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Phase III Remedial Investigation Report
for
Installation Restoration Program Site 16

Volume 2 – Text and Tables (Section 4)

Former Naval Construction Battalion Center Davisville
North Kingstown, Rhode Island

Naval Facilities Engineering Command MidAtlantic

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4-15 Conceptualized Isoconcentration Ranges for Soil, Cross Section F-F’
4-16 Benzo(a)pyrene Equivalent Results for Surface Soil (0-2 Feet) at the Former Fire Fighting Training Area and Eastern Side of the North Central Area
4-17 Benzo(a)pyrene Equivalent Results for Surface Soil (2-25 Feet) at the Former Fire Fighting Training Area and Eastern Side of the North Central Area
4-18 Benzo(a)pyrene Equivalent Results for Surface Soil (0-2 Feet) Extended Boundary of Creosote Dip Tank Area
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4-21 Trichloroethene (TCE) – Shallow Overburden Groundwater (2004 and 2007)
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4-24 Trichloroethene (TCE) – Shallow Bedrock (R) and Deep Bedrock (R2) Groundwater (2004 and 2007)
4-25 Total Chlorinated Volatile Organic Chemicals - Shallow Overburden Groundwater (2004 and 2007)
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4-29 Volatile Organic Chemical Results for Groundwater/Surface Water Samples in Allen Harbor
4-30 Benzo(a)pyrene Equivalent Results for Groundwater – North Central Area
4-31 Total Chlorinated Volatile Organic Results for Sediment and Seep Samples
4-32 Polychlorinated Aromatic Hydrocarbon Results for Sediment and Seep Samples

FIGURES (Continued)

NUMBER

4-33 Selected Results for Soil Gas Sample Locations
4-34 Standard EPA Polycyclic Aromatic Hydrocarbon Results for Pavement and Piling Sampling Locations
5-1 Trichloroethene (TCE) – Shallow Overburden Groundwater (2004 and 2007)
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5-3 Trichloroethene (TCE) – Deep Overburden Groundwater (2004 and 2007)
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5-5 Volatile Organic Chemical Results for Groundwater/Surface Samples in Allen Harbor
5-6 Distribution of Total 1,2-DCE in Groundwater – Shallow Overburden Zone, 2004
5-7 Distribution of Vinyl Chloride – Shallow Overburden Zone, 2004
5-8 Distribution of Total 1,2-DCE in Groundwater – Intermediate Overburden Zone, 2004
5-9 Distribution of Vinyl Chloride in Groundwater – Intermediate Overburden Zone, 2004
5-10 Distribution of Total 1,2-DCE in Groundwater – Deep Overburden Zone, 2004
5-11 Distribution of Vinyl Chloride in Groundwater – Deep Overburden Zone, 2004
5-12 Distribution of Total 1,2-DCE in Groundwater – Bedrock Zone, 2004
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5-14 Selected Results for Soil Gas Sample Locations
5-15 Redox Conditions in Groundwater, Shallow Overburden Zone, 2002
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5-17 Redox Conditions in Groundwater, Deep Overburden Zone, 2002
5-18 Redox Conditions in Groundwater, Bedrock Zone, 2002
6-1 Statistical Analysis Background Diagram Background Investigation
6-2 Human Health Conceptual Site Model
7-1 Ecological Conceptual Site Model

4.0 NATURE AND EXTENT OF CONTAMINATION

This section describes the locations, spatial patterns, chemical forms, and concentrations of organic and inorganic chemical contaminants at Site 16. Analytical data from the following investigations are used in the discussion:

- Phase II EBS.
- Phase II EBS Follow-on Investigation.
- Phase II EBS Follow-on Addendum Investigations.
- Phase I RI (Stage I and Stage II).
- Phase II RI.
- Supplemental Sediment Investigation [i.e., Phase II SLERA (for sediments)].
- Supplemental Phase II Investigation.
- HRC Injection Pilot Study.
- Phase III RI.

The analytical data generated during these environmental investigations are presented in Appendix C of this report. Analytical data for chemicals detected at least once in soils, surface water, or sediments in any aforementioned Site 16 investigation or in groundwater sampled during the Supplemental Phase II Investigation (2004), the HRC Injection Pilot Study (2004), and the Phase III RI (2007) are presented on a sample-by-sample basis in tables referenced in this section. Summary descriptive statistics [frequency of detection, range of positive detections, range of non-detect results (i.e., sample quantitation limits), arithmetic mean concentration, arithmetic mean of positive detections] are also presented for these data as well as for groundwater data collected in previous investigations. Additionally, selected data presentation tables and figures from previous Site 16 environmental investigation reports are presented in Appendix A and referenced in this section. An electronic copy of the Supplemental Phase II Remedial Investigation Data Package Report (September 2006) is included in Appendix A of this report.

In calculating total concentrations presented in Section 4.0 tables and figures, a value of zero was used for non-detected values. Total xylenes is the summation of m+p xylenes and o-xylene. BTEX is the sum of benzene, toluene, ethylbenzene, and xylenes concentrations. Total CVOCs is the sum of 1,1,1-trichloroethane (TCA), 1,1,2,2-tetrachloroethene (PCE), 1,1,2-TCA, 1,1,-dichloroethane (DCA), 1,1-dichloroethene (DCE), 1,2-DCA, 1,2-dichloropropane, carbon tetrachloride, chloroethane, chloromethane, cis-1,2-DCE, cis-1,3-dichloropropene, methylene chloride, PCE, total 1,2-DCE, trans-1,2-DCE, trans-1,3-dichloropropene, TCE, and VC. The benzo(a)pyrene equivalent and 2,3,7,8-TCDD toxicity equivalent concentrations were calculated per EPA guidelines.

Exceedance of a human health or ecological risk-based screening criterion is evidence of possible unacceptable risk, but it is not a confirmation that unacceptable risks exist. Conversely, if concentrations do not exceed screening criteria, the chemicals could pose a risk, but the level of risk is generally considered to be acceptable. Therefore, screening criteria (Tables 4-1 through 4-5) were used as approximate numerical limits to conservatively identify areas that could be problematic from a risk perspective. The criteria are defined in Table 4-6. Human health criteria apply to surface soil, subsurface soil, groundwater, surface water, and sediments. The ecological screening values apply to surface soil, surface water, and sediment only. In addition to screening levels, consideration was given to cleanup levels commonly used to establish the extent of remediation. The concentration-to-criteria comparisons presented in this section of the Phase III RI report were conducted to assist in the determination of the nature and extent of contamination at Site 16. The comparisons do not represent a RI risk assessment of the Site 16; those evaluations are presented in Sections 6 and 7 of this report (i.e., the Phase III RI HHRA and SLERA for Site 16). This RI report was prepared using the July 8, 2008 version of the Oak Ridge National Laboratory (ORNL) Regional Screening Levels (RSLs), which was the current version of the criteria at the time. The ORNL RSLs were updated on September 12, 2008, after this RI Report had been completed. A discussion of the changes in the RSLs is presented in Section 6.5.1. The changes in some of the criteria in the updated RSL table do not effect the conclusions of this RI.

Whereas organic chemicals investigated at Site 16 do not occur naturally at the concentration levels investigated, many metals do occur naturally at those levels. Consequently, where appropriate to do so, metals concentrations are also discussed relative to available background levels. Background soil samples for inorganics were not collected as part of this investigation because they are not a primary contaminant of concern at this site, especially south of Davisville Road, where the property was previously investigated and transferred without restriction. However, background soil data for metals is available as a result of sampling conducted in other areas of NCBC Davisville and at other Navy facilities in the New England Area [e.g., NETC Newport (Rhode Island), South Weymouth Naval Air Station (Massachusetts)]. Literature sources also provide some indication of commonly observed soil metals concentrations. The Navy believes that these data provide useful perspective when making risk management decisions for Site 16. For example, consider the lead concentrations reported for subsurface soils in the North Central area. Although a Site 16 specific background soil data set does not currently exist, the lead concentrations noted in a few of the soil samples collected in the BTEX "hot spot" area clearly exceed *all* of the comparison benchmarks provided (Appendix D.1). Both maximum *and* mean concentrations in the "hot spot" area clearly exceed those available for the comparison datasets. Therefore, the weight of evidence (i.e., the fact that *all* of the background comparison datasets have been exceeded) leads one to conclude that it is likely that some lead concentrations in the North Central area likely *do* exceed background. It should be noted that the referenced background studies for NETC

Newport and South Weymouth were rigorous background soil studies scoped and conducted per both Navy and EPA guidance documents. However, these background soil datasets are added as "points of reference" for the discussions included in the RI and for risk-management decision making, and are not a substitute for Site 16 specific background soil data set.

Site-specific background concentrations for inorganics in groundwater were established by the Navy during the Basewide Groundwater Inorganics Survey for NCBC Davisville (Stone and Webster Environmental Technology and Services, September 1996). The facility-specific background concentrations for groundwater are presented in Table 4-7. Background reference samples were collected for sediments and are discussed below. The nature and extent narrative presented in Section 4 discusses those metals found in groundwater (e.g., arsenic) or soils (e.g., lead) at concentrations exceeding the available background information for Site 16. Figures depicting referenced NCBC Davisville background soil and groundwater sampling locations are included at the end of Appendix D.1. It should be noted that the background soils datasets referenced in this RI should be viewed as "points of reference" and do not constitute a site-specific background soils dataset for Site 16.

The Site 16 area includes the EBS Review Items shown on Figure 1-2 and described in Section 2.0. These potential source areas are as follows:

- EBS Review Item 28: :
  - Creosote Dip Tank Area
  - Fire Fighting Training Area
- EBS Review Item 29 - Former Building 41
- EBS Review Item 30 - Railroad Staging Area
- EBS Review Item 57 - Building 39 Area Septic System
- EBS Review Item 60 - Building E-107 Septic Tanks
- EBS Review Item 68 - Building 39 Area
- EBS Review Item 79 - Building E-319
- EBS Review Item 81 - Former Building 41 Septic Tanks
- EBS Review Item 85 - Former UST Area
- EBS Review Item 86 - Building E-107 Floor Drains

As detailed in Section 1, the EBS previously recommended no further action for Review Items 29, 30, 57, 68, 79, 81, and 85. Several of these (EBS No. 30, 57, 68, 85) are noted in this RI document for purposes of completeness only.

4.1 OVERVIEW OF DATA PRESENTATION FOR ENVIRONMENTAL MEDIA

This section provides an overview of the data available to evaluate the nature and extent of contamination at Site 16. Most importantly it orients the reader to the various tables and figures used to present the significant amount of data currently available for Site 16. The data are discussed in detail on a fraction-by-fraction basis in Sections 4.2 through 4.7.

Surface and Subsurface Soils Data

Data are available for soils as the result of sampling conducted during the EBS Phase II Investigation (EA, February 1998), EBS Phase II Follow-On Investigation (EA, March 1998), EBS Phase II Follow-On Addendum Investigations (EA, May 1998), Phase I RI (EA, August 2004), Phase II RI (EA, June 2003), Supplemental Phase II Investigation (EA, April 2004), HRC Injection Study (EA, July 2004), and the Phase III RI field investigation (summer/fall of 2007). Tables 4-8 through 4-22 present the chemicals detected in surface soil (0 to 2 feet bgs), shallow subsurface soil (2 to 25 feet bgs) and deep subsurface soil (greater than 25 feet bgs). Also shown on Tables 4-8 through 4-22 are exceedances of the direct contact human health screening criteria. Section 2 presented the results of the Color-Tec analyses and discussed the applicability and usability of the results as compared to the FBL results. The Color-Tec screening was demonstrated to effectively estimate CVOC concentrations to FBL results based on observed concentration ranges compared to distinct tube readings. Consequently, a vast amount of semi-quantitative CVOC results are available for the nature and extent analysis of CVOCs for the site. In addition, as discussed in Section 2, MIP screening was used at 59 locations to locate potential source areas during the Phase I RI. The results of the MIP screening are included in Appendix A. The MIP screening is most useful for identifying areas of relative concentration differences for VOCs in soil and, when collected in the saturated zone, in overburden groundwater.

Tables 4-23, 4-24, 4-27 and 4-28, which present descriptive statistics for chemicals detected in surface soil at least once during any investigation, also include comparisons to direct contact human health criteria, ecological screening criteria, criteria for migration of chemicals from soil to groundwater, and criteria for migration of chemicals from soil to air. Tables 4-25, 4-26, 4-29, and 4-30, which present descriptive statistics for chemicals detected in subsurface soil at least once during any investigation, also include comparisons to direct contact human health criteria, criteria for migration of chemicals from soil to groundwater, and criteria for migration from soil to air (shallow subsurface soil only). These criteria provide perspective on the degree of risk that could be associated with the detected chemicals. Overall, when describing the extent of contamination, emphasis is placed on comparisons to RIDEM direct contact criteria, the criteria for leachability from soils to groundwater, applicable ecological criteria for surface soil, and the commonly used soil cleanup limit of 1 µg/kg for dioxins and furans. The extent of contamination is largely described in terms of exceedances of these criteria.

Figures 4-1 to 4-8 are spatial concentration plots of total CVOCs in soils (30 to 15 feet MSL, 15 feet to 5 feet MSL, 5 to -5 feet MSL, -5 to -15 feet MSL, -15 feet to -25 feet MSL, -25 feet to -35 feet MSL, -35 to -45 feet MSL, and -45 feet to -55 feet MSL) based on review of all available FBL and Color Tec Screening data for soils. Figures 4-9 to 4-15 present cross-sections of concentration plots of total CVOCs in soils; the cross-section locations are provided as part of Figure 4-5. The cross-sections were selected based on analysis of Figures 4-1 to 4-8 and present areas of maximum observed total CVOCs in soils and likely transport pathways. Figures 4-16 to 4-20 present the spatial distribution of benzo(a)pyrene, total PAHs, and total carcinogenic PAHs [expressed in terms of benzo(a)pyrene equivalents (BaP Eqs) in surface soil (North Central area only), shallow subsurface soil (North Central area only), and deep subsurface soil (Site 16) based on FBL data. The plotted concentrations are representative of the major contaminant groups or chemical groups analyzed at Site 16.

In addition to the site characterization soil samples collected in 2007, select soil samples were analyzed forensically to further investigate the potential connection between the PAH concentrations noted in the Allen Harbor sediments and the PAH source area in the North Central area of Site 16. These data are presented and evaluated in Appendix F which provides an update to the forensic evaluation presented in the 2004 SLERA.

Groundwater Data

Analytical data collected during the Supplemental Phase II Hydrogeologic Investigation (EA, April 2004), HRC Injection Pilot Study (EA, July 2004), and Phase III RI were the data primarily used to define the vertical and horizontal extent of groundwater contamination at Site 16. Analytical results for the 2004 and 2007 sampling events are presented on a sample specific basis in Tables 4-31 through 4-40. Tables 4-41 through 4-55 present descriptive statistics for chemicals detected at least once in samples collected during the pre-2004 sampling events, the 2004 sampling events, and the Phase III RI. Table 4-56 provides a summary of the primary chlorinated VOCs and degradation products by groundwater zone over the course of all referenced sampling events. The analytical results for shallow groundwater samples collected via piezometer advanced below the sediments of Allen Harbor are presented in Table 5-57.

Figures 4-21 through 4-28 present the spatial distribution of TCE and the total CVOCs in each of the groundwater zones for samples collected during the 2004 and 2007 rounds of sampling. Analytical results for shallow groundwater samples collected via piezometers advanced below the sediments of Allen Harbor are provided in Figure 4-29. The results of the aforementioned MIP screening are included in Appendix A. Figure 4-30 presents the spatial distribution of benzo(a)pyrene, total PAHs, and total

carcinogenic PAHs [expressed in terms of benzo(a)pyrene equivalents (BaP Eqs)] in the shallow groundwater samples collected in the North Central area in 2007.

In addition to the site characterization groundwater samples collected in 2007, select groundwater samples were analyzed forensically to further investigate the potential connection between the PAH concentrations noted in the Allen Harbor sediments and the PAH source area in the North Central area of Site 16. These data are presented and evaluated in Appendix F which provides an update to the forensic evaluation presented in the 2004 SLERA.

Surface Water and Seep Data

Seeps represent groundwater that is expressed as surface water. Consequently, contamination detected in seeps is expected to reflect groundwater quality, and to some degree, sediment quality if sediments at the seeps infiltrate the seep samples during sample collection (it is often difficult to exclude sediments during sampling).

As detailed in Section 2, one seep sample (28-SP-01) was collected along the southwestern shore of Allen Harbor during the Phase II EBS Follow-On Investigation. Water from two seeps (SEEP16-01 and SEEP16-02) and one outfall pipe (OPW16-01) were sampled during the Phase I RI. SEEP16-01 was collected along the southwestern shore of Allen Harbor in the vicinity of 28-SP-01. SEEP16-02 was collected along the southeastern shore. OPW16-01 was collected adjacent to the outfall pipe that extends beneath Allens Harbor Road from the paved parking lot and discharges to Allen Harbor.

Three deep surface water samples (locations SW16-AH-05S, SW16-AH-05C, and SW16-AH-07S; just above the sediment surface) were collected during the 2007 Phase III field investigation because VOC concentrations noted in the shallow groundwater samples collected from piezometers advanced at these locations exceeded 500 µg/L. Seep samples were also collected from the seep location at the southwest corner of Allen Harbor (location SP16-AH-01) during the Phase III field investigation and analyzed as part of the aforementioned forensics investigation (See Appendix F).

Tables 4-58 and 4-59 summarize the chemicals detected in seep samples, and Table 4-60 provides descriptive statistics. Tables 4-58 and 4-59 also display chemicals with concentrations that exceed the screening criteria for seeps. Analytical results for the deep surface water samples are included in Table 4-57. A copy of the analytical database is presented in Appendix C. Figure 4-31 displays the spatial distribution of TCE and total CVOCs. Figure 4-32 presents the spatial distribution of benzo(a)pyrene, total PAHs, and total carcinogenic PAHs (expressed in terms of BaP Eqs). Analytical results for the deep surface water samples are included in Figure 4-29.

Concentrations of most constituents in samples from 28-SP-01, OPW16-01, SEEP16-01, and SEEP16-02 were less than or equal to EPA MCLs and RIDEM GA groundwater objectives. The exceedances are discussed below. However, EPA MCLs, ORNL RSLs, and RIDEM GA groundwater criteria are very conservative screening criteria for the seeps because human contact with the seeps is likely to be intermittent only. A risk-based concentration developed for human exposure to seeps is likely to be at least an order of magnitude greater than the screening criteria presented in Tables 4-58 and 4-59. This statement is accurate primarily because of differences in receptor contract rates (e.g., ingestion rates) and exposure frequencies assumed a receptor who is using water supply for domestic purposes (i.e., the basic assumption for the human health screening criteria presented in Tables 4-58 and 4-59) versus that which is plausible for a receptor contacting the seeps at Site 16 (a very limited, intermittent exposure). For example, the drinking water ingestion rate assumed for domestic use of a water supply is 2 liters per day. In contrast, a typical ingestion rate assumed for recreational or trespass scenarios involving surface water bodies is 0.05 liters per hour. Assuming a 4 hour exposure time, the recreational or trespass exposure is, consequently, an order of magnitude less intensive than the domestic use/drinking scenario. Additionally, large boulders have been placed along the Allen Harbor shoreline abutting Site 16. The physical hazards associated with reaching the seeps in question are substantial; frequent, direct physical contact with the seeps (which are only visible at low tide) is very unlikely. Thus, any screening level developed for such an exposure would easily be an order of magnitude greater than those presented in Tables 5-48 and 4-59.

Sediment

Two sediment samples (SED16-01 and SED16-02) were collected along the southern shore of Allen Harbor, and one sediment sample (OPSED16-01) was collected adjacent to the outfall pipe that extends beneath Allens Harbor Road from the paved parking lot and discharges to Allen Harbor during the Phase I RI. Eighteen sediment samples and one sediment core were collected from Allen Harbor during the Phase II SLERA (EA, November 2004). One sediment sample was also collected from a storm catch basin located across Allens Harbor Road from location OPSED16-01. Analytical results for these samples are presented in Tables 4-61 and 4-62. Typical chemistry analyses were conducted on the 2004 sediments as well as forensic analyses designed to determine whether the observed contaminant concentrations are associated with Site 16. The results of the 2004 Phase II SLERA forensic study are summarized in Section 2 of this report. The detailed forensics report can be found in Appendix B of the Phase II SLERA Report (EA, November 2004).

One shallow sediment sample (0 to 6 inches below the sediment surface) was collected at the seep location at the southwest corner of Allen Harbor in 2007. Thirteen 2007 shallow sediment samples (PAH analysis only) were collected either along one of two transects or at locations adjoining selected piling as described in Appendix F. Deeper sediment samples (3 to 9 feet below sediment surface) were also

collected from three Allen Harbor locations in 2007 (VOC analysis only). Analytical results for these 2007 samples are presented in Tables 4-63 and 4-64; descriptive statistics are presented in Table 4-65.

The sediment tables listed above identify chemicals with concentrations that exceed the screening criteria for sediments. However, it should be noted that the screening criteria presented are very conservative for sediments. A risk-based concentration developed for human exposure to sediments is likely to be at least an order of magnitude greater than the screening criteria presented in these tables. This statement is correct because of differences in receptor contact rates (e.g., ingestion rates) and exposure frequencies assumed a receptor who is exposed to soils under a residential land use scenario (i.e., the basic assumption for the human health screening criteria presented in sediment data summary tables) versus that which is plausible for a receptor contacting the sediments underlying Allen Harbor at Site 16. For example, the typical soil ingestion rate assumed for a hypothetical child contacting soils under a residential land use scenario is 200 mg/day. In contrast, most sediments at Site 16 are submerged under several feet of water. Any type of contact with these sediments would be considerably less intensive and less frequent than that assumed for soils under a residential land use scenario. Thus, any screening level developed for such an exposure would easily be an order of magnitude greater than those presented in the sediment data summary tables.

Figure 4-31 shows the spatial distribution of TCE and total CVOCs. Figure 4-32 presents the spatial distribution of benzo(a)pyrene, total PAHs, and total carcinogenic PAHs (expressed in terms of BaP Eqs).

Selected 2007 shallow sediment samples were analyzed forensically to further investigate the potential connection between the Site 16 source areas and the PAH concentrations in the sediments of Allen Harbor. Appendix F provides an update to the forensic evaluation presented in the 2004 SLERA.

Tables 4-66 to 4-68 present the analytical results for three sediment reference areas sampled in 2004. Consistent with Navy policy (Navy, January 2004), three reference sites (9 samples) were sampled and analyzed for the same constituents as the 2004 sediment samples from Allen Harbor. Three samples were collected from Prudence Coggeshall Cove (REF1), three samples were collected Little Allen Harbor (REF2), and three samples were collected from Fishing Cove (REF3). As discussed in the Phase II SLERA (EA, November 2004), Prudence Coggeshall Cove qualifies as a background area, Little Allen Harbor and Fishing Cove do not. Although Coggeshall Cove qualifies as a background area, it is not physically similar to Allen Harbor. Coggeshall Cove is more representative of open Narragansett Bay, and Allen Harbor has a restricted hydrodynamic flux. The bottom in Little Allen Harbor is very rocky, making collection of samples difficult. Fishing Cove is very shallow and exposed during low tide, with minimal boat traffic.

Soil Gas Data

Table 4-69 presents the analytical results for positive detections reported for the 25 soil gas samples collected during the Phase III field investigation. As described in Section 2, the soil gas samples were collected from the following sub-areas of Site 16:

- The immediate vicinity of Bldg E-107
- The FFTA
- The North Central Area directly south of the FFTA
- The south-western end of the former Bldg 41 area in the general vicinity for the TCE still area
- The north-eastern end of the former Bldg 41 area

Descriptive statistics for the shallow (0 to 5 feet bgs) and deep samples (5 to 10 feet bgs) collected are provided in Tables 4-70 and 4-71, respectively. Selected results for the soil gas samples are displayed in Figure 4-33.

Pavement/Pilings

Pavement samples (11 locations), piling samples (9 locations) and one sample of a pole (located in an area directly adjoining Allen Harbor inner dock area) that appeared to have been treated with creosote/petroleum product were collected during the Phase III field investigation. These samples were also collected to support the aforementioned forensics evaluation. Selected PAH results (standard EPA results only) are displayed in Figure 4-34 and presented on Tables 4-72, 4-73, and 4-74. Appendix F provides an update to the forensic evaluation presented in the 2004 SLERA.

4.2 VOLATILE ORGANIC COMPOUNDS

The previous section provided a summary of all of the data available for the various environmental media sampled to date. The purpose of this section is to focus on the VOCs detected at the site in order to provide a conceptual understanding of the current distribution of contamination based on interpreted and/or observed prior source releases. A significant number of tables and figures have been developed in order to present the nature and extent of VOC contamination in the various media. In addition, at least one table and most figures combine both FBL data and field screening data (Color-Tec). Due to the vast amount of data available at this site, the data has been parsed as appropriate for each media type.

4.2.1 Volatile Organic Compounds in Soils

Tables 4-8 to 4-22 present analytical results for chemicals detected in surface soils (0 to 2 feet bgs), shallow subsurface (2 to 25 feet bgs) and deep subsurface soils (greater than 25 feet bgs). As presented in these tables, the data is parsed both spatially and by depth for data collected in 2007 while the pre-2007 data is only presented by depth ranges. Tables 4-23 to 4-30 present a summary of descriptive statistics with all data, parsed by broad descriptive areas and compared to various screening criteria. Appendix C.4 summarizes the more frequently detected chemicals and chemicals most important to the risk evaluations, parsing the data by pre-described areas and presenting complete vertical profiles for each sample location.

As observed in the summary of descriptive statistics tables (Tables 4-23 to 4-30), a more extensive list of VOCs was detected in both the surface and subsurface soils of the undeveloped area than was detected in the soil of the developed area. Seven VOCs were detected in the surface soil and 27 VOCs were detected in the subsurface soil in the undeveloped area, while only two VOCs were detected in the surface and 16 VOCs were detected in the subsurface soils for the developed area.

For the surface soils, for both areas, acetone was the most frequently detected VOC (detected in 21 of 33 samples in the undeveloped area and in 2 of 16 samples in the developed area). Detections of acetone were scattered across the site, but were most frequently noted in the area between the former creosote dip tank and the wooden bermed structure (the two samples in developed area were in vicinity of former Building 41). (The wooden bermed structure is located between the creosote dip tank area and the FFTA.) All of the acetone detections are orders of magnitude less than screening values and are not discussed further. The only other VOC detected in the developed area in the surface soils was TCE reported for locations near the eastern end of former Building 41 in the 1 to 2 feet bgs zone. While the concentration noted is very low, 1.7 µg/kg, and obviously much lower than surface soil screening criteria, the detection is noteworthy when evaluating potential former source areas. The only CVOC detected in the undeveloped area surface soils was methylene chloride which was present at concentrations less than surface soil screening criteria; therefore, it is not discussed further. Similar to TCE in the developed area, ethylbenzene, toluene, and total xylenes were detected infrequently (mostly at SB16-093) and at very low concentrations (i.e., well below surface soil screening criteria). The remaining VOCs noted in the surface soil of the undeveloped area (2-butanone and carbon disulfide) were detected infrequently and at concentrations well below surface soil screening criteria, so no further discussion is warranted. Concentrations of all VOCs in surface soils were less than the direct contact human health and ecological screening criteria.

For the subsurface soils, the most frequently detected VOCs varied between the undeveloped and developed areas. Additionally, more VOCs were detected in the undeveloped area (27) compared to the

developed area (16). The 11 VOCs detected only in the undeveloped area were 1,2,4-trichlorobenzene, 4-methyl-2-pentanone, benzene, bromodichloromethane, chlorobenzene, chloroform, chloromethane, cyclohexane, methyl acetate, styrene, and VC. Of these 11 VOCs, most were detected infrequently, with only benzene, cyclohexane, and VC detected in 7 or more samples. These three more frequently detected VOCs were still reported infrequently when the total number of samples collected at Site 16 are considered (generally between 109 and up to 162 samples were collected). Of the 11 VOCs unique to the undeveloped area, only benzene, chloroform and VC were noted at concentrations exceeding screening levels. Of the 16 VOCs found in both the undeveloped and developed areas, acetone was the most frequently detected VOC in the undeveloped area (79 of 123 samples). While frequently detected, all of the acetone detections are orders of magnitude less than screening values and are not discussed further. Also in the undeveloped area, the other three BTEX constituents were frequently detected [ethylbenzene (40 of 160 samples), toluene (29 of 161 samples) and total xylenes (46 of 160 samples)]. While these more frequently detected BTEX constituents were not reported at concentrations exceeding screening levels, their frequent detection and relatively high concentrations at certain locations is important to note.

TCE (36 of 161 sample locations) and several of its degradation constituents (cis- and trans-1,2,-DCE, 1,1-DCE, and VC) were also detected in the subsurface soils of the undeveloped area. Of the four TCE degradation constituents detected, only cis-1,2-DCE was reported at concentrations greater than 1,000 µg/kg. The remaining VOCs detected in the undeveloped area, with the exception of 2-butanone with 26 of 109 samples, are detected relatively infrequently (total detections less than 20). Exceedances of various screening criteria were noted for 1,1-DCE, cis-1,2-DCE, methylene chloride, PCE, trans-1,2-DCE, and TCE. While exceedances of screening criteria are observed for methylene chloride, it is a common laboratory contaminant and since it was only infrequently detected, no further discussion is warranted.

Not only were there less VOCs detected in the developed area as compared to the undeveloped area for the subsurface soils, the frequencies of detections in the developed area were also quite different. The BTEX parameters toluene, ethylbenzene, and total xylenes were detected fairly frequently in the undeveloped area but very infrequently in the developed area. Benzene was not detected in the developed area (and only infrequently detected in the undeveloped area). While toluene, ethylbenzene and total xylenes were detected in the developed area, the concentrations were low when compared to screening concentrations (e.g., a maximum concentration of 23 µg/kg was reported for total xylenes).

The most frequently detected VOC in the subsurface soils of the developed area was TCE (140 of 229 samples). The concentrations reported exceed several screening criteria including criteria established to evaluate the potential for contaminant migration from soils to groundwater. Several TCE degradation

constituents are also detected (albeit infrequently) in the developed area. 1,1-DCE and trans-1,2-DCE were detected only once (at concentrations of 0.81 µg/kg and 2.4 µg/kg, respectively). cis-1,2-DCE was detected in 9 or 226 samples with all concentrations less than 10 µg/kg. 1,1,2-TCA and methylene chloride were reported infrequently at concentrations exceeding screening criteria. While few 1,1,2-TCA concentrations were found to exceed screening criteria, all observed concentrations were quite low (less than 5 µg/kg) and given their sporadic occurrences are likely due to impurities of the TCE used at former Building 41 (generated during production of TCE). As with 1,1,2-TCA, most other ethanes and chloroform detected were also infrequently detected and at sporadic locations, also implying their presence is due to impurities of the TCE used at former Building 41. All other VOCs were detected infrequently and at concentrations below screening criteria and are therefore not discussed further.

While the examination of frequency of detection tables is useful in determining which VOCs are most frequently encountered and whether certain screening criteria are exceeded, additional data review is necessary when evaluating potential release areas and the overall extent of contamination. As noted above, TCE was the primary contaminant detected in the soils of the developed area and it occurred in both the surface and subsurface samples. In the undeveloped area, BTEX and total CVOCs (primarily TCE and some of its degradation by-products) were the primary contaminants detected. These chemicals occurred in both the surface and subsurface soils. While these general trends were observed, further analysis is necessary in order to evaluate the nature and extent of the VOC contamination in soils.

Appendix C.4 summarizes data for the primary VOCs in soils selected based on frequency of detection and exceedances of screening criteria. The data is parsed into sub-areas (generally by uniform operational areas); complete vertical profiles are presented for each sample location. The following six areas of the undeveloped area were considered: (1) the BTEX hot spot area, (2) the Building E-107 area, (3) the eastern portion of the North Central Area, (4) the former FFTA, (5) the immediate creosote dip tank area, and (6) the southwest quadrant of the North Central Area. Three areas of the developed area were considered: (1) the former Building 41 and adjoining areas, (2) CVOC Screening Area No. 2 to the Narragansett Bay piers, and (3) the upgradient area – south of Davisville Road and CVOC Screening Area No 1. The following items described the primary contaminants (BTEX and CVOCs) observed in each of these sub-areas and the approximate depths at which the contamination is detected:

- **The BTEX hot spot**
  - BTEX was frequently encountered in shallow subsurface soils, generally between 4 to 10 feet bgs.
    - Very high BTEX concentrations were detected at locations SB16-58 and SB16-59.
  - High CVOCs were observed collocated with high concentrations of BTEX.
  - Overall, BTEX and CVOC contamination is shallow (less than 10 feet bgs) with only minor concentrations of TCE below 20 feet bgs.

- **Building E-107**
  - Low-level BTEX (no benzene) was detected in the upper 10 feet bgs at several locations; however, very few detections of BTEX reported for samples collected below 20 feet bgs.
    - Maximum concentration (36 µg/kg) was observed in the 0 to 2 foot bgs sample from location EBS85-SB01.
  - Only one CVOC was detected [VC (6.5 µg/kg) at TP-2 from 5 to 10 feet bgs].

- **Eastern Area of North Central Area**
  - Low level BTEX (no benzene) observed; contamination was typically detected in samples collected at depths less than 20 feet bgs.
    - BTEX was detected in few samples collected at depths greater than 50 feet bgs; all located at SB16-074.
  - CVOCs were prevalent VOCs detected, dominantly in soils greater than 20 feet bgs.
    - At several locations, cis-1,2-DCE is approximately 100 percent of CVOC (at SB16-041 from 16 to 18 feet bgs, SB16-069 at 14 to 15 feet bgs, and at SB16-079 at 18 feet bgs).
    - In deeper zones, CVOC is approximately 100 percent TCE.

- **Former Fire Training Area**
  - BTEX was detected very infrequently.
    - Maximum concentration reported was 18.12 µg/kg (no benzene) at SB16-100 from 2 to 3 feet bgs; BTEX concentrations at other locations were less than 10 µg/kg.
  - CVOCs were detected at approximately one third of sample locations.
    - Generally low levels (less than 300 µg/kg) detected throughout the area with some locations dominated by cis-1,2-DCE [at SB16-44 from 14 to 16 feet bgs, total CVOC is 1,342 µg/kg (1300 µg/kg from cis-1,2-DCE)].
    - The frequency of detection of CVOCs was similar for the shallow and deep sampling locations (CVOCs do not appear to be biased in either zone based on number of detections).

- **Immediate Creosote Dip Tank Area**
  - Very few detections of BTEX were reported, all detections at less than 10 feet bgs; benzene was not detected.
  - No CVOCs detected at shallow or deep zones.

- **Southwest Quadrant of North Central Area**
  - Only three sporadic detections for BTEX (no benzene) were reported, all results less than 20 µg/kg.
  - Very few CVOC detections noted.
    - -- Few detections noted in shallow zone (less than 10 feet bgs); most were reported for samples collected at greater than 30 feet bgs.
    - -- All but one result was less than 100 µg/kg; highest detection (490 µg/kg) was reported for sample from SB16-078 (43 to 44 feet bgs).

- **Former Building 41 and Adjoining Areas**
  - Very few (only 6) detections of BTEX were reported.
    - -- All detections but one were less than 5 µg/kg (no benzene).
  - Adjacent to and within building footprint, CVOCs were detected at nearly all locations and typically over range of depths.
    - -- CVOCs were less frequently noted at locations south of the building.
    - -- CVOCs were observed in unsaturated zone (less than 15 feet bgs) at multiple locations and at some locations, at multiple depth zones:
      - ▪ Locations include SB16-032, SB16-A3-08, SB16-A3-14, SB16-A3-22, SB16-A3-23, SB16-A3-34, SB16-A3-37 and SB16-A3-41.
    - -- Very few TCE degradation by-products were detected (for most locations, TCE accounted for 100 percent of CVOC).

- **CVOC Screening Area No. 2 to the Narragansett Bay Piers**
  - No BTEX was detected at any location.
  - Total CVOCs were frequently detected at depths greater than 20 feet bgs.
    - -- Several locations noted with positive results greater than 1,000 µg/kg.
    - -- Very infrequent occurrences of cis-1,2-DCE were noted and when observed, cis-1,2-DCE was a very minor percentage of the total CVOC.
    - -- 2 Locations where CVOCs were observed at less than 10 feet bgs (SB16-A2-18 and SB16-A2-05).

- **Upgradient Area – South of Davisville Road and CVOC Screening Area No 1**
  - Only one location noted with BTEX less than 1 µg/kg (all toluene) (SB16-A1-02).
  - No CVOCs were detected at any sampling location.

As detailed in Appendix C.4, the highest concentrations of BTEX are associated with the BTEX hot spot area and were detected in the upper 10 feet of soil. BTEX was also frequently detected at relatively low concentrations in the shallow subsurface soil (the upper 20 feet of soils) in the eastern portion of the North Central area. BTEX was generally only infrequently encountered in the other areas and when observed, occurred in the shallow soils and at relatively low concentrations. Therefore, while BTEX may be frequently detected in subsurface soils throughout the undeveloped area, elevated concentrations only occur in a spatially small area (i.e., the BTEX hot spot area).

The data presented in Appendix C.4 indicates that the most frequently detected and spatially extensive contaminants in the Site 16 soils are the CVOCs. Specifically, TCE and its degradation products cis-1,2-DCE and VC, but dominantly, TCE is the primary CVOC detected. To further assist in evaluating the extent of CVOCs, Figures 4-1 to 4-15 present all available CVOC data collected to date. The figures are based on the FBL data and the Color-Tec field screening data. As discussed in Section 2 and summarized in Appendix B.5, in most cases, a positive detection reported using the Color-Tec screening technology was verified by the FBL data (very high verification rate). While the direct measurements reported using the Color-Tec field screening do not always directly correlate to FBL data (on a one-to-one basis), response ranges observed in the Color-Tec field screening data correlate strongly with response ranges reported in FBL data. For instance, as summarized in Appendix B.5, for the low-level CVOC screening tube (LL), 76 of 77 positive Color-Tec results were confirmed by the FBL (a verification rate of 98.7 percent), and for tube readings of non-zero to 1.5, FBL results ranged from non-detect (one sample) to 163.4 µg/kg, with increased Color-Tec responses correlating to increased FBL results. Based on these two observations, the geometric means of the screening tube ranges was used in Appendix C.4 to estimate the CVOC result from the Color-Tec specific result. The screening tube ranges (divided in half of overall response range) and geometric means are summarized as follows:

- LL Screening Tube, non-zero to 1.5 tube response – 16 µg/kg
- LL Screening Tube, 1.5 to 3.0 tube response – 260 µg/kg
- L Screening Tube, non-zero to 12 tube response – 860 µg/kg
- L Screening Tube, 12 to 25 tube response – 5400 µg/kg
- M Screening Tube, non-zero to 25 tube response – 2200 µg/kg
- M Screening Tube, 25 to 50 tube response – 12000 µg/kg

Non-detects for the Color-Tec screening method was verified at a rate of 86.1% (161 of 187 samples). The geometric mean of the 26 samples detected by the FBL (not the Color-Tec field screening) is 2.86 µg/kg. Therefore, Figures 4-1 through 4-15 present the results in ranges (based on the geometric means of the screening tube response), which are based on the effective ranges where Color-Tec field screening results highly correlate to FBL results. While this approach results in the figures that are more conceptual than traditional isopleth concentration contours, the goal of understanding nature and extent in three dimensions is enhanced.

Figures 4-1 to 4-8 present the spatial distribution of the CVOCs based on all data collected to date. Figure 4-1 presents CVOC data for the 30 to 15 feet MSL interval while Figures 4-2 through 4-8 present the CVOC data in ten foot slices beginning with 15 to 5 feet MSL interval, additional intervals decreasing in elevation with increasing figure numbers. For most figures, results of two or more samples may occupy the elevation range presented for many sampling locations. In most all cases, the concentrations were very similar. However, to be conservative and present the maximum extent of contamination, the highest concentration was used to create the figure. It is important to note that while the data presented is for soils, groundwater results and potentiometric flow field information (Section 3) were also considered when creating the figures (though not posted or contoured). It is assumed that the spatial distribution/extent of contamination (observed based on the analytical data) is a very good, long-term representation of the degree to which contaminant migration has occurred, even if the physical system observed currently does not allow for distribution in the patterns observed. In other words, contamination can only migrate in accordance with the physical properties of the subsurface system and thereby examining chemical distribution and considering all available physical properties, a comprehensive understanding of the nature and extent can be determined over the entire course of contaminant migration through time.

In Figure 4-1, data is not plotted for at least half of the undeveloped area (i.e., the North Central area) and most of the eastern area of the site because the surface elevation of these areas are less than 15 feet MSL. Additionally, for this figure, the elevation range dominantly equates to the unsaturated zone. In Figure 4-2, the sample locations in the developed area (all sample locations south of Davisville Road but not the eastern area) are generally in the uppermost saturated zone while all other sample locations are generally in the unsaturated zone. As depicted in Figures 4-1 and 4-2, positive detections were infrequently noted in the unsaturated zone in the former Building 41 area and North Central Area. In the former Building 41 area, CVOCs were detected in the unsaturated zone in three areas: (1) near the former solvent still (western third of building), (2) the central portion of building, and (3) near the eastern extent (loading dock area). Per Figure 4-1, the highest CVOC concentrations were reported for samples collected in the central portion of the building and at the eastern extent of the former building footprint. However, upon closer examination, methylene chloride (a common laboratory contaminant) is the only detected contaminant at this location; the results reported may be an artifact of laboratory contamination.

On Figure 4-2, several areas of CVOC contamination are noted in the unsaturated/uppermost water table in the North Central Area with the most notable located at the BTEX hot spot area (in the unsaturated zone). While the CVOC concentrations in the North Central Area are generally quite low (less than 30 µg/kg), the contamination is widely dispersed and observed in areas up to 100 feet wide and up to several hundred feet long (particularly south of the BTEX hotspot and in the eastern portion of the site).

Based on Figures 4-1 through 4-8, while the residual CVOC concentrations currently observed in the unsaturated zone are generally low (Figures 4-1 and 4-2), the data suggest that several discrete contaminant releases occurred within two major areas: (1) the former Building 41 area and (2) the North Central Area. Additionally, contaminant migration from these release points has been complex. Subsurface conditions (including, but not limited to lithology variations, potentiometrics, groundwater quality, etc.) have impacted the nature and extent of the CVOC contamination. The following summaries are provided for each of the major potential source areas identified and are based on distribution of CVOC contamination from Figures 4-1 to 4-8:

- **Former Building 41 area**
  - Three potential CVOC source areas are identified in the unsaturated zone: (1) near the former solvent still/transfer tank/piping, (2) in the central portion of the former building, and (3) at the eastern edge of the former building (loading dock).

  - Two additional potential CVOC source areas are identified based on data collected in the saturated zone: (1) in the vicinity of locations the MW16-10 to MW16-33 well clusters and (2) in the vicinity of the MW16-37 well cluster.
    - -- The CVOC contamination noted in the MW16-10 to MW16-33 area is confined spatially to the intermediate overburden zone and does not extend eastward appreciably past MW16-33 (indicating a minor release).
    - -- The CVOC contamination in the vicinity of the MW16-37 well cluster first appears at the water table and the extent increases with depth downgradient from this location.

  - The spatial and areal extent of the CVOC contamination increases with depth as the groundwater flows away from the source areas. (While this observation is based on soil data, groundwater is the transport mechanism because the CVOC concentrations are in the dissolved phase).

- The potential release around MW16-37 may have a significant impact on the contaminant elongated plume migrating towards both Allen Harbor and Narragansett Bay.
  - -- The arm of CVOC plume observed to the east of the former Building 41 area (towards Narragansett Bay) may originate at location MW16-37.
  - -- A portion of CVOC contamination that originated at location MW16-37 appears to migrate north (through MW16-38I area) into North Central Area and ultimately to Allen Harbor.

- Releases from within the former Building 41 area appear to impact both Allen Harbor and Narragansett Bay.

- The distribution of the CVOC contamination indicates that contamination has migrated from the source releases following a contorted, complex pathway.

- **North Central Area**
  - Wide-spread, low-level CVOC contamination is evident in the unsaturated/uppermost water table zone (Figures 4-2 and 4-3) but the contamination does not appear to extend into lower elevations (Figure 4-4).
    - -- The extent of contamination varies widely as depth increases with most CVOC extent disappearing by -5 to -15 feet bgs (Figure 4-4).
    - -- The areal extent of contamination appears to be due to capillary pressure distributions in the peat layer prevalent in area (see Section 3) with minimal vertical migration into deeper soils.

  - In addition to releases in the BTEX hot spot area and FFTA, a release may have occurred south of the FFTA, between the FFTA and Davisville Road (SB16-79 and SB16-81).

  - Based on distribution and concentrations of CVOCs, much of the contamination observed at lower elevations appears to have originated south of Davisville Road.
    - -- Outlines of extent vary widely with decreasing elevations (most notable in Figures 4-2 to 4-3 and 4-3 to 4-4), indicating that sources have relatively confined spatial and areal extent.

  - The distribution of contamination indicates CVOCs have migrated from the source releases following a contorted, complex pathway.

  - Degradation is occurring in this area, complicating the evaluation of the nature and extent contamination.

- The semi-circular outline of contamination centered south of Davisville Road in area east of former Building 41 suggests an origin at the FFTA. This could be due to radial groundwater flow from a potentiometric high in the area in the past, possibly due to fire fighting training activities.

While Figures 4-1 to 4-8 present the nature and extent of the CVOCs at the site from a conceptual point of view, cross-sections through key areas allow for a more comprehensive understanding of the contorted flowpaths that occur at the site. Figure 4-5 was used as the base figure for Figure 4-9 which presents the locations of six cross-sections (Figures 4-10 through 4-15). While the cross-sections are designed according to standard cross-section preparation procedures (aligned parallel or perpendicular to groundwater flow directions and maintaining an approximate 1 to 5 vertical exaggeration), consideration is also given to the distribution of CVOC contamination as observed in Figures 4-1 to 4-8 (i.e., it is assumed that contamination migrates where the subsurface properties allow it to migrate). While this approach results in portions of the cross-sections that appear to be somewhat cross-gradient or side gradient of groundwater flow, this analysis of the distribution of CVOC contamination should clarify the legitimate contorted migration pathways. The water levels from the deep overburden zone from the November 2007 synoptic round of water levels are provided for reference of unsaturated versus saturated zone. Figure 4-10 presents a cross-section generally trending west to east across the site, starting in the upgradient area and extending to Narragansett Bay (parallel to groundwater flow). Figure 4-11 presents a cross-section trending west to east through the former Building 41 area (parallel to groundwater flow), while Figure 4-12 contains this area and extends it to Allen Harbor (parallel to groundwater flow). Figures 4-13 to 4-15 present cross-sections originating near MW16-37 and generally extending to the northeast, toward Allen Harbor; these are designed to evaluate the extent of CVOC contamination emanating from the MW16-37 area. While countless additional cross-sections can be created, emphasis was placed on evaluating pathways emanating from source areas identified in Figures 4-1 to 4-8.

The following summarizes the distribution of CVOC contamination for each figure/cross-section:

- **Figure 4-10 (Cross-section A-A')**
  - While the cross-section is oriented parallel to groundwater flow, groundwater diverges east of MW16-14, before MW16-37. These areas are likely not connected.
  - Four potential source release areas are noted, two within the unsaturated zone:
    - -- One source noted near MW16-10, two noted within former Building 41 (details on Figure 4-11), and one near MW16-37.
  - CVOC contamination increases with depth as the groundwater migrates from the source release areas.

- Highest CVOC contamination is observed in the center of impacted areas (plume) and generally near the source release areas.
- CVOC contamination diverges between SB16-A2-22 to SB16-A2-31, most likely due to the presence of Narragansett Bay just east of SB16-A2-31 which causes upward gradients to occur.

- **Figure 4-11 (Cross-section B-B')**
  - Two potential source release areas are noted: (1) one near former solvent still/transfer tank/piping (in the vicinity of SB16-A3-23, SB16-A3-25 and SB16-A3-26), and (2) the other in proximity to SB16-A3-37 (central building area). Multiple releases at each location may have occurred.
    - -- For the source area(s) near the former solvent still/transfer tank/piping, two areas of impacted soils occur near the water table interface.
    - -- For the source area(s) near the central building area, no apparent connection of contamination is observed immediately below water table to the outline of observed contamination (between approximately +10 ft msl to -5 ft msl). Based on the plume outline, most contamination appears to be originating further upgradient, though contributions from above should be considered as well.
  - The extent of CVOC contamination is well defined, the plume dips at a fairly consistent angle until it reaches the bedrock surface, with increasing concentrations toward the centroid of the outline of the CVOC plume.

- **Figure 4-12 (Cross-section C-C')**
  - Three potential, distinct source release areas are evident, each with CVOC contamination observed in the unsaturated zone: (1) the former Building 41 area (two areas as observed in Figure 4-11), (2) near SB16-A3-08 (near the eastern edge of former Building 41/loading dock area), and (3) in the vicinity of SB16-81.
  - The source release emanating from near SB16-A3-08 appears to merge with CVOC contamination originating from the former Building 41 area. Two notable residual concentrations of CVOCs were reported for location MW16-59 where contamination in the upper zone appears to be from a release at SB16-A3-08 while contamination in the lower zone appears to be from a release in the former Building 41 area.
  - Given the widespread, generally low-level CVOC contamination in most of the shallow zone for soils, source release(s) may have occurred at multiple locations in the North Central Area (in addition to a possible release at location SB16-81). Degradation has reduced the extent of the CVOC contamination in the shallow zones in much of the North Central area. Consequently, contamination originating from the former Building 41 area (and the MW16-37 area) is the likely dominant contributor to the CVOCs detected in groundwater underlying Allen Harbor because it migrates in the lower portions of the overburden.

- **Figures 4-13 (Cross-section D-D') and 4-14 (cross-section E-E')**
  - A potential source release was noted in the vicinity of MW16-37.
  - The highest CVOC concentrations are located downgradient of source release areas and within the centroid of the plume.

- **Figure 4-15 (Cross-section F-F')**
  - Three potential source release areas are evident: (1) one near MW16-37, (2) one near SB16-A3-09, and (3) one near SB16-88.
    - -- CVOCs were detected in the unsaturated zone of the potential source release near SB16-088.

While the cross-sections consider the spatial extent of contamination, soil lithologies were not considered during their construction or subsequently posted on the cross-sections for analysis. However, it is the interplay of the subsurface lithologies (along with the physical properties of the material) that impact how contamination migrates across the site. Therefore, it is important to evaluate the lithologies along with the information presented in the cross-sections, particularly at locations where higher contaminant (i.e., CVOCs) concentrations are noted. The following paragraphs summarize the lithologies encountered in cross-sections A-A' (Figure 4-10) through F-F' (Figure 4-15), with an emphasis on areas where the highest CVOC concentrations are detected.

Notwithstanding the portion of A-A' that is presented on B-B', only two areas of elevated CVOC concentrations are evident on the cross-section. The first area is from MW16-37 at approximately 32 to 34 feet bgs and extending to SB16-A3-20 at approximately from 38 to 39 feet bgs. In both boring locations, sands with silts generally overlie silts and both samples demonstrating elevated concentrations occur in the lower portions of the sands, just above the silty units. The second area is from SB16-A2-14 at approximately 45 to 47 feet bgs and extending to SB16-A2-22 at approximately 45 to 53 feet bgs. Beyond location SB16-A2-22, the contamination diverges at SB16-A2-31, with one arm of the plume continuing to extend laterally and the other arm migrating upward (potentially towards and discharging into Narragansett Bay). Based on the boring logs for these locations, no definitive depositional trends are evident, as sands dominate in the three logs, with varying amounts of silts and gravels. Lower permeability units were not observed even in the clean zone between the two arms at SB16-A2-31; however, more frequent finer-grained materials were noted.

Cross-section B-B' (Figure 4-11) is presented by lithologies (no concentration data) on Figure 3-2A. In Figure 4-11, the extent of the contamination indicates a fairly constant angle of migration downward through the subsurface, irrespective of lithologies encountered (Figure 3-2A) though a more contorted

pathway is evident based on the higher concentration plume center. The zones demonstrating higher concentrations still demonstrate a fairly constant downward angle of migration. The highest concentrations along this section were observed within a vertical section approximately 5 feet thick from SB16-A3-23 to nearly SB16-A3-33. The evaluation of the boring logs for these locations indicates that the highest concentrations observed for each occur in lithologies slightly less permeable compared to the surrounding materials, based on the presence of finer grained materials. For example, at SB16-A3-06 where a concentration of 17,000 µg/kg was detected at 34 to 35 feet bgs, very fine to fine sand was present at the 33 to 35 feet bgs interval compared to more coarse sands (fine) above and below this zone. Additionally, at SB16-A3-22, a concentration of 3,900 µg/kg was detected at 27 to 28 feet bgs, in a more silty zone (observed from 25 to 28 feet bgs) within a more coarse lithology above and below this zone. For both of these locations, the high CVOC concentrations rapidly dissipate in the more coarse lithologies.

Cross-section C-C' (Figure 4-12) depicts a large area in the central portion of the section where elevated contamination occurs (between MW16-22 to SB16-A3-05). The area from MW16-22 to MW16-59 is also depicted on Figure 3-2A. As noted on that figure, various sands with silts are observed between these borings. The highest CVOC concentrations were reported for samples collected at MW16-59, at depths of 44 to 46, 46 to 48, 64 to 66 and 66 to 68 bgs, at concentrations of 4,700, 7,800, 1,800 and 3,300 µg/kg, respectively. The boring log for MW16-59 indicates that generally more silts occur at 44 to 48 feet bgs, than in adjacent portions of the boring. Additionally, finer grained materials are observed from 64 to 68 feet bgs, when compared to the overlying lithologies (mostly gravels and sands).

The CVOC profiles depicted in cross-sections D-D', E-E' and F-F' (Figures 4-13 to 4-15) gently slope downward toward the downgradient locations. Areas with concentrations exceeding 300 µg/kg are generally approximately 15 to 30 feet thick. Comparing these sections, concentrations exceeding 300 µg/kg are only observed on cross-section D-D', approximately between MW16-38I and SB16-A3-15. No soil samples were collected at MW16-38 and the highest concentrations at SB16-A3-15 are at 39 to 40 and 40 to 41 feet bgs (3,300 and 3,500 µg/kg, respectively). At SB16-A3-15 a silty sand is observed from 38 to 42 feet bgs as compared to very fine to fine sands with minor silts above and below this section.

The following items summarize the evaluation of the lithologies with respect to distribution and extent of contamination:

- Contaminant migration is a primarily a function of the hydraulics operating at Site 16 and the chemical/physical properties of the site contaminants. Groundwater flow, chemical density, and gravity are the key factors determining overall contaminant migration.

- Variations in lithologies do affect the distribution of contamination, however the impact is secondary compared to other factors such as groundwater flow, density, and gravity.

- The highest detected CVOC concentrations are associated with finer-grained portions of a generally more expansive sandy lithology.

- Fine-scale screening of the subsurface soils (e.g., sampling at every 5 feet) is necessary if the objective of a sampling program is the identification of the zones of highest CVOC contamination. However, overall, the CVOC groundwater plume(s) at Site 16 are quite extensive and the vertical and horizontal extent of the plume(s) are well understood.

4.2.1.1 Summary of VOC Contamination in Soils

A 3-D conceptual understanding of the nature and extent of CVOC contamination was provided in Figures 4-1 through 4-15. Source areas were determined based on the overall distribution of the CVOC contamination with an emphasis placed on occurrences in the unsaturated zone(s) and at elevations consistent with the water table, regardless of whether or not these areas comprise the highest currently observed CVOC concentrations. Based on Figures 4-1 to 4-15, there is little (if any) evidence of CVOC contamination in the unsaturated zone at most areas identified as source areas and only minor concentrations (generally less than 30 µg/kg) in the uppermost water table zones. The following general conclusions concerning the nature and extent of CVOC contamination at Site 16 are based on the data displayed on Figures 4-1 to 4-15:

1. Several CVOC releases have occurred throughout the site and generally appear to be small in extent (most likely point-source style releases). Many occurred within and around former Building 41 (the former still area, the central portion of the building, the eastern edge/loading dock, and the railroad spur southeast of building). These are the likely sources to the plumes extending towards both Allen Harbor and Narragansett Bay. Additional source areas also exist in the North Central area (the BTEX hot spot area, FFTA, and area south of FFTA) and appear to primarily impact the immediate area; these also contribute to the overall plume migrating toward Allen Harbor.

2. The CVOC contamination follows contorted, complex flowpaths as contamination migrates from the source areas to ultimate discharge points. In addition, the areal width of the plume(s) increase as the contamination migrates away from the source areas, resulting in wide, spatial areas of CVOC contamination in the deeper lithologies versus with shallower lithologies. In addition, the vertical extent of elevated contamination also increases away from the source areas resulting in areas of vertical contamination approximately 20 feet or more thick.

3. CVOC concentrations at the source areas are generally low with only about half of the areas exhibiting CVOCs in the unsaturated zone.

4. The highest CVOC concentrations are found in areas downgradient from source releases and generally in deeper lithologies. However, based on the data collected to date, the highest CVOC concentrations were reported for soils samples collected from the shallower lithologies beneath former Building 41.

5. The highest CVOC concentrations are generally found in finer-grained materials within a coarser-grained unit. It is likely that contaminants initially released from a source area migrated downward through the soils (probably in a dissolved phase based on distribution of contamination with respect to observed vertical flow) and were preferentially adsorbed to soils in these zones or “pockets” of finer-grained materials. In effect, these "pockets" act as a continuing source of contamination that is slowly leached into the groundwater over time.

6. Based on the overall size and shape of the CVOC plume(s) throughout the site and more specifically, on the distribution of CVOC concentrations in the plume(s), the releases appear to be relatively old.

7. The observed BTEX contamination is residual evidence of one or more past releases of gasoline or related spills.

The presence of TCE contamination in soil is consistent with site operations. All VOC releases appear to be relatively old because the majority of CVOC mass is deep in the soils. Either dense non-aqueous phase liquid (DNAPLs) or dissolved phase releases evidently have migrated into deeper soils, dissolving into groundwater as the contaminants migrated, as appropriate. Light non-aqueous phase liquid (LNAPLs) would have stayed at or above the water table and also dissolved into groundwater over time. However, no evidence for DNAPL or LNAPL was observed in any soil samples; therefore, the VOCs are concluded to be in an adsorbed phase, dissolved in soil moisture, etc., rather than present as a separate phase. If any separate non-aqueous phase liquid (NAPL) exists in soil, it is likely to be in isolated pockets that would be virtually impossible to locate.

4.2.2 Volatile Organic Compounds in Groundwater

As stated in Section 4.1, analytical data collected during the Supplemental Phase II Hydrogeologic Investigation (EA, April 2004), HRC Injection Pilot Study (EA, July 2004), and Phase III RI field investigation (2007) were the data primarily used to define the vertical and horizontal extent of groundwater contamination at Site 16. While groundwater data was collected during several events prior

to 2004, their respective datasets are spatially small with respect to the overall extent of Site 16. Therefore, these historical results are considered during the evaluation of summary statistics and in determining long-term trends, but not presented on figures for spatial analysis. By far, the most comprehensive synoptic groundwater sampling event occurred in 2004. However, new monitoring wells were installed in 2007 during the Phase III field investigation. These new wells as well as select, representative existing wells, were sampled during the Phase III event. Therefore, the nature and extent of groundwater contamination will be primarily discussed in terms of 2004 data with additional perspective provided by the 2007 and historical data.

4.2.2.1 Shallow Overburden Groundwater Zone

Table 4-31 presents the analytical results for chemicals detected during the 2004 round of groundwater sampling while Table 4-32 presents the analytical results for chemicals detected during the 2007 round of groundwater sampling. Tables 4-41, 4-42 and 4-43 present summary descriptive statistics for chemicals detected in pre-2004, 2004, and 2007 groundwater samples, respectively, from the shallow overburden zone. These tables also include comparisons to groundwater screening criteria. The following discussion focuses on the VOC data collected in 2004 because the data provide the most comprehensive understanding of site groundwater conditions. The discussion also incorporates VOC data collected in 2007 because four additional monitoring wells were installed in 2007 to further define the nature and extent of groundwater contamination.

As summarized in Table 4-42 (2004 data), Total CVOCs were detected in 32 of 37 samples at concentrations ranging from 0.0121 µg/L (MW16-05S) to 175 µg/L (MW16-40S). In Table 4-43 (2007 data), Total CVOCs were detected in 12 of 22 samples at concentrations ranging from 0.21 µg/L to 181 µg/L (MW16-78S). In both 2004 and 2007, TCE was the major CVOC detected in shallow overburden groundwater. The spatial distribution of TCE is shown on Figure 4-21 while Figure 4-25 presents the spatial distribution of CVOCs. TCE was detected in 24 of 37 samples at concentrations ranging from an estimated 0.135 (MW16-41S) µg/L to 93 µg/L (MW16-37S) in 2004, and in 2007, TCE was detected in 9 of 21 samples at concentrations ranging from an estimated 0.11 µg/L to 180 µg/L (MW16-78S). Other CVOCs detected in 2004 at maximum concentrations exceeding 50 µg/L were total 1,2-DCE and VC. Total 1,2-DCE was detected in 11 of 37 samples at concentrations ranging from an estimated 0.166 µg/L (MW16-02S) to 96.2 µg/L (MW16-40S). VC was detected in 9 of 31 samples at concentrations ranging from an estimated 0.0266 µg/L (MW16-58S) to 58 µg/L (MW16-40S). While total 1,2-DCE and VC were detected in 2007, they were only detected infrequently and at low concentrations (the highest reported concentration was 26 µg/L for VC at MW16-40S).

The highest concentration of total CVOCs was detected at MW16-40S during the 2004 sampling event and at MW16-78S during the 2007 sampling event. MW16-40S is located just north of Davisville Road

and downgradient of the former Building 41 area, while MW16-78S was installed in the immediate vicinity of the solvent recovery still/solvent tank/piping located within former Building 41. As discussed in preceding sections, CVOCs (primarily TCE) were detected throughout the subsurface soils collected around and within former Building 41. The TCE contamination (Figure 4-23) is primarily located between the northeastern section of former Building 41 and Davisville Road, although TCE was also detected at low concentrations in wells located in the creosote dip tank area and former FFTA. Overall, concentrations of TCE and CVOC did not vary significantly between 2004 and 2007; the only noteworthy changes were decreases of TCE and CVOC concentrations at MW16-40S and MW16-37S.

Concentrations of both total CVOCs and TCE were significantly lower in wells located adjacent to Allen Harbor versus wells in the source areas described in the preceding narrative. Total CVOCs concentrations are less than 1 µg/L in the wells bordering Allen Harbor and TCE was not detected in these shallow overburden wells. Benzene was detected primarily in monitoring wells located in the North Central area of Site 16, where it had also been detected in soils at significant concentrations. The maximum detected benzene concentration was reported for MW16-46S, located immediately downgradient of the FFTA. Elevated MIP readings were also reported in the Phase I RI for this general area.

VOCs detected in shallow overburden groundwater in 2004 and 2007 at concentrations exceeding ORNL RSLs included PCE, TCE, benzene, and VC. With the exception of cis-1,2-DCE and total-1,2-DCE at MW16-40S, TCE and VC were the only VOCs detected in groundwater samples in the shallow overburden groundwater zone at concentrations exceeding EPA MCLs and RIDEM GA groundwater objectives. With the exception of aforementioned location MW16-37S, the TCE exceedances occurred mainly in the coalesced TCE plume downgradient of the former Building 41 area as shown on Figure 4-25. Elevated MIP readings were also reported for this general area in the Phase I RI. The TCE contamination appears to be bounded in the shallow overburden groundwater zone relative to the EPA MCL and RIDEM GA groundwater objective, except to the east of MW16-23S and possibly with respect to MW16-37S. The VC exceedances occurred in monitoring wells located between Davisville Road and the former FFTA (MW16-40S, -41S, -42S, and -44S) and likely reflect the degradation of TCE, the predominant Site 16 contaminant. The VC contamination in this area appears to be delineated relative to the EPA MCL and RIDEM GA groundwater objective. However, VC detections have been reported for some shallow overburden wells that do not exhibit TCE contamination (e.g., MW16-58S, MW16-42S) (see Table 4-31).

CVOCs are significant site-related contaminants in the shallow overburden zone at Site 16. Although the Building 41 area appears to be a primary source of the TCE detected in the shallow groundwater, additional contributions appear to occur due to releases at the BTEX hot spot area, FFTA, and south of

the FFTA (between the FFTA and Davisville Road). Although no shallow well exists at the BTEX hot spot area (SB16-058), this area likely contains elevated concentrations of TCE and CVOC in the shallow zone.

4.2.2.2 Intermediate Overburden Groundwater Zone

Table 4-33 presents analytical results for chemicals detected during the 2004 round of groundwater sampling while Table 4-34 presents analytical results for chemicals detected during the 2007 round of groundwater sampling. Tables 4-44, 4-45 and 4-46 present summary descriptive statistics for pre-2004, 2004 and 2007 groundwater samples, respectively, from the intermediate overburden zone. These tables also include comparisons to groundwater screening criteria. The following discussion focuses on the VOC data collected in 2004 because the data provide the most comprehensive understanding of site groundwater conditions. The discussion also incorporates VOC data from eight new intermediate depth wells installed in 2007; data from these new wells has significantly enhanced the understanding of the nature and extent of contamination in the intermediate groundwater zone at Site 16.

Concentrations of VOCs in the intermediate overburden groundwater zone exceed those detected in the shallow overburden groundwater zone. In the 2004 data, total CVOCs were detected in 47 of 48 samples at concentrations ranging from 0.0304 (MW16-58I) µg/L to 1,700 µg/L (MW16-37I). In the 2007 data, total CVOCs were detected in 26 of 33 samples at concentrations ranging from 0.79 µg/L to 7,700 µg/L (MW16-77I). As presented in Tables 4-44 through 4-46, TCE was the most frequently detected VOC in the intermediate zone; the concentrations reported exceed those noted for all other VOCs. While other CVOC constituents were found, they were typically detected infrequently and at low concentrations [the maximum concentration of any other CVOC constituent was 25 µg/L (cis-1,2-DCE at MW16-58I2)]. Therefore, the TCE plume is likely representative of the extent of significant VOC contamination in the intermediate overburden groundwater zone.

The spatial distribution of TCE and CVOCs in the intermediate zone is displayed on Figures 4-22 and 4-26, respectively. In 2004, TCE was detected in 42 of 48 samples at concentrations ranging from an estimated 0.137 µg/L (MW16-48I) to 1,700 µg/L (MW16-37I). In 2007, TCE was detected in 26 of 33 samples at concentrations ranging from an estimated 0.51 µg/L to 7,700 µg/L (MW16-77I). In 2004, the maximum detected TCE concentration was reported for location MW16-37 (both in the shallow and intermediate overburden); MW16-37I is located southeast of former Building 41. In 2007, the maximum TCE concentration was reported for location MW16-77I, which is located immediately downgradient of the former solvent still/transfer tank/piping within former Building 41.

In both 2004 and 2007, other CVOCs detected at concentrations exceeding 10 µg/L in the intermediate zone include total 1,2-DCE, PCE and VC. In 2004, total 1,2-DCE was detected in 22 of 48 samples at concentrations ranging from an estimated 0.158 µg/L (MW16-20I) to 41 µg/L (MW16-42I). In 2007, total

1,2-DCE was detected in 7 of 33 samples (based on individual cis- and trans- isomers) at concentrations ranging from an 1 µg/L to 25 µg/L (MW16-58I2). PCE was detected in 10 of 42 samples at concentrations ranging from an estimated 0.311 µg/L (MW16-63I) to 18 µg/L (MW16-33I) in 2004 and in 8 of 33 samples at concentrations ranging from an estimated 0.11 µg/L to 15 µg/L (MW16-33I) in 2007. VC was detected in 10 of 42 samples at concentrations ranging from an estimated 0.0113 µg/L (MW16-04I) to 33 µg/L (MW16-42I) in 2004 and only detected at two locations in 2007, with a maximum concentration of 16 µg/L located at MW16-58I2. All other VOCs noted in the 2004 and 2007 samples were detected infrequently and at relatively low concentrations.

As noted above, the highest concentrations of total CVOCs and TCE in 2004 were detected at MW16-37I while the highest concentrations in 2007 were detected at MW16-77I. These results are consistent with the highest concentrations observed in the shallow groundwater zone (MW16-77I is immediately downgradient of MW16-78S). As displayed on Figures 4-22 and 4-26, there does not appear to be a single, distinct, coalesced groundwater plume in the intermediate zone. Rather small pockets of elevated total CVOC and TCE concentrations and possibly multiple smaller overlapping contaminant plumes (or release areas) exist. Generally, the concentrations observed in the intermediate zones are at identified source release areas and immediately downgradient of these locations. Total CVOC and TCE concentrations were also notable in monitoring wells MW16-38I, MW16-37I, MW16-59I, MW16-69I, and MW16-77I, which are all located in the vicinity of or downgradient of the former Building 41 and the railroad tracks to the east/southeast, and MW16-45I, which is located in the former FFTA. Total CVOC and TCE concentrations were also notable in monitoring wells MW16-57I and MW16-88I, which are located in the eastern edge of the site, toward Narragansett Bay. Total CVOCs and TCE concentrations are generally less than 1 µg/L in the wells bordering Allen Harbor, although elevated levels of total CVOCs (496 µg/L) and TCE (470 µg/L) were detected at MW16-05I, most likely due to upwelling toward ultimate discharge into Allen Harbor.

When comparing TCE and total CVOC concentrations reported for samples collected in 2004 to concentrations reported for samples collected in 2007, approximately 50 percent of wells exhibit no appreciable changes. Decreases did occur at locations MW16-58I2, MW16-57I, MW16-25I and most notably at MW16-37I (concentrations decreased by nearly an order of magnitude). Increases in concentrations occurred at MW16-59I, MW16-39I, MW16-05I and MW16-27I, with most increases being approximately 50 percent. This analysis of decreases and increases is only provided for additional clarification and should not be considered a complete analysis of long-term trends. Additionally, these changes in concentrations between 2004 and 2007 do not alter the overall understanding of nature and extent of contamination observed in the intermediate groundwater zone at Site 16.

VOCs detected in the intermediate overburden groundwater in 2004 and 2007 at concentrations exceeding ORNL RSLs included PCE, 1,1,2-TCA, TCE, benzene, chloroform, and VC. While PCE and VC were found to exceed their respective EPA MCLs and RIDEM GA groundwater objectives, the exceedances were few and typically near the referenced criteria. In contrast, TCE was frequently detected at concentrations exceeding the EPA MCL and RIDEM GA groundwater objective. The TCE contamination appears to be delineated with reference to the EPA MCL and the RIDEM GA groundwater objective to the south, west, and northeast. However, the TCE contamination in the intermediate overburden may not be completely bounded to the northwest in the vicinity of MW16-45I (the former FFTA), to the north near MW16-05I, to the southeast near MW16-18I, and to the east near MW16-88 (however, it is likely that the TCE plume extends to Narragansett Bay). There is also an area of PCE contamination (less than 20 µg/L) in the vicinity of MW16-33I and between former Building 41 and Building 318 that does not appear to be delineated. The PCE concentrations reported for MW16-33I for samples collected in 2004 and 2007 were approximately four times and three times the RIDEM GA groundwater objective (5 µg/L), respectively.

CVOCs are significant site-related contaminants in the intermediate overburden zone at Site 16, particularly in the former Building 41 area (including location MW16-37). Although the former Building 41 area appears to be a primary source of the TCE detected in the shallow and intermediate groundwater, additional contributions are likely due to releases at the BTEX hot spot area, FFTA, and south of the FFTA (between the FFTA and Davisville Road). As discussed in the evaluation of VOCs in soils, it is also possible that another source area exists to the east of former Building 41 and just upgradient of MW16-39. Therefore, elevated CVOCs are found in the intermediate zone across the site and are due to releases from many different locations. However, the CVOC contamination is not laterally extensive enough to form a coalesced groundwater plume in this zone.

4.2.2.3 Deep Overburden Groundwater Zone

Table 4-35 presents the analytical results for chemicals detected during the 2004 round of groundwater sampling while Table 4-36 presents the analytical results for chemicals detected during the 2007 round of groundwater sampling. Tables 4-47, 4-48 and 4-49 present summary descriptive statistics for pre-2004, 2004, and 2007 groundwater samples, respectively, collected from the deep overburden zone. These tables also include comparisons to groundwater screening criteria. The following discussion focuses on the VOC data collected in 2004 because the data provide the most comprehensive understanding of site groundwater conditions. The discussion also incorporates VOC data from 10 new deep overburden wells installed in 2007, including 8 new wells located upgradient of Site 16. Data from these new wells has enhanced the understanding of the nature and extent of contamination in the deep overburden groundwater zone at Site 16.

With the exception of MW16-77I (immediately downgradient of a Building 41 source area), concentrations of VOCs in the deep overburden groundwater zone exceed those reported for the shallow and intermediate groundwater zones. This is consistent with the observation of high concentrations of VOCs in deep overburden soil, which serves as a continuing source of VOCs in the Site 16 groundwater. In 2004, total CVOCs were detected in 73 of 81 samples at concentrations ranging from 0.031 µg/L (MW16-30D) to 2,939 µg/L (MW16-29D). In 2007, total CVOCs were detected in 38 of 55 samples at concentrations ranging from 0.1 µg/L to 4,808 µg/L (MW16-85D). As presented in Tables 4-35, 4-36, 4-47, 4-48, and 4-49, TCE was the predominant CVOC detected in deep overburden groundwater. Additionally, cis-1,2-DCE and trans-1,2-DCE (or total 1,2-DCE, as appropriate) were detected half as frequently as TCE in both 2004 and 2007 samples. When detected, 1,2-DCE concentrations were generally low when compared to the TCE concentrations, with a maximum concentration of 35 µg/L at MW16-29D in 2004 and 19 µg/L at MW16-59D in 2007. VC was only detected once in 2004 and 2007; the maximum concentrations reported did not exceed 1 µg/L in either case.

The spatial distributions of TCE and the CVOCs are displayed on Figures 4-23 and 4-27, respectively. In 2004, TCE was detected in 69 of 81 samples at concentrations ranging from an estimated 0.142 µg/L (MW16-03D) to 2,900 µg/L (MW16-29D). In 2007, TCE was detected in 35 of 49 samples at concentrations ranging from an estimated 0.12 µg/L to 4,800 µg/L (MW16-85D). In 2004, the highest concentrations of total CVOCs and TCE were detected at MW16-29D, located to the southeast of the earthen ramp structure in the eastern section of the North Central area of Site 16 (EBS Review Item No. 28). Based on the analysis of VOC data for soils, this location is downgradient of the potential source area located between the FFTA and Davisville Road (potential source area is near SB16-081). In 2007, the highest concentrations of total CVOCs and TCE were detected at MW16-85D which was installed during the Phase III field investigation. MW16-85D is located downgradient of the former solvent still/transfer tank/piping within the former Building 41 area and immediately downgradient of MW16-77I. The TCE and CVOC concentrations detected in samples from MW16-85D are twice the concentrations detected in samples from MW16-29D. As depicted on Figure 4-27, Total CVOC and TCE have been consistently detected at concentrations exceeding 1,000 µg/L in several monitoring wells located in the area between the northeastern section of former Building 41 and monitoring well MW16-05D (at the southeast corner of Allen Harbor). These results are consistent with those reported in the Phase II RI and the Supplemental Data Gap Report.

In comparison to the somewhat sporadic TCE contamination pattern observed in the intermediate overburden groundwater zone, a coalesced TCE groundwater plume does appear to extend from the central and eastern portions of former Building 41 to the southeastern corner of Allen Harbor in the deep overburden zone (Figure 4-23). The highest TCE concentrations are located immediately downgradient of MW16-77I and the former solvent still/transfer tank/piping at MW16-85D. Only two wells occur

between MW16-85D and the clusters of wells in the eastern portions of former Building 41, MW16-31D and MW16-32D. The somewhat elevated TCE concentrations (generally less than 300 µg/L) detected in these wells are much lower than those observed wells located at the eastern edge of former Building 41. However, this pattern has been observed over many portions of the overall coalesced TCE groundwater plume. Specifically, there is not a clear chemical gradient radiating from the former Building 41 area towards Allen Harbor. This may be attributable to the distribution of VOC contamination in soils (e.g., the contamination appears to be the result of multiple releases), the complexity of groundwater flow patterns, and apparent age of the coalesced plume. The elongated, coalesced plume along the primary groundwater flow direction is consistent with the groundwater flow patterns discussed in Section 3. The examination of the spatial distribution of the TCE in the deep groundwater zone suggests that residual elevated areas of groundwater contamination remain immediately downgradient of source releases (most likely due to finer grained lithologies retaining the VOCs) at many locations throughout the site. These source areas have formed a complex, coalesced VOC plume consistent with contamination in soils and groundwater flow patterns. In most cases, the TCE and total CVOC concentrations detected in the 2004 groundwater were similar to those detected in the 2007 groundwater samples, with a perhaps a general decrease overall in concentrations (this should not be considered a trend). The TCE and CVOC concentrations reported for two locations, MW16-60D and MW16-02D, increased by approximately 25 percent between 2004 and 2007.

In general, TCE concentrations in the plume decrease from concentrations ranging from 1,000 to 2,000 µg/L near former Building 41 to non-detect levels in monitoring wells to the west/northwest (MW16-48D, MW16-26D, MW16-55D), to the northeast/east (MW16-52D, MW16-50D), and to the south/southeast (MW16-54D). However, low-level TCE (and in some cases VC concentrations) were detected in some of the deep overburden wells at the eastern Phase II RI boundary (most notably MW16-90D and MW16-57D). However, in contrast to the TCE plume(s) noted for the intermediate overburden zone, TCE contamination greater than the SDWA MCL does not extend beyond the eastern Site 16 Phase II RI boundary (Figure 4-23). Other notable CVOCs detected in the deep overburden include VC. In 2004, VC was detected in 37 of 81 samples at concentrations ranging from an estimated 0.0132 µg/L (MW16-07D) to 7.87 µg/L (MW16-24D); the concentrations detected likely reflect the biodegradation of TCE. VC was only detected in one of the monitoring wells sampled in 2007 (MW16-72D) at an estimated concentration of 0.14 µg/L.

VOCs detected in the deep overburden groundwater in 2004 and 2007 at concentrations exceeding ORNL RSLs included PCE, TCE, VC, 1,1,2-TCA, 1,4-dichlorobenzene, chloromethane, 1,1-dichloromethane, and chloroform. In 2004, only PCE, VC, and TCE were detected in groundwater samples in the deep overburden groundwater zone at concentrations exceeding its EPA MCL and RIDEM GA groundwater objectives. In 2007, only PCE and TCE were detected at concentrations exceeding

these criteria. In both 2004 and 2007, few criteria exceedances were reported for PCE and VC; TCE was the primary contaminant exceeding criteria. The TCE contamination appears to be delineated to the south/southwest, west, and northwest with reference to the EPA MCLs and RIDEM GA groundwater objectives. The TCE contamination is not delineated toward the north near MW16-04D and MW16-05D; however, these wells are in proximity to Allen Harbor. It should also be noted that low-level VC concentrations (less than 1 µg/L) have been detected in some of the site boundary wells (e.g., MW16-57D) in 2004.

CVOCs are significant site-related contaminants in the deep overburden zone at Site 16, particularly in the former Building 41 area and extending northeast toward Allen Harbor. Although the former Building 41 area (including the MW16-37 area) appears to be a primary source of the TCE detected in the shallow, intermediate and deep groundwater zones, releases at the BTEX hot spot area, FFTA, and south of the FFTA (between the FFTA and Davisville Road) also likely contributed to the observed contamination. As discussed in the evaluation of VOCs in soils, it is also possible that another source area exists to the east of former Building 41 but upgradient of MW16-39.

4.2.2.4 Shallow Bedrock Groundwater Zone

The shallow bedrock monitoring wells were completed within the upper 25 to 30 feet of competent bedrock. Table 4-37 presents analytical results for the chemicals detected during the 2004 round of groundwater sampling. Table 4-38 presents analytical results for the chemicals detected during the 2007 round of groundwater sampling. Tables 4-50, 4-51, and 4-52 present summary descriptive statistics for pre-2004, 2004, and 2007 groundwater samples collected from the shallow bedrock zone. These tables also include comparisons to groundwater screening criteria. The following discussion focuses on the VOC data collected in 2004 because the data provide the most comprehensive understanding of site groundwater conditions. The discussion also incorporates VOC data from five new shallow bedrock wells installed in 2007, including 4 new wells located upgradient of Site 16. Data from these new wells has enhanced the understanding of the nature and extent of contamination in the bedrock groundwater zone at Site 16.

Concentrations of CVOCs in the shallow bedrock groundwater zone exceed those reported for the shallow and intermediate overburden groundwater zones and but are generally less than those reported for the deep overburden groundwater zone. In 2004, total CVOCs were detected in 24 of 29 samples at concentrations ranging from 0.0157 µg/L (MW16-28R) to 1,824 µg/L (MW16-60R). In 2007, total CVOCs were detected in 21 of 31 samples at concentrations ranging from 0.41 µg/L to 2,035 µg/L (MW16-59R). TCE was the major CVOC detected in shallow bedrock groundwater, accounting for essentially all of the total CVOCs detected. While cis-1,2-DCE was detected approximately one third to one half of the time in either the 2004 or 2007 samples, the maximum concentrations detected were low relative to the TCE

concentrations detected (maximum concentration of 60 µg/L in 2004 and 29 µg/L in 2007). VC was only detected infrequently and the maximum concentrations detected did not exceed 1.5 µg/L.

The spatial distributions of TCE and total CVOCs are shown on Figures 4-24 and 4-28, respectively. The coalesced plume reflects the contamination migrating from the overlying deep overburden and its source areas. However, with the exception of the TCE concentration reported for location MW16-03R (31 µg/L), the plume appears to be somewhat narrower than the coalesced plume described for the deep overburden. This may be a function of the current number and locations of the wells in the shallow bedrock system and not a reflection of contaminant distribution. In fact, overall, concentrations in the shallow bedrock correlate with concentrations in the deep overburden (i.e., the most contaminated areas in the overburden correlate with the most contaminated areas in the shallow bedrock). In 2004, TCE was detected in 20 of 29 samples at concentrations ranging from an estimated 0.415 µg/L (MW16-65R) to 1,800 µg/L (MW16-60R). In 2007, TCE was detected in 21 of 28 samples at concentrations ranging from an estimated 0.12 µg/L to 2,000 µg/L (MW16-59R). As noted for the deep overburden wells and as shown on Figures 4-24 and 4-28, total CVOC and TCE were frequently detected at concentrations exceeding 500 µg/L in monitoring wells located in the area between the northeastern section of former Building 41 and monitoring well MW16-05R (southeastern corner of Allen Harbor). In 2004, the greatest concentrations of total CVOCs and TCE were detected at MW16-60R. In 2007, the greatest concentrations were detected at MW16-59R. Both of these wells are located northeast of former Building 41 (downgradient of several source areas within and around former Building 41).

During the 2007 RI field activities, two existing shallow rock wells (MW16-68R and MW16-70R) were converted into a nested well pair consisting of an upper and lower well. The details of the installation and the intent/purpose of this activity were outlined in Section 2. In both cases, the wells were sampled before the conversions occurred to allow for comparisons to previous sampling events and post-conversion sampling. 500 µg/L of both TCE and CVOC (since TCE was the only CVOC) were detected in a groundwater sample collected from MW16-68 in May 2007 prior to well conversions into an upper and lower shallow rock wells. In August 2007, the TCE and CVOC concentrations reported for the upper shallow well were 510 µg/L and 511.2 µg/L, respectively (cis-1,2-DCE was detected at 1.2 µg/L). The TCE and CVOC concentrations detected in the lower shallow well were 170 µg/L and 173.3 µg/L, respectively (cis-1,2-DCE was detected at 3.3 µg/L). 38 µg/L and 39.9 µg/L CVOC were detected in a groundwater sample collected from MW16-70 in May 2007 prior to well conversions into an upper and lower shallow rock wells. In August 2007, the TCE and CVOC concentrations reported for the upper shallow well were 61 µg/L and 63.4 µg/L CVOC, respectively (cis-1,2-DCE was detected at 2.4 µg/L). The TCE and CVOC concentrations detected in the lower shallow well were 16 µg/L. For both nested wells, concentrations decrease with depth; the upper shallow rock well exhibits concentrations similar to previous sampling results.

VOCs detected in the shallow rock groundwater in 2004 and 2007 at concentrations exceeding ORNL RSLs included PCE, TCE, 1,1,2-TCA, VC, and chloroform. TCE was the only VOC detected in groundwater samples in the shallow bedrock groundwater zone at concentrations exceeding its EPA MCL and RIDEM GA groundwater objective. TCE contamination in the shallow bedrock groundwater zone appears to be delineated with respect to these criteria to the south and west. However, the contamination does not appear to be delineated toward the north near MW16-03R and MW16-05R and toward the east near MW16-02R and MW16-56R. MW16-05R is located just south of Allen Harbor.

CVOCs are significant site-related contaminants in the shallow bedrock zone at Site 16, particularly in the former Building 41 area and extending northeast towards Allen Harbor. Although the former Building 41 area (including MW16-37) appears to be a primary source of the TCE detected in the shallow, intermediate and deep overburden groundwater zones and in the shallow bedrock, the BTEX hot spot area, FFTA and south of the FFTA (between the FFTA and Davisville Road) also appear to be contributing to the observed plume(s). As discussed in the evaluation of VOCs in soils, it is also possible that another source area exists to the east of former Building 41 but upgradient of MW16-39. Although no bedrock wells are present in this area, significant impacts to the shallow bedrock are not anticipated because only low level contamination has been observed in the intermediate and deep overburden zones at MW16-39 in both 2004 and 2007, with significant decreasing concentrations with depth. For MW16-39I, concentrations of TCE were 86 and 77 µg/L in 2004 and 140 µg/L in 2007 and for MW16-39D, concentrations of TCE were non-detect and 1.44 µg/L in 2004 and 0.46 µg/L in 2007.

4.2.2.5 Deep Bedrock Groundwater Zone

Groundwater monitoring of the deep bedrock zone underlying Site 16 has been limited to the completion of four monitoring wells in the 25 to 30 feet of competent bedrock below the levels at which the adjacent shallow bedrock wells were installed. Three of these wells (MW16-05R2, MW16-02R2, and MW16-15R2) are located along the long axis of the TCE plume described for the deep overburden and shallow bedrock zones. The fourth well (MW16-55R2) is located west of the primary areas of investigation at Site 16 and just north of Davisville Road. Table 4-39 presents the analytical results for chemicals detected during the 2004 round of groundwater sampling. Table 4-40 presents the analytical results for chemicals detected during the 2007 round of groundwater sampling. Tables 4-53, 4-54, and 4-55 present summary descriptive statistics for pre-2004, 2004, and 2007 groundwater samples, respectively, from the deep bedrock zone. These tables also include comparisons to groundwater screening criteria. The following discussion focuses on the VOC data collected in 2004 because the data provides the most comprehensive understanding of site groundwater conditions. The discussion also incorporates VOC data collected in 2007.

Total CVOCs were detected in three of four samples collected in 2004 at concentrations ranging from 10.1 µg/L (MW16-05R2) to 476 µg/L (MW16-02R2). Total CVOCs were detected in both samples collected in 2007 at concentrations ranging from 12 µg/L to 440 µg/L (MW16-02R2). TCE was the major CVOC detected in deep bedrock groundwater samples with some contributions from 1,2-DCE (cis-, trans- or total, as appropriate) and VC. The contamination pattern observed at Site 16 is consistent with the vertical downward migration of past DNAPL or dissolved phase releases, although evidence for the current presence of DNAPL does not exist [based on either direct measurement efforts (Sudan IV dye testing) or the concentrations detected in the environmental media].

The spatial distributions of TCE and CVOCs are displayed on Figures 4-24 and 4-28, respectively. TCE was detected in the samples from wells underlying the coalesced TCE plume described for the shallow bedrock and deep overburden. VOCs were not detected in the sample from MW16-55R2, which is located north of Davisville Road and west of the primary Site 16 area of investigation. Concentrations of total CVOCs and TCE in the samples from MW16-15R2 and MW16-02R2 were approximately two times less than, and concentrations in sample from MW16-05R were approximately 10 times less than those reported for related samples from the shallow bedrock zone in 2004.

TCE and VC were the only VOCs detected in the deep bedrock groundwater samples collected in 2004. Only TCE concentrations detected in the 2007 samples exceeded ORNL RSLs. TCE was also the only VOC detected in groundwater samples from the deep bedrock groundwater zone at concentrations exceeding its EPA MCL and RIDEM GA groundwater objective. Exceedances of these criteria were only reported for wells located along the long axis of the previously described coalesced TCE plume. However, with the exception of MW16-55R2, deep bedrock monitoring wells have only been installed along the axis of the coalesced plume that extends from the former Building 41 area to MW16-05R2 (near the southeastern shore of Allen Harbor). Therefore, the degree of lateral VOC dispersion along the long axis of the coalesced plume in this zone has not been determined. However, it may be estimated based on data for shallow bedrock wells installed east of Allen Harbor Road (MW16-56R, MW16-27R and MW16-28R).

CVOCs are significant site-related contaminants in the deep bedrock zone at Site 16, particularly in the former Building 41 area and extending northeast toward Allen Harbor. Although the former Building 41 area (including MW16-37) appears to be a primary source of the TCE detected in the shallow, intermediate and deep groundwater zones and in both bedrock zones, the BTEX hot spot area, FFTA, and south of the FFTA (between the FFTA and Davisville Road) also appear to be contributing to the observed plume(s).

4.2.2.6 Summary of VOC Contamination in Groundwater

The numerous tables and figures discussed in the preceding narrative provide an overall understanding of the VOC contamination (particularly the CVOC contamination) in the overburden and bedrock zones underlying Site 16. Additionally, Table 4-56 presents a summary of the data available for the CVOCs. The data are ordered by monitoring well cluster location and by zone monitored at each location (i.e., shallow, intermediate, and deep overburden; shallow and deep bedrock). It should be emphasized that only a few samples have been collected from wells installed in 2004 or 2007. Therefore, a definitive analysis of long-term trends is not possible for most well locations at this time.

The following items summarize the VOC contamination detected in the Site 16 groundwater:

- VOC contamination is present in all five groundwater zones evaluated (shallow, intermediate, and deep overburden, and shallow and deep bedrock). TCE was the primary VOC contaminant detected in groundwater. In most instances, TCE comprised more than 95 percent of the total CVOC detections. Concentrations of total CVOCs were typically greatest in the deep overburden and shallow bedrock groundwater zones.

- There is not a single distinct coalesced groundwater plume in the intermediate groundwater zone but rather small pockets of elevated total CVOCs and TCE concentrations and multiple smaller overlapping contaminant plumes. There is a distinct coalesced contaminant groundwater plume in the deep overburden and shallow bedrock groundwater zones. The coalesced plume extends from the northeastern portion of former Building 41 (and/or nearby) to Allen Harbor in the vicinity of monitoring well MW16-05.

- The groundwater plume is a coalesced plume from several source releases across the site. Based on the currently available data, it is not possible to determine the temporal occurrence of the releases or if multiple releases occurred at the same release point or even the release volumes (independently or with respect to one another). However, several source releases likely occurred in the former Building 41 area (particularly in the solvent still/transfer tank/piping area), the central portion of the former Building 41 area (potentially), the eastern end of former Building 41 (near the loading dock), and in the vicinity of MW16-37 (southeast of loading dock area near railroad spur). Additional contributing sources appear to be the BTEX hot spot area, FFTA and an area south of the FFTA located between the FFTA and Davisville Road. An additional potential source may be located downgradient of former Building 41, near MW16-39. Conclusions regarding source areas are supported by groundwater and soil data as well as hydrogeological data available for Site 16. CVOCs in groundwater are highest in areas (or downgradient of areas) demonstrating CVOC contamination in the soils.

- While the groundwater CVOC data in all zones demonstrate that the plumes are not completely spatially bounded, the available data do allow for a comprehensive understanding of the nature and extent of contamination and the potential future migration of CVOC contaminated groundwater.

  - In the shallow overburden groundwater zone, the TCE contamination appears to be delineated relative to the EPA MCL and RIDEM GA groundwater objective with the possible exception of the area east of MW16-23S. However, the area of VC contamination extends beyond the primary TCE contamination area and is defined by monitoring wells located between Davisville Road and the former FFTA (MW16-40S, -41S, -42S, and -44S). The VC contamination in this area is bounded relative to the EPA MCL and RIDEM GA groundwater objective.

  - In the intermediate overburden groundwater zone, the TCE contamination appears to be delineated to the southwest, west, and northeast relative to the EPA MCL and RIDEM GA groundwater objective. However, the TCE contamination may not be bounded (relative to these criteria) to the northwest in the vicinity of MW16-45I, to the north near MW16-05I, southeast near MW16-18I, and to the east near MW16-39I and MW16-57I. Also, the PCE contamination in the vicinity of MW16-33I, between former Building 41 and Building 318, is not bounded relative to the EPA MCL and RIDEM GA groundwater objective for PCE.

  - In the deep overburden groundwater zone, TCE contamination is delineated to the southwest, west, and northwest relative to the EPA MCL and RIDEM GA groundwater objective. Contamination is not bounded to the north near MW16-04D and MW16-05D; however, these wells are located just south of Allen Harbor.

  - In the shallow bedrock groundwater zone, contamination is bounded to the south and west relative to the EPA MCLs and RIDEM GA groundwater objectives. TCE contamination is not bounded (relative to these criteria) to the north near MW16-03R or MW16-05R or in the vicinity of MW16-56R. MW-05R is located just south of Allen Harbor.

  - The deep bedrock groundwater has not been fully characterized, especially with respect to migration away from the long axis of the plume (generally from former Building 41 to Allen Harbor). Only four deep bedrock monitoring wells currently exist at Site 16.

- While the currently available data do not allow for the evaluation of long-term trends of CVOC concentrations throughout the various groundwater zones, CVOC concentrations appear to be generally decreasing for most zones and locations. A review of the data for the shallow and deep

overburden and the shallow and deep bedrock zones indicates few changes in concentrations when the 2004 and 2007 datasets are compared. The intermediate overburden zone exhibited the most changes in concentrations through time, exhibiting approximately an equal number of increases and decreases when the 2004 and 2007 datasets are compared. However, it should be noted that any analysis of trends should be considered preliminary only and subject to change given the limitations of the existing groundwater dataset.

- While CVOC concentrations appear to be generally decreasing, groundwater samples from a few of the wells installed in 2007 (i.e., MW16-77I and MW16-85D, in the former Building 41 area) exhibited the highest concentrations of VOCs observed to date at Site 16.

- While CVOC concentrations are generally similar between the deep overburden and shallow rock, the concentrations of CVOCs at well clusters generally decrease with depth (a few exceptions are noted).

4.2.3 Volatile Organic Compounds in Water Underlying Allen Harbor, Allen Harbor Surface Water and Seeps Adjacent to Allen Harbor

During the 2007 Phase III RI field activities, 24 shallow groundwater samples were collected from the southern portion of Allen Harbor. Groundwater was collected from two different shallow depth intervals (3 to 5 feet and 8 to 10 feet below the harbor floor) at 12 locations. Samples were collected along four lines running parallel to the southern shoreline of Allen Harbor; samples were collected from three locations along each line. Details on the placement, construction and purpose of the sampling locations are provided in Section 2. The groundwater samples collected at these locations are representative of the groundwater immediately underlying Allen Harbor, downgradient of the coalesced groundwater plume, just prior to discharge to the surface water in Allen Harbor. Deep surface water samples were also collected at three locations in Allen Harbor based on the results of the Color-Tec screening of the groundwater samples collected in the Harbor.

Table 4-57 presents the analytical results for the samples of the shallow groundwater underlying Allen Harbor as well as the deep surface water samples from the Harbor. The spatial distribution of TCE and the CVOCs are shown on Figures 4-21 and 4-25, respectively (i.e., with the analytical data for the shallow groundwater zone). Additionally, analytical results for all VOCs detected at least once in the Allen Harbor groundwater and deep surface water samples are presented in Figure 4-29. As detailed in Table 4-57, total CVOCs were detected in 11 of 24 sampling locations at concentrations ranging from 3.2 µg/L (TW16-AH-10 at 3 to 5 feet below harbor surface) to 1,122 µg/L (TW16-AH-05 at 8 to 10 feet below harbor surface). TCE was the primary component of the total CVOCs (noted at all 11 locations with positive CVOC detections). Cis-1,2-DCE, also detected frequently (9 of 11 locations), was a generally a minor component of CVOCs. However, cis-1,2-DCE was noted at concentrations exceeding 100 µg/L at

two locations (TW16-AH-05 and TW16-AH-08) and at concentrations exceeding 200 µg/L at one location (TW16-AH-07). All of these samples were collected from 3 to 5 feet below harbor floor.

The TCE concentrations reported for the samples collected from groundwater below the harbor floor exceed the TCE concentrations reported for the shallow overburden monitoring wells at Site 16 (maximum concentration of 180 µg/L was observed at MW16-78S), indicating that upwelling is responsible for the migration of the contamination. Benzene, toluene, and MTBE were also detected infrequently in groundwater samples collected in the harbor and at concentrations less than 5 µg/L. The low-level presence of BTEX is not surprising given the detection of BTEX in Site 16 soils and shallow overburden groundwater plume as well as the current use of fuels by boats in the Allen Harbor marina area.

Spatially, the highest CVOC and TCE concentrations are observed at locations in the central part of the grid established for the Allen Harbor sampling. The extent of elevated TCE concentrations is bounded in all directions with the exception that the TCE concentration reported for location TW16-AH-06 (along the northern line of sampling locations) is 93 µg/L for the 3 to 5 feet zone and 460 µg/L for the 8 to 10 feet zone. However, given the general trend of CVOC and TCE concentrations observed between locations TW16-AH-06 and TW16-AH-05 (located south of TW16-AH-06), the plume underlying Allen Harbor would not be expected to extend much further than approximately 100 feet north of location TW16-AH-06. Examining Figure 4-29, it is noted that the CVOC and TCE concentrations decrease by more than 50 percent between locations -05 and -06. These locations are less than 200 feet apart. No CVOC contamination was detected in samples from locations -03 and -09 (to the west and east of location -06).

As presented in Table 4-57, three deep surface water samples were collected immediately above the harbor sediments where the highest CVOC and TCE concentrations were observed in groundwater samples (i.e., at locations TW16-AH-05 and TW16-AH-07; see Section 2 for details regarding the surface water sampling). VOCs were not detected in the three surface water samples. This observation suggests that while elevated concentrations of CVOCs and TCE exist in the shallow groundwater underlying Allen Harbor, the contamination appears to be significantly biodegraded or diluted as it discharges to the surface water.

Table 4-58 presents the analytical results for chemicals detected in the seep samples collected from locations along the southern shoreline of Allen Harbor; Table 4-60 presents the summary statistics for those samples. These tables also include comparisons to groundwater screening criteria. Figure 4-31 presents the spatial location of the samples and general VOC data. Acetone was detected in sample OPW16-01 but not at the other locations. VOCs were not detected in sample 28-SP-01. VC was detected in sample SEEP16-01 at 0.5 µg/L. The VC concentration exceeded the ORNL RSL for tap

water; there is no ecological criterion for this chemical. TCE (0.7 µg/L) and cis-1,2-DCE (0.7 µg/L) were the only organics detected in SEEP16-02; trans-1,2-DCE was not detected in the sample. Concentrations of all constituents in sample SEEP16-02 were less than EPA MCLs and RIDEM GA groundwater objectives, with the exception of TCE and manganese. The following table presents a comparison of detected VOC concentrations to human health and ecological AWQCs.

Chemical	Maximum Detected Concentration (µg/L)	Human Health Ambient Water Quality Criterion(1) (µg/L)	Ecological Ambient Water Quality Criterion (µg/L)
Acetone	0.9 J	NA	1,500(3)
cis-1,2-DCE	0.7	NA	2,240(2)
TCE	0.7	30	20(2)
VC	0.5 J	24	NA

NA – Not available.
1 - National Recommended Water Quality Criteria (EPA, 2004).
2 - Saltwater values (Buchman, 1999).
3 - Freshwater values (Suter and Tsao, 1996).

The detected concentrations of all VOCs in all seep samples are less than their applicable AWQCs.

VOCs were detected infrequently in the sediment samples collected from along the shore of Allen Harbor and in Allen Harbor sediment. Acetone and carbon disulfide were detected in seep sediment samples collected on the shoreline. Acetone, 1,1-DCE, 2-butanone, cis-1,2-DCE, and TCE were detected in sediment samples from Allen Harbor. TCE was detected in four sediment samples at a concentration range of 2 to 11 µg/kg. 1,1-DCE (0.9 µg/kg) was only detected in one sediment sample (AH-47). Cis-1,2-DCE ($C_{maximum}$ = 880 µg/kg at AH-47) was only detected in three samples. Sample AH-47 is located approximately 40 feet downgradient of SEEP16-02/SED16-02. TCE was the only VOC detected in seep water sample SEEP16-02. Acetone and carbon disulfide were the only VOCs detected in sediment sample SED16-02. The detection of cis-1,2,-DCE at AH-47 is an indication that biodegradation of TCE occurs between SEEP16-02 and AH-47. Despite the apparent minor connection between Site 16 and seeps/sediments, the concentrations of all VOCs were less than applicable human health and ecological screening criteria. Furthermore, the 2004 SLERA forensic analysis found minimal to no impact to Allen Harbor sediments from Site 16 (EA, November 2004).

4.2.4 Volatile Organic Compounds in Allen Harbor and Reference Areas 1, 2 and 3 Sediments

Table 4-61 presents the analytical results for chemicals detected during the 2004 Allen Harbor sediment sampling while Tables 4-63 and 4-64 present the analytical results for chemicals detected during the Phase III field investigation in 2007. Table 4-65 present summary descriptive statistics for all sediment

samples collected to date in Allen Harbor. This table also includes comparisons to various soil screening criteria. Figure 4-31 displays the Allen Harbor sediment sampling locations.

As summarized in Table 4-65, 2-butanone and acetone were the two most frequently detected VOCs. 2-Butatone was detected in 13 of 25 samples at concentrations ranging from an estimated 5 µg/kg to 23 µg/kg; acetone was detected in 7 of 26 samples at concentrations ranging from an estimated 30 µg/kg to 390 µg/kg. Total CVOCs were detected in 6 of 26 samples, ranging in concentrations from a minimum of 5 µg/kg to 886 µg/kg (AH-47-NSD). In contrast to the CVOC profile typically seen in groundwater, cis-1,2-DCE is the primary component of total CVOCs in the sediments. Concentrations of cis-1,2-DCE were also highest in the shallowest sampling locations. These observations strongly suggest that degradation of TCE is occurring as the contaminant migrates from the deeper groundwater to the shallower groundwater zones and sediments of Allen Harbor.

As detailed in Table 4-65, none of VOCs detected in the Allen Harbor sediment samples collected in 2004 and 2007 exceed any screening criteria.

Tables 4-66 to 4-68 presents the analytical results for chemicals detected in sediments for the three reference areas (all collected in 2004). These tables also include comparisons to various soil screening criteria. As seen in these tables, VOCs are detected infrequently and at concentrations significantly lower than screening criteria. Therefore, no further discussion of VOCs detected in the reference areas is warranted.

4.2.5 Volatile Organic Compounds in Soil Gas Samples

Soil gas samples were collected from 5 different areas across Site 16 during the 2007 Phase III field investigation (the sampling design was presented in Section 2). Generally, five sampling locations were selected at each area, however three samples were collected from Area 1 (near Building E-107) and seven were collected from Area 5 (at the eastern end of the former Building 41). Soil gas samples have not been previously collected at Site 16.

Table 4-69 presents the analytical results for chemicals detected during the 2007 soil gas sampling event. Tables 4-70 and 4-71 present descriptive statistics for chemicals detected in the soil gas samples collected from the shallow zone (less than 5 feet bgs) and the deeper zone (greater than 5 feet bgs), respectively. It should be noted that the soils gas sampling program was originally designed to collect soil gas samples at approximately 5 to 10 feet bgs. However, samples were collected at shallower depths at a few locations (Area 1 and Area 2) because of the high groundwater table encountered in the undeveloped area of Site 16. At all sampling locations, soil gas samples were collected immediately above the saturated zone. Analytical results for selected analytes are displayed on Figure 4-33.

As summarized in Table 4-70, 21 different VOCs were detected in the shallow soil gas zone, with many constituents detected in at least 3 of the 5 samples. 2-Butanone, acetone and BTEX (all four components) were detected at all 5 sample locations. While all four components of BTEX were consistently detected, all reported concentrations less than 20 ppbv except for toluene at SG16-002-004 (66 ppbv). CVOCs were detected at 4 of 5 locations with maximum TCE and cis-1,2-DCE concentrations estimated at 0.074 ppbv and 12 ppbv, respectively (SG16-002-005). While VC was only observed at 2 of 5 locations, the maximum concentration (260 ppbv) exceeded the maximum concentrations reported for all other CVOC components detected at the 5 locations sampled.

Only five of the VOCs (benzene, chloroform, ethylbenzene, TCE and VC) listed on Table 4-70 were detected at concentrations exceeding the USEPA soil gas screening concentrations. The exceedance reported for VC was most notable ($C_{maximum}$ =260 ppbv versus a screening level of 1.1 ppbv). The relatively low TCE concentrations versus the relatively high VC concentrations in the soil gas is further evidence that biodegradation of TCE is occurring the North Central area of Site 16.

As detailed in Table 4-71, 30 VOCs were detected in the deeper soil gas zone. Seventeen of the 30 VOCs were detected in less than 50 percent of the samples analyzed (5 of the 17 were only detected once). In contrast, 6 VOCs [all four BTEX components (xylene isomers separated) and acetone] were detected at all locations. The maximum concentrations reported for 16 of the 30 VOCs exceeded 10 ppbv. Acetone and isopropanol was detected at all 20 sampling locations, with acetone concentrations ranging from 19 ppbv to 5,000 ppbv (SG16-004-001) and isopropanol concentrations ranging from 19 ppbv of 14,000 ppbv (SG16-004-001). 2-Butanone was detected at 19 of 20 sampling locations at concentrations ranging from 2.9 ppbv to 160 ppbv (SG16-003-004). Acetone and 2-butanone are common laboratory contaminants and the concentrations reported are below screening criteria (when available). Consequently, further discussion of these VOCs is not warranted. As discussed in Section 2, the detection of isopropanol in some of the soil gas samples is an indication that the sampling train used to collect the soil gas samples allowed ambient air to be was introduced into some of the soil gas canisters. This potential sampling problem was anticipated during the design of the sampling program and is the primary reason that multiple soil gas samples were collected in each area evaluated.

BTEX was detected in all 20 deeper zone samples analyzed, however, the concentrations reported were generally low, ranging from a minimum of 1, 0.82, 2.4, 1.1 and 3 ppbv to a maximum of 15, 4.9, 8.8, 4.5 and 34 ppbv for benzene, ethylbenzene, m+p-xylene, o-xylene and toluene, respectively. Total BTEX ranged in concentration from 1 ppbv to 67 ppbv (SG16-002-003). This consistent, low level contamination across the site would not be unexpected given the historic operations at Site 16, the marina operations in the Allen Harbor area, and the current operations in the developed areas of the site.

The predominant CVOC in the deeper soil gas samples was TCE detected at 17 of 20 locations at concentrations ranging from 0.045 ppbv to 1,800 ppbv (SG16-004-005). Cis-1,2-DCE was noted in 7 of 20 locations and trans-1,2-DCE detected at 2 of 20 locations. The maximum concentration of either 1,2-DCE isomer was 32 ppbv (cis-1,2-DCE, SG16-003-001). VC was detected in 5 of 20 locations at concentrations ranging from 1.1 ppbv to 350 ppbv (SG16-002-002). Total CVOCs were detected at 19 of 20 locations at concentrations ranging from 0.11 ppbv to 1,822 ppbv (SG16-004-005).

The spatial distribution of the chemicals detected in the shallow and deeper zone soil gas samples is presented on the Figure 4-33. For the two areas located within and adjacent to former Building 41, CVOCs (primarily TCE) are the predominant VOCs detected. For the remaining three areas evaluated (all north of Davisville Road), BTEX and/or VC are the primary VOCs detected. For Area 4, which is located within the footprint of the former Building 41, TCE concentrations were highest at location SG16-004-005, which was positioned directly above the former solvent still/transfer tank/piping. The other Area 4 samples also exhibit elevated TCE and CVOC concentrations, particularly location SG16-004-002 which was positioned approximately 20 feet northeast of SG16-004-005. This suggests that releases may have occurred at multiple locations within close proximity to one another, or alternatively, that contamination followed a contorted flow path downward once released. Area 5 is at the eastern edge of former Building 41 and included two additional sampling locations further east and southeast. SG16-005-002 exhibits elevated TCE and CVOC when compared to the other 4 sampling locations at the immediate eastern extent of the former Building 41. The location within Area 5 demonstrating the highest concentrations of TCE and CVOC concentrations is SG16-005-006, which is located downgradient of both the immediate eastern edge of former Building 41 and MW16-37 (another suspected source area). Elevated VC (over 200 ppbv) concentrations were reported for both Areas 2 and 3 while only minor concentrations of TCE were reported for samples collected from these two areas. In contrast, elevated VC concentrations were not reported for Areas 4 and 5 suggesting that TCE biodegradation is not significant in the former Building 41 area. This observation is consistent with the VOC data available for both soils and groundwater.

4.3 SEMI-VOLATILE ORGANIC COMPOUNDS

4.3.1 Semivolatile Organic Compounds in Soils

As detailed in the following narrative, PAHs are the primary SVOCs detected in the surface and shallow subsurface soils at Site 16. The contamination is most evident at several locations in the undeveloped North Central area and, for the most part, can be clearly linked to historical operations/removal actions in this area. The PAH profile in the surface and shallow subsurface soils has been well characterized using both screening level samples (i.e., the extractable TPH screening data) and FBL data from several

different analytical laboratories over the course of the environmental investigations at Site 16. In addition to site characterization samples, the Phase III field investigation included the collection of samples to supplement the environmental forensics analyses presented in the Phase II SLERA report. As noted previously, the objective of the Site 16 forensics analyses was the evaluation of the extent to which historic Navy operations at Site 16 may have contributed to the PAH contamination observed in the Allen Harbor sediments. An updated environmental forensics report is included as Appendix F of this document and only briefly summarized in this section.

4.3.1.1 Undeveloped Area

SVOCs, primarily PAHs, were frequently detected in surface soil (0 to 2 feet bgs) and shallow subsurface soil (2 to 25 feet bgs) samples. SVOCs were not detected in one deep subsurface soil (greater than 25 feet bgs) sample indicating limited impact from site operations in the deep strata. This spatial distribution pattern is consistent with surface releases that migrated somewhat into deeper soils, but to a limited extent. Total PAH concentrations ranged from 32.8 µg/kg to 50,739 µg/kg (SOURCE1-2) in surface soil samples and from 0.84 µg/kg to 444,861 µg/kg (SB16-059, 6 to 10 feet) in shallow subsurface soil samples. PAHs were not detected in soil samples collected from below 25 feet bgs.

Concentrations of PAHs in surface soil and subsurface soil exceeded ORNL residential soil direct contact screening criteria in most of the samples in which they were detected, but the same concentrations are frequently less than RIDEM soil direct exposure residential criteria. Concentrations of PAHs exceeded the RIDEM soil direct exposure industrial criteria in surface and subsurface soil samples from the former creosote dip tank area, BTEX hot spot area, septic tank removal area, and wooded bermed structure area. Furthermore, these concentrations are typically less than the leachability-to-groundwater criteria because PAHs tend to bind tightly to soils and not to leach into groundwater unless they are present at very high concentrations in the soil. Concentrations of PAHs in surface soil also exceeded the ecological screening criteria in samples from the former creosote dip tank area, former FFTA area, BTEX hot spot area, in the vicinity of SB16-95 (located east of the Building E-107), and in the vicinity of SB16-100, (located north of the former FFTA area). The contamination pattern identifies the northwestern quadrant of the undeveloped area of Site 16 as having most obviously received impacts to soils from site operations involving the use or generation of PAHs. Also affected is the area to the southeast of Building E-107, located north and across the perimeter road in the North Central area of Site 16.

As expected based on site history, total PAH concentrations were greatest in surface soil samples collected from the former FFTA and in surface soil and shallow subsurface soil samples collected from the former creosote dip tank area, the BTEX hot spot area, and the septic tank removal area. The soil SVOC contamination patterns generally reflect surface releases with limited vertical migration. The exceptions are near the former creosote dip tank area, the former FFTA, and the BTEX hot spot area.

The greatest vertical migration presumably occurred where surface releases were the most voluminous, with the release penetrating (i.e., soaking) deeper into the soil than would be possible in areas experiencing smaller releases. Vertical migration would also have been facilitated by organic solvents, if released with the PAHs. The organic solvents would have dissolved the SVOCs thus aiding their migration (e.g., in the former FFTA). In addition to surface releases it should be noted that "fill" /debris has been noted at soil boring, test pit, and exploratory test pit locations throughout the North Central area. Fill operations likely occurred in this area during training exercises and/or as a consequence of efforts to extend the available useable land surface in this portion of Site 16. Thus, conceptually, the burying of debris may have also contributed to the observed shallow sub-surface PAH contamination.

Based on the existing spatial patterns and the known chemical and physical behaviors of SVOCs, the extent of contamination can be characterized as follows. One area of significance extends over an approximate rectangle or ellipse oriented southwest of 28-SB-01A to the northeast, near 28-SB-50. This is essentially the original estimated location of the creosote dip tank area. The width of the contaminated area is unknown (not completely delineated) but appears to be less than about 70 feet. Most of the contaminant mass is in the southwestern half of this rectangular or elliptical area. The vertical extent of contamination is at least 4 feet bgs in the southwestern half of the rectangle (see Figure 4-18, rectangle not shown) but it is probably less than 10 feet deep in this area, based on the known chemical and physical properties of these chemicals. Based on these properties and site data (see Figure 4-19), the depth of contamination in the northeastern half of this area is limited to surface and shallow subsurface soils.

Another significant area of SVOC contamination is the BTEX hot spot area. The surface soil contamination is generally within a circle with a radius of approximately 30 feet, centered on SB16-28. This estimated radius is based on concentrations of PAHs that are less than the RIDEM residential direct contact criteria in the samples collected around 16SB-28. The contamination in subsurface soil is within a circle with a radius of approximately 75 feet, centered on SB16-28 and does not appear to be completely bounded to the south. The shallow subsurface soils, which were collected at depths ranging from 2 to 12 feet bgs in this area, exhibit the greatest PAH concentrations in this area. The deepest soils, collected at a depth of 36 feet bgs as a result of the installation of well MW16-07D, exhibited no detectable SVOCs indicating that the depth of PAH contamination in this area is less than 36 feet bgs.

The third contaminated area of significance is the former FFTA. The former FFTA is represented by a circle on Figures 4-16 and 4-17, but the contaminated area extends somewhat outside this circle to the southeast and north. The extent of contamination in the surface and subsurface soils of this particular area is somewhat limited. There is one exceedance of the RIDEM direct soil exposure residential criterion and several exceedances of the more conservative ORNL residential screening levels in the

immediate area. There is also one exceedance of the RIDEM direct soil exposure industrial criterion at a location immediately north of the circled area presented on Figures 4-16 and 4-17.

The fourth contaminated area of significance is the area near the former septic tanks located south of Building E-107. Concentrations of PAHs exceeded the RIDEM direct soil exposure residential criteria in the surface soil sample at SB16-95 and in the subsurface soil samples at TP16-01, TP16-02, SB16-91, and SB16-92. Two test pits excavated in this area during the Phase III investigation revealed subsurface debris (e.g., charred wood) and the analytical results for soil samples collected from this area suggest that residual PAH contamination remains in the area.

In summary, the areas described above are those where potential releases of SVOCs would be logical based on site operations. This knowledge of operations and the available data suggest that the areas of greatest importance with regard to potential SVOC contamination have been investigated. However, the horizontal extent of contamination is not been completely resolved in all areas. Additional surface/shallow subsurface soil sampling may be necessary for a few areas to support Feasibility Study decisions.

4.3.1.2 Developed Area

SVOCs, primarily PAHs, were infrequently detected in surface soil (0 to 2 feet bgs), shallow subsurface soil (2 to 25 feet bgs) and deep subsurface soil (greater than 25 feet bgs) samples. Concentrations of PAHs were low in all samples with the exception of samples from location SB16-A3-12. Total PAHs were detected at a concentration of 383,220 µg/kg in surface soil and 7,010 µg/kg in subsurface soil (5 to 6 feet) at location SB16-A3-12. At the other locations total PAH concentrations ranged from 46 µg/kg to 899 µg/kg (SB16-A3-04) in surface soil samples and from 398 µg/kg to 995 µg/kg (SB16-A2-05, 10 to 11 feet) in shallow subsurface soil samples. PAHs were detected in one deep subsurface soil sample at a concentration of 10 µg/kg (SB16-29, 32 to 34 feet). Concentrations of PAHs in surface soil exceeded the ORNL residential soil direct contact screening criteria in four samples but only exceeded the RIDEM soil direct exposure residential criteria in one sample (SB16-A3-12). Concentrations of PAHs in shallow subsurface soil samples exceeded the ORNL and RIDEM direct contact screening criteria in only one sample (SB16-A3-12, 5 to 6 feet). Also concentrations of PAHs in surface and subsurface soil only exceeded the RIDEM soil direct contact exposure industrial criteria in the samples collected from location SB16-A3-12. The area of contamination in the vicinity of SB16-A3-12 appears to be limited although it is not bounded to the south.

A fuel odor was observed during the installation of boring SB16-A2-05, therefore two additional borings, SB16-A2-28 and SB16-A2-29 were installed downgradient of SB16-A2-05. Total PAHs were detected at a concentration of 995 µg/kg at SB-A2-05 (10 to 11 feet bgs) and at concentrations of 6.07 µg/kg at SB16-A2-28 (15 to 16 feet bgs) and 4.52 µg/kg at SB-A2-29 (11 to 12 feet bgs).

4.3.2 Semivolatile Organic Compounds in Groundwater

While several pre-2004 sampling events included the analysis of groundwater samples for the presence of SVOCs, groundwater samples collected in the 2004 round of sampling were not analyzed for SVOCs. In 2007, only groundwater samples from the shallow overburden aquifer were analyzed for PAHs. As indicated in Section 2, unfiltered groundwater samples were collected in 2007 from shallow overburden monitoring wells MW16-03S, MW16-04S, MW16-07S, MW16-44S, MW16-45S, and MW16-46S. Additionally, groundwater samples were collected from shallow overburden wells MW16-80S, MW16-81S, and MW16-82S in support of the supplemental forensics investigation detailed in Appendix F. The following discussion is based on the groundwater samples collected before 2004 and during the 2007 investigation.

4.3.2.1 Shallow Overburden Groundwater Zone

Tables 4-41 and 4-43 present summary statistics for pre-2004 and 2007 groundwater samples, respectively, collected from the shallow overburden zone and analyzed for SVOCs. These tables also include comparisons to groundwater screening criteria. All analytical data are presented in Appendix C. Additionally, select tables and figures from the Phase I and II RI reports, which display positive detections for select chemicals, are presented in Appendix A.

Pre-2004 Groundwater Samples

SVOCs were detected infrequently in groundwater samples from the shallow overburden groundwater zone. Bis(2-ethylhexyl) phthalate was detected in 5 of 24 groundwater samples. The remaining SVOCs (primarily PAHs) were detected in three or fewer samples.

The majority of the SVOCs listed in Table 4-41 [primarily PAHs (total PAHs = 330 µg/L)] were detected in a groundwater sample collected from 28-GW07 (1998), which is located southeast of Building E-107 and in the general vicinity of the Building E-107 septic tanks (Figure 2-1). However, subsequent groundwater monitoring in adjoining RI monitoring wells MW16-03S, MW16-04S, and MW16-48S detected minimal PAH contamination in the pre-2004 groundwater samples. Naphthalene was detected in a groundwater sample from MW16-45S, which is located in the former FFTA. SVOCs were not detected in the limited number of soil samples collected in the vicinity of 28-GW07 but were detected in several soil samples from the expanded creosote dip tank area and the FFTA. (However, as noted above, the 2007 soil sampling in the general 28-GW07 area did detect significant PAH contamination in TP16-01 and TP16-02.) The PAH contamination detected in the Site 16 shallow overburden monitoring wells is likely associated with historical activities in the North Central area of Site 16 (i.e., the former FFTA, the

expanded creosote dip tank area, the Building E-107 septic tanks). However, the PAH concentrations detected in the *pre-2004* groundwater samples are generally less than 10 µg/L and therefore do not suggest significant, wide-spread impact to the shallow groundwater from these activities. In contrast to the VOCs, SVOCs (especially PAHs) tend to bind tightly to soils and do not migrate readily from source area soils to groundwater. Therefore, unless they are present in very high concentrations or large volumes, a significant impact would not be expected.

Bis(2-ethylhexyl) phthalate (MW16-06S, MW16-07S, MW16-40S, EBS81-01, and 28-GW-01A), carbazole (28-GW07), and naphthalene (28-GW07 and 28-GW08) were detected in the pre-2004 samples at concentrations exceeding ORNL screening levels. However, only bis(2-ethylhexyl) phthalate and naphthalene were detected at concentrations exceeding EPA MCLs or RIDEM GA groundwater objectives. As noted above, monitoring wells 28-GW07 and 28-GW08 (1998) are located southeast of Building E-107 and in the general vicinity of the Building E-107 septic tanks

<u>2007 Groundwater Samples</u>

Samples were collected from six groundwater monitoring wells (MW16-03S, MW16-04S, MW16-07S, MW16-44S, MW16-45S, and MW16-46S) located in or downgradient of areas with elevated PAHs concentrations in soils and analyzed for PAHs (Figure 4-30). PAHs were detected in 5 of the 6 wells. In general the PAHs detected in the groundwater samples were the lower molecular weight PAHs (e.g., acenaphthene, acenaphthylene, anthracene, and fluorene); the predominant PAHs were not the carcinogenic PAHs (e.g., benzo(a)pyrene). The highest concentrations of total PAHs were detected at MW16-46S (2,608 µg/L). MW16-46S is located northeast of the former FFTA. While the highest total PAH concentrations were reported for the groundwater sample from MW16-46S, concentrations of the individual PAHs were less than the ORNL screening levels and RIDEM GA groundwater objectives with the exception of naphthalene and benzo(a)pyrene equivalents.

Two water samples were also collected from the test pits TP16-01 and TP16-02 excavated in the Bldg E-107 septic tank removal area. As noted in Section 2, the samples were grab samples of the groundwater pooling at the bottom of excavation pits. Total PAHs were detected at concentrations of 365,350 µg/L in the sample from TP16-01 and 35,850 µg/L in the sample from TP16-02. These samples were not filtered. Thus, the elevated concentrations of PAHs are likely a consequence, in part, of the suspended solids present in the samples. However, the PAHs in the water samples from the test pits are reflective of the presence of PAHs in soils/debris (e.g., remnants of charred wood) in this area. As noted on Figure 4-30, benzo(a)pyrene concentrations were notable in both TP16-01 and TP16-02, but, were not particularly notable in the samples collected from the downgradient monitoring well and the seep at the southwest corner of Allen Harbor.

Samples were also collected from monitoring wells MW16-80S, MW16-81S, and MW16-82S. The samples from these wells were analyzed forensically to further investigate the potential connection between the PAH concentrations noted in the Allen Harbor sediments and the PAH source area in the North Central area of Site 16. These data are presented and evaluated in Appendix F which provides an update to the forensic evaluation presented in the 2004 SLERA.

Summary

Based on the low frequency of detection and low detected concentrations (in most cases), the SVOC contamination in shallow overburden groundwater in the undeveloped area of Site 16 is not considered to be significant or appears to be very localized (i.e., in the Bldg E-107 septic tank removal area). The low concentrations detected at most locations are significantly less than the solubilities of these chemicals and indicate that the SVOCs may be dissolved in the shallow groundwater. Because of their tendency to bind tightly to suspended particulates, the SVOCs may also be bound to colloidal or slightly larger suspended particulates. SVOC monitoring of the shallow groundwater has been limited primarily to wells in the undeveloped of Site 16. Few monitoring wells in the developed portion of Site 16 have been sampled for SVOC contamination. However, as discussed in Section 4.3.1.2, SVOCs were not detected at significant levels in soil samples from the developed portion of Site 16 with the exception of one boring located near former Building 41.

4.3.2.2 Intermediate Overburden Groundwater Zone

Table 4-44 presents summary statistics for pre-2004 groundwater samples collected from the intermediate overburden zone and analyzed for SVOCs. (None of the groundwater samples collected from intermediate overburden wells during the Phase III field investigation were analyzed for SVOCs.) This table also includes comparisons to groundwater screening criteria. All analytical data are presented in Appendix A. Additionally, select tables and figures from the Phase I and II RI reports, which display positive detections for select chemicals, are presented in Appendix A.

As detailed in Table 4-44, SVOCs (primarily phenols, ethers, PAHs, and phthalates) were detected infrequently and at low concentrations in groundwater samples from the intermediate overburden groundwater zone. Bis(2-ethylhexyl) phthalate was detected in 3 of 14 samples, di-n-butyl phthalate and dibenzofuran were each detected in 2 of 14 samples, and 12 other SVOCs were detected only once.

With the exception of the phthalate compounds listed in Table 4-44, the maximum detected concentrations reported for any of the SVOCs detected in the Site 16 intermediate overburden did not exceed 2 µg/L. The SVOCs were detected primarily in samples from monitoring wells 28-GW07 (1998) and MW16-04I, which are located southeast of Building E-107 in the general vicinity of the Building E-107

septic tanks (Figure 2-1). SVOCs were not detected in pre-2004 soil samples collected in the vicinity of 28-GW07 but were detected in soil samples from MW16-04S (primarily low-level PAHs). PAHs were detected at low concentrations in soil samples collected in the vicinity of MW16-04I during the Phase III investigation. As discussed above, the SVOC contamination detected in the Site 16 overburden wells is likely to be associated with historical activities in the North Central area of Site 16. However, the generally low-level detections to date do not suggest a significant, wide-spread impact to the intermediate groundwater from this contamination. Additionally, it should be noted that monitoring well MW16-04I, the RI monitoring well demonstrating the widest variety of chemical contaminants in the intermediate overburden zone, is located immediately adjacent to the unnamed asphalt-paved road that encircles the North Central area of Site 16. The road materials (asphalt) or materials historically transported along the road may also have contributed to the SVOC contamination observed in this well.

Bis(2-ethylhexyl) phthalate and hexachlorobenzene were the only SVOCs detected at concentrations exceeding ORNL screening levels. However, only bis(2-ethylhexyl) phthalate (MW16-04I and MW16-31I) was detected at concentrations exceeding its EPA MCL and RIDEM GA groundwater objective.

Based on the low frequency of detection and low detected concentrations, the SVOC contamination in intermediate overburden groundwater is not considered to be significant at Site 16.

4.3.2.3 Deep Overburden Groundwater Zone

Table 4-47 presents summary statistics for pre-2004 groundwater samples collected from the deep overburden zone. (None of the groundwater samples collected from deep overburden wells during the Phase III field investigation were analyzed for SVOCs.) All analytical data are presented in Appendix A. Additionally, select tables and figures from the Phase I and II RI reports, which display positive detections for select chemicals, are presented in Appendix A.

1,4-Dichlorobenzene, bis(2-ethylhexyl) phthalate, di-n-butyl phthalate, naphthalene, and phenanthrene were the only SVOCs detected in groundwater samples from the deep overburden groundwater zone. Naphthalene was detected in 2 of 37 samples at concentrations of 0.1 µg/L (MW16-11D) and an estimated 0.2 µg/L (MW16-09D). Di-n-butyl phthalate was detected in 2 of 40 samples at concentrations of 0.6 µg/L (MW16-24D) and 0.9 µg/L (MW16-19D). 1,4-Dichlorobenzene and phenanthrene were detected in one groundwater sample at estimated concentrations of 2 µg/L (MW16-08D) and 0.04 µg/L (MW16-52D), respectively. Bis(2-ethylhexyl) phthalate was detected in 6 of 40 samples at concentrations ranging from an estimated 1 µg/L to 46 µg/L (MW16-31D). However, only the bis(2-ethylhexyl) phthalate concentration reported for MW16-31D exceeds 10 µg/L. Few soil samples were collected and analyzed for SVOCs in the vicinity of these wells during the Phase I and II RIs. However, during the Phase III investigation soil samples were collected in the vicinity of these wells and analyzed for PAHs. No

significant concentrations of PAHs were detected in the subsurface soil samples collected in the vicinity of these wells during the Phase III investigation. Therefore, based on available data, the low-level SVOCs concentrations detected in groundwater indicate that SVOC contamination in soils in the immediate vicinity of these wells (if any) is not significantly impacting SVOC groundwater quality in the area of these wells.

Concentrations of naphthalene, phenanthrene, and di-N-butyl phthalate were less than screening criteria. Concentrations of 1,4-dichlorobenzene exceeded the ORNL screening level (one location only, MW16-08D), and concentrations of bis(2-ethylhexyl) phthalate exceeded both the EPA MCL and RIDEM GA groundwater objective at three locations (MW16-31D, MW16-06D, and MW16-26D).

Based on the low frequency of detection and low detected concentrations, the SVOC contamination in deep overburden groundwater is not considered to be significant. Additionally, in contrast to the somewhat limited monitoring of SVOC contamination in the shallow and intermediate groundwater zones described above, over 35 wells distributed evenly in the deep overburden across Site 16 have been sampled for SVOCs. Although soils have exhibited contamination in the North-Central area of the Site 16, the degree of impact is limited, possibly because the PAH contamination is limited primarily to soils less than about 10 feet bgs.

4.3.2.4 Shallow Bedrock Groundwater Zone

Table 4-50 presents summary statistics for pre-2004 groundwater samples collected from the shallow bedrock zone. (None of the groundwater samples collected from bedrock wells during the Phase III field investigation were analyzed for SVOCs.) This table also includes comparisons to groundwater screening criteria. All analytical data are presented in Appendix A. Additionally, select tables and figures from the Phase I and II RI reports, which display positive detections for select chemicals are presented, in Appendix A.

Phenanthrene was the only SVOC detected in groundwater samples collected in the shallow bedrock zone. Phenanthrene was detected in one of seven samples at a concentration of 0.06 µg/L at MW16-10R. This monitoring well is located southwest of former Building 41. The detected concentration of phenanthrene was less than the screening criteria.

Based on the low frequency of detection and low detected concentrations, the SVOC contamination in shallow bedrock groundwater is not considered to be significant.

4.3.2.5 Deep Bedrock Groundwater Zone

Groundwater samples collected from the deep bedrock monitoring wells were not analyzed for SVOCs. Based on the low-level SVOCs detections reported for the overburden and shallow bedrock groundwater samples, significant SVOC contamination is not expected in the deep bedrock groundwater zone.

4.3.3 Semivolatile Organic Compounds in Seeps

Pre-2004 Seep Samples

SVOCs, primarily PAHs, were detected in both 28-SP-01 and SEEP16-01 at comparable levels. Total PAHs were detected at a concentration of 45 µg/L at 28-SP-01, which was collected in 1998, at a concentration of 72 µg/L at SEEP16-01, which was collected in 2001, and at a concentration of 0.3 J µg/L at OPW16-01, which was also collected in 2001. PAHs were not detected at SEEP16-02. Concentrations of naphthalene exceeded the ORNL screening criteria at SEEP16-01(see Table 4-58). Concentrations of dibenzofuran, fluoranthene, fluorene, and phenanthrene exceeded ecological criteria only at 28-SP-01 and SEEP16-01. Concentrations of bis(2-ethylhexyl) phthalate exceeded the ORNL screening criteria, EPA MCL, and RIDEM GA groundwater objective at OPW16-1; concentrations of di-n-octylphthalate exceeded ecological criteria at that location. The SVOCs detected may reflect both the PAH contamination observed in TP16-01 and TP16-02 as well as non-site-related anthropogenic sources. However, it should be also noted that all of the pre-2007 seep samples were unfiltered; the reported concentrations may reflect sample turbidity as well.

2007 Seep Sample

One seep sample was collected in 2007 at the location of previously collected samples 28-SP-01 and SEEP16-01 and was analyzed for PAHs in support of the forensics study. The results for this sample are presented and discussed in Appendix F.

Comparison of PAHs in Shallow Groundwater to Seeps

Groundwater samples were collected from monitoring wells MW16-82S, MW16-81S, and MW16-80S to determine if PAH contamination from the former creosote dip tank area might be migrating to Allen Harbor. Concentrations of total PAHs in these wells and in the seep sample are as follows:

Location	MW16-82S/ Temp Well 112S (Creosote Dip Tank Area)	MW16-81S/ Temp Well 111S (Between Creosote Dip Tank Area and Southwest Seep)	MW16-80S/ Temp Well 110S (Downgradient of TP16-1 and TP16-2)	SP16-AH-01 (Southwest corner of Allen Harbor)
Concentration (ng/L)	64.1 64 (duplicate)	18	16,163	1,412 1,606 (duplicate)

Concentrations of total PAHs were lowest in the sample from MW16-81S (Temp Well 111S), which was collected at a location between the creosote dip tank area and the southwest seep, and highest in the sample from MW16-80S (Temp Well 110S), which is located upgradient from the septic tank removal area (Figure 4-30). The concentration of total PAHs in the seep sample is approximately an order of magnitude lower than the concentration detected at MW16-80S. This indicates that the PAH contamination in soil at the former creosote dip tank area is not migrating into groundwater downgradient to Allen Harbor at significant levels. The PAHs detected in groundwater at MW16-80S (Temp Well 110S) are likely associated with the former septic tank removal area.

4.3.4 Semivolatile Organic Compounds in Sediments

PAHs were the primary SVOCs detected in all sediment samples (Tables 4-61 and 4-64). Total PAH concentrations ranged from 382 µg/kg (SED16-02) to 2,575,970 µg/kg (SD-AH-16). Concentrations of PAHs, particularly the carcinogenic PAHs, were higher overall in the sediment samples collected from Allen Harbor than in the sediment samples collected at the locations of the seeps on the shoreline. This is an indication offshore sources (most likely historic and current boat traffic and organic preservatives used on docks) are contributing to the PAH concentrations in the Allen Harbor sediment samples.

Tables 4-72 through 4-74 and Figure 4-34 present the results of samples (wood corings) collected from the dock pilings (as described in Appendix F). In several cases, these wood coring samples were collected from the docks in areas where sediments samples were also collected as shown on Figure 4-32. PAHs were detected at high concentrations in all of the wood coring piling samples; elevated PAH concentrations were also noted in some of the sediment samples collected from the immediate vicinity of the pilings. PAH concentrations were also high in sediment samples collected near the outfall in the southeastern portion of Allen Harbor and near the docks. The outfall represents overland flow from parking areas and hence does not represent Site 16 chemical releases. However, all stormwater sewer systems are subject to inflow and infiltration from surface water run-off and shallow groundwater. It is also true that there is likely an exchange of waters/material between all such systems and the surrounding shallow soils and groundwater. It should be noted that the Site 16 stormwater system does not extend to the PAH source areas that exist within the North Central area. Additionally, the lack of significant volatile organic contamination in the deep surface waters and sediments of Allen

Harbor and in sediment materials collected from within the system during the Phase III RI suggests that the stormwater sewer system is not *currently* acting as a significant transport pathway for the primary contaminants in the Site 16 groundwater (i.e., the volatile organic chemicals). (It is plausible that his pathway may have been more significant in the past.) (Standard PAH data for pavement samples collected from paved areas adjoining the Site 16 area are included in Table 4-72 and discussed in Appendix F.)

Concentrations of PAHs in the sediment samples exceeded both the human health and ecological screening criteria. Multiple sources contribute to the PAH contamination in the Allen Harbor sediments. Consequently, a significant amount of variability in PAH concentrations was expected and was noted in the sediment samples collected from the Harbor (i.e., a wide-range of concentrations was detected). However, no particular concentration pattern or gradient was observed whereby samples along the shoreline demonstrated high concentrations versus samples collected distal from the shoreline. This analysis is consistent with the assessment presented in the Appendix F, the Supplemental Forensics Report.

One sediment sample (SOURCE4-1) was collected from the storm water catch basin located across from Allens Harbor Road (Figure 4-32) that discharges into the southeastern corner of Allen Harbor and was analyzed for PAHs. Table 4-62 presents the analytical results for this sample. Total PAHs were detected at a concentration of 6,796 µg/kg, which is at the lower end of the range of PAHs detected in Allen Harbor sediments. This sample was also submitted for environmental forensics analysis which was performed as part of the ecological risk assessment (EA, August 2004). The hydrocarbon signatures of chemicals in this sample matched those in samples AH-49 and AH-28 from Allen Harbor located close to the drains from Allens Harbor Road. This indicates that runoff from the road and parking lot is contributing to the sediment contamination observed in Allen Harbor. These contaminants tend to accumulate over time, so the apparent impact would be expected to increase with time. At some point in time, however, the sediment concentrations may no longer increase and a steady state may be established whereby the additional contamination from the runoff no longer contributes to increased sediment contaminant concentrations because an equal amount of contamination is being degraded or washing away. (An updated interpretation of the 2004 forensic PAH data is provided in provided in Appendix F.)

4.3.5 Semivolatile Organic Compounds in Sheen

The sample of the sheen at the southwest corner of Allen Harbor collected using a net as described in Section 2 [SP16-AH-01-SHEEN, (sample date - August 27, 2007)] was collected to support the supplemental Phase III forensics analysis; an interpretation of the PAH data for that sample is provided in Appendix F. (Elevated PAH concentrations were detected in the forensics sample.) However, a second sample of the floating sheen material at the southwest was collected using a wide-mouth, one liter bottle

on April 17, 2008 and was analyzed for SVOCs (including PAHs). Target analyte SVOCs were not detected in the April 17, 2008 sample. The reporting limit for the standard EPA PAHs was approximately 1.0 µg/L. As a point of reference, the current SDWA MCL for benzo(a)pyrene is 0.2 µg/L. This is a conservative reference point for the sheen material. Based on observations during the Phase III field investigation, the sheen is intermittent in nature. Additionally, the surface waters of Allen Harbor are not used for drinking water purposes; direct human exposure to the sheen material is expected to be limited in nature.

4.4 PESTICIDES/PCBS

4.4.1 Pesticides/PCBs in Soils

4.4.1.1 Undeveloped Area

Pesticides/PCBs were detected very infrequently in surface and subsurface soil samples in the undeveloped area. 4,4'-DDD (6.8 J µg/kg), 4,4'-DDT (3.7 µg/kg), alpha-BHC (2.4 J µg/kg), gamma-chlordane (2.9 J µg/kg), and Aroclor-1260 (19 µg/kg) were detected in only one surface soil sample, although the detections were not all in the same sample (Table 4-23 and 4-24). 4,4'-DDD (4.1 J µg/kg), Aroclor-1254 (120 J µg/kg), endosulfan II (5 J µg/kg), endrin ketone (7.9 µg/kg), and gamma-chlordane (8.9 J) were detected in only one shallow subsurface soil sample, although not all in the same sample (Tables 4-25 and 4-26). 4,4'-DDT and endrin aldehyde were detected in three shallow subsurface soil samples, and Aroclor-1260 was detected in two shallow subsurface soil samples. Pesticides/PCBs were not detected in subsurface soil samples collected deeper than 25 feet bgs.

Detected concentrations of all pesticides/PCBs were less than direct contact human health screening criteria in all soil samples from the undeveloped area. Detected concentrations of gamma-chlordane in one surface soil sample (SB16-21) exceeded the ecological screening criteria. Concentrations of alpha-BHC in one surface soil sample (SB16-28) exceeded the screening criteria for the protection of migration of chemicals from soil to groundwater. Elevated concentrations of SVOCs (especially PAHs) were also noted at these locations. The origin of the pesticides is unknown. However, the concentrations detected may reflect the routine, non-site related application of pesticides in the general vicinity of Site 16. It is also plausible that empty waste pesticide containers were occasionally interred amongst the fill materials noted in the North Central area of Site 16. Again, the available soil and groundwater data do not suggest this potential activity contributed significant pesticide/PCB concentrations to the environment.

Based on the low concentrations and low frequencies at which these chemicals were detected, they are not considered to be significant site-related contaminants.

4.4.1.2 Developed Area

Pesticides/PCBs were detected very infrequently in surface soil samples in the developed area. Alpha-chlordane (29 J µg/kg), and endrin aldehyde (38 J µg/kg) were detected in only one surface soil sample, although the detections were not all in the same sample (Table 4-27 and 4-28). Gamma-chlordane was detected in only two surface soil samples (8.8 J µg/kg and 31 µg/kg). Pesticides/PCBs were not detected in any subsurface soil sample collected in the developed area.

Detected concentrations of all pesticides/PCBs were less than direct contact human health screening criteria in all soil samples from the developed area. The detected concentrations of alpha-chlordane, endrin aldehyde, and gamma-chlordane exceeded the ecological screening criteria. As noted above, the origin of the pesticides in the Site 16 soils is unknown. However, the concentrations detected may simply reflect the routine, non-site related application of pesticides in the general vicinity of the area.

Based on the low concentrations and low frequencies at which these pesticides/PCBs were detected, they are not considered to be significant site-related contaminants.

4.4.2 <u>Pesticides/PCBs in Groundwater</u>

Groundwater samples collected during the 2004 and 2007 round of groundwater sampling were not analyzed for pesticides/PCBs. The following discussion is based on the previously collected groundwater samples. All analytical data are presented in Appendix A. Additionally, select tables and figures from the Phase I and Phase II RI reports, which display positive detections for select chemicals, are presented in Appendix A.

4.4.2.1 Shallow Overburden Groundwater Zone

Table 4-41 presents summary statistics for pre-2004 groundwater samples collected from the shallow overburden zone. This table also includes comparisons to groundwater screening criteria. 4,4'-DDD, 4,4'-DDT, gamma-BHC, and heptachlor epoxide were the only pesticides detected in shallow overburden groundwater samples. PCBs were not detected. 4,4'-DDD (0.0049 µg/L) and 4,4'-DDT (0.0063 µg/L) were detected in 1 of 21 samples (28-GW02 in 1998). Gamma-BHC (0.0019 µg/L and 0.0049 µg/L) and heptachlor epoxide (0.0025 µg/L and 0.06 µg/L) were detected in 2 of 21 samples. The concentration of heptachlor epoxide in one well (28-GW02, 1998) exceeded the ORNL RSL but was less than the EPA MCL.

Based on the low frequencies of detection and low detected concentrations, the pesticide contamination in shallow overburden groundwater is not considered to be significant. The available site history

(i.e., pesticides/PCBs were not significant process-related chemicals for Site 16 activities), the preceding nature and extent of contamination information reported for Site 16 soils, and the chemical/physical properties of these chemicals (i.e., in contrast to CVOCs, pesticides/PCBs do not readily migrate to and in groundwater) also support this conclusion.

4.4.2.2 Intermediate Overburden Groundwater Zone

Table 4-44 presents summary statistics for pre-2004 groundwater samples collected from the intermediate overburden zone and analyzed for pesticides/PCBs. This table also includes comparisons to groundwater screening criteria. 4,4'-DDD, alpha-BHC, endrin aldehyde, gamma-BHC, and heptachlor epoxide were the only pesticides detected in intermediate overburden groundwater samples. PCBs were not detected. 4,4'-DDD (0.0037 J µg/L), alpha-BHC (0.0073 µg/L), endrin aldehyde (0.0062 J µg/L), and gamma-BHC (0.001 J µg/L) were only detected in one groundwater sample. Heptachlor epoxide was detected in 3 of 14 groundwater samples at estimated concentrations ranging from 0.0013 µg/L to 0.0034 µg/L. Concentrations of all pesticides/PCBs were less than screening criteria.

Based on the low frequency of detection and low detected concentrations (no concentrations exceeding screening criteria), the pesticide contamination in intermediate overburden groundwater is not considered to be significant.

4.4.2.3 Deep Overburden Groundwater Zone

Table 4-47 presents summary statistics for pre-2004 groundwater samples collected from the deep overburden zone. This table also includes comparisons to groundwater screening criteria. Beta-BHC was the only pesticide detected in groundwater samples from the deep overburden groundwater zone. No PCBs were detected. Beta-BHC was detected in 1 of 41 samples (MW16-07D) at a concentration of 0.01 µg/L, which is less than the screening criteria.

Based on the low frequencies of detection and the low detected concentrations, the low levels of pesticide contamination (not exceeding screening criteria) in the deep overburden groundwater are not considered to be significant at Site 16.

4.4.2.4 Shallow Bedrock Groundwater Zone

Table 4-50 presents summary descriptive statistics for chemicals detected in pre-2004 groundwater samples collected from the shallow bedrock zone and analyzed for pesticides/PCBs. This table also includes comparisons to groundwater screening criteria. Gamma-chlordane was the only pesticide detected in groundwater samples from the shallow bedrock groundwater zone. PCBs were not detected.

Gamma-chlordane was detected in one of seven samples (MW16-02R) at an estimated concentration of 0.004 µg/L, which is less than the screening criteria presented in Table 4-50.

Based on the low frequencies of detection and the low detected concentrations, the low levels of pesticide contamination (not exceeding screening criteria) in the shallow bedrock groundwater are not considered to be significant at Site 16.

4.4.2.5 Deep Bedrock Groundwater Zone

Groundwater samples collected from deep bedrock monitoring wells were not analyzed for pesticides/PCBs. Based on the low-level pesticide detections reported for the overburden and shallow bedrock groundwater samples and the soil samples, significant pesticide contamination is not expected in the deep bedrock groundwater zone.

4.4.3 Pesticides/PCBs in Seeps

The 2007 sample of the seep at the southwest corner of Allen Harbor was collected to support the aforementioned forensics study and was not analyzed for pesticides/PCBs. The following discussion is based on the previously collected seep samples.

Alpha-BHC was detected at SEEP16-01 at a concentration that exceeded the ORNL screening criteria. Dieldrin, endrin, and heptachlor epoxide were detected at 28-SP-01. Concentrations of dieldrin and heptachlor epoxide exceeded ORNL RSLs, and concentrations of dieldrin, endrin, and heptachlor epoxide exceeded ecological criteria. However, as noted below, pesticides and PCBs were not detected in the sediment sample collected from the southwest seep location on December 19, 2007. Additionally, as noted above, the pesticide and PCB concentrations noted in groundwater and soil samples are not remarkable. However, as summarized on Table 6-23, alpha-BHC, dieldrin, and heptaclor epoxide were retained as chemicals of potential concern for the human health risk assessment and were evaluated in the risk analysis.

4.4.4 Pesticides/PCBs in Sediments

The vast majority of sediment samples collected in 2007 were intended to support the aforementioned forensics analysis (Appendix F). However, one sediment sample was collected at the seep location at the southwest corner of Allen Harbor in 2007 and analyzed for pesticides/PCBs. None of the target analytes were detected in this December 19, 2007 sediment sample. Consequently, the following discussion is based on the previously collected sediment samples most of which were are available as a result of sampling conducted in support of the 2004 Phase II SLERA.

Pesticides were detected sporadically and at low concentrations in sediment samples. Detected pesticide concentrations ranged from 0.45 J µg/kg (heptachlor, SED16-01, located in the southwestern corner of Allen Harbor) to 8.1 µg/kg (dieldrin, AH-28, located on the eastern side of Allen Harbor) (see locations provided on Figure 4-30). Some pesticides concentrations as high as 9.6 µg/kg were rejected (most rejected values were less than approximately 3 µg/kg). 4,4'-DDD, 4,4'-DDE, and gamma-chlordane were the most frequently detected pesticides. Other pesticides were detected in four or fewer samples. Concentrations of pesticides were less than human health screening criteria but exceeded ecological screening criteria. However, as discussed in the Phase II SLERA, the low levels are indicative of a limited ecological impact. Site 16 or adjacent areas are likely to have been a contributor to the observed pesticide levels because use of these chemicals in Allen Harbor waters would be unusual. The observed low concentrations, however, would also be consistent with widespread legal use of these chemicals followed by migration in overland runoff. There is no spatial pattern to suggest otherwise.

Aroclor-1260 was the only PCB detected in sediment samples. Aroclor-1260 was detected in 19 of 23 samples at concentrations ranging from 16 µg/kg (AH-45), located in the southern central shoreline of Allen Harbor) to 70 µg/kg (AH-23, located at the marina docks). Concentrations of Aroclor-1260 were highest in samples collected near the docks in Allen Harbor. Concentrations of Aroclor-1260 were less than human health screening criteria but exceeded ecological screening criteria. However, the spatial distribution patterns suggest that the PCBs have sources other than Site 16, and, based on the results of the SLERA, PCBs evidently pose little risk to ecological receptors (EA, November 2004). PCBs were not Site 16-related contaminants in soil, which would be a source of contamination in overland runoff. PCBs are also extremely insoluble in water and therefore were not detected in, nor are they expected to be transported in, groundwater. However, it should be noted that the lower chlorinated congeners of PCBs are more soluble in water than the higher chlorinated congeners. Additionally, while PCBs (as a group) are considerably less soluble in groundwater than the primary site contaminants (i.e., the CVOCs), PCBs have been detected in groundwater samples collected during environmental sampling at other sites investigated by the Navy. Sometimes the migration of PCBs (from soils to groundwater and within the groundwater aquifer) is even promoted by the presence of solvent contamination in soils/groundwater. PCBs were not detected in groundwater samples collected during the Phase II RI for Site 16.

4.4.5 Pesticides/PCBs in the Sheen Sample

The sample of the sheen at the southwest corner of Allen Harbor collected using a net as described in Section 2 [SP16-AH-01-SHEEN (sample date - August 27, 2007)] was collected to support the forensics analysis and was not analyzed for pesticides/PCBs. However, a second sample of the floating sheen material at the southwest corner of Allen Harbor was collected using a wide-mouth, one liter bottle on

April 17, 2008 and was analyzed for pesticides/PCBs. The following low-level pesticide concentrations (less than 1 µg/L) were detected:

Chemical	Reported Concentration (µg/L)	AWQC (Ecological Receptors Marine) (µg/L)	AWQC (Human Receptors) (µg/L)
Alpha-BHC	0.72	NA	0.0026, 0.0049
Beta-BHC	0.62	NA	0.0091, 0.017
Delta-BHC	0.15	NA	N/A
Gamma-BHC (Lindane)	0.11	NA	0.98, 1.8
Endrin ketone	0.13	NA	NA

NA - Not available

These concentrations are approximately an order of magnitude greater than the concentrations typically reported for pesticides in the actual southwest corner seep samples (i.e., actual seep/surface water) discussed in Section 4.4.3. The concentrations noted may reflect an affinity/concentration of these organics with organic materials (anthropogenic or naturally occurring). No PCBs were detected in the sheen sample collected August 27, 2007. As points of reference, the current SDWA MCLs for gamma lindane and endrin are 0.2 µg/L and 2 µg/L, respectively. The preceding table also compares detected concentrations to available AWQC for ecological receptors and human receptors. It should be noted that the AWQC assume that a receptor is exposed to contaminants in surface water, not necessarily in a sheen floating atop the surface water.

4.5 DIOXINS

4.5.1 Dioxin/Furans in Soils

Dioxin/furans were detected in all surface soil and shallow subsurface soil samples in which they were analyzed. The available dioxin/furan data set consists of surface and subsurface soil samples collected from eight soil boring locations (28-SB-08, 28-SB-09, SB16-22, SB16-24, SB16-25, SB16-26, SB16-27, and SB16-28) and subsurface soil samples collected from three Phase III exploratory test pit locations (ETP-2, ETP-4, and ETP-6). The Phase III ETP locations were selected for dioxin/furan analysis in consultation with the EPA Region I/RIDEM during the TRIAD teleconferences described in Section 2.

Dioxins/furans are often detected in surface soil as a result of general anthropogenic activity (ATSDR, 1997). For example, the arithmetic mean 2,3,7,8-TCDD equivalent concentrations in soil samples representing background conditions in the United States is estimated to be 8 nanograms per kilogram (ng/kg) (ATSDR, 1997). Anthropogenic sources generally add to surface soil concentrations but not to subsurface concentrations because dioxins and furans do not move easily into deeper soils. In areas

such as the former FFTA (or filled areas in the North Central area), where soils were reworked periodically, dioxins and furans as well as other chemicals may have been turned into deeper soils during the reworking. A potential source of the dioxins is the burning associated with the former FFTA. At the June 2006 BCT/RAB meeting, a retired Seabee indicated that the accelerant of choice during fire protection training exercises was diesel fuel. However, spent solvents (or other sources of chlorine that would be required to generate dioxins) may or may not have also been applied to fires generated during a fire training exercise. The frequency of such activity is unknown. Significant levels of TCE (greater than 500 µg/L) have been detected in groundwater underlying the fire training area and in the shallow subsurface soils of the aforementioned BTEX hot-spot area indicating that chlorinated solvents (chlorine contributors) may have been released in these areas. The observed dioxin contamination is likely to be a mixture of Site 16 operational and other anthropogenic dioxin sources. It would be difficult if not impossible to apportion the relative contributions from the various sources, even with extensive study.

Total dioxin and furan concentrations at Site 16 (expressed as 2,3,7,8-TCDD equivalents) ranged from 1.19 ng/kg to 48.5 ng/kg (SB16-25) in surface soil and from 0.41 ng/kg to 505 ng/kg (SB16-28, 4 to 6 feet) in shallow subsurface soil. Dioxin/furan concentrations were generally greater in surface soil than shallow subsurface soil except in samples from SB16-23 (304 ng/kg, 3 to 5 feet) and SB16-28. SB16-23 is located in the former FFTA, and SB16-28 is located in an area where a fuel oil-like odor was noted during the MIP screening activity (MIP16-07) conducted during Stage 1 of the Phase I RI. As noted previously, this area is also referred as the BTEX “hot-spot” area.

Concentrations of dioxins/furans in five surface soil samples and six shallow subsurface soil samples exceeded direct contact human health screening criteria. Concentrations of dioxins/furans in one surface soil sample and two shallow subsurface soil samples exceeded the screening criteria for inhalation of fugitive dust emissions. Concentrations of dioxin/furans in three surface soil samples and five shallow subsurface soil samples exceeded the screening criteria for protection of migration of chemicals from soil to groundwater. Concentrations of dioxins in three surface soil samples and five shallow subsurface soil samples exceed the mean background concentration for the United States (referenced above).

Although the extent of the dioxin contamination is not completely delineated laterally or vertically with reference to the aforementioned screening criteria, the samples with dioxin/furan concentrations greater than the mean background concentration for the United States are associated only with the FFTA, the wooden bermed structure, and the general vicinity of the BTEX hot-spot area. In addition, it should be noted that none of the dioxin/furan concentrations reported for Site 16 soils exceed the EPA goal of 1 µg/kg (expressed as 2,3,7,8-TCDD equivalents) presented in Office of Solid Waste and Emergency Response (OSWER) Directive 9200.4-26 (EPA, April 1998). This limit is generally used by EPA as a starting point for setting cleanup levels for sites evaluated assuming a residential land use scenario.

Because of this, dioxins and furans are not discussed further in Section 4 and are considered to be satisfactorily delineated relative to the 1 µg/kg cleanup level. Although the EPA goal of 1 µg/kg was not exceeded, dioxins/furans were selected as chemicals of potential concern and evaluated in the human health risk assessment presented in Section 6.0.

4.6 METALS

4.6.1 Metals in Soils

As expected, metals were detected in all soil samples. Metals are naturally occurring and are present in varying concentrations in uncontaminated soils. Some metals such as aluminum, calcium, iron, magnesium, and manganese are major components (tens or hundreds to thousands of mg/kg for manganese, and thousands to tens of thousands of mg/kg for aluminum, calcium, magnesium, and iron) of most soils. Other metals such as potassium, cobalt, nickel, titanium, vanadium, and zinc are lesser components (tens to hundreds and sometimes thousands of mg/kg). Metals such as mercury, silver, and tin are not often detected in uncontaminated soils or are found at detection limit levels when they are detected (typically less than 1 mg/kg).

Metals concentrations detected in the surface and subsurface soils of the undeveloped (North Central area) and the developed areas of Site 16 were evaluated by:

- Inspection of simple scatter-plots of the metals concentrations to determine if there were obvious outliers/subsets within the datasets that may be indicative of contamination. These scatter-plots are presented in Appendix D.1.

- Comparison of metals concentrations to background soil concentrations for other areas of NCBC Davisville, background soil concentrations reported for other Navy bases in the New England area (NAS South Weymouth, NAVSTA Newport), and the range of background soil concentrations reported for the eastern United States. The comparisons are presented in Appendix D.1. The comparisons are made because there is currently no Site 16-specific background soil dataset. The Navy may develop such a data set if it is determined that accurate Site 16-specific background values are necessary for risk-management decisions for Site 16.

- Comparison of Site 16 data to relevant screening criteria.

Undeveloped (North Central) Area

While metals concentrations clearly in excess of the background reference values and screening levels presented in Appendix D.1 are not prevalent across Site 16, metals concentrations at several locations in the North Central area are noteworthy. For example, the maximum concentrations of antimony, barium, cadmium, copper, lead, and/or zinc in surface and/or subsurface soils at locations SB16-28, SB16-50, TP16-ETP2, TP-ETP4, and TP-ETP6 exceed most (if not all) of the background reference values presented in Appendix D.1. Most of these locations (as well as others that tend to demonstrate the higher metals concentrations reported for Site 16 soils) are in the northwest quadrant of the North Central area (the general vicinity of the creosote dip tank and BTEX hot spot area) and in the former fire fighting training area. Location SB16-28 is in an area where a fuel oil-like odor was noted during the MIP screening activity (MIP16-07) conducted during Stage 1 of the Phase I RI. Notable metals concentrations are lead (2,650 mg/kg), barium (1,100 mg/kg), cadmium (2.4, mg/kg), chromium (67 mg/kg), copper (452 mg/kg), and zinc (1,610 mg/kg) in SB16-28-NS0-062700-04. Boring SB16-50 was advanced to the northeast of the creosote dip tank area. The maximum surface soil concentration for most metals was reported for this location. Notable metals concentrations are antimony (17.9 mg/kg), arsenic (32.3 mg/kg), barium (229 mg/kg), cadmium (4.4 mg/kg), copper (143 mg/kg), lead (424 mg/kg), and zinc (616 mg/kg). Significant BTEX contamination and PAH contamination was detected in TP16-ETP2. Notable metals concentrations are antimony (22.3 mg/kg), barium (416 mg/kg), lead (636 mg/kg), and zinc (639 mg/kg). Debris/fill material was observed in TP16-ETP2, -ETP4, and -ETP6. Metals concentrations in all of the exploratory test pits excavated in the North Central area tend to be elevated when compared to soil concentrations throughout most of the undeveloped area.

Otherwise, there is no discernable, strong concentration pattern for inorganics in the soils of the North Central area. A discernible pattern would consist of, for example, an area of high metals concentration surrounded by decreasing concentrations trending toward background concentration levels as the distance from the highest levels increases. When concentrations patterns do not exist, it is typically an indication of background concentration levels or an area of wide contamination such as might have occurred as a result of areal releases (e.g., from combustion or crop dusting). Site history suggests that crop dusting would not have occurred at Site 16; combustion could be a very minor but probably insignificant release mechanism for metals. Some metals could be associated with waste engine oils or leaded gasoline, but the volume of waste engine oils that might have been released is probably small, based on site history.

Although several metals were detected in the North Central area soils at concentrations exceeding background reference values, only arsenic and lead were detected at concentrations exceeding the RIDEM industrial direct contact criteria and the ORNL residential and industrial RSLs. Antimony, arsenic, beryllium, lead, and manganese concentrations exceed the RIDEM residential direct contact criteria.

However, relatively few values actually exceed both the screening levels and the background reference values. Lead was the most notable site-related inorganic detected in the soils. The maximum detected lead concentration of 2,650 mg/kg occurred at SB16-28 (4 to 6 feet bgs). The second highest lead concentration of 636 mg/kg was observed at TP16-ETP2 (8 to 9 feet bgs). Lead concentrations in the remaining samples were less than 450 mg/kg. The elevated lead concentrations could be evidence of a past release of, for example, leaded gasoline. However, the limited extent of lead contamination potentially associated with the single highest concentration is considered to be insignificant because exposures to soil generally occur as a result of receptor movement over or through an area or volume. This exposure mechanism effectively results in an averaging of exposure concentrations across the area or volume to yield an exposure concentration for the entire area or home range. Furthermore, lead is notably recalcitrant to movement into groundwater from soils because it binds tightly to the soils under a wide array of soil conditions (Dragun, 1988). Furthermore, the limited area associated with the elevated lead concentrations is not likely to result in elevated groundwater lead concentrations.

Concentrations of aluminum, antimony, arsenic, cadmium, cobalt, copper, lead, manganese, mercury, selenium, thallium, and vanadium were detected in soils at concentrations exceeding the conservative ecological screening levels or the screening criteria for the protection of chemical migration from soil to groundwater. However, as indicated in Appendix D.1, the detected aluminum, beryllium, and vanadium concentrations likely reflect background conditions. Based on comparisons of detected concentrations to literature values reported for the eastern United States, the cobalt, manganese, mercury, selenium, and thallium concentrations may also reflect background values. Again, relatively few metals concentrations exceed both screening levels and background reference values suggesting that the extent of metals contamination in the undeveloped North Central area is somewhat limited.

Developed Area

Based on the comparisons presented in Appendix D.1, the metals concentrations in the developed area generally appear to reflect background conditions. In contrast to some of detections reported for soils collected from the undeveloped (North Central) area, there are few distinct exceedances of background concentrations. However, concentrations of arsenic, beryllium, and manganese exceeded direct contact human health screening criteria. Copper, lead, manganese, selenium, thallium, vanadium, and zinc were detected in surface soils at concentrations exceeding ecological screening level. Concentrations of aluminum and cobalt in both surface and subsurface soils exceeded screening criteria for the protection of chemical migration from soil to groundwater. It should be noted that only beryllium and manganese (one exceedance only) concentrations exceeded RIDEM residential direct contact criteria. None of the reported metals concentrations exceeded RIDEM industrial direct contact screening criteria. Concentrations of beryllium were less than the ORNL residential RSL but exceeded the RIDEM residential direct contact screening criterion. The RIDEM direct contact criterion for beryllium (0.4 mg/kg)

is based on carcinogenic effects; however, the EPA currently classifies beryllium as a carcinogen for the inhalation route of exposure only. As a "rule of thumb" naturally occurring beryllium concentrations do not often exceed 1 mg/kg, and the maximum observed beryllium concentration of 1.3 mg/kg only marginally exceeded this "rule of thumb." The background comparisons (Appendix D.1) suggest that reported aluminum, arsenic, lead, and vanadium concentrations most likely reflect background concentrations. The beryllium, copper, cobalt, manganese, and thallium are clearly within the range of background concentrations reported in the open literature. The single metal that was potentially used in large quantities in this area of Site 16 would be manganese, which is a component of Phospholene, a manganesed phosphoric acid, used in former Building 41.

Summary

In contrast to the VOC and PAH contamination described above, metals are not significant environmental contaminants in soils at Site 16. However, several metals (e.g., lead) were detected in soil samples collected from locations particularly in the undeveloped North Central at concentrations clearly exceeding background concentrations. The elevated concentrations detected are likely a consequence of the fill operations that occurred throughout much of the North Central area, the wide-spread, historic use of fuels through out Site 16, and/or possibly the disposal/ignition of a wide variety of materials during the fire fighting exercises. The limited number of detections exceeding both reference background values and screening criteria (as well as the magnitude of those exceedances) indicate that the impact to the environment has been relatively minor.

4.6.2 Metals in Groundwater

The following subsections provide a discussion of the nature and extent of metals in the groundwater at Site 16. As a point of comparison, the metals concentrations detected are compared to base-wide background groundwater concentrations. Additionally, the site groundwater data sets are compared to: (1) the base-wide groundwater data set, and (2) data for upgradient wells at Site 16 using the statistical methodology presented in Appendix D.1. It should be noted the sample turbidity and salinity impacted the utility of the statistical analyses presented in Appendix D.1. Consequently, the results of the analyses are not highlighted in this section. The complete analysis is presented in Appendix D.1 and referenced in the human health risk assessment (Section 6).

4.6.2.1 Shallow Overburden Groundwater Zone

Tables 4-31 and 4-32 present the analytical results for chemicals detected during the 2004 and 2007 rounds of groundwater sampling. Tables 4-41, 4-42, and 4-43 present summary descriptive statistics for pre-2004, 2004, and 2007 groundwater samples, respectively, collected from the shallow overburden

zone. These tables also include comparisons to groundwater screening criteria. The following discussion focuses on the metals data collected in 2004 and 2007.

EPA TAL metals were detected in groundwater samples collected from all monitoring wells throughout the shallow overburden groundwater zone. Total and dissolved concentrations were generally comparable for most metals, except that average aluminum concentration in unfiltered samples was significantly greater than average concentration reported for the filtered samples. Arsenic, barium, calcium, cobalt, iron, magnesium, manganese, nickel, potassium, sodium, and zinc were detected in unfiltered samples at concentrations exceeding base-wide background levels in background samples. However, of the more toxic metals, arsenic, barium, and zinc only were detected in filtered samples at concentrations exceeding base-wide background levels. The most notable exceedances of background arsenic levels are for the wells located in the immediate vicinity of the former fire fighting training area.

Arsenic, cobalt, iron, and manganese concentrations detected in both unfiltered and filtered groundwater samples exceeded ORNL RSLs. Additionally, arsenic concentrations reported for both unfiltered ($C_{maximum}$ = 19.8 µg/L) and filtered ($C_{maximum}$ = 27.4 µg/L) samples collected from six wells (MW16-41S, MW16-43S, MW16-44S, MW16-45S, MW16-46S, and MW16-48S) located in the North Central area of Site 16 approached or exceeded the EPA primary MCL. Evidence of fuel contamination (e.g., BTEX, PAHs) has been detected in this portion of Site 16. This contamination may induce reducing conditions in soil/groundwater by serving as a food source for the microbes that cause such conditions. Reducing conditions can cause metals such as arsenic, iron, and manganese to mobilize. As noted above in the discussion of the metals concentrations in soils, there is limited evidence that arsenic may be sporadically present in the soils of the North Central area at concentrations exceeding background soil concentrations.

4.6.2.2 Intermediate Overburden Groundwater Zone

Tables 4-33 and 4-34 presents the analytical results for chemicals detected during the 2004 and 2007 rounds of groundwater sampling. Tables 4-44, Table 4-45, and 4-46 present summary descriptive statistics for pre-2004, 2004, and 2007 groundwater samples, respectively, collected from the intermediate overburden zone. These tables also include comparisons to groundwater screening criteria. The following discussion focuses on the metals data collected in 2004 and 2007.

EPA TAL metals were detected in groundwater samples collected from all monitoring wells in the intermediate overburden groundwater zone. The sample-specific data/descriptive statistics presented in the aforementioned tables indicate that metals concentrations reported for unfiltered samples were significantly higher than metals concentrations reported for filtered samples in many of the monitoring wells tested. Turbidity levels were also elevated in the monitoring wells in which unfiltered metals concentrations were significantly higher than filtered metals concentrations. The elevated turbidity levels

indicate that the metals concentrations detected in the unfiltered samples are due, in part, to the presence of suspended solids in the groundwater sample. With the exception of thallium, concentrations of all metals in unfiltered samples exceeded base-wide and site-specific background levels. While several metals were also detected in filtered groundwater samples at concentrations exceeding base-wide site-specific background levels, the magnitude of the exceedances is typically less than that observed for the unfiltered samples. Concentrations of metals in samples from the intermediate overburden groundwater zone exceeded those detected in samples from the shallow overburden groundwater zone.

Aluminum, arsenic, chromium, cobalt, iron, manganese, and vanadium concentrations reported for unfiltered samples and arsenic, cobalt, iron, and manganese concentrations reported for filtered samples exceeded ORNL RSLs. Additionally, arsenic, beryllium, cadmium, chromium, nickel, and lead concentrations reported for unfiltered samples, and arsenic and antimony concentrations reported for filtered samples exceeded EPA MCLs and/or RIDEM GA groundwater objectives. Most of the exceedances of EPA MCLs and RIDEM GA groundwater objectives occurred in monitoring wells located northeast/east of former Building 41 area (MW16-64I, MW16-59I, MW16-22I, MW16-21I, MW16-61I, MW16-38I, MW16-16I, and MW16-37I) or in the North Central area of Site 16 (MW16-46I, MW16-45I, MW-16-42I, and MW16-58I). However, a review of sample-specific data indicates that metals concentrations reported for unfiltered samples collected from wells northeast/east of the former Building 41 area are likely the result, in part, of sample turbidity; few exceedances of criteria are noted in filtered sample results from these wells. Metals concentrations noted in the unfiltered samples from the new monitoring wells installed at the extremes of the eastern arm of the TCE plume were also impacted by sample turbidity ($C_{maximum}$ for lead = 33 µg/L). In contrast, the elevated arsenic concentrations ($C_{maximum}$ = 56.8 µg/L) reported for filtered samples (2004 data) collected in some wells located in the North Central area of Site 16 (MW16-46I, MW-16-42I) may be the result of reducing conditions as described above for the shallow overburden zone. The antimony concentration reported for the 2007 sample from MW16-58I is also noteworthy (9.2 µg/L versus an EPA MCL of 6 µg/L).

4.6.2.3 Deep Overburden Groundwater Zone

Tables 4-35 and 4-36 present the analytical results for chemicals detected during the 2004 and 2007 rounds of groundwater sampling. Tables 4-47, 4-48, and 4-49 present summary descriptive statistics for pre-2004, 2004, and 2007 groundwater samples, respectively, from the deep overburden zone. These tables also include comparisons to groundwater screening criteria. The following discussion focuses on the metals data collected in 2004 and 2007.

Metals were detected in all groundwater samples from the deep overburden groundwater zone. The mean concentration calculated for several metals detected in unfiltered samples exceeds the mean

concentration reported for metals concentrations in filtered samples. Elevated turbidity levels were often noted for the unfiltered samples with elevated metals concentrations. This suggests that the metals concentrations detected in some of the unfiltered samples are a result, in part, of the sample turbidity. One or more of the detections reported for all metals detected in the unfiltered groundwater samples (and most of the metals detected in filtered samples) exceeded base-wide site-specific background levels. Concentrations of most metals in samples from the deep overburden groundwater zone were similar to or less than those from samples in the intermediate groundwater zone.

Aluminum, arsenic, chromium, cobalt, iron, manganese, thallium, and vanadium concentrations reported for unfiltered samples and arsenic, iron, and manganese concentrations reported for filtered samples exceeded ORNL RSLs. Antimony, arsenic, beryllium, chromium, lead, nickel, thallium, and selenium concentrations reported for unfiltered samples, and antimony, arsenic and selenium concentrations reported for filtered samples exceeded EPA MCLs and/or RIDEM GA groundwater objectives. The exceedances of EPA primary MCLs and/or RIDEM GA groundwater objectives occurred in monitoring wells scattered across Site 16. In most cases, exceedances of EPA primary MCLs and/or RIDEM GA groundwater objectives in unfiltered groundwater samples were not noted in filtered groundwater samples, indicating that the elevated metals concentrations in the unfiltered samples may be the result of sample particulates (see, for example, metals data for unfiltered and filtered samples from locations MW16-30D, -35D, -39D, -54D, -59D, -61D, and 82D). Only antimony (7.2 µg/L) from the filtered sample from MW16-58D, and arsenic (16.9 µg/L) and selenium (61 µg/L) detections reported for filtered samples collected from MW16-50D exceed EPA primary MCLs and/or RIDEM GA groundwater objectives. However, antimony was not detected in the 2007 unfiltered sample collected from MW16-58D. MW16-50D is located at the eastern Phase II RI boundary and is remote from the primary source areas under investigation at Site 16. The distribution of metals concentrations in the deep overburden zone does not suggest that the metals are present as a consequence of Site 16-related contamination. In many cases, the elevated metals concentrations are noted in wells distal from the primary Site 16 source areas.

4.6.2.4 Shallow Bedrock Groundwater Zone

Tables 4-37 and 4-38 present the analytical results for chemicals detected during the 2004 and 2007 rounds of groundwater sampling. Tables 4-50, 4-51, and 4-52 present summary descriptive statistics for pre-2004, 2004, and 2007 groundwater samples, respectively, from the shallow bedrock zone. These tables also include comparisons to groundwater screening criteria. The following discussion focuses on the metals data collected in 2004 and 2007.

TAL metals were detected in all groundwater samples from the shallow bedrock groundwater zone. In general, concentrations of total and dissolved metals were comparable for samples collected in 2004

except that the aluminum, iron, manganese, and zinc concentrations reported for unfiltered samples generally exceeded those reported for filtered samples. Sample turbidity (greater than 11000 NTU) may have impacted the 2007 metals concentrations reported for MW16-68R (e.g., lead = 52.1 µg/L). Salinity may have also impacted the metals concentrations (e.g., antimony = 64.9 µg/l) reported for the 2007 samples from MW16-51R. Antimony was not detected in the 2004 samples and was only detected in two samples collected in 2007. With the exception of cadmium, chromium, nickel, and thallium, concentrations of all metals exceeded base-wide site-specific background levels.

Unfiltered arsenic, aluminum, antimony, cobalt, iron, manganese, and vanadium, and filtered arsenic, cobalt, iron, and manganese concentrations exceeded ORNL RSLs. Unfiltered antimony, arsenic, barium, lead, and selenium, and filtered arsenic, barium, and selenium concentrations exceeded EPA MCLs and/or RIDEM GA groundwater objectives. However, the exceedances of EPA MCL and RIDEM GA groundwater objectives occurred only for monitoring wells MW-16-51R (antimony, arsenic) and MW16-52R (arsenic), which are located in the northeastern corner of the Site 16 study area (distant from the primary Site 16 source areas), in MW16-65R (arsenic, barium), which is located northwest of former Building 41, and MW16-68R (arsenic, lead) and MW16-70R (selenium) which are located in the eastern most section of the former Bldg 41. Confounding factors such as salinity and turbidity are influencing the analytical results reported for these wells. High salinity readings were reported for monitoring wells MW16-51R and -52R (the water in these wells is classified as saline). As noted above, significantly elevated turbidity levels were reported for the unfiltered 2007 sample collected from MW16-68R. The distribution of metals concentrations in the shallow bedrock zone does not suggest that the metals are present as a consequence of site-related contamination. In many cases, the elevated metals concentrations are noted in wells distal to the primary Site 16 source areas.

4.6.2.5 Deep Bedrock Groundwater Zone

Tables 4-39 and 4-40 present the analytical results for chemicals detected during the 2004 and 2007 rounds of groundwater sampling. Tables 4-53, 4-54, and 4-55 present summary descriptive statistics for pre-2004, 2004, and 2007 groundwater samples, respectively, from the deep bedrock zone. These tables also include comparisons to groundwater screening criteria.

Metals were detected in all groundwater samples collected from the deep bedrock groundwater zone. In general, total and dissolved concentrations were comparable for most metals. Concentrations of metals in samples from the deep bedrock groundwater zone were generally lower than those reported for samples collected from the shallow bedrock groundwater zone.

Concentrations of total and dissolved arsenic and manganese exceeded ORNL RSLs. However, the maximum arsenic (8.6 µg/L, MW16-05R2) and manganese (3880 µg/L, MW16-05R2) detections in

unfiltered samples were comparable to or less than background values presented in Table 4-7. The maximum concentration of arsenic in filtered samples, 10.9 µg/L (MW16-05R2), marginally exceeded the current EPA primary MCL (10 µg/L). The maximum concentration of lead in the 2007 samples (16.1 µg/L) marginally exceeded the current SDWA level for lead. Some of the elevated metals concentrations noted in the samples from monitoring well MW16-05R2 may reflect, in part, the fact that the well is located in close proximity to Allen Harbor and may be influenced by the salinity of the surface waters of the Harbor.

4.6.2.6 Summary

In contrast to the VOC contamination described above, metals are not significant environmental contaminants in the groundwater at Site 16. Several metals (most notably arsenic, iron, manganese) were detected in groundwater samples collected at concentrations clearly exceeding background concentrations and screening criteria (ORNL RSLs, EPA MCLs, RIDEM GA groundwater objectives). Confounding factors such as salinity and turbidity are influencing the analytical results reported for many of the wells and, in many cases, the elevated metals concentrations are noted in wells distal to the primary Site 16 source areas. Thus, the distribution of the chemical concentrations in the groundwater does not suggest a strong, site-related contribution. However, arsenic concentrations reported for both unfiltered and filtered samples collected from several wells located in the North Central area of Site 16 approached or exceeded the EPA primary MCL. Evidence of fuel contamination (e.g., BTEX, PAHs) has been detected in this portion of Site 16. This contamination may induce reducing conditions in soils/groundwater by serving as a food source for the microbes that cause such conditions. Reducing conditions can cause metals such as arsenic, iron, and manganese to mobilize.

4.6.3 Metals in Allen Harbor Seeps

Concentrations of total and dissolved metals were generally comparable in the seeps samples collected along the southern shoreline of Allen Harbor in 1998 and 2001 (locations 28-SP-01, OPW16-01, SEEP16-01, and SEEP16-02), although aluminum, arsenic, and beryllium were not detected in unfiltered samples (total metals) and they were detected in the filtered samples (dissolved metals). When the dissolved metals concentrations exceeded total metal concentrations, it was generally because the dissolved metals concentrations were near detection limits, at which the relative analytical uncertainty is greatest. Sample 28-SP-01 was only analyzed for dissolved metals, whereas other seep samples were analyzed for total and dissolved metals. Seeps samples collected in 2007 were not analyzed for metals because historical data (described below) indicated that metals were not significant Site 16 contaminants.

When compared to the PAH and CVOC contamination described above, metals do not appear to be significant Site 16-related contaminants based on the available groundwater and soils data. With few exceptions, the metals concentrations reported for the seep samples do not exceed the base-wide

background groundwater concentrations (see Table 4-7). Also, metals concentrations reported for groundwater samples collected from shallow wells immediately upgradient of the referenced seeps (e.g., MW16-03S, MW16-05S) are often less than those reported in the seep samples suggesting that other factors (e.g., sample turbidity) may be influencing the metals concentrations noted in the unfiltered seep samples. The current shallow groundwater and seep data do not suggest that significant metals are migrating from Site 16 source areas to Allen Harbor via a shallow groundwater-to-seep discharge pathway.

Concentrations of aluminum, barium, copper, iron, lead, and manganese in the 1998 and/or 2001 samples exceeded ecological criteria. Concentrations of arsenic, iron, and manganese exceeded ORNL RSLs. However, it should be noted that the ORNL RSLs are very conservative screening benchmarks for the metals concentrations in the seep samples. The ORNL RSLs assume daily, domestic use of a water supply (i.e., consumption of 2 liters of water per day). Whereas the referenced seeps are submerged much of the time. Thus, human exposure is anticipated to be limited to occasional dermal contact by an individual working/recreating in the vicinity of the seeps. Risk-based screening levels reflective of this type of limited exposure would be at least an order of magnitude greater than the ORNL RSLs presented on Table 4-60. The potential for human exposure to the seeps (and the associated risks) are further addressed in Section 6 (the HHRA).

4.6.4 Metals in Allen Harbor Sediments

The vast majority of the metals data for Allen Harbor sediments is available as result of environmental sampling conducted in 2004 to support the Phase II SLERA (EA, November 2004). The 2004 sampling event included:

- Eighteen sediment samples and one sediment core collected from Allen Harbor.
- One sediment sample collected from a storm water catch basin located across Allens Harbor Road (location OPSED16-01).
- Nine sediment samples collected from three reference areas: Prudence Coggeshall Cove, Little Allen Harbor, and Fishing Cove.

A small amount of data is also available as a result of sampling conducted in 2001 in support of the Phase I RI:

- Two sediment samples (locations SED16-01 and SED16-02) collected along the southern shore of Allen Harbor.

- One sediment sample (location OPSED16-01) collected adjacent to the outfall pipe that extends beneath Allens Harbor Road from the paved parking lot and discharges to Allen Harbor.

One sediment sample was also collected in December 2007 at the seep location at the southwest corner of Allen Harbor. This sample was collected to further investigate the potential migration of Site 16 contaminants (particularly the PAHs) from Site 16 source areas to Allen Harbor and to also address community concerns regarding human exposure to a "floating sheen" periodically observed at the southwest corner of the Allen Harbor (see Section 4.6.5).

Metals were detected in all Allen Harbor sediment samples. The concentrations clearly exceed those reported for the aforementioned reference locations. For example, the average reported zinc and lead concentrations in the Allen Harbor sediment samples exceed the maximum concentrations reported for the reference sample locations:

Metal	Maximum Reference Concentration (mg/kg)	Average Allen Harbor Location (mg/kg)
Lead	45.5	68.8
Zinc	119	202

The average concentrations of these metals in the Allen Harbor sediments also exceed aforementioned background reference concentrations for soils.

The maximum concentrations of 9 metals (antimony, arsenic, cobalt, iron, lead, manganese, nickel, selenium, and sodium) were reported for locations immediately adjoining the shoreline (SED16-01, -02, and OPSED16-01). Based on the metals profile for soils (described above), lead is the most clearly site-related metal detected in source area soils. The maximum concentration of six metals (beryllium, cadmium, copper, magnesium, mercury, and zinc) was reported for location AH-17. Again, based on the available soils data, cadmium, copper, and zinc are the most clearly site-related metals detected in soils. However, the following factors should be considered when interpreting this data:

- The higher metals concentrations noted in the Allen Harbor sediments (versus the reference areas sediments) are likely attributable (at least, in part) to Allen Harbor functioning as a sediment trap due to limited flow into and out of Narragansett Bay. The reference areas are not "sediment trap" areas. Thus, the concentrations are expected to be lower and not reflective of metals concentrations occurring in sheltered harbor areas such as Allen Harbor. The metals concentrations noted in the Allen Harbor sediments are similar to concentrations reported for other similar commercially/recreationally used harbor areas.

- The highest metals concentrations were generally detected in areas around the docks (AH-17, AH-29, and AH-32). This indicates that the docks (and related boat traffic) are probably contributing to the observed contamination.

- Concentrations of metals in samples collected in the vicinity of the seeps (SED16-01 and SED16-02, locations shown on Figure 4-32) were not significantly different than samples collected in Allen Harbor. A clear concentration gradient between the locations adjoining the shoreline and those more distant from the shoreline is not apparent. Such a pattern would suggest that Site 16 source areas are contributing to the contamination observed in Allen Harbor.

- Metals concentrations reported for the 2007 sediment sample collected at the seep location at the southwest corner of Allen Harbor (an obvious shallow groundwater-to-Allen-Harbor-discharge point) are elevated when compared to concentrations for the aforementioned reference locations. However, the concentrations are not remarkable when compared to Allen Harbor locations more distant from the southern shoreline of Allen Harbor.

These observations should not be interpreted as conclusive evidence that Site 16 source areas have not impacted (to some degree) the metals profile observed in the sediments. While the Site 16 North Central area is currently heavily vegetated and the current topography is not steep, past site conditions (denuded areas created during heavy equipment training/creosote/fire training operations, filling operations) may have promoted both surface water run-off to Allen Harbor and infiltration of surface waters (and contamination contained therein) to the subsurface soil strata. However, the currently available data suggest that: (1) the contribution from the Site 16 source areas has been limited (based on concentrations currently observed in Site 16 soils and groundwater data), (2) other non-site related activities have contributed to the metals concentration noted in the sediments (i.e., surface water run-off from adjoining commercial areas, contamination from boats and docking structures), and (3) the metals concentrations observed in Allen Harbor sediments are similar to those observed in other commercially used harbor areas (not influenced by Navy operations).

Concentrations of arsenic, barium, cadmium, cobalt, copper, lead, manganese, mercury, nickel, selenium, vanadium, and zinc exceeded ecological screening criteria for sediment. Concentrations of arsenic, beryllium, chromium, cobalt, iron, lead, manganese, and vanadium exceeded human health screening criteria for soil. However, as noted above, the ORNL RSLs are very conservative screening benchmarks for the metals concentrations in the sediment samples. The ORNL RSLs assume daily contact with surface soils under a residential setting. In contrast, the referenced sediments underlying Allen Harbor are always submerged and the sediments along the southern shoreline are submerged most of the time.

Thus, human exposure is anticipated to be limited to occasional dermal contact by an individual working/recreating in Allen Harbor or occasionally taking fish caught from the Harbor area. Risk-based screening levels reflective of these types of limited exposure would be at least an order of magnitude greater than the ORNL RSLs presented on Table 4-65. The potential for human exposure to the Allen Harbor sediments (and the associated risks) are further addressed in Section 6 (the HHRA).

4.6.5 Metals in the Sheen Sample

As noted above, a floating sheen is occasionally observed to accumulate the southwest corner of Allen Harbor. The sheen is most prominent in the warm weather months but has also occasionally been observed at other times of the year. In an effort to address the community concerns regarding the source and nature of the sheen, a sample of the sheen was collected by the FOL on April 18, 2008 and submitted to Mitkem for analysis. The metals concentrations reported for the sheen material are compared to benchmarks in the following table:

Chemical	Reported Concentration (µg/L)	Background Groundwater Concentration (µg/L)	ORNL RSLs for Tap Water (µg/L)
Aluminum	4,280	5,315	37,000
Antimony	4.6	6	15
Barium	88.5	80.5	7,300
Beryllium	0.5	1.3	73
Cadmium	0.11 U	3	18
Calcium	116,000	13,302	NA
Chromium	12.8	214	110
Cobalt	4.1	24.9	11
Copper	82.6	25.8	1,500
Iron	33,600	25,500	26,000
Lead	24	4.8	15
Magnesium	279,000	5,126	NA
Manganese	675	3,292	880
Mercury	0.073	0.2	11
Nickel	10.3	154	730
Potassium	113,000	3,843	NA
Selenium	7.2	2.2	180
Silver	1.2 U	1	180
Sodium	278,000	12,346	NA
Vanadium	29	24.4	180
Zinc	153	89.9	18,00

These concentrations are similar to the concentrations historically reported for seep samples collected at the southwest corner of Allen Harbor. The reported calcium, sodium, and potassium results likely reflect the salinity of the Allen Harbor surface waters. With the exception of the copper, lead, and zinc, the concentrations of the primary metals of human health concern are similar to or less than basewide background groundwater concentrations. With the exception of lead and iron, the metals concentrations noted in the sheen material do not exceed the conservative ORNL RSLs for tap water. As further detailed in Section 6 (the HHRA), the reported metals concentrations are not anticipated to present a direct contact human health risk.

4.7 TOTAL PETROLEUM HYDROCARBONS

4.7.1 Total Petroleum Hydrocarbons in Soils

4.7.1.1 Undeveloped Area

Concentrations of total petroleum hydrocarbons (TPH) ranged from 14 mg/kg to 2,200 mg/kg in surface soil samples and from 1.1 mg/kg to 13,000 mg/kg in subsurface soil from the undeveloped area (Tables 4-23 and 4-25). TPH concentrations in eight surface soil samples and three subsurface soil samples exceeded the RIDEM residential direct contact criteria. TPH concentrations in two subsurface soil samples exceeded the RIDEM industrial direct contact criteria of 2,500 mg/kg The exceedances occurred in surface soil samples from 28-SB-06 and SB16-51, which are located northeast of the former creosote dip tank area; 28-SB-11, which is located north of the wooden bermed structure; 28-SB-07, 28-SB-08, and 28-SB-09, which are located in the former FFTA area; and SB16-94 and SB16-95, which are located east of Building E-107. The exceedances in subsurface soil samples were noted in samples from SB16-58 and SB16-59, which are located in the BTEX hot spot area; and from SB16-94, which is located east of Building E-107. Concentrations of PAHs in surface soil samples from 28-SB-06, SB-28-07, SB16-94, and SB16-95 and in subsurface soil samples from SB16-58, SB16-59, and SB16-94 also exceeded the screening criteria. TPH was also detected at a concentration of 1,500 mg/kg, which exceeds the RIDEM direct contact criteria, in the test pit sample TP16-01 collected in the septic tank removal area. Concentrations of TPH in the remaining test pit and exploratory test pit samples were less than the RIDEM residential direct contact criteria.

4.7.1.2 Developed Area

Concentrations of TPH ranged from 10 mg/kg to 1,600 mg/kg in surface soil samples and from 11 mg/kg to 1,300 mg/kg in subsurface soil from the developed area (Tables 4-27 and 4-29). TPH concentrations in two surface soil samples (SB16-A2-14 and SB16-A3-12) and one subsurface soil sample (SB16-A2-05) exceeded the RIDEM residential direct contact criteria. Concentrations of TPH in all surface and subsurface soil samples were less than the RIDEM industrial direct contact criteria. Samples SB16-A2-05

and SB16-A2-14 are located in the eastern portion of the developed area. Concentrations of SVOCs in these samples were less than the screening criteria. Sample SB16-A3-12 is located adjacent to former Building 41. High concentrations of total PAHs (58,000 µg/kg) were also detected in the surface soil sample from this location.

4.7.2 Total Petroleum Hydrocarbons in Groundwater

Only groundwater samples collected in 2007 from 11 wells screened in the shallow overburden groundwater zone were analyzed for TPH. TPH was detected at low concentrations (0.093 µg/L to 2 J µg/L) in groundwater samples from three monitoring wells (MW16-45S, MW16-46S, and MW16-82S/TW16-112S) (Table 4-32). MW16-45S is located in the former FFTA area, MW16-46S is located northeast of the former FFTA area, and MW16-82S is located in the former creosote dip tank area. PAHs were also detected in samples collected from all three wells.

4.7.3 Total Petroleum Hydrocarbons in Seeps

The historical seep samples were not analyzed for TPH.

One seep sample collected at the southwest corner of Allen Harbor in 2007 was analyzed for TPH. TPH was detected in both the original and duplicate seep sample at concentrations ranging from 0.094 mg/L to 0.16 mg/L.

4.7.4 Total Petroleum Hydrocarbons in Sediments

The historical sediment samples were not analyzed for TPH. TPH was detected at concentrations in all 13 sediment samples collected in 2007 at concentrations ranging from 79 mg/kg to 4,900 mg/kg. TPH concentrations in five sediment samples exceeded the RIDEM residential direct contact criteria. TPH concentrations in one sediment sample (4,900 mg/kg – SD16-AH-16) exceeded the RIDEM industrial direct contact criteria.

4.7.5 Total Petroleum Hydrocarbons in Sheen Sample

A sheen sample was collected in the southwestern corner of Allen Harbor near the location of SP16-AH-01. TPH was detected at a concentration of 0.35 mg/L in the sheen sample.

TABLE 4-1

SCREENING CRITERIA FOR DIRECT CONTACT WITH SOIL/SEDIMENT
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 1 OF 6

CAS No.	Parameter	Units	Oak Ridge National Laboratory Regional Screening Levels[2]		RIDEM Direct Contact Criteria[3]		EPA Soil Screening Levels[1] Soil to Air		Ecological Screening Criterion
			Residential	Industrial	Residential	Industrial	Residential	Industrial	
Dioxins/Furans									
3268-87-9	1,2,3,4,6,7,8,9-OCDD	ng/kg	13000 C	53000 C	NA	NA	140,000 C[4]	260,000 C[4]	NA
39001-02-0	1,2,3,4,6,7,8,9-OCDF	ng/kg	11000 C	38000 C	NA	NA	140,000 C[4]	260,000 C[4]	NA
35822-46-9	1,2,3,4,6,7,8-HPCDD	ng/kg	390 C	1600 C	NA	NA	4,200 C[4]	7,900 C[4]	NA
67562-39-4	1,2,3,4,6,7,8-HPCDF	ng/kg	320 C	1100 C	NA	NA	4,200 C[4]	7,900 C[4]	NA
55673-89-7	1,2,3,4,7,8,9-HPCDF	ng/kg	320 C	1100 C	NA	NA	4,200 C[4]	7,900 C[4]	NA
39227-28-6	1,2,3,4,7,8-HXCDD	ng/kg	39 C	160 C	NA	NA	420 C[4]	790 C[4]	NA
70648-26-9	1,2,3,4,7,8-HXCDF	ng/kg	32 C	110 C	NA	NA	420 C[4]	790 C[4]	NA
57653-85-7	1,2,3,6,7,8-HXCDD	ng/kg	32 C	110 C	NA	NA	420 C[4]	790 C[4]	NA
57117-44-9	1,2,3,6,7,8-HXCDF	ng/kg	32 C	110 C	NA	NA	420 C[4]	790 C[4]	NA
19408-74-3	1,2,3,7,8,9-HXCDD	ng/kg	32 C	110 C	NA	NA	420 C[4]	790 C[4]	NA
72918-21-9	1,2,3,7,8,9-HXCDF	ng/kg	32 C	110 C	NA	NA	420 C[4]	790 C[4]	NA
40321-76-4	1,2,3,7,8-PECDD	ng/kg	3.9 C	16 C	NA	NA	42 C[4]	79 C[4]	NA
57117-41-6	1,2,3,7,8-PECDF	ng/kg	110 C	380 C	NA	NA	1,400 C[4]	2,600 C[4]	NA
60851-34-5	2,3,4,6,7,8-HXCDF	ng/kg	32 C	110 C	NA	NA	420 C[4]	790 C[4]	NA
57117-31-4	2,3,4,7,8-PECDF	ng/kg	11 C	38 C	NA	NA	140 C[4]	260 C[4]	NA
1746-01-6	2,3,7,8-TCDD	ng/kg	4.5 C	18 C	NA	NA	42 C	79 C	NA
51207-31-9	2,3,7,8-TCDF	ng/kg	32 C	110 C	NA	NA	420 C[4]	790 C[4]	NA
-	2,3,7,8-TCDD Equivalents	ng/kg	4.5 C	16 C	NA	NA	42 C[4]	79 C[4]	NA
37871-00-4	Total HPCDD		NA	NA	NA	NA	NA	NA	NA
38998-75-3	Total HPCDF		NA	NA	NA	NA	NA	NA	NA
34465-46-8	Total HXCDD		NA	NA	NA	NA	NA	NA	NA
55684-94-1	Total HXCDF		NA	NA	NA	NA	NA	NA	NA
36088-22-9	Total PECDD		NA	NA	NA	NA	NA	NA	NA
30402-15-4	Total PECDF		NA	NA	NA	NA	NA	NA	NA
41903-57-5	Total TCDD		NA	NA	NA	NA	NA	NA	NA
55722-27-5	Total TCDF		NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds									
79-00-5	1,1,2-Trichloroethane	ug/kg	1100 C	5,500 C	3,600	100,000	970 C	1,800 C	400 [5]
120-82-1	1,2,4-Trichlorobenzene	ug/kg	78,000 N[6]	790,000 N[7]	96,000	10,000,000	180,000 N	270,000 N	NA
75-34-3	1,1-Dichloroethane	ug/kg	3,400 C	17,000 C	920,000	10,000,000	1,200,000 N	1,700,000 sat	20 [5]
75-35-4	1,1-Dichloroethene	ug/kg	250,000 N	1,100,000 N	200	9,500	290,000 N	460,000 N	100 [5]
107-06-2	1,2-Dichloroethane	ug/kg	450 C	2200 C	900	63,000	360 C	670 C	20 [5]
106-46-7	1,4-Dichlorobenzene	ug/kg	2,600 C	13000 C	27,000	240,000	11,000,000 N	16,000,000 N	NA
78-93-3	2-Butanone	ug/kg	28,000,000 N[7]	190,000,000 N[7]	10,000,000	10,000,000	24,000,000 sat	24,000,000 sat	NA
591-78-6	2-Hexanone	ug/kg	NA	NA	NA	NA	NA	NA	NA
108-10-1	4-Methyl-2-Pentanone	ug/kg	5,300,000 N	52,000,000 N[7]	1,200,000	10,000,000	2,700,000 sat	2,700,000 sat	NA
67-64-1	Acetone	ug/kg	61,000,000 N	610,000,000 N[7]	7,800,000	10,000,000	NA	NA	NA
71-43-2	Benzene	ug/kg	1,100.00 C	5600 C	2,500	200,000	830 C	1,600 C	5,000 [8]
75-27-4	Bromodichloromethane	ug/kg	10,000.00 C	46000 C	10,000	92,000	NA	NA	NA
-	BTEX	ug/kg	NA	NA	NA	NA	NA	NA	NA
75-15-0	Carbon Disulfide	ug/kg	670,000 N[7]	3,000,000 N[7]	NA	NA	720,000 sat	720,000 sat	NA

TABLE 4-1

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PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

CAS No.	Parameter	Units	Oak Ridge National Laboratory Regional Screening Levels[2]		RIDEM Direct Contact Criteria[3]		EPA Soil Screening Levels[1] Soil to Air		Ecological Screening Criterion
			Residential	Industrial	Residential	Industrial	Residential	Industrial	
Volatile Organic Compounds (Continued)									
108-90-7	Chlorobenzene	ug/kg	310,000 N	1,500,000 N[7]	210,000	10,000,000	130,000 N	200,000 N	40 [9]
124-48-1	Chlorodibromomethane	ug/kg	5,800 C	21,000 C	7,600	68,000	470 C	890 C	NA
75-00-3	Chloroethane	ug/kg	15,000,000 N[7]	62,000,000 N[7]	NA	NA	1,200,000 sat	1,200,000 sat	NA
67-66-3	Chloroform	ug/kg	300 C	1,500 C	1,200	940,000	280 C	520 C	20 [5]
74-87-3	Chloromethane	ug/kg	1,700 C	8,400 C	NA	NA	2100 C	3,900 C	NA
156-59-2	cis-1,2-Dichloroethene	ug/kg	780,000 N	10,000,000 N[7]	630,000	10,000,000	NA	NA	200 [5]
110-82-7	Cyclohexane	ug/kg	7,200,000 N[7]	30,000,000 N[7]	NA	NA	8.51E+12 N	1.32E+13 N	
74-84-0	Ethane	ug/kg	NA	NA	NA	NA	NA	NA	NA
74-85-1	Ethene	ug/kg	NA	NA	NA	NA	NA	NA	NA
100-41-4	Ethylbenzene	ug/kg	5,700 C	29,000 C	71,000	10,000,000	400,000 sat	400,000 sat	13,000 [8]
98-82-8	Isopropylbenzene	ug/kg	2,200,000 N[7]	11,000,000 N[7]	NA	NA	850,000 sat	850,000 sat	NA
-	m+p-Xylenes	ug/kg	4,500,000 N[10]	19,000,000 N[10]	NA	NA	NA	NA	130,000 [8]
79-20-9	Methyl Acetate	ug/kg	78,000,000 N[7]	1,000,000,000 N[7]	NA	NA	NA	NA	NA
108-87-2	Methyl Cyclohexane	ug/kg	3,400,000 N[7]	14,000,000 N[7]	NA	NA	NA	NA	NA
1634-04-4	Methyl tert-Butyl Ether	ug/kg	39,000 C	190,000 C	390,000	10,000,000	8,700,000 sat	8,700,000 sat	
74-82-8	Methane	ug/kg	NA	NA	NA	NA	NA	NA	NA
75-09-2	Methylene Chloride	ug/kg	11,000 C	54,000 C	45,000	760,000	13,000 C	24,000 C	400 [5]
95-47-6	o-Xylene	ug/kg	5,300,000 N[7]	23,000,000 N[7]	NA	NA	NA	NA	130,000 [8]
100-42-5	Styrene	ug/kg	6,500,000 N[7]	38,000,000 N[7]	13,000	190,000	1,500,000 sat	1,500,000 sat	300,000 [11]
127-18-4	Tetrachloroethene	ug/kg	570 C	2,700 C	12,000	110,000	10,000 C	20,000 C	3,800 [8]
108-88-3	Toluene	ug/kg	5,000,000 N[7]	46,000,000 N[7]	190,000	10,000,000	650,000 sat	650,000 sat	200,000 [11]
540-59-0	Total 1,2-Dichloroethene	ug/kg	700,000 N	9,200,000 N[7]	630,000	10,000,000	NA	NA	200 [5]
--	Total Chlorinated VOCs	ug/kg	NA	NA	NA	NA	NA	NA	NA
1330-20-7	Total Xylenes	ug/kg	600,000 N[7]	2,600,000 N[7]	110,000	10,000,000	700,000 N[10]	1,100,000 N[10]	3,700 [8]
156-60-5	trans-1,2-Dichloroethene	ug/kg	110,000 N	500,000 N	1,100,000	10,000,000	NA	NA	200 [5]
79-01-6	Trichloroethene	ug/kg	2800 C	14,000 C	13,000	520,000	71 C	130 C	3,000 [8]
75-01-4	Vinyl Chloride	ug/kg	60 C	1,700 C	20	3,000	280 C	530 C	10 [5]
Semivolatile Organic Compounds									
92-52-4	1,1-Biphenyl	ug/kg	3,900,000 N[7]	51,000,000 N[7]	800	10,000,000	NA	NA	
95-95-4	2,4,5-Trichlorophenol	ug/kg	6,100,000 N	62,000,000 N	330,000	10,000,000	NA	NA	4,000 [11]
118-79-6	2,4,6-Tribromophenol	ug/kg	NA	NA	NA	NA	NA	NA	NA
88-06-2	2,4,6-Trichlorophenol	ug/kg	61,000 N[6]	620,000 N[6]	58,000	520,000	200,000 C	370,000 C	10,000 [9]
105-67-9	2,4-Dimethylphenol	ug/kg	1,200,000 N	12,000,000 N	1,400,000	10,000,000	NA	NA	NA
606-20-2	2,6-Dinitrotoluene	ug/kg	61,000 N	620,000 N	NA	NA	NA	NA	NA
91-57-6	2-Methylnaphthalene	ug/kg	310,000 N	4,100,000 N[7]	123,000	10,000,000	NA	NA	29,000 [12]
95-48-7	2-Methylphenol	ug/kg	3,100,000 N	31,000,000 N	NA	NA	NA	NA	50 [5]
101-55-3	4-Bromophenyl Phenyl Ether	ug/kg	NA	NA	NA	NA	NA	NA	NA
106-47-8	4-Chloroaniline	ug/kg	240,000 N	2,500,000 N	310,000	8,200,000	NA	NA	NA
7005-72-3	4-Chlorophenyl Phenyl Ether	ug/kg	NA	NA	NA	NA	NA	NA	NA
106-44-5	4-Methylphenol	ug/kg	310,000 N	3,100,000 N	NA	NA	NA	NA	50 [5]

TABLE 4-1

SCREENING CRITERIA FOR DIRECT CONTACT WITH SOIL/SEDIMENT
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

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			Residential	Industrial	Residential	Industrial	Residential	Industrial	
Semivolatile Organic Compounds (Continued)									
83-32-9	Acenaphthene	ug/kg	3,400,000 N	33,000,000 N	43,000	10,000,000	NA	NA	29,000 [12]
208-96-8	Acenaphthylene	ug/kg	3,400,000 N[13]	33,000,000 N[13]	23,000	10,000,000	NA	NA	29,000 [12]
120-12-7	Anthracene	ug/kg	17,000,000 N	170,000,000 N[14]	35,000	10,000,000	NA	NA	29,000 [12]
56-55-3	Benzo(a)anthracene	ug/kg	150 C	2,100 C	900	7,800	NA	NA	1,100 [15]
50-32-8	Benzo(a)pyrene	ug/kg	15 C	210 C	400	800	NA	NA	1,100 [15]
205-99-2	Benzo(b)fluoranthene	ug/kg	150 C	2,100 C	900	7,800	NA	NA	1,100 [15]
191-24-2	Benzo(g,h,i)perylene	ug/kg	1,700,000 N[16]	17,000,000 N[16]	800	10,000,000	NA	NA	1,100 [15]
207-08-9	Benzo(k)fluoranthene	ug/kg	1,500 C	21,000 C	900	78,000	NA	NA	1,100 [15]
117-81-7	Bis(2-Ethylhexyl)phthalate	ug/kg	35,000 C	120,000 C	46,000	410,000	NA	NA	100 [17]
85-68-7	Butyl Benzyl Phthalate	ug/kg	12,000,000 N	120,000,000 N[14]	NA	NA	NA	NA	100 [17]
86-74-8	Carbazole	ug/kg	24,000 C	86,000 C	NA	NA	NA	NA	NA
218-01-9	Chrysene	ug/kg	15,000 C	210,000 C	400	780,000	NA	NA	1,100 [15]
53-70-3	Dibenzo(a,h)anthracene	ug/kg	15 C	210 C	400	800	NA	NA	1,100 [15]
132-64-9	Dibenzofuran	ug/kg	NA	NA	NA	NA	NA	NA	NA
84-66-2	Diethyl Phthalate	ug/kg	49,000,000 N	490,000,000 N[14]	340,000	10,000,000	NA	NA	100,000 [11]
84-74-2	di-n-Butyl Phthalate	ug/kg	6,100,000 N	62,000,000 N	NA	NA	NA	NA	200,000 [11]
117-84-0	di-n-Octyl Phthalate	ug/kg	2,400,000 N	25,000,000 N	NA	NA	NA	NA	100 [17]
206-44-0	Fluoranthene	ug/kg	2,300,000 N	22,000,000 N	20,000	10,000,000	NA	NA	29,000 [12]
86-73-7	Fluorene	ug/kg	2,300,000 N	22,000,000 N	28,000	10,000,000	NA	NA	29,000 [12]
118-74-1	Hexachlorobenzene	ug/kg	300 C	1,100 C	400	3,600	950 C	1,800 C	NA
193-39-5	Indeno(1,2,3-cd)pyrene	ug/kg	150 C	2,100 C	900	7,800	NA	NA	1,100 [15]
91-20-3	Naphthalene	ug/kg	3,900 C	20,000 C	54,000	10,000,000	170,000 N	270,000 N	29,000 [12]
86-30-6	N-Nitrosodiphenylamine	ug/kg	99,000 C	350,000 C	NA	NA	NA	NA	20,000 [9]
85-01-8	Phenanthrene	ug/kg	1,700,000 N[16]	17,000,000 N[16]	40,000	10,000,000	NA	NA	29,000 [12]
129-00-0	Pyrene	ug/kg	1,700,000 N	17,000,000 N	13,000	10,000,000	NA	NA	1,100 [15]
-	BaP Equivalent	ug/kg	15 C	210 C	400	800	NA	NA	NA
-	Total PAHs	ug/kg	NA	NA	NA	NA	NA	NA	NA
Pesticides/PCBs									
72-54-8	4,4'-DDD	ug/kg	2,000 C	7,200 C	NA	NA	NA	NA	21 [15]
72-55-9	4,4'-DDE	ug/kg	1,400 C	5,100 C	NA	NA	NA	NA	21 [15]
50-29-3	4,4'-DDT	ug/kg	1,700 C	7,000 C	NA	NA	750,000 C	1,400,000 C	21 [15]
319-84-6	alpha-BHC	ug/kg	77 C	270 C	NA	NA	750 C	1,400 C	3 [5]
5103-71-9	alpha-Chlordane	ug/kg	1,600 C[18]	6,500 C[18]	NA	NA	72,000 C[18]	130,000 C[18]	0.03 [5,19]
11097-69-1	Aroclor-1254	ug/kg	220 C[20]	740 C[20]	NA	NA	NA	NA	40000 [11]
11096-82-5	Aroclor-1260	ug/kg	220 C[20]	740 C[20]	NA	NA	NA	NA	40000 [11]
319-85-7	beta-BHC	ug/kg	270 C	960 C	NA	NA	6,000 C	11,000 C	9 [5]
319-86-8	delta-BHC	ug/kg	77 C[21]	270 C[21]	NA	NA	NA	NA	0.05 [5,22]
60-57-1	Dieldrin	ug/kg	30 C	110 C	40	400	1,100 C	2,100 C	4.9 [15]
33213-65-9	Endosulfan II	ug/kg	370,000 N[23]	3,700,000 N[23]	NA	NA	NA	NA	0.01 [5,24]

TABLE 4-1

SCREENING CRITERIA FOR DIRECT CONTACT WITH SOIL/SEDIMENT
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

CAS No.	Parameter	Units	Oak Ridge National Laboratory Regional Screening Levels[2]		RIDEM Direct Contact Criteria[3]		EPA Soil Screening Levels[1] Soil to Air		Ecological Screening Criterion
			Residential	Industrial	Residential	Industrial	Residential	Industrial	
Pesticides/PCBs (Continued)									
1031-07-8	Endosulfan Sulfate	ug/kg	370,000 N[23]	3,700,000 N[23]	NA	NA	NA	NA	0.01 [5,24]
72-20-8	Endrin	ug/kg	18,000 N	180,000 N	NA	NA	NA	NA	0.04 [5]
7421-93-4	Endrin Aldehyde	ug/kg	18,000 N[25]	180,000 N[25]	NA	NA	NA	NA	0.04 [5,26]
53494-70-5	Endrin Ketone	ug/kg	18,000 N[25]	180,000 N[25]	NA	NA	NA	NA	0.04 [5,26]
58-89-9	gamma-BHC (Lindane)	ug/kg	520 C	2,100 C	NA	NA	NA	NA	0.05 [5]
5103-74-2	gamma-Chlordane	ug/kg	1,600 C[18]	6,500 C[18]	NA	NA	72,000 C[18]	120,000 C[18]	0.03 [5,19]
76-44-8	Heptachlor	ug/kg	110 C	380 C	NA	NA	4,100 C	7,700 C	0.7 [5]
1024-57-3	Heptachlor Epoxide	ug/kg	53 C	190 C	NA	NA	4,700 C	8,800 C	0.0002 [5]
1336-36-3	Total Aroclor	ug/kg	240 C[20]	860 C[20]	10,000	10,000	NA	NA	40000 [11]
-	Total DDT	ug/kg	NA	NA	NA	NA	NA	NA	21 [15]
-	Total PCB Congeners	ug/kg	NA	NA	NA	NA	NA	NA	NA
Inorganics									
7429-90-5	Aluminum	mg/kg	77,000 N	990,000 N[14]	NA	NA	7,090,000 N	11,000,000 N	pH [15,27]
7440-36-0	Antimony	mg/kg	31 N	410 N	10	820	NA	NA	0.27 [15]
7440-38-2	Arsenic	mg/kg	0.39 C	1.6 C	7	7	769 C	1,440 C	18 [28]
7440-39-3	Barium	mg/kg	15,000 N	190,000 N[14]	5,500	10,000	709,000 N	1,100,000 N	330 [12]
7440-41-7	Beryllium	mg/kg	160 N	2000 N	0.4	1.3	1,380 C	2,570 C	21 [15]
7440-43-9	Cadmium	mg/kg	70 N	810 N	39	1,000	1,840 C	3,430 C	0.36 [15]
7440-70-2	Calcium	mg/kg	NA	NA	NA	NA	NA	NA	NA
7440-47-3	Chromium	mg/kg	230 N[29]	3100 N[6,29]	390 [29]	10,000 [29]	276 C[29]	515 C[29]	26 [31]
7440-48-4	Cobalt	mg/kg	23 N[32]	300 N[32]	NA	NA	1,180 C	2,210 C	13 [28]
7440-50-8	Copper	mg/kg	3,100 N	41,000 N	3,100	10,000	NA	NA	28 [31]
7439-89-6	Iron	mg/kg	55,000 N	720,000 N[14]	NA	NA	NA	NA	pH [27,28]
7439-92-1	Lead	mg/kg	400	800	150	500	NA	NA	11 [31]
7439-95-4	Magnesium	mg/kg	NA	NA	NA	NA	NA	NA	NA
7439-96-5	Manganese	mg/kg	1,800 N	19,000 N	390	10,000	70,900 N	110,000 N	220 [28]
7439-97-6	Mercury	mg/kg	23 N[30]	310 N[30]	23	610	NA	NA	0.1 [9]
7440-02-0	Nickel	mg/kg	1,600 N	20,000 N	1,000	10,000	NA	NA	38 [28]
7440-09-7	Potassium	mg/kg	NA	NA	NA	NA	NA	NA	NA
7782-49-2	Selenium	mg/kg	390 N	5,100 N	390	10,000	NA	NA	0.52 [28]
7440-22-4	Silver	mg/kg	390 N	5,100 N	200	10,000	NA	NA	4.2 [31]
7440-23-5	Sodium	mg/kg	NA	NA	NA	NA	NA	NA	NA
7440-28-0	Thallium	mg/kg	5.1 N	66 N	5.5	140	NA	NA	1 [11]
7440-62-2	Vanadium	mg/kg	390 N	5200 N	550	10,000	NA	NA	7.8 [31]
7440-66-6	Zinc	mg/kg	23,000 N	310,000 N[14]	6,000	10,000	NA	NA	46 [31]
Miscellaneous Compounds									
-	Total Petroleum Hydrocarbons	mg/kg	NA	NA	500	2,500	NA	NA	NA
57-12-5	Cyanide	mg/kg	1,600 N	20,000 N	200	10,000	NA	NA	NA

TABLE 4-1

SCREENING CRITERIA FOR DIRECT CONTACT WITH SOIL/SEDIMENT
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

CAS No.	Parameter	Units	Oak Ridge National Laboratory Regional Screening Levels[2]		RIDEM Direct Contact Criteria[3]		EPA Soil Screening Levels[1] Soil to Air		Ecological Screening Criterion
			Residential	Industrial	Residential	Industrial	Residential	Industrial	

Footnotes:
1 - EPA Soil Screening Levels. EPA Internet Site at http://risk.lsd.ornl.gov/calc_start.htm.
2 - Oak Ridge National Laboratory Regional Screening Levels for Chemical Contaminants at Superfund Sites, July 7, 2008. [Cancer benchmark value = 1E-06, Hazard index (HI) = 1.0].
3 - RIDEM, DEM-DSR-01-93, February 2004.
4 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
5 - Dutch Target Value (MHSPE, 2000)
6 - Ten percent of the noncarcinogenic value is less than the carcinogenic value, therefore the noncarcinogenic value is presented.
7 - Concentration exceeds soil saturation limit.
8 - Canadian Soil Quality Guidelines (CCME, 2006)
9 - Oak Ridge National Laboratory - Invertebrate (Efroymson, 1997b)
10 - Value is for m-xylenes.
11 - Oak Ridge National Laboratory - Plant (Efroymson, 1997a)
12 - Ecological Soil Screening Level - Invertebrate
13 - The value for acenaphthene was used as a surrogate for acenaphthylene.
14 - Concentration exceeds ceiling limit of 100,000 mg/kg.
15 - Ecological Soil Screening Level - Mammal
16 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
17 - Value is for total phthalates
18 - The value for chlordane was used as a surrogate for alpha- and gamma-chlordane.
19 - Value is for total chlordane
20 - The value for total PCB congeners (Aroclors) is presented.
21 - The value for alpha-BHC (lindane) has been used as a surrogate for delta-BHC.
22 - Gamma-BHC used as a surrogate.
23 - The value for endosulfan have been used as surrogates for endosulfan II and endosulfan sulfate.
24 - Value for endosulfan used.
25 - The value for endrin have been used as surrogates for endrin aldehyde and endrin ketone.
26 - Value for endrin used.
27 - Aluminum is considered a COPC only when the soil pH is less than 5.5; iron is not expected to be toxic to plants with a soil pH between 5 and 8.
28 - Ecological Soil Screening Level - Plant
29 - The values for chromium VI are presented.
30 - Value is for mercuric chloride.
31 - Ecological Soil Screening Level - Avian
32 - Value for cobalt is from the September 12, 2008 ORNL table.

TABLE 4-1

SCREENING CRITERIA FOR DIRECT CONTACT WITH SOIL/SEDIMENT
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

CAS No.	Parameter	Units	Oak Ridge National Laboratory Regional Screening Levels[2]		RIDEM Direct Contact Criteria[3]		EPA Soil Screening Levels[1] Soil to Air		Ecological Screening Criterion
			Residential	Industrial	Residential	Industrial	Residential	Industrial	

Qualifiers:
C - Carcinogen.
N - Non-carcinogen.

Acronyms:
CCME = Canadian Councils of Ministers of the Environment
CSF = Cancer Slope Factor
EPA = United States Environmental Protection Agency
HI = Hazard index
MHSPE = Ministry of Housing, Spatial Planning, and Environment
NA = No criteria available.
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PRG = Preliminary Remediation Goal
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management

Sources:
Eco SSL = USEPA Ecological Soil Screening Levels, August 2003. Individual Eco-SSL documents available at http://www.epa.gov/ecotox/ecossl
CCME = CCME, 2006. Recommended Canadian Soil Quality Guidelines. Canadian Council of Ministers of the Environment. Ottawa, Ontario. November.
ORNL Plant = Efroymson, R.A., M.E. Will, G.W. Suter II, and A.C. Wooten. 1997. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revision. Oa Ridge National Laboratory. November. ES/ER/TM-85/R3 and ES/ER/TM-126/R2.
ORNL Invert = Efroymson, R.A., M.E. Will, and G.W. Suter II. 1997. Toxicological Benchmarks for Contaminants of Potential Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process: 1997 Revision. Oak Ridge National Laboratory. November. ES/ER/TM-126/R2.
TV = MHSPE, 2000. Circular on target values and intervention values for soil remediation. Ministry of Housing, Spatial Planning, and Environment. DBO/1999226863. Department of Soil Protection, The Netherlands. February 4.

TABLE 4-2

SCREENING CRITERIA FOR MIGRATION OF CONTAMINANTS FROM SOIL TO GROUNDWATER
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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CAS No.	Parameter	Units	EPA SSL[1] Soil to Groundwater	RIDEM GA Leachability Criterion[2]
Dioxins/Furans				
3268-87-9	1,2,3,4,6,7,8,9-OCDD	NG/KG	19000 [3]	NA
39001-02-0	1,2,3,4,6,7,8,9-OCDF	NG/KG	19000 [3]	NA
35822-46-9	1,2,3,4,6,7,8-HPCDD	NG/KG	560 [3]	NA
67562-39-4	1,2,3,4,6,7,8-HPCDF	NG/KG	560 [3]	NA
55673-89-7	1,2,3,4,7,8,9-HPCDF	NG/KG	560 [3]	NA
39227-28-6	1,2,3,4,7,8-HXCDD	NG/KG	56 [3]	NA
70648-26-9	1,2,3,4,7,8-HXCDF	NG/KG	56 [3]	NA
57653-85-7	1,2,3,6,7,8-HXCDD	NG/KG	56 [3]	NA
57117-44-9	1,2,3,6,7,8-HXCDF	NG/KG	56 [3]	NA
19408-74-3	1,2,3,7,8,9-HXCDD	NG/KG	56 [3]	NA
72918-21-9	1,2,3,7,8,9-HXCDF	NG/KG	56 [3]	NA
40321-76-4	1,2,3,7,8-PECDD	NG/KG	5.6 [3]	NA
57117-41-6	1,2,3,7,8-PECDF	NG/KG	190 [3]	NA
60851-34-5	2,3,4,6,7,8-HXCDF	NG/KG	56 [3]	NA
57117-31-4	2,3,4,7,8-PECDF	NG/KG	19 [3]	NA
1746-01-6	2,3,7,8-TCDD	NG/KG	5.6 MCL	NA
51207-31-9	2,3,7,8-TCDF	NG/KG	56 C	NA
	2,3,7,8-TCDD Equivalents	NG/KG	5.6 [3]	NA
37871-00-4	Total HPCDD		NA	NA
38998-75-3	Total HPCDF		NA	NA
34465-46-8	Total HXCDD		NA	NA
55684-94-1	Total HXCDF		NA	NA
36088-22-9	Total PECDD		NA	NA
30402-15-4	Total PECDF		NA	NA
41903-57-5	Total TCDD		NA	NA
55722-27-5	Total TCDF		NA	NA
Volatile Organic Compounds				
79-00-5	1,1,2-Trichloroethane	UG/KG	18 MCL	100
120-82-1	1,2,4-Trichlorobenzene	UG/KG	5300 MCL	140000
75-34-3	1,1-Dichloroethane	UG/KG	41000 N	NA
75-35-4	1,1-Dichloroethene	UG/KG	58 MCL	700
107-06-2	1,2-Dichloroethane	UG/KG	24 MCL	100
106-46-7	1,4-Dichlorobenzene	UG/KG	2200 MCL	NA
78-93-3	2-Butanone	UG/KG	89000 N	NA
591-78-6	2-Hexanone	UG/KG	NA	NA
108-10-1	4-Methyl-2-Pentanone	UG/KG	12000 N	NA
67-64-1	Acetone	UG/KG	130000 N	NA
71-43-2	Benzene	UG/KG	34 MCL	200
75-27-4	Bromodichloromethane	UG/KG	630 MCL	NA
-	BTEX	UG/KG	NA	NA
75-15-0	Carbon Disulfide	UG/KG	29000 N	NA

TABLE 4-2

SCREENING CRITERIA FOR MIGRATION OF CONTAMINANTS FROM SOIL TO GROUNDWATER
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 2 OF 5

CAS No.	Parameter	Units	EPA SSL[1] Soil to Groundwater	RIDEM GA Leachability Criterion[2]
Volatile Organic Compounds (Continued)				
108-90-7	Chlorobenzene	UG/KG	1300 MCL	3200
124-48-1	Chlorodibromomethane	UG/KG	2000 C	NA
75-00-3	Chloroethane	UG/KG	NA	NA
67-66-3	Chloroform	UG/KG	590 MCL	NA
74-87-3	Chloromethane	UG/KG	40 N	NA
156-59-2	cis-1,2-Dichloroethene	UG/KG	400 MCL	1700
110-82-7	Cyclohexane	UG/KG	NA	NA
74-84-0	Ethane	UG/KG	NA	NA
74-85-1	Ethene	UG/KG	NA	NA
100-41-4	Ethylbenzene	UG/KG	13000 MCL	27000
98-82-8	Isopropylbenzene	UG/KG	350000 N	NA
-	m+p-Xylenes	UG/KG	190000 MCL	NA
74-82-8	Methane	UG/KG	NA	NA
79-20-9	Methyl Acetate	UG/KG	150000 N	NA
108-87-2	Methyl Cyclohexane	UG/KG	NA	NA
75-09-2	Methylene Chloride	UG/KG	23 MCL	NA
95-47-6	o-Xylene	UG/KG	190000 MCL	NA
100-42-5	Styrene	UG/KG	3500 MCL	2900
127-18-4	Tetrachloroethene	UG/KG	58 MCL	100
108-88-3	Toluene	UG/KG	12000 MCL	32000
540-59-0	Total 1,2-Dichloroethene	UG/KG	NA	NA
-	Total Chlorinated VOCs	UG/KG	NA	NA
1330-20-7	Total Xylenes	UG/KG	140000 N	540000
156-60-5	trans-1,2-Dichloroethene	UG/KG	680 MCL	3300
79-01-6	Trichloroethene	UG/KG	57 C	200
75-01-4	Vinyl Chloride	UG/KG	13 MCL	300
Semivolatile Organic Compounds				
106-46-7	1,4-Dichlorobenzene	UG/KG	2200 MCL	NA
95-95-4	2,4,5-Trichlorophenol	UG/KG	250000 N	NA
118-79-6	2,4,6-Tribromophenol	UG/KG	NA	NA
88-06-2	2,4,6-Trichlorophenol	UG/KG	150 C	NA
105-67-9	2,4-Dimethylphenol	UG/KG	9000 N	NA
606-20-2	2,6-Dinitrotoluene	UG/KG	0.85 N	NA
91-57-6	2-Methylnaphthalene	UG/KG	NA	NA
95-48-7	2-Methylphenol	UG/KG	14000 N	NA
101-55-3	4-Bromophenyl Phenyl Ether	UG/KG	NA	NA
106-47-8	4-Chloroaniline	UG/KG	970 N	NA
7005-72-3	4-Chlorophenyl Phenyl Ether	UG/KG	NA	NA
106-44-5	4-Methylphenol	UG/KG	1300 N	NA
83-32-9	Acenaphthene	UG/KG	630000 N	NA
208-96-8	Acenaphthylene	UG/KG	NA	NA
120-12-7	Anthracene	UG/KG	13000000 N	NA
56-55-3	Benzo(a)anthracene	UG/KG	3200 MCL	NA

TABLE 4-2

SCREENING CRITERIA FOR MIGRATION OF CONTAMINANTS FROM SOIL TO GROUNDWATER
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

CAS No.	Parameter	Units	EPA SSL[1] Soil to Groundwater	RIDEM GA Leachability Criterion[2]
Semivolatile Organic Compounds (Continued)				
50-32-8	Benzo(a)pyrene	UG/KG	8200 MCL	240000
205-99-2	Benzo(b)fluoranthene	UG/KG	9800 MCL	NA
191-24-2	Benzo(g,h,i)perylene	UG/KG	NA	NA
207-08-9	Benzo(k)fluoranthene	UG/KG	9800 MCL	NA
117-81-7	Bis(2-Ethylhexyl) Phthalate	UG/KG	3600000 MCL	120000
85-68-7	Butyl Benzyl Phthalate	UG/KG	17000000 N	NA
86-74-8	Carbazole	UG/KG	590 C	NA
218-01-9	Chrysene	UG/KG	3200 MCL	NA
53-70-3	Dibenzo(a,h)anthracene	UG/KG	30000 MCL	NA
132-64-9	Dibenzofuran	UG/KG	48000 N	NA
84-66-2	Diethyl Phthalate	UG/KG	450000 N	NA
84-74-2	di-n-Butyl Phthalate	UG/KG	5000000 N	NA
117-84-0	di-n-Octyl Phthalate	UG/KG	4900000000 N	NA
206-44-0	Fluoranthene	UG/KG	6300000 N	NA
86-73-7	Fluorene	UG/KG	810000 N	NA
118-74-1	Hexachlorobenzene	UG/KG	2200 MCL	NA
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG	28000 MCL	NA
91-20-3	Naphthalene	UG/KG	61000 N	800
86-30-6	N-Nitrosodiphenylamine	UG/KG	4300 C	NA
85-01-8	Phenanthrene	UG/KG	NA	NA
129-00-0	Pyrene	UG/KG	4600000 N	NA
-	Total Bap Equivalents	UG/KG	8200 MCL	240000
-	Total PAHs	UG/KG	NA	NA
72-54-8	4,4'-DDD	UG/KG	14000 C	NA
72-55-9	4,4'-DDE	UG/KG	45000 C	NA
50-29-3	4,4'-DDT	UG/KG	26000 C	NA
319-84-6	alpha-BHC	UG/KG	0.72 C	NA
5103-71-9	alpha-Chlordane	UG/KG	9600 MCL[4]	NA
11097-69-1	Aroclor-1254	UG/KG	NA	NA
11096-82-5	Aroclor-1260	UG/KG	NA	NA
319-85-7	beta-BHC	UG/KG	2.6 C	NA
319-86-8	delta-BHC	UG/KG	NA	NA
60-57-1	Dieldrin	UG/KG	4.6 C	NA
33213-65-9	Endosulfan II	UG/KG	20000 N[5]	NA
1031-07-8	Endosulfan Sulfate	UG/KG	20000 N[5]	NA
72-20-8	Endrin	UG/KG	990 MCL	NA
7421-93-4	Endrin Aldehyde	UG/KG	NA	NA
53494-70-5	Endrin Ketone	UG/KG	NA	NA
58-89-9	gamma-BHC (Lindane)	UG/KG	9.4 MCL	NA
5103-74-2	gamma-Chlordane	UG/KG	9600 MCL[4]	NA
76-44-8	Heptachlor	UG/KG	23000 MCL	NA

TABLE 4-2

SCREENING CRITERIA FOR MIGRATION OF CONTAMINANTS FROM SOIL TO GROUNDWATER
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 4 OF 5

CAS No.	Parameter	Units	EPA SSL[1] Soil to Groundwater	RIDEM GA Leachability Criterion[2]
Pesticides/PCBs (continued)				
1024-57-3	Heptachlor Epoxide	UG/KG	670 MCL	NA
1336-36-3	Total Aroclor	UG/KG	NA	10000
-	Total DDT	UG/KG	NA	NA
-	Total PCB Congeners	UG/KG	NA	NA
Inorganics				
7429-90-5	Aluminum	MG/KG	170 N	NA
7440-36-0	Antimony	MG/KG	5.4 MCL	[7]
7440-38-2	Arsenic	MG/KG	5.8 C	NA
7440-39-3	Barium	MG/KG	1600 MCL	[7]
7440-41-7	Beryllium	MG/KG	63 MCL	[7]
7440-43-9	Cadmium	MG/KG	7.5 MCL	[7]
7440-70-2	Calcium	MG/KG	NA	NA
7440-47-3	Chromium	MG/KG	42 N[6]	[7]
7440-48-4	Cobalt	MG/KG	3.3 N	NA
7440-50-8	Copper	MG/KG	11000 MCL	NA
7439-89-6	Iron	MG/KG	NA	NA
7439-92-1	Lead	MG/KG	NA	[7]
7439-95-4	Magnesium	MG/KG	NA	NA
7439-96-5	Manganese	MG/KG	2200 N	NA
7439-97-6	Mercury	MG/KG	2.1 MCL	[7]
7440-02-0	Nickel	MG/KG	950 N	[7]
7440-09-7	Potassium	MG/KG	NA	NA
7782-49-2	Selenium	MG/KG	5.2 MCL	[7]
7440-22-4	Silver	MG/KG	31 N	NA
7440-23-5	Sodium	MG/KG	NA	NA
7440-28-0	Thallium	MG/KG	1.1 N	[7]
7440-62-2	Vanadium	MG/KG	5100 N	NA
7440-66-6	Zinc	MG/KG	14000 N	NA
Miscellaneous Compounds				
-	Total Petroleum Hydrocarbons	MG/KG	NA	NA
57-12-5	Cyanide	MG/KG	40 MCL	2400

TABLE 4-2

SCREENING CRITERIA FOR MIGRATION OF CONTAMINANTS FROM SOIL TO GROUNDWATER
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

CAS No.	Parameter	Units	EPA SSL[1] Soil to Groundwater	RIDEM GA Leachability Criterion[2]

Footnotes:
1 - EPA Soil Screening Levels. EPA Internet Site at http://risk.lsd.ornl.gov/calc_start.shtml.
2 - RIDEM, DEM-DSR-01-93, February 2004.
3 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
4 - The value for chlordane was used as a surrogate for alpha- and gamma-chlordane.
5 - The value for endosulfan has been used as a surrogate for endosulfan II and endosulfan sulfate.
6 - The value for chromium VI is presented.
7 - Leachability criteria for inorganics are based on SPLP/TCLP analysis.

Qualifiers:
C - Carcinogen.
N - Noncarcinogen.
MCL - Maximum Contaminant Level.

Acronyms:
EPA = United States Environmental Protection Agency
NA = No criteria available
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SPLP = Synthetic Precipitation Leaching Procedure
SSL = Soil Screening Level
TCLP = Toxicity Characteristics Leaching Procedure

TABLE 4-3

HUMAN HEALTH SCREENING CRITERIA FOR GROUNDWATER/SURFACE WATER/SEEPS
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 1 OF 3

CAS No.	Parameter	Units	ORNL Regional Screening Level[1] Tap Water	EPA MCL[2]	RIDEM GA Groundwater Objective[3]	RIDEM GB Groundwater Objective[3]
Volatile Organic Compounds						
79-00-5	1,1,2-Trichloroethane	ug/L	0.24 C	5	5	NA
75-34-3	1,1-Dichloroethane	ug/L	2.4 C	NA	NA	NA
75-35-4	1,1-Dichloroethene	ug/L	340 C	7	7	7
107-06-2	1,2-Dichloroethane	ug/L	0.15 C	5	5	110
120-82-1	1,2,4-Trichlorobenzene	ug/L	19 C	70	70	NA
106-46-7	1,4-Dichlorobenzene	ug/L	0.43 C	75	75	NA
78-93-3	2-Butanone	ug/L	7100 N	NA	NA	NA
591-78-6	2-Hexanone	ug/L	NA	NA	NA	NA
108-10-1	4-Methyl-2-Pentanone	ug/L	2000 N	NA	NA	NA
67-64-1	Acetone	ug/L	22000 N	NA	NA	NA
71-43-2	Benzene	ug/L	0.41 C	5	5	140
75-27-4	Bromodichloromethane	ug/L	1.1 C	80	NA	NA
-	BTEX	ug/L	NA	NA	NA	NA
75-15-0	Carbon Disulfide	ug/L	1000 N	NA	NA	NA
124-48-1	Chlorodibromomethane	ug/L	0.8 C	80	NA	NA
75-00-3	Chloroethane	ug/L	21000 N	NA	NA	NA
67-66-3	Chloroform	ug/L	0.19 C	80	NA	NA
74-87-3	Chloromethane	ug/L	1.8 C	NA	NA	NA
156-59-2	cis-1,2-Dichloroethene	ug/L	370 N	70	70	2400
74-84-0	Ethane	ug/L	NA	NA	NA	NA
74-85-1	Ethene	ug/L	NA	NA	NA	NA
100-41-4	Ethylbenzene	ug/L	1.5 C	700	700	1600
-	m+p-Xylenes	ug/L	210 N[4]	10000[4]	10000[4]	NA
74-82-8	Methane	ug/L	NA	NA	NA	NA
75-09-2	Methylene Chloride	ug/L	4.8 C	5	5	NA
79-20-9	Methyl Acetate	ug/L	37000 N	NA	NA	NA
1634-04-4	Methyl Tert-Butyl Ether	ug/L	12 C	NA	40	5000
95-47-6	o-Xylene	ug/L	1400 N	10000[4]	10000[4]	NA
100-42-5	Styrene	ug/L	1600 N	100	100	2200
127-18-4	Tetrachloroethene	ug/L	0.11 C	5	5	150
108-88-3	Toluene	ug/L	2300 N	1000	1000	1700
540-59-0	Total 1,2-Dichloroethene	ug/L	330 N	NA	70	NA
-	Total Chlorinated VOCs	ug/L	NA	NA	NA	NA
1330-20-7	Total Xylenes	ug/L	200 N	10000	10000	NA
156-60-5	trans-1,2-Dichloroethene	ug/L	110 N	100	100	2800
79-01-6	Trichloroethene	ug/L	1.7 C	5	5	540
75-01-4	Vinyl Chloride	ug/L	0.016 C	2	2	NA
Semivolatile Organic Compounds						
92-52-4	1,1-Biphenyl	ug/L	1800 N	NA	NA	NA
106-46-7	1,4-Dichlorobenzene	ug/L	0.43 C	75	75	NA
95-95-4	2,4,5-Trichlorophenol	ug/L	3700 N	NA	NA	NA
118-79-6	2,4,6-Tribromophenol	ug/L	NA	NA	NA	NA
88-06-2	2,4,6-Trichlorophenol	ug/L	37 N[5]	NA	NA	NA
105-67-9	2,4-Dimethylphenol	ug/L	730 N	NA	NA	NA
606-20-2	2,6-Dinitrotoluene	ug/L	37 N	NA	NA	NA
91-57-6	2-Methylnaphthalene	ug/L	150 N	NA	NA	NA
95-48-7	2-Methylphenol	ug/L	1800 N	NA	NA	NA
101-55-3	4-Bromophenyl Phenyl Ether	ug/L	NA	NA	NA	NA
106-47-8	4-Chloroaniline	ug/L	150 N	NA	NA	NA
7005-72-3	4-Chlorophenyl Phenyl Ether	ug/L	NA	NA	NA	NA
106-44-5	4-Methylphenol	ug/L	180 N	NA	NA	NA
83-32-9	Acenaphthene	ug/L	2200 N	NA	NA	NA
208-96-8	Acenaphthylene	ug/L	2200 N[6]	NA	NA	NA
120-12-7	Anthracene	ug/L	11000 N	NA	NA	NA
56-55-3	Benzo(a)anthracene	ug/L	0.029 C	NA	NA	NA
50-32-8	Benzo(a)pyrene	ug/L	0.0029 C	0.2	0.2	NA
	Benzo(a)pyrene Equivalents	ug/L	0.0029 C	0.2	0.2	NA

TABLE 4-3

HUMAN HEALTH SCREENING CRITERIA FOR GROUNDWATER/SURFACE WATER/SEEPS
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

CAS No.	Parameter	Units	ORNL Regional Screening Level[1] Tap Water	EPA MCL[2]	RIDEM GA Groundwater Objective[3]	RIDEM GB Groundwater Objective[3]
Semivolatile Organic Compounds (Continued)						
205-99-2	Benzo(b)fluoranthene	ug/L	0.029 C	NA	NA	NA
191-24-2	Benzo(g,h,i)perylene	ug/L	1100 N[7]	NA	NA	NA
207-08-9	Benzo(k)fluoranthene	ug/L	0.29 C	NA	NA	NA
117-81-7	Bis(2-Ethylhexyl) Phthalate	ug/L	4.8 C	6	6	NA
85-68-7	Butyl Benzyl Phthalate	ug/L	7300 N	NA	NA	NA
86-74-8	Carbazole	ug/L	3.4 C	NA	NA	NA
218-01-9	Chrysene	ug/L	2.9 C	NA	NA	NA
53-70-3	Dibenzo(a,h)anthracene	ug/L	0.0029 C	NA	NA	NA
132-64-9	Dibenzofuran	ug/L	NA	NA	NA	NA
84-66-2	Diethyl Phthalate	ug/L	29000 N	NA	NA	NA
84-74-2	di-n-Butyl Phthalate	ug/L	3700 N	NA	NA	NA
117-84-0	di-n-Octyl Phthalate	ug/L	1500 N	NA	NA	NA
206-44-0	Fluoranthene	ug/L	1500 N	NA	NA	NA
86-73-7	Fluorene	ug/L	1500 N	NA	NA	NA
118-74-1	Hexachlorobenzene	ug/L	0.042 C	1	1	NA
193-39-5	Indeno(1,2,3-cd)pyrene	ug/L	0.029 C	NA	NA	NA
91-20-3	Naphthalene	ug/L	0.14 C	NA	20	NA
86-30-6	N-Nitrosodiphenylamine	ug/L	14 C	NA	NA	NA
85-01-8	Phenanthrene	ug/L	1100 N[7]	NA	NA	NA
129-00-0	Pyrene	ug/L	1100 N	NA	NA	NA
-	Total Bap Equivalents	ug/L	0.0029 C	0.2	0.2	NA
-	Total PAHs	ug/L	NA	NA	NA	NA
Pesticides/PCBs						
72-54-8	4,4'-DDD	ug/L	0.28 C	NA	NA	NA
72-55-9	4,4'-DDE	ug/L	0.2 C	NA	NA	NA
50-29-3	4,4'-DDT	ug/L	0.2 C	NA	NA	NA
319-84-6	alpha-BHC	ug/L	0.011 C	NA	NA	NA
5103-71-9	alpha-Chlordane	ug/L	0.19 C[8]	2[8]	NA	NA
11096-82-5	Aroclor-1260	ug/L	0.034 C[9]	0.5[9]	NA	NA
319-85-7	beta-BHC	ug/L	0.037 C	NA	NA	NA
319-86-8	delta-BHC	ug/L	0.011 C[10]	NA	NA	NA
60-57-1	Dieldrin	ug/L	0.0042 C	NA	NA	NA
33213-65-9	Endosulfan II	ug/L	220 N[11]	NA	NA	NA
1031-07-8	Endosulfan Sulfate	ug/L	220 N[11]	NA	NA	NA
72-20-8	Endrin	ug/L	11 N	2	NA	NA
7421-93-4	Endrin Aldehyde	ug/L	11 N[12]	NA	NA	NA
53494-70-5	Endrin Ketone	ug/L	11 N[12]	NA	NA	NA
58-89-9	gamma-BHC (Lindane)	ug/L	0.061 C	0.2	NA	NA
5103-74-2	gamma-Chlordane	ug/L	0.19 C[8]	2[8]	NA	NA
76-44-8	Heptachlor	ug/L	0.015 C	0.4	0.4	NA
1024-57-3	Heptachlor Epoxide	ug/L	0.0074 C	0.2	0.2	NA
1336-36-3	Total Aroclor	ug/L	0.17 C[9]	0.5[9]	0.5	NA
-	Total DDT	ug/L	NA	NA	NA	NA
-	Total PCB Congeners	ug/L	0.17 C[9]	0.5[9]	0.5[9]	NA
Inorganics						
7429-90-5	Aluminum	ug/L	37000 N	NA	NA	NA
7440-36-0	Antimony	ug/L	15 N	6	6	NA
7440-38-2	Arsenic	ug/L	0.045 C	10	NA	NA
7440-39-3	Barium	ug/L	7300 N	2000	2000	NA
7440-41-7	Beryllium	ug/L	73 N	4	4	NA
7440-43-9	Cadmium	ug/L	18 N	5	5	NA
7440-70-2	Calcium	ug/L	NA	NA	NA	NA
7440-47-3	Chromium	ug/L	110 N[13]	100[13]	100	NA
7440-48-4	Cobalt	ug/L	11 N[16]	NA	NA	NA
7440-50-8	Copper	ug/L	1500 N	1300[14]	NA	NA
7439-89-6	Iron	ug/L	26000 N	NA	NA	NA

TABLE 4-3

HUMAN HEALTH SCREENING CRITERIA FOR GROUNDWATER/SURFACE WATER/SEEPS
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 3 OF 3

CAS No.	Parameter	Units	ORNL Regional Screening Level[1] Tap Water	EPA MCL[2]	RIDEM GA Groundwater Objective[3]	RIDEM GB Groundwater Objective[3]
Inorganics (Continued)						
7439-92-1	Lead	ug/L	NA	15[14]	15	NA
7439-95-4	Magnesium	ug/L	NA	NA	NA	NA
7439-96-5	Manganese	ug/L	880 N	NA	NA	NA
7439-97-6	Mercury	ug/L	11 N[15]	2	2	NA
7440-02-0	Nickel	ug/L	730 N	NA	100	NA
7440-09-7	Potassium	ug/L	NA	NA	NA	NA
7782-49-2	Selenium	ug/L	180 N	50	50	NA
7440-22-4	Silver	ug/L	180 N	NA	NA	NA
7440-23-5	Sodium	ug/L	NA	NA	NA	NA
7440-28-0	Thallium	ug/L	2.4 N	2	2	NA
7440-62-2	Vanadium	ug/L	180 N	NA	NA	NA
7440-66-6	Zinc	ug/L	11000 N	NA	NA	NA
Miscellaneous Compounds						
57-12-5	Cyanide	ug/L	730 N	200	200	NA
7783-06-4	Hydrogen Sulfide	mg/L	110 N	NA	NA	NA
14797-55-8	Nitrate	mg/L	58 N	10	NA	NA
14797-65-0	Nitrite	mg/L	3.7 N	1	NA	NA

Footnotes:
1 - Oak Ridge National Laboratory Regional (ORNL) Screening Levels for Chemical Contaminants at Superfund Sites, July 7, 2008.
[Cancer benchmark value = 1E-06, Hazard index (HI) = 1.0].
2 - EPA Primary Drinking Water Standard (EPA, August 2006).
3 - RIDEM, DEM-DSR-01-93, February 2004.
4 - Value is for total xylenes
5 - Ten percent of the noncarcinogenic value is less than the carcinogenic value, therefore the noncarcinogenic value is presented.
6 - The value for acenaphthene is used as a surrogate for acenaphthylene.
7 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
8 - The value for chlordane is used as a surrogate for alpha- and gamma-chlordane.
9 - The value for total PCB congeners (Aroclors) is presented.
10 - The value for alpha-BHC is used as a surrogate for delta BHC.
11 - The value for endosulfan is used as a surrogate for endosulfan II and endosulfan sulfate.
12 - The value for endrin is used as a surrogate for endrin aldehyde and endrin ketone.
13 - The value for chromium VI is presented.
14 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
15 - Value is for mercuric chloride.
16 - Value for cobalt is from the September 12, 2008 ORNL table.

Qualifiers:
C - Carcinogenic.
N - Noncarcinogenic.

Acronyms:
EPA = United States Environmental Protection Agency
MCL = Maximum Contaminant Level
NA = No criterion available
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PRG = Preliminary Remediation Goal
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SDWA = Safe Drinking Water Act

TABLE 4-4

ECOLOGICALSCREENING CRITERIA FOR SEEPS
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 1 OF 2

CAS No.	Chemical	Criterion	Source
Volatile Organics (ug/L)			
67-64-1	Acetone	1500	3
156-59-2	cis-1,2-Dichloroethene	2240	2(1)
540-59-0	Total 1,2-Dichloroethene	2240	2(1)
-	Total Chlorinated VOCs	NA	-
79-01-6	Trichloroethene	20	2(1)
75-01-4	Vinyl Chloride	NA	
Semivolatile Organics (ug/L)			
91-57-6	2-Methylnaphthalene	3	2(1)
83-32-9	Acenaphthene	71	2(2)
208-96-8	Acenaphthylene	3	2(1)
120-12-7	Anthracene	3	2(1)
56-55-3	Benzo(a)anthracene	3	2(1)
50-32-8	Benzo(a)pyrene	3	2(1)
205-99-2	Benzo(b)fluoranthene	3	2(1)
191-24-2	Benzo(g,h,i)perylene	3	2(1)
207-08-9	Benzo(k)fluoranthene	3	2(1)
117-81-7	Bis(2-Ethylhexyl)phthalate	360	2
218-01-9	Chrysene	3	2(1)
53-70-3	Dibenzo(a,h)anthracene	3	2(1)
132-64-9	Dibenzofuran	3.7	3
117-84-0	di-n-Octyl Phthalate	0.34	2(2)
206-44-0	Fluoranthene	1.6	2(2)
86-73-7	Fluorene	3	2(1)
193-39-5	Indeno(1,2,3-cd)pyrene	3	2(1)
91-20-3	Naphthalene	23.5	2(1)
85-01-8	Phenanthrene	4.6	2
129-00-0	Pyrene	3	2(1)
-	Total PAHs	3	2(1)
Pesticides (ug/L)			
319-84-6	alpha-BHC	0.16	1(4)
60-57-1	Dieldrin	0.0019	1
72-20-8	Endrin	0.0023	1
1024-57-3	Heptachlor Epoxide	0.0036	1
Metals (ug/L)			
7429-90-5	Aluminum	87	1(3)
7440-38-2	Arsenic	36	1
7440-39-3	Barium	4	3
7440-41-7	Beryllium	0.53	2(2,3)
7440-70-2	Calcium	NA	-
7440-47-3	Chromium	50	1

TABLE 4-4

ECOLOGICALSCREENING CRITERIA FOR SEEPS
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 2 OF 2

CAS No.	Chemical	Criterion	Source
Metals (ug/L) (continued)			
7440-48-4	Cobalt	23	3
7440-50-8	Copper	3.1	1
7439-89-6	Iron	1000	1(3)
7439-92-1	Lead	8.1	1
7439-95-4	Magnesium	NA	-
7439-96-5	Manganese	120	3
7439-97-6	Mercury	0.94	1
7440-02-0	Nickel	8.2	1
7440-09-7	Potassium	NA	-
7440-23-5	Sodium	NA	-
7440-62-2	Vanadium	20	3
7440-66-6	Zinc	81	1

Sources:
1 - Water Quality Criteria (EPA, 2004).
2 - Saltwater values (Buchman, 1999).
3 - Freshwater values (Suter and Tsao, 1996).

Footnotes:
(1) Calculated by multplying the acute LOEL by 0.01 to estimate a chronic NOEL.
(2) Calculated by multplying the chronic LOEL by 0.1 to estimate a chronic NOEL.
(3) Freshwater value.
(4) Acute value for gamma-BHC multiplied by 0.1.

Acronyms:
LOEL = Lowest Observed Effect Level
NOEL = No Observed Effect Level
PAH = Polycyclic aromatic hydrocarbon
RI = Remedial Investigation
VOC = Volatile organic compound

TABLE 4-5

ECOLOGICAL SCREENING CRITERIA FOR SEDIMENT
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 1 OF 3

CAS No.	Chemical	Criterion	Source
Volatile Organics (ug/kg)			
75-35-4	1,1-Dichloroethene	NA	-
78-93-3	2-Butanone	NA	-
67-64-1	Acetone	NA	-
75-15-0	Carbon Disulfide	NA	-
156-59-2	cis-1,2-Dichloroethene	NA	-
540-59-0	Total 1,2-Dichloroethene	NA	-
-	Total Chlorinated VOCs	NA	-
79-01-6	Trichloroethene	41	5
Semivolatile Organics (ug/kg)			
91-57-6	2-Methylnaphthalene	70	2
83-32-9	Acenaphthene	16	2
208-96-8	Acenaphthylene	44	2
120-12-7	Anthracene	85.3	2
-	BaP Equivalent	NA	-
56-55-3	Benzo(a)anthracene	261	2
50-32-8	Benzo(a)pyrene	430	2
205-99-2	Benzo(b)fluoranthene	1800	5
191-24-2	Benzo(g,h,i)perylene	670	5
207-08-9	Benzo(k)fluoranthene	1800	5
117-81-7	Bis(2-Ethylhexyl) Phthalate	182	3
218-01-9	Chrysene	384	2
117-84-0	di-n-Octyl Phthalate	61	5
53-70-3	Dibenzo(a,h)anthracene	63.4	2
132-64-9	Dibenzofuran	110	5
206-44-0	Fluoranthene	600	2
86-73-7	Fluorene	19	2
-	High Molecular Weight PAHs	1700	2
193-39-5	Indeno(1,2,3-cd)pyrene	600	5
-	Low Molecular Weight PAHs	552	2
91-20-3	Naphthalene	160	2
85-01-8	Phenanthrene	240	2
129-00-0	Pyrene	665	2
-	Total PAHs	4022	2
Pesticides/PCBs (ug/kg)			
72-54-8	4,4'-DDD	1.22	3
72-55-9	4,4'-DDE	2.2	2
50-29-3	4,4'-DDT	1.58	2
5103-71-9	alpha-Chlordane	2.26	3
11096-82-5	Aroclor-1260	22.7	2(2)
319-86-8	delta-BHC	0.32	3(1)
60-57-1	Dieldrin	280	1
1031-07-8	Endosulfan Sulfate	5.4	6(4)
53494-70-5	Endrin Ketone	9.9	1

TABLE 4-5

ECOLOGICAL SCREENING CRITERIA FOR SEDIMENT
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 2 OF 3

CAS No.	Chemical	Criterion	Source
Pesticides/PCBs (ug/kg) (Continued)			
5103-74-2	gamma-Chlordane	2.26	3
76-44-8	Heptachlor	0.3	5
1024-57-3	Heptachlor Epoxide	0.3	5(3)
1336-36-3	Total Aroclor	22.7	2
-	Total DDT	1.58	2
-	Total PCB Congeners	22.7	2(2)
Inorganics (mg/kg)			
7429-90-5	Aluminum	18000	5
7440-36-0	Antimony	2	4
7440-38-2	Arsenic	8.2	2
7440-39-3	Barium	48	5
7440-41-7	Beryllium	NA	-
7440-43-9	Cadmium	1.2	2
7440-70-2	Calcium	NA	
7440-47-3	Chromium	81	2
7440-48-4	Cobalt	10	5
7440-50-8	Copper	34	2
7439-89-6	Iron	220000	5
7439-92-1	Lead	46.7	2
7439-95-4	Magnesium	NA	-
7439-96-5	Manganese	260	5
7439-97-6	Mercury	0.15	2
7440-02-0	Nickel	20.9	2
7440-09-7	Potassium	NA	-
7782-49-2	Selenium	1	5
7440-22-4	Silver	1	2
7440-23-5	Sodium	NA	-
7440-62-2	Vanadium	57	5
7440-66-6	Zinc	150	2

Sources:
1 - Sediment Quality Benchmark for dieldrin and endrin (assume 1% total organic carbon) (EPA, 1996).
2 - ER-L (Long et al., 1995)
3 - TEL (MacDonald, 1994)
4 - ER-L (Long and Morgan, 1991)
5 - AET (Buchman, 1999)
6 - SQB from Ecotox Thresholds (EPA, 1996)

Footnotes:
(1) Gamma-BHC is used as a surrogate.
(2) Total PCBs is used as a surrogate.
(3) Heptachlor is used as a surrogate.
(4) Endosulfan is used as a surrogate.

TABLE 4-5

ECOLOGICAL SCREENING CRITERIA FOR SEDIMENT
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

CAS No.	Chemical	Criterion	Source

Acronyms:
AET = Apparent Effects Threshold
ER-L = Effects Range-Low
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
RI = Remedial Investigation
SQB = Sediment Quality Benchmark
TEL = Threshold Effects Level

TABLE 4-6

DEFINITIONS FOR STANDARDS/CRITERIA/SCREENING LEVELS
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 1 OF 4

Federal Safe Drinking Water Act (SDWA) MCLs for Public Drinking Water Supplies	Primary MCLs are enforceable standards promulgated under the federal SDWA and are designed to be protective of human health. Primary MCLs are based on laboratory or epidemiological studies and apply to public water systems. A public water supply is defined as a system that provides water to the public for human consumption and that has at least 15 service connections or regularly serves an average of 25 individuals daily at least 60 days per year. Primary MCLs are designed for the prevention of adverse human health effects but also reflect the technical feasibility of removing a contaminant. Primary (i.e., health-based) MCLs are promulgated under the SDWA and are considered Applicable or Relevant and Appropriate Requirements (ARARs).
Oak Ridge National Laboratory (ORNL) Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites	RSLs are chemical concentrations corresponding to fixed levels of risk [i.e., a hazard quotient (HQ) of 1 for non-carcinogenic chemicals; a lifetime cancer risk of 1 x 10^{-6} for carcinogenic chemicals]. Adverse non-carcinogenic health effects are not anticipated when the HQ is less than or equal to 1. A cancer risk of 1 x 10^{-6} may be interpreted as one additional case in one million exposed individuals. The tap water RSLs are based on residential use of drinking water. The soil RSLs are based on residential and industrial exposures to soil through incidental ingestion, dermal contact, and inhalation routes of exposure.
EPA SSLs for Transfer from Soils to Air and Migration from Soils to Groundwater	The EPA SSLs for the migration of chemicals from soil to groundwater or air are benchmarks derived to identify chemical concentrations in soils that may adversely effect groundwater or air quality (EPA, May 1996). The migration-to-groundwater and migration-to-air SSLs are calculated using default, residential land use exposure factors, infinite source models, and conservative default assumptions for source delineation. Therefore, these values are conservative and are designed to be protective of potential exposure at most sites. Chemicals with concentrations exceeding migration-to-groundwater or migration-to-air SSLs may potentially migrate from soil to groundwater or to air in sufficient quantities to pose groundwater or quality problems.
RIDEM Direct Exposure Criteria	The RIDEM Direct Exposure Criteria are similar to the EPA Region 9 PRGs in that they also correspond to a cancer risk of 1 x 10-6 for carcinogens or an HQ of 1 for non-carcinogens. The Direct Contact Criteria are based on residential and industrial exposures to soil through incidental ingestion and inhalation.

TABLE 4-6

DEFINITIONS FOR STANDARDS/CRITERIA/SCREENING LEVELS
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

RIDEM GA Groundwater Objectives	The GA groundwater objectives are protective of groundwater that is suitable for use as a drinking water supply. They can be either risk-based or based on other considerations such as State or federal MCLs.
RIDEM GA Leachability Criteria	The GA leachability criteria are protective of the migration of chemicals from soil to groundwater. For organics, the criteria correspond to soil concentrations that are protective of leaching to groundwater at concentrations exceeding groundwater objectives. For inorganics, the GA leachability criteria are compared to Synthetic Precipitation Leaching Procedure (SPLP) or Toxicity Characteristics Leaching Procedure (TCLP) results.
EPA Ecological Soil Screening Levels (Eco SSLs)	The Eco SSLs are concentrations of contaminants in soil that are protective of ecological receptors that commonly come into contact with soil or ingest biota that live in or on soil. These values are used to identify those contaminants of potential concern in soils that may require further evaluation in a baseline ecological risk assessment. The Eco SSLs were developed for evaluating risks to soil invertebrates, plants, mammals, and birds when adequate data were available.
ORNL Plant and Invertebrate Benchmarks	The ORNL benchmarks are intended to be used as screening values to evaluate potential risks to plants and invertebrates, and as such, may be overly conservative. They are based on a 20 percent reduction in growth, reproduction, or activity (for invertebrates) or growth and yield (for plants) as the threshold for significant effects.
Canadian Soil Quality Guidelines (SQGs)	The SQGs were developed by the Canadian Council of Ministers of the Environment using toxicological data to determine the threshold level for key receptors. The values are calculated for four land uses: agricultural, residential/parkland, commercial, and industrial. Exposure from direct soil contact is used to derive guidelines for the residential/parkland, commercial, and industrial land uses; the soil guidelines for the agricultural land use incorporate direct soil contact and soil and food ingestion.
Dutch Target Values	The Dutch Target Values were developed by the Netherlands Ministry of Housing, Spatial Planning, and Environment, Department of Soil Protection and are the soil quality levels that are ultimately desired for a site. Most of the values were developed using a risk-based approach, but the values for a few inorganic chemicals are background levels and not risk-based.
EPA Sediment Quality Benchmarks (SQBs)	EPA developed SQBs for dieldrin and endrin to protect benthic organisms. The values were calculated using equilibrium partitioning and represent chemical concentrations below which adverse effects are not expected.

TABLE 4-6

DEFINITIONS FOR STANDARDS/CRITERIA/SCREENING LEVELS
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Effects-Range Low (ER-L) Values	The ER-L values represent levels below which adverse effects would be rarely observed. They were first developed by Long and Morgan (1991) using freshwater, marine, and estuarine studies and then further refined by Long et al., (1995) using additional data that included only marine and estuarine studies.
Threshold Effects Levels (TELs)	The TEL represents the upper limit of the range of sediment contaminant concentrations that are dominated by no effects data for aquatic organisms including benthic macroinvertebrates, fish, and shellfish. They were developed by the Florida Department of Environmental Protection using data from estuarine and marine waters.
Apparent Effects Threshold (AET) Values	AET values are generally defined as the concentrations of a given chemical above which statistically significant biological effects are always expected to occur. AETs have been developed as part of several studies and were compiled by Buchman in the National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQUIRT).
Ecotox Thresholds including SQBs	The SQBs were presented in the EPA publication ECO Update-Ecotox Thresholds for use as benchmark screening values in the first step of a baseline risk assessment. The SQBs were calculated using equilibrium partitioning based on 1 percent organic carbon (10,000 mg/kg TOC). The SQBs calculated in EPA (1996) are based on freshwater data.
ORNL Sediment Secondary Chronic Values (SCVs)	The sediment SCVs are non-enforceable screening levels developed for evaluating impacts to benthic invertebrates from pollutants in sediment. The sediment SCVs were calculated by equilibrium partitioning, which uses the surface water screening levels (ORNL surface water SCVs), the octanol-water partition coefficient (Koc) for each chemical and an assumed TOC value of one percent. The assumption with the equilibrium partitioning model is that the sediment SCV is the level at which the sediment pore water concentration is equal to the surface water SCV.
EPA Water Quality Criteria (WQCs)	The WQCs were developed by EPA to provide states with guidance for developing their own criteria. These values are set to protect the majority of aquatic organisms from adverse impacts from contaminants in the surface water. The WQCs are often considered ARARs.
NOAA SQUIRT	The NOAA SQUIRT values include non-enforceable screening levels developed for evaluating impacts to aquatic organisms from chemicals in surface water. The SQUIRT screening levels are a compilation of existing screening levels from other sources.

TABLE 4-6

DEFINITIONS FOR STANDARDS/CRITERIA/SCREENING LEVELS
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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RIDEM AWQCs	RIDEM developed AWQCs to protect aquatic organisms from chemicals in surface water. These values consist of saltwater and freshwater values, including freshwater minimum database guidelines for many pollutants for which EPA WQCs are not available.
ORNL Tier II Surface Water SCVs	The surface water SCVs are non-enforceable screening levels developed for evaluating impacts to aquatic organisms from pollutants in surface water. Tier II values were developed so that aquatic benchmarks could be established with fewer data than are required for the AWQCs. Tier II values are concentrations expected to be higher than AWQCs in no more than 20 percent of cases (Suter and Tsao, 1996). Surface water SCVs may be considered for actions that involve groundwater treatment and/or discharge to nearby surface waters.

TABLE 4-7

BASE-WIDE BACKGROUND CONCENTRATIONS IN GROUNDWATER
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Inorganics	Background Value (µg/L)
Aluminum	5315
Antimony	6
Arsenic	6.4
Barium	80.5
Beryllium	1.3
Cadmium	3
Calcium	13302
Chromium	214
Cobalt	24.9
Copper	25.8
Iron	25500
Lead	4.8
Magnesium	5126
Manganese	3292
Mercury	0.2 U
Nickel	154
Potassium	3843
Selenium	2.2
Silver	1
Sodium	12346
Thallium	4.1
Vanadium	24.4
Zinc	89.9

Source:

Table 7-4 from Stone & Webster Environmental Technology and Services (June 1996) Background Inorganics Groundwater Study Report, December 1996. The groundwater background values are based on the more conservative value of the 95% UCL and the maximum detected concentration.

Acronyms:
RI = Remedial Investigation
UCL = 95% Upper Confidence Limit on the arithmetic mean

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**01**	**01**	**01**	**01**
Location	**ORNL**	**RIDEM**	**28-SB-01**	**28-SB-01A**	**28-SB-01B**	**28-SB-01C**	**28-SB-01D**
Sample Number	**Residential**	**Soil Direct**	**28SB-01-NSO-061797-00**	**28SB-01A-NSO-042496-00**	**28SB-01B-NSO-042496-00**	**28SB-01C-NSO-042696-00**	**28SB-01D-NSO-042696-00**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/17/1997**	**4/24/1996**	**4/24/1996**	**4/26/1996**	**4/26/1996**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA					
1,2,3,4,6,7,8,9-OCDF	11000	NA					
1,2,3,4,6,7,8-HPCDD	390	NA					
1,2,3,4,6,7,8-HPCDF	320	NA					
1,2,3,4,7,8,9-HPCDF	320	NA					
1,2,3,4,7,8-HXCDD	39	NA					
1,2,3,4,7,8-HXCDF	32	NA					
1,2,3,6,7,8-HXCDD	32	NA					
1,2,3,6,7,8-HXCDF	32	NA					
1,2,3,7,8,9-HXCDD	32	NA					
1,2,3,7,8,9-HXCDF	32	NA					
1,2,3,7,8-PECDD	3.9	NA					
1,2,3,7,8-PECDF	110	NA					
2,3,4,6,7,8-HXCDF	32	NA					
2,3,4,7,8-PECDF	11	NA					
2,3,7,8-TCDD	4.5	NA					
2,3,7,8-TCDF	32	NA					
TEQ[(1)]	4.5	NA					
TOTAL HPCDD	NA	NA					
TOTAL HPCDF	NA	NA					
TOTAL HXCDD	NA	NA					
TOTAL HXCDF	NA	NA					
TOTAL PECDD	NA	NA					
TOTAL PECDF	NA	NA					
TOTAL TCDD	NA	NA					
TOTAL TCDF	NA	NA					
Volatile Organics (ug/kg)							
2-Butanone	28000000	10000000	11 U				
Acetone	61000000	7800000	11 U				
BTEX[(1)]	NA	NA	0 U				
Methylene Chloride	11000	45000	11 U				
Toluene	5000000	190000	11 U				
Total Chlorinated VOCs[(1)]	NA	NA	0 U				
Semivolatile Organics (ug/kg)							
2-Methylnaphthalene	310000	123000	350 U				
Acenaphthene	3400000	43000	350 U				
Acenaphthylene	3400000	23000	350 U				
Anthracene	17000000	35000	350 U				
Benzo(a)pyrene Equivalents	15	400	0 U				
Benzo(a)anthracene	150	900	350 U				
Benzo(a)pyrene	15	400	350 U				
Benzo(b)fluoranthene	150	900	350 U				
Benzo(g,h,i)perylene	1700000	800	350 U				
Benzo(k)fluoranthene	1500	900	350 U				
Bis(2-Ethylhexyl) Phthalate	NA	46000	350 U				

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet)	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	02 28-SB-01 28SB-01-NSO-061797-00 NORMAL 6/17/1997 0 - 2	01 28-SB-01A 28SB-01A-NSO-042496-00 NORMAL 4/24/1996 0 - 2	01 28-SB-01B 28SB-01B-NSO-042496-00 NORMAL 4/24/1996 0 - 2	01 28-SB-01C 28SB-01C-NSO-042696-00 NORMAL 4/26/1996 0 - 2	01 28-SB-01D 28SB-01D-NSO-042696-00 NORMAL 4/26/1996 0 - 2
Semivolatile Organics (ug/kg) (Continued)							
Carbazole	24000	NA	350 U				
Chrysene	15000	400	350 U				
di-n-Butyl Phthalate	6100000	NA	350 U				
Dibenzo(a,h)anthracene	15	400	350 U				
Fluoranthene	2300000	20000	350 U				
Fluorene	2300000	28000	350 U				
Indeno(1,2,3-cd)pyrene	150	900	350 U				
Naphthalene	3900	54000	350 U				
Phenanthrene	1700000	40000	350 U				
Pyrene	1700000	13000	350 U				
Total PAHs[1]	NA	NA	0 U				
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000					
Acenaphthene	3400000	43000		**420**	**2400 J**	42 U	**800 J**
Acenaphthylene	3400000	23000		**54 J**	1600 UJ	74 U	1500 UJ
Anthracene	17000000	35000		**15**	**4600 J**	**5 J**	**300 J**
Benzo(a)pyrene Equivalents	15	400		**96.9**	**477**	**5.45**	**1837**
Benzo(a)anthracene	150	900		**57**	**590 J**	**4**	**1100 J**
Benzo(a)pyrene	15	400		**67**	**330 J**	**4 J**	**1400 J**
Benzo(b)fluoranthene	150	900		**100**	**680 J**	**8**	**1800 J**
Benzo(g,h,i)perylene	1700000	800		**87**	**280 J**	**3 J**	**700 J**
Benzo(k)fluoranthene	1500	900		**39**	**300 J**	**3**	**820 J**
Chrysene	15000	400		**73**	**1500 J**	**15 J**	**1400 J**
Dibenzo(a,h)anthracene	15	400		**9**	44 UJ	2 U	**88 J**
Fluoranthene	2300000	20000		**73**	**2500 J**	**17 J**	**930 J**
Fluorene	2300000	28000		**5 J**	**510 J**	7 U	**140 J**
Indeno(1,2,3-cd)pyrene	150	900		**47**	**150 J**	**2 J**	**490 J**
Naphthalene	3900	54000		**30 J**	890 UJ	42 U	870 UJ
Phenanthrene	1700000	40000		**30**	**900 J**	**6 J**	**280 J**
Pyrene	1700000	13000		**70**	**1700 J**	**13 J**	**2200 J**
Total PAHs[1]	NA	NA		**1176**	**16440**	**80**	**12448**
Pesticides/PCBs (ug/kg)							
4,4'-DDT	1700	NA					
alpha-BHC	77	NA					
Aroclor-1260	220	NA					
gamma-Chlordane	1600	NA					
Total Aroclor[1]	NA	10000					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**01**	**01**	**01**	**01**
Location	**ORNL**	**RIDEM**	**28-SB-01**	**28-SB-01A**	**28-SB-01B**	**28-SB-01C**	**28-SB-01D**
Sample Number	**Residential**	**Soil Direct**	**28SB-01-NSO-061797-00**	**28SB-01A-NSO-042496-00**	**28SB-01B-NSO-042496-00**	**28SB-01C-NSO-042696-00**	**28SB-01D-NSO-042696-00**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/17/1997**	**4/24/1996**	**4/24/1996**	**4/26/1996**	**4/26/1996**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Inorganics (mg/kg) (Continued)							
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Mercury	23	23					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Silver	390	200					
Sodium	NA	NA					
Thallium	5.1	5.5					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
pH (S.U.)	NA	NA					
Total Inorganic Carbon (%)	NA	NA					
Total Organic Carbon	NA	NA					
Total Residue (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500	**368**				

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**02**	**02**	**02**	**02**	**02**
Location	**ORNL**	**RIDEM**	**28-SB-02**	**28-SB-03**	**28-SB-04**	**28-SB-05**	**28-SB-06**	**28-SB-07**
Sample Number	**Residential**	**Soil Direct**	**28SB-02-NSO-061897-00**	**28SB-03-NSO-061897-00**	**28SB-04-NSO-061897-00**	**28SB-05-NSO-061897-00**	**28SB-06-NSO-061797-00**	**28SB-07-NSO-061897-00**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**
Sample Date	**Screening**	**Residential**	**6/18/1997**	**6/18/1997**	**6/18/1997**	**6/18/1997**	**6/17/1997**	**6/18/1997**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Dioxins (ng/kg)								
1,2,3,4,6,7,8,9-OCDD	13000	NA						
1,2,3,4,6,7,8,9-OCDF	11000	NA						
1,2,3,4,6,7,8-HPCDD	390	NA						
1,2,3,4,6,7,8-HPCDF	320	NA						
1,2,3,4,7,8,9-HPCDF	320	NA						
1,2,3,4,7,8-HXCDD	39	NA						
1,2,3,4,7,8-HXCDF	32	NA						
1,2,3,6,7,8-HXCDD	32	NA						
1,2,3,6,7,8-HXCDF	32	NA						
1,2,3,7,8,9-HXCDD	32	NA						
1,2,3,7,8,9-HXCDF	32	NA						
1,2,3,7,8-PECDD	3.9	NA						
1,2,3,7,8-PECDF	110	NA						
2,3,4,6,7,8-HXCDF	32	NA						
2,3,4,7,8-PECDF	11	NA						
2,3,7,8-TCDD	4.5	NA						
2,3,7,8-TCDF	32	NA						
TEQ[(1)]	4.5	NA						
TOTAL HPCDD	NA	NA						
TOTAL HPCDF	NA	NA						
TOTAL HXCDD	NA	NA						
TOTAL HXCDF	NA	NA						
TOTAL PECDD	NA	NA						
TOTAL PECDF	NA	NA						
TOTAL TCDD	NA	NA						
TOTAL TCDF	NA	NA						
Volatile Organics (ug/kg)								
2-Butanone	28000000	10000000	11 U	10 U	11 U	10 U	10 U	11 U
Acetone	61000000	7800000	11 U	**1300 J**	**3700 J**	**3000 J**	**33**	**890 J**
BTEX[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U
Methylene Chloride	11000	45000	11 U	10 U	11 U	10 U	10 U	**4 J**
Toluene	5000000	190000	11 U	10 U	11 U	10 U	10 UJ	11 U
Total Chlorinated VOCs[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U	**4**
Semivolatile Organics (ug/kg)								
2-Methylnaphthalene	310000	123000	350 U	330 U	350 U	340 U	340 U	350 U
Acenaphthene	3400000	43000	350 U	330 U	350 U	340 U	**62 J**	350 U
Acenaphthylene	3400000	23000	350 U	330 U	350 U	340 U	340 U	350 U
Anthracene	17000000	35000	350 U	330 U	350 U	340 U	**87 J**	**39 J**
Benzo(a)pyrene Equivalents	15	400	0 U	0 U	**5.04**	0 U	**550**	**325**
Benzo(a)anthracene	150	900	350 U	330 U	350 U	340 U	**350**	**330 J**
Benzo(a)pyrene	15	400	350 U	330 U	350 U	340 U	**350**	**200 J**
Benzo(b)fluoranthene	150	900	350 U	330 U	**50 J**	340 U	**530**	**370**
Benzo(g,h,i)perylene	1700000	800	350 U	330 U	350 U	340 U	**250 J**	**100 J**
Benzo(k)fluoranthene	1500	900	350 U	330 U	350 U	340 U	**180 J**	**120 J**
Bis(2-Ethylhexyl) Phthalate	NA	46000	350 U	330 U	350 U	340 U	340 U	350 U

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**02**	**02**	**02**	**02**	**02**
Location	**ORNL**	**RIDEM**	**28-SB-02**	**28-SB-03**	**28-SB-04**	**28-SB-05**	**28-SB-06**	**28-SB-07**
Sample Number	**Residential**	**Soil Direct**	**28SB-02-NSO-061897-00**	**28SB-03-NSO-061897-00**	**28SB-04-NSO-061897-00**	**28SB-05-NSO-061897-00**	**28SB-06-NSO-061797-00**	**28SB-07-NSO-061897-00**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**
Sample Date	**Screening**	**Residential**	**6/18/1997**	**6/18/1997**	**6/18/1997**	**6/18/1997**	**6/17/1997**	**6/18/1997**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Semivolatile Organics (ug/kg) (Continued)								
Carbazole	24000	NA	350 U	330 U	350 U	340 U	**66 J**	350 U
Chrysene	15000	400	350 U	330 U	**36 J**	340 U	**340 J**	**330 J**
di-n-Butyl Phthalate	6100000	NA	350 U	330 U	350 U	**56 J**	**49 J**	**37 J**
Dibenzo(a,h)anthracene	15	400	350 U	330 U	350 U	340 U	**84 J**	**41 J**
Fluoranthene	2300000	20000	350 U	330 U	**50 J**	340 U	**580**	**1200 J**
Fluorene	2300000	28000	350 U	330 U	350 U	340 U	**62 J**	350 U
Indeno(1,2,3-cd)pyrene	150	900	350 U	330 U	350 U	340 U	**260 J**	**120 J**
Naphthalene	3900	54000	350 U	330 U	350 U	340 U	340 U	350 U
Phenanthrene	1700000	40000	350 U	330 U	350 U	340 U	**500**	**190 J**
Pyrene	1700000	13000	350 U	330 U	**44 J**	340 U	**490**	**930 J**
Total PAHs[(1)]	NA	NA	0 U	0 U	**180**	0 U	**4125**	**3970**
Polycyclic Aromatic Hydrocarbons (ug/kg)							**4560**	
2-Methylnaphthalene	310000	123000						
Acenaphthene	3400000	43000						
Acenaphthylene	3400000	23000						
Anthracene	17000000	35000						
Benzo(a)pyrene Equivalents	15	400						
Benzo(a)anthracene	150	900						
Benzo(a)pyrene	15	400						
Benzo(b)fluoranthene	150	900						
Benzo(g,h,i)perylene	1700000	800						
Benzo(k)fluoranthene	1500	900						
Chrysene	15000	400						
Dibenzo(a,h)anthracene	15	400						
Fluoranthene	2300000	20000						
Fluorene	2300000	28000						
Indeno(1,2,3-cd)pyrene	150	900						
Naphthalene	3900	54000						
Phenanthrene	1700000	40000						
Pyrene	1700000	13000						
Total PAHs[(1)]	NA	NA						
Pesticides/PCBs (ug/kg)								
4,4'-DDT	1700	NA						
alpha-BHC	77	NA						
Aroclor-1260	220	NA						
gamma-Chlordane	1600	NA						
Total Aroclor[(1)]	NA	10000						
Inorganics (mg/kg)								
Aluminum	77000	NA						
Arsenic	0.39	7						
Barium	15000	5500						
Beryllium	160	0.4						
Cadmium	70	39						
Calcium	NA	NA						
Chromium	230	390						
Cobalt	23	NA						

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**02**	**02**	**02**	**02**	**02**
Location	**ORNL**	**RIDEM**	**28-SB-02**	**28-SB-03**	**28-SB-04**	**28-SB-05**	**28-SB-06**	**28-SB-07**
Sample Number	**Residential**	**Soil Direct**	**28SB-02-NSO-061897-00**	**28SB-03-NSO-061897-00**	**28SB-04-NSO-061897-00**	**28SB-05-NSO-061897-00**	**28SB-06-NSO-061797-00**	**28SB-07-NSO-061897-00**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**
Sample Date	**Screening**	**Residential**	**6/18/1997**	**6/18/1997**	**6/18/1997**	**6/18/1997**	**6/17/1997**	**6/18/1997**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Inorganics (mg/kg) (Continued)								
Copper	3100	3100						
Iron	55000	NA						
Lead	400	150						
Magnesium	NA	NA						
Manganese	1800	390						
Mercury	23	23						
Nickel	1600	1000						
Potassium	NA	NA						
Selenium	390	390						
Silver	390	200						
Sodium	NA	NA						
Thallium	5.1	5.5						
Vanadium	390	550						
Zinc	23000	6000						
Miscellaneous Parameters (mg/kg)								
pH (S.U.)	NA	NA						
Total Inorganic Carbon (%)	NA	NA						
Total Organic Carbon	NA	NA						
Total Residue (%)	NA	NA						
Petroleum Hydrocarbons (mg/kg)								
TPH	NA	500	26 U	25 U	26 U	**34**	**552**	**708**

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**02**	**02**	**02**	**02**
Location	**ORNL**	**RIDEM**	**28-SB-07**	**28-SB-08**	**28-SB-08**	**28-SB-09**	**28-SB-10**
Sample Number	**Residential**	**Soil Direct**	**28SB-07-NSO-061897-00-D**	**28SB-08-NSO-061897-00**	**28SB-08-NSO-061897-00-D**	**28SB-09-NSO-061897-00**	**28SB-10-NSO-061997-00**
Sample Code	**Regional**	**Exposure**	**DUP**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/18/1997**	**6/18/1997**	**6/18/1997**	**6/18/1997**	**6/19/1997**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA					
1,2,3,4,6,7,8,9-OCDF	11000	NA					
1,2,3,4,6,7,8-HPCDD	390	NA					
1,2,3,4,6,7,8-HPCDF	320	NA					
1,2,3,4,7,8,9-HPCDF	320	NA					
1,2,3,4,7,8-HXCDD	39	NA					
1,2,3,4,7,8-HXCDF	32	NA					
1,2,3,6,7,8-HXCDD	32	NA					
1,2,3,6,7,8-HXCDF	32	NA					
1,2,3,7,8,9-HXCDD	32	NA					
1,2,3,7,8,9-HXCDF	32	NA					
1,2,3,7,8-PECDD	3.9	NA					
1,2,3,7,8-PECDF	110	NA					
2,3,4,6,7,8-HXCDF	32	NA					
2,3,4,7,8-PECDF	11	NA					
2,3,7,8-TCDD	4.5	NA					
2,3,7,8-TCDF	32	NA					
TEQ[(1)]	4.5	NA					
TOTAL HPCDD	NA	NA					
TOTAL HPCDF	NA	NA					
TOTAL HXCDD	NA	NA					
TOTAL HXCDF	NA	NA					
TOTAL PECDD	NA	NA					
TOTAL PECDF	NA	NA					
TOTAL TCDD	NA	NA					
TOTAL TCDF	NA	NA					
Volatile Organics (ug/kg)							
2-Butanone	28000000	10000000	10 U	11 U	11 U	11 U	11 U
Acetone	61000000	7800000	**880 J**	**27 J**	**22**	**63 J**	11 U
BTEX[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U
Methylene Chloride	11000	45000	10 U	11 U	11 U	11 U	11 U
Toluene	5000000	190000	10 U	11 U	11 U	11 U	11 U
Total Chlorinated VOCs[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U
Semivolatile Organics (ug/kg)							
2-Methylnaphthalene	310000	123000	340 U	350 U	350 U	360 U	350 U
Acenaphthene	3400000	43000	340 U	350 UJ	350 U	360 U	350 U
Acenaphthylene	3400000	23000	340 U	350 U	350 U	360 U	350 U
Anthracene	17000000	35000	340 U	350 U	350 U	360 U	350 U
Benzo(a)pyrene Equivalents	15	400	**355**	0 U	**496**	0 U	0 U
Benzo(a)anthracene	150	900	**200 J**	350 U	**200 J**	360 U	350 U
Benzo(a)pyrene	15	400	**230 J**	350 U	**310 J**	360 U	350 U
Benzo(b)fluoranthene	150	900	**330 J**	350 U	**450**	360 U	350 U
Benzo(g,h,i)perylene	1700000	800	**170 J**	350 U	**290 J**	360 U	350 U
Benzo(k)fluoranthene	1500	900	**120 J**	350 U	**150 J**	360 U	350 U
Bis(2-Ethylhexyl) Phthalate	NA	46000	340 U	350 U	**37 J**	360 U	**36 J**

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet)	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	02 28-SB-07 28SB-07-NSO-061897-00-D DUP 6/18/1997 0 - 2	02 28-SB-08 28SB-08-NSO-061897-00 ORIG 6/18/1997 0 - 2	02 28-SB-08 28SB-08-NSO-061897-00-D DUP 6/18/1997 0 - 2	02 28-SB-09 28SB-09-NSO-061897-00 NORMAL 6/18/1997 0 - 2	02 28-SB-10 28SB-10-NSO-061997-00 NORMAL 6/19/1997 0 - 2
Semivolatile Organics (ug/kg) (Continued)							
Carbazole	24000	NA	340 U	350 U	350 U	360 U	350 U
Chrysene	15000	400	**240 J**	350 U	**250 J**	360 U	350 U
di-n-Butyl Phthalate	6100000	NA	**55 J**	350 U	350 U	**40 J**	350 U
Dibenzo(a,h)anthracene	15	400	**54 J**	350 U	**94 J**	360 U	350 U
Fluoranthene	2300000	20000	**450 J**	350 U	**330 J**	360 U	350 U
Fluorene	2300000	28000	340 U	350 U	350 U	360 U	350 U
Indeno(1,2,3-cd)pyrene	150	900	**170 J**	350 U	**250 J**	360 U	350 U
Naphthalene	3900	54000	340 U	350 U	350 U	360 U	350 U
Phenanthrene	1700000	40000	**210 J**	350 U	**160 J**	360 U	350 U
Pyrene	1700000	13000	**330 J**	350 UJ	**320 J**	360 U	**38 J**
Total PAHs[(1)]	NA	NA	**2504**	0 U	**2804**	0 U	**38**
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000					
Acenaphthene	3400000	43000					
Acenaphthylene	3400000	23000					
Anthracene	17000000	35000					
Benzo(a)pyrene Equivalents	15	400					
Benzo(a)anthracene	150	900					
Benzo(a)pyrene	15	400					
Benzo(b)fluoranthene	150	900					
Benzo(g,h,i)perylene	1700000	800					
Benzo(k)fluoranthene	1500	900					
Chrysene	15000	400					
Dibenzo(a,h)anthracene	15	400					
Fluoranthene	2300000	20000					
Fluorene	2300000	28000					
Indeno(1,2,3-cd)pyrene	150	900					
Naphthalene	3900	54000					
Phenanthrene	1700000	40000					
Pyrene	1700000	13000					
Total PAHs[(1)]	NA	NA					
Pesticides/PCBs (ug/kg)							
4,4'-DDT	1700	NA					
alpha-BHC	77	NA					
Aroclor-1260	220	NA					
gamma-Chlordane	1600	NA					
Total Aroclor[(1)]	NA	10000					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet)	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	02 28-SB-07 28SB-07-NSO-061897-00-D DUP 6/18/1997 0 - 2	02 28-SB-08 28SB-08-NSO-061897-00 ORIG 6/18/1997 0 - 2	02 28-SB-08 28SB-08-NSO-061897-00-D DUP 6/18/1997 0 - 2	02 28-SB-09 28SB-09-NSO-061897-00 NORMAL 6/18/1997 0 - 2	02 28-SB-10 28SB-10-NSO-061997-00 NORMAL 6/19/1997 0 - 2
Inorganics (mg/kg) (Continued)							
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Mercury	23	23					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Silver	390	200					
Sodium	NA	NA					
Thallium	5.1	5.5					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
pH (S.U.)	NA	NA					
Total Inorganic Carbon (%)	NA	NA					
Total Organic Carbon	NA	NA					
Total Residue (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500	**176 J**	**1640 J**	**94**	**1750**	26 U

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet)	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	02 28-SB-11 28SB-11-NSO-061997-00 NORMAL 6/19/1997 0 - 2	02 28-SB-12 28SB-12-NSO-061997-00 NORMAL 6/19/1997 0 - 2	02 28-SB-13 28SB-13-NSO-061997-00 NORMAL 6/19/1997 0 - 2	02 28-SB-14 28SB-14-NSO-062097-00 ORIG 6/20/1997 0 - 2	02 28-SB-14 28SB-14-NSO-062097-00-D DUP 6/20/1997 0 - 2
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA					
1,2,3,4,6,7,8,9-OCDF	11000	NA					
1,2,3,4,6,7,8-HPCDD	390	NA					
1,2,3,4,6,7,8-HPCDF	320	NA					
1,2,3,4,7,8,9-HPCDF	320	NA					
1,2,3,4,7,8-HXCDD	39	NA					
1,2,3,4,7,8-HXCDF	32	NA					
1,2,3,6,7,8-HXCDD	32	NA					
1,2,3,6,7,8-HXCDF	32	NA					
1,2,3,7,8,9-HXCDD	32	NA					
1,2,3,7,8,9-HXCDF	32	NA					
1,2,3,7,8-PECDD	3.9	NA					
1,2,3,7,8-PECDF	110	NA					
2,3,4,6,7,8-HXCDF	32	NA					
2,3,4,7,8-PECDF	11	NA					
2,3,7,8-TCDD	4.5	NA					
2,3,7,8-TCDF	32	NA					
TEQ[(1)]	4.5	NA					
TOTAL HPCDD	NA	NA					
TOTAL HPCDF	NA	NA					
TOTAL HXCDD	NA	NA					
TOTAL HXCDF	NA	NA					
TOTAL PECDD	NA	NA					
TOTAL PECDF	NA	NA					
TOTAL TCDD	NA	NA					
TOTAL TCDF	NA	NA					
Volatile Organics (ug/kg)							
2-Butanone	28000000	10000000	11 U	11 U	13 U	11 U	11 U
Acetone	61000000	7800000	11 U	11 U	13 U	11 U	11 U
BTEX[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U
Methylene Chloride	11000	45000	11 U	11 U	13 U	11 U	11 U
Toluene	5000000	190000	11 U	11 U	13 U	11 U	11 U
Total Chlorinated VOCs[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U
Semivolatile Organics (ug/kg)							
2-Methylnaphthalene	310000	123000	350 U	360 U	440 U	350 U	360 U
Acenaphthene	3400000	43000	350 U	360 U	440 U	350 U	360 U
Acenaphthylene	3400000	23000	350 U	360 U	440 U	350 U	360 U
Anthracene	17000000	35000	350 U	360 U	440 U	350 U	360 U
Benzo(a)pyrene Equivalents	15	400	**5.64**	**45.5**	0 U	**143**	**3.9**
Benzo(a)anthracene	150	900	350 U	360 U	440 U	**100 J**	360 U
Benzo(a)pyrene	15	400	350 U	**40 J**	440 U	**110 J**	360 U
Benzo(b)fluoranthene	150	900	**56 J**	**55 J**	440 U	**150 J**	**39 J**
Benzo(g,h,i)perylene	1700000	800	350 U	360 U	440 U	**73 J**	360 U
Benzo(k)fluoranthene	1500	900	350 U	360 U	440 U	**45 J**	360 U
Bis(2-Ethylhexyl) Phthalate	NA	46000	350 U	360 U	440 U	350 U	360 U

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet)	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	02 28-SB-11 28SB-11-NSO-061997-00 NORMAL 6/19/1997 0 - 2	02 28-SB-12 28SB-12-NSO-061997-00 NORMAL 6/19/1997 0 - 2	02 28-SB-13 28SB-13-NSO-061997-00 NORMAL 6/19/1997 0 - 2	02 28-SB-14 28SB-14-NSO-062097-00 ORIG 6/20/1997 0 - 2	02 28-SB-14 28SB-14-NSO-062097-00-D DUP 6/20/1997 0 - 2
Semivolatile Organics (ug/kg) (Continued)							
Carbazole	24000	NA	350 U	360 U	440 U	350 U	360 U
Chrysene	15000	400	**41 J**	360 U	440 U	**110 J**	360 U
di-n-Butyl Phthalate	6100000	NA	350 U	360 U	440 U	350 U	360 U
Dibenzo(a,h)anthracene	15	400	350 U	360 U	440 U	350 U	360 U
Fluoranthene	2300000	20000	**55 J**	360 U	440 U	**150 J**	**51 J**
Fluorene	2300000	28000	350 U	360 U	440 U	350 U	360 U
Indeno(1,2,3-cd)pyrene	150	900	350 U	360 U	440 U	**70 J**	360 U
Naphthalene	3900	54000	350 U	360 U	440 U	350 U	360 U
Phenanthrene	1700000	40000	350 U	360 U	440 U	**63 J**	360 U
Pyrene	1700000	13000	**68 J**	360 U	440 U	**190 J**	**50 J**
Total PAHs(1)	NA	NA	**220**	**95**	0 U	**1061**	**140**
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000					
Acenaphthene	3400000	43000					
Acenaphthylene	3400000	23000					
Anthracene	17000000	35000					
Benzo(a)pyrene Equivalents	15	400					
Benzo(a)anthracene	150	900					
Benzo(a)pyrene	15	400					
Benzo(b)fluoranthene	150	900					
Benzo(g,h,i)perylene	1700000	800					
Benzo(k)fluoranthene	1500	900					
Chrysene	15000	400					
Dibenzo(a,h)anthracene	15	400					
Fluoranthene	2300000	20000					
Fluorene	2300000	28000					
Indeno(1,2,3-cd)pyrene	150	900					
Naphthalene	3900	54000					
Phenanthrene	1700000	40000					
Pyrene	1700000	13000					
Total PAHs(1)	NA	NA					
Pesticides/PCBs (ug/kg)							
4,4'-DDT	1700	NA					
alpha-BHC	77	NA					
Aroclor-1260	220	NA					
gamma-Chlordane	1600	NA					
Total Aroclor(1)	NA	10000					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**02**	**02**	**02**	**02**
Location	**ORNL**	**RIDEM**	**28-SB-11**	**28-SB-12**	**28-SB-13**	**28-SB-14**	**28-SB-14**
Sample Number	**Residential**	**Soil Direct**	**28SB-11-NSO-061997-00**	**28SB-12-NSO-061997-00**	**28SB-13-NSO-061997-00**	**28SB-14-NSO-062097-00**	**28SB-14-NSO-062097-00-D**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**
Sample Date	**Screening**	**Residential**	**6/19/1997**	**6/19/1997**	**6/19/1997**	**6/20/1997**	**6/20/1997**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Inorganics (mg/kg) (Continued)							
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Mercury	23	23					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Silver	390	200					
Sodium	NA	NA					
Thallium	5.1	5.5					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
pH (S.U.)	NA	NA					
Total Inorganic Carbon (%)	NA	NA					
Total Organic Carbon	NA	NA					
Total Residue (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500	**644**	**35**	33 U	**32 J**	27 UJ

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**02**	**03**	**02**	**01**
Location	**ORNL**	**RIDEM**	**28-SB-15**	**28-SB-16**	**28-SS-21**	**28-SS-01**	**EBS85-SB01**
Sample Number	**Residential**	**Soil Direct**	**28SB-15-NSO-062397-00**	**28SB-16-NSO-062497-00**	**28SB-21-NSO-101398-00**	**28SS-01-NSO-070197-00**	**EBS85-SB01-050196-00**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/23/1997**	**6/24/1997**	**10/13/1998**	**7/1/1997**	**5/1/1996**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA					
1,2,3,4,6,7,8,9-OCDF	11000	NA					
1,2,3,4,6,7,8-HPCDD	390	NA					
1,2,3,4,6,7,8-HPCDF	320	NA					
1,2,3,4,7,8,9-HPCDF	320	NA					
1,2,3,4,7,8-HXCDD	39	NA					
1,2,3,4,7,8-HXCDF	32	NA					
1,2,3,6,7,8-HXCDD	32	NA					
1,2,3,6,7,8-HXCDF	32	NA					
1,2,3,7,8,9-HXCDD	32	NA					
1,2,3,7,8,9-HXCDF	32	NA					
1,2,3,7,8-PECDD	3.9	NA					
1,2,3,7,8-PECDF	110	NA					
2,3,4,6,7,8-HXCDF	32	NA					
2,3,4,7,8-PECDF	11	NA					
2,3,7,8-TCDD	4.5	NA					
2,3,7,8-TCDF	32	NA					
TEQ[(1)]	4.5	NA					
TOTAL HPCDD	NA	NA					
TOTAL HPCDF	NA	NA					
TOTAL HXCDD	NA	NA					
TOTAL HXCDF	NA	NA					
TOTAL PECDD	NA	NA					
TOTAL PECDF	NA	NA					
TOTAL TCDD	NA	NA					
TOTAL TCDF	NA	NA					
Volatile Organics (ug/kg)							
2-Butanone	28000000	10000000	10 U	10 U	4 U	10 U	**55 J**
Acetone	61000000	7800000	10 U	10 U	3 U	10 U	**63**
BTEX[(1)]	NA	NA	**6**	0 U	0 U	0 U	**36**
Methylene Chloride	11000	45000	10 U	10 U	1 U	10 U	11 U
Toluene	5000000	190000	**6 J**	10 U	1 U	10 U	**36**
Total Chlorinated VOCs[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U
Semivolatile Organics (ug/kg)							
2-Methylnaphthalene	310000	123000	340 U	340 U	56 U		
Acenaphthene	3400000	43000	340 U	340 U	57 U		
Acenaphthylene	3400000	23000	340 U	340 U	54 U		
Anthracene	17000000	35000	340 U	340 U	51 U		
Benzo(a)pyrene Equivalents	15	400	**79**	0 U	**90.1**		
Benzo(a)anthracene	150	900	**59 J**	340 U	**70**		
Benzo(a)pyrene	15	400	**58 J**	340 U	**70**		
Benzo(b)fluoranthene	150	900	**100 J**	340 U	**130**		
Benzo(g,h,i)perylene	1700000	800	**48 J**	340 U	96 U		
Benzo(k)fluoranthene	1500	900	340 U	340 U	66 U		
Bis(2-Ethylhexyl) Phthalate	NA	46000	340 U	340 U	130 U		

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**02**	**03**	**02**	**01**
Location	**ORNL**	**RIDEM**	**28-SB-15**	**28-SB-16**	**28-SS-21**	**28-SS-01**	**EBS85-SB01**
Sample Number	**Residential**	**Soil Direct**	**28SB-15-NSO-062397-00**	**28SB-16-NSO-062497-00**	**28SB-21-NSO-101398-00**	**28SS-01-NSO-070197-00**	**EBS85-SB01-050196-00**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/23/1997**	**6/24/1997**	**10/13/1998**	**7/1/1997**	**5/1/1996**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Semivolatile Organics (ug/kg) (Continued)							
Carbazole	24000	NA	340 U	340 U	69 U		
Chrysene	15000	400	**66 J**	340 U	**96**		
di-n-Butyl Phthalate	6100000	NA	**43 J**	**44 J**	93 U		
Dibenzo(a,h)anthracene	15	400	340 U	340 U	77 U		
Fluoranthene	2300000	20000	**82 J**	340 U	**160**		
Fluorene	2300000	28000	340 U	340 U	64 U		
Indeno(1,2,3-cd)pyrene	150	900	**50 J**	340 U	89 U		
Naphthalene	3900	54000	340 U	340 U	95 U		
Phenanthrene	1700000	40000	340 U	340 U	**74**		
Pyrene	1700000	13000	**86 J**	340 U	**140**		
Total PAHs[(1)]	NA	NA	**549**	0 U	**740**		
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000					
Acenaphthene	3400000	43000					
Acenaphthylene	3400000	23000					
Anthracene	17000000	35000					
Benzo(a)pyrene Equivalents	15	400					
Benzo(a)anthracene	150	900					
Benzo(a)pyrene	15	400					
Benzo(b)fluoranthene	150	900					
Benzo(g,h,i)perylene	1700000	800					
Benzo(k)fluoranthene	1500	900					
Chrysene	15000	400					
Dibenzo(a,h)anthracene	15	400					
Fluoranthene	2300000	20000					
Fluorene	2300000	28000					
Indeno(1,2,3-cd)pyrene	150	900					
Naphthalene	3900	54000					
Phenanthrene	1700000	40000					
Pyrene	1700000	13000					
Total PAHs[(1)]	NA	NA					
Pesticides/PCBs (ug/kg)							
4,4'-DDT	1700	NA			3.6 U		
alpha-BHC	77	NA			1.9 U		
Aroclor-1260	220	NA			36 U		
gamma-Chlordane	1600	NA			1.9 U		
Total Aroclor[(1)]	NA	10000			36 U		
Inorganics (mg/kg)							
Aluminum	77000	NA			**4300**		
Arsenic	0.39	7			**2.2**		
Barium	15000	5500			**19.4 J**		
Beryllium	160	0.4			**0.38 J**		
Cadmium	70	39			0.07 U		
Calcium	NA	NA			**419 J**		
Chromium	230	390			**5.5**		
Cobalt	23	NA			**4.2 J**		

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**02**	**03**	**02**	**01**
Location	**ORNL**	**RIDEM**	**28-SB-15**	**28-SB-16**	**28-SS-21**	**28-SS-01**	**EBS85-SB01**
Sample Number	**Residential**	**Soil Direct**	**28SB-15-NSO-062397-00**	**28SB-16-NSO-062497-00**	**28SB-21-NSO-101398-00**	**28SS-01-NSO-070197-00**	**EBS85-SB01-050196-00**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/23/1997**	**6/24/1997**	**10/13/1998**	**7/1/1997**	**5/1/1996**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Inorganics (mg/kg) (Continued)							
Copper	3100	3100			**18.5**		
Iron	55000	NA			**9740**		
Lead	400	150			**58.6**		
Magnesium	NA	NA			**1200**		
Manganese	1800	390			**167 J**		
Mercury	23	23			0.05 U		
Nickel	1600	1000			**7.3 J**		
Potassium	NA	NA			**599 J**		
Selenium	390	390			0.45 U		
Silver	390	200			0.2 U		
Sodium	NA	NA			**75.8 J**		
Thallium	5.1	5.5			0.25 U		
Vanadium	390	550			**7.5 J**		
Zinc	23000	6000			**39.6**		
Miscellaneous Parameters (mg/kg)							
pH (S.U.)	NA	NA					
Total Inorganic Carbon (%)	NA	NA					
Total Organic Carbon	NA	NA					
Total Residue (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500	**55**	**28**		**119**	

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet)	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	04 SB16-21 SB16-21-NSO-062600-00 ORIG 6/26/2000 0 - 2	04 SB16-21 SB16-21-NSO-062600-00-D DUP 6/26/2000 0 - 2	04 SB16-22 SB16-22-NSO-062700-00 NORMAL 6/27/2000 0 - 2	04 SB16-23 SB16-23-NSO-062600-00 NORMAL 6/26/2000 0 - 2	04 SB16-24 SB16-24-NSO-062600-00 NORMAL 6/26/2000 0 - 2
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA	**1060 J**	**740**	**831 J**	**2080 J**	**1360**
1,2,3,4,6,7,8,9-OCDF	11000	NA	**35.1**	**23.7**	**45.8**	**112**	**15.1**
1,2,3,4,6,7,8-HPCDD	390	NA	**63.9**	**49.7**	**69**	**242**	**22.5**
1,2,3,4,6,7,8-HPCDF	320	NA	**12.7**	**9.2**	**23.3**	**43.6**	**7.4**
1,2,3,4,7,8,9-HPCDF	320	NA	4.95 U	5 U	**0.97**	**3.7**	5 U
1,2,3,4,7,8-HXCDD	39	NA	**1.1**	5 U	**1**	**2.8**	5 U
1,2,3,4,7,8-HXCDF	32	NA	2.2 U	**1.2**	2.8 U	**5.9**	**0.98**
1,2,3,6,7,8-HXCDD	32	NA	**3.5**	**2.7**	**3.8**	**10.3**	5 U
1,2,3,6,7,8-HXCDF	32	NA	**1.1**	**0.89**	**1.4**	**3.2**	**0.54**
1,2,3,7,8,9-HXCDD	32	NA	**3.8 J**	**1.9**	**3.6**	**10.8**	5 U
1,2,3,7,8,9-HXCDF	32	NA	4.95 U	5 U	4.97 U	4.88 U	5 U
1,2,3,7,8-PECDD	3.9	NA	**1.4**	5 U	**1.1**	**2.7**	5 U
1,2,3,7,8-PECDF	110	NA	**1**	5 U	**2.3 J**	4.88 U	5 U
2,3,4,6,7,8-HXCDF	32	NA	**1.4**	5 U	**2.2**	**5.4**	**1.4**
2,3,4,7,8-PECDF	11	NA	**1.5**	**1.4 J**	**2.1**	**3.6**	**0.77 J**
2,3,7,8-TCDD	4.5	NA	**0.26**	1 U	0.99 U	**0.96**	1 U
2,3,7,8-TCDF	32	NA	**1.4**	1.1 U	**2.1**	**3.9**	**0.73**
TEQ[(1)]	4.5	NA	**4.57**	**2.03**	**4.7**	**12.8**	**1.19**
TOTAL HPCDD	NA	NA	**122**	**95.5**	**128**	**473**	**50.8**
TOTAL HPCDF	NA	NA	**35**	**20.7**	**54.4**	**135**	**17.9**
TOTAL HXCDD	NA	NA	**34.6**	**22.2**	**34.8**	**102**	**7.4**
TOTAL HXCDF	NA	NA	14.3 U	**7.8**	**24.9**	**71.6**	**22.1**
TOTAL PECDD	NA	NA	12.6 UJ	**1.8**	11.3 U	**25.8**	5 U
TOTAL PECDF	NA	NA	7.3 UJ	**7**	**19.4**	**61.6 J**	**17.2 J**
TOTAL TCDD	NA	NA	**2.1 J**	**0.55**	**1.6**	**15.7**	1 U
TOTAL TCDF	NA	NA	**15.7 J**	**9.2 J**	**31.2**	**81.8 J**	**4.6 J**
Volatile Organics (ug/kg)							
2-Butanone	28000000	10000000	10 U	10 U	10 U	10 U	**10**
Acetone	61000000	7800000	**56 J**	**22 J**	**16 J**	**19 J**	**20**
BTEX[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U
Methylene Chloride	11000	45000	5 UJ	5 UJ	7 UJ	5 UJ	**4 J**
Toluene	5000000	190000	5 U	5 U	5 U	5 U	5 U
Total Chlorinated VOCs[(1)]	NA	NA	0 U	0 U	0 U	0 U	**4**
Semivolatile Organics (ug/kg)							
2-Methylnaphthalene	310000	123000	330 U	330 U	330 UJ	360 U	360 U
Acenaphthene	3400000	43000	330 U	330 U	330 UJ	360 U	360 U
Acenaphthylene	3400000	23000	**380 J**	**200**	330 UJ	360 U	360 U
Anthracene	17000000	35000	**870 J**	**460 J**	330 UJ	360 U	360 U
Benzo(a)pyrene Equivalents	15	400	**3155**	**1898**	0 U	0 U	0 U
Benzo(a)anthracene	150	900	**2500**	**2000**	330 UJ	360 U	360 U
Benzo(a)pyrene	15	400	**1900**	**1200**	330 UJ	360 U	360 U
Benzo(b)fluoranthene	150	900	**4700 J**	**4000**	330 UJ	360 U	360 U
Benzo(g,h,i)perylene	1700000	800	**1100**	**600**	330 UJ	360 U	360 U
Benzo(k)fluoranthene	1500	900	**2100**	**1100 J**	330 UJ	360 U	360 U
Bis(2-Ethylhexyl) Phthalate	NA	46000	330 U	330 U	330 UJ	360 U	360 U

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet)	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	04 SB16-21 SB16-21-NSO-062600-00 ORIG 6/26/2000 0 - 2	04 SB16-21 SB16-21-NSO-062600-00-D DUP 6/26/2000 0 - 2	04 SB16-22 SB16-22-NSO-062700-00 NORMAL 6/27/2000 0 - 2	04 SB16-23 SB16-23-NSO-062600-00 NORMAL 6/26/2000 0 - 2	04 SB16-24 SB16-24-NSO-062600-00 NORMAL 6/26/2000 0 - 2
Semivolatile Organics (ug/kg) (Continued)							
Carbazole	24000	NA	**550 J**	**260 J**	330 UJ	360 U	360 U
Chrysene	15000	400	**3900**	**2400**	330 UJ	360 U	360 U
di-n-Butyl Phthalate	6100000	NA	330 U	330 U	330 UJ	360 U	360 U
Dibenzo(a,h)anthracene	15	400	**350**	330 U	330 UJ	360 U	360 U
Fluoranthene	2300000	20000	**5100**	**3400**	330 UJ	360 U	360 U
Fluorene	2300000	28000	330 U	330 U	330 UJ	360 U	360 U
Indeno(1,2,3-cd)pyrene	150	900	**1600 J**	**850 J**	330 UJ	360 U	360 U
Naphthalene	3900	54000	330 U	330 U	330 UJ	360 U	360 U
Phenanthrene	1700000	40000	**700 J**	**390 J**	330 UJ	360 U	360 U
Pyrene	1700000	13000	**5300**	**4200**	330 UJ	360 U	360 U
Total PAHs[(1)]	NA	NA	**30500**	**20800**	0 U	0 U	0 U
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000	**16**	2200 U	20 U	42 U	22 U
Acenaphthene	3400000	43000	**440**	2200 U	20 U	42 U	22 U
Acenaphthylene	3400000	23000	**440**	2200 U	20 U	42 U	22 U
Anthracene	17000000	35000	**930**	2200 U	20 U	**37**	22 U
Benzo(a)pyrene Equivalents	15	400	**3847**	**4128**	**28.7**	**127**	**46.9**
Benzo(a)anthracene	150	900	**4800**	**4100**	**25**	**100**	**43**
Benzo(a)pyrene	15	400	**2000**	**2700**	**20**	**73**	**32**
Benzo(b)fluoranthene	150	900	**7400**	**7400**	**40 J**	**120**	**62**
Benzo(g,h,i)perylene	1700000	800	**900**	**1200**	**13**	**47**	**28**
Benzo(k)fluoranthene	1500	900	**1300**	**2300**	20 U	**41**	**14**
Chrysene	15000	400	**4200**	**5300**	**26**	**83**	**38**
Dibenzo(a,h)anthracene	15	400	**400**	2200 U	20 U	**24**	22 U
Fluoranthene	2300000	20000	**710**	**7900**	**40 J**	**220**	**69**
Fluorene	2300000	28000	**85**	2200 UJ	20 UJ	42 UJ	22 U
Indeno(1,2,3-cd)pyrene	150	900	**2100**	**2500**	**22**	**76**	**42**
Naphthalene	3900	54000	**14**	2200 U	20 U	42 U	22 U
Phenanthrene	1700000	40000	**710**	2200 U	**24**	**77**	**20**
Pyrene	1700000	13000	**6200**	**6600**	**32 J**	**170**	**59**
Total PAHs[(1)]	NA	NA	**32645**	**40000**	**242**	**1068**	**407**
Pesticides/PCBs (ug/kg)							
4,4'-DDT	1700	NA	3.5 R	3.5 R	3.4 UJ	3.5 U	3.6 U
alpha-BHC	77	NA	1.8 R	1.8 R	1.8 U	1.8 UJ	1.8 UJ
Aroclor-1260	220	NA	18 U	**19**	18 U	18 U	18 U
gamma-Chlordane	1600	NA	**2.9 J**	1.8 R	1.8 U	1.8 U	1.8 U
Total Aroclor[(1)]	NA	10000	18 U	**19**	18 U	18 U	18 U
Inorganics (mg/kg)							
Aluminum	77000	NA	**3510**	**3860**	**2570**	**5360**	**4430**
Arsenic	0.39	7	**2.1**	**1.9**	**1.3**	**1.8**	1.9 U
Barium	15000	5500	**18.3**	**26.1**	**14.8**	**14.9**	**14.8**
Beryllium	160	0.4	**0.44**	**0.48**	**0.53**	**0.52**	**0.53**
Cadmium	70	39	0.26 U	0.25 U	0.27 U	0.3 U	**0.56**
Calcium	NA	NA	**665 J**	**864**	**282**	**1200**	**321 J**
Chromium	230	390	**4.7 J**	**3.2**	**2.9**	**7**	**4.7 J**
Cobalt	23	NA	**3.1 J**	**3.3**	**2**	**4.7**	**3.5**

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**04**	**04**	**04**	**04**	**04**
Location	**ORNL**	**RIDEM**	**SB16-21**	**SB16-21**	**SB16-22**	**SB16-23**	**SB16-24**
Sample Number	**Residential**	**Soil Direct**	**SB16-21-NSO-062600-00**	**SB16-21-NSO-062600-00-D**	**SB16-22-NSO-062700-00**	**SB16-23-NSO-062600-00**	**SB16-24-NSO-062600-00**
Sample Code	**Regional**	**Exposure**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/26/2000**	**6/26/2000**	**6/27/2000**	**6/26/2000**	**6/26/2000**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Inorganics (mg/kg) (Continued)							
Copper	3100	3100	**9.4**	**7 J**	**8.2 J**	**40.2 J**	**14.6**
Iron	55000	NA	**9840**	**8270**	**5930**	**11700**	**8120**
Lead	400	150	**16.1**	**10.8**	**22**	**18.8**	**98.4**
Magnesium	NA	NA	**861 J**	**1130**	**540**	**1470**	**872 J**
Manganese	1800	390	**141 J**	**173 J**	**84.4 J**	**149 J**	**121 J**
Mercury	23	23	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Nickel	1600	1000	4.1 U	**3.7**	**2.6**	**7.2**	4.6 U
Potassium	NA	NA	**449 J**	**921 J**	**381**	**564**	**531**
Selenium	390	390	0.3 U	0.26 U	0.27 U	0.29 U	0.31 U
Silver	390	200	0.28 U	0.24 U	0.25 U	0.27 U	0.29 U
Sodium	NA	NA	23.9 U	**34**	**27.5**	**82**	21.8 U
Thallium	5.1	5.5	0.33 U	0.35 U	0.3 U	0.32 U	0.35 U
Vanadium	390	550	**6.4**	**7.4**	**4.7**	**10.6**	**8**
Zinc	23000	6000	**38.3**	**41.9 J**	**33.1 J**	**40.8 J**	**29.8**
Miscellaneous Parameters (mg/kg)							
pH (S.U.)	NA	NA	**7**		**7.1**	**7.8**	**5.6**
Total Inorganic Carbon (%)	NA	NA					
Total Organic Carbon	NA	NA	**2800**	**3100**	**1900**	**2100**	**2700**
Total Residue (%)	NA	NA	**95**	**95**	**97**	**94**	**92**
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet)	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	04 SB16-25 SB16-25-NSO-062600-00 NORMAL 6/26/2000 0 - 2	04 SB16-26 SB16-26-NSO-062300-00 NORMAL 6/23/2000 0 - 2	04 SB16-27 SB16-27-NSO-062600-00 NORMAL 6/26/2000 0 - 2	04 SB16-28 SB16-28-NSO-062700-00 NORMAL 6/27/2000 0 - 2	07 SOURCE1-1 SOURCE1-1-NSD-032604 NORMAL 3/26/2004 0 - 6
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA	**3310**	**1140**	**1400**	**1940 J**	
1,2,3,4,6,7,8,9-OCDF	11000	NA	**113**	**77.2**	**68.4**	**33.6**	
1,2,3,4,6,7,8-HPCDD	390	NA	**664**	**53.7**	**80**	**181**	
1,2,3,4,6,7,8-HPCDF	320	NA	**69.2**	**43.1**	**29.2**	**17.8**	
1,2,3,4,7,8,9-HPCDF	320	NA	**4**	**1.4**	**0.96**	**1.4**	
1,2,3,4,7,8-HXCDD	39	NA	**8.8**	**0.66**	**1.1**	**3.2**	
1,2,3,4,7,8-HXCDF	32	NA	**24.4**	**1.6**	**2.7**	7.6 U	
1,2,3,6,7,8-HXCDD	32	NA	**36.7**	**2.7**	**3.8**	**10.6**	
1,2,3,6,7,8-HXCDF	32	NA	**10**	**1.3**	**1.6**	**3.5**	
1,2,3,7,8,9-HXCDD	32	NA	**38**	**1.8**	**3.3 J**	**12.1**	
1,2,3,7,8,9-HXCDF	32	NA	5.01 U	5.03 U	5.02 U	**0.31**	
1,2,3,7,8-PECDD	3.9	NA	**10**	5.03 U	5.02 U	**4.1**	
1,2,3,7,8-PECDF	110	NA	**20.5 J**	5.03 U	5.02 U	**3.6**	
2,3,4,6,7,8-HXCDF	32	NA	**11.5**	**2.3**	**3**	**4.1**	
2,3,4,7,8-PECDF	11	NA	**20 J**	**0.71 J**	**1.6 J**	**5.6**	
2,3,7,8-TCDD	4.5	NA	**4**	1 U	1 U	**1.1**	
2,3,7,8-TCDF	32	NA	**28.3**	0.57 U	1.4 U	**6.1**	
TEQ[(1)]	4.5	NA	**48.5**	**2.49**	**3.6**	**14.4**	
TOTAL HPCDD	NA	NA	**1220**	**105**	**151**	**331**	
TOTAL HPCDF	NA	NA	**156**	**86.5**	**64.2**	**45.6**	
TOTAL HXCDD	NA	NA	**340**	**21.7**	**29.7**	**110**	
TOTAL HXCDF	NA	NA	**125**	**45.9**	**45.3**	**37.3**	
TOTAL PECDD	NA	NA	**101**	5.03 U	**2.1**	**40.6**	
TOTAL PECDF	NA	NA	**197**	**30.4 J**	**35.7 J**	**47.7**	
TOTAL TCDD	NA	NA	**54.4**	**0.76**	**1.1**	**14**	
TOTAL TCDF	NA	NA	**495**	**12.3 J**	**25.2 J**	**115**	
Volatile Organics (ug/kg)							
2-Butanone	28000000	10000000	10 UJ	**11**	**12**	11 U	
Acetone	61000000	7800000	**15 J**	**35 E**	**25**	**24 J**	
BTEX[(1)]	NA	NA	0 U	0 U	0 U	0 U	
Methylene Chloride	11000	45000	5 UJ	5 UJ	**4 J**	11 UJ	
Toluene	5000000	190000	5 U	5 U	5 U	6 U	
Total Chlorinated VOCs[(1)]	NA	NA	0 U	0 U	**4**	0 U	
Semivolatile Organics (ug/kg)							
2-Methylnaphthalene	310000	123000	360 U	360 U	360 U	430 U	**11.17 J**
Acenaphthene	3400000	43000	360 U	360 U	360 U	430 U	**12.26**
Acenaphthylene	3400000	23000	360 U	360 U	360 U	430 U	**159 J**
Anthracene	17000000	35000	360 U	360 U	360 U	430 U	**530**
Benzo(a)pyrene Equivalents	15	400	0 U	0 U	0 U	0 U	**668**
Benzo(a)anthracene	150	900	360 U	360 U	360 U	430 U	**770**
Benzo(a)pyrene	15	400	360 U	360 U	360 U	430 U	**318**
Benzo(b)fluoranthene	150	900	360 U	360 U	360 U	430 U	**1021**
Benzo(g,h,i)perylene	1700000	800	360 U	360 U	360 U	430 U	**301**
Benzo(k)fluoranthene	1500	900	360 U	360 U	360 U	430 U	**986**
Bis(2-Ethylhexyl) Phthalate	NA	46000	360 U	360 U	360 U	430 U	

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet)	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	04 SB16-25 SB16-25-NSO-062600-00 NORMAL 6/26/2000 0 - 2	04 SB16-26 SB16-26-NSO-062300-00 NORMAL 6/23/2000 0 - 2	04 SB16-27 SB16-27-NSO-062600-00 NORMAL 6/26/2000 0 - 2	04 SB16-28 SB16-28-NSO-062700-00 NORMAL 6/27/2000 0 - 2	07 SOURCE1-1 SOURCE1-1-NSD-032604 NORMAL 3/26/2004 0 - 6
Semivolatile Organics (ug/kg) (Continued)							
Carbazole	24000	NA	360 U	360 U	360 U	430 U	
Chrysene	15000	400	360 U	360 U	360 U	430 U	**1298**
di-n-Butyl Phthalate	6100000	NA	360 U	360 U	360 U	430 U	
Dibenzo(a,h)anthracene	15	400	360 U	360 U	360 U	430 U	**116**
Fluoranthene	2300000	20000	360 U	360 U	360 U	430 U	**2549**
Fluorene	2300000	28000	360 U	360 U	360 U	430 U	**43**
Indeno(1,2,3-cd)pyrene	150	900	360 U	360 U	360 U	430 U	**435**
Naphthalene	3900	54000	360 U	360 U	360 U	430 U	**19 J**
Phenanthrene	1700000	40000	360 U	360 U	360 U	430 U	**364**
Pyrene	1700000	13000	360 U	360 U	360 U	430 U	**2131**
Total PAHs[(1)]	NA	NA	0 U	0 U	0 U	0 U	**11063**
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000	42 U	22 U	22 U	**30**	
Acenaphthene	3400000	43000	42 U	22 U	22 U	**14**	
Acenaphthylene	3400000	23000	42 U	**12**	22 U	**32**	
Anthracene	17000000	35000	42 U	**6**	**12**	**870**	
Benzo(a)pyrene Equivalents	15	400	**99.7**	**102**	**112**	**287**	
Benzo(a)anthracene	150	900	**60**	**53**	**75 J**	**250**	
Benzo(a)pyrene	15	400	**71**	**51**	**70**	**140 J**	
Benzo(b)fluoranthene	150	900	**140**	**97**	**100 J**	**500**	
Benzo(g,h,i)perylene	1700000	800	**50**	**68**	**50 J**	**100**	
Benzo(k)fluoranthene	1500	900	**36**	**18**	**35 J**	**150 J**	
Chrysene	15000	400	**86**	**34**	**69**	**1000**	
Dibenzo(a,h)anthracene	15	400	42 U	**26**	**15 J**	**50**	
Fluoranthene	2300000	20000	**120**	**53**	**120**	**1400**	
Fluorene	2300000	28000	42 UJ	22 U	22 UJ	**55 J**	
Indeno(1,2,3-cd)pyrene	150	900	**83**	**100**	**86 J**	**190 J**	
Naphthalene	3900	54000	42 U	22 U	22 U	**15**	
Phenanthrene	1700000	40000	**35**	**28**	**64**	**920**	
Pyrene	1700000	13000	**68**	**53**	**90**	**760**	
Total PAHs[(1)]	NA	NA	**749**	**599**	**786**	**6476**	
Pesticides/PCBs (ug/kg)							
4,4'-DDT	1700	NA	3.5 U	**3.7**	3.5 U	4.2 U	
alpha-BHC	77	NA	1.8 UJ	1.8 UJ	1.8 UJ	**2.4 J**	
Aroclor-1260	220	NA	18 U	18 U	18 U	21 U	
gamma-Chlordane	1600	NA	1.8 U	1.8 U	1.8 U	2.1 U	
Total Aroclor[(1)]	NA	10000	18 U	18 U	18 U	21 U	
Inorganics (mg/kg)							
Aluminum	77000	NA	**3670**	**5560**	**3340**	**8590**	
Arsenic	0.39	7	**3.3**	**2 J**	1.7 U	**4**	
Barium	15000	5500	**29.9**	**40.6**	**26.1**	**38.9**	
Beryllium	160	0.4	**0.4**	**0.51**	**0.33**	**0.64**	
Cadmium	70	39	0.25 UJ	**0.35 J**	0.43 U	0.46 U	
Calcium	NA	NA	**361 J**	550 U	**469 J**	**495**	
Chromium	230	390	**6 J**	**7.4**	**5.9 J**	**11.6**	
Cobalt	23	NA	**3.9**	**4.7 J**	**3.4**	**7.8**	

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**04**	**04**	**04**	**04**	**07**
Location	**ORNL**	**RIDEM**	**SB16-25**	**SB16-26**	**SB16-27**	**SB16-28**	**SOURCE1-1**
Sample Number	**Residential**	**Soil Direct**	**SB16-25-NSO-062600-00**	**SB16-26-NSO-062300-00**	**SB16-27-NSO-062600-00**	**SB16-28-NSO-062700-00**	**SOURCE1-1-NSD-032604**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/26/2000**	**6/23/2000**	**6/26/2000**	**6/27/2000**	**3/26/2004**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 6**
Inorganics (mg/kg) (Continued)							
Copper	3100	3100	**24.8**	**16.9 J**	**21.6**	**24.3 J**	
Iron	55000	NA	**9880**	**14000**	**8080**	**21200**	
Lead	400	150	**59.3**	**29.1**	**36**	**69.3**	
Magnesium	NA	NA	**1200 J**	**1830 J**	**1200 J**	**2140**	
Manganese	1800	390	**102 J**	**171**	**105 J**	**248 J**	
Mercury	23	23	**0.11**	0.02 U	0.01 U	0.03 U	
Nickel	1600	1000	7.6 U	**9**	4.1 U	**11**	
Potassium	NA	NA	**432**	562 U	**542**	**634**	
Selenium	390	390	0.28 U	0.29 U	0.27 U	**0.88**	
Silver	390	200	**0.32 J**	0.51 UJ	0.25 U	0.33 U	
Sodium	NA	NA	20.9 U	35.2 U	20.8 U	**43.1**	
Thallium	5.1	5.5	0.31 U	0.31 U	**0.65 J**	0.4 U	
Vanadium	390	550	**8.6**	**11.8**	**7.4**	**16.1**	
Zinc	23000	6000	**70.4**	**62.6 J**	**35.9**	**85.3 J**	
Miscellaneous Parameters (mg/kg)							
pH (S.U.)	NA	NA	**5.5**	**6.9**	**5.9**	**6.4**	
Total Inorganic Carbon (%)	NA	NA					
Total Organic Carbon	NA	NA	**6300**	**4400**	**3500**	**3900**	
Total Residue (%)	NA	NA	**94**	**93**	**94**	**79**	
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet)	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	07 SOURCE1-2 SOURCE1-2-NSD-032604 NORMAL 3/26/2004 0 - 6	07 SOURCE2-1 SOURCE2-1-NSD-032604 NORMAL 3/26/2004 0 - 6	07 SOURCE2-2 SOURCE2-2-NSD-032604 NORMAL 3/26/2004 0 - 6	07 SOURCE3-1 SOURCE3-1-NSD-032604 NORMAL 3/26/2004 0 - 6	07 SOURCE3-2 SOURCE3-2-NSD-032604 NORMAL 3/26/2004 0 - 6
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA					
1,2,3,4,6,7,8,9-OCDF	11000	NA					
1,2,3,4,6,7,8-HPCDD	390	NA					
1,2,3,4,6,7,8-HPCDF	320	NA					
1,2,3,4,7,8,9-HPCDF	320	NA					
1,2,3,4,7,8-HXCDD	39	NA					
1,2,3,4,7,8-HXCDF	32	NA					
1,2,3,6,7,8-HXCDD	32	NA					
1,2,3,6,7,8-HXCDF	32	NA					
1,2,3,7,8,9-HXCDD	32	NA					
1,2,3,7,8,9-HXCDF	32	NA					
1,2,3,7,8-PECDD	3.9	NA					
1,2,3,7,8-PECDF	110	NA					
2,3,4,6,7,8-HXCDF	32	NA					
2,3,4,7,8-PECDF	11	NA					
2,3,7,8-TCDD	4.5	NA					
2,3,7,8-TCDF	32	NA					
TEQ[(1)]	4.5	NA					
TOTAL HPCDD	NA	NA					
TOTAL HPCDF	NA	NA					
TOTAL HXCDD	NA	NA					
TOTAL HXCDF	NA	NA					
TOTAL PECDD	NA	NA					
TOTAL PECDF	NA	NA					
TOTAL TCDD	NA	NA					
TOTAL TCDF	NA	NA					
Volatile Organics (ug/kg)							
2-Butanone	28000000	10000000					
Acetone	61000000	7800000					
BTEX[(1)]	NA	NA					
Methylene Chloride	11000	45000					
Toluene	5000000	190000					
Total Chlorinated VOCs[(1)]	NA	NA					
Semivolatile Organics (ug/kg)							
2-Methylnaphthalene	310000	123000	**50 J**	**9428 J**	**10012 J**	**4.2 J**	**100 J**
Acenaphthene	3400000	43000	**47.19 J**	**441**	**749**	**5**	**65**
Acenaphthylene	3400000	23000	**963 J**	5.74 R	**651 J**	**11.3 J**	**26 J**
Anthracene	17000000	35000	**1885 J**	**223**	**652**	**20.8**	**66**
Benzo(a)pyrene Equivalents	15	400	**4608**	**524**	**1571**	**74**	**282**
Benzo(a)anthracene	150	900	**3812 J**	**314**	**1060**	**59**	**186**
Benzo(a)pyrene	15	400	**2339 J**	**328**	**989**	**42**	**170**
Benzo(b)fluoranthene	150	900	**7236 J**	**383**	**1129**	**67**	**262**
Benzo(g,h,i)perylene	1700000	800	**1904 J**	**295**	**875**	**45**	**154**
Benzo(k)fluoranthene	1500	900	**6221 J**	**347**	**1029**	**62**	**214**
Bis(2-Ethylhexyl) Phthalate	NA	46000					

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet)	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	07 SOURCE1-2 SOURCE1-2-NSD-032604 NORMAL 3/26/2004 0 - 6	07 SOURCE2-1 SOURCE2-1-NSD-032604 NORMAL 3/26/2004 0 - 6	07 SOURCE2-2 SOURCE2-2-NSD-032604 NORMAL 3/26/2004 0 - 6	07 SOURCE3-1 SOURCE3-1-NSD-032604 NORMAL 3/26/2004 0 - 6	07 SOURCE3-2 SOURCE3-2-NSD-032604 NORMAL 3/26/2004 0 - 6
Semivolatile Organics (ug/kg) (Continued)							
Carbazole	24000	NA					
Chrysene	15000	400	**6549 J**	**338**	**1208**	**68**	**214**
di-n-Butyl Phthalate	6100000	NA					
Dibenzo(a,h)anthracene	15	400	**825 J**	**92**	**259**	**13**	**46**
Fluoranthene	2300000	20000	**6958 J**	**462**	**1943**	**136**	**329**
Fluorene	2300000	28000	**145 J**	**678**	**984**	**5.5**	**66**
Indeno(1,2,3-cd)pyrene	150	900	**2708 J**	**307**	**935**	**52**	**181**
Naphthalene	3900	54000	**122 J**	**3367 J**	**3685 J**	**13 J**	**163 J**
Phenanthrene	1700000	40000	**959 J**	**1563**	**2767**	**93**	**235**
Pyrene	1700000	13000	**8017 J**	**492**	**1740**	**106**	**271**
Total PAHs[(1)]	NA	NA	**50739**	**19058**	**30666**	**804**	**2749**
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000					
Acenaphthene	3400000	43000					
Acenaphthylene	3400000	23000					
Anthracene	17000000	35000					
Benzo(a)pyrene Equivalents	15	400					
Benzo(a)anthracene	150	900					
Benzo(a)pyrene	15	400					
Benzo(b)fluoranthene	150	900					
Benzo(g,h,i)perylene	1700000	800					
Benzo(k)fluoranthene	1500	900					
Chrysene	15000	400					
Dibenzo(a,h)anthracene	15	400					
Fluoranthene	2300000	20000					
Fluorene	2300000	28000					
Indeno(1,2,3-cd)pyrene	150	900					
Naphthalene	3900	54000					
Phenanthrene	1700000	40000					
Pyrene	1700000	13000					
Total PAHs[(1)]	NA	NA					
Pesticides/PCBs (ug/kg)							
4,4'-DDT	1700	NA					
alpha-BHC	77	NA					
Aroclor-1260	220	NA					
gamma-Chlordane	1600	NA					
Total Aroclor[(1)]	NA	10000					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					

TABLE 4-8

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **Depth Range (feet)**	**ORNL Residential Regional Screening Levels**	**RIDEM Soil Direct Exposure Residential Criterion**	**07** **SOURCE1-2** **SOURCE1-2-NSD-032604** **NORMAL** **3/26/2004** **0 - 6**	**07** **SOURCE2-1** **SOURCE2-1-NSD-032604** **NORMAL** **3/26/2004** **0 - 6**	**07** **SOURCE2-2** **SOURCE2-2-NSD-032604** **NORMAL** **3/26/2004** **0 - 6**	**07** **SOURCE3-1** **SOURCE3-1-NSD-032604** **NORMAL** **3/26/2004** **0 - 6**	**07** **SOURCE3-2** **SOURCE3-2-NSD-032604** **NORMAL** **3/26/2004** **0 - 6**
Inorganics (mg/kg) (Continued)							
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Mercury	23	23					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Silver	390	200					
Sodium	NA	NA					
Thallium	5.1	5.5					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
pH (S.U.)	NA	NA					
Total Inorganic Carbon (%)	NA	NA				**0.8**	
Total Organic Carbon	NA	NA					
Total Residue (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

Investigation Description:
01 - EBS Phase II Sampling
02 - EBS Phase II Follow-On Sampling
03 - EBS Phase II Follow-On Addendum Sampling
04 - Stage I Phase I RI Sampling Event
07 - Supplemental Sediment RI Investigation

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
R - Rejected value.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
BaP = Benzo(a)pyrene equivalents
BTEX = Benzene, toluene, ethylbenzene, and total xylenes
EPA = Environmental Protection Agency
NA = Not applicable/Not available
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PRG = Preliminary Remediation Goal
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
S.U. = Standard units
TEQ = Toxicity equivalents for 2,3,7,8-TCDD
TPH = Total petroleum hydrocarbons
VOC = Volatile organic compound

Footnotes:
1 - The calculation of the BTEX, total chlorinated VOCs, BAP equivalents, TEQs, total PAHs are defined in the Section 4 text. "0 U" indicates that this chemical group was not detected in the sample analyzed.
2 - A concentration that is shaded exceeds the criteria presented in the table.
3 - A blank cell indicates that the sample was not analyzed for the target analyte.

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**01**	**01**	**01**	**01**
Location	**ORNL**	**RIDEM**	**28-SB-01**	**28-SB-01A**	**28-SB-01B**	**28-SB-01C**	**28-SB-01D**
Sample Number	**Residential**	**Soil Direct**	**28SB-01-NSO-061797-08**	**28SB-01A-NSO-042696-02**	**28SB-01B-NSO-042496-02**	**28SB-01C-NSO-042496-02**	**28SB-01D-NSO-042696-02**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**
Sample Date	**Screening**	**Residential**	**6/17/1997**	**4/26/1996**	**4/24/1996**	**4/24/1996**	**4/26/1996**
Depth Range (feet)	**Levels**	**Criterion**	**8 - 10**	**2 - 4**	**2 - 4**	**2 - 4**	**2 - 4**
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA					
1,2,3,4,6,7,8,9-OCDF	11000	NA					
1,2,3,4,6,7,8-HPCDD	390	NA					
1,2,3,4,6,7,8-HPCDF	320	NA					
1,2,3,4,7,8,9-HPCDF	320	NA					
1,2,3,4,7,8-HXCDD	39	NA					
1,2,3,4,7,8-HXCDF	32	NA					
1,2,3,6,7,8-HXCDD	32	NA					
1,2,3,6,7,8-HXCDF	32	NA					
1,2,3,7,8,9-HXCDD	32	NA					
1,2,3,7,8-PECDD	3.9	NA					
1,2,3,7,8-PECDF	110	NA					
2,3,4,6,7,8-HXCDF	32	NA					
2,3,4,7,8-PECDF	11	NA					
2,3,7,8-TCDD	4.5	NA					
2,3,7,8-TCDF	32	NA					
TEQ[(1)]	4.5	NA					
Total HPCDD	NA	NA					
Total HPCDF	NA	NA					
Total HXCDD	NA	NA					
Total HXCDF	NA	NA					
Total PECDD	NA	NA					
Total PECDF	NA	NA					
Total TCDD	NA	NA					
Total TCDF	NA	NA					
Volatile Organic Compounds (ug/kg)							
1,1,2-Trichloroethane	1100	3600	12 U				
2-Butanone	28000000	10000000	12 U				
2-Hexanone	NA	NA	12 U				
4-Methyl-2-Pentanone	5300000	1200000	12 U				
Acetone	61000000	7800000	**220**				
Benzene	1100	2500	12 U				
Bromodichloromethane	10000	10000	12 U				
BTEX[(1)]	NA	NA	0 U				
Carbon Disulfide	670000	NA	12 U				
Chloroform	300	1200	12 U				
Chloromethane	1700	NA	12 U				
cis-1,2-Dichloroethene	780000	630000					
Ethylbenzene	5700	71000	12 U				
m+p-Xylenes	4500000	NA					
Methylene Chloride	11000	45000	12 U				
o-Xylene	5300000	NA					
Styrene	6500000	13000	12 U				
Toluene	5000000	190000	12 U				
Total 1,2-Dichloroethene	700000	630000	12 U				
Total Chlorinated VOCs[(1)]	NA	NA	0 U				

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**01**	**01**	**01**	**01**
Location	**ORNL**	**RIDEM**	**28-SB-01**	**28-SB-01A**	**28-SB-01B**	**28-SB-01C**	**28-SB-01D**
Sample Number	**Residential**	**Soil Direct**	**28SB-01-NSO-061797-08**	**28SB-01A-NSO-042696-02**	**28SB-01B-NSO-042496-02**	**28SB-01C-NSO-042496-02**	**28SB-01D-NSO-042696-02**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**
Sample Date	**Screening**	**Residential**	**6/17/1997**	**4/26/1996**	**4/24/1996**	**4/24/1996**	**4/26/1996**
Depth Range (feet)	**Levels**	**Criterion**	**8 - 10**	**2 - 4**	**2 - 4**	**2 - 4**	**2 - 4**
Volatile Organic Compounds (ug/kg) (Continued)							
Total Xylenes	600000	110000	12 U				
trans-1,2-Dichloroethene	110000	1100000					
Trichloroethene	2800	13000	12 U				
Vinyl Chloride	60	20	12 U				
Semivolatile Organic Compounds (ug/kg)							
2,4-Dimethylphenol	1200000	1400000	390 U				
2,6-Dinitrotoluene	61000	NA	390 U				
2-Methylnaphthalene	310000	123000	390 U				
2-Methylphenol	3100000	NA	390 U				
4-Chloroaniline	240000	310000	390 U				
4-Methylphenol	310000	NA	390 U				
Acenaphthene	3400000	43000	390 U				
Anthracene	17000000	35000	390 U				
Benzo(a)pyrene Equivalents[1]	NA	400	0 U				
Benzo(a)anthracene	150	900	390 U				
Benzo(a)pyrene	15	400	390 U				
Benzo(b)fluoranthene	150	900	390 U				
Benzo(g,h,i)perylene	1700000	800	390 U				
Benzo(k)fluoranthene	1500	900	390 U				
Bis(2-Ethylhexyl) Phthalate	NA	46000	390 U				
Carbazole	24000	NA	390 U				
Chrysene	15000	400	390 U				
di-n-Butyl Phthalate	6100000	NA	**57 J**				
Dibenzo(a,h)anthracene	15	400	390 U				
Dibenzofuran	NA	NA	390 U				
Diethyl Phthalate	49000000	340000	390 U				
Fluoranthene	2300000	20000	390 U				
Fluorene	2300000	28000	390 U				
Indeno(1,2,3-cd)pyrene	150	900	390 U				
Naphthalene	3900	54000	390 U				
Phenanthrene	1700000	40000	390 U				
Pyrene	1700000	13000	390 U				
Total PAHs[1]	NA	NA	0 U				
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000					
Acenaphthene	3400000	43000		**4200 J**	**51**	**1400 J**	**9200 J**
Acenaphthylene	3400000	23000		800 UJ	76 U	**75 J**	1700 UJ
Anthracene	17000000	35000		**150 J**	**40**	**92 J**	**430 J**
Benzo(a)pyrene Equivalents[1]	NA	400		**2046**	**11.3**	**382**	**2808**
Benzo(a)anthracene	150	900		**1200 J**	**11**	**230 J**	**1300 J**
Benzo(a)pyrene	15	400		**1600 J**	**8**	**280 J**	**2200 J**
Benzo(b)fluoranthene	150	900		**1200 J**	**17**	**330 J**	**1800 J**
Benzo(g,h,i)perylene	1700000	800		**840 J**	**6**	**240 J**	**1400 J**
Benzo(k)fluoranthene	1500	900		**510 J**	**7**	**99 J**	**690 J**
Chrysene	15000	400		**1200 J**	**28**	**300 J**	**1300 J**
Dibenzo(a,h)anthracene	15	400		**150 J**	2 U	**32 J**	**210 J**
Fluoranthene	2300000	20000		**1600 J**	**41**	**480 J**	**1900 J**

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**01**	**01**	**01**	**01**
Location	**ORNL**	**RIDEM**	**28-SB-01**	**28-SB-01A**	**28-SB-01B**	**28-SB-01C**	**28-SB-01D**
Sample Number	**Residential**	**Soil Direct**	**28SB-01-NSO-061797-08**	**28SB-01A-NSO-042696-02**	**28SB-01B-NSO-042496-02**	**28SB-01C-NSO-042496-02**	**28SB-01D-NSO-042696-02**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**
Sample Date	**Screening**	**Residential**	**6/17/1997**	**4/26/1996**	**4/24/1996**	**4/24/1996**	**4/26/1996**
Depth Range (feet)	**Levels**	**Criterion**	**8 - 10**	**2 - 4**	**2 - 4**	**2 - 4**	**2 - 4**
Polycyclic Aromatic Hydrocarbons (ug/kg) (Continued)							
Fluorene	2300000	28000		**160 J**	8 U	**38 J**	**180 J**
Indeno(1,2,3-cd)pyrene	150	900		**500 J**	**4**	**130 J**	**800 J**
Naphthalene	3900	54000		460 UJ	44 U	**140 J**	990 UJ
Phenanthrene	1700000	40000		**550 J**	**14**	**300 J**	**1600 J**
Pyrene	1700000	13000		**1300 J**	**37**	**360 J**	**1500 J**
Total PAHs[1]	NA	NA		**15160**	**264**	**4526**	**24510**
Pesticides (ug/kg)							
4,4'-DDD	2000	NA					
4,4'-DDT	1700	NA					
Endrin Aldehyde	18000	NA					
gamma-Chlordane	1600	NA					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Antimony	31	10					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Mercury	23	23					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Silver	390	200					
Sodium	NA	NA					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					
Total Organic Carbon	NA	NA					
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
Diesel Range Organics	NA	NA					
Oil & Grease	NA	NA					
PHC As Diesel	NA	NA					
Total Petroleum Hydrocarbons	NA	500					
TPH	NA	NA	29 U				

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**01**	**02**	**02**	**02**	**02**
Location	**ORNL**	**RIDEM**	**28-SB-01D**	**28-SB-02**	**28-SB-03**	**28-SB-04**	**28-SB-05**
Sample Number	**Residential**	**Soil Direct**	**28SB-01D-NSO-042696-02-D**	**28SB-02-NSO-061897-08**	**28SB-03-NSO-061897-06**	**28SB-04-NSO-061897-02**	**28SB-05-NSO-061997-06**
Sample Code	**Regional**	**Exposure**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**4/26/1996**	**6/18/1997**	**6/18/1997**	**6/18/1997**	**6/19/1997**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 4**	**8 - 10**	**6 - 8**	**2 - 4**	**6 - 8**
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA					
1,2,3,4,6,7,8,9-OCDF	11000	NA					
1,2,3,4,6,7,8-HPCDD	390	NA					
1,2,3,4,6,7,8-HPCDF	320	NA					
1,2,3,4,7,8,9-HPCDF	320	NA					
1,2,3,4,7,8-HXCDD	39	NA					
1,2,3,4,7,8-HXCDF	32	NA					
1,2,3,6,7,8-HXCDD	32	NA					
1,2,3,6,7,8-HXCDF	32	NA					
1,2,3,7,8,9-HXCDD	32	NA					
1,2,3,7,8-PECDD	3.9	NA					
1,2,3,7,8-PECDF	110	NA					
2,3,4,6,7,8-HXCDF	32	NA					
2,3,4,7,8-PECDF	11	NA					
2,3,7,8-TCDD	4.5	NA					
2,3,7,8-TCDF	32	NA					
TEQ[(1)]	4.5	NA					
Total HPCDD	NA	NA					
Total HPCDF	NA	NA					
Total HXCDD	NA	NA					
Total HXCDF	NA	NA					
Total PECDD	NA	NA					
Total PECDF	NA	NA					
Total TCDD	NA	NA					
Total TCDF	NA	NA					
Volatile Organic Compounds (ug/kg)							
1,1,2-Trichloroethane	1100	3600		12 U	11 U	11 U	12 U
2-Butanone	28000000	10000000		12 U	11 U	11 U	12 U
2-Hexanone	NA	NA		12 U	11 U	11 U	12 U
4-Methyl-2-Pentanone	5300000	1200000		12 U	11 U	11 U	12 U
Acetone	61000000	7800000		**15000 J**	**4400 J**	**150 J**	**2000 J**
Benzene	1100	2500		12 U	11 U	11 U	12 U
Bromodichloromethane	10000	10000		12 U	11 U	11 U	12 U
BTEX[(1)]	NA	NA		0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA		12 U	11 U	11 U	12 U
Chloroform	300	1200		12 U	11 U	11 U	12 U
Chloromethane	1700	NA		12 U	11 U	11 U	12 U
cis-1,2-Dichloroethene	780000	630000					
Ethylbenzene	5700	71000		12 U	11 U	11 U	12 U
m+p-Xylenes	4500000	NA					
Methylene Chloride	11000	45000		12 U	11 U	11 U	12 U
o-Xylene	5300000	NA					
Styrene	6500000	13000		12 U	11 U	11 U	12 U
Toluene	5000000	190000		12 U	11 U	11 U	12 U
Total 1,2-Dichloroethene	700000	630000		12 U	11 U	11 U	12 U
Total Chlorinated VOCs[(1)]	NA	NA		0 U	0 U	0 U	0 U

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**01**	**02**	**02**	**02**	**02**
Location	**ORNL**	**RIDEM**	**28-SB-01D**	**28-SB-02**	**28-SB-03**	**28-SB-04**	**28-SB-05**
Sample Number	**Residential**	**Soil Direct**	**28SB-01D-NSO-042696-02-D**	**28SB-02-NSO-061897-08**	**28SB-03-NSO-061897-06**	**28SB-04-NSO-061897-02**	**28SB-05-NSO-061997-06**
Sample Code	**Regional**	**Exposure**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**4/26/1996**	**6/18/1997**	**6/18/1997**	**6/18/1997**	**6/19/1997**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 4**	**8 - 10**	**6 - 8**	**2 - 4**	**6 - 8**
Volatile Organic Compounds (ug/kg) (Continued)							
Total Xylenes	600000	110000		12 U	11 U	11 U	12 U
trans-1,2-Dichloroethene	110000	1100000					
Trichloroethene	2800	13000		12 U	11 U	11 U	12 U
Vinyl Chloride	60	20		12 U	11 U	11 U	12 U
Semivolatile Organic Compounds (ug/kg)							
2,4-Dimethylphenol	1200000	1400000		390 U	350 U	350 U	380 U
2,6-Dinitrotoluene	61000	NA		390 U	350 U	350 U	380 U
2-Methylnaphthalene	310000	123000		390 U	350 U	350 U	380 U
2-Methylphenol	3100000	NA		390 U	350 U	350 U	380 U
4-Chloroaniline	240000	310000		390 U	350 U	350 U	380 U
4-Methylphenol	310000	NA		390 U	350 U	350 U	380 U
Acenaphthene	3400000	43000		390 U	350 U	350 U	380 U
Anthracene	17000000	35000		390 U	350 U	350 U	380 U
Benzo(a)pyrene Equivalents[(1)]	NA	400		0 U	0 U	0 U	0 U
Benzo(a)anthracene	150	900		390 U	350 U	350 U	380 U
Benzo(a)pyrene	15	400		390 U	350 U	350 U	380 U
Benzo(b)fluoranthene	150	900		390 U	350 U	350 U	380 U
Benzo(g,h,i)perylene	1700000	800		390 U	350 U	350 U	380 U
Benzo(k)fluoranthene	1500	900		390 U	350 U	350 U	380 U
Bis(2-Ethylhexyl) Phthalate	NA	46000		390 U	350 U	350 U	**110 J**
Carbazole	24000	NA		390 U	350 U	350 U	380 U
Chrysene	15000	400		390 U	350 U	350 U	380 U
di-n-Butyl Phthalate	6100000	NA		390 U	350 U	**120 J**	380 U
Dibenzo(a,h)anthracene	15	400		390 U	350 U	350 U	380 U
Dibenzofuran	NA	NA		390 U	350 U	350 U	380 U
Diethyl Phthalate	49000000	340000		390 U	350 U	350 U	380 U
Fluoranthene	2300000	20000		390 U	350 U	350 U	380 U
Fluorene	2300000	28000		390 U	350 U	350 U	380 U
Indeno(1,2,3-cd)pyrene	150	900		390 U	350 U	350 U	380 U
Naphthalene	3900	54000		390 U	350 U	350 U	380 U
Phenanthrene	1700000	40000		390 U	350 U	350 U	380 U
Pyrene	1700000	13000		390 U	350 U	350 U	380 U
Total PAHs[(1)]	NA	NA		0 U	0 U	0 U	0 U
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000					
Acenaphthene	3400000	43000	**21000 J**				
Acenaphthylene	3400000	23000	1700 UJ				
Anthracene	17000000	35000	**800 J**				
Benzo(a)pyrene Equivalents[(1)]	NA	400	**3948**				
Benzo(a)anthracene	150	900	**2700 J**				
Benzo(a)pyrene	15	400	**2700 J**				
Benzo(b)fluoranthene	150	900	**3800 J**				
Benzo(g,h,i)perylene	1700000	800	**2700 J**				
Benzo(k)fluoranthene	1500	900	**1500 J**				
Chrysene	15000	400	**2700 J**				
Dibenzo(a,h)anthracene	15	400	**420 J**				
Fluoranthene	2300000	20000	**2800 J**				

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**01**	**02**	**02**	**02**	**02**
Location	**ORNL**	**RIDEM**	**28-SB-01D**	**28-SB-02**	**28-SB-03**	**28-SB-04**	**28-SB-05**
Sample Number	**Residential**	**Soil Direct**	**28SB-01D-NSO-042696-02-D**	**28SB-02-NSO-061897-08**	**28SB-03-NSO-061897-06**	**28SB-04-NSO-061897-02**	**28SB-05-NSO-061997-06**
Sample Code	**Regional**	**Exposure**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**4/26/1996**	**6/18/1997**	**6/18/1997**	**6/18/1997**	**6/19/1997**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 4**	**8 - 10**	**6 - 8**	**2 - 4**	**6 - 8**
Polycyclic Aromatic Hydrocarbons (ug/kg) (Continued)							
Fluorene	2300000	28000	**110 J**				
Indeno(1,2,3-cd)pyrene	150	900	**1600 J**				
Naphthalene	3900	54000	**550 J**				
Phenanthrene	1700000	40000	**1600 J**				
Pyrene	1700000	13000	**2300 J**				
Total PAHs[(1)]	NA	NA	**47280**				
Pesticides (ug/kg)							
4,4'-DDD	2000	NA					
4,4'-DDT	1700	NA					
Endrin Aldehyde	18000	NA					
gamma-Chlordane	1600	NA					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Antimony	31	10					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Mercury	23	23					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Silver	390	200					
Sodium	NA	NA					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					
Total Organic Carbon	NA	NA					
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
Diesel Range Organics	NA	NA					
Oil & Grease	NA	NA					
PHC As Diesel	NA	NA					
Total Petroleum Hydrocarbons	NA	500					
TPH	NA	NA		29 U	27 U	27 U	29 U

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**02**	**02**	**02**	**02**
Location	**ORNL**	**RIDEM**	**28-SB-06**	**28-SB-07**	**28-SB-08**	**28-SB-09**	**28-SB-10**
Sample Number	**Residential**	**Soil Direct**	**28SB-06-NSO-061997-08**	**28SB-07-NSO-061997-02**	**28SB-08-NSO-061997-02**	**28SB-09-NSO-061997-02**	**28SB-10-NSO-061997-04**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/19/1997**	**6/19/1997**	**6/19/1997**	**6/19/1997**	**6/19/1997**
Depth Range (feet)	**Levels**	**Criterion**	**8 - 10**	**2 - 4**	**2 - 4**	**2 - 4**	**4 - 6**
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA					
1,2,3,4,6,7,8,9-OCDF	11000	NA					
1,2,3,4,6,7,8-HPCDD	390	NA					
1,2,3,4,6,7,8-HPCDF	320	NA					
1,2,3,4,7,8,9-HPCDF	320	NA					
1,2,3,4,7,8-HXCDD	39	NA					
1,2,3,4,7,8-HXCDF	32	NA					
1,2,3,6,7,8-HXCDD	32	NA					
1,2,3,6,7,8-HXCDF	32	NA					
1,2,3,7,8,9-HXCDD	32	NA					
1,2,3,7,8-PECDD	3.9	NA					
1,2,3,7,8-PECDF	110	NA					
2,3,4,6,7,8-HXCDF	32	NA					
2,3,4,7,8-PECDF	11	NA					
2,3,7,8-TCDD	4.5	NA					
2,3,7,8-TCDF	32	NA					
TEQ[(1)]	4.5	NA					
Total HPCDD	NA	NA					
Total HPCDF	NA	NA					
Total HXCDD	NA	NA					
Total HXCDF	NA	NA					
Total PECDD	NA	NA					
Total PECDF	NA	NA					
Total TCDD	NA	NA					
Total TCDF	NA	NA					
Volatile Organic Compounds (ug/kg)							
1,1,2-Trichloroethane	1100	3600	11 U	13 U	11 U	11 U	11 U
2-Butanone	28000000	10000000	11 U	13 U	11 U	11 U	11 U
2-Hexanone	NA	NA	11 U	13 U	11 U	11 U	11 U
4-Methyl-2-Pentanone	5300000	1200000	11 U	13 U	11 U	11 U	11 U
Acetone	61000000	7800000	**75000 J**	**150 J**	11 UJ	**190**	11 U
Benzene	1100	2500	11 U	13 U	11 U	11 U	11 U
Bromodichloromethane	10000	10000	11 U	13 U	11 U	11 U	11 U
BTEX[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	11 U	13 U	11 U	11 U	11 U
Chloroform	300	1200	11 U	13 U	11 U	11 U	11 U
Chloromethane	1700	NA	11 U	13 U	11 U	11 U	11 U
cis-1,2-Dichloroethene	780000	630000					
Ethylbenzene	5700	71000	11 U	13 U	11 U	11 U	11 U
m+p-Xylenes	4500000	NA					
Methylene Chloride	11000	45000	11 U	13 U	11 U	11 U	11 U
o-Xylene	5300000	NA					
Styrene	6500000	13000	11 U	13 U	11 U	11 U	11 U
Toluene	5000000	190000	11 U	13 U	11 U	11 U	11 U
Total 1,2-Dichloroethene	700000	630000	11 U	13 U	11 U	11 U	11 U
Total Chlorinated VOCs[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**02**	**02**	**02**	**02**
Location	**ORNL**	**RIDEM**	**28-SB-06**	**28-SB-07**	**28-SB-08**	**28-SB-09**	**28-SB-10**
Sample Number	**Residential**	**Soil Direct**	**28SB-06-NSO-061997-08**	**28SB-07-NSO-061997-02**	**28SB-08-NSO-061997-02**	**28SB-09-NSO-061997-02**	**28SB-10-NSO-061997-04**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/19/1997**	**6/19/1997**	**6/19/1997**	**6/19/1997**	**6/19/1997**
Depth Range (feet)	**Levels**	**Criterion**	**8 - 10**	**2 - 4**	**2 - 4**	**2 - 4**	**4 - 6**
Volatile Organic Compounds (ug/kg) (Continued)							
Total Xylenes	600000	110000	11 U	13 U	11 U	11 U	11 U
trans-1,2-Dichloroethene	110000	1100000					
Trichloroethene	2800	13000	11 U	13 U	11 U	11 U	11 U
Vinyl Chloride	60	20	11 U	13 U	11 U	11 U	11 U
Semivolatile Organic Compounds (ug/kg)							
2,4-Dimethylphenol	1200000	1400000	370 U	430 U	350 U	350 U	360 U
2,6-Dinitrotoluene	61000	NA	370 U	430 UJ	350 U	350 U	360 U
2-Methylnaphthalene	310000	123000	370 U	430 UJ	350 U	350 U	360 U
2-Methylphenol	3100000	NA	370 U	430 U	350 U	350 U	360 U
4-Chloroaniline	240000	310000	370 U	430 UJ	350 U	350 U	360 U
4-Methylphenol	310000	NA	370 U	430 U	350 U	350 U	360 U
Acenaphthene	3400000	43000	370 U	430 UJ	350 U	350 U	360 U
Anthracene	17000000	35000	370 U	430 UJ	**53 J**	350 U	360 U
Benzo(a)pyrene Equivalents[1]	NA	400	0 U	0 U	**307**	0 U	**112**
Benzo(a)anthracene	150	900	370 U	430 UJ	**200 J**	350 U	**75 J**
Benzo(a)pyrene	15	400	370 U	430 UJ	**190 J**	350 U	**87 J**
Benzo(b)fluoranthene	150	900	370 U	430 UJ	**240 J**	350 U	**110 J**
Benzo(g,h,i)perylene	1700000	800	370 U	430 UJ	**170 J**	350 U	**66 J**
Benzo(k)fluoranthene	1500	900	370 U	430 UJ	**67 J**	350 U	**43 J**
Bis(2-Ethylhexyl) Phthalate	NA	46000	370 U	430 UJ	**83 J**	**46 J**	**40 J**
Carbazole	24000	NA	370 U	430 UJ	350 U	350 U	360 U
Chrysene	15000	400	370 U	430 UJ	**190 J**	350 U	**80 J**
di-n-Butyl Phthalate	6100000	NA	370 U	430 UJ	350 U	350 U	360 U
Dibenzo(a,h)anthracene	15	400	370 U	430 UJ	**58 J**	350 U	360 U
Dibenzofuran	NA	NA	370 U	430 UJ	350 U	350 U	360 U
Diethyl Phthalate	49000000	340000	370 U	430 UJ	350 U	350 U	360 U
Fluoranthene	2300000	20000	370 U	430 UJ	**260 J**	350 U	**78 J**
Fluorene	2300000	28000	370 U	430 UJ	350 U	350 U	360 U
Indeno(1,2,3-cd)pyrene	150	900	370 U	430 UJ	**140 J**	350 U	**56 J**
Naphthalene	3900	54000	370 U	430 UJ	350 U	350 U	360 U
Phenanthrene	1700000	40000	370 U	430 UJ	**220 J**	350 U	**65 J**
Pyrene	1700000	13000	370 U	430 UJ	**360 J**	350 U	**110 J**
Total PAHs[1]	NA	NA	0 U	0 U	**2148**	0 U	**770**
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000					
Acenaphthene	3400000	43000					
Acenaphthylene	3400000	23000					
Anthracene	17000000	35000					
Benzo(a)pyrene Equivalents[1]	NA	400					
Benzo(a)anthracene	150	900					
Benzo(a)pyrene	15	400					
Benzo(b)fluoranthene	150	900					
Benzo(g,h,i)perylene	1700000	800					
Benzo(k)fluoranthene	1500	900					
Chrysene	15000	400					
Dibenzo(a,h)anthracene	15	400					
Fluoranthene	2300000	20000					

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**02**	**02**	**02**	**02**
Location	**ORNL**	**RIDEM**	**28-SB-06**	**28-SB-07**	**28-SB-08**	**28-SB-09**	**28-SB-10**
Sample Number	**Residential**	**Soil Direct**	**28SB-06-NSO-061997-08**	**28SB-07-NSO-061997-02**	**28SB-08-NSO-061997-02**	**28SB-09-NSO-061997-02**	**28SB-10-NSO-061997-04**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/19/1997**	**6/19/1997**	**6/19/1997**	**6/19/1997**	**6/19/1997**
Depth Range (feet)	**Levels**	**Criterion**	**8 - 10**	**2 - 4**	**2 - 4**	**2 - 4**	**4 - 6**
Polycyclic Aromatic Hydrocarbons (ug/kg) (Continued)							
Fluorene	2300000	28000					
Indeno(1,2,3-cd)pyrene	150	900					
Naphthalene	3900	54000					
Phenanthrene	1700000	40000					
Pyrene	1700000	13000					
Total PAHs[(1)]	NA	NA					
Pesticides (ug/kg)							
4,4'-DDD	2000	NA					
4,4'-DDT	1700	NA					
Endrin Aldehyde	18000	NA					
gamma-Chlordane	1600	NA					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Antimony	31	10					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Mercury	23	23					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Silver	390	200					
Sodium	NA	NA					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					
Total Organic Carbon	NA	NA					
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
Diesel Range Organics	NA	NA					
Oil & Grease	NA	NA					
PHC As Diesel	NA	NA					
Total Petroleum Hydrocarbons	NA	500					
TPH	NA	NA	**118**	33 U	**810 J**	**100**	27 U

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**02**	**02**	**02**	**03**
Location	**ORNL**	**RIDEM**	**28-SB-11**	**28-SB-12**	**28-SB-13**	**28-SB-16**	**28-SB-17**
Sample Number	**Residential**	**Soil Direct**	**28SB-11-NSO-061997-02**	**28SB-12-NSO-061997-06**	**28SB-13-NSO-061997-02**	**28SB-16-NSO-062497-14**	**28SB-17-NSO-101398-08**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/19/1997**	**6/19/1997**	**6/19/1997**	**6/24/1997**	**10/13/1998**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 4**	**6 - 8**	**2 - 4**	**14 - 16**	**8 - 10**
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA					
1,2,3,4,6,7,8,9-OCDF	11000	NA					
1,2,3,4,6,7,8-HPCDD	390	NA					
1,2,3,4,6,7,8-HPCDF	320	NA					
1,2,3,4,7,8,9-HPCDF	320	NA					
1,2,3,4,7,8-HXCDD	39	NA					
1,2,3,4,7,8-HXCDF	32	NA					
1,2,3,6,7,8-HXCDD	32	NA					
1,2,3,6,7,8-HXCDF	32	NA					
1,2,3,7,8,9-HXCDD	32	NA					
1,2,3,7,8-PECDD	3.9	NA					
1,2,3,7,8-PECDF	110	NA					
2,3,4,6,7,8-HXCDF	32	NA					
2,3,4,7,8-PECDF	11	NA					
2,3,7,8-TCDD	4.5	NA					
2,3,7,8-TCDF	32	NA					
TEQ[(1)]	4.5	NA					
Total HPCDD	NA	NA					
Total HPCDF	NA	NA					
Total HXCDD	NA	NA					
Total HXCDF	NA	NA					
Total PECDD	NA	NA					
Total PECDF	NA	NA					
Total TCDD	NA	NA					
Total TCDF	NA	NA					
Volatile Organic Compounds (ug/kg)							
1,1,2-Trichloroethane	1100	3600	10 U	13 U	11 U	10 U	1 U
2-Butanone	28000000	10000000	10 U	13 U	11 U	10 U	5 U
2-Hexanone	NA	NA	10 U	13 U	11 U	10 U	5 U
4-Methyl-2-Pentanone	5300000	1200000	10 U	13 U	11 U	10 U	6 U
Acetone	61000000	7800000	10 U	**880 J**	**470 J**	**14**	3 U
Benzene	1100	2500	10 U	13 U	11 U	10 U	1 U
Bromodichloromethane	10000	10000	10 U	13 U	11 U	10 U	1 U
BTEX[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	10 U	13 U	11 U	10 U	2 U
Chloroform	300	1200	10 U	13 U	11 U	10 U	1 U
Chloromethane	1700	NA	10 U	13 U	11 U	10 U	2 U
cis-1,2-Dichloroethene	780000	630000					
Ethylbenzene	5700	71000	10 U	13 U	11 U	10 U	2 U
m+p-Xylenes	4500000	NA					
Methylene Chloride	11000	45000	10 U	13 U	11 U	10 U	1 U
o-Xylene	5300000	NA					
Styrene	6500000	13000	10 U	13 U	11 U	10 U	1 U
Toluene	5000000	190000	10 U	13 U	11 U	10 U	1 U
Total 1,2-Dichloroethene	700000	630000	10 U	13 U	11 U	10 U	1 U
Total Chlorinated VOCs[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**02**	**02**	**02**	**03**
Location	**ORNL**	**RIDEM**	**28-SB-11**	**28-SB-12**	**28-SB-13**	**28-SB-16**	**28-SB-17**
Sample Number	**Residential**	**Soil Direct**	**28SB-11-NSO-061997-02**	**28SB-12-NSO-061997-06**	**28SB-13-NSO-061997-02**	**28SB-16-NSO-062497-14**	**28SB-17-NSO-101398-08**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/19/1997**	**6/19/1997**	**6/19/1997**	**6/24/1997**	**10/13/1998**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 4**	**6 - 8**	**2 - 4**	**14 - 16**	**8 - 10**
Volatile Organic Compounds (ug/kg) (Continued)							
Total Xylenes	600000	110000	10 U	13 U	11 U	10 U	2 U
trans-1,2-Dichloroethene	110000	1100000					
Trichloroethene	2800	13000	10 U	13 U	11 U	10 U	1 U
Vinyl Chloride	60	20	10 U	13 U	11 U	10 U	2 U
Semivolatile Organic Compounds (ug/kg)							
2,4-Dimethylphenol	1200000	1400000	340 U	410 U	350 U	340 U	52 U
2,6-Dinitrotoluene	61000	NA	340 U	410 U	350 U	340 U	55 U
2-Methylnaphthalene	310000	123000	340 U	**420**	350 U	340 U	57 U
2-Methylphenol	3100000	NA	340 U	410 U	350 U	340 U	58 U
4-Chloroaniline	240000	310000	340 U	410 U	350 U	340 U	110 U
4-Methylphenol	310000	NA	340 U	410 U	350 U	340 U	49 U
Acenaphthene	3400000	43000	340 U	**530**	350 U	340 U	58 U
Anthracene	17000000	35000	340 U	410 U	350 U	340 U	52 U
Benzo(a)pyrene Equivalents[(1)]	NA	400	**45.5**	**101**	0 U	0 U	0 U
Benzo(a)anthracene	150	900	**43 J**	410 U	350 U	340 U	71 U
Benzo(a)pyrene	15	400	**36 J**	**83 J**	350 U	340 U	49 U
Benzo(b)fluoranthene	150	900	**51 J**	**110 J**	350 U	340 U	75 U
Benzo(g,h,i)perylene	1700000	800	340 U	**110 J**	350 U	340 U	98 U
Benzo(k)fluoranthene	1500	900	340 U	410 U	350 U	340 U	67 U
Bis(2-Ethylhexyl) Phthalate	NA	46000	340 U	**66 J**	350 U	340 U	130 U
Carbazole	24000	NA	340 U	410 U	350 U	340 U	71 U
Chrysene	15000	400	**50 J**	**69 J**	350 U	340 U	74 U
di-n-Butyl Phthalate	6100000	NA	340 U	**56 J**	350 U	**53 J**	96 U
Dibenzo(a,h)anthracene	15	400	340 U	410 U	350 U	340 U	79 U
Dibenzofuran	NA	NA	340 U	**160 J**	350 U	340 U	53 U
Diethyl Phthalate	49000000	340000	340 U	**61 J**	350 U	36 UJ	71 U
Fluoranthene	2300000	20000	**67 J**	**78 J**	350 U	340 U	64 U
Fluorene	2300000	28000	340 U	**140 J**	350 U	340 U	65 U
Indeno(1,2,3-cd)pyrene	150	900	340 U	**70 J**	350 U	340 U	91 U
Naphthalene	3900	54000	340 U	**2300**	350 U	340 U	97 U
Phenanthrene	1700000	40000	**49 J**	**140 J**	350 U	340 U	71 U
Pyrene	1700000	13000	**75 J**	**66 J**	350 U	340 U	81 U
Total PAHs[(1)]	NA	NA	**371**	**4116**	0 U	0 U	0 U
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000					
Acenaphthene	3400000	43000					
Acenaphthylene	3400000	23000					
Anthracene	17000000	35000					
Benzo(a)pyrene Equivalents[(1)]	NA	400					
Benzo(a)anthracene	150	900					
Benzo(a)pyrene	15	400					
Benzo(b)fluoranthene	150	900					
Benzo(g,h,i)perylene	1700000	800					
Benzo(k)fluoranthene	1500	900					
Chrysene	15000	400					
Dibenzo(a,h)anthracene	15	400					
Fluoranthene	2300000	20000					

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**02**	**02**	**02**	**03**
Location	**ORNL**	**RIDEM**	**28-SB-11**	**28-SB-12**	**28-SB-13**	**28-SB-16**	**28-SB-17**
Sample Number	**Residential**	**Soil Direct**	**28SB-11-NSO-061997-02**	**28SB-12-NSO-061997-06**	**28SB-13-NSO-061997-02**	**28SB-16-NSO-062497-14**	**28SB-17-NSO-101398-08**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/19/1997**	**6/19/1997**	**6/19/1997**	**6/24/1997**	**10/13/1998**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 4**	**6 - 8**	**2 - 4**	**14 - 16**	**8 - 10**
Polycyclic Aromatic Hydrocarbons (ug/kg) (Continued)							
Fluorene	2300000	28000					
Indeno(1,2,3-cd)pyrene	150	900					
Naphthalene	3900	54000					
Phenanthrene	1700000	40000					
Pyrene	1700000	13000					
Total PAHs[(1)]	NA	NA					
Pesticides (ug/kg)							
4,4'-DDD	2000	NA					3.7 U
4,4'-DDT	1700	NA					3.7 U
Endrin Aldehyde	18000	NA					3.7 U
gamma-Chlordane	1600	NA					1.9 U
Inorganics (mg/kg)							
Aluminum	77000	NA					**3480**
Antimony	31	10					0.53 UJ
Arsenic	0.39	7					**1.6 J**
Barium	15000	5500					**11.6 J**
Beryllium	160	0.4					**0.27 J**
Cadmium	70	39					0.04 U
Calcium	NA	NA					**505 J**
Chromium	230	390					**4.9**
Cobalt	23	NA					**4.2 J**
Copper	3100	3100					**8.4**
Iron	55000	NA					**6980**
Lead	400	150					**4.6**
Magnesium	NA	NA					**969 J**
Manganese	1800	390					**121 J**
Mercury	23	23					0.05 U
Nickel	1600	1000					**6.9 J**
Potassium	NA	NA					**401 J**
Selenium	390	390					0.49 U
Silver	390	200					0.22 U
Sodium	NA	NA					**101 J**
Vanadium	390	550					**6.1 J**
Zinc	23000	6000					**20.7**
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					
Total Organic Carbon	NA	NA					
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
Diesel Range Organics	NA	NA					28.1 U
Oil & Grease	NA	NA					
PHC As Diesel	NA	NA					
Total Petroleum Hydrocarbons	NA	500					
TPH	NA	NA	**127**	31 U	27 U	**44**	

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**03**	**03**	**03**	**03**	**02**
Location	**ORNL**	**RIDEM**	**28-SB-18**	**28-SB-19**	**28-SB-19**	**28-SB-20**	**EBS60-01**
Sample Number	**Residential**	**Soil Direct**	**28SB-18-NSO-101398-10**	**28SB-19-NSO-101398-08**	**28SB-19-NSO-101398-08-D**	**28SB-20-NSO-101398-08**	**EBS60-RSPT-01-071497-02**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**ORIG**
Sample Date	**Screening**	**Residential**	**10/13/1998**	**10/13/1998**	**10/13/1998**	**10/13/1998**	**7/14/1997**
Depth Range (feet)	**Levels**	**Criterion**	**10 - 12**	**8 - 10**	**8 - 10**	**8 - 10**	**2 - 3**
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA					
1,2,3,4,6,7,8,9-OCDF	11000	NA					
1,2,3,4,6,7,8-HPCDD	390	NA					
1,2,3,4,6,7,8-HPCDF	320	NA					
1,2,3,4,7,8,9-HPCDF	320	NA					
1,2,3,4,7,8-HXCDD	39	NA					
1,2,3,4,7,8-HXCDF	32	NA					
1,2,3,6,7,8-HXCDD	32	NA					
1,2,3,6,7,8-HXCDF	32	NA					
1,2,3,7,8,9-HXCDD	32	NA					
1,2,3,7,8-PECDD	3.9	NA					
1,2,3,7,8-PECDF	110	NA					
2,3,4,6,7,8-HXCDF	32	NA					
2,3,4,7,8-PECDF	11	NA					
2,3,7,8-TCDD	4.5	NA					
2,3,7,8-TCDF	32	NA					
TEQ[(1)]	4.5	NA					
Total HPCDD	NA	NA					
Total HPCDF	NA	NA					
Total HXCDD	NA	NA					
Total HXCDF	NA	NA					
Total PECDD	NA	NA					
Total PECDF	NA	NA					
Total TCDD	NA	NA					
Total TCDF	NA	NA					
Volatile Organic Compounds (ug/kg)							
1,1,2-Trichloroethane	1100	3600	1 U	1 U	1 U	1 U	10 U
2-Butanone	28000000	10000000	4 U	5 U	5 U	5 U	10 U
2-Hexanone	NA	NA	4 U	5 U	5 U	5 U	10 U
4-Methyl-2-Pentanone	5300000	1200000	6 U	6 U	6 U	6 U	10 U
Acetone	61000000	7800000	**20**	3 U	3 U	4 U	10 UJ
Benzene	1100	2500	1 U	1 U	1 U	1 U	10 U
Bromodichloromethane	10000	10000	1 U	1 U	1 U	1 U	10 U
BTEX[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	2 U	2 U	2 U	2 U	10 U
Chloroform	300	1200	1 U	1 U	1 U	1 U	10 U
Chloromethane	1700	NA	2 U	2 U	2 U	2 U	10 U
cis-1,2-Dichloroethene	780000	630000					
Ethylbenzene	5700	71000	2 U	2 U	2 U	2 U	10 U
m+p-Xylenes	4500000	NA					
Methylene Chloride	11000	45000	1 U	1 U	1 U	1 U	10 U
o-Xylene	5300000	NA					
Styrene	6500000	13000	1 U	1 U	1 U	1 U	10 U
Toluene	5000000	190000	1 U	1 U	1 U	1 U	10 U
Total 1,2-Dichloroethene	700000	630000	1 U	1 U	1 U	1 U	10 U
Total Chlorinated VOCs[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **Depth Range (feet)**	**ORNL Residential Regional Screening Levels**	**RIDEM Soil Direct Exposure Residential Criterion**	**03** **28-SB-18** **28SB-18-NSO-101398-10** **NORMAL** **10/13/1998** **10 - 12**	**03** **28-SB-19** **28SB-19-NSO-101398-08** **ORIG** **10/13/1998** **8 - 10**	**03** **28-SB-19** **28SB-19-NSO-101398-08-D** **DUP** **10/13/1998** **8 - 10**	**03** **28-SB-20** **28SB-20-NSO-101398-08** **NORMAL** **10/13/1998** **8 - 10**	**02** **EBS60-01** **EBS60-RSPT-01-071497-02** **ORIG** **7/14/1997** **2 - 3**
Volatile Organic Compounds (ug/kg) (Continued)							
Total Xylenes	600000	110000	2 U	2 U	2 U	2 U	10 U
trans-1,2-Dichloroethene	110000	1100000					
Trichloroethene	2800	13000	1 U	1 U	1 U	1 U	10 U
Vinyl Chloride	60	20	2 U	2 U	2 U	2 U	10 U
Semivolatile Organic Compounds (ug/kg)							
2,4-Dimethylphenol	1200000	1400000	52 U	53 U	52 U	55 U	340 U
2,6-Dinitrotoluene	61000	NA	55 U	56 U	56 U	59 U	340 U
2-Methylnaphthalene	310000	123000	57 U	58 U	58 U	61 U	340 U
2-Methylphenol	3100000	NA	58 U	60 U	59 U	63 U	340 U
4-Chloroaniline	240000	310000	110 U	110 U	110 U	120 U	340 U
4-Methylphenol	310000	NA	49 U	51 U	50 U	53 U	340 U
Acenaphthene	3400000	43000	58 U	60 U	59 U	63 U	340 U
Anthracene	17000000	35000	52 U	53 U	52 U	55 U	340 U
Benzo(a)pyrene Equivalents[1]	NA	400	0 U	0 U	0 U	0 U	**49.9**
Benzo(a)anthracene	150	900	71 U	72 U	72 U	76 U	**52 J**
Benzo(a)pyrene	15	400	49 U	50 U	49 U	52 U	**38 J**
Benzo(b)fluoranthene	150	900	75 U	77 U	76 U	81 U	**66 J**
Benzo(g,h,i)perylene	1700000	800	98 U	100 U	99 U	100 U	340 U
Benzo(k)fluoranthene	1500	900	67 U	69 U	68 U	72 U	340 U
Bis(2-Ethylhexyl) Phthalate	NA	46000	130 U	140 U	140 U	140 U	340 U
Carbazole	24000	NA	71 U	72 U	72 U	76 U	340 U
Chrysene	15000	400	74 U	76 U	75 U	80 U	**50 J**
di-n-Butyl Phthalate	6100000	NA	96 U	98 U	97 U	100 U	340 U
Dibenzo(a,h)anthracene	15	400	79 U	80 U	80 U	84 U	340 U
Dibenzofuran	NA	NA	53 U	54 U	53 U	57 U	340 U
Diethyl Phthalate	49000000	340000	71 U	72 U	72 U	76 U	340 U
Fluoranthene	2300000	20000	64 U	66 U	65 U	69 U	**96 J**
Fluorene	2300000	28000	65 U	67 U	66 U	70 U	340 U
Indeno(1,2,3-cd)pyrene	150	900	91 U	93 U	92 U	98 U	340 U
Naphthalene	3900	54000	97 U	99 U	98 U	100 U	340 U
Phenanthrene	1700000	40000	71 U	72 U	72 U	76 U	**51 J**
Pyrene	1700000	13000	81 U	83 U	82 U	87 U	**86 J**
Total PAHs[1]	NA	NA	0 U	0 U	0 U	0 U	**439**
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000					
Acenaphthene	3400000	43000					
Acenaphthylene	3400000	23000					
Anthracene	17000000	35000					
Benzo(a)pyrene Equivalents[1]	NA	400					
Benzo(a)anthracene	150	900					
Benzo(a)pyrene	15	400					
Benzo(b)fluoranthene	150	900					
Benzo(g,h,i)perylene	1700000	800					
Benzo(k)fluoranthene	1500	900					
Chrysene	15000	400					
Dibenzo(a,h)anthracene	15	400					
Fluoranthene	2300000	20000					

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**03**	**03**	**03**	**03**	**02**
Location	**ORNL**	**RIDEM**	**28-SB-18**	**28-SB-19**	**28-SB-19**	**28-SB-20**	**EBS60-01**
Sample Number	**Residential**	**Soil Direct**	**28SB-18-NSO-101398-10**	**28SB-19-NSO-101398-08**	**28SB-19-NSO-101398-08-D**	**28SB-20-NSO-101398-08**	**EBS60-RSPT-01-071497-02**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**ORIG**
Sample Date	**Screening**	**Residential**	**10/13/1998**	**10/13/1998**	**10/13/1998**	**10/13/1998**	**7/14/1997**
Depth Range (feet)	**Levels**	**Criterion**	**10 - 12**	**8 - 10**	**8 - 10**	**8 - 10**	**2 - 3**
Polycyclic Aromatic Hydrocarbons (ug/kg) (Continued)							
Fluorene	2300000	28000					
Indeno(1,2,3-cd)pyrene	150	900					
Naphthalene	3900	54000					
Phenanthrene	1700000	40000					
Pyrene	1700000	13000					
Total PAHs[(1)]	NA	NA					
Pesticides (ug/kg)							
4,4'-DDD	2000	NA	3.7 U	3.8 U	3.8 U	4 U	
4,4'-DDT	1700	NA	3.7 U	3.8 U	3.8 U	4 U	
Endrin Aldehyde	18000	NA	3.7 U	3.8 U	3.8 U	4 U	
gamma-Chlordane	1600	NA	1.9 U	1.9 U	1.9 U	2 U	
Inorganics (mg/kg)							
Aluminum	77000	NA	**8780**	**9010**	**9610**	**3600**	
Antimony	31	10	**0.66 J**	0.52 UJ	**0.58 J**	**6.4 J**	
Arsenic	0.39	7	**2.5**	**2.4**	**2 J**	**2.8**	**1.7 J**
Barium	15000	5500	**35.8 J**	**37.6 J**	**31.3 J**	**98.9**	**8.7**
Beryllium	160	0.4	**0.57 J**	**0.52 J**	**0.51 J**	**0.3 J**	
Cadmium	70	39	0.06 U	0.04 U	0.04 U	**0.81 J**	0.05 U
Calcium	NA	NA	**1050 J**	**934 J**	**871 J**	**2640**	
Chromium	230	390	**13.3**	**10.8**	**11.3**	**16.5**	**4.4 J**
Cobalt	23	NA	**9.5 J**	**8.4 J**	**7.5 J**	**7 J**	
Copper	3100	3100	**28.3**	**21.9**	**16.2**	**54.1**	
Iron	55000	NA	**17300**	**16000**	**15900**	**25800**	
Lead	400	150	**24.6**	**27.2**	**19.7**	**339**	**7.5 J**
Magnesium	NA	NA	**3240**	**2550**	**2490**	**1660**	
Manganese	1800	390	**228 J**	**198 J**	**156 J**	**317 J**	
Mercury	23	23	0.05 U	0.06 U	**0.05 J**	**0.14**	0.1 U
Nickel	1600	1000	**17.1**	**12.4**	**12.2**	**18.3**	
Potassium	NA	NA	**1170**	**1080**	**997 J**	**901 J**	
Selenium	390	390	0.49 U	0.47 U	0.46 U	0.5 U	0.17 U
Silver	390	200	0.22 U	0.22 U	0.21 U	**0.29 J**	0.33 U
Sodium	NA	NA	**103 J**	**92.3 J**	**98 J**	**145 J**	
Vanadium	390	550	**14.9**	**15.3**	**15.5**	**7.4 J**	
Zinc	23000	6000	**61.8**	**73.7**	**58.1**	**528**	
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					
Total Organic Carbon	NA	NA					
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
Diesel Range Organics	NA	NA	27.8 U	28.3 U	28.2 U	**82.9**	
Oil & Grease	NA	NA					
PHC As Diesel	NA	NA					
Total Petroleum Hydrocarbons	NA	500					**124**
TPH	NA	NA					

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**03**	**03**	**01**	**01**
Location	**ORNL**	**RIDEM**	**EBS60-01**	**EBS81-01**	**EBS81-02**	**EBS85-SB01**	**EBS85-SB02**
Sample Number	**Residential**	**Soil Direct**	**EBS60-RSPT-01-071497-02-D**	**EBS81-RSPT-01S-120297-09**	**EBS81-RSPT-02S-120297-09**	**EBS85-SB01-050196-02**	**EBS85-SB02-050196-02**
Sample Code	**Regional**	**Exposure**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**7/14/1997**	**12/2/1997**	**12/2/1997**	**5/1/1996**	**5/1/1996**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 3**	**9 - 11**	**9 - 11**	**2 - 4**	**2 - 4**
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA					
1,2,3,4,6,7,8,9-OCDF	11000	NA					
1,2,3,4,6,7,8-HPCDD	390	NA					
1,2,3,4,6,7,8-HPCDF	320	NA					
1,2,3,4,7,8,9-HPCDF	320	NA					
1,2,3,4,7,8-HXCDD	39	NA					
1,2,3,4,7,8-HXCDF	32	NA					
1,2,3,6,7,8-HXCDD	32	NA					
1,2,3,6,7,8-HXCDF	32	NA					
1,2,3,7,8,9-HXCDD	32	NA					
1,2,3,7,8-PECDD	3.9	NA					
1,2,3,7,8-PECDF	110	NA					
2,3,4,6,7,8-HXCDF	32	NA					
2,3,4,7,8-PECDF	11	NA					
2,3,7,8-TCDD	4.5	NA					
2,3,7,8-TCDF	32	NA					
TEQ[(1)]	4.5	NA					
Total HPCDD	NA	NA					
Total HPCDF	NA	NA					
Total HXCDD	NA	NA					
Total HXCDF	NA	NA					
Total PECDD	NA	NA					
Total PECDF	NA	NA					
Total TCDD	NA	NA					
Total TCDF	NA	NA					
Volatile Organic Compounds (ug/kg)							
1,1,2-Trichloroethane	1100	3600	10 U	11 U	11 U	11 U	11 U
2-Butanone	28000000	10000000	10 U	11 U	11 U	**99 J**	**63 J**
2-Hexanone	NA	NA	10 U	11 U	11 U	11 U	11 U
4-Methyl-2-Pentanone	5300000	1200000	10 U	11 U	11 U	11 U	11 U
Acetone	61000000	7800000	10 UJ	11 U	11 U	**48 J**	**28 J**
Benzene	1100	2500	10 U	11 U	11 U	11 U	11 U
Bromodichloromethane	10000	10000	10 U	11 U	11 U	11 U	11 U
BTEX[(1)]	NA	NA	0 U	0 U	0 U	**15**	**6**
Carbon Disulfide	670000	NA	10 U	11 U	11 U	11 U	11 U
Chloroform	300	1200	10 U	11 U	11 U	11 U	11 U
Chloromethane	1700	NA	10 U	11 U	11 U	11 U	11 U
cis-1,2-Dichloroethene	780000	630000					
Ethylbenzene	5700	71000	10 U	11 U	11 U	11 U	11 U
m+p-Xylenes	4500000	NA					
Methylene Chloride	11000	45000	10 U	11 U	11 U	11 U	11 U
o-Xylene	5300000	NA					
Styrene	6500000	13000	10 U	11 U	11 U	11 U	11 U
Toluene	5000000	190000	10 U	11 U	11 U	**15**	**6 J**
Total 1,2-Dichloroethene	700000	630000	10 U	11 U	11 U	11 U	11 U
Total Chlorinated VOCs[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet)	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	02 EBS60-01 EBS60-RSPT-01-071497-02-D DUP 7/14/1997 2 - 3	03 EBS81-01 EBS81-RSPT-01S-120297-09 NORMAL 12/2/1997 9 - 11	03 EBS81-02 EBS81-RSPT-02S-120297-09 NORMAL 12/2/1997 9 - 11	01 EBS85-SB01 EBS85-SB01-050196-02 NORMAL 5/1/1996 2 - 4	01 EBS85-SB02 EBS85-SB02-050196-02 NORMAL 5/1/1996 2 - 4
Volatile Organic Compounds (ug/kg) (Continued)							
Total Xylenes	600000	110000	10 U	11 U	11 U	11 U	11 U
trans-1,2-Dichloroethene	110000	1100000					
Trichloroethene	2800	13000	10 U	11 U	11 U	11 U	11 U
Vinyl Chloride	60	20	10 U	11 U	11 U	11 U	11 U
Semivolatile Organic Compounds (ug/kg)							
2,4-Dimethylphenol	1200000	1400000	340 U	350 U	350 U		
2,6-Dinitrotoluene	61000	NA	340 U	350 U	350 U		
2-Methylnaphthalene	310000	123000	340 U	350 U	350 U		
2-Methylphenol	3100000	NA	340 U	350 U	350 U		
4-Chloroaniline	240000	310000	340 U	350 U	350 U		
4-Methylphenol	310000	NA	340 U	350 U	350 U		
Acenaphthene	3400000	43000	340 U	350 U	350 U		
Anthracene	17000000	35000	340 U	350 U	350 U		
Benzo(a)pyrene Equivalents[1]	NA	400	0 U	0 U	0 U		
Benzo(a)anthracene	150	900	340 U	350 U	350 U		
Benzo(a)pyrene	15	400	340 U	350 U	350 U		
Benzo(b)fluoranthene	150	900	340 U	350 U	350 U		
Benzo(g,h,i)perylene	1700000	800	340 U	350 U	350 U		
Benzo(k)fluoranthene	1500	900	340 U	350 U	350 U		
Bis(2-Ethylhexyl) Phthalate	NA	46000	340 U	350 U	350 U		
Carbazole	24000	NA	340 U	350 U	350 U		
Chrysene	15000	400	340 U	350 U	350 U		
di-n-Butyl Phthalate	6100000	NA	340 U	350 U	350 U		
Dibenzo(a,h)anthracene	15	400	340 U	350 U	350 U		
Dibenzofuran	NA	NA	340 U	350 U	350 U		
Diethyl Phthalate	49000000	340000	340 U	350 U	350 U		
Fluoranthene	2300000	20000	340 U	350 U	350 U		
Fluorene	2300000	28000	340 U	350 U	350 U		
Indeno(1,2,3-cd)pyrene	150	900	340 U	350 U	350 U		
Naphthalene	3900	54000	340 U	350 U	350 U		
Phenanthrene	1700000	40000	340 U	350 U	350 U		
Pyrene	1700000	13000	340 U	350 U	350 U		
Total PAHs[1]	NA	NA	0 U	0 U	0 U		
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000					
Acenaphthene	3400000	43000					
Acenaphthylene	3400000	23000					
Anthracene	17000000	35000					
Benzo(a)pyrene Equivalents[1]	NA	400					
Benzo(a)anthracene	150	900					
Benzo(a)pyrene	15	400					
Benzo(b)fluoranthene	150	900					
Benzo(g,h,i)perylene	1700000	800					
Benzo(k)fluoranthene	1500	900					
Chrysene	15000	400					
Dibenzo(a,h)anthracene	15	400					
Fluoranthene	2300000	20000					

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **Depth Range (feet)**	**ORNL Residential Regional Screening Levels**	**RIDEM Soil Direct Exposure Residential Criterion**	**02** **EBS60-01** **EBS60-RSPT-01-071497-02-D** **DUP** **7/14/1997** **2 - 3**	**03** **EBS81-01** **EBS81-RSPT-01S-120297-09** **NORMAL** **12/2/1997** **9 - 11**	**03** **EBS81-02** **EBS81-RSPT-02S-120297-09** **NORMAL** **12/2/1997** **9 - 11**	**01** **EBS85-SB01** **EBS85-SB01-050196-02** **NORMAL** **5/1/1996** **2 - 4**	**01** **EBS85-SB02** **EBS85-SB02-050196-02** **NORMAL** **5/1/1996** **2 - 4**
Polycyclic Aromatic Hydrocarbons (ug/kg) (Continued)							
Fluorene	2300000	28000					
Indeno(1,2,3-cd)pyrene	150	900					
Naphthalene	3900	54000					
Phenanthrene	1700000	40000					
Pyrene	1700000	13000					
Total PAHs[(1)]	NA	NA					
Pesticides (ug/kg)							
4,4'-DDD	2000	NA					
4,4'-DDT	1700	NA					
Endrin Aldehyde	18000	NA					
gamma-Chlordane	1600	NA					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Antimony	31	10					
Arsenic	0.39	7	**2.8 J**	**3.4**	**3.1**		
Barium	15000	5500	**10.7**	**5.2 J**	**3 J**		
Beryllium	160	0.4					
Cadmium	70	39	0.06 U	0.04 U	0.04 U		
Calcium	NA	NA					
Chromium	230	390	**4.3 J**	**3.7**	**1.9**		
Cobalt	23	NA					
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150	**9.2 J**	**6.5**	**3.6**		
Magnesium	NA	NA					
Manganese	1800	390					
Mercury	23	23	0.1 U	0.1 U	0.1 U		
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390	0.28 U	0.38 U	0.21 U		
Silver	390	200	0.38 U	0.07 U	0.07 U		
Sodium	NA	NA					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					
Total Organic Carbon	NA	NA					
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
Diesel Range Organics	NA	NA					
Oil & Grease	NA	NA					
PHC As Diesel	NA	NA					
Total Petroleum Hydrocarbons	NA	500	**109**	**56**	**27.1**		
TPH	NA	NA					

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**01**	**04**	**04**	**04**	**04**
Location	**ORNL**	**RIDEM**	**EBS85-SB02**	**MW16-01S**	**MW16-02S**	**MW16-03S**	**MW16-04S**
Sample Number	**Residential**	**Soil Direct**	**EBS85-SB02-050196-08**	**MW16-01S-NSO-051700-19**	**MW16-02S-NSO-052400-10**	**MW16-03S-NSO-061200-03**	**MW16-04S-NSO-061400-03**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**5/1/1996**	**5/17/2000**	**5/24/2000**	**6/12/2000**	**6/14/2000**
Depth Range (feet)	**Levels**	**Criterion**	**8 - 10**	**19 - 21**	**10 - 12**	**3 - 5**	**3 - 5**
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA					
1,2,3,4,6,7,8,9-OCDF	11000	NA					
1,2,3,4,6,7,8-HPCDD	390	NA					
1,2,3,4,6,7,8-HPCDF	320	NA					
1,2,3,4,7,8,9-HPCDF	320	NA					
1,2,3,4,7,8-HXCDD	39	NA					
1,2,3,4,7,8-HXCDF	32	NA					
1,2,3,6,7,8-HXCDD	32	NA					
1,2,3,6,7,8-HXCDF	32	NA					
1,2,3,7,8,9-HXCDD	32	NA					
1,2,3,7,8-PECDD	3.9	NA					
1,2,3,7,8-PECDF	110	NA					
2,3,4,6,7,8-HXCDF	32	NA					
2,3,4,7,8-PECDF	11	NA					
2,3,7,8-TCDD	4.5	NA					
2,3,7,8-TCDF	32	NA					
TEQ[(1)]	4.5	NA					
Total HPCDD	NA	NA					
Total HPCDF	NA	NA					
Total HXCDD	NA	NA					
Total HXCDF	NA	NA					
Total PECDD	NA	NA					
Total PECDF	NA	NA					
Total TCDD	NA	NA					
Total TCDF	NA	NA					
Volatile Organic Compounds (ug/kg)							
1,1,2-Trichloroethane	1100	3600	12 U	5 U	5 U	5 U	5 U
2-Butanone	28000000	10000000	**52 J**	10 UJ	10 U	10 U	**7 J**
2-Hexanone	NA	NA	12 U	10 U	10 U	10 U	10 UJ
4-Methyl-2-Pentanone	5300000	1200000	12 U	10 U	10 U	10 U	10 U
Acetone	61000000	7800000	12 U	10 UJ	10 UJ	**8 E**	**10 E**
Benzene	1100	2500	12 U	5 U	5 U	5 U	5 U
Bromodichloromethane	10000	10000	12 U	5 U	5 U	5 U	5 U
BTEX[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	12 U	5 U	5 U	5 UJ	5 U
Chloroform	300	1200	12 U	5 U	5 U	5 U	5 U
Chloromethane	1700	NA	12 U	5 UJ	5 U	5 U	5 UJ
cis-1,2-Dichloroethene	780000	630000		5 U	5 U	5 U	5 U
Ethylbenzene	5700	71000	12 U	5 U	5 U	5 U	5 U
m+p-Xylenes	4500000	NA		5 U	5 U	5 U	5 U
Methylene Chloride	11000	45000	12 U	22 UJ	8 UJ	6 UJ	5 UJ
o-Xylene	5300000	NA		5 U	5 U	5 U	5 U
Styrene	6500000	13000	12 U	5 U	5 U	5 U	5 U
Toluene	5000000	190000	12 U	5 U	5 U	5 U	5 U
Total 1,2-Dichloroethene	700000	630000	12 U	5 U	5 U	5 U	5 U
Total Chlorinated VOCs[(1)]	NA	NA	0 U	0 U	**6**	0 U	0 U

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**01**	**04**	**04**	**04**	**04**
Location	**ORNL**	**RIDEM**	**EBS85-SB02**	**MW16-01S**	**MW16-02S**	**MW16-03S**	**MW16-04S**
Sample Number	**Residential**	**Soil Direct**	**EBS85-SB02-050196-08**	**MW16-01S-NSO-051700-19**	**MW16-02S-NSO-052400-10**	**MW16-03S-NSO-061200-03**	**MW16-04S-NSO-061400-03**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**5/1/1996**	**5/17/2000**	**5/24/2000**	**6/12/2000**	**6/14/2000**
Depth Range (feet)	**Levels**	**Criterion**	**8 - 10**	**19 - 21**	**10 - 12**	**3 - 5**	**3 - 5**
Volatile Organic Compounds (ug/kg) (Continued)							
Total Xylenes	600000	110000	12 U	5 U	5 U	5 U	5 U
trans-1,2-Dichloroethene	110000	1100000		5 U	5 U	5 U	5 U
Trichloroethene	2800	13000	12 U	5 U	**6**	5 U	5 U
Vinyl Chloride	60	20	12 U	10 U	10 U	10 U	10 U
Semivolatile Organic Compounds (ug/kg)							
2,4-Dimethylphenol	1200000	1400000		400 UJ	400 U	400 U	360 U
2,6-Dinitrotoluene	61000	NA		400 UJ	400 U	400 U	360 U
2-Methylnaphthalene	310000	123000		400 UJ	400 U	400 U	360 U
2-Methylphenol	3100000	NA		400 UJ	400 U	400 U	360 U
4-Chloroaniline	240000	310000		400 UJ	400 UJ	400 UJ	360 UJ
4-Methylphenol	310000	NA		400 UJ	400 U	400 U	360 U
Acenaphthene	3400000	43000		400 UJ	400 U	400 U	360 U
Anthracene	17000000	35000		400 UJ	400 U	400 U	360 U
Benzo(a)pyrene Equivalents[(1)]	NA	400		0 U	0 U	0 U	0 U
Benzo(a)anthracene	150	900		400 UJ	400 U	400 U	360 U
Benzo(a)pyrene	15	400		400 UJ	400 U	400 U	360 U
Benzo(b)fluoranthene	150	900		400 UJ	400 U	400 U	360 U
Benzo(g,h,i)perylene	1700000	800		400 UJ	400 U	400 UJ	360 UJ
Benzo(k)fluoranthene	1500	900		400 UJ	400 U	400 UJ	360 UJ
Bis(2-Ethylhexyl) Phthalate	NA	46000		400 UJ	400 U	400 U	360 U
Carbazole	24000	NA		400 UJ	400 U	400 U	360 U
Chrysene	15000	400		400 UJ	400 U	400 U	360 U
di-n-Butyl Phthalate	6100000	NA		400 UJ	400 U	400 U	360 U
Dibenzo(a,h)anthracene	15	400		400 UJ	400 U	400 UJ	360 UJ
Dibenzofuran	NA	NA		400 UJ	400 U	400 U	360 U
Diethyl Phthalate	49000000	340000		400 UJ	400 UJ	400 U	360 U
Fluoranthene	2300000	20000		400 UJ	400 U	400 U	360 U
Fluorene	2300000	28000		400 UJ	400 U	400 U	360 U
Indeno(1,2,3-cd)pyrene	150	900		400 UJ	400 U	400 UJ	360 UJ
Naphthalene	3900	54000		400 UJ	400 U	400 U	360 U
Phenanthrene	1700000	40000		400 UJ	400 U	400 U	360 U
Pyrene	1700000	13000		400 UJ	400 UJ	400 U	360 U
Total PAHs[(1)]	NA	NA		0 U	0 U	0 U	0 U
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000		24 UJ	24 UJ	24 U	22 U
Acenaphthene	3400000	43000		24 UJ	24 UJ	24 U	22 U
Acenaphthylene	3400000	23000		24 UJ	24 UJ	24 U	22 U
Anthracene	17000000	35000		24 UJ	24 UJ	24 U	**11**
Benzo(a)pyrene Equivalents[(1)]	NA	400		0 U	0 U	0 U	**79.6**
Benzo(a)anthracene	150	900		24 UJ	24 U	24 U	**59**
Benzo(a)pyrene	15	400		24 UJ	24 UJ	24 U	**51**
Benzo(b)fluoranthene	150	900		24 UJ	24 U	24 U	**81**
Benzo(g,h,i)perylene	1700000	800		24 UJ	24 UJ	24 U	**34**
Benzo(k)fluoranthene	1500	900		24 UJ	24 U	24 U	**24**
Chrysene	15000	400		24 UJ	24 U	24 U	**50**
Dibenzo(a,h)anthracene	15	400		24 UJ	24 UJ	24 U	**10**
Fluoranthene	2300000	20000		24 UJ	24 U	24 U	**100**

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**01**	**04**	**04**	**04**	**04**
Location	**ORNL**	**RIDEM**	**EBS85-SB02**	**MW16-01S**	**MW16-02S**	**MW16-03S**	**MW16-04S**
Sample Number	**Residential**	**Soil Direct**	**EBS85-SB02-050196-08**	**MW16-01S-NSO-051700-19**	**MW16-02S-NSO-052400-10**	**MW16-03S-NSO-061200-03**	**MW16-04S-NSO-061400-03**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**5/1/1996**	**5/17/2000**	**5/24/2000**	**6/12/2000**	**6/14/2000**
Depth Range (feet)	**Levels**	**Criterion**	**8 - 10**	**19 - 21**	**10 - 12**	**3 - 5**	**3 - 5**
Polycyclic Aromatic Hydrocarbons (ug/kg) (Continued)							
Fluorene	2300000	28000		24 UJ	24 U	24 U	22 U
Indeno(1,2,3-cd)pyrene	150	900		24 UJ	24 UJ	24 U	**43**
Naphthalene	3900	54000		24 UJ	24 UJ	24 U	22 U
Phenanthrene	1700000	40000		24 UJ	24 UJ	24 U	**60**
Pyrene	1700000	13000		24 UJ	24 U	24 U	**83**
Total PAHs[(1)]	NA	NA		0 U	0 U	0 U	**606**
Pesticides (ug/kg)							
4,4'-DDD	2000	NA		4 U	4 U	3.8 U	3.8 U
4,4'-DDT	1700	NA		4 U	4 U	3.8 U	3.8 U
Endrin Aldehyde	18000	NA		4 U	4 U	3.8 U	3.8 U
gamma-Chlordane	1600	NA		2.1 U	2.1 U	2 U	1.9 U
Inorganics (mg/kg)							
Aluminum	77000	NA		**3570**	**3380**	**5270**	**2810**
Antimony	31	10		0.22 U	0.23 U	0.38 UJ	0.18 UJ
Arsenic	0.39	7		**3.1**	**2**	1.7 UJ	1.5 UJ
Barium	15000	5500		**10.1**	**9.5**	**11.6**	**12**
Beryllium	160	0.4		**0.29**	**0.31**	**0.6**	**0.44**
Cadmium	70	39		0.25 U	0.03 U	0.43 U	0.2 U
Calcium	NA	NA		**492**	**587**	341 U	526 U
Chromium	230	390		**5.4**	**5.5**	**8.1**	**2.5**
Cobalt	23	NA		**4.9**	**4.3**	**10.2**	**2.9**
Copper	3100	3100		**15.5**	**8.1**	**56.7 J**	**6.7 J**
Iron	55000	NA		**11500**	**9080**	**22000**	**5900**
Lead	400	150		**5.8**	**4.6**	**9.1**	**11.6**
Magnesium	NA	NA		**1410**	**1260**	**1740 J**	509 UJ
Manganese	1800	390		**157**	**145**	**219**	**92**
Mercury	23	23		0.01 U	0.01 U	0.01 U	0.02 U
Nickel	1600	1000		4.3 U	**6.1**	**12.6**	2.7 U
Potassium	NA	NA		**616**	**469**	524 U	389 U
Selenium	390	390		0.28 U	0.3 U	**0.92**	0.23 U
Silver	390	200		0.51 U	0.27 U	0.45 U	0.21 UJ
Sodium	NA	NA		**68.6**	**45.9**	23.4 U	20.2 U
Vanadium	390	550		**8.2**	**6.6**	**10.9**	**4.6**
Zinc	23000	6000		**20.8**	**22.7**	**39.3 J**	**27.8 J**
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA		**6.4**	**6.4**	**6.5**	**6.4**
Total Organic Carbon	NA	NA		**1900**	**890**	**3600**	**3300**
Total Residue (%)	NA	NA		**81**	**82**	**86**	**87**
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
Diesel Range Organics	NA	NA					
Oil & Grease	NA	NA					
PHC As Diesel	NA	NA					
Total Petroleum Hydrocarbons	NA	500					
TPH	NA	NA					

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**04**	**04**	**04**	**04**	**08**
Location	**ORNL**	**RIDEM**	**MW16-05S**	**MW16-06S**	**MW16-07S**	**MW16-07S**	**MW16-49I**
Sample Number	**Residential**	**Soil Direct**	**MW16-05S-NSO-053000-05**	**MW16-06S-NSO-062100-10**	**MW16-07S-NSO-061900-05**	**MW16-07S-NSO-061900-05-D**	**MW16-49I-NSO-080404-10**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**ORIG**
Sample Date	**Screening**	**Residential**	**5/30/2000**	**6/21/2000**	**6/19/2000**	**6/19/2000**	**8/4/2004**
Depth Range (feet)	**Levels**	**Criterion**	**5 - 7**	**10 - 12**	**5 - 7**	**5 - 7**	**10 - 12**
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA					
1,2,3,4,6,7,8,9-OCDF	11000	NA					
1,2,3,4,6,7,8-HPCDD	390	NA					
1,2,3,4,6,7,8-HPCDF	320	NA					
1,2,3,4,7,8,9-HPCDF	320	NA					
1,2,3,4,7,8-HXCDD	39	NA					
1,2,3,4,7,8-HXCDF	32	NA					
1,2,3,6,7,8-HXCDD	32	NA					
1,2,3,6,7,8-HXCDF	32	NA					
1,2,3,7,8,9-HXCDD	32	NA					
1,2,3,7,8-PECDD	3.9	NA					
1,2,3,7,8-PECDF	110	NA					
2,3,4,6,7,8-HXCDF	32	NA					
2,3,4,7,8-PECDF	11	NA					
2,3,7,8-TCDD	4.5	NA					
2,3,7,8-TCDF	32	NA					
TEQ[(1)]	4.5	NA					
Total HPCDD	NA	NA					
Total HPCDF	NA	NA					
Total HXCDD	NA	NA					
Total HXCDF	NA	NA					
Total PECDD	NA	NA					
Total PECDF	NA	NA					
Total TCDD	NA	NA					
Total TCDF	NA	NA					
Volatile Organic Compounds (ug/kg)							
1,1,2-Trichloroethane	1100	3600	5 U	5 U	340 U	330 U	4 U
2-Butanone	28000000	10000000	10 U	10 U	670 UJ	660 UJ	**7 J**
2-Hexanone	NA	NA	10 U	10 U	670 U	660 U	8 U
4-Methyl-2-Pentanone	5300000	1200000	10 U	10 U	670 U	660 U	8 U
Acetone	61000000	7800000	17 U	**27 E**	**490 E**	**450 E**	**49 J**
Benzene	1100	2500	5 U	5 U	340 U	330 U	4 U
Bromodichloromethane	10000	10000	5 U	5 U	340 U	330 U	4 U
BTEX[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	5 U	5 U	340 U	330 U	**11 J**
Chloroform	300	1200	5 U	5 U	340 U	330 U	4 U
Chloromethane	1700	NA	5 UJ	5 UJ	340 U	330 U	4 U
cis-1,2-Dichloroethene	780000	630000	5 U	5 U	340 U	330 U	4 U
Ethylbenzene	5700	71000	5 U	5 U	340 U	330 U	4 U
m+p-Xylenes	4500000	NA	5 U	5 U	340 U	330 U	8 U
Methylene Chloride	11000	45000	19 UJ	**4 J**	**230 J**	**190 J**	7 U
o-Xylene	5300000	NA	5 U	5 U	340 U	330 U	4 U
Styrene	6500000	13000	5 U	5 U	340 U	330 U	4 U
Toluene	5000000	190000	5 U	5 U	340 U	330 U	4 U
Total 1,2-Dichloroethene	700000	630000	5 U	5 U	340 U	330 U	4 U
Total Chlorinated VOCs[(1)]	NA	NA	0 U	**4**	**230**	**190**	0 U

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**04**	**04**	**04**	**04**	**08**
Location	**ORNL**	**RIDEM**	**MW16-05S**	**MW16-06S**	**MW16-07S**	**MW16-07S**	**MW16-49I**
Sample Number	**Residential**	**Soil Direct**	**MW16-05S-NSO-053000-05**	**MW16-06S-NSO-062100-10**	**MW16-07S-NSO-061900-05**	**MW16-07S-NSO-061900-05-D**	**MW16-49I-NSO-080404-10**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**ORIG**
Sample Date	**Screening**	**Residential**	**5/30/2000**	**6/21/2000**	**6/19/2000**	**6/19/2000**	**8/4/2004**
Depth Range (feet)	**Levels**	**Criterion**	**5 - 7**	**10 - 12**	**5 - 7**	**5 - 7**	**10 - 12**
Volatile Organic Compounds (ug/kg) (Continued)							
Total Xylenes	600000	110000	5 U	5 U	340 U	330 U	4 U
trans-1,2-Dichloroethene	110000	1100000	5 U	5 U	340 U	330 U	4 U
Trichloroethene	2800	13000	5 U	5 U	340 U	330 U	4 U
Vinyl Chloride	60	20	10 U	10 U	670 U	660 U	4 U
Semivolatile Organic Compounds (ug/kg)							
2,4-Dimethylphenol	1200000	1400000	400 U	360 U	360 U	360 U	220 U
2,6-Dinitrotoluene	61000	NA	400 U	360 U	360 U	360 U	220 U
2-Methylnaphthalene	310000	123000	400 UJ	360 U	**5700**	**8100**	220 U
2-Methylphenol	3100000	NA	400 U	360 U	360 U	360 U	220 U
4-Chloroaniline	240000	310000	400 UJ	360 UJ	360 UJ	360 UJ	220 U
4-Methylphenol	310000	NA	400 UJ	360 U	360 U	360 U	220 U
Acenaphthene	3400000	43000	400 UJ	360 U	**610**	**640**	
Anthracene	17000000	35000	400 UJ	360 U	360 U	360 U	
Benzo(a)pyrene Equivalents[1]	NA	400	0 U	0 U	0 U	0 U	
Benzo(a)anthracene	150	900	400 UJ	360 U	360 U	360 U	
Benzo(a)pyrene	15	400	400 UJ	360 U	360 U	360 U	
Benzo(b)fluoranthene	150	900	400 UJ	360 U	360 U	360 U	
Benzo(g,h,i)perylene	1700000	800	400 UJ	360 U	360 UJ	360 UJ	
Benzo(k)fluoranthene	1500	900	400 UJ	360 U	360 UJ	360 UJ	
Bis(2-Ethylhexyl) Phthalate	NA	46000	400 U	360 U	**560**	360 U	**1600**
Carbazole	24000	NA	400 U	360 U	360 U	360 U	220 U
Chrysene	15000	400	400 UJ	360 U	360 U	360 U	
di-n-Butyl Phthalate	6100000	NA	400 U	360 U	360 U	360 U	220 U
Dibenzo(a,h)anthracene	15	400	400 UJ	360 U	360 UJ	360 UJ	
Dibenzofuran	NA	NA	400 U	360 U	360 U	360 U	220 U
Diethyl Phthalate	49000000	340000	400 U	360 U	360 U	360 U	220 U
Fluoranthene	2300000	20000	400 U	360 U	**280**	**350**	
Fluorene	2300000	28000	400 UJ	360 U	**620**	**700**	
Indeno(1,2,3-cd)pyrene	150	900	400 UJ	360 U	360 UJ	360 UJ	
Naphthalene	3900	54000	400 UJ	360 U	360 U	360 U	
Phenanthrene	1700000	40000	400 UJ	360 U	**1000**	**1200**	
Pyrene	1700000	13000	400 UJ	360 U	**350**	**360 J**	
Total PAHs[1]	NA	NA	0 U	0 U	**8560**	**11350**	
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000	24 U	22 U	**7000**	**5900**	
Acenaphthene	3400000	43000	24 UJ	22 U	**600**	**600**	22 U
Acenaphthylene	3400000	23000	24 UJ	22 U	**310 J**	22 UJ	44 U
Anthracene	17000000	35000	24 U	22 U	**1300**	**1200**	2.2 U
Benzo(a)pyrene Equivalents[1]	NA	400	0 U	0 U	**129**	**150**	0 U
Benzo(a)anthracene	150	900	24 UJ	22 U	**140**	**140**	2.2 U
Benzo(a)pyrene	15	400	24 UJ	22 U	**89 J**	**92 J**	2.2 U
Benzo(b)fluoranthene	150	900	24 UJ	22 U	**200**	**180**	4.4 U
Benzo(g,h,i)perylene	1700000	800	24 UJ	22 U	**46 J**	**46 J**	4.4 U
Benzo(k)fluoranthene	1500	900	24 UJ	22 U	**24**	**35 J**	2.2 U
Chrysene	15000	400	24 U	22 U	**100 J**	**100 J**	2.2 U
Dibenzo(a,h)anthracene	15	400	24 UJ	22 U	22 U	**19**	4.4 U
Fluoranthene	2300000	20000	24 U	22 U	**280**	**300**	**22 J**

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**04**	**04**	**04**	**04**	**08**
Location	**ORNL**	**RIDEM**	**MW16-05S**	**MW16-06S**	**MW16-07S**	**MW16-07S**	**MW16-49I**
Sample Number	**Residential**	**Soil Direct**	**MW16-05S-NSO-053000-05**	**MW16-06S-NSO-062100-10**	**MW16-07S-NSO-061900-05**	**MW16-07S-NSO-061900-05-D**	**MW16-49I-NSO-080404-10**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**ORIG**
Sample Date	**Screening**	**Residential**	**5/30/2000**	**6/21/2000**	**6/19/2000**	**6/19/2000**	**8/4/2004**
Depth Range (feet)	**Levels**	**Criterion**	**5 - 7**	**10 - 12**	**5 - 7**	**5 - 7**	**10 - 12**
Polycyclic Aromatic Hydrocarbons (ug/kg) (Continued)							
Fluorene	2300000	28000	24 U	22 U	**660 J**	**710 J**	4.4 U
Indeno(1,2,3-cd)pyrene	150	900	24 UJ	22 U	**60 J**	**63 J**	2.2 U
Naphthalene	3900	54000	24 U	22 U	**620**	**540**	22 U
Phenanthrene	1700000	40000	24 U	22 U	**1400**	**1300**	2.2 U
Pyrene	1700000	13000	24 U	22 U	**400**	**350**	**21 J**
Total PAHs[(1)]	NA	NA	0 U	0 U	**13229**	**11575**	**43**
Pesticides (ug/kg)							
4,4'-DDD	2000	NA	3.8 U	3.8 U	3.8 U	3.7 U	
4,4'-DDT	1700	NA	3.8 U	3.8 U	3.8 U	3.7 U	
Endrin Aldehyde	18000	NA	3.8 U	3.8 U	3.8 U	3.7 U	
gamma-Chlordane	1600	NA	2 U	2 U	1.9 U	1.9 U	
Inorganics (mg/kg)							
Aluminum	77000	NA	**4560**	**7970**	**3390**	**3520**	
Antimony	31	10	0.21 UJ	0.24 UJ	0.21 UJ	0.24 UJ	
Arsenic	0.39	7	**2.2**	**2.8 J**	**1.5**	**1.7**	
Barium	15000	5500	**10.8**	**23.5**	**38.4**	**37.2**	
Beryllium	160	0.4	**0.36**	**0.57**	**0.27 J**	**0.39**	
Cadmium	70	39	**0.33 J**	0.25 U	0.23 U	0.27 U	
Calcium	NA	NA	**358 J**	1050 U	350 U	356 U	
Chromium	230	390	**7.4**	**9.9**	4 U	4.5 U	
Cobalt	23	NA	**4.8**	**7.7**	**3.3**	**3.8**	
Copper	3100	3100	**8.6**	**20.2 J**	**8.3 J**	**9.3 J**	
Iron	55000	NA	**12900**	**17100**	**6930**	**7690**	
Lead	400	150	**4.6**	**7.2**	**3.8**	**4.1**	
Magnesium	NA	NA	**1900**	**3040 J**	966 U	**1050**	
Manganese	1800	390	**140**	**195**	**66.8**	**73.7**	
Mercury	23	23	0.01 U	0.01 U	0.01 U	0.01 U	
Nickel	1600	1000	**8.3**	**11.3**	**5.9**	**5.1**	
Potassium	NA	NA	**619**	1390 U	270 U	344 U	
Selenium	390	390	0.27 U	0.31 U	0.32 U	0.31 U	
Silver	390	200	**0.3 J**	0.44 UJ	0.24 U	**0.33 J**	
Sodium	NA	NA	**31.8**	26 U	18.4 U	21.6 U	
Vanadium	390	550	**8.3**	**15.1**	**6.6**	**7**	
Zinc	23000	6000	**25.2**	**37.3 J**	**15.9 J**	**18.7 J**	
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA	**6.4**	**7.1**	**7.4**	**7.8**	**6.43**
Total Organic Carbon	NA	NA	**1800**	**3500**	**1800**	**2600**	**5400**
Total Residue (%)	NA	NA	**87**	**87**	**87**	**90**	
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
Diesel Range Organics	NA	NA					**11**
Oil & Grease	NA	NA					**120**
PHC As Diesel	NA	NA					
Total Petroleum Hydrocarbons	NA	500					
TPH	NA	NA					

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**08**	**08**	**08**	**08**	**04**
Location	**ORNL**	**RIDEM**	**MW16-49I**	**MW16-50I**	**SB16-07**	**SB16-07**	**SB16-21**
Sample Number	**Residential**	**Soil Direct**	**MW16-49I-NSO-080404-10-D**	**MW16-50I-NSO-080504-22**	**SB16-07-NSO-051404-04**	**SB16-07-NSO-051404-10**	**SB16-21-NSO-062600-08**
Sample Code	**Regional**	**Exposure**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**8/4/2004**	**8/5/2004**	**5/14/2004**	**5/14/2004**	**6/26/2000**
Depth Range (feet)	**Levels**	**Criterion**	**10 - 12**	**22 - 24**	**4 - 6**	**10 - 12**	**8 - 10**
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA					**7240 J**
1,2,3,4,6,7,8,9-OCDF	11000	NA					9.88 U
1,2,3,4,6,7,8-HPCDD	390	NA					**46.8**
1,2,3,4,6,7,8-HPCDF	320	NA					4.94 U
1,2,3,4,7,8,9-HPCDF	320	NA					4.94 U
1,2,3,4,7,8-HXCDD	39	NA					4.94 U
1,2,3,4,7,8-HXCDF	32	NA					4.94 U
1,2,3,6,7,8-HXCDD	32	NA					4.94 U
1,2,3,6,7,8-HXCDF	32	NA					4.94 U
1,2,3,7,8,9-HXCDD	32	NA					4.94 U
1,2,3,7,8-PECDD	3.9	NA					4.94 U
1,2,3,7,8-PECDF	110	NA					4.94 U
2,3,4,6,7,8-HXCDF	32	NA					4.94 U
2,3,4,7,8-PECDF	11	NA					4.94 U
2,3,7,8-TCDD	4.5	NA					0.98 U
2,3,7,8-TCDF	32	NA					0.98 U
TEQ[(1)]	4.5	NA					**1.19**
Total HPCDD	NA	NA					**80.5 J**
Total HPCDF	NA	NA					1.4 U
Total HXCDD	NA	NA					3.3 U
Total HXCDF	NA	NA					19.8 U
Total PECDD	NA	NA					4.94 U
Total PECDF	NA	NA					0.47 U
Total TCDD	NA	NA					0.98 U
Total TCDF	NA	NA					0.98 U
Volatile Organic Compounds (ug/kg)							
1,1,2-Trichloroethane	1100	3600	4 U	8 U	**5 J**	5 U	5 U
2-Butanone	28000000	10000000	**5 J**	**13 J**	10 U	10 U	10 U
2-Hexanone	NA	NA	8 U	16 UJ	**400 J**	10 U	10 U
4-Methyl-2-Pentanone	5300000	1200000	8 U	16 UJ	**7 J**	10 U	10 U
Acetone	61000000	7800000	**41 J**	**130 J**	31 U	47 U	**18 J**
Benzene	1100	2500	4 U	8 UJ	**9 J**	5 U	5 U
Bromodichloromethane	10000	10000	4 U	8 U	**7 J**	5 U	5 U
BTEX[(1)]	NA	NA	0 U	0 U	**105**	**8**	0 U
Carbon Disulfide	670000	NA	**5 J**	**3 J**	5 U	5 U	5 U
Chloroform	300	1200	4 U	8 U	**2 J**	5 U	5 U
Chloromethane	1700	NA	4 U	8 U	5 U	5 U	5 UJ
cis-1,2-Dichloroethene	780000	630000	4 U	8 U	5 U	5 U	5 U
Ethylbenzene	5700	71000	4 U	8 UJ	**12 J**	5 U	5 U
m+p-Xylenes	4500000	NA	8 U	16 UJ	**44 J**	**2 J**	5 U
Methylene Chloride	11000	45000	4 U	5 U	1 U	1 U	5 UJ
o-Xylene	5300000	NA	4 U	8 UJ	**33 J**	**4 J**	5 U
Styrene	6500000	13000	4 U	8 UJ	**1 J**	5 U	5 U
Toluene	5000000	190000	4 U	8 UJ	**7 J**	**2 J**	5 U
Total 1,2-Dichloroethene	700000	630000	4 U	8 U	5 U	5 U	5 U
Total Chlorinated VOCs[(1)]	NA	NA	0 U	0 U	**6**	**1**	0 U

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**08**	**08**	**08**	**08**	**04**
Location	**ORNL**	**RIDEM**	**MW16-49I**	**MW16-50I**	**SB16-07**	**SB16-07**	**SB16-21**
Sample Number	**Residential**	**Soil Direct**	**MW16-49I-NSO-080404-10-D**	**MW16-50I-NSO-080504-22**	**SB16-07-NSO-051404-04**	**SB16-07-NSO-051404-10**	**SB16-21-NSO-062600-08**
Sample Code	**Regional**	**Exposure**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**8/4/2004**	**8/5/2004**	**5/14/2004**	**5/14/2004**	**6/26/2000**
Depth Range (feet)	**Levels**	**Criterion**	**10 - 12**	**22 - 24**	**4 - 6**	**10 - 12**	**8 - 10**
Volatile Organic Compounds (ug/kg) (Continued)							
Total Xylenes	600000	110000	4 U	8 UJ	**77 J**	**6 J**	5 U
trans-1,2-Dichloroethene	110000	1100000	4 U	8 U	5 U	5 U	5 U
Trichloroethene	2800	13000	4 U	8 UJ	**1 J**	**1 J**	5 U
Vinyl Chloride	60	20	4 U	8 U	5 U	5 U	10 U
Semivolatile Organic Compounds (ug/kg)							
2,4-Dimethylphenol	1200000	1400000	230 U	270 U	5900 U	1900 U	400 U
2,6-Dinitrotoluene	61000	NA	230 U	270 U	5900 U	**2000**	400 U
2-Methylnaphthalene	310000	123000	230 U	270 U	**120000 J**	**13000**	400 U
2-Methylphenol	3100000	NA	230 U	270 U	5900 U	1900 U	400 U
4-Chloroaniline	240000	310000	230 U	270 U	5900 U	1900 U	400 UJ
4-Methylphenol	310000	NA	230 U	270 U	5900 U	1900 U	400 U
Acenaphthene	3400000	43000					400 U
Anthracene	17000000	35000					400 U
Benzo(a)pyrene Equivalents[1]	NA	400					0 U
Benzo(a)anthracene	150	900					400 U
Benzo(a)pyrene	15	400					400 U
Benzo(b)fluoranthene	150	900					400 U
Benzo(g,h,i)perylene	1700000	800					400 U
Benzo(k)fluoranthene	1500	900					400 U
Bis(2-Ethylhexyl) Phthalate	NA	46000	**2200**	**1800**	5900 U	1900 U	400 U
Carbazole	24000	NA	230 U	270 U	5900 U	1900 U	400 U
Chrysene	15000	400					400 U
di-n-Butyl Phthalate	6100000	NA	230 U	270 U	5900 U	1900 U	400 U
Dibenzo(a,h)anthracene	15	400					400 U
Dibenzofuran	NA	NA	230 U	270 U	5900 U	1900 U	400 U
Diethyl Phthalate	49000000	340000	230 U	270 U	5900 U	1900 U	400 U
Fluoranthene	2300000	20000					400 U
Fluorene	2300000	28000					400 U
Indeno(1,2,3-cd)pyrene	150	900					400 U
Naphthalene	3900	54000					400 U
Phenanthrene	1700000	40000					400 U
Pyrene	1700000	13000					400 U
Total PAHs[1]	NA	NA					0 U
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000					24 U
Acenaphthene	3400000	43000	23 U	28 UJ	20 U	20 U	24 U
Acenaphthylene	3400000	23000	46 U	55 UJ	40 U	**110 J**	24 U
Anthracene	17000000	35000	2.3 U	2.8 U	**240 J**	**86 J**	24 U
Benzo(a)pyrene Equivalents[1]	NA	400	0 U	0 U	**204**	**142**	**37.1**
Benzo(a)anthracene	150	900	2.3 U	2.8 UR	2 U	2 U	**28**
Benzo(a)pyrene	15	400	2.3 U	2.8 UR	**190 J**	**140 J**	**26**
Benzo(b)fluoranthene	150	900	4.6 U	5.5 UR	**45 J**	3.9 U	**57**
Benzo(g,h,i)perylene	1700000	800	4.6 U	5.5 UR	**130 J**	**19 J**	**13**
Benzo(k)fluoranthene	1500	900	2.3 U	2.8 UR	**120 J**	2 U	**15**
Chrysene	15000	400	2.3 U	2.8 U	2 U	2 U	**30**
Dibenzo(a,h)anthracene	15	400	4.6 U	5.5 U	4 U	3.9 U	24 U
Fluoranthene	2300000	20000	**16**	**7.5 J**	4 U	3.9 U	**40**

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**08**	**08**	**08**	**08**	**04**
Location	**ORNL**	**RIDEM**	**MW16-49I**	**MW16-50I**	**SB16-07**	**SB16-07**	**SB16-21**
Sample Number	**Residential**	**Soil Direct**	**MW16-49I-NSO-080404-10-D**	**MW16-50I-NSO-080504-22**	**SB16-07-NSO-051404-04**	**SB16-07-NSO-051404-10**	**SB16-21-NSO-062600-08**
Sample Code	**Regional**	**Exposure**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**8/4/2004**	**8/5/2004**	**5/14/2004**	**5/14/2004**	**6/26/2000**
Depth Range (feet)	**Levels**	**Criterion**	**10 - 12**	**22 - 24**	**4 - 6**	**10 - 12**	**8 - 10**
Polycyclic Aromatic Hydrocarbons (ug/kg) (Continued)							
Fluorene	2300000	28000	4.6 U	5.5 UR	**2400 J**	**1300 J**	24 UJ
Indeno(1,2,3-cd)pyrene	150	900	2.3 U	2.8 UR	**86 J**	**21 J**	**24**
Naphthalene	3900	54000	23 U	28 U	**14000 J**	**160 J**	24 U
Phenanthrene	1700000	40000	2.3 U	2.8 U	**1900 J**	2 U	24 U
Pyrene	1700000	13000	**10 J**	2.8 U	2 U	**2400 J**	**39**
Total PAHs[(1)]	NA	NA	**26**	**7.5**	**139111**	**17236**	**272**
Pesticides (ug/kg)							
4,4'-DDD	2000	NA					3.9 U
4,4'-DDT	1700	NA					3.9 U
Endrin Aldehyde	18000	NA					3.9 U
gamma-Chlordane	1600	NA					2 U
Inorganics (mg/kg)							
Aluminum	77000	NA					**11300**
Antimony	31	10					0.24 UN
Arsenic	0.39	7					**2.5**
Barium	15000	5500					**17.4**
Beryllium	160	0.4					**0.55**
Cadmium	70	39					0.36 U
Calcium	NA	NA					**1090**
Chromium	230	390					**10.5**
Cobalt	23	NA					**4.7 J**
Copper	3100	3100					**7.9 J**
Iron	55000	NA					**14200**
Lead	400	150					**8.5**
Magnesium	NA	NA					**1490**
Manganese	1800	390					**94.2 J**
Mercury	23	23					0.03 U
Nickel	1600	1000					**6.6**
Potassium	NA	NA					**481**
Selenium	390	390					**0.7**
Silver	390	200					**0.28 J**
Sodium	NA	NA					**38.5**
Vanadium	390	550					**18.4**
Zinc	23000	6000					**22.9 J**
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA	**6.53**	**7.5**	**7.43 J**	**7.89 J**	**6.6**
Total Organic Carbon	NA	NA	**3800**	**8100**	**25000**	**1800**	**2000**
Total Residue (%)	NA	NA					**85**
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
Diesel Range Organics	NA	NA	**18**	**25**			
Oil & Grease	NA	NA	100 U	**160**	**960**	**160**	
PHC As Diesel	NA	NA			**7800**	**1600**	
Total Petroleum Hydrocarbons	NA	500					
TPH	NA	NA					

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet)	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	04 SB16-22 SB16-22-NSO-062700-06 NORMAL 6/27/2000 6 - 8	04 SB16-23 SB16-23-NSO-062600-03 NORMAL 6/26/2000 3 - 5	04 SB16-24 SB16-24-NSO-062600-07 NORMAL 6/26/2000 7 - 9	04 SB16-25 SB16-25-NSO-062600-07 NORMAL 6/26/2000 7 - 9	04 SB16-26 SB16-26-NSO-062300-02 NORMAL 6/23/2000 2 - 4
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA	**2500 J**	**34930 J**	**4590 J**	**1310**	**1410**
1,2,3,4,6,7,8,9-OCDF	11000	NA	9.83 U	**1790**	10.06 U	**9.5**	**98**
1,2,3,4,6,7,8-HPCDD	390	NA	**16**	**7630 J**	**24.5**	**52.5**	**73**
1,2,3,4,6,7,8-HPCDF	320	NA	4.91 U	**1870**	5.03 U	**6.4**	**36.7**
1,2,3,4,7,8,9-HPCDF	320	NA	4.91 U	**48.4**	5.03 U	5.02 U	**1.1**
1,2,3,4,7,8-HXCDD	39	NA	4.91 U	**87.4**	5.03 U	**0.77**	**0.94**
1,2,3,4,7,8-HXCDF	32	NA	4.91 U	**68.5**	5.03 U	**1.1**	**2.1**
1,2,3,6,7,8-HXCDD	32	NA	4.91 U	**403**	5.03 U	**2.9**	**4.2**
1,2,3,6,7,8-HXCDF	32	NA	4.91 U	**26**	5.03 U	5.02 U	**1.2**
1,2,3,7,8,9-HXCDD	32	NA	4.91 U	**412**	5.03 U	**2.9**	**3.2**
1,2,3,7,8-PECDD	3.9	NA	4.91 U	**69.2**	5.03 U	5.02 U	**0.75**
1,2,3,7,8-PECDF	110	NA	4.91 U	**33.2**	5.03 U	**0.69**	**2.9 J**
2,3,4,6,7,8-HXCDF	32	NA	4.91 U	**39.8**	5.03 U	5.02 U	**1.7**
2,3,4,7,8-PECDF	11	NA	4.91 U	**20**	5.03 U	5.02 U	**1.1 J**
2,3,7,8-TCDD	4.5	NA	0.98 U	**18.8**	1 U	1 U	1 U
2,3,7,8-TCDF	32	NA	0.98 U	**16.9**	1 U	1 U	1.1 U
TEQ[(1)]	4.5	NA	**0.41**	**304**	**0.704**	**1.52**	**4.04**
Total HPCDD	NA	NA	**38.1**	**14230 J**	**70.9**	**99.1**	**134**
Total HPCDF	NA	NA	9.83 U	**4030 J**	10.1 U	**13.5**	**89**
Total HXCDD	NA	NA	3.3 U	**4080**	**14.1**	**28.5**	**30.6**
Total HXCDF	NA	NA	19.7 U	**1190**	20.1 U	**6.3**	**34.1**
Total PECDD	NA	NA	4.91 U	**868**	5.03 U	**5.6**	**4.2**
Total PECDF	NA	NA	9.83 U	**261 J**	10.1 U	**1.9**	**22.3 J**
Total TCDD	NA	NA	0.98 U	**335**	1 U	**0.91**	**0.72**
Total TCDF	NA	NA	0.98 U	**399 J**	1 U	**3.2 J**	**20.6 J**
Volatile Organic Compounds (ug/kg)							
1,1,2-Trichloroethane	1100	3600	5 U	8 UJ	5 U	5 U	5 U
2-Butanone	28000000	10000000	10 U	16 UJ	10 U	10 UJ	**10**
2-Hexanone	NA	NA	10 UJ	16 UJ	10 U	10 U	10 U
4-Methyl-2-Pentanone	5300000	1200000	10 U	16 UJ	10 U	10 UJ	10 U
Acetone	61000000	7800000	**25 J**	**22 J**	**8**	**8 J**	**22 E**
Benzene	1100	2500	5 U	**8 J**	5 U	5 U	5 U
Bromodichloromethane	10000	10000	5 U	8 UJ	5 U	5 U	5 U
BTEX[(1)]	NA	NA	0 U	**8**	0 U	0 U	0 U
Carbon Disulfide	670000	NA	5 U	8 UJ	**11**	**4**	5 U
Chloroform	300	1200	5 U	8 UJ	5 U	5 U	5 U
Chloromethane	1700	NA	5 UJ	8 UJ	5 UJ	5 U	5 UJ
cis-1,2-Dichloroethene	780000	630000	5 U	8 UJ	5 U	5 U	5 U
Ethylbenzene	5700	71000	5 U	8 UJ	5 U	5 U	5 U
m+p-Xylenes	4500000	NA	5 U	8 UJ	5 U	5 U	5 U
Methylene Chloride	11000	45000	5 UJ	8 UJ	**7 J**	8 UJ	**3 J**
o-Xylene	5300000	NA	5 U	8 UJ	5 U	5 U	5 U
Styrene	6500000	13000	5 U	8 UJ	5 U	5 U	5 U
Toluene	5000000	190000	5 U	8 UJ	5 U	5 U	5 U
Total 1,2-Dichloroethene	700000	630000	5 U	8 U	5 U	5 U	5 U
Total Chlorinated VOCs[(1)]	NA	NA	0 U	0 U	**7**	0 U	**3**

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**04**	**04**	**04**	**04**	**04**
Location	**ORNL**	**RIDEM**	**SB16-22**	**SB16-23**	**SB16-24**	**SB16-25**	**SB16-26**
Sample Number	**Residential**	**Soil Direct**	**SB16-22-NSO-062700-06**	**SB16-23-NSO-062600-03**	**SB16-24-NSO-062600-07**	**SB16-25-NSO-062600-07**	**SB16-26-NSO-062300-02**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/27/2000**	**6/26/2000**	**6/26/2000**	**6/26/2000**	**6/23/2000**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 8**	**3 - 5**	**7 - 9**	**7 - 9**	**2 - 4**
Volatile Organic Compounds (ug/kg) (Continued)							
Total Xylenes	600000	110000	5 U	8 U	5 U	5 U	5 U
trans-1,2-Dichloroethene	110000	1100000	5 U	8 UJ	5 U	5 U	5 U
Trichloroethene	2800	13000	5 U	8 UJ	5 U	5 U	5 U
Vinyl Chloride	60	20	10 U	16 UJ	10 U	10 U	10 U
Semivolatile Organic Compounds (ug/kg)							
2,4-Dimethylphenol	1200000	1400000	400 U	400 U	400 U	400 U	360 U
2,6-Dinitrotoluene	61000	NA	400 U	400 U	400 U	400 U	360 U
2-Methylnaphthalene	310000	123000	400 U	400 U	400 U	400 U	360 U
2-Methylphenol	3100000	NA	400 U	400 U	400 U	400 U	360 U
4-Chloroaniline	240000	310000	400 UJ	400 UJ	400 UJ	400 UJ	360 UJ
4-Methylphenol	310000	NA	400 U	400 U	400 U	400 U	360 U
Acenaphthene	3400000	43000	400 U	400 U	400 U	400 U	360 U
Anthracene	17000000	35000	400 U	400 U	400 U	400 U	360 U
Benzo(a)pyrene Equivalents[(1)]	NA	400	0 U	**609**	0 U	0 U	**909**
Benzo(a)anthracene	150	900	400 U	**480**	400 U	400 U	**200**
Benzo(a)pyrene	15	400	400 U	**460**	400 U	400 U	**690**
Benzo(b)fluoranthene	150	900	400 U	**670**	400 U	400 U	**1300**
Benzo(g,h,i)perylene	1700000	800	400 U	**260**	400 U	400 U	**480**
Benzo(k)fluoranthene	1500	900	400 U	**230**	400 U	400 U	**380**
Bis(2-Ethylhexyl) Phthalate	NA	46000	400 U	400 U	400 U	400 U	360 U
Carbazole	24000	NA	400 U	400 U	400 U	400 U	360 U
Chrysene	15000	400	400 U	**490**	400 U	400 U	**370**
di-n-Butyl Phthalate	6100000	NA	400 U	400 U	400 U	400 U	360 U
Dibenzo(a,h)anthracene	15	400	400 U	400 U	400 U	400 U	360 U
Dibenzofuran	NA	NA	400 U	400 U	400 U	400 U	360 U
Diethyl Phthalate	49000000	340000	400 U	400 U	400 U	400 U	360 U
Fluoranthene	2300000	20000	400 U	**560**	400 U	400 U	360 U
Fluorene	2300000	28000	400 U	400 U	400 U	400 U	360 U
Indeno(1,2,3-cd)pyrene	150	900	400 U	**310**	400 U	400 U	**650**
Naphthalene	3900	54000	400 U	400 U	400 U	400 U	360 U
Phenanthrene	1700000	40000	400 U	**210**	400 U	400 U	360 U
Pyrene	1700000	13000	400 U	**500**	400 U	400 U	360 U
Total PAHs[(1)]	NA	NA	0 U	**4170**	0 U	0 U	**4070**
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000	24 U	2400 U	24 U	24 U	22 U
Acenaphthene	3400000	43000	24 U	2400 U	24 U	24 U	22 U
Acenaphthylene	3400000	23000	24 U	2400 U	24 U	24 U	**29**
Anthracene	17000000	35000	24 U	2400 U	24 U	**12 J**	**45**
Benzo(a)pyrene Equivalents[(1)]	NA	400	0 U	0 U	0 U	**28**	**822**
Benzo(a)anthracene	150	900	24 U	2400 U	24 U	**31**	**300**
Benzo(a)pyrene	15	400	24 U	2400 U	24 U	**19 J**	**500**
Benzo(b)fluoranthene	150	900	24 U	2400 U	24 U	**37 J**	**850**
Benzo(g,h,i)perylene	1700000	800	24 U	2400 U	24 U	**15 J**	**400**
Benzo(k)fluoranthene	1500	900	24 U	2400 U	24 U	24 U	**260**
Chrysene	15000	400	24 U	2400 U	24 U	**31**	**190**
Dibenzo(a,h)anthracene	15	400	24 U	2400 U	24 U	24 U	**140**
Fluoranthene	2300000	20000	24 U	2400 U	24 U	**92**	**180**

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**04**	**04**	**04**	**04**	**04**
Location	**ORNL**	**RIDEM**	**SB16-22**	**SB16-23**	**SB16-24**	**SB16-25**	**SB16-26**
Sample Number	**Residential**	**Soil Direct**	**SB16-22-NSO-062700-06**	**SB16-23-NSO-062600-03**	**SB16-24-NSO-062600-07**	**SB16-25-NSO-062600-07**	**SB16-26-NSO-062300-02**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/27/2000**	**6/26/2000**	**6/26/2000**	**6/26/2000**	**6/23/2000**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 8**	**3 - 5**	**7 - 9**	**7 - 9**	**2 - 4**
Polycyclic Aromatic Hydrocarbons (ug/kg) (Continued)							
Fluorene	2300000	28000	24 UJ	2400 UJ	24 UJ	24 UJ	**7**
Indeno(1,2,3-cd)pyrene	150	900	24 U	2400 U	24 U	**22 J**	**640**
Naphthalene	3900	54000	24 U	2400 U	24 U	**27**	**6**
Phenanthrene	1700000	40000	24 U	2400 U	24 U	**55**	**98**
Pyrene	1700000	13000	24 U	2400 U	24 U	**62**	**130**
Total PAHs[(1)]	NA	NA	0 U	0 U	0 U	**403**	**3775**
Pesticides (ug/kg)							
4,4'-DDD	2000	NA	3.8 U	4 U	3.9 U	3.8 U	3.6 U
4,4'-DDT	1700	NA	3.8 U	4 U	3.9 U	3.8 U	**3.7**
Endrin Aldehyde	18000	NA	3.8 U	**4.7**	3.9 U	3.8 U	3.6 U
gamma-Chlordane	1600	NA	2 U	2.1 U	2 U	2 U	1.8 U
Inorganics (mg/kg)							
Aluminum	77000	NA	**12400**	**7210**	**6670**	**6150**	**3440**
Antimony	31	10	0.24 UN	**4.7**	0.26 UJ	0.25 UJ	0.25 UJ
Arsenic	0.39	7	**2.6**	**4.2**	**5.8**	**2.9**	1.6 UJ
Barium	15000	5500	**25.2**	**189**	**18.4**	**36.9**	**28.4**
Beryllium	160	0.4	**0.71**	**0.58**	**0.48**	**0.5**	**0.62**
Cadmium	70	39	0.42 U	1.1 U	0.4 U	1.1 UJ	0.21 U
Calcium	NA	NA	**975**	**3970**	**584 J**	**748 J**	413 U
Chromium	230	390	**11.5**	**19.1**	**7.6 J**	**7.5 J**	**5.2**
Cobalt	23	NA	**6 J**	**6.5**	**5.2**	**6.8**	**2.6**
Copper	3100	3100	**14.2 J**	**160 J**	**11**	**16.6**	**10.7 J**
Iron	55000	NA	**16900**	**26500**	**14100**	**12900**	**9220**
Lead	400	150	**8.1**	**288**	**6.7**	**17.1**	**27.7**
Magnesium	NA	NA	**2360**	**2550**	**1780 J**	**1670 J**	766 UJ
Manganese	1800	390	**144 J**	**295 J**	**136 J**	**102 J**	**81.7**
Mercury	23	23	0.01 U	**0.52**	0.02 U	0.02 U	0.02 U
Nickel	1600	1000	**10.3**	**25.6**	7.1 U	**9.4**	**3.9**
Potassium	NA	NA	**754**	**1100**	**490**	**588**	447 U
Selenium	390	390	**0.55 J**	0.59 U	0.34 U	0.32 U	0.32 U
Silver	390	200	0.29 U	**2**	0.31 U	0.3 U	0.32 UJ
Sodium	NA	NA	**33.6**	**209**	**29.8**	**31.4**	23.5 U
Vanadium	390	550	**18.9**	**14.2**	**11.3**	**10.5**	**6**
Zinc	23000	6000	**28.8 J**	**688 J**	**23.2**	**366**	**42.9 J**
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA	**7.8**	**8.2**	**7.4**	**7.1**	**7**
Total Organic Carbon	NA	NA	**3700**	**11000**	**3700**	**5300**	**4700**
Total Residue (%)	NA	NA	**86**	**82**	**84**	**86**	**93**
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
Diesel Range Organics	NA	NA					
Oil & Grease	NA	NA					
PHC As Diesel	NA	NA					
Total Petroleum Hydrocarbons	NA	500					
TPH	NA	NA					

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**04**	**04**	**04**	**05**	**06**
Location	**ORNL**	**RIDEM**	**SB16-27**	**SB16-27**	**SB16-28**	**SB16-29**	**SB16-31**
Sample Number	**Residential**	**Soil Direct**	**SB16-27-NSO-062600-02**	**SB16-27-NSO-062600-02-D**	**SB16-28-NSO-062700-04**	**SB16-29-NSO-011701-20**	**SB16-31-NSO-021802-08**
Sample Code	**Regional**	**Exposure**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/26/2000**	**6/26/2000**	**6/27/2000**	**1/17/2001**	**2/18/2002**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 4**	**2 - 4**	**4 - 6**	**20 - 22**	**8 - 10**
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA	**1840**	**1860**	**26370 J**		
1,2,3,4,6,7,8,9-OCDF	11000	NA	**69.9**	**87.2**	**851**		
1,2,3,4,6,7,8-HPCDD	390	NA	**59**	**51.8**	**8340 J**		
1,2,3,4,6,7,8-HPCDF	320	NA	**25.8**	**26.3**	**719 J**		
1,2,3,4,7,8,9-HPCDF	320	NA	5.01 U	5 U	4.85 U		
1,2,3,4,7,8-HXCDD	39	NA	5.01 U	5 U	**88.1**		
1,2,3,4,7,8-HXCDF	32	NA	**1**	**1.5**	**310 J**		
1,2,3,6,7,8-HXCDD	32	NA	**2.4**	**2.3**	**505**		
1,2,3,6,7,8-HXCDF	32	NA	**1.2**	**1.2**	4.85 UJ		
1,2,3,7,8,9-HXCDD	32	NA	**1.6**	5 U	**556**		
1,2,3,7,8-PECDD	3.9	NA	5.01 U	5 U	**119**		
1,2,3,7,8-PECDF	110	NA	5.01 U	5 U	**121**		
2,3,4,6,7,8-HXCDF	32	NA	**2.3**	**2.4**	**215 J**		
2,3,4,7,8-PECDF	11	NA	**0.89 J**	**0.76 J**	**125**		
2,3,7,8-TCDD	4.5	NA	1 U	1 U	**44.5**		
2,3,7,8-TCDF	32	NA	0.82 U	**0.58**	**125**		
TEQ[(1)]	4.5	NA	**2.33**	**2.15**	**505**		
Total HPCDD	NA	NA	**136**	**109**	**15510 J**		
Total HPCDF	NA	NA	**76.7**	**70.5**	**2400**		
Total HXCDD	NA	NA	**14.2**	**13.9**	**4630 J**		
Total HXCDF	NA	NA	**39.5**	**34.9**	**1160 J**		
Total PECDD	NA	NA	5.01 U	5 U	**897**		
Total PECDF	NA	NA	**25.2 J**	**13.3 J**	**789**		
Total TCDD	NA	NA	1 U	**1**	**505**		
Total TCDF	NA	NA	**9.5 J**	**4 J**	**1900 J**		
Volatile Organic Compounds (ug/kg)							
1,1,2-Trichloroethane	1100	3600	5 U	5 U	320 U	5 U	
2-Butanone	28000000	10000000	**12**	10 U	630 U	10 U	
2-Hexanone	NA	NA	10 U	10 UJ	630 U	10 U	
4-Methyl-2-Pentanone	5300000	1200000	10 U	10 U	630 UJ	10 U	
Acetone	61000000	7800000	**30 J**	**7 J**	**570 J**	**38**	
Benzene	1100	2500	5 U	5 U	**34 J**	5 U	
Bromodichloromethane	10000	10000	5 U	5 U	320 U	5 U	
BTEX[(1)]	NA	NA	0 U	0 U	**1464**	0 U	
Carbon Disulfide	670000	NA	5 U	5 U	320 U	5 U	
Chloroform	300	1200	5 U	5 U	320 U	5 U	
Chloromethane	1700	NA	5 UJ	5 UJ	320 U	5 U	
cis-1,2-Dichloroethene	780000	630000	5 U	5 U	320 U	5 U	
Ethylbenzene	5700	71000	5 U	5 U	**350**	5 U	
m+p-Xylenes	4500000	NA	5 U	5 U	**620**	5 U	
Methylene Chloride	11000	45000	**4 J**	5 UJ	320 U	**3 J**	
o-Xylene	5300000	NA	5 U	5 U	**290**	5 U	
Styrene	6500000	13000	5 U	5 U	320 U	5 U	
Toluene	5000000	190000	5 U	5 U	**170**	5 U	
Total 1,2-Dichloroethene	700000	630000	5 U	5 U	320 U	5 U	
Total Chlorinated VOCs[(1)]	NA	NA	**4**	0 U	0 U	**58**	

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**04**	**04**	**04**	**05**	**06**
Location	**ORNL**	**RIDEM**	**SB16-27**	**SB16-27**	**SB16-28**	**SB16-29**	**SB16-31**
Sample Number	**Residential**	**Soil Direct**	**SB16-27-NSO-062600-02**	**SB16-27-NSO-062600-02-D**	**SB16-28-NSO-062700-04**	**SB16-29-NSO-011701-20**	**SB16-31-NSO-021802-08**
Sample Code	**Regional**	**Exposure**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/26/2000**	**6/26/2000**	**6/27/2000**	**1/17/2001**	**2/18/2002**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 4**	**2 - 4**	**4 - 6**	**20 - 22**	**8 - 10**
Volatile Organic Compounds (ug/kg) (Continued)							
Total Xylenes	600000	110000	5 U	5 U	**910**	5 U	
trans-1,2-Dichloroethene	110000	1100000	5 U	5 U	320 U	5 U	
Trichloroethene	2800	13000	5 U	5 U	320 U	**55**	
Vinyl Chloride	60	20	10 U	10 U	630 U	10 U	
Semivolatile Organic Compounds (ug/kg)							
2,4-Dimethylphenol	1200000	1400000	360 U	360 U	400 U	400 U	
2,6-Dinitrotoluene	61000	NA	360 U	360 U	400 U	400 U	
2-Methylnaphthalene	310000	123000	360 U	360 U	400 U	400 U	
2-Methylphenol	3100000	NA	360 U	360 U	400 U	400 U	
4-Chloroaniline	240000	310000	360 UJ	360 UJ	400 UJ	400 UJ	
4-Methylphenol	310000	NA	360 U	360 U	400 U	400 U	
Acenaphthene	3400000	43000	360 U	360 U	400 U	400 U	
Anthracene	17000000	35000	360 U	360 U	400 U	400 U	
Benzo(a)pyrene Equivalents[(1)]	NA	400	0 U	0 U	0 U	0 U	
Benzo(a)anthracene	150	900	360 U	360 U	400 U	400 U	
Benzo(a)pyrene	15	400	360 U	360 U	400 U	400 U	
Benzo(b)fluoranthene	150	900	360 U	360 U	400 U	400 U	
Benzo(g,h,i)perylene	1700000	800	360 U	360 U	400 U	400 U	
Benzo(k)fluoranthene	1500	900	360 U	360 U	400 U	400 U	
Bis(2-Ethylhexyl) Phthalate	NA	46000	360 U	360 U	400 U	400 U	
Carbazole	24000	NA	360 U	360 U	400 U	400 U	
Chrysene	15000	400	360 U	360 U	400 U	400 U	
di-n-Butyl Phthalate	6100000	NA	360 U	360 U	400 U	400 U	
Dibenzo(a,h)anthracene	15	400	360 U	360 U	400 U	400 U	
Dibenzofuran	NA	NA	360 U	360 U	400 U	400 U	
Diethyl Phthalate	49000000	340000	360 U	360 U	400 U	400 U	
Fluoranthene	2300000	20000	**240**	**270**	**250**	400 U	
Fluorene	2300000	28000	360 U	360 U	400 U	400 U	
Indeno(1,2,3-cd)pyrene	150	900	360 U	360 U	400 U	400 U	
Naphthalene	3900	54000	360 U	360 U	400 U	400 U	
Phenanthrene	1700000	40000	360 U	360 U	400 U	400 U	
Pyrene	1700000	13000	**200**	**220**	**240**	400 U	
Total PAHs[(1)]	NA	NA	**440**	**490**	**490**	0 U	
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000	42 U	86 U	**49000**	24 U	
Acenaphthene	3400000	43000	42 U	86 U	**5300**	24 UJ	
Acenaphthylene	3400000	23000	42 U	86 U	2400 U	24 UJ	
Anthracene	17000000	35000	42 U	86 U	**2800**	24 U	
Benzo(a)pyrene Equivalents[(1)]	NA	400	**96.2**	**119**	**2212**	**0.506**	
Benzo(a)anthracene	150	900	**83**	**92**	**2000**	24 U	
Benzo(a)pyrene	15	400	**68**	**83**	**1600**	24 U	
Benzo(b)fluoranthene	150	900	**120**	**170**	**2600**	**5 J**	
Benzo(g,h,i)perylene	1700000	800	**44**	**56**	2400 U	24 U	
Benzo(k)fluoranthene	1500	900	**37**	86 U	2400 U	24 U	
Chrysene	15000	400	**70**	**94**	**2200**	**6 J**	
Dibenzo(a,h)anthracene	15	400	42 U	86 U	2400 U	24 U	
Fluoranthene	2300000	20000	**160**	**230**	**5500**	**6**	

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**04**	**04**	**04**	**05**	**06**
Location	**ORNL**	**RIDEM**	**SB16-27**	**SB16-27**	**SB16-28**	**SB16-29**	**SB16-31**
Sample Number	**Residential**	**Soil Direct**	**SB16-27-NSO-062600-02**	**SB16-27-NSO-062600-02-D**	**SB16-28-NSO-062700-04**	**SB16-29-NSO-011701-20**	**SB16-31-NSO-021802-08**
Sample Code	**Regional**	**Exposure**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/26/2000**	**6/26/2000**	**6/27/2000**	**1/17/2001**	**2/18/2002**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 4**	**2 - 4**	**4 - 6**	**20 - 22**	**8 - 10**
Polycyclic Aromatic Hydrocarbons (ug/kg) (Continued)							
Fluorene	2300000	28000	42 UJ	86 UJ	**5100 J**	24 UJ	
Indeno(1,2,3-cd)pyrene	150	900	**75**	**96**	**1500**	24 U	
Naphthalene	3900	54000	42 U	86 U	**12000**	24 U	
Phenanthrene	1700000	40000	**75**	**99**	**13000 J**	24 U	
Pyrene	1700000	13000	**100**	**130**	**5000**	**5 J**	
Total PAHs[(1)]	NA	NA	**832**	**1050**	**107600**	**22**	
Pesticides (ug/kg)							
4,4'-DDD	2000	NA	3.5 UJ	**4.1 J**	8 U	4.1 U	
4,4'-DDT	1700	NA	3.5 U	3.6 U	8 U	4.1 U	
Endrin Aldehyde	18000	NA	3.5 U	3.6 U	8 U	4.1 U	
gamma-Chlordane	1600	NA	1.8 U	1.8 U	**8.9 J**	2.1 U	
Inorganics (mg/kg)							
Aluminum	77000	NA	**4570**	**4950**	**7740**	**3390**	
Antimony	31	10	0.24 UJ	0.23 UJ	**8.7**	0.4 UJ	
Arsenic	0.39	7	**2.1**	**2.8**	**10.6**	**1.4**	
Barium	15000	5500	**21.8**	**18.5**	**1100**	**11.4**	
Beryllium	160	0.4	**0.46**	**0.48**	**0.56**	**0.5**	
Cadmium	70	39	0.27 UJ	0.26 UJ	**2.4**	0.03 U	
Calcium	NA	NA	**427 J**	**451 J**	**23400**	592 U	
Chromium	230	390	**7.5 J**	**9.7 J**	**67.2**	**5.2**	
Cobalt	23	NA	**5.2**	**5 J**	**6**	**3**	
Copper	3100	3100	**14.4**	**14.8**	**452 J**	**8.6**	
Iron	55000	NA	**11800**	**13800**	**54300**	**9290**	
Lead	400	150	**33.8**	**27**	**2650**	**4.7**	
Magnesium	NA	NA	**1480 J**	**1530 J**	**4910**	**1260 J**	
Manganese	1800	390	**107 J**	**108 J**	**587 J**	**117 J**	
Mercury	23	23	0.01 U	0.01 U	**0.96**	0.01 U	
Nickel	1600	1000	7.5 U	**8.5**	**34.5**	**5.5**	
Potassium	NA	NA	**724**	**690**	**1060**	393 U	
Selenium	390	390	**0.36 J**	**0.3 J**	0.99 U	0.33 U	
Silver	390	200	0.28 U	0.28 U	**6.8**	0.11 U	
Sodium	NA	NA	**24.6**	**28.5**	**596**	43.9 U	
Vanadium	390	550	**10.3**	**10.9**	**14.4**	**8.4**	
Zinc	23000	6000	**39.8**	**36.8**	**1610 J**	**27.1**	
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA				**1200**	
Percent Moisture (%)	NA	NA				**17.5**	
pH (S.U.)	NA	NA	**6.3**		**8.2**	**5.8**	
Total Organic Carbon	NA	NA	**4400**	**5300**	**34000**		
Total Residue (%)	NA	NA	**93**	**93**	**82**	**81**	
Total Solids (%)	NA	NA				**82.5**	
Petroleum Hydrocarbons (mg/kg)							
Diesel Range Organics	NA	NA					
Oil & Grease	NA	NA					3.8 R
PHC As Diesel	NA	NA					
Total Petroleum Hydrocarbons	NA	500					
TPH	NA	NA					

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**06**	**06**	**06**	**06**	**08**
Location	**ORNL**	**RIDEM**	**SB16-31**	**SB16-31**	**SB16-31**	**SB16-32**	**SB16-41**
Sample Number	**Residential**	**Soil Direct**	**SB16-31-NSO-021802-14**	**SB16-31-NSO-022502-08**	**SB16-31-NSO-022502-14**	**SB16-32-NSO-021202-10**	**SB16-41-NSO-051104-16**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**2/18/2002**	**2/25/2002**	**2/25/2002**	**2/12/2002**	**5/11/2004**
Depth Range (feet)	**Levels**	**Criterion**	**14 - 16**	**8 - 10**	**14 - 16**	**10 - 12**	**16 - 18**
Dioxins (ng/kg)							
1,2,3,4,6,7,8,9-OCDD	13000	NA					
1,2,3,4,6,7,8,9-OCDF	11000	NA					
1,2,3,4,6,7,8-HPCDD	390	NA					
1,2,3,4,6,7,8-HPCDF	320	NA					
1,2,3,4,7,8,9-HPCDF	320	NA					
1,2,3,4,7,8-HXCDD	39	NA					
1,2,3,4,7,8-HXCDF	32	NA					
1,2,3,6,7,8-HXCDD	32	NA					
1,2,3,6,7,8-HXCDF	32	NA					
1,2,3,7,8,9-HXCDD	32	NA					
1,2,3,7,8-PECDD	3.9	NA					
1,2,3,7,8-PECDF	110	NA					
2,3,4,6,7,8-HXCDF	32	NA					
2,3,4,7,8-PECDF	11	NA					
2,3,7,8-TCDD	4.5	NA					
2,3,7,8-TCDF	32	NA					
TEQ[(1)]	4.5	NA					
Total HPCDD	NA	NA					
Total HPCDF	NA	NA					
Total HXCDD	NA	NA					
Total HXCDF	NA	NA					
Total PECDD	NA	NA					
Total PECDF	NA	NA					
Total TCDD	NA	NA					
Total TCDF	NA	NA					
Volatile Organic Compounds (ug/kg)							
1,1,2-Trichloroethane	1100	3600			180 U	330 UJ	5 U
2-Butanone	28000000	10000000			360 R	330 R	**24**
2-Hexanone	NA	NA			360 U	330 UJ	10 U
4-Methyl-2-Pentanone	5300000	1200000			360 U	330 UJ	10 U
Acetone	61000000	7800000			490 R	330 R	**130**
Benzene	1100	2500			180 U	330 UJ	5 U
Bromodichloromethane	10000	10000			180 U	330 UJ	5 U
BTEX[(1)]	NA	NA			0 U	0 U	0 U
Carbon Disulfide	670000	NA			180 U	330 UJ	**9**
Chloroform	300	1200			180 U	330 UJ	5 U
Chloromethane	1700	NA			180 U	330 UJ	5 U
cis-1,2-Dichloroethene	780000	630000			180 U	330 UJ	**1800**
Ethylbenzene	5700	71000			180 U	330 UJ	5 U
m+p-Xylenes	4500000	NA			180 U	330 UJ	10 U
Methylene Chloride	11000	45000			180 U	**150 T**	1 U
o-Xylene	5300000	NA			180 U	330 UJ	5 U
Styrene	6500000	13000			180 U	330 UJ	5 U
Toluene	5000000	190000			180 U	330 UJ	5 U
Total 1,2-Dichloroethene	700000	630000			180 U	330 U	**1875**
Total Chlorinated VOCs[(1)]	NA	NA			0 U	**150**	**1896**

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**06**	**06**	**06**	**06**	**08**
Location	**ORNL**	**RIDEM**	**SB16-31**	**SB16-31**	**SB16-31**	**SB16-32**	**SB16-41**
Sample Number	**Residential**	**Soil Direct**	**SB16-31-NSO-021802-14**	**SB16-31-NSO-022502-08**	**SB16-31-NSO-022502-14**	**SB16-32-NSO-021202-10**	**SB16-41-NSO-051104-16**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**2/18/2002**	**2/25/2002**	**2/25/2002**	**2/12/2002**	**5/11/2004**
Depth Range (feet)	**Levels**	**Criterion**	**14 - 16**	**8 - 10**	**14 - 16**	**10 - 12**	**16 - 18**
Volatile Organic Compounds (ug/kg) (Continued)							
Total Xylenes	600000	110000			180 U	330 U	5 U
trans-1,2-Dichloroethene	110000	1100000			180 U	330 UJ	**75**
Trichloroethene	2800	13000			180 U	330 UJ	5 U
Vinyl Chloride	60	20			180 U	330 UJ	**21**
Semivolatile Organic Compounds (ug/kg)							
2,4-Dimethylphenol	1200000	1400000					220 U
2,6-Dinitrotoluene	61000	NA					220 U
2-Methylnaphthalene	310000	123000					220 U
2-Methylphenol	3100000	NA					220 U
4-Chloroaniline	240000	310000					220 U
4-Methylphenol	310000	NA					220 U
Acenaphthene	3400000	43000					
Anthracene	17000000	35000					
Benzo(a)pyrene Equivalents[1]	NA	400					
Benzo(a)anthracene	150	900					
Benzo(a)pyrene	15	400					
Benzo(b)fluoranthene	150	900					
Benzo(g,h,i)perylene	1700000	800					
Benzo(k)fluoranthene	1500	900					
Bis(2-Ethylhexyl) Phthalate	NA	46000					220 U
Carbazole	24000	NA					220 U
Chrysene	15000	400					
di-n-Butyl Phthalate	6100000	NA					220 U
Dibenzo(a,h)anthracene	15	400					
Dibenzofuran	NA	NA					220 U
Diethyl Phthalate	49000000	340000					220 U
Fluoranthene	2300000	20000					
Fluorene	2300000	28000					
Indeno(1,2,3-cd)pyrene	150	900					
Naphthalene	3900	54000					
Phenanthrene	1700000	40000					
Pyrene	1700000	13000					
Total PAHs[1]	NA	NA					
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000					
Acenaphthene	3400000	43000					23 U
Acenaphthylene	3400000	23000					45 U
Anthracene	17000000	35000					2.3 U
Benzo(a)pyrene Equivalents[1]	NA	400					0 U
Benzo(a)anthracene	150	900					2.3 U
Benzo(a)pyrene	15	400					2.3 U
Benzo(b)fluoranthene	150	900					4.5 U
Benzo(g,h,i)perylene	1700000	800					4.5 U
Benzo(k)fluoranthene	1500	900					2.3 U
Chrysene	15000	400					2.3 U
Dibenzo(a,h)anthracene	15	400					4.5 U
Fluoranthene	2300000	20000					4.5 U

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**06**	**06**	**06**	**06**	**08**
Location	**ORNL**	**RIDEM**	**SB16-31**	**SB16-31**	**SB16-31**	**SB16-32**	**SB16-41**
Sample Number	**Residential**	**Soil Direct**	**SB16-31-NSO-021802-14**	**SB16-31-NSO-022502-08**	**SB16-31-NSO-022502-14**	**SB16-32-NSO-021202-10**	**SB16-41-NSO-051104-16**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**2/18/2002**	**2/25/2002**	**2/25/2002**	**2/12/2002**	**5/11/2004**
Depth Range (feet)	**Levels**	**Criterion**	**14 - 16**	**8 - 10**	**14 - 16**	**10 - 12**	**16 - 18**
Polycyclic Aromatic Hydrocarbons (ug/kg) (Continued)							
Fluorene	2300000	28000					4.5 U
Indeno(1,2,3-cd)pyrene	150	900					2.3 U
Naphthalene	3900	54000					23 U
Phenanthrene	1700000	40000					**4.4**
Pyrene	1700000	13000					2.3 U
Total PAHs[(1)]	NA	NA					**4.4**
Pesticides (ug/kg)							
4,4'-DDD	2000	NA					
4,4'-DDT	1700	NA					
Endrin Aldehyde	18000	NA					
gamma-Chlordane	1600	NA					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Antimony	31	10					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Mercury	23	23					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Silver	390	200					
Sodium	NA	NA					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					**6.77 J**
Total Organic Carbon	NA	NA					**9800**
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
Diesel Range Organics	NA	NA					
Oil & Grease	NA	NA	1.3 R	**1.3**	1 U		100 U
PHC As Diesel	NA	NA					**36**
Total Petroleum Hydrocarbons	NA	500					
TPH	NA	NA					

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **Depth Range (feet)**	**ORNL Residential Regional Screening Levels**	**RIDEM Soil Direct Exposure Residential Criterion**	**08** **SB16-44** **SB16-44-NSO-051304-14** **NORMAL** **5/13/2004** **14 - 16**	**08** **SB16-45** **SB16-45-NSO-051204-14** **ORIG** **5/12/2004** **14 - 16**	**08** **SB16-45** **SB16-45-NSO-051204-14-D** **DUP** **5/12/2004** **14 - 16**	**08** **SB16-46** **SB16-46-NSO-051304-12** **NORMAL** **5/13/2004** **12 - 14**
Dioxins (ng/kg)						
1,2,3,4,6,7,8,9-OCDD	13000	NA				
1,2,3,4,6,7,8,9-OCDF	11000	NA				
1,2,3,4,6,7,8-HPCDD	390	NA				
1,2,3,4,6,7,8-HPCDF	320	NA				
1,2,3,4,7,8,9-HPCDF	320	NA				
1,2,3,4,7,8-HXCDD	39	NA				
1,2,3,4,7,8-HXCDF	32	NA				
1,2,3,6,7,8-HXCDD	32	NA				
1,2,3,6,7,8-HXCDF	32	NA				
1,2,3,7,8,9-HXCDD	32	NA				
1,2,3,7,8-PECDD	3.9	NA				
1,2,3,7,8-PECDF	110	NA				
2,3,4,6,7,8-HXCDF	32	NA				
2,3,4,7,8-PECDF	11	NA				
2,3,7,8-TCDD	4.5	NA				
2,3,7,8-TCDF	32	NA				
TEQ[(1)]	4.5	NA				
Total HPCDD	NA	NA				
Total HPCDF	NA	NA				
Total HXCDD	NA	NA				
Total HXCDF	NA	NA				
Total PECDD	NA	NA				
Total PECDF	NA	NA				
Total TCDD	NA	NA				
Total TCDF	NA	NA				
Volatile Organic Compounds (ug/kg)						
1,1,2-Trichloroethane	1100	3600	7 UJ	14 U	12 U	5 U
2-Butanone	28000000	10000000	**30**	**74**	**120**	**4 J**
2-Hexanone	NA	NA	14 U	29 U	25 U	10 U
4-Methyl-2-Pentanone	5300000	1200000	14 U	29 U	25 U	10 U
Acetone	61000000	7800000	190 U	**410 J**	**590 J**	16 U
Benzene	1100	2500	7 UJ	14 U	12 U	**0.9 J**
Bromodichloromethane	10000	10000	7 UJ	14 U	12 U	5 U
BTEX[(1)]	NA	NA	0 U	**8**	**9**	**2.9**
Carbon Disulfide	670000	NA	**13 J**	**21**	**29**	**5**
Chloroform	300	1200	7 UJ	14 U	12 U	5 U
Chloromethane	1700	NA	7 U	14 U	12 U	**2 J**
cis-1,2-Dichloroethene	780000	630000	**1300 J**	**280**	**310**	5 U
Ethylbenzene	5700	71000	7 UJ	14 U	12 U	5 U
m+p-Xylenes	4500000	NA	14 UJ	29 U	25 U	10 U
Methylene Chloride	11000	45000	2 U	4 U	4 U	1 U
o-Xylene	5300000	NA	7 UJ	14 U	12 U	5 U
Styrene	6500000	13000	7 UR	14 U	12 U	5 U
Toluene	5000000	190000	7 UJ	**8 J**	**9 J**	**2 J**
Total 1,2-Dichloroethene	700000	630000	**1342 J**	**314**	**347**	5 U
Total Chlorinated VOCs[(1)]	NA	NA	**1342**	**314**	**350**	**2**

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **Depth Range (feet)**	**ORNL Residential Regional Screening Levels**	**RIDEM Soil Direct Exposure Residential Criterion**	**08** **SB16-44** **SB16-44-NSO-051304-14** **NORMAL** **5/13/2004** **14 - 16**	**08** **SB16-45** **SB16-45-NSO-051204-14** **ORIG** **5/12/2004** **14 - 16**	**08** **SB16-45** **SB16-45-NSO-051204-14-D** **DUP** **5/12/2004** **14 - 16**	**08** **SB16-46** **SB16-46-NSO-051304-12** **NORMAL** **5/13/2004** **12 - 14**
Volatile Organic Compounds (ug/kg) (Continued)						
Total Xylenes	600000	110000	7 UJ	14 U	12 U	5 U
trans-1,2-Dichloroethene	110000	1100000	**42 J**	**34**	**37**	5 U
Trichloroethene	2800	13000	7 UJ	14 U	12 U	5 U
Vinyl Chloride	60	20	7 U	14 U	**3 J**	5 U
Semivolatile Organic Compounds (ug/kg)						
2,4-Dimethylphenol	1200000	1400000	420 U	510 U	650 U	**270 J**
2,6-Dinitrotoluene	61000	NA	420 UJ	510 U	650 U	430 U
2-Methylnaphthalene	310000	123000	420 UJ	510 U	650 U	**360 J**
2-Methylphenol	3100000	NA	420 U	510 U	650 U	**200 J**
4-Chloroaniline	240000	310000	420 U	510 U	650 U	**260 J**
4-Methylphenol	310000	NA	420 U	510 U	650 U	**830**
Acenaphthene	3400000	43000				
Anthracene	17000000	35000				
Benzo(a)pyrene Equivalents[1]	NA	400				
Benzo(a)anthracene	150	900				
Benzo(a)pyrene	15	400				
Benzo(b)fluoranthene	150	900				
Benzo(g,h,i)perylene	1700000	800				
Benzo(k)fluoranthene	1500	900				
Bis(2-Ethylhexyl) Phthalate	NA	46000	420 U	510 U	650 U	**300 J**
Carbazole	24000	NA	420 U	510 U	650 U	**120 J**
Chrysene	15000	400				
di-n-Butyl Phthalate	6100000	NA	420 U	510 U	650 U	**130 J**
Dibenzo(a,h)anthracene	15	400				
Dibenzofuran	NA	NA	420 U	510 U	650 U	**240 J**
Diethyl Phthalate	49000000	340000	420 U	510 U	650 U	430 U
Fluoranthene	2300000	20000				
Fluorene	2300000	28000				
Indeno(1,2,3-cd)pyrene	150	900				
Naphthalene	3900	54000				
Phenanthrene	1700000	40000				
Pyrene	1700000	13000				
Total PAHs[1]	NA	NA				
Polycyclic Aromatic Hydrocarbons (ug/kg)						
2-Methylnaphthalene	310000	123000				
Acenaphthene	3400000	43000	43 UR	50 U	65 U	22 U
Acenaphthylene	3400000	23000	85 UJ	100 U	130 U	44 U
Anthracene	17000000	35000	4.3 UJ	5 U	6.5 U	**120 J**
Benzo(a)pyrene Equivalents[1]	NA	400	**0.008**	**1.9**	**0.016**	**395**
Benzo(a)anthracene	150	900	4.3 UR	5 U	6.5 U	**260 J**
Benzo(a)pyrene	15	400	4.3 UR	5 U	6.5 U	**360 J**
Benzo(b)fluoranthene	150	900	8.5 UR	10 U	13 U	**70 J**
Benzo(g,h,i)perylene	1700000	800	8.5 U	10 U	13 U	4.4 U
Benzo(k)fluoranthene	1500	900	4.3 UR	**190 J**	6.5 UJ	**190 J**
Chrysene	15000	400	**8 J**	5 UJ	**16 J**	**130 J**
Dibenzo(a,h)anthracene	15	400	8.5 UJ	10 U	13 U	4.4 U
Fluoranthene	2300000	20000	8.5 U	10 UJ	**49 J**	**280 J**

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet)	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	08 SB16-44 SB16-44-NSO-051304-14 NORMAL 5/13/2004 14 - 16	08 SB16-45 SB16-45-NSO-051204-14 ORIG 5/12/2004 14 - 16	08 SB16-45 SB16-45-NSO-051204-14-D DUP 5/12/2004 14 - 16	08 SB16-46 SB16-46-NSO-051304-12 NORMAL 5/13/2004 12 - 14
Polycyclic Aromatic Hydrocarbons (ug/kg) (Continued)						
Fluorene	2300000	28000	8.5 UR	10 U	13 U	**180 J**
Indeno(1,2,3-cd)pyrene	150	900	4.3 UR	5 U	6.5 U	2.2 U
Naphthalene	3900	54000	43 U	50 U	65 U	**670 J**
Phenanthrene	1700000	40000	4.3 UJ	5 U	6.5 U	**550 J**
Pyrene	1700000	13000	4.3 UR	5 U	6.5 U	**280 J**
Total PAHs[(1)]	NA	NA	**8**	**190**	**65**	**3450**
Pesticides (ug/kg)						
4,4'-DDD	2000	NA				
4,4'-DDT	1700	NA				
Endrin Aldehyde	18000	NA				
gamma-Chlordane	1600	NA				
Inorganics (mg/kg)						
Aluminum	77000	NA				
Antimony	31	10				
Arsenic	0.39	7				
Barium	15000	5500				
Beryllium	160	0.4				
Cadmium	70	39				
Calcium	NA	NA				
Chromium	230	390				
Cobalt	23	NA				
Copper	3100	3100				
Iron	55000	NA				
Lead	400	150				
Magnesium	NA	NA				
Manganese	1800	390				
Mercury	23	23				
Nickel	1600	1000				
Potassium	NA	NA				
Selenium	390	390				
Silver	390	200				
Sodium	NA	NA				
Vanadium	390	550				
Zinc	23000	6000				
Miscellaneous Parameters (mg/kg)						
Carbon	NA	NA				
Percent Moisture (%)	NA	NA				
pH (S.U.)	NA	NA	**7.92 J**	**6.91 J**	**6.91 J**	**7.54 J**
Total Organic Carbon	NA	NA	**18000**	**7300**	**9000**	**10000**
Total Residue (%)	NA	NA				
Total Solids (%)	NA	NA				
Petroleum Hydrocarbons (mg/kg)						
Diesel Range Organics	NA	NA				
Oil & Grease	NA	NA	**620 J**	**300**	**490**	**3360**
PHC As Diesel	NA	NA	**280 J**	**200 J**	**430 J**	**980**
Total Petroleum Hydrocarbons	NA	500				
TPH	NA	NA				

TABLE 4-9

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Description:
01 - EBS Phase II Sampling
02 - EBS Phase II Follow-On Sampling
03 - EBS Phase II Follow-On Addendum Sampling
04 - State I Phase I RI Sampling Event
05 - Stage II Phase I RI Sampling Event
06 - Phase II RI Sampling Event
08 - CTO 97 Supplemental Phase II Investigation

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UN - Non-detected result is qualified due to spike noncompliance.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
BaP = Benzo(a)pyrene equivalents
BTEX = Benzene, toluene, ethylbenzene, and total xylenes
EPA = Environmental Protection Agency
NA = Not applicable/Not available
PAH = Polycyclic aromatic hydrocarbon
PHC = Petroleum hydrocarbons as diesel fuel
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
TEQ = Toxicity equivalents for 2,3,7,8-TCDD
TPH = Total petroleum hydrocarbon
VOC = Volatile organic compound

Footnotes:
1 - The calculation of the BTEX, total chlorinated VOCs, BAP equivalents, TEQs, total PAHs are defined in the Section 4 text. "0 U" indicates that this chemical group was not detected in the sample analyzed.
2 - A concentration that is shaded exceeds the criteria presented in the table.
3 - A blank cell indicates that the sample was not analyzed for the target analyte.

TABLE 4-10

SUMMARY OF CHEMICALS DETECTED IN DEEP SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**02**	**02**	**09**	**09**	**09**
Location	**ORNL**	**RIDEM**	**28-SB-14**	**28-SB-15**	**INJ16-01D**	**INJ16-01D**	**INJ16-02D**
Sample Number	**Residential**	**Soil Direct**	**28SB-14-NSO-062397-42**	**28SB-15-NSO-062497-30**	**INJ16-01D-NSO-090804-48**	**INJ16-01D-NSO-090804-56**	**INJ16-02D-NSO-082504-44**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/23/1997**	**6/24/1997**	**9/8/2004**	**9/8/2004**	**8/25/2004**
Depth Range (feet)	**Levels**	**Criterion**	**42 - 44**	**30 - 32**	**48 - 50**	**56 - 57.4**	**44 - 46**
Volatile Organic Compounds (ug/kg)							
2-Butanone	28000000	10000000	12 U	11 U	860 U	820 U	6 U
2-Hexanone	NA	NA	12 U	11 U	860 U	820 U	6 U
Acetone	61000000	7800000	**17**	11 U	970 U	820 U	8 U
Carbon Disulfide	670000	NA	12 U	11 U	430 U	410 U	3 U
cis-1,2-Dichloroethene	780000	630000			430 U	410 U	3 U
Methylene Chloride	11000	45000	12 U	11 U	660 U	720 U	3 U
Total 1,2-Dichloroethene	700000	630000	12 U	11 U	430 U	410 U	3 U
Total Chlorinated VOCs [(1)]	NA	NA	0 U	0 U	**1300**	**840**	0 U
Trichloroethene	2800	13000	12 U	11 U	**1300**	**840**	3 U
Semivolatile Organic Compounds (ug/kg)							
di-n-Butyl Phthalate	6100000	NA	400 U	**47 J**			
Polycyclic Aromatic Hydrocarbons (ug/kg)							
Fluoranthene	2300000	20000					
Phenanthrene	1700000	40000					
Total PAHs[(1)]	NA	NA					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Antimony	31	10					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Sodium	NA	NA					
Thallium	5.1	5.5					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					
Total Organic Carbon	NA	NA			**3000**	1200 U	**1600**
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500	30 U	**31**			

TABLE 4-10

SUMMARY OF CHEMICALS DETECTED IN DEEP SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**09**	**09**	**09**	**09**	**09**
Location	**ORNL**	**RIDEM**	**INJ16-02D**	**INJ16-03D**	**INJ16-03D**	**INJ16-04D**	**INJ16-04D**
Sample Number	**Residential**	**Soil Direct**	**INJ16-02D-NSO-082504-52**	**INJ16-03D-NSO-091004-46**	**INJ16-03D-NSO-091004-52**	**INJ16-04D-NSO-090704-44**	**INJ16-04D-NSO-090704-46**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**8/25/2004**	**9/10/2004**	**9/10/2004**	**9/7/2004**	**9/7/2004**
Depth Range (feet)	**Levels**	**Criterion**	**52 - 54**	**46 - 48**	**52 - 54**	**44 - 46**	**46 - 48**
Volatile Organic Compounds (ug/kg)							
2-Butanone	28000000	10000000	8 U	5 U	3 U	7 U	7 UJ
2-Hexanone	NA	NA	8 U	7 U	6 U	7 U	7 UJ
Acetone	61000000	7800000	11 U	250 U	370 U	8 U	29 U
Carbon Disulfide	670000	NA	4 U	3 U	3 U	3 U	4 U
cis-1,2-Dichloroethene	780000	630000	4 U	3 U	3 U	3 U	4 U
Methylene Chloride	11000	45000	4 U	3 U	3 U	3 U	4 U
Total 1,2-Dichloroethene	700000	630000	4 U	3 U	3 U	3 U	4 U
Total Chlorinated VOCs [(1)]	NA	NA	**17**	**690**	**110**	**76**	**19**
Trichloroethene	2800	13000	**17**	**690**	**110**	**76**	**19**
Semivolatile Organic Compounds (ug/kg)							
di-n-Butyl Phthalate	6100000	NA					
Polycyclic Aromatic Hydrocarbons (ug/kg)							
Fluoranthene	2300000	20000					
Phenanthrene	1700000	40000					
Total PAHs[(1)]	NA	NA					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Antimony	31	10					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Sodium	NA	NA					
Thallium	5.1	5.5					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					
Total Organic Carbon	NA	NA	1200 U	**1900**	1100 U	1100 U	1100 U
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

TABLE 4-10

SUMMARY OF CHEMICALS DETECTED IN DEEP SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**09**	**09**	**09**	**09**	**09**
Location	**ORNL**	**RIDEM**	**INJ16-05D**	**INJ16-05D**	**INJ16-06D**	**INJ16-06D**	**INJ16-06D**
Sample Number	**Residential**	**Soil Direct**	**INJ16-05D-NSO-090704-44**	**INJ16-05D-NSO-090704-46**	**INJ16-06D-NSO-082604-50**	**INJ16-06D-NSO-082704-58**	**INJ16-06D-NSO-082704-58-D**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**
Sample Date	**Screening**	**Residential**	**9/7/2004**	**9/7/2004**	**8/26/2004**	**8/27/2004**	**8/27/2004**
Depth Range (feet)	**Levels**	**Criterion**	**44 - 46**	**46 - 48**	**50 - 52**	**58 - 60**	**58 - 60**
Volatile Organic Compounds (ug/kg)							
2-Butanone	28000000	10000000	6 UJ	**3 J**	6 U	6 U	6 U
2-Hexanone	NA	NA	6 UJ	7 UJ	6 U	6 U	6 U
Acetone	61000000	7800000	31 U	38 U	9 U	11 U	9 U
Carbon Disulfide	670000	NA	**0.9 J**	**0.8 J**	3 U	3 U	3 U
cis-1,2-Dichloroethene	780000	630000	3 U	4 U	3 U	3 U	3 U
Methylene Chloride	11000	45000	3 U	4 U	5 U	3 U	4 U
Total 1,2-Dichloroethene	700000	630000	3 U	4 U	3 U	3 U	3 U
Total Chlorinated VOCs [(1)]	NA	NA	**2400**	**2600**	**11**	**100**	**9**
Trichloroethene	2800	13000	**2400**	**2600**	**11**	**100 J**	**9 J**
Semivolatile Organic Compounds (ug/kg)							
di-n-Butyl Phthalate	6100000	NA					
Polycyclic Aromatic Hydrocarbons (ug/kg)							
Fluoranthene	2300000	20000					
Phenanthrene	1700000	40000					
Total PAHs[(1)]	NA	NA					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Antimony	31	10					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Sodium	NA	NA					
Thallium	5.1	5.5					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					
Total Organic Carbon	NA	NA	**1600**	1200 U	1200 U	1100 U	1100 U
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

TABLE 4-10

SUMMARY OF CHEMICALS DETECTED IN DEEP SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**09**	**09**	**09**	**09**	**09**
Location	**ORNL**	**RIDEM**	**INJ16-07D**	**INJ16-07D**	**INJ16-08D**	**INJ16-08D**	**INJ16-09D**
Sample Number	**Residential**	**Soil Direct**	**INJ16-07D-NSO-090204-54**	**INJ16-07D-NSO-090204-60**	**INJ16-08D-NSO-081804-56**	**INJ16-08D-NSO-081804-62**	**INJ16-09D-NSO-082404-54**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**9/2/2004**	**9/2/2004**	**8/18/2004**	**8/18/2004**	**8/24/2004**
Depth Range (feet)	**Levels**	**Criterion**	**54 - 56**	**60 - 62**	**56 - 56.8**	**62 - 64**	**54 - 55.9**
Volatile Organic Compounds (ug/kg)							
2-Butanone	28000000	10000000	700 U	670 U	7 U	6 U	7 U
2-Hexanone	NA	NA	700 U	670 U	7 U	6 U	7 U
Acetone	61000000	7800000	700 U	700 U	17 U	24 U	100 U
Carbon Disulfide	670000	NA	350 U	330 U	3 U	3 U	3 U
cis-1,2-Dichloroethene	780000	630000	350 U	330 U	3 U	3 U	3 U
Methylene Chloride	11000	45000	550 U	420 U	3 U	3 U	3 U
Total 1,2-Dichloroethene	700000	630000	350 U	330 U	3 U	3 U	3 U
Total Chlorinated VOCs [(1)]	NA	NA	**430**	**1000**	**71**	**87**	**130**
Trichloroethene	2800	13000	**430**	**1000**	**71**	**87**	**130**
Semivolatile Organic Compounds (ug/kg)							
di-n-Butyl Phthalate	6100000	NA					
Polycyclic Aromatic Hydrocarbons (ug/kg)							
Fluoranthene	2300000	20000					
Phenanthrene	1700000	40000					
Total PAHs[(1)]	NA	NA					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Antimony	31	10					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Sodium	NA	NA					
Thallium	5.1	5.5					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					
Total Organic Carbon	NA	NA	1110 U	**1900**	1100 U	1100 U	1100 U
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

TABLE 4-10

SUMMARY OF CHEMICALS DETECTED IN DEEP SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**09**	**09**	**09**	**09**	**09**
Location	**ORNL**	**RIDEM**	**INJ16-09D**	**INJ16-10D**	**INJ16-10D**	**INJ16-11D**	**INJ16-11D**
Sample Number	**Residential**	**Soil Direct**	**INJ16-09D-NSO-082404-58**	**INJ16-10D-NSO-082704-51**	**INJ16-10D-NSO-082704-57**	**INJ16-11D-NSO-090204-56**	**INJ16-11D-NSO-090204-56-D**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**
Sample Date	**Screening**	**Residential**	**8/24/2004**	**8/27/2004**	**8/27/2004**	**9/2/2004**	**9/2/2004**
Depth Range (feet)	**Levels**	**Criterion**	**58 - 58.4**	**51 - 53**	**57 - 59**	**56 - 58**	**56 - 58**
Volatile Organic Compounds (ug/kg)							
2-Butanone	28000000	10000000	**3 J**	7 U	6 U	720 U	730 U
2-Hexanone	NA	NA	6 U	7 U	6 U	720 U	730 U
Acetone	61000000	7800000	13 U	13 U	61 U	720 U	730 U
Carbon Disulfide	670000	NA	14 U	3 U	3 U	360 U	370 U
cis-1,2-Dichloroethene	780000	630000	3 U	3 U	3 U	360 U	370 U
Methylene Chloride	11000	45000	3 U	3 U	**4 B**	550 U	650 U
Total 1,2-Dichloroethene	700000	630000	3 U	3 U	3 U	360 U	370 U
Total Chlorinated VOCs [(1)]	NA	NA	**32**	**43**	**74**	**480**	**560**
Trichloroethene	2800	13000	**32**	**43**	**70**	**480**	**560**
Semivolatile Organic Compounds (ug/kg)							
di-n-Butyl Phthalate	6100000	NA					
Polycyclic Aromatic Hydrocarbons (ug/kg)							
Fluoranthene	2300000	20000					
Phenanthrene	1700000	40000					
Total PAHs[(1)]	NA	NA					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Antimony	31	10					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Sodium	NA	NA					
Thallium	5.1	5.5					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					
Total Organic Carbon	NA	NA	1100 U	**3200**	1200 U	1100 U	1100 U
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

TABLE 4-10

SUMMARY OF CHEMICALS DETECTED IN DEEP SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**09**	**09**	**09**	**09**	**04**
Location	**ORNL**	**RIDEM**	**INJ16-11D**	**INJ16-12D**	**INJ16-12D**	**INJ16-12D**	**MW16-01D**
Sample Number	**Residential**	**Soil Direct**	**INJ16-11D-NSO-090204-58**	**INJ16-12D-NSO-083004-48**	**INJ16-12D-NSO-083004-52**	**INJ16-12D-NSO-083004-52-D**	**MW16-01D-NSO-051500-48**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**
Sample Date	**Screening**	**Residential**	**9/2/2004**	**8/30/2004**	**8/30/2004**	**8/30/2004**	**5/15/2000**
Depth Range (feet)	**Levels**	**Criterion**	**58 - 60**	**48 - 50**	**52 - 54**	**52 - 54**	**48 - 50**
Volatile Organic Compounds (ug/kg)							
2-Butanone	28000000	10000000	**2 J**	6 U	830 U	850 U	10 R
2-Hexanone	NA	NA	5 U	6 U	830 U	850 U	10 U
Acetone	61000000	7800000	41 U	16 U	1000 U	1000 U	**7 E**
Carbon Disulfide	670000	NA	3 U	3 U	410 U	420 U	5 U
cis-1,2-Dichloroethene	780000	630000	3 U	3 U	410 U	420 U	5 U
Methylene Chloride	11000	45000	3 U	3 U	520 U	590 U	10 UJ
Total 1,2-Dichloroethene	700000	630000	3 U	3 U	410 U	420 U	5 U
Total Chlorinated VOCs [(1)]	NA	NA	**430**	**35**	**950**	**610**	**6**
Trichloroethene	2800	13000	**430**	**35**	**950**	**610**	**6**
Semivolatile Organic Compounds (ug/kg)							
di-n-Butyl Phthalate	6100000	NA					400 UJ
Polycyclic Aromatic Hydrocarbons (ug/kg)							
Fluoranthene	2300000	20000					24 UJ
Phenanthrene	1700000	40000					24 UJ
Total PAHs[(1)]	NA	NA					0 U
Inorganics (mg/kg)							
Aluminum	77000	NA					**7190**
Antimony	31	10					0.18 U
Arsenic	0.39	7					**2**
Barium	15000	5500					**21.9**
Beryllium	160	0.4					**0.47**
Cadmium	70	39					**0.24 J**
Calcium	NA	NA					**1900**
Chromium	230	390					**11.7**
Cobalt	23	NA					**7.4**
Copper	3100	3100					**13.4**
Iron	55000	NA					**18600**
Lead	400	150					**5.8**
Magnesium	NA	NA					**3530**
Manganese	1800	390					**227**
Nickel	1600	1000					**12.9**
Potassium	NA	NA					**1240**
Selenium	390	390					0.24 U
Sodium	NA	NA					**53.1**
Thallium	5.1	5.5					0.26 U
Vanadium	390	550					**14.5**
Zinc	23000	6000					**46.2**
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					**6.6**
Total Organic Carbon	NA	NA	1100 U	**1900**	**1100 J**	**2000 J**	**11000**
Total Residue (%)	NA	NA					**79**
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

TABLE 4-10

SUMMARY OF CHEMICALS DETECTED IN DEEP SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**04**	**04**	**04**	**04**	**04**
Location	**ORNL**	**RIDEM**	**MW16-02D**	**MW16-03D**	**MW16-03D**	**MW16-04D**	**MW16-05D**
Sample Number	**Residential**	**Soil Direct**	**MW16-02D-NSO-052200-64**	**MW16-03D-NSO-060100-46**	**MW16-03D-NSO-060100-46-D**	**MW16-04D-NSO-061300-52**	**MW16-05D-NSO-052500-54**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**5/22/2000**	**6/1/2000**	**6/1/2000**	**6/13/2000**	**5/25/2000**
Depth Range (feet)	**Levels**	**Criterion**	**64 - 66**	**46.5 - 48.5**	**46.5 - 48.5**	**52 - 53**	**54 - 56**
Volatile Organic Compounds (ug/kg)							
2-Butanone	28000000	10000000	10 U	10 U	10 U	10 U	10 U
2-Hexanone	NA	NA	10 U	10 U	10 U	10 U	10 U
Acetone	61000000	7800000	10 UJ	**7 J**	10 UJ	**7 E**	14 U
Carbon Disulfide	670000	NA	5 U	5 U	5 UJ	5 UJ	5 U
cis-1,2-Dichloroethene	780000	630000	5 U	5 U	5 U	5 U	5 U
Methylene Chloride	11000	45000	8 UJ	8 UJ	5 UJ	6 UJ	12 UJ
Total 1,2-Dichloroethene	700000	630000	5 U	5 U	5 U	5 U	5 U
Total Chlorinated VOCs [(1)]	NA	NA	**19**	0 U	0 U	**76**	**800**
Trichloroethene	2800	13000	**19**	5 U	5 U	**76**	**800**
Semivolatile Organic Compounds (ug/kg)							
di-n-Butyl Phthalate	6100000	NA	400 U	330 U	360 U	400 U	360 U
Polycyclic Aromatic Hydrocarbons (ug/kg)							
Fluoranthene	2300000	20000	24 U	20 U	22 U	24 U	22 U
Phenanthrene	1700000	40000	24 U	20 U	22 U	24 U	22 U
Total PAHs[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U
Inorganics (mg/kg)							
Aluminum	77000	NA	**8340**	**3710**	**5090**	**4920**	**5150**
Antimony	31	10	0.26 U	0.22 UJ	0.22 UJ	0.23 UJ	0.25 UJ
Arsenic	0.39	7	**2**	**1.7**	**1.4**	1.2 UJ	**1.1**
Barium	15000	5500	**24.4**	**11.5**	**16**	**12.6**	**14.9**
Beryllium	160	0.4	**0.48**	**0.31**	**0.43**	**0.58**	**0.34**
Cadmium	70	39	0.03 U	0.25 U	**0.29 J**	**0.27**	0.28 UJ
Calcium	NA	NA	**1440**	**1080**	**1240**	2060 U	**1360 J**
Chromium	230	390	**14.5**	**6.6**	**9**	**7.1**	**9**
Cobalt	23	NA	**10.6**	**5.7**	**7.6**	**6.7**	**6.8**
Copper	3100	3100	**18.7**	**14.1**	**13.9**	**20.1 J**	**11.9**
Iron	55000	NA	**20000**	**9630**	**15400**	**12200**	**11400**
Lead	400	150	**8.3**	**4.7**	**7.1**	**4.7**	**4.2**
Magnesium	NA	NA	**4100**	**2140**	**3050**	**2600 J**	**2470**
Manganese	1800	390	**201**	**92.8 J**	**148 J**	**107**	**114**
Nickel	1600	1000	**21**	**11.9**	**14**	13 U	**12.6**
Potassium	NA	NA	**1900**	**1230**	**1530**	1410 U	**1160**
Selenium	390	390	0.34 U	0.28 U	0.29 U	0.3 U	0.32 U
Sodium	NA	NA	**79.1**	**32.7**	**41.2**	41.8 U	**47**
Thallium	5.1	5.5	0.37 U	0.31 U	0.82 U	0.33 U	0.35 U
Vanadium	390	550	**17.2**	**8.9**	**12.8**	**10.9**	**11.3**
Zinc	23000	6000	**47.6**	**28.7**	**34.4**	**33.6 J**	**28.3**
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA	**6.7**	**6.9**		**6.4**	**6.8**
Total Organic Carbon	NA	NA	**1100**	**2600**	**2000**	**3500**	**2400**
Total Residue (%)	NA	NA	**87**	**96**	**91**	**85**	**92**
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

TABLE 4-10

SUMMARY OF CHEMICALS DETECTED IN DEEP SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**04**	**04**	**05**	**05**	**05**
Location	**ORNL**	**RIDEM**	**MW16-06D**	**MW16-07D**	**MW16-13D**	**MW16-14D**	**MW16-15R**
Sample Number	**Residential**	**Soil Direct**	**MW16-06D-NSO-062200-40**	**MW16-07D-NSO-061500-36**	**MW16-13D-NSO-011601-58**	**MW16-14D-NSO-013001-57**	**MW16-15R-NSO-012201-51**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**6/22/2000**	**6/15/2000**	**1/16/2001**	**1/30/2001**	**1/22/2001**
Depth Range (feet)	**Levels**	**Criterion**	**40 - 42**	**36 - 38**	**58 - 60**	**57.5 - 59.5**	**51 - 53**
Volatile Organic Compounds (ug/kg)							
2-Butanone	28000000	10000000	10 U	10 UJ	10 U	430 U	10 UJ
2-Hexanone	NA	NA	10 U	10 UJ	10 U	430 U	10 U
Acetone	61000000	7800000	**24 E**	**40 E**	10 U	430 UJ	**14 J**
Carbon Disulfide	670000	NA	5 U	5 UJ	5 U	220 U	5 U
cis-1,2-Dichloroethene	780000	630000	5 U	5 UJ	5 U	220 U	5 U
Methylene Chloride	11000	45000	**4 J**	5 UJ	5 UJ	420 U	5 U
Total 1,2-Dichloroethene	700000	630000	5 U	5 U	5 U	220 U	5 U
Total Chlorinated VOCs [(1)]	NA	NA	**4**	0 U	0 U	**5400**	**1200**
Trichloroethene	2800	13000	5 U	5 UJ	5 U	**5400**	**1200**
Semivolatile Organic Compounds (ug/kg)							
di-n-Butyl Phthalate	6100000	NA	360 U	360 U	360 U	360 U	360 U
Polycyclic Aromatic Hydrocarbons (ug/kg)							
Fluoranthene	2300000	20000	22 U	22 U	22 U	22 U	22 U
Phenanthrene	1700000	40000	22 U	22 U	22 U	22 U	22 U
Total PAHs[(1)]	NA	NA	0 U	0 U	0 U	0 U	0 U
Inorganics (mg/kg)							
Aluminum	77000	NA	**7410**	**5630**	**6560**	**5740**	**5580**
Antimony	31	10	0.23 UJ	0.21 UJ	0.4 UJ	**0.4 J**	0.4 UJ
Arsenic	0.39	7	**1.9 J**	0.97 UJ	**1.5**	**1.4**	**0.85**
Barium	15000	5500	**19.5**	**13.6**	**17.6**	**15.9**	**13.6**
Beryllium	160	0.4	**0.71**	**0.41**	**0.54**	0.46 UJ	**0.58**
Cadmium	70	39	0.24 U	0.23 U	0.03 UJ	0.03 UJ	0.03 UJ
Calcium	NA	NA	3420 U	1410 U	1820 U	**1900**	1390 U
Chromium	230	390	**11.9**	**9.7**	**10.9**	**9.7**	**9.1**
Cobalt	23	NA	**9.3**	**7.6**	**7.6**	**6.8**	**7**
Copper	3100	3100	**19.2 J**	**17 J**	**15.7**	**11.4 J**	**11.3**
Iron	55000	NA	**19400**	**14200**	**17400**	**15800**	**14100**
Lead	400	150	**6.7**	**4.9**	**5.6**	**5.1**	**6.8**
Magnesium	NA	NA	**4080 J**	**2970 J**	**3420 J**	**3230**	**3000 J**
Manganese	1800	390	**194**	**123**	**243 J**	**181**	**130 J**
Nickel	1600	1000	**16.2**	**14.2**	**13.9**	**13.5**	**15.9**
Potassium	NA	NA	2250 U	1450 U	1200 U	**1470**	1120 U
Selenium	390	390	0.3 U	0.26 U	0.33 U	**0.42 J**	0.34 U
Sodium	NA	NA	45.1 U	37.4 U	62.2 U	82.8 U	47.5 U
Thallium	5.1	5.5	0.33 U	0.29 U	0.51 U	0.52 U	0.52 U
Vanadium	390	550	**17.6**	**13.7**	**13.4**	**12.4**	**12.8**
Zinc	23000	6000	**46.1 J**	**34.4 J**	**37.2**	**37.5**	**38**
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA			**1300**	**1400**	**2100**
Percent Moisture (%)	NA	NA			**10.2**	**16.5**	**7.7**
pH (S.U.)	NA	NA	**7.2**	**5.6**	**5.8**	**5.9**	**6.4**
Total Organic Carbon	NA	NA	**2500**	**2400**			
Total Residue (%)	NA	NA	**89**	**91**	**89**	**87**	**89**
Total Solids (%)	NA	NA			**89.8**	**83.5**	**92.3**
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

TABLE 4-10

SUMMARY OF CHEMICALS DETECTED IN DEEP SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**05**	**05**	**05**	**09**	**09**
Location	**ORNL**	**RIDEM**	**MW16-22D**	**MW16-22D**	**MW16-23D**	**MW16-59D**	**MW16-59D**
Sample Number	**Residential**	**Soil Direct**	**MW16-22D-NSO-011601-59**	**MW16-22D-NSO-011601-59-D**	**MW16-23D-NSO-011001-54**	**MW16-59D-NSO-072104-64**	**MW16-59D-NSO-072104-66**
Sample Code	**Regional**	**Exposure**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**1/16/2001**	**1/16/2001**	**1/10/2001**	**7/21/2004**	**7/21/2004**
Depth Range (feet)	**Levels**	**Criterion**	**59 - 61**	**59 - 61**	**54 - 56**	**64 - 66**	**66 - 68**
Volatile Organic Compounds (ug/kg)							
2-Butanone	28000000	10000000	10 U	10 UJ	10 UJ	670 U	700 U
2-Hexanone	NA	NA	10 U	10 UJ	10 U	**230 J**	700 U
Acetone	61000000	7800000	**5 J**	10 UJ	10 UJ	670 U	740 U
Carbon Disulfide	670000	NA	5 U	5 UJ	5 U	340 U	350 U
cis-1,2-Dichloroethene	780000	630000	5 U	5 UJ	5 U	340 U	350 U
Methylene Chloride	11000	45000	5 UJ	5 UJ	5 U	340 U	350 U
Total 1,2-Dichloroethene	700000	630000	5 U	5 U	5 U	340 U	350 U
Total Chlorinated VOCs [(1)]	NA	NA	**1300**	**760**	**800**	**1800**	**3300**
Trichloroethene	2800	13000	**1300**	**760 J**	**800**	**1800**	**3300**
Semivolatile Organic Compounds (ug/kg)							
di-n-Butyl Phthalate	6100000	NA	360 U	360 U	400 U		
Polycyclic Aromatic Hydrocarbons (ug/kg)							
Fluoranthene	2300000	20000	22 U	22 U	24 U		
Phenanthrene	1700000	40000	22 U	22 U	24 U		
Total PAHs[(1)]	NA	NA	0 U	0 U	0 U		
Inorganics (mg/kg)							
Aluminum	77000	NA	**9200**	**8700**	**2840**		
Antimony	31	10	0.35 UJ	0.39 UJ	0.36 UJ		
Arsenic	0.39	7	**0.94**	**2.3**	**2.8**		
Barium	15000	5500	**22.1**	**21.4**	**9.5**		
Beryllium	160	0.4	**0.56**	**0.51**	**0.32**		
Cadmium	70	39	0.02 U	0.03 UJ	0.02 UJ		
Calcium	NA	NA	1700 U	1780 U	**739**		
Chromium	230	390	**14.2**	**13.4**	**5.1**		
Cobalt	23	NA	**10.3**	**10.1**	**3.8**		
Copper	3100	3100	**16.6 J**	**43.3 J**	**7.2**		
Iron	55000	NA	**21200**	**18300**	**10800**		
Lead	400	150	**6.4**	**7.4**	**4.8**		
Magnesium	NA	NA	**4910 J**	**4540 J**	**1300 J**		
Manganese	1800	390	**193 J**	**196 J**	**182 J**		
Nickel	1600	1000	**19.5**	**19**	**8.5**		
Potassium	NA	NA	**1230**	1210 U	480 U		
Selenium	390	390	0.29 U	0.33 U	0.3 U		
Sodium	NA	NA	56.2 U	51.2 U	44.9 U		
Thallium	5.1	5.5	**0.51 J**	0.51 U	0.47 U		
Vanadium	390	550	**18.4**	**17.3**	**7.5**		
Zinc	23000	6000	**53.7**	**52.2**	**20.4**		
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA	**2600**	**2000**	**1600**		
Percent Moisture (%)	NA	NA	**8.9**	**7.8**	**17.4**		
pH (S.U.)	NA	NA	**6**		**5.8**		
Total Organic Carbon	NA	NA				**2100**	**1200**
Total Residue (%)	NA	NA	**91**	**93**	**83**		
Total Solids (%)	NA	NA	**91.1**	**92.2**	**82.6**		
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

TABLE 4-10

SUMMARY OF CHEMICALS DETECTED IN DEEP SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**09**	**09**	**09**	**09**	**09**
Location	**ORNL**	**RIDEM**	**MW16-59I**	**MW16-59I**	**MW16-60D**	**MW16-60D**	**MW16-61D**
Sample Number	**Residential**	**Soil Direct**	**MW16-59I-NSO-072604-44**	**MW16-59I-NSO-072604-46**	**MW16-60D-NSO-072004-52**	**MW16-60D-NSO-072104-56**	**MW16-61D-NSO-072804-44**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**7/26/2004**	**7/26/2004**	**7/20/2004**	**7/21/2004**	**7/28/2004**
Depth Range (feet)	**Levels**	**Criterion**	**44 - 46**	**46 - 48**	**52 - 54**	**56 - 58**	**44 - 46**
Volatile Organic Compounds (ug/kg)							
2-Butanone	28000000	10000000	850 U	760 U	910 U	790 U	6 U
2-Hexanone	NA	NA	850 U	760 U	**210 J**	790 U	6 UJ
Acetone	61000000	7800000	880 U	760 U	1100 U	790 U	10 U
Carbon Disulfide	670000	NA	430 U	380 U	450 UJ	390 U	3 U
cis-1,2-Dichloroethene	780000	630000	430 U	380 U	450 U	390 U	3 U
Methylene Chloride	11000	45000	430 U	380 U	450 U	390 U	3 U
Total 1,2-Dichloroethene	700000	630000	430 U	380 U	450 U	390 U	3 U
Total Chlorinated VOCs [(1)]	NA	NA	**4700**	**7800**	**350**	**420**	**55**
Trichloroethene	2800	13000	**4700**	**7800**	**350 J**	**420**	**55**
Semivolatile Organic Compounds (ug/kg)							
di-n-Butyl Phthalate	6100000	NA					
Polycyclic Aromatic Hydrocarbons (ug/kg)							
Fluoranthene	2300000	20000					
Phenanthrene	1700000	40000					
Total PAHs[(1)]	NA	NA					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Antimony	31	10					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Sodium	NA	NA					
Thallium	5.1	5.5					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					
Total Organic Carbon	NA	NA	**2800**	**4500**	1200 U	**1300**	**4000**
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

TABLE 4-10

SUMMARY OF CHEMICALS DETECTED IN DEEP SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**09**	**09**	**09**	**09**	**09**
Location	**ORNL**	**RIDEM**	**MW16-61D**	**MW16-61D**	**MW16-61D**	**MW16-62D**	**MW16-62D**
Sample Number	**Residential**	**Soil Direct**	**MW16-61D-NSO-072904-48**	**MW16-61D-NSO-072904-50**	**MW16-61D-NSO-072904-50-D**	**MW16-62D-NSO-080304-51**	**MW16-62D-NSO-080304-55**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**7/29/2004**	**7/29/2004**	**7/29/2004**	**8/3/2004**	**8/3/2004**
Depth Range (feet)	**Levels**	**Criterion**	**48 - 50**	**50 - 52**	**50 - 52**	**51 - 53**	**55 - 57**
Volatile Organic Compounds (ug/kg)							
2-Butanone	28000000	10000000	6 U	6 U	7 U	7 U	1300 U
2-Hexanone	NA	NA	6 UJ	6 U	7 UJ	7 U	1300 U
Acetone	61000000	7800000	21 U	6 U	43 U	11 U	620 U
Carbon Disulfide	670000	NA	3 U	3 U	3 UJ	3 UJ	630 U
cis-1,2-Dichloroethene	780000	630000	3 U	3 U	3 U	3 U	630 U
Methylene Chloride	11000	45000	3 U	3 U	3 U	3 U	920 U
Total 1,2-Dichloroethene	700000	630000	3 U	3 U	3 U	3 U	630 U
Total Chlorinated VOCs [(1)]	NA	NA	**4**	**61**	**6**	**6**	**1200**
Trichloroethene	2800	13000	**4**	**61 J**	**6 J**	**6**	**1200**
Semivolatile Organic Compounds (ug/kg)							
di-n-Butyl Phthalate	6100000	NA					
Polycyclic Aromatic Hydrocarbons (ug/kg)							
Fluoranthene	2300000	20000					
Phenanthrene	1700000	40000					
Total PAHs[(1)]	NA	NA					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Antimony	31	10					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Sodium	NA	NA					
Thallium	5.1	5.5					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					
Total Organic Carbon	NA	NA	**1500**	**1400**	1200 U	1100 U	**1200**
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

TABLE 4-10

SUMMARY OF CHEMICALS DETECTED IN DEEP SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**09**	**09**	**09**	**09**	**09**
Location	**ORNL**	**RIDEM**	**MW16-63D**	**MW16-63D**	**MW16-64D**	**MW16-64D**	**MW16-66D**
Sample Number	**Residential**	**Soil Direct**	**MW16-63D-NSO-072704-48**	**MW16-63D-NSO-072704-54**	**MW16-64D-NSO-072704-51**	**MW16-64D-NSO-072704-55**	**MW16-66D-NSO-081004-46**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**7/27/2004**	**7/27/2004**	**7/27/2004**	**7/27/2004**	**8/10/2004**
Depth Range (feet)	**Levels**	**Criterion**	**48 - 50**	**54 - 54.3**	**51 - 53**	**55 - 57**	**46 - 48**
Volatile Organic Compounds (ug/kg)							
2-Butanone	28000000	10000000	530 U	360 U	730 UJ	1100 UJ	7 U
2-Hexanone	NA	NA	1100 U	720 U	730 UJ	1100 UJ	7 U
Acetone	61000000	7800000	1400 U	830 U	730 U	1100 U	8 U
Carbon Disulfide	670000	NA	530 U	360 U	360 UJ	560 UJ	3 U
cis-1,2-Dichloroethene	780000	630000	530 U	360 U	360 U	560 U	3 U
Methylene Chloride	11000	45000	530 U	360 U	360 U	560 U	3 U
Total 1,2-Dichloroethene	700000	630000	530 U	360 U	360 U	560 U	3 U
Total Chlorinated VOCs [(1)]	NA	NA	**1000**	**180**	**400**	**670**	**4**
Trichloroethene	2800	13000	**1000**	**180 J**	**400**	**670**	**4**
Semivolatile Organic Compounds (ug/kg)							
di-n-Butyl Phthalate	6100000	NA					
Polycyclic Aromatic Hydrocarbons (ug/kg)							
Fluoranthene	2300000	20000					
Phenanthrene	1700000	40000					
Total PAHs[(1)]	NA	NA					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Antimony	31	10					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Sodium	NA	NA					
Thallium	5.1	5.5					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					
Total Organic Carbon	NA	NA	1100 U	**2000**	1200 U	**2300**	**2000**
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

TABLE 4-10

SUMMARY OF CHEMICALS DETECTED IN DEEP SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**09**	**09**	**09**	**09**	**09**
Location	**ORNL**	**RIDEM**	**MW16-66D**	**MW16-67D**	**MW16-67D**	**MW16-67D**	**MW16-68D**
Sample Number	**Residential**	**Soil Direct**	**MW16-66D-NSO-081004-48**	**MW16-67D-NSO-083104-56**	**MW16-67D-NSO-083104-60**	**MW16-67D-NSO-083104-60-D**	**MW16-68D-NSO-080904-54**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**
Sample Date	**Screening**	**Residential**	**8/10/2004**	**8/31/2004**	**8/31/2004**	**8/31/2004**	**8/9/2004**
Depth Range (feet)	**Levels**	**Criterion**	**48 - 50**	**56 - 58**	**60 - 62**	**60 - 62**	**54 - 56**
Volatile Organic Compounds (ug/kg)							
2-Butanone	28000000	10000000	7 U	**1 J**	5 U	6 U	7 U
2-Hexanone	NA	NA	7 U	5 U	5 U	6 U	7 U
Acetone	61000000	7800000	11 U	26 U	15 U	13 U	35 U
Carbon Disulfide	670000	NA	4 U	**3**	3 U	3 U	**0.8 J**
cis-1,2-Dichloroethene	780000	630000	4 U	3 U	3 U	3 U	3 U
Methylene Chloride	11000	45000	4 U	3 U	3 U	2 U	3 U
Total 1,2-Dichloroethene	700000	630000	4 U	3 U	3 U	3 U	3 U
Total Chlorinated VOCs [(1)]	NA	NA	**2**	**46**	**57**	**70**	**89**
Trichloroethene	2800	13000	**2 J**	**46**	**57**	**70**	**89**
Semivolatile Organic Compounds (ug/kg)							
di-n-Butyl Phthalate	6100000	NA					
Polycyclic Aromatic Hydrocarbons (ug/kg)							
Fluoranthene	2300000	20000					
Phenanthrene	1700000	40000					
Total PAHs[(1)]	NA	NA					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Antimony	31	10					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Sodium	NA	NA					
Thallium	5.1	5.5					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					
Total Organic Carbon	NA	NA	**2600**	**1800**	1100 U	**1300**	**2600**
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

TABLE 4-10

SUMMARY OF CHEMICALS DETECTED IN DEEP SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**09**	**09**	**09**	**09**	**09**
Location	**ORNL**	**RIDEM**	**MW16-68D**	**MW16-69D**	**MW16-69D**	**MW16-70D**	**MW16-70D**
Sample Number	**Residential**	**Soil Direct**	**MW16-68D-NSO-080904-56**	**MW16-69D-NSO-081204-54**	**MW16-69D-NSO-081204-56**	**MW16-70D-NSO-080904-46**	**MW16-70D-NSO-080904-54**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**8/9/2004**	**8/12/2004**	**8/12/2004**	**8/9/2004**	**8/9/2004**
Depth Range (feet)	**Levels**	**Criterion**	**56 - 58**	**54 - 56**	**56 - 58**	**46 - 48**	**54 - 56**
Volatile Organic Compounds (ug/kg)							
2-Butanone	28000000	10000000	810 U	7 U	8 U	**2 J**	6 U
2-Hexanone	NA	NA	810 U	7 U	8 U	6 U	6 U
Acetone	61000000	7800000	930 U	9 U	15 U	30 U	110 U
Carbon Disulfide	670000	NA	400 U	**2 J**	4 U	3 U	**0.9 J**
cis-1,2-Dichloroethene	780000	630000	400 U	**1 J**	**1 J**	3 U	3 U
Methylene Chloride	11000	45000	460 U	3 U	4 U	3 U	3 U
Total 1,2-Dichloroethene	700000	630000	400 U	**1 J**	**1 J**	3 U	3 U
Total Chlorinated VOCs [(1)]	NA	NA	**850**	**101**	**33**	**9**	**96**
Trichloroethene	2800	13000	**850**	**100**	**32**	**9**	**96**
Semivolatile Organic Compounds (ug/kg)							
di-n-Butyl Phthalate	6100000	NA					
Polycyclic Aromatic Hydrocarbons (ug/kg)							
Fluoranthene	2300000	20000					
Phenanthrene	1700000	40000					
Total PAHs[(1)]	NA	NA					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Antimony	31	10					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Sodium	NA	NA					
Thallium	5.1	5.5					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					
Total Organic Carbon	NA	NA	**1100**	1100 U	**1300**	**1800**	**1830**
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

TABLE 4-10

SUMMARY OF CHEMICALS DETECTED IN DEEP SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**09**	**09**	**05**	**06**	**06**
Location	**ORNL**	**RIDEM**	**MW16-71D**	**MW16-71D**	**SB16-29**	**SB16-30**	**SB16-30**
Sample Number	**Residential**	**Soil Direct**	**MW16-71D-NSO-081804-46**	**MW16-71D-NSO-081804-56**	**SB16-29-NSO-011701-32**	**SB16-30-NSO-021902-34**	**SB16-30-NSO-021902-44**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**8/18/2004**	**8/18/2004**	**1/17/2001**	**2/19/2002**	**2/19/2002**
Depth Range (feet)	**Levels**	**Criterion**	**46 - 48**	**56 - 57.25**	**32 - 34**	**34 - 36**	**44 - 46**
Volatile Organic Compounds (ug/kg)							
2-Butanone	28000000	10000000	6 U	630 U	10 U	360 R	340 R
2-Hexanone	NA	NA	6 U	630 U	10 U	360 U	340 U
Acetone	61000000	7800000	6 U	1400 U	10 U	540 R	510 R
Carbon Disulfide	670000	NA	3 U	320 U	5 U	180 U	170 U
cis-1,2-Dichloroethene	780000	630000	3 U	320 U	5 U	180 U	170 U
Methylene Chloride	11000	45000	3 U	1000 U	5 UJ	**39 T**	170 U
Total 1,2-Dichloroethene	700000	630000	3 U	320 U	5 U	180 U	170 U
Total Chlorinated VOCs [(1)]	NA	NA	**26**	**810**	**280**	**39**	0 U
Trichloroethene	2800	13000	**26**	**810**	**280 J**	180 U	170 U
Semivolatile Organic Compounds (ug/kg)							
di-n-Butyl Phthalate	6100000	NA			430 U		
Polycyclic Aromatic Hydrocarbons (ug/kg)							
Fluoranthene	2300000	20000			**4**		
Phenanthrene	1700000	40000			**6**		
Total PAHs[(1)]	NA	NA			**10**		
Inorganics (mg/kg)							
Aluminum	77000	NA			**4690**		
Antimony	31	10			0.46 UJ		
Arsenic	0.39	7			**1.6**		
Barium	15000	5500			**12.1**		
Beryllium	160	0.4			**0.54**		
Cadmium	70	39			0.03 U		
Calcium	NA	NA			1150 U		
Chromium	230	390			**6.7**		
Cobalt	23	NA			**3**		
Copper	3100	3100			**13.8**		
Iron	55000	NA			**10500**		
Lead	400	150			**4.7**		
Magnesium	NA	NA			**1850 J**		
Manganese	1800	390			**119 J**		
Nickel	1600	1000			**7.2**		
Potassium	NA	NA			809 U		
Selenium	390	390			0.38 U		
Sodium	NA	NA			60.6 U		
Thallium	5.1	5.5			0.59 U		
Vanadium	390	550			**9.7**		
Zinc	23000	6000			**25.2**		
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA			**1700**		
Percent Moisture (%)	NA	NA			**16.1**		
pH (S.U.)	NA	NA			**6.2**		
Total Organic Carbon	NA	NA	**2000**	**1100**			
Total Residue (%)	NA	NA			**79**		
Total Solids (%)	NA	NA			**83.9**		
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

TABLE 4-10

SUMMARY OF CHEMICALS DETECTED IN DEEP SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **Depth Range (feet)**	**ORNL Residential Regional Screening Levels**	**RIDEM Soil Direct Exposure Residential Criterion**	**06** **SB16-30** **SB16-30-NSO-022002-57** **NORMAL** **2/20/2002** **57 - 59**	**06** **SB16-31** **SB16-31-NSO-022602-36** **NORMAL** **2/26/2002** **36 - 38**	**06** **SB16-31** **SB16-31-NSO-022702-56** **NORMAL** **2/27/2002** **56 - 58**	**06** **SB16-32** **SB16-32-NSO-021202-36** **NORMAL** **2/12/2002** **36 - 38**	**06** **SB16-32** **SB16-32-NSO-021202-56** **NORMAL** **2/12/2002** **56 - 58**
Volatile Organic Compounds (ug/kg)							
2-Butanone	28000000	10000000	880 R	260 R	260 R	170 R	220 R
2-Hexanone	NA	NA	880 U	260 U	260 U	170 UJ	220 UJ
Acetone	61000000	7800000	1300 R	**280 T**	**290 T**	170 R	220 R
Carbon Disulfide	670000	NA	440 U	130 U	130 U	170 UJ	220 UJ
cis-1,2-Dichloroethene	780000	630000	440 U	130 U	130 U	170 U	220 U
Methylene Chloride	11000	45000	440 U	130 U	**51 T**	**280 T**	**570 T**
Total 1,2-Dichloroethene	700000	630000	440 U	130 U	130 U	170 U	220 U
Total Chlorinated VOCs [(1)]	NA	NA	0 U	0 U	**881**	**280**	**4570**
Trichloroethene	2800	13000	440 U	130 U	**830**	170 U	**4000**
Semivolatile Organic Compounds (ug/kg)							
di-n-Butyl Phthalate	6100000	NA					
Polycyclic Aromatic Hydrocarbons (ug/kg)							
Fluoranthene	2300000	20000					
Phenanthrene	1700000	40000					
Total PAHs[(1)]	NA	NA					
Inorganics (mg/kg)							
Aluminum	77000	NA					
Antimony	31	10					
Arsenic	0.39	7					
Barium	15000	5500					
Beryllium	160	0.4					
Cadmium	70	39					
Calcium	NA	NA					
Chromium	230	390					
Cobalt	23	NA					
Copper	3100	3100					
Iron	55000	NA					
Lead	400	150					
Magnesium	NA	NA					
Manganese	1800	390					
Nickel	1600	1000					
Potassium	NA	NA					
Selenium	390	390					
Sodium	NA	NA					
Thallium	5.1	5.5					
Vanadium	390	550					
Zinc	23000	6000					
Miscellaneous Parameters (mg/kg)							
Carbon	NA	NA					
Percent Moisture (%)	NA	NA					
pH (S.U.)	NA	NA					
Total Organic Carbon	NA	NA					
Total Residue (%)	NA	NA					
Total Solids (%)	NA	NA					
Petroleum Hydrocarbons (mg/kg)							
TPH	NA	500					

TABLE 4-10

SUMMARY OF CHEMICALS DETECTED IN DEEP SUBSURFACE SOIL SAMPLES - PRE 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Description:
02 - EBS Phase II Follow-On Sampling
04 - Stage I Phase I RI Sampling Event
05 - Stage II Phase I RI Sampling Event
06 - Phase II RI Sampling Event
09 - CTO 107 HRC Injection Study

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
B - Result is qualified due to blank contamination.
R - Rejected value.
E - Positive result is detected in the equipment blank.
T - Positive result is detected in the trip blank.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
EPA = Environmental Protection Agency
NA = Not applicable/Not available
PAH = Polycyclic aromatic hydrocarbon
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
S.U. = Standard units
TPH = Total petroleum hydrocarbons
VOC = Volatile organic compound

Footnotes:
1 - The calculation of the BTEX, total chlorinated VOCs, BAP equivalents, TEQs, total PAHs are defined in the Section 4 text. "0 U" indicates that this chemical group was not detected in the sample analyzed.
2 - A concentration that is shaded exceeds the criteria presented in the table.
3 - A blank cell indicates that the sample was not analyzed for the target analyte.

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**28-SB-01A**	**28-SB-01D**	**SB16-007**	**SB16-007**	**SB16-021**	**SB16-022**	**SB16-028**
Sample Number	**Residential**	**Soil Direct**	**SB16-28-SB-01A0002**	**SB16-28-SB-001D0002**	**SB16-007-SO-0002**	**SB16-007-SO-0002-D**	**SB16-021-SO-0002**	**SB16-022-SO-0002**	**SB16-028-SO-0002**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070522**	**20070522**	**20070521**	**20070521**	**20070522**	**20070522**	**20070521**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Volatile Organic Compounds (ug/kg)									
Acetone	61000000	7800000							
BTEX	NA	NA							
Carbon Disulfide	670000	NA							
Ethylbenzene	5700	71000							
Total Xylenes	600000	110000							
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000	6.6 U	7.1 U	6.9 U	6.9 U	6.7 U	7 U	6.8 U
Acenaphthene	3400000	43000	6.7 U	7.1 U	7 U	6.9 U	6.8 U	7 U	6.9 U
Acenaphthylene	3400000	23000	5.9 U	**170**	6.1 U	6.1 U	**43**	6.2 U	6.1 U
Anthracene	17000000	35000	6 U	**370**	6.3 U	6.3 U	**44**	**200**	6.2 U
Benzo(a)pyrene Equivalents	15	400	**113**	**1041**	**83.5**	**108**	**135**	**346**	**8.54**
Benzo(a)anthracene	150	900	**130**	**980**	**53 J**	**98 J**	**130**	**320**	**39**
Benzo(a)pyrene	15	400	**83**	**530**	**63**	**81**	**95**	**210**	6.5 U
Benzo(b)fluoranthene	150	900	**120**	**2300**	**85**	**120**	**190**	**450**	**46**
Benzo(g,h,i)perylene	1700000	800	**51**	**390**	5.1 U	**61**	**83**	**170**	5 U
Benzo(k)fluoranthene	1500	900	**62**	**1100**	**38**	**53**	**64**	**170**	8 U
Bis(2-ethylhexyl)phthalate	35000	46000							
Carbazole	24000	NA							
Chrysene	15000	400	**120**	**1600**	**59 J**	**99 J**	**140**	**470**	**39**
Dibenzo(a,h)anthracene	15	400	6.5 U	**130**	6.7 U	6.7 U	6.6 U	**43**	6.6 U
Dibenzofuran	NA	NA	5.6 U	5.9 U	5.8 U	5.8 U	5.7 U	5.9 U	5.7 U
Fluoranthene	2300000	20000	**190**	**3500**	**74 J**	**150 J**	**170**	**740**	**56**
Fluorene	2300000	28000	6.7 U	**43**	6.9 U	6.9 U	6.8 U	7 U	6.9 U
High Molecular Weight PAHs	NA	NA	**992**	**13730**	**509**	**861**	**1152**	**3353**	**239**
Indeno(1,2,3-cd)pyrene	150	900	**46**	**400**	**63**	**49**	**70**	**140**	7.3 U
Low Molecular Weight PAHs	NA	NA	**82.0**	**1033**	0 U	**41.0**	**146**	**450**	0 U
Phenanthrene	1700000	40000	**82**	**450**	5.4 U	**41**	**59**	**250**	5.3 U
Pyrene	1700000	13000	**190**	**2800**	**74 J**	**150 J**	**210**	**640**	**59**
Total PAHs	NA	NA	**1074**	**14763**	**509**	**902**	**1298**	**3803**	**239**
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000							
Acenaphthene	3400000	43000							
Acenaphthylene	3400000	23000							
Anthracene	17000000	35000							
Benzo(a)pyrene Equivalents	15	400							
Benzo(a)anthracene	150	900							
Benzo(a)pyrene	15	400							
Benzo(b)fluoranthene	150	900							
Benzo(g,h,i)perylene	1700000	800							
Benzo(k)fluoranthene	1500	900							
Chrysene	15000	400							
Dibenzo(a,h)anthracene	15	400							
Fluoranthene	2300000	20000							
Fluorene	2300000	28000							
High Molecular Weight PAHs	NA	NA							
Indeno(1,2,3-cd)pyrene	150	900							
Low Molecular Weight PAHs	NA	NA							
Naphthalene	3900	54000							

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			10	10	10	10	10	10	10
Location	ORNL	RIDEM	28-SB-01A	28-SB-01D	SB16-007	SB16-007	SB16-021	SB16-022	SB16-028
Sample Number	Residential	Soil Direct	SB16-28-SB-01A0002	SB16-28-SB-001D0002	SB16-007-SO-0002	SB16-007-SO-0002-D	SB16-021-SO-0002	SB16-022-SO-0002	SB16-028-SO-0002
Sample Code	Regional	Exposure	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL
Sample Date	Screening	Residential	20070522	20070522	20070521	20070521	20070522	20070522	20070521
Depth Range (feet)	Levels	Criterion	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
Area			CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Phenanthrene	1700000	40000							
Pyrene	1700000	13000							
Total PAHs	NA	NA							
Pesticides/PCBs (ug/kg)									
4,4'-DDD	2000	NA							
Total DDT	NA	NA							
Inorganics (mg/kg)									
Aluminum	77000	NA							
Antimony	31	10							
Arsenic	0.39	7							
Barium	15000	5500							
Beryllium	160	0.4							
Cadmium	70	39							
Calcium	NA	NA							
Chromium	230	1400							
Cobalt	23	NA							
Copper	3100	3100							
Iron	55000	NA							
Lead	400	150							
Magnesium	NA	NA							
Manganese	1800	390							
Mercury	23	23							
Nickel	1600	1000							
Potassium	NA	NA							
Selenium	390	390							
Silver	390	200							
Sodium	NA	NA							
Thallium	5.1	5.5							
Vanadium	390	550							
Zinc	23000	6000							
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500							
TPH (C09-C36)	NA	500							
TPH (C09-C44)	NA	500							

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-047**	**SB16-047**	**SB16-048**	**SB16-049**	**SB16-050**	**SB16-050**	**SB16-050**
Sample Number	**Residential**	**Soil Direct**	**SB16-047-SO-0002**	**B16-047-SO-0002-AU**	**SB16-048-SO-0002**	**SB16-049-SO-0002**	**SB16-050-SO-0001**	**SB16-050-SO-0002**	**SB16-050-SO-0202**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070522**	**20070829**	**20071001**	**20070828**	**20070522**	**20070828**	**20070828**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 1**	**0 - 2**	**2 - 2**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Volatile Organic Compounds (ug/kg)									
Acetone	61000000	7800000							**13 J**
BTEX	NA	NA							0 U
Carbon Disulfide	670000	NA							0.25 U
Ethylbenzene	5700	71000							0.96 U
Total Xylenes	600000	110000							2.6 U
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000	7 U	34 U			7.1 U	35 U	
Acenaphthene	3400000	43000	7.1 U	34 U			7.1 U	35 U	
Acenaphthylene	3400000	23000	6.2 U	34 U			**68**	35 U	
Anthracene	17000000	35000	**66**	34 U			**54**	35 U	
Benzo(a)pyrene Equivalents	15	400	**131**	34 U			**229**	**490**	
Benzo(a)anthracene	150	900	**150**	34 U			**180**	**250**	
Benzo(a)pyrene	15	400	**74**	34 U			**180**	**320**	
Benzo(b)fluoranthene	150	900	**330**	34 U			**190**	**480**	
Benzo(g,h,i)perylene	1700000	800	**69**	34 U			**140**	**260**	
Benzo(k)fluoranthene	1500	900	**170**	34 U			**110**	**140**	
Bis(2-ethylhexyl)phthalate	35000	46000		**150 J**				**62 J**	
Carbazole	24000	NA		34 U				35 U	
Chrysene	15000	400	**240**	34 U			**190**	**280**	
Dibenzo(a,h)anthracene	15	400	6.8 U	34 U			6.9 U	**73**	
Dibenzofuran	NA	NA	5.9 U	34 U			5.9 U	35 U	
Fluoranthene	2300000	20000	**360**	34 U			**240**	**350**	
Fluorene	2300000	28000	7 U	34 U			7.1 U	35 U	
High Molecular Weight PAHs	NA	NA	**1804**	0 U			**1660**	**2663**	
Indeno(1,2,3-cd)pyrene	150	900	**71**	34 U			**110**	**220**	
Low Molecular Weight PAHs	NA	NA	**132**	0 U			**222**	**110**	
Phenanthrene	1700000	40000	**66**	34 U			**100**	**110**	
Pyrene	1700000	13000	**340**	34 U			**320**	**290**	
Total PAHs	NA	NA	**1936**	0 U			**1882**	**2773**	
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000			**1.7**	**2.4**			
Acenaphthene	3400000	43000			**1.7**	**0.45 J**			
Acenaphthylene	3400000	23000			**5.8**	**5.7**			
Anthracene	17000000	35000			**6.5**	**4.8**			
Benzo(a)pyrene Equivalents	15	400			**38.2**	**8.04**			
Benzo(a)anthracene	150	900			**30**	**9.8**			
Benzo(a)pyrene	15	400			**17**	**1.1**			
Benzo(b)fluoranthene	150	900			**43**	**14**			
Benzo(g,h,i)perylene	1700000	800			**36 J**	**14**			
Benzo(k)fluoranthene	1500	900			**39**	**14**			
Chrysene	15000	400			**44**	**16**			
Dibenzo(a,h)anthracene	15	400			**10**	**3.2**			
Fluoranthene	2300000	20000			**68**	**21**			
Fluorene	2300000	28000			**2.1**	**0.82**			
High Molecular Weight PAHs	NA	NA			**378**	**127**			
Indeno(1,2,3-cd)pyrene	150	900			**35**	**12**			
Low Molecular Weight PAHs	NA	NA			**58.7**	**27.6**			
Naphthalene	3900	54000			**2.9**	**2.4**			

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-047**	**SB16-047**	**SB16-048**	**SB16-049**	**SB16-050**	**SB16-050**	**SB16-050**
Sample Number	**Residential**	**Soil Direct**	**SB16-047-SO-0002**	**B16-047-SO-0002-AU**	**SB16-048-SO-0002**	**SB16-049-SO-0002**	**SB16-050-SO-0001**	**SB16-050-SO-0002**	**SB16-050-SO-0202**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070522**	**20070829**	**20071001**	**20070828**	**20070522**	**20070828**	**20070828**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 1**	**0 - 2**	**2 - 2**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Phenanthrene	1700000	40000			**38**	**11**			
Pyrene	1700000	13000			**56**	**22**			
Total PAHs	NA	NA			**437**	**155**			
Pesticides/PCBs (ug/kg)									
4,4'-DDD	2000	NA		3.4 U				3.5 U	
Total DDT	NA	NA		0 U				0 U	
Inorganics (mg/kg)									
Aluminum	77000	NA				**8380**		**7530**	
Antimony	31	10				**6.9**		**17.9**	
Arsenic	0.39	7				**14**		**32.3**	
Barium	15000	5500				**17.3**		**229**	
Beryllium	160	0.4				**0.4**		**0.44**	
Cadmium	70	39				**1.5 J**		**4.4 J**	
Calcium	NA	NA				7.5 U		**767**	
Chromium	230	1400				**9.5 J**		**24.3**	
Cobalt	23	NA				**9.6**		**13.6**	
Copper	3100	3100				**18.1**		**143**	
Iron	55000	NA				**18200**		**38800**	
Lead	400	150				**8.4**		**424**	
Magnesium	NA	NA				**2640**		**2910**	
Manganese	1800	390				**228**		**398**	
Mercury	23	23				0.0047 UJ		**0.26**	
Nickel	1600	1000				**12.1**		**20.7 J**	
Potassium	NA	NA				**675**		**760**	
Selenium	390	390				0.15 U		0.15 U	
Silver	390	200				0.048 U		0.047 U	
Sodium	NA	NA				**42.8 J**		21.6 U	
Thallium	5.1	5.5				**1.3 J**		**3.5 J**	
Vanadium	390	550				**13.4**		**15.8**	
Zinc	23000	6000				**43.8**		**616**	
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500							
TPH (C09-C36)	NA	500			**25**	**11**			
TPH (C09-C44)	NA	500			**33**	**15**			

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-051**	**SB16-052**	**SB16-053**	**SB16-054**	**SB16-055**	**SB16-056**	**SB16-057**
Sample Number	**Residential**	**Soil Direct**	**SB16-051-SO-0002**	**SB16-052-SO-0002**	**SB16-053-SO-0002**	**SB16-054-SO-0002**	**SB16-055-SO-0002**	**SB16-056-SO-0002**	**SB16-057-SO-0002**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070828**	**20070522**	**20070522**	**20071002**	**20070522**	**20070521**	**20070521**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Volatile Organic Compounds (ug/kg)									
Acetone	61000000	7800000							
BTEX	NA	NA							
Carbon Disulfide	670000	NA							
Ethylbenzene	5700	71000							
Total Xylenes	600000	110000							
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000		**42**	7.2 U		6.8 U	6.8 U	6.6 U
Acenaphthene	3400000	43000		**42**	7.2 U		6.9 U	6.9 U	6.7 U
Acenaphthylene	3400000	23000		**320**	6.4 U		6 U	6.1 U	5.9 U
Anthracene	17000000	35000		**2900**	6.5 U		6.2 U	6.2 U	6 U
Benzo(a)pyrene Equivalents	15	400		**1177**	**4.34**		6.5 U	**159**	**49.8**
Benzo(a)anthracene	150	900		**1100**	4.1 U		3.9 U	**140**	**52**
Benzo(a)pyrene	15	400		**530**	6.9 U		6.5 U	**120**	**39**
Benzo(b)fluoranthene	150	900		**3000**	**43**		7.2 U	**170**	**56**
Benzo(g,h,i)perylene	1700000	800		**480**	5.3 U		5 U	**94**	**42**
Benzo(k)fluoranthene	1500	900		**1200**	8.4 U		8 U	**79**	7.8 U
Bis(2-ethylhexyl)phthalate	35000	46000							
Carbazole	24000	NA							
Chrysene	15000	400		**2800**	**40**		10 U	**150**	**41**
Dibenzo(a,h)anthracene	15	400		**170**	7 U		6.6 U	6.6 U	6.5 U
Dibenzofuran	NA	NA		**53**	6 U		5.7 U	5.7 U	5.6 U
Fluoranthene	2300000	20000		**5700**	**44**		7.5 U	**180**	**59**
Fluorene	2300000	28000		**150**	7.2 U		6.8 U	6.9 U	6.7 U
High Molecular Weight PAHs	NA	NA		**19600**	**127**		0 U	**1185**	**351**
Indeno(1,2,3-cd)pyrene	150	900		**520**	7.6 U		7.2 U	**72**	7.1 U
Low Molecular Weight PAHs	NA	NA		**5954**	0 U		0 U	**54.0**	0 U
Phenanthrene	1700000	40000		**2500**	5.6 U		5.3 U	**54**	5.2 U
Pyrene	1700000	13000		**4100**	7 U		6.7 U	**180**	**62**
Total PAHs	NA	NA		**25554**	**127**		0 U	**1239**	**351**
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000	**37**			**1 J**	**1.2**		
Acenaphthene	3400000	43000	**14**			**0.73 J**	**0.86**		
Acenaphthylene	3400000	23000	**29**			**4.8**	**2.9**		
Anthracene	17000000	35000	**74**			**2.6 J**	**3.1**		
Benzo(a)pyrene Equivalents	15	400	**786**			**11.3**	**4.44**		
Benzo(a)anthracene	150	900	**490**			**8.1**	**4.8**		
Benzo(a)pyrene	15	400	**510**			**5.6**	0.77 U		
Benzo(b)fluoranthene	150	900	**590**			**11**	**14**		
Benzo(g,h,i)perylene	1700000	800	**440**			**9.6 J**	**7**		
Benzo(k)fluoranthene	1500	900	**520**			**10**	**10**		
Chrysene	15000	400	**570**			**12**	**16**		
Dibenzo(a,h)anthracene	15	400	**120**			**2.8 J**	**1.7**		
Fluoranthene	2300000	20000	**650**			**18**	**21**		
Fluorene	2300000	28000	**15**			**1.4 J**	**0.95**		
High Molecular Weight PAHs	NA	NA	**4910**			**101**	**97.9**		
Indeno(1,2,3-cd)pyrene	150	900	**420**			**9 J**	**7.4**		
Low Molecular Weight PAHs	NA	NA	**719**			**18.4**	**21.8**		
Naphthalene	3900	54000	**240**			1.2 U	**1.8**		

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-051**	**SB16-052**	**SB16-053**	**SB16-054**	**SB16-055**	**SB16-056**	**SB16-057**
Sample Number	**Residential**	**Soil Direct**	**SB16-051-SO-0002**	**SB16-052-SO-0002**	**SB16-053-SO-0002**	**SB16-054-SO-0002**	**SB16-055-SO-0002**	**SB16-056-SO-0002**	**SB16-057-SO-0002**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070828**	**20070522**	**20070522**	**20071002**	**20070522**	**20070521**	**20070521**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Phenanthrene	1700000	40000	**310**			**7.9**	**11**		
Pyrene	1700000	13000	**600**			**15**	**16**		
Total PAHs	NA	NA	**5629**			**120**	**120**		
Pesticides/PCBs (ug/kg)									
4,4'-DDD	2000	NA							
Total DDT	NA	NA							
Inorganics (mg/kg)									
Aluminum	77000	NA			**6410**	**6480**			
Antimony	31	10			0.64 U	0.58 U			
Arsenic	0.39	7			**4**	**3.5**			
Barium	15000	5500			**19.2**	**17.7**			
Beryllium	160	0.4			0.00079 U	0.00087 U			
Cadmium	70	39			**0.42 J**	**0.38 J**			
Calcium	NA	NA			**728**	**737**			
Chromium	230	1400			**8.2**	**8.7**			
Cobalt	23	NA			**7.2 J**	**6 J**			
Copper	3100	3100			**25**	**19.8**			
Iron	55000	NA			**17000**	**15900**			
Lead	400	150			**21.7**	**23**			
Magnesium	NA	NA			**2280**	**1910**			
Manganese	1800	390			**205**	**156**			
Mercury	23	23			**0.0047 J**	**0.0049 J**			
Nickel	1600	1000			**10 J**	**10 J**			
Potassium	NA	NA			**550**	**642**			
Selenium	390	390			0.085 UJ	0.093 UJ			
Silver	390	200			**4 J**	**4 J**			
Sodium	NA	NA			17.8 U	20.1 U			
Thallium	5.1	5.5			0.062 U	0.068 U			
Vanadium	390	550			**10.2 J**	**10.8**			
Zinc	23000	6000			**40.3**	**33.9**			
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500							
TPH (C09-C36)	NA	500	**310**			**34**	**72**		
TPH (C09-C44)	NA	500	**520**			**71**	**80**		

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-058**	**SB16-059**	**SB16-060**	**SB16-060**	**SB16-060**	**SB16-061**	**SB16-062**
Sample Number	**Residential**	**Soil Direct**	**SB16-058-SO-0002**	**SB16-059-SO-0002**	**SB16-060-SO-0002**	**SB16-060-SO-0002-D**	**B16-060-SO-0002-AU**	**SB16-061-SO-0002**	**SB16-062-SO-0102**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070521**	**20070521**	**20070521**	**20070521**	**20070828**	**20070824**	**20070807**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**1 - 2**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**NORTH CEN EAST**	**NORTH CEN FFTA**
Volatile Organic Compounds (ug/kg)									
Acetone	61000000	7800000							
BTEX	NA	NA							
Carbon Disulfide	670000	NA							
Ethylbenzene	5700	71000							
Total Xylenes	600000	110000							
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000	6.8 U	6.7 U	6.7 U	6.8 U	34 U		
Acenaphthene	3400000	43000	6.9 U	6.7 U	6.8 U	6.9 U	34 U		
Acenaphthylene	3400000	23000	6 U	5.9 U	6 U	6.1 U	34 U		
Anthracene	17000000	35000	6.2 U	6.1 U	6.1 U	6.2 U	34 U		
Benzo(a)pyrene Equivalents	15	400	**134**	**61.9**	6.5 U	6.5 U	**4.1**		
Benzo(a)anthracene	150	900	**130**	**63**	3.8 U	3.9 U	34 U		
Benzo(a)pyrene	15	400	**99**	**46**	6.5 U	6.5 U	34 U		
Benzo(b)fluoranthene	150	900	**150**	**90**	7.2 U	7.3 U	**41**		
Benzo(g,h,i)perylene	1700000	800	**73**	**37**	4.9 U	5 U	34 U		
Benzo(k)fluoranthene	1500	900	**51**	**56**	7.9 U	8 U	34 U		
Bis(2-ethylhexyl)phthalate	35000	46000					51 U		
Carbazole	24000	NA					34 U		
Chrysene	15000	400	**130**	**76**	10 U	10 U	34 U		
Dibenzo(a,h)anthracene	15	400	6.6 U	6.5 U	6.5 U	6.6 U	34 U		
Dibenzofuran	NA	NA	5.7 U	5.6 U	5.7 U	5.7 U	34 U		
Fluoranthene	2300000	20000	**220**	**100**	7.4 U	7.5 U	**52**		
Fluorene	2300000	28000	6.8 U	6.7 U	6.8 U	6.9 U	34 U		
High Molecular Weight PAHs	NA	NA	**1115**	**578**	0 U	0 U	**135**		
Indeno(1,2,3-cd)pyrene	150	900	**62**	7.1 U	7.2 U	7.3 U	34 U		
Low Molecular Weight PAHs	NA	NA	**83.0**	0 U	0 U	0 U	0 U		
Phenanthrene	1700000	40000	**83**	5.2 U	5.3 U	5.3 U	34 U		
Pyrene	1700000	13000	**200**	**110**	6.6 U	6.7 U	**42**		
Total PAHs	NA	NA	**1198**	**578**	0 U	0 U	**135**		
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000		**7**				**57**	**7**
Acenaphthene	3400000	43000		**2**				**26**	**7.4 J**
Acenaphthylene	3400000	23000		**22**				**150**	**4.7 J**
Anthracene	17000000	35000		**51**				**130**	**4.2 J**
Benzo(a)pyrene Equivalents	15	400		**57.3**				**255**	**18.1**
Benzo(a)anthracene	150	900		**80**				**360**	**19 J**
Benzo(a)pyrene	15	400		**3.2**				**120**	1 UR
Benzo(b)fluoranthene	150	900		**180**				**290**	**49**
Benzo(g,h,i)perylene	1700000	800		**63**				**160**	**27 J**
Benzo(k)fluoranthene	1500	900		**150**				**300**	**44**
Chrysene	15000	400		**170**				**380**	**56**
Dibenzo(a,h)anthracene	15	400		**19**				**49**	**7.7 J**
Fluoranthene	2300000	20000		**170**				**1000**	**140**
Fluorene	2300000	28000		**2.2**				**190**	**14**
High Molecular Weight PAHs	NA	NA		**1109**				**3519**	**484**
Indeno(1,2,3-cd)pyrene	150	900		**74**				**180**	**31 J**
Low Molecular Weight PAHs	NA	NA		**118**				**1663**	**157**
Naphthalene	3900	54000		**3.4**				**110**	**9.2**

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-058**	**SB16-059**	**SB16-060**	**SB16-060**	**SB16-060**	**SB16-061**	**SB16-062**
Sample Number	**Residential**	**Soil Direct**	**SB16-058-SO-0002**	**SB16-059-SO-0002**	**SB16-060-SO-0002**	**SB16-060-SO-0002-D**	**B16-060-SO-0002-AU**	**SB16-061-SO-0002**	**SB16-062-SO-0102**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070521**	**20070521**	**20070521**	**20070521**	**20070828**	**20070824**	**20070807**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**1 - 2**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**NORTH CEN EAST**	**NORTH CEN FFTA**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Phenanthrene	1700000	40000		**30**				**1000**	**110**
Pyrene	1700000	13000		**200**				**680**	**110**
Total PAHs	NA	NA		**1227**				**5182**	**640**
Pesticides/PCBs (ug/kg)									
4,4'-DDD	2000	NA					3.3 U		
Total DDT	NA	NA					0 U		
Inorganics (mg/kg)									
Aluminum	77000	NA	**3950**					**6580**	**6440**
Antimony	31	10	**3.5**					**5.9 J**	0.036 UJ
Arsenic	0.39	7	**6.3**					**11.2 J**	**2 J**
Barium	15000	5500	**12**					**15.3**	**17.8**
Beryllium	160	0.4	**0.44**					**0.41**	**0.5**
Cadmium	70	39	**0.64 J**					**1.1 J**	**0.16 J**
Calcium	NA	NA	**200**					6.4 U	**329**
Chromium	230	1400	**3.1 J**					**8.6**	**6.9**
Cobalt	23	NA	**3.5**					**7.5**	**6.1 J**
Copper	3100	3100	**12.4**					**15.7**	**12.1**
Iron	55000	NA	**7400**					**15400**	**12800**
Lead	400	150	**166**					**15.1**	**12**
Magnesium	NA	NA	**935**					**2080**	**1740**
Manganese	1800	390	**112**					**189**	**132**
Mercury	23	23	0.0052 UJ					**0.0052 J**	0.0072 U
Nickel	1600	1000	**2.6 J**					**9.6**	**9 J**
Potassium	NA	NA	**356**					**625**	**701**
Selenium	390	390	0.13 U					0.13 U	**1.9 J**
Silver	390	200	0.04 U					0.04 U	0.012 UJ
Sodium	NA	NA	22.3 U					**24.6 J**	**26.2**
Thallium	5.1	5.5	**0.53 J**					0.91 U	**1.8 J**
Vanadium	390	550	**6**					**12.8**	**11.5**
Zinc	23000	6000	**38.4**					**39.7**	**35.1**
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500							
TPH (C09-C36)	NA	500		**24**				**37**	**79**
TPH (C09-C44)	NA	500		**27**				**49**	**94**

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	ORNL	RIDEM	10	10	10	10	10	10	10
Location	Residential	Soil Direct	SB16-063	SB16-063	SB16-064	SB16-065	SB16-066	SB16-067	SB16-067
Sample Number	Regional	Exposure	SB16-063-SO-0002	SB16-063-SO-0002-D	SB16-064-SO-0002	SB16-065-SO-0002	SB16-066-SO-0001	SB16-067-SO-0002	SB16-067-SO-0202
Sample Code	Screening	Residential	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Levels	Criterion	20070825	20070825	20070826	20070731	20070731	20070821	20070821
Depth Range (feet)			0 - 2	0 - 2	0 - 2	0 - 2	0 - 1	0 - 2	2 - 2
Area			NORTH CEN FFTA	NORTH CEN FFTA	NORTH CEN FFTA	NORTH CEN FFTA	NORTH CEN FFTA	NORTH CEN FFTA	NORTH CEN FFTA
Volatile Organic Compounds (ug/kg)									
Acetone	61000000	7800000							1.5 UR
BTEX	NA	NA							0 U
Carbon Disulfide	670000	NA							1.8 U
Ethylbenzene	5700	71000							0.58 U
Total Xylenes	600000	110000							0.83 U
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000						34 U	
Acenaphthene	3400000	43000						34 U	
Acenaphthylene	3400000	23000						34 U	
Anthracene	17000000	35000						34 U	
Benzo(a)pyrene Equivalents	15	400						**47.4**	
Benzo(a)anthracene	150	900						**42**	
Benzo(a)pyrene	15	400						**38**	
Benzo(b)fluoranthene	150	900						**52**	
Benzo(g,h,i)perylene	1700000	800						34 U	
Benzo(k)fluoranthene	1500	900						34 U	
Bis(2-ethylhexyl)phthalate	35000	46000						51 U	
Carbazole	24000	NA						34 U	
Chrysene	15000	400						**39**	
Dibenzo(a,h)anthracene	15	400						34 U	
Dibenzofuran	NA	NA						34 U	
Fluoranthene	2300000	20000						**67**	
Fluorene	2300000	28000						34 U	
High Molecular Weight PAHs	NA	NA						**294**	
Indeno(1,2,3-cd)pyrene	150	900						34 U	
Low Molecular Weight PAHs	NA	NA						0 U	
Phenanthrene	1700000	40000						34 U	
Pyrene	1700000	13000						**56**	
Total PAHs	NA	NA						**294**	
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000	**10**		**0.69**	**7**	**41 J**	**8.4**	
Acenaphthene	3400000	43000	**3.6**		**0.49 J**	**2.1**	**4.2 J**	**2.6**	
Acenaphthylene	3400000	23000	**8**		**1.8**	**8.4 J**	**86 J**	**16**	
Anthracene	17000000	35000	**9.7**		**1.9**	**6.6 J**	**65 J**	**13**	
Benzo(a)pyrene Equivalents	15	400	**57.4**		**8.69**	**24.1**	**155**	**31.4**	
Benzo(a)anthracene	150	900	**45**		**6.6**	**28**	**120 J**	**33**	
Benzo(a)pyrene	15	400	**29**		**4.4**	**0.46 J**	**48 J**	**4.5**	
Benzo(b)fluoranthene	150	900	**70**		**11**	**62**	**250 J**	**61**	
Benzo(g,h,i)perylene	1700000	800	**47**		**6.2**	**40 J**	**180 J**	**42**	
Benzo(k)fluoranthene	1500	900	**55**		**8.6**	**51**	**190 J**	**56**	
Chrysene	15000	400	**67**		**9.9**	**66**	**250 J**	**64**	
Dibenzo(a,h)anthracene	15	400	**12**		**1.8**	**10 J**	**50 J**	**12**	
Fluoranthene	2300000	20000	**90**		**12**	**120**	**350 J**	**100**	
Fluorene	2300000	28000	**3.5**		**0.54 J**	**1.9**	**5.7 J**	**4**	
High Molecular Weight PAHs	NA	NA	**531**		**76.7**	**513**	**1888**	**505**	
Indeno(1,2,3-cd)pyrene	150	900	**43**		**6.3**	**41 J**	**180 J**	**49**	
Low Molecular Weight PAHs	NA	NA	**95.8**		**12.9**	**73.4**	**451**	**99.0**	
Naphthalene	3900	54000	**13**		**1.2**	**5.4**	**39 J**	**7**	

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-063**	**SB16-063**	**SB16-064**	**SB16-065**	**SB16-066**	**SB16-067**	**SB16-067**
Sample Number	**Residential**	**Soil Direct**	**SB16-063-SO-0002**	**SB16-063-SO-0002-D**	**SB16-064-SO-0002**	**SB16-065-SO-0002**	**SB16-066-SO-0001**	**SB16-067-SO-0002**	**SB16-067-SO-0202**
Sample Code	**Regional**	**Exposure**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070825**	**20070825**	**20070826**	**20070731**	**20070731**	**20070821**	**20070821**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 1**	**0 - 2**	**2 - 2**
Area			**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Phenanthrene	1700000	40000	**48**		**6.3**	**42**	**210 J**	**48**	
Pyrene	1700000	13000	**73**		**9.9**	**95**	**270 J**	**83**	
Total PAHs	NA	NA	**627**		**89.6**	**587**	**2339**	**604**	
Pesticides/PCBs (ug/kg)									
4,4'-DDD	2000	NA				3.5 U		3.4 U	
Total DDT	NA	NA				0 U		0 U	
Inorganics (mg/kg)									
Aluminum	77000	NA	**5990**	**5870**	**4580**	**6170**	**4620**	**5660**	
Antimony	31	10	**4.7 J**	**4.8 J**	**4 J**	0.29 U	0.29 U	0.38 U	
Arsenic	0.39	7	**9.3 J**	**9.6 J**	**7.7 J**	**1.7 J**	**1.6 J**	**1.6 J**	
Barium	15000	5500	**28.9**	**25.9**	**15.8**	**14.6**	**10.2**	**16.2**	
Beryllium	160	0.4	**0.38**	**0.38**	**0.3**	**0.53**	**0.52**	**0.44**	
Cadmium	70	39	**0.98 J**	**0.99 J**	**0.76 J**	**0.038 J**	0.038 U	**0.28 J**	
Calcium	NA	NA	6.1 U	6.8 U	**236 J**	110 U	103 U	**370 J**	
Chromium	230	1400	**7.8**	**7.2**	**6.6**	**5.7 J**	**4 J**	**5.2**	
Cobalt	23	NA	**5.8**	**6.9**	**4.9**	**4.8 J**	**2.1 J**	**3.9 J**	
Copper	3100	3100	**24.9**	**23.4**	**11.3**	**9.9**	**6.5**	**18.5**	
Iron	55000	NA	**11100**	**11600**	**9580**	**10500**	**7740**	**9890**	
Lead	400	150	**50.1**	**37.1**	**12.2**	**9.4 J**	**38.2 J**	**46.5**	
Magnesium	NA	NA	**1690**	**1560**	**1610**	**1420**	**786**	**1400**	
Manganese	1800	390	**141**	**135**	**106**	**151**	**95.2**	**125**	
Mercury	23	23	**0.036**	**0.027**	**0.026**	**0.0074 J**	**0.013 J**	**0.0047 J**	
Nickel	1600	1000	**7.5**	**8.2**	**6.8**	**8 J**	**3.6 J**	**6.4 J**	
Potassium	NA	NA	**568**	**476**	**510**	**584 J**	**448 J**	**652**	
Selenium	390	390	0.12 U	0.14 U	0.13 U	**1.4 J**	**1.3 J**	**1.6**	
Silver	390	200	0.039 U	0.043 U	0.039 U	0.019 U	0.018 U	0.043 U	
Sodium	NA	NA	**31.3 J**	**29.9 J**	**29.6 J**	**22.3**	**24.6**	**27.5 J**	
Thallium	5.1	5.5	0.94 U	1.2 U	0.98 U	**1.7 J**	**1.3 J**	**1.2 J**	
Vanadium	390	550	**11.1**	**11.1**	**8.8**	**9.7**	**7.5**	**8.6**	
Zinc	23000	6000	**51.3**	**57.6**	**29.3**	**29.7**	**28.8**	**46.7**	
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500				9.7 U			
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500							
TPH (C09-C36)	NA	500	**66**		**19**	**100**	**120 J**	**76**	
TPH (C09-C44)	NA	500	**93**		**33**	**180**	**210 J**	**110**	

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-068**	**SB16-069**	**SB16-069**	**SB16-070**	**SB16-071**	**SB16-072**	**SB16-073**
Sample Number	**Residential**	**Soil Direct**	**SB16-068-SO-0002**	**SB16-069-SO-0001**	**SB16-069-SO-0002**	**SB16-070-SO-0002**	**SB16-071-SO-0002**	**SB16-072-SO-0002**	**SB16-073-SO-0002**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**
Sample Date	**Screening**	**Residential**	**20070821**	**20070822**	**20070822**	**20070930**	**20070929**	**20070930**	**20070929**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 1**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Area			**NORTH CEN FFTA**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Volatile Organic Compounds (ug/kg)									
Acetone	61000000	7800000		**78 J**					
BTEX	NA	NA		0 U					
Carbon Disulfide	670000	NA		1.8 UJ					
Ethylbenzene	5700	71000		0.57 UJ					
Total Xylenes	600000	110000		0.81 UJ					
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000	34 U		33 U		34 U	38 U	34 U
Acenaphthene	3400000	43000	34 U		33 U		34 U	38 U	34 U
Acenaphthylene	3400000	23000	34 U		33 U		34 U	38 U	34 U
Anthracene	17000000	35000	34 U		33 U		34 U	38 U	34 U
Benzo(a)pyrene Equivalents	15	400	**5.24**		**4**		**58.3**	38 U	34 U
Benzo(a)anthracene	150	900	34 U		33 U		**61**	38 U	34 U
Benzo(a)pyrene	15	400	34 U		33 U		**45**	38 U	34 U
Benzo(b)fluoranthene	150	900	**52**		**40**		**67**	38 U	34 U
Benzo(g,h,i)perylene	1700000	800	34 U		33 U		34 U	38 U	34 U
Benzo(k)fluoranthene	1500	900	34 U		33 U		**42**	38 U	34 U
Bis(2-ethylhexyl)phthalate	35000	46000	52 U		50 U		100 U	57 U	110 U
Carbazole	24000	NA	34 U		33 U		34 U	38 U	34 U
Chrysene	15000	400	**42**		33 U		**54**	38 U	34 U
Dibenzo(a,h)anthracene	15	400	34 U		33 U		34 U	38 U	34 U
Dibenzofuran	NA	NA	34 U		33 U		34 U	38 U	34 U
Fluoranthene	2300000	20000	**58**		**46**		**84**	38 U	34 U
Fluorene	2300000	28000	34 U		33 U		34 U	38 U	34 U
High Molecular Weight PAHs	NA	NA	**208**		**130**		**434**	0 U	0 U
Indeno(1,2,3-cd)pyrene	150	900	34 U		33 U		34 U	38 U	34 U
Low Molecular Weight PAHs	NA	NA	0 U		0 U		0 U	0 U	0 U
Phenanthrene	1700000	40000	34 U		33 U		34 U	38 U	34 U
Pyrene	1700000	13000	**56**		**44**		**81**	38 U	34 U
Total PAHs	NA	NA	**208**		**130**		**434**	0 U	0 U
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000	**2**		0.48 U	**2.9**	**0.87**	**0.94**	**0.47 J**
Acenaphthene	3400000	43000	**4**		**1.4**	**1.7**	**3**	**0.31 J**	**0.36 J**
Acenaphthylene	3400000	23000	**26**		**2.8**	**18**	**3.4**	**1.4**	**2.1**
Anthracene	17000000	35000	**34**		**7.7**	**14**	**17**	**1.4**	**2.9**
Benzo(a)pyrene Equivalents	15	400	**57.1**		**50.6**	**43.6**	**132**	**4.40**	**30.6**
Benzo(a)anthracene	150	900	**88**		**50**	**37**	**150**	**3.6**	**27**
Benzo(a)pyrene	15	400	**3.7**		**25**	**22**	**66**	**2.4**	**19**
Benzo(b)fluoranthene	150	900	**140**		**64**	**45**	**150**	**4.6**	**24**
Benzo(g,h,i)perylene	1700000	800	**60**		**29**	**36**	**74**	**3.5**	**19**
Benzo(k)fluoranthene	1500	900	**130**		**59**	**44**	**140**	**5.2**	**26**
Chrysene	15000	400	**140**		**59**	**60**	**190**	**6.4**	**27**
Dibenzo(a,h)anthracene	15	400	**21**		**10**	**9.6**	**26**	**0.79**	**4.3**
Fluoranthene	2300000	20000	**220**		**60**	**110**	**340**	**10**	**59**
Fluorene	2300000	28000	**4.1**		**1.4**	**3.3**	**3.5**	**0.43 J**	**0.5 J**
High Molecular Weight PAHs	NA	NA	**1085**		**452**	**497**	**1486**	**49.0**	**277**
Indeno(1,2,3-cd)pyrene	150	900	**82**		**36**	**33**	**80**	**3.3**	**19**
Low Molecular Weight PAHs	NA	NA	**130**		**30.8**	**112**	**149**	**11.6**	**30.1**
Naphthalene	3900	54000	**2.6**		**1.5**	**3.8**	**1.2**	**1.2**	**1.8**

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
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Investigation			10	10	10	10	10	10	10
Location	ORNL	RIDEM	SB16-068	SB16-069	SB16-069	SB16-070	SB16-071	SB16-072	SB16-073
Sample Number	Residential	Soil Direct	SB16-068-SO-0002	SB16-069-SO-0001	SB16-069-SO-0002	SB16-070-SO-0002	SB16-071-SO-0002	SB16-072-SO-0002	SB16-073-SO-0002
Sample Code	Regional	Exposure	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG
Sample Date	Screening	Residential	20070821	20070822	20070822	20070930	20070929	20070930	20070929
Depth Range (feet)	Levels	Criterion	0 - 2	0 - 1	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
Area			NORTH CEN FFTA	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Phenanthrene	1700000	40000	**57**		**16**	**68**	**120**	**5.9**	**22**
Pyrene	1700000	13000	**200**		**60**	**100**	**270**	**9.2**	**53**
Total PAHs	NA	NA	**1214**		**483**	**608**	**1635**	**60.6**	**307**
Pesticides/PCBs (ug/kg)									
4,4'-DDD	2000	NA	3.4 U		3.3 U		3.4 U	3.4 U	3.5 U
Total DDT	NA	NA	0 U		0 U		0 U	0 U	0 U
Inorganics (mg/kg)									
Aluminum	77000	NA	**5970**		**5370**	**4560**	**7230**	**6380**	**7030**
Antimony	31	10	0.46 U		0.3 U	**0.61 J**	**0.84 J**	**0.75 J**	**0.82 J**
Arsenic	0.39	7	**1.5 J**		**1.9 J**	**3**	**3.9**	**3.7**	**3.8**
Barium	15000	5500	**16.6**		**14.6**	**13.8**	**16.2**	**17**	**14.8**
Beryllium	160	0.4	**0.44**		**0.37**	0.0008 U	0.00088 U	0.0008 U	0.00083 U
Cadmium	70	39	**0.25 J**		**0.28 J**	**0.32 J**	**0.49 J**	**0.42 J**	**0.45 J**
Calcium	NA	NA	**436 J**		**441 J**	**537**	**757**	**1540**	**666**
Chromium	230	1400	**5**		**6.6**	**6.5**	**9**	**7.5**	**8.5**
Cobalt	23	NA	**3.4 J**		**4.4 J**	**5.4 J**	**10.9 J**	**7.4 J**	**6.9 J**
Copper	3100	3100	**6.4**		**10.4**	**13.9**	**19.4**	**18**	**18.1**
Iron	55000	NA	**10200**		**10400**	**11200**	**17300**	**16400**	**16600**
Lead	400	150	**12.2**		**15.8**	**11.9**	**11.1**	**11**	**8.2**
Magnesium	NA	NA	**1480**		**1620**	**1700**	**2790**	**2500**	**2620**
Manganese	1800	390	**150**		**142**	**161**	**297**	**206**	**181**
Mercury	23	23	**0.0046 J**		**0.0047 J**	0.0048 U	0.0047 U	0.0044 U	0.0047 U
Nickel	1600	1000	**5.1 J**		**7.4 J**	**8 J**	**13.3 J**	**10.2 J**	**10.6 J**
Potassium	NA	NA	**671**		**627**	**653**	**932**	**1830**	**769**
Selenium	390	390	**1.2**		**1.3**	0.086 U	0.094 U	0.086 U	0.089 U
Silver	390	200	0.042 U		0.037 U	**2.6 J**	**3.7 J**	**3.3 J**	**3.6 J**
Sodium	NA	NA	**31.6 J**		**28.8 J**	**14.5 J**	**13.4 J**	**25.1 J**	**13.8 J**
Thallium	5.1	5.5	**0.93 J**		**1.1 J**	0.063 U	0.069 U	0.063 U	0.065 U
Vanadium	390	550	**8.4**		**9.4**	**8.8**	**11.2**	**11.2**	**10.4 J**
Zinc	23000	6000	**31.1**		**29.1**	**23.4**	**37.1**	**33.9**	**31**
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500							
TPH (C09-C36)	NA	500	**53**		**9.8**	**76**	**48**	**23**	**9.2**
TPH (C09-C44)	NA	500	**84**		**15**	**88**	**53**	**27**	**9.9**

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-073**	**SB16-074**	**SB16-075**	**SB16-076**	**SB16-077**	**SB16-078**	**SB16-079**
Sample Number	**Residential**	**Soil Direct**	**SB16-073-SO-0002-D**	**SB16-074-SO-0002**	**SB16-075-SO-0002**	**SB16-076-SO-0002**	**SB16-077-SO-0002**	**SB16-078-SO-0002**	**SB16-079-SO-0002**
Sample Code	**Regional**	**Exposure**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070929**	**20070929**	**20070929**	**20070926**	**20071002**	**20070522**	**20070823**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**NORTH CEN EAST**
Volatile Organic Compounds (ug/kg)									
Acetone	61000000	7800000							
BTEX	NA	NA							
Carbon Disulfide	670000	NA							
Ethylbenzene	5700	71000							
Total Xylenes	600000	110000							
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000	35 U					6.8 U	
Acenaphthene	3400000	43000	35 U					6.9 U	
Acenaphthylene	3400000	23000	35 U					6 U	
Anthracene	17000000	35000	35 U					6.2 U	
Benzo(a)pyrene Equivalents	15	400	35 U					**54.5**	
Benzo(a)anthracene	150	900	35 U					**62**	
Benzo(a)pyrene	15	400	35 U					**41**	
Benzo(b)fluoranthene	150	900	35 U					**70**	
Benzo(g,h,i)perylene	1700000	800	35 U					5 U	
Benzo(k)fluoranthene	1500	900	35 U					**27 J**	
Bis(2-ethylhexyl)phthalate	35000	46000	120 U						
Carbazole	24000	NA	35 U						
Chrysene	15000	400	35 U					**41**	
Dibenzo(a,h)anthracene	15	400	35 U					6.6 U	
Dibenzofuran	NA	NA	35 U					5.7 U	
Fluoranthene	2300000	20000	35 U					**83**	
Fluorene	2300000	28000	35 U					6.8 U	
High Molecular Weight PAHs	NA	NA	0 U					**407**	
Indeno(1,2,3-cd)pyrene	150	900	35 U					7.2 U	
Low Molecular Weight PAHs	NA	NA	0 U					**51.0**	
Phenanthrene	1700000	40000	35 U					**51**	
Pyrene	1700000	13000	35 U					**83**	
Total PAHs	NA	NA	0 U					**458**	
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000		**0.95**	**84**	**0.78**	**0.89**		**0.68 J**
Acenaphthene	3400000	43000		**0.67 J**	**4**	0.17 U	**0.81**		**0.43 J**
Acenaphthylene	3400000	23000		**25**	**8.5**	**0.71**	**8.5**		**0.87**
Anthracene	17000000	35000		**18**	**8.7**	**0.71**	**8.5**		**1.2**
Benzo(a)pyrene Equivalents	15	400		**171**	**27.2**	**3.42**	**61.4**		**4.51**
Benzo(a)anthracene	150	900		**150**	**26**	**2.3**	**35**		**6.2**
Benzo(a)pyrene	15	400		**86**	**10**	**2**	**36**		**1.4**
Benzo(b)fluoranthene	150	900		**170**	**40**	**3.1**	**54**		**7.8**
Benzo(g,h,i)perylene	1700000	800		**110**	**28**	**2.8**	**38 J**		**4.1**
Benzo(k)fluoranthene	1500	900		**160**	**37**	**2.6**	**46**		**7**
Chrysene	15000	400		**200**	**50**	**3.4**	**48**		**8.8**
Dibenzo(a,h)anthracene	15	400		**39**	**7.4**	**0.61 J**	**12 J**		**1.2**
Fluoranthene	2300000	20000		**260**	**86**	**3.8 J**	**65**		**13**
Fluorene	2300000	28000		**1.3**	**11**	**0.3 J**	**1.5**		**0.46 J**
High Molecular Weight PAHs	NA	NA		**1525**	**384**	**27.4**	**428**		**64.8**
Indeno(1,2,3-cd)pyrene	150	900		**120**	**28**	**2.4**	**40**		**4.3**
Low Molecular Weight PAHs	NA	NA		**72.2**	**373**	**5.39**	**48.3**		**13.4**
Naphthalene	3900	54000		**2.3**	**180**	**0.59 J**	**2.1**		**3.9**

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-073**	**SB16-074**	**SB16-075**	**SB16-076**	**SB16-077**	**SB16-078**	**SB16-079**
Sample Number	**Residential**	**Soil Direct**	**SB16-073-SO-0002-D**	**SB16-074-SO-0002**	**SB16-075-SO-0002**	**SB16-076-SO-0002**	**SB16-077-SO-0002**	**SB16-078-SO-0002**	**SB16-079-SO-0002**
Sample Code	**Regional**	**Exposure**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070929**	**20070929**	**20070929**	**20070926**	**20071002**	**20070522**	**20070823**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**NORTH CEN EAST**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Phenanthrene	1700000	40000		**24**	**77**	**2.3**	**26**		**5.9**
Pyrene	1700000	13000		**230**	**72**	**4.4 J**	**54**		**11**
Total PAHs	NA	NA		**1597**	**758**	**32.8**	**476**		**78.2**
Pesticides/PCBs (ug/kg)									
4,4'-DDD	2000	NA	3.5 U						
Total DDT	NA	NA	0 U						
Inorganics (mg/kg)									
Aluminum	77000	NA		**4270**		**8450**		**7990**	**7370**
Antimony	31	10		**0.5 J**		0.085 U		**0.78 J**	**6 J**
Arsenic	0.39	7		**2.9**		**3.7 J**		**3.2**	**11.6 J**
Barium	15000	5500		**10.9**		**20.7**		**16.2**	**18.4**
Beryllium	160	0.4		**0.078**		0.00079 U		0.00088 U	**0.46**
Cadmium	70	39		**0.28 J**		**0.34 J**		**0.36 J**	**1.2 J**
Calcium	NA	NA		**461**		**646**		**610**	5.5 U
Chromium	230	1400		**4.2**		**8.7**		**7.7**	**9.2**
Cobalt	23	NA		**3.7 J**		**9.6 J**		**5**	**9.2**
Copper	3100	3100		**9.6**		**22.9**		**12**	**18.3**
Iron	55000	NA		**9100**		**16300**		**12600**	**16100**
Lead	400	150		**8.8**		**10.6**		**11.7**	**7.5**
Magnesium	NA	NA		**1140**		**2800**		**1490**	**2640**
Manganese	1800	390		**129**		**237**		**106**	**264**
Mercury	23	23		0.0048 U		0.0051 U		**0.0049 J**	0.0052 U
Nickel	1600	1000		**5.2 J**		**11.6 J**		**7.4**	**12.5**
Potassium	NA	NA		**554**		**1240**		**512**	**817**
Selenium	390	390		0.093 U		0.085 U		0.095 U	0.11 U
Silver	390	200		**2.3 J**		**3.9**		**2.9**	0.035 U
Sodium	NA	NA		**19.3 J**		**25.6**		**18.2 J**	**27.9 J**
Thallium	5.1	5.5		0.068 U		0.062 U		0.069 U	**1.5**
Vanadium	390	550		**5.8**		**13.3**		**11.3**	**13.1**
Zinc	23000	6000		**27.5**		**35.5**		**26.9**	**38.1**
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500							
TPH (C09-C36)	NA	500		**17**	**82**	**9.4**	**10**		**4.8**
TPH (C09-C44)	NA	500		**19**	**91**	**14**	**20**		**4.2**

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	ORNL	RIDEM	10	10	10	10	10	10	10
Location	Residential	Soil Direct	SB16-080	SB16-081	SB16-081	SB16-082	SB16-083	SB16-084	SB16-085
Sample Number	Regional	Exposure	SB16-080-SO-0002	SB16-081-SO-0002	SB16-081-SO-0002-D	SB16-082-SO-0002	SB16-083-SO-0002	SB16-084-SO-0001	SB16-085-SO-0002
Sample Code	Screening	Residential	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Levels	Criterion	20070824	20070826	20070826	20070821	20070822	20070807	20070821
Depth Range (feet)			0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 1	0 - 2
Area			NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST
Volatile Organic Compounds (ug/kg)									
Acetone	61000000	7800000							
BTEX	NA	NA							
Carbon Disulfide	670000	NA							
Ethylbenzene	5700	71000							
Total Xylenes	600000	110000							
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000		35 U	35 U				
Acenaphthene	3400000	43000		**51**	**80**				
Acenaphthylene	3400000	23000		35 U	35 U				
Anthracene	17000000	35000		**250 J**	**470 J**				
Benzo(a)pyrene Equivalents	15	400		**843**	**1511**				
Benzo(a)anthracene	150	900		**690 J**	**1300 J**				
Benzo(a)pyrene	15	400		**560 J**	**1000 J**				
Benzo(b)fluoranthene	150	900		**690 J**	**1300 J**				
Benzo(g,h,i)perylene	1700000	800		**350 J**	**590 J**				
Benzo(k)fluoranthene	1500	900		**420 J**	**650**				
Bis(2-ethylhexyl)phthalate	35000	46000		53 U	53 U				
Carbazole	24000	NA		**100 J**	**210 J**				
Chrysene	15000	400		**690 J**	**1300 J**				
Dibenzo(a,h)anthracene	15	400		**110 J**	**190 J**				
Dibenzofuran	NA	NA		35 U	**50 J**				
Fluoranthene	2300000	20000		**1500 J**	**3000 J**				
Fluorene	2300000	28000		**69**	**110**				
High Molecular Weight PAHs	NA	NA		**6410**	**12060**				
Indeno(1,2,3-cd)pyrene	150	900		**300 J**	**530 J**				
Low Molecular Weight PAHs	NA	NA		**1340**	**2460**				
Phenanthrene	1700000	40000		**970 J**	**1800 J**				
Pyrene	1700000	13000		**1100 J**	**2200 J**				
Total PAHs	NA	NA		**7750**	**14520**				
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000	**0.58 J**	**3.8**		0.55 U	0.72 U	**1.7 J**	0.6 U
Acenaphthene	3400000	43000	**0.17 J**	**85**		**0.81**	**0.77**	**1.3 J**	**0.92**
Acenaphthylene	3400000	23000	**0.77**	**9.1**		0.83 U	**3.2**	**5.7 J**	**3.5**
Anthracene	17000000	35000	**0.66 J**	**180**		**0.78**	**3.3**	**4.4 J**	**4.5**
Benzo(a)pyrene Equivalents	15	400	**4.63**	**715**		**1.68**	**8.10**	**49.5**	**20.4**
Benzo(a)anthracene	150	900	**3.9**	**700**		**2.9**	**9.2**	**33 J**	**13**
Benzo(a)pyrene	15	400	**2.5**	**390**		1.7 U	0.61 U	**22 J**	**4.8**
Benzo(b)fluoranthene	150	900	**4.6**	**520**		**3.6**	**19**	**49 J**	**36**
Benzo(g,h,i)perylene	1700000	800	**3.3**	**430**		**2.2**	**13**	**74 J**	**25**
Benzo(k)fluoranthene	1500	900	**4.4**	**620**		**3.5**	**16**	**27 J**	**24**
Chrysene	15000	400	**5.2**	**750**		**3.8**	**18**	**76 J**	**29**
Dibenzo(a,h)anthracene	15	400	**0.89**	**150**		**0.73**	**3.7**	**16 J**	**7.5**
Fluoranthene	2300000	20000	**7**	**1500**		**6.5**	**29**	**56 J**	**34**
Fluorene	2300000	28000	**0.21 J**	**130**		0.38 U	0.74 U	**1.3 J**	**1.4**
High Molecular Weight PAHs	NA	NA	**41.1**	**6620**		**31.5**	**145**	**462**	**229**
Indeno(1,2,3-cd)pyrene	150	900	**3.4**	**460**		**2.6**	**14**	**30 J**	**29**
Low Molecular Weight PAHs	NA	NA	**6.42**	**1612**		**4.19**	**17.3**	**33.4**	**26.3**
Naphthalene	3900	54000	**0.93**	**4.2**		0.9 U	1 U	2.4 U	0.98 U

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-080**	**SB16-081**	**SB16-081**	**SB16-082**	**SB16-083**	**SB16-084**	**SB16-085**
Sample Number	**Residential**	**Soil Direct**	**SB16-080-SO-0002**	**SB16-081-SO-0002**	**SB16-081-SO-0002-D**	**SB16-082-SO-0002**	**SB16-083-SO-0002**	**SB16-084-SO-0001**	**SB16-085-SO-0002**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070824**	**20070826**	**20070826**	**20070821**	**20070822**	**20070807**	**20070821**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 1**	**0 - 2**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Phenanthrene	1700000	40000	**3.1**	**1200**		**2.6**	**10**	**19 J**	**16**
Pyrene	1700000	13000	**5.9**	**1100**		**5.7**	**23**	**79 J**	**27**
Total PAHs	NA	NA	**47.5**	**8232**		**35.7**	**162**	**495**	**256**
Pesticides/PCBs (ug/kg)									
4,4'-DDD	2000	NA		3.5 U	3.5 U				
Total DDT	NA	NA		0 U	0 U				
Inorganics (mg/kg)									
Aluminum	77000	NA		**7760**		**6700**	**4800**	**7510**	**5720**
Antimony	31	10		**13.4**		0.4 U	**4 J**	0.057 UJ	0.42 U
Arsenic	0.39	7		**23.5**		**3.5 J**	**7.7 J**	**2.3 J**	**1.8 J**
Barium	15000	5500		**26.1**		**16.8**	**13.8**	**14.6**	**14.6**
Beryllium	160	0.4		**0.31**		**0.42**	**0.29**	**0.47**	**0.34**
Cadmium	70	39		**2.8 J**		**0.38**	**0.77 J**	**0.13 J**	**0.3 J**
Calcium	NA	NA		7.8 U		**33.2 J**	**253 J**	**79.2**	**252 J**
Chromium	230	1400		**16.5 J**		**7.6**	**6.4**	**8.7**	**6.6**
Cobalt	23	NA		**7.7**		**8.1**	**5.1**	**5.1 J**	**5.1 J**
Copper	3100	3100		**36.9**		**19.3**	**10**	**22.9**	**10.7**
Iron	55000	NA		**33000**		**17700**	**9760**	**13600**	**11000**
Lead	400	150		**20.5**		**9.7**	**7**	**20.5**	**11.5**
Magnesium	NA	NA		**1380**		**2420**	**1650**	**2010**	**1770**
Manganese	1800	390		**125**		**271**	**126**	**185**	**156**
Mercury	23	23		**0.0054 J**		0.0046 U	**0.0052 J**	0.0072 U	0.005 U
Nickel	1600	1000		**9.9 J**		**12.8**	**7.2**	**8.4 J**	**7.7 J**
Potassium	NA	NA		**440**		**764**	**465**	**543**	**622**
Selenium	390	390		0.16 U		**2**	0.12 U	**2.6 J**	**1.4**
Silver	390	200		0.05 U		0.043 U	0.037 U	0.019 UJ	0.037 U
Sodium	NA	NA		**28.5 J**		**22.7**	**34.6 J**	**30.5**	**24.6 J**
Thallium	5.1	5.5		**2.5 J**		**1.2**	0.98 U	**2 J**	**1 J**
Vanadium	390	550		**13.4**		**10.5**	**9.3**	**13.9**	**10**
Zinc	23000	6000		**213**		**32.3**	**26.6**	**33.3**	**27.4**
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500							
TPH (C09-C36)	NA	500	**21**	**63**		**8.7**	**28**	**270**	**29**
TPH (C09-C44)	NA	500	**31**	**83**		**13**	**52**	**490**	**38**

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-086**	**SB16-087**	**SB16-088**	**SB16-088**	**SB16-089**	**SB16-089**	**SB16-090**
Sample Number	**Residential**	**Soil Direct**	**SB16-086-SO-0002**	**SB16-087-SO-0002**	**SB16-088-SO-0002**	**B16-088-SO-0002-OC**	**SB16-089-SO-0002**	**SB16-089-SO-0001**	**SB16-090-SO-0002**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070925**	**20070522**	**20070522**	**20070522**	**20070522**	**20070926**	**20071001**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 1**	**0 - 2**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**NORTH CEN EAST**
Volatile Organic Compounds (ug/kg)									
Acetone	61000000	7800000						**2 J**	
BTEX	NA	NA						0 U	
Carbon Disulfide	670000	NA						0.21 U	
Ethylbenzene	5700	71000						0.82 U	
Total Xylenes	600000	110000						2.2 U	
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000		6.6 U	7 U	35 U	6.8 U		34 U
Acenaphthene	3400000	43000		6.7 U	7 U	35 U	6.9 U		34 U
Acenaphthylene	3400000	23000		5.9 U	6.2 U	35 U	6.1 U		34 U
Anthracene	17000000	35000		6 U	6.4 U	35 U	6.2 U		34 U
Benzo(a)pyrene Equivalents	15	400		**60.9**	**4**	35 U	6.6 U		**43.0**
Benzo(a)anthracene	150	900		**68**	4 U	35 U	3.9 U		34 U
Benzo(a)pyrene	15	400		**47**	6.7 U	35 U	6.6 U		**35**
Benzo(b)fluoranthene	150	900		**70**	**40**	35 U	7.3 U		**79**
Benzo(g,h,i)perylene	1700000	800		**40**	5.1 U	35 U	5 U		**48**
Benzo(k)fluoranthene	1500	900		7.7 U	8.2 U	35 U	8 U		34 U
Bis(2-ethylhexyl)phthalate	35000	46000				110 U			140 U
Carbazole	24000	NA				35 U			34 U
Chrysene	15000	400		**55**	11 U	35 U	11 U		**65**
Dibenzo(a,h)anthracene	15	400		6.4 U	6.8 U	35 U	6.7 U		34 U
Dibenzofuran	NA	NA		5.6 U	5.9 U	35 U	5.8 U		34 U
Fluoranthene	2300000	20000		**110**	**50**	35 U	7.6 U		**90**
Fluorene	2300000	28000		6.6 U	7 U	35 U	6.9 U		34 U
High Molecular Weight PAHs	NA	NA		**490**	**139**	0 U	0 U		**387**
Indeno(1,2,3-cd)pyrene	150	900		7 U	7.4 U	35 U	7.3 U		34 U
Low Molecular Weight PAHs	NA	NA		**57.0**	0 U	0 U	0 U		**37.0**
Phenanthrene	1700000	40000		**57**	5.5 U	35 U	5.3 U		**37**
Pyrene	1700000	13000		**100**	**49**	35 U	6.7 U		**70**
Total PAHs	NA	NA		**547**	**139**	0 U	0 U		**424**
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000	**3**	**2 J**					**7.1**
Acenaphthene	3400000	43000	**0.52 J**	**0.39 J**					**44**
Acenaphthylene	3400000	23000	**0.95**	**0.26 J**					**11**
Anthracene	17000000	35000	**1.3**	**0.49 J**					**49**
Benzo(a)pyrene Equivalents	15	400	**6.87**	**2.52**					**212**
Benzo(a)anthracene	150	900	**6.8**	**2.6**					**150**
Benzo(a)pyrene	15	400	**3.1**	**1.2**					**120**
Benzo(b)fluoranthene	150	900	**8**	**2.1**					**200**
Benzo(g,h,i)perylene	1700000	800	**9.1**	**3.2 J**					**140 J**
Benzo(k)fluoranthene	1500	900	**5.6**	**1.2**					**180**
Chrysene	15000	400	**15**	**6.6 J**					**210**
Dibenzo(a,h)anthracene	15	400	**1.7**	**0.7**					**40**
Fluoranthene	2300000	20000	**18 J**	**4.4 J**					**410**
Fluorene	2300000	28000	**1.6**	**1.2**					**32**
High Molecular Weight PAHs	NA	NA	**98.5**	**32.6**					**1920**
Indeno(1,2,3-cd)pyrene	150	900	**5.2**	**1.3**					**150**
Low Molecular Weight PAHs	NA	NA	**29.9**	**18.0**					**440**
Naphthalene	3900	54000	**1.5**	**1.7 J**					**17**

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-086**	**SB16-087**	**SB16-088**	**SB16-088**	**SB16-089**	**SB16-089**	**SB16-090**
Sample Number	**Residential**	**Soil Direct**	**SB16-086-SO-0002**	**SB16-087-SO-0002**	**SB16-088-SO-0002**	**B16-088-SO-0002-OC**	**SB16-089-SO-0002**	**SB16-089-SO-0001**	**SB16-090-SO-0002**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070925**	**20070522**	**20070522**	**20070522**	**20070522**	**20070926**	**20071001**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 1**	**0 - 2**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**NORTH CEN EAST**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Phenanthrene	1700000	40000	**21**	**12 J**					**280**
Pyrene	1700000	13000	**26 J**	**9.3 J**					**320**
Total PAHs	NA	NA	**128**	**50.6**					**2360**
Pesticides/PCBs (ug/kg)									
4,4'-DDD	2000	NA				3.5 U			3.4 U
Total DDT	NA	NA				0 U			0 U
Inorganics (mg/kg)									
Aluminum	77000	NA							
Antimony	31	10							
Arsenic	0.39	7							
Barium	15000	5500							
Beryllium	160	0.4							
Cadmium	70	39							
Calcium	NA	NA							
Chromium	230	1400							
Cobalt	23	NA							
Copper	3100	3100							
Iron	55000	NA							
Lead	400	150							
Magnesium	NA	NA							
Manganese	1800	390							
Mercury	23	23							
Nickel	1600	1000							
Potassium	NA	NA							
Selenium	390	390							
Silver	390	200							
Sodium	NA	NA							
Thallium	5.1	5.5							
Vanadium	390	550							
Zinc	23000	6000							
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500							
TPH (C09-C36)	NA	500	**44**	**30**					**100**
TPH (C09-C44)	NA	500	**67**	**44**					**150**

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			10	10	10	10	10	10	10
Location	ORNL	RIDEM	SB16-091	SB16-092	SB16-093	SB16-093	SB16-094	SB16-095	SB16-096
Sample Number	Residential	Soil Direct	SB16-091-SO-0002	SB16-092-SO-0002	SB16-093-SO-0002	SB16-093-SO-0102	SB16-094-SO-0002	SB16-095-SO-0002	SB16-096-SO-0002
Sample Code	Regional	Exposure	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Screening	Residential	20071002	20070930	20071002	20071002	20071002	20071002	20070825
Depth Range (feet)	Levels	Criterion	0 - 2	0 - 2	0 - 2	1 - 2	0 - 2	0 - 2	0 - 2
Area			NORTH CEN EAST	NORTH CEN EAST	BLDG E-107	BLDG E-107	BLDG E-107	BLDG E-107	NORTH CEN FFTA
Volatile Organic Compounds (ug/kg)									
Acetone	61000000	7800000				**34**			
BTEX	NA	NA				**15**			
Carbon Disulfide	670000	NA				**1.6 J**			
Ethylbenzene	5700	71000				**2 J**			
Total Xylenes	600000	110000				**13**			
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000	35 U	34 U	35 U		36 U	36 U	
Acenaphthene	3400000	43000	35 U	34 U	35 U		36 U	**75**	
Acenaphthylene	3400000	23000	35 U	34 U	35 U		36 U	36 U	
Anthracene	17000000	35000	35 U	34 U	35 U		36 U	**140**	
Benzo(a)pyrene Equivalents	15	400	**79.4**	34 U	**3.7**		**7.56**	**608**	
Benzo(a)anthracene	150	900	**43**	34 U	35 U		36 U	**380**	
Benzo(a)pyrene	15	400	**59**	34 U	35 U		36 U	**400**	
Benzo(b)fluoranthene	150	900	**100**	34 U	**37**		**75**	**630**	
Benzo(g,h,i)perylene	1700000	800	**78**	34 U	35 U		**39**	**340**	
Benzo(k)fluoranthene	1500	900	35 U	34 U	35 U		36 U	**220**	
Bis(2-ethylhexyl)phthalate	35000	46000	120 U	93 U	180 U		77 U	240 U	
Carbazole	24000	NA	35 U	34 U	35 U		36 U	**220**	
Chrysene	15000	400	**38**	34 U	35 U		**61**	**560**	
Dibenzo(a,h)anthracene	15	400	35 U	34 U	35 U		36 U	**75**	
Dibenzofuran	NA	NA	35 U	34 U	35 U		36 U	**54 J**	
Fluoranthene	2300000	20000	**50**	34 U	**98**		**120**	**2000**	
Fluorene	2300000	28000	35 U	34 U	35 U		36 U	**110**	
High Molecular Weight PAHs	NA	NA	**476**	0 U	**202**		**425**	**6195**	
Indeno(1,2,3-cd)pyrene	150	900	**61**	34 U	35 U		36 U	**290**	
Low Molecular Weight PAHs	NA	NA	0 U	0 U	**78.0**		**56.0**	**1725**	
Phenanthrene	1700000	40000	35 U	34 U	**78**		**56**	**1400**	
Pyrene	1700000	13000	**47**	34 U	**67**		**130**	**1300**	
Total PAHs	NA	NA	**476**	0 U	**280**		**481**	**7920**	
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000	**3.1**	**2.7**	**22**		**8.2**	**37**	**3.5**
Acenaphthene	3400000	43000	**4.1**	**1**	**28**		**11**	**130**	**18**
Acenaphthylene	3400000	23000	**30**	**2.1**	**4.4**		**8.9**	**17**	**9**
Anthracene	17000000	35000	**28**	**1.8**	**20**		**17**	**130**	**22**
Benzo(a)pyrene Equivalents	15	400	**112**	**9.98**	**66.8**		**148**	**1103**	**103**
Benzo(a)anthracene	150	900	**44**	**11**	**50**		**77**	**660**	**150**
Benzo(a)pyrene	15	400	**65**	**1.4**	**36**		**84**	**730**	**41**
Benzo(b)fluoranthene	150	900	**93**	**19**	**64**		**170**	**880**	**130**
Benzo(g,h,i)perylene	1700000	800	**86 J**	**18**	**58**		**120**	**670**	**86**
Benzo(k)fluoranthene	1500	900	**75**	**16**	**58**		**140**	**820**	**130**
Chrysene	15000	400	**63**	**24**	**85**		**160**	**1100**	**180**
Dibenzo(a,h)anthracene	15	400	**24 J**	**3.8**	**14**		**26**	**140**	**24**
Fluoranthene	2300000	20000	**110**	**26 J**	**230**		**240**	**2800**	**300**
Fluorene	2300000	28000	**10**	**1.2**	**44**		**14**	**170**	**14**
High Molecular Weight PAHs	NA	NA	**732**	**157**	**812**		**1427**	**10700**	**1371**
Indeno(1,2,3-cd)pyrene	150	900	**86**	**16**	**47**		**120**	**700**	**90**
Low Molecular Weight PAHs	NA	NA	**167**	**25.5**	**434**		**184**	**2908**	**241**
Naphthalene	3900	54000	**3.8**	**1.7**	**16**		**5.3 J**	**24**	**4.6**

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-091**	**SB16-092**	**SB16-093**	**SB16-093**	**SB16-094**	**SB16-095**	**SB16-096**
Sample Number	**Residential**	**Soil Direct**	**SB16-091-SO-0002**	**SB16-092-SO-0002**	**SB16-093-SO-0002**	**SB16-093-SO-0102**	**SB16-094-SO-0002**	**SB16-095-SO-0002**	**SB16-096-SO-0002**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071002**	**20070930**	**20071002**	**20071002**	**20071002**	**20071002**	**20070825**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**1 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**BLDG E-107**	**BLDG E-107**	**BLDG E-107**	**BLDG E-107**	**NORTH CEN FFTA**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Phenanthrene	1700000	40000	**88**	**15**	**300**		**120**	**2400**	**170**
Pyrene	1700000	13000	**86**	**22 J**	**170**		**290**	**2200**	**240**
Total PAHs	NA	NA	**899**	**183**	**1246**		**1611**	**13608**	**1612**
Pesticides/PCBs (ug/kg)									
4,4'-DDD	2000	NA	3.5 U	3.4 U	3.5 U		**6.8 J**	3.5 U	
Total DDT	NA	NA	0 U	0 U	0 U		**6.8**	0 U	
Inorganics (mg/kg)									
Aluminum	77000	NA					**5140**	**5490**	
Antimony	31	10					0.52 U	0.7 U	
Arsenic	0.39	7					**2.3**	**2.1**	
Barium	15000	5500					**24.1**	**33.9**	
Beryllium	160	0.4					0.00081 U	0.0009 U	
Cadmium	70	39					**0.49 J**	**0.42 J**	
Calcium	NA	NA					**612**	**1420**	
Chromium	230	1400					**6.3**	**5.7**	
Cobalt	23	NA					**3.5 J**	**3.9 J**	
Copper	3100	3100					**10.6**	**10.7**	
Iron	55000	NA					**8290**	**9010**	
Lead	400	150					**36.1**	**21.8**	
Magnesium	NA	NA					**1150**	**1800**	
Manganese	1800	390					**85.2**	**148**	
Mercury	23	23					**0.0047 J**	0.0054 UJ	
Nickel	1600	1000					**5.9 J**	**5.5 J**	
Potassium	NA	NA					**722**	**1960**	
Selenium	390	390					0.087 UJ	0.096 UJ	
Silver	390	200					**2.5 J**	**2.6 J**	
Sodium	NA	NA					**23 J**	**27.4 J**	
Thallium	5.1	5.5					0.064 U	0.07 U	
Vanadium	390	550					**8.8**	**9**	
Zinc	23000	6000					**46.1**	**44**	
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500							
TPH (C09-C36)	NA	500	**66**	**31**	**170**		**1700**	**1300**	**52**
TPH (C09-C44)	NA	500	**180**	**52**	**320**		**2200**	**1800**	**73**

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	10	10	10	10	10
Location			SB16-098	SB16-099	SB16-100	SB16-A2-01	SB16-A2-01
Sample Number			SB16-098-SO-0002	SB16-099-SO-0002	SB16-100-SO-0002	SB16-A2-01-SO-0102	SB16-A2-01-SO-0102-D
Sample Code			NORMAL	NORMAL	NORMAL	ORIG	DUP
Sample Date			20070930	20071002	20071003	20070731	20070731
Depth Range (feet)			0 - 2	0 - 2	0 - 2	1 - 2	1 - 2
Area			NORTH CEN EAST	CREOSOTE DIP TANK	NORTH CEN FFTA	NORTH CEN EAST	NORTH CEN EAST
Volatile Organic Compounds (ug/kg)							
Acetone	61000000	7800000				1.1 UR	1.3 U
BTEX	NA	NA				0 U	0 U
Carbon Disulfide	670000	NA				1.3 U	1.6 U
Ethylbenzene	5700	71000				0.43 U	0.53 U
Total Xylenes	600000	110000				0.61 U	0.75 U
Semivolatile Organic Compounds (ug/kg)							
2-Methylnaphthalene	310000	123000	34 U	34 U		35 U	35 U
Acenaphthene	3400000	43000	34 U	34 U		35 U	35 U
Acenaphthylene	3400000	23000	34 U	34 U		35 U	35 U
Anthracene	17000000	35000	34 U	34 U		35 U	35 U
Benzo(a)pyrene Equivalents	15	400	**53.1**	**3.4**		35 U	35 U
Benzo(a)anthracene	150	900	**44**	34 U		35 U	35 U
Benzo(a)pyrene	15	400	**39**	34 U		35 U	35 U
Benzo(b)fluoranthene	150	900	**59**	**34**		35 U	35 U
Benzo(g,h,i)perylene	1700000	800	**52**	34 U		35 U	35 U
Benzo(k)fluoranthene	1500	900	34 U	34 U		35 U	35 U
Bis(2-ethylhexyl)phthalate	35000	46000	110 U	280 U		53 U	52 U
Carbazole	24000	NA	34 U	34 U		35 U	35 U
Chrysene	15000	400	**42**	34 U		35 U	35 U
Dibenzo(a,h)anthracene	15	400	34 U	34 U		35 U	35 U
Dibenzofuran	NA	NA	34 U	34 U		35 U	35 U
Fluoranthene	2300000	20000	**55**	**56**		35 U	35 U
Fluorene	2300000	28000	34 U	34 U		35 U	35 U
High Molecular Weight PAHs	NA	NA	**373**	**143**		0 U	0 U
Indeno(1,2,3-cd)pyrene	150	900	**38**	34 U		35 U	35 U
Low Molecular Weight PAHs	NA	NA	0 U	0 U		0 U	0 U
Phenanthrene	1700000	40000	34 U	34 U		35 U	35 U
Pyrene	1700000	13000	**44**	**53**		35 U	35 U
Total PAHs	NA	NA	**373**	**143**		0 U	0 U
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000	**15**	0.49 U	**8.2**		
Acenaphthene	3400000	43000	**96**	**0.46 J**	**46**		
Acenaphthylene	3400000	23000	**16**	**2.4**	**140**		
Anthracene	17000000	35000	**65**	**2.2**	**400**		
Benzo(a)pyrene Equivalents	15	400	**260**	**14.9**	**1226**		
Benzo(a)anthracene	150	900	**310**	**10**	**1500 J**		
Benzo(a)pyrene	15	400	**120**	**8.4**	**450 J**		
Benzo(b)fluoranthene	150	900	**290**	**14**	**1500 J**		
Benzo(g,h,i)perylene	1700000	800	**200**	**10**	**930 J**		
Benzo(k)fluoranthene	1500	900	**290**	**13**	**1400 J**		
Chrysene	15000	400	**390**	**14**	**1800 J**		
Dibenzo(a,h)anthracene	15	400	**56**	**2.9**	**360**		
Fluoranthene	2300000	20000	**820 J**	**21**	**3700 J**		
Fluorene	2300000	28000	**97**	**0.44 J**	**130**		
High Molecular Weight PAHs	NA	NA	**3276**	**122**	**15340**		
Indeno(1,2,3-cd)pyrene	150	900	**210**	**11**	**1000 J**		
Low Molecular Weight PAHs	NA	NA	**1163**	**13.1**	**2538**		
Naphthalene	3900	54000	**14**	0.7 U	**14**		

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-098**	**SB16-099**	**SB16-100**	**SB16-A2-01**	**SB16-A2-01**
Sample Number	**Residential**	**Soil Direct**	**SB16-098-SO-0002**	**SB16-099-SO-0002**	**SB16-100-SO-0002**	**SB16-A2-01-SO-0102**	**SB16-A2-01-SO-0102-D**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**
Sample Date	**Screening**	**Residential**	**20070930**	**20071002**	**20071003**	**20070731**	**20070731**
Depth Range (feet)	**Levels**	**Criterion**	**0 - 2**	**0 - 2**	**0 - 2**	**1 - 2**	**1 - 2**
Area			**NORTH CEN EAST**	**CREOSOTE DIP TANK**	**NORTH CEN FFTA**	**NORTH CEN EAST**	**NORTH CEN EAST**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)							
Phenanthrene	1700000	40000	**860**	**7.6**	**1800 J**		
Pyrene	1700000	13000	**590 J**	**18**	**2700 J**		
Total PAHs	NA	NA	**4439**	**135**	**17878**		
Pesticides/PCBs (ug/kg)							
4,4'-DDD	2000	NA	3.4 U	3.3 U		3.5 U	3.5 U
Total DDT	NA	NA	0 U	0 U		0 U	0 U
Inorganics (mg/kg)							
Aluminum	77000	NA	**5210**			**7340**	**8010**
Antimony	31	10	**1.1 J**			0.5 U	0.3 U
Arsenic	0.39	7	**2.3**			**2.7 J**	**2.5 J**
Barium	15000	5500	**72.5**			**16.4**	**19.5**
Beryllium	160	0.4	0.00078 U			**0.51**	**0.68**
Cadmium	70	39	**0.55 J**			**0.11 J**	**0.12 J**
Calcium	NA	NA	**771**			**189**	**212**
Chromium	230	1400	**17.5**			**10.1 J**	**9.2 J**
Cobalt	23	NA	**5 J**			**8 J**	**8.4 J**
Copper	3100	3100	**16.3**			**18.4**	**16.1**
Iron	55000	NA	**11200**			**17600**	**17500**
Lead	400	150	**47.2**			**12.2 J**	**10.9 J**
Magnesium	NA	NA	**2640**			**2960**	**2990**
Manganese	1800	390	**126**			**267**	**267**
Mercury	23	23	**0.027**			0.0066 U	**0.0078 J**
Nickel	1600	1000	**10.1 J**			**13.6 J**	**13.1 J**
Potassium	NA	NA	**1880**			**933 J**	**951 J**
Selenium	390	390	0.084 U			**2.1 J**	**2.5 J**
Silver	390	200	**2.6 J**			0.018 U	0.019 U
Sodium	NA	NA	**27.5 J**			**23.9**	**24.1**
Thallium	5.1	5.5	0.061 U			**2.7 J**	**2.5 J**
Vanadium	390	550	**11.9**			**13.2**	**14.1**
Zinc	23000	6000	**48.6**			**36.6**	**36**
Diesel Range Organics - Semivolatile (mg/kg)							
TPH (C09-C36)	NA	500				**14**	9.4 U
Petroleum Hydrocarbons (mg/kg)							
Extractable TPH-Screening Data	NA	500					
TPH (C09-C36)	NA	500	**330**	**12**	**91**		
TPH (C09-C44)	NA	500	**460**	**26**	**120**		

TABLE 4-11

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Notes:
Bolding indicates that the chemical was detected in the sample.
PAHs samples were analyzed by AWL by method SW8270-SIM.
BaP Equivalents = Benzo(a)pyrene equivalent concentration
High Molecular Weight PAHs = Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene
High Molecular Weight PAHs Ecosd = Benzo(a)anthracene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthrancene, Fluoranthene, Pyrene
Low Molecular Weight PAHs = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
Low Molecular Weight PAHs Ecosd = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C_9 to C_{36}.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C_9 to C_{44}.

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and total xylenes
EPA = Environmental Protection Agency
NA = Not applicable/Not available
PAH = Polycyclic aromatic hydrocarbon
PHC = Petroleum hydrocarbons as diesel fuel
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
TPH = Total petroleum hydrocarbon
VOC = Volatile organic compound

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-047**	**SB16-047**	**SB16-047**	**SB16-047**	**SB16-048**	**SB16-048**	**SB16-048**	**SB16-048**
Sample Number	**Residential**	**Soil Direct**	**SB16-047-SO-0206**	**SB16-047-SO-0610**	**SB16-047-SO-1016**	**SB16-047-SO-1622**	**SB16-048-SO-0206**	**SB16-048-SO-0610**	**SB16-048-SO-0910**	**SB16-048-SO-1015**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070829**	**20070829**	**20070829**	**20070829**	**20071001**	**20071001**	**20071001**	**20071001**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**6 - 10**	**9 - 10**	**10 - 15**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200							0.9 U	
1,2,4-Trichlorobenzene	78000	96000							**0.86 J**	
2-Butanone	28000000	10000000							0.56 U	
Acetone	61000000	7800000							1.4 U	
Benzene	1100	2500							0.23 U	
BTEX	NA	NA							**19.7**	
Carbon Disulfide	670000	NA							0.23 U	
Chlorobenzene	310000	210000							0.63 U	
Chloroform	300	1200							0.33 U	
Cyclohexane	7200000	NA							0.47 U	
Ethylbenzene	5700	71000							**2.7 J**	
Isopropylbenzene	2200000	NA							0.9 U	
Methyl Acetate	78000000	NA							0.9 U	
Methyl Cyclohexane	3400000	NA							0.25 U	
Methylene Chloride	11000	45000							0.67 U	
Tetrachloroethene	570	12000							0.7 U	
Toluene	5000000	190000							**1 J**	
Total Chlorinated VOCs	NA	NA							0 U	
Total Xylenes	600000	110000							**16**	
Trichloroethene	2800	13000							0.22 U	
Semivolatile Organic Compounds (ug/kg)										
2,4-Dimethylphenol	1200000	1400000						58 U		
2-Methylnaphthalene	310000	123000						36 U		
2-Methylphenol	3100000	NA						67 U		
4-Methylphenol	310000	NA						58 U		
Acenaphthene	3400000	43000						36 U		
Acenaphthylene	3400000	23000						36 U		
Anthracene	17000000	35000						36 U		
Benzo(a)pyrene Equivalents	15	400						36 U		
Benzo(a)anthracene	150	900						36 U		
Benzo(a)pyrene	15	400						36 U		
Benzo(b)fluoranthene	150	900						36 U		
Benzo(g,h,i)perylene	1700000	800						36 U		
Benzo(k)fluoranthene	1500	900						36 U		
Bis(2-ethylhexyl)phthalate	35000	46000						100 U		
Carbazole	24000	NA						36 U		
Chrysene	15000	400						36 U		
di-n-Butyl Phthalate	6100000	NA						52 U		
Dibenzo(a,h)anthracene	15	400						36 U		
Dibenzofuran	NA	NA						36 U		
Fluoranthene	2300000	20000						36 U		
Fluorene	2300000	28000						36 U		
High Molecular Weight PAHs	NA	NA						0 U		
Indeno(1,2,3-cd)pyrene	150	900						36 U		
Low Molecular Weight PAHs	NA	NA						0 U		
Naphthalene	3900	54000						36 U		
Phenanthrene	1700000	40000						36 U		
Pyrene	1700000	13000						36 U		
Total PAHs	NA	NA						0 U		

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-047**	**SB16-047**	**SB16-047**	**SB16-047**	**SB16-048**	**SB16-048**	**SB16-048**	**SB16-048**
Sample Number	**Residential**	**Soil Direct**	**SB16-047-SO-0206**	**SB16-047-SO-0610**	**SB16-047-SO-1016**	**SB16-047-SO-1622**	**SB16-048-SO-0206**	**SB16-048-SO-0610**	**SB16-048-SO-0910**	**SB16-048-SO-1015**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070829**	**20070829**	**20070829**	**20070829**	**20071001**	**20071001**	**20071001**	**20071001**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**6 - 10**	**9 - 10**	**10 - 15**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000	**16**				**0.23 J**			
Acenaphthene	3400000	43000	**6.2**				0.72 U			
Acenaphthylene	3400000	23000	**84**				**0.25 J**			
Anthracene	17000000	35000	**73**				**0.18 J**			
BaP Equivalent	15	400	**271**				**1.43**			
Benzo(a)anthracene	150	900	**420**				**0.66 J**			
Benzo(a)pyrene	15	400	**47**				**0.85**			
Benzo(b)fluoranthene	150	900	**460**				**1.2**			
Benzo(g,h,i)perylene	1700000	800	**290**				**1 J**			
Benzo(k)fluoranthene	1500	900	**440**				**0.96**			
Chrysene	15000	400	**570**				**1.1**			
Dibenzo(a,h)anthracene	15	400	**100**				**0.27 J**			
Fluoranthene	2300000	20000	**910 J**				**1.6**			
Fluorene	2300000	28000	**11**				0.099 U			
High Molecular Weight PAHs	NA	NA	**4187**				**10.2**			
Indeno(1,2,3-cd)pyrene	150	900	**310**				**1.1**			
Low Molecular Weight PAHs	NA	NA	**481**				**1.59**			
Naphthalene	3900	54000	**31**				0.44 U			
Phenanthrene	1700000	40000	**260**				**0.93**			
Pyrene	1700000	13000	**640**				**1.5**			
Total PAHs	NA	NA	**4668**				**11.8**			
Pesticides/PCBs (ug/kg)										
4,4'-DDT	1700	NA						3.5 U		
Aroclor-1254	220	NA						35 U		
Aroclor-1260	220	NA						35 U		
Endosulfan II	370000	NA						3.5 U		
Endrin Aldehyde	18000	NA						3.5 U		
Total Aroclor	240	10000						0 U		
Total DDT	NA	NA						0 U		
Inorganics (mg/kg)										
Aluminum	77000	NA								
Antimony	31	10								
Arsenic	0.39	7								
Barium	15000	5500								
Beryllium	160	0.4								
Cadmium	70	39								
Calcium	NA	NA								
Chromium	230	1400								
Cobalt	23	NA								
Copper	3100	3100								
Iron	55000	NA								
Lead	400	150								
Magnesium	NA	NA								
Manganese	1800	390								
Mercury	23	23								
Nickel	1600	1000								
Potassium	NA	NA								
Silver	390	200								
Sodium	NA	NA								

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-047**	**SB16-047**	**SB16-047**	**SB16-047**	**SB16-048**	**SB16-048**	**SB16-048**	**SB16-048**
Sample Number	**Residential**	**Soil Direct**	**SB16-047-SO-0206**	**SB16-047-SO-0610**	**SB16-047-SO-1016**	**SB16-047-SO-1622**	**SB16-048-SO-0206**	**SB16-048-SO-0610**	**SB16-048-SO-0910**	**SB16-048-SO-1015**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070829**	**20070829**	**20070829**	**20070829**	**20071001**	**20071001**	**20071001**	**20071001**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**6 - 10**	**9 - 10**	**10 - 15**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Inorganics (mg/kg) (continued)										
Thallium	5.1	5.5								
Vanadium	390	550								
Zinc	23000	6000								
Petroleum Hydrocarbons (mg/kg)										
Extractable TPH-Screening Data	NA	500	**2.9**	0.99 U	0.94 U	0.97 U	0.97 U	0.96 U		0.99 U
TPH (C09-C36)	NA	500	**45**				**4.2**			
TPH (C09-C44)	NA	500	**55**				**8.4**			

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			10	10	10	10	10	10	10	10
Location	ORNL	RIDEM	SB16-049	SB16-049	SB16-049	SB16-049	SB16-049	SB16-050	SB16-050	SB16-051
Sample Number	Residential	Soil Direct	SB16-049-SO-0206	SB16-049-SO-0506	SB16-049-SO-0610	SB16-049-SO-1016	SB16-049-SO-1622	SB16-050-SO-0206	SB16-050-SO-0610	SB16-051-SO-0206
Sample Code	Regional	Exposure	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Screening	Residential	20070828	20070828	20070828	20070828	20070829	20070828	20070828	20070828
Depth Range (feet)	Levels	Criterion	2 - 6	5 - 6	6 - 10	10 - 16	16 - 22	2 - 6	6 - 10	2 - 6
Area			CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200		1 U						
1,2,4-Trichlorobenzene	78000	96000		0.87 U						
2-Butanone	28000000	10000000		0.65 UR						
Acetone	61000000	7800000		1.6 UR						
Benzene	1100	2500		0.27 U						
BTEX	NA	NA		0 U						
Carbon Disulfide	670000	NA		0.27 U						
Chlorobenzene	310000	210000		0.73 U						
Chloroform	300	1200		0.38 U						
Cyclohexane	7200000	NA		0.54 U						
Ethylbenzene	5700	71000		1 U						
Isopropylbenzene	2200000	NA		1 U						
Methyl Acetate	78000000	NA		1 U						
Methyl Cyclohexane	3400000	NA		0.29 U						
Methylene Chloride	11000	45000		0.77 U						
Tetrachloroethene	570	12000		0.81 U						
Toluene	5000000	190000		0.54 U						
Total Chlorinated VOCs	NA	NA		0 U						
Total Xylenes	600000	110000		2.9 U						
Trichloroethene	2800	13000		0.25 UJ						
Semivolatile Organic Compounds (ug/kg)										
2,4-Dimethylphenol	1200000	1400000	58 U							
2-Methylnaphthalene	310000	123000	35 U							
2-Methylphenol	3100000	NA	67 U							
4-Methylphenol	310000	NA	58 U							
Acenaphthene	3400000	43000	35 U							
Acenaphthylene	3400000	23000	35 U							
Anthracene	17000000	35000	35 U							
Benzo(a)pyrene Equivalents	15	400	35 U							
Benzo(a)anthracene	150	900	35 U							
Benzo(a)pyrene	15	400	35 U							
Benzo(b)fluoranthene	150	900	35 U							
Benzo(g,h,i)perylene	1700000	800	35 U							
Benzo(k)fluoranthene	1500	900	35 U							
Bis(2-ethylhexyl)phthalate	35000	46000	54 U							
Carbazole	24000	NA	35 U							
Chrysene	15000	400	35 U							
di-n-Butyl Phthalate	6100000	NA	52 U							
Dibenzo(a,h)anthracene	15	400	35 U							
Dibenzofuran	NA	NA	35 U							
Fluoranthene	2300000	20000	35 U							
Fluorene	2300000	28000	35 U							
High Molecular Weight PAHs	NA	NA	0 U							
Indeno(1,2,3-cd)pyrene	150	900	35 U							
Low Molecular Weight PAHs	NA	NA	0 U							
Naphthalene	3900	54000	35 U							
Phenanthrene	1700000	40000	35 U							
Pyrene	1700000	13000	35 U							
Total PAHs	NA	NA	0 U							

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-049**	**SB16-049**	**SB16-049**	**SB16-049**	**SB16-049**	**SB16-050**	**SB16-050**	**SB16-051**
Sample Number	**Residential**	**Soil Direct**	**SB16-049-SO-0206**	**SB16-049-SO-0506**	**SB16-049-SO-0610**	**SB16-049-SO-1016**	**SB16-049-SO-1622**	**SB16-050-SO-0206**	**SB16-050-SO-0610**	**SB16-051-SO-0206**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070828**	**20070828**	**20070828**	**20070828**	**20070829**	**20070828**	**20070828**	**20070828**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 6**	**5 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**6 - 10**	**2 - 6**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000	0.32 U					**16**		**31**
Acenaphthene	3400000	43000	**0.043 J**					**4.9**		**11**
Acenaphthylene	3400000	23000	**0.12 J**					**13**		**37**
Anthracene	17000000	35000	**0.076 J**					**17**		**57**
BaP Equivalent	15	400	**0.342**					**159**		**874**
Benzo(a)anthracene	150	900	**0.32 J**					**140**		**420**
Benzo(a)pyrene	15	400	**0.075 J**					**55**		**530**
Benzo(b)fluoranthene	150	900	**0.62 J**					**220**		**690**
Benzo(g,h,i)perylene	1700000	800	**0.51 J**					**180**		**640**
Benzo(k)fluoranthene	1500	900	**0.56 J**					**190**		**550**
Chrysene	15000	400	**0.72**					**210**		**530**
Dibenzo(a,h)anthracene	15	400	**0.12 J**					**49**		**170**
Fluoranthene	2300000	20000	**0.94**					**240**		**510**
Fluorene	2300000	28000	0.14 U					**6**		**13**
High Molecular Weight PAHs	NA	NA	**5.12**					**1654**		**5070**
Indeno(1,2,3-cd)pyrene	150	900	**0.47 J**					**170**		**570**
Low Molecular Weight PAHs	NA	NA	**1.64**					**219**		**467**
Naphthalene	3900	54000	**0.6 J**					**42**		**68**
Phenanthrene	1700000	40000	**0.8**					**120**		**250**
Pyrene	1700000	13000	**0.78**					**200**		**460**
Total PAHs	NA	NA	**6.75**					**1873**		**5537**
Pesticides/PCBs (ug/kg)										
4,4'-DDT	1700	NA	3.5 UJ							
Aroclor-1254	220	NA	35 U							
Aroclor-1260	220	NA	35 U							
Endosulfan II	370000	NA	3.5 U							
Endrin Aldehyde	18000	NA	3.5 U							
Total Aroclor	240	10000	0 U							
Total DDT	NA	NA	0 U							
Inorganics (mg/kg)										
Aluminum	77000	NA								
Antimony	31	10								
Arsenic	0.39	7								
Barium	15000	5500								
Beryllium	160	0.4								
Cadmium	70	39								
Calcium	NA	NA								
Chromium	230	1400								
Cobalt	23	NA								
Copper	3100	3100								
Iron	55000	NA								
Lead	400	150								
Magnesium	NA	NA								
Manganese	1800	390								
Mercury	23	23								
Nickel	1600	1000								
Potassium	NA	NA								
Silver	390	200								
Sodium	NA	NA								

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-049**	**SB16-049**	**SB16-049**	**SB16-049**	**SB16-049**	**SB16-050**	**SB16-050**	**SB16-051**
Sample Number	**Residential**	**Soil Direct**	**SB16-049-SO-0206**	**SB16-049-SO-0506**	**SB16-049-SO-0610**	**SB16-049-SO-1016**	**SB16-049-SO-1622**	**SB16-050-SO-0206**	**SB16-050-SO-0610**	**SB16-051-SO-0206**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070828**	**20070828**	**20070828**	**20070828**	**20070829**	**20070828**	**20070828**	**20070828**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 6**	**5 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**6 - 10**	**2 - 6**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Inorganics (mg/kg) (continued)										
Thallium	5.1	5.5								
Vanadium	390	550								
Zinc	23000	6000								
Petroleum Hydrocarbons (mg/kg)										
Extractable TPH-Screening Data	NA	500	0.98 U		0.97 U	0.96 U	0.99 U	**2.2**	0.94 U	**3.7**
TPH (C09-C36)	NA	500	**2.8**					**90**		**250**
TPH (C09-C44)	NA	500	**1.4 J**					**120**		**460**

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			10	10	10	10	10	10	10	10
Location	ORNL	RIDEM	SB16-051	SB16-051	SB16-051	SB16-052	SB16-052	SB16-052	SB16-052	SB16-053
Sample Number	Residential	Soil Direct	SB16-051-SO-0610	SB16-051-SO-1016	SB16-051-SO-1622	SB16-052-SO-0206	SB16-052-SO-0610	SB16-052-SO-1016	SB16-052-SO-1622	SB16-053-SO-0206
Sample Code	Regional	Exposure	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Screening	Residential	20070828	20070828	20070828	20070828	20070828	20070828	20070828	20071002
Depth Range (feet)	Levels	Criterion	6 - 10	10 - 16	16 - 22	2 - 6	6 - 10	10 - 16	16 - 22	2 - 6
Area			CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200								
1,2,4-Trichlorobenzene	78000	96000								
2-Butanone	28000000	10000000								
Acetone	61000000	7800000								
Benzene	1100	2500								
BTEX	NA	NA								
Carbon Disulfide	670000	NA								
Chlorobenzene	310000	210000								
Chloroform	300	1200								
Cyclohexane	7200000	NA								
Ethylbenzene	5700	71000								
Isopropylbenzene	2200000	NA								
Methyl Acetate	78000000	NA								
Methyl Cyclohexane	3400000	NA								
Methylene Chloride	11000	45000								
Tetrachloroethene	570	12000								
Toluene	5000000	190000								
Total Chlorinated VOCs	NA	NA								
Total Xylenes	600000	110000								
Trichloroethene	2800	13000								
Semivolatile Organic Compounds (ug/kg)										
2,4-Dimethylphenol	1200000	1400000								
2-Methylnaphthalene	310000	123000								
2-Methylphenol	3100000	NA								
4-Methylphenol	310000	NA								
Acenaphthene	3400000	43000								
Acenaphthylene	3400000	23000								
Anthracene	17000000	35000								
Benzo(a)pyrene Equivalents	15	400								
Benzo(a)anthracene	150	900								
Benzo(a)pyrene	15	400								
Benzo(b)fluoranthene	150	900								
Benzo(g,h,i)perylene	1700000	800								
Benzo(k)fluoranthene	1500	900								
Bis(2-ethylhexyl)phthalate	35000	46000								
Carbazole	24000	NA								
Chrysene	15000	400								
di-n-Butyl Phthalate	6100000	NA								
Dibenzo(a,h)anthracene	15	400								
Dibenzofuran	NA	NA								
Fluoranthene	2300000	20000								
Fluorene	2300000	28000								
High Molecular Weight PAHs	NA	NA								
Indeno(1,2,3-cd)pyrene	150	900								
Low Molecular Weight PAHs	NA	NA								
Naphthalene	3900	54000								
Phenanthrene	1700000	40000								
Pyrene	1700000	13000								
Total PAHs	NA	NA								

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-051**	**SB16-051**	**SB16-051**	**SB16-052**	**SB16-052**	**SB16-052**	**SB16-052**	**SB16-053**
Sample Number	**Residential**	**Soil Direct**	**SB16-051-SO-0610**	**SB16-051-SO-1016**	**SB16-051-SO-1622**	**SB16-052-SO-0206**	**SB16-052-SO-0610**	**SB16-052-SO-1016**	**SB16-052-SO-1622**	**SB16-053-SO-0206**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20071002**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000				**16**				**26**
Acenaphthene	3400000	43000				**7.1**				**43**
Acenaphthylene	3400000	23000				**17**				**66**
Anthracene	17000000	35000				**47**				**230**
BaP Equivalent	15	400				**125**				**1793**
Benzo(a)anthracene	150	900				**130**				**980**
Benzo(a)pyrene	15	400				**16**				**1100**
Benzo(b)fluoranthene	150	900				**260**				**1400**
Benzo(g,h,i)perylene	1700000	800				**180**				**940**
Benzo(k)fluoranthene	1500	900				**210**				**1400**
Chrysene	15000	400				**290**				**1400**
Dibenzo(a,h)anthracene	15	400				**51**				**340 J**
Fluoranthene	2300000	20000				**380**				**1600**
Fluorene	2300000	28000				**12**				**78**
High Molecular Weight PAHs	NA	NA				**1947**				**11460**
Indeno(1,2,3-cd)pyrene	150	900				**170**				**1000**
Low Molecular Weight PAHs	NA	NA				**423**				**1400**
Naphthalene	3900	54000				**84**				**77**
Phenanthrene	1700000	40000				**240**				**880**
Pyrene	1700000	13000				**260**				**1300**
Total PAHs	NA	NA				**2370**				**12860**
Pesticides/PCBs (ug/kg)										
4,4'-DDT	1700	NA								
Aroclor-1254	220	NA								
Aroclor-1260	220	NA								
Endosulfan II	370000	NA								
Endrin Aldehyde	18000	NA								
Total Aroclor	240	10000								
Total DDT	NA	NA								
Inorganics (mg/kg)										
Aluminum	77000	NA								**7230**
Antimony	31	10								**1.6 J**
Arsenic	0.39	7								**5.8**
Barium	15000	5500								**108**
Beryllium	160	0.4								0.00077 U
Cadmium	70	39								**1.2**
Calcium	NA	NA								**1520**
Chromium	230	1400								**21.3**
Cobalt	23	NA								**5.8**
Copper	3100	3100								**84**
Iron	55000	NA								**39500**
Lead	400	150								**270**
Magnesium	NA	NA								**1710**
Manganese	1800	390								**244**
Mercury	23	23								**0.098**
Nickel	1600	1000								**14.2**
Potassium	NA	NA								**552**
Silver	390	200								**7.8 J**
Sodium	NA	NA								**52.3**

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-051**	**SB16-051**	**SB16-051**	**SB16-052**	**SB16-052**	**SB16-052**	**SB16-052**	**SB16-053**
Sample Number	**Residential**	**Soil Direct**	**SB16-051-SO-0610**	**SB16-051-SO-1016**	**SB16-051-SO-1622**	**SB16-052-SO-0206**	**SB16-052-SO-0610**	**SB16-052-SO-1016**	**SB16-052-SO-1622**	**SB16-053-SO-0206**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20071002**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Inorganics (mg/kg) (continued)										
Thallium	5.1	5.5								0.061 U
Vanadium	390	550								**11.1**
Zinc	23000	6000								**284**
Petroleum Hydrocarbons (mg/kg)										
Extractable TPH-Screening Data	NA	500	0.97 U	0.98 U	0.94 U	**1.8**	0.96 U	0.99 U	0.96 U	**1.3**
TPH (C09-C36)	NA	500				**46**				**94**
TPH (C09-C44)	NA	500				**58**				**130**

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-053**	**SB16-053**	**SB16-054**	**SB16-054**	**SB16-054**	**SB16-054**	**SB16-054**	**SB16-055**
Sample Number	**Residential**	**Soil Direct**	**SB16-053-SO-0609**	**SB16-053-SO-0909**	**SB16-054-SO-0206**	**SB16-054-SO-0506**	**SB16-054-SO-0506-D**	**SB16-054-SO-0610**	**SB16-054-SO-1014**	**SB16-055-SO-0206**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071002**	**20071002**	**20071002**	**20071002**	**20071002**	**20071002**	**20071002**	**20070828**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 9**	**9 - 9**	**2 - 6**	**5 - 6**	**5 - 6**	**6 - 10**	**10 - 14**	**2 - 6**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200		1 U		0.9 U	1.3 U			
1,2,4-Trichlorobenzene	78000	96000		0.84 U		0.75 U	1 U			
2-Butanone	28000000	10000000		0.63 U		0.56 U	0.78 U			
Acetone	61000000	7800000		**1.8 J**		1.4 U	2 U			
Benzene	1100	2500		0.26 U		0.23 U	0.32 U			
BTEX	NA	NA		**20.43**		**18.1**	**29**			
Carbon Disulfide	670000	NA		0.26 U		0.23 U	0.32 U			
Chlorobenzene	310000	210000		0.71 U		0.63 U	0.88 U			
Chloroform	300	1200		0.37 U		0.33 U	0.46 U			
Cyclohexane	7200000	NA		0.52 U		0.47 U	0.65 U			
Ethylbenzene	5700	71000		**2.5 J**		**2.3 J**	**3.8 J**			
Isopropylbenzene	2200000	NA		1 U		0.9 U	1.3 U			
Methyl Acetate	78000000	NA		1 U		0.9 U	1.3 U			
Methyl Cyclohexane	3400000	NA		0.28 U		0.25 U	0.34 U			
Methylene Chloride	11000	45000		0.75 U		0.67 U	0.93 U			
Tetrachloroethene	570	12000		0.78 U		0.7 U	0.97 U			
Toluene	5000000	190000		**0.93 J**		**0.8 J**	**1.2 J**			
Total Chlorinated VOCs	NA	NA		0 U		0 U	0 U			
Total Xylenes	600000	110000		**17**		**15**	**24**			
Trichloroethene	2800	13000		0.24 U		0.22 U	0.3 U			
Semivolatile Organic Compounds (ug/kg)										
2,4-Dimethylphenol	1200000	1400000						59 U		
2-Methylnaphthalene	310000	123000						36 U		
2-Methylphenol	3100000	NA						67 U		
4-Methylphenol	310000	NA						59 U		
Acenaphthene	3400000	43000						36 U		
Acenaphthylene	3400000	23000						36 U		
Anthracene	17000000	35000						36 U		
Benzo(a)pyrene Equivalents	15	400						36 U		
Benzo(a)anthracene	150	900						36 U		
Benzo(a)pyrene	15	400						36 U		
Benzo(b)fluoranthene	150	900						36 U		
Benzo(g,h,i)perylene	1700000	800						36 U		
Benzo(k)fluoranthene	1500	900						36 U		
Bis(2-ethylhexyl)phthalate	35000	46000						160 U		
Carbazole	24000	NA						36 U		
Chrysene	15000	400						36 U		
di-n-Butyl Phthalate	6100000	NA						52 U		
Dibenzo(a,h)anthracene	15	400						36 U		
Dibenzofuran	NA	NA						36 U		
Fluoranthene	2300000	20000						36 U		
Fluorene	2300000	28000						36 U		
High Molecular Weight PAHs	NA	NA						0 U		
Indeno(1,2,3-cd)pyrene	150	900						36 U		
Low Molecular Weight PAHs	NA	NA						0 U		
Naphthalene	3900	54000						36 U		
Phenanthrene	1700000	40000						36 U		
Pyrene	1700000	13000						36 U		
Total PAHs	NA	NA						0 U		

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			10	10	10	10	10	10	10	10
Location	ORNL	RIDEM	SB16-053	SB16-053	SB16-054	SB16-054	SB16-054	SB16-054	SB16-054	SB16-055
Sample Number	Residential	Soil Direct	SB16-053-SO-0609	SB16-053-SO-0909	SB16-054-SO-0206	SB16-054-SO-0506	SB16-054-SO-0506-D	SB16-054-SO-0610	SB16-054-SO-1014	SB16-055-SO-0206
Sample Code	Regional	Exposure	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL
Sample Date	Screening	Residential	20071002	20071002	20071002	20071002	20071002	20071002	20071002	20070828
Depth Range (feet)	Levels	Criterion	6 - 9	9 - 9	2 - 6	5 - 6	5 - 6	6 - 10	10 - 14	2 - 6
Area			CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000	**65**		**0.16 J**					**77**
Acenaphthene	3400000	43000	**310**		0.72 U					**170**
Acenaphthylene	3400000	23000	**150**		**0.23 J**					**2800**
Anthracene	17000000	35000	**560**		**0.22 J**					**3300**
BaP Equivalent	15	400	**1631**		**0.901**					**14955**
Benzo(a)anthracene	150	900	**1900**		**0.84**					**15000**
Benzo(a)pyrene	15	400	**800**		**0.44 J**					**9200**
Benzo(b)fluoranthene	150	900	**2100**		**0.97**					**10000**
Benzo(g,h,i)perylene	1700000	800	**850**		**0.55 J**					**6700**
Benzo(k)fluoranthene	1500	900	**1900**		**0.78**					**12000**
Chrysene	15000	400	**2600**		**0.95**					**15000**
Dibenzo(a,h)anthracene	15	400	**310 J**		**0.21 J**					**2400**
Fluoranthene	2300000	20000	**6200**		**1.3**					**25000**
Fluorene	2300000	28000	**290**		0.19 U					**290**
High Molecular Weight PAHs	NA	NA	**22350**		**7.85**					**124500**
Indeno(1,2,3-cd)pyrene	150	900	**990**		**0.61 J**					**7200**
Low Molecular Weight PAHs	NA	NA	**4952**		**0.610**					**14097**
Naphthalene	3900	54000	**77**		0.22 U					**160**
Phenanthrene	1700000	40000	**3500**		0.61 U					**7300**
Pyrene	1700000	13000	**4700**		**1.2**					**22000**
Total PAHs	NA	NA	**27302**		**8.46**					**138597**
Pesticides/PCBs (ug/kg)										
4,4'-DDT	1700	NA						3.6 U		
Aroclor-1254	220	NA						36 U		
Aroclor-1260	220	NA						36 U		
Endosulfan II	370000	NA						3.6 U		
Endrin Aldehyde	18000	NA						3.6 U		
Total Aroclor	240	10000						0 U		
Total DDT	NA	NA						0 U		
Inorganics (mg/kg)										
Aluminum	77000	NA							**9490**	
Antimony	31	10							0.67 U	
Arsenic	0.39	7							**3.8 J**	
Barium	15000	5500							**24.1**	
Beryllium	160	0.4							0.00085 U	
Cadmium	70	39							**0.45 J**	
Calcium	NA	NA							**1410**	
Chromium	230	1400							**12.7**	
Cobalt	23	NA							**9.1 J**	
Copper	3100	3100							**26.2**	
Iron	55000	NA							**21000**	
Lead	400	150							**7.8 J**	
Magnesium	NA	NA							**4010**	
Manganese	1800	390							**225**	
Mercury	23	23							0.0047 UJ	
Nickel	1600	1000							**14.1 J**	
Potassium	NA	NA							**2280**	
Silver	390	200							**4.7 J**	
Sodium	NA	NA							**34.9 J**	

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-053**	**SB16-053**	**SB16-054**	**SB16-054**	**SB16-054**	**SB16-054**	**SB16-054**	**SB16-055**
Sample Number	**Residential**	**Soil Direct**	**SB16-053-SO-0609**	**SB16-053-SO-0909**	**SB16-054-SO-0206**	**SB16-054-SO-0506**	**SB16-054-SO-0506-D**	**SB16-054-SO-0610**	**SB16-054-SO-1014**	**SB16-055-SO-0206**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071002**	**20071002**	**20071002**	**20071002**	**20071002**	**20071002**	**20071002**	**20070828**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 9**	**9 - 9**	**2 - 6**	**5 - 6**	**5 - 6**	**6 - 10**	**10 - 14**	**2 - 6**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Inorganics (mg/kg) (continued)										
Thallium	5.1	5.5							0.067 U	
Vanadium	390	550							**17.1**	
Zinc	23000	6000							**42.6**	
Petroleum Hydrocarbons (mg/kg)										
Extractable TPH-Screening Data	NA	500	**8.9**		0.95 U			0.97 U	0.99 U	**120**
TPH (C09-C36)	NA	500	**100**		**3.4**					**420**
TPH (C09-C44)	NA	500	**130**		**15**					**480**

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			10	10	10	10	10	10	10	10
Location	ORNL	RIDEM	SB16-055	SB16-055	SB16-055	SB16-056	SB16-056	SB16-056	SB16-056	SB16-056
Sample Number	Residential	Soil Direct	SB16-055-SO-0610	SB16-055-SO-1016	SB16-055-SO-1622	SB16-056-SO-0206	SB16-056-SO-0206-D	SB16-056-SO-0506	SB16-056-SO-0610	SB16-056-SO-1016
Sample Code	Regional	Exposure	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL
Sample Date	Screening	Residential	20070828	20070828	20070828	20070828	20070828	20070828	20070828	20070828
Depth Range (feet)	Levels	Criterion	6 - 10	10 - 16	16 - 22	2 - 6	2 - 6	5 - 6	6 - 10	10 - 16
Area			CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200						1 U		
1,2,4-Trichlorobenzene	78000	96000						0.86 U		
2-Butanone	28000000	10000000						0.65 UR		
Acetone	61000000	7800000						1.6 UR		
Benzene	1100	2500						0.27 U		
BTEX	NA	NA						0 U		
Carbon Disulfide	670000	NA						0.27 U		
Chlorobenzene	310000	210000						0.73 U		
Chloroform	300	1200						0.38 U		
Cyclohexane	7200000	NA						0.54 U		
Ethylbenzene	5700	71000						1 U		
Isopropylbenzene	2200000	NA						1 U		
Methyl Acetate	78000000	NA						1 U		
Methyl Cyclohexane	3400000	NA						0.29 U		
Methylene Chloride	11000	45000						0.77 U		
Tetrachloroethene	570	12000						0.8 U		
Toluene	5000000	190000						0.54 U		
Total Chlorinated VOCs	NA	NA						0 U		
Total Xylenes	600000	110000						2.9 U		
Trichloroethene	2800	13000						0.25 UJ		
Semivolatile Organic Compounds (ug/kg)										
2,4-Dimethylphenol	1200000	1400000				56 U	59 U			
2-Methylnaphthalene	310000	123000				34 U	36 U			
2-Methylphenol	3100000	NA				64 U	67 U			
4-Methylphenol	310000	NA				56 U	59 U			
Acenaphthene	3400000	43000				34 U	36 U			
Acenaphthylene	3400000	23000				34 U	36 U			
Anthracene	17000000	35000				34 U	**60**			
Benzo(a)pyrene Equivalents	15	400				**109**	**786**			
Benzo(a)anthracene	150	900				**48 J**	**430 J**			
Benzo(a)pyrene	15	400				**85 J**	**500 J**			
Benzo(b)fluoranthene	150	900				**120 J**	**760 J**			
Benzo(g,h,i)perylene	1700000	800				**85 J**	**420 J**			
Benzo(k)fluoranthene	1500	900				**55 J**	**220 J**			
Bis(2-ethylhexyl)phthalate	35000	46000				**81 J**	**71 J**			
Carbazole	24000	NA				34 U	36 U			
Chrysene	15000	400				**72 J**	**460 J**			
di-n-Butyl Phthalate	6100000	NA				50 U	52 U			
Dibenzo(a,h)anthracene	15	400				34 UJ	**130 J**			
Dibenzofuran	NA	NA				34 U	36 U			
Fluoranthene	2300000	20000				**53 J**	**540 J**			
Fluorene	2300000	28000				34 U	36 U			
High Molecular Weight PAHs	NA	NA				**582**	**4440**			
Indeno(1,2,3-cd)pyrene	150	900				**64 J**	**340 J**			
Low Molecular Weight PAHs	NA	NA				0 U	**290**			
Naphthalene	3900	54000				34 U	36 U			
Phenanthrene	1700000	40000				34 UJ	**230 J**			
Pyrene	1700000	13000				34 UJ	**640 J**			
Total PAHs	NA	NA				**582**	**4730**			

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-055**	**SB16-055**	**SB16-055**	**SB16-056**	**SB16-056**	**SB16-056**	**SB16-056**	**SB16-056**
Sample Number	**Residential**	**Soil Direct**	**SB16-055-SO-0610**	**SB16-055-SO-1016**	**SB16-055-SO-1622**	**SB16-056-SO-0206**	**SB16-056-SO-0206-D**	**SB16-056-SO-0506**	**SB16-056-SO-0610**	**SB16-056-SO-1016**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**2 - 6**	**5 - 6**	**6 - 10**	**10 - 16**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000				**1.6**				
Acenaphthene	3400000	43000				**2.7**				
Acenaphthylene	3400000	23000				**13**				
Anthracene	17000000	35000				**6.2**				
BaP Equivalent	15	400				**31.1**				
Benzo(a)anthracene	150	900				**35**				
Benzo(a)pyrene	15	400				**15**				
Benzo(b)fluoranthene	150	900				**33**				
Benzo(g,h,i)perylene	1700000	800				**20**				
Benzo(k)fluoranthene	1500	900				**28**				
Chrysene	15000	400				**44**				
Dibenzo(a,h)anthracene	15	400				**6.9**				
Fluoranthene	2300000	20000				**49**				
Fluorene	2300000	28000				**1.5**				
High Molecular Weight PAHs	NA	NA				**280**				
Indeno(1,2,3-cd)pyrene	150	900				**21**				
Low Molecular Weight PAHs	NA	NA				**52.2**				
Naphthalene	3900	54000				**6.2**				
Phenanthrene	1700000	40000				**21**				
Pyrene	1700000	13000				**28**				
Total PAHs	NA	NA				**332**				
Pesticides/PCBs (ug/kg)										
4,4'-DDT	1700	NA				3.4 UJ	**12 J**			
Aroclor-1254	220	NA				34 U	36 U			
Aroclor-1260	220	NA				34 U	36 U			
Endosulfan II	370000	NA				3.4 U	3.6 U			
Endrin Aldehyde	18000	NA				3.4 U	14 R			
Total Aroclor	240	10000				0 U	0 U			
Total DDT	NA	NA				0 U	**12**			
Inorganics (mg/kg)										
Aluminum	77000	NA								
Antimony	31	10								
Arsenic	0.39	7								
Barium	15000	5500								
Beryllium	160	0.4								
Cadmium	70	39								
Calcium	NA	NA								
Chromium	230	1400								
Cobalt	23	NA								
Copper	3100	3100								
Iron	55000	NA								
Lead	400	150								
Magnesium	NA	NA								
Manganese	1800	390								
Mercury	23	23								
Nickel	1600	1000								
Potassium	NA	NA								
Silver	390	200								
Sodium	NA	NA								

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-055**	**SB16-055**	**SB16-055**	**SB16-056**	**SB16-056**	**SB16-056**	**SB16-056**	**SB16-056**
Sample Number	**Residential**	**Soil Direct**	**SB16-055-SO-0610**	**SB16-055-SO-1016**	**SB16-055-SO-1622**	**SB16-056-SO-0206**	**SB16-056-SO-0206-D**	**SB16-056-SO-0506**	**SB16-056-SO-0610**	**SB16-056-SO-1016**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**2 - 6**	**5 - 6**	**6 - 10**	**10 - 16**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Inorganics (mg/kg) (continued)										
Thallium	5.1	5.5								
Vanadium	390	550								
Zinc	23000	6000								
Petroleum Hydrocarbons (mg/kg)										
Extractable TPH-Screening Data	NA	500	0.96 U	**17**	**3.8**	0.94 U			0.98 U	0.95 U
TPH (C09-C36)	NA	500				**6**				
TPH (C09-C44)	NA	500				**10**				

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-056**	**SB16-056**	**SB16-057**	**SB16-057**	**SB16-057**	**SB16-057**	**SB16-057**	**SB16-058**
Sample Number	**Residential**	**Soil Direct**	**SB16-056-SO-1620**	**SB16-056-SO-2020**	**SB16-057-SO-0206**	**SB16-057-SO-0610**	**SB16-057-SO-1016**	**SB16-057-SO-1622**	**SB16-057-SO-1920**	**SB16-058-SO-0206**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20070827**
Depth Range (feet)	**Levels**	**Criterion**	**16 - 20**	**20 - 20**	**2 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**19 - 20**	**2 - 6**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200		1.2 U					1 U	
1,2,4-Trichlorobenzene	78000	96000		0.99 U					0.86 U	
2-Butanone	28000000	10000000		0.74 UR					0.65 UR	
Acetone	61000000	7800000		1.9 UR					1.6 UR	
Benzene	1100	2500		0.31 U					0.27 U	
BTEX	NA	NA		0 U					0 U	
Carbon Disulfide	670000	NA		0.31 U					0.27 U	
Chlorobenzene	310000	210000		0.83 U					0.72 U	
Chloroform	300	1200		0.44 U					0.38 U	
Cyclohexane	7200000	NA		0.62 U					0.53 U	
Ethylbenzene	5700	71000		1.2 U					1 U	
Isopropylbenzene	2200000	NA		1.2 U					1 U	
Methyl Acetate	78000000	NA		1.2 U					1 U	
Methyl Cyclohexane	3400000	NA		0.33 U					0.28 U	
Methylene Chloride	11000	45000		0.88 U					0.77 U	
Tetrachloroethene	570	12000		0.92 U					0.8 U	
Toluene	5000000	190000		0.62 U					0.53 U	
Total Chlorinated VOCs	NA	NA		0 U					0 U	
Total Xylenes	600000	110000		3.3 U					2.8 U	
Trichloroethene	2800	13000		0.29 UJ					0.25 UJ	
Semivolatile Organic Compounds (ug/kg)										
2,4-Dimethylphenol	1200000	1400000								
2-Methylnaphthalene	310000	123000								
2-Methylphenol	3100000	NA								
4-Methylphenol	310000	NA								
Acenaphthene	3400000	43000								
Acenaphthylene	3400000	23000								
Anthracene	17000000	35000								
Benzo(a)pyrene Equivalents	15	400								
Benzo(a)anthracene	150	900								
Benzo(a)pyrene	15	400								
Benzo(b)fluoranthene	150	900								
Benzo(g,h,i)perylene	1700000	800								
Benzo(k)fluoranthene	1500	900								
Bis(2-ethylhexyl)phthalate	35000	46000								
Carbazole	24000	NA								
Chrysene	15000	400								
di-n-Butyl Phthalate	6100000	NA								
Dibenzo(a,h)anthracene	15	400								
Dibenzofuran	NA	NA								
Fluoranthene	2300000	20000								
Fluorene	2300000	28000								
High Molecular Weight PAHs	NA	NA								
Indeno(1,2,3-cd)pyrene	150	900								
Low Molecular Weight PAHs	NA	NA								
Naphthalene	3900	54000								
Phenanthrene	1700000	40000								
Pyrene	1700000	13000								
Total PAHs	NA	NA								

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			10	10	10	10	10	10	10	10
Location	ORNL	RIDEM	SB16-056	SB16-056	SB16-057	SB16-057	SB16-057	SB16-057	SB16-057	SB16-058
Sample Number	Residential	Soil Direct	SB16-056-SO-1620	SB16-056-SO-2020	SB16-057-SO-0206	SB16-057-SO-0610	SB16-057-SO-1016	SB16-057-SO-1622	SB16-057-SO-1920	SB16-058-SO-0206
Sample Code	Regional	Exposure	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Screening	Residential	20070828	20070828	20070828	20070828	20070828	20070828	20070828	20070827
Depth Range (feet)	Levels	Criterion	16 - 20	20 - 20	2 - 6	6 - 10	10 - 16	16 - 22	19 - 20	2 - 6
Area			CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000			**83**					
Acenaphthene	3400000	43000			**30**					
Acenaphthylene	3400000	23000			**36**					
Anthracene	17000000	35000			**40**					
BaP Equivalent	15	400			**257**					
Benzo(a)anthracene	150	900			**300**					
Benzo(a)pyrene	15	400			**63**					
Benzo(b)fluoranthene	150	900			**400**					
Benzo(g,h,i)perylene	1700000	800			**310**					
Benzo(k)fluoranthene	1500	900			**360**					
Chrysene	15000	400			**390**					
Dibenzo(a,h)anthracene	15	400			**88**					
Fluoranthene	2300000	20000			**630**					
Fluorene	2300000	28000			**25**					
High Molecular Weight PAHs	NA	NA			**3361**					
Indeno(1,2,3-cd)pyrene	150	900			**320**					
Low Molecular Weight PAHs	NA	NA			**664**					
Naphthalene	3900	54000			**120**					
Phenanthrene	1700000	40000			**330**					
Pyrene	1700000	13000			**500**					
Total PAHs	NA	NA			**4025**					
Pesticides/PCBs (ug/kg)										
4,4'-DDT	1700	NA								
Aroclor-1254	220	NA								
Aroclor-1260	220	NA								
Endosulfan II	370000	NA								
Endrin Aldehyde	18000	NA								
Total Aroclor	240	10000								
Total DDT	NA	NA								
Inorganics (mg/kg)										
Aluminum	77000	NA								
Antimony	31	10								
Arsenic	0.39	7								
Barium	15000	5500								
Beryllium	160	0.4								
Cadmium	70	39								
Calcium	NA	NA								
Chromium	230	1400								
Cobalt	23	NA								
Copper	3100	3100								
Iron	55000	NA								
Lead	400	150								
Magnesium	NA	NA								
Manganese	1800	390								
Mercury	23	23								
Nickel	1600	1000								
Potassium	NA	NA								
Silver	390	200								
Sodium	NA	NA								

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-056**	**SB16-056**	**SB16-057**	**SB16-057**	**SB16-057**	**SB16-057**	**SB16-057**	**SB16-058**
Sample Number	**Residential**	**Soil Direct**	**SB16-056-SO-1620**	**SB16-056-SO-2020**	**SB16-057-SO-0206**	**SB16-057-SO-0610**	**SB16-057-SO-1016**	**SB16-057-SO-1622**	**SB16-057-SO-1920**	**SB16-058-SO-0206**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20070828**	**20070827**
Depth Range (feet)	**Levels**	**Criterion**	**16 - 20**	**20 - 20**	**2 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**19 - 20**	**2 - 6**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Inorganics (mg/kg) (continued)										
Thallium	5.1	5.5								
Vanadium	390	550								
Zinc	23000	6000								
Petroleum Hydrocarbons (mg/kg)										
Extractable TPH-Screening Data	NA	500	0.99 U		**2.3**	0.97 U	0.98 U	0.95 U		**35**
TPH (C09-C36)	NA	500			**150**					
TPH (C09-C44)	NA	500			**180**					

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-058**	**SB16-058**	**SB16-058**	**SB16-058**	**SB16-059**	**SB16-059**	**SB16-059**	**SB16-059**
Sample Number	**Residential**	**Soil Direct**	**SB16-058-SO-0610**	**SB16-058-SO-0808**	**SB16-058-SO-1016**	**SB16-058-SO-1622**	**SB16-059-SO-0206**	**SB16-059-SO-0405**	**SB16-059-SO-0610**	**SB16-059-SO-0910**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070827**	**20070827**	**20070827**	**20070827**	**20070827**	**20070827**	**20070827**	**20070827**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 10**	**8 - 8**	**10 - 16**	**16 - 22**	**2 - 6**	**4 - 5**	**6 - 10**	**9 - 10**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200		**410 J**				1.6 U		1.1 U
1,2,4-Trichlorobenzene	78000	96000		0.77 U				0.77 U		0.53 UJ
2-Butanone	28000000	10000000		1.6 UR				1.6 UR		1.1 UR
Acetone	61000000	7800000		**50 J**				**120 J**		**87 J**
Benzene	1100	2500		**4800**				0.37 U		**8.5 J**
BTEX	NA	NA		**25400**				**6.4**		**3713.6**
Carbon Disulfide	670000	NA		**660 J**				2.3 U		**3.5 J**
Chlorobenzene	310000	210000		**420 J**				0.4 U		0.28 UJ
Chloroform	300	1200		**450 J**				0.44 U		0.3 U
Cyclohexane	7200000	NA		**4200**				**6.3**		**2100**
Ethylbenzene	5700	71000		**5500**				**1.6 J**		**2600**
Isopropylbenzene	2200000	NA		**4100**				**4.2 J**		**1500**
Methyl Acetate	78000000	NA		**910 J**				2.5 U		1.7 U
Methyl Cyclohexane	3400000	NA		**27000**				**10**		**8600**
Methylene Chloride	11000	45000		0.89 U				0.89 U		0.62 U
Tetrachloroethene	570	12000		**450 J**				0.7 U		0.48 UJ
Toluene	5000000	190000		**4100**				0.35 U		**5.1 J**
Total Chlorinated VOCs	NA	NA		**1330**				0 U		0 U
Total Xylenes	600000	110000		**11000**				**4.8 J**		**1100**
Trichloroethene	2800	13000		**470 J**				0.39 U		0.27 UJ
Semivolatile Organic Compounds (ug/kg)										
2,4-Dimethylphenol	1200000	1400000	350 U							
2-Methylnaphthalene	310000	123000	**9900**							
2-Methylphenol	3100000	NA	410 U							
4-Methylphenol	310000	NA	350 U							
Acenaphthene	3400000	43000	220 U							
Acenaphthylene	3400000	23000	220 U							
Anthracene	17000000	35000	**1500**							
Benzo(a)pyrene Equivalents	15	400	**501**							
Benzo(a)anthracene	150	900	**490**							
Benzo(a)pyrene	15	400	**410**							
Benzo(b)fluoranthene	150	900	**390**							
Benzo(g,h,i)perylene	1700000	800	**350**							
Benzo(k)fluoranthene	1500	900	**260**							
Bis(2-ethylhexyl)phthalate	35000	46000	330 U							
Carbazole	24000	NA	220 U							
Chrysene	15000	400	**470**							
di-n-Butyl Phthalate	6100000	NA	310 U							
Dibenzo(a,h)anthracene	15	400	220 U							
Dibenzofuran	NA	NA	220 U							
Fluoranthene	2300000	20000	**2100**							
Fluorene	2300000	28000	**1000**							
High Molecular Weight PAHs	NA	NA	**5670**							
Indeno(1,2,3-cd)pyrene	150	900	220 U							
Low Molecular Weight PAHs	NA	NA	**15800**							
Naphthalene	3900	54000	**1500**							
Phenanthrene	1700000	40000	**1900**							
Pyrene	1700000	13000	**1200**							
Total PAHs	NA	NA	**21470**							

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-058**	**SB16-058**	**SB16-058**	**SB16-058**	**SB16-059**	**SB16-059**	**SB16-059**	**SB16-059**
Sample Number	**Residential**	**Soil Direct**	**SB16-058-SO-0610**	**SB16-058-SO-0808**	**SB16-058-SO-1016**	**SB16-058-SO-1622**	**SB16-059-SO-0206**	**SB16-059-SO-0405**	**SB16-059-SO-0610**	**SB16-059-SO-0910**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070827**	**20070827**	**20070827**	**20070827**	**20070827**	**20070827**	**20070827**	**20070827**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 10**	**8 - 8**	**10 - 16**	**16 - 22**	**2 - 6**	**4 - 5**	**6 - 10**	**9 - 10**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000	**7300**						**280000**	
Acenaphthene	3400000	43000	**270**						**6200**	
Acenaphthylene	3400000	23000	**55**						**1000**	
Anthracene	17000000	35000	**54**						**1600**	
BaP Equivalent	15	400	**346**						**185**	
Benzo(a)anthracene	150	900	**300**						**240**	
Benzo(a)pyrene	15	400	**170**						**110**	
Benzo(b)fluoranthene	150	900	**220**						**150**	
Benzo(g,h,i)perylene	1700000	800	**270**						**92**	
Benzo(k)fluoranthene	1500	900	**130**						**130**	
Chrysene	15000	400	**660**						**350**	
Dibenzo(a,h)anthracene	15	400	**110**						**26**	
Fluoranthene	2300000	20000	**250**						**780**	
Fluorene	2300000	28000	**270**						**91000**	
High Molecular Weight PAHs	NA	NA	**2620**						**4061**	
Indeno(1,2,3-cd)pyrene	150	900	**120**						**83**	
Low Molecular Weight PAHs	NA	NA	**10279**						**440800**	
Naphthalene	3900	54000	**1700**						**44000**	
Phenanthrene	1700000	40000	**630**						**17000**	
Pyrene	1700000	13000	**390**						**2100**	
Total PAHs	NA	NA	**12899**						**444861**	
Pesticides/PCBs (ug/kg)										
4,4'-DDT	1700	NA	4.3 UJ							
Aroclor-1254	220	NA	43 U							
Aroclor-1260	220	NA	43 U							
Endosulfan II	370000	NA	**5 J**							
Endrin Aldehyde	18000	NA	**9.6 J**							
Total Aroclor	240	10000	0 U							
Total DDT	NA	NA	0 U							
Inorganics (mg/kg)										
Aluminum	77000	NA					**6240**			
Antimony	31	10					**6.2**			
Arsenic	0.39	7					**11.7**			
Barium	15000	5500					**38.2**			
Beryllium	160	0.4					**0.38**			
Cadmium	70	39					**1.2 J**			
Calcium	NA	NA					**31.8**			
Chromium	230	1400					**7.9 J**			
Cobalt	23	NA					**8.3**			
Copper	3100	3100					**49**			
Iron	55000	NA					**13300**			
Lead	400	150					**47.7**			
Magnesium	NA	NA					**2050**			
Manganese	1800	390					**143**			
Mercury	23	23					**0.005 J**			
Nickel	1600	1000					**10.1**			
Potassium	NA	NA					**589**			
Silver	390	200					0.043 U			
Sodium	NA	NA					**32.4 J**			

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-058**	**SB16-058**	**SB16-058**	**SB16-058**	**SB16-059**	**SB16-059**	**SB16-059**	**SB16-059**
Sample Number	**Residential**	**Soil Direct**	**SB16-058-SO-0610**	**SB16-058-SO-0808**	**SB16-058-SO-1016**	**SB16-058-SO-1622**	**SB16-059-SO-0206**	**SB16-059-SO-0405**	**SB16-059-SO-0610**	**SB16-059-SO-0910**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070827**	**20070827**	**20070827**	**20070827**	**20070827**	**20070827**	**20070827**	**20070827**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 10**	**8 - 8**	**10 - 16**	**16 - 22**	**2 - 6**	**4 - 5**	**6 - 10**	**9 - 10**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Inorganics (mg/kg) (continued)										
Thallium	5.1	5.5					**1.1 J**			
Vanadium	390	550					**11.3**			
Zinc	23000	6000					**80.4**			
Petroleum Hydrocarbons (mg/kg)										
Extractable TPH-Screening Data	NA	500	**25**		**2.3**	0.94 U	**110**		**620**	
TPH (C09-C36)	NA	500	**1200**						**13000**	
TPH (C09-C44)	NA	500	**1300**						**13000**	

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			10	10	10	10	10	10	10	10
Location	ORNL	RIDEM	SB16-059	SB16-059	SB16-060	SB16-060	SB16-060	SB16-060	SB16-076	SB16-076
Sample Number	Residential	Soil Direct	SB16-059-SO-1016	SB16-059-SO-1622	SB16-060-SO-0206	SB16-060-SO-1016	SB16-060-SO-1415	SB16-060-SO-1622	SB16-076-SO-0206	SB16-076-SO-0610
Sample Code	Regional	Exposure	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Screening	Residential	20070827	20070827	20070828	20070828	20070828	20070828	20070926	20070926
Depth Range (feet)	Levels	Criterion	10 - 16	16 - 22	2 - 6	10 - 16	14 - 15	16 - 22	2 - 6	6 - 10
Area			CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200								
1,2,4-Trichlorobenzene	78000	96000								
2-Butanone	28000000	10000000								
Acetone	61000000	7800000								
Benzene	1100	2500								
BTEX	NA	NA								
Carbon Disulfide	670000	NA								
Chlorobenzene	310000	210000								
Chloroform	300	1200								
Cyclohexane	7200000	NA								
Ethylbenzene	5700	71000								
Isopropylbenzene	2200000	NA								
Methyl Acetate	78000000	NA								
Methyl Cyclohexane	3400000	NA								
Methylene Chloride	11000	45000								
Tetrachloroethene	570	12000								
Toluene	5000000	190000								
Total Chlorinated VOCs	NA	NA								
Total Xylenes	600000	110000								
Trichloroethene	2800	13000								
Semivolatile Organic Compounds (ug/kg)										
2,4-Dimethylphenol	1200000	1400000					66 U			56 UR
2-Methylnaphthalene	310000	123000					40 U			34 U
2-Methylphenol	3100000	NA					76 U			65 U
4-Methylphenol	310000	NA					66 U			56 U
Acenaphthene	3400000	43000					40 U			34 U
Acenaphthylene	3400000	23000					40 U			34 U
Anthracene	17000000	35000					40 U			34 U
Benzo(a)pyrene Equivalents	15	400					40 U			34 U
Benzo(a)anthracene	150	900					40 U			34 U
Benzo(a)pyrene	15	400					40 U			34 U
Benzo(b)fluoranthene	150	900					40 U			34 U
Benzo(g,h,i)perylene	1700000	800					40 U			34 U
Benzo(k)fluoranthene	1500	900					40 U			34 U
Bis(2-ethylhexyl)phthalate	35000	46000					61 U			170 U
Carbazole	24000	NA					40 U			34 U
Chrysene	15000	400					40 U			34 U
di-n-Butyl Phthalate	6100000	NA					59 U			50 U
Dibenzo(a,h)anthracene	15	400					40 U			34 U
Dibenzofuran	NA	NA					40 U			34 U
Fluoranthene	2300000	20000					40 U			34 U
Fluorene	2300000	28000					40 U			34 U
High Molecular Weight PAHs	NA	NA					0 U			0 U
Indeno(1,2,3-cd)pyrene	150	900					40 U			34 U
Low Molecular Weight PAHs	NA	NA					0 U			0 U
Naphthalene	3900	54000					40 U			34 U
Phenanthrene	1700000	40000					40 U			34 U
Pyrene	1700000	13000					40 U			34 U
Total PAHs	NA	NA					0 U			0 U

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			10	10	10	10	10	10	10	10
Location	ORNL	RIDEM	SB16-059	SB16-059	SB16-060	SB16-060	SB16-060	SB16-060	SB16-076	SB16-076
Sample Number	Residential	Soil Direct	SB16-059-SO-1016	SB16-059-SO-1622	SB16-060-SO-0206	SB16-060-SO-1016	SB16-060-SO-1415	SB16-060-SO-1622	SB16-076-SO-0206	SB16-076-SO-0610
Sample Code	Regional	Exposure	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Screening	Residential	20070827	20070827	20070828	20070828	20070828	20070828	20070926	20070926
Depth Range (feet)	Levels	Criterion	10 - 16	16 - 22	2 - 6	10 - 16	14 - 15	16 - 22	2 - 6	6 - 10
Area			CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000			**17**				0.17 U	
Acenaphthene	3400000	43000			**2**				0.12 U	
Acenaphthylene	3400000	23000			**4.3**				0.7 U	
Anthracene	17000000	35000			**5.1**				0.7 U	
BaP Equivalent	15	400			**56.3**				**0.063**	
Benzo(a)anthracene	150	900			**45**				**0.033 J**	
Benzo(a)pyrene	15	400			**8.2**				0.7 U	
Benzo(b)fluoranthene	150	900			**100**				0.7 U	
Benzo(g,h,i)perylene	1700000	800			**85**				**0.072 J**	
Benzo(k)fluoranthene	1500	900			**80**				0.7 U	
Chrysene	15000	400			**81**				**0.09 J**	
Dibenzo(a,h)anthracene	15	400			**25**				**0.054 J**	
Fluoranthene	2300000	20000			**79**				0.099 U	
Fluorene	2300000	28000			**2.2**				0.1 U	
High Molecular Weight PAHs	NA	NA			**640**				**0.303**	
Indeno(1,2,3-cd)pyrene	150	900			**77**				**0.054 J**	
Low Molecular Weight PAHs	NA	NA			**109**				**0.960**	
Naphthalene	3900	54000			**30**				**0.59 J**	
Phenanthrene	1700000	40000			**48**				**0.37 J**	
Pyrene	1700000	13000			**60**				0.31 U	
Total PAHs	NA	NA			**749**				**1.26**	
Pesticides/PCBs (ug/kg)										
4,4'-DDT	1700	NA					4 UJ			3.4 UJ
Aroclor-1254	220	NA					40 U			34 U
Aroclor-1260	220	NA					40 U			34 U
Endosulfan II	370000	NA					4 U			3.4 U
Endrin Aldehyde	18000	NA					4 U			3.4 U
Total Aroclor	240	10000					0 U			0 U
Total DDT	NA	NA					0 U			0 U
Inorganics (mg/kg)										
Aluminum	77000	NA								
Antimony	31	10								
Arsenic	0.39	7								
Barium	15000	5500								
Beryllium	160	0.4								
Cadmium	70	39								
Calcium	NA	NA								
Chromium	230	1400								
Cobalt	23	NA								
Copper	3100	3100								
Iron	55000	NA								
Lead	400	150								
Magnesium	NA	NA								
Manganese	1800	390								
Mercury	23	23								
Nickel	1600	1000								
Potassium	NA	NA								
Silver	390	200								
Sodium	NA	NA								

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-059**	**SB16-059**	**SB16-060**	**SB16-060**	**SB16-060**	**SB16-060**	**SB16-076**	**SB16-076**
Sample Number	**Residential**	**Soil Direct**	**SB16-059-SO-1016**	**SB16-059-SO-1622**	**SB16-060-SO-0206**	**SB16-060-SO-1016**	**SB16-060-SO-1415**	**SB16-060-SO-1622**	**SB16-076-SO-0206**	**SB16-076-SO-0610**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070827**	**20070827**	**20070828**	**20070828**	**20070828**	**20070828**	**20070926**	**20070926**
Depth Range (feet)	**Levels**	**Criterion**	**10 - 16**	**16 - 22**	**2 - 6**	**10 - 16**	**14 - 15**	**16 - 22**	**2 - 6**	**6 - 10**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Inorganics (mg/kg) (continued)										
Thallium	5.1	5.5								
Vanadium	390	550								
Zinc	23000	6000								
Petroleum Hydrocarbons (mg/kg)										
Extractable TPH-Screening Data	NA	500	**25**	0.95 U	**1.2**	0.94 U		0.96 U	0.99 U	0.98 U
TPH (C09-C36)	NA	500			**31**				**6.2**	
TPH (C09-C44)	NA	500			**39**				**7.1**	

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-076**	**SB16-076**	**SB16-076**	**SB16-076**	**SB16-077**	**SB16-077**	**SB16-077**	**SB16-077**
Sample Number	**Residential**	**Soil Direct**	**SB16-076-SO-0910**	**SB16-076-SO-1016**	**SB16-076-SO-1617**	**SB16-076-SO-1622**	**SB16-077-SO-0206**	**SB16-077-SO-0304**	**SB16-077-SO-0610**	**SB16-077-SO-0910**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070926**	**20070926**	**20070926**	**20070926**	**20071002**	**20071002**	**20071002**	**20071002**
Depth Range (feet)	**Levels**	**Criterion**	**9 - 10**	**10 - 16**	**16 - 17**	**16 - 22**	**2 - 6**	**3 - 4**	**6 - 10**	**9 - 10**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200	0.92 U		0.88 U			0.9 U		1.1 U
1,2,4-Trichlorobenzene	78000	96000	0.77 U		0.74 U			0.75 U		0.89 U
2-Butanone	28000000	10000000	0.58 UR		0.55 UR			0.56 U		0.67 U
Acetone	61000000	7800000	1.5 UR		1.4 UR			**7.7**		**19**
Benzene	1100	2500	0.24 U		0.23 U			0.23 U		0.28 U
BTEX	NA	NA	0 U		0 U			**13.9**		**13.8**
Carbon Disulfide	670000	NA	0.24 U		0.23 U			0.23 U		**1.1 J**
Chlorobenzene	310000	210000	0.65 U		0.62 U			0.63 U		0.75 U
Chloroform	300	1200	0.34 U		0.32 U			0.33 U		0.39 U
Cyclohexane	7200000	NA	0.48 U		0.46 U			0.47 U		0.55 U
Ethylbenzene	5700	71000	0.92 U		0.88 U			**1.9 J**		**1.8 J**
Isopropylbenzene	2200000	NA	0.92 U		0.88 U			0.9 U		1.1 U
Methyl Acetate	78000000	NA	0.92 U		0.88 U			0.9 U		**11**
Methyl Cyclohexane	3400000	NA	0.25 U		0.24 U			0.25 U		0.29 U
Methylene Chloride	11000	45000	0.68 U		1.1 U			0.67 U		0.79 U
Tetrachloroethene	570	12000	0.72 U		0.68 U			0.7 U		0.83 U
Toluene	5000000	190000	0.48 U		0.46 U			0.47 U		0.55 U
Total Chlorinated VOCs	NA	NA	0 U		0 U			0 U		0 U
Total Xylenes	600000	110000	2.5 U		2.4 U			**12**		**12**
Trichloroethene	2800	13000	0.22 U		0.21 U			0.22 U		0.26 U
Semivolatile Organic Compounds (ug/kg)										
2,4-Dimethylphenol	1200000	1400000								
2-Methylnaphthalene	310000	123000								
2-Methylphenol	3100000	NA								
4-Methylphenol	310000	NA								
Acenaphthene	3400000	43000								
Acenaphthylene	3400000	23000								
Anthracene	17000000	35000								
Benzo(a)pyrene Equivalents	15	400								
Benzo(a)anthracene	150	900								
Benzo(a)pyrene	15	400								
Benzo(b)fluoranthene	150	900								
Benzo(g,h,i)perylene	1700000	800								
Benzo(k)fluoranthene	1500	900								
Bis(2-ethylhexyl)phthalate	35000	46000								
Carbazole	24000	NA								
Chrysene	15000	400								
di-n-Butyl Phthalate	6100000	NA								
Dibenzo(a,h)anthracene	15	400								
Dibenzofuran	NA	NA								
Fluoranthene	2300000	20000								
Fluorene	2300000	28000								
High Molecular Weight PAHs	NA	NA								
Indeno(1,2,3-cd)pyrene	150	900								
Low Molecular Weight PAHs	NA	NA								
Naphthalene	3900	54000								
Phenanthrene	1700000	40000								
Pyrene	1700000	13000								
Total PAHs	NA	NA								

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-076**	**SB16-076**	**SB16-076**	**SB16-076**	**SB16-077**	**SB16-077**	**SB16-077**	**SB16-077**
Sample Number	**Residential**	**Soil Direct**	**SB16-076-SO-0910**	**SB16-076-SO-1016**	**SB16-076-SO-1617**	**SB16-076-SO-1622**	**SB16-077-SO-0206**	**SB16-077-SO-0304**	**SB16-077-SO-0610**	**SB16-077-SO-0910**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070926**	**20070926**	**20070926**	**20070926**	**20071002**	**20071002**	**20071002**	**20071002**
Depth Range (feet)	**Levels**	**Criterion**	**9 - 10**	**10 - 16**	**16 - 17**	**16 - 22**	**2 - 6**	**3 - 4**	**6 - 10**	**9 - 10**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000					**9.5**			
Acenaphthene	3400000	43000					**3.4**			
Acenaphthylene	3400000	23000					**3.2**			
Anthracene	17000000	35000					**12**			
BaP Equivalent	15	400					**88.3**			
Benzo(a)anthracene	150	900					**58**			
Benzo(a)pyrene	15	400					**52**			
Benzo(b)fluoranthene	150	900					**73**			
Benzo(g,h,i)perylene	1700000	800					**55 J**			
Benzo(k)fluoranthene	1500	900					**60**			
Chrysene	15000	400					**70**			
Dibenzo(a,h)anthracene	15	400					**17 J**			
Fluoranthene	2300000	20000					**110**			
Fluorene	2300000	28000					**5**			
High Molecular Weight PAHs	NA	NA					**639**			
Indeno(1,2,3-cd)pyrene	150	900					**55**			
Low Molecular Weight PAHs	NA	NA					**144**			
Naphthalene	3900	54000					**30**			
Phenanthrene	1700000	40000					**81**			
Pyrene	1700000	13000					**89**			
Total PAHs	NA	NA					**783**			
Pesticides/PCBs (ug/kg)										
4,4'-DDT	1700	NA								
Aroclor-1254	220	NA								
Aroclor-1260	220	NA								
Endosulfan II	370000	NA								
Endrin Aldehyde	18000	NA								
Total Aroclor	240	10000								
Total DDT	NA	NA								
Inorganics (mg/kg)										
Aluminum	77000	NA								
Antimony	31	10								
Arsenic	0.39	7								
Barium	15000	5500								
Beryllium	160	0.4								
Cadmium	70	39								
Calcium	NA	NA								
Chromium	230	1400								
Cobalt	23	NA								
Copper	3100	3100								
Iron	55000	NA								
Lead	400	150								
Magnesium	NA	NA								
Manganese	1800	390								
Mercury	23	23								
Nickel	1600	1000								
Potassium	NA	NA								
Silver	390	200								
Sodium	NA	NA								

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-076**	**SB16-076**	**SB16-076**	**SB16-076**	**SB16-077**	**SB16-077**	**SB16-077**	**SB16-077**
Sample Number	**Residential**	**Soil Direct**	**SB16-076-SO-0910**	**SB16-076-SO-1016**	**SB16-076-SO-1617**	**SB16-076-SO-1622**	**SB16-077-SO-0206**	**SB16-077-SO-0304**	**SB16-077-SO-0610**	**SB16-077-SO-0910**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070926**	**20070926**	**20070926**	**20070926**	**20071002**	**20071002**	**20071002**	**20071002**
Depth Range (feet)	**Levels**	**Criterion**	**9 - 10**	**10 - 16**	**16 - 17**	**16 - 22**	**2 - 6**	**3 - 4**	**6 - 10**	**9 - 10**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Inorganics (mg/kg) (continued)										
Thallium	5.1	5.5								
Vanadium	390	550								
Zinc	23000	6000								
Petroleum Hydrocarbons (mg/kg)										
Extractable TPH-Screening Data	NA	500		0.99 U		0.98 U	0.95 U		0.98 U	
TPH (C09-C36)	NA	500					**21**			
TPH (C09-C44)	NA	500					**33**			

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			10	10	10	10	10	10	10	10
Location	ORNL	RIDEM	SB16-077	SB16-077	SB16-077	SB16-078	SB16-078	SB16-078	SB16-078	SB16-078
Sample Number	Residential	Soil Direct	SB16-077-SO-1016	SB16-077-SO-1620	SB16-077-SO-1620-D	SB16-078-SO-0206	SB16-078-SO-0610	SB16-078-SO-0910	SB16-078-SO-1016	SB16-078-SO-1622
Sample Code	Regional	Exposure	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Screening	Residential	20071002	20071002	20071002	20070927	20070927	20070927	20070927	20070927
Depth Range (feet)	Levels	Criterion	10 - 16	16 - 20	16 - 20	2 - 6	6 - 10	9 - 10	10 - 16	16 - 22
Area			CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200						0.97 U		
1,2,4-Trichlorobenzene	78000	96000						0.81 U		
2-Butanone	28000000	10000000						0.61 UR		
Acetone	61000000	7800000						1.5 UJ		
Benzene	1100	2500						0.25 U		
BTEX	NA	NA						0 U		
Carbon Disulfide	670000	NA						0.25 U		
Chlorobenzene	310000	210000						0.68 U		
Chloroform	300	1200						0.36 U		
Cyclohexane	7200000	NA						0.5 U		
Ethylbenzene	5700	71000						0.97 U		
Isopropylbenzene	2200000	NA						0.97 U		
Methyl Acetate	78000000	NA						0.97 U		
Methyl Cyclohexane	3400000	NA						0.27 U		
Methylene Chloride	11000	45000						0.72 U		
Tetrachloroethene	570	12000						0.75 U		
Toluene	5000000	190000						0.5 U		
Total Chlorinated VOCs	NA	NA						0 U		
Total Xylenes	600000	110000						2.7 U		
Trichloroethene	2800	13000						0.23 U		
Semivolatile Organic Compounds (ug/kg)										
2,4-Dimethylphenol	1200000	1400000					56 U			
2-Methylnaphthalene	310000	123000					34 U			
2-Methylphenol	3100000	NA					64 U			
4-Methylphenol	310000	NA					56 U			
Acenaphthene	3400000	43000					34 U			
Acenaphthylene	3400000	23000					34 U			
Anthracene	17000000	35000					34 U			
Benzo(a)pyrene Equivalents	15	400					34 U			
Benzo(a)anthracene	150	900					34 U			
Benzo(a)pyrene	15	400					34 U			
Benzo(b)fluoranthene	150	900					34 U			
Benzo(g,h,i)perylene	1700000	800					34 U			
Benzo(k)fluoranthene	1500	900					34 U			
Bis(2-ethylhexyl)phthalate	35000	46000					120 U			
Carbazole	24000	NA					34 U			
Chrysene	15000	400					34 U			
di-n-Butyl Phthalate	6100000	NA					49 U			
Dibenzo(a,h)anthracene	15	400					34 U			
Dibenzofuran	NA	NA					34 U			
Fluoranthene	2300000	20000					34 U			
Fluorene	2300000	28000					34 U			
High Molecular Weight PAHs	NA	NA					0 U			
Indeno(1,2,3-cd)pyrene	150	900					34 U			
Low Molecular Weight PAHs	NA	NA					0 U			
Naphthalene	3900	54000					34 U			
Phenanthrene	1700000	40000					34 U			
Pyrene	1700000	13000					34 U			
Total PAHs	NA	NA					0 U			

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-077**	**SB16-077**	**SB16-077**	**SB16-078**	**SB16-078**	**SB16-078**	**SB16-078**	**SB16-078**
Sample Number	**Residential**	**Soil Direct**	**SB16-077-SO-1016**	**SB16-077-SO-1620**	**SB16-077-SO-1620-D**	**SB16-078-SO-0206**	**SB16-078-SO-0610**	**SB16-078-SO-0910**	**SB16-078-SO-1016**	**SB16-078-SO-1622**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071002**	**20071002**	**20071002**	**20070927**	**20070927**	**20070927**	**20070927**	**20070927**
Depth Range (feet)	**Levels**	**Criterion**	**10 - 16**	**16 - 20**	**16 - 20**	**2 - 6**	**6 - 10**	**9 - 10**	**10 - 16**	**16 - 22**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000		0.31 U		**0.99**				
Acenaphthene	3400000	43000		0.75 UJ		0.058 U				
Acenaphthylene	3400000	23000		0.11 U		**0.79**				
Anthracene	17000000	35000		0.045 U		**0.75**				
BaP Equivalent	15	400		0.038 U		**4.59**				
Benzo(a)anthracene	150	900		0.047 U		**4.1**				
Benzo(a)pyrene	15	400		0.038 U		**2.2**				
Benzo(b)fluoranthene	150	900		0.088 U		**4.6**				
Benzo(g,h,i)perylene	1700000	800		0.15 U		**3.8**				
Benzo(k)fluoranthene	1500	900		0.073 U		**4.3**				
Chrysene	15000	400		0.1 U		**6**				
Dibenzo(a,h)anthracene	15	400		0.059 U		**1.1**				
Fluoranthene	2300000	20000		0.17 U		**8.1 J**				
Fluorene	2300000	28000		0.1 U		**0.32 J**				
High Molecular Weight PAHs	NA	NA		0 U		**46.3**				
Indeno(1,2,3-cd)pyrene	150	900		0.11 U		**3.7**				
Low Molecular Weight PAHs	NA	NA		0 U		**16.1**				
Naphthalene	3900	54000		0.65 U		**9.6**				
Phenanthrene	1700000	40000		0.23 U		**3.6**				
Pyrene	1700000	13000		0.19 U		**8.4 J**				
Total PAHs	NA	NA		0 U		**62.4**				
Pesticides/PCBs (ug/kg)										
4,4'-DDT	1700	NA					3.4 U			
Aroclor-1254	220	NA					34 U			
Aroclor-1260	220	NA					34 U			
Endosulfan II	370000	NA					3.4 U			
Endrin Aldehyde	18000	NA					3.4 U			
Total Aroclor	240	10000					0 U			
Total DDT	NA	NA					0 U			
Inorganics (mg/kg)										
Aluminum	77000	NA		**7150**	**5890**					
Antimony	31	10		0.47 U	0.51 U					
Arsenic	0.39	7		**3.6**	**3**					
Barium	15000	5500		**17.6**	**15.3**					
Beryllium	160	0.4		0.00086 U	0.00088 U					
Cadmium	70	39		**0.34 J**	**0.26 J**					
Calcium	NA	NA		**1010**	**762**					
Chromium	230	1400		**8.6**	**8.4**					
Cobalt	23	NA		**5.4 J**	**4.1 J**					
Copper	3100	3100		**16.8**	**14.4**					
Iron	55000	NA		**17100**	**13300**					
Lead	400	150		**8**	**6.3**					
Magnesium	NA	NA		**2860**	**2280**					
Manganese	1800	390		**141**	**116**					
Mercury	23	23		0.0049 UJ	0.0052 UJ					
Nickel	1600	1000		**9.4 J**	**8.2 J**					
Potassium	NA	NA		**1020**	**641**					
Silver	390	200		**4 J**	**3.3 J**					
Sodium	NA	NA		**53.8 J**	**54.9 J**					

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-077**	**SB16-077**	**SB16-077**	**SB16-078**	**SB16-078**	**SB16-078**	**SB16-078**	**SB16-078**
Sample Number	**Residential**	**Soil Direct**	**SB16-077-SO-1016**	**SB16-077-SO-1620**	**SB16-077-SO-1620-D**	**SB16-078-SO-0206**	**SB16-078-SO-0610**	**SB16-078-SO-0910**	**SB16-078-SO-1016**	**SB16-078-SO-1622**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071002**	**20071002**	**20071002**	**20070927**	**20070927**	**20070927**	**20070927**	**20070927**
Depth Range (feet)	**Levels**	**Criterion**	**10 - 16**	**16 - 20**	**16 - 20**	**2 - 6**	**6 - 10**	**9 - 10**	**10 - 16**	**16 - 22**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Inorganics (mg/kg) (continued)										
Thallium	5.1	5.5		0.068 U	0.069 U					
Vanadium	390	550		**11.5**	**9.3**					
Zinc	23000	6000		**27.3**	**20.9**					
Petroleum Hydrocarbons (mg/kg)										
Extractable TPH-Screening Data	NA	500	0.97 U	0.99 U	0.95 U	0.97 U	0.99 U		0.98 U	0.97 U
TPH (C09-C36)	NA	500		**11 J**		**15**				
TPH (C09-C44)	NA	500		**12 J**		**22**				

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-086**	**SB16-086**	**SB16-086**	**SB16-086**	**SB16-086**	**SB16-086**	**SB16-086**	**SB16-087**
Sample Number	**Residential**	**Soil Direct**	**SB16-086-SO-0206**	**SB16-086-SO-0304**	**SB16-086-SO-0610**	**SB16-086-SO-0910**	**SB16-086-SO-1016**	**SB16-086-SO-1314**	**SB16-086-SO-1622**	**SB16-087-SO-0206**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070925**	**20070925**	**20070925**	**20070925**	**20070925**	**20070925**	**20070925**	**20070926**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 6**	**3 - 4**	**6 - 10**	**9 - 10**	**10 - 16**	**13 - 14**	**16 - 22**	**2 - 6**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200		0.9 U		0.9 U		0.96 U		
1,2,4-Trichlorobenzene	78000	96000		0.75 U		0.75 U		0.8 U		
2-Butanone	28000000	10000000		0.56 UR		0.56 UR		0.6 UR		
Acetone	61000000	7800000		**42 J**		1.4 UR		**5.1 J**		
Benzene	1100	2500		0.23 U		0.23 U		0.25 U		
BTEX	NA	NA		0 U		0 U		0 U		
Carbon Disulfide	670000	NA		0.23 U		0.23 U		0.25 U		
Chlorobenzene	310000	210000		0.63 U		0.63 U		0.67 U		
Chloroform	300	1200		0.33 U		0.33 U		0.35 U		
Cyclohexane	7200000	NA		0.47 U		0.47 U		0.5 U		
Ethylbenzene	5700	71000		0.9 U		0.9 U		0.96 U		
Isopropylbenzene	2200000	NA		0.9 U		0.9 U		0.96 U		
Methyl Acetate	78000000	NA		0.9 U		0.9 U		0.96 U		
Methyl Cyclohexane	3400000	NA		0.25 U		0.25 U		0.26 U		
Methylene Chloride	11000	45000		0.67 U		0.67 U		0.71 U		
Tetrachloroethene	570	12000		0.7 U		0.7 U		0.75 U		
Toluene	5000000	190000		0.47 U		0.47 U		0.5 U		
Total Chlorinated VOCs	NA	NA		0 U		0 U		0 U		
Total Xylenes	600000	110000		2.5 U		2.5 U		2.6 U		
Trichloroethene	2800	13000		0.22 U		0.22 U		0.23 U		
Semivolatile Organic Compounds (ug/kg)										
2,4-Dimethylphenol	1200000	1400000	55 UR							
2-Methylnaphthalene	310000	123000	34 U							
2-Methylphenol	3100000	NA	63 U							
4-Methylphenol	310000	NA	55 U							
Acenaphthene	3400000	43000	34 U							
Acenaphthylene	3400000	23000	34 U							
Anthracene	17000000	35000	34 U							
Benzo(a)pyrene Equivalents	15	400	34 U							
Benzo(a)anthracene	150	900	34 U							
Benzo(a)pyrene	15	400	34 U							
Benzo(b)fluoranthene	150	900	34 U							
Benzo(g,h,i)perylene	1700000	800	34 U							
Benzo(k)fluoranthene	1500	900	34 U							
Bis(2-ethylhexyl)phthalate	35000	46000	190 U							
Carbazole	24000	NA	34 U							
Chrysene	15000	400	34 U							
di-n-Butyl Phthalate	6100000	NA	49 U							
Dibenzo(a,h)anthracene	15	400	34 U							
Dibenzofuran	NA	NA	34 U							
Fluoranthene	2300000	20000	34 U							
Fluorene	2300000	28000	34 U							
High Molecular Weight PAHs	NA	NA	0 U							
Indeno(1,2,3-cd)pyrene	150	900	34 U							
Low Molecular Weight PAHs	NA	NA	0 U							
Naphthalene	3900	54000	34 U							
Phenanthrene	1700000	40000	34 U							
Pyrene	1700000	13000	34 U							
Total PAHs	NA	NA	0 U							

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			10	10	10	10	10	10	10	10
Location	ORNL	RIDEM	SB16-086	SB16-086	SB16-086	SB16-086	SB16-086	SB16-086	SB16-086	SB16-087
Sample Number	Residential	Soil Direct	SB16-086-SO-0206	SB16-086-SO-0304	SB16-086-SO-0610	SB16-086-SO-0910	SB16-086-SO-1016	SB16-086-SO-1314	SB16-086-SO-1622	SB16-087-SO-0206
Sample Code	Regional	Exposure	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Screening	Residential	20070925	20070925	20070925	20070925	20070925	20070925	20070925	20070926
Depth Range (feet)	Levels	Criterion	2 - 6	3 - 4	6 - 10	9 - 10	10 - 16	13 - 14	16 - 22	2 - 6
Area			CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000	**0.39 J**							**7.8**
Acenaphthene	3400000	43000	0.13 U							**1.2**
Acenaphthylene	3400000	23000	**0.48 J**							**0.24 J**
Anthracene	17000000	35000	**0.48 J**							**1 J**
BaP Equivalent	15	400	**2.67**							**6.73**
Benzo(a)anthracene	150	900	**2.1**							**6.8**
Benzo(a)pyrene	15	400	**1.4**							**3.7**
Benzo(b)fluoranthene	150	900	**3.2**							**4.6**
Benzo(g,h,i)perylene	1700000	800	**1.9**							**7.8**
Benzo(k)fluoranthene	1500	900	**2.5**							**2**
Chrysene	15000	400	**3.4**							**16**
Dibenzo(a,h)anthracene	15	400	**0.51 J**							**1.6**
Fluoranthene	2300000	20000	**5.8 J**							**8.8 J**
Fluorene	2300000	28000	**0.27 J**							**3.2**
High Molecular Weight PAHs	NA	NA	**27.8**							**74.8**
Indeno(1,2,3-cd)pyrene	150	900	**2**							**2.5**
Low Molecular Weight PAHs	NA	NA	**7.42**							**45.5**
Naphthalene	3900	54000	**2.5**							**3.1**
Phenanthrene	1700000	40000	**3.3**							**29**
Pyrene	1700000	13000	**5 J**							**21 J**
Total PAHs	NA	NA	**35.2**							**120**
Pesticides/PCBs (ug/kg)										
4,4'-DDT	1700	NA	3.4 UJ							
Aroclor-1254	220	NA	34 U							
Aroclor-1260	220	NA	34 U							
Endosulfan II	370000	NA	3.4 U							
Endrin Aldehyde	18000	NA	3.4 U							
Total Aroclor	240	10000	0 U							
Total DDT	NA	NA	0 U							
Inorganics (mg/kg)										
Aluminum	77000	NA	**8560**						**7320**	**7050**
Antimony	31	10	0.086 U						0.091 U	**1 J**
Arsenic	0.39	7	**3.9 J**						**3.9 J**	**3.9**
Barium	15000	5500	**17.7**						**16.4**	**15**
Beryllium	160	0.4	0.00081 U						0.00085 U	0.00089 U
Cadmium	70	39	**0.35 J**						**0.35 J**	**0.48 J**
Calcium	NA	NA	**396**						**755**	**654**
Chromium	230	1400	**9.6**						**9.9**	**11.4**
Cobalt	23	NA	**9.9 J**						**10.6 J**	**8.1 J**
Copper	3100	3100	**21.1**						**18.2**	**18.2**
Iron	55000	NA	**16600**						**18100**	**17700**
Lead	400	150	**8.9**						**8.9**	**8.2**
Magnesium	NA	NA	**2780**						**3280**	**2840**
Manganese	1800	390	**251**						**292**	**271**
Mercury	23	23	**0.005 J**						0.0051 U	0.005 U
Nickel	1600	1000	**13.1 J**						**11.9 J**	**12.1 J**
Potassium	NA	NA	**805**						**1060**	**974**
Silver	390	200	**4.1**						**4.3**	**3.8 J**
Sodium	NA	NA	**17.7**						**67.5**	**22.2 J**

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-086**	**SB16-086**	**SB16-086**	**SB16-086**	**SB16-086**	**SB16-086**	**SB16-086**	**SB16-087**
Sample Number	**Residential**	**Soil Direct**	**SB16-086-SO-0206**	**SB16-086-SO-0304**	**SB16-086-SO-0610**	**SB16-086-SO-0910**	**SB16-086-SO-1016**	**SB16-086-SO-1314**	**SB16-086-SO-1622**	**SB16-087-SO-0206**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070925**	**20070925**	**20070925**	**20070925**	**20070925**	**20070925**	**20070925**	**20070926**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 6**	**3 - 4**	**6 - 10**	**9 - 10**	**10 - 16**	**13 - 14**	**16 - 22**	**2 - 6**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Inorganics (mg/kg) (continued)										
Thallium	5.1	5.5	0.063 U						0.067 U	0.07 U
Vanadium	390	550	**12.1**						**11.7**	**9.6 J**
Zinc	23000	6000	**37.1**						**35.5**	**35.5**
Petroleum Hydrocarbons (mg/kg)										
Extractable TPH-Screening Data	NA	500	0.99 U		0.99 U		0.97 U		0.99 U	0.98 U
TPH (C09-C36)	NA	500	**9.7**							**62**
TPH (C09-C44)	NA	500	**14**							**98**

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-087**	**SB16-087**	**SB16-087**	**SB16-087**	**SB16-088**	**SB16-088**	**SB16-088**	**SB16-088**
Sample Number	**Residential**	**Soil Direct**	**SB16-087-SO-0506**	**SB16-087-SO-0610**	**SB16-087-SO-1016**	**SB16-087-SO-1622**	**SB16-088-SO-0206**	**SB16-088-SO-0610**	**SB16-088-SO-0910**	**SB16-088-SO-1016**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070926**	**20070926**	**20070926**	**20070926**	**20071001**	**20071001**	**20071001**	**20071001**
Depth Range (feet)	**Levels**	**Criterion**	**5 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**6 - 10**	**9 - 10**	**10 - 16**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200	0.77 U						0.91 U	
1,2,4-Trichlorobenzene	78000	96000	0.65 U						0.76 U	
2-Butanone	28000000	10000000	0.48 UR						0.57 U	
Acetone	61000000	7800000	1.2 UR						1.4 U	
Benzene	1100	2500	0.2 U						0.23 U	
BTEX	NA	NA	0 U						**11.4**	
Carbon Disulfide	670000	NA	0.2 U						0.23 U	
Chlorobenzene	310000	210000	0.54 U						0.64 U	
Chloroform	300	1200	0.28 U						0.33 U	
Cyclohexane	7200000	NA	0.4 U						0.47 U	
Ethylbenzene	5700	71000	0.77 U						**1.6 J**	
Isopropylbenzene	2200000	NA	0.77 U						0.91 U	
Methyl Acetate	78000000	NA	0.77 U						0.91 U	
Methyl Cyclohexane	3400000	NA	0.21 U						0.25 U	
Methylene Chloride	11000	45000	0.57 U						0.67 U	
Tetrachloroethene	570	12000	0.6 U						0.7 U	
Toluene	5000000	190000	0.4 U						0.47 U	
Total Chlorinated VOCs	NA	NA	0 U						**1.9**	
Total Xylenes	600000	110000	2.1 U						**9.8**	
Trichloroethene	2800	13000	0.19 U						**1.9 J**	
Semivolatile Organic Compounds (ug/kg)										
2,4-Dimethylphenol	1200000	1400000								
2-Methylnaphthalene	310000	123000								
2-Methylphenol	3100000	NA								
4-Methylphenol	310000	NA								
Acenaphthene	3400000	43000								
Acenaphthylene	3400000	23000								
Anthracene	17000000	35000								
Benzo(a)pyrene Equivalents	15	400								
Benzo(a)anthracene	150	900								
Benzo(a)pyrene	15	400								
Benzo(b)fluoranthene	150	900								
Benzo(g,h,i)perylene	1700000	800								
Benzo(k)fluoranthene	1500	900								
Bis(2-ethylhexyl)phthalate	35000	46000								
Carbazole	24000	NA								
Chrysene	15000	400								
di-n-Butyl Phthalate	6100000	NA								
Dibenzo(a,h)anthracene	15	400								
Dibenzofuran	NA	NA								
Fluoranthene	2300000	20000								
Fluorene	2300000	28000								
High Molecular Weight PAHs	NA	NA								
Indeno(1,2,3-cd)pyrene	150	900								
Low Molecular Weight PAHs	NA	NA								
Naphthalene	3900	54000								
Phenanthrene	1700000	40000								
Pyrene	1700000	13000								
Total PAHs	NA	NA								

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-087**	**SB16-087**	**SB16-087**	**SB16-087**	**SB16-088**	**SB16-088**	**SB16-088**	**SB16-088**
Sample Number	**Residential**	**Soil Direct**	**SB16-087-SO-0506**	**SB16-087-SO-0610**	**SB16-087-SO-1016**	**SB16-087-SO-1622**	**SB16-088-SO-0206**	**SB16-088-SO-0610**	**SB16-088-SO-0910**	**SB16-088-SO-1016**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070926**	**20070926**	**20070926**	**20070926**	**20071001**	**20071001**	**20071001**	**20071001**
Depth Range (feet)	**Levels**	**Criterion**	**5 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**6 - 10**	**9 - 10**	**10 - 16**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000					**0.66 J**			
Acenaphthene	3400000	43000					**0.56 J**			
Acenaphthylene	3400000	23000					**0.76**			
Anthracene	17000000	35000					**2.6**			
BaP Equivalent	15	400					**10.7**			
Benzo(a)anthracene	150	900					**10**			
Benzo(a)pyrene	15	400					**6.1**			
Benzo(b)fluoranthene	150	900					**12**			
Benzo(g,h,i)perylene	1700000	800					**5.4 J**			
Benzo(k)fluoranthene	1500	900					**9.2**			
Chrysene	15000	400					**14**			
Dibenzo(a,h)anthracene	15	400					**1.7**			
Fluoranthene	2300000	20000					**27**			
Fluorene	2300000	28000					**0.9**			
High Molecular Weight PAHs	NA	NA					**109**			
Indeno(1,2,3-cd)pyrene	150	900					**5.7**			
Low Molecular Weight PAHs	NA	NA					**31.0**			
Naphthalene	3900	54000					**7.5**			
Phenanthrene	1700000	40000					**18**			
Pyrene	1700000	13000					**18**			
Total PAHs	NA	NA					**140**			
Pesticides/PCBs (ug/kg)										
4,4'-DDT	1700	NA								
Aroclor-1254	220	NA								
Aroclor-1260	220	NA								
Endosulfan II	370000	NA								
Endrin Aldehyde	18000	NA								
Total Aroclor	240	10000								
Total DDT	NA	NA								
Inorganics (mg/kg)										
Aluminum	77000	NA								**3260**
Antimony	31	10								0.23 U
Arsenic	0.39	7								**2.5**
Barium	15000	5500								**8.3**
Beryllium	160	0.4								0.00083 U
Cadmium	70	39								**0.16 J**
Calcium	NA	NA								**762**
Chromium	230	1400								**4.8**
Cobalt	23	NA								**3.5 J**
Copper	3100	3100								**9.7**
Iron	55000	NA								**8340**
Lead	400	150								**4.6**
Magnesium	NA	NA								**1250**
Manganese	1800	390								**123**
Mercury	23	23								0.0054 UJ
Nickel	1600	1000								**5.1 J**
Potassium	NA	NA								**468**
Silver	390	200								**2.4 J**
Sodium	NA	NA								**22.6 J**

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-087**	**SB16-087**	**SB16-087**	**SB16-087**	**SB16-088**	**SB16-088**	**SB16-088**	**SB16-088**
Sample Number	**Residential**	**Soil Direct**	**SB16-087-SO-0506**	**SB16-087-SO-0610**	**SB16-087-SO-1016**	**SB16-087-SO-1622**	**SB16-088-SO-0206**	**SB16-088-SO-0610**	**SB16-088-SO-0910**	**SB16-088-SO-1016**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070926**	**20070926**	**20070926**	**20070926**	**20071001**	**20071001**	**20071001**	**20071001**
Depth Range (feet)	**Levels**	**Criterion**	**5 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**6 - 10**	**9 - 10**	**10 - 16**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Inorganics (mg/kg) (continued)										
Thallium	5.1	5.5								0.065 U
Vanadium	390	550								**6.5**
Zinc	23000	6000								**15.7**
Petroleum Hydrocarbons (mg/kg)										
Extractable TPH-Screening Data	NA	500		0.99 U	0.96 U	0.95 U	0.98 U	0.99 U		0.98 U
TPH (C09-C36)	NA	500					**3.4**			
TPH (C09-C44)	NA	500					**6.5**			

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-088**	**SB16-089**	**SB16-089**	**SB16-089**	**SB16-089**	**SB16-099**	**SB16-099**	**SB16-099**
Sample Number	**Residential**	**Soil Direct**	**SB16-088-SO-1622**	**SB16-089-SO-0206**	**SB16-089-SO-0610**	**SB16-089-SO-1016**	**SB16-089-SO-1622**	**SB16-099-SO-0206**	**SB16-099-SO-0506**	**SB16-099-SO-0610**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071001**	**20070926**	**20070926**	**20070927**	**20070927**	**20071002**	**20071002**	**20071002**
Depth Range (feet)	**Levels**	**Criterion**	**16 - 22**	**2 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**5 - 6**	**6 - 10**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200							1.4 U	
1,2,4-Trichlorobenzene	78000	96000							1.2 U	
2-Butanone	28000000	10000000							0.87 U	
Acetone	61000000	7800000							2.2 U	
Benzene	1100	2500							0.36 U	
BTEX	NA	NA							0 U	
Carbon Disulfide	670000	NA							0.36 U	
Chlorobenzene	310000	210000							0.98 U	
Chloroform	300	1200							0.51 U	
Cyclohexane	7200000	NA							0.72 U	
Ethylbenzene	5700	71000							1.4 U	
Isopropylbenzene	2200000	NA							1.4 U	
Methyl Acetate	78000000	NA							1.4 U	
Methyl Cyclohexane	3400000	NA							0.38 U	
Methylene Chloride	11000	45000							**2.6 J**	
Tetrachloroethene	570	12000							1.1 U	
Toluene	5000000	190000							0.72 U	
Total Chlorinated VOCs	NA	NA							**2.6**	
Total Xylenes	600000	110000							3.8 U	
Trichloroethene	2800	13000							0.34 U	
Semivolatile Organic Compounds (ug/kg)										
2,4-Dimethylphenol	1200000	1400000						59 U		
2-Methylnaphthalene	310000	123000						**110**		
2-Methylphenol	3100000	NA						67 U		
4-Methylphenol	310000	NA						59 U		
Acenaphthene	3400000	43000						**200**		
Acenaphthylene	3400000	23000						**48**		
Anthracene	17000000	35000						**700**		
Benzo(a)pyrene Equivalents	15	400						**1966**		
Benzo(a)anthracene	150	900						**1400**		
Benzo(a)pyrene	15	400						**1300**		
Benzo(b)fluoranthene	150	900						**1800**		
Benzo(g,h,i)perylene	1700000	800						**860**		
Benzo(k)fluoranthene	1500	900						**770**		
Bis(2-ethylhexyl)phthalate	35000	46000						310 U		
Carbazole	24000	NA						**160**		
Chrysene	15000	400						**1600**		
di-n-Butyl Phthalate	6100000	NA						52 U		
Dibenzo(a,h)anthracene	15	400						**260**		
Dibenzofuran	NA	NA						**320 J**		
Fluoranthene	2300000	20000						**3200**		
Fluorene	2300000	28000						**330**		
High Molecular Weight PAHs	NA	NA						**14260**		
Indeno(1,2,3-cd)pyrene	150	900						**770**		
Low Molecular Weight PAHs	NA	NA						**3888**		
Naphthalene	3900	54000						**300**		
Phenanthrene	1700000	40000						**2200**		
Pyrene	1700000	13000						**2300**		
Total PAHs	NA	NA						**18148**		

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-088**	**SB16-089**	**SB16-089**	**SB16-089**	**SB16-089**	**SB16-099**	**SB16-099**	**SB16-099**
Sample Number	**Residential**	**Soil Direct**	**SB16-088-SO-1622**	**SB16-089-SO-0206**	**SB16-089-SO-0610**	**SB16-089-SO-1016**	**SB16-089-SO-1622**	**SB16-099-SO-0206**	**SB16-099-SO-0506**	**SB16-099-SO-0610**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071001**	**20070926**	**20070926**	**20070927**	**20070927**	**20071002**	**20071002**	**20071002**
Depth Range (feet)	**Levels**	**Criterion**	**16 - 22**	**2 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**5 - 6**	**6 - 10**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000		**0.77**				**120**		
Acenaphthene	3400000	43000		**0.51 J**				**180**		
Acenaphthylene	3400000	23000		**3.1**				**29**		
Anthracene	17000000	35000		**2.4**				**140**		
BaP Equivalent	15	400		**18.9**				**616**		
Benzo(a)anthracene	150	900		**19**				**540**		
Benzo(a)pyrene	15	400		**9.3**				**250**		
Benzo(b)fluoranthene	150	900		**23**				**690**		
Benzo(g,h,i)perylene	1700000	800		**14**				**560**		
Benzo(k)fluoranthene	1500	900		**19**				**560**		
Chrysene	15000	400		**26**				**670**		
Dibenzo(a,h)anthracene	15	400		**3.7**				**180**		
Fluoranthene	2300000	20000		**32 J**				**1600**		
Fluorene	2300000	28000		**0.71**				**260**		
High Molecular Weight PAHs	NA	NA		**187**				**6720**		
Indeno(1,2,3-cd)pyrene	150	900		**15**				**570**		
Low Molecular Weight PAHs	NA	NA		**21.7**				**2789**		
Naphthalene	3900	54000		**2.2**				**360**		
Phenanthrene	1700000	40000		**12**				**1700**		
Pyrene	1700000	13000		**26 J**				**1100**		
Total PAHs	NA	NA		**209**				**9509**		
Pesticides/PCBs (ug/kg)										
4,4'-DDT	1700	NA						3.6 U		
Aroclor-1254	220	NA						**120 J**		
Aroclor-1260	220	NA						36 U		
Endosulfan II	370000	NA						3.6 U		
Endrin Aldehyde	18000	NA						3.6 U		
Total Aroclor	240	10000						**120**		
Total DDT	NA	NA						0 U		
Inorganics (mg/kg)										
Aluminum	77000	NA		**7320**						
Antimony	31	10		**0.74 J**						
Arsenic	0.39	7		**3.4**						
Barium	15000	5500		**15.5**						
Beryllium	160	0.4		0.00087 U						
Cadmium	70	39		**0.36 J**						
Calcium	NA	NA		**727**						
Chromium	230	1400		**8**						
Cobalt	23	NA		**5.5**						
Copper	3100	3100		**12.9**						
Iron	55000	NA		**13000**						
Lead	400	150		**10.5**						
Magnesium	NA	NA		**1850**						
Manganese	1800	390		**155**						
Mercury	23	23		0.0053 U						
Nickel	1600	1000		**8.9**						
Potassium	NA	NA		**567**						
Silver	390	200		**3**						
Sodium	NA	NA		**19.5 J**						

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-088**	**SB16-089**	**SB16-089**	**SB16-089**	**SB16-089**	**SB16-099**	**SB16-099**	**SB16-099**
Sample Number	**Residential**	**Soil Direct**	**SB16-088-SO-1622**	**SB16-089-SO-0206**	**SB16-089-SO-0610**	**SB16-089-SO-1016**	**SB16-089-SO-1622**	**SB16-099-SO-0206**	**SB16-099-SO-0506**	**SB16-099-SO-0610**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071001**	**20070926**	**20070926**	**20070927**	**20070927**	**20071002**	**20071002**	**20071002**
Depth Range (feet)	**Levels**	**Criterion**	**16 - 22**	**2 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**5 - 6**	**6 - 10**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Inorganics (mg/kg) (continued)										
Thallium	5.1	5.5		0.069 U						
Vanadium	390	550		**10.7**						
Zinc	23000	6000		**26.8**						
Petroleum Hydrocarbons (mg/kg)										
Extractable TPH-Screening Data	NA	500	0.98 U	0.99 U	0.98 U	0.99 U	0.98 U	**5.4**		0.99 U
TPH (C09-C36)	NA	500		**16**				**77**		
TPH (C09-C44)	NA	500		**24**				**99**		

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-099**	**SB16-099**	**SB16-099**	**SB16-099**
Sample Number	**Residential**	**Soil Direct**	**SB16-099-SO-1016**	**SB16-099-SO-1016-D**	**SB16-099-SO-1622**	**SB16-099-SO-2425**
Sample Code	**Regional**	**Exposure**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071002**	**20071001**	**20071002**	**20071002**
Depth Range (feet)	**Levels**	**Criterion**	**10 - 16**	**10 - 16**	**16 - 22**	**24 - 25**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Volatile Organic Compounds (ug/kg)						
1,1-Dichloroethene	250000	200				0.8 U
1,2,4-Trichlorobenzene	78000	96000				0.66 U
2-Butanone	28000000	10000000				0.5 U
Acetone	61000000	7800000				1.3 U
Benzene	1100	2500				0.21 U
BTEX	NA	NA				**17.4**
Carbon Disulfide	670000	NA				0.21 U
Chlorobenzene	310000	210000				0.56 U
Chloroform	300	1200				0.29 U
Cyclohexane	7200000	NA				0.41 U
Ethylbenzene	5700	71000				**2.4 J**
Isopropylbenzene	2200000	NA				0.8 U
Methyl Acetate	78000000	NA				0.8 U
Methyl Cyclohexane	3400000	NA				0.22 U
Methylene Chloride	11000	45000				0.59 U
Tetrachloroethene	570	12000				0.62 U
Toluene	5000000	190000				0.41 U
Total Chlorinated VOCs	NA	NA				0 U
Total Xylenes	600000	110000				**15**
Trichloroethene	2800	13000				0.19 U
Semivolatile Organic Compounds (ug/kg)						
2,4-Dimethylphenol	1200000	1400000	62 U	63 U		
2-Methylnaphthalene	310000	123000	38 U	39 U		
2-Methylphenol	3100000	NA	72 U	72 U		
4-Methylphenol	310000	NA	62 U	63 U		
Acenaphthene	3400000	43000	38 U	39 U		
Acenaphthylene	3400000	23000	38 U	39 U		
Anthracene	17000000	35000	38 U	39 U		
Benzo(a)pyrene Equivalents	15	400	38 U	39 U		
Benzo(a)anthracene	150	900	38 U	39 U		
Benzo(a)pyrene	15	400	38 U	39 U		
Benzo(b)fluoranthene	150	900	38 U	39 U		
Benzo(g,h,i)perylene	1700000	800	38 U	39 U		
Benzo(k)fluoranthene	1500	900	38 U	39 U		
Bis(2-ethylhexyl)phthalate	35000	46000	150 U	83 U		
Carbazole	24000	NA	38 U	39 U		
Chrysene	15000	400	38 U	39 U		
di-n-Butyl Phthalate	6100000	NA	56 U	56 U		
Dibenzo(a,h)anthracene	15	400	38 U	39 U		
Dibenzofuran	NA	NA	38 U	39 U		
Fluoranthene	2300000	20000	38 U	39 U		
Fluorene	2300000	28000	38 U	39 U		
High Molecular Weight PAHs	NA	NA	0 U	0 U		
Indeno(1,2,3-cd)pyrene	150	900	38 U	39 U		
Low Molecular Weight PAHs	NA	NA	0 U	0 U		
Naphthalene	3900	54000	38 U	39 U		
Phenanthrene	1700000	40000	38 U	39 U		
Pyrene	1700000	13000	38 U	39 U		
Total PAHs	NA	NA	0 U	0 U		

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-099**	**SB16-099**	**SB16-099**	**SB16-099**
Sample Number	**Residential**	**Soil Direct**	**SB16-099-SO-1016**	**SB16-099-SO-1016-D**	**SB16-099-SO-1622**	**SB16-099-SO-2425**
Sample Code	**Regional**	**Exposure**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071002**	**20071001**	**20071002**	**20071002**
Depth Range (feet)	**Levels**	**Criterion**	**10 - 16**	**10 - 16**	**16 - 22**	**24 - 25**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Polycyclic Aromatic Hydrocarbons (ug/kg)						
2-Methylnaphthalene	310000	123000				
Acenaphthene	3400000	43000				
Acenaphthylene	3400000	23000				
Anthracene	17000000	35000				
BaP Equivalent	15	400				
Benzo(a)anthracene	150	900				
Benzo(a)pyrene	15	400				
Benzo(b)fluoranthene	150	900				
Benzo(g,h,i)perylene	1700000	800				
Benzo(k)fluoranthene	1500	900				
Chrysene	15000	400				
Dibenzo(a,h)anthracene	15	400				
Fluoranthene	2300000	20000				
Fluorene	2300000	28000				
High Molecular Weight PAHs	NA	NA				
Indeno(1,2,3-cd)pyrene	150	900				
Low Molecular Weight PAHs	NA	NA				
Naphthalene	3900	54000				
Phenanthrene	1700000	40000				
Pyrene	1700000	13000				
Total PAHs	NA	NA				
Pesticides/PCBs (ug/kg)						
4,4'-DDT	1700	NA	3.8 U	3.8 U		
Aroclor-1254	220	NA	38 U	38 U		
Aroclor-1260	220	NA	38 U	38 U		
Endosulfan II	370000	NA	3.8 U	3.8 U		
Endrin Aldehyde	18000	NA	3.8 U	3.8 U		
Total Aroclor	240	10000	0 U	0 U		
Total DDT	NA	NA	0 U	0 U		
Inorganics (mg/kg)						
Aluminum	77000	NA	**3790**	**3570**		
Antimony	31	10	0.34 U	0.28 U		
Arsenic	0.39	7	**2.1**	**2.3**		
Barium	15000	5500	**7.3**	**7.7**		
Beryllium	160	0.4	0.00086 U	0.00085 U		
Cadmium	70	39	**0.19 J**	**0.19 J**		
Calcium	NA	NA	**584**	**617**		
Chromium	230	1400	**5.1**	**4.7**		
Cobalt	23	NA	**4.2 J**	**4.2 J**		
Copper	3100	3100	**9**	**9.5**		
Iron	55000	NA	**8050**	**7970**		
Lead	400	150	**3.8**	**4.1**		
Magnesium	NA	NA	**1380**	**1290**		
Manganese	1800	390	**120**	**124**		
Mercury	23	23	0.0053 UJ	0.0058 UJ		
Nickel	1600	1000	**6.3 J**	**6.5 J**		
Potassium	NA	NA	**411**	**447**		
Silver	390	200	**2.4 J**	**2.3 J**		
Sodium	NA	NA	16.3 U	18.9 U		

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-099**	**SB16-099**	**SB16-099**	**SB16-099**
Sample Number	**Residential**	**Soil Direct**	**SB16-099-SO-1016**	**SB16-099-SO-1016-D**	**SB16-099-SO-1622**	**SB16-099-SO-2425**
Sample Code	**Regional**	**Exposure**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071002**	**20071001**	**20071002**	**20071002**
Depth Range (feet)	**Levels**	**Criterion**	**10 - 16**	**10 - 16**	**16 - 22**	**24 - 25**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Inorganics (mg/kg) (continued)						
Thallium	5.1	5.5	0.067 U	0.067 U		
Vanadium	390	550	**5.8**	**5.8**		
Zinc	23000	6000	**17**	**17.9**		
Petroleum Hydrocarbons (mg/kg)						
Extractable TPH-Screening Data	NA	500	0.97 U		0.95 U	
TPH (C09-C36)	NA	500				
TPH (C09-C44)	NA	500				

TABLE 4-12

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - CREOSOTE DIP TANK AREA -2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Notes:
Bolding indicates that the chemical was detected in the sample.
PAHs samples were analyzed by AWL by method SW8270-SIM.
BaP Equivalents = Benzo(a)pyrene equivalent concentration
High Molecular Weight PAHs = Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene
High Molecular Weight PAHs Ecosd = Benzo(a)anthracene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthrancene, Fluoranthene, Pyrene
Low Molecular Weight PAHs = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
Low Molecular Weight PAHs Ecosd = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C_9 to C_{36}.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C_9 to C_{44}.

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and total xylenes
EPA = Environmental Protection Agency
NA = Not applicable/Not available
PAH = Polycyclic aromatic hydrocarbon
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
VOC = Volatile organic compound

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-061**	**SB16-061**	**SB16-061**	**SB16-061**	**SB16-061**	**SB16-061**	**SB16-061**
Sample Number	**Residential**	**Soil Direct**	**SB16-061-SO-0206**	**SB16-061-SO-0206-D**	**SB16-061-SO-0610**	**SB16-061-SO-1016**	**SB16-061-SO-1622**	**SB16-061-SO-1919**	**SB16-061-SO-2323**
Sample Code	**Regional**	**Exposure**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070824**	**20070824**	**20070824**	**20070824**	**20070824**	**20070824**	**20070824**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 6**	**2 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**19 - 19**	**23 - 23**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000						5.2 UR	1.2 UR
Acetone	61000000	7800000						5.9 UR	1.3 UR
BTEX	NA	NA						0 U	0 U
Carbon Disulfide	670000	NA						7.3 UR	1.6 UJ
cis-1,2-Dichloroethene	780000	630000						1.6 UR	0.37 UJ
Ethylbenzene	5700	71000						2.3 UR	0.52 UJ
Methyl Cyclohexane	3400000	NA						1.4 UR	0.32 UJ
Methylene Chloride	11000	45000						2.8 UR	**1.2 J**
Toluene	5000000	190000						1.1 UR	0.25 UJ
Total Chlorinated VOCs	NA	NA						0 U	**1.2**
Total Xylenes	600000	110000						3.3 UR	0.74 UJ
trans-1,2-Dichloroethene	110000	1100000						2.3 UR	0.52 UJ
Trichloroethene	2800	13000						1.3 UR	0.28 UJ
Vinyl Chloride	60	20						3 UR	0.67 UJ
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000							
Acenaphthene	3400000	43000							
Acenaphthylene	3400000	23000							
Anthracene	17000000	35000							
Benzo(a)pyrene Equivalents	15	400							
Benzo(a)anthracene	150	900							
Benzo(a)pyrene	15	400							
Benzo(b)fluoranthene	150	900							
Benzo(g,h,i)perylene	1700000	800							
Benzo(k)fluoranthene	1500	900							
Carbazole	24000	NA							
Chrysene	15000	400							
Dibenzo(a,h)anthracene	15	400							
Dibenzofuran	NA	NA							
Fluoranthene	2300000	20000							
Fluorene	2300000	28000							
High Molecular Weight PAHs	NA	NA							
Indeno(1,2,3-cd)pyrene	150	900							
Low Molecular Weight PAHs	NA	NA							
Naphthalene	3900	54000							
Phenanthrene	1700000	40000							
Pyrene	1700000	13000							
Total PAHs	NA	NA							
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000				0.32 U			
Acenaphthene	3400000	43000				**0.32 J**			
Acenaphthylene	3400000	23000				**0.25 J**			
Anthracene	17000000	35000				**0.95**			
Benzo(a)pyrene Equivalents	15	400				**2.27**			
Benzo(a)anthracene	150	900				**1.5**			
Benzo(a)pyrene	15	400				**1.5**			
Benzo(b)fluoranthene	150	900				**2**			
Benzo(g,h,i)perylene	1700000	800				**1**			

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet) Area	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	10 SB16-061 SB16-061-SO-0206 ORIG 20070824 2 - 6 NORTH CEN EAST	10 SB16-061 SB16-061-SO-0206-D DUP 20070824 2 - 6 NORTH CEN EAST	10 SB16-061 SB16-061-SO-0610 NORMAL 20070824 6 - 10 NORTH CEN EAST	10 SB16-061 SB16-061-SO-1016 NORMAL 20070824 10 - 16 NORTH CEN EAST	10 SB16-061 SB16-061-SO-1622 NORMAL 20070824 16 - 22 NORTH CEN EAST	10 SB16-061 SB16-061-SO-1919 NORMAL 20070824 19 - 19 NORTH CEN EAST	10 SB16-061 SB16-061-SO-2323 NORMAL 20070824 23 - 23 NORTH CEN EAST
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900				**1.8**			
Chrysene	15000	400				**1.9**			
Dibenzo(a,h)anthracene	15	400				**0.29 J**			
Fluoranthene	2300000	20000				**3.1**			
Fluorene	2300000	28000				**0.5 J**			
High Molecular Weight PAHs	NA	NA				**16.59**			
Indeno(1,2,3-cd)pyrene	150	900				**1.1**			
Low Molecular Weight PAHs	NA	NA				**6.32**			
Naphthalene	3900	54000				**2**			
Phenanthrene	1700000	40000				**2.3**			
Pyrene	1700000	13000				**2.4**			
Total PAHs	NA	NA				**22.91**			
Pesticides/PCBs (ug/kg)									
Aroclor-1260	220	NA							
Endrin Ketone	18000	NA							
Total Aroclor	240	10000							
Inorganics (mg/kg)									
Aluminum	77000	NA	**6960**	**7540**					
Antimony	31	10	**8.6 J**	**6.4 J**					
Arsenic	0.39	7	**15.1 J**	**11.9 J**					
Barium	15000	5500	**17.9**	**17.5**					
Beryllium	160	0.4	**0.58**	**0.44**					
Cadmium	70	39	**1.5 J**	**1.2 J**					
Calcium	NA	NA	6.8 U	**47.5 J**					
Chromium	230	1400	**9.5 J**	**9.8**					
Cobalt	23	NA	**10.4**	**10.1**					
Copper	3100	3100	**18.9**	**19**					
Iron	55000	NA	**20600**	**16600**					
Lead	400	150	**6.8 J**	**6.8 J**					
Magnesium	NA	NA	**2360**	**2900**					
Manganese	1800	390	**308**	**306**					
Mercury	23	23	**0.0048 J**	0.0052 U					
Nickel	1600	1000	**14.5**	**12.8**					
Potassium	NA	NA	**879**	**932**					
Selenium	390	390	0.14 U	0.13 U					
Silver	390	200	0.043 U	0.041 U					
Sodium	NA	NA	**27.9 J**	**27 J**					
Thallium	5.1	5.5	**1.8**	**2**					
Vanadium	390	550	**13.5**	**13.2**					
Zinc	23000	6000	**40.6**	**35.7**					
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500	0.96 U		0.95 U	0.97 U	0.99 U		
TPH (C09-C36)	NA	500				**7.2**			
TPH (C09-C44)	NA	500				**11**			

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-069**	**SB16-069**	**SB16-069**	**SB16-069**	**SB16-069**	**SB16-070**	**SB16-070**
Sample Number	**Residential**	**Soil Direct**	**SB16-069-SO-0206**	**SB16-069-SO-0610**	**SB16-069-SO-1016**	**SB16-069-SO-1415**	**SB16-069-SO-1622**	**SB16-070-SO-0206**	**SB16-070-SO-0506**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070822**	**20070822**	**20070822**	**20070822**	**20070822**	**20070930**	**20070930**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 6**	**6 - 10**	**10 - 16**	**14 - 15**	**16 - 22**	**2 - 6**	**5 - 6**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000				1.3 UR			0.58 U
Acetone	61000000	7800000				1.4 UR			**34**
BTEX	NA	NA				0 U			**13.72**
Carbon Disulfide	670000	NA				**5.5 J**			**4.9**
cis-1,2-Dichloroethene	780000	630000				**1100**			0.55 U
Ethylbenzene	5700	71000				0.56 UJ			**1.8 J**
Methyl Cyclohexane	3400000	NA				0.34 UJ			0.26 U
Methylene Chloride	11000	45000				0.69 UJ			0.69 U
Toluene	5000000	190000				0.27 UJ			**0.92 J**
Total Chlorinated VOCs	NA	NA				**1127.4**			0 U
Total Xylenes	600000	110000				0.8 UJ			**11**
trans-1,2-Dichloroethene	110000	1100000				**21 J**			0.54 U
Trichloroethene	2800	13000				0.3 UJ			0.23 U
Vinyl Chloride	60	20				**6.4 J**			0.17 U
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000						73 U	
Acenaphthene	3400000	43000						73 U	
Acenaphthylene	3400000	23000						73 U	
Anthracene	17000000	35000						73 U	
Benzo(a)pyrene Equivalents	15	400						73 U	
Benzo(a)anthracene	150	900						73 U	
Benzo(a)pyrene	15	400						73 U	
Benzo(b)fluoranthene	150	900						73 U	
Benzo(g,h,i)perylene	1700000	800						73 U	
Benzo(k)fluoranthene	1500	900						73 U	
Carbazole	24000	NA						73 U	
Chrysene	15000	400						73 U	
Dibenzo(a,h)anthracene	15	400						73 U	
Dibenzofuran	NA	NA						73 U	
Fluoranthene	2300000	20000						73 U	
Fluorene	2300000	28000						73 U	
High Molecular Weight PAHs	NA	NA						0 U	
Indeno(1,2,3-cd)pyrene	150	900						73 U	
Low Molecular Weight PAHs	NA	NA						0 U	
Naphthalene	3900	54000						73 U	
Phenanthrene	1700000	40000						73 U	
Pyrene	1700000	13000						73 U	
Total PAHs	NA	NA						0 U	
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000	0.52 U					**0.74**	
Acenaphthene	3400000	43000	**0.36 J**					0.71 U	
Acenaphthylene	3400000	23000	0.99 U					**0.41 J**	
Anthracene	17000000	35000	**1.4**					**0.4 J**	
Benzo(a)pyrene Equivalents	15	400	**6.05**					**1.51**	
Benzo(a)anthracene	150	900	**4.6**					**1.2 J**	
Benzo(a)pyrene	15	400	**3.6**					**0.84**	
Benzo(b)fluoranthene	150	900	**5.8**					**1.5 J**	
Benzo(g,h,i)perylene	1700000	800	**2.9**					**1.2**	

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-069**	**SB16-069**	**SB16-069**	**SB16-069**	**SB16-069**	**SB16-070**	**SB16-070**
Sample Number	**Residential**	**Soil Direct**	**SB16-069-SO-0206**	**SB16-069-SO-0610**	**SB16-069-SO-1016**	**SB16-069-SO-1415**	**SB16-069-SO-1622**	**SB16-070-SO-0206**	**SB16-070-SO-0506**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070822**	**20070822**	**20070822**	**20070822**	**20070822**	**20070930**	**20070930**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 6**	**6 - 10**	**10 - 16**	**14 - 15**	**16 - 22**	**2 - 6**	**5 - 6**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900	**5**					**1.6 J**	
Chrysene	15000	400	**6.9**					**1.9 J**	
Dibenzo(a,h)anthracene	15	400	**0.98**					**0.26 J**	
Fluoranthene	2300000	20000	**12**					**3.7 J**	
Fluorene	2300000	28000	0.58 U					**0.29 J**	
High Molecular Weight PAHs	NA	NA	**54.88**					**16.5**	
Indeno(1,2,3-cd)pyrene	150	900	**3.7**					**1.2**	
Low Molecular Weight PAHs	NA	NA	**10.06**					**5.34**	
Naphthalene	3900	54000	**2.9**					**1.4**	
Phenanthrene	1700000	40000	**5.4**					**2.1 J**	
Pyrene	1700000	13000	**9.4**					**3.1 J**	
Total PAHs	NA	NA	**64.94**					**21.84**	
Pesticides/PCBs (ug/kg)									
Aroclor-1260	220	NA						35 U	
Endrin Ketone	18000	NA						3.5 UJ	
Total Aroclor	240	10000						0 U	
Inorganics (mg/kg)									
Aluminum	77000	NA	**5860**	**2510**					
Antimony	31	10	0.3 U	0.32 U					
Arsenic	0.39	7	**2.3 J**	**1.1 J**					
Barium	15000	5500	**10.4**	**6.9**					
Beryllium	160	0.4	**0.34**	**0.19**					
Cadmium	70	39	**0.39 J**	**0.13 J**					
Calcium	NA	NA	**161 J**	**173 J**					
Chromium	230	1400	**6**	**3.7**					
Cobalt	23	NA	**7.8 J**	**2.6 J**					
Copper	3100	3100	**13.2**	**5.8**					
Iron	55000	NA	**16000**	**7240**					
Lead	400	150	**11.6**	**3.6**					
Magnesium	NA	NA	**1950**	**1000**					
Manganese	1800	390	**288**	**58.7**					
Mercury	23	23	**0.005 J**	0.005 U					
Nickel	1600	1000	**8.8 J**	**4.8 J**					
Potassium	NA	NA	**492**	**436**					
Selenium	390	390	**1.4**	**1.1**					
Silver	390	200	0.029 U	0.053 U					
Sodium	NA	NA	**17 J**	18.4 U					
Thallium	5.1	5.5	**0.71 J**	**1.1 J**					
Vanadium	390	550	**8.6**	**5**					
Zinc	23000	6000	**30.2**	**17.4**					
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500	0.98 U	0.98 U	0.97 U		0.97 U	0.99 U	
TPH (C09-C36)	NA	500	**9.5**					**23 J**	
TPH (C09-C44)	NA	500	**16**					**30 J**	

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-070**	**SB16-070**	**SB16-070**	**SB16-071**	**SB16-071**	**SB16-071**	**SB16-071**
Sample Number	**Residential**	**Soil Direct**	**SB16-070-SO-0610**	**SB16-070-SO-1016**	**SB16-070-SO-1622**	**SB16-071-SO-0206**	**SB16-071-SO-0506**	**SB16-071-SO-0610**	**SB16-071-SO-1016**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070930**	**20070930**	**20070930**	**20070929**	**20070929**	**20070929**	**20070929**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**5 - 6**	**6 - 10**	**10 - 16**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000					0.61 UR		
Acetone	61000000	7800000					1.6 UR		
BTEX	NA	NA					**3.4**		
Carbon Disulfide	670000	NA					0.25 U		
cis-1,2-Dichloroethene	780000	630000					0.58 U		
Ethylbenzene	5700	71000					0.98 U		
Methyl Cyclohexane	3400000	NA					0.27 U		
Methylene Chloride	11000	45000					0.73 UJ		
Toluene	5000000	190000					0.51 U		
Total Chlorinated VOCs	NA	NA					0 U		
Total Xylenes	600000	110000					**3.4 J**		
trans-1,2-Dichloroethene	110000	1100000					0.56 U		
Trichloroethene	2800	13000					0.24 U		
Vinyl Chloride	60	20					0.18 U		
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000							
Acenaphthene	3400000	43000							
Acenaphthylene	3400000	23000							
Anthracene	17000000	35000							
Benzo(a)pyrene Equivalents	15	400							
Benzo(a)anthracene	150	900							
Benzo(a)pyrene	15	400							
Benzo(b)fluoranthene	150	900							
Benzo(g,h,i)perylene	1700000	800							
Benzo(k)fluoranthene	1500	900							
Carbazole	24000	NA							
Chrysene	15000	400							
Dibenzo(a,h)anthracene	15	400							
Dibenzofuran	NA	NA							
Fluoranthene	2300000	20000							
Fluorene	2300000	28000							
High Molecular Weight PAHs	NA	NA							
Indeno(1,2,3-cd)pyrene	150	900							
Low Molecular Weight PAHs	NA	NA							
Naphthalene	3900	54000							
Phenanthrene	1700000	40000							
Pyrene	1700000	13000							
Total PAHs	NA	NA							
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000							**12**
Acenaphthene	3400000	43000							**49**
Acenaphthylene	3400000	23000							**0.95**
Anthracene	17000000	35000							**40**
Benzo(a)pyrene Equivalents	15	400							**5.84**
Benzo(a)anthracene	150	900							**6.5**
Benzo(a)pyrene	15	400							**3.6**
Benzo(b)fluoranthene	150	900							**4.8**
Benzo(g,h,i)perylene	1700000	800							**2.7**

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-070**	**SB16-070**	**SB16-070**	**SB16-071**	**SB16-071**	**SB16-071**	**SB16-071**
Sample Number	**Residential**	**Soil Direct**	**SB16-070-SO-0610**	**SB16-070-SO-1016**	**SB16-070-SO-1622**	**SB16-071-SO-0206**	**SB16-071-SO-0506**	**SB16-071-SO-0610**	**SB16-071-SO-1016**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070930**	**20070930**	**20070930**	**20070929**	**20070929**	**20070929**	**20070929**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**5 - 6**	**6 - 10**	**10 - 16**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900							**5.5**
Chrysene	15000	400							**11**
Dibenzo(a,h)anthracene	15	400							**0.76 J**
Fluoranthene	2300000	20000							**52**
Fluorene	2300000	28000							**49**
High Molecular Weight PAHs	NA	NA							**122.66**
Indeno(1,2,3-cd)pyrene	150	900							**2.8**
Low Molecular Weight PAHs	NA	NA							**492.95**
Naphthalene	3900	54000							**22**
Phenanthrene	1700000	40000							**320**
Pyrene	1700000	13000							**33**
Total PAHs	NA	NA							**615.61**
Pesticides/PCBs (ug/kg)									
Aroclor-1260	220	NA							
Endrin Ketone	18000	NA							
Total Aroclor	240	10000							
Inorganics (mg/kg)									
Aluminum	77000	NA				**4500**			
Antimony	31	10				**0.57 J**			
Arsenic	0.39	7				**1.6**			
Barium	15000	5500				**9.5**			
Beryllium	160	0.4				0.00092 U			
Cadmium	70	39				**0.19 J**			
Calcium	NA	NA				**523**			
Chromium	230	1400				**5.1**			
Cobalt	23	NA				**2.5 J**			
Copper	3100	3100				**6**			
Iron	55000	NA				**6800**			
Lead	400	150				**5.7**			
Magnesium	NA	NA				**1100**			
Manganese	1800	390				**51.6**			
Mercury	23	23				0.0056 U			
Nickel	1600	1000				**4.9 J**			
Potassium	NA	NA				**389**			
Selenium	390	390				0.099 U			
Silver	390	200				**1.8 J**			
Sodium	NA	NA				**12 J**			
Thallium	5.1	5.5				0.072 U			
Vanadium	390	550				**6.5**			
Zinc	23000	6000				**15.2**			
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500	0.96 U	0.99 U	0.98 U	0.99 U		0.99 U	0.99 U
TPH (C09-C36)	NA	500							**34**
TPH (C09-C44)	NA	500							**38**

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-071**	**SB16-072**	**SB16-072**	**SB16-072**	**SB16-072**	**SB16-072**	**SB16-073**
Sample Number	**Residential**	**Soil Direct**	**SB16-071-SO-1622**	**SB16-072-SO-0206**	**SB16-072-SO-0506**	**SB16-072-SO-0610**	**SB16-072-SO-1016**	**SB16-072-SO-1622**	**SB16-073-SO-0206**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**
Sample Date	**Screening**	**Residential**	**20070929**	**20070930**	**20070930**	**20070930**	**20070930**	**20070930**	**20070929**
Depth Range (feet)	**Levels**	**Criterion**	**16 - 22**	**2 - 6**	**5 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000			0.55 U				
Acetone	61000000	7800000			1.4 U				
BTEX	NA	NA			**13.74**				
Carbon Disulfide	670000	NA			0.23 U				
cis-1,2-Dichloroethene	780000	630000			0.52 U				
Ethylbenzene	5700	71000			**1.8 J**				
Methyl Cyclohexane	3400000	NA			0.24 U				
Methylene Chloride	11000	45000			0.66 U				
Toluene	5000000	190000			**0.94 J**				
Total Chlorinated VOCs	NA	NA			0 U				
Total Xylenes	600000	110000			**11**				
trans-1,2-Dichloroethene	110000	1100000			0.51 U				
Trichloroethene	2800	13000			0.21 U				
Vinyl Chloride	60	20			0.16 U				
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000							33 U
Acenaphthene	3400000	43000							33 U
Acenaphthylene	3400000	23000							33 U
Anthracene	17000000	35000							33 U
Benzo(a)pyrene Equivalents	15	400							33 U
Benzo(a)anthracene	150	900							33 U
Benzo(a)pyrene	15	400							33 U
Benzo(b)fluoranthene	150	900							33 U
Benzo(g,h,i)perylene	1700000	800							33 U
Benzo(k)fluoranthene	1500	900							33 U
Carbazole	24000	NA							33 U
Chrysene	15000	400							33 U
Dibenzo(a,h)anthracene	15	400							33 U
Dibenzofuran	NA	NA							33 U
Fluoranthene	2300000	20000							33 U
Fluorene	2300000	28000							33 U
High Molecular Weight PAHs	NA	NA							0 U
Indeno(1,2,3-cd)pyrene	150	900							33 U
Low Molecular Weight PAHs	NA	NA							0 U
Naphthalene	3900	54000							33 U
Phenanthrene	1700000	40000							33 U
Pyrene	1700000	13000							33 U
Total PAHs	NA	NA							0 U
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000		**0.65 J**					
Acenaphthene	3400000	43000		**0.072 J**					
Acenaphthylene	3400000	23000		**0.36 J**					
Anthracene	17000000	35000		**0.39 J**					
Benzo(a)pyrene Equivalents	15	400		**1.42**					
Benzo(a)anthracene	150	900		**1**					
Benzo(a)pyrene	15	400		**0.83**					
Benzo(b)fluoranthene	150	900		**1.4**					
Benzo(g,h,i)perylene	1700000	800		**1.2**					

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-071**	**SB16-072**	**SB16-072**	**SB16-072**	**SB16-072**	**SB16-072**	**SB16-073**
Sample Number	**Residential**	**Soil Direct**	**SB16-071-SO-1622**	**SB16-072-SO-0206**	**SB16-072-SO-0506**	**SB16-072-SO-0610**	**SB16-072-SO-1016**	**SB16-072-SO-1622**	**SB16-073-SO-0206**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**
Sample Date	**Screening**	**Residential**	**20070929**	**20070930**	**20070930**	**20070930**	**20070930**	**20070930**	**20070929**
Depth Range (feet)	**Levels**	**Criterion**	**16 - 22**	**2 - 6**	**5 - 6**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900		**1.3**					
Chrysene	15000	400		**1.6**					
Dibenzo(a,h)anthracene	15	400		**0.23 J**					
Fluoranthene	2300000	20000		**3.4**					
Fluorene	2300000	28000		**0.27 J**					
High Molecular Weight PAHs	NA	NA		**14.96**					
Indeno(1,2,3-cd)pyrene	150	900		**1.1**					
Low Molecular Weight PAHs	NA	NA		**3.442**					
Naphthalene	3900	54000		1 U					
Phenanthrene	1700000	40000		**1.7**					
Pyrene	1700000	13000		**2.9**					
Total PAHs	NA	NA		**18.402**					
Pesticides/PCBs (ug/kg)									
Aroclor-1260	220	NA							34 U
Endrin Ketone	18000	NA							3.4 UJ
Total Aroclor	240	10000							0 U
Inorganics (mg/kg)									
Aluminum	77000	NA							**3860**
Antimony	31	10							**0.65 J**
Arsenic	0.39	7							**2.4**
Barium	15000	5500							**8.2**
Beryllium	160	0.4							0.00081 U
Cadmium	70	39							**0.32 J**
Calcium	NA	NA							**639**
Chromium	230	1400							**5.9**
Cobalt	23	NA							**4.1 J**
Copper	3100	3100							**10**
Iron	55000	NA							**12500**
Lead	400	150							**5.3**
Magnesium	NA	NA							**1710**
Manganese	1800	390							**98.4**
Mercury	23	23							0.0044 U
Nickel	1600	1000							**6.5 J**
Potassium	NA	NA							**591**
Selenium	390	390							0.087 U
Silver	390	200							**2.8 J**
Sodium	NA	NA							**15 J**
Thallium	5.1	5.5							0.064 U
Vanadium	390	550							**7 J**
Zinc	23000	6000							**21.3**
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500	0.98 U	0.98 U		0.98 U	0.98 U	0.97 U	0.98 U
TPH (C09-C36)	NA	500		**18**					
TPH (C09-C44)	NA	500		**22**					

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-073**	**SB16-073**	**SB16-073**	**SB16-073**	**SB16-073**	**SB16-073**	**SB16-074**
Sample Number	**Residential**	**Soil Direct**	**SB16-073-SO-0206-D**	**SB16-073-SO-0506**	**SB16-073-SO-0610**	**SB16-073-SO-0910**	**SB16-073-SO-1016**	**SB16-073-SO-1622**	**SB16-074-SO-0206**
Sample Code	**Regional**	**Exposure**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070929**	**20070929**	**20070929**	**20070929**	**20070929**	**20070929**	**20070929**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 6**	**5 - 6**	**6 - 10**	**9 - 10**	**10 - 16**	**16 - 22**	**2 - 6**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000		0.63 UR		0.58 U			
Acetone	61000000	7800000		1.6 UJ		1.5 U			
BTEX	NA	NA		0 U		**32**			
Carbon Disulfide	670000	NA		0.26 U		0.24 U			
cis-1,2-Dichloroethene	780000	630000		0.6 U		0.55 U			
Ethylbenzene	5700	71000		1 U		**4.4**			
Methyl Cyclohexane	3400000	NA		0.28 U		0.25 U			
Methylene Chloride	11000	45000		**1.1 J**		0.69 U			
Toluene	5000000	190000		0.52 U		**1.6 J**			
Total Chlorinated VOCs	NA	NA		**1.1**		0 U			
Total Xylenes	600000	110000		2.8 U		**26**			
trans-1,2-Dichloroethene	110000	1100000		0.58 U		0.53 U			
Trichloroethene	2800	13000		0.25 U		0.22 U			
Vinyl Chloride	60	20		0.19 U		0.17 U			
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000							35 U
Acenaphthene	3400000	43000							35 U
Acenaphthylene	3400000	23000							35 U
Anthracene	17000000	35000							35 U
Benzo(a)pyrene Equivalents	15	400							35 U
Benzo(a)anthracene	150	900							35 U
Benzo(a)pyrene	15	400							35 U
Benzo(b)fluoranthene	150	900							35 U
Benzo(g,h,i)perylene	1700000	800							35 U
Benzo(k)fluoranthene	1500	900							35 U
Carbazole	24000	NA							35 U
Chrysene	15000	400							35 U
Dibenzo(a,h)anthracene	15	400							35 U
Dibenzofuran	NA	NA							35 U
Fluoranthene	2300000	20000							35 U
Fluorene	2300000	28000							35 U
High Molecular Weight PAHs	NA	NA							0 U
Indeno(1,2,3-cd)pyrene	150	900							35 U
Low Molecular Weight PAHs	NA	NA							0 U
Naphthalene	3900	54000							35 U
Phenanthrene	1700000	40000							35 U
Pyrene	1700000	13000							35 U
Total PAHs	NA	NA							0 U
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000						**0.29 J**	**1.9**
Acenaphthene	3400000	43000						0.87 U	**0.33 J**
Acenaphthylene	3400000	23000						0.87 U	**4**
Anthracene	17000000	35000						0.87 U	**3.4**
Benzo(a)pyrene Equivalents	15	400						**0.00007**	**33.9**
Benzo(a)anthracene	150	900						0.87 U	**25**
Benzo(a)pyrene	15	400						0.87 U	**20**
Benzo(b)fluoranthene	150	900						0.87 U	**29**
Benzo(g,h,i)perylene	1700000	800						0.87 U	**18**

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-073**	**SB16-073**	**SB16-073**	**SB16-073**	**SB16-073**	**SB16-073**	**SB16-074**
Sample Number	**Residential**	**Soil Direct**	**SB16-073-SO-0206-D**	**SB16-073-SO-0506**	**SB16-073-SO-0610**	**SB16-073-SO-0910**	**SB16-073-SO-1016**	**SB16-073-SO-1622**	**SB16-074-SO-0206**
Sample Code	**Regional**	**Exposure**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070929**	**20070929**	**20070929**	**20070929**	**20070929**	**20070929**	**20070929**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 6**	**5 - 6**	**6 - 10**	**9 - 10**	**10 - 16**	**16 - 22**	**2 - 6**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900						0.87 U	**28**
Chrysene	15000	400						**0.074 J**	**32**
Dibenzo(a,h)anthracene	15	400						0.87 U	**6.2**
Fluoranthene	2300000	20000						0.072 U	**40**
Fluorene	2300000	28000						**0.13 J**	**0.56 J**
High Molecular Weight PAHs	NA	NA						**0.074**	**254.2**
Indeno(1,2,3-cd)pyrene	150	900						0.87 U	**20**
Low Molecular Weight PAHs	NA	NA						**0.77**	**20.09**
Naphthalene	3900	54000						0.93 U	**1.8**
Phenanthrene	1700000	40000						**0.35 J**	**8.1**
Pyrene	1700000	13000						0.11 U	**36**
Total PAHs	NA	NA						**0.844**	**274.29**
Pesticides/PCBs (ug/kg)									
Aroclor-1260	220	NA							35 U
Endrin Ketone	18000	NA							3.5 UJ
Total Aroclor	240	10000							0 U
Inorganics (mg/kg)									
Aluminum	77000	NA	**3930**						
Antimony	31	10	**0.61 J**						
Arsenic	0.39	7	**2.4**						
Barium	15000	5500	**7.9**						
Beryllium	160	0.4	0.00085 U						
Cadmium	70	39	**0.3 J**						
Calcium	NA	NA	**596 J**						
Chromium	230	1400	**5.9**						
Cobalt	23	NA	**3.9 J**						
Copper	3100	3100	**9**						
Iron	55000	NA	**11800**						
Lead	400	150	**4.9**						
Magnesium	NA	NA	**1800**						
Manganese	1800	390	**95.1**						
Mercury	23	23	0.0044 U						
Nickel	1600	1000	**6.5 J**						
Potassium	NA	NA	**579**						
Selenium	390	390	0.092 U						
Silver	390	200	**2.7 J**						
Sodium	NA	NA	**14.2 J**						
Thallium	5.1	5.5	0.067 U						
Vanadium	390	550	**6.7 J**						
Zinc	23000	6000	**21.1**						
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500			0.97 U		0.97 U	0.97 U	0.98 U
TPH (C09-C36)	NA	500						**4.2**	**22**
TPH (C09-C44)	NA	500						**3.8**	**24**

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-074**	**SB16-074**	**SB16-074**	**SB16-074**	**SB16-074**	**SB16-074**	**SB16-075**
Sample Number	**Residential**	**Soil Direct**	**SB16-074-SO-0506**	**SB16-074-SO-0506-D**	**SB16-074-SO-0610**	**SB16-074-SO-0910**	**SB16-074-SO-1016**	**SB16-074-SO-2022**	**SB16-075-SO-0206**
Sample Code	**Regional**	**Exposure**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070929**	**20070929**	**20070929**	**20070929**	**20070929**	**20070929**	**20070929**
Depth Range (feet)	**Levels**	**Criterion**	**5 - 6**	**5 - 6**	**6 - 10**	**9 - 10**	**10 - 16**	**20 - 22**	**2 - 6**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000	0.6 U	0.6 UR		0.6 U			
Acetone	61000000	7800000	1.5 U	1.5 UR		**3.9 J**			
BTEX	NA	NA	**14**	**4.8**		**17.11**			
Carbon Disulfide	670000	NA	0.25 U	0.25 U		0.25 U			
cis-1,2-Dichloroethene	780000	630000	0.57 U	0.56 U		0.56 U			
Ethylbenzene	5700	71000	**2 J**	0.95 U		**2.3 J**			
Methyl Cyclohexane	3400000	NA	0.26 U	0.26 U		0.26 U			
Methylene Chloride	11000	45000	0.71 U	0.71 UJ		0.71 U			
Toluene	5000000	190000	0.49 U	0.49 U		**0.81 J**			
Total Chlorinated VOCs	NA	NA	0 U	0 U		0 U			
Total Xylenes	600000	110000	**12**	**4.8**		**14**			
trans-1,2-Dichloroethene	110000	1100000	0.55 U	0.55 U		0.55 U			
Trichloroethene	2800	13000	0.23 U	0.23 U		0.23 U			
Vinyl Chloride	60	20	0.18 U	0.17 U		0.17 U			
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000			39 U				33 U
Acenaphthene	3400000	43000			39 U				33 U
Acenaphthylene	3400000	23000			39 U				33 U
Anthracene	17000000	35000			39 U				33 U
Benzo(a)pyrene Equivalents	15	400			39 U				33 U
Benzo(a)anthracene	150	900			39 U				33 U
Benzo(a)pyrene	15	400			39 U				33 U
Benzo(b)fluoranthene	150	900			39 U				33 U
Benzo(g,h,i)perylene	1700000	800			39 U				33 U
Benzo(k)fluoranthene	1500	900			39 U				33 U
Carbazole	24000	NA			39 U				33 U
Chrysene	15000	400			39 U				33 U
Dibenzo(a,h)anthracene	15	400			39 U				33 U
Dibenzofuran	NA	NA			39 U				33 U
Fluoranthene	2300000	20000			39 U				33 U
Fluorene	2300000	28000			39 U				33 U
High Molecular Weight PAHs	NA	NA			0 U				0 U
Indeno(1,2,3-cd)pyrene	150	900			39 U				33 U
Low Molecular Weight PAHs	NA	NA			0 U				0 U
Naphthalene	3900	54000			39 U				33 U
Phenanthrene	1700000	40000			39 U				33 U
Pyrene	1700000	13000			39 U				33 U
Total PAHs	NA	NA			0 U				0 U
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000							**0.88**
Acenaphthene	3400000	43000							0.68 U
Acenaphthylene	3400000	23000							**1.4**
Anthracene	17000000	35000							**2.9**
Benzo(a)pyrene Equivalents	15	400							**3.39**
Benzo(a)anthracene	150	900							**3.2**
Benzo(a)pyrene	15	400							**0.82**
Benzo(b)fluoranthene	150	900							**8.9**
Benzo(g,h,i)perylene	1700000	800							**2.7**

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-074**	**SB16-074**	**SB16-074**	**SB16-074**	**SB16-074**	**SB16-074**	**SB16-075**
Sample Number	**Residential**	**Soil Direct**	**SB16-074-SO-0506**	**SB16-074-SO-0506-D**	**SB16-074-SO-0610**	**SB16-074-SO-0910**	**SB16-074-SO-1016**	**SB16-074-SO-2022**	**SB16-075-SO-0206**
Sample Code	**Regional**	**Exposure**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070929**	**20070929**	**20070929**	**20070929**	**20070929**	**20070929**	**20070929**
Depth Range (feet)	**Levels**	**Criterion**	**5 - 6**	**5 - 6**	**6 - 10**	**9 - 10**	**10 - 16**	**20 - 22**	**2 - 6**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900							**7.3**
Chrysene	15000	400							**12**
Dibenzo(a,h)anthracene	15	400							**0.95**
Fluoranthene	2300000	20000							**6.5**
Fluorene	2300000	28000							**0.59 J**
High Molecular Weight PAHs	NA	NA							**50.27**
Indeno(1,2,3-cd)pyrene	150	900							**3.2**
Low Molecular Weight PAHs	NA	NA							**18.07**
Naphthalene	3900	54000							**7.8**
Phenanthrene	1700000	40000							**4.5**
Pyrene	1700000	13000							**4.7**
Total PAHs	NA	NA							**68.34**
Pesticides/PCBs (ug/kg)									
Aroclor-1260	220	NA			39 U				34 U
Endrin Ketone	18000	NA			3.9 UJ				3.4 UJ
Total Aroclor	240	10000			0 U				0 U
Inorganics (mg/kg)									
Aluminum	77000	NA							**3590**
Antimony	31	10							**0.63 J**
Arsenic	0.39	7							**2.4**
Barium	15000	5500							**8.9**
Beryllium	160	0.4							0.00081 U
Cadmium	70	39							**0.3 J**
Calcium	NA	NA							**586**
Chromium	230	1400							**6.4**
Cobalt	23	NA							**3.5 J**
Copper	3100	3100							**9.1**
Iron	55000	NA							**11200**
Lead	400	150							**6.3**
Magnesium	NA	NA							**1540**
Manganese	1800	390							**97.8**
Mercury	23	23							0.0044 U
Nickel	1600	1000							**6.2 J**
Potassium	NA	NA							**490**
Selenium	390	390							0.087 U
Silver	390	200							**2.6 J**
Sodium	NA	NA							**16.4 J**
Thallium	5.1	5.5							0.064 U
Vanadium	390	550							**6.7 J**
Zinc	23000	6000							**22**
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500			0.97 U		0.98 U	0.95 U	0.97 U
TPH (C09-C36)	NA	500							**8.7**
TPH (C09-C44)	NA	500							**12**

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			10	10	10	10	10	10	10
Location	ORNL	RIDEM	SB16-075	SB16-075	SB16-075	SB16-075	SB16-075	SB16-079	SB16-079
Sample Number	Residential	Soil Direct	SB16-075-SO-0506	SB16-075-SO-0610	SB16-075-SO-1016	SB16-075-SO-1016-D	SB16-075-SO-1622	SB16-079-SO-0206	SB16-079-SO-0610
Sample Code	Regional	Exposure	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL
Sample Date	Screening	Residential	20070929	20070929	20070929	20070929	20070929	20070823	20070823
Depth Range (feet)	Levels	Criterion	5 - 6	6 - 10	10 - 16	10 - 16	16 - 22	2 - 6	6 - 10
Area			NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000	0.59 U						
Acetone	61000000	7800000	1.5 U						
BTEX	NA	NA	**24.4**						
Carbon Disulfide	670000	NA	0.24 U						
cis-1,2-Dichloroethene	780000	630000	0.55 U						
Ethylbenzene	5700	71000	**3.3 J**						
Methyl Cyclohexane	3400000	NA	0.26 U						
Methylene Chloride	11000	45000	0.7 U						
Toluene	5000000	190000	**1.1 J**						
Total Chlorinated VOCs	NA	NA	0 U						
Total Xylenes	600000	110000	**20**						
trans-1,2-Dichloroethene	110000	1100000	0.54 U						
Trichloroethene	2800	13000	0.23 U						
Vinyl Chloride	60	20	0.17 U						
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000							
Acenaphthene	3400000	43000							
Acenaphthylene	3400000	23000							
Anthracene	17000000	35000							
Benzo(a)pyrene Equivalents	15	400							
Benzo(a)anthracene	150	900							
Benzo(a)pyrene	15	400							
Benzo(b)fluoranthene	150	900							
Benzo(g,h,i)perylene	1700000	800							
Benzo(k)fluoranthene	1500	900							
Carbazole	24000	NA							
Chrysene	15000	400							
Dibenzo(a,h)anthracene	15	400							
Dibenzofuran	NA	NA							
Fluoranthene	2300000	20000							
Fluorene	2300000	28000							
High Molecular Weight PAHs	NA	NA							
Indeno(1,2,3-cd)pyrene	150	900							
Low Molecular Weight PAHs	NA	NA							
Naphthalene	3900	54000							
Phenanthrene	1700000	40000							
Pyrene	1700000	13000							
Total PAHs	NA	NA							
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000			**0.74**				
Acenaphthene	3400000	43000			**0.15 J**				
Acenaphthylene	3400000	23000			**0.93**				
Anthracene	17000000	35000			**1.4**				
Benzo(a)pyrene Equivalents	15	400			**3.66**				
Benzo(a)anthracene	150	900			**2.3**				
Benzo(a)pyrene	15	400			**2**				
Benzo(b)fluoranthene	150	900			**4.9**				
Benzo(g,h,i)perylene	1700000	800			**2.5**				

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet) Area	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	10 SB16-075 SB16-075-SO-0506 NORMAL 20070929 5 - 6 NORTH CEN EAST	10 SB16-075 SB16-075-SO-0610 NORMAL 20070929 6 - 10 NORTH CEN EAST	10 SB16-075 SB16-075-SO-1016 ORIG 20070929 10 - 16 NORTH CEN EAST	10 SB16-075 SB16-075-SO-1016-D DUP 20070929 10 - 16 NORTH CEN EAST	10 SB16-075 SB16-075-SO-1622 NORMAL 20070929 16 - 22 NORTH CEN EAST	10 SB16-079 SB16-079-SO-0206 NORMAL 20070823 2 - 6 NORTH CEN EAST	10 SB16-079 SB16-079-SO-0610 NORMAL 20070823 6 - 10 NORTH CEN EAST
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900			**4.4**				
Chrysene	15000	400			**5.9**				
Dibenzo(a,h)anthracene	15	400			**0.64 J**				
Fluoranthene	2300000	20000			**5.6**				
Fluorene	2300000	28000			**0.38 J**				
High Molecular Weight PAHs	NA	NA			**35.14**				
Indeno(1,2,3-cd)pyrene	150	900			**2.5**				
Low Molecular Weight PAHs	NA	NA			**8.4**				
Naphthalene	3900	54000			**1.8**				
Phenanthrene	1700000	40000			**3**				
Pyrene	1700000	13000			**4.4**				
Total PAHs	NA	NA			**43.54**				
Pesticides/PCBs (ug/kg)									
Aroclor-1260	220	NA							
Endrin Ketone	18000	NA							
Total Aroclor	240	10000							
Inorganics (mg/kg)									
Aluminum	77000	NA			**3020**	**2850**			
Antimony	31	10			**0.45**	**0.54 J**			
Arsenic	0.39	7			**1.8**	**2.1**			
Barium	15000	5500			**8.1**	**6.5**			
Beryllium	160	0.4			0.0008 U	0.00089 U			
Cadmium	70	39			**0.21 J**	**0.21 J**			
Calcium	NA	NA			**2530 J**	**765**			
Chromium	230	1400			**6.9**	**6.8**			
Cobalt	23	NA			**2.9**	**2.6 J**			
Copper	3100	3100			**6.2**	**5.9**			
Iron	55000	NA			**7270**	**7280**			
Lead	400	150			**4.6**	**5.2**			
Magnesium	NA	NA			**1200**	**1170**			
Manganese	1800	390			**72.5**	**68.1**			
Mercury	23	23			0.0053 U	0.0049 U			
Nickel	1600	1000			**4.7**	**5.3 J**			
Potassium	NA	NA			**603**	**442**			
Selenium	390	390			0.085 U	0.096 U			
Silver	390	200			**1.7**	**1.9 J**			
Sodium	NA	NA			**73.1**	**46.1 J**			
Thallium	5.1	5.5			0.063 U	0.07 U			
Vanadium	390	550			**5.4**	**5**			
Zinc	23000	6000			**17.1**	**17**			
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500		0.96 U	0.97 U	0.96 U	0.98 U	0.98 U	0.97 U
TPH (C09-C36)	NA	500			**6.6**				
TPH (C09-C44)	NA	500			**9**				

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	ORNL	RIDEM	10	10	10	10	10	10	10
Location			SB16-079	SB16-079	SB16-079	SB16-080	SB16-080	SB16-080	SB16-080
Sample Number	Residential	Soil Direct	SB16-079-SO-1016	SB16-079-SO-1622	SB16-079-SO-1818	SB16-080-SO-0206	SB16-080-SO-0610	SB16-080-SO-1016	SB16-080-SO-1622
Sample Code	Regional	Exposure	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Screening	Residential	20070823	20070823	20070823	20070824	20070824	20070824	20070824
Depth Range (feet)	Levels	Criterion	10 - 16	16 - 22	18 - 18	2 - 6	6 - 10	10 - 16	16 - 22
Area			NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000			9.1 UR				
Acetone	61000000	7800000			**330 J**				
BTEX	NA	NA			**11**				
Carbon Disulfide	670000	NA			**28 J**				
cis-1,2-Dichloroethene	780000	630000			**5700 J**				
Ethylbenzene	5700	71000			4.1 UR				
Methyl Cyclohexane	3400000	NA			2.5 UR				
Methylene Chloride	11000	45000			5 UR				
Toluene	5000000	190000			**11 J**				
Total Chlorinated VOCs	NA	NA			**7208**				
Total Xylenes	600000	110000			5.8 UR				
trans-1,2-Dichloroethene	110000	1100000			**860 J**				
Trichloroethene	2800	13000			**570 J**				
Vinyl Chloride	60	20			**78 J**				
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000							
Acenaphthene	3400000	43000							
Acenaphthylene	3400000	23000							
Anthracene	17000000	35000							
Benzo(a)pyrene Equivalents	15	400							
Benzo(a)anthracene	150	900							
Benzo(a)pyrene	15	400							
Benzo(b)fluoranthene	150	900							
Benzo(g,h,i)perylene	1700000	800							
Benzo(k)fluoranthene	1500	900							
Carbazole	24000	NA							
Chrysene	15000	400							
Dibenzo(a,h)anthracene	15	400							
Dibenzofuran	NA	NA							
Fluoranthene	2300000	20000							
Fluorene	2300000	28000							
High Molecular Weight PAHs	NA	NA							
Indeno(1,2,3-cd)pyrene	150	900							
Low Molecular Weight PAHs	NA	NA							
Naphthalene	3900	54000							
Phenanthrene	1700000	40000							
Pyrene	1700000	13000							
Total PAHs	NA	NA							
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000		**0.87 J**		**0.63 J**			
Acenaphthene	3400000	43000		**1.3 J**		**0.78**			
Acenaphthylene	3400000	23000		2.5 U		**1.6**			
Anthracene	17000000	35000		**0.34 J**		**2**			
Benzo(a)pyrene Equivalents	15	400		**0.159**		**15.2**			
Benzo(a)anthracene	150	900		**0.33 J**		**11**			
Benzo(a)pyrene	15	400		2.5 U		**8.8**			
Benzo(b)fluoranthene	150	900		**0.85 J**		**14**			
Benzo(g,h,i)perylene	1700000	800		**0.49 J**		**13**			

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-079**	**SB16-079**	**SB16-079**	**SB16-080**	**SB16-080**	**SB16-080**	**SB16-080**
Sample Number	**Residential**	**Soil Direct**	**SB16-079-SO-1016**	**SB16-079-SO-1622**	**SB16-079-SO-1818**	**SB16-080-SO-0206**	**SB16-080-SO-0610**	**SB16-080-SO-1016**	**SB16-080-SO-1622**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070823**	**20070823**	**20070823**	**20070824**	**20070824**	**20070824**	**20070824**
Depth Range (feet)	**Levels**	**Criterion**	**10 - 16**	**16 - 22**	**18 - 18**	**2 - 6**	**6 - 10**	**10 - 16**	**16 - 22**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900		**0.44 J**		**12**			
Chrysene	15000	400		**1.4 J**		**14**			
Dibenzo(a,h)anthracene	15	400		2.5 U		**2.8**			
Fluoranthene	2300000	20000		**2.2 J**		**21**			
Fluorene	2300000	28000		**1.1 J**		**0.69**			
High Molecular Weight PAHs	NA	NA		**7.96**		**123.6**			
Indeno(1,2,3-cd)pyrene	150	900		**0.35 J**		**10**			
Low Molecular Weight PAHs	NA	NA		**8.01**		**16.8**			
Naphthalene	3900	54000		**2 J**		**1.1**			
Phenanthrene	1700000	40000		**2.4 J**		**10**			
Pyrene	1700000	13000		**1.9 J**		**17**			
Total PAHs	NA	NA		**15.97**		**140.4**			
Pesticides/PCBs (ug/kg)									
Aroclor-1260	220	NA							
Endrin Ketone	18000	NA							
Total Aroclor	240	10000							
Inorganics (mg/kg)									
Aluminum	77000	NA							
Antimony	31	10							
Arsenic	0.39	7							
Barium	15000	5500							
Beryllium	160	0.4							
Cadmium	70	39							
Calcium	NA	NA							
Chromium	230	1400							
Cobalt	23	NA							
Copper	3100	3100							
Iron	55000	NA							
Lead	400	150							
Magnesium	NA	NA							
Manganese	1800	390							
Mercury	23	23							
Nickel	1600	1000							
Potassium	NA	NA							
Selenium	390	390							
Silver	390	200							
Sodium	NA	NA							
Thallium	5.1	5.5							
Vanadium	390	550							
Zinc	23000	6000							
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500	0.98 U	0.98 U		**3.1**	0.96 U	0.96 U	0.95 U
TPH (C09-C36)	NA	500		**210**		**48**			
TPH (C09-C44)	NA	500		**260**		**62**			

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-081**	**SB16-081**	**SB16-081**	**SB16-081**	**SB16-081**	**SB16-081**	**SB16-082**
Sample Number	**Residential**	**Soil Direct**	**SB16-081-SO-0206**	**SB16-081-SO-0506**	**SB16-081-SO-0610**	**SB16-081-SO-1016**	**SB16-081-SO-1415**	**SB16-081-SO-1622**	**SB16-082-SO-0206**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070826**	**20070826**	**20070826**	**20070826**	**20070826**	**20070826**	**20070821**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 6**	**5 - 6**	**6 - 10**	**10 - 16**	**14 - 15**	**16 - 22**	**2 - 6**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000		2 UR			1.1 UR		
Acetone	61000000	7800000		2.3 UR			**11 J**		
BTEX	NA	NA		0 U			0 U		
Carbon Disulfide	670000	NA		2.8 U			1.6 UJ		
cis-1,2-Dichloroethene	780000	630000		0.64 U			**21 J**		
Ethylbenzene	5700	71000		0.91 U			0.51 UJ		
Methyl Cyclohexane	3400000	NA		**2.3 J**			0.31 UJ		
Methylene Chloride	11000	45000		**3 J**			0.62 UJ		
Toluene	5000000	190000		0.43 U			0.24 UJ		
Total Chlorinated VOCs	NA	NA		**3**			**39.2**		
Total Xylenes	600000	110000		1.3 UJ			0.72 UJ		
trans-1,2-Dichloroethene	110000	1100000		0.89 U			**4.2 J**		
Trichloroethene	2800	13000		0.49 U			0.27 UJ		
Vinyl Chloride	60	20		1.2 U			**14 J**		
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000							
Acenaphthene	3400000	43000							
Acenaphthylene	3400000	23000							
Anthracene	17000000	35000							
Benzo(a)pyrene Equivalents	15	400							
Benzo(a)anthracene	150	900							
Benzo(a)pyrene	15	400							
Benzo(b)fluoranthene	150	900							
Benzo(g,h,i)perylene	1700000	800							
Benzo(k)fluoranthene	1500	900							
Carbazole	24000	NA							
Chrysene	15000	400							
Dibenzo(a,h)anthracene	15	400							
Dibenzofuran	NA	NA							
Fluoranthene	2300000	20000							
Fluorene	2300000	28000							
High Molecular Weight PAHs	NA	NA							
Indeno(1,2,3-cd)pyrene	150	900							
Low Molecular Weight PAHs	NA	NA							
Naphthalene	3900	54000							
Phenanthrene	1700000	40000							
Pyrene	1700000	13000							
Total PAHs	NA	NA							
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000				**1.7**			**29**
Acenaphthene	3400000	43000				**27**			**33**
Acenaphthylene	3400000	23000				**3**			**4.4**
Anthracene	17000000	35000				**47**			**81**
Benzo(a)pyrene Equivalents	15	400				**146**			**112**
Benzo(a)anthracene	150	900				**160**			**120**
Benzo(a)pyrene	15	400				**88**			**68**
Benzo(b)fluoranthene	150	900				**110**			**83**
Benzo(g,h,i)perylene	1700000	800				**70**			**55**

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	ORNL	RIDEM	10	10	10	10	10	10	10
Location	Residential	Soil Direct	SB16-081	SB16-081	SB16-081	SB16-081	SB16-081	SB16-081	SB16-082
Sample Number	Regional	Exposure	SB16-081-SO-0206	SB16-081-SO-0506	SB16-081-SO-0610	SB16-081-SO-1016	SB16-081-SO-1415	SB16-081-SO-1622	SB16-082-SO-0206
Sample Code	Screening	Residential	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Levels	Criterion	20070826	20070826	20070826	20070826	20070826	20070826	20070821
Depth Range (feet)			2 - 6	5 - 6	6 - 10	10 - 16	14 - 15	16 - 22	2 - 6
Area			NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900				**110**			**88**
Chrysene	15000	400				**160**			**110**
Dibenzo(a,h)anthracene	15	400				**22**			**16**
Fluoranthene	2300000	20000				**310**			**320**
Fluorene	2300000	28000				**23**			**47**
High Molecular Weight PAHs	NA	NA				**1335**			**1179**
Indeno(1,2,3-cd)pyrene	150	900				**75**			**69**
Low Molecular Weight PAHs	NA	NA				**336.1**			**642.4**
Naphthalene	3900	54000				**4.4**			**78**
Phenanthrene	1700000	40000				**230**			**370**
Pyrene	1700000	13000				**230**			**250**
Total PAHs	NA	NA				**1671.1**			**1821.4**
Pesticides/PCBs (ug/kg)									
Aroclor-1260	220	NA							
Endrin Ketone	18000	NA							
Total Aroclor	240	10000							
Inorganics (mg/kg)									
Aluminum	77000	NA							
Antimony	31	10							
Arsenic	0.39	7							
Barium	15000	5500							
Beryllium	160	0.4							
Cadmium	70	39							
Calcium	NA	NA							
Chromium	230	1400							
Cobalt	23	NA							
Copper	3100	3100							
Iron	55000	NA							
Lead	400	150							
Magnesium	NA	NA							
Manganese	1800	390							
Mercury	23	23							
Nickel	1600	1000							
Potassium	NA	NA							
Selenium	390	390							
Silver	390	200							
Sodium	NA	NA							
Thallium	5.1	5.5							
Vanadium	390	550							
Zinc	23000	6000							
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500	**1.5**		0.96 U	**2.1**		0.99 U	**6.5**
TPH (C09-C36)	NA	500				**28**			**9.4**
TPH (C09-C44)	NA	500				**40**			**14**

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**1**
Location	**ORNL**	**RIDEM**	**SB16-082**	**SB16-082**	**SB16-082**	**SB16-083**	**SB16-083**	**SB16-083**	**SB16-083**	**SB16**
Sample Number	**Residential**	**Soil Direct**	**SB16-082-SO-0610**	**SB16-082-SO-1016**	**SB16-082-SO-1622**	**SB16-083-SO-0206**	**SB16-083-SO-0610**	**SB16-083-SO-1016**	**SB16-083-SO-1516**	**SB16-083**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NOR**
Sample Date	**Screening**	**Residential**	**20070821**	**20070821**	**20070821**	**20070822**	**20070822**	**20070822**	**20070822**	**2007**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**6 - 10**	**10 - 16**	**15 - 16**	**16 -**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH C**
Volatile Organic Compounds (ug/kg)										
2-Butanone	28000000	10000000							0.98 UR	
Acetone	61000000	7800000							**19 J**	
BTEX	NA	NA							0 U	
Carbon Disulfide	670000	NA							**1.8 J**	
cis-1,2-Dichloroethene	780000	630000							**2.1 J**	
Ethylbenzene	5700	71000							0.44 U	
Methyl Cyclohexane	3400000	NA							0.27 U	
Methylene Chloride	11000	45000							0.54 U	
Toluene	5000000	190000							0.21 U	
Total Chlorinated VOCs	NA	NA							**4.4**	
Total Xylenes	600000	110000							0.62 U	
trans-1,2-Dichloroethene	110000	1100000							0.43 U	
Trichloroethene	2800	13000							0.24 U	
Vinyl Chloride	60	20							**2.3 J**	
Semivolatile Organic Compounds (ug/kg)										
2-Methylnaphthalene	310000	123000								
Acenaphthene	3400000	43000								
Acenaphthylene	3400000	23000								
Anthracene	17000000	35000								
Benzo(a)pyrene Equivalents	15	400								
Benzo(a)anthracene	150	900								
Benzo(a)pyrene	15	400								
Benzo(b)fluoranthene	150	900								
Benzo(g,h,i)perylene	1700000	800								
Benzo(k)fluoranthene	1500	900								
Carbazole	24000	NA								
Chrysene	15000	400								
Dibenzo(a,h)anthracene	15	400								
Dibenzofuran	NA	NA								
Fluoranthene	2300000	20000								
Fluorene	2300000	28000								
High Molecular Weight PAHs	NA	NA								
Indeno(1,2,3-cd)pyrene	150	900								
Low Molecular Weight PAHs	NA	NA								
Naphthalene	3900	54000								
Phenanthrene	1700000	40000								
Pyrene	1700000	13000								
Total PAHs	NA	NA								
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000				**3.1**				
Acenaphthene	3400000	43000				**8.5**				
Acenaphthylene	3400000	23000				**4.7**				
Anthracene	17000000	35000				**7.9**				
Benzo(a)pyrene Equivalents	15	400				**34.9**				
Benzo(a)anthracene	150	900				**52**				
Benzo(a)pyrene	15	400				**6.1**				
Benzo(b)fluoranthene	150	900				**64**				
Benzo(g,h,i)perylene	1700000	800				**36**				

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**1**
Location	**ORNL**	**RIDEM**	**SB16-082**	**SB16-082**	**SB16-082**	**SB16-083**	**SB16-083**	**SB16-083**	**SB16-083**	**SB16**
Sample Number	**Residential**	**Soil Direct**	**SB16-082-SO-0610**	**SB16-082-SO-1016**	**SB16-082-SO-1622**	**SB16-083-SO-0206**	**SB16-083-SO-0610**	**SB16-083-SO-1016**	**SB16-083-SO-1516**	**SB16-083**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NOR**
Sample Date	**Screening**	**Residential**	**20070821**	**20070821**	**20070821**	**20070822**	**20070822**	**20070822**	**20070822**	**2007**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 10**	**10 - 16**	**16 - 22**	**2 - 6**	**6 - 10**	**10 - 16**	**15 - 16**	**16 -**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH C**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)										
Benzo(k)fluoranthene	1500	900				**53**				
Chrysene	15000	400				**71**				
Dibenzo(a,h)anthracene	15	400				**12**				
Fluoranthene	2300000	20000				**160**				
Fluorene	2300000	28000				**9.3**				
High Molecular Weight PAHs	NA	NA				**620.1**				
Indeno(1,2,3-cd)pyrene	150	900				**46**				
Low Molecular Weight PAHs	NA	NA				**130**				
Naphthalene	3900	54000				**4.5**				
Phenanthrene	1700000	40000				**92**				
Pyrene	1700000	13000				**120**				
Total PAHs	NA	NA				**750.1**				
Pesticides/PCBs (ug/kg)										
Aroclor-1260	220	NA								
Endrin Ketone	18000	NA								
Total Aroclor	240	10000								
Inorganics (mg/kg)										
Aluminum	77000	NA			**5730**					
Antimony	31	10			0.27 U					
Arsenic	0.39	7			**2.8 J**					
Barium	15000	5500			**10.4**					
Beryllium	160	0.4			**0.16**					
Cadmium	70	39			**0.33 J**					
Calcium	NA	NA			**1440 J**					
Chromium	230	1400			**7.1**					
Cobalt	23	NA			**6.5 J**					
Copper	3100	3100			**21.1**					
Iron	55000	NA			**7880**					
Lead	400	150			**6.9**					
Magnesium	NA	NA			**2430**					
Manganese	1800	390			**96.2**					
Mercury	23	23			0.0067 U					
Nickel	1600	1000			**11.9 J**					
Potassium	NA	NA			**668**					
Selenium	390	390			**1.7**					
Silver	390	200			0.043 U					
Sodium	NA	NA			**162**					
Thallium	5.1	5.5			**0.84 J**					
Vanadium	390	550			**7.3**					
Zinc	23000	6000			**36.5**					
Diesel Range Organics - Semivolatile (mg/kg)										
TPH (C09-C36)	NA	500								
Petroleum Hydrocarbons (mg/kg)										
Extractable TPH-Screening Data	NA	500	0.96 U	0.95 U	0.97 U	**2.5**	**1.9**	0.97 U		0.97
TPH (C09-C36)	NA	500				**53**				
TPH (C09-C44)	NA	500				**67**				

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**0**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**-083**	**SB16-084**	**SB16-084**	**SB16-084**	**SB16-084**	**SB16-085**	**SB16-085**	**SB16-085**
Sample Number	**Residential**	**Soil Direct**	**-SO-1622**	**SB16-084-SO-0506**	**SB16-084-SO-0910**	**SB16-084-SO-1314**	**SB16-084-SO-1819**	**SB16-085-SO-0206**	**SB16-085-SO-0610**	**SB16-085-SO-0910**
Sample Code	**Regional**	**Exposure**	**MAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**0822**	**20070807**	**20070807**	**20070807**	**20070807**	**20070821**	**20070821**	**20070821**
Depth Range (feet)	**Levels**	**Criterion**	**- 22**	**5 - 6**	**9 - 10**	**13 - 14**	**18 - 19**	**2 - 6**	**6 - 10**	**9 - 10**
Area			**EN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Volatile Organic Compounds (ug/kg)										
2-Butanone	28000000	10000000		1.1 U						1.2 UR
Acetone	61000000	7800000		1.3 U						1.4 UR
BTEX	NA	NA		0 U						0 U
Carbon Disulfide	670000	NA		1.6 U						1.7 U
cis-1,2-Dichloroethene	780000	630000		0.36 U						0.39 U
Ethylbenzene	5700	71000		0.51 UJ						0.55 U
Methyl Cyclohexane	3400000	NA		0.31 U						0.34 U
Methylene Chloride	11000	45000		0.62 U						0.68 U
Toluene	5000000	190000		0.24 U						0.26 U
Total Chlorinated VOCs	NA	NA		0 U						0 U
Total Xylenes	600000	110000		0.72 U						0.78 U
trans-1,2-Dichloroethene	110000	1100000		0.5 U						0.54 U
Trichloroethene	2800	13000		0.27 U						0.3 U
Vinyl Chloride	60	20		0.65 U						0.71 UJ
Semivolatile Organic Compounds (ug/kg)										
2-Methylnaphthalene	310000	123000							34 U	
Acenaphthene	3400000	43000							34 U	
Acenaphthylene	3400000	23000							34 U	
Anthracene	17000000	35000							34 U	
Benzo(a)pyrene Equivalents	15	400							34 U	
Benzo(a)anthracene	150	900							34 U	
Benzo(a)pyrene	15	400							34 U	
Benzo(b)fluoranthene	150	900							34 U	
Benzo(g,h,i)perylene	1700000	800							34 U	
Benzo(k)fluoranthene	1500	900							34 U	
Carbazole	24000	NA							34 U	
Chrysene	15000	400							34 U	
Dibenzo(a,h)anthracene	15	400							34 U	
Dibenzofuran	NA	NA							34 U	
Fluoranthene	2300000	20000							34 U	
Fluorene	2300000	28000							34 U	
High Molecular Weight PAHs	NA	NA							0 U	
Indeno(1,2,3-cd)pyrene	150	900							34 U	
Low Molecular Weight PAHs	NA	NA							0 U	
Naphthalene	3900	54000							34 U	
Phenanthrene	1700000	40000							34 U	
Pyrene	1700000	13000							34 U	
Total PAHs	NA	NA							0 U	
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000			0.43 U			**57**		
Acenaphthene	3400000	43000			0.2 U			**1.6**		
Acenaphthylene	3400000	23000			**0.36 J**			**1.4**		
Anthracene	17000000	35000			**0.42 J**			**2.5**		
Benzo(a)pyrene Equivalents	15	400			**0.110**			**10.1**		
Benzo(a)anthracene	150	900			**0.15 J**			**11**		
Benzo(a)pyrene	15	400			**0.072 J**			**3.5**		
Benzo(b)fluoranthene	150	900			**0.15 J**			**13**		
Benzo(g,h,i)perylene	1700000	800			**0.092 J**			**13**		

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**0**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**6-083**	**SB16-084**	**SB16-084**	**SB16-084**	**SB16-084**	**SB16-085**	**SB16-085**	**SB16-085**
Sample Number	**Residential**	**Soil Direct**	**-SO-1622**	**SB16-084-SO-0506**	**SB16-084-SO-0910**	**SB16-084-SO-1314**	**SB16-084-SO-1819**	**SB16-085-SO-0206**	**SB16-085-SO-0610**	**SB16-085-SO-0910**
Sample Code	**Regional**	**Exposure**	**MAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**0822**	**20070807**	**20070807**	**20070807**	**20070807**	**20070821**	**20070821**	**20070821**
Depth Range (feet)	**Levels**	**Criterion**	**- 22**	**5 - 6**	**9 - 10**	**13 - 14**	**18 - 19**	**2 - 6**	**6 - 10**	**9 - 10**
Area			**EN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)										
Benzo(k)fluoranthene	1500	900			**0.13 J**			**10**		
Chrysene	15000	400			**0.32 J**			**17**		
Dibenzo(a,h)anthracene	15	400			0.69 UJ			**3**		
Fluoranthene	2300000	20000			**0.62 J**			**25**		
Fluorene	2300000	28000			**0.47 J**			**2.1**		
High Molecular Weight PAHs	NA	NA			**1.999**			**128.5**		
Indeno(1,2,3-cd)pyrene	150	900			**0.065 J**			**11**		
Low Molecular Weight PAHs	NA	NA			**7.35**			**144.6**		
Naphthalene	3900	54000			**4.5 J**			**41**		
Phenanthrene	1700000	40000			**1.6 J**			**39**		
Pyrene	1700000	13000			**0.4 J**			**22**		
Total PAHs	NA	NA			**9.349**			**273.1**		
Pesticides/PCBs (ug/kg)										
Aroclor-1260	220	NA							34 U	
Endrin Ketone	18000	NA							3.4 UJ	
Total Aroclor	240	10000							0 U	
Inorganics (mg/kg)										
Aluminum	77000	NA		**10000**	**3370**					
Antimony	31	10		0.039 UJ	0.089 U					
Arsenic	0.39	7		**2.3 J**	**1.3 J**					
Barium	15000	5500		**23.2**	**7.2**					
Beryllium	160	0.4		**0.68**	**0.27**					
Cadmium	70	39		**0.21 J**	**0.073 J**					
Calcium	NA	NA		**560**	**153**					
Chromium	230	1400		**11.4**	**6.4**					
Cobalt	23	NA		**7.7 J**	**3.2 J**					
Copper	3100	3100		**17.7**	**6.8**					
Iron	55000	NA		**20200**	**9620**					
Lead	400	150		**9.2 J**	**5.1 J**					
Magnesium	NA	NA		**3220**	**1460**					
Manganese	1800	390		**299**	**101**					
Mercury	23	23		0.0074 U	0.0065 U					
Nickel	1600	1000		**13.8 J**	**6 J**					
Potassium	NA	NA		**935**	**458**					
Selenium	390	390		**2.9 J**	**1.6 J**					
Silver	390	200		0.013 UJ	0.014 UJ					
Sodium	NA	NA		**28.8**	**16.2**					
Thallium	5.1	5.5		**1.8 J**	**1.6 J**					
Vanadium	390	550		**17.8**	**8.1**					
Zinc	23000	6000		**40.5**	**18.3 J**					
Diesel Range Organics - Semivolatile (mg/kg)										
TPH (C09-C36)	NA	500								
Petroleum Hydrocarbons (mg/kg)										
Extractable TPH-Screening Data	NA	500	U	0.99 U	0.96 U	0.97 U	0.99 U	0.94 U	0.96 U	
TPH (C09-C36)	NA	500			9 U			**29**		
TPH (C09-C44)	NA	500			**20**			**40**		

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			10	10	10	10	10	10	10
Location	ORNL	RIDEM	SB16-085	SB16-085	SB16-090	SB16-090	SB16-090	SB16-090	SB16-090
Sample Number	Residential	Soil Direct	SB16-085-SO-1016	SB16-085-SO-1622	SB16-090-SO-0206	SB16-090-SO-0610	SB16-090-SO-0910	SB16-090-SO-1016	SB16-090-SO-1622
Sample Code	Regional	Exposure	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Screening	Residential	20070821	20070821	20071001	20071001	20071001	20071001	20071001
Depth Range (feet)	Levels	Criterion	10 - 16	16 - 22	2 - 6	6 - 10	9 - 10	10 - 16	16 - 22
Area			NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000					0.58 U		
Acetone	61000000	7800000					**2.1 J**		
BTEX	NA	NA					**23.1**		
Carbon Disulfide	670000	NA					0.24 U		
cis-1,2-Dichloroethene	780000	630000					0.55 U		
Ethylbenzene	5700	71000					**3.1 J**		
Methyl Cyclohexane	3400000	NA					0.25 U		
Methylene Chloride	11000	45000					0.69 U		
Toluene	5000000	190000					**1 J**		
Total Chlorinated VOCs	NA	NA					0 U		
Total Xylenes	600000	110000					**19**		
trans-1,2-Dichloroethene	110000	1100000					0.53 U		
Trichloroethene	2800	13000					0.22 U		
Vinyl Chloride	60	20					0.17 U		
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000			35 U	40 U			
Acenaphthene	3400000	43000			35 U	40 U			
Acenaphthylene	3400000	23000			35 U	40 U			
Anthracene	17000000	35000			35 U	40 U			
Benzo(a)pyrene Equivalents	15	400			35 U	40 U			
Benzo(a)anthracene	150	900			35 U	40 U			
Benzo(a)pyrene	15	400			35 U	40 U			
Benzo(b)fluoranthene	150	900			35 U	40 U			
Benzo(g,h,i)perylene	1700000	800			35 U	40 U			
Benzo(k)fluoranthene	1500	900			35 U	40 U			
Carbazole	24000	NA			35 U	40 U			
Chrysene	15000	400			35 U	40 U			
Dibenzo(a,h)anthracene	15	400			35 U	40 U			
Dibenzofuran	NA	NA			35 U	40 U			
Fluoranthene	2300000	20000			35 U	40 U			
Fluorene	2300000	28000			35 U	40 U			
High Molecular Weight PAHs	NA	NA			0 U	0 U			
Indeno(1,2,3-cd)pyrene	150	900			35 U	40 U			
Low Molecular Weight PAHs	NA	NA			0 U	0 U			
Naphthalene	3900	54000			35 U	40 U			
Phenanthrene	1700000	40000			35 U	40 U			
Pyrene	1700000	13000			35 U	40 U			
Total PAHs	NA	NA			0 U	0 U			
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000			**0.49 J**				
Acenaphthene	3400000	43000			**2**				
Acenaphthylene	3400000	23000			**0.82**				
Anthracene	17000000	35000			**3.3**				
Benzo(a)pyrene Equivalents	15	400			**11.2**				
Benzo(a)anthracene	150	900			**8**				
Benzo(a)pyrene	15	400			**6.3**				
Benzo(b)fluoranthene	150	900			**12**				
Benzo(g,h,i)perylene	1700000	800			**7.4 J**				

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-085**	**SB16-085**	**SB16-090**	**SB16-090**	**SB16-090**	**SB16-090**	**SB16-090**
Sample Number	**Residential**	**Soil Direct**	**SB16-085-SO-1016**	**SB16-085-SO-1622**	**SB16-090-SO-0206**	**SB16-090-SO-0610**	**SB16-090-SO-0910**	**SB16-090-SO-1016**	**SB16-090-SO-1622**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070821**	**20070821**	**20071001**	**20071001**	**20071001**	**20071001**	**20071001**
Depth Range (feet)	**Levels**	**Criterion**	**10 - 16**	**16 - 22**	**2 - 6**	**6 - 10**	**9 - 10**	**10 - 16**	**16 - 22**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900			**12**				
Chrysene	15000	400			**19**				
Dibenzo(a,h)anthracene	15	400			**2**				
Fluoranthene	2300000	20000			**32**				
Fluorene	2300000	28000			**1.6**				
High Molecular Weight PAHs	NA	NA			**132.7**				
Indeno(1,2,3-cd)pyrene	150	900			**8**				
Low Molecular Weight PAHs	NA	NA			**27.11**				
Naphthalene	3900	54000			**1.9**				
Phenanthrene	1700000	40000			**17**				
Pyrene	1700000	13000			**26**				
Total PAHs	NA	NA			**159.81**				
Pesticides/PCBs (ug/kg)									
Aroclor-1260	220	NA			35 U	40 U			
Endrin Ketone	18000	NA			3.5 U	4 U			
Total Aroclor	240	10000			0 U	0 U			
Inorganics (mg/kg)									
Aluminum	77000	NA			**4310**			**3330**	
Antimony	31	10			0.5 U			0.36 U	
Arsenic	0.39	7			**2.9**			**2.4**	
Barium	15000	5500			**12**			**6.6**	
Beryllium	160	0.4			0.0009 U			0.001 U	
Cadmium	70	39			**0.22 J**			**0.16 J**	
Calcium	NA	NA			**584**			**496**	
Chromium	230	1400			**4.6**			**4.2**	
Cobalt	23	NA			**3.8 J**			**3.9 J**	
Copper	3100	3100			**10.8**			**9.8**	
Iron	55000	NA			**8770**			**7880**	
Lead	400	150			**11.1**			**3.9**	
Magnesium	NA	NA			**1060**			**1190**	
Manganese	1800	390			**107**			**119**	
Mercury	23	23			0.0049 UJ			0.0057 UJ	
Nickel	1600	1000			**5.4 J**			**6.3 J**	
Potassium	NA	NA			**524**			**386**	
Selenium	390	390			0.096 UJ			0.11 UJ	
Silver	390	200			**2.5 J**			**2.3 J**	
Sodium	NA	NA			**24.6 J**			17.5 U	
Thallium	5.1	5.5			0.07 U			0.08 U	
Vanadium	390	550			**6.5**			**5.7**	
Zinc	23000	6000			**34.9**			**15.8**	
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500	0.96 U	0.99 U	0.97 U	0.97 U		0.97 U	0.96 U
TPH (C09-C36)	NA	500			**10**				
TPH (C09-C44)	NA	500			**22**				

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	ORNL	RIDEM	10	10	10	10	10	10	10
Location	Residential	Soil Direct	SB16-091	SB16-091	SB16-091	SB16-091	SB16-091	SB16-092	SB16-092
Sample Number	Regional	Exposure	SB16-091-SO-0206	SB16-091-SO-0610	SB16-091-SO-0910	SB16-091-SO-1016	SB16-091-SO-1622	SB16-092-SO-0206	SB16-092-SO-0304
Sample Code	Screening	Residential	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Levels	Criterion	20071002	20071002	20071002	20071002	20071002	20070930	20070930
Depth Range (feet)			2 - 6	6 - 10	9 - 10	10 - 16	16 - 22	2 - 6	3 - 4
Area			NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000			0.49 U				0.55 U
Acetone	61000000	7800000			1.2 U				1.4 U
BTEX	NA	NA			**11.6**				**4.7**
Carbon Disulfide	670000	NA			0.2 U				0.23 U
cis-1,2-Dichloroethene	780000	630000			0.46 U				0.52 U
Ethylbenzene	5700	71000			**1.6 J**				0.88 U
Methyl Cyclohexane	3400000	NA			0.21 U				0.24 U
Methylene Chloride	11000	45000			0.58 U				0.66 U
Toluene	5000000	190000			0.4 U				0.46 U
Total Chlorinated VOCs	NA	NA			0 U				0 U
Total Xylenes	600000	110000			**10**				**4.7**
trans-1,2-Dichloroethene	110000	1100000			0.45 U				0.51 U
Trichloroethene	2800	13000			0.19 U				0.21 U
Vinyl Chloride	60	20			0.14 U				0.16 U
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000		**200**				36 U	
Acenaphthene	3400000	43000		**2600**				36 U	
Acenaphthylene	3400000	23000		**140**				36 U	
Anthracene	17000000	35000		**2700**				36 U	
Benzo(a)pyrene Equivalents	15	400		**2682**				**96.5**	
Benzo(a)anthracene	150	900		**3900**				**58**	
Benzo(a)pyrene	15	400		**1700**				**75**	
Benzo(b)fluoranthene	150	900		**2900**				**100**	
Benzo(g,h,i)perylene	1700000	800		**670**				**53**	
Benzo(k)fluoranthene	1500	900		**1100**				**43**	
Carbazole	24000	NA		**140**				36 U	
Chrysene	15000	400		**3800**				**74**	
Dibenzo(a,h)anthracene	15	400		**220**				36 U	
Dibenzofuran	NA	NA		**1500**				36 U	
Fluoranthene	2300000	20000		**11000**				**110**	
Fluorene	2300000	28000		**2600**				36 U	
High Molecular Weight PAHs	NA	NA		**33660**				**659**	
Indeno(1,2,3-cd)pyrene	150	900		**670**				**52**	
Low Molecular Weight PAHs	NA	NA		**15020**				**50**	
Naphthalene	3900	54000		**180**				36 U	
Phenanthrene	1700000	40000		**6600**				**50**	
Pyrene	1700000	13000		**7700**				**94**	
Total PAHs	NA	NA		**48680**				**709**	
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000	**78**	**1400**				**3.6**	
Acenaphthene	3400000	43000	**1000**	**7500**				**2.7**	
Acenaphthylene	3400000	23000	**23**	**220**				**5.9**	
Anthracene	17000000	35000	**130**	**2300**				**6.8**	
Benzo(a)pyrene Equivalents	15	400	**119**	**3014**				**60.8**	
Benzo(a)anthracene	150	900	**82**	**5100**				**61**	
Benzo(a)pyrene	15	400	**60**	**1700**				**24**	
Benzo(b)fluoranthene	150	900	**150**	**3200**				**87**	
Benzo(g,h,i)perylene	1700000	800	**88**	**920**				**55**	

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet) Area	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	10 SB16-091 SB16-091-SO-0206 NORMAL 20071002 2 - 6 NORTH CEN EAST	10 SB16-091 SB16-091-SO-0610 NORMAL 20071002 6 - 10 NORTH CEN EAST	10 SB16-091 SB16-091-SO-0910 NORMAL 20071002 9 - 10 NORTH CEN EAST	10 SB16-091 SB16-091-SO-1016 NORMAL 20071002 10 - 16 NORTH CEN EAST	10 SB16-091 SB16-091-SO-1622 NORMAL 20071002 16 - 22 NORTH CEN EAST	10 SB16-092 SB16-092-SO-0206 NORMAL 20070930 2 - 6 NORTH CEN EAST	10 SB16-092 SB16-092-SO-0304 NORMAL 20070930 3 - 4 NORTH CEN EAST
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900	**120**	**2800**				**73**	
Chrysene	15000	400	**150**	**5900**				**88**	
Dibenzo(a,h)anthracene	15	400	**25**	**340**				**15**	
Fluoranthene	2300000	20000	**450**	**21000**				**140 J**	
Fluorene	2300000	28000	**1000**	**6900**				**3.4**	
High Molecular Weight PAHs	NA	NA	**1508**	**57060**				**725**	
Indeno(1,2,3-cd)pyrene	150	900	**93**	**1100**				**62**	
Low Molecular Weight PAHs	NA	NA	**5713**	**38220**				**85.7**	
Naphthalene	3900	54000	**82**	**1900**				**7.3**	
Phenanthrene	1700000	40000	**3400**	**18000**				**56**	
Pyrene	1700000	13000	**290**	**15000**				**120 J**	
Total PAHs	NA	NA	**7221**	**95280**				**810.7**	
Pesticides/PCBs (ug/kg)									
Aroclor-1260	220	NA		**40 J**				36 U	
Endrin Ketone	18000	NA		**7.9 J**				3.6 UJ	
Total Aroclor	240	10000		**40**				0 U	
Inorganics (mg/kg)									
Aluminum	77000	NA	**4210**						
Antimony	31	10	0.49 U						
Arsenic	0.39	7	**2.4**						
Barium	15000	5500	**17.6**						
Beryllium	160	0.4	0.00077 U						
Cadmium	70	39	**0.26 J**						
Calcium	NA	NA	**648**						
Chromium	230	1400	**6.3**						
Cobalt	23	NA	**3.3 J**						
Copper	3100	3100	**13.4**						
Iron	55000	NA	**7470**						
Lead	400	150	**24.1**						
Magnesium	NA	NA	**1060**						
Manganese	1800	390	**77.8**						
Mercury	23	23	**0.0046 J**						
Nickel	1600	1000	**5.2 J**						
Potassium	NA	NA	**561**						
Selenium	390	390	0.082 UJ						
Silver	390	200	**2.2 J**						
Sodium	NA	NA	**31.2 J**						
Thallium	5.1	5.5	0.06 U						
Vanadium	390	550	**6.8**						
Zinc	23000	6000	**53.3**						
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500	**2.8**	**92**		0.98 U	0.99 U	0.99 U	
TPH (C09-C36)	NA	500	**54**	**200**				**41**	
TPH (C09-C44)	NA	500	**86**	**220**				**60**	

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	ORNL	RIDEM	10	10	10	10	10	10	10
Location	Residential	Soil Direct	SB16-092	SB16-092	SB16-093	SB16-093	SB16-093	SB16-094	SB16-094
Sample Number	Regional	Exposure	SB16-092-SO-0608	SB16-092-SO-0708	SB16-093-SO-0207	SB16-093-SO-0207-D	SB16-093-SO-0607	SB16-094-SO-0205	SB16-094-SO-0405
Sample Code	Screening	Residential	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL
Sample Date	Levels	Criterion	20070930	20070930	20071002	20071002	20071002	20071002	20071002
Depth Range (feet)			6 - 8	7 - 8	2 - 7	2 - 7	6 - 7	2 - 5	4 - 5
Area			NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000		**17**			0.52 U		**5**
Acetone	61000000	7800000		**63**			**1.8 J**		**22**
BTEX	NA	NA		**18.5**			**8.2**		**9.1**
Carbon Disulfide	670000	NA		0.33 U			0.21 U		0.22 U
cis-1,2-Dichloroethene	780000	630000		0.75 U			0.49 U		0.49 U
Ethylbenzene	5700	71000		**2.5 J**			**1.1 J**		**1.2 J**
Methyl Cyclohexane	3400000	NA		0.35 U			0.23 U		0.23 U
Methylene Chloride	11000	45000		0.94 U			0.61 U		0.62 U
Toluene	5000000	190000		0.66 U			0.43 U		0.43 U
Total Chlorinated VOCs	NA	NA		0 U			0 U		0 U
Total Xylenes	600000	110000		**16**			**7.1**		**7.9**
trans-1,2-Dichloroethene	110000	1100000		0.73 U			0.48 U		0.48 U
Trichloroethene	2800	13000		0.31 U			0.2 U		0.2 U
Vinyl Chloride	60	20		0.23 U			0.15 U		0.15 U
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000			36 U	36 U		35 U	
Acenaphthene	3400000	43000			36 U	36 U		35 U	
Acenaphthylene	3400000	23000			36 U	36 U		35 U	
Anthracene	17000000	35000			36 U	36 U		35 U	
Benzo(a)pyrene Equivalents	15	400			36 U	36 U		**0.041**	
Benzo(a)anthracene	150	900			36 U	36 U		35 U	
Benzo(a)pyrene	15	400			36 U	36 U		35 U	
Benzo(b)fluoranthene	150	900			36 U	36 U		35 U	
Benzo(g,h,i)perylene	1700000	800			36 U	36 U		35 U	
Benzo(k)fluoranthene	1500	900			36 U	36 U		35 U	
Carbazole	24000	NA			36 U	36 U		35 U	
Chrysene	15000	400			36 U	36 U		**41**	
Dibenzo(a,h)anthracene	15	400			36 U	36 U		35 U	
Dibenzofuran	NA	NA			36 U	36 U		35 U	
Fluoranthene	2300000	20000			**59**	**48**		**45**	
Fluorene	2300000	28000			36 U	36 U		35 U	
High Molecular Weight PAHs	NA	NA			**108**	**89**		**165**	
Indeno(1,2,3-cd)pyrene	150	900			36 U	36 U		35 U	
Low Molecular Weight PAHs	NA	NA			0 U	0 U		**36**	
Naphthalene	3900	54000			36 U	36 U		35 U	
Phenanthrene	1700000	40000			36 U	36 U		**36**	
Pyrene	1700000	13000			**49**	**41**		**79**	
Total PAHs	NA	NA			**108**	**89**		**201**	
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000			**3.7**	**2.6**		**20**	
Acenaphthene	3400000	43000			**5.8 J**	**3 J**		**14**	
Acenaphthylene	3400000	23000			**4.4**	**3.5**		**6.4 J**	
Anthracene	17000000	35000			**5**	**5.2 J**		**7.5**	
Benzo(a)pyrene Equivalents	15	400			**31.5**	**26.3**		**55.1**	
Benzo(a)anthracene	150	900			**26**	**22 J**		**33**	
Benzo(a)pyrene	15	400			**13**	**14 J**		**35**	
Benzo(b)fluoranthene	150	900			**37**	**24 J**		**51**	
Benzo(g,h,i)perylene	1700000	800			**37 J**	**20 J**		**45**	

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	ORNL	RIDEM	10	10	10	10	10	10	10
Location			SB16-092	SB16-092	SB16-093	SB16-093	SB16-093	SB16-094	SB16-094
Sample Number	Residential	Soil Direct	SB16-092-SO-0608	SB16-092-SO-0708	SB16-093-SO-0207	SB16-093-SO-0207-D	SB16-093-SO-0607	SB16-094-SO-0205	SB16-094-SO-0405
Sample Code	Regional	Exposure	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL
Sample Date	Screening	Residential	20070930	20070930	20071002	20071002	20071002	20071002	20071002
Depth Range (feet)	Levels	Criterion	6 - 8	7 - 8	2 - 7	2 - 7	6 - 7	2 - 5	4 - 5
Area			NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900			**33**	**23 J**		**32**	
Chrysene	15000	400			**50**	**30 J**		**78**	
Dibenzo(a,h)anthracene	15	400			**9.2**	**5.6**		**8.4**	
Fluoranthene	2300000	20000			**70**	**50 J**		**96**	
Fluorene	2300000	28000			**5.4**	**5.5**		**19**	
High Molecular Weight PAHs	NA	NA			**376.2**	**247.6**		**577.4**	
Indeno(1,2,3-cd)pyrene	150	900			**26 J**	**18 J**		**29**	
Low Molecular Weight PAHs	NA	NA			**54.4**	**65.8**		**150.9**	
Naphthalene	3900	54000			**6.1 J**	**24 J**		**10**	
Phenanthrene	1700000	40000			**24**	**22**		**74**	
Pyrene	1700000	13000			**75 J**	**41 J**		**170**	
Total PAHs	NA	NA			**430.6**	**313.4**		**728.3**	
Pesticides/PCBs (ug/kg)									
Aroclor-1260	220	NA			36 U	37 U		35 U	
Endrin Ketone	18000	NA			3.6 U	3.7 U		3.5 U	
Total Aroclor	240	10000			0 U	0 U		0 U	
Inorganics (mg/kg)									
Aluminum	77000	NA						**4330**	
Antimony	31	10						0.43 U	
Arsenic	0.39	7						**2.6**	
Barium	15000	5500						**18.1**	
Beryllium	160	0.4						0.00076 U	
Cadmium	70	39						**0.34 J**	
Calcium	NA	NA						**668**	
Chromium	230	1400						**5.7**	
Cobalt	23	NA						**4.1 J**	
Copper	3100	3100						**11.8**	
Iron	55000	NA						**10800**	
Lead	400	150						**17.1**	
Magnesium	NA	NA						**1330**	
Manganese	1800	390						**117**	
Mercury	23	23						**0.054**	
Nickel	1600	1000						**6.1 J**	
Potassium	NA	NA						**751**	
Selenium	390	390						0.082 UJ	
Silver	390	200						**2.5 J**	
Sodium	NA	NA						**31.6 J**	
Thallium	5.1	5.5						0.06 U	
Vanadium	390	550						**7.7**	
Zinc	23000	6000						**31.7**	
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500	0.98 U		0.96 U	0.99 U		**1.9**	
TPH (C09-C36)	NA	500			**290 J**	**82 J**		**1800**	
TPH (C09-C44)	NA	500			**410 J**	**110 J**		**2600**	

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-094**	**SB16-094**	**SB16-095**	**SB16-095**	**SB16-095**	**SB16-098**	**SB16-098**
Sample Number	**Residential**	**Soil Direct**	**SB16-094-SO-0507**	**SB16-094-SO-0607**	**SB16-095-SO-0203**	**SB16-095-SO-0205**	**SB16-095-SO-0405**	**SB16-098-SO-0206**	**SB16-098-SO-0506**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071002**	**20071002**	**20071002**	**20071002**	**20071002**	**20070930**	**20070930**
Depth Range (feet)	**Levels**	**Criterion**	**5 - 7**	**6 - 7**	**2 - 3**	**2 - 5**	**4 - 5**	**2 - 6**	**5 - 6**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000		**19**	0.57 U		**21**		**11**
Acetone	61000000	7800000		**62**	**22**		**63**		**44**
BTEX	NA	NA		**9.9**	**11.6**		**10.3**		**23.3**
Carbon Disulfide	670000	NA		0.21 U	0.23 U		0.22 U		0.23 U
cis-1,2-Dichloroethene	780000	630000		0.48 U	0.54 U		0.51 U		0.54 U
Ethylbenzene	5700	71000		**1.2 J**	**1.6 J**		**1.3 J**		**3.2 J**
Methyl Cyclohexane	3400000	NA		0.22 U	0.25 U		**2.4 J**		0.25 U
Methylene Chloride	11000	45000		0.6 U	0.67 U		0.63 U		0.67 U
Toluene	5000000	190000		0.42 U	0.47 U		0.44 U		**1.1 J**
Total Chlorinated VOCs	NA	NA		0 U	0 U		0 U		0 U
Total Xylenes	600000	110000		**8.7**	**10**		**9**		**19**
trans-1,2-Dichloroethene	110000	1100000		0.47 U	0.52 U		0.49 U		0.52 U
Trichloroethene	2800	13000		0.2 U	0.22 U		0.21 U		0.22 U
Vinyl Chloride	60	20		0.15 U	0.17 U		0.16 U		0.17 U
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000				35 U		52 U	
Acenaphthene	3400000	43000				35 U		**120**	
Acenaphthylene	3400000	23000				35 U		52 U	
Anthracene	17000000	35000				**40**		**92**	
Benzo(a)pyrene Equivalents	15	400				**7.9**		**311**	
Benzo(a)anthracene	150	900				**37**		**250**	
Benzo(a)pyrene	15	400				35 U		**240**	
Benzo(b)fluoranthene	150	900				**42**		**300**	
Benzo(g,h,i)perylene	1700000	800				35 U		**170**	
Benzo(k)fluoranthene	1500	900				35 U		**150**	
Carbazole	24000	NA				35 U		**74**	
Chrysene	15000	400				35 U		**260**	
Dibenzo(a,h)anthracene	15	400				35 U		52 U	
Dibenzofuran	NA	NA				35 U		52 U	
Fluoranthene	2300000	20000				**120**		**580**	
Fluorene	2300000	28000				**42**		52 U	
High Molecular Weight PAHs	NA	NA				**274**		**2540**	
Indeno(1,2,3-cd)pyrene	150	900				35 U		**140**	
Low Molecular Weight PAHs	NA	NA				**302**		**647**	
Naphthalene	3900	54000				35 U		**85**	
Phenanthrene	1700000	40000				**220**		**350**	
Pyrene	1700000	13000				**75**		**450**	
Total PAHs	NA	NA				**576**		**3187**	
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000				**17**		**43**	
Acenaphthene	3400000	43000				**22**		**200**	
Acenaphthylene	3400000	23000				**2.9**		**10**	
Anthracene	17000000	35000				**7.5**		**17**	
Benzo(a)pyrene Equivalents	15	400				**32.9**		**198**	
Benzo(a)anthracene	150	900				**29**		**290**	
Benzo(a)pyrene	15	400				**17**		**41**	
Benzo(b)fluoranthene	150	900				**31**		**360**	
Benzo(g,h,i)perylene	1700000	800				**25**		**240**	

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet) Area	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	10 SB16-094 SB16-094-SO-0507 NORMAL 20071002 5 - 7 NORTH CEN EAST	10 SB16-094 SB16-094-SO-0607 NORMAL 20071002 6 - 7 NORTH CEN EAST	10 SB16-095 SB16-095-SO-0203 NORMAL 20071002 2 - 3 NORTH CEN EAST	10 SB16-095 SB16-095-SO-0205 NORMAL 20071002 2 - 5 NORTH CEN EAST	10 SB16-095 SB16-095-SO-0405 NORMAL 20071002 4 - 5 NORTH CEN EAST	10 SB16-098 SB16-098-SO-0206 NORMAL 20070930 2 - 6 NORTH CEN EAST	10 SB16-098 SB16-098-SO-0506 NORMAL 20070930 5 - 6 NORTH CEN EAST
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900				**30**		**330**	
Chrysene	15000	400				**39**		**410**	
Dibenzo(a,h)anthracene	15	400				**7.2**		**61**	
Fluoranthene	2300000	20000				**86**		**760 J**	
Fluorene	2300000	28000				**29**		**77**	
High Molecular Weight PAHs	NA	NA				**356.2**		**3392**	
Indeno(1,2,3-cd)pyrene	150	900				**24**		**270**	
Low Molecular Weight PAHs	NA	NA				**166**		**1077**	
Naphthalene	3900	54000				**5.6**		**280**	
Phenanthrene	1700000	40000				**82**		**450**	
Pyrene	1700000	13000				**68**		**630 J**	
Total PAHs	NA	NA				**522.2**		**4469**	
Pesticides/PCBs (ug/kg)									
Aroclor-1260	220	NA				34 U		35 U	
Endrin Ketone	18000	NA				3.4 U		3.5 UJ	
Total Aroclor	240	10000				0 U		0 U	
Inorganics (mg/kg)									
Aluminum	77000	NA							
Antimony	31	10							
Arsenic	0.39	7							
Barium	15000	5500							
Beryllium	160	0.4							
Cadmium	70	39							
Calcium	NA	NA							
Chromium	230	1400							
Cobalt	23	NA							
Copper	3100	3100							
Iron	55000	NA							
Lead	400	150							
Magnesium	NA	NA							
Manganese	1800	390							
Mercury	23	23							
Nickel	1600	1000							
Potassium	NA	NA							
Selenium	390	390							
Silver	390	200							
Sodium	NA	NA							
Thallium	5.1	5.5							
Vanadium	390	550							
Zinc	23000	6000							
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500	0.96 U			0.97 U		**2.9**	
TPH (C09-C36)	NA	500				**86**		**100**	
TPH (C09-C44)	NA	500				**190**		**120**	

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-098**	**SB16-098**	**SB16-098**	**SB16-098**	**SB16-A2-01**	**SB16-A2-01**
Sample Number	**Residential**	**Soil Direct**	**SB16-098-SO-0608**	**SB16-098-SO-1216**	**SB16-098-SO-1622**	**SB16-098-SO-2122**	**SB16-A2-01-SO-0910**	**SB16-A2-01-SO-0910-D**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**
Sample Date	**Screening**	**Residential**	**20070930**	**20070930**	**20070930**	**20070930**	**20070731**	**20070731**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 8**	**12 - 16**	**16 - 22**	**21 - 22**	**9 - 10**	**9 - 10**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Volatile Organic Compounds (ug/kg)								
2-Butanone	28000000	10000000				0.59 U	**14**	**17**
Acetone	61000000	7800000				**10**	**65 J**	**71 J**
BTEX	NA	NA				**11.3**	0 U	0 U
Carbon Disulfide	670000	NA				0.24 U	1.7 U	1.6 U
cis-1,2-Dichloroethene	780000	630000				**35**	0.39 U	0.37 U
Ethylbenzene	5700	71000				**1.6 J**	0.56 U	0.52 U
Methyl Cyclohexane	3400000	NA				0.26 U	0.34 UJ	0.32 UJ
Methylene Chloride	11000	45000				0.7 U	0.68 U	0.64 U
Toluene	5000000	190000				0.48 U	0.27 U	0.25 U
Total Chlorinated VOCs	NA	NA				**163.4**	0 U	0 U
Total Xylenes	600000	110000				**9.7**	0.79 U	0.74 U
trans-1,2-Dichloroethene	110000	1100000				**6.9**	0.55 U	0.52 U
Trichloroethene	2800	13000				**120**	0.3 U	0.28 U
Vinyl Chloride	60	20				**1.5 J**	0.71 U	0.67 U
Semivolatile Organic Compounds (ug/kg)								
2-Methylnaphthalene	310000	123000	39 U				38 U	40 U
Acenaphthene	3400000	43000	39 U				38 U	40 U
Acenaphthylene	3400000	23000	39 U				38 U	40 U
Anthracene	17000000	35000	39 U				38 U	40 U
Benzo(a)pyrene Equivalents	15	400	**4.2**				38 U	40 U
Benzo(a)anthracene	150	900	39 U				38 U	40 U
Benzo(a)pyrene	15	400	39 U				38 U	40 U
Benzo(b)fluoranthene	150	900	**42**				38 U	40 U
Benzo(g,h,i)perylene	1700000	800	39 U				38 U	40 U
Benzo(k)fluoranthene	1500	900	39 U				38 U	40 U
Carbazole	24000	NA	39 U				38 U	40 U
Chrysene	15000	400	39 U				38 U	40 U
Dibenzo(a,h)anthracene	15	400	39 U				38 U	40 U
Dibenzofuran	NA	NA	39 U				38 U	40 U
Fluoranthene	2300000	20000	**42**				38 U	40 U
Fluorene	2300000	28000	39 U				38 U	40 U
High Molecular Weight PAHs	NA	NA	**84**				0 U	0 U
Indeno(1,2,3-cd)pyrene	150	900	39 U				38 U	40 U
Low Molecular Weight PAHs	NA	NA	0 U				0 U	0 U
Naphthalene	3900	54000	39 U				38 U	40 U
Phenanthrene	1700000	40000	39 U				38 U	40 U
Pyrene	1700000	13000	39 U				38 U	40 U
Total PAHs	NA	NA	**84**				0 U	0 U
Polycyclic Aromatic Hydrocarbons (ug/kg)								
2-Methylnaphthalene	310000	123000						
Acenaphthene	3400000	43000						
Acenaphthylene	3400000	23000						
Anthracene	17000000	35000						
Benzo(a)pyrene Equivalents	15	400						
Benzo(a)anthracene	150	900						
Benzo(a)pyrene	15	400						
Benzo(b)fluoranthene	150	900						
Benzo(g,h,i)perylene	1700000	800						

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			10	10	10	10	10	10
Location	ORNL	RIDEM	SB16-098	SB16-098	SB16-098	SB16-098	SB16-A2-01	SB16-A2-01
Sample Number	Residential	Soil Direct	SB16-098-SO-0608	SB16-098-SO-1216	SB16-098-SO-1622	SB16-098-SO-2122	SB16-A2-01-SO-0910	SB16-A2-01-SO-0910-D
Sample Code	Regional	Exposure	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP
Sample Date	Screening	Residential	20070930	20070930	20070930	20070930	20070731	20070731
Depth Range (feet)	Levels	Criterion	6 - 8	12 - 16	16 - 22	21 - 22	9 - 10	9 - 10
Area			NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST	NORTH CEN EAST
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)								
Benzo(k)fluoranthene	1500	900						
Chrysene	15000	400						
Dibenzo(a,h)anthracene	15	400						
Fluoranthene	2300000	20000						
Fluorene	2300000	28000						
High Molecular Weight PAHs	NA	NA						
Indeno(1,2,3-cd)pyrene	150	900						
Low Molecular Weight PAHs	NA	NA						
Naphthalene	3900	54000						
Phenanthrene	1700000	40000						
Pyrene	1700000	13000						
Total PAHs	NA	NA						
Pesticides/PCBs (ug/kg)								
Aroclor-1260	220	NA	39 U				38 U	40 U
Endrin Ketone	18000	NA	3.9 UJ				3.8 UJ	4 UJ
Total Aroclor	240	10000	0 U				0 U	0 U
Inorganics (mg/kg)								
Aluminum	77000	NA					**2650 J**	**7290 J**
Antimony	31	10					0.34 U	0.33 U
Arsenic	0.39	7					**0.81 J**	**1.8 J**
Barium	15000	5500					**7**	**12.8**
Beryllium	160	0.4					**0.31**	**0.47**
Cadmium	70	39					0.0048 U	0.017 U
Calcium	NA	NA					**184 J**	**350 J**
Chromium	230	1400					**5.8 J**	**8.9 J**
Cobalt	23	NA					**2.2 J**	**3 J**
Copper	3100	3100					**5.1**	**5.1**
Iron	55000	NA					**5890 J**	**10200 J**
Lead	400	150					**3.7 J**	**6.4 J**
Magnesium	NA	NA					**972**	**1370**
Manganese	1800	390					**54.8 J**	**99.3 J**
Mercury	23	23					0.007 U	**0.015**
Nickel	1600	1000					**4.5 J**	**6.6 J**
Potassium	NA	NA					**377 J**	**497 J**
Selenium	390	390					**1 J**	**2 J**
Silver	390	200					0.017 U	0.021 U
Sodium	NA	NA					**20.6**	**31.9**
Thallium	5.1	5.5					**1 J**	**1.8 J**
Vanadium	390	550					**5.3**	**11.6**
Zinc	23000	6000					**17.8**	**21.8**
Diesel Range Organics - Semivolatile (mg/kg)								
TPH (C09-C36)	NA	500					**18**	**20**
Petroleum Hydrocarbons (mg/kg)								
Extractable TPH-Screening Data	NA	500	0.98 U	0.97 U	0.97 U			
TPH (C09-C36)	NA	500						
TPH (C09-C44)	NA	500						

TABLE 4-13

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED AREA - EASTERN - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Notes:
Bolding indicates that the chemical was detected in the sample.
PAHs samples were analyzed by AWL by method SW8270-SIM.
BaP Equivalents = Benzo(a)pyrene equivalent concentration
High Molecular Weight PAHs = Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene
High Molecular Weight PAHs Ecosd = Benzo(a)anthracene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthrancene, Fluoranthene, Pyrene
Low Molecular Weight PAHs = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
Low Molecular Weight PAHs Ecosd = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C_9 to C_{36}.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C_9 to C_{44}.

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and total xylenes
EPA = Environmental Protection Agency
NA = Not applicable/Not available
PAH = Polycyclic aromatic hydrocarbon
PHC = Petroleum hydrocarbons as diesel fuel
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
TPH = Total petroleum hydrocarbon
VOC = Volatile organic compound

TABLE 4-14

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - FFTA AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-062**	**SB16-062**	**SB16-062**	**SB16-062**	**SB16-063**	**SB16-063**	**SB16-063**
Sample Number	**Residential**	**Soil Direct**	**SB16-062-SO-0203**	**SB16-062-SO-0607**	**SB16-062-SO-1112**	**SB16-062-SO-1617**	**SB16-063-SO-0206**	**SB16-063-SO-0304**	**SB16-063-SO-0610**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070807**	**20070807**	**20070807**	**20070807**	**20070825**	**20070825**	**20070825**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 3**	**6 - 7**	**11 - 12**	**16 - 17**	**2 - 6**	**3 - 4**	**6 - 10**
Area			**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000	1.2 U					1.7 UR	
Acetone	61000000	7800000	1.4 U					1.9 UR	
BTEX	NA	NA	0 U					0 U	
Carbon Disulfide	670000	NA	1.7 U					2.4 U	
cis-1,2-Dichloroethene	780000	630000	0.38 U					0.54 U	
Ethylbenzene	5700	71000	0.54 UJ					0.77 U	
Methylene Chloride	11000	45000	0.66 U					0.94 U	
Toluene	5000000	190000	0.26 U					0.37 U	
Total Chlorinated VOCs	NA	NA	0 U					0 U	
Total Xylenes	600000	110000	0.76 U					1.1 U	
trans-1,2-Dichloroethene	110000	1100000	0.53 U					0.76 U	
Trichloroethene	2800	13000	0.29 U					0.41 U	
Vinyl Chloride	60	20	0.69 U					0.98 U	
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000					38 U		
4-Methylphenol	310000	NA					62 U		
Acenaphthene	3400000	43000					38 U		
Anthracene	17000000	35000					38 U		
Benzo(a)pyrene Equivalents	15	400					**59.3**		
Benzo(a)anthracene	150	900					**48**		
Benzo(a)pyrene	15	400					**48**		
Benzo(b)fluoranthene	150	900					**64**		
Benzo(g,h,i)perylene	1700000	800					38 U		
Benzo(k)fluoranthene	1500	900					38 U		
Bis(2-ethylhexyl)phthalate	35000	46000					57 U		
Chrysene	15000	400					**51**		
di-n-Butyl Phthalate	6100000	NA					55 U		
Dibenzo(a,h)anthracene	15	400					38 U		
Dibenzofuran	NA	NA					38 U		
Fluoranthene	2300000	20000					**73**		
Fluorene	2300000	28000					38 U		
High Molecular Weight PAHs	NA	NA					**344**		
Indeno(1,2,3-cd)pyrene	150	900					38 U		
Low Molecular Weight PAHs	NA	NA					**106**		
Naphthalene	3900	54000					**42**		
Phenanthrene	1700000	40000					**64**		
Pyrene	1700000	13000					**60**		
Total PAHs	NA	NA					**450**		
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000		**27 J**					**2000**
Acenaphthene	3400000	43000		**12 J**					**720**
Acenaphthylene	3400000	23000		**2.7 J**					**28**
Anthracene	17000000	35000		**3.1 J**					**360**
Benzo(a)pyrene Equivalents	15	400		**7.43**					**981**
Benzo(a)anthracene	150	900		**10 J**					**800**
Benzo(a)pyrene	15	400		**0.99 J**					**560**
Benzo(b)fluoranthene	150	900		**16 J**					**1000**
Benzo(g,h,i)perylene	1700000	800		**30 J**					**550**

TABLE 4-14

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - FFTA AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-062**	**SB16-062**	**SB16-062**	**SB16-062**	**SB16-063**	**SB16-063**	**SB16-063**
Sample Number	**Residential**	**Soil Direct**	**SB16-062-SO-0203**	**SB16-062-SO-0607**	**SB16-062-SO-1112**	**SB16-062-SO-1617**	**SB16-063-SO-0206**	**SB16-063-SO-0304**	**SB16-063-SO-0610**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070807**	**20070807**	**20070807**	**20070807**	**20070825**	**20070825**	**20070825**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 3**	**6 - 7**	**11 - 12**	**16 - 17**	**2 - 6**	**3 - 4**	**6 - 10**
Area			**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900		**13 J**					**780**
Chrysene	15000	400		**28 J**					**920**
Dibenzo(a,h)anthracene	15	400		**2.7 J**					**180**
Fluoranthene	2300000	20000		**91 J**					**1500**
Fluorene	2300000	28000		**20 J**					**900**
High Molecular Weight PAHs	NA	NA		**270**					**7910**
Indeno(1,2,3-cd)pyrene	150	900		**9.8 J**					**520**
Low Molecular Weight PAHs	NA	NA		**242**					**24408**
Naphthalene	150000	54000		**77 J**					**18000**
Phenanthrene	1700000	40000		**100 J**					**2400**
Pyrene	1700000	13000		**69 J**					**1100**
Total PAHs	NA	NA		**512**					**32318**
Inorganics (mg/kg)									
Aluminum	77000	NA				**4310**			
Antimony	31	10				0.04 UJ			
Arsenic	0.39	7				**1.5 J**			
Barium	15000	5500				**8.4**			
Beryllium	160	0.4				**0.38**			
Cadmium	70	39				**0.085 J**			
Calcium	NA	NA				**678**			
Chromium	230	1400				**7.3**			
Cobalt	23	NA				**2.7 J**			
Copper	3100	3100				**5.2**			
Iron	55000	NA				**6080**			
Lead	400	150				**3.4**			
Magnesium	NA	NA				**1610**			
Manganese	1800	390				**62.7**			
Mercury	23	23				0.0087 U			
Nickel	1600	1000				**7.2 J**			
Potassium	NA	NA				**744**			
Selenium	390	390				**2.3 J**			
Silver	390	200				0.013 UJ			
Sodium	NA	NA				**94.4**			
Thallium	5.1	5.5				**0.81 J**			
Vanadium	390	550				**8.5**			
Zinc	23000	6000				**13.9**			
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500	0.96 U	0.99 U	0.97 U	0.98 U	0.98 U		**34**
TPH (C09-C36)	NA	500		**110**					**450**
TPH (C09-C44)	NA	500		**150**					**510**

TABLE 4-14

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - FFTA AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-063**	**SB16-063**	**SB16-063**	**SB16-063**	**SB16-063**	**SB16-064**	**SB16-064**
Sample Number	**Residential**	**Soil Direct**	**SB16-063-SO-1016**	**SB16-063-SO-1622**	**B16-063-SO-1622-AV**	**SB16-063-SO-1718**	**SB16-063-SO-1718-D**	**SB16-064-SO-0206**	**SB16-064-SO-0206-D**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**ORIG**	**AVG**	**ORIG**	**DUP**	**ORIG**	**DUP**
Sample Date	**Screening**	**Residential**	**20070825**	**20070825**	**20070825**	**20070825**	**20070825**	**20070826**	**20070826**
Depth Range (feet)	**Levels**	**Criterion**	**10 - 16**	**16 - 22**	**16 - 22**	**17 - 18**	**17 - 18**	**2 - 6**	**2 - 6**
Area			**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000				1 UR	1.1 UR		
Acetone	61000000	7800000				1.1 UR	1.3 UR		
BTEX	NA	NA				0 U	0 U		
Carbon Disulfide	670000	NA				1.4 UJ	1.6 U		
cis-1,2-Dichloroethene	780000	630000				0.31 UJ	0.35 U		
Ethylbenzene	5700	71000				0.44 UJ	0.5 U		
Methylene Chloride	11000	45000				0.54 UJ	0.62 U		
Toluene	5000000	190000				0.21 UJ	0.24 U		
Total Chlorinated VOCs	NA	NA				0 U	0 U		
Total Xylenes	600000	110000				0.63 UJ	0.72 U		
trans-1,2-Dichloroethene	110000	1100000				0.44 UJ	0.5 U		
Trichloroethene	2800	13000				0.24 UJ	0.27 U		
Vinyl Chloride	60	20				0.57 UJ	0.65 U		
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000							
4-Methylphenol	310000	NA							
Acenaphthene	3400000	43000							
Anthracene	17000000	35000							
Benzo(a)pyrene Equivalents	15	400							
Benzo(a)anthracene	150	900							
Benzo(a)pyrene	15	400							
Benzo(b)fluoranthene	150	900							
Benzo(g,h,i)perylene	1700000	800							
Benzo(k)fluoranthene	1500	900							
Bis(2-ethylhexyl)phthalate	35000	46000							
Chrysene	15000	400							
di-n-Butyl Phthalate	6100000	NA							
Dibenzo(a,h)anthracene	15	400							
Dibenzofuran	NA	NA							
Fluoranthene	2300000	20000							
Fluorene	2300000	28000							
High Molecular Weight PAHs	NA	NA							
Indeno(1,2,3-cd)pyrene	150	900							
Low Molecular Weight PAHs	NA	NA							
Naphthalene	3900	54000							
Phenanthrene	1700000	40000							
Pyrene	1700000	13000							
Total PAHs	NA	NA							
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000	**240**	**1.1 J**	**1.1 J**				
Acenaphthene	3400000	43000	**110**	**1.7 J**	**1.7 J**				
Acenaphthylene	3400000	23000	**28**	**0.34 J**	**0.34 J**				
Anthracene	17000000	35000	**82**	**0.58 J**	**0.58 J**				
Benzo(a)pyrene Equivalents	15	400	**103**	**1.19**	**1.19**				
Benzo(a)anthracene	150	900	**91**	**1.2 J**	**1.2 J**				
Benzo(a)pyrene	15	400	**64**	**0.67 J**	**0.67 J**				
Benzo(b)fluoranthene	150	900	**90**	**1.1 J**	**1.1 J**				
Benzo(g,h,i)perylene	1700000	800	**54**	**0.75 J**	**0.75 J**				

TABLE 4-14

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - FFTA AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	ORNL	RIDEM	10	10	10	10	10	10	10
Location	Residential	Soil Direct	SB16-063	SB16-063	SB16-063	SB16-063	SB16-063	SB16-064	SB16-064
Sample Number	Regional	Exposure	SB16-063-SO-1016	SB16-063-SO-1622	B16-063-SO-1622-AV	SB16-063-SO-1718	SB16-063-SO-1718-D	SB16-064-SO-0206	SB16-064-SO-0206-D
Sample Code	Screening	Residential	NORMAL	ORIG	AVG	ORIG	DUP	ORIG	DUP
Sample Date	Levels	Criterion	20070825	20070825	20070825	20070825	20070825	20070826	20070826
Depth Range (feet)			10 - 16	16 - 22	16 - 22	17 - 18	17 - 18	2 - 6	2 - 6
Area			NORTH CEN FFTA	NORTH CEN FFTA	NORTH CEN FFTA	NORTH CEN FFTA	NORTH CEN FFTA	NORTH CEN FFTA	NORTH CEN FFTA
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900	**75**	**0.98 J**	**0.98 J**				
Chrysene	15000	400	**120**	**1.4 J**	**1.4 J**				
Dibenzo(a,h)anthracene	15	400	**15**	**0.21 J**	**0.21 J**				
Fluoranthene	2300000	20000	**260**	**2.2 J**	**2.2 J**				
Fluorene	2300000	28000	**130**	**4.6**	**4.6**				
High Molecular Weight PAHs	NA	NA	**1017**	**10.8**	**10.8**				
Indeno(1,2,3-cd)pyrene	150	900	**48**	**0.68 J**	**0.68 J**				
Low Molecular Weight PAHs	NA	NA	**2210**	**19.8**	**19.8**				
Naphthalene	150000	54000	**1200**	**7.7**	**7.7**				
Phenanthrene	1700000	40000	**420**	**3.8**	**3.8**				
Pyrene	1700000	13000	**200**	**1.6 J**	**1.6 J**				
Total PAHs	NA	NA	**3227**	**30.6**	**30.6**				
Inorganics (mg/kg)									
Aluminum	77000	NA		**3400**	**3455**			**5350**	**6280**
Antimony	31	10		**4.4 J**	**4.1 J**			**5.2 J**	**5.9 J**
Arsenic	0.39	7		**8 J**	**7.7 J**			**9.6 J**	**10.5 J**
Barium	15000	5500		**8.3**	**8.55**			**21.2**	**26.6**
Beryllium	160	0.4		**0.27**	**0.255**			**0.57**	**0.43**
Cadmium	70	39		**0.76 J**	**0.71 J**			**1 J**	**1.1 J**
Calcium	NA	NA		**210 J**	**216.5 J**			**149 J**	**61.5 J**
Chromium	230	1400		**5.5**	**5.25**			**10**	**10.5**
Cobalt	23	NA		**5.5**	**5.35**			**6**	**6.7**
Copper	3100	3100		**8.1**	**8.1**			**16.1**	**18.3**
Iron	55000	NA		**9750**	**9280**			**12100**	**13600**
Lead	400	150		**2.3 J**	**2.15 J**			**28.4**	**38.4**
Magnesium	NA	NA		**1250**	**1260**			**1710**	**2220**
Manganese	1800	390		**79.9**	**79.35**			**115**	**129**
Mercury	23	23		0.0064 U	0.0064 U			**0.0053 J**	**0.0054 J**
Nickel	1600	1000		**7.6**	**7.65**			**8.2**	**10.3**
Potassium	NA	NA		**437**	**434**			**586**	**570**
Selenium	390	390		0.14 U	0.155 U			0.14 U	0.16 U
Silver	390	200		0.045 U	0.0495 U			0.044 U	0.049 U
Sodium	NA	NA		**33.6 J**	**32.7 J**			**39.3 J**	**33.3 J**
Thallium	5.1	5.5		1 U	0.945 U			1.3 U	1.1 U
Vanadium	390	550		**7.5**	**7.2**			**11.5**	**10.4**
Zinc	23000	6000		**22.1**	**21.15**			**48.6**	**64**
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500	**1.6**	0.95 U	0.96 U			0.98 U	
TPH (C09-C36)	NA	500	**150**	**220**	**220**				
TPH (C09-C44)	NA	500	**180**	**220**	**220**				

TABLE 4-14

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - FFTA AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-064**	**SB16-064**	**SB16-064**	**SB16-064**	**SB16-065**	**SB16-065**	**SB16-065**
Sample Number	**Residential**	**Soil Direct**	**SB16-064-SO-0610**	**SB16-064-SO-0708**	**SB16-064-SO-1016**	**SB16-064-SO-1622**	**SB16-065-SO-0506**	**SB16-065-SO-0910**	**SB16-065-SO-1516**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070826**	**20070826**	**20070826**	**20070826**	**20070731**	**20070731**	**20070731**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 10**	**7 - 8**	**10 - 16**	**16 - 22**	**5 - 6**	**9 - 10**	**15 - 16**
Area			**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000		**8.7 J**					
Acetone	61000000	7800000		**45 J**					
BTEX	NA	NA		0 U					
Carbon Disulfide	670000	NA		2.4 U					
cis-1,2-Dichloroethene	780000	630000		**12**					
Ethylbenzene	5700	71000		0.78 U					
Methylene Chloride	11000	45000		0.95 U					
Toluene	5000000	190000		0.37 U					
Total Chlorinated VOCs	NA	NA		**95.2**					
Total Xylenes	600000	110000		1.1 UJ					
trans-1,2-Dichloroethene	110000	1100000		**3.9 J**					
Trichloroethene	2800	13000		**2.3 J**					
Vinyl Chloride	60	20		**77**					
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000							
4-Methylphenol	310000	NA							
Acenaphthene	3400000	43000							
Anthracene	17000000	35000							
Benzo(a)pyrene Equivalents	15	400							
Benzo(a)anthracene	150	900							
Benzo(a)pyrene	15	400							
Benzo(b)fluoranthene	150	900							
Benzo(g,h,i)perylene	1700000	800							
Benzo(k)fluoranthene	1500	900							
Bis(2-ethylhexyl)phthalate	35000	46000							
Chrysene	15000	400							
di-n-Butyl Phthalate	6100000	NA							
Dibenzo(a,h)anthracene	15	400							
Dibenzofuran	NA	NA							
Fluoranthene	2300000	20000							
Fluorene	2300000	28000							
High Molecular Weight PAHs	NA	NA							
Indeno(1,2,3-cd)pyrene	150	900							
Low Molecular Weight PAHs	NA	NA							
Naphthalene	3900	54000							
Phenanthrene	1700000	40000							
Pyrene	1700000	13000							
Total PAHs	NA	NA							
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000	**44**				**23**		**4.5 J**
Acenaphthene	3400000	43000	**31**				**31**		**6.1 J**
Acenaphthylene	3400000	23000	**3.5**				**3.4 J**		**21 J**
Anthracene	17000000	35000	**6.8**				**4.8 J**		**1.5 J**
Benzo(a)pyrene Equivalents	15	400	**10.0**				**10.9**		**1.42**
Benzo(a)anthracene	150	900	**11**				**20**		**3.2 J**
Benzo(a)pyrene	15	400	**5.1**				**0.61 J**		14 UR
Benzo(b)fluoranthene	150	900	**13**				**25**		**5.5 J**
Benzo(g,h,i)perylene	1700000	800	**5.4**				**14 J**		**5.6 J**

TABLE 4-14

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - FFTA AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-064**	**SB16-064**	**SB16-064**	**SB16-064**	**SB16-065**	**SB16-065**	**SB16-065**
Sample Number	**Residential**	**Soil Direct**	**SB16-064-SO-0610**	**SB16-064-SO-0708**	**SB16-064-SO-1016**	**SB16-064-SO-1622**	**SB16-065-SO-0506**	**SB16-065-SO-0910**	**SB16-065-SO-1516**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070826**	**20070826**	**20070826**	**20070826**	**20070731**	**20070731**	**20070731**
Depth Range (feet)	**Levels**	**Criterion**	**6 - 10**	**7 - 8**	**10 - 16**	**16 - 22**	**5 - 6**	**9 - 10**	**15 - 16**
Area			**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900	**8.6**				**24**		**2.2 J**
Chrysene	15000	400	**19**				**33**		**8 J**
Dibenzo(a,h)anthracene	15	400	**2**				**4 J**		14 UR
Fluoranthene	2300000	20000	**36**				**140**		**6.4 J**
Fluorene	2300000	28000	**24**				**31**		**8.6 J**
High Molecular Weight PAHs	NA	NA	**134**				**368**		**40.7**
Indeno(1,2,3-cd)pyrene	150	900	**4.3**				**15 J**		**5.2 J**
Low Molecular Weight PAHs	NA	NA	**404**				**288**		**50.8**
Naphthalene	150000	54000	**240**				**110**		**3.6 J**
Phenanthrene	1700000	40000	**55**				**85**		**5.5 J**
Pyrene	1700000	13000	**30**				**92**		**4.6 J**
Total PAHs	NA	NA	**539**				**656**		**91.5**
Inorganics (mg/kg)									
Aluminum	77000	NA					**5510**	**9930**	**2470 J**
Antimony	31	10					0.75 U	0.5 U	0.77 U
Arsenic	0.39	7					**2.9 J**	**3.1 J**	2.4 U
Barium	15000	5500					**30.7**	**22.4**	**6.5 J**
Beryllium	160	0.4					**0.52**	**0.61**	**0.5 J**
Cadmium	70	39					**0.1 J**	**0.084 J**	**0.43 J**
Calcium	NA	NA					**1100**	**369**	**9920 J**
Chromium	230	1400					**9.6 J**	**9.9 J**	**15.1 J**
Cobalt	23	NA					**5.3 J**	**4.5 J**	**1.5 J**
Copper	3100	3100					**16.9**	**8.9**	**23.7 J**
Iron	55000	NA					**13800**	**15200**	**1630 J**
Lead	400	150					**30.1 J**	**8.8 J**	**2.5 J**
Magnesium	NA	NA					**2110**	**1930**	**11000 J**
Manganese	1800	390					**166**	**140**	**26.8 J**
Mercury	23	23					**0.053**	**0.016**	0.034 UJ
Nickel	1600	1000					**10.2 J**	**10.6 J**	**11.5 J**
Potassium	NA	NA					**892 J**	**441 J**	**873 J**
Selenium	390	390					**2.1 J**	**2.3 J**	**12.4 J**
Silver	390	200					0.02 U	0.018 U	0.41 U
Sodium	NA	NA					**45.5**	**35.4**	**13500 J**
Thallium	5.1	5.5					**2.2 J**	**2.5 J**	0.4 UJ
Vanadium	390	550					**12.2**	**16.1**	**9.1 J**
Zinc	23000	6000					**53**	**28.5**	**4.1 J**
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500					**98**		
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500	0.98 U		0.97 U	0.96 U	**6.7**	0.97 U	**10**
TPH (C09-C36)	NA	500	**220**				**58**		**810 J**
TPH (C09-C44)	NA	500	**270**				**97**		**1000 J**

TABLE 4-14

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - FFTA AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-065**	**SB16-066**	**SB16-066**	**SB16-066**	**SB16-066**	**SB16-067**	**SB16-067**
Sample Number	**Residential**	**Soil Direct**	**SB16-065-SO-2122**	**SB16-066-SO-0506**	**SB16-066-SO-0910**	**SB16-066-SO-1415**	**SB16-066-SO-2122**	**SB16-067-SO-0206**	**SB16-067-SO-0610**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070731**	**20070731**	**20070731**	**20070731**	**20070731**	**20070821**	**20070821**
Depth Range (feet)	**Levels**	**Criterion**	**21 - 22**	**5 - 6**	**9 - 10**	**14 - 15**	**21 - 22**	**2 - 6**	**6 - 10**
Area			**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000							
Acetone	61000000	7800000							
BTEX	NA	NA							
Carbon Disulfide	670000	NA							
cis-1,2-Dichloroethene	780000	630000							
Ethylbenzene	5700	71000							
Methylene Chloride	11000	45000							
Toluene	5000000	190000							
Total Chlorinated VOCs	NA	NA							
Total Xylenes	600000	110000							
trans-1,2-Dichloroethene	110000	1100000							
Trichloroethene	2800	13000							
Vinyl Chloride	60	20							
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000							
4-Methylphenol	310000	NA							
Acenaphthene	3400000	43000							
Anthracene	17000000	35000							
Benzo(a)pyrene Equivalents	15	400							
Benzo(a)anthracene	150	900							
Benzo(a)pyrene	15	400							
Benzo(b)fluoranthene	150	900							
Benzo(g,h,i)perylene	1700000	800							
Benzo(k)fluoranthene	1500	900							
Bis(2-ethylhexyl)phthalate	35000	46000							
Chrysene	15000	400							
di-n-Butyl Phthalate	6100000	NA							
Dibenzo(a,h)anthracene	15	400							
Dibenzofuran	NA	NA							
Fluoranthene	2300000	20000							
Fluorene	2300000	28000							
High Molecular Weight PAHs	NA	NA							
Indeno(1,2,3-cd)pyrene	150	900							
Low Molecular Weight PAHs	NA	NA							
Naphthalene	3900	54000							
Phenanthrene	1700000	40000							
Pyrene	1700000	13000							
Total PAHs	NA	NA							
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000		**2.8 J**				**94 J**	
Acenaphthene	3400000	43000		1.2 U				**20 J**	
Acenaphthylene	3400000	23000		5.3 U				**15 J**	
Anthracene	17000000	35000		**4.7 J**				**57 J**	
Benzo(a)pyrene Equivalents	15	400		**16.7**				**624**	
Benzo(a)anthracene	150	900		**13 J**				**410 J**	
Benzo(a)pyrene	15	400		**7.5 J**				**360 J**	
Benzo(b)fluoranthene	150	900		**20 J**				**520 J**	
Benzo(g,h,i)perylene	1700000	800		**14 J**				**420 J**	

TABLE 4-14

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - FFTA AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-065**	**SB16-066**	**SB16-066**	**SB16-066**	**SB16-066**	**SB16-067**	**SB16-067**
Sample Number	**Residential**	**Soil Direct**	**SB16-065-SO-2122**	**SB16-066-SO-0506**	**SB16-066-SO-0910**	**SB16-066-SO-1415**	**SB16-066-SO-2122**	**SB16-067-SO-0206**	**SB16-067-SO-0610**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070731**	**20070731**	**20070731**	**20070731**	**20070731**	**20070821**	**20070821**
Depth Range (feet)	**Levels**	**Criterion**	**21 - 22**	**5 - 6**	**9 - 10**	**14 - 15**	**21 - 22**	**2 - 6**	**6 - 10**
Area			**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900		**17 J**				**460 J**	
Chrysene	15000	400		**20 J**				**490 J**	
Dibenzo(a,h)anthracene	15	400		**4.3 J**				**120 J**	
Fluoranthene	2300000	20000		**29 J**				**830 J**	
Fluorene	2300000	28000		**1.2 J**				**24 J**	
High Molecular Weight PAHs	NA	NA		**162**				**4730**	
Indeno(1,2,3-cd)pyrene	150	900		**14 J**				**460 J**	
Low Molecular Weight PAHs	NA	NA		**28.9**				**790**	
Naphthalene	150000	54000		**2.2 J**				**190 J**	
Phenanthrene	1700000	40000		**18 J**				**390 J**	
Pyrene	1700000	13000		**23 J**				**660 J**	
Total PAHs	NA	NA		**191**				**5520**	
Inorganics (mg/kg)									
Aluminum	77000	NA	**3870**	**6250**	**3260**	**4220**	**7910**	**5660**	
Antimony	31	10	0.5 U	0.22 U	**1.3 J**	0.57 U	0.38 U	0.91 U	
Arsenic	0.39	7	**2 J**	**1.7 J**	**2.3 J**	**1.6 J**	**1.2 J**	**3.1 J**	
Barium	15000	5500	**8.5**	**15.8**	**24.9**	**14**	**15.4**	**75**	
Beryllium	160	0.4	**0.46**	**0.52**	**0.28**	**0.39**	**0.56**	**0.31**	
Cadmium	70	39	**0.052 J**	0.03 U	**0.71 J**	0.028 U	**0.044 J**	**1.1 J**	
Calcium	NA	NA	**286**	107 U	**627**	**631**	**1720**	**450 J**	
Chromium	230	1400	**7.1 J**	**36 J**	**10.7 J**	**6.3 J**	**12.1 J**	**18**	
Cobalt	23	NA	**5.7 J**	**3.1 J**	**4.6 J**	**6.2 J**	**5.5 J**	**5.8 J**	
Copper	3100	3100	**8.5**	**8**	**49.4**	**9.5**	**14.4**	**51.7**	
Iron	55000	NA	**11600**	**10900**	**27300**	**11200**	**11200**	**26700**	
Lead	400	150	**4.6 J**	**8.1 J**	**25.8 J**	**5.1 J**	**7.6 J**	**101**	
Magnesium	NA	NA	**1580**	**1220**	**1260**	**1970**	**3340**	**1980**	
Manganese	1800	390	**97.7**	**117**	**233**	**239**	**137**	**231**	
Mercury	23	23	0.0072 U	**0.019**	**0.025**	0.007 U	0.0084 U	**0.24**	
Nickel	1600	1000	**8 J**	**7.4 J**	**13.2 J**	**9.2 J**	**12.7 J**	**15.3 J**	
Potassium	NA	NA	**394 J**	**789 J**	**546 J**	**844 J**	**729 J**	**657**	
Selenium	390	390	**1.6 J**	**1.6 J**	**2.9 J**	**1.9 J**	**1.8 J**	**2.2**	
Silver	390	200	0.021 U	0.018 U	0.018 U	0.019 U	0.018 U	0.035 U	
Sodium	NA	NA	**50.2**	**75.7**	**41.2**	**25.7**	**159**	**44.8 J**	
Thallium	5.1	5.5	**2.3 J**	**2.1 J**	**5**	**1.5 J**	**1.7 J**	**3 J**	
Vanadium	390	550	**9.5**	**10.3**	**6.7 J**	**8.6**	**13.5**	**10.2**	
Zinc	23000	6000	**22.9**	**24.6**	**296**	**29.1**	**48.1**	**263**	
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500	0.97 U	0.98 U	0.99 U	0.96 U	0.99 U	**6**	0.95 U
TPH (C09-C36)	NA	500		**19 J**				**300**	
TPH (C09-C44)	NA	500		**38 J**				**490**	

TABLE 4-14

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - FFTA AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-067**	**SB16-067**	**SB16-067**	**SB16-068**	**SB16-068**	**SB16-068**	**SB16-068**
Sample Number	**Residential**	**Soil Direct**	**SB16-067-SO-1016**	**SB16-067-SO-1616**	**SB16-067-SO-1622**	**SB16-068-SO-0206**	**SB16-068-SO-0506**	**SB16-068-SO-0610**	**SB16-068-SO-1016**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070821**	**20070821**	**20070821**	**20070821**	**20070821**	**20070821**	**20070821**
Depth Range (feet)	**Levels**	**Criterion**	**10 - 16**	**16 - 16**	**16 - 22**	**2 - 6**	**5 - 6**	**6 - 10**	**10 - 16**
Area			**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000		1.1 UR			1.5 UR		
Acetone	61000000	7800000		1.2 UR			**39 J**		
BTEX	NA	NA		0 U			0 U		
Carbon Disulfide	670000	NA		1.5 U			2.1 U		
cis-1,2-Dichloroethene	780000	630000		**8.5**			0.48 U		
Ethylbenzene	5700	71000		0.48 U			0.68 U		
Methylene Chloride	11000	45000		0.59 U			0.84 U		
Toluene	5000000	190000		0.23 U			0.33 U		
Total Chlorinated VOCs	NA	NA		**8.5**			0 U		
Total Xylenes	600000	110000		0.68 U			0.97 U		
trans-1,2-Dichloroethene	110000	1100000		0.47 U			0.67 U		
Trichloroethene	2800	13000		0.26 U			0.37 U		
Vinyl Chloride	60	20		0.62 U			0.88 U		
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000				35 U			
4-Methylphenol	310000	NA				57 U			
Acenaphthene	3400000	43000				35 U			
Anthracene	17000000	35000				35 U			
Benzo(a)pyrene Equivalents	15	400				35 U			
Benzo(a)anthracene	150	900				35 U			
Benzo(a)pyrene	15	400				35 U			
Benzo(b)fluoranthene	150	900				35 U			
Benzo(g,h,i)perylene	1700000	800				35 U			
Benzo(k)fluoranthene	1500	900				35 U			
Bis(2-ethylhexyl)phthalate	35000	46000				52 U			
Chrysene	15000	400				35 U			
di-n-Butyl Phthalate	6100000	NA				50 U			
Dibenzo(a,h)anthracene	15	400				35 U			
Dibenzofuran	NA	NA				35 U			
Fluoranthene	2300000	20000				35 U			
Fluorene	2300000	28000				35 U			
High Molecular Weight PAHs	NA	NA				0 U			
Indeno(1,2,3-cd)pyrene	150	900				35 U			
Low Molecular Weight PAHs	NA	NA				0 U			
Naphthalene	3900	54000				35 U			
Phenanthrene	1700000	40000				35 U			
Pyrene	1700000	13000				35 U			
Total PAHs	NA	NA				0 U			
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000							0.69 U
Acenaphthene	3400000	43000							**0.87**
Acenaphthylene	3400000	23000							0.62 U
Anthracene	17000000	35000							**0.74 J**
Benzo(a)pyrene Equivalents	15	400							**0.622**
Benzo(a)anthracene	150	900							**1.9**
Benzo(a)pyrene	15	400							1.1 U
Benzo(b)fluoranthene	150	900							**1.2**
Benzo(g,h,i)perylene	1700000	800							**0.96**

TABLE 4-14

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - FFTA AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Depth Range (feet) Area	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	10 SB16-067 SB16-067-SO-1016 NORMAL 20070821 10 - 16 NORTH CEN FFTA	10 SB16-067 SB16-067-SO-1616 NORMAL 20070821 16 - 16 NORTH CEN FFTA	10 SB16-067 SB16-067-SO-1622 NORMAL 20070821 16 - 22 NORTH CEN FFTA	10 SB16-068 SB16-068-SO-0206 NORMAL 20070821 2 - 6 NORTH CEN FFTA	10 SB16-068 SB16-068-SO-0506 NORMAL 20070821 5 - 6 NORTH CEN FFTA	10 SB16-068 SB16-068-SO-0610 NORMAL 20070821 6 - 10 NORTH CEN FFTA	10 SB16-068 SB16-068-SO-1016 NORMAL 20070821 10 - 16 NORTH CEN FFTA
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900							**1.1**
Chrysene	15000	400							**2.1**
Dibenzo(a,h)anthracene	15	400							**0.21 J**
Fluoranthene	2300000	20000							**5.6**
Fluorene	2300000	28000							**1.1**
High Molecular Weight PAHs	NA	NA							**18.7**
Indeno(1,2,3-cd)pyrene	150	900							**0.89**
Low Molecular Weight PAHs	NA	NA							**9.71**
Naphthalene	150000	54000							**2.6**
Phenanthrene	1700000	40000							**4.4**
Pyrene	1700000	13000							**4.7**
Total PAHs	NA	NA							**28.4**
Inorganics (mg/kg)									
Aluminum	77000	NA							
Antimony	31	10							
Arsenic	0.39	7							
Barium	15000	5500							
Beryllium	160	0.4							
Cadmium	70	39							
Calcium	NA	NA							
Chromium	230	1400							
Cobalt	23	NA							
Copper	3100	3100							
Iron	55000	NA							
Lead	400	150							
Magnesium	NA	NA							
Manganese	1800	390							
Mercury	23	23							
Nickel	1600	1000							
Potassium	NA	NA							
Selenium	390	390							
Silver	390	200							
Sodium	NA	NA							
Thallium	5.1	5.5							
Vanadium	390	550							
Zinc	23000	6000							
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500	0.95 U		0.96 U	0.97 U		0.97 U	**1.2**
TPH (C09-C36)	NA	500							**24**
TPH (C09-C44)	NA	500							**36**

TABLE 4-14

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - FFTA AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-068**	**SB16-068**	**SB16-096**	**SB16-096**	**SB16-096**	**SB16-096**	**SB16-096**
Sample Number	**Residential**	**Soil Direct**	**SB16-068-SO-1516**	**SB16-068-SO-1622**	**SB16-096-SO-0206**	**SB16-096-SO-0505**	**SB16-096-SO-0610**	**SB16-096-SO-1016**	**SB16-096-SO-1622**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070821**	**20070822**	**20070825**	**20070825**	**20070825**	**20070825**	**20070825**
Depth Range (feet)	**Levels**	**Criterion**	**15 - 16**	**16 - 22**	**2 - 6**	**5 - 5**	**6 - 10**	**10 - 16**	**16 - 22**
Area			**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Volatile Organic Compounds (ug/kg)									
2-Butanone	28000000	10000000	1.4 UR			2.1 UR			
Acetone	61000000	7800000	1.6 UR			**39 J**			
BTEX	NA	NA	0 U			**1.8**			
Carbon Disulfide	670000	NA	1.9 UJ			2.9 U			
cis-1,2-Dichloroethene	780000	630000	0.43 UJ			0.66 U			
Ethylbenzene	5700	71000	0.61 UJ			0.94 U			
Methylene Chloride	11000	45000	**2.2 J**			1.1 U			
Toluene	5000000	190000	0.29 UJ			0.45 U			
Total Chlorinated VOCs	NA	NA	**2.2**			**4.4**			
Total Xylenes	600000	110000	0.87 UJ			**1.8 J**			
trans-1,2-Dichloroethene	110000	1100000	0.6 UJ			0.92 U			
Trichloroethene	2800	13000	0.33 UJ			0.5 U			
Vinyl Chloride	60	20	0.79 UJ			**4.4 J**			
Semivolatile Organic Compounds (ug/kg)									
2-Methylnaphthalene	310000	123000							
4-Methylphenol	310000	NA							
Acenaphthene	3400000	43000							
Anthracene	17000000	35000							
Benzo(a)pyrene Equivalents	15	400							
Benzo(a)anthracene	150	900							
Benzo(a)pyrene	15	400							
Benzo(b)fluoranthene	150	900							
Benzo(g,h,i)perylene	1700000	800							
Benzo(k)fluoranthene	1500	900							
Bis(2-ethylhexyl)phthalate	35000	46000							
Chrysene	15000	400							
di-n-Butyl Phthalate	6100000	NA							
Dibenzo(a,h)anthracene	15	400							
Dibenzofuran	NA	NA							
Fluoranthene	2300000	20000							
Fluorene	2300000	28000							
High Molecular Weight PAHs	NA	NA							
Indeno(1,2,3-cd)pyrene	150	900							
Low Molecular Weight PAHs	NA	NA							
Naphthalene	3900	54000							
Phenanthrene	1700000	40000							
Pyrene	1700000	13000							
Total PAHs	NA	NA							
Polycyclic Aromatic Hydrocarbons (ug/kg)									
2-Methylnaphthalene	310000	123000					**360**		
Acenaphthene	3400000	43000					**72**		
Acenaphthylene	3400000	23000					**51**		
Anthracene	17000000	35000					**82**		
Benzo(a)pyrene Equivalents	15	400					**133**		
Benzo(a)anthracene	150	900					**150**		
Benzo(a)pyrene	15	400					**74**		
Benzo(b)fluoranthene	150	900					**150**		
Benzo(g,h,i)perylene	1700000	800					**86**		

TABLE 4-14

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - FFTA AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	**ORNL**	**RIDEM**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**Residential**	**Soil Direct**	**SB16-068**	**SB16-068**	**SB16-096**	**SB16-096**	**SB16-096**	**SB16-096**	**SB16-096**
Sample Number	**Regional**	**Exposure**	**SB16-068-SO-1516**	**SB16-068-SO-1622**	**SB16-096-SO-0206**	**SB16-096-SO-0505**	**SB16-096-SO-0610**	**SB16-096-SO-1016**	**SB16-096-SO-1622**
Sample Code	**Screening**	**Residential**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Levels**	**Criterion**	**20070821**	**20070822**	**20070825**	**20070825**	**20070825**	**20070825**	**20070825**
Depth Range (feet)			**15 - 16**	**16 - 22**	**2 - 6**	**5 - 5**	**6 - 10**	**10 - 16**	**16 - 22**
Area			**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)									
Benzo(k)fluoranthene	1500	900					**110**		
Chrysene	15000	400					**200**		
Dibenzo(a,h)anthracene	15	400					**21**		
Fluoranthene	2300000	20000					**530**		
Fluorene	2300000	28000					**110**		
High Molecular Weight PAHs	NA	NA					**1775**		
Indeno(1,2,3-cd)pyrene	150	900					**64**		
Low Molecular Weight PAHs	NA	NA					**2805**		
Naphthalene	150000	54000					**1300**		
Phenanthrene	1700000	40000					**830**		
Pyrene	1700000	13000					**390**		
Total PAHs	NA	NA					**4580**		
Inorganics (mg/kg)									
Aluminum	77000	NA							
Antimony	31	10							
Arsenic	0.39	7							
Barium	15000	5500							
Beryllium	160	0.4							
Cadmium	70	39							
Calcium	NA	NA							
Chromium	230	1400							
Cobalt	23	NA							
Copper	3100	3100							
Iron	55000	NA							
Lead	400	150							
Magnesium	NA	NA							
Manganese	1800	390							
Mercury	23	23							
Nickel	1600	1000							
Potassium	NA	NA							
Selenium	390	390							
Silver	390	200							
Sodium	NA	NA							
Thallium	5.1	5.5							
Vanadium	390	550							
Zinc	23000	6000							
Diesel Range Organics - Semivolatile (mg/kg)									
TPH (C09-C36)	NA	500							
Petroleum Hydrocarbons (mg/kg)									
Extractable TPH-Screening Data	NA	500		0.98 U	0.95 U		**1.5**	0.99 U	0.94 U
TPH (C09-C36)	NA	500					**400**		
TPH (C09-C44)	NA	500					**510**		

TABLE 4-14

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - FFTA AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-100**	**SB16-100**	**SB16-100**	**SB16-100**
Sample Number	**Residential**	**Soil Direct**	**SB16-100-SO-0203**	**SB16-100-SO-0206**	**SB16-100-SO-0610**	**SB16-100-SO-1016**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071003**	**20071003**	**20071003**	**20071003**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 3**	**2 - 6**	**6 - 10**	**10 - 16**
Area			**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Volatile Organic Compounds (ug/kg)						
2-Butanone	28000000	10000000	0.55 U			
Acetone	61000000	7800000	1.4 U			
BTEX	NA	NA	**18.12**			
Carbon Disulfide	670000	NA	0.23 U			
cis-1,2-Dichloroethene	780000	630000	0.52 U			
Ethylbenzene	5700	71000	**2.3 J**			
Methylene Chloride	11000	45000	0.65 U			
Toluene	5000000	190000	**0.82 J**			
Total Chlorinated VOCs	NA	NA	0 U			
Total Xylenes	600000	110000	**15**			
trans-1,2-Dichloroethene	110000	1100000	0.5 U			
Trichloroethene	2800	13000	0.21 U			
Vinyl Chloride	60	20	0.16 U			
Semivolatile Organic Compounds (ug/kg)						
2-Methylnaphthalene	310000	123000				
4-Methylphenol	310000	NA				
Acenaphthene	3400000	43000				
Anthracene	17000000	35000				
Benzo(a)pyrene Equivalents	15	400				
Benzo(a)anthracene	150	900				
Benzo(a)pyrene	15	400				
Benzo(b)fluoranthene	150	900				
Benzo(g,h,i)perylene	1700000	800				
Benzo(k)fluoranthene	1500	900				
Bis(2-ethylhexyl)phthalate	35000	46000				
Chrysene	15000	400				
di-n-Butyl Phthalate	6100000	NA				
Dibenzo(a,h)anthracene	15	400				
Dibenzofuran	NA	NA				
Fluoranthene	2300000	20000				
Fluorene	2300000	28000				
High Molecular Weight PAHs	NA	NA				
Indeno(1,2,3-cd)pyrene	150	900				
Low Molecular Weight PAHs	NA	NA				
Naphthalene	3900	54000				
Phenanthrene	1700000	40000				
Pyrene	1700000	13000				
Total PAHs	NA	NA				
Polycyclic Aromatic Hydrocarbons (ug/kg)						
2-Methylnaphthalene	310000	123000		**0.92**		
Acenaphthene	3400000	43000		**1.6**		
Acenaphthylene	3400000	23000		**1.5**		
Anthracene	17000000	35000		**2.2**		
Benzo(a)pyrene Equivalents	15	400		**15.4**		
Benzo(a)anthracene	150	900		**8.2**		
Benzo(a)pyrene	15	400		**9.4**		
Benzo(b)fluoranthene	150	900		**12**		
Benzo(g,h,i)perylene	1700000	800		**10**		

TABLE 4-14

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - FFTA AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-100**	**SB16-100**	**SB16-100**	**SB16-100**
Sample Number	**Residential**	**Soil Direct**	**SB16-100-SO-0203**	**SB16-100-SO-0206**	**SB16-100-SO-0610**	**SB16-100-SO-1016**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071003**	**20071003**	**20071003**	**20071003**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 3**	**2 - 6**	**6 - 10**	**10 - 16**
Area			**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)						
Benzo(k)fluoranthene	1500	900		**9.6**		
Chrysene	15000	400		**9.6**		
Dibenzo(a,h)anthracene	15	400		**2.9**		
Fluoranthene	2300000	20000		**14**		
Fluorene	2300000	28000		**1.8**		
High Molecular Weight PAHs	NA	NA		**97.7**		
Indeno(1,2,3-cd)pyrene	150	900		**10**		
Low Molecular Weight PAHs	NA	NA		**20.0**		
Naphthalene	150000	54000		**2.2**		
Phenanthrene	1700000	40000		**9.8**		
Pyrene	1700000	13000		**12**		
Total PAHs	NA	NA		**118**		
Inorganics (mg/kg)						
Aluminum	77000	NA			**5620**	
Antimony	31	10			0.62 U	
Arsenic	0.39	7			**2.9**	
Barium	15000	5500			**22**	
Beryllium	160	0.4			0.00091 U	
Cadmium	70	39			**0.49 J**	
Calcium	NA	NA			**720**	
Chromium	230	1400			**7.4**	
Cobalt	23	NA			**4.2 J**	
Copper	3100	3100			**17.1**	
Iron	55000	NA			**9090**	
Lead	400	150			**42.3**	
Magnesium	NA	NA			**1190**	
Manganese	1800	390			**97.6**	
Mercury	23	23			**0.055**	
Nickel	1600	1000			**7.6 J**	
Potassium	NA	NA			**381**	
Selenium	390	390			0.097 UJ	
Silver	390	200			**2.8 J**	
Sodium	NA	NA			**43.4 J**	
Thallium	5.1	5.5			0.071 U	
Vanadium	390	550			**8.3**	
Zinc	23000	6000			**51.2**	
Diesel Range Organics - Semivolatile (mg/kg)						
TPH (C09-C36)	NA	500				
Petroleum Hydrocarbons (mg/kg)						
Extractable TPH-Screening Data	NA	500		0.96 U	0.98 U	0.95 U
TPH (C09-C36)	NA	500		**13**		
TPH (C09-C44)	NA	500		**26**		

TABLE 4-14

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - UNDEVELOPED - FFTA AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Notes:
Bolding indicates that the chemical was detected in the sample.
PAHs samples were analyzed by AWL by method SW8270-SIM.
BaP Equivalents = Benzo(a)pyrene equivalent concentration
High Molecular Weight PAHs = Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene
High Molecular Weight PAHs Ecosd = Benzo(a)anthracene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthrancene, Fluoranthene, Pyrene
Low Molecular Weight PAHs = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
Low Molecular Weight PAHs Ecosd = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C_9 to C_{36}.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C_9 to C_{44}.

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
BaP = Benzo(a)pyrene equivalents
BTEX = Benzene, toluene, ethylbenzene, and total xylenes
EPA = Environmental Protection Agency
NA = Not applicable/Not available
PAH = Polycyclic aromatic hydrocarbon
PHC = Petroleum hydrocarbons as diesel fuel
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
TPH = Total petroleum hydrocarbon
VOC = Volatile organic compound

TABLE 4-15

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-047**	**SB16-049**	**SB16-051**	**SB16-052**	**SB16-055**	**SB16-062**	**SB16-063**	**SB16-063**
Sample Number	**Residential**	**Soil Direct**	**SB16-047-SO-3334**	**SB16-049-SO-3434**	**SB16-051-SO-2930**	**SB16-052-SO-2930**	**SB16-055-SO-2930**	**SB16-062-SO-3839**	**SB16-063-SO-3940**	**SB16-063-SO-4344**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070829**	**20070829**	**20070828**	**20070828**	**20070828**	**20070807**	**20070825**	**20070825**
Depth Range (feet)	**Levels**	**Criterion**	**33 - 34**	**34 - 34**	**29 - 30**	**29 - 30**	**29 - 30**	**38 - 39**	**39 - 40**	**43 - 44**
Area			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Volatile Organic Compounds (ug/kg)										
Acetone	61000000	7800000	0.77 UR	1.7 UR	1.3 UR	0.77 UR	**5.2 J**	0.96 U	2.3 UR	1.7 UR
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	0.13 U	0.27 U	0.21 U	0.13 U	0.2 U	1.2 U	2.9 UJ	2.1 UJ
cis-1,2-Dichloroethene	780000	630000	0.29 U	0.62 U	0.48 U	0.29 U	0.46 U	**1.2 J**	0.64 UJ	0.48 UJ
Ethylbenzene	5700	71000	0.49 U	1.1 U	0.81 U	0.49 U	0.78 U	0.38 UJ	0.91 UJ	0.68 UJ
Toluene	5000000	190000	0.25 U	0.54 U	0.42 U	0.25 U	0.41 U	0.18 U	0.43 UJ	0.32 UJ
Total Chlorinated VOCs	NA	NA	0 U	0 U	0 U	0 U	0 U	**57.2**	0 U	0 U
Total Xylenes	600000	110000	1.3 U	2.9 U	2.2 U	1.3 U	2.2 U	0.54 U	1.3 UJ	0.96 UJ
trans-1,2-Dichloroethene	110000	1100000	0.28 U	0.6 U	0.46 U	0.28 U	0.45 U	0.37 U	0.9 UJ	0.67 UJ
Trichloroethene	2800	13000	0.12 UJ	0.25 UJ	0.19 UJ	0.12 UJ	0.19 UJ	**56**	0.49 UJ	0.36 UJ
Inorganics (mg/kg)										
Aluminum	77000	NA								
Arsenic	0.39	7								
Barium	15000	5500								
Beryllium	160	0.4								
Cadmium	70	39								
Calcium	NA	NA								
Chromium	230	1400								
Cobalt	23	NA								
Copper	3100	3100								
Iron	55000	NA								
Lead	400	150								
Magnesium	NA	NA								
Manganese	1800	390								
Nickel	1600	1000								
Potassium	NA	NA								
Selenium	390	390								
Sodium	NA	NA								
Thallium	5.1	5.5								
Vanadium	390	550								
Zinc	23000	6000								

TABLE 4-15

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-064**	**SB16-065**	**SB16-065**	**SB16-066**	**SB16-066**	**SB16-067**	**SB16-070**	**SB16-070**
Sample Number	**Residential**	**Soil Direct**	**SB16-064-SO-4344**	**SB16-065-SO-2829**	**SB16-065-SO-3839**	**SB16-066-SO-2930**	**SB16-066-SO-4445**	**SB16-067-SO-5353**	**SB16-070-SO-2728**	**SB16-070-SO-4041**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070826**	**20070731**	**20070731**	**20070801**	**20070801**	**20070821**	**20070930**	**20071001**
Depth Range (feet)	**Levels**	**Criterion**	**43 - 44**	**28 - 29**	**38 - 39**	**29 - 30**	**44 - 45**	**53 - 53**	**27 - 28**	**40 - 41**
Area			**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN EAST**	**NORTH CEN EAST**
Volatile Organic Compounds (ug/kg)										
Acetone	61000000	7800000	1.2 UR		1.2 U	1.4 UR	1.6 UR	1.5 UR	**3.1 J**	1.4 U
BTEX	NA	NA	**0.71**		0 U	0 U	0 U	0 U	**10.2**	**27.8**
Carbon Disulfide	670000	NA	1.5 U		1.5 U	1.7 U	1.9 U	1.9 U	0.23 U	0.23 U
cis-1,2-Dichloroethene	780000	630000	0.33 U		0.33 U	0.39 U	0.44 U	0.42 U	**15**	0.52 U
Ethylbenzene	5700	71000	0.47 U		0.48 U	0.56 U	0.62 U	0.6 U	**1.4 J**	**3.5 J**
Toluene	5000000	190000	0.22 U		0.23 U	0.27 U	0.3 U	0.29 U	0.46 U	**1.3 J**
Total Chlorinated VOCs	NA	NA	**8.5**		**58**	0 U	**110**	**75**	**117**	**3500**
Total Xylenes	600000	110000	**0.71 J**		0.67 U	0.79 U	0.88 U	0.85 U	**8.8**	**23**
trans-1,2-Dichloroethene	110000	1100000	0.46 U		0.47 U	0.55 U	0.61 U	0.59 U	**2.2 J**	0.5 U
Trichloroethene	2800	13000	**8.5**		**58**	0.3 U	**110**	**75**	**100**	**3500**
Inorganics (mg/kg)										
Aluminum	77000	NA		**9410**	**7320**					
Arsenic	0.39	7		**2.7 J**	**1.7 J**					
Barium	15000	5500		**23.8**	**22.7**					
Beryllium	160	0.4		**0.49**	**0.6**					
Cadmium	70	39		**0.11 J**	**0.082 J**					
Calcium	NA	NA		**1590**	**1510**					
Chromium	230	1400		**12.4 J**	**11.2 J**					
Cobalt	23	NA		**9.4 J**	**8.8 J**					
Copper	3100	3100		**15.6**	**10.8**					
Iron	55000	NA		**21500**	**16500**					
Lead	400	150		**7.7 J**	**7.7 J**					
Magnesium	NA	NA		**4260**	**3440**					
Manganese	1800	390		**297**	**212**					
Nickel	1600	1000		**13.8 J**	**17.7 J**					
Potassium	NA	NA		**1230 J**	**1260 J**					
Selenium	390	390		**2.8 J**	**2.9 J**					
Sodium	NA	NA		**74.4**	**66**					
Thallium	5.1	5.5		**3 J**	**2.7 J**					
Vanadium	390	550		**16.4**	**15.6**					
Zinc	23000	6000		**47.2**	**42.5**					

TABLE 4-15

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-071**	**SB16-072**	**SB16-073**	**SB16-074**	**SB16-074**	**SB16-074**	**SB16-074**	**SB16-074**
Sample Number	**Residential**	**Soil Direct**	**SB16-071-SO-2930**	**SB16-072-SO-2930**	**SB16-073-SO-2930**	**SB16-074-SO-4950**	**SB16-074-SO-4950-D**	**SB16-074-SO-5657**	**SB16-074-SO-5657-D**	**SB16-074-SO-6465**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**ORIG**	**DUP**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070929**	**20070930**	**20070929**	**20070930**	**20070930**	**20070930**	**20070930**	**20070930**
Depth Range (feet)	**Levels**	**Criterion**	**29 - 30**	**29 - 30**	**29 - 30**	**49 - 50**	**49 - 50**	**56 - 57**	**56 - 57**	**64 - 65**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Volatile Organic Compounds (ug/kg)										
Acetone	61000000	7800000	1.7 UR	1.5 U	1.5 U	**2.9 J**	**6.5**	1.4 U	**2.3 J**	**3.5**
BTEX	NA	NA	0 U	**21.75**	**27.1**	**9.6**	**27.8**	**26.6**	**20.65**	**8.7**
Carbon Disulfide	670000	NA	0.28 UJ	0.25 U	0.25 U	0.25 U	0.33 U	0.23 U	0.24 U	0.22 U
cis-1,2-Dichloroethene	780000	630000	0.64 UJ	0.58 U	**0.86 J**	0.56 U	0.75 U	0.54 U	0.55 U	0.49 U
Ethylbenzene	5700	71000	1.1 UJ	**2.9 J**	**3.7 J**	**1.3 J**	**3.6 J**	**3.4 J**	**2.7 J**	**1.2 J**
Toluene	5000000	190000	0.56 UJ	**0.85 J**	**1.4 J**	0.49 U	**1.2 J**	**1.2 J**	**0.95 J**	0.43 U
Total Chlorinated VOCs	NA	NA	0 U	0 U	**0.86**	**1800**	**1700**	**40**	**31**	**72**
Total Xylenes	600000	110000	3 UJ	**18**	**22**	**8.3 J**	**23 J**	**22**	**17**	**7.5**
trans-1,2-Dichloroethene	110000	1100000	0.63 UJ	0.56 U	0.56 U	0.55 U	0.73 U	0.52 U	0.54 U	0.48 U
Trichloroethene	2800	13000	0.26 UJ	0.24 U	0.23 U	**1800**	**1700**	**40**	**31**	**72**
Inorganics (mg/kg)										
Aluminum	77000	NA								
Arsenic	0.39	7								
Barium	15000	5500								
Beryllium	160	0.4								
Cadmium	70	39								
Calcium	NA	NA								
Chromium	230	1400								
Cobalt	23	NA								
Copper	3100	3100								
Iron	55000	NA								
Lead	400	150								
Magnesium	NA	NA								
Manganese	1800	390								
Nickel	1600	1000								
Potassium	NA	NA								
Selenium	390	390								
Sodium	NA	NA								
Thallium	5.1	5.5								
Vanadium	390	550								
Zinc	23000	6000								

TABLE 4-15

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-075**	**SB16-078**	**SB16-078**	**SB16-079**	**SB16-079**	**SB16-080**	**SB16-081**	**SB16-082**
Sample Number	**Residential**	**Soil Direct**	**SB16-075-SO-3637**	**SB16-078-SO-3637**	**SB16-078-SO-4344**	**SB16-079-SO-4849**	**SB16-079-SO-4849-D**	**SB16-080-SO-4445**	**SB16-081-SO-3738**	**SB16-082-SO-3233**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070929**	**20070927**	**20070927**	**20070824**	**20070824**	**20070824**	**20070826**	**20070821**
Depth Range (feet)	**Levels**	**Criterion**	**36 - 37**	**36 - 37**	**43 - 44**	**49 - 49**	**48 - 49**	**44 - 45**	**37 - 38**	**32 - 33**
Area			**NORTH CEN EAST**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Volatile Organic Compounds (ug/kg)										
Acetone	61000000	7800000	1.5 UR	1.4 UJ	1.2 UJ	0.48 UR	0.7 UR	1 UR	0.97 UR	1.4 UR
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	0.25 U	**1.1 J**	0.19 U	0.6 UJ	0.86 UJ	1.2 U	1.2 UJ	1.7 U
cis-1,2-Dichloroethene	780000	630000	0.57 U	0.53 U	0.44 U	0.13 UJ	0.19 UJ	0.28 U	**2.4 J**	**1.1 J**
Ethylbenzene	5700	71000	0.96 U	0.9 U	0.75 U	0.19 UJ	0.28 UJ	0.4 U	0.38 UJ	0.54 U
Toluene	5000000	190000	0.5 U	0.47 U	0.39 U	0.091 UJ	0.13 UJ	0.19 U	0.18 UJ	0.26 U
Total Chlorinated VOCs	NA	NA	**320**	**66**	**490**	**2.2**	**5.8**	**41**	**2602**	**151**
Total Xylenes	600000	110000	2.6 U	2.5 U	2.1 U	0.27 UJ	0.39 UJ	0.56 U	0.54 UJ	0.76 U
trans-1,2-Dichloroethene	110000	1100000	0.55 U	0.52 U	0.43 U	0.19 UJ	0.27 UJ	0.39 U	0.38 UJ	0.53 U
Trichloroethene	2800	13000	**320**	**66**	**490**	**2.2 J**	**5.8 J**	**41**	**2600**	**150**
Inorganics (mg/kg)										
Aluminum	77000	NA								
Arsenic	0.39	7								
Barium	15000	5500								
Beryllium	160	0.4								
Cadmium	70	39								
Calcium	NA	NA								
Chromium	230	1400								
Cobalt	23	NA								
Copper	3100	3100								
Iron	55000	NA								
Lead	400	150								
Magnesium	NA	NA								
Manganese	1800	390								
Nickel	1600	1000								
Potassium	NA	NA								
Selenium	390	390								
Sodium	NA	NA								
Thallium	5.1	5.5								
Vanadium	390	550								
Zinc	23000	6000								

TABLE 4-15

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-083**	**SB16-084**	**SB16-084**	**SB16-085**	**SB16-086**	**SB16-087**	**SB16-088**	**SB16-089**
Sample Number	**Residential**	**Soil Direct**	**SB16-083-SO-5960**	**SB16-084-SO-2930**	**SB16-084-SO-5556**	**SB16-085-SO-3839**	**SB16-086-SO-2829**	**SB16-087-SO-3940**	**SB16-088-SO-4445**	**SB16-089-SO-3637**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070823**	**20070807**	**20070807**	**20070822**	**20070926**	**20070926**	**20071001**	**20070927**
Depth Range (feet)	**Levels**	**Criterion**	**59 - 60**	**29 - 30**	**55 - 56**	**38 - 39**	**28 - 29**	**39 - 40**	**44 - 45**	**36 - 37**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Volatile Organic Compounds (ug/kg)										
Acetone	61000000	7800000	0.9 UR	1.3 UJ	1.4 U	1 UR	1.4 UR	1.1 UR	**2.8 J**	**1.9 J**
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	**18.22**	**3.5**
Carbon Disulfide	670000	NA	1.1 U	1.6 UJ	1.8 U	1.2 U	0.23 U	0.17 UJ	0.19 U	0.24 U
cis-1,2-Dichloroethene	780000	630000	0.25 U	0.37 UJ	0.4 U	0.28 U	0.53 U	0.39 UJ	0.43 U	0.54 U
Ethylbenzene	5700	71000	0.36 U	0.52 UJ	0.57 UJ	0.4 U	0.89 U	0.67 UJ	**2.4 J**	0.91 U
Toluene	5000000	190000	0.17 U	0.25 UJ	0.27 U	0.19 U	0.46 U	0.34 UJ	**0.82 J**	0.47 U
Total Chlorinated VOCs	NA	NA	**730**	**4.6**	**94**	**20**	0 U	0 U	**7**	**31**
Total Xylenes	600000	110000	0.5 U	0.74 UJ	0.8 U	0.56 U	2.5 UJ	1.8 UJ	**15**	**3.5 J**
trans-1,2-Dichloroethene	110000	1100000	0.35 U	0.52 UJ	0.56 U	0.39 U	0.51 U	0.38 UJ	0.41 U	0.53 U
Trichloroethene	2800	13000	**730**	**4.6 J**	**94**	**20**	0.22 U	0.16 UJ	**7 J**	**31**
Inorganics (mg/kg)										
Aluminum	77000	NA		**5610**						
Arsenic	0.39	7		**8.1 J**						
Barium	15000	5500		**10**						
Beryllium	160	0.4		**0.89**						
Cadmium	70	39		**0.22 J**						
Calcium	NA	NA		**197**						
Chromium	230	1400		**6.8 J**						
Cobalt	23	NA		**7.4 J**						
Copper	3100	3100		**36.4**						
Iron	55000	NA		**29200**						
Lead	400	150		**7.3 J**						
Magnesium	NA	NA		**1960**						
Manganese	1800	390		**180**						
Nickel	1600	1000		**11.5 J**						
Potassium	NA	NA		**578**						
Selenium	390	390		**2.7 J**						
Sodium	NA	NA		**61.7**						
Thallium	5.1	5.5		**2.8 J**						
Vanadium	390	550		**13.6**						
Zinc	23000	6000		**34.8 J**						

TABLE 4-15

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-090**	**SB16-091**	**SB16-A2-01**
Sample Number	**Residential**	**Soil Direct**	**SB16-090-SO-3132**	**SB16-091-SO-2526**	**SB16-A2-01-SO-5960**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071002**	**20071002**	**20070731**
Depth Range (feet)	**Levels**	**Criterion**	**31 - 32**	**25 - 26**	**59 - 60**
Area			**NORTH CEN EAST**	**NORTH CEN EAST**	**NORTH CEN EAST**
Volatile Organic Compounds (ug/kg)					
Acetone	61000000	7800000	**1.7 J**	1.4 U	1.2 UR
BTEX	NA	NA	**15.72**	**9.9**	0 U
Carbon Disulfide	670000	NA	0.2 U	0.24 U	1.5 U
cis-1,2-Dichloroethene	780000	630000	0.46 U	0.54 U	0.33 U
Ethylbenzene	5700	71000	**1.9 J**	**1.4 J**	0.47 U
Toluene	5000000	190000	**0.82 J**	0.47 U	0.22 U
Total Chlorinated VOCs	NA	NA	0 U	0 U	**2200**
Total Xylenes	600000	110000	**13**	**8.5**	0.67 U
trans-1,2-Dichloroethene	110000	1100000	0.45 U	0.53 U	0.46 U
Trichloroethene	2800	13000	0.19 U	0.22 U	**2200**
Inorganics (mg/kg)					
Aluminum	77000	NA			
Arsenic	0.39	7			
Barium	15000	5500			
Beryllium	160	0.4			
Cadmium	70	39			
Calcium	NA	NA			
Chromium	230	1400			
Cobalt	23	NA			
Copper	3100	3100			
Iron	55000	NA			
Lead	400	150			
Magnesium	NA	NA			
Manganese	1800	390			
Nickel	1600	1000			
Potassium	NA	NA			
Selenium	390	390			
Sodium	NA	NA			
Thallium	5.1	5.5			
Vanadium	390	550			
Zinc	23000	6000			

TABLE 4-15

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - UNDEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Notes:
Bolding indicates that the chemical was detected in the sample.
PAHs samples were analyzed by AWL by method SW8270-SIM.

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
EPA = Environmental Protection Agency
NA = Not applicable/Not available
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
VOC = Volatile organic compound

TABLE 4-16

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	10	10	10	10	10	10	10	10	10
Location			SB16-A2-07	SB16-A2-10	SB16-A2-12	SB16-A2-14	SB16-A2-16	SB16-A2-18	SB16-A2-20	SB16-A2-24	SB16-A2-25
Sample Number			SB16-A2-07-SO-010	SB16-A2-10-SO-010	SB16-A2-12-SO-010	SB16-A2-14-SO-010	SB16-A2-16-SO-010	SB16-A2-18-SO-010	SB16-A2-20-SO-010	SB16-A2-24-SO-010	SB16-A2-25-SO-010
Sample Code			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date			20070715	20070628	20070716	20070811	20070628	20070630	20070717	20070702	20070717
Depth Range (feet)			1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2
Matrix			SO	SO	SO	SO	SO	SO	SO	SO	SO
Duplicate											
Area			EASTERN AREA	EASTERN AREA	EASTERN AREA	EASTERN AREA	EASTERN AREA	EASTERN AREA	EASTERN AREA	EASTERN AREA	EASTERN AREA
Volatile Organic Compounds (ug/kg)											
Acetone	61000000	7800000	1.2 U	1.6 UJ	1.5 UR	1.2 UJ	1 UJ	1.4 UJ	1.2 UR	1.1 UJ	1.3 UR
Total Chlorinated VOCs	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Trichloroethene	2800	13000	0.26 U	0.33 UJ	0.31 U	0.26 U	0.22 U	0.3 UJ	0.25 U	0.22 UJ	0.27 U
Semivolatile Organic Compounds (ug/kg)											
Acenaphthene	3400000	43000	35 U	40 U	34 U	34 U	35 U	34 U	34 U	35 U	34 U
Acenaphthylene	3400000	23000	35 U	40 U	34 U	34 U	35 U	34 U	34 U	35 U	34 U
Anthracene	17000000	35000	35 U	40 U	34 U	34 U	35 U	34 U	34 U	35 U	34 U
Benzo(a)pyrene Equivalents	15	400	35 U	40 U	**51**	**5.25**	35 U	34 U	34 U	35 U	34 U
Benzo(a)anthracene	150	900	35 U	40 U	34 U	34 U	35 U	34 U	34 U	35 U	34 U
Benzo(a)pyrene	15	400	35 U	40 U	**40**	34 U	35 U	34 U	34 U	35 U	34 U
Benzo(b)fluoranthene	150	900	35 U	40 U	**73**	**52**	35 U	34 U	34 U	35 U	34 U
Benzo(g,h,i)perylene	1700000	800	35 U	40 U	**47**	**49**	35 U	34 U	34 U	35 U	34 U
Benzo(k)fluoranthene	1500	900	35 U	40 U	34 U	34 U	35 U	34 U	34 U	35 U	34 U
Carbazole	24000	NA	35 U	40 U	34 U	34 U	35 U	34 U	34 U	35 U	34 U
Chrysene	15000	400	35 U	40 U	**62**	**54**	35 U	34 U	34 U	35 U	34 U
Dibenzo(a,h)anthracene	15	400	35 U	40 U	34 U	34 U	35 U	34 U	34 U	35 U	34 U
Dibenzofuran	NA	NA	35 U	40 U	34 U	34 U	35 U	34 U	34 U	35 U	34 U
Fluoranthene	2300000	20000	35 U	40 U	**94**	**57**	35 U	34 U	34 U	35 U	34 U
Fluorene	2300000	28000	35 U	40 U	34 U	34 U	35 U	34 U	34 U	35 U	34 U
High Molecular Weight PAHs	NA	NA	0 U	0 U	**439**	**267**	0 U	0 U	0 U	0 U	0 U
Indeno(1,2,3-cd)pyrene	150	900	35 U	40 U	**36**	34 U	35 U	34 U	34 U	35 U	34 U
Low Molecular Weight PAHs	NA	NA	0 U	0 U	**39**	0 U	0 U	0 U	0 U	0 U	0 U
Phenanthrene	1700000	40000	35 U	40 U	**39**	34 U	35 U	34 U	34 U	35 U	34 U
Pyrene	1700000	13000	35 U	40 U	**87**	**55**	35 U	34 U	34 U	35 U	34 U
Total PAHs	NA	NA	0 U	0 U	**478**	**267**	0 U	0 U	0 U	0 U	0 U
Pesticides/PCBs (ug/kg)											
alpha-Chlordane	1600	NA	1.8 U	2 U	1.8 U	1.7 U	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U
Endrin Aldehyde	18000	NA	3.5 U	3.9 U	3.4 U	3.4 U	3.5 U	3.4 U	3.4 U	3.5 U	3.4 U
gamma-Chlordane	1600	NA	1.8 U	2 U	1.8 U	1.7 U	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U
Inorganics (mg/kg)											
Aluminum	77000	NA	**6650**	**7970**	**4420**	**4500**	**6180**	**3310**	**5320**	**7150**	**2960**
Arsenic	0.39	7	**2.5**	**2.1**	**1.2**	**1.6 J**	**2.8**	**1.2 J**	**1.5**	**2.5 J**	**1.4**
Barium	15000	5500	**18.4**	**15.9**	**16.4**	**55.1**	**11**	**12.7**	**16.9**	**15.5**	**21.8**
Beryllium	160	0.4	**0.49 J**	**0.58**	**0.44 J**	**0.56**	**0.49**	**0.45**	**0.51 J**	**0.5**	**0.32 J**
Cadmium	70	39	**0.06**	0.015 U	**0.04**	**0.18 J**	0.0055 U	**0.031**	**0.063**	**0.083**	**0.09**
Calcium	NA	NA	**106 J**	140 U	**222 J**	**194**	1.8 U	20.5 U	**72.3 J**	1.7 U	**128 J**
Chromium	230	1400	**8.2**	**9.7**	**7.4**	**24**	**8**	**3.8**	**5.3**	**8.3**	**3.8**
Cobalt	23	NA	**5.3 J**	**6.7**	**4.7 J**	**3.2 J**	**6.1 J**	**3.1**	**3.3 J**	**11.5**	**3.8 J**
Copper	3100	3100	**9.8**	**13.4**	**10.1**	**8.4**	**17.8**	**6.4**	**6.8**	**28.3**	**7.1**
Iron	55000	NA	**12900 J**	**14300**	**11000 J**	**8630**	**13900**	**7100**	**9700 J**	**13100**	**7500 J**
Lead	400	150	**50.1 J**	**7.6**	**6 J**	**18.2**	**7.3**	**4.5**	**14.4 J**	**8.6**	**4.2 J**
Magnesium	NA	NA	**1860**	**2440**	**1860**	**982**	**2530**	**1070**	**1340**	**1970**	**1170**
Manganese	1800	390	**179 J**	**210**	**126 J**	**152**	**173**	**150**	**147 J**	**188**	**154 J**
Mercury	23	23	**0.026**	**0.057**	0.0073 U	0.0063 U	0.0072 UJ	0.0069 UJ	0.0062 U	0.0062 UJ	0.0063 U
Nickel	1600	1000	**8.9 J**	**11.1 J**	**8.8 J**	**5.1 J**	**9.7 J**	**4.7 J**	**5.5 J**	**9.9 J**	**5.9 J**
Potassium	NA	NA	**513**	**1000**	**1250**	**605**	**604**	**405**	**694**	**525**	**428**

TABLE 4-16

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	10	10	10	10	10	10	10	10	10
Location			SB16-A2-07	SB16-A2-10	SB16-A2-12	SB16-A2-14	SB16-A2-16	SB16-A2-18	SB16-A2-20	SB16-A2-24	SB16-A2-25
Sample Number			SB16-A2-07-SO-010	SB16-A2-10-SO-010	SB16-A2-12-SO-010	SB16-A2-14-SO-010	SB16-A2-16-SO-010	SB16-A2-18-SO-010	SB16-A2-20-SO-010	SB16-A2-24-SO-010	SB16-A2-25-SO-010
Sample Code			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date			20070715	20070628	20070716	20070811	20070628	20070630	20070717	20070702	20070717
Depth Range (feet)			1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2
Matrix			SO	SO	SO	SO	SO	SO	SO	SO	SO
Duplicate											
Area			EASTERN AREA	EASTERN AREA	EASTERN AREA	EASTERN AREA	EASTERN AREA	EASTERN AREA	EASTERN AREA	EASTERN AREA	EASTERN AREA
Inorganics (mg/kg) (continued)											
Selenium	390	390	1.7 U	**1.6 J**	1.4 U	**1.2 J**	**1.3 J**	0.67 U	1.1 U	0.96 U	0.9 U
Sodium	NA	NA	**165**	**28.4**	**110**	**31**	**18.9**	**17.3**	**24.5**	**15.8**	**17.7**
Thallium	5.1	5.5	**2.2**	**2.2 J**	**2.2**	1.6 U	**2.2 J**	**1.1 J**	**1.8**	**2.2 J**	**1.1**
Vanadium	390	550	**11.6**	**14.1**	**9.2**	**10.3**	**10.2**	**4.9**	**8.1**	**11.3**	**5.3**
Zinc	23000	6000	**43 J**	**42.9**	**36.6 J**	**45.9**	**30**	**31.8**	**37.2 J**	**58**	**55.2 J**
Diesel Range Organics - Semivolatile (mg/kg)											
TPH (C09-C36)	NA	500	9.6 U	**18**	**100**	**720 J**	9.5 U	9.2 U	**12**	9.3 U	9.2 U

TABLE 4-16

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	10	10	10	10	10	10	10	10	10
Location			SB16-A3-02	SB16-A3-03	SB16-A3-04	SB16-A3-06	SB16-A3-08	SB16-A3-09	SB16-A3-10	SB16-A3-12	SB16-A3-14
Sample Number			SB16-A3-02-SO-010	SB16-A3-03-SO-010	SB16-A3-04-SO-010	SB16-A3-06-SO-010	SB16-A3-08-SO-010	SB16-A3-09-SO-010	SB16-A3-10-SO-010	SB16-A3-12-SO-010	SB16-A3-14-SO-010
Sample Code			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date			20070711	20070710	20070711	20070713	20070713	20070713	20070711	20070711	20070713
Depth Range (feet)			1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2
Matrix			SO	SO	SO	SO	SO	SO	SO	SO	SO
Duplicate											
Area			BUILDING 41	BUILDING 41	EASTERN AREA	BUILDING 41	BUILDING 41	EASTERN AREA	EASTERN AREA	BUILDING 41	EASTERN AREA
Volatile Organic Compounds (ug/kg)											
Acetone	61000000	7800000	1.6 U	**2.3 J**	**4**	1 U	1.4 U	1.5 U	1.4 U	1.1 U	1.3 U
Total Chlorinated VOCs	NA	NA	0 U	0 U	0 U	0 U	**1.7**	0 U	0 U	0 U	0 U
Trichloroethene	2800	13000	0.34 U	0.22 UJ	0.26 U	0.22 U	**1.7 J**	0.33 U	0.29 U	0.24 U	0.28 U
Semivolatile Organic Compounds (ug/kg)											
Acenaphthene	3400000	43000	35 U	34 U	34 U	35 U	35 U	35 U	35 U	**340**	35 U
Acenaphthylene	3400000	23000	35 U	34 U	**67**	35 U	35 U	35 U	**36**	**2500**	35 U
Anthracene	17000000	35000	35 U	34 U	34 U	35 U	35 U	35 U	35 U	**11000**	35 U
Benzo(a)pyrene Equivalents	15	400	35 U	34 U	**109**	35 U	35 U	35 U	**64.1**	**58170**	35 U
Benzo(a)anthracene	150	900	35 U	34 U	**58**	35 U	35 U	35 U	**51**	**40000**	35 U
Benzo(a)pyrene	15	400	35 U	34 U	**76**	35 U	35 U	35 U	**51**	**39000**	35 U
Benzo(b)fluoranthene	150	900	35 U	34 U	**180**	35 U	35 U	35 U	**79**	**52000**	35 U
Benzo(g,h,i)perylene	1700000	800	35 U	34 U	**96**	35 U	35 U	35 U	35 U	**23000**	35 U
Benzo(k)fluoranthene	1500	900	35 U	34 U	**58**	35 U	35 U	35 U	35 U	**23000**	35 U
Carbazole	24000	NA	35 U	34 U	34 U	35 U	35 U	35 U	35 U	**3400**	35 U
Chrysene	15000	400	35 U	34 U	**75**	35 U	35 U	35 U	**63**	**40000**	35 U
Dibenzo(a,h)anthracene	15	400	35 U	34 U	34 U	35 U	35 U	35 U	35 U	**7500**	35 U
Dibenzofuran	NA	NA	35 U	34 U	34 U	35 U	35 U	35 U	35 U	**360 J**	35 U
Fluoranthene	2300000	20000	35 U	34 U	**110**	35 U	35 U	**46**	**100**	**55000 J**	35 U
Fluorene	2300000	28000	35 U	34 U	34 U	35 U	35 U	35 U	35 U	**880**	35 U
High Molecular Weight PAHs	NA	NA	0 U	0 U	**832**	0 U	0 U	**46**	**425**	**343500**	0 U
Indeno(1,2,3-cd)pyrene	150	900	35 U	34 U	**88**	35 U	35 U	35 U	35 U	**22000**	35 U
Low Molecular Weight PAHs	NA	NA	0 U	0 U	**67**	0 U	0 U	0 U	**76**	**39720**	0 U
Phenanthrene	1700000	40000	35 U	34 U	34 U	35 U	35 U	35 U	**40**	**25000**	35 U
Pyrene	1700000	13000	35 U	34 U	**91**	35 U	35 U	35 U	**81**	**42000**	35 U
Total PAHs	NA	NA	0 U	0 U	**899**	0 U	0 U	**46**	**501**	**383220**	0 U
Pesticides/PCBs (ug/kg)											
alpha-Chlordane	1600	NA	1.8 U	1.8 U	**29 J**	1.8 U	1.8 U	1.8 U	1.8 U	1.7 UJ	1.8 U
Endrin Aldehyde	18000	NA	3.5 U	3.4 U	13 U	3.5 U	3.5 UJ	3.4 U	3.5 U	**38 J**	3.5 U
gamma-Chlordane	1600	NA	1.8 U	1.8 U	**31**	1.8 U	1.8 U	1.8 U	1.8 U	**8.8 J**	1.8 U
Inorganics (mg/kg)											
Aluminum	77000	NA	**6490**	**4410**	**3970**	**6740**	**6880**	**7080**	**6140**	**6220**	**6720**
Arsenic	0.39	7	**2.1**	**2 J**	**1.3 J**	**1.6 J**	**3.2**	**2.1 J**	**2.6 J**	**2.8 J**	**3.5 J**
Barium	15000	5500	**13.5**	**10.5**	**11**	**17.7 J**	**15.9 J**	**16.7 J**	**16.7**	**27.1**	**10.9 J**
Beryllium	160	0.4	**0.47**	**0.29**	**0.47**	**0.45 J**	**0.42 J**	**0.54 J**	**0.41**	**1.3**	**0.57 J**
Cadmium	70	39	**0.13**	**0.071 J**	**0.045 J**	**0.095 J**	**0.08 J**	**0.12 J**	**0.12 J**	**0.16 J**	**0.14 J**
Calcium	NA	NA	1.9 U	8.2 U	18.3 U	**228 J**	**257 J**	**116 J**	**296**	**1630**	**85 J**
Chromium	230	1400	**9.1**	**6.1**	**4.5**	**5.9 J**	**4.8 J**	**8.4 J**	**9.3**	**4**	**8.9 J**
Cobalt	23	NA	**9**	**5.1 J**	**3.6 J**	**2.3 J**	**9.9 J**	**5.3 J**	**5.7 J**	**2.7 J**	**7.7 J**
Copper	3100	3100	**18.5**	**9.4**	**14.3**	**5 J**	**11.4 J**	**10.1 J**	**11.5**	**4.9**	**19.9 J**
Iron	55000	NA	**21700**	**9990**	**8270**	**8220**	**8390**	**12800**	**12600**	**11500**	**18100**
Lead	400	150	**10 J**	**6 J**	**16.1 J**	**10.4 J**	**5.8 J**	**8.6 J**	**21.2 J**	**9.4 J**	**9.6 J**
Magnesium	NA	NA	**2710**	**1720**	**1170**	**1030 J**	**1270 J**	**1880 J**	**1980**	**1200**	**2500 J**
Manganese	1800	390	**303**	**182**	**158**	**125 J**	**180 J**	**188 J**	**184**	**224**	**194 J**
Mercury	23	23	0.0065 U	**0.0084 J**	0.0065 U	0.0069 UJ	0.0068 UJ	0.0061 UJ	**0.011 J**	**0.015**	0.0066 UJ
Nickel	1600	1000	**13.9**	**7.5 J**	**5.5 J**	**5.6 J**	**8.9 J**	**9.5 J**	**9.6 J**	**3.3 J**	**11.7 J**
Potassium	NA	NA	**653**	**537**	**442**	**285**	**536**	**610**	**534**	**1260**	**849**

TABLE 4-16

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	ORNL Residential Regional Screening Levels	RIDEM Soil Direct Exposure Residential Criterion	10	10	10	10	10	10	10	10	10
Location			SB16-A3-02	SB16-A3-03	SB16-A3-04	SB16-A3-06	SB16-A3-08	SB16-A3-09	SB16-A3-10	SB16-A3-12	SB16-A3-14
Sample Number			SB16-A3-02-SO-010	SB16-A3-03-SO-010	SB16-A3-04-SO-010	SB16-A3-06-SO-010	SB16-A3-08-SO-010	SB16-A3-09-SO-010	SB16-A3-10-SO-010	SB16-A3-12-SO-010	SB16-A3-14-SO-010
Sample Code			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date			20070711	20070710	20070711	20070713	20070713	20070713	20070711	20070711	20070713
Depth Range (feet)			1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2
Matrix			SO	SO	SO	SO	SO	SO	SO	SO	SO
Duplicate											
Area			BUILDING 41	BUILDING 41	EASTERN AREA	BUILDING 41	BUILDING 41	EASTERN AREA	EASTERN AREA	BUILDING 41	EASTERN AREA
Inorganics (mg/kg) (continued)											
Selenium	390	390	0.77 U	0.62 U	0.66 U	**1.2 J**	**1.1 J**	**1.9 J**	0.73 U	0.6 U	**1.8 J**
Sodium	NA	NA	**17**	**21.3**	**18.9**	**11 J**	**223**	7.3 U	**24.9**	**38.6**	6.6 U
Thallium	5.1	5.5	**2.6**	**1.3 J**	**1 J**	**0.89 J**	**0.85 J**	**1.8 J**	**1.9 J**	**1.6 J**	**2.4 J**
Vanadium	390	550	**11.8**	**7.5**	**6.1**	**10.7 J**	**7.4 J**	**12.1 J**	**11.4**	**7.7**	**13.1 J**
Zinc	23000	6000	**41.5**	**20.8**	**35.1**	**19.4 J**	**23.8 J**	**54.4 J**	**38.5**	**84.5**	**40.3 J**
Diesel Range Organics - Semivolatile (mg/kg)											
TPH (C09-C36)	NA	500	9.6 U	9.3 U	**19**	**10**	9.5 U	9.5 U	9.4 U	**1600**	9.7 U

TABLE 4-16

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**
Location	**ORNL**	**RIDEM**	**SB16-A3-17**
Sample Number	**Residential**	**Soil Direct**	**SB16-A3-17-SO-010**
Sample Code	**Regional**	**Exposure**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070701**
Depth Range (feet)	**Levels**	**Criterion**	**1 - 2**
Matrix			**SO**
Duplicate			
Area			**EASTERN AREA**
Volatile Organic Compounds (ug/kg)			
Acetone	61000000	7800000	1.2 UJ
Total Chlorinated VOCs	NA	NA	0 U
Trichloroethene	2800	13000	0.24 UJ
Semivolatile Organic Compounds (ug/kg)			
Acenaphthene	3400000	43000	35 U
Acenaphthylene	3400000	23000	35 U
Anthracene	17000000	35000	35 U
Benzo(a)pyrene Equivalents	15	400	35 U
Benzo(a)anthracene	150	900	35 U
Benzo(a)pyrene	15	400	35 U
Benzo(b)fluoranthene	150	900	35 U
Benzo(g,h,i)perylene	1700000	800	35 U
Benzo(k)fluoranthene	1500	900	35 U
Carbazole	24000	NA	35 U
Chrysene	15000	400	35 U
Dibenzo(a,h)anthracene	15	400	35 U
Dibenzofuran	NA	NA	35 U
Fluoranthene	2300000	20000	35 U
Fluorene	2300000	28000	35 U
High Molecular Weight PAHs	NA	NA	0 U
Indeno(1,2,3-cd)pyrene	150	900	35 U
Low Molecular Weight PAHs	NA	NA	0 U
Phenanthrene	1700000	40000	35 U
Pyrene	1700000	13000	35 U
Total PAHs	NA	NA	0 U
Pesticides/PCBs (ug/kg)			
alpha-Chlordane	1600	NA	1.8 U
Endrin Aldehyde	18000	NA	3.5 U
gamma-Chlordane	1600	NA	1.8 U
Inorganics (mg/kg)			
Aluminum	77000	NA	**6080**
Arsenic	0.39	7	**2.4 J**
Barium	15000	5500	**15.9**
Beryllium	160	0.4	**0.51**
Cadmium	70	39	**0.053**
Calcium	NA	NA	**303**
Chromium	230	1400	**7.5**
Cobalt	23	NA	**7.2**
Copper	3100	3100	**15.6**
Iron	55000	NA	**13400**
Lead	400	150	**7.9**
Magnesium	NA	NA	**2450**
Manganese	1800	390	**209**
Mercury	23	23	0.0068 UJ
Nickel	1600	1000	**12 J**
Potassium	NA	NA	**869**

TABLE 4-16

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**
Location	**ORNL**	**RIDEM**	**SB16-A3-17**
Sample Number	**Residential**	**Soil Direct**	**SB16-A3-17-SO-010**
Sample Code	**Regional**	**Exposure**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070701**
Depth Range (feet)	**Levels**	**Criterion**	**1 - 2**
Matrix			**SO**
Duplicate			
Area			**EASTERN AREA**
Inorganics (mg/kg) (continued)			
Selenium	390	390	1.1 U
Sodium	NA	NA	**22.2**
Thallium	5.1	5.5	**2.2 J**
Vanadium	390	550	**11.7**
Zinc	23000	6000	**32.9**
Diesel Range Organics - Semivolatile (mg/kg)			
TPH (C09-C36)	NA	500	9.6 U

TABLE 4-16

SUMMARY OF CHEMICALS DETECTED IN PHASE III SURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Notes:
Bolding indicates that the chemical was detected in the sample.
PAHs samples were analyzed by AWL by method SW8270-SIM.
BaP Equivalents = Benzo(a)pyrene equivalent concentration
High Molecular Weight PAHs = Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene
High Molecular Weight PAHs Ecosd = Benzo(a)anthracene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthrancene, Fluoranthene, Pyrene
Low Molecular Weight PAHs = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
Low Molecular Weight PAHs Ecosd = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C_9 to C_{36}.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C_9 to C_{44}.

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
BaP = Benzo(a)pyrene equivalents
BTEX = Benzene, toluene, ethylbenzene, and total xylenes
EPA = Environmental Protection Agency
NA = Not applicable/Not available
PAH = Polycyclic aromatic hydrocarbon
PHC = Petroleum hydrocarbons as diesel fuel
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
TPH = Total petroleum hydrocarbon
VOC = Volatile organic compound

TABLE 4-17

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A1-01**	**SB16-A2-05**	**SB16-A2-07**	**SB16-A2-10**	**SB16-A2-12**	**SB16-A2-14**	**SB16-A2-16**	**SB16-A2-16**
Sample Number	**Residential**	**Soil Direct**	**SB16-A1-01-SO-2223**	**SB16-A2-05-SO-1011**	**SB16-A2-07-SO-0910**	**SB16-A2-10-SO-0206**	**SB16-A2-12-SO-0506**	**SB16-A2-14-SO-0708**	**SB16-A2-16-SO-0405**	**SB16-A2-16-SO-0910**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070715**	**20070809**	**20070715**	**20070628**	**20070716**	**20070811**	**20070628**	**20070628**
Depth Range (feet)	**Levels**	**Criterion**	**22 - 23**	**10 - 11**	**9 - 10**	**2 - 6**	**5 - 6**	**7 - 8**	**4 - 5**	**9 - 10**
Matrix			**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
Duplicate										
Area			**UPGRADIENT**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Volatile Organic Compounds (ug/kg)										
1,1,2-Trichloroethane	1100	3600	0.43 U	**46 J**	0.53 U	0.55 UJ	0.62 U	0.51 U	0.48 U	0.41 U
Acetone	61000000	7800000	1.1 U	**7.4 J**	1.3 U	1.4 UJ	1.6 UR	1.3 UJ	1.2 UJ	1 UJ
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	1.3 U	**2.5 J**	1.6 U	1.7 UJ	1.9 U	1.6 U	1.5 U	1.3 U
cis-1,2-Dichloroethene	780000	630000	0.3 U	0.34 U	0.37 U	0.38 UJ	0.43 U	0.35 U	0.33 U	0.28 U
Isopropylbenzene	2200000	NA	0.19 U	**5.1 J**	0.23 U	0.24 UJ	0.28 U	0.23 U	0.21 U	0.18 U
Methyl Cyclohexane	3400000	NA	0.26 U	**3.7 J**	0.32 U	0.33 UJ	0.38 UJ	0.31 UJ	0.29 U	0.25 U
Methylene Chloride	11000	45000	0.52 U	0.6 U	0.64 U	0.66 UJ	0.75 U	0.62 U	0.58 U	0.49 U
Tetrachloroethene	570	12000	0.41 U	0.47 U	0.5 U	0.52 UJ	0.59 U	0.48 U	0.45 U	0.38 U
Toluene	5000000	190000	0.2 U	0.23 U	0.25 U	0.26 UJ	0.29 U	0.24 U	0.23 U	0.19 U
Total Chlorinated VOCs	NA	NA	0 U	**46**	0 U	0 U	0 U	0 U	0 U	0 U
Trichloroethene	2800	13000	0.23 U	0.26 U	0.28 U	0.29 UJ	0.33 U	0.27 U	0.26 U	0.22 U
Semivolatile Organic Compounds (ug/kg)										
2-Methylnaphthalene	310000	123000		**940**	40 U	35 U	41 U	40 UJ		38 U
Acenaphthylene	3400000	23000		37 U	40 U	35 U	41 U	40 UJ		38 U
Anthracene	17000000	35000		37 U	40 U	35 U	41 U	40 UJ		38 U
Benzo(a)pyrene Equivalents	15	400		37 U	40 U	35 U	41 U	40 U		38 U
Benzo(a)anthracene	150	900		37 U	40 U	35 U	41 U	40 UJ		38 U
Benzo(a)pyrene	15	400		37 U	40 U	35 U	41 U	40 UJ		38 U
Benzo(b)fluoranthene	150	900		37 U	40 U	35 U	41 U	40 UJ		38 U
Benzo(g,h,i)perylene	1700000	800		37 U	40 U	35 U	41 U	40 UJ		38 U
Benzo(k)fluoranthene	1500	900		37 U	40 U	35 U	41 U	40 UJ		38 U
Bis(2-ethylhexyl)phthalate	35000	46000		56 U	61 U	53 U	63 U	60 UJ		57 U
Carbazole	24000	NA		37 U	40 U	35 U	41 U	40 UJ		38 U
Chrysene	15000	400		37 U	40 U	35 U	41 U	40 UJ		38 U
Dibenzo(a,h)anthracene	15	400		37 U	40 U	35 U	41 U	40 UJ		38 U
Dibenzofuran	NA	NA		**71 J**	40 U	35 U	41 U	40 UJ		38 U
Fluoranthene	2300000	20000		37 U	40 U	35 U	41 U	40 UJ		38 U
Fluorene	2300000	28000		**55**	40 U	35 U	41 U	40 UJ		38 U
High Molecular Weight PAHs	NA	NA		0 U	0 U	0 U	0 U	0 U		0 U
Indeno(1,2,3-cd)pyrene	150	900		37 U	40 U	35 U	41 U	40 UJ		38 U
Low Molecular Weight PAHs	NA	NA		**995**	0 U	0 U	0 U	0 U		0 U
Phenanthrene	1700000	40000		37 U	40 U	35 U	41 U	40 UJ		38 U
Pyrene	1700000	13000		37 U	40 U	35 U	41 U	40 UJ		38 U
Total PAHs	NA	NA		**995**	0 U	0 U	0 U	0 U		0 U
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000		**340**						
Acenaphthene	3400000	43000		**12**						
Acenaphthylene	3400000	23000		**12**						
Anthracene	17000000	35000		4.3 U						
Benzo(a)pyrene Equivalents	15	400		**0.108**						
Benzo(a)anthracene	150	900		**0.2 J**						
Benzo(a)pyrene	15	400		4.3 U						
Benzo(b)fluoranthene	150	900		**0.5 J**						
Benzo(g,h,i)perylene	1700000	800		**0.37 J**						
Benzo(k)fluoranthene	1500	900		**0.25 J**						

TABLE 4-17

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation			10	10	10	10	10	10	10	10
Location	ORNL	RIDEM	SB16-A1-01	SB16-A2-05	SB16-A2-07	SB16-A2-10	SB16-A2-12	SB16-A2-14	SB16-A2-16	SB16-A2-16
Sample Number	Residential	Soil Direct	SB16-A1-01-SO-2223	SB16-A2-05-SO-1011	SB16-A2-07-SO-0910	SB16-A2-10-SO-0206	SB16-A2-12-SO-0506	SB16-A2-14-SO-0708	SB16-A2-16-SO-0405	SB16-A2-16-SO-0910
Sample Code	Regional	Exposure	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Screening	Residential	20070715	20070809	20070715	20070628	20070716	20070811	20070628	20070628
Depth Range (feet)	Levels	Criterion	22 - 23	10 - 11	9 - 10	2 - 6	5 - 6	7 - 8	4 - 5	9 - 10
Matrix			SO	SO	SO	SO	SO	SO	SO	SO
Duplicate										
Area			UPGRADIENT	EASTERN AREA	EASTERN AREA	EASTERN AREA	EASTERN AREA	EASTERN AREA	EASTERN AREA	EASTERN AREA
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)										
Chrysene	15000	400		0.54 J						
Dibenzo(a,h)anthracene	15	400		4.3 U						
Fluoranthene	2300000	20000		0.69 J						
Fluorene	2300000	28000		27						
High Molecular Weight PAHs	NA	NA		3.71						
Indeno(1,2,3-cd)pyrene	150	900		0.35 J						
Low Molecular Weight PAHs	NA	NA		443						
Naphthalene	3900	54000		33						
Phenanthrene	1700000	40000		19						
Pyrene	1700000	13000		0.81 J						
Total PAHs	NA	NA		447						
Inorganics (mg/kg)										
Aluminum	77000	NA		2290	8690	6910	4780	4670		3750
Arsenic	0.39	7		0.83 J	1.9	1.7	2.2	2.6 J		2
Barium	15000	5500		8.1	29.4	13.3	17.8	13		11.7
Beryllium	160	0.4		0.2	0.72 J	0.61	0.4 J	0.28		0.52
Cadmium	70	39		0.12 J	0.15	0.0048 U	0.071	1.6		0.0058 U
Calcium	NA	NA		214	605 J	18.5 U	955 J	444		11.6 U
Chromium	230	1400		8.5	11.1	7	9.5	6.5		4.9
Cobalt	23	NA		2.2 J	7.3 J	5.2 J	4.1 J	11.8 J		3.1 J
Copper	3100	3100		5.4	11.2	10.5	11.8	9.5		8
Iron	55000	NA		5530	16600 J	12200	11700 J	8630		10400
Lead	400	150		3.8	6.4 J	7.1	6.7 J	5		5.7
Magnesium	NA	NA		912	3150	1940	1970	1590		1420
Manganese	1800	390		63	277 J	377	134 J	79.2		89.8
Mercury	23	23		0.0069 U	0.008 U	0.015 J	0.0079 U	0.021		0.0069 UJ
Nickel	1600	1000		5.1 J	12.5 J	9.7 J	7.9 J	9.5 J		5 J
Potassium	NA	NA		367	1100	615	770	892		464
Selenium	390	390		1 J	2.4	0.9 U	1.8 U	1.8		1.3 J
Sodium	NA	NA		26.5	169	22.9	256	24.5		17.5
Thallium	5.1	5.5		0.94 U	2.7	1.3 J	2.2	1.7 J		1.8 J
Vanadium	390	550		5.1	15.6	11.1	10.6	9.2		8
Zinc	23000	6000		55.7	48.6 J	27.3	31.8 J	72.4		22.6
Diesel Range Organics Semivolatile (mg/kg)										
TPH (C09-C36)	NA	500		510	11 U	9.4 U	94	11 U		10 U
Petroleum Hydrocarbons (mg/kg)										
TPH (C09-C36)	NA	500		1300						
TPH (C09-C44)	NA	500		960						

TABLE 4-17

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A2-16**	**SB16-A2-18**	**SB16-A2-18**	**SB16-A2-20**	**SB16-A2-20**	**SB16-A2-24**	**SB16-A2-24**	**SB16-A2-25**
Sample Number	**Residential**	**Soil Direct**	**SB16-A2-16-SO-2223**	**SB16-A2-18-SO-0809**	**SB16-A2-18-SO-0809-D**	**SB16-A2-20-SO-0708**	**SB16-A2-20-SO-0708-D**	**SB16-A2-24-SO-0506**	**SB16-A2-24-SO-2122**	**SB16-A2-25-SO-0506**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**ORIG**	**DUP**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070628**	**20070630**	**20070630**	**20070717**	**20070717**	**20070702**	**20070702**	**20070717**
Depth Range (feet)	**Levels**	**Criterion**	**22 - 23**	**8 - 9**	**8 - 9**	**7 - 8**	**7 - 8**	**5 - 6**	**21 - 22**	**5 - 6**
Matrix			**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
Duplicate					**SB16-A2-18-SO-0809**		**SB16-A2-20-SO-0708**			
Area			**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Volatile Organic Compounds (ug/kg)										
1,1,2-Trichloroethane	1100	3600	0.43 U	0.5 U	0.48 U	0.62 U	0.55 U	0.5 U	0.59 U	0.54 U
Acetone	61000000	7800000	1.1 UJ	1.2 UJ	1.2 UJ	1.5 UR	1.4 UR	1.3 UJ	1.5 UJ	1.3 UR
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	1.3 U	1.5 U	1.5 U	1.9 U	1.7 U	1.6 U	1.8 U	1.7 U
cis-1,2-Dichloroethene	780000	630000	0.29 U	0.35 U	0.33 U	0.43 U	0.38 U	0.35 U	0.41 U	0.37 U
Isopropylbenzene	2200000	NA	0.19 U	0.22 U	0.21 U	0.27 U	0.24 U	0.22 U	0.26 U	0.24 U
Methyl Cyclohexane	3400000	NA	0.26 U	0.3 U	0.29 U	0.37 UJ	0.33 UJ	0.3 U	0.36 U	0.33 UJ
Methylene Chloride	11000	45000	0.51 U	**1.1 J**	**0.91 J**	0.74 U	0.66 U	0.61 U	0.71 U	0.65 U
Tetrachloroethene	570	12000	0.4 U	0.47 U	0.45 U	0.58 U	0.52 U	0.47 U	0.56 U	0.51 U
Toluene	5000000	190000	0.2 U	0.24 UJ	0.22 UJ	0.29 U	0.26 U	0.24 UJ	0.28 UJ	0.25 U
Total Chlorinated VOCs	NA	NA	**20**	**1.1**	**0.91**	0 U	0 U	0 U	0 U	0 U
Trichloroethene	2800	13000	**20**	0.26 UJ	0.25 UJ	0.33 U	0.29 U	0.27 UJ	0.31 UJ	0.29 U
Semivolatile Organic Compounds (ug/kg)										
2-Methylnaphthalene	310000	123000		40 U	41 U	37 U	36 U	34 U		34 U
Acenaphthylene	3400000	23000		40 U	41 U	37 U	36 U	34 U		34 U
Anthracene	17000000	35000		40 U	41 U	37 U	36 U	34 U		34 U
Benzo(a)pyrene Equivalents	15	400		40 U	41 U	37 U	36 U	34 U		34 U
Benzo(a)anthracene	150	900		40 U	41 U	37 U	36 U	34 U		34 U
Benzo(a)pyrene	15	400		40 U	41 U	37 U	36 U	34 U		34 U
Benzo(b)fluoranthene	150	900		40 U	41 U	37 U	36 U	34 U		34 U
Benzo(g,h,i)perylene	1700000	800		40 U	41 U	37 U	36 U	34 U		34 U
Benzo(k)fluoranthene	1500	900		40 U	41 U	37 U	36 U	34 U		34 U
Bis(2-ethylhexyl)phthalate	35000	46000		61 U	62 U	56 U	55 U	51 U		51 U
Carbazole	24000	NA		40 U	41 U	37 U	36 U	34 U		34 U
Chrysene	15000	400		40 U	41 U	37 U	36 U	34 U		34 U
Dibenzo(a,h)anthracene	15	400		40 U	41 U	37 U	36 U	34 U		34 U
Dibenzofuran	NA	NA		40 U	41 U	37 U	36 U	34 U		34 U
Fluoranthene	2300000	20000		40 U	41 U	37 U	36 U	34 U		34 U
Fluorene	2300000	28000		40 U	41 U	37 U	36 U	34 U		34 U
High Molecular Weight PAHs	NA	NA		0 U	0 U	0 U	0 U	0 U		0 U
Indeno(1,2,3-cd)pyrene	150	900		40 U	41 U	37 U	36 U	34 U		34 U
Low Molecular Weight PAHs	NA	NA		0 U	0 U	0 U	0 U	0 U		0 U
Phenanthrene	1700000	40000		40 U	41 U	37 U	36 U	34 U		34 U
Pyrene	1700000	13000		40 U	41 U	37 U	36 U	34 U		34 U
Total PAHs	NA	NA		0 U	0 U	0 U	0 U	0 U		0 U
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000								
Acenaphthene	3400000	43000								
Acenaphthylene	3400000	23000								
Anthracene	17000000	35000								
Benzo(a)pyrene Equivalents	15	400								
Benzo(a)anthracene	150	900								
Benzo(a)pyrene	15	400								
Benzo(b)fluoranthene	150	900								
Benzo(g,h,i)perylene	1700000	800								
Benzo(k)fluoranthene	1500	900								

TABLE 4-17

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A2-16**	**SB16-A2-18**	**SB16-A2-18**	**SB16-A2-20**	**SB16-A2-20**	**SB16-A2-24**	**SB16-A2-24**	**SB16-A2-25**
Sample Number	**Residential**	**Soil Direct**	**SB16-A2-16-SO-2223**	**SB16-A2-18-SO-0809**	**SB16-A2-18-SO-0809-D**	**SB16-A2-20-SO-0708**	**SB16-A2-20-SO-0708-D**	**SB16-A2-24-SO-0506**	**SB16-A2-24-SO-2122**	**SB16-A2-25-SO-0506**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**ORIG**	**DUP**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070628**	**20070630**	**20070630**	**20070717**	**20070717**	**20070702**	**20070702**	**20070717**
Depth Range (feet)	**Levels**	**Criterion**	**22 - 23**	**8 - 9**	**8 - 9**	**7 - 8**	**7 - 8**	**5 - 6**	**21 - 22**	**5 - 6**
Matrix			**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
Duplicate					**SB16-A2-18-SO-0809**		**SB16-A2-20-SO-0708**			
Area			**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)										
Chrysene	15000	400								
Dibenzo(a,h)anthracene	15	400								
Fluoranthene	2300000	20000								
Fluorene	2300000	28000								
High Molecular Weight PAHs	NA	NA								
Indeno(1,2,3-cd)pyrene	150	900								
Low Molecular Weight PAHs	NA	NA								
Naphthalene	3900	54000								
Phenanthrene	1700000	40000								
Pyrene	1700000	13000								
Total PAHs	NA	NA								
Inorganics (mg/kg)										
Aluminum	77000	NA		**2160**	**2060**	**2900**	**2840**	**4740**		**2110**
Arsenic	0.39	7		**0.92 J**	**0.95 J**	**0.8 J**	**1.4**	**1.5 J**		**0.87 J**
Barium	15000	5500		**7.6**	**7.4**	**7.3**	**6.6**	**16.4**		**16.3**
Beryllium	160	0.4		**0.33**	**0.35**	**0.24 J**	**0.28 J**	**0.33**		**0.25 J**
Cadmium	70	39		0.0057 U	0.0063 U	**0.026**	**0.024**	**0.045**		**0.072**
Calcium	NA	NA		**111**	28.1 U	**226 J**	**303 J**	**193**		**196 J**
Chromium	230	1400		**3.3**	**3.2**	**4.5**	**4.5**	**6.9**		**10.1**
Cobalt	23	NA		**1.7 J**	**1.7 J**	**2.4 J**	**2.7 J**	**4.3 J**		**2.9 J**
Copper	3100	3100		**5.4**	**6.6**	**5.5**	**5.7**	**10.1**		**5.7**
Iron	55000	NA		**5940**	**6540**	**7260 J**	**7440 J**	**13500**		**6440 J**
Lead	400	150		**3.5**	**3.4**	**4.4 J**	**4.6 J**	**8.4**		**3.5 J**
Magnesium	NA	NA		**829**	**813**	**1240**	**1190**	**2240**		**921**
Manganese	1800	390		**72.1**	**68.2**	**67.3 J**	**72.8 J**	**137**		**130 J**
Mercury	23	23		0.0081 UJ	0.0086 UJ	0.0065 U	0.0074 U	0.0069 UJ		0.0067 U
Nickel	1600	1000		**2.7 J**	**2.8 J**	**4.9 J**	**5.2 J**	**7.7 J**		**5.7 J**
Potassium	NA	NA		**303**	**348**	**413**	**447**	**826**		**431**
Selenium	390	390		0.79 U	0.89 U	1.2 U	1.1 U	1.2 U		0.7 U
Sodium	NA	NA		**16.8**	**15.6 J**	**21.8**	**23.6**	**20**		**30.8**
Thallium	5.1	5.5		**0.96 J**	**1.2 J**	**1.3**	**1.3**	**2.3 J**		**0.88**
Vanadium	390	550		**4.3**	**4.5**	**6.2**	**6.8**	**10.1**		**4.7**
Zinc	23000	6000		**14.4**	**15.5**	**17.1 J**	**18.5 J**	**26.7**		**43 J**
Diesel Range Organics Semivolatile (mg/kg)										
TPH (C09-C36)	NA	500		**17**	11 U	**14**	**11**	9.2 U		9.3 U
Petroleum Hydrocarbons (mg/kg)										
TPH (C09-C36)	NA	500								
TPH (C09-C44)	NA	500								

TABLE 4-17

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A2-28**	**SB16-A2-29**	**SB16-A3-02**	**SB16-A3-03**	**SB16-A3-04**	**SB16-A3-05**	**SB16-A3-06**	**SB16-A3-08**
Sample Number	**Residential**	**Soil Direct**	**SB16-A2-28-SO-1516**	**SB16-A2-29-SO-1112**	**SB16-A3-02-SO-0506**	**SB16-A3-03-SO-0910**	**SB16-A3-04-SO-0506**	**SB16-A3-05-SO-2122**	**SB16-A3-06-SO-0809**	**SB16-A3-08-SO-0506**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**
Sample Date	**Screening**	**Residential**	**20070812**	**20070812**	**20070711**	**20070710**	**20070711**	**20070712**	**20070713**	**20070713**
Depth Range (feet)	**Levels**	**Criterion**	**15 - 16**	**11 - 12**	**5 - 6**	**9 - 10**	**5 - 6**	**21 - 22**	**8 - 9**	**5 - 6**
Matrix			**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
Duplicate										
Area			**EASTERN AREA**	**EASTERN AREA**	**BUILDING 41**	**BUILDING 41**	**EASTERN AREA**	**EASTERN AREA**	**BUILDING 41**	**BUILDING 41**
Volatile Organic Compounds (ug/kg)										
1,1,2-Trichloroethane	1100	3600	0.54 U	0.53 U	0.54 U	0.47 UJ	0.7 U	0.38 UR	0.44 U	0.45 U
Acetone	61000000	7800000	1.3 UJ	1.3 UJ	1.3 U	**1.7 J**	**8.7**	0.95 UR	1.1 U	1.1 U
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	**4.2**	1.6 U	1.7 U	1.4 UJ	2.2 U	1.2 UR	1.4 U	1.4 U
cis-1,2-Dichloroethene	780000	630000	0.37 U	0.37 U	0.37 U	0.32 UJ	0.49 U	0.26 UR	0.3 U	0.31 U
Isopropylbenzene	2200000	NA	0.24 U	0.23 U	0.24 U	0.21 UJ	0.31 U	0.17 UR	0.19 U	0.2 U
Methyl Cyclohexane	3400000	NA	0.32 UJ	0.32 UJ	0.32 U	0.28 UJ	0.42 U	0.23 UR	0.26 UJ	0.27 UJ
Methylene Chloride	11000	45000	0.65 U	0.64 U	0.65 U	0.57 UJ	0.85 U	0.46 UR	0.53 U	0.54 U
Tetrachloroethene	570	12000	0.51 U	0.5 U	0.51 U	0.44 UJ	0.66 U	0.36 UR	0.41 U	0.42 U
Toluene	5000000	190000	0.25 U	0.25 U	0.25 U	0.22 UJ	0.33 U	0.18 UR	0.21 U	0.21 U
Total Chlorinated VOCs	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	**0.67**
Trichloroethene	2800	13000	0.28 U	0.28 U	0.28 U	0.25 UJ	0.37 U	0.2 UR	0.23 U	**0.67 J**
Semivolatile Organic Compounds (ug/kg)										
2-Methylnaphthalene	310000	123000	42 UJ	39 UJ	34 U	33 U	35 U		34 U	34 U
Acenaphthylene	3400000	23000	42 UJ	39 UJ	34 U	**130**	35 U		34 U	34 U
Anthracene	17000000	35000	42 UJ	39 UJ	34 U	33 U	35 U		34 U	34 U
Benzo(a)pyrene Equivalents	15	400	42 U	39 U	34 U	**5.35**	35 U		34 U	34 U
Benzo(a)anthracene	150	900	42 UJ	39 UJ	34 U	**53**	35 U		34 U	34 U
Benzo(a)pyrene	15	400	42 UJ	39 UJ	34 U	33 U	35 U		34 U	34 U
Benzo(b)fluoranthene	150	900	42 UJ	39 UJ	34 U	33 U	35 U		34 U	34 U
Benzo(g,h,i)perylene	1700000	800	42 UJ	39 UJ	34 U	33 U	35 U		34 U	34 U
Benzo(k)fluoranthene	1500	900	42 UJ	39 UJ	34 U	33 U	35 U		34 U	34 U
Bis(2-ethylhexyl)phthalate	35000	46000	64 UJ	60 UJ	52 U	51 U	54 U		51 U	52 U
Carbazole	24000	NA	42 UJ	39 UJ	34 U	33 U	35 U		34 U	34 U
Chrysene	15000	400	42 UJ	39 UJ	34 U	**52**	35 U		34 U	34 U
Dibenzo(a,h)anthracene	15	400	42 UJ	39 UJ	34 U	33 U	35 U		34 U	34 U
Dibenzofuran	NA	NA	42 UJ	39 UJ	34 U	33 U	35 U		34 U	34 U
Fluoranthene	2300000	20000	42 UJ	39 UJ	34 U	**93**	35 U		34 U	34 U
Fluorene	2300000	28000	42 UJ	39 UJ	34 U	33 U	35 U		34 U	34 U
High Molecular Weight PAHs	NA	NA	0 U	0 U	0 U	**268**	0 U		0 U	0 U
Indeno(1,2,3-cd)pyrene	150	900	42 UJ	39 UJ	34 U	33 U	35 U		34 U	34 U
Low Molecular Weight PAHs	NA	NA	0 U	0 U	0 U	**130**	0 U		0 U	0 U
Phenanthrene	1700000	40000	42 UJ	39 UJ	34 U	33 U	35 U		34 U	34 U
Pyrene	1700000	13000	42 UJ	39 UJ	34 U	**70**	35 U		34 U	34 U
Total PAHs	NA	NA	0 U	0 U	0 U	**398**	0 U		0 U	0 U
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000	**0.74 J**	**1.6**						
Acenaphthene	3400000	43000	**0.089 J**	**0.12 J**						
Acenaphthylene	3400000	23000	0.85 U	0.77 U						
Anthracene	17000000	35000	**0.039 J**	**0.059 J**						
Benzo(a)pyrene Equivalents	15	400	**0.146**	**0.029**						
Benzo(a)anthracene	150	900	**0.085 J**	**0.057 J**						
Benzo(a)pyrene	15	400	**0.046 J**	0.77 U						
Benzo(b)fluoranthene	150	900	**0.16 J**	**0.1 J**						
Benzo(g,h,i)perylene	1700000	800	**0.22 J**	**0.12 J**						
Benzo(k)fluoranthene	1500	900	**0.1 J**	**0.099 J**						

TABLE 4-17

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	ORNL	RIDEM	10	10	10	10	10	10	10	10
Location			SB16-A2-28	SB16-A2-29	SB16-A3-02	SB16-A3-03	SB16-A3-04	SB16-A3-05	SB16-A3-06	SB16-A3-08
Sample Number	Residential	Soil Direct	SB16-A2-28-SO-1516	SB16-A2-29-SO-1112	SB16-A3-02-SO-0506	SB16-A3-03-SO-0910	SB16-A3-04-SO-0506	SB16-A3-05-SO-2122	SB16-A3-06-SO-0809	SB16-A3-08-SO-0506
Sample Code	Regional	Exposure	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG
Sample Date	Screening	Residential	20070812	20070812	20070711	20070710	20070711	20070712	20070713	20070713
Depth Range (feet)	Levels	Criterion	15 - 16	11 - 12	5 - 6	9 - 10	5 - 6	21 - 22	8 - 9	5 - 6
Matrix			SO	SO	SO	SO	SO	SO	SO	SO
Duplicate										
Area			EASTERN AREA	EASTERN AREA	BUILDING 41	BUILDING 41	EASTERN AREA	EASTERN AREA	BUILDING 41	BUILDING 41
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)										
Chrysene	15000	400	**0.39 J**	**0.15 J**						
Dibenzo(a,h)anthracene	15	400	**0.065 J**	0.77 U						
Fluoranthene	2300000	20000	0.13 U	**0.24 J**						
Fluorene	2300000	28000	**0.19 J**	**0.18 J**						
High Molecular Weight PAHs	NA	NA	**1.43**	**1.06**						
Indeno(1,2,3-cd)pyrene	150	900	**0.094 J**	**0.12 J**						
Low Molecular Weight PAHs	NA	NA	**4.64**	**3.46**						
Naphthalene	3900	54000	**2.9**	**1.5**						
Phenanthrene	1700000	40000	**0.68 J**	0.4 U						
Pyrene	1700000	13000	**0.27 J**	**0.17 J**						
Total PAHs	NA	NA	**6.07**	**4.52**						
Inorganics (mg/kg)										
Aluminum	77000	NA	**6900**	**1900**	**7150**	**4690**	**6980**		**5790**	**5160**
Arsenic	0.39	7	**0.66 J**	**0.95**	**2.9 J**	**1.7**	**2 J**		**1.7 J**	**1.3 J**
Barium	15000	5500	**21.9**	**7.2**	**22.3**	**11.3**	**19.8**		**15.8 J**	**11.2 J**
Beryllium	160	0.4	**0.35**	**0.14**	**0.57**	**0.33**	**0.55**		**0.44 J**	**0.34 J**
Cadmium	70	39	**0.17 J**	**0.13**	**0.24 J**	**0.1**	**0.15 J**		**0.097 J**	**0.1 J**
Calcium	NA	NA	**647**	**235**	1.8 U	1.5 U	1.9 U		**245 J**	**391 J**
Chromium	230	1400	**4.3 J**	**2.9**	**9**	**6.8**	**8.3**		**8.1 J**	**7.6 J**
Cobalt	23	NA	**2.9 J**	**3.5**	**15.3 J**	**4**	**7.7 J**		**4.4 J**	**7.4 J**
Copper	3100	3100	**4.6**	**2.8**	**25.2**	**13.4**	**16.8**		**8.4 J**	**14.9 J**
Iron	55000	NA	**8840**	**4580**	**25600**	**16900**	**15300**		**11200**	**15000**
Lead	400	150	**3.2 J**	**2**	**13.7 J**	**7.5 J**	**8.3 J**		**5.8 J**	**6.6 J**
Magnesium	NA	NA	**2020**	**726**	**2950**	**2120**	**2140**		**1930 J**	**2580 J**
Manganese	1800	390	**116**	**41.4**	**760**	**140**	**347**		**129 J**	**230 J**
Mercury	23	23	0.0077 U	0.008 U	**0.0083 J**	0.007 U	0.0062 U		0.0071 UJ	0.0072 UJ
Nickel	1600	1000	**4.1 J**	**4.3**	**21.2 J**	**8.1**	**12.5 J**		**8.2 J**	**11.3 J**
Potassium	NA	NA	**1710**	**300**	**802**	**555**	**699**		**716**	**821**
Selenium	390	390	**1.6 J**	0.78 U	0.94 U	0.86 U	0.71 U		**1.4 J**	**1.6 J**
Sodium	NA	NA	**359**	**73.5**	**17.2**	**16.7**	**21.6**		**22**	**7.6 J**
Thallium	5.1	5.5	1.1 U	0.74 U	**1.6 J**	**2.3**	**1.8 J**		**1.7 J**	**1.9 J**
Vanadium	390	550	**10.2**	**3.6**	**12.2**	**8.9**	**12.4**		**12.3 J**	**9.5 J**
Zinc	23000	6000	**24.3**	**25**	**45.4**	**28.2**	**46.1**		**23.8 J**	**29.3 J**
Diesel Range Organics Semivolatile (mg/kg)										
TPH (C09-C36)	NA	500	11 U	11 U	9.3 U	**69**	9.7 U		9.2 U	9.4 U
Petroleum Hydrocarbons (mg/kg)										
TPH (C09-C36)	NA	500	**14**	**13**						
TPH (C09-C44)	NA	500	**17**	**14**						

TABLE 4-17

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A3-08**	**SB16-A3-09**	**SB16-A3-09**	**SB16-A3-10**	**SB16-A3-12**	**SB16-A3-14**	**SB16-A3-14**	**SB16-A3-15**
Sample Number	**Residential**	**Soil Direct**	**SB16-A3-08-SO-0506-D**	**SB16-A3-09-SO-0910**	**SB16-A3-09-SO-2122**	**SB16-A3-10-SO-0506**	**SB16-A3-12-SO-0506**	**SB16-A3-14-SO-0910**	**SB16-A3-14-SO-1213**	**SB16-A3-15-SO-2122**
Sample Code	**Regional**	**Exposure**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070713**	**20070713**	**20070714**	**20070711**	**20070711**	**20070713**	**20070713**	**20070713**
Depth Range (feet)	**Levels**	**Criterion**	**5 - 6**	**9 - 10**	**21 - 22**	**5 - 6**	**5 - 6**	**9 - 10**	**12 - 13**	**21 - 22**
Matrix			**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
Duplicate			**SB16-A3-08-SO-0506**							
Area			**BUILDING 41**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**BUILDING 41**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Volatile Organic Compounds (ug/kg)										
1,1,2-Trichloroethane	1100	3600	0.43 U	0.58 U	0.49 U	0.51 U	0.59 U	0.53 U	0.53 U	0.51 U
Acetone	61000000	7800000	1.1 U	1.5 U	1.2 U	1.3 U	1.5 U	1.3 U	1.3 U	1.3 U
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	1.3 U	1.8 U	1.5 U	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
cis-1,2-Dichloroethene	780000	630000	0.3 U	0.4 U	0.34 U	0.35 U	0.41 U	0.36 U	**8.9**	0.35 U
Isopropylbenzene	2200000	NA	0.19 U	0.26 U	0.22 U	0.23 UJ	0.26 U	0.23 U	0.23 U	0.23 U
Methyl Cyclohexane	3400000	NA	0.26 UJ	0.35 UJ	0.3 U	0.31 UJ	0.36 U	0.32 UJ	0.32 UJ	0.31 U
Methylene Chloride	11000	45000	0.52 U	0.7 U	0.6 U	0.62 U	0.71 U	0.64 U	0.64 U	0.62 U
Tetrachloroethene	570	12000	0.41 U	0.55 U	0.47 U	0.48 U	0.56 U	0.5 U	0.5 U	0.48 U
Toluene	5000000	190000	0.2 U	0.27 U	0.23 U	0.24 UJ	0.28 U	0.25 U	0.25 U	0.24 U
Total Chlorinated VOCs	NA	NA	**0.72**	0 U	**1.9**	0 U	0 U	**9.1**	**269**	**2.7**
Trichloroethene	2800	13000	**0.72 J**	0.31 U	**1.9 J**	0.27 UJ	0.31 U	**9.1**	**260 J**	**2.7 J**
Semivolatile Organic Compounds (ug/kg)										
2-Methylnaphthalene	310000	123000		34 U		34 U	34 U	38 U		
Acenaphthylene	3400000	23000		34 U		34 U	**110**	38 U		
Anthracene	17000000	35000		34 U		34 U	**130**	38 U		
Benzo(a)pyrene Equivalents	15	400		34 U		34 U	**862**	38 U		
Benzo(a)anthracene	150	900		34 U		34 U	**770**	38 U		
Benzo(a)pyrene	15	400		34 U		34 U	**550**	38 U		
Benzo(b)fluoranthene	150	900		34 U		34 U	**820**	38 U		
Benzo(g,h,i)perylene	1700000	800		34 U		34 U	**330**	38 U		
Benzo(k)fluoranthene	1500	900		34 U		34 U	**270**	38 U		
Bis(2-ethylhexyl)phthalate	35000	46000		52 U		52 U	**100 J**	58 U		
Carbazole	24000	NA		34 U		34 U	**36**	38 U		
Chrysene	15000	400		34 U		34 U	**670**	38 U		
Dibenzo(a,h)anthracene	15	400		34 U		34 U	**120**	38 U		
Dibenzofuran	NA	NA		34 U		34 U	34 U	38 U		
Fluoranthene	2300000	20000		34 U		34 U	**1600**	38 U		
Fluorene	2300000	28000		34 U		34 U	34 U	38 U		
High Molecular Weight PAHs	NA	NA		0 U		0 U	**6530**	0 U		
Indeno(1,2,3-cd)pyrene	150	900		34 U		34 U	**300**	38 U		
Low Molecular Weight PAHs	NA	NA		0 U		0 U	**480**	0 U		
Phenanthrene	1700000	40000		34 U		34 U	**240**	38 U		
Pyrene	1700000	13000		34 U		34 U	**1100**	38 U		
Total PAHs	NA	NA		0 U		0 U	**7010**	0 U		
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000								
Acenaphthene	3400000	43000								
Acenaphthylene	3400000	23000								
Anthracene	17000000	35000								
Benzo(a)pyrene Equivalents	15	400								
Benzo(a)anthracene	150	900								
Benzo(a)pyrene	15	400								
Benzo(b)fluoranthene	150	900								
Benzo(g,h,i)perylene	1700000	800								
Benzo(k)fluoranthene	1500	900								

TABLE 4-17

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	ORNL	RIDEM	10	10	10	10	10	10	10	10
Location	Residential	Soil Direct	SB16-A3-08	SB16-A3-09	SB16-A3-09	SB16-A3-10	SB16-A3-12	SB16-A3-14	SB16-A3-14	SB16-A3-15
Sample Number	Regional	Exposure	SB16-A3-08-SO-0506-D	SB16-A3-09-SO-0910	SB16-A3-09-SO-2122	SB16-A3-10-SO-0506	SB16-A3-12-SO-0506	SB16-A3-14-SO-0910	SB16-A3-14-SO-1213	SB16-A3-15-SO-2122
Sample Code	Screening	Residential	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Levels	Criterion	20070713	20070713	20070714	20070711	20070711	20070713	20070713	20070713
Depth Range (feet)			5 - 6	9 - 10	21 - 22	5 - 6	5 - 6	9 - 10	12 - 13	21 - 22
Matrix			SO	SO	SO	SO	SO	SO	SO	SO
Duplicate			SB16-A3-08-SO-0506							
Area			BUILDING 41	EASTERN AREA	EASTERN AREA	EASTERN AREA	BUILDING 41	EASTERN AREA	EASTERN AREA	EASTERN AREA
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)										
Chrysene	15000	400								
Dibenzo(a,h)anthracene	15	400								
Fluoranthene	2300000	20000								
Fluorene	2300000	28000								
High Molecular Weight PAHs	NA	NA								
Indeno(1,2,3-cd)pyrene	150	900								
Low Molecular Weight PAHs	NA	NA								
Naphthalene	3900	54000								
Phenanthrene	1700000	40000								
Pyrene	1700000	13000								
Total PAHs	NA	NA								
Inorganics (mg/kg)										
Aluminum	77000	NA		**5620**		**3590**	**2890**	**4090**		
Arsenic	0.39	7		**1.6 J**		**0.53 J**	**1.5 J**	**2.3 J**		
Barium	15000	5500		**12.3 J**		**9.2**	**11.9**	**10.3 J**		
Beryllium	160	0.4		**0.41 J**		**0.32**	**0.43**	**0.38 J**		
Cadmium	70	39		**0.099 J**		**0.011 J**	**0.073 J**	0.049 U		
Calcium	NA	NA		**179 J**		**167**	**44**	**112 J**		
Chromium	230	1400		**7.3 J**		**5.6**	**4**	**6.1 J**		
Cobalt	23	NA		**7.9 J**		**2.7 J**	**7.1 J**	**5.4 J**		
Copper	3100	3100		**15.4 J**		**4.7**	**5.3**	**11.6 J**		
Iron	55000	NA		**16400**		**9770**	**8500**	**10500**		
Lead	400	150		**8.3 J**		**5.2 J**	**3.7 J**	**5.9 J**		
Magnesium	NA	NA		**2480 J**		**1650**	**1130**	**1650 J**		
Manganese	1800	390		**244 J**		**92.4**	**232**	**171 J**		
Mercury	23	23		0.006 UJ		0.0059 U	**0.013 J**	0.0068 UJ		
Nickel	1600	1000		**10 J**		**5.7 J**	**7.3 J**	**6.5 J**		
Potassium	NA	NA		**659**		**564**	**390**	**621**		
Selenium	390	390		**2.3 J**		0.58 U	0.84 U	**1.2 J**		
Sodium	NA	NA		7.1 U		**23.9**	**13.4**	8.5 U		
Thallium	5.1	5.5		**2.2 J**		**1.6 J**	**0.94 J**	**1.6 J**		
Vanadium	390	550		**11.2 J**		**7.9**	**5.9**	**8.5 J**		
Zinc	23000	6000		**30.6 J**		**20.7**	**37.9**	**21.8 J**		
Diesel Range Organics Semivolatile (mg/kg)										
TPH (C09-C36)	NA	500		9.1 U		9.3 U	**20**	10 U		
Petroleum Hydrocarbons (mg/kg)										
TPH (C09-C36)	NA	500								
TPH (C09-C44)	NA	500								

TABLE 4-17

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A3-17**	**SB16-A3-20**	**SB16-A3-22**	**SB16-A3-23**	**SB16-A3-23**	**SB16-A3-23**	**SB16-A3-24**	**SB16-A3-25**
Sample Number	**Residential**	**Soil Direct**	**SB16-A3-17-SO-0506**	**SB16-A3-20-SO-1819**	**SB16-A3-22-SO-1516**	**SB16-A3-23-SO-1819**	**SB16-A3-23-SO-2425**	**SB16-A3-23-SO-2424**	**SB16-A3-24-SO-2324**	**SB16-A3-25-SO-2425**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070701**	**20070629**	**20070716**	**20070717**	**20070717**	**20070727**	**20070717**	**20070726**
Depth Range (feet)	**Levels**	**Criterion**	**5 - 6**	**18 - 19**	**15 - 16**	**18 - 19**	**24 - 25**	**24 - 24**	**23 - 24**	**24 - 25**
Matrix			**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
Duplicate										
Area			**EASTERN AREA**	**EASTERN AREA**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**
Volatile Organic Compounds (ug/kg)										
1,1,2-Trichloroethane	1100	3600	0.66 U	0.42 U	0.38 U	0.47 U	0.39 U	0.66 U	0.36 U	0.66 U
Acetone	61000000	7800000	1.7 UJ	1 UJ	0.96 UR	1.2 U	**1.5 J**	1.7 U	0.89 UR	1.7 U
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	**2.4**
Carbon Disulfide	670000	NA	2 U	1.3 U	1.2 U	1.5 U	1.2 U	2 U	1.1 U	2 U
cis-1,2-Dichloroethene	780000	630000	0.46 U	0.29 U	0.26 U	0.33 U	0.27 U	0.46 U	0.25 U	0.46 U
Isopropylbenzene	2200000	NA	0.29 U	0.19 U	0.17 U	0.21 U	0.17 U	0.29 U	0.16 U	0.29 U
Methyl Cyclohexane	3400000	NA	0.4 U	0.25 U	0.23 UJ	0.28 U	0.24 U	0.4 U	0.21 UJ	0.4 UJ
Methylene Chloride	11000	45000	0.8 U	0.51 U	0.46 U	0.57 U	0.48 U	0.8 U	0.43 U	**1.5 J**
Tetrachloroethene	570	12000	0.62 U	0.4 U	0.36 U	0.44 U	0.37 U	0.62 U	0.34 U	0.62 U
Toluene	5000000	190000	0.31 UJ	0.2 U	0.18 U	0.22 U	0.19 U	0.31 U	0.17 U	**2.4 J**
Total Chlorinated VOCs	NA	NA	0 U	**1.8**	**1.4**	**58**	**2300**	**4000**	0 U	**1302**
Trichloroethene	2800	13000	0.35 UJ	**1.8 J**	**1.4 J**	**58**	**2300**	**4000**	0.19 U	**1300**
Semivolatile Organic Compounds (ug/kg)										
2-Methylnaphthalene	310000	123000	34 U							
Acenaphthylene	3400000	23000	34 U							
Anthracene	17000000	35000	34 U							
Benzo(a)pyrene Equivalents	15	400	34 U							
Benzo(a)anthracene	150	900	34 U							
Benzo(a)pyrene	15	400	34 U							
Benzo(b)fluoranthene	150	900	34 U							
Benzo(g,h,i)perylene	1700000	800	34 U							
Benzo(k)fluoranthene	1500	900	34 U							
Bis(2-ethylhexyl)phthalate	35000	46000	51 U							
Carbazole	24000	NA	34 U							
Chrysene	15000	400	34 U							
Dibenzo(a,h)anthracene	15	400	34 U							
Dibenzofuran	NA	NA	34 U							
Fluoranthene	2300000	20000	34 U							
Fluorene	2300000	28000	34 U							
High Molecular Weight PAHs	NA	NA	0 U							
Indeno(1,2,3-cd)pyrene	150	900	34 U							
Low Molecular Weight PAHs	NA	NA	0 U							
Phenanthrene	1700000	40000	34 U							
Pyrene	1700000	13000	34 U							
Total PAHs	NA	NA	0 U							
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000								
Acenaphthene	3400000	43000								
Acenaphthylene	3400000	23000								
Anthracene	17000000	35000								
Benzo(a)pyrene Equivalents	15	400								
Benzo(a)anthracene	150	900								
Benzo(a)pyrene	15	400								
Benzo(b)fluoranthene	150	900								
Benzo(g,h,i)perylene	1700000	800								
Benzo(k)fluoranthene	1500	900								

TABLE 4-17

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A3-17**	**SB16-A3-20**	**SB16-A3-22**	**SB16-A3-23**	**SB16-A3-23**	**SB16-A3-23**	**SB16-A3-24**	**SB16-A3-25**
Sample Number	**Residential**	**Soil Direct**	**SB16-A3-17-SO-0506**	**SB16-A3-20-SO-1819**	**SB16-A3-22-SO-1516**	**SB16-A3-23-SO-1819**	**SB16-A3-23-SO-2425**	**SB16-A3-23-SO-2424**	**SB16-A3-24-SO-2324**	**SB16-A3-25-SO-2425**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070701**	**20070629**	**20070716**	**20070717**	**20070717**	**20070727**	**20070717**	**20070726**
Depth Range (feet)	**Levels**	**Criterion**	**5 - 6**	**18 - 19**	**15 - 16**	**18 - 19**	**24 - 25**	**24 - 24**	**23 - 24**	**24 - 25**
Matrix			**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
Duplicate										
Area			**EASTERN AREA**	**EASTERN AREA**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)										
Chrysene	15000	400								
Dibenzo(a,h)anthracene	15	400								
Fluoranthene	2300000	20000								
Fluorene	2300000	28000								
High Molecular Weight PAHs	NA	NA								
Indeno(1,2,3-cd)pyrene	150	900								
Low Molecular Weight PAHs	NA	NA								
Naphthalene	3900	54000								
Phenanthrene	1700000	40000								
Pyrene	1700000	13000								
Total PAHs	NA	NA								
Inorganics (mg/kg)										
Aluminum	77000	NA	**3190**							
Arsenic	0.39	7	**0.85 J**							
Barium	15000	5500	**10.2**							
Beryllium	160	0.4	**0.46**							
Cadmium	70	39	0.0053 U							
Calcium	NA	NA	27.8 U							
Chromium	230	1400	**3.3 J**							
Cobalt	23	NA	**3.9**							
Copper	3100	3100	**4.1**							
Iron	55000	NA	**6900**							
Lead	400	150	**3.8**							
Magnesium	NA	NA	**1130**							
Manganese	1800	390	**99.4**							
Mercury	23	23	0.0071 UJ							
Nickel	1600	1000	**4.7 J**							
Potassium	NA	NA	**462**							
Selenium	390	390	0.8 U							
Sodium	NA	NA	**18.1**							
Thallium	5.1	5.5	**1.1 J**							
Vanadium	390	550	**4.6**							
Zinc	23000	6000	**22**							
Diesel Range Organics Semivolatile (mg/kg)										
TPH (C09-C36)	NA	500	9.3 U							
Petroleum Hydrocarbons (mg/kg)										
TPH (C09-C36)	NA	500								
TPH (C09-C44)	NA	500								

TABLE 4-17

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A3-26**	**SB16-A3-26**	**SB16-A3-29**	**SB16-A3-34**	**SB16-A3-34**	**SB16-A3-36**	**SB16-A3-36**	**SB16-A3-37**
Sample Number	**Residential**	**Soil Direct**	**SB16-A3-26-SO-0203**	**SB16-A3-26-SO-2223**	**SB16-A3-29-SO-2425**	**SB16-A3-34-SO-0405**	**SB16-A3-34-SO-1516**	**SB16-A3-36-SO-0910**	**SB16-A3-36-SO-2425**	**SB16-A3-37-SO-0506**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070726**	**20070726**	**20070728**	**20070925**	**20070925**	**20070927**	**20070927**	**20070927**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 3**	**22 - 23**	**24 - 25**	**4 - 5**	**15 - 16**	**9 - 10**	**24 - 25**	**5 - 6**
Matrix			**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
Duplicate										
Area			**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**
Volatile Organic Compounds (ug/kg)										
1,1,2-Trichloroethane	1100	3600	0.74 U	0.53 U	0.29 U	0.36 U	0.46 U	0.32 U	0.38 U	0.38 U
Acetone	61000000	7800000	1.8 U	1.3 U	0.71 UR	1.4 UR	1.8 UR	1.3 UJ	1.5 UJ	**20 J**
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	2.3 U	1.6 U	0.88 U	0.23 U	0.29 U	0.2 U	0.24 U	0.24 U
cis-1,2-Dichloroethene	780000	630000	0.51 U	0.37 U	0.2 U	0.52 U	0.67 U	0.47 U	0.55 U	0.55 U
Isopropylbenzene	2200000	NA	0.33 U	0.23 U	0.13 U	0.88 U	1.1 U	0.79 U	0.93 U	0.94 U
Methyl Cyclohexane	3400000	NA	0.45 UJ	0.32 U	0.17 UJ	0.24 U	0.31 U	0.22 U	0.26 U	0.26 U
Methylene Chloride	11000	45000	0.89 U	0.64 U	0.34 U	0.65 U	0.84 U	0.59 U	0.69 U	0.7 U
Tetrachloroethene	570	12000	0.7 U	0.5 U	0.27 U	**0.95 J**	0.87 U	0.61 U	0.72 U	0.73 U
Toluene	5000000	190000	0.35 U	0.25 U	0.13 U	0.45 U	0.58 U	0.41 U	0.48 U	0.48 U
Total Chlorinated VOCs	NA	NA	**14**	**67**	0 U	**27.0**	**4**	0 U	**120**	**8.1**
Trichloroethene	2800	13000	**14**	**67**	0.15 U	**26**	**4 J**	0.19 U	**120**	**8.1**
Semivolatile Organic Compounds (ug/kg)										
2-Methylnaphthalene	310000	123000								
Acenaphthylene	3400000	23000								
Anthracene	17000000	35000								
Benzo(a)pyrene Equivalents	15	400								
Benzo(a)anthracene	150	900								
Benzo(a)pyrene	15	400								
Benzo(b)fluoranthene	150	900								
Benzo(g,h,i)perylene	1700000	800								
Benzo(k)fluoranthene	1500	900								
Bis(2-ethylhexyl)phthalate	35000	46000								
Carbazole	24000	NA								
Chrysene	15000	400								
Dibenzo(a,h)anthracene	15	400								
Dibenzofuran	NA	NA								
Fluoranthene	2300000	20000								
Fluorene	2300000	28000								
High Molecular Weight PAHs	NA	NA								
Indeno(1,2,3-cd)pyrene	150	900								
Low Molecular Weight PAHs	NA	NA								
Phenanthrene	1700000	40000								
Pyrene	1700000	13000								
Total PAHs	NA	NA								
Polycyclic Aromatic Hydrocarbons (ug/kg)										
2-Methylnaphthalene	310000	123000								
Acenaphthene	3400000	43000								
Acenaphthylene	3400000	23000								
Anthracene	17000000	35000								
Benzo(a)pyrene Equivalents	15	400								
Benzo(a)anthracene	150	900								
Benzo(a)pyrene	15	400								
Benzo(b)fluoranthene	150	900								
Benzo(g,h,i)perylene	1700000	800								
Benzo(k)fluoranthene	1500	900								

TABLE 4-17

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			10	10	10	10	10	10	10	10
Location	ORNL	RIDEM	SB16-A3-26	SB16-A3-26	SB16-A3-29	SB16-A3-34	SB16-A3-34	SB16-A3-36	SB16-A3-36	SB16-A3-37
Sample Number	Residential	Soil Direct	SB16-A3-26-SO-0203	SB16-A3-26-SO-2223	SB16-A3-29-SO-2425	SB16-A3-34-SO-0405	SB16-A3-34-SO-1516	SB16-A3-36-SO-0910	SB16-A3-36-SO-2425	SB16-A3-37-SO-0506
Sample Code	Regional	Exposure	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Screening	Residential	20070726	20070726	20070728	20070925	20070925	20070927	20070927	20070927
Depth Range (feet)	Levels	Criterion	2 - 3	22 - 23	24 - 25	4 - 5	15 - 16	9 - 10	24 - 25	5 - 6
Matrix			SO	SO	SO	SO	SO	SO	SO	SO
Duplicate										
Area			BUILDING 41	BUILDING 41	BUILDING 41	BUILDING 41	BUILDING 41	BUILDING 41	BUILDING 41	BUILDING 41
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)										
Chrysene	15000	400								
Dibenzo(a,h)anthracene	15	400								
Fluoranthene	2300000	20000								
Fluorene	2300000	28000								
High Molecular Weight PAHs	NA	NA								
Indeno(1,2,3-cd)pyrene	150	900								
Low Molecular Weight PAHs	NA	NA								
Naphthalene	3900	54000								
Phenanthrene	1700000	40000								
Pyrene	1700000	13000								
Total PAHs	NA	NA								
Inorganics (mg/kg)										
Aluminum	77000	NA								
Arsenic	0.39	7								
Barium	15000	5500								
Beryllium	160	0.4								
Cadmium	70	39								
Calcium	NA	NA								
Chromium	230	1400								
Cobalt	23	NA								
Copper	3100	3100								
Iron	55000	NA								
Lead	400	150								
Magnesium	NA	NA								
Manganese	1800	390								
Mercury	23	23								
Nickel	1600	1000								
Potassium	NA	NA								
Selenium	390	390								
Sodium	NA	NA								
Thallium	5.1	5.5								
Vanadium	390	550								
Zinc	23000	6000								
Diesel Range Organics Semivolatile (mg/kg)										
TPH (C09-C36)	NA	500								
Petroleum Hydrocarbons (mg/kg)										
TPH (C09-C36)	NA	500								
TPH (C09-C44)	NA	500								

TABLE 4-17

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**
Location	**ORNL**	**RIDEM**	**SB16-A3-37**
Sample Number	**Residential**	**Soil Direct**	**SB16-A3-37-SO-1516**
Sample Code	**Regional**	**Exposure**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070927**
Depth Range (feet)	**Levels**	**Criterion**	**15 - 16**
Matrix			**SO**
Duplicate			
Area			**BUILDING 41**
Volatile Organic Compounds (ug/kg)			
1,1,2-Trichloroethane	1100	3600	0.36 U
Acetone	61000000	7800000	**27 J**
BTEX	NA	NA	0 U
Carbon Disulfide	670000	NA	0.23 U
cis-1,2-Dichloroethene	780000	630000	0.52 U
Isopropylbenzene	2200000	NA	0.87 U
Methyl Cyclohexane	3400000	NA	0.24 U
Methylene Chloride	11000	45000	0.65 U
Tetrachloroethene	570	12000	0.68 U
Toluene	5000000	190000	0.45 U
Total Chlorinated VOCs	NA	NA	**7.4**
Trichloroethene	2800	13000	**7.4**
Semivolatile Organic Compounds (ug/kg)			
2-Methylnaphthalene	310000	123000	
Acenaphthylene	3400000	23000	
Anthracene	17000000	35000	
Benzo(a)pyrene Equivalents	15	400	
Benzo(a)anthracene	150	900	
Benzo(a)pyrene	15	400	
Benzo(b)fluoranthene	150	900	
Benzo(g,h,i)perylene	1700000	800	
Benzo(k)fluoranthene	1500	900	
Bis(2-ethylhexyl)phthalate	35000	46000	
Carbazole	24000	NA	
Chrysene	15000	400	
Dibenzo(a,h)anthracene	15	400	
Dibenzofuran	NA	NA	
Fluoranthene	2300000	20000	
Fluorene	2300000	28000	
High Molecular Weight PAHs	NA	NA	
Indeno(1,2,3-cd)pyrene	150	900	
Low Molecular Weight PAHs	NA	NA	
Phenanthrene	1700000	40000	
Pyrene	1700000	13000	
Total PAHs	NA	NA	
Polycyclic Aromatic Hydrocarbons (ug/kg)			
2-Methylnaphthalene	310000	123000	
Acenaphthene	3400000	43000	
Acenaphthylene	3400000	23000	
Anthracene	17000000	35000	
Benzo(a)pyrene Equivalents	15	400	
Benzo(a)anthracene	150	900	
Benzo(a)pyrene	15	400	
Benzo(b)fluoranthene	150	900	
Benzo(g,h,i)perylene	1700000	800	
Benzo(k)fluoranthene	1500	900	

TABLE 4-17

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**
Location	**ORNL**	**RIDEM**	**SB16-A3-37**
Sample Number	**Residential**	**Soil Direct**	**SB16-A3-37-SO-1516**
Sample Code	**Regional**	**Exposure**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070927**
Depth Range (feet)	**Levels**	**Criterion**	**15 - 16**
Matrix			**SO**
Duplicate			
Area			**BUILDING 41**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)			
Chrysene	15000	400	
Dibenzo(a,h)anthracene	15	400	
Fluoranthene	2300000	20000	
Fluorene	2300000	28000	
High Molecular Weight PAHs	NA	NA	
Indeno(1,2,3-cd)pyrene	150	900	
Low Molecular Weight PAHs	NA	NA	
Naphthalene	3900	54000	
Phenanthrene	1700000	40000	
Pyrene	1700000	13000	
Total PAHs	NA	NA	
Inorganics (mg/kg)			
Aluminum	77000	NA	
Arsenic	0.39	7	
Barium	15000	5500	
Beryllium	160	0.4	
Cadmium	70	39	
Calcium	NA	NA	
Chromium	230	1400	
Cobalt	23	NA	
Copper	3100	3100	
Iron	55000	NA	
Lead	400	150	
Magnesium	NA	NA	
Manganese	1800	390	
Mercury	23	23	
Nickel	1600	1000	
Potassium	NA	NA	
Selenium	390	390	
Sodium	NA	NA	
Thallium	5.1	5.5	
Vanadium	390	550	
Zinc	23000	6000	
Diesel Range Organics Semivolatile (mg/kg)			
TPH (C09-C36)	NA	500	
Petroleum Hydrocarbons (mg/kg)			
TPH (C09-C36)	NA	500	
TPH (C09-C44)	NA	500	

TABLE 4-17

SUMMARY OF CHEMICALS DETECTED IN PHASE III SHALLOW SUBSURFACE SOIL - DEVELOPED AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Notes:
Bolding indicates that the chemical was detected in the sample.
PAHs samples were analyzed by AWL by method SW8270-SIM.
BaP Equivalents = Benzo(a)pyrene equivalent concentration
High Molecular Weight PAHs = Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene
High Molecular Weight PAHs Ecosd = Benzo(a)anthracene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthrancene, Fluoranthene, Pyrene
Low Molecular Weight PAHs = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
Low Molecular Weight PAHs Ecosd = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C_9 to C_{36}.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C_9 to C_{44}.

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
BaP = Benzo(a)pyrene equivalents
BTEX = Benzene, toluene, ethylbenzene, and total xylenes
EPA = Environmental Protection Agency
NA = Not applicable/Not available
PAH = Polycyclic aromatic hydrocarbon
PHC = Petroleum hydrocarbons as diesel fuel
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
TPH = Total petroleum hydrocarbon
VOC = Volatile organic compound

TABLE 4-18

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/UPGRADIENT AND BLDG 41 AREA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A1-01**	**SB16-A1-02**	**SB16-A1-02**	**SB16-A1-02**	**SB16-A1-03**	**SB16-A1-04**	**SB16-A1-05**	**SB16-A1-06**
Sample Number	**Residential**	**Soil Direct**	**SB16-A1-01-SO-3839**	**SB16-A1-02-SO-3435**	**SB16-A1-02-SO-3435-D**	**SB16-A1-02-SO-3940**	**SB16-A1-03-SO-5455**	**SB16-A1-04-SO-5556**	**SB16-A1-05-SO-3738**	**SB16-A1-06-SO-5354**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070715**	**20070730**	**20070730**	**20070731**	**20070725**	**20070726**	**20070729**	**20070729**
Depth Range (feet)	**Levels**	**Criterion**	**38 - 39**	**34 - 35**	**34 - 35**	**39 - 40**	**54 - 55**	**55 - 56**	**37 - 38**	**53 - 54**
Area			**UPGRADIENT**	**UPGRADIENT**	**UPGRADIENT**	**UPGRADIENT**	**UPGRADIENT**	**UPGRADIENT**	**UPGRADIENT**	**UPGRADIENT**
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200	0.88 U	1.3 UJ	1.6 UJ	1.1 U	1.2 U	1.1 U	1.2 U	1.2 U
2-Butanone	28000000	10000000	0.88 U	1.3 UJ	1.6 U	1.1 U	1.2 U	1.1 U	1.2 U	1.2 U
Acetone	61000000	7800000	**4.1**	1.5 UJ	1.9 U	1.2 U	1.3 U	**8.7**	1.3 U	1.4 U
BTEX	NA	NA	0 U	**1.3**	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	1.2 U	1.8 UJ	2.3 U	1.5 U	1.6 U	1.5 U	1.6 U	1.7 U
cis-1,2-Dichloroethene	780000	630000	0.28 U	0.41 UJ	0.51 U	0.33 U	0.36 U	0.33 U	0.37 U	0.39 U
Ethylbenzene	5700	71000	0.39 U	0.58 UJ	0.73 U	0.48 U	0.52 U	0.47 U	0.52 U	0.55 U
Methylene Chloride	11000	45000	0.48 U	0.72 UJ	0.9 U	0.58 U	0.63 U	0.58 U	0.64 U	0.67 U
Tetrachloroethene	570	12000	0.38 U	0.56 UJ	0.7 U	0.46 U	0.49 U	0.45 U	0.5 U	0.53 U
Toluene	5000000	190000	0.19 U	**1.3 J**	0.35 U	0.23 U	0.25 U	0.23 U	0.25 U	0.26 U
Total Chlorinated VOCs	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Total Xylenes	600000	110000	0.56 U	0.83 UJ	1 U	0.68 U	0.73 U	0.67 U	0.74 U	0.78 U
trans-1,2-Dichloroethene	110000	1100000	0.39 U	0.58 UJ	0.72 U	0.47 U	0.51 U	0.47 U	0.52 U	0.54 U
Trichloroethene	2800	13000	0.21 U	0.31 UJ	0.39 U	0.26 U	0.28 U	0.26 U	0.28 U	0.3 U

TABLE 4-18

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/UPGRADIENT AND BLDG 41 AREA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A3-01**	**SB16-A3-02**	**SB16-A3-03**	**SB16-A3-06**	**SB16-A3-06**	**SB16-A3-06**	**SB16-A3-06**	**SB16-A3-07**
Sample Number	**Residential**	**Soil Direct**	**SB16-A3-01-SO-4647**	**SB16-A3-02-SO-3233**	**SB16-A3-03-SO-4647**	**SB16-A3-06-SO-4748**	**SB16-A3-06-SO-3031**	**SB16-A3-06-SO-3233**	**SB16-A3-06-SO-3435**	**SB16-A3-07-SO-5859**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070711**	**20070711**	**20070711**	**20070714**	**20070717**	**20070717**	**20070717**	**20070714**
Depth Range (feet)	**Levels**	**Criterion**	**46 - 47**	**32 - 33**	**46 - 47**	**47 - 48**	**30 - 31**	**32 - 33**	**34 - 35**	**58 - 59**
Area			**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200	1.3 U	1.1 U	1 U	0.8 U	0.93 U	1 U	140 U	0.87 U
2-Butanone	28000000	10000000	1.3 U	1.1 U	1 U	0.8 U	0.93 U	1 U	220 U	0.87 U
Acetone	61000000	7800000	1.5 U	1.3 U	1.1 U	**2.7**	1.1 U	1.1 UR	720 U	0.99 U
BTEX	NA	NA	0 U	0 U	**1.9**	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	1.8 U	1.6 U	1.4 U	1.1 U	1.3 U	1.4 U	130 U	1.2 U
cis-1,2-Dichloroethene	780000	630000	0.41 U	0.35 U	0.31 U	0.25 U	0.29 U	0.32 U	98 U	0.27 U
Ethylbenzene	5700	71000	0.58 U	0.5 U	0.44 U	0.36 U	0.42 U	0.45 U	91 U	0.39 U
Methylene Chloride	11000	45000	0.71 U	0.62 U	0.54 U	0.44 U	0.51 U	0.55 U	100 U	0.48 U
Tetrachloroethene	570	12000	0.56 U	0.48 U	0.42 U	0.34 U	0.4 U	0.43 U	94 U	0.37 U
Toluene	5000000	190000	0.28 U	0.24 U	**1.9 J**	0.17 U	0.2 U	0.21 U	62 U	0.19 U
Total Chlorinated VOCs	NA	NA	0 U	0 U	**1.5**	0 U	**3.9**	**500**	**17000**	**14**
Total Xylenes	600000	110000	0.82 U	0.72 U	0.63 U	0.51 U	0.59 U	0.64 U	270 U	0.55 U
trans-1,2-Dichloroethene	110000	1100000	0.57 U	0.5 U	0.44 U	0.35 U	0.41 U	0.44 U	91 U	0.38 U
Trichloroethene	2800	13000	0.31 U	0.27 U	**1.5 J**	0.19 U	**3.9**	**500**	**17000**	**14**

TABLE 4-18

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/UPGRADIENT AND BLDG 41 AREA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A3-08**	**SB16-A3-11**	**SB16-A3-12**	**SB16-A3-13**	**SB16-A3-22**	**SB16-A3-22**	**SB16-A3-23**	**SB16-A3-26**
Sample Number	**Residential**	**Soil Direct**	**SB16-A3-08-SO-4445**	**SB16-A3-11-SO-4445**	**SB16-A3-12-SO-2930**	**SB16-A3-13-SO-4950**	**SB16-A3-22-SO-2829**	**SB16-A3-22-SO-3334**	**SB16-A3-23-SO-2627**	**SB16-A3-26-SO-2728**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070713**	**20070711**	**20070711**	**20070712**	**20070716**	**20070716**	**20070717**	**20070726**
Depth Range (feet)	**Levels**	**Criterion**	**44 - 45**	**44 - 45**	**29 - 30**	**49 - 50**	**28 - 29**	**33 - 34**	**26 - 27**	**27 - 28**
Area			**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200	1.3 U	0.95 U	1.9 U	1.1 U	0.94 U	0.92 U	0.87 U	1.2 U
2-Butanone	28000000	10000000	1.3 U	0.95 U	1.9 U	1.1 U	0.94 U	0.92 U	0.87 U	1.2 U
Acetone	61000000	7800000	1.4 U	**2.8 J**	2.1 U	**6.1**	1.1 UR	**3 J**	0.98 UR	1.3 U
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	1.8 U	1.3 U	2.6 U	1.6 U	1.3 U	1.3 U	1.2 U	1.6 U
cis-1,2-Dichloroethene	780000	630000	0.4 U	0.3 U	0.58 U	0.36 U	0.29 U	0.29 U	0.27 U	0.37 U
Ethylbenzene	5700	71000	0.57 U	0.42 U	0.83 U	0.51 U	0.42 U	0.41 U	0.39 U	0.52 U
Methylene Chloride	11000	45000	0.7 U	0.52 U	1 U	0.63 U	0.51 U	0.5 U	0.47 U	0.64 U
Tetrachloroethene	570	12000	0.54 U	0.4 U	0.79 U	0.49 U	0.4 U	0.39 U	0.37 U	0.5 U
Toluene	5000000	190000	0.27 U	0.2 U	0.4 U	0.24 U	0.2 U	0.2 U	0.18 U	0.25 U
Total Chlorinated VOCs	NA	NA	**2.8**	0 U	**1.9**	**27**	**71**	**1700**	**88**	**3900**
Total Xylenes	600000	110000	0.81 U	0.6 U	1.2 U	0.72 U	0.59 U	0.58 U	0.55 U	0.74 U
trans-1,2-Dichloroethene	110000	1100000	0.56 U	0.42 U	0.82 U	0.5 U	0.41 U	0.4 U	0.38 U	0.52 U
Trichloroethene	2800	13000	**2.8 J**	0.23 U	**1.9 J**	**27**	**71**	**1700**	**88**	**3900**

TABLE 4-18

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/UPGRADIENT AND BLDG 41 AREA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A3-27**	**SB16-A3-27**	**SB16-A3-28**	**SB16-A3-29**	**SB16-A3-31**	**SB16-A3-31**	**SB16-A3-31**	**SB16-A3-32**
Sample Number	**Residential**	**Soil Direct**	**SB16-A3-27-SO-3738**	**SB16-A3-27-SO-3738-D**	**SB16-A3-28-SO-2930**	**SB16-A3-29-SO-4849**	**SB16-A3-31-SO-2829**	**SB16-A3-31-SO-4243**	**SB16-A3-31-SO-4243-D**	**SB16-A3-32-SO-3637**
Sample Code	**Regional**	**Exposure**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070727**	**20070727**	**20070727**	**20070728**	**20070728**	**20070728**	**20070728**	**20070729**
Depth Range (feet)	**Levels**	**Criterion**	**37 - 38**	**37 - 38**	**29 - 30**	**48 - 49**	**28 - 29**	**42 - 43**	**42 - 43**	**36 - 37**
Area			**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200	2.6 U	1.2 U	1.3 U	0.86 U	1.2 U	1.1 U	0.91 U	1.3 U
2-Butanone	28000000	10000000	2.6 U	1.2 U	1.3 U	0.86 U	1.2 U	1.1 U	0.91 U	1.3 U
Acetone	61000000	7800000	3 U	1.3 U	1.5 U	0.97 U	1.3 U	1.3 UR	1 UR	1.5 U
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	3.7 U	1.6 U	1.8 U	1.2 U	1.6 U	1.6 U	1.3 U	1.8 U
cis-1,2-Dichloroethene	780000	630000	0.83 U	0.36 U	0.4 U	0.27 U	0.36 U	0.35 U	0.28 U	0.4 U
Ethylbenzene	5700	71000	1.2 U	0.52 U	0.57 U	0.38 U	0.51 U	0.51 U	0.4 U	0.57 U
Methylene Chloride	11000	45000	1.4 U	0.63 U	0.7 U	0.47 U	0.63 U	0.62 U	0.5 U	0.7 U
Tetrachloroethene	570	12000	1.1 U	0.49 U	0.55 U	0.37 U	0.49 U	0.48 U	0.39 U	0.55 U
Toluene	5000000	190000	0.56 U	0.25 U	0.27 U	0.18 U	0.25 U	0.24 U	0.19 U	0.27 U
Total Chlorinated VOCs	NA	NA	**41**	0 U	0 U	0 U	**130**	0 U	0 U	**140**
Total Xylenes	600000	110000	1.7 U	0.73 U	0.81 U	0.54 U	0.73 U	0.72 U	0.57 U	0.81 U
trans-1,2-Dichloroethene	110000	1100000	1.2 U	0.51 U	0.56 U	0.38 U	0.51 U	0.5 U	0.4 U	0.57 U
Trichloroethene	2800	13000	**41 J**	0.28 UJ	0.31 U	0.21 U	**130 J**	0.27 U	0.22 U	**140**

TABLE 4-18

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/UPGRADIENT AND BLDG 41 AREA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A3-33**	**SB16-A3-33**	**SB16-A3-33**	**SB16-A3-36**	**SB16-A3-37**	**SB16-A3-37**	**SB16-A3-37**	**SB16-A3-38**
Sample Number	**Residential**	**Soil Direct**	**SB16-A3-33-SO-3940**	**SB16-A3-33-SO-4142S**	**B16-A3-33-SO-4142-D**	**SB16-A3-36-SO-3536**	**SB16-A3-37-SO-3940**	**SB16-A3-37-SO-4647**	**SB16-A3-37-SO-5960**	**SB16-A3-38-SO-5455**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070730**	**20070730**	**20070730**	**20070928**	**20070927**	**20070928**	**20070928**	**20070929**
Depth Range (feet)	**Levels**	**Criterion**	**39 - 40**	**41 - 42**	**41 - 42**	**35 - 36**	**39 - 40**	**46 - 47**	**59 - 60**	**54 - 55**
Area			**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**
Volatile Organic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200	1 UJ	1.2 UJ	1.2 UJ	0.87 U	1.1 UJ	0.67 UJ	0.94 UJ	0.99 U
2-Butanone	28000000	10000000	1 U	1.2 U	1.2 U	0.55 UR	0.67 UR	0.42 UR	0.59 UR	0.62 U
Acetone	61000000	7800000	1.2 U	1.4 U	1.4 U	**2.4 J**	**7.7 J**	**2.3 J**	1.5 UR	1.6 U
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	**3.7**	**27.7**
Carbon Disulfide	670000	NA	1.5 U	1.7 U	1.7 U	0.23 U	**1.4 J**	0.17 UJ	0.24 UJ	0.25 U
cis-1,2-Dichloroethene	780000	630000	0.33 U	0.38 U	0.39 U	0.52 U	**1.2 J**	0.4 UJ	0.55 UJ	0.58 U
Ethylbenzene	5700	71000	0.46 U	0.54 U	0.55 U	0.87 U	1.1 UJ	0.67 UJ	0.94 UJ	**3.4 J**
Methylene Chloride	11000	45000	0.57 U	0.66 U	0.68 U	0.65 U	0.79 UJ	0.5 UJ	0.69 UJ	0.73 U
Tetrachloroethene	570	12000	0.44 U	0.52 U	0.53 U	0.68 U	0.83 UJ	0.52 UJ	0.73 UJ	0.76 U
Toluene	5000000	190000	0.22 U	0.26 U	0.26 U	0.45 U	0.55 UJ	0.35 UJ	0.48 UJ	**1.3 J**
Total Chlorinated VOCs	NA	NA	**12**	**42**	**42**	0 U	**8503.6**	**1200**	0 U	**82**
Total Xylenes	600000	110000	0.66 U	0.77 U	0.78 U	2.4 U	2.9 UJ	1.9 UJ	**3.7 J**	**23**
trans-1,2-Dichloroethene	110000	1100000	0.46 U	0.53 U	0.54 U	0.5 U	**2.4 J**	0.39 UJ	0.54 UJ	0.57 U
Trichloroethene	2800	13000	**12**	**42**	**42**	0.21 U	**8500**	**1200**	0.23 UJ	**82**

TABLE 4-18

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/UPGRADIENT AND BLDG 41 AREA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 6 OF 7

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A3-41/MW16-13F**	**SB16-UG-01**	**SB16-UG-02**	**SB16-UG-04/MW16-82**	**SB16-UG-05/MW16-10**	**SB16-UG-07/MW16-84**	**SB16-UG-09/MW16-83**
Sample Number	**Residential**	**Soil Direct**	**SB16-MW16-13R-6466**	**SB16-UG-01-SO-4747**	**SB16-UG-02-SO-4748**	**SB16-MW16-82R-9294**	**SB16-MW16-10I-3335**	**SB16-MW16-84R-5556**	**SB16-MW16-83R-5658**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071017**	**20070717**	**20070717**	**20071010**	**20071008**	**20071010**	**20071019**
Depth Range (feet)	**Levels**	**Criterion**	**64 - 66**	**47 - 47**	**47 - 48**	**92 - 94**	**33 - 35**	**55 - 56**	**56 - 58**
Area			**BUILDING 41**	**UPGRADIENT**	**UPGRADIENT**	**UPGRADIENT**	**UPGRADIENT**	**UPGRADIENT**	**UPGRADIENT**
Volatile Organic Compounds (ug/kg)									
1,1-Dichloroethene	250000	200	0.84 UJ	1.5 U	0.89 U	0.78 U	0.9 U	0.83 U	0.83 UJ
2-Butanone	28000000	10000000	0.53 U	1.5 U	0.89 U	0.49 U	0.56 U	0.52 U	0.52 U
Acetone	61000000	7800000	1.6 U	1.7 U	1 UR	**1.7 J**	1.4 U	**1.8 J**	1.3 U
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	0.22 U	2.1 U	1.3 U	0.2 U	0.23 U	0.21 U	0.22 U
cis-1,2-Dichloroethene	780000	630000	0.5 U	0.46 U	0.28 U	0.46 U	0.53 U	0.49 U	0.49 U
Ethylbenzene	5700	71000	0.84 U	0.66 U	0.4 U	0.78 U	0.9 U	0.83 U	0.92 U
Methylene Chloride	11000	45000	0.63 U	0.81 U	0.49 U	0.58 U	0.67 U	0.62 U	0.62 U
Tetrachloroethene	570	12000	0.65 U	0.63 U	0.38 U	0.61 U	**3.2 J**	0.64 U	0.65 U
Toluene	5000000	190000	0.44 U	0.31 U	0.19 U	0.41 U	0.47 U	0.43 U	0.43 U
Total Chlorinated VOCs	NA	NA	0 U	0 U	0 U	0 U	**4.01**	0 U	0 U
Total Xylenes	600000	110000	4.6 U	0.93 U	0.57 U	2.2 U	2.5 U	2.3 U	5.2 U
trans-1,2-Dichloroethene	110000	1100000	0.48 U	0.65 U	0.39 U	0.45 U	0.52 U	0.48 U	0.48 U
Trichloroethene	2800	13000	0.2 U	0.35 U	0.21 U	0.19 U	**0.81 J**	0.2 U	0.2 U

TABLE 4-18

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/UPGRADIENT AND BLDG 41 AREA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Notes:
Bolding indicates that the chemical was detected in the sample.
PAHs samples were analyzed by AWL by method SW8270-SIM.
BaP Equivalents = Benzo(a)pyrene equivalent concentration
High Molecular Weight PAHs = Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene
High Molecular Weight PAHs Ecosd = Benzo(a)anthracene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthrancene, Fluoranthene, Pyrene
Low Molecular Weight PAHs = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
Low Molecular Weight PAHs Ecosd = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C_9 to C_{36}.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C_9 to C_{44}.

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and total xylenes
EPA = Environmental Protection Agency
NA = Not applicable/Not available
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
VOC = Volatile organic compound

TABLE 4-19

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/EASTERN AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A2-02**	**SB16-A2-02**	**SB16-A2-03**	**SB16-A2-04**	**SB16-A2-06**	**SB16-A2-07**	**SB16-A2-08**	**SB16-A2-09**
Sample Number	**Residential**	**Soil Direct**	**SB16-A2-02-SO-4849**	**SB16-A2-02-SO-4849-D**	**SB16-A2-03-SO-4950**	**SB16-A2-04-SO-4950**	**SB16-A2-06-SO-3536**	**SB16-A2-07-SO-4445**	**SB16-A2-08-SO-5455**	**SB16-A2-09-SO-4849**
Sample Code	**Regional**	**Exposure**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070808**	**20070808**	**20070809**	**20070809**	**20070715**	**20070716**	**20070726**	**20070811**
Depth Range (feet)	**Levels**	**Criterion**	**48 - 49**	**48 - 49**	**49 - 50**	**49 - 50**	**35 - 36**	**44 - 45**	**54 - 55**	**48 - 49**
Area			**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Volatile Oragnic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200	1 U	0.98 U	1.2 U	1.2 U	0.93 U	1.1 U	1.2 U	0.96 U
2-Butanone	28000000	10000000	1 UR	0.98 UR	1.2 UR	1.2 UR	0.93 U	1.1 U	1.2 U	0.96 UR
Acetone	61000000	7800000	1.1 UJ	1.1 UJ	1.4 UJ	1.3 UJ	**4**	1.2 UR	1.4 U	1.1 UJ
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	1.4 U	1.4 U	1.7 U	1.6 U	1.3 U	1.5 U	1.7 U	1.3 U
cis-1,2-Dichloroethene	780000	630000	**0.73 J**	**0.84 J**	**1.2 J**	0.37 U	**2.9 J**	0.33 U	0.39 U	0.3 U
Ethylbenzene	5700	71000	0.45 U	0.44 U	0.54 U	0.52 U	0.41 U	0.48 U	0.55 U	0.43 U
Methylene Chloride	11000	45000	0.55 U	0.54 U	0.66 U	0.64 U	0.51 U	0.58 U	0.67 U	0.52 U
Tetrachloroethene	570	12000	0.43 U	0.42 U	0.51 U	0.5 U	0.4 U	0.45 U	0.53 U	0.41 U
Toluene	5000000	190000	0.21 U	0.21 U	0.26 U	0.25 U	0.2 U	0.23 U	0.26 U	0.2 U
Total Chlorinated VOCs	NA	NA	**48.73**	**51.84**	**12.2**	**9.2**	**2802.9**	**54**	**9.4**	**19**
Total Xylenes	600000	110000	0.64 U	0.62 U	0.76 U	0.74 U	0.59 U	0.67 U	0.78 U	0.61 U
trans-1,2-Dichloroethene	110000	1100000	0.44 U	0.43 U	0.53 U	0.52 U	0.41 U	0.47 U	0.54 U	0.42 U
Trichloroethene	2800	13000	**48**	**51**	**11**	**9.2**	**2800**	**54**	**9.4**	**19**

TABLE 4-19

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/EASTERN AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A2-10**	**SB16-A2-10**	**SB16-A2-10**	**SB16-A2-11**	**SB16-A2-11**	**SB16-A2-12**	**SB16-A2-13**	**SB16-A2-14**
Sample Number	**Residential**	**Soil Direct**	**SB16-A2-10-SO-2728**	**SB16-A2-10-SO-3435**	**SB16-A2-10-SO-4748**	**SB16-A2-11-SO-3435**	**SB16-A2-11-SO-4748**	**SB16-A2-12-SO-5960**	**SB16-A2-13-SO-5960**	**SB16-A2-14-SO-4647**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070628**	**20070629**	**20070629**	**20070628**	**20070628**	**20070716**	**20070809**	**20070811**
Depth Range (feet)	**Levels**	**Criterion**	**27 - 28**	**34 - 35**	**47 - 48**	**34 - 35**	**47 - 48**	**59 - 60**	**59 - 60**	**46 - 47**
Area			**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Volatile Oragnic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200	0.89 U	0.99 U	1.5 U	1.1 U	0.68 U	1.3 U	1 U	1.2 U
2-Butanone	28000000	10000000	0.89 U	0.99 U	1.5 U	1.1 U	0.68 U	1.3 U	1 UR	1.2 UR
Acetone	61000000	7800000	1 UJ	1.1 UJ	1.7 UJ	1.2 UJ	0.78 UJ	1.4 UR	1.2 UJ	1.3 UJ
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	1.3 U	1.4 U	2.1 U	1.5 U	0.96 U	1.8 U	1.5 U	1.6 U
cis-1,2-Dichloroethene	780000	630000	0.28 U	0.31 U	0.47 U	0.35 U	0.21 U	0.39 U	0.33 U	0.36 U
Ethylbenzene	5700	71000	0.4 U	0.44 U	0.67 U	0.49 U	0.31 U	0.56 U	0.47 U	0.52 U
Methylene Chloride	11000	45000	0.49 U	0.54 U	0.81 U	0.6 U	0.37 U	0.69 U	0.57 U	0.63 U
Tetrachloroethene	570	12000	0.38 U	0.42 U	0.64 U	0.47 U	0.29 U	0.54 U	0.44 U	0.49 U
Toluene	5000000	190000	0.19 U	0.21 U	0.32 U	0.24 U	0.15 U	0.27 U	0.22 U	0.25 U
Total Chlorinated VOCs	NA	NA	0 U	**1200**	0 U	**33**	**51**	**12**	**11**	**110**
Total Xylenes	600000	110000	0.57 U	0.63 U	0.94 U	0.7 U	0.43 U	0.8 U	0.66 U	0.73 U
trans-1,2-Dichloroethene	110000	1100000	0.39 U	0.43 U	0.66 U	0.49 U	0.3 U	0.55 U	0.46 U	0.51 U
Trichloroethene	2800	13000	0.21 U	**1200**	0.36 U	**33**	**51**	**12**	**11**	**110**

TABLE 4-19

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/EASTERN AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A2-15/MW16-89I**	**SB16-A2-15/MW16-89I**	**SB16-A2-15/MW16-89I**	**SB16-A2-15/MW16-89I**	**SB16-A2-15/MW16-89I**	**SB16-A2-17**	**SB16-A2-18**	**SB16-A2-18**
Sample Number	**Residential**	**Soil Direct**	**MW16-89I-3941**	**MW16-89I-3941-D**	**MW16-89I-4951**	**MW16-89I-5961**	**MW16-89I-6567**	**SB16-A2-17-SO-3637**	**SB16-A2-18-SO-2728**	**SB16-A2-18-SO-3536**
Sample Code	**Regional**	**Exposure**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071114**	**20071114**	**20071114**	**20071114**	**20071114**	**20070627**	**20070630**	**20070630**
Depth Range (feet)	**Levels**	**Criterion**	**39 - 41**	**39 - 41**	**49 - 51**	**59 - 61**	**65 - 67**	**36 - 37**	**27 - 28**	**35 - 36**
Area			**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Volatile Oragnic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200	1 U	0.96 U	0.95 U	0.94 U	0.73 U	0.98 U	0.88 UJ	0.95 UJ
2-Butanone	28000000	10000000	0.63 UR	0.6 UR	0.59 UR	0.59 UR	0.45 UR	0.98 U	0.88 U	0.95 U
Acetone	61000000	7800000	1.6 UR	1.5 UR	1.5 UR	1.5 UR	1.2 UR	1.1 UJ	0.99 UJ	1.1 UJ
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	0.26 U	0.25 U	0.25 U	0.24 U	0.19 U	1.4 U	1.2 U	1.3 U
cis-1,2-Dichloroethene	780000	630000	0.6 U	0.57 U	0.56 U	0.56 U	0.43 U	0.31 U	0.27 U	0.3 U
Ethylbenzene	5700	71000	1 U	0.96 U	0.95 U	0.94 U	0.73 U	0.44 U	0.39 U	0.42 U
Methylene Chloride	11000	45000	0.75 U	0.71 U	0.7 U	0.7 U	0.54 U	0.54 U	**1.2 J**	0.52 U
Tetrachloroethene	570	12000	0.79 U	0.75 U	0.74 U	0.73 U	0.56 U	**0.99 J**	0.37 U	0.41 U
Toluene	5000000	190000	0.52 U	0.5 U	0.49 U	0.49 U	0.38 U	0.21 U	0.19 UJ	0.2 UJ
Total Chlorinated VOCs	NA	NA	**11**	**8**	0 U	0 U	0 U	**4.49**	**8.4**	**27**
Total Xylenes	600000	110000	2.8 U	2.6 U	2.6 U	2.6 U	2 U	0.62 U	0.55 U	0.6 U
trans-1,2-Dichloroethene	110000	1100000	0.58 U	0.55 U	0.55 U	0.54 U	0.42 U	0.43 U	0.39 U	0.42 U
Trichloroethene	2800	13000	**11**	**8**	0.23 U	0.23 U	0.18 U	**3.5**	**7.2 J**	**27 J**

TABLE 4-19

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/EASTERN AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A2-18**	**SB16-A2-19**	**SB16-A2-20**	**SB16-A2-20**	**SB16-A2-21**	**SB16-A2-21**	**SB16-A2-22**	**SB16-A2-22**
Sample Number	**Residential**	**Soil Direct**	**SB16-A2-18-SO-4950**	**SB16-A2-19-SO-4950**	**SB16-A2-20-SO-2930**	**SB16-A2-20-SO-3940**	**SB16-A2-21-SO-4950**	**SB16-A2-21-SO-4950-D**	**SB16-A2-22-SO-3940**	**SB16-A2-22-SO-4950**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070710**	**20070724**	**20070717**	**20070717**	**20070725**	**20070725**	**20070726**	**20070726**
Depth Range (feet)	**Levels**	**Criterion**	**49 - 50**	**49 - 50**	**29 - 30**	**39 - 40**	**49 - 50**	**49 - 50**	**39 - 40**	**49 - 50**
Area			**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Volatile Oragnic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200	1.1 U	1.2 U	1.2 U	0.96 U	1.2 U	1.2 U	1.2 U	1.2 U
2-Butanone	28000000	10000000	1.1 U	1.2 U	1.2 U	0.96 U	1.2 U	1.2 U	1.2 U	1.2 U
Acetone	61000000	7800000	**8.9**	1.3 U	1.3 UR	1.1 UR	1.4 U	1.3 U	1.4 U	1.4 U
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	1.6 U	1.6 U	1.6 U	1.3 U	1.7 U	1.6 U	1.7 U	1.7 U
cis-1,2-Dichloroethene	780000	630000	0.35 U	0.36 U	0.36 U	0.3 U	0.39 U	0.36 U	0.38 U	0.38 U
Ethylbenzene	5700	71000	0.5 U	0.52 U	0.52 U	0.43 U	0.56 U	0.52 U	0.54 U	0.54 U
Methylene Chloride	11000	45000	0.61 U	0.63 U	0.63 U	0.52 U	0.68 U	0.63 U	0.66 U	0.67 U
Tetrachloroethene	570	12000	0.47 U	0.49 U	0.49 U	0.41 U	0.53 U	0.49 U	0.51 U	0.52 U
Toluene	5000000	190000	0.24 U	0.25 U	0.25 U	0.2 U	0.27 U	0.25 U	0.26 U	0.26 U
Total Chlorinated VOCs	NA	NA	0 U	**50**	0 U	0 U	**2.9**	0 U	**130**	**2000**
Total Xylenes	600000	110000	0.7 U	0.73 U	0.73 U	0.61 U	0.79 U	0.73 U	0.76 U	0.77 U
trans-1,2-Dichloroethene	110000	1100000	0.49 U	0.51 U	0.51 U	0.42 U	0.55 U	0.51 U	0.53 U	0.54 U
Trichloroethene	2800	13000	0.27 U	**50**	0.28 U	0.23 U	**2.9 J**	0.28 U	**130**	**2000**

TABLE 4-19

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/EASTERN AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A2-23**	**SB16-A2-24**	**SB16-A2-24**	**SB16-A2-25**	**SB16-A2-26**	**SB16-A2-27**	**SB16-A2-28**	**SB16-A2-28**
Sample Number	**Residential**	**Soil Direct**	**SB16-A2-23-SO-4446**	**SB16-A2-24-SO-2829**	**SB16-A2-24-SO-3839**	**SB16-A2-25-SO-3940**	**SB16-A2-26-SO-4243**	**SB16-A2-27-SO-5354**	**SB16-A2-28-SO-4950**	**SB16-A2-28-SO-5960**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070627**	**20070702**	**20070702**	**20070717**	**20070626**	**20070808**	**20070813**	**20070813**
Depth Range (feet)	**Levels**	**Criterion**	**44 - 46**	**28 - 29**	**38 - 39**	**39 - 40**	**42 - 43**	**53 - 54**	**49 - 50**	**59 - 60**
Area			**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Volatile Oragnic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200	0.75 U	0.95 UJ	0.79 UJ	0.79 U	1.6 U	1.1 U	0.95 U	1 U
2-Butanone	28000000	10000000	0.75 UJ	0.95 U	0.79 U	0.79 U	1.6 U	1.1 UR	0.95 UR	1 UR
Acetone	61000000	7800000	0.84 UR	1.1 UJ	**4 J**	0.89 UR	1.8 UJ	1.3 UJ	**3.7 J**	1.2 UJ
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	1 U	1.3 U	1.1 U	1.1 U	2.2 U	1.6 U	1.3 U	1.4 U
cis-1,2-Dichloroethene	780000	630000	0.23 U	0.3 U	0.25 U	0.25 U	0.5 U	0.35 U	0.3 U	0.32 U
Ethylbenzene	5700	71000	0.33 U	0.43 U	0.35 U	0.35 U	0.71 U	0.5 U	0.42 U	0.46 U
Methylene Chloride	11000	45000	0.41 U	0.52 U	0.43 U	0.43 U	0.87 U	0.61 U	0.52 U	0.56 U
Tetrachloroethene	570	12000	0.32 U	0.41 U	0.34 U	0.34 U	0.68 U	0.48 U	0.41 U	0.44 U
Toluene	5000000	190000	0.16 U	0.2 UJ	0.17 UJ	0.17 U	0.34 U	0.24 U	0.2 U	0.22 U
Total Chlorinated VOCs	NA	NA	0 U	0 U	0 U	0 U	0 U	**99**	0 U	**3.7**
Total Xylenes	600000	110000	0.47 U	0.6 U	0.5 U	0.5 U	1 U	0.71 U	0.6 U	0.65 U
trans-1,2-Dichloroethene	110000	1100000	0.33 U	0.42 U	0.35 U	0.35 U	0.7 U	0.49 U	0.42 U	0.45 U
Trichloroethene	2800	13000	0.18 U	0.23 UJ	0.19 UJ	0.19 U	0.38 U	**99**	0.23 U	**3.7**

TABLE 4-19

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/EASTERN AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A2-29**	**SB16-A2-29**	**SB16-A2-30/MW16-87**	**SB16-A2-30/MW16-87**	**SB16-A2-31/MW16-88**	**SB16-A2-31/MW16-88**	**SB16-A2-32/MW16-90I**	**SB16-A2-32/MW16-90I**
Sample Number	**Residential**	**Soil Direct**	**SB16-A2-29-SO-4849**	**SB16-A2-29-SO-5859**	**SB16-MW16-87I-3537**	**SB16-MW16-87I-5557**	**SB16-MW16-88I-5557**	**SB16-MW16-88I-6971**	**MW16-90D-3537**	**MW16-90D-6567**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**
Sample Date	**Screening**	**Residential**	**20070812**	**20070812**	**20071031**	**20071031**	**20071107**	**20071107**	**20071109**	**20071109**
Depth Range (feet)	**Levels**	**Criterion**	**48 - 49**	**58 - 59**	**35 - 37**	**55 - 57**	**55 - 57**	**69 - 71**	**35 - 37**	**65 - 67**
Area			**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Volatile Oragnic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200	1.1 U	0.94 U	0.93 U	0.86 U	0.88 U	0.83 U	1 U	0.97 U
2-Butanone	28000000	10000000	1.1 UR	0.94 UR	0.58 U	0.54 U	0.55 U	0.52 U	0.63 UR	0.61 UR
Acetone	61000000	7800000	1.3 UJ	1.1 UJ	**2.7 J**	1.4 U	**2.1 J**	1.3 U	**6.5 J**	1.5 UR
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	1.6 U	1.3 U	0.24 UJ	0.22 UJ	0.23 UJ	0.22 UJ	0.26 U	0.25 U
cis-1,2-Dichloroethene	780000	630000	**1.4 J**	0.29 U	0.55 U	0.51 U	0.52 U	0.49 U	0.59 U	0.58 U
Ethylbenzene	5700	71000	0.51 U	0.42 U	0.93 U	0.86 U	0.88 U	0.83 U	1 U	0.97 U
Methylene Chloride	11000	45000	0.63 U	0.51 U	0.69 U	0.64 U	0.65 U	0.62 U	0.74 U	0.72 U
Tetrachloroethene	570	12000	0.49 U	0.4 U	0.72 U	0.67 U	0.68 U	0.65 U	0.78 U	0.75 U
Toluene	5000000	190000	0.24 U	0.2 U	0.48 U	0.44 U	0.46 U	0.43 U	0.52 U	0.5 U
Total Chlorinated VOCs	NA	NA	**12.4**	**2.1**	0 U	0 U	**1600**	0 U	0 U	**1.1**
Total Xylenes	600000	110000	0.73 U	0.59 U	2.5 U	2.4 U	2.4 U	2.3 U	2.8 U	2.7 U
trans-1,2-Dichloroethene	110000	1100000	0.5 U	0.41 U	0.53 U	0.49 U	0.51 U	0.48 U	0.58 U	0.56 U
Trichloroethene	2800	13000	**11**	**2.1 J**	0.22 U	0.21 U	**1600**	0.2 U	0.24 U	**1.1 J**

TABLE 4-19

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/EASTERN AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A2-32/MW16-90I**	**SB16-A3-04**	**SB16-A3-04**	**SB16-A3-04**	**SB16-A3-05**	**SB16-A3-05**	**SB16-A3-09**	**SB16-A3-09**
Sample Number	**Residential**	**Soil Direct**	**MW16-90D-6567-D**	**SB16-A3-04-SO-3940**	**SB16-A3-04-SO-4748**	**SB16-A3-04-SO-4748-D**	**SB16-A3-05-SO-4849**	**SB16-A3-05-SO-5960**	**SB16-A3-09-SO-3940**	**SB16-A3-09-SO-4950**
Sample Code	**Regional**	**Exposure**	**DUP**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071109**	**20070712**	**20070712**	**20070712**	**20070712**	**20070713**	**20070714**	**20070714**
Depth Range (feet)	**Levels**	**Criterion**	**65 - 67**	**39 - 40**	**47 - 48**	**47 - 48**	**48 - 49**	**59 - 60**	**39 - 40**	**49 - 50**
Area			**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Volatile Oragnic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200	1.1 U	0.99 U	1.1 U	1.1 U	1.9 U	0.93 U	1.3 U	1.2 U
2-Butanone	28000000	10000000	0.67 UR	0.99 U	1.1 U	1.1 U	1.9 U	0.93 UR	1.3 U	1.2 U
Acetone	61000000	7800000	**8.3 J**	1.1 U	1.2 U	1.2 U	2.2 U	1.1 UR	1.4 U	1.4 U
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	**1.6**	0 U
Carbon Disulfide	670000	NA	**0.91 J**	1.4 U	1.5 U	1.5 U	2.7 U	1.3 U	1.8 U	1.7 U
cis-1,2-Dichloroethene	780000	630000	0.63 U	0.31 U	0.33 U	0.33 U	**1.9 J**	0.29 U	0.4 U	0.38 U
Ethylbenzene	5700	71000	1.1 U	0.44 U	0.47 U	0.47 U	0.87 U	0.41 U	0.57 U	0.54 U
Methylene Chloride	11000	45000	0.79 U	0.54 U	**0.74 J**	0.57 U	1.1 U	0.51 U	0.69 U	0.66 U
Tetrachloroethene	570	12000	0.83 U	0.42 U	0.45 U	0.45 U	0.83 U	0.4 U	0.54 U	0.51 U
Toluene	5000000	190000	0.55 U	0.21 U	0.22 U	0.22 U	0.41 U	0.2 U	**1.6 J**	0.26 U
Total Chlorinated VOCs	NA	NA	**5.4**	**4.9**	**2.74**	**3.6**	**5801.9**	**26**	**86**	**3.2**
Total Xylenes	600000	110000	2.9 U	0.63 U	0.67 U	0.67 U	1.2 U	0.59 U	0.8 U	0.76 U
trans-1,2-Dichloroethene	110000	1100000	0.62 U	0.44 U	0.46 U	0.46 U	0.85 U	0.41 U	0.56 U	0.53 U
Trichloroethene	2800	13000	**5.4**	**4.9**	**2 J**	**3.6**	**5800**	**26**	**86**	**3.2 J**

TABLE 4-19

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/EASTERN AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A3-09**	**SB16-A3-10**	**SB16-A3-15**	**SB16-A3-15**	**SB16-A3-15**	**SB16-A3-16**	**SB16-A3-17**	**SB16-A3-17**
Sample Number	**Residential**	**Soil Direct**	**SB16-A3-09-SO-5758**	**SB16-A3-10-SO-4950**	**SB16-A3-15-SO-3940**	**SB16-A3-15-SO-4041**	**SB16-A3-15-SO-4041-D**	**SB16-A3-16-SO-3940**	**SB16-A3-17-SO-2829**	**SB16-A3-17-SO-4849**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**ORIG**
Sample Date	**Screening**	**Residential**	**20070714**	**20070715**	**20070713**	**20070713**	**20070713**	**20070703**	**20070702**	**20070702**
Depth Range (feet)	**Levels**	**Criterion**	**57 - 58**	**49 - 50**	**39 - 40**	**40 - 41**	**40 - 41**	**39 - 40**	**28 - 29**	**48 - 49**
Area			**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Volatile Oragnic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200	1.1 U	1.2 UJ	1.1 U	1.2 U	1.2 U	1.5 U	1 UJ	1.3 UJ
2-Butanone	28000000	10000000	1.1 U	1.2 UJ	1.1 U	1.2 U	1.2 U	1.5 U	1 U	1.3 U
Acetone	61000000	7800000	1.2 U	1.3 UJ	**4.5**	1.3 U	**6.9**	1.7 U	1.1 UJ	1.5 UJ
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	1.5 U	1.7 UJ	1.5 U	1.6 U	1.7 U	2.1 U	1.4 U	1.8 U
cis-1,2-Dichloroethene	780000	630000	0.34 U	0.37 UJ	0.34 U	0.36 U	0.37 U	0.46 U	0.32 U	0.4 U
Ethylbenzene	5700	71000	0.49 U	0.53 UJ	0.49 U	0.52 U	0.53 U	0.65 U	0.45 U	0.57 U
Methylene Chloride	11000	45000	0.6 U	0.65 UJ	0.6 U	0.64 U	0.65 U	0.8 U	0.55 U	**1.3 J**
Tetrachloroethene	570	12000	0.47 U	0.51 UJ	0.47 U	0.5 U	0.51 U	0.63 U	0.43 U	**1.6 J**
Toluene	5000000	190000	0.23 U	0.25 UJ	0.23 U	0.25 U	0.25 U	0.31 U	0.22 UJ	0.27 UJ
Total Chlorinated VOCs	NA	NA	**710**	**6600**	**3300**	**2900**	**4100**	0 U	0 U	**2.9**
Total Xylenes	600000	110000	0.69 U	0.75 UJ	0.69 U	0.74 U	0.75 U	0.93 U	0.64 U	0.81 U
trans-1,2-Dichloroethene	110000	1100000	0.48 U	0.52 UJ	0.48 U	0.51 U	0.52 U	0.64 U	0.45 U	0.57 U
Trichloroethene	2800	13000	**710**	**6600**	**3300**	**2900**	**4100**	0.35 U	0.24 UJ	0.31 UJ

TABLE 4-19

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/EASTERN AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A3-17**	**SB16-A3-18**	**SB16-A3-18**	**SB16-A3-18**	**SB16-A3-19**	**SB16-A3-20**	**SB16-A3-20**	**SB16-A3-20**
Sample Number	**Residential**	**Soil Direct**	**SB16-A3-17-SO-4849-D**	**SB16-A3-18-SO-3940**	**SB16-A3-18-SO-4950**	**SB16-A3-18-SO-5253**	**SB16-A3-19-SO-3738**	**SB16-A3-20-SO-2627**	**SB16-A3-20-SO-3839**	**SB16-A3-20-SO-4647**
Sample Code	**Regional**	**Exposure**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070702**	**20070703**	**20070703**	**20070703**	**20070630**	**20070629**	**20070629**	**20070629**
Depth Range (feet)	**Levels**	**Criterion**	**48 - 49**	**39 - 40**	**49 - 50**	**52 - 53**	**37 - 38**	**26 - 27**	**38 - 39**	**46 - 47**
Area			**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Volatile Oragnic Compounds (ug/kg)										
1,1-Dichloroethene	250000	200	1.1 UJ	**0.81 J**	0.78 U	0.88 U	0.91 UJ	0.94 U	0.88 U	0.93 U
2-Butanone	28000000	10000000	1.1 U	0.59 U	0.78 U	0.88 U	0.91 U	0.94 U	0.88 U	0.93 U
Acetone	61000000	7800000	1.2 UJ	**3**	**5.5**	0.99 U	1 UJ	1.1 UJ	0.99 UJ	1 UJ
BTEX	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	670000	NA	1.5 U	0.83 U	1.1 U	1.2 U	1.3 U	1.3 U	1.2 U	1.3 U
cis-1,2-Dichloroethene	780000	630000	0.33 U	0.19 U	0.24 U	0.27 U	0.29 U	0.29 U	0.27 U	0.29 U
Ethylbenzene	5700	71000	0.48 U	0.27 U	0.35 U	0.39 U	0.41 U	0.42 U	0.39 U	0.41 U
Methylene Chloride	11000	45000	0.58 U	**0.51 J**	**1.6 J**	0.48 U	0.5 U	0.51 U	0.48 U	0.51 U
Tetrachloroethene	570	12000	**2.5 J**	0.25 U	0.33 U	0.37 U	0.39 U	0.4 U	0.37 U	0.4 U
Toluene	5000000	190000	0.23 UJ	0.13 U	0.17 U	0.19 U	0.19 UJ	0.2 U	0.19 U	0.2 U
Total Chlorinated VOCs	NA	NA	**2.5**	**2401.32**	**1.6**	**2.4**	0 U	**38**	**970**	**0.96**
Total Xylenes	600000	110000	0.67 U	0.38 U	0.49 U	0.56 U	0.58 U	0.59 U	0.56 U	0.59 U
trans-1,2-Dichloroethene	110000	1100000	0.47 U	0.26 U	0.34 U	0.39 U	0.4 U	0.41 U	0.39 U	0.41 U
Trichloroethene	2800	13000	0.26 UJ	**2400**	0.19 U	**2.4 J**	0.22 UJ	**38**	**970**	**0.96 J**

TABLE 4-19

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/EASTERN AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation			**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**SB16-A3-39**	**SB16-A3-39**	**SB16-A3-42/MW16-86R**	**SB16-A3-42/MW16-86R**
Sample Number	**Residential**	**Soil Direct**	**SB16-A3-39-SO-3132**	**SB16-A3-39-SO-3738**	**SB16-MW16-86R-2931**	**SB16-MW16-86R-6163**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20070928**	**20070928**	**20071022**	**20071022**
Depth Range (feet)	**Levels**	**Criterion**	**31 - 32**	**37 - 38**	**29 - 31**	**61 - 63**
Area			**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Volatile Oragnic Compounds (ug/kg)						
1,1-Dichloroethene	250000	200	0.8 U	1 U	0.99 UJ	0.88 UJ
2-Butanone	28000000	10000000	0.5 UR	0.63 UR	0.62 U	**1.9 J**
Acetone	61000000	7800000	1.3 UJ	1.6 UR	5.3 U	4.1 U
BTEX	NA	NA	0 U	**3.5**	0 U	0 U
Carbon Disulfide	670000	NA	0.21 U	0.26 U	0.26 U	0.23 U
cis-1,2-Dichloroethene	780000	630000	0.48 U	0.6 U	0.59 U	0.52 U
Ethylbenzene	5700	71000	0.8 U	1 U	1.1 U	0.88 U
Methylene Chloride	11000	45000	0.6 U	0.75 UJ	0.73 U	0.66 U
Tetrachloroethene	570	12000	**1.2 J**	**5.9**	**2.1 J**	0.68 U
Toluene	5000000	190000	0.42 U	0.52 U	0.51 U	0.46 U
Total Chlorinated VOCs	NA	NA	**1.2**	**5.9**	**2.1**	0 U
Total Xylenes	600000	110000	2.2 U	**3.5 J**	7.9 U	5.5 U
trans-1,2-Dichloroethene	110000	1100000	0.46 U	0.58 U	0.57 U	0.51 U
Trichloroethene	2800	13000	0.19 U	0.24 U	0.24 U	0.21 U

TABLE 4-19

SUMMARY OF CHEMICALS DETECTED IN PHASE III DEEP SUBSURFACE SOIL - DEVELOPED/EASTERN AREA - 2007
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Notes:
Bolding indicates that the chemical was detected in the sample.
PAHs samples were analyzed by AWL by method SW8270-SIM.
BaP Equivalents = Benzo(a)pyrene equivalent concentration
High Molecular Weight PAHs = Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene
High Molecular Weight PAHs Ecosd = Benzo(a)anthracene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthrancene, Fluoranthene, Pyrene
Low Molecular Weight PAHs = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
Low Molecular Weight PAHs Ecosd = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C_9 to C_{36}.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C_9 to C_{44}.

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and total xylenes
EPA = Environmental Protection Agency
NA = Not applicable/Not available
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
VOC = Volatile organic compound

TABLE 4-20

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES FROM TEST PITS - NORTH CENTRAL AREA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 1 OF 2

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **Depth Range (feet)** **Area**	**ORNL Residential Regional Screening Levels**	**RIDEM Soil Direct Exposure Residential Criterion**	**10** **TP16-01** **16TP-TP1-0002** **NORMAL** **20071025** **0 - 2** **BLDG E107**	**10** **TP16-02** **16TP-TP2-0002** **NORMAL** **20071025** **0 - 2** **BLDG E107**
Volatile Organic Compounds (ug/kg)				
Acetone	61000000	7800000	**2.1 J**	1.8 U
Semivolatile Organic Compounds (ug/kg)				
Anthracene	17000000	35000	**50**	**37**
Benzo(a)pyrene Equivalents	15	400	**144**	**14**
Benzo(a)anthracene	150	900	**120**	**64**
Benzo(a)pyrene	15	400	**110**	35 U
Benzo(b)fluoranthene	150	900	**130**	**75**
Benzo(g,h,i)perylene	1700000	800	**91**	35 U
Benzo(k)fluoranthene	1500	900	**90**	35 U
Chrysene	15000	400	**130**	**63**
Fluoranthene	2300000	20000	**270**	**120**
High Molecular Weight PAHs	NA	NA	**1247**	**421**
Indeno(1,2,3-cd)pyrene	150	900	**76**	35 U
Low Molecular Weight PAHs	NA	NA	**94**	**37**
Phenanthrene	1700000	40000	**44**	35 U
Pyrene	1700000	13000	**230**	**99**
Total PAHs	NA	NA	**1341**	**458**
Petroleum Hydrocarbons (mg/kg)				
Extractable TPH-Screening Data	NA	500	0.97 U	**2.9**

TABLE 4-20

SUMMARY OF CHEMICALS DETECTED IN SURFACE SOIL SAMPLES FROM TEST PITS - NORTH CENTRAL AREA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Notes:
Bolding indicates that the chemical was detected in the sample.
PAHs samples were analyzed by AWL by method SW8270-SIM.
BaP Equivalents = Benzo(a)pyrene equivalent concentration
High Molecular Weight PAHs = Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene
High Molecular Weight PAHs Ecosd = Benzo(a)anthracene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthrancene, Fluoranthene, Pyrene
Low Molecular Weight PAHs = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
Low Molecular Weight PAHs Ecosd = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene

Matrix Codes
PV = Pavement
BM = Bulk Material

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
BaP = Benzo(a)pyrene equivalents
EPA = Environmental Protection Agency
NA = Not applicable/Not available
PAH = Polycyclic aromatic hydrocarbon
PHC = Petroleum hydrocarbons as diesel fuel
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
TPH = Total petroleum hydrocarbon

TABLE 4-21

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL FROM TEST PITS - NORTH CENTRAL AREA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 1 OF 3

Investigation			**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**TP16-01**	**TP16-01**	**TP16-01**	**TP16-02**	**TP16-02**
Sample Number	**Residential**	**Soil Direct**	**16TP-TP1-0205**	**16TP-TP1-0509**	**16TP-TP1-0509-WOOD**	**16TP-TP2-0205**	**16TP-TP2-0510**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071025**	**20071025**	**20071025**	**20071025**	**20071025**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 5**	**5 - 9**	**5 - 9**	**2 - 5**	**5 - 10**
Area			**BLDG E107**	**BLDG E107**	**BLDG E107**	**BLDG E107**	**BLDG E107**
Volatile Organic Compounds (ug/kg)							
2-Butanone	28000000	10000000	0.48 U	**49 J**		**14**	**76 J**
Acetone	61000000	7800000	**2.1 J**	**180 J**		**49 J**	**190 J**
BTEX	NA	NA	0 U	**1.4**		0 U	0 U
Carbon Disulfide	670000	NA	0.2 U	**3.6 J**		0.26 U	**8.8 J**
Methyl Cyclohexane	3400000	NA	0.21 U	**2.6 J**		0.28 U	0.43 UJ
Toluene	5000000	190000	0.4 U	**1.4 J**		0.53 U	0.8 UJ
Total Chlorinated VOCs	NA	NA	0 U	0 U		0 U	**6.5**
Vinyl Chloride	60	20	0.14 U	0.27 UJ		0.19 U	**6.5 J**
Semivolatile Organic Compounds (ug/kg)							
Acenaphthene	3400000	43000	35 U	**1900**		36 U	41 U
Acenaphthylene	3400000	23000	35 U	**810**		36 U	41 U
Anthracene	17000000	35000	35 U	**11000**		**93**	**170**
Benzo(a)pyrene Equivalents	15	400	**4.9**	**17995**		**318**	**438**
Benzo(a)anthracene	150	900	35 U	**19000**		**150**	**360**
Benzo(a)pyrene	15	400	35 U	**12000**		**210**	**290**
Benzo(b)fluoranthene	150	900	**49**	**17000**		**330**	**450**
Benzo(g,h,i)perylene	1700000	800	35 U	**5000**		**130**	**140**
Benzo(k)fluoranthene	1500	900	35 U	**8400**		**150**	**210**
Chrysene	15000	400	35 U	**21000**		**290**	**440**
Dibenzo(a,h)anthracene	15	400	35 U	**1800**		**45**	**50**
Fluoranthene	2300000	20000	35 U	**60000**		**240**	**940**
Fluorene	2300000	28000	35 U	**1300**		36 U	41 U
High Molecular Weight PAHs	NA	NA	**49**	**199100**		**1895**	**4120**
Indeno(1,2,3-cd)pyrene	150	900	35 U	**4900**		**130**	**140**
Low Molecular Weight PAHs	NA	NA	0 U	**20110**		**186**	**330**
Naphthalene	3900	54000	35 U	480 U		36 U	41 U
Phenanthrene	1700000	40000	35 U	**5100**		**93**	**160**
Pyrene	1700000	13000	35 U	**50000**		**220**	**1100**
Total PAHs	NA	NA	**49**	**219210**		**2081**	**4450**
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	310000	123000		**140**	**38000**		**40**
Acenaphthene	3400000	43000		**2200**	**370000**		**87**
Acenaphthylene	3400000	23000		**760**	**92000**		**24**
Anthracene	17000000	35000		**9500**	**1100000**		**180 J**
Benzo(a)pyrene Equivalents	15	400		**14257**	**1840800**		**418.64**
Benzo(a)anthracene	150	900		**16000**	**2200000**		**370 J**
Benzo(a)pyrene	15	400		**9600**	**1200000**		**280**
Benzo(b)fluoranthene	150	900		**12000**	**1800000**		**380**
Benzo(g,h,i)perylene	1700000	800		**3600**	**550000**		**130**
Benzo(k)fluoranthene	1500	900		**10000**	**1600000**		**310**
Chrysene	15000	400		**17000**	**2800000**		**540 J**

TABLE 4-21

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL FROM TEST PITS - NORTH CENTRAL AREA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 2 OF 3

Investigation			**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**	**TP16-01**	**TP16-01**	**TP16-01**	**TP16-02**	**TP16-02**
Sample Number	**Residential**	**Soil Direct**	**16TP-TP1-0205**	**16TP-TP1-0509**	**16TP-TP1-0509-WOOD**	**16TP-TP2-0205**	**16TP-TP2-0510**
Sample Code	**Regional**	**Exposure**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Screening**	**Residential**	**20071025**	**20071025**	**20071025**	**20071025**	**20071025**
Depth Range (feet)	**Levels**	**Criterion**	**2 - 5**	**5 - 9**	**5 - 9**	**2 - 5**	**5 - 10**
Area			**BLDG E107**	**BLDG E107**	**BLDG E107**	**BLDG E107**	**BLDG E107**
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)							
Dibenzo(a,h)anthracene	15	400		**1300**	**160000**		**44**
Fluoranthene	2300000	20000		**49000**	**9400000**		**1100 J**
Fluorene	2300000	28000		**1500**	**250000**		**95 J**
High Molecular Weight PAHs	NA	NA		**167900**	**29530000**		**4414**
Indeno(1,2,3-cd)pyrene	150	900		**4400**	**620000**		**160**
Low Molecular Weight PAHs	NA	NA		**20270**	**2811000**		**798**
Naphthalene	150000	54000		**270**	**61000**		**92**
Phenanthrene	1700000	40000		**5900**	**900000**		**280 J**
Pyrene	1700000	13000		**45000**	**9200000**		**1100 J**
Total PAHs	NA	NA		**188170**	**32341000**		**5212**
Petroleum Hydrocarbons (mg/kg)							
Extractable TPH-Screening Data	NA	500	0.97 U	**310**		**2.1**	**7.2**
TPH (C09-C36)	NA	500		**1300 J**	**480000**		**190**
TPH (C09-C44)	NA	500		**1500 J**	**590000**		**220**

TABLE 4-21

SUMMARY OF CHEMICALS DETECTED IN SHALLOW SUBSURFACE SOIL FROM TEST PITS - NORTH CENTRAL AREA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Notes:
Bolding indicates that the chemical was detected in the sample.
PAHs samples were analyzed by AWL by method SW8270-SIM.
BaP Equivalents = Benzo(a)pyrene equivalent concentration
High Molecular Weight PAHs = Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene
High Molecular Weight PAHs Ecosd = Benzo(a)anthracene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthrancene, Fluoranthene, Pyrene
Low Molecular Weight PAHs = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
Low Molecular Weight PAHs Ecosd = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C_9 to C_{36}.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C_9 to C_{44}.

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.
0 U - No chemicals were detected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and total xylenes
EPA = Environmental Protection Agency
NA = Not applicable/Not available
PAH = Polycyclic aromatic hydrocarbon
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
TPH = Total petroleum hydrocarbon
VOC = Volatile organic compound

TABLE 4-22

SUMMARY OF CHEMICALS DETECTED IN PHASE III EXPLORATORY TEST PIT SOIL SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 1 OF 3

Investigation	ORNL	RIDEM	10	10	10	10	10	10	10	10
Location	Residential	Soil Direct	TP16-ETP1	TP16-ETP2	TP16-ETP3	TP16-ETP4	TP16-ETP5	TP16-ETP6	TP16-ETP7	TP16-ETP8
Sample Number	Regional	Exposure	16TP-ETP1-0708	16TP-ETP2-0809	16TP-ETP3-0809	16TP-ETP4-0809	16TP-ETP5-0809	16TP-ETP6-0809	16TP-ETP7-0809	16TP-ETP8-0809
Sample Code	Screening	Residential	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Levels	Criterion	20071025	20071025	20071025	20071025	20071001	20071025	20071025	20071025
Depth Range			7 - 8	8 - 9	8 - 9	8 - 9	8 - 9	8 - 9	8 - 9	8 - 9
Area			CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	NORTH CEN FFTA	NORTH CEN FFTA
Dioxins (ng/kg)										
1,2,3,4,6,7,8,9-OCDD	13000	NA		20000		3400		4700		
1,2,3,4,6,7,8,9-OCDF	11000	NA		900 J		110		190		
1,2,3,4,6,7,8-HPCDD	390	NA		4000		830		1400		
1,2,3,4,6,7,8-HPCDF	320	NA		510 J		81		170		
1,2,3,4,7,8,9-HPCDF	320	NA		28 J		4 J		5.8 J		
1,2,3,4,7,8-HXCDD	39	NA		49 J		13 J		29 J		
1,2,3,4,7,8-HXCDF	32	NA		31 J		17 J		7.6 J		
1,2,3,6,7,8-HXCDD	32	NA		400 J		150		170		
1,2,3,6,7,8-HXCDF	32	NA		12 J		9.8 J		4.5 J		
1,2,3,7,8,9-HXCDD	32	NA		290		100		150		
1,2,3,7,8,9-HXCDF	32	NA		1.7 J		0.78 J		62 U		
1,2,3,7,8-PECDD	3.9	NA		58 J		42 J		32 J		
1,2,3,7,8-PECDF	110	NA		8.4 J		10 J		3.9 J		
2,3,4,6,7,8-HXCDF	32	NA		13		9.7		4.6		
2,3,4,7,8-PECDF	11	NA		13 J		13 J		4.6 J		
2,3,7,8-TCDD	4.5	NA		13		12		7.4 J		
2,3,7,8-TCDF	32	NA		14 J		11 J		3.5 J		
Dioxin TEQ	4.5	NA		208		99.5		95.0		
Total HPCDD	NA	NA		7300		1500		2600		
Total HPCDF	NA	NA		1300		180 J		350		
Total HXCDD	NA	NA		2800		1100 J		1400		
Total HXCDF	NA	NA		450 J		160 J		150 J		
Total PECDD	NA	NA		690		410 J		330 J		
Total PECDF	NA	NA		200 J		180 J		84 J		
Total TCDD	NA	NA		260		170 J		110 J		
Total TCDF	NA	NA		340		480 J		190 J		
Volatile Organics (ug/kg)										
2-Butanone	28000000	10000000	0.8 U	120 U	8.1	4.8 J	5.4	4.9	8.2	8.2
Acetone	61000000	7800000	4.6 J	290 U	51 J	27 J	23 J	24 J	53 J	31 J
Benzene	1100	2500	0.33 U	340 J	0.39 U	0.33 U	0.21 U	1.4 J	0.3 U	0.27 U
BTEX	NA	NA	0 U	3240	0 U	0 U	0 U	1.4	0 U	0 U
Carbon Disulfide	670000	NA	0.33 U	91 U	0.39 U	0.33 U	0.21 U	0.3 U	0.3 U	4 J
Cyclohexane	7200000	NA	4 J	5800	6.6	0.67 U	0.42 U	13	0.6 U	0.54 U
Ethylbenzene	5700	71000	1.3 U	1300	1.5 U	1.3 U	0.81 U	1.1 U	1.2 U	1.1 U
Isopropylbenzene	2200000	NA	1.3 U	850 J	1.5 U	1.3 U	0.81 U	1.1 U	1.2 U	1.1 U
Methyl Acetate	78000000	NA	3.6 J	390 J	1.5 U	1.3 U	0.81 U	1.1 U	1.2 U	1.1 U
Methyl Cyclohexane	3400000	NA	10	14000 J	17	1.4 J	1.3 J	52	0.32 U	0.29 U
Total Xylenes	600000	110000	3.5 U	1600	4.1 U	3.6 U	2.2 U	3.1 U	3.2 U	2.9 U
Semivolatile Organics (ug/kg)										
2,4-Dimethylphenol	1200000	1400000	57 U	1300 UR	63 U	60 U	280 U	130 J	65 U	64 U
2-Methylnaphthalene	310000	123000	170	100000 J	470	1300	530	310	150	39 U
2-Methylphenol	3100000	NA	65 U	1500 U	72 U	69 U	320 U	130 J	75 U	74 U
4-Methylphenol	310000	NA	57 U	1300 U	180 J	210 J	1000 J	520	380 J	64 U
Acenaphthene	3400000	43000	35 U	5400 J	80	100	460	360	73	39 U
Acenaphthylene	3400000	23000	35 U	790 UR	79	37 U	640	69	40 U	39 U
Anthracene	17000000	35000	35 U	1700 J	190	310	2300	420	92	39 U
Benzo(a)pyrene Equivalents	15	400	50.2	111	764	3593	11516	567	307	55.7
Benzo(a)anthracene	150	900	41	1100 J	570	2300	9300	450	290	75
Benzo(a)pyrene	15	400	38	790 UR	490	2300	7900	360	190	42

TABLE 4-22

SUMMARY OF CHEMICALS DETECTED IN PHASE III EXPLORATORY TEST PIT SOIL SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 2 OF 3

Investigation	ORNL	RIDEM	10	10	10	10	10	10	10	10
Location	Residential	Soil Direct	TP16-ETP1	TP16-ETP2	TP16-ETP3	TP16-ETP4	TP16-ETP5	TP16-ETP6	TP16-ETP7	TP16-ETP8
Sample Number	Regional	Exposure	16TP-ETP1-0708	16TP-ETP2-0809	16TP-ETP3-0809	16TP-ETP4-0809	16TP-ETP5-0809	16TP-ETP6-0809	16TP-ETP7-0809	16TP-ETP8-0809
Sample Code	Screening	Residential	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	Levels	Criterion	20071025	20071025	20071025	20071025	20071001	20071025	20071025	20071025
Depth Range			7 - 8	8 - 9	8 - 9	8 - 9	8 - 9	8 - 9	8 - 9	8 - 9
Area			CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	CREOSOTE DIP TANK	NORTH CEN FFTA	NORTH CEN FFTA
Semivolatile Organics (ug/kg) (continued)			80							
Benzo(b)fluoranthene	150	900		790 UR	740	3100	9000	540	270	61
Benzo(g,h,i)perylene	1700000	800	41	790 UR	390	1800	4400	240	140	39 U
Benzo(k)fluoranthene	1500	900	35 U	790 UR	270	1100	4800	200	150	39 U
Bis(2-ethylhexyl)phthalate	35000	46000	52 U	1200 UR	83 J	56 U	260 U	120 J	330 J	60 U
Carbazole	24000	NA	35 U	790 UR	59	130	220	310	40 U	39 U
Chrysene	15000	400	67	890 J	550	2100	7900	470	270	68
di-n-Butyl Phthalate	6100000	NA	50 U	1100 UR	63 J	67 J	250 U	85 J	91 J	57 U
Dibenzo(a,h)anthracene	15	400	35 U	790 UR	110	590	1300	85	48	39 U
Dibenzofuran	NA	NA	35 U	1800 J	89 J	87 J	370 J	240 J	54 J	39 U
Fluoranthene	2300000	20000	120	3100 J	1200	3200	20000	1500	620	110
Fluorene	2300000	28000	35 U	5200 J	100	130	1100	370	86	39 U
High Molecular Weight PAHs	NA	NA	464	8290	5570	20390	83900	5045	2578	443
Indeno(1,2,3-cd)pyrene	150	900	35 U	790 UR	300	1500	4300	210	110	39 U
Low Molecular Weight PAHs	NA	NA	311	138100	2109	3460	11230	3759	1081	0 U
Naphthalene	3900	54000	74	16000 J	510	520	1100	630	300	39 U
Phenanthrene	1700000	40000	67	9800 J	680	1100	5100	1600	380	39 U
Pyrene	1700000	13000	77	3200 J	950	2400	15000	990	490	87
Total PAHs	NA	NA	775	146390	7679	23850	95130	8804	3659	443
Pesticides/PCBs (ug/kg)										
4,4'-DDT	1700	NA		6.5 J		3.7 UJ		4 UJ		
Aroclor-1260	220	NA		93 J		37 U		40 U		
Endrin Aldehyde	18000	NA		6.9 J		3.7 U		4 U		
Total Aroclor	240	10000		93		0 U		0 U		
Total DDT	NA	NA		6.5		0 U		0 U		
Inorganics (mg/kg)										
Aluminum	77000	NA		5600		6390		6220		
Antimony	31	10		22.3		3.1		3		
Arsenic	0.39	7		5.4		4.2		4.9		
Barium	15000	5500		416		227		299		
Cadmium	70	39		1.9		0.71		2.3		
Calcium	NA	NA		12100		6540		4440		
Chromium	230	1400		33.7		15.3		17.8		
Cobalt	23	NA		5.9 J		4.4 J		4		
Copper	3100	3100		121		82		71.7		
Iron	55000	NA		30100		19400		19200		
Lead	400	150		636		226		314		
Magnesium	NA	NA		2270		2630		1300		
Manganese	1800	390		307		197		205		
Mercury	23	23		0.4		0.16		0.35		
Nickel	1600	1000		17.4 J		13 J		11.8		
Potassium	NA	NA		835		560		773		
Sodium	NA	NA		261		215		232		
Vanadium	390	550		9.1		9.5		9.2		
Zinc	23000	6000		639		348		405		
Petroleum Hydrocarbons (mg/kg)										
Extractable TPH-Screening Data	NA	500	1.1	410	9.6	5.5	8.6	10	4.9	1.4 U

TABLE 4-22

SUMMARY OF CHEMICALS DETECTED IN PHASE III EXPLORATORY TEST PIT SOIL SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Notes:
Bolding indicates that the chemical was detected in the sample.
PAHs samples were analyzed by AWL by method SW8270-SIM.
BaP Equivalents = Benzo(a)pyrene equivalent concentration
High Molecular Weight PAHs = Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene
High Molecular Weight PAHs Ecosd = Benzo(a)anthracene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthrancene, Fluoranthene, Pyrene
Low Molecular Weight PAHs = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
Low Molecular Weight PAHs Ecosd = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C_9 to C_{36}.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C_9 to C_{44}.

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and total xylenes
EPA = Environmental Protection Agency
NA = Not applicable/Not available
PAH = Polycyclic aromatic hydrocarbon
PHC = Petroleum hydrocarbons as diesel fuel
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
TEQ = Toxicity equivalents for 2,3,7,8-TCDD
TPH = Total petroleum hydrocarbon
VOC = Volatile organic compound

TABLE 4-23

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SURFACE SOIL - UNDEVELOPED AREA - DIRECT CONTACT CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential[3]	ORNL Regional Screening Level - Industrial[3]	RIDEM Soil Direct Exposure Residential Criterion[4]	RIDEM Soil Direct Exposure Industrial Criterion[4]	Ecological Criterion
Volatile Organic Compounds (ug/kg)												
2-Butanone	4/32	10	55 J	0.64 - 13	7	22	EBS85-SB01-050196-00	28,000,000 N	190,000,000 N	10,000,000	10,000,000	NA
Acetone	21/34	2 J	3,700 J	1.3 - 13	280	450	28SB-04-NSO-061897-00	61,000,000 N	610,000,000 N	7,800,000	10,000,000	NA
BTEX	3/3	6	36	- - -	19	19	EBS85-SB01-050196-00	NA	NA	NA	NA	NA
Carbon Disulfide	1/36	1.6 J	1.6 J	0.21 - 13	3	2	SB16-093-SO-0102	670,000 N	3,000,000 N	NA	NA	NA
Ethylbenzene	1/36	2 J	2 J	0.43 - 13	3	2	SB16-093-SO-0102	5,700 C	29,000 C	71,000	10,000,000	13,000 [13]
Methylene Chloride	3/36	4 J	4 J	0.53 - 13	4	4	28SB-07-NSO-061897-00, SB16-24-NSO-062600-00, SB16-27-NSO-062600-00	NA	NA	45,000	760,000	400 [14]
Toluene	2/36	6 J	36	0.21 - 13	4	21	EBS85-SB01-050196-00	5,000,000 N	46,000,000 N	190,000	10,000,000	200,000 [15]
Total Chlorinated VOCs	3/27	4	4	1 - 13	4	4	28SB-07-NSO-061897-00, SB16-24-NSO-062600-00, SB16-27-NSO-062600-00	NA	NA	NA	NA	NA
Total Xylenes	1/36	13	13	0.61 - 13	4	13	SB16-093-SO-0102	600,000 N	2,600,000 N	110,000	10,000,000	3,700 [13]
Semivolatile Organic Compounds (ug/kg)												
2-Methylnaphthalene	7/74	4.15 J	10,012 J	6.6 - 440	330	2800	SOURCE2-2-NSD-032604	310,000 N	4,100,000 N	123,000	10,000,000	29,000 [16]
Acenaphthene	10/74	4.93	749	6.7 - 440	83	160	SOURCE2-2-NSD-032604	3,400,000 N	33,000,000 N	43,000	10,000,000	29,000 [16]
Acenaphthylene	10/73	11.28 J	963 J	5.9 - 440	100	270	SOURCE1-2-NSD-032604	3,400,000 N[5]	33,000,000 N[5]	23,000	10,000,000	29,000 [16]
Anthracene	19/74	20.83	2,900	6 - 440	170	440	SB16-052-SO-0002	17,000,000 N	170,000,000 N	35,000	10,000,000	29,000 [16]
Benzo(a)pyrene Equivalents	49/59	3.4	4,608	6.5 - 38	320	380	SOURCE1-2-NSD-032604	NA	NA	**400**	**800**	NA
Benzo(a)anthracene	37/74	39	3,812 J	3.8 - 440	250	410	SOURCE1-2-NSD-032604	**150 C**	**2,100 C**	**900**	7,800	**1,100 [17]**
Benzo(a)pyrene	37/74	35	2,339 J	6.5 - 440	190	290	SOURCE1-2-NSD-032604	**15 C**	**210 C**	**400**	**800**	**1,100 [17]**
Benzo(b)fluoranthene	49/74	34	7,236 J	7.2 - 440	400	540	SOURCE1-2-NSD-032604	**150 C**	**2,100 C**	**900**	7,800	**1,100 [17]**
Benzo(g,h,i)perylene	33/74	37	1,904 J	4.9 - 440	160	250	SOURCE1-2-NSD-032604	1,700,000 N[6]	17,000,000 N[6]	**800**	10,000,000	**1,100 [17]**
Benzo(k)fluoranthene	28/74	27 J	6,221 J	7.7 - 440	260	540	SOURCE1-2-NSD-032604	**1,500 C**	21,000 C	**900**	78,000	**1,100 [17]**
Bis(2-ethylhexyl)phthalate	4/48	36 J	150 J	50 - 440	110	71	SB16-047-SO-0002-AUG	35,000 C	120,000 C	46,000	410,000	**100 [18]**
Carbazole	4/48	66 J	550 J	33 - 440	110	210	SB16-21-NSO-062600-00	24,000 C	86,000 C	NA	NA	NA
Chrysene	43/74	36 J	6,549 J	10 - 440	350	530	SOURCE1-2-NSD-032604	15,000 C	210,000 C	**400**	780,000	**1,100 [17]**
di-n-Butyl Phthalate	16/74	13.09	824.9 J	6.4 - 440	88	150	SOURCE1-2-NSD-032604	6,100,000 N	62,000,000 N	NA	NA	200,000 [15]
Dibenzo(a,h)anthracene	3/69	50 J	54 J	5.6 - 440	70	47	SB16-095-SO-0002	**15 C**	210 C	400	800	1,100 [17]
Dibenzofuran	6/48	37 J	56 J	48 - 440	86	46	28SB-05-NSO-061897-00	NA	NA	NA	NA	NA
Fluoranthene	48/74	44	6,958 J	7.4 - 440	530	760	SOURCE1-2-NSD-032604	2,300,000 N	22,000,000 N	20,000	10,000,000	29,000 [16]
Fluorene	11/74	5.49	984	6.6 - 440	94	220	SOURCE2-2-NSD-032604	2,300,000 N	22,000,000 N	28,000	10,000,000	29,000 [16]
High Molecular Weight PAHs	50/64	38	46,568	330 - 440	2900	3600	SOURCE1-2-NSD-032604	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	28/74	38	2,708 J	7 - 440	170	330	SOURCE1-2-NSD-032604	**150 C**	**2,100 C**	**900**	7,800	**1,100 [17]**
Low Molecular Weight PAHs	32/51	37	19,499	330 - 440	1200	1800	SOURCE2-2-NSD-032604	NA	NA	NA	NA	NA
Naphthalene	6/74	13.46 J	3,685 J	7.5 - 440	160	1200	SOURCE2-2-NSD-032604	3,900 C	20,000 C	54,000	10,000,000	29,000 [16]
Phenanthrene	31/74	37	2,767	5.2 - 440	240	460	SOURCE2-2-NSD-032604	1,700,000 N[6]	17,000,000 N[6]	40,000	10,000,000	29,000 [16]
Pyrene	48/74	38 J	8,017 J	6.6 - 440	490	690	SOURCE1-2-NSD-032604	1,700,000 N	17,000,000 N	13,000	10,000,000	**1,100 [17]**
Total PAHs	50/50	38	50,739	- - -	4700	4700	SOURCE1-2-NSD-032604	NA	NA	NA	NA	NA
Polycyclic Aromatic Hydrocarbons (ug/kg)												
2-Methylnaphthalene	42/53	0.47 J	84	0.48 - 2200	10	11	SB16-075-SO-0002	310,000 N	4,100,000 N	123,000	10,000,000	29,000 [16]
Acenaphthene	49/57	0.17 J	2,400 J	0.17 - 2200	85	96	28SB-01B-NSO-042496-00	3,400,000 N	33,000,000 N	43,000	10,000,000	29,000 [16]
Acenaphthylene	48/57	0.26 J	440	0.83 - 2200	51	26	SB16-21-NSO-062600-00	3,400,000 N[5]	33,000,000 N[5]	23,000	10,000,000	29,000 [16]
Anthracene	54/57	0.29 J	4,600 J	20 - 2200	150	160	28SB-01B-NSO-042496-00	17,000,000 N	170,000,000 N	35,000	10,000,000	29,000 [16]
Benzo(a)pyrene Equivalents	57/57	1.68	4,128	- - -	250	250	SB16-21-NSO-062600-00-D	**15 C**	**210 C**	**400**	**800**	NA
Benzo(a)anthracene	57/57	2.1	4,800	- - -	230	230	SB16-21-NSO-062600-00	**150 C**	**2,100 C**	**900**	7,800	**1,100 [17]**
Benzo(a)pyrene	53/56	0.46 J	2,700	0.61 - 1.7	150	150	SB16-21-NSO-062600-00-D	**15 C**	**210 C**	**400**	**800**	**1,100 [17]**
Benzo(b)fluoranthene	57/57	2	7,400	- - -	320	320	SB16-21-NSO-062600-00, SB16-21-NSO-062600-00-D	**150 C**	**2,100 C**	**900**	7,800	**1,100 [17]**
Benzo(g,h,i)perylene	57/57	2.2	1,200	- - -	130	130	SB16-21-NSO-062600-00-D	1,700,000 N[6]	17,000,000 N[6]	**800**	10,000,000	**1,100 [17]**
Benzo(k)fluoranthene	56/57	1.2	2,300	20 - 20	170	180	SB16-21-NSO-062600-00-D	**1,500 C**	21,000 C	**900**	78,000	**1,100 [17]**
Chrysene	57/57	3.4	5,300	- - -	300	300	SB16-21-NSO-062600-00-D	15,000 C	210,000 C	**400**	780,000	**1,100 [17]**
Dibenzo(a,h)anthracene	52/57	0.61 J	400	2 - 2200	38	40	SB16-21-NSO-062600-00	**15 C**	**210 C**	400	800	1,100 [17]
Fluoranthene	57/57	3	7,900	- - -	450	450	SB16-21-NSO-062600-00-D	2,300,000 N	22,000,000 N	20,000	10,000,000	29,000 [16]

TABLE 4-23

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SURFACE SOIL - UNDEVELOPED AREA - DIRECT CONTACT CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential[3]	ORNL Regional Screening Level - Industrial[3]	RIDEM Soil Direct Exposure Residential Criterion[4]	RIDEM Soil Direct Exposure Industrial Criterion[4]	Ecological Criterion
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)												
Fluorene	48/57	0.21 J	510 J	0.38 - 2200	34	38	28SB-01B-NSO-042496-00	2,300,000 N	22,000,000 N	28,000	10,000,000	29,000 [16]
High Molecular Weight PAHs	57/57	27.41	40,000	- - -	2400	2400	SB16-21-NSO-062600-00-D	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	57/57	1.3	2,500	- - -	150	150	SB16-21-NSO-062600-00-D	**150 C**	**2,100 C**	**900**	7,800	**1,100 [17]**
Low Molecular Weight PAHs	57/57	4.19	8,410	2200 - 2200	550	550	28SB-01B-NSO-042496-00	NA	NA	NA	NA	NA
Naphthalene	42/57	0.59 J	240	0.7 - 2200	32	20	SB16-051-SO-0002	3,900 C	20,000 C	54,000	10,000,000	29,000 [16]
Phenanthrene	57/57	2.3	2,400	2200 - 2200	250	250	SB16-095-SO-0002	1,700,000 N[6]	17,000,000 N[6]	40,000	10,000,000	29,000 [16]
Pyrene	57/57	4.4 J	6,600	- - -	420	420	SB16-21-NSO-062600-00-D	1,700,000 N	17,000,000 N	13,000	10,000,000	**1,100 [15]**
Total PAHs	57/57	32.8	40,000	- - -	2900	2900	SB16-21-NSO-062600-00-D	NA	NA	NA	NA	NA
Pesticides/PCBs (ug/kg)												
4,4'-DDD	1/30	6.8 J	6.8 J	3.3 - 4.2	2	7	SB16-094-SO-0002	2,000 C	7,200 C	NA	NA	21 [17]
4,4'-DDT	1/30	3.7	3.7	3.3 - 4.2	2	4	SB16-26-NSO-062300-00	1,700 C	7,000 C	NA	NA	21 [17]
alpha-BHC	1/30	2.4 J	2.4 J	1.7 - 1.9	0.9	2	SB16-28-NSO-062700-00	77 C	270 C	NA	NA	3 [14]
Aroclor-1260	1/31	19	19	18 - 36	15	14	SB16-21-NSO-062600-00-D	220 C	740 C	NA	NA	40,000 [15]
gamma-Chlordane	1/31	2.9 J	2.9 J	1.7 - 2.1	1	3	SB16-21-NSO-062600-00	1,600 C[7]	6,500 C[7]	NA	NA	**0.03 [14,19]**
Total Aroclor	1/30	19	19	18 - 36	11	14	SB16-21-NSO-062600-00-D	240 C[8]	860 C[8]	10,000	10,000	40,000 [15]
Total DDT	1/21	3.7	6.8	- - -	5	5	SB16-094-SO-0002	NA	NA	NA	NA	21 [17]
Dioxins/Furans (ng/kg)												
1,2,3,4,6,7,8,9-OCDD	8/8	740	3,310	-	1,620	1,620	SB16-25-NSO-062600-00	13,000 C	60,000 C[9]	NA	NA	NA
1,2,3,4,6,7,8,9-OCDF	8/8	15.1	113	-	61.8	61.8	SB16-25-NSO-062600-00	11,000 C	60,000 C[9]	NA	NA	NA
1,2,3,4,6,7,8-HPCDD	8/8	22.5	664	-	171	171	SB16-25-NSO-062600-00	**390 C**	1,800 C[9]	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	8/8	7.4	69.2	-	30.6	30.6	SB16-25-NSO-062600-00	320 C	1,800 C[9]	NA	NA	NA
1,2,3,4,7,8,9-HPCDF	6/8	0.96	4	4.95 - 5	2.2	2.1	SB16-25-NSO-062600-00	320 C	1,800 C[9]	NA	NA	NA
1,2,3,4,7,8-HXCDD	7/8	0.66	8.8	5 - 5	2.6	2.7	SB16-25-NSO-062600-00	39 C	180 C[9]	NA	NA	NA
1,2,3,4,7,8-HXCDF	6/8	0.98	24.4	2.2 - 7.6	5.2	6.1	SB16-25-NSO-062600-00	32 C	180 C[9]	NA	NA	NA
1,2,3,6,7,8-HXCDD	7/8	2.7	36.7	5 - 5	9.2	10.1	SB16-25-NSO-062600-00	**32 C**	180 C[9]	NA	NA	NA
1,2,3,6,7,8-HXCDF	8/8	0.54	10	-	2.8	2.8	SB16-25-NSO-062600-00	32 C	180 C[9]	NA	NA	NA
1,2,3,7,8,9-HXCDD	7/8	1.8	38	5 - 5	9.4	10.4	SB16-25-NSO-062600-00	**32 C**	180 C[9]	NA	NA	NA
1,2,3,7,8,9-HXCDF	1/8	0.31	0.31	4.88 - 5.03	2.2	0.31	SB16-28-NSO-062700-00	32 C	180 C[9]	NA	NA	NA
1,2,3,7,8-PECDD	5/8	1.1	10	5 - 5.03	3.4	3.9	SB16-25-NSO-062600-00	**3.9 C**	18 C[9]	NA	NA	NA
1,2,3,7,8-PECDF	4/8	1	20.5 J	4.88 - 5.03	4.7	6.9	SB16-25-NSO-062600-00	110 C	600 C[9]	NA	NA	NA
2,3,4,6,7,8-HXCDF	8/8	1.4	11.5	5 - 5	3.9	3.9	SB16-25-NSO-062600-00	32 C	180 C[9]	NA	NA	NA
2,3,4,7,8-PECDF	8/8	0.71 J	20 J	-	4.5	4.5	SB16-25-NSO-062600-00	**11 C**	60 C[9]	NA	NA	NA
2,3,7,8-TCDD	4/8	0.26	4	0.99 - 1	1.0	1.6	SB16-25-NSO-062600-00	4.5 C	18 C	NA	NA	NA
2,3,7,8-TCDF	6/8	0.73	28.3	0.57 - 1.4	5.4	7.0	SB16-25-NSO-062600-00	32 C	180 C[9]	NA	NA	NA
2,3,7,8-TCDD Equivalents	8/8	1.19	48.5	-	11.5	11.5	SB16-25-NSO-062600-00	**4.5 C**	**16 C[9]**	NA	NA	NA
Total HPCDD	8/8	50.8	1,220	-	321	321	SB16-25-NSO-062600-00	NA	NA	NA	NA	NA
Total HPCDF	8/8	17.9	156	-	73.4	73.4	SB16-25-NSO-062600-00	NA	NA	NA	NA	NA
Total HXCDD	8/8	7.4	340	-	84.3	84.3	SB16-25-NSO-062600-00	NA	NA	NA	NA	NA
Total HXCDF	8/8	7.8	125	14.3 - 14.3	47.5	47.5	SB16-25-NSO-062600-00	NA	NA	NA	NA	NA
Total PECDD	5/8	1.8	101	5 - 12.6	22.7	34.3	SB16-25-NSO-062600-00	NA	NA	NA	NA	NA
Total PECDF	8/8	7	197	7.3 - 7.3	52.0	52.0	SB16-25-NSO-062600-00	NA	NA	NA	NA	NA
Total TCDD	7/8	0.55	54.4	1 - 1	11.2	12.7	SB16-25-NSO-062600-00	NA	NA	NA	NA	NA
Total TCDF	8/8	4.6 J	495	-	97.2	97.2	SB16-25-NSO-062600-00	NA	NA	NA	NA	NA
Inorganics (mg/kg)												
Aluminum	43/43	2,570	8,590	- - -	5980	5980	SB16-28-NSO-062700-00	77,000 N	990,000 N	NA	NA	pH [17,20]
Antimony	18/43	0.5 J	17.9	0.036 - 0.7	2.1	4.8	SB16-050-SO-0002	31 N	410 N	**10**	820	**0.27 [17]**
Arsenic	41/43	1.3	32.3	1.7 - 1.9	5.4	5.6	SB16-050-SO-0002	**0.39 C**	**1.6 C**	**7**	**7**	**18 [17]**
Barium	43/43	10.2	229	- - -	25.2	25.2	SB16-050-SO-0002	15,000 N	190,000 N	5,500	10,000	330 [16]
Beryllium	31/43	0.078	0.68	0.00078 - 0.0009	0.31	0.43	SB16-A2-01-SO-0102-D	160 N	2,000 N	**0.4**	1.3	21 [17]
Cadmium	35/43	0.038 J	4.4 J	0.038 - 0.46	0.61	0.72	SB16-050-SO-0002	70 N	810 N	39	1,000	**0.36 [17]**
Calcium	34/43	33.2 J	1,540	5.5 - 550	434	537	SB16-072-SO-0002	NA	NA	NA	NA	NA
Chromium	43/43	2.9	24.3	- - -	8.1	8.1	SB16-050-SO-0002	230 N[10]	3,100 N[10,11]	390 [10]	10,000 [10]	26 [21]
Cobalt	43/43	2	13.6	- - -	5.9	5.9	SB16-050-SO-0002	23 N	300 N	NA	NA	**13 [22]**

TABLE 4-23

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SURFACE SOIL - UNDEVELOPED AREA - DIRECT CONTACT CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential[3]	ORNL Regional Screening Level - Industrial[3]	RIDEM Soil Direct Exposure Residential Criterion[4]	RIDEM Soil Direct Exposure Industrial Criterion[4]	Ecological Criterion
Inorganics (mg/kg) (continued)												
Copper	43/43	6.4	143	- - -	20.3	20.3	SB16-050-SO-0002	3,100 N	41,000 N	3,100	10,000	**28** [21]
Iron	43/43	5,930	38,800	- - -	14100	14100	SB16-050-SO-0002	55,000 N	720,000 N	NA	NA	pH [22,20]
Lead	43/43	7	424	- - -	36.3	36.3	SB16-050-SO-0002	**400**	800	**150**	500	**11** [21]
Magnesium	43/43	540	2,990	- - -	1820	1820	SB16-A2-01-SO-0102-D	NA	NA	NA	NA	NA
Manganese	43/43	84.4 J	398	- - -	169	169	SB16-050-SO-0002	1,800 N	19,000 N	**390**	10,000	**220** [22]
Mercury	19/43	0.0046 J	0.26	0.0044 - 0.05	0.015	0.028	SB16-050-SO-0002	23 N[12]	310 N[12]	23	610	**0.1** [23]
Nickel	40/43	2.6 J	20.7 J	4.1 - 7.6	8.4	8.8	SB16-050-SO-0002	1,600 N	20,000 N	1,000	10,000	38 [22]
Potassium	42/43	356	1,960	562 - 562	715	726	SB16-095-SO-0002	NA	NA	NA	NA	NA
Selenium	12/43	0.88	2.6 J	0.084 - 0.45	0.52	1.7	SB16-084-SO-0001	390 N	5,100 N	390	10,000	**0.52** [22]
Silver	14/43	0.32 J	4 J	0.012 - 0.51	1.0	3.0	SB16-053-SO-0002, SB16-054-SO-0002	390 N	5,100 N	200	10,000	4.2 [21]
Sodium	35/43	13.4 J	82	17.8 - 35.2	25.5	28.8	SB16-23-NSO-062600-00	NA	NA	NA	NA	NA
Thallium	18/43	0.53 J	3.5 J	0.061 - 1.2	0.78	1.7	SB16-050-SO-0002	5.1 N	66 N	5.5	140	**1** [15]
Vanadium	43/43	4.7	16.1	- - -	10.4	10.4	SB16-28-NSO-062700-00	390 N	5,200 N	550	10,000	**7.8** [21]
Zinc	43/43	23.4	616	- - -	59.9	59.9	SB16-050-SO-0002	23,000 N	310,000 N	6,000	10,000	**46** [21]
DRO Specific Semivolatile Organics (mg/kg)												
TPH (C09-C36)	2/3	14	14	9.4 - 9.7	9	12	SB16-A2-01-SO-0102	NA	NA	500	2,500	NA
Petroleum Hydrocarbons (mg/kg)												
Extractable TPH-Screening Data	1/2	2.9	2.9	0.97 - 0.97	2	3	16TP-TP2-0002	NA	NA	500	2,500	NA
Total Recoverable TPH	12/17	28	1,750	25 - 33	290	410	28SB-09-NSO-061897-00	NA	NA	**500**	2,500	NA
TPH (C09-C36)	45/45	4.8	1,700	-	130	130	SB16-094-SO-0002	NA	NA	**500**	2,500	NA
TPH (C09-C44)	45/45	4.2	2,200	-	190	190	SB16-094-SO-0002	NA	NA	**500**	2,500	NA
Miscellaneous Parameters												
pH (S.U.)	9/9	5.5	7.8	-	7	7	SB16-23-NSO-062600-00	NA	NA	NA	NA	NA
Total Inorganic Carbon (%)	1/1	0.8	0.8	-	0.8	0.8	SOURCE3-1-NSD-032604					
Total Organic Carbon (mg/kg)	8/8	1,900	6,300	-	3500	3500	SB16-25-NSO-062600-00	NA	NA	NA	NA	NA
Total Residue (%)	8/8	79	97	-	92	92	SB16-22-NSO-062700-00	NA	NA	NA	NA	NA

Notes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
4 - RIDEM, DEM-DSR-01-93, February 2004.
5 - The value for acenaphthene is used as a surrogate for acenaphthylene.
6 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
7 - The value for chlordane was used as a surrogate for gamma-chlordane.
8 - The value for total PCB congeners (Aroclors) is presented.
9 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
10 - The value for chromium VI is presented.
11 - Ten percent of the noncarcinogenic value is less than the carcinogenic value, therefore the noncarcinogenic value is presented.
12 - The value for mercuric chloride is presented.
13 - Canadian Soil Quality Guidelines (CCME, 2006)
14 - Dutch Target Value (MHSPE, 2000)
15 - Oak Ridge National Laboratory - Plant (Efroymson, 1997a)
16 - Ecological Soil Screening Level - Invertebrate
17 - Ecological Soil Screening Level - Mammal
18 - Value is for total phthalates
19 - Value is for total chlordane
20 - Aluminum is considered a COPC only when the soil pH is less than 5.5; iron is not expected to be toxic to plants with a soil pH between 5 and 8.
21 - Ecological Soil Screening Level - Avian
22 - Ecological Soil Screening Level - Plant
23 - Oak Ridge National Laboratory - Invertebrate (Efroymson, 1997b)
Shading indicates that the maximum detected concentration exceeds the screening criterion.

TABLE 4-23

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SURFACE SOIL - UNDEVELOPED AREA - DIRECT CONTACT CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential[3]	ORNL Regional Screening Level - Industrial[3]	RIDEM Soil Direct Exposure Residential Criterion[4]	RIDEM Soil Direct Exposure Industrial Criterion[4]	Ecological Criterion

Qualifiers:
C - Carcinogen.
N - Non-carcinogen.
MAX - Ceiling limit.
SAT - Saturation limit.
J - Estimated value

Acronyms:
COPC = Chemical of potential concern
DRO = Diesel Range Organics
EPA = Environmental Protection Agency
HI = Hazard index
MHSPE = Ministry of Housing, Spatial Planning and Environment
NA = Not available
ORNL = Oak Ridge National Laboratories
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
TPH = Total petroleum hydrocarbons
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C9 to C36.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C9 to C44.
VOC = Volatile organic compound

TABLE 4-24

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SURFACE SOIL - UNDEVELOPED AREA - MIGRATION CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Federal SSL[3] Inhalation - Residential	Fed. SSL[3] Prot. of GW for DAF = 20 - Residential	Federal SSL[3] Inhalation - Industrial	RIDEM GA Leachability Criterion[4]
Volatile Organic Compounds (ug/kg)											
2-Butanone	4/32	10	55 J	0.64 - 13	7	22	EBS85-SB01-050196-00	24,000,000 sat	89,000 N	24,000,000 sat	NA
Acetone	21/34	2 J	3,700 J	1.3 - 13	280	450	28SB-04-NSO-061897-00	NA	130,000 N	NA	NA
BTEX	3/3	6	36	- - -	19	19	EBS85-SB01-050196-00	NA	NA	NA	NA
Carbon Disulfide	1/36	1.6 J	1.6 J	0.21 - 13	3	2	SB16-093-SO-0102	720,000 sat	29,000 N	720,000 sat	NA
Ethylbenzene	1/36	2 J	2 J	0.43 - 13	3	2	SB16-093-SO-0102	400,000 sat	13,000 MCL	400,000 sat	27,000
Methylene Chloride	3/36	4 J	4 J	0.53 - 13	4	4	28SB-07-NSO-061897-00, SB16-24-NSO-062600-00, SB16-27-NSO-062600-00	13,000 C	23 MCL	24,000 C	NA
Toluene	2/36	6 J	36	0.21 - 13	4	21	EBS85-SB01-050196-00	650,000 sat	12,000 MCL	650,000 sat	32,000
Total Chlorinated VOCs	3/27	4	4	1 - 13	4	4	28SB-07-NSO-061897-00, SB16-24-NSO-062600-00, SB16-27-NSO-062600-00	NA	NA	NA	NA
Total Xylenes	1/36	13	13	0.61 - 13	4	13	SB16-093-SO-0102	700,000 N	140,000 N	1,100,000 N	540,000
Semivolatile Organic Compounds (ug/kg)											
2-Methylnaphthalene	7/74	4.15 J	10,012 J	6.6 - 440	330	2,800	SOURCE2-2-NSD-032604	NA	NA	NA	NA
Acenaphthene	10/74	4.93	748.75	6.7 - 440	83	160	SOURCE2-2-NSD-032604	NA	630,000 N	NA	NA
Acenaphthylene	10/73	11.28 J	963.01 J	5.9 - 440	100	270	SOURCE1-2-NSD-032604	NA	NA	NA	NA
Anthracene	19/74	20.83	2,900	6 - 440	170	440	SB16-052-SO-0002	NA	13,000,000 N	NA	NA
BaP Equivalent	49/59	3.4	4,608	6.5 - 38	320	380	SOURCE1-2-NSD-032604	NA	8,200 MCL	NA	240,000
Benzo(a)anthracene	37/74	39	3,812 J	3.8 - 440	250	410	SOURCE1-2-NSD-032604	NA	**3,200 MCL**	NA	NA
Benzo(a)pyrene	37/74	35	2,339 J	6.5 - 440	190	290	SOURCE1-2-NSD-032604	NA	8,200 MCL	NA	240,000
Benzo(b)fluoranthene	49/74	34	7,236 J	7.2 - 440	400	540	SOURCE1-2-NSD-032604	NA	9,800 MCL	NA	NA
Benzo(g,h,i)perylene	33/74	37	1,904 J	4.9 - 440	160	250	SOURCE1-2-NSD-032604	NA	NA	NA	NA
Benzo(k)fluoranthene	28/74	27 J	6,221 J	7.7 - 440	260	540	SOURCE1-2-NSD-032604	NA	9,800 MCL	NA	NA
Bis(2-ethylhexyl)phthalate	4/48	36 J	150 J	50 - 440	110	71	SB16-047-SO-0002-AUG	NA	3,600,000 MCL	NA	120,000
Carbazole	4/48	66 J	550 J	33 - 440	110	210	SB16-21-NSO-062600-00	NA	590 C	NA	NA
Chrysene	43/74	36 J	6,549 J	10 - 440	350	530	SOURCE1-2-NSD-032604	NA	**3,200 MCL**	NA	NA
di-n-Butyl Phthalate	16/74	13.09	824.9 J	6.4 - 440	88	150	SOURCE1-2-NSD-032604	NA	5,000,000 N	NA	NA
Dibenzo(a,h)anthracene	3/69	50 J	54 J	5.6 - 440	70	47	SB16-095-SO-0002	NA	30,000 MCL	NA	NA
Dibenzofuran	6/48	37 J	56 J	48 - 440	86	46	28SB-05-NSO-061897-00	NA	48,000 N	NA	NA
Fluoranthene	48/74	44	6,958 J	7.4 - 440	530	760	SOURCE1-2-NSD-032604	NA	6,300,000 N	NA	NA
Fluorene	11/74	5.49	983.53	6.6 - 440	94	220	SOURCE2-2-NSD-032604	NA	810,000 N	NA	NA
High Molecular Weight PAHs	50/64	38	46,568	330 - 440	2,900	3,600	SOURCE1-2-NSD-032604	NA	NA NA	NA	NA
Indeno(1,2,3-cd)pyrene	28/74	38	2,708 J	7 - 440	170	330	SOURCE1-2-NSD-032604	NA	28,000 MCL	NA	NA
Low Molecular Weight PAHs	32/51	37	19,499	330 - 440	1200	1,800	SOURCE2-2-NSD-032604	NA	NA NA	NA	NA
Naphthalene	6/74	13.46 J	3,685 J	7.5 - 440	160	1,200	SOURCE2-2-NSD-032604	170,000 N	61,000 N	270,000 N	**800**
Phenanthrene	31/74	37	2,767	5.2 - 440	240	460	SOURCE2-2-NSD-032604	NA	NA	NA	NA
Pyrene	48/74	38 J	8,017 J	6.6 - 440	490	690	SOURCE1-2-NSD-032604	NA	4,600,000 N	NA	NA
Total PAHs	50/50	38	50,739	- - -	4,700	4,700	SOURCE1-2-NSD-032604	NA	NA	NA	NA
Polycyclic Aromatic Hydrocarbons (ug/kg)											
2-Methylnaphthalene	42/53	0.47 J	84	0.48 - 2200	10	11	SB16-075-SO-0002	NA	NA	NA	NA
Acenaphthene	49/57	0.17 J	2,400 J	0.17 - 2200	85	96	28SB-01B-NSO-042496-00	NA	630,000 N	NA	NA
Acenaphthylene	48/57	0.26 J	440	0.83 - 2200	51	26	SB16-21-NSO-062600-00	NA	NA	NA	NA
Anthracene	54/57	0.29 J	4,600 J	20 - 2200	150	160	28SB-01B-NSO-042496-00	NA	13,000,000 N	NA	NA
BaP Equivalent	57/57	1.6788	4,128	- - -	250	250	SB16-21-NSO-062600-00-D	NA	8,200 MCL	NA	240,000
Benzo(a)anthracene	57/57	2.1	4,800	- - -	230	230	SB16-21-NSO-062600-00	NA	**3,200 MCL**	NA	NA
Benzo(a)pyrene	53/56	0.46 J	2,700	0.61 - 1.7	150	150	SB16-21-NSO-062600-00-D	NA	8,200 MCL	NA	240,000
Benzo(b)fluoranthene	57/57	2	7,400	- - -	320	320	SB16-21-NSO-062600-00, SB16-21-NSO-062600-00-D	NA	9,800 MCL	NA	NA
Benzo(g,h,i)perylene	57/57	2.2	1,200	- - -	130	130	SB16-21-NSO-062600-00-D	NA	NA	NA	NA
Benzo(k)fluoranthene	56/57	1.2	2,300	20 - 20	170	180	SB16-21-NSO-062600-00-D	NA	9,800 MCL	NA	NA

TABLE 4-24

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SURFACE SOIL - UNDEVELOPED AREA - MIGRATION CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Federal SSL[3] Inhalation - Residential	Fed. SSL[3] Prot. of GW for DAF = 20 - Residential	Federal SSL[3] Inhalation - Industrial	RIDEM GA Leachability Criterion[4]
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)											
Chrysene	57/57	3.4	5,300	- - -	300	300	SB16-21-NSO-062600-00-D	NA	**3,200 MCL**	NA	NA
Dibenzo(a,h)anthracene	52/57	0.61 J	400	2 - 2200	38	40	SB16-21-NSO-062600-00	NA	30,000 MCL	NA	NA
Fluoranthene	57/57	3	7,900	- - -	450	450	SB16-21-NSO-062600-00-D	NA	6,300,000 N	NA	NA
Fluorene	48/57	0.21 J	510 J	0.38 - 2200	34	38	28SB-01B-NSO-042496-00	NA	810,000 N	NA	NA
High Molecular Weight PAHs	57/57	27.41	40,000	- - -	2,400	2,400	SB16-21-NSO-062600-00-D	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	57/57	1.3	2,500	- - -	150	150	SB16-21-NSO-062600-00-D	NA	28,000 MCL	NA	NA
Low Molecular Weight PAHs	57/57	4.19	8,410	2200 - 2200	550	550	28SB-01B-NSO-042496-00	NA	NA	NA	NA
Naphthalene	42/57	0.59 J	240	0.7 - 2200	32	20	SB16-051-SO-0002	170,000 N	61,000 N	270,000 N	800
Phenanthrene	57/57	2.3	2,400	2200 - 2200	250	250	SB16-095-SO-0002	NA	NA	NA	NA
Pyrene	57/57	4.4 J	6,600	- - -	420	420	SB16-21-NSO-062600-00-D	NA	4,600,000 N	NA	NA
Total PAHs	57/57	32.8	40,000	- - -	2,900	2,900	SB16-21-NSO-062600-00-D	NA	NA	NA	NA
Pesticides/PCBs (ug/kg)											
4,4'-DDD	1/30	6.8 J	6.8 J	3.3 - 4.2	2	7	SB16-094-SO-0002	NA	14,000 C	NA	NA
4,4'-DDT	1/30	3.7	3.7	3.3 - 4.2	2	4	SB16-26-NSO-062300-00	750,000 C	26,000 C	1,400,000 C	NA
alpha-BHC	1/30	2.4 J	2.4 J	1.7 - 1.9	0.9	2	SB16-28-NSO-062700-00	760 C	**0.72 C**	1,400 C	NA
Aroclor-1260	1/31	19	19	18 - 36	15	14	SB16-21-NSO-062600-00-D	NA	NA	NA	NA
gamma-Chlordane	1/31	2.9 J	2.9 J	1.7 - 2.1	1	3	SB16-21-NSO-062600-00	72,000 C[5]	9,600 MCL[5]	120,000 C[5]	NA
Total Aroclor	1/30	19	19	18 - 36	11	14	SB16-21-NSO-062600-00-D	NA	NA	NA	10,000
Total DDT	1/21	3.7	6.8	- - -	5	5	SB16-094-SO-0002	NA	NA	NA	NA
Dioxins/Furans (ng/kg)											
1,2,3,4,6,7,8,9-OCDD	8/8	740	3,310	-	1,620	1,620	SB16-25-NSO-062600-00	140,000 C[6]	19,000 C[6]	270,000 C[6]	NA
1,2,3,4,6,7,8,9-OCDF	8/8	15.1	113	-	61.8	61.8	SB16-25-NSO-062600-00	140,000 C[6]	19,000 C[6]	270,000 C[6]	NA
1,2,3,4,6,7,8-HPCDD	8/8	22.5	664	-	171	171	SB16-25-NSO-062600-00	4,300 C[6]	**560 C**	8,000 C[6]	NA
1,2,3,4,6,7,8-HPCDF	8/8	7.4	69.2	-	30.6	30.6	SB16-25-NSO-062600-00	4,300 C[6]	560 C[6]	8,000 C[6]	NA
1,2,3,4,7,8,9-HPCDF	6/8	0.96	4	4.95 - 5	2.2	2.1	SB16-25-NSO-062600-00	4,300 C[6]	560 C[6]	8,000 C[6]	NA
1,2,3,4,7,8-HXCDD	7/8	0.66	8.8	5 - 5	2.6	2.7	SB16-25-NSO-062600-00	430 C[6]	56 C[6]	800 C[6]	NA
1,2,3,4,7,8-HXCDF	6/8	0.98	24.4	2.2 - 7.6	5.2	6.1	SB16-25-NSO-062600-00	430 C[6]	56 C[6]	800 C[6]	NA
1,2,3,6,7,8-HXCDD	7/8	2.7	36.7	5 - 5	9.2	10.1	SB16-25-NSO-062600-00	430 C[6]	56 C[6]	800 C[6]	NA
1,2,3,6,7,8-HXCDF	8/8	0.54	10	-	2.8	2.8	SB16-25-NSO-062600-00	430 C[6]	56 C[6]	800 C[6]	NA
1,2,3,7,8,9-HXCDD	7/8	1.8	38	5 - 5	9.4	10.4	SB16-25-NSO-062600-00	430 C[6]	56 C[6]	800 C[6]	NA
1,2,3,7,8,9-HXCDF	1/8	0.31	0.31	4.88 - 5.03	2.2	0.31	SB16-28-NSO-062700-00	430 C[6]	56 C[6]	800 C[6]	NA
1,2,3,7,8-PECDD	5/8	1.1	10	5 - 5.03	3.4	3.9	SB16-25-NSO-062600-00	43 C[6]	**5.6 C**	80 C[6]	NA
1,2,3,7,8-PECDF	4/8	1	20.5 J	4.88 - 5.03	4.7	6.9	SB16-25-NSO-062600-00	1,400 C[6]	190 C[6]	2,700 C[6]	NA
2,3,4,6,7,8-HXCDF	8/8	1.4	11.5	5 - 5	3.9	3.9	SB16-25-NSO-062600-00	430 C[6]	56 C[6]	800 C[6]	NA
2,3,4,7,8-PECDF	8/8	0.71 J	20 J	-	4.5	4.5	SB16-25-NSO-062600-00	140 C[6]	**19 C**	270 C[6]	NA
2,3,7,8-TCDD	4/8	0.26	4	0.99 - 1	1	1.6	SB16-25-NSO-062600-00	43 C	5.6 MCL	80 C	NA
2,3,7,8-TCDF	6/8	0.73	28.3	0.57 - 1.4	5.4	7	SB16-25-NSO-062600-00	430 C[6]	56 C[6]	800 C[6]	NA
TEQ	8/8	1.19	48.5	-	11.5	11.5	SB16-25-NSO-062600-00	NA	NA	NA	NA
Total HPCDD	8/8	50.8	1,220	-	321	321	SB16-25-NSO-062600-00	NA	NA	NA	NA
Total HPCDF	8/8	17.9	156	-	73.4	73.4	SB16-25-NSO-062600-00	NA	NA	NA	NA
Total HXCDD	8/8	7.4	340	-	84.3	84.3	SB16-25-NSO-062600-00	NA	NA	NA	NA
Total HXCDF	8/8	7.8	125	14.3 - 14.3	47.5	47.5	SB16-25-NSO-062600-00	NA	NA	NA	NA
Total PECDD	5/8	1.8	101	5 - 12.6	22.7	34.3	SB16-25-NSO-062600-00	NA	NA	NA	NA
Total PECDF	8/8	7	197	7.3 - 7.3	52	52	SB16-25-NSO-062600-00	NA	NA	NA	NA
Total TCDD	7/8	0.55	54.4	1 - 1	11.2	12.7	SB16-25-NSO-062600-00	NA	NA	NA	NA
Total TCDF	8/8	4.6 J	495	-	97.2	97.2	SB16-25-NSO-062600-00	NA	NA	NA	NA

TABLE 4-24

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SURFACE SOIL - UNDEVELOPED AREA - MIGRATION CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Federal SSL[3] Inhalation - Residential	Fed. SSL[3] Prot. of GW for DAF = 20 - Residential	Federal SSL[3] Inhalation - Industrial	RIDEM GA Leachability Criterion[4]
Inorganics (mg/kg)											
Aluminum	43/43	2,570	8,590	- - -	5,980	5,980	SB16-28-NSO-062700-00	7,090,000 N	**170 N**	11,000,000 N	NA
Antimony	18/43	0.5 J	17.9	0.036 - 0.7	2.1	4.8	SB16-050-SO-0002	NA	**5.4 MCL**	NA	[7]
Arsenic	41/43	1.3	32.3	1.7 - 1.9	5.4	5.6	SB16-050-SO-0002	769 C	**5.8 C**	1,440 C	NA
Barium	43/43	10.2	229	- - -	25.2	25.2	SB16-050-SO-0002	709,000 N	1,600 MCL	1,100,000 N	[7]
Beryllium	31/43	0.078	0.68	0.00078 - 0.0009	0.31	0.43	SB16-A2-01-SO-0102-D	1,380 C	63 MCL	2,570 C	[7]
Cadmium	35/43	0.038 J	4.4 J	0.038 - 0.46	0.61	0.72	SB16-050-SO-0002	1,840 C	7.5 MCL	3,320 C	[7]
Calcium	34/43	33.2 J	1,540	5.5 - 550	434	537	SB16-072-SO-0002	NA	NA	NA	NA
Chromium	43/43	2.9	24.3	- - -	8.1	8.1	SB16-050-SO-0002	276 C[8]	42 N[8]	515 C[8]	[7]
Cobalt	43/43	2	13.6	- - -	5.9	5.9	SB16-050-SO-0002	1,180 C	**3.3 N**	2,210 C	NA
Copper	43/43	6.4	143	- - -	20.3	20.3	SB16-050-SO-0002	NA	11,000 MCL	NA	NA
Iron	43/43	5,930	38,800	- - -	14,100	14,100	SB16-050-SO-0002	NA	NA	NA	NA
Lead	43/43	7	424	- - -	36.3	36.3	SB16-050-SO-0002	NA	NA	NA	[7]
Magnesium	43/43	540	2,990	- - -	1,820	1,820	SB16-A2-01-SO-0102-D	NA	NA	NA	NA
Manganese	43/43	84.4 J	398	- - -	169	169	SB16-050-SO-0002	70,900 N	2,200 N	110,000 N	NA
Mercury	19/43	0.0046 J	0.26	0.0044 - 0.05	0.015	0.028	SB16-050-SO-0002	2.9 sat	2.1 MCL	2.9 sat	[7]
Nickel	40/43	2.6 J	20.7 J	4.1 - 7.6	8.4	8.8	SB16-050-SO-0002	NA	950 N	NA	[7]
Potassium	42/43	356	1,960	562 - 562	715	726	SB16-095-SO-0002	NA	NA	NA	NA
Selenium	12/43	0.88	2.6 J	0.084 - 0.45	0.52	1.7	SB16-084-SO-0001	NA	5.2 MCL	NA	[7]
Silver	14/43	0.32 J	4 J	0.012 - 0.51	1.0	3.0	SB16-053-SO-0002, SB16-054-SO-0002	NA	31 N	NA	NA
Sodium	35/43	13.4 J	82	17.8 - 35.2	25.5	28.8	SB16-23-NSO-062600-00	NA	NA	NA	NA
Thallium	18/43	0.53 J	3.5 J	0.061 - 1.2	0.78	1.7	SB16-050-SO-0002	NA	**1.1 N**	NA	[7]
Vanadium	43/43	4.7	16.1	- - -	10.4	10.4	SB16-28-NSO-062700-00	NA	5,100 N	NA	NA
Zinc	43/43	23.4	616	- - -	59.9	59.9	SB16-050-SO-0002	NA	14,000 N	NA	NA
DRO Specific Semivolatile Organics (mg/kg)											
TPH (C09-C36)	2/3	14	14	9.4 - 9.7	9	12	SB16-A2-01-SO-0102	NA	NA	NA	NA
Petroleum Hydrocarbons (mg/kg)											
Extractable TPH-Screening Data	1/2	2.9	2.9	0.97 - 0.97	2	3	16TP-TP2-0002	NA	NA	NA	NA
Total Recoverable TPH	12/17	28	1,750	25 - 33	290	410	28SB-09-NSO-061897-00	NA	NA	NA	NA
TPH (C09-C36)	45/45	4.8	1,700	-	130	130	SB16-094-SO-0002	NA	NA	NA	NA
TPH (C09-C44)	45/45	4.2	2,200	-	190	190	SB16-094-SO-0002	NA	NA	NA	NA
Miscellaneous Parameters											
pH (S.U.)	9/9	5.5	7.8	-	7	7	SB16-23-NSO-062600-00	NA	NA	NA	NA
Total Inorganic Carbon (%)	1/1	0.8	0.8	-	0.8	0.8	SOURCE3-1-NSD-032604				
Total Organic Carbon (mg/kg)	8/8	1,900	6,300	-	3,500	3,500	SB16-25-NSO-062600-00	NA	NA	NA	NA
Total Residue (%)	8/8	79	97	-	92	92	SB16-22-NSO-062700-00	NA	NA	NA	NA

Notes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - EPA SSLs. EPA Internet Site at http://risk.lsd.ornl.gov/calc_start.shtml.
4 - RIDEM, DEM-DSR-01-93, February 2004.
5 - The value for chlordane was used as a surrogate for alpha- and gamma-chlordane.
6 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
7 - Leachability criteria for inorganics are based on SPLP/TCLP analysis.
8 - The value for chromium VI is presented.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

TABLE 4-24

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SURFACE SOIL - UNDEVELOPED AREA - MIGRATION CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Federal SSL[3] Inhalation - Residential	Fed. SSL[3] Prot. of GW for DAF = 20 - Residential	Federal SSL[3] Inhalation - Industrial	RIDEM GA Leachability Criterion[4]

Qualifiers:
C - Carcinogenic
N - Non-carcinogenic
MCL - Maximum Contaminant Level - Indicates that the value presented is based on the MCL

sat - Soil saturation concentration
J - Estimated value

Acronyms:
BaP = Benzo(a)pyrene equivalents
DAF = Dilution attenuation factor
DRO = Diesel Range Organics
GW = Groundwater
NA = No Criterion available
PAH = Polycyclic aromatic hydrocarbon
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SSL = Soil Screening Level
TPH = Total petroleum hydrocarbons
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C9 to C36.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C9 to C44.
VOC = Volatile organic compound

TABLE 4-25

SUMMARY OF STATISTICS
PHASE III SUBSURFACE SOIL - UNDEVELOPED AREA - DIRECT CONTACT CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTWON, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential[3]	ORNL Regional Screening Level - Industrial[3]	RIDEM Soil Direct Exposure Residential Criterion[4]	RIDEM Soil Direct Exposure Industrial Criterion[4]
Volatile Organic Compounds (ug/kg)											
1,1,2-Trichloroethane	1/160	5 J	5 J	0.19 - 340	4	5	SB16-07-NSO-051404-04	1,100 C	5,500 C	3,600	100,000
1,1-Dichloroethene	1/160	410 J	410 J	0.43 - 340	6	410	SB16-058-SO-0808	250,000 N	1,100,000 N	**200**	9,500
1,2,4-Trichlorobenzene	1/113	0.86 J	0.86 J	0.2 - 100	2	0.9	SB16-048-SO-0910	78,000 N[5]	790,000 N	96,000	10,000,000
2-Butanone	26/109	4 J	120	0.45 - 670	15	26	SB16-45-NSO-051204-14-D	28,000,000 N	190,000,000 N	10,000,000	10,000,000
2-Hexanone	1/160	400 J	400 J	0.14 - 670	8	400	SB16-07-NSO-051404-04	NA 0	NA 0	NA	NA
4-Methyl-2-Pentanone	1/160	7 J	7 J	0.19 - 670	6	7	SB16-07-NSO-051404-04	5,300,000 N	52,000,000 N	1,200,000	10,000,000
Acetone	79/123	1.7 J	75,000 J	0.96 - 290	840	1,300	28SB-06-NSO-061997-08	61,000,000 N	610,000,000 N	7,800,000	10,000,000
Benzene	8/160	0.9 J	4,800	0.096 - 340	35	650	SB16-058-SO-0808	**1,100 C**	5,600 C	**2,500**	200,000
Bromodichloromethane	1/160	7 J	7 J	0.11 - 340	3	7	SB16-07-NSO-051404-04	10,000 C	46,000 C	10,000	92,000
BTEX	54/162	0.71	25,400	0 - 0	210	640	SB16-058-SO-0808	NA	NA	NA	NA
Carbon Disulfide	17/161	1.1 J	660 J	0.13 - 340	8	46	SB16-058-SO-0808	670,000 N	3,000,000 N	NA	NA
Chlorobenzene	1/160	420 J	420 J	0.1 - 340	6	420	SB16-058-SO-0808	310,000 N	1,500,000 N	210,000	10,000,000
Chloroform	2/160	2 J	450 J	0.11 - 340	6	230	SB16-058-SO-0808	**300 C**	1,500 C	1,200	940,000
Chloromethane	1/160	2 J	2 J	0.22 - 340	4	2	SB16-46-NSO-051304-12	1,700 C	8,400 N	NA	NA
cis-1,2-Dichloroethene	15/138	0.86 J	5,700 J	0.13 - 340	78	690	SB16-079-SO-1818	780,000 N	10,000,000 N	630,000	10,000,000
Cyclohexane	7/109	4 J	5,800	0.15 - 0.8	110	1,700	16TP-ETP2-0809	7,200,000 N	30,000,000 N	NA	NA
Ethylbenzene	40/160	1.1 J	5,500	0.19 - 340	64	250	SB16-058-SO-0808	5,700 C	29,000 C	71,000	10,000,000
Isopropylbenzene	4/109	4.2 J	4,100	0.085 - 1.5	60	1,600	SB16-058-SO-0808	2,200,000 N	11,000,000 N	NA	NA
Methyl Acetate	4/109	3.6 J	910 J	0.49 - 3.2	13	330	SB16-058-SO-0808	78,000,000 N	1,000,000,000 N	NA	NA
Methyl Cyclohexane	12/109	1.3 J	27,000	0.12 - 0.57	460	4,100	SB16-058-SO-0808	3,400,000 N	14,000,000 N	NA	NA
Methylene Chloride	11/160	1.1 J	230 J	0.23 - 320	4	22	MW16-07S-NSO-061900-05	11,000 C	54,000 C	45,000	760,000
Styrene	1/159	1 J	1 J	0.14 - 340	4	1	SB16-07-NSO-051404-04	6,500,000 N	38,000,000 N	13,000	190,000
Tetrachloroethene	1/160	450 J	450 J	0.18 - 340	6	450	SB16-058-SO-0808	570 C	2,700 C	12,000	110,000
Toluene	29/161	0.8 J	4,100	0.091 - 340	29	150	SB16-058-SO-0808	5,000,000 N	46,000,000 N	190,000	10,000,000
Total Chlorinated VOCs	58/162	0.86	7,208	0 - 320	170	470	SB16-079-SO-1818	NA	NA	NA	NA
Total Xylenes	46/160	0.71 J	11,000	0.27 - 340	97	330	SB16-058-SO-0808	600,000 N	2,600,000 N	110,000	10,000,000
trans-1,2-Dichloroethene	9/138	2.2 J	860 J	0.19 - 340	11	120	SB16-079-SO-1818	110,000 N	500,000 N	1,100,000	10,000,000
Trichloroethene	36/161	1 J	3,500	0.12 - 340	94	410	SB16-070-SO-4041	**2,800 C**	14,000 C	13,000	520,000
Vinyl Chloride	10/161	1.5 J	78 J	0.089 - 670	7	21	SB16-079-SO-1818	**60 C**	1,700 C	**20**	3,000
Semivolatile Organic Compounds (ug/kg)											
2,4-Dimethylphenol	2/85	130 J	270 J	52 - 5900	160	200	SB16-46-NSO-051304-12	1,200,000 N	12,000,000 N	1,400,000	10,000,000
2,6-Dinitrotoluene	1/88	2,000	2,000	29 - 5900	160	2,000	SB16-07-NSO-051404-10	61,000 N	620,000 N	NA	NA
2-Methylnaphthalene	15/89	110	120,000 J	33 - 650	2,900	17,000	SB16-07-NSO-051404-04	310,000 N	4,100,000 N	123,000	10,000,000
2-Methylphenol	2/89	130 J	200 J	58 - 5900	170	170	SB16-46-NSO-051304-12	3,100,000 N	31,000,000 N	NA	NA
4-Chloroaniline	1/88	260 J	260 J	29 - 5900	150	260	SB16-46-NSO-051304-12	240,000 N	2,500,000 N	310,000	8,200,000
4-Methylphenol	6/89	180 J	1,000 J	49 - 5900	190	520	16TP-ETP5-0809	310,000 N	3,100,000 N	NA	NA
Acenaphthene	12/83	73	5,400 J	33 - 430	240	1,000	16TP-ETP2-0809	3,400,000 N	33,000,000 N	43,000	10,000,000
Acenaphthylene	6/82	48	810	33 - 430	120	300	16TP-TP1-0509	3,400,000 N[6]	33,000,000 N[6]	23,000	10,000,000
Anthracene	16/83	40	11,000	33 - 430	350	1,300	16TP-TP1-0509	17,000,000 N	170,000,000 N	35,000	10,000,000
Benzo(a)pyrene Equivalents	28/83	0.041	17,995	0 - 73	530	1,600	16TP-TP1-0509	**15 C**	**210 C**	**400**	**800**
Benzo(a)anthracene	24/83	37	19,000	33 - 430	580	1,700	16TP-TP1-0509	**150 C**	**2,100 C**	**900**	**7,800**
Benzo(a)pyrene	23/82	36 J	12,000	33 - 430	440	1,300	16TP-TP1-0509	**15 C**	**210 C**	**400**	**800**
Benzo(b)fluoranthene	26/82	42	17,000	33 - 430	570	1,500	16TP-TP1-0509	**150 C**	**2,100 C**	**900**	**7,800**
Benzo(g,h,i)perylene	20/82	41	5,000	33 - 430	280	790	16TP-TP1-0509	1,700,000 N[7]	17,000,000 N[7]	**800**	10,000,000
Benzo(k)fluoranthene	18/82	43	8,400	33 - 430	310	1,000	16TP-TP1-0509	**1,500 C**	21,000 C	**900**	78,000
Bis(2-ethylhexyl)phthalate	11/88	40 J	560	51 - 5900	170	150	MW16-07S-NSO-061900-05	35,000 C	120,000 C	46,000	410,000
Carbazole	8/88	59	310	33 - 5900	160	150	16TP-ETP6-0809	24,000 C	86,000 C	NA	NA
Chrysene	25/83	41	21,000	33 - 430	580	1,700	16TP-TP1-0509	**15,000 C**	210,000 C	**400**	780,000
di-n-Butyl Phthalate	10/88	47 J	130 J	48 - 5900	150	77	SB16-46-NSO-051304-12	6,100,000 N	62,000,000 N	NA	NA

TABLE 4-25

SUMMARY OF STATISTICS
PHASE III SUBSURFACE SOIL - UNDEVELOPED AREA - DIRECT CONTACT CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTWON, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential[3]	ORNL Regional Screening Level - Industrial[3]	RIDEM Soil Direct Exposure Residential Criterion[4]	RIDEM Soil Direct Exposure Industrial Criterion[4]
Semivolatile Organic Compounds (ug/kg) (continued)											
Dibenzo(a,h)anthracene	12/82	45	1,800	33 - 430	150	390	16TP-TP1-0509	**15 C**	**210 C**	**400**	**800**
Dibenzofuran	10/89	54 J	1,800 J	33 - 5900	200	490	16TP-ETP2-0809	NA	NA	NA	NA
Diethyl Phthalate	1/88	61 J	61 J	36 - 5900	150	61	28SB-12-NSO-061997-06	49,000,000 N	490,000,000 N	340,000	10,000,000
Fluoranthene	30/83	42	60,000	33 - 430	1,400	3,700	16TP-TP1-0509	2,300,000 N	22,000,000 N	**20,000**	10,000,000
Fluorene	13/83	42	5,200 J	33 - 430	250	1,000	16TP-ETP2-0809	2,300,000 N	22,000,000 N	28,000	10,000,000
High Molecular Weight PAHs	32/83	49	199,100	0 - 430	5,000	13,000	16TP-TP1-0509	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	18/82	52	4,900	33 - 430	260	810	16TP-TP1-0509	**150 C**	**2,100 C**	**900**	7,800
Low Molecular Weight PAHs	28/89	36	138,100	0 - 650	4,200	13,000	16TP-ETP2-0809	NA	NA	NA	NA
Naphthalene	13/83	42	16,000 J	33 - 480	380	1,800	16TP-ETP2-0809	**3,900 C**	20,000 C	54,000	10,000,000
Phenanthrene	25/83	36	9,800 J	33 - 430	530	1,500	16TP-ETP2-0809	1,700,000 N[7]	17,000,000 N[7]	40,000	10,000,000
Pyrene	29/83	41	50,000	33 - 430	1,100	3,100	16TP-TP1-0509	1,700,000 N	17,000,000 N	**13,000**	10,000,000
Total PAHs	35/89	49	219,210	0 - 650	8,600	22,000	16TP-TP1-0509	NA	NA	NA	NA
Polycyclic Aromatic Hydrocarbons (ug/kg)											
2-Methylnaphthalene	57/84	0.16 J	280,000	0.17 - 2400	4,200	6,100	SB16-059-SO-0610	310,000 N	4,100,000 N	**123,000**	10,000,000
Acenaphthene	57/93	0.043 J	21,000 J	0.058 - 2400	510	810	28SB-01D-NSO-042696-02-D	3,400,000 N	33,000,000 N	43,000	10,000,000
Acenaphthylene	59/94	0.12 J	2,800	0.11 - 2400	110	100	SB16-055-SO-0206	3,400,000 N[6]	33,000,000 N[6]	23,000	10,000,000
Anthracene	71/94	0.076 J	9,500	0.045 - 2400	280	350	16TP-TP1-0509-SOIL	17,000,000 N	170,000,000 N	35,000	10,000,000
Benzo(a)pyrene Equivalents	77/94	7.4E-05	14,955	0 - 0.038	550	670	SB16-055-SO-0206	**15 C**	**210 C**	**400**	**800**
Benzo(a)anthracene	72/93	0.033 J	16,000	0.047 - 2400	560	710	16TP-TP1-0509-SOIL	**150 C**	**2,100 C**	**900**	**7,800**
Benzo(a)pyrene	70/92	0.072 J	9,600	0.038 - 2400	370	470	16TP-TP1-0509-SOIL	**15 C**	**210 C**	**400**	**800**
Benzo(b)fluoranthene	72/93	0.15 J	12,000	0.088 - 2400	490	610	16TP-TP1-0509-SOIL	**150 C**	**2,100 C**	**900**	**7,800**
Benzo(g,h,i)perylene	72/94	0.072 J	6,700	0.15 - 2400	260	300	SB16-055-SO-0206	1,700,000 N[7]	17,000,000 N[7]	**800**	10,000,000
Benzo(k)fluoranthene	71/93	0.13 J	12,000	0.073 - 2400	420	510	SB16-055-SO-0206	**1,500 C**	21,000 C	**900**	78,000
Chrysene	75/94	0.074 J	17,000	0.1 - 2400	610	740	16TP-TP1-0509-SOIL	**15,000 C**	210,000 C	**400**	780,000
Dibenzo(a,h)anthracene	63/93	0.054 J	2,400	0.059 - 2400	100	110	SB16-055-SO-0206	**15 C**	**210 C**	**400**	**800**
Fluoranthene	72/94	0.62 J	49,000	0.072 - 2400	1,400	1,800	16TP-TP1-0509-SOIL	2,300,000 N	22,000,000 N	**20,000**	10,000,000
Fluorene	65/93	0.13 J	91,000	0.099 - 2400	1,200	1,700	SB16-059-SO-0610	2,300,000 N	22,000,000 N	**28,000**	10,000,000
High Molecular Weight PAHs	77/94	0.074	167,900	0 - 2400	5,400	6,600	16TP-TP1-0509-SOIL	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	73/93	0.054 J	7,200	0.11 - 2400	270	320	SB16-055-SO-0206	**150 C**	**2,100 C**	**900**	7,800
Low Molecular Weight PAHs	75/94	0.61	440,800	0 - 2400	7,700	9,600	SB16-059-SO-0610	NA	NA	NA	NA
Naphthalene	66/94	0.59 J	44,000	0.22 - 2400	1,100	1,500	SB16-059-SO-0610	**3,900 C**	**20,000 C**	54,000	10,000,000
Phenanthrene	73/94	0.35 J	18,000	0.23 - 2400	930	1,200	SB16-091-SO-0610	1,700,000 N[7]	17,000,000 N[7]	40,000	10,000,000
Pyrene	72/93	0.4 J	45,000	0.11 - 2400	1,200	1,600	16TP-TP1-0509-SOIL	1,700,000 N	17,000,000 N	**13,000**	10,000,000
Total PAHs	78/94	0.844	444,861	0 - 0	15,000	18,000	SB16-059-SO-0610	NA	NA	NA	NA
Pesticides/PCBs (ug/kg)											
4,4'-DDD	1/58	4.1 J	4.1 J	3.4 - 8	2	3	SB16-27-NSO-062600-02-D	2,000 C	7,200 C	NA	NA
4,4'-DDT	3/59	3.7	12 J	3.4 - 8	2	6	SB16-056-SO-0206-D	1,700 C	7,000 C	NA	NA
Aroclor-1254	1/59	120 J	120 J	18 - 43	17	120	SB16-099-SO-0206	220 C	740 C	NA	NA
Aroclor-1260	2/59	40 J	93 J	18 - 43	17	67	16TP-ETP2-0809	220 C	740 C	NA	NA
Endosulfan II	1/59	5 J	5 J	3.4 - 8	2	5	SB16-058-SO-0610	370,000 N[8]	3,700,000 N[8]	NA	NA
Endrin Aldehyde	3/59	4.7	9.6 J	3.4 - 8	2	7	SB16-058-SO-0610	18,000 N[9]	180,000 N[9]	NA	NA
Endrin Ketone	1/59	7.9 J	7.9 J	3.4 - 8	2	8	SB16-091-SO-0610	18,000 N[9]	180,000 N[9]	NA	NA
gamma-Chlordane	1/59	8.9 J	8.9 J	1.7 - 2.2	1	9	SB16-28-NSO-062700-04	1,600 C[10]	6,500 C[10]	NA	NA
Total Aroclor	3/59	40	120	0 - 40	9	84	SB16-099-SO-0206	240 C[11]	860 C[11]	10,000	10,000
Total DDT	2/33	6.5	12	0 - 0	0.4	7	SB16-056-SO-0206-D	NA	NA	NA	NA

TABLE 4-25

SUMMARY OF STATISTICS
PHASE III SUBSURFACE SOIL - UNDEVELOPED AREA - DIRECT CONTACT CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTWON, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential[3]	ORNL Regional Screening Level - Industrial[3]	RIDEM Soil Direct Exposure Residential Criterion[4]	RIDEM Soil Direct Exposure Industrial Criterion[4]
Dioxins/Furans (ng/kg)											
1,2,3,4,6,7,8,9-OCDD	11/11	1,310	34,930 J	-	9,800	9,800	SB16-23-NSO-062600-03	**13,000 C**	60,000 C[12]	NA	NA
1,2,3,4,6,7,8,9-OCDF	8/11	9.5	1,790	9.83 - 10.06	370	500	SB16-23-NSO-062600-03	11,000 C	60,000 C[12]	NA	NA
1,2,3,4,6,7,8-HPCDD	11/11	16	8,340 J	-	2,000	2,000	SB16-28-NSO-062700-04	**390 C**	**1,800 C[12]**	NA	NA
1,2,3,4,6,7,8-HPCDF	8/11	6.4	1,870	4.91 - 5.03	310	430	SB16-23-NSO-062600-03	**320 C**	**1,800 C[12]**	NA	NA
1,2,3,4,7,8,9-HPCDF	5/11	1.1	48.4	4.85 - 5.03	9	17	SB16-23-NSO-062600-03	320 C	1,800 C[12]	NA	NA
1,2,3,4,7,8-HXCDD	7/11	0.77	88.1	4.91 - 5.03	25	38	SB16-28-NSO-062700-04	**39 C**	180 C[12]	NA	NA
1,2,3,4,7,8-HXCDF	8/11	1	310 J	4.91 - 5.03	41	55	SB16-28-NSO-062700-04	**32 C**	**180 C[12]**	NA	NA
1,2,3,6,7,8-HXCDD	8/11	2.3	505	4.91 - 5.03	150	200	SB16-28-NSO-062700-04	**32 C**	**180 C[12]**	NA	NA
1,2,3,6,7,8-HXCDF	6/11	1.2	26	4.85 - 5.03	6	9	SB16-23-NSO-062600-03	32 C	180 C[12]	NA	NA
1,2,3,7,8,9-HXCDD	8/11	1.6	556	4.91 - 5.03	140	190	SB16-28-NSO-062700-04	**32 C**	**180 C[12]**	NA	NA
1,2,3,7,8,9-HXCDF	2/11	0.78 J	1.7 J	4.85 - 62	5	1	16TP-ETP2-0809	32 C	180 C[12]	NA	NA
1,2,3,7,8-PECDD	6/11	0.75	119	4.91 - 5.03	30	53	SB16-28-NSO-062700-04	**4 C**	**18 C[12]**	NA	NA
1,2,3,7,8-PECDF	7/11	0.69	121	4.91 - 5.03	17	26	SB16-28-NSO-062700-04	**110 C**	600 C[12]	NA	NA
2,3,4,6,7,8-HXCDF	7/11	1.7	215 J	4.91 - 5.03	27	41	SB16-28-NSO-062700-04	**32 C**	**180 C[12]**	NA	NA
2,3,4,7,8-PECDF	7/11	0.76 J	125	4.91 - 5.03	17	25	SB16-28-NSO-062700-04	**11 C**	**60 C[12]**	NA	NA
2,3,7,8-TCDD	5/11	7.4 J	44.5	0.98 - 1	9	19	SB16-28-NSO-062700-04	**5 C**	**18 C[12]**	NA	NA
2,3,7,8-TCDF	6/11	0.58	125	0.82 - 1.1	16	28	SB16-28-NSO-062700-04	**32 C**	180 C[12]	NA	NA
2,3,7,8-TCDD Equivalents	8/8	0.41	505	-	100	100	SB16-28-NSO-062700-04	**5 C**	**16 C[12]**	NA	NA
Total HPCDD	11/11	38.1	15,510 J	-	3,800	3,800	SB16-28-NSO-062700-04	NA	NA	NA	NA
Total HPCDF	8/11	13.5	4,030 J	1.4 - 10.1	770	1,100	SB16-23-NSO-062600-03	NA	NA	NA	NA
Total HXCDD	9/11	13.9	4,630 J	3.3 - 3.3	1,300	1,600	SB16-28-NSO-062700-04	NA	NA	NA	NA
Total HXCDF	8/11	6.3	1,190	19.7 - 20.1	290	400	SB16-23-NSO-062600-03	NA	NA	NA	NA
Total PECDD	7/11	4.2	897	4.91 - 5.03	290	460	SB16-28-NSO-062700-04	NA	NA	NA	NA
Total PECDF	8/11	1.9	789	0.47 - 10.1	140	190	SB16-28-NSO-062700-04	NA	NA	NA	NA
Total TCDD	8/11	0.72	505	0.98 - 1	130	170	SB16-28-NSO-062700-04	NA	NA	NA	NA
Total TCDF	8/11	3.2 J	1,900 J	0.98 - 1	300	420	SB16-28-NSO-062700-04	NA	NA	NA	NA
Inorganics (mg/kg)											
Aluminum	70/70	2,470 J	12,400	-	5,790	5,790	SB16-22-NSO-062700-06	77,000 N	990,000 N	NA	NA
Antimony	20/70	0.45	22.3	0.039 - 0.91	1.3	4.0	16TP-ETP2-0809	31 N	410 N	**10**	820
Arsenic	64/70	0.81 J	15.1 J	0.97 - 2.4	3.1	3.4	SB16-061-SO-0206	**0.39 C**	**1.6 C**	**7**	**7**
Barium	70/70	6.5	1,100	-	51.0	51.0	SB16-28-NSO-062700-04	15,000 N	190,000 N	5,500	10,000
Beryllium	49/70	0.16	0.89	0.00076 - 0.0011	0.32	0.46	SB16-084-SO-2930	160 N	2,000 N	**0.4**	1.3
Cadmium	47/70	0.044 J	2.4	0.0048 - 1.1	0.39	0.51	SB16-28-NSO-062700-04	70 N	810 N	39	1,000
Calcium	61/70	31.8	23,400	6.8 - 3420	1,540	1,690	SB16-28-NSO-062700-04	NA	NA	NA	NA
Chromium	69/70	2.5	67.2	4 - 4.5	10.6	10.7	SB16-28-NSO-062700-04	230 N[13]	3,100 N[5,13]	390 [13]	10,000 [13]
Cobalt	70/70	1.5 J	10.6 J	-	5.8	5.8	SB16-086-SO-1622, MW16-02D-NSO-052200-64	23 N	300 N	NA	NA
Copper	70/70	5.1	452 J	-	29.2	29.2	SB16-28-NSO-062700-04	3,100 N	41,000 N	3,100	10,000
Iron	70/70	1,630 J	54,300	-	15,100	15,100	SB16-28-NSO-062700-04	55,000 N	720,000 N	NA	NA
Lead	70/70	2 J	2,650	-	78.5	78.5	SB16-28-NSO-062700-04	**400**	**800**	**150**	**500**
Magnesium	68/70	969 J	11,000 J	509 - 966	2,200	2,250	SB16-065-SO-1516	NA	NA	NA	NA
Manganese	70/70	26.8 J	587 J	-	165	165	SB16-28-NSO-062700-04	1,800 N	19,000 N	**390**	10,000
Mercury	22/70	0.0046 J	0.96	0.0044 - 0.06	0.049	0.14	SB16-28-NSO-062700-04	23 N[14]	310 N[14]	23	610
Nickel	66/70	3.9	34.5	2.7 - 13	10.4	10.8	SB16-28-NSO-062700-04	1,600 N	20,000 N	1,000	10,000
Potassium	62/70	377 J	2,280	270 - 2250	726	753	SB16-054-SO-1014	NA	NA	NA	NA
Selenium	23/70	0.3 J	12.4 J	0.082 - 0.99	0.82	2.3	SB16-065-SO-1516	390 N	5,100 N	390	10,000
Silver	24/70	0.28 J	7.8 J	0.013 - 6.9	1.1	2.8	SB16-053-SO-0206	390 N	5,100 N	200	10,000

TABLE 4-25

SUMMARY OF STATISTICS
PHASE III SUBSURFACE SOIL - UNDEVELOPED AREA - DIRECT CONTACT CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTWON, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration(1)	Maximum Detected Concentration(1)	Range of Non-Detects(2)	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential(3)	ORNL Regional Screening Level - Industrial(3)	RIDEM Soil Direct Exposure Residential Criterion(4)	RIDEM Soil Direct Exposure Industrial Criterion(4)
Inorganics (mg/kg) (continued)											
Sodium	59/70	12 J	13,500 J	16.3 - 45.1	254	299	SB16-065-SO-1516	NA	NA	NA	NA
Thallium	20/70	0.71 J	5	0.06 - 1.3	0.67	2.0	SB16-066-SO-0910	5 N	66 N	5.5	140
Vanadium	70/70	4.6	18.9	-	10.5	10.5	SB16-22-NSO-062700-06	390 N	5,200 N	550	10,000
Zinc	70/70	4.1 J	1,610 J	-	106	106	SB16-28-NSO-062700-04	23,000 N	310,000 N	6,000	10,000
Petroleum Hydrocarbons (mg/kg)											
Diesel Range Organics	1/4	82.9	82.9	27.8 - 28.3	31	83	28SB-20-NSO-101398-08	NA	NA	NA	NA
Extractable TPH-Screening Data	44/206	1.1	620	0.94 - 2.9	10	44	SB16-059-SO-0610	NA	NA	**500**	2,500
Oil & Grease	5/6	160	3,360	100 - 100	920	1,100	SB16-46-NSO-051304-12	NA	NA	NA	NA
PHC As Diesel	6/6	36	7,800	-	1,800	1,800	SB16-07-NSO-051404-04	NA	NA	NA	NA
Total Recoverable TPH	6/16	31	810 J	27 - 33	86	210	28SB-08-NSO-061997-02	NA	NA	**500**	2,500
TPH (C09-C36)	61/62	2.8	13,000	9 - 9	370	380	SB16-059-SO-0610	NA	NA	**500**	**2,500**
TPH (C09-C44)	62/62	1.4 J	13,000	-	420	420	SB16-059-SO-0610	NA	NA	**500**	**2,500**
DRO Specific Semivolatile Organics (mg/kg)											
TPH (C09-C36)	2/2	18	98	-	59	59	SB16-065-SO-0506	NA	NA	500	2,500
Miscellaneous Parameters											
pH (S.U.)	28/28	5.6	8.2	-	7	7	SB16-28-NSO-062700-04, SB16-23-NSO-062600-03	NA	NA	NA	NA
Total Organic Carbon (mg/kg)	28/28	890	34,000	-	6,600	6,600	SB16-28-NSO-062700-04	NA	NA	NA	NA
Total Residue (%)	22/22	79	96	-	87	87	MW16-03D-NSO-060100-46	NA	NA	NA	NA

Notes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
4 - RIDEM, DEM-DSR-01-93, February 2004.
5 - Ten percent of the noncarcinogenic value is less than the carcinogenic value, therefore the noncarcinogenic value is presented.
6 - The value for acenaphthene is used as a surrogate for acenaphthylene.
7 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
8 - The value for endosulfan has been used as surrogates for endosulfan II.
9 - The value for endrin has been used as surrogates for endrin aldehyde and endrin ketone.
10 - The value for chlordane is used as a surrogate for gamma-chlordane.
11 - The value for total PCB congeners (Aroclors) is presented.
12 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
13 - The value for chromium VI is presented.
14 - The value for mercuric chloride is presented.

Qualifiers:
C - Carcinogen.
N - Non-carcinogen.
J - Estimated value

TABLE 4-25

SUMMARY OF STATISTICS
PHASE III SUBSURFACE SOIL - UNDEVELOPED AREA - DIRECT CONTACT CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTWON, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential[3]	ORNL Regional Screening Level - Industrial[3]	RIDEM Soil Direct Exposure Residential Criterion[4]	RIDEM Soil Direct Exposure Industrial Criterion[4]

Acronyms:
EPA = Environmental Protection Agency.
HI = Hazard index.
NA = Not available.
PAH = Polycyclic aromatic hydrocarbon.
PCB = Polychlorinated biphenyl.
RI = Remedial Investigation.
RIDEM = Rhode Island Department of Environmental Management.
TPH = Total petroleum hydrocarbons.
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C_9 to C_{36}.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C_9 to C_{44}.
VOC = Volatile organic compound.

TABLE 4-26

SUMMARY OF STATISTICS
PHASE III SUBSURFACE SOIL - UNDEVELOPED AREA - MIGRATION CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Federal SSL[3] Inhalation - Residential	Fed. SSL[3] Prot. of GW for DAF = 20 - Residential	Federal SSL[3] Inhalation - Industrial	RIDEM GA Leachability Criterion[4]
Volatile Organic Compounds (ug/kg)											
1,1,2-Trichloroethane	1/160	5 J	5 J	0.19 - 340	4	5	SB16-07-NSO-051404-04	970 C	18 MCL	1,800 C	100
1,1-Dichloroethene	1/160	410 J	410 J	0.43 - 340	6	410	SB16-058-SO-0808	290,000 N	**58 MCL**	460,000 N	700
1,2,4-Trichlorobenzene	1/113	0.86 J	0.86 J	0.2 - 100	2	0.9	SB16-048-SO-0910	180,000 N	5,300 MCL	270,000 N	140,000
2-Butanone	26/109	4 J	120	0.45 - 670	15	26	SB16-45-NSO-051204-14-D	24,000,000 sat	89,000 N	24,000,000 sat	NA
2-Hexanone	1/160	400 J	400 J	0.14 - 670	8	400	SB16-07-NSO-051404-04	NA	NA	NA	NA
4-Methyl-2-Pentanone	1/160	7 J	7 J	0.19 - 670	6	7	SB16-07-NSO-051404-04	2,700,000 sat	12,000 N	2,700,000 sat	NA
Acetone	79/123	1.7 J	75,000 J	0.96 - 290	840	1,300	28SB-06-NSO-061997-08	NA	130,000 N	NA	NA
Benzene	8/160	0.9 J	4,800	0.096 - 340	35	650	SB16-058-SO-0808	**830 C**	**34 MCL**	**1,600 C**	**200**
Bromodichloromethane	1/160	7 J	7 J	0.11 - 340	3	7	SB16-07-NSO-051404-04	NA	630 MCL	NA 0	NA
BTEX	54/162	0.71	25,400	0 - 0	210	640	SB16-058-SO-0808	NA	NA	NA	NA
Carbon Disulfide	17/161	1.1 J	660 J	0.13 - 340	8	46	SB16-058-SO-0808	720,000 sat	29,000 N	720,000 sat	NA
Chlorobenzene	1/160	420 J	420 J	0.1 - 340	6	420	SB16-058-SO-0808	130,000 N	1,300 MCL	200,000 N	3,200
Chloroform	2/160	2 J	450 J	0.11 - 340	6	230	SB16-058-SO-0808	**280 C**	590 MCL	520 C	NA
Chloromethane	1/160	2 J	2 J	0.22 - 340	4	2	SB16-46-NSO-051304-12	2,100 C	40 N	3,900 C	NA
cis-1,2-Dichloroethene	15/138	0.86 J	5,700 J	0.13 - 340	78	690	SB16-079-SO-1818	NA	**400 MCL**	NA	**1,700**
Cyclohexane	7/109	4 J	5,800	0.15 - 0.8	110	1,700	16TP-ETP2-0809	8,510,000,000,000 N	NA	13,200,000,000,000 N	NA
Ethylbenzene	40/160	1.1 J	5,500	0.19 - 340	64	250	SB16-058-SO-0808	400,000 sat	13,000 MCL	400,000 sat	27,000
Isopropylbenzene	4/109	4.2 J	4,100	0.085 - 1.5	60	1,600	SB16-058-SO-0808	850,000 sat	350,000 N	850,000 sat	NA
Methyl Acetate	4/109	3.6 J	910 J	0.49 - 3.2	13	330	SB16-058-SO-0808	NA	150,000 N	NA	NA
Methyl Cyclohexane	12/109	1.3 J	27,000	0.12 - 0.57	460	4,100	SB16-058-SO-0808	NA	NA	NA	NA
Methylene Chloride	11/160	1.1 J	230 J	0.23 - 320	4	22	MW16-07S-NSO-061900-05	13,000 C	**23 MCL**	24,000 C	NA
Styrene	1/159	1 J	1 J	0.14 - 340	4	1	SB16-07-NSO-051404-04	1,500,000 sat	3,500 MCL	1,500,000 sat	2,900
Tetrachloroethene	1/160	450 J	450 J	0.18 - 340	6	450	SB16-058-SO-0808	11,000 C	**58 MCL**	20,000 C	**100**
Toluene	29/161	0.8 J	4,100	0.091 - 340	29	150	SB16-058-SO-0808	650,000 sat	12,000 MCL	650,000 sat	32,000
Total Chlorinated VOCs	58/162	0.86	7,208	0 - 320	170	470	SB16-079-SO-1818	NA	NA	NA	NA
Total Xylenes	46/160	0.71 J	11,000	0.27 - 340	97	330	SB16-058-SO-0808	700,000 N	140,000 N	1,100,000 N	540,000
trans-1,2-Dichloroethene	9/138	2.2 J	860 J	0.19 - 340	11	120	SB16-079-SO-1818	NA	**680 MCL**	NA	3,300
Trichloroethene	36/161	1 J	3,500	0.12 - 340	94	410	SB16-070-SO-4041	**71 C**	**57 C**	**130 C**	**200**
Vinyl Chloride	10/161	1.5 J	78 J	0.089 - 670	7	21	SB16-079-SO-1818	280 C	**13 MCL**	530 C	300
Semivolatile Organic Compounds (ug/kg)											
2,4-Dimethylphenol	2/85	130 J	270 J	52 - 5900	160	200	SB16-46-NSO-051304-12	NA	9,000 N	NA	NA
2,6-Dinitrotoluene	1/88	2,000	2,000	29 - 5900	160	2,000	SB16-07-NSO-051404-10	NA	**0.85 N**	NA	NA
2-Methylnaphthalene	15/89	110	120,000 J	33 - 650	2,900	17,000	SB16-07-NSO-051404-04	NA	NA	NA	NA
2-Methylphenol	2/89	130 J	200 J	58 - 5900	170	170	SB16-46-NSO-051304-12	NA	14,000 N	NA	NA
4-Chloroaniline	1/88	260 J	260 J	29 - 5900	150	260	SB16-46-NSO-051304-12	NA	970 N	NA	NA
4-Methylphenol	6/89	180 J	1,000 J	49 - 5900	190	520	16TP-ETP5-0809	NA	1,300 N	NA	NA
Acenaphthene	12/83	73	5,400 J	33 - 430	240	1,000	16TP-ETP2-0809	NA	630,000 N	NA	NA
Acenaphthylene	6/82	48	810	33 - 430	120	300	16TP-TP1-0509	NA	NA	NA	NA
Anthracene	16/83	40	11,000	33 - 430	350	1,300	16TP-TP1-0509	NA	13,000,000 N	NA	NA
Benzo(a)pyrene Equivalents	28/83	0.041	17,995	0 - 73	530	1,600	16TP-TP1-0509	NA	**8,200 MCL**	NA	240,000
Benzo(a)anthracene	24/83	37	19,000	33 - 430	580	1,700	16TP-TP1-0509	NA	**3,200 MCL**	NA	NA
Benzo(a)pyrene	23/82	36 J	12,000	33 - 430	440	1,300	16TP-TP1-0509	NA	**8,200 MCL**	NA	240,000
Benzo(b)fluoranthene	26/82	42	17,000	33 - 430	570	1,500	16TP-TP1-0509	NA	**9,800 MCL**	NA	NA
Benzo(g,h,i)perylene	20/82	41	5,000	33 - 430	280	790	16TP-TP1-0509	NA	NA	NA	NA
Benzo(k)fluoranthene	18/82	43	8,400	33 - 430	310	1,000	16TP-TP1-0509	NA	9,800 MCL	NA	NA
Bis(2-ethylhexyl)phthalate	11/88	40 J	560	51 - 5900	170	150	MW16-07S-NSO-061900-05	NA	3,600,000 MCL	NA	120,000
Carbazole	8/88	59	310	33 - 5900	160	150	16TP-ETP6-0809	NA	590 C	NA	NA
Chrysene	25/83	41	21,000	33 - 430	580	1,700	16TP-TP1-0509	NA	**3,200 MCL**	NA	NA
di-n-Butyl Phthalate	10/88	47 J	130 J	48 - 5900	150	77	SB16-46-NSO-051304-12	NA	5,000,000 N	NA	NA

TABLE 4-26

SUMMARY OF STATISTICS
PHASE III SUBSURFACE SOIL - UNDEVELOPED AREA - MIGRATION CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Federal SSL[3] Inhalation - Residential	Fed. SSL[3] Prot. of GW for DAF = 20 - Residential	Federal SSL[3] Inhalation - Industrial	RIDEM GA Leachability Criterion[4]
Semivolatile Organic Compounds (ug/kg) (continued)											
Dibenzo(a,h)anthracene	12/82	45	1,800	33 - 430	150	390	16TP-TP1-0509	NA	30,000 MCL	NA	NA
Dibenzofuran	10/89	54 J	1,800 J	33 - 5900	200	490	16TP-ETP2-0809	NA	48,000 N	NA	NA
Diethyl Phthalate	1/88	61 J	61 J	36 - 5900	150	61	28SB-12-NSO-061997-06	NA	450,000 N	NA	NA
Fluoranthene	30/83	42	60,000	33 - 430	1,400	3,700	16TP-TP1-0509	NA	6,300,000 N	NA	NA
Fluorene	13/83	42	5,200 J	33 - 430	250	1,000	16TP-ETP2-0809	NA	810,000 N	NA	NA
High Molecular Weight PAHs	32/83	49	199,100	0 - 430	5,000	13,000	16TP-TP1-0509	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	18/82	52	4,900	33 - 430	260	810	16TP-TP1-0509	NA	28,000 MCL	NA	NA
Low Molecular Weight PAHs	28/89	36	138,100	0 - 650	4,200	13,000	16TP-ETP2-0809	NA	NA	NA	NA
Naphthalene	13/83	42	16,000 J	33 - 480	380	1,800	16TP-ETP2-0809	170,000 N	61,000 N	270,000 N	**800**
Phenanthrene	25/83	36	9,800 J	33 - 430	530	1,500	16TP-ETP2-0809	NA	NA	NA	NA
Pyrene	29/83	41	50,000	33 - 430	1,100	3,100	16TP-TP1-0509	NA	4,600,000 N	NA	NA
Total PAHs	35/89	49	219,210	0 - 650	8,600	22,000	16TP-TP1-0509	NA	NA	NA	NA
Polycyclic Aromatic Hydrocarbons (ug/kg)											
2-Methylnaphthalene	57/84	0.16 J	280,000	0.17 - 2400	4,200	6,100	SB16-059-SO-0610	NA	NA	NA	NA
Acenaphthene	57/93	0.043 J	21,000 J	0.058 - 2400	510	810	28SB-01D-NSO-042696-02-D	NA	630,000 N	NA	NA
Acenaphthylene	59/94	0.12 J	2,800	0.11 - 2400	110	100	SB16-055-SO-0206	NA	NA	NA	NA
Anthracene	71/94	0.076 J	9,500	0.045 - 2400	280	350	16TP-TP1-0509-SOIL	NA	13,000,000 N	NA	NA
Benzo(a)pyrene Equivalents	77/94	7.4E-05	14,955	0 - 0.038	550	670	SB16-055-SO-0206	NA	**8,200 MCL**	NA	240,000
Benzo(a)anthracene	72/93	0.033 J	16,000	0.047 - 2400	560	710	16TP-TP1-0509-SOIL	NA	**3,200 MCL**	NA	NA
Benzo(a)pyrene	70/92	0.072 J	9,600	0.038 - 2400	370	470	16TP-TP1-0509-SOIL	NA	**8,200 MCL**	NA	240,000
Benzo(b)fluoranthene	72/93	0.15 J	12,000	0.088 - 2400	490	610	16TP-TP1-0509-SOIL	NA	**9,800 MCL**	NA	NA
Benzo(g,h,i)perylene	72/94	0.072 J	6,700	0.15 - 2400	260	300	SB16-055-SO-0206	NA	NA	NA	NA
Benzo(k)fluoranthene	71/93	0.13 J	12,000	0.073 - 2400	420	510	SB16-055-SO-0206	NA	**9,800 MCL**	NA	NA
Chrysene	75/94	0.074 J	17,000	0.1 - 2400	610	740	16TP-TP1-0509-SOIL	NA	**3,200 MCL**	NA	NA
Dibenzo(a,h)anthracene	63/93	0.054 J	2,400	0.059 - 2400	100	110	SB16-055-SO-0206	NA	30,000 MCL	NA	NA
Fluoranthene	72/94	0.62 J	49,000	0.072 - 2400	1,400	1,800	16TP-TP1-0509-SOIL	NA	6,300,000 N	NA	NA
Fluorene	65/93	0.13 J	91,000	0.099 - 2400	1,200	1,700	SB16-059-SO-0610	NA	810,000 N	NA	NA
High Molecular Weight PAHs	77/94	0.074	167,900	0 - 2400	5,400	6,600	16TP-TP1-0509-SOIL	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	73/93	0.054 J	7,200	0.11 - 2400	270	320	SB16-055-SO-0206	NA	28,000 MCL	NA	NA
Low Molecular Weight PAHs	75/94	0.61	440,800	0 - 2400	7,700	9,600	SB16-059-SO-0610	NA	NA	NA	NA
Naphthalene	66/94	0.59 J	44,000	0.22 - 2400	1,100	1,500	SB16-059-SO-0610	170,000 N	61,000 N	270,000 N	**800**
Phenanthrene	73/94	0.35 J	18,000	0.23 - 2400	930	1,200	SB16-091-SO-0610	NA	NA	NA	NA
Pyrene	72/93	0.4 J	45,000	0.11 - 2400	1,200	1,600	16TP-TP1-0509-SOIL	NA	4,600,000 N	NA	NA
Total PAHs	78/94	0.844	444,861	0 - 0	15,000	18,000	SB16-059-SO-0610	NA	NA	NA	NA
Pesticides/PCBs (ug/kg)											
4,4'-DDD	1/58	4.1 J	4.1 J	3.4 - 8	2	3	SB16-27-NSO-062600-02-D	NA	14,000 C	NA	NA
4,4'-DDT	3/59	3.7	12 J	3.4 - 8	2	6	SB16-056-SO-0206-D	750,000 C	26,000 C	1,400,000 C	NA
Aroclor-1254	1/59	120 J	120 J	18 - 43	17	120	SB16-099-SO-0206	NA	NA	NA	NA
Aroclor-1260	2/59	40 J	93 J	18 - 43	17	67	16TP-ETP2-0809	NA	NA	NA	NA
Endosulfan II	1/59	5 J	5 J	3.4 - 8	2	5	SB16-058-SO-0610	NA	20,000 N[5]	NA	NA
Endrin Aldehyde	3/59	4.7	9.6 J	3.4 - 8	2	7	SB16-058-SO-0610	NA	NA	NA	NA
Endrin Ketone	1/59	7.9 J	7.9 J	3.4 - 8	2	8	SB16-091-SO-0610	NA	NA	NA	NA
gamma-Chlordane	1/59	8.9 J	8.9 J	1.7 - 2.2	1	9	SB16-28-NSO-062700-04	72,000 C[6]	9,600 MCL[6]	120,000 C[6]	NA
Total Aroclor	3/59	40	120	0 - 40	9	84	SB16-099-SO-0206	NA	NA	NA	10,000
Total DDT	2/33	6.5	12	0 - 0	0.4	7	SB16-056-SO-0206-D	NA	NA	NA	NA
Dioxins/Furans (ng/kg)											
1,2,3,4,6,7,8,9-OCDD	11/11	1,310	34,930 J	-	9,800	9,800	SB16-23-NSO-062600-03	140,000 C[7]	**19,000 [7]**	270,000 C[7]	NA
1,2,3,4,6,7,8,9-OCDF	8/11	9.5	1,790	9.83 - 10.06	370	500	SB16-23-NSO-062600-03	140,000 C[7]	19,000 [7]	270,000 C[7]	NA

TABLE 4-26

SUMMARY OF STATISTICS
PHASE III SUBSURFACE SOIL - UNDEVELOPED AREA - MIGRATION CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Federal SSL[3] Inhalation - Residential	Fed. SSL[3] Prot. of GW for DAF = 20 - Residential	Federal SSL[3] Inhalation - Industrial	RIDEM GA Leachability Criterion[4]
Dioxins/Furans (ng/kg) (continued)											
1,2,3,4,6,7,8-HPCDD	11/11	16	8,340 J	-	2,000	2,000	SB16-28-NSO-062700-04	**4,300 C[7]**	**560 [7]**	**8,000 C[7]**	NA
1,2,3,4,6,7,8-HPCDF	8/11	6.4	1,870	4.91 - 5.03	310	430	SB16-23-NSO-062600-03	4,300 C[7]	**560 [7]**	8,000 C[7]	NA
1,2,3,4,7,8,9-HPCDF	5/11	1.1	48.4	4.85 - 5.03	9	17	SB16-23-NSO-062600-03	4,300 C[7]	560 [7]	8,000 C[7]	NA
1,2,3,4,7,8-HXCDD	7/11	0.77	88.1	4.91 - 5.03	25	38	SB16-28-NSO-062700-04	430 C[7]	**56 [7]**	800 C[7]	NA
1,2,3,4,7,8-HXCDF	8/11	1	310 J	4.91 - 5.03	41	55	SB16-28-NSO-062700-04	430 C[7]	**56 [7]**	800 C[7]	NA
1,2,3,6,7,8-HXCDD	8/11	2.3	505	4.91 - 5.03	150	200	SB16-28-NSO-062700-04	**430 C[7]**	**56 [7]**	800 C[7]	NA
1,2,3,6,7,8-HXCDF	6/11	1.2	26	4.85 - 5.03	6	9	SB16-23-NSO-062600-03	430 C[7]	56 [7]	800 C[7]	NA
1,2,3,7,8,9-HXCDD	8/11	1.6	556	4.91 - 5.03	140	190	SB16-28-NSO-062700-04	**430 C[7]**	**56 [7]**	800 C[7]	NA
1,2,3,7,8,9-HXCDF	2/11	0.78 J	1.7 J	4.85 - 62	5	1	16TP-ETP2-0809	430 C[7]	56 [7]	800 C[7]	NA
1,2,3,7,8-PECDD	6/11	0.75	119	4.91 - 5.03	30	53	SB16-28-NSO-062700-04	**43 C[7]**	**5.6 [7]**	**80 C[7]**	NA
1,2,3,7,8-PECDF	7/11	0.69	121	4.91 - 5.03	17	26	SB16-28-NSO-062700-04	1,400 C[7]	190 [7]	2,700 C[7]	NA
2,3,4,6,7,8-HXCDF	7/11	1.7	215 J	4.91 - 5.03	27	41	SB16-28-NSO-062700-04	430 C[7]	**56 [7]**	800 C[7]	NA
2,3,4,7,8-PECDF	7/11	0.76 J	125	4.91 - 5.03	17	25	SB16-28-NSO-062700-04	140 C[7]	**19 [7]**	270 C[7]	NA
2,3,7,8-TCDD	5/11	7.4 J	44.5	0.98 - 1	9	19	SB16-28-NSO-062700-04	**43 C**	**5.6 MCL**	80 C	NA
2,3,7,8-TCDF	6/11	0.58	125	0.82 - 1.1	16	28	SB16-28-NSO-062700-04	430 C[7]	**56 [7]**	800 C[7]	NA
TEQ	8/8	0.41	505	-	100	100	SB16-28-NSO-062700-04	NA	NA	NA	NA
Total HPCDD	11/11	38.1	15,510 J	-	3,800	3,800	SB16-28-NSO-062700-04	NA	NA	NA	NA
Total HPCDF	8/11	13.5	4,030 J	1.4 - 10.1	770	1,100	SB16-23-NSO-062600-03	NA	NA	NA	NA
Total HXCDD	9/11	13.9	4,630 J	3.3 - 3.3	1,300	1,600	SB16-28-NSO-062700-04	NA	NA	NA	NA
Total HXCDF	8/11	6.3	1,190	19.7 - 20.1	290	400	SB16-23-NSO-062600-03	NA	NA	NA	NA
Total PECDD	7/11	4.2	897	4.91 - 5.03	290	460	SB16-28-NSO-062700-04	NA	NA	NA	NA
Total PECDF	8/11	1.9	789	0.47 - 10.1	140	190	SB16-28-NSO-062700-04	NA	NA	NA	NA
Total TCDD	8/11	0.72	505	0.98 - 1	130	170	SB16-28-NSO-062700-04	NA	NA	NA	NA
Total TCDF	8/11	3.2 J	1,900 J	0.98 - 1	300	420	SB16-28-NSO-062700-04	NA	NA	NA	NA
Inorganics (mg/kg)											
Aluminum	70/70	2,470 J	12,400	-	5,790	5,790	SB16-22-NSO-062700-06	7,090,000 N	**170 N**	11,000,000 N	NA
Antimony	20/70	0.45	22.3	0.039 - 0.91	1.3	4.0	16TP-ETP2-0809	NA	**5.4 MCL**	NA	[8]
Arsenic	64/70	0.81 J	15.1 J	0.97 - 2.4	3.1	3.4	SB16-061-SO-0206	769 C	**5.8 C**	1,440 C	NA
Barium	70/70	6.5	1,100	-	51.0	51.0	SB16-28-NSO-062700-04	709,000 N	1,600 MCL	1,100,000 N	[8]
Beryllium	49/70	0.16	0.89	0.00076 - 0.0011	0.32	0.46	SB16-084-SO-2930	1,380 C	63 MCL	2,570 C	[8]
Cadmium	47/70	0.044 J	2.4	0.0048 - 1.1	0.39	0.51	SB16-28-NSO-062700-04	1,840 C	7.5 MCL	3,320 C	[8]
Calcium	61/70	31.8	23,400	6.8 - 3420	1,540	1,690	SB16-28-NSO-062700-04	NA	NA	NA	NA
Chromium	69/70	2.5	67.2	4 - 4.5	10.6	10.7	SB16-28-NSO-062700-04	276 C[9]	**42 N[9]**	515 C[9]	[8]
Cobalt	70/70	1.5 J	10.6 J	-	5.8	5.8	SB16-086-SO-1622, MW16-02D-NSO-052200-64	1,180 C	**3.3 N**	2,210 C	NA
Copper	70/70	5.1	452 J	-	29.2	29.2	SB16-28-NSO-062700-04	NA	11,000 MCL	NA	NA
Iron	70/70	1,630 J	54,300	-	15,100	15,100	SB16-28-NSO-062700-04	NA	NA	NA	NA
Lead	70/70	2 J	2,650	-	78.5	78.5	SB16-28-NSO-062700-04	NA	NA	NA	[8]
Magnesium	68/70	969 J	11,000 J	509 - 966	2,200	2,250	SB16-065-SO-1516	NA	NA	NA	NA
Manganese	70/70	26.8 J	587 J	-	165	165	SB16-28-NSO-062700-04	70,900 N	2,200 N	110,000 N	NA
Mercury	22/70	0.0046 J	0.96	0.0044 - 0.06	0.049	0.14	SB16-28-NSO-062700-04	2.9 sat	2.1 MCL	2.9 sat	[8]
Nickel	66/70	3.9	34.5	2.7 - 13	10.4	10.8	SB16-28-NSO-062700-04	NA	950 N	NA	[8]
Potassium	62/70	377 J	2,280	270 - 2250	726	753	SB16-054-SO-1014	NA	NA	NA	NA
Selenium	23/70	0.3 J	12.4 J	0.082 - 0.99	0.82	2.3	SB16-065-SO-1516	NA	**5.2 MCL**	NA	[8]
Silver	24/70	0.28 J	7.8 J	0.013 - 6.9	1.1	2.8	SB16-053-SO-0206	NA	31 N	NA	NA
Sodium	59/70	12 J	13,500 J	16.3 - 45.1	254	299	SB16-065-SO-1516	NA	NA	NA	NA
Inorganics (mg/kg) (Continued)											
Thallium	20/70	0.71 J	5	0.06 - 1.3	0.67	2.0	SB16-066-SO-0910	NA	**1.1 N**	NA	[8]
Vanadium	70/70	4.6	18.9	-	10.5	10.5	SB16-22-NSO-062700-06	NA	5,100 N	NA	NA
Zinc	70/70	4.1 J	1,610 J	-	106	106	SB16-28-NSO-062700-04	NA	14,000 N	NA	NA

TABLE 4-26

SUMMARY OF STATISTICS
PHASE III SUBSURFACE SOIL - UNDEVELOPED AREA - MIGRATION CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Federal SSL[3] Inhalation - Residential	Fed. SSL[3] Prot. of GW for DAF = 20 - Residential	Federal SSL[3] Inhalation - Industrial	RIDEM GA Leachability Criterion[4]
Petroleum Hydrocarbons (mg/kg)											
Diesel Range Organics	1/4	82.9	82.9	27.8 - 28.3	31	83	28SB-20-NSO-101398-08	NA	NA	NA	NA
Extractable TPH-Screening Data	44/206	1.1	620	0.94 - 2.9	10	44	SB16-059-SO-0610	NA	NA	NA	NA
Oil & Grease	5/6	160	3,360	100 - 100	920	1,100	SB16-46-NSO-051304-12	NA	NA	NA	NA
PHC As Diesel	6/6	36	7,800	-	1,800	1,800	SB16-07-NSO-051404-04	NA	NA	NA	NA
Total Recoverable TPH	6/16	31	810 J	27 - 33	86	210	28SB-08-NSO-061997-02	NA	NA	NA	NA
TPH (C09-C36)	61/62	2.8	13,000	9 - 9	370	380	SB16-059-SO-0610	NA	NA	NA	NA
TPH (C09-C44)	62/62	1.4 J	13,000	-	420	420	SB16-059-SO-0610	NA	NA	NA	NA
Dro Specific Semivolatile Organics (mg/kg)											
TPH (C09-C36)	2/2	18	98	-	59	59	SB16-065-SO-0506	NA	NA	NA	NA
Miscellaneous Parameters											
pH (S.U.)	28/28	5.6	8.2	-	7	7	SB16-28-NSO-062700-04, SB16-23-NSO-062600-03	NA	NA	NA	NA
Total Organic Carbon (mg/kg)	28/28	890	34,000	-	6,600	6,600	SB16-28-NSO-062700-04	NA	NA	NA	NA
Total Residue (%)	22/22	79	96	-	87	87	MW16-03D-NSO-060100-46	NA	NA	NA	NA

Notes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - EPA SSLs. EPA Internet Site at http://risk.lsd.ornl.gov/calc_start.shtml.
4 - RIDEM, DEM-DSR-01-93, February 2004.
5 - The value for endosulfan has been used as a surrogate for endosulfan II and endosulfan sulfate.
6 - The value for chlordane was used as a surrogate for gamma-chlordane.
7 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
8 - Leachability criteria for inorganics are based on SPLP/TCLP analysis.
9 - The value for chromium VI is presented.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Qualifiers:
C - Carcinogenic
N - Non-carcinogenic
MCL - Maximum Contaminant Level - Indicates that the value presented is based on the MCL
sat - Soil saturation concentration
J - Estimated value

Acronyms:
BaP = Benzo(a)pyrene equivalents
DAF = Dilution attenuation factor
DRO = Diesel Range Organics
GW = Groundwater
NA = No Criterion available
PAH = Polycyclic aromatic hydrocarbon
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SSL = Soil Screening Level
TPH = Total petroleum hydrocarbons
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C9 to C36.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C9 to C44.
VOC = Volatile organic compound

TABLE 4-27

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SURFACE SOIL - DEVELOPED AREA - DIRECT CONTACT CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential[3]	ORNL Regional Screening Level - Industrial[3]	RIDEM Soil Direct Exposure Residential Criterion[4]	RIDEM Soil Direct Exposure Industrial Criterion[4]	Ecological Criterion
Volatile Organic Compounds (ug/kg)												
Acetone	2/16	2.3 J	4	1 - 1.6	1	3	SB16-A3-04-SO-0102	61,000,000 N	610,000,000 N	7,800,000	10,000,000	NA
Total Chlorinated VOCs	1/19	1.7	1.7	0 - 0	0.09	2	SB16-A3-08-SO-0102	NA	NA	NA	NA	NA
Trichloroethene	1/19	1.7 J	1.7 J	0.22 - 0.34	0.2	2	SB16-A3-08-SO-0102	2,800 C	14,000 C	13,000	520,000	3,000 [12]
Semivolatile Organic Compounds (ug/kg)												
Acenaphthene	1/19	340	340	34 - 40	34	340	SB16-A3-12-SO-0102	3,400,000 N	33,000,000 N	43,000	10,000,000	29,000 [13]
Acenaphthylene	3/19	36	2,500	34 - 40	150	870	SB16-A3-12-SO-0102	3,400,000 N[5]	33,000,000 N[5]	23,000	10,000,000	29,000 [13]
Anthracene	1/19	11,000	11,000	34 - 40	600	11,000	SB16-A3-12-SO-0102	17,000,000 N	170,000,000 N	35,000	10,000,000	29,000 [13]
Benzo(a)pyrene equivalents	5/19	5.25	58,170	34 - 40	3,100	12,000	SB16-A3-12-SO-0102	**15 C**	**210 C**	**400 [6]**	**800 [6]**	NA
Benzo(a)anthracene	3/19	51	40,000	34 - 40	2,100	13,000	SB16-A3-12-SO-0102	**150 C**	**2,100 C**	**900**	**7,800**	**1,100 [14]**
Benzo(a)pyrene	4/19	40	39,000	34 - 40	2,100	9,800	SB16-A3-12-SO-0102	**15 C**	**210 C**	**400**	**800**	**1,100 [14]**
Benzo(b)fluoranthene	5/19	52	52,000	34 - 40	2,800	10,000	SB16-A3-12-SO-0102	**150 C**	**2,100 C**	**900**	**7,800**	**1,100 [14]**
Benzo(g,h,i)perylene	4/19	47	23,000	34 - 40	1,200	5,800	SB16-A3-12-SO-0102	1,700,000 N[6]	17,000,000 N[6]	**800**	10,000,000	**1,100 [14]**
Benzo(k)fluoranthene	2/19	58	23,000	34 - 40	1,200	12,000	SB16-A3-12-SO-0102	**1,500 C**	**21,000 C**	**900**	78,000	**1,100 [14]**
Carbazole	1/19	3,400	3,400	34 - 40	200	3,400	SB16-A3-12-SO-0102	24,000 C	86,000 C	NA	NA	NA
Chrysene	5/19	54	40,000	34 - 40	2,100	8,100	SB16-A3-12-SO-0102	**15,000 C**	210,000 C	**400**	780,000	**1,100 [14]**
Dibenzo(a,h)anthracene	1/19	7,500	7,500	34 - 40	410	7,500	SB16-A3-12-SO-0102	**15 C**	**210 C**	**400**	**800**	**1,100 [14]**
Dibenzofuran	1/19	360 J	360 J	34 - 40	35	360	SB16-A3-12-SO-0102	NA	NA	NA	NA	NA
Fluoranthene	6/19	46	55,000 J	34 - 40	2,900	9,200	SB16-A3-12-SO-0102	2,300,000 N	22,000,000 N	**20,000**	10,000,000	**29,000 [13]**
Fluorene	1/19	880	880	34 - 40	63	880	SB16-A3-12-SO-0102	2,300,000 N	22,000,000 N	28,000	10,000,000	29,000 [13]
High Molecular Weight PAHs	6/19	46	343,500	0 - 0	18,000	58,000	SB16-A3-12-SO-0102	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	3/19	36	22,000	34 - 40	1,200	7,400	SB16-A3-12-SO-0102	**150 C**	**2,100 C**	**900**	**7,800**	**1,100 [14]**
Low Molecular Weight PAHs	4/19	39	39,720	0 - 0	2,100	10,000	SB16-A3-12-SO-0102	NA	NA	NA	NA	NA
Phenanthrene	3/19	39	25,000	34 - 40	1,300	8,400	SB16-A3-12-SO-0102	1,700,000 N[6]	17,000,000 N[6]	40,000	10,000,000	29,000 [13]
Pyrene	5/19	55	42,000	34 - 40	2,200	8,500	SB16-A3-12-SO-0102	1,700,000 N	17,000,000 N	**13,000**	10,000,000	**1,100 [14]**
Total PAHs	6/19	46	383,220	0 - 0	20,000	64,000	SB16-A3-12-SO-0102	NA	NA	NA	NA	NA
Pesticides/PCBs (ug/kg)												
alpha-Chlordane	1/19	29 J	29 J	1.7 - 2	2	29	SB16-A3-04-SO-0102	1,600 C[7]	6,500 C[7]	NA	NA	**0.03 [15,16]**
Endrin Aldehyde	1/19	38 J	38 J	3.4 - 13	4	38	SB16-A3-12-SO-0102	18,000 N[8]	180,000 N[8]	NA	NA	**0.04 [15,17]**
gamma-Chlordane	2/19	8.8 J	31	1.7 - 2	3	20	SB16-A3-04-SO-0102	1,600 C[7]	6,500 C[7]	NA	NA	**0.03 [15,16]**
Inorganics (mg/kg)												
Aluminum	19/19	2,960	7,970	-	5,750	5,750	SB16-A2-10-SO-0102	77,000 N	990,000 N	NA	NA	pH [14,18]
Arsenic	19/19	1.2 J	3.5 J	-	2.1	2.1	SB16-A3-14-SO-0102	**0.39 C**	**1.6 C**	7	7	18 [19]
Barium	19/19	10.5	55.1	-	17.9	17.9	SB16-A2-14-SO-0102	15,000 N	190,000 N	5,500	10,000	330 [13]
Beryllium	19/19	0.29	1.3	-	0.51	0.51	SB16-A3-12-SO-0102	160 N	2,000 N	**0.4**	1.3	21 [14]
Cadmium	17/19	0.031	0.18 J	0.0055 - 0.015	0.083	0.092	SB16-A2-14-SO-0102	70 N	810 N	39	1,000	0.36 [14]
Calcium	12/19	72.3 J	1,630	1.7 - 140	197	303	SB16-A3-12-SO-0102	NA	NA	NA	NA	NA
Chromium	19/19	3.8	24	-	7.7	7.7	SB16-A2-14-SO-0102	230 N[9]	3,100 N[9,10]	390 [10]	10,000 [10]	26 [20]
Cobalt	19/19	2.3 J	11.5	-	5.6	5.6	SB16-A2-24-SO-0102	23 N	300 N	NA	NA	13 [19]
Copper	19/19	4.9	28.3	-	12.0	12.0	SB16-A2-24-SO-0102	3,100 N	41,000 N	3,100	10,000	**28 [20]**
Iron	19/19	7,100	21,700	-	11,700	11,700	SB16-A3-02-SO-0102	55,000 N	720,000 N	NA	NA	pH [19,18]
Lead	19/19	4.2 J	50.1 J	-	11.9	11.9	SB16-A2-07-SO-0102	400	800	150	500	**11 [20]**
Magnesium	19/19	982	2,710	-	1,740	1,740	SB16-A3-02-SO-0102	NA	NA	NA	NA	NA
Manganese	19/19	125 J	303	-	180	180	SB16-A3-02-SO-0102	1,800 N	19,000 N	390	10,000	**220 [19]**
Mercury	5/19	0.0084 J	0.057	0.0061 - 0.0073	0.0086	0.023	SB16-A2-10-SO-0102	23 N[11]	310 N[11]	23	610	0.1 [21]

TABLE 4-27

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SURFACE SOIL - DEVELOPED AREA - DIRECT CONTACT CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential[3]	ORNL Regional Screening Level - Industrial[3]	RIDEM Soil Direct Exposure Residential Criterion[4]	RIDEM Soil Direct Exposure Industrial Criterion[4]	Ecological Criterion
Inorganics (mg/kg) (continued)												
Nickel	19/19	3.3 J	13.9	-	8.3	8.3	SB16-A3-02-SO-0102	1,600 N	20,000 N	1,000	10,000	38 [19]
Potassium	19/19	285	1,260	-	663	663	SB16-A3-12-SO-0102	NA	NA	NA	NA	NA
Selenium	7/19	1.1 J	1.9 J	0.6 - 1.7	0.83	1.4	SB16-A3-09-SO-0102	390 N	5,100 N	390	10,000	**0.52** [19]
Sodium	17/19	11 J	223	6.6 - 7.3	42.8	47.4	SB16-A3-08-SO-0102	NA	NA	NA	NA	NA
Thallium	18/19	0.85 J	2.6	1.6 - 1.6	1.7	1.8	SB16-A3-02-SO-0102	5 N	66 N	5.5	140	**1** [20]
Vanadium	19/19	4.9	14.1	-	9.7	9.7	SB16-A2-10-SO-0102	390 N	5,200 N	550	10,000	**7.8** [20]
Zinc	19/19	19.4 J	84.5	-	40.6	40.6	SB16-A3-12-SO-0102	23,000 N	310,000 N	6,000	10,000	**46** [20]
Diesel Range Organics (mg/kg)												
TPH (C09-C36)	7/19	10	1,600	9.2 - 9.7	130	350	SB16-A3-12-SO-0102	NA	NA	**500**	2,500	NA

Notes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
4 - RIDEM, DEM-DSR-01-93, February 2004.
5 - The value for acenaphthene is used as a surrogate for acenaphthylene.
6 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
7 - The value for chlordane was used as a surrogate for alpha- and gamma-chlordane.
8 - The value for endrin has been used as a surrogate for endrin aldehyde.
9 - The value for chromium VI is presented.
10 - Ten percent of the noncarcinogenic value is less than the carcinogenic value, therefore the noncarcinogenic value is presented.
11 - The value for mercuric chloride is presented.
12 - Canadian Soil Quality Guidelines (EC, 1999)
13 - Ecological Soil Screening Level - Invertebrate
14 - Ecological Soil Screening Level - Mammal
15 - Dutch Target Value (MHSPE, 2000)
16 - Value is for total chlordane
17 - Value for endrin was used.
18 - Aluminum is considered a COPC only when the soil pH is less than 5.5; iron is not expected to be toxic to plants with a soil pH between 5 and 8.
19 - Ecological Soil Screening Level - Plant
20 - Ecological Soil Screening Level - Avian
21 - Oak Ridge National Laboratory - Invertebrate (Efroymson, 1997b)
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Qualifiers:
C - Carcinogen.
N - Non-carcinogen.
J - Estimated value

TABLE 4-27

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SURFACE SOIL - DEVELOPED AREA - DIRECT CONTACT CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential[3]	ORNL Regional Screening Level - Industrial[3]	RIDEM Soil Direct Exposure Residential Criterion[4]	RIDEM Soil Direct Exposure Industrial Criterion[4]	Ecological Criterion

Acronyms:
COPC = Chemical of Potential Concern
EPA = Environmental Protection Agency
HI = Hazard index
MHSPE = Ministry of Housing, Spatial Planning and Environment
NA = Not available
ORNL = Oak Ridge National Laboratories
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
TPH = Total petroleum hydrocarbons
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C_9 to C_{36}.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C_9 to C_{44}.
VOC = Volatile organic compound

TABLE 4-28

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SURFACE SOIL - DEVELOPED AREA - MIGRATION CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Federal SSL[3] Inhalation - Residential	Fed. SSL[3] Prot. of GW for DAF = 20 - Residential	Federal SSL[3] Inhalation - Industrial	RIDEM GA Leachability Criterion[4]
Volatile Organic Compounds (ug/kg)											
Acetone	2/16	2.3 J	4	1 - 1.6	1	3	SB16-A3-04-SO-0102	NA	130,000 N	NA	NA
Total Chlorinated VOCs	1/19	1.7	1.7	0 - 0	0.09	2	SB16-A3-08-SO-0102	NA	NA	NA	NA
Trichloroethene	1/19	1.7 J	1.7 J	0.22 - 0.34	0.2	2	SB16-A3-08-SO-0102	71 C	57 C	130 C	200
Semivolatile Organic Compounds (ug/kg)											
Acenaphthene	1/19	340	340	34 - 40	34	340	SB16-A3-12-SO-0102	NA	630,000 N	NA	NA
Acenaphthylene	3/19	36	2,500	34 - 40	150	870	SB16-A3-12-SO-0102	NA	NA	NA	NA
Anthracene	1/19	11,000	11,000	34 - 40	600	11,000	SB16-A3-12-SO-0102	NA	13,000,000 N	NA	NA
Benzo(a)pyrene Equivalents	5/19	5.25	58,170	34 - 40	3,100	12,000	SB16-A3-12-SO-0102	NA	**8,200 MCL**	NA	240,000
Benzo(a)anthracene	3/19	51	40,000	34 - 40	2,100	13,000	SB16-A3-12-SO-0102	NA	**3,200 MCL**	NA	NA
Benzo(a)pyrene	4/19	40	39,000	34 - 40	2,100	9,800	SB16-A3-12-SO-0102	NA	**8,200 MCL**	NA	240,000
Benzo(b)fluoranthene	5/19	52	52,000	34 - 40	2,800	10,000	SB16-A3-12-SO-0102	NA	**9,800 MCL**	NA	NA
Benzo(g,h,i)perylene	4/19	47	23,000	34 - 40	1,200	5,800	SB16-A3-12-SO-0102	NA	NA	NA	NA
Benzo(k)fluoranthene	2/19	58	23,000	34 - 40	1,200	12,000	SB16-A3-12-SO-0102	NA	**9,800 MCL**	NA	NA
Carbazole	1/19	3,400	3,400	34 - 40	200	3,400	SB16-A3-12-SO-0102	NA	**590 C**	NA	NA
Chrysene	5/19	54	40,000	34 - 40	2,100	8,100	SB16-A3-12-SO-0102	NA	**3,200 MCL**	NA	NA
Dibenzo(a,h)anthracene	1/19	7,500	7,500	34 - 40	410	7,500	SB16-A3-12-SO-0102	NA	30,000 MCL	NA	NA
Dibenzofuran	1/19	360 J	360 J	34 - 40	35	360	SB16-A3-12-SO-0102	NA	48,000 N	NA	NA
Fluoranthene	6/19	46	55,000 J	34 - 40	2,900	9,200	SB16-A3-12-SO-0102	NA	6,300,000 N	NA	NA
Fluorene	1/19	880	880	34 - 40	63	880	SB16-A3-12-SO-0102	NA	810,000 N	NA	NA
High Molecular Weight PAHs	6/19	46	343,500	0 - 0	18,000	58,000	SB16-A3-12-SO-0102	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	3/19	36	22,000	34 - 40	1,200	7,400	SB16-A3-12-SO-0102	NA	28,000 MCL	NA	NA
Low Molecular Weight PAHs	4/19	39	39,720	0 - 0	2,100	10,000	SB16-A3-12-SO-0102	NA	NA	NA	NA
Phenanthrene	3/19	39	25,000	34 - 40	1,300	8,400	SB16-A3-12-SO-0102	NA	NA	NA	NA
Pyrene	5/19	55	42,000	34 - 40	2,200	8,500	SB16-A3-12-SO-0102	NA	4,600,000 N	NA	NA
Total PAHs	6/19	46	383,220	0 - 0	20,000	64,000	SB16-A3-12-SO-0102	NA	NA	NA	NA
Pesticides/PCBs (ug/kg)											
alpha-Chlordane	1/19	29 J	29 J	1.7 - 2	2	29	SB16-A3-04-SO-0102	72,000 C[5]	9,600 MCL[5]	120,000 C[5]	NA
Endrin Aldehyde	1/19	38 J	38 J	3.4 - 13	4	38	SB16-A3-12-SO-0102	NA	NA	NA	NA
gamma-Chlordane	2/19	8.8 J	31	1.7 - 2	3	20	SB16-A3-04-SO-0102	72,000 C[5]	9,600 MCL[5]	120,000 C[5]	NA
Inorganics (mg/kg)											
Aluminum	19/19	2,960	7,970	-	5,750	5,750	SB16-A2-10-SO-0102	7,090,000 N	**170 N**	11,000,000 N	NA
Arsenic	19/19	1.2 J	3.5 J	-	2.1	2.1	SB16-A3-14-SO-0102	769 C	5.8 C	1,440 C	NA
Barium	19/19	10.5	55.1	-	17.9	17.9	SB16-A2-14-SO-0102	709,000 N	1,600 MCLG	1,100,000 N	[6]
Beryllium	19/19	0.29	1.3	-	0.51	0.51	SB16-A3-12-SO-0102	1,380 C	63 MCLG	2,570 C	[6]
Cadmium	17/19	0.031	0.18 J	0.0055 - 0.015	0.083	0.092	SB16-A2-14-SO-0102	1,840 C	7.5 MCLG	3,320 C	[6]
Calcium	12/19	72.3 J	1,630	1.7 - 140	197	303	SB16-A3-12-SO-0102	NA	NA	NA	NA
Chromium	19/19	3.8	24	-	7.7	7.7	SB16-A2-14-SO-0102	276 C[7]	42 N[7]	515 C[7]	[6]
Cobalt	19/19	2.3 J	11.5	-	5.6	5.6	SB16-A2-24-SO-0102	1,180 C	**3.3 N**	2,210 C	NA
Copper	19/19	4.9	28.3	-	12.0	12.0	SB16-A2-24-SO-0102	NA	11,000 MCLG	NA	NA
Iron	19/19	7,100	21,700	-	11,700	11,700	SB16-A3-02-SO-0102	NA	NA	NA	NA
Lead	19/19	4.2 J	50.1 J	-	11.9	11.9	SB16-A2-07-SO-0102	NA	NA	NA	[6]
Magnesium	19/19	982	2,710	-	1,740	1,740	SB16-A3-02-SO-0102	NA	NA	NA	NA
Manganese	19/19	125 J	303	-	180	180	SB16-A3-02-SO-0102	70,900 N	2,200 N	110,000 N	NA
Mercury	5/19	0.0084 J	0.057	0.0061 - 0.0073	0.0086	0.023	SB16-A2-10-SO-0102	2.9 sat	2.1 MCLG	2.9 sat	[6]
Nickel	19/19	3.3 J	13.9	-	8.3	8.3	SB16-A3-02-SO-0102	NA	950 N	NA	[6]
Potassium	19/19	285	1,260	-	663	663	SB16-A3-12-SO-0102	NA	NA	NA	NA

TABLE 4-28

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SURFACE SOIL - DEVELOPED AREA - MIGRATION CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Federal SSL[3] Inhalation - Residential	Fed. SSL[3] Prot. of GW for DAF = 20 - Residential	Federal SSL[3] Inhalation - Industrial	RIDEM GA Leachability Criterion[4]
Inorganics (mg/kg) (continued)											
Selenium	7/19	1.1 J	1.9 J	0.6 - 1.7	0.83	1.4	SB16-A3-09-SO-0102	NA	5.2 MCLG	NA	[6]
Sodium	17/19	11 J	223	6.6 - 7.3	42.8	47.4	SB16-A3-08-SO-0102	NA	NA	NA	NA
Thallium	18/19	0.85 J	2.6	1.6 - 1.6	1.7	1.8	SB16-A3-02-SO-0102	NA	**1.1 N**	NA	[6]
Vanadium	19/19	4.9	14.1	-	9.7	9.7	SB16-A2-10-SO-0102	NA	5,100 N	NA	NA
Zinc	19/19	19.4 J	84.5	-	40.6	40.6	SB16-A3-12-SO-0102	NA	14,000 N	NA	NA
Diesel Range Organics (mg/kg)											
TPH (C09-C36)	7/19	10	1,600	9.2 - 9.7	130	350	SB16-A3-12-SO-0102	NA	NA	NA	NA

Notes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - EPA SSLs. EPA Internet Site at http://risk.lsd.ornl.gov/calc_start.shtml.
4 - RIDEM, DEM-DSR-01-93, February 2004.
5 - The value for chlordane was used as a surrogate for alpha- and gamma-chlordane.
6 - Leachability criteria for inorganics are based on SPLP/TCLP analysis.
7 - The value for chromium VI is presented.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Qualifiers:
C - Carcinogenic
N - Non-carcinogenic
MCL - Maximum Contaminant Level - Indicates that the value presented is based on the MCL
MCLG - Maximum Contaminant Level Goal - Indicates that the value presented is based on the MCLG
sat - Soil saturation concentration
J - Estimated value

Acronyms:
BaP = Benzo(a)pyrene equivalents
DAF = Dilution attenuation factor
GW = Groundwater
NA = No Criterion available
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SSL = Soil Screening Level
SPLP/TCLP = Synthetic Precipitation Leaching Procedure/Toxic Characteristic Leaching Procedure
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C9 to C36.
VOC = Volatile organic compound

TABLE 4-29

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SUBSURFACE SOIL - DEVELOPED AREA - DIRECT CONTACT CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential[3]	ORNL Regional Screening Level - Industrial[3]	RIDEM Soil Direct Exposure Residential Criterion[4]	RIDEM Soil Direct Exposure Industrial Criterion[4]
Volatile Organic Compounds (ug/kg)											
1,1,2-Trichloroethane	1/229	46 J	46 J	0.27 - 630	23	46	SB16-A2-05-SO-1011	1,100 C	5,500 C	3,600	100,000
1,1-Dichloroethene	1/229	0.81 J	0.81 J	0.63 - 630	23	0.8	SB16-A3-18-SO-3940	250,000 N	1,100,000 N	200	9,500
2-Butanone	8/186	1 J	13 J	0.49 - 1300	43	4	MW16-50I-NSO-080504-22	28,000,000 N	190,000,000 N	10,000,000	10,000,000
2-Hexanone	2/229	210 J	230 J	0.2 - 1300	42	220	MW16-59D-NSO-072104-64	NA	NA	NA	NA
Acetone	35/195	1.5 J	290 T	0.78 - 1400	55	27	SB16-31-NSO-022702-56	61,000,000 N	610,000,000 N	7,800,000	10,000,000
BTEX	7/230	1.3	27.7	0 - 0	0.2	6	SB16-A3-38-SO-5455	NA	NA	NA	NA
Carbon Disulfide	12/229	0.8 J	11 J	0.17 - 630	23	2	MW16-49I-NSO-080404-10	670,000 N	3,000,000 N	NA	NA
cis-1,2-Dichloroethene	9/226	0.73 J	8.9	0.19 - 630	23	2	SB16-A3-14-SO-1213	780,000 N	10,000,000 N	630,000	10,000,000
Ethylbenzene	1/229	3.4 J	3.4 J	0.27 - 630	23	3	SB16-A3-38-SO-5455	5,700 C	29,000 C	71,000	10,000,000
Isopropylbenzene	1/157	5.1 J	5.1 J	0.12 - 110	0.6	5	SB16-A2-05-SO-1011	2,200,000 N	11,000,000 N	NA	NA
Methyl Cyclohexane	1/157	3.7 J	3.7 J	0.16 - 160	0.7	4	SB16-A2-05-SO-1011	3,400,000 N	14,000,000 N	NA	NA
Methylene Chloride	14/229	0.51 J	570 T	0.34 - 1000	30	79	SB16-32-NSO-021202-56	11,000 C	54,000 C	45,000	760,000
Tetrachloroethene	7/229	0.95 J	5.9	0.25 - 630	23	2	SB16-A3-39-SO-3738	570 C	2,700 C	12,000	110,000
Toluene	5/229	1.3 J	2.4 J	0.13 - 630	22	2	SB16-A3-25-SO-2425	5,000,000 N	46,000,000 N	190,000	10,000,000
Total Chlorinated VOCs	150/230	0.67	17,000	0 - 440	540	830	SB16-A3-06-SO-3435	NA	NA	NA	NA
Total Xylenes	3/229	3.5 J	23	0.38 - 630	23	10	SB16-A3-38-SO-5455	600,000 N	2,600,000 N	110,000	10,000,000
trans-1,2-Dichloroethene	1/226	2.4 J	2.4 J	0.26 - 630	23	2	SB16-A3-37-SO-3940	110,000 N	500,000 N	1,100,000	10,000,000
Trichloroethene	140/229	0.67 J	17,000	0.15 - 440	540	880	SB16-A3-06-SO-3435	**2,800 C**	**14,000 C**	**13,000**	520,000
Semivolatile Organic Compounds (ug/kg)											
2-Methylnaphthalene	1/34	940	940	33 - 430	100	940	SB16-A2-05-SO-1011	310,000 N	4,100,000 N	123,000	10,000,000
Acenaphthylene	2/32	110	130	34 - 430	77	120	SB16-A3-03-SO-0910	3,400,000 N[5]	33,000,000 N[5]	23,000	10,000,000
Anthracene	1/32	130	130	33 - 430	74	130	SB16-A3-12-SO-0506	17,000,000 N	170,000,000 N	35,000	10,000,000
Benzo(a)pyrene Equivalents	3/32	5.35	862	0 - 42	40	310	SB16-A3-12-SO-0506	**15 C**	**210 C**	**400**	**800**
Benzo(a)anthracene	3/32	52 J	770	34 - 430	91	290	SB16-A3-12-SO-0506	**150 C**	2,100 C	900	7,800
Benzo(a)pyrene	2/32	38 J	550	33 - 430	83	290	SB16-A3-12-SO-0506	**15 C**	**210 C**	**400**	800
Benzo(b)fluoranthene	2/32	66 J	820	33 - 430	92	440	SB16-A3-12-SO-0506	**150 C**	2,100 C	900	7,800
Benzo(g,h,i)perylene	1/32	330	330	33 - 430	80	330	SB16-A3-12-SO-0506	1,700,000 N[6]	17,000,000 N[6]	800	10,000,000
Benzo(k)fluoranthene	1/32	270	270	33 - 430	78	270	SB16-A3-12-SO-0506	1,500 C	21,000 C	900	78,000
Bis(2-ethylhexyl)phthalate	3/34	100 J	2,200	51 - 430	180	1,300	MW16-49I-NSO-080404-10-D	35,000 C	120,000 C	46,000	410,000
Carbazole	1/33	36	36	33 - 430	71	36	SB16-A3-12-SO-0506	24,000 C	86,000 C	NA	NA
Chrysene	3/32	50 J	670	34 - 430	88	260	SB16-A3-12-SO-0506	15,000 C	210,000 C	**400**	780,000
Dibenzo(a,h)anthracene	1/32	120	120	33 - 430	74	120	SB16-A3-12-SO-0506	**15 C**	210 C	400	800
Dibenzofuran	1/34	71 J	71 J	33 - 430	75	71	SB16-A2-05-SO-1011	NA	NA	NA	NA
Fluoranthene	3/32	93	1,600	34 - 430	120	600	SB16-A3-12-SO-0506	2,300,000 N	22,000,000 N	20,000	10,000,000
Fluorene	1/32	55	55	33 - 430	72	55	SB16-A2-05-SO-1011	2,300,000 N	22,000,000 N	28,000	10,000,000
High Molecular Weight PAHs	3/32	268	6,530	0 - 430	280	2,400	SB16-A3-12-SO-0506	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1/32	300	300	33 - 430	79	300	SB16-A3-12-SO-0506	**150 C**	2,100 C	900	7,800
Low Molecular Weight PAHs	4/34	51	995	0 - 430	110	410	SB16-A2-05-SO-1011	NA	NA	NA	NA
Phenanthrene	2/32	51 J	240	33 - 430	74	150	SB16-A3-12-SO-0506	1,700,000 N[6]	17,000,000 N[6]	40,000	10,000,000
Pyrene	3/32	70	1,100	34 - 430	100	420	SB16-A3-12-SO-0506	1,700,000 N	17,000,000 N	13,000	10,000,000
Total PAHs	4/34	398	7,010	0 - 270	270	2,200	SB16-A3-12-SO-0506	NA	NA	NA	NA
Polycyclic Aromatic Hydrocarbons (ug/kg)											
2-Methylnaphthalene	3/10	0.74 J	340	22 - 26	42	110	SB16-A2-05-SO-1011	310,000 N	4,100,000 N	123,000	10,000,000
Acenaphthene	3/12	0.089 J	12	22 - 28	10	4	SB16-A2-05-SO-1011	3,400,000 N	33,000,000 N	43,000	10,000,000
Acenaphthylene	1/12	12	12	0.77 - 55	12	12	SB16-A2-05-SO-1011	3,400,000 N[5]	33,000,000 N[5]	23,000	10,000,000
Anthracene	2/12	0.039 J	0.059 J	2.2 - 26	7	0.05	SB16-A2-29-SO-1112	17,000,000 N	170,000,000 N	35,000	10,000,000
Benzo(a)pyrene Equivalents	4/12	0.02884	0.506	0 - 0	0.07	0.2	SB16-29-NSO-011701-20	15 C	210 C	400	800
Benzo(a)anthracene	3/11	0.057 J	0.2 J	2.2 - 26	7	0.1	SB16-A2-05-SO-1011	150 C	2,100 C	900	7,800

TABLE 4-29

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SUBSURFACE SOIL - DEVELOPED AREA - DIRECT CONTACT CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential[3]	ORNL Regional Screening Level - Industrial[3]	RIDEM Soil Direct Exposure Residential Criterion[4]	RIDEM Soil Direct Exposure Industrial Criterion[4]
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)											
Benzo(a)pyrene	1/11	0.046 J	0.046 J	0.77 - 26	8	0.05	SB16-A2-28-SO-1516	15 C	210 C	400	800
Benzo(b)fluoranthene	4/11	0.1 J	5 J	4.4 - 26	7	1	SB16-29-NSO-011701-20	150 C	2,100 C	900	7,800
Benzo(g,h,i)perylene	3/11	0.12 J	0.37 J	4.4 - 26	8	0.2	SB16-A2-05-SO-1011	1,700,000 N[6]	17,000,000 N[6]	800	10,000,000
Benzo(k)fluoranthene	3/11	0.099 J	0.25 J	2.2 - 26	8	0.1	SB16-A2-05-SO-1011	1,500 C	21,000 C	900	78,000
Chrysene	4/12	0.15 J	6 J	2.2 - 26	7	2	SB16-29-NSO-011701-20	15,000 C	210,000 C	400	780,000
Dibenzo(a,h)anthracene	1/12	0.065 J	0.065 J	0.77 - 26	7	0.07	SB16-A2-28-SO-1516	15 C	210 C	400	800
Fluoranthene	6/12	0.24 J	22 J	0.13 - 24	8	6	MW16-49I-NSO-080404-10	2,300,000 N	22,000,000 N	20,000	10,000,000
Fluorene	3/11	0.18 J	27	4.4 - 26	10	9	SB16-A2-05-SO-1011	2,300,000 N	22,000,000 N	28,000	10,000,000
High Molecular Weight PAHs	7/12	1.056	43	22 - 24	11	11	MW16-49I-NSO-080404-10	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	3/11	0.094 J	0.35 J	2.2 - 26	8	0.2	SB16-A2-05-SO-1011	150 C	2,100 C	900	7,800
Low Molecular Weight PAHs	4/12	3.459	443	2.2 - 24	44	110	SB16-A2-05-SO-1011	NA	NA	NA	NA
Naphthalene	3/12	1.5	33	22 - 28	12	12	SB16-A2-05-SO-1011	3,900 C	20,000 C	54,000	10,000,000
Phenanthrene	3/12	0.68 J	19	0.4 - 24	8	9	SB16-A2-05-SO-1011	1,700,000 N[6]	17,000,000 N[6]	40,000	10,000,000
Pyrene	5/12	0.17 J	21 J	2.8 - 26	8	4	MW16-49I-NSO-080404-10	1,700,000 N	17,000,000 N	13,000	10,000,000
Total PAHs	7/12	4.52	447	0 - 0	44	76	SB16-A2-05-SO-1011	NA	NA	NA	NA
Inorganics (mg/kg)											
Aluminum	29/29	1,900	9,200	-	4,780	4,780	MW16-22D-NSO-011601-59	77,000 N	990,000 N	NA	NA
Antimony	1/29	0.4 J	0.4 J	0.045 - 0.68	0.13	0.4	MW16-14D-NSO-013001-57	31 N	410 N	10	820
Arsenic	32/32	0.53 J	3.4	-	1.7	1.7	EBS81-RSPT-01S-120297-09	**0.39 C**	**1.6 C**	7	7
Barium	32/32	3 J	29.4	-	13.2	13.2	SB16-A2-07-SO-0910	15,000 N	190,000 N	5,500	10,000
Beryllium	28/29	0.14	0.72 J	0.46 - 0.46	0.41	0.42	SB16-A2-07-SO-0910	160 N	2,000 N	**0.4**	1.3
Cadmium	17/32	0.011 J	1.6	0.0048 - 0.06	0.11	0.19	SB16-A2-14-SO-0708	70 N	810 N	39	1,000
Calcium	18/29	44	1,900	1.5 - 1820	378	422	MW16-14D-NSO-013001-57	NA	NA	NA	NA
Chromium	32/32	1.9	14.2	-	6.8	6.8	MW16-22D-NSO-011601-59	230 N[7]	3,100 N[7,8]	390 [7]	10,000 [7]
Cobalt	29/29	1.7 J	15.3 J	-	5.5	5.5	SB16-A3-02-SO-0506	23 N	300 N	NA	NA
Copper	29/29	2.8	43.3 J	-	10.7	10.7	MW16-22D-NSO-011601-59-D	3,100 N	41,000 N	3,100	10,000
Iron	29/29	4,580	25,600	-	11,900	11,900	SB16-A3-02-SO-0506	55,000 N	720,000 N	NA	NA
Lead	32/32	2	13.7 J	-	5.8	5.8	SB16-A3-02-SO-0506	400	800	150	500
Magnesium	29/29	726	4,910 J	-	1,980	1,980	MW16-22D-NSO-011601-59	NA	NA	NA	NA
Manganese	29/29	41.4	760	-	179	179	SB16-A3-02-SO-0506	1,800 N	19,000 N	**390**	10,000
Mercury	4/32	0.0083 J	0.021	0.0059 - 0.1	0.0096	0.014	SB16-A2-14-SO-0708	23 N[9]	310 N[9]	23	610
Nickel	29/29	2.7 J	21.2 J	-	8.9	8.9	SB16-A3-02-SO-0506	1,600 N	20,000 N	1,000	10,000
Potassium	24/29	300	1,710	393 - 1210	652	704	SB16-A2-28-SO-1516	NA	NA	NA	NA
Selenium	10/32	0.42 J	2.4	0.17 - 1.8	0.7	1.5	SB16-A2-07-SO-0910	390 N	5,100 N	390	10,000
Sodium	20/29	7.6 J	359	7.1 - 82.8	47.7	59.0	SB16-A2-28-SO-1516	NA	NA	NA	NA
Thallium	20/29	0.51 J	2.7	0.47 - 1.1	1.2	1.6	SB16-A2-07-SO-0910	5 N	66 N	5.5	140
Vanadium	29/29	3.6	18.4	-	9.5	9.5	MW16-22D-NSO-011601-59	390 N	5,200 N	550	10,000
Zinc	29/29	14.4	72.4	-	32.9	32.9	SB16-A2-14-SO-0708	23,000 N	310,000 N	6,000	10,000
Miscellaneous Parameters											
Carbon (mg/kg)	7/7	1,200	2,600	-	1,700	1,700	MW16-22D-NSO-011601-59	NA	NA	NA	NA
Percent Moisture (%)	7/7	7.7	17.5	-	13	13	SB16-29-NSO-011701-20	NA	NA	NA	NA
pH (S.U.)	9/9	5.8	7.5	-	6	6	MW16-50I-NSO-080504-22	NA	NA	NA	NA
Total Organic Carbon (mg/kg)	32/53	1,100 J	8,100	1100 - 1200	1,600	2,300	MW16-50I-NSO-080504-22	NA	NA	NA	NA
Total Residue (%)	7/7	79	93	-	86	86	MW16-22D-NSO-011601-59-D	NA	NA	NA	NA
Total Solids (%)	7/7	82.5	92.3	-	87	87	MW16-15R-NSO-012201-51	NA	NA	NA	NA

TABLE 4-29

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SUBSURFACE SOIL - DEVELOPED AREA - DIRECT CONTACT CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential[3]	ORNL Regional Screening Level - Industrial[3]	RIDEM Soil Direct Exposure Residential Criterion[4]	RIDEM Soil Direct Exposure Industrial Criterion[4]
Petroleum Hydrocarbons (mg/kg)											
Diesel Range Organics	2/2	11	25	-	20	20	MW16-50I-NSO-080504-22	NA	NA	NA	NA
Oil & Grease	3/4	1.3	160	1 - 100	62	82	MW16-50I-NSO-080504-22	NA	NA	NA	NA
Total Petroleum Hydrocarbons	3/3	27.1	124	-	67	67	EBS60-RSPT-01-071497-02	NA	NA	500	2,500
TPH (C09-C36)	3/3	13	1,300	-	440	440	SB16-A2-05-SO-1011	NA	NA	**500**	2,500
TPH (C09-C44)	3/3	14	960	-	330	330	SB16-A2-05-SO-1011	NA	NA	**500**	2,500
DRO Specific Semivolatile Organics (mg/kg)											
TPH (C09-C36)	6/22	11	510	9.1 - 11	36	120	SB16-A2-05-SO-1011	NA	NA	**500**	2,500

Notes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
4 - RIDEM, DEM-DSR-01-93, February 2004.
5 - The value for acenaphthene is used as a surrogate for acenaphthylene.
6 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
7 - The value for chromium VI is presented.
8 - Ten percent of the noncarcinogenic value is less than the carcinogenic value, therefore the noncarcinogenic value is presented.
9 - The value for mercuric chloride is presented.

Qualifiers:
C - Carcinogen.
N - Non-carcinogen.
J - Estimated value

Acronyms:
EPA = Environmental Protection Agency
HI = Hazard index
NA = Not available
ORNL = Oak Ridge National Laboratories
PAH = Polycyclic aromatic hydrocarbon
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
TPH = Total petroleum hydrocarbons
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C_9 to C_{36}.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C_9 to C_{44}.
VOC = Volatile organic compound

TABLE 4-30

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SUBSURFACE SOIL - DEVELOPED AREA - MIGRATION CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Federal SSL[3] Inhalation - Residential	Fed. SSL[3] Prot. of GW for DAF = 20 - Residential	Federal SSL[3] Inhalation - Industrial	RIDEM GA Leachability Criterion[4]
Volatile Organic Compounds (ug/kg)											
1,1,2-Trichloroethane	1/229	46 J	46 J	0.27 - 630	23	46	SB16-A2-05-SO-1011	970 C	**18 MCL**	1,800 C	100
1,1-Dichloroethene	1/229	0.81 J	0.81 J	0.63 - 630	23	0.8	SB16-A3-18-SO-3940	290,000 N	58 MCL	460,000 N	700
2-Butanone	8/186	1 J	13 J	0.49 - 1300	43	4	MW16-50I-NSO-080504-22	24,000,000 sat	89,000 N	24,000,000 sat	NA
2-Hexanone	2/229	210 J	230 J	0.2 - 1300	42	220	MW16-59D-NSO-072104-64	NA	NA	NA	NA
Acetone	35/195	1.5 J	290 T	0.78 - 1400	55	27	SB16-31-NSO-022702-56	NA	130,000 N	NA	NA
BTEX	7/230	1.3	27.7	0 - 0	0.2	6	SB16-A3-38-SO-5455	NA	NA	NA	NA
Carbon Disulfide	12/229	0.8 J	11 J	0.17 - 630	23	2	MW16-49I-NSO-080404-10	720,000 sat	29,000 N	720,000 sat	NA
cis-1,2-Dichloroethene	9/226	0.73 J	8.9	0.19 - 630	23	2	SB16-A3-14-SO-1213	NA	400 MCL	NA	1,700
Ethylbenzene	1/229	3.4 J	3.4 J	0.27 - 630	23	3	SB16-A3-38-SO-5455	400,000 sat	13,000 MCL	400,000 sat	27,000
Isopropylbenzene	1/157	5.1 J	5.1 J	0.12 - 110	0.6	5	SB16-A2-05-SO-1011	850,000 sat	350,000 N	850,000 sat	NA
Methyl Cyclohexane	1/157	3.7 J	3.7 J	0.16 - 160	0.7	4	SB16-A2-05-SO-1011	NA	NA	NA	NA
Methylene Chloride	14/229	0.51 J	570 T	0.34 - 1000	30	79	SB16-32-NSO-021202-56	13,000 C	**23 MCL**	24,000 C	NA
Tetrachloroethene	7/229	0.95 J	5.9	0.25 - 630	23	2	SB16-A3-39-SO-3738	11,000 C	58 MCL	20,000 C	100
Toluene	5/229	1.3 J	2.4 J	0.13 - 630	22	2	SB16-A3-25-SO-2425	650,000 sat	12,000 MCL	650,000 sat	32,000
Total Chlorinated VOCs	150/230	0.67	17,000	0 - 440	540	830	SB16-A3-06-SO-3435	NA	NA	NA	NA
Total Xylenes	3/229	3.5 J	23	0.38 - 630	23	10	SB16-A3-38-SO-5455	700,000 N	140,000 N	1,100,000 N	540,000
trans-1,2-Dichloroethene	1/226	2.4 J	2.4 J	0.26 - 630	23	2	SB16-A3-37-SO-3940	NA	680 MCL	NA	3,300
Trichloroethene	140/229	0.67 J	17,000	0.15 - 440	540	880	SB16-A3-06-SO-3435	**71 C**	**57 C**	**130 C**	**200**
Semivolatile Organic Compounds (ug/kg)											
2-Methylnaphthalene	1/34	940	940	33 - 430	100	940	SB16-A2-05-SO-1011	NA	NA	NA	NA
Acenaphthylene	2/32	110	130	34 - 430	77	120	SB16-A3-03-SO-0910	NA	NA	NA	NA
Anthracene	1/32	130	130	33 - 430	74	130	SB16-A3-12-SO-0506	NA	13,000,000 N	NA	NA
Benzo(a)pyrene Equivalents	3/32	5.35	862	0 - 42	40	310	SB16-A3-12-SO-0506	NA	8,200 MCL	NA	240,000
Benzo(a)anthracene	3/32	52 J	770	34 - 430	91	290	SB16-A3-12-SO-0506	NA	3,200 MCL	NA	NA
Benzo(a)pyrene	2/32	38 J	550	33 - 430	83	290	SB16-A3-12-SO-0506	NA	8,200 MCL	NA	240,000
Benzo(b)fluoranthene	2/32	66 J	820	33 - 430	92	440	SB16-A3-12-SO-0506	NA	9,800 MCL	NA	NA
Benzo(g,h,i)perylene	1/32	330	330	33 - 430	80	330	SB16-A3-12-SO-0506	NA	NA	NA	NA
Benzo(k)fluoranthene	1/32	270	270	33 - 430	78	270	SB16-A3-12-SO-0506	NA	9,800 MCL	NA	NA
Bis(2-ethylhexyl)phthalate	3/34	100 J	2,200	51 - 430	180	1,300	MW16-49I-NSO-080404-10-D	NA	3,600,000 MCL	NA	120,000
Carbazole	1/33	36	36	33 - 430	71	36	SB16-A3-12-SO-0506	NA	590 C	NA	NA
Chrysene	3/32	50 J	670	34 - 430	88	260	SB16-A3-12-SO-0506	NA	3,200 MCL	NA	NA
Dibenzo(a,h)anthracene	1/32	120	120	33 - 430	74	120	SB16-A3-12-SO-0506	NA	30,000 MCL	NA	NA
Dibenzofuran	1/34	71 J	71 J	33 - 430	75	71	SB16-A2-05-SO-1011	NA	48,000 N	NA	NA
Fluoranthene	3/32	93	1,600	34 - 430	120	600	SB16-A3-12-SO-0506	NA	6,300,000 N	NA	NA
Fluorene	1/32	55	55	33 - 430	72	55	SB16-A2-05-SO-1011	NA	810,000 N	NA	NA
High Molecular Weight PAHs	3/32	268	6,530	0 - 430	280	2,400	SB16-A3-12-SO-0506	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1/32	300	300	33 - 430	79	300	SB16-A3-12-SO-0506	NA	28,000 MCL	NA	NA
Low Molecular Weight PAHs	4/34	51	995	0 - 430	110	410	SB16-A2-05-SO-1011	NA	NA	NA	NA
Phenanthrene	2/32	51 J	240	33 - 430	74	150	SB16-A3-12-SO-0506	NA	NA	NA	NA
Pyrene	3/32	70	1,100	34 - 430	100	420	SB16-A3-12-SO-0506	NA	4,600,000 N	NA	NA
Total PAHs	4/34	398	7,010	0 - 270	270	2,200	SB16-A3-12-SO-0506	NA	NA	NA	NA
Polycyclic Aromatic Hydrocarbons (ug/kg)											
2-Methylnaphthalene	3/10	0.74 J	340	22 - 26	42	110	SB16-A2-05-SO-1011	NA	NA	NA	NA
Acenaphthene	3/12	0.089 J	12	22 - 28	10	4	SB16-A2-05-SO-1011	NA	630,000 N	NA	NA
Acenaphthylene	1/12	12	12	0.77 - 55	12	12	SB16-A2-05-SO-1011	NA	NA	NA	NA
Anthracene	2/12	0.039 J	0.059 J	2.2 - 26	7	0.05	SB16-A2-29-SO-1112	NA	13,000,000 N	NA	NA
Benzo(a)pyrene Equivalents	4/12	0.02884	0.506	0 - 0	0.07	0.2	SB16-29-NSO-011701-20	NA	8,200 MCL	NA	240,000
Benzo(a)anthracene	3/11	0.057 J	0.2 J	2.2 - 26	7	0.1	SB16-A2-05-SO-1011	NA	3,200 MCL	NA	NA

TABLE 4-30

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SUBSURFACE SOIL - DEVELOPED AREA - MIGRATION CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Federal SSL[3] Inhalation - Residential	Fed. SSL[3] Prot. of GW for DAF = 20 - Residential	Federal SSL[3] Inhalation - Industrial	RIDEM GA Leachability Criterion[4]
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)											
Benzo(a)pyrene	1/11	0.046 J	0.046 J	0.77 - 26	8	0.05	SB16-A2-28-SO-1516	NA	8,200 MCL	NA	240,000
Benzo(b)fluoranthene	4/11	0.1 J	5 J	4.4 - 26	7	1	SB16-29-NSO-011701-20	NA	9,800 MCL	NA	NA
Benzo(g,h,i)perylene	3/11	0.12 J	0.37 J	4.4 - 26	8	0.2	SB16-A2-05-SO-1011	NA	NA	NA	NA
Benzo(k)fluoranthene	3/11	0.099 J	0.25 J	2.2 - 26	8	0.1	SB16-A2-05-SO-1011	NA	9,800 MCL	NA	NA
Chrysene	4/12	0.15 J	6 J	2.2 - 26	7	2	SB16-29-NSO-011701-20	NA	3,200 MCL	NA	NA
Dibenzo(a,h)anthracene	1/12	0.065 J	0.065 J	0.77 - 26	7	0.07	SB16-A2-28-SO-1516	NA	30,000 MCL	NA	NA
Fluoranthene	6/12	0.24 J	22 J	0.13 - 24	8	6	MW16-49I-NSO-080404-10	NA	6,300,000 N	NA	NA
Fluorene	3/11	0.18 J	27	4.4 - 26	10	9	SB16-A2-05-SO-1011	NA	810,000 N	NA	NA
High Molecular Weight PAHs	7/12	1.056	43	22 - 24	11	11	MW16-49I-NSO-080404-10	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	3/11	0.094 J	0.35 J	2.2 - 26	8	0.2	SB16-A2-05-SO-1011	NA	28,000 MCL	NA	NA
Low Molecular Weight PAHs	4/12	3.459	443	2.2 - 24	44	110	SB16-A2-05-SO-1011	NA	NA	NA	NA
Naphthalene	3/12	1.5	33	22 - 28	12	12	SB16-A2-05-SO-1011	170,000 N	61,000 N	270,000 N	800
Phenanthrene	3/12	0.68 J	19	0.4 - 24	8	9	SB16-A2-05-SO-1011	NA	NA	NA	NA
Pyrene	5/12	0.17 J	21 J	2.8 - 26	8	4	MW16-49I-NSO-080404-10	NA	4,600,000 N	NA	NA
Total PAHs	7/12	4.52	447	0 - 0	44	76	SB16-A2-05-SO-1011	NA	NA	NA	NA
Inorganics (mg/kg)											
Aluminum	29/29	1,900	9,200	-	4,780	4,780	MW16-22D-NSO-011601-59	7,090,000 N	**170 N**	11,000,000 N	NA
Antimony	1/29	0.4 J	0.4 J	0.045 - 0.68	0.13	0.4	MW16-14D-NSO-013001-57	NA	5.4 MCL	NA	[5]
Arsenic	32/32	0.53 J	3.4	-	1.7	1.7	EBS81-RSPT-01S-120297-09	769 C	5.8 C	1,440 C	NA
Barium	32/32	3 J	29.4	-	13.2	13.2	SB16-A2-07-SO-0910	709,000 N	1,600 MCL	1,100,000 N	[5]
Beryllium	28/29	0.14	0.72 J	0.46 - 0.46	0.41	0.42	SB16-A2-07-SO-0910	1,380 C	63 MCL	2,570 C	[5]
Cadmium	17/32	0.011 J	1.6	0.0048 - 0.06	0.11	0.19	SB16-A2-14-SO-0708	1,840 C	7.5 MCL	3,320 C	[5]
Calcium	18/29	44	1,900	1.5 - 1820	378	422	MW16-14D-NSO-013001-57	NA	NA	NA	NA
Chromium	32/32	1.9	14.2	-	6.8	6.8	MW16-22D-NSO-011601-59	276 C[6]	42 N[6]	515 C[6]	[5]
Cobalt	29/29	1.7 J	15.3 J	-	5.5	5.5	SB16-A3-02-SO-0506	1,180 C	**3.3 N**	2,210 C	NA
Copper	29/29	2.8	43.3 J	-	10.7	10.7	MW16-22D-NSO-011601-59-D	NA	11,000 MCL	NA	NA
Iron	29/29	4,580	25,600	-	11,900	11,900	SB16-A3-02-SO-0506	NA	NA	NA	NA
Lead	32/32	2	13.7 J	-	5.8	5.8	SB16-A3-02-SO-0506	NA	NA	NA	[5]
Magnesium	29/29	726	4,910 J	-	1,980	1,980	MW16-22D-NSO-011601-59	NA	NA	NA	NA
Manganese	29/29	41.4	760	-	179	179	SB16-A3-02-SO-0506	70,900 N	2,200 N	110,000 N	NA
Mercury	4/32	0.0083 J	0.021	0.0059 - 0.1	0.0096	0.014	SB16-A2-14-SO-0708	2.9 sat	2.1 MCL	2.9 sat	[5]
Nickel	29/29	2.7 J	21.2 J	-	8.9	8.9	SB16-A3-02-SO-0506	NA	950 N	NA	[5]
Potassium	24/29	300	1,710	393 - 1210	652	704	SB16-A2-28-SO-1516	NA	NA	NA	NA
Selenium	10/32	0.42 J	2.4	0.17 - 1.8	0.7	1.5	SB16-A2-07-SO-0910	NA	5.2 MCL	NA	[5]
Sodium	20/29	7.6 J	359	7.1 - 82.8	47.7	59.0	SB16-A2-28-SO-1516	NA	NA	NA	NA
Thallium	20/29	0.51 J	2.7	0.47 - 1.1	1.2	1.6	SB16-A2-07-SO-0910	NA	**1.1 N**	NA	[5]
Vanadium	29/29	3.6	18.4	-	9.5	9.5	MW16-22D-NSO-011601-59	NA	5,100 N	NA	NA
Zinc	29/29	14.4	72.4	-	32.9	32.9	SB16-A2-14-SO-0708	NA	14,000 N	NA	NA
Miscellaneous Parameters											
Carbon (mg/kg)	7/7	1,200	2,600	-	1,700	1,700	MW16-22D-NSO-011601-59	NA	NA	NA	NA
Percent Moisture (%)	7/7	7.7	17.5	-	13	13	SB16-29-NSO-011701-20	NA	NA	NA	NA
pH (S.U.)	9/9	5.8	7.5	-	6	6	MW16-50I-NSO-080504-22	NA	NA	NA	NA
Total Organic Carbon (mg/kg)	32/53	1,100 J	8,100	1100 - 1200	1,600	2,300	MW16-50I-NSO-080504-22	NA	NA	NA	NA
Total Residue (%)	7/7	79	93	-	86	86	MW16-22D-NSO-011601-59-D	NA	NA	NA	NA
Total Solids (%)	7/7	82.5	92.3	-	87	87	MW16-15R-NSO-012201-51	NA	NA	NA	NA

TABLE 4-30

SUMMARY OF DESCRIPTIVE STATISTICS
PHASE III SUBSURFACE SOIL - DEVELOPED AREA - MIGRATION CRITERIA
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Federal SSL[3] Inhalation - Residential	Fed. SSL[3] Prot. of GW for DAF = 20 - Residential	Federal SSL[3] Inhalation - Industrial	RIDEM GA Leachability Criterion[4]
Petroleum Hydrocarbons (mg/kg)											
Diesel Range Organics	2/2	11	25	-	20	20	MW16-50I-NSO-080504-22	NA	NA	NA	NA
Oil & Grease	3/4	1.3	160	1 - 100	62	82	MW16-50I-NSO-080504-22	NA	NA	NA	NA
Total Petroleum Hydrocarbons	3/3	27.1	124	-	67	67	EBS60-RSPT-01-071497-02	NA	NA	NA	NA
TPH (C09-C36)	3/3	13	1,300	-	440	440	SB16-A2-05-SO-1011	NA	NA	NA	NA
TPH (C09-C44)	3/3	14	960	-	330	330	SB16-A2-05-SO-1011	NA	NA	NA	NA
DRO Specific Semivolatile Organics (mg/kg)											
TPH (C09-C36)	6/22	11	510	9.1 - 11	36	120	SB16-A2-05-SO-1011	NA	NA	NA	NA

Notes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - EPA SSLs. EPA Internet Site at http://risk.lsd.ornl.gov/calc_start.shtml.
4 - RIDEM, DEM-DSR-01-93, February 2004.
5 - Leachability criteria for inorganics are based on SPLP/TCLP analysis.
6 - The value for chromium VI is presented.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Qualifiers:
C - Carcinogenic
N - Non-carcinogenic
MCL - Maximum Contaminant Level - Indicates that the value presented is based on the MCL
J - Estimated value
T - This parameter was also detected in a trip blank.

Acronyms:
BaP = Benzo(a)pyrene equivalents
DAF = Dilution attenuation factor
DRO = Diesel Range Organics
GW = Groundwater
NA = No Criterion available
PAH = Polycyclic aromatic hydrocarbon
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SPLP/TCLP = Synthetic Precipitation Leaching Procedure/Toxic Characteristic Leaching Procedure
SSL = Soil Screening Level
TPH = Total petroleum hydrocarbons
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C9 to C36.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C9 to C44.
VOC = Volatile organic compound

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**08 MW16-01S MW16-01S-NWG-100704 NORMAL 10/7/2004**	**08 MW16-02S MW16-02S-NWG-100604 NORMAL 10/6/2004**	**08 MW16-03S MW16-03S-NWG-100804 NORMAL 10/8/2004**	**08 MW16-04S MW16-04S-NWG-100404 NORMAL 10/4/2004**	**08 MW16-05S MW16-05S-NWG-110104 NORMAL 11/1/2004**
Volatile Organics (ug/L)								
Acetone	22000	NA	NA	5 U	5 UR	5 U	5 UR	5 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	**0.501**	0 U
Carbon Disulfide	1000	NA	NA	1 UJ	1 U	1 UJ	1 U	**0.162 J**
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U
Chloromethane	1.8	NA	NA	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	1 U	**0.166 J**	1 U	1 U	1 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	**5.3 J**	5.8 U
Ethylbenzene	1.5	700	700	1 U	1 U	1 U	1 U	1 U
m+p-Xylenes	210	10000	10000	2 U	2 U	2 U	2 U	2 U
Methane	NA	NA	NA	3.3 U	**1.8 J**	**140**	**12000**	**65**
o-Xylene	1400	10000	10000	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	1 U	1 U
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	1 U	**0.166 J**	1 U	1 U	1 U
Total Chlorinated VOCs[1]	NA	NA	NA	**1.28**	**1.38**	**0.0202**	**0.548**	**0.0121**
Total Xylenes	200	10000	10000	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	110	100	100	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1.7	5	5	**1.28**	**1.19**	1 U	1 U	1 U
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	**0.0121 J**
1,1-Dichloroethene	340	7	7	0.1 UJ	**0.0287 J**	**0.0202 J**	**0.0269 J**	0.1 U
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzene	0.41	5	5	0.1 U	0.1 U	0.1 U	**0.501**	0.1 U
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.1 U	**0.521**	0.1 U
Total Metals (ug/L)								
Aluminum	37000	NA	NA	**70.3**	**27.8**	**10.1**	**28.9**	**8.7**
Arsenic	0.045	10	NA	0.42 U	**0.67 J**	**1.2**	**2.3**	**1**
Barium	7300	2000	2000	**102**	**16.3**	**13.1**	**247**	**5.8**
Beryllium	73	4	4	0.11 U	0.11 U	0.11 U	0.11 UJ	0.11 U
Cadmium	18	5	5	**0.14**	0.06 U	0.06 U	**0.1 J**	0.08 U
Calcium	NA	NA	NA	**20100**	**33400**	**22000**	**53500**	**13000**
Chromium	110	100	100	0.82 U	**0.89**	0.63 U	0.85 U	0.34 U
Cobalt	11	NA	NA	**0.15**	0.07 U	**1.3**	**0.78**	**8.7**
Copper	1500	1300	NA	**2.1**	**3.6**	**0.74 J**	**0.95 J**	1.7 U
Iron	26000	NA	NA	**68.8 J**	**173**	**4400**	**21200**	**18200**
Lead	NA	15	15	**0.12**	**0.21**	0.05 U	**0.51 J**	0.05 U
Magnesium	NA	NA	NA	**7530**	**3360**	**2770**	**4450**	**1810**
Manganese	880	NA	NA	**78.7**	**0.94**	**212**	**281**	**1530**
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	**0.54**	0.13 U
Nickel	730	NA	100	**1.1**	**1.2**	**0.66 J**	**2 J**	**3.2**

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-01S MW16-01S-NWG-100704 NORMAL 10/7/2004	08 MW16-02S MW16-02S-NWG-100604 NORMAL 10/6/2004	08 MW16-03S MW16-03S-NWG-100804 NORMAL 10/8/2004	08 MW16-04S MW16-04S-NWG-100404 NORMAL 10/4/2004	08 MW16-05S MW16-05S-NWG-110104 NORMAL 11/1/2004
Total Metals (ug/L) (Continued)								
Potassium	NA	NA	NA	**2860**	**5960**	**3170**	**5310**	**2170**
Selenium	180	50	50	0.29 U	**0.52 J**	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	**0.12**	0.05 U	0.05 U	0.05 U	0.05 U
Sodium	NA	NA	NA	**161000**	**417000**	**18200**	**21500**	**4820 J**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	0.4 U	**0.57 J**	0.4 U	**0.65 J**	0.4 U
Zinc	11000	NA	NA	**8.9 J**	**3.6**	**2.9 J**	**13.7**	**7.3**
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA	**59.2**	**2.4**	**1.4 J**	**4.5**	**3.4**
Arsenic	0.045	10	NA	0.09 U	**1.1**	**0.4**	**3.3**	**0.96**
Barium	7300	2000	2000	**99.5**	**16.6**	**11.9**	**259**	**5.6**
Cadmium	18	5	5	0.18 U	0.02 U	0.02 U	0.02 U	0.07 U
Calcium	NA	NA	NA	**20600**	**35700**	**21900**	**55300**	**12900**
Chromium	110	100	100	**1.3**	**4.8**	**3.7**	**4.8**	**3.5**
Cobalt	11	NA	NA	0.01 U	**0.02 J**	**1.1**	**0.74**	**8.7**
Copper	1500	1300	NA	**5.1 J**	**3.3**	**0.27 J**	**0.18 J**	0.45 U
Iron	26000	NA	NA	**65.4 J**	**144**	**2510**	**21700**	**17800**
Lead	NA	15	15	**1.6 J**	**0.17**	0.078 UJ	**0.08 J**	0.09 U
Magnesium	NA	NA	NA	**7270**	**3630**	**2770**	**4820**	**1770**
Manganese	880	NA	NA	**73.3**	**0.25**	**154**	**291**	**1500**
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U	**0.027 J**
Nickel	730	NA	100	**1.2**	**0.97**	**0.51**	**2.2 J**	**3.1**
Potassium	NA	NA	NA	**3120**	**6500**	**3130**	**5790**	**2200**
Selenium	180	50	50	0.3 U	**0.88**	0.3 U	**0.35 J**	0.3 U
Silver	180	NA	NA	**0.11**	0.02 U	0.02 U	0.02 U	0.02 U
Sodium	NA	NA	NA	**158000**	**450000**	**17300**	**21400**	**4480**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	**0.16**	**1.5**	**1**	**1.4**	**0.91**
Zinc	11000	NA	NA	**6.5 J**	**3.8**	**2.4 J**	**2 J**	**6.9**
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**1.1**	**161**	**46.5**	**203**	**46.5**
Ammonia	NA	NA	NA	**0.1**	0.1 U	**0.21**	**0.7**	**0.23**
Chloride	NA	NA	NA	**371**	**520**	**37.9**	**16**	**5.51**
Dissolved Inorganic Carbon	NA	NA	NA	**1**	**13**	**10**	**1**	**34**
Dissolved Organic Carbon	NA	NA	NA	**2**	**4**	**3**	**3**	**4**
Nitrate	58000	10	NA	**4.83**	**5.53**	**11.6**	0.1 U	0.1 U
Nitrite	3700	1	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA	**0.772**	**1.26**	**0.138**	**0.247**	**0.081**
Sulfate	NA	NA	NA	**7.44**	**19**	**10.3**	**10.8**	**14.8**
pH	NA	NA	NA	**4.66**	**7.13**	**5.96**	**6.45**	**5.64**
Conductivity	NA	NA	NA	**1.46**	**2.024**	**0.249**	**0.488**	**0.161**
DO	NA	NA	NA	**9.39**	**4.75**	**1.33**	**0.01**	**4.59**
Turbidity	NA	NA	NA	**1.59**	**2.1**	**7.24**	**4**	**8**

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date**	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**08** **MW16-06S** **MW16-06S-NWG-100604** **NORMAL** **10/6/2004**	**08** **MW16-07S** **MW16-07S-NWG-100604** **NORMAL** **10/6/2004**	**08** **MW16-08S** **MW16-08S-NWG-102804** **NORMAL** **10/28/2004**	**08** **MW16-11S** **MW16-11S-NWG-100604** **NORMAL** **10/6/2004**	**08** **MW16-12S** **MW16-12S-NWG-102704** **NORMAL** **10/27/2004**
Volatile Organics (ug/L)								
Acetone	22000	NA	NA	5 U	5 U	19 U	5 U	5 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	**1.87**	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	1 UJ	1 UJ	**0.184 J**	1 UJ	1 U
Chlorodibromomethane	0.8	80	NA	**0.152 J**	1 U	1 U	1 U	1 U
Chloromethane	1.8	NA	NA	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	1 U	1 U	1 U	1 U	**0.972 J**
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Ethylbenzene	1.5	700	700	1 U	**0.288 J**	1 U	1 U	1 U
m+p-Xylenes	210	10000	10000	2 U	**0.352 J**	2 U	2 U	2 U
Methane	NA	NA	NA	**1.3 J**	**200**	3.3 U	3.3 U	3.3 U
o-Xylene	1400	10000	10000	1 U	**0.929 J**	1 U	1 U	1 U
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	1 U	1 U
Toluene	2300	1000	1000	1 U	**0.143 J**	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	1 U	1 U	1 U	1 U	**0.972 J**
Total Chlorinated VOCs[1]	NA	NA	NA	**0.25**	**0.546**	**4.19**	**0.266**	**4.49**
Total Xylenes	200	10000	10000	1 U	**1.28 J**	1 U	1 U	1 U
trans-1,2-Dichloroethene	110	100	100	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1.7	5	5	**0.25 J**	**0.546 J**	**4.19**	**0.266 J**	**3.52**
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzene	0.41	5	5	0.1 U	**0.159 J**	0.1 U	0.1 U	0.1 U
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total Metals (ug/L)								
Aluminum	37000	NA	NA	**9.8**	4.8 U	**134**	**242**	**19**
Arsenic	0.045	10	NA	0.42 U	**4.7**	0.42 U	0.42 U	0.42 U
Barium	7300	2000	2000	**18.9**	**171**	**121**	**12.4**	**3.9**
Beryllium	73	4	4	0.11 U	0.11 U	0.11 UJ	**0.14 J**	0.11 UR
Cadmium	18	5	5	**0.07 J**	0.06 U	0.11 U	**0.66**	0.09 U
Calcium	NA	NA	NA	**16500**	**77400**	**15600**	**1270**	**3450 J**
Chromium	110	100	100	**0.45 J**	0.34 U	1 U	**1.2**	1.1 U
Cobalt	11	NA	NA	0.05 U	**0.2 J**	**3.5**	**0.55**	0.05 U
Copper	1500	1300	NA	**7.4**	0.55 U	2.9 U	**1.6**	0.4 U
Iron	26000	NA	NA	**76.6 J**	**12000**	**51.7 J**	**267**	50 U
Lead	NA	15	15	**2.8**	**0.1 J**	**0.17**	**0.72**	**0.05 J**
Magnesium	NA	NA	NA	**3790**	**6980**	**3420**	**332**	**1190**
Manganese	880	NA	NA	**15.2**	**184**	**293**	**23**	**12.2**
Mercury	11	2	2	0.021 U	0.021 U	0.095 U	0.021 U	0.021 U
Nickel	730	NA	100	**1.1**	**1.7 J**	**6.8 J**	**2.9**	**0.64 J**

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-06S MW16-06S-NWG-100604 NORMAL 10/6/2004	08 MW16-07S MW16-07S-NWG-100604 NORMAL 10/6/2004	08 MW16-08S MW16-08S-NWG-102804 NORMAL 10/28/2004	08 MW16-11S MW16-11S-NWG-100604 NORMAL 10/6/2004	08 MW16-12S MW16-12S-NWG-102704 NORMAL 10/27/2004
Total Metals (ug/L) (Continued)								
Potassium	NA	NA	NA	**2560**	**3940**	**3180**	**696**	**1080**
Selenium	180	50	50	0.29 U	0.29 U	0.43 U	0.29 U	**0.33 J**
Silver	180	NA	NA	0.05 U	0.05 U	**0.1 J**	0.05 U	0.05 U
Sodium	NA	NA	NA	**55700**	**21500**	**319000 J**	**4900**	**4690 J**
Thallium	2.4	2	2	0.07 U	0.07 U	**0.09 J**	0.07 U	0.07 U
Vanadium	180	NA	NA	0.4 U	0.4 U	0.4 U	**0.45 J**	0.4 U
Zinc	11000	NA	NA	**14.2**	**2.7 J**	**11.6 J**	**166**	**10.2**
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA	**6.2**	**2.8**	**123**	**29.1**	**3.9**
Arsenic	0.045	10	NA	0.09 U	**6.5**	0.09 UJ	**0.31**	0.09 U
Barium	7300	2000	2000	**19.1**	**173**	**121**	**9.8**	**4.1 J**
Cadmium	18	5	5	0.07 U	0.07 U	0.1 U	**0.63**	0.02 U
Calcium	NA	NA	NA	**17000**	**79400**	**17300**	**1180**	**3150**
Chromium	110	100	100	**2**	**6.7**	**2**	**0.98**	0.85 U
Cobalt	11	NA	NA	**0.02 J**	**0.24 J**	**3.2**	**0.51**	**0.02 J**
Copper	1500	1300	NA	**6.9**	0.16 U	3.1 U	**1.3**	0.16 U
Iron	26000	NA	NA	**73.2 J**	**12700**	50 U	50 U	50 U
Lead	NA	15	15	**3**	0.08 U	**0.26**	**0.19**	**0.15 J**
Magnesium	NA	NA	NA	**3780**	**7000**	**3600**	**285**	**1160**
Manganese	880	NA	NA	**15.2**	**200**	**274**	**19.9**	**10.9**
Mercury	11	2	2	0.021 U	0.021 U	0.062 U	0.026 U	0.021 U
Nickel	730	NA	100	**1.2**	**2.1 J**	**6.9 J**	**2.9**	**0.71**
Potassium	NA	NA	NA	**2730**	**4170**	**2900**	**731**	**975**
Selenium	180	50	50	0.3 U	0.3 U	**0.36 J**	0.3 U	0.3 U
Silver	180	NA	NA	0.02 U	0.02 U	0.09 U	0.02 U	0.02 U
Sodium	NA	NA	NA	50 U	**20600 J**	**250000 J**	**4680**	**4830**
Thallium	2.4	2	2	0.07 U	0.07 U	0.074 UJ	0.07 U	0.07 U
Vanadium	180	NA	NA	**0.46**	**1.9**	0.43 U	**0.29**	0.17 U
Zinc	11000	NA	NA	**13.2**	**1.1 J**	**10.2 J**	**136**	**10.6**
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**12**	**257**	**5.2**	1 U	**9.5**
Ammonia	NA	NA	NA	0.1 U	**0.57**	**0.12**	0.1 U	0.1 U
Chloride	NA	NA	NA	**105**	**53.3**	**470**	**2.6**	**4.48**
Dissolved Inorganic Carbon	NA	NA	NA	**7**	**37**	**5**	**2**	**2**
Dissolved Organic Carbon	NA	NA	NA	**3**	**7**	**4**	**3**	**2**
Nitrate	58000	10	NA	**0.987**	0.1 U	**4.31**	**3.54**	**4.84**
Nitrite	3700	1	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA	**0.235**	**0.332**	**0.883**	**0.023**	**0.028**
Sulfate	NA	NA	NA	**6.19**	**1.77**	**16.8**	**7.95**	**6.44**
pH	NA	NA	NA	**5.45**	**5.09**	**4.77**	**4.72**	**5.93**
Conductivity	NA	NA	NA	**0.409**	**0.607**	**1.281**	**0.039**	**0.058**
DO	NA	NA	NA	**4.72**	**0.2**	**5.15**	**8.05**	**4.81**
Turbidity	NA	NA	NA	**1.4**	**1.8**	**7**	**6.793**	**10**

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-15S MW16-15S-NWG-102804 NORMAL 10/28/2004	08 MW16-17S MW16-17S-NWG-100404 NORMAL 10/4/2004	08 MW16-23S MW16-23S-NWG-102804 NORMAL 10/28/2004	08 MW16-25S MW16-25S-NWG-110104 NORMAL 11/1/2004	08 MW16-33S MW16-33S-NWG-100404 ORIG 10/4/2004
Volatile Organics (ug/L)								
Acetone	22000	NA	NA	5.03 U	5 UR	14 U	17 U	5 UR
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	1 U	1 U	**0.149 J**	**0.151 J**	1 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U
Chloromethane	1.8	NA	NA	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	1 U	1 U	**0.61 J**	**0.233 J**	1 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Ethylbenzene	1.5	700	700	1 U	1 U	1 U	1 U	1 U
m+p-Xylenes	210	10000	10000	2 U	2 U	2 U	2 U	2 U
Methane	NA	NA	NA	3.3 U	**1 J**	5.3 U	3.3 U	**1.1 J**
o-Xylene	1400	10000	10000	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	1 U	**0.317 J**
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	1 U	1 U	**0.61 J**	**0.233 J**	1 U
Total Chlorinated VOCs[1]	NA	NA	NA	**6.15**	0 U	**31.6**	**3.13**	**0.317**
Total Xylenes	200	10000	10000	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	110	100	100	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1.7	5	5	**6.15**	1 U	**31**	**2.9**	1 U
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzene	0.41	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloroform	0.19	80	NA	0.1 U	0.1 U	**0.116**	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total Metals (ug/L)								
Aluminum	37000	NA	NA	**56.4**	**323**	**20.8**	**94.7**	**6.7**
Arsenic	0.045	10	NA	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U
Barium	7300	2000	2000	**73.8**	**3.7**	**51.8**	**3.5**	**2.6**
Beryllium	73	4	4	0.11 U	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ
Cadmium	18	5	5	0.1 U	0.06 U	0.061 UJ	0.13 U	0.06 U
Calcium	NA	NA	NA	**11000**	**1140**	**21200**	**1770 J**	**1560**
Chromium	110	100	100	1 U	1.8 U	0.85 U	0.87 U	1 U
Cobalt	11	NA	NA	**0.37**	**0.19**	**0.13**	0.07 U	0.05 U
Copper	1500	1300	NA	**1.7**	**1.2**	1.4 U	0.61 U	**1.1**
Iron	26000	NA	NA	**94.4 J**	**605**	50 U	**141**	50 U
Lead	NA	15	15	**0.13**	**0.5**	**0.06 J**	**0.19**	**0.14**
Magnesium	NA	NA	NA	**2470**	**427**	**5670**	**644**	**476**
Manganese	880	NA	NA	**13.3**	**7.7**	**18.7**	**8.5**	**2**
Mercury	11	2	2	0.021 U	0.021 U	0.067 U	0.09 U	0.021 U
Nickel	730	NA	100	**0.81**	**0.67 J**	**1.1 J**	**0.61 J**	0.35 U

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-15S MW16-15S-NWG-102804 NORMAL 10/28/2004	08 MW16-17S MW16-17S-NWG-100404 NORMAL 10/4/2004	08 MW16-23S MW16-23S-NWG-102804 NORMAL 10/28/2004	08 MW16-25S MW16-25S-NWG-110104 NORMAL 11/1/2004	08 MW16-33S MW16-33S-NWG-100404 ORIG 10/4/2004
Total Metals (ug/L) (Continued)								
Potassium	NA	NA	NA	**4550**	**669**	**6170**	**1110 J**	**458**
Selenium	180	50	50	**1.7**	0.29 U	0.31 U	0.29 UJ	0.29 U
Silver	180	NA	NA	**0.08 J**	0.05 U	**0.15**	0.05 U	0.05 U
Sodium	NA	NA	NA	**102000 J**	**2860**	**140000 J**	**8650 J**	**6120**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	0.4 U	**0.71 J**	0.4 U	0.4 U	0.4 U
Zinc	11000	NA	NA	7 U	**4.2**	2.9 U	4.3 U	**3.6**
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA	**11.9**	**2**	**17.8**	**8.2 J**	**5.2**
Arsenic	0.045	10	NA	0.09 U	0.09 UJ	0.09 UJ	0.09 UJ	0.09 U
Barium	7300	2000	2000	**70**	**2.7 J**	**52.3**	**3 J**	**3.2 J**
Cadmium	18	5	5	0.05 U	0.04 U	0.02 U	0.07 U	0.04 U
Calcium	NA	NA	NA	**10500**	**1110**	**24700**	**1590**	**1540**
Chromium	110	100	100	**1.2**	**0.92**	0.85 U	0.92 U	**0.48**
Cobalt	11	NA	NA	**0.37**	0.01 U	**0.13**	**0.03**	0.01 U
Copper	1500	1300	NA	**0.87**	**0.28 J**	1.3 U	0.18 U	**0.63**
Iron	26000	NA	NA	50 U	50 U	50 U	50 U	50 U
Lead	NA	15	15	0.08 U	**0.17**	**0.18**	**0.11 J**	**0.23**
Magnesium	NA	NA	NA	**2590**	**378**	**6550**	**619 J**	**510**
Manganese	880	NA	NA	**11.3**	**1.2 J**	**16**	**3.9 J**	**1.9 J**
Mercury	11	2	2	0.021 U	0.031 U	0.063 U	0.058 U	0.021 U
Nickel	730	NA	100	**0.49**	**0.35**	**0.97 J**	0.3 U	**0.34**
Potassium	NA	NA	NA	**4220**	**641**	**6010**	**1040**	**467**
Selenium	180	50	50	**0.74**	0.3 U	0.3 UJ	0.3 UJ	0.3 U
Silver	180	NA	NA	**0.04 J**	0.02 U	0.14 U	0.02 U	0.02 U
Sodium	NA	NA	NA	**96800**	**2850**	**113000 J**	**7730**	**6130**
Thallium	2.4	2	2	0.07 U	0.07 U	0.074 UJ	0.074 UJ	0.07 U
Vanadium	180	NA	NA	0.19 U	0.08 U	0.17 U	0.18 U	0.08 U
Zinc	11000	NA	NA	**7.4**	**1.9 J**	**2.4 J**	**5.1 J**	**1.8 J**
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**7**	**1.5**	**4.8**	**10.1**	**2.3**
Ammonia	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloride	NA	NA	NA	**131**	**3.18**	**244**	**7.62**	**6.22**
Dissolved Inorganic Carbon	NA	NA	NA	**3**	1 U	**1**	**4**	1 U
Dissolved Organic Carbon	NA	NA	NA	**2**	**2**	**3**	**2**	**2**
Nitrate	58000	10	NA	**8.63**	**1.28**	**16.7**	**1.43**	**3.43**
Nitrite	3700	1	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA	**0.305**	**0.015**	**0.473**	**0.036**	**0.025**
Sulfate	NA	NA	NA	**29.4**	**3.96**	**5.1**	**7.51**	**5.91**
pH	NA	NA	NA	**5.62**	**5.87**	**5.96**	**5.53**	**5.3**
Conductivity	NA	NA	NA	**0.624**	**0.028**	**0.741**	**0.059**	**0.055**
DO	NA	NA	NA	**4.93**	**9.43**	**5.73**	**6.74**	**9.12**
Turbidity	NA	NA	NA	**4**	**6.04**	**2.3**	**8**	**0**

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-33S MW16-33S-NWG-100404-AVG AVG 10/4/2004	08 MW16-33S MW16-33S-NWG-100404-D DUP 10/4/2004	08 MW16-34S MW16-34S-NWG-092904 NORMAL 9/29/2004	08 MW16-35S MW16-35S-NWG-092904 NORMAL 9/29/2004	08 MW16-37S MW16-37S-NWG-100504 NORMAL 10/5/2004
Volatile Organics (ug/L)								
Acetone	22000	NA	NA	5 U	5 U	5 UR	5 UR	5 UR
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	**0.0106**	0 U
Carbon Disulfide	1000	NA	NA	1 U	1 U	1 U	1 U	1 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U
Chloromethane	1.8	NA	NA	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	1 U	1 U	1 U	1 U	1 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Ethylbenzene	1.5	700	700	1 U	1 U	1 U	1 U	1 U
m+p-Xylenes	210	10000	10000	2 U	2 U	2 U	2 U	2 U
Methane	NA	NA	NA	**1.1 J**	3.3 U	3.3 U	3.3 U	**1.1 J**
o-Xylene	1400	10000	10000	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	0.11	5	5	**0.322 J**	**0.327 J**	1 U	1 U	1 U
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	1 U	1 U	1 U	1 U	1 U
Total Chlorinated VOCs[1]	NA	NA	NA	**0.492**	**0.497**	0 U	0 U	**93**
Total Xylenes	200	10000	10000	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	110	100	100	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1.7	5	5	**0.17 J**	**0.17 J**	1 U	1 U	**93**
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzene	0.41	5	5	0.1 U	0.1 U	0.1 U	**0.0106 J**	0.1 U
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total Metals (ug/L)								
Aluminum	37000	NA	NA	**6.3 J**	**5.9 J**	**27.5 J**	**27.3**	**10.4**
Arsenic	0.045	10	NA	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U
Barium	7300	2000	2000	**2.55**	**2.5**	**3.7**	**3.7**	**5.6**
Beryllium	73	4	4	0.11 UJ	0.11 UJ	0.11 U	0.11 U	0.11 UJ
Cadmium	18	5	5	0.06 U	0.06 U	0.13 U	0.06 U	**0.26**
Calcium	NA	NA	NA	**1525**	**1490**	**2510**	**1800**	**1700**
Chromium	110	100	100	0.995 U	0.99 U	1.1 U	0.85 U	1.4 U
Cobalt	11	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	**0.06 J**
Copper	1500	1300	NA	**0.93 J**	**0.76 J**	0.4 U	0.4 U	0.4 U
Iron	26000	NA	NA	50 U	50 U	50 U	50 U	50 U
Lead	NA	15	15	**0.0825**	0.05 U	0.05 U	**0.06 J**	0.05 U
Magnesium	NA	NA	NA	**466.5**	**457**	**876**	**618**	**677**
Manganese	880	NA	NA	**1.95**	**1.9**	**11.4**	**3.4**	**7.1**
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U	0.066 U
Nickel	730	NA	100	0.35 U	0.35 U	0.35 U	0.35 U	**2.7**

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-33S MW16-33S-NWG-100404-AVG AVG 10/4/2004	08 MW16-33S MW16-33S-NWG-100404-D DUP 10/4/2004	08 MW16-34S MW16-34S-NWG-092904 NORMAL 9/29/2004	08 MW16-35S MW16-35S-NWG-092904 NORMAL 9/29/2004	08 MW16-37S MW16-37S-NWG-100504 NORMAL 10/5/2004
Total Metals (ug/L) (Continued)								
Potassium	NA	NA	NA	**451.5**	**445**	**776**	**713**	**712**
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Sodium	NA	NA	NA	**6035**	**5950**	**4750 J**	**3710**	**3910**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	0.4 U	0.4 U	0.4 U	0.4 U	**0.85**
Zinc	11000	NA	NA	**2.8**	**2**	**2.9**	**7.2 J**	**108**
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA	**5.4**	**5.6**	**19.7**	**8.4**	**9.9**
Arsenic	0.045	10	NA	0.09 U	0.09 U	0.09 U	0.092 U	**0.17 J**
Barium	7300	2000	2000	**3 J**	**2.8 J**	**4.1 J**	**4.4**	**6.4**
Cadmium	18	5	5	0.04 U	0.04 U	0.08 U	0.05 U	**0.24**
Calcium	NA	NA	NA	**1560**	**1580**	**2510**	**1840 J**	**1760**
Chromium	110	100	100	**0.47**	**0.46**	**0.49**	0.72 U	**0.56**
Cobalt	11	NA	NA	0.01 U	0.01 U	**0.02 J**	**0.03**	**0.07**
Copper	1500	1300	NA	**0.74**	**0.85**	**0.2 J**	0.16 U	**0.28 J**
Iron	26000	NA	NA	50 U	50 U	50 U	50 U	50 U
Lead	NA	15	15	**0.135**	0.08 U	**0.25**	**0.12 J**	**0.2**
Magnesium	NA	NA	NA	**521**	**532**	**804**	**614**	**722**
Manganese	880	NA	NA	**1.95 J**	**2 J**	**10.5**	**2.7**	**7.5**
Mercury	11	2	2	0.021 U	0.021 U	0.034 U	0.033 U	0.021 U
Nickel	730	NA	100	**0.205**	0.14 U	**0.62**	**0.25**	**3.1**
Potassium	NA	NA	NA	**465.5**	**464**	**780**	**728**	**811**
Selenium	180	50	50	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Silver	180	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Sodium	NA	NA	NA	**6210**	**6290**	**4260**	**3420**	**4250**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	0.08 U	0.08 U	0.08 U	0.14 U	**0.12 J**
Zinc	11000	NA	NA	**2.2 J**	**2.6 J**	**2.9 J**	**9.3 J**	**115**
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**2.3**	**2.3**	**8.3**	**3.2**	**2.5**
Ammonia	NA	NA	NA	**0.085**	**0.12**	**0.23**	0.31 U	0.1 U
Chloride	NA	NA	NA	**6.37**	**6.52**	**9.44**	**5.2**	**5.33**
Dissolved Inorganic Carbon	NA	NA	NA	1 U	1 U	1 U	1 U	**2**
Dissolved Organic Carbon	NA	NA	NA	**2**	**2**	**2**	**8**	**2**
Nitrate	58000	10	NA	**3.385**	**3.34**	**2.2**	**2.25**	**3.98**
Nitrite	3700	1	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA	**0.025**	**0.025**	**0.028**	**0.021**	**0.023**
Sulfate	NA	NA	NA	**5.865**	**5.82**	**3.27**	**3.69**	**4.16**
pH	NA	NA	NA			**5.33**	**5.73**	**5.51**
Conductivity	NA	NA	NA			**0.045**	**0.04**	**0.047**
DO	NA	NA	NA			**9.76**	**9.7**	**8.78**
Turbidity	NA	NA	NA			**1.7**	**0.52**	**0**

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-40S MW16-40S-NWG-100804 ORIG 10/8/2004	08 MW16-40S MW16-40S-NWG-100804-AVG AVG 10/8/2004	08 MW16-40S MW16-40S-NWG-100804-D DUP 10/8/2004	08 MW16-41S MW16-41S-NWG-093004 ORIG 9/30/2004	08 MW16-41S MW16-41S-NWG-093004-AVG AVG 9/30/2004
Volatile Organics (ug/L)								
Acetone	22000	NA	NA	5 U	5 U	5 U	5 UR	5 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	**1.58**	**1.63**
Carbon Disulfide	1000	NA	NA	1 UJ	1 UJ	1 UJ	1 U	1 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U
Chloromethane	1.8	NA	NA	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	**91**	**87**	**83**	**3.83**	**3.86**
Ethane	NA	NA	NA	**9.6**	**9.55**	**9.5**	**11**	**10.5**
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Ethylbenzene	1.5	700	700	1 U	1 U	1 U	**0.0936 J**	**0.1018 J**
m+p-Xylenes	210	10000	10000	2 U	2 U	2 U	**0.275 J**	**0.2915 J**
Methane	NA	NA	NA	**2700**	**2600**	**2500**	**1600**	**1650**
o-Xylene	1400	10000	10000	1 U	1 U	1 U	**0.548 J**	**0.578 J**
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	1 U	1 U
Toluene	2300	1000	1000	1 U	1 U	1 U	**0.228 J**	**0.2265 J**
Total 1,2-Dichloroethene	330	NA	70	**96.2**	**92.2**	**88.2**	**4.93**	**4.96**
Total Chlorinated VOCs[1]	NA	NA	NA	**175**	**168**	**161**	**33.8**	**30.6**
Total Xylenes	200	10000	10000	1 U	1 U	1 U	**0.823 J**	**0.87 J**
trans-1,2-Dichloroethene	110	100	100	**5.18**	**5.175**	**5.17**	**1.1**	**1.1**
Trichloroethene	1.7	5	5	**14**	**14**	**14**	**0.701 J**	**0.418 J**
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	**6.98**	**6.68**	**6.38**	**1.2**	**1.24**
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzene	0.41	5	5	0.1 U	0.1 U	0.1 U	**0.432**	**0.4335**
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	**58**	**55**	**52**	**27**	**24**
Total Metals (ug/L)								
Aluminum	37000	NA	NA	**49.7**	**46.1**	**42.5**	**13.2**	**11.4**
Arsenic	0.045	10	NA	**0.49 J**	**0.53 J**	**0.57 J**	**12.4**	**11.5**
Barium	7300	2000	2000	**15.7**	**15.5**	**15.3**	**36**	**34.85**
Beryllium	73	4	4	0.11 U	0.11 U	0.11 U	0.11 UJ	0.11 UJ
Cadmium	18	5	5	0.06 U	**0.05 J**	**0.07 J**	**0.06 J**	**0.065 J**
Calcium	NA	NA	NA	**12500**	**12350**	**12200**	**49000**	**48750**
Chromium	110	100	100	0.48 U	0.595 U	0.71 U	0.51 U	0.525 U
Cobalt	11	NA	NA	**19.3**	**19.4**	**19.5**	**1.4**	**1.4**
Copper	1500	1300	NA	**1.1**	**1.15**	**1.2**	**1.3 J**	**1.25 J**
Iron	26000	NA	NA	**5130**	**5095**	**5060**	**50600**	**49150**
Lead	NA	15	15	0.05 U	**0.0775**	**0.13**	**0.07 J**	**0.0475 J**
Magnesium	NA	NA	NA	**3800**	**3760**	**3720**	**4320**	**4295**
Manganese	880	NA	NA	**1970**	**1945**	**1920**	**1050**	**1035**
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U
Nickel	730	NA	100	**14**	**14.1**	**14.2**	**2.9 J**	**2.8 J**

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-40S MW16-40S-NWG-100804 ORIG 10/8/2004	08 MW16-40S MW16-40S-NWG-100804-AVG AVG 10/8/2004	08 MW16-40S MW16-40S-NWG-100804-D DUP 10/8/2004	08 MW16-41S MW16-41S-NWG-093004 ORIG 9/30/2004	08 MW16-41S MW16-41S-NWG-093004-AVG AVG 9/30/2004
Total Metals (ug/L) (Continued)								
Potassium	NA	NA	NA	**2970**	**2960**	**2950**	**4710**	**4695**
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Sodium	NA	NA	NA	**26500**	**25950**	**25400**	**34200**	**33200**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Zinc	11000	NA	NA	**12.9 J**	**15.75 J**	**18.6 J**	**11.9 J**	**14.3 J**
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA	**23**	**22**	**21**	**3.7**	**3.75**
Arsenic	0.045	10	NA	**0.5**	**0.5**	**0.5**	**16.1**	**15.45**
Barium	7300	2000	2000	**16.6**	**16.65**	**16.7**	**32.6**	**33.2**
Cadmium	18	5	5	0.14 U	0.13 U	0.12 U	0.1 U	0.085 U
Calcium	NA	NA	NA	**13000**	**12850**	**12700**	**48700**	**48000**
Chromium	110	100	100	**3.1**	**3.05**	**3**	**10.6**	**9.85**
Cobalt	11	NA	NA	**19.5**	**19.55**	**19.6**	**1.3**	**1.25**
Copper	1500	1300	NA	**0.62 J**	**0.495 J**	**0.37 J**	**0.32**	**0.315 J**
Iron	26000	NA	NA	**5030**	**4960**	**4890**	**48500**	**48700**
Lead	NA	15	15	**0.19 J**	**0.175 J**	**0.16 J**	0.08 U	0.08 U
Magnesium	NA	NA	NA	**3620**	**3620**	**3620**	**4630**	**4520**
Manganese	880	NA	NA	**1880**	**1880**	**1880**	**1020 J**	**1020 J**
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.062 U	0.0415 U
Nickel	730	NA	100	**14.1**	**14.1**	**14.1**	**2.5**	**2.4**
Potassium	NA	NA	NA	**3030**	**3020**	**3010**	**4650**	**4585**
Selenium	180	50	50	0.3 U	0.3 U	0.3 U	**0.35 J**	**0.39 J**
Silver	180	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Sodium	NA	NA	NA	**25600**	**25400**	**25200**	**36300**	**35950**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	**0.83**	**0.805**	**0.78**	**3**	**2.8**
Zinc	11000	NA	NA	**12.5 J**	**12.8 J**	**13.1 J**	**9.4**	**8.6**
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**27.5**	**27.5**	**27.5**	**175**	**171.5**
Ammonia	NA	NA	NA	**1.3**	**1.325**	**1.35**	**4.05**	**4**
Chloride	NA	NA	NA	**59.5**	**61.8**	**64.1**	**51.4**	**49.95**
Dissolved Inorganic Carbon	NA	NA	NA	**7**	**7.5**	**8**	**3 J**	**4.5 J**
Dissolved Organic Carbon	NA	NA	NA	**2**	**2**	**2**	**3 J**	**5 J**
Nitrate	58000	10	NA	**0.101**	**0.0755**	0.1 U	0.1 U	0.1 U
Nitrite	3700	1	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA	**0.149**	**0.1495**	**0.15**	**0.285**	**0.279**
Sulfate	NA	NA	NA	**10.8**	**10.55**	**10.3**	**15.6**	**16.3**
pH	NA	NA	NA	**5.99**			**6.22**	
Conductivity	NA	NA	NA	**0.261**			**0.662**	
DO	NA	NA	NA	**2.46**			**3.6**	
Turbidity	NA	NA	NA	**1.3**			**4.53**	

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-41S MW16-41S-NWG-093004-D DUP 9/30/2004	08 MW16-42S MW16-42S-NWG-093004 ORIG 9/30/2004	08 MW16-42S MW16-42S-NWG-093004-AVG AVG 9/30/2004	08 MW16-42S MW16-42S-NWG-093004-D DUP 9/30/2004	08 MW16-43S MW16-43S-NWG-093004 NORMAL 9/30/2004
Volatile Organics (ug/L)								
Acetone	22000	NA	NA	5 U	5 UR	5 UR	5 UR	5 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	**1.686**	**0.0475**	**0.0484**	**0.0493**	**0.0549**
Carbon Disulfide	1000	NA	NA	1 U	1 U	1 U	1 U	1 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U
Chloromethane	1.8	NA	NA	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	**3.89**	**4.69**	**5.195**	**5.7**	**4.1**
Ethane	NA	NA	NA	**10**	**2.6 J**	**2.85 J**	**3.1 J**	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Ethylbenzene	1.5	700	700	**0.11 J**	1 U	1 U	1 U	1 U
m+p-Xylenes	210	10000	10000	**0.308 J**	2 U	2 U	2 U	2 U
Methane	NA	NA	NA	**1700**	**1800**	**1750**	**1700**	**1500**
o-Xylene	1400	10000	10000	**0.608 J**	1 U	1 U	1 U	1 U
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	1 U	1 U
Toluene	2300	1000	1000	**0.225 J**	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	**4.99**	**5.23**	**5.77**	**6.31**	**4.31**
Total Chlorinated VOCs[1]	NA	NA	NA	**27.4**	**14.5**	**15.8**	**17.1**	**5.09**
Total Xylenes	200	10000	10000	**0.916 J**	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	110	100	100	**1.1**	**0.537 J**	**0.575 J**	**0.613 J**	**0.213 J**
Trichloroethene	1.7	5	5	**0.135 J**	1 U	1 U	1 U	0.901 U
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	**1.28**	**0.713**	**0.7455**	**0.778**	**0.357**
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzene	0.41	5	5	**0.435**	**0.0475 J**	**0.0484 J**	**0.0493 J**	**0.0549 J**
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	**21**	**8.56**	**9.28**	**10**	**0.415**
Total Metals (ug/L)								
Aluminum	37000	NA	NA	**9.6**	**8.1 J**	**10.3 J**	**12.5 J**	**12.9 J**
Arsenic	0.045	10	NA	**10.6**	0.42 U	0.42 U	0.42 U	**6.8**
Barium	7300	2000	2000	**33.7**	**6.9**	**7.1**	**7.3**	**157**
Beryllium	73	4	4	0.11 UJ	0.11 U	0.11 U	0.11 U	0.11 U
Cadmium	18	5	5	**0.07 J**	0.06 U	0.095 U	0.13 U	0.08 U
Calcium	NA	NA	NA	**48500**	**56800**	**58600**	**60400**	**38900**
Chromium	110	100	100	0.54 U	0.34 U	0.34 U	0.34 U	0.73 U
Cobalt	11	NA	NA	**1.4**	**0.12 J**	**0.15 J**	**0.18 J**	**0.13**
Copper	1500	1300	NA	**1.2**	0.4 U	0.4 U	0.4 U	**1**
Iron	26000	NA	NA	**47700**	**12000**	**13350**	**14700**	**31700**
Lead	NA	15	15	0.05 U	0.05 U	**0.0575 J**	**0.09 J**	**0.18**
Magnesium	NA	NA	NA	**4270**	**2690 J**	**2815 J**	**2940 J**	**3480**
Manganese	880	NA	NA	**1020**	**2090**	**2225**	**2360**	**827**
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U
Nickel	730	NA	100	**2.7**	**1.5 J**	**1.65 J**	**1.8 J**	**0.67 J**

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-41S MW16-41S-NWG-093004-D DUP 9/30/2004	08 MW16-42S MW16-42S-NWG-093004 ORIG 9/30/2004	08 MW16-42S MW16-42S-NWG-093004-AVG AVG 9/30/2004	08 MW16-42S MW16-42S-NWG-093004-D DUP 9/30/2004	08 MW16-43S MW16-43S-NWG-093004 NORMAL 9/30/2004
Total Metals (ug/L) (Continued)								
Potassium	NA	NA	NA	**4680**	**3660**	**3765**	**3870**	**3020**
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Sodium	NA	NA	NA	**32200**	**18100**	**18500**	**18900**	**8370 J**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Zinc	11000	NA	NA	**16.7 J**	**5.1 J**	**6.45 J**	**7.8 J**	**22.7**
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA	**3.8**	**2**	**1.95**	**1.9**	0.72 U
Arsenic	0.045	10	NA	**14.8**	**0.17 J**	**0.175 J**	**0.18 J**	**5.1**
Barium	7300	2000	2000	**33.8**	**6.5**	**6.5**	**6.5**	**124**
Cadmium	18	5	5	0.07 U	0.15 U	0.135 U	0.12 U	0.05 U
Calcium	NA	NA	NA	**47300**	**60900**	**61350**	**61800**	**38800**
Chromium	110	100	100	**9.1**	**3.7**	**3.6**	**3.5**	**1.7**
Cobalt	11	NA	NA	**1.2**	**0.16 J**	**0.155 J**	**0.15 J**	**0.12**
Copper	1500	1300	NA	**0.31 J**	**0.26 J**	**0.225 J**	**0.19 J**	**0.16 J**
Iron	26000	NA	NA	**48900**	**10200**	**10200**	**10200**	**24200**
Lead	NA	15	15	0.08 U	**0.47 J**	**0.42 J**	**0.37 J**	**0.11 J**
Magnesium	NA	NA	NA	**4410**	**2710**	**2700**	**2690**	**3140**
Manganese	880	NA	NA	**1020 J**	**2300**	**2305**	**2310**	**811**
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U	0.042 U
Nickel	730	NA	100	**2.3**	**2.7 J**	**2.45 J**	**2.2 J**	**0.96**
Potassium	NA	NA	NA	**4520**	**3920**	**3920**	**3920**	**2990**
Selenium	180	50	50	**0.43 J**	0.3 U	0.3 U	0.3 U	0.3 U
Silver	180	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Sodium	NA	NA	NA	**35600**	**17800**	**17850**	**17900**	**7010**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	**2.6**	**0.97**	**0.945**	**0.92**	**0.44**
Zinc	11000	NA	NA	**7.8**	**4.1 J**	**3.35 J**	**2.6 J**	**16.5 J**
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**168**	**170**	**174**	**178**	**140**
Ammonia	NA	NA	NA	**3.95**	**0.39**	**0.4**	**0.41**	**0.4**
Chloride	NA	NA	NA	**48.5**	**29.9**	**31.05**	**32.2**	**7.68**
Dissolved Inorganic Carbon	NA	NA	NA	**6 J**	1 U	1 U	1 U	1 U
Dissolved Organic Carbon	NA	NA	NA	**7 J**	**3**	**3.5**	**4**	**4**
Nitrate	58000	10	NA	0.1 U	**1.12**	**1.085**	**1.05**	**0.543**
Nitrite	3700	1	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA	**0.273**	**0.265**	**0.269**	**0.273**	**0.187**
Sulfate	NA	NA	NA	**17**	**25.5**	**25.65**	**25.8**	**5.25**
pH	NA	NA	NA		**6.29**			**6.59**
Conductivity	NA	NA	NA		**0.479**			**0.366**
DO	NA	NA	NA		**2.01**			**3.59**
Turbidity	NA	NA	NA		**4.69**			**27**

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-44S MW16-44S-NWG-092704 ORIG 9/27/2004	08 MW16-44S MW16-44S-NWG-092704-AVG AVG 9/27/2004	08 MW16-44S MW16-44S-NWG-092704-D DUP 9/27/2004	08 MW16-45S MW16-45S-NWG-092804 ORIG 9/28/2004	08 MW16-45S MW16-45S-NWG-092804-AVG AVG 9/28/2004
Volatile Organics (ug/L)								
Acetone	22000	NA	NA	5 UR	5 UR	5 UR	5 UR	5 UR
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	**0.521**	**0.525**	**0.529**	**0.219**	**0.215**
Carbon Disulfide	1000	NA	NA	1 U	1 U	1 U	1 U	1 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U
Chloromethane	1.8	NA	NA	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	**20**	**19.5**	**19**	**3.26**	**3.405**
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Ethylbenzene	1.5	700	700	1 U	1 U	1 U	1 U	1 U
m+p-Xylenes	210	10000	10000	2 U	2 U	2 U	2 U	2 U
Methane	NA	NA	NA	**3000**	**2700**	**2400**	**570 J**	**1385 J**
o-Xylene	1400	10000	10000	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	1 U	1 U
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	**21.8**	**21.3**	**20.8**	**3.99**	**4.13**
Total Chlorinated VOCs[1]	NA	NA	NA	**40.9**	**39.1**	**37.3**	**5**	**5.09**
Total Xylenes	200	10000	10000	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	110	100	100	**1.77**	**1.76**	**1.75**	**0.733 J**	**0.729 J**
Trichloroethene	1.7	5	5	**3.69**	**3.625**	**3.56**	1 U	1 U
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	**2.47**	**2.23**	**1.99**	**0.804**	**0.7605**
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	**0.0188 J**	**0.01725 J**
Benzene	0.41	5	5	**0.521**	**0.525**	**0.529**	**0.219**	**0.2145**
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	**13**	**12**	**11**	**0.185**	**0.1805**
Total Metals (ug/L)								
Aluminum	37000	NA	NA	**14.3 J**	**16.6 J**	**18.9**	**118 J**	**126 J**
Arsenic	0.045	10	NA	**7**	**7.05**	**7.1**	**19.8**	**19.5**
Barium	7300	2000	2000	**40.7**	**40.9**	**41.1**	**14.3**	**14.25**
Beryllium	73	4	4	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
Cadmium	18	5	5	0.06 U	0.06 U	0.06 U	0.07 U	0.065 U
Calcium	NA	NA	NA	**49200**	**48750**	**48300**	**60200**	**59650**
Chromium	110	100	100	0.46 U	0.475 U	0.49 U	0.77 U	0.845 U
Cobalt	11	NA	NA	**15.2**	**15.1**	**15**	**0.47**	**0.47**
Copper	1500	1300	NA	**0.59 J**	**0.55 J**	**0.51 J**	**0.91 J**	**0.945 J**
Iron	26000	NA	NA	**30500**	**29950**	**29400**	**26800**	**26800**
Lead	NA	15	15	**0.06 J**	**0.065 J**	**0.07 J**	**0.97 J**	**0.895 J**
Magnesium	NA	NA	NA	**3990**	**3860**	**3730**	**7250**	**7180**
Manganese	880	NA	NA	**1370**	**1360**	**1350**	**600**	**600.5**
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U
Nickel	730	NA	100	**3.3**	**3.35**	**3.4**	**1.5 J**	**1.4 J**

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-44S MW16-44S-NWG-092704 ORIG 9/27/2004	08 MW16-44S MW16-44S-NWG-092704-AVG AVG 9/27/2004	08 MW16-44S MW16-44S-NWG-092704-D DUP 9/27/2004	08 MW16-45S MW16-45S-NWG-092804 ORIG 9/28/2004	08 MW16-45S MW16-45S-NWG-092804-AVG AVG 9/28/2004
Total Metals (ug/L) (Continued)								
Potassium	NA	NA	NA	**4790 J**	**4675 J**	**4560**	**5250 J**	**5170 J**
Selenium	180	50	50	**0.36 J**	**0.375 J**	**0.39 J**	0.29 U	0.29 U
Silver	180	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Sodium	NA	NA	NA	**25700 J**	**25250 J**	**24800 J**	**39500**	**38900**
Thallium	2.4	2	2	0.07 U	**0.0525 J**	**0.07 J**	0.07 U	0.07 U
Vanadium	180	NA	NA	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Zinc	11000	NA	NA	**10.6 J**	**9.9 J**	**9.2 J**	3.8 U	**3.9 J**
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA	**6.8**	**6.75**	**6.7**	**0.91 J**	**0.94 J**
Arsenic	0.045	10	NA	**8.8 J**	**8.8 J**	**8.8 J**	**27.4 J**	**26.9 J**
Barium	7300	2000	2000	**36**	**36.25**	**36.5**	**13.2**	**13.3**
Cadmium	18	5	5	0.03 U	0.025 U	0.02 U	0.03 U	0.035 U
Calcium	NA	NA	NA	**44300**	**44550**	**44800**	**63100**	**62750 J**
Chromium	110	100	100	**12.8**	**12.5**	**12.2**	**9**	**8.2**
Cobalt	11	NA	NA	**15**	**14.9**	**14.8**	**0.41**	**0.395**
Copper	1500	1300	NA	**0.17 J**	**0.21 J**	**0.25 J**	**0.31 J**	**0.32 J**
Iron	26000	NA	NA	**25900**	**25950**	**26000**	**27500**	**27050**
Lead	NA	15	15	0.08 U	**0.105**	**0.17**	0.08 U	**0.085 J**
Magnesium	NA	NA	NA	**3530**	**3645**	**3760**	**7180**	**7055**
Manganese	880	NA	NA	**1330**	**1325**	**1320**	**613**	**611**
Mercury	11	2	2	0.048 U	0.0545 U	0.061 U	0.021 U	0.037 U
Nickel	730	NA	100	**3**	**3.05**	**3.1**	**0.79 J**	**1.045 J**
Potassium	NA	NA	NA	**4120**	**4235**	**4350**	**5300**	**5245**
Selenium	180	50	50	**0.36 J**	**0.38 J**	**0.4 J**	0.3 U	0.3 U
Silver	180	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Sodium	NA	NA	NA	**20900 J**	**22800 J**	**24700 J**	**42600 J**	**42150 J**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	**3.6**	**3.5**	**3.4**	**2.5**	**2.25**
Zinc	11000	NA	NA	**7.3 J**	**6.7 J**	**6.1 J**	**12.7 J**	**8.45 J**
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**179**	**179**	**179**	**236**	**235.5**
Ammonia	NA	NA	NA	**2.8**	**2.625**	**2.45**	**1.2**	**1.17**
Chloride	NA	NA	NA	**30**	**30.5**	**31**	**48**	**49.65**
Dissolved Inorganic Carbon	NA	NA	NA	**11 J**	**7 J**	**3 J**	**11**	**10**
Dissolved Organic Carbon	NA	NA	NA	**45 J**	**37 J**	**29 J**	**25**	**20**
Nitrate	58000	10	NA	0.1 U	0.1 U	0.1 U	**1.24 J**	**0.734 J**
Nitrite	3700	1	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA	**0.233**	**0.2305**	**0.228**	**0.292**	**0.298**
Sulfate	NA	NA	NA	**25.2**	**25.2**	**25.2**	**4.68**	**5.145**
pH	NA	NA	NA	**6.17**			**6.92**	
Conductivity	NA	NA	NA	**0.393**			**0.601**	
DO	NA	NA	NA	**0.79**			**0.09**	
Turbidity	NA	NA	NA	**19.5**			**4**	

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-45S MW16-45S-NWG-092804-D DUP 9/28/2004	08 MW16-46S MW16-46S-NWG-092804 NORMAL 9/28/2004	08 MW16-47S MW16-47S-NWG-092704 NORMAL 9/27/2004	08 MW16-48S MW16-48S-NWG-100404 NORMAL 10/4/2004	08 MW16-53S MW16-53S-NWG-100704 NORMAL 10/7/2004
Volatile Organics (ug/L)								
Acetone	22000	NA	NA	5 UR	5 UR	5 U	**3.46 J**	5 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	**0.21**	**2.24**	0 U	0 U	**1.079**
Carbon Disulfide	1000	NA	NA	1 U	1 U	1 U	1 U	1 UJ
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U
Chloromethane	1.8	NA	NA	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	**3.55**	**0.731 J**	1 U	1 U	1 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Ethylbenzene	1.5	700	700	1 U	**0.262 J**	1 U	1 U	1 U
m+p-Xylenes	210	10000	10000	2 U	2 U	2 U	2 U	**0.747 J**
Methane	NA	NA	NA	**2200 J**	**4100**	3.3 U	**2900**	**1200**
o-Xylene	1400	10000	10000	1 U	1 U	1 U	1 U	**0.332 J**
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	1 U	1 U
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	**4.28**	**0.976 J**	1 U	1 U	1 U
Total Chlorinated VOCs[1]	NA	NA	NA	**5.18**	**3.08**	0 U	0 U	**0.177**
Total Xylenes	200	10000	10000	1 U	1 U	1 U	1 U	**1.079 J**
trans-1,2-Dichloroethene	110	100	100	**0.725 J**	**0.245 J**	1 U	1 U	1 U
Trichloroethene	1.7	5	5	1 U	1 U	1 U	1 U	**0.177 J**
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	**0.717**	**0.244**	0.1 U	0.1 U	0.1 U
1,2-Dichloroethane	0.15	5	5	**0.0157 J**	0.1 U	0.1 U	0.1 U	0.1 U
Benzene	0.41	5	5	**0.21**	**1.98**	0.1 U	0.1 U	0.1 U
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	**0.176**	**1.86**	0.1 U	0.1 U	0.1 U
Total Metals (ug/L)								
Aluminum	37000	NA	NA	**134**	**7.2 J**	**28.3 J**	**433**	**6.7**
Arsenic	0.045	10	NA	**19.2**	**12.3**	0.42 U	**8.9**	**1.1**
Barium	7300	2000	2000	**14.2**	**39.8**	**21.7**	**5**	**4**
Beryllium	73	4	4	0.11 U	0.11 U	0.11 U	0.11 UJ	0.11 U
Cadmium	18	5	5	0.06 U	0.06 U	0.1 U	**0.07 J**	0.06 U
Calcium	NA	NA	NA	**59100**	**70100**	**119000**	**13500**	**17500**
Chromium	110	100	100	0.92 U	0.34 U	0.79 U	0.98 U	**0.87**
Cobalt	11	NA	NA	**0.47**	**0.21 J**	**0.23 J**	**2**	**0.43**
Copper	1500	1300	NA	**0.98 J**	0.4 U	**0.96 J**	**1.5**	0.45 U
Iron	26000	NA	NA	**26800**	**31700**	**283**	**33000**	**13900**
Lead	NA	15	15	**0.82 J**	**0.15 J**	**0.06 J**	**0.85**	0.05 U
Magnesium	NA	NA	NA	**7110**	**9530**	**8950**	**2910**	**1050**
Manganese	880	NA	NA	**601**	**613**	**93.6**	**915**	**116**
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U
Nickel	730	NA	100	**1.3 J**	**1.1 J**	**2.8 J**	**1.3**	**0.9**

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-45S MW16-45S-NWG-092804-D DUP 9/28/2004	08 MW16-46S MW16-46S-NWG-092804 NORMAL 9/28/2004	08 MW16-47S MW16-47S-NWG-092704 NORMAL 9/27/2004	08 MW16-48S MW16-48S-NWG-100404 NORMAL 10/4/2004	08 MW16-53S MW16-53S-NWG-100704 NORMAL 10/7/2004
Total Metals (ug/L) (Continued)								
Potassium	NA	NA	NA	**5090**	**6840 J**	**6840 J**	**2890**	**1640**
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Sodium	NA	NA	NA	**38300**	**32000**	**22000 J**	**13800**	**4040**
Thallium	2.4	2	2	0.07 U	0.07 U	**0.12 J**	0.07 U	0.07 U
Vanadium	180	NA	NA	0.4 U	0.4 U	0.4 U	**1.2**	0.4 U
Zinc	11000	NA	NA	**5.9 J**	**6.3 J**	**4.6 J**	**14.5**	**3.2**
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA	**0.97 J**	**1 J**	**1.6**	**2**	**3.5**
Arsenic	0.045	10	NA	**26.4 J**	**20.7 J**	**0.27 J**	**6.3**	**1.4**
Barium	7300	2000	2000	**13.4**	**26.6**	**20.3**	**4.1 J**	**4.2**
Cadmium	18	5	5	0.04 U	0.04 U	0.09 U	**0.03 J**	0.09 U
Calcium	NA	NA	NA	**62400 J**	**75300**	**117000**	**14000**	**17700**
Chromium	110	100	100	**7.4**	**11.9**	**19.3**	**2.7**	**3.1**
Cobalt	11	NA	NA	**0.38**	**0.28 J**	**0.2 J**	**1.9**	**0.56**
Copper	1500	1300	NA	**0.33 J**	**0.35 J**	**0.89 J**	0.16 U	0.16 U
Iron	26000	NA	NA	**26600**	**33500**	**228**	**29100**	**13000**
Lead	NA	15	15	**0.13 J**	0.08 U	0.08 U	**0.09 J**	0.08 U
Magnesium	NA	NA	NA	**6930**	**9890**	**8930**	**3130**	**1050**
Manganese	880	NA	NA	**609**	**646**	**95.5**	**968**	**127**
Mercury	11	2	2	0.053 U	0.064 U	0.021 U	0.021 U	0.057 U
Nickel	730	NA	100	**1.3 J**	**1 J**	**2.3 J**	**1.5**	**1.1**
Potassium	NA	NA	NA	**5190**	**7330**	**6940**	**3180**	**1710**
Selenium	180	50	50	0.3 U	**0.36 J**	0.3 U	**0.35 J**	0.3 U
Silver	180	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Sodium	NA	NA	NA	**41700**	**37600 J**	**25500 J**	**14700**	**3890**
Thallium	2.4	2	2	0.07 U	0.07 U	**0.09 J**	0.07 U	0.07 U
Vanadium	180	NA	NA	**2**	**3.3**	**5.4**	**0.74**	**0.64**
Zinc	11000	NA	NA	**4.2 J**	**6.6 J**	**12 J**	**3.7**	**6.8**
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**235**	**276**	**283**	**52**	**55.5**
Ammonia	NA	NA	NA	**1.14**	**1.9**	0.1 U	**2.12**	**0.27**
Chloride	NA	NA	NA	**51.3**	**39.3**	**50.5**	**27.5**	**7.1**
Dissolved Inorganic Carbon	NA	NA	NA	**9**	**27**	**56**	**2**	**16**
Dissolved Organic Carbon	NA	NA	NA	**15**	**13**	**28**	**1**	**4**
Nitrate	58000	10	NA	**0.228 J**	0.1 U	**17.9**	0.1 U	0.1 U
Nitrite	3700	1	NA	0.1 U	0.1 U	0.1 U	0.1 U	**1.5**
Salinity (ppth)	NA	NA	NA	**0.304**	**0.318**	**0.419**	**0.136**	**0.076**
Sulfate	NA	NA	NA	**5.61**	**1.14**	**38.2**	**4.86**	**2.82**
pH	NA	NA	NA		**6.91**	**5.32**	**6.25**	**6.42**
Conductivity	NA	NA	NA		**0.677**	**0.689**	**0.289**	**0.212**
DO	NA	NA	NA		**0.36**	**1.67**	**1.35**	**0.51**
Turbidity	NA	NA	NA		**4.52**	**1.4**	**69.8**	**1.75**

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**08 MW16-58S MW16-58S-NWG-101304 NORMAL 10/13/2004**	**08 MW16-59S MW16-59S-NWG-102504 NORMAL 10/25/2004**	**08 MW16-65S MW16-65S-NWG-102804 NORMAL 10/28/2004**	**09 MW16-66S MW16-66S-NWG-111604 NORMAL 11/16/2004**	**09 MW16-67S MW16-67S-NWG-111604 NORMAL 11/16/2004**
Volatile Organics (ug/L)								
Acetone	22000	NA	NA	5 U	6.93 U	7.61 U	5 U	5 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	**0.166 J**	1 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	1 U	1 U	1 U	**0.146 J**	1 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	**0.269 J**	1 U
Chloromethane	1.8	NA	NA	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	1 U	1 U	1 U	1 U	1 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Ethylbenzene	1.5	700	700	1 U	1 U	1 U	1 U	1 U
m+p-Xylenes	210	10000	10000	2 U	2 U	2 U	2 U	2 U
Methane	NA	NA	NA	**22**	3.3 U	5.3 U	5 U	4.4 U
o-Xylene	1400	10000	10000	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U		
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	1 U	1 U	1 U	2 U	2 U
Total Chlorinated VOCs[1]	NA	NA	NA	**0.0266**	**21**	**1.24**	**4.01**	**6.81**
Total Xylenes	200	10000	10000	1 U	1 U	1 U	3 U	3 U
trans-1,2-Dichloroethene	110	100	100	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1.7	5	5	1 U	**21**	**1.24**	**4.01**	**6.81**
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U		
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U	0.1 U		
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U		
Benzene	0.41	5	5	0.1 U	0.1 U	0.1 U		
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U		
Vinyl Chloride	0.016	2	2	**0.0266 J**	0.1 U	0.1 U		
Total Metals (ug/L)								
Aluminum	37000	NA	NA	**27.3**	**26.8**	**411**		
Arsenic	0.045	10	NA	0.42 U	0.42 U	0.42 U		
Barium	7300	2000	2000	**13.2**	**27.4**	**39.7**		
Beryllium	73	4	4	0.11 UJ	0.11 U	0.11 UJ		
Cadmium	18	5	5	0.06 U	0.06 U	0.06 U		
Calcium	NA	NA	NA	**25500**	**10100**	**16200**		
Chromium	110	100	100	1.3 U	1.4 U	1.8 U		
Cobalt	11	NA	NA	0.05 U	0.05 U	**0.26**		
Copper	1500	1300	NA	0.43 U	**1.1**	1.2 U		
Iron	26000	NA	NA	**4340**	50 U	**627**		
Lead	NA	15	15	0.05 U	**0.12**	**0.4**		
Magnesium	NA	NA	NA	**2460**	**3460**	**5350**		
Manganese	880	NA	NA	**12 J**	**12.2**	**27.6**		
Mercury	11	2	2	0.021 U	0.021 U	0.093 U		
Nickel	730	NA	100	**0.62 J**	**0.75**	**0.86 J**		

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-58S MW16-58S-NWG-101304 NORMAL 10/13/2004	08 MW16-59S MW16-59S-NWG-102504 NORMAL 10/25/2004	08 MW16-65S MW16-65S-NWG-102804 NORMAL 10/28/2004	09 MW16-66S MW16-66S-NWG-111604 NORMAL 11/16/2004	09 MW16-67S MW16-67S-NWG-111604 NORMAL 11/16/2004
Total Metals (ug/L) (Continued)								
Potassium	NA	NA	NA	**3320**	**2250**	**2230**		
Selenium	180	50	50	0.29 U	0.29 U	0.29 UJ		
Silver	180	NA	NA	0.05 U	0.05 U	0.05 U		
Sodium	NA	NA	NA	**26600 J**	**62300 J**	**30300 J**		
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U		
Vanadium	180	NA	NA	**0.9 J**	0.4 U	**1.8**		
Zinc	11000	NA	NA	**3.7 J**	**8**	**12.7 J**		
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA	**2.9**	**14.7**	**32.3**		
Arsenic	0.045	10	NA	**0.19**	0.09 U	**0.24 J**		
Barium	7300	2000	2000	**6.2**	**26**	**37.2**		
Cadmium	18	5	5	0.03 U	0.02 U	0.07 U		
Calcium	NA	NA	NA	**30000**	**9520**	**18100**		
Chromium	110	100	100	**1.7**	0.93 U	**1.1**		
Cobalt	11	NA	NA	**0.03**	0.01 U	**0.11**		
Copper	1500	1300	NA	0.42 U	**0.74**	0.3 U		
Iron	26000	NA	NA	**269**	50 U	50 U	32.2 U	32.2 U
Lead	NA	15	15	0.08 U	0.08 U	**0.15 J**		
Magnesium	NA	NA	NA	**2740**	**3320**	**5650**		
Manganese	880	NA	NA	**12.5 J**	**11.4**	**15.5**	**4.8**	**11**
Mercury	11	2	2	0.021 U	0.021 U	0.047 U		
Nickel	730	NA	100	**0.71 J**	**0.7**	**0.55 J**		
Potassium	NA	NA	NA	**3450**	**2150**	**2040**		
Selenium	180	50	50	0.3 U	0.3 U	0.3 UJ		
Silver	180	NA	NA	0.02 U	0.02 U	0.02 U		
Sodium	NA	NA	NA	**32800**	**59900**	**26500 J**		
Thallium	2.4	2	2	0.07 U	0.07 U	0.074 UJ		
Vanadium	180	NA	NA	**0.64**	0.11 U	**1**		
Zinc	11000	NA	NA	**4.2 J**	**2.5**	**9.8 J**		
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**67.8**	**4.5**	**23.5**	**6.3**	**4.5**
Ammonia	NA	NA	NA	**0.15**	0.1 U	0.1 U	**0.29**	**0.17**
Chloride	NA	NA	NA	**68.7**	**102**	**79.6**	**6.65**	**25.8**
Dissolved Inorganic Carbon	NA	NA	NA	**7**	**1**	**2**	**5**	**3**
Dissolved Organic Carbon	NA	NA	NA	**2**	**2**	**2**	**1**	**1**
Nitrate	58000	10	NA	**3.42**	**9.12**	**26.7**	**8.01**	**5.21**
Nitrite	3700	1	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA	**0.202**	**0.224**	**0.162**		
Sulfate	NA	NA	NA	**8.37**	**6.46**	**5.11**	**3.91**	**5.43**
pH	NA	NA	NA	**7.15**	**5.59**	**9.88**	**5.66**	**5.6**
Conductivity	NA	NA	NA	**0.328**	**0.425**	**0.278**	**0.054**	**0.114**
DO	NA	NA	NA	**6.73**	**7.09**	**9.34**	**8.51**	**8.55**
Turbidity	NA	NA	NA	**1.8**	**3**	**11**	**1.3**	**1.8**

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	09 MW16-68S MW16-68S-NWG-120904 NORMAL 12/9/2004	09 MW16-69S MW16-69S-NWG-111704 NORMAL 11/17/2004	09 MW16-70S MW16-70S-NWG-111704 NORMAL 11/17/2004	09 MW16-71S MW16-71S-NWG-111704 NORMAL 11/17/2004
Volatile Organics (ug/L)							
Acetone	22000	NA	NA	5 U	5.45 U	5 U	5 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	**0.167 J**	1 U	1 U	**0.262 J**
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U
Chloromethane	1.8	NA	NA	**0.101 J**	1 UJ	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	1 U	1 U	1 U	1 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U
Ethylbenzene	1.5	700	700	1 U	1 U	1 U	1 U
m+p-Xylenes	210	10000	10000		2 U	2 U	2 U
Methane	NA	NA	NA	14 U	3.3 U	4.6 U	4.2 U
o-Xylene	1400	10000	10000		1 U	1 U	1 U
Tetrachloroethene	0.11	5	5				
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	2 U	2 U	2 U	2 U
Total Chlorinated VOCs[1]	NA	NA	NA	**12.1**	**10**	**20**	**4.58**
Total Xylenes	200	10000	10000	1 U	3 U	3 U	3 U
trans-1,2-Dichloroethene	110	100	100	1 U	1 U	1 U	1 U
Trichloroethene	1.7	5	5	**12**	**10**	**20**	**4.58**
Low-Level Volatile Organics (ug/L)							
1,1,2-Trichloroethane	0.24	5	5				
1,1-Dichloroethene	340	7	7				
1,2-Dichloroethane	0.15	5	5				
Benzene	0.41	5	5				
Chloroform	0.19	80	NA				
Vinyl Chloride	0.016	2	2				
Total Metals (ug/L)							
Aluminum	37000	NA	NA				
Arsenic	0.045	10	NA				
Barium	7300	2000	2000				
Beryllium	73	4	4				
Cadmium	18	5	5				
Calcium	NA	NA	NA				
Chromium	110	100	100				
Cobalt	11	NA	NA				
Copper	1500	1300	NA				
Iron	26000	NA	NA				
Lead	NA	15	15				
Magnesium	NA	NA	NA				
Manganese	880	NA	NA				
Mercury	11	2	2				
Nickel	730	NA	100				

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	09 MW16-68S MW16-68S-NWG-120904 NORMAL 12/9/2004	09 MW16-69S MW16-69S-NWG-111704 NORMAL 11/17/2004	09 MW16-70S MW16-70S-NWG-111704 NORMAL 11/17/2004	09 MW16-71S MW16-71S-NWG-111704 NORMAL 11/17/2004
Total Metals (ug/L) (Continued)							
Potassium	NA	NA	NA				
Selenium	180	50	50				
Silver	180	NA	NA				
Sodium	NA	NA	NA				
Thallium	2.4	2	2				
Vanadium	180	NA	NA				
Zinc	11000	NA	NA				
Dissolved Metals (ug/L)							
Aluminum	37000	NA	NA				
Arsenic	0.045	10	NA				
Barium	7300	2000	2000				
Cadmium	18	5	5				
Calcium	NA	NA	NA				
Chromium	110	100	100				
Cobalt	11	NA	NA				
Copper	1500	1300	NA				
Iron	26000	NA	NA	32.2 UJ	32.2 U	32.2 UJ	32.2 UJ
Lead	NA	15	15				
Magnesium	NA	NA	NA				
Manganese	880	NA	NA	**27**	**23.4**	**32.6**	**6.6**
Mercury	11	2	2				
Nickel	730	NA	100				
Potassium	NA	NA	NA				
Selenium	180	50	50				
Silver	180	NA	NA				
Sodium	NA	NA	NA				
Thallium	2.4	2	2				
Vanadium	180	NA	NA				
Zinc	11000	NA	NA				
Miscellaneous Parameters (mg/L)							
Alkalinity	NA	NA	NA	**5.2**	**2.8**	**2.5**	**13.5**
Ammonia	NA	NA	NA	**0.12**	0.1 U	**0.21**	**0.23**
Chloride	NA	NA	NA	**300**	**93.6**	**307**	**128**
Dissolved Inorganic Carbon	NA	NA	NA	**5**	**3**	**3**	**3**
Dissolved Organic Carbon	NA	NA	NA	**1**	**1**	**2**	**2**
Nitrate	58000	10	NA	**4.7**	**11**	**38.9**	**7.09**
Nitrite	3700	1	NA	0.01 U	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA				
Sulfate	NA	NA	NA	**42**	**4.55**	**13**	**11.5**
pH	NA	NA	NA	**8.15**	**5.69**	**5.23**	**6.32**
Conductivity	NA	NA	NA	**0.758**	**0.408**	**1.083**	**0.483**
DO	NA	NA	NA	**9.42**	**6.83**	**9.34**	**3.14**
Turbidity	NA	NA	NA	**5**	**3.44**	**3.97**	**2.12**

TABLE 4-31

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Description:
08 - CTO 97 Supplemental Phase II Investigation
09 - CTO 107 HRC Injection Study

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.
AVG - Average of the two samples collected at this location.

Acronyms:
GA = Drinking water suitability
GW = Groundwater
MCL = Maximum Contaminant Level
NA = Not applicable/not available
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
VOC = Volatile organic compound

Footnotes:
1 - The calculation of the BTEX and the total chlorinated VOCs are defined in the Section 4 text. "0 U" indicates that this chemical group was not detected in the sample analyzed.
2 - A concentration that is shaded exceeds one or more criterion presented in the table.
3 - A blank cell in the table indicates that the sample was not analyzed for the target analyte.

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 1 OF 28

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **Area**	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**10** **MW16-01S** **MW16-01S-NWG-082707** **NORMAL** **20070827** **CREOSOTE DIP TANK**	**10** **MW16-03S** **MW16-03S-NWG-082807** **NORMAL** **20070828** **NCENTRAL EASTERN**	**10** **MW16-04S** **MW16-04S-NWG-052207** **NORMAL** **20070522** **NCENTRAL EASTERN**	**10** **MW16-04S** **MW16-04S-NWG-061507** **NORMAL** **20070615** **NCENTRAL EASTERN**	**10** **MW16-04S** **MW16-04S-NWG-082007** **NORMAL** **20070820** **NCENTRAL EASTERN**
Volatile Organic Compounds (ug/L)								
Benzene	0.41	5	5	0.1 U	0.1 U	0.2 UJ	0.1 U	
BTEX	NA	NA	NA	0 U	0 U	0 U	0 U	
Chloroform	0.19	80	NA	0.1 UJ	0.1 UJ	0.2 UJ	**0.17**	
cis-1,2-Dichloroethene	370	70	70	0.53 U	0.53 U	0.53 U	0.53 U	
Tetrachloroethene	0.11	5	5	0.1 U	0.1 U	0.2 UJ	0.1 U	
Total Chlorinated VOCs	NA	NA	NA	0 U	0 U	0 U	0 U	
trans-1,2-Dichloroethene	110	100	100	0.5 U	0.5 U	0.5 U	0.5 U	
Trichloroethene	1.7	5	5	0.1 U	0.1 U	0.2 UJ	0.1 U	
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.2 UJ	0.1 U	
Semivolatile Organic Compounds (ug/L)								
2-Methylnaphthalene	150	NA	NA		0.1 U			0.1 U
Acenaphthene	2200	NA	NA		0.1 U			**0.16**
Acenaphthylene	2200	NA	NA		0.1 U			0.1 U
Anthracene	11000	NA	NA		0.1 U			0.1 U
Fluoranthene	1500	NA	NA		0.1 U			**0.38**
Fluorene	1500	NA	NA		0.1 U			**0.15**
High Molecular Weight PAHs	NA	NA	NA		0 U			**0.58**
Low Molecular Weight PAHs	NA	NA	NA		0 U			**0.61**
Naphthalene	0.14	NA	20		0.1 U			0.1 U
Phenanthrene	1100	NA	NA		0.1 U			**0.3**
Pyrene	1100	NA	NA		0.1 U			**0.2**
Total PAHs	NA	NA	NA		0 U			**1.19**
Polycyclic Aromatic Hydrocarbons (ng/L)								
2-Methylnaphthalene	150000	NA	NA					
Acenaphthene	2200000	NA	NA					
Acenaphthylene	2200000	NA	NA					
Anthracene	11000000	NA	NA					
Benzo(a)pyrene Equivalents	2.9	200	200					
Benzo(a)anthracene	29	NA	NA					
Benzo(a)pyrene	2.9	200	200					
Benzo(b)fluoranthene	29	NA	NA					
Benzo(g,h,i)perylene	1100000	NA	NA					
Benzo(k)fluoranthene	290	NA	NA					
Chrysene	2900	NA	NA					
Dibenzo(a,h)anthracene	2.9	NA	NA					
Dibenzofuran	NA	NA	NA					
Fluoranthene	1500000	NA	NA					
Fluorene	1500000	NA	NA					
High Molecular Weight PAHs	NA	NA	NA					
Indeno(1,2,3-cd)pyrene	29	NA	NA					
Low Molecular Weight PAHs	NA	NA	NA					
Naphthalene	6200	NA	20000					
Phenanthrene	1100000	NA	NA					
Pyrene	1100000	NA	NA					
Total PAHs	NA	NA	NA					

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 2 OF 28

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**		**RIDEM**	**MW16-01S**	**MW16-03S**	**MW16-04S**	**MW16-04S**	**MW16-04S**
Sample Number	**Regional**	**Federal**	**GA GW**	**MW16-01S-NWG-082707**	**MW16-03S-NWG-082807**	**MW16-04S-NWG-052207**	**MW16-04S-NWG-061507**	**MW16-04S-NWG-082007**
Sample Code	**Screening**	**MCL**	**Objectives**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**			**20070827**	**20070828**	**20070522**	**20070615**	**20070820**
Area	**Tap Water**			**CREOSOTE DIP TANK**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**
Filtered Polycyclic Aromatic Hydrocarbons (ng/L)								
Acenaphthene	2200000	NA	NA					
Acenaphthylene	2200000	NA	NA					
Anthracene	11000000	NA	NA					
Benzo(a)pyrene Equivalents	2.9	0.2	0.2					
Benzo(a)anthracene	29	NA	NA					
Benzo(a)pyrene	2.9	0.2	0.2					
Benzo(b)fluoranthene	29	NA	NA					
Benzo(g,h,i)perylene	1100000	NA	NA					
Benzo(k)fluoranthene	290	NA	NA					
Chrysene	2900	NA	NA					
Dibenzo(a,h)anthracene	2.9	NA	NA					
Dibenzofuran	NA	NA	NA					
Fluoranthene	1500000	NA	NA					
Fluorene	1500000	NA	NA					
High Molecular Weight PAHs	NA	NA	NA					
Indeno(1,2,3-cd)pyrene	29	NA	NA					
Low Molecular Weight PAHs	NA	NA	NA					
Naphthalene	6200	NA	20					
Phenanthrene	1100000	NA	NA					
Pyrene	1100000	NA	NA					
Total PAHs	NA	NA	NA					
Inorganics (ug/L)								
Aluminum	37000	NA	NA	**67.2**	37 U	**199**	**23 J**	
Arsenic	0.045	10	NA	1 U	1 U	**1.8**	0.901 U	
Barium	7300	2000	2000	**92**	11 U	**206**	**295**	
Beryllium	73	4	4	0.051 U	0.051 U	0.15 U	0.15 U	
Cadmium	18	5	5	0.11 U	0.11 U	**0.17 J**	0.1 U	
Calcium	NA	NA	NA	**16200**	**21500**	**58300**	**67900**	
Chromium	110	100	100	0.22 U	0.22 U	0.38 U	0.38 U	
Cobalt	11	NA	NA	0.61 U	1.1 U	0.15 U	0.68 U	
Copper	1500	1300	NA	1.7 U	1.7 U	6.3 U	6.3 U	
Iron	26000	NA	NA	**89 J**	**720 J**	**26300**	**22300**	
Magnesium	NA	NA	NA	**4820**	**2340**	**4210**	**5940**	
Manganese	880	NA	NA	**49.3**	**38.3**	**479**	**371**	
Nickel	730	NA	100	0.73 U	0.79 U	2.1 U	**0.85 J**	
Potassium	NA	NA	NA	**2210**	**2610**	**4810**	**5290**	
Selenium	180	50	50	5.2 U	**8**	17.6 U	13.7 U	
Sodium	NA	NA	NA	**190000**	**15800**	**18700**	**28300**	
Thallium	2.4	2	2	1 U	1 U	0.007 U	0.011 U	
Vanadium	180	NA	NA	0.62 U	0.7 U	0.47 U	0.47 U	
Zinc	11000	NA	NA	21.6 U	19.3 U	**25.4**	**17.9**	

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**		**RIDEM**	**MW16-01S**	**MW16-03S**	**MW16-04S**	**MW16-04S**	**MW16-04S**
Sample Number	**Regional**	**Federal**	**GA GW**	**MW16-01S-NWG-082707**	**MW16-03S-NWG-082807**	**MW16-04S-NWG-052207**	**MW16-04S-NWG-061507**	**MW16-04S-NWG-082007**
Sample Code	**Screening**	**MCL**	**Objectives**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**			**20070827**	**20070828**	**20070522**	**20070615**	**20070820**
Area	**Tap Water**			**CREOSOTE DIP TANK**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA		37 U			
Arsenic	0.045	10	NA		1 U			
Barium	7300	2000	2000		11 U			
Cadmium	18	5	5		0.11 U			
Calcium	NA	NA	NA		**21100**			
Chromium	110	100	100		**2.1**			
Cobalt	11	NA	NA		1.3 U			
Iron	26000	NA	NA		**314 J**			
Magnesium	NA	NA	NA		**2310**			
Manganese	880	NA	NA		**42.3**			
Nickel	730	NA	100		0.84 U			
Potassium	NA	NA	NA		**2540**			
Sodium	NA	NA	NA		**15400**			
Petroleum Hydrocarbons (mg/L)								
TPH (C09-C36)	NA	NA	NA					
TPH (C09-C44)	NA	NA	NA					
Miscellaneous Parameters								
Turbidity (NTUs)	NA	NA	NA	**4.31**	**8**	**2.5**	**1.5**	**3.25**
pH	NA	NA	NA	**5.08**	**5.83**	**6.59**	**6.79**	**6.69**
Conductivity (mS/cm)	NA	NA	NA	**2.1**	**11.9**	**23.1**	**0.999**	**0.635**
DO (mg/L)	NA	NA	NA	**7.69**	**0.89**	**3.14**	**4.53**	**2.08**
Salinity	NA	NA	NA	**0.1**	**0.7**	**1.4**	**0.1**	**0**

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-05S**	**MW16-06S**	**MW16-07S**	**MW16-11S**	**MW16-15S**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-05S-NWG-052107**	**MW16-06S-NWG-082807**	**MW16-07S-NWG-082907**	**MW16-11S-NWG-071607**	**MW16-15S-NWG-071407**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070521**	**20070828**	**20070829**	**20070716**	**20070714**
Area	**Tap Water**			**NCENTRAL EASTERN**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**BUILDING 41**	**BUILDING 41**
Volatile Organic Compounds (ug/L)								
Benzene	0.41	5	5	0.1 UJ	0.1 U	0.5 U	0.1 U	0.1 U
BTEX	NA	NA	NA	0 U	0 U	0 U	0 U	0 U
Chloroform	0.19	80	NA	0.1 UJ	0.1 UJ	0.35 U	0.1 U	0.1 U
cis-1,2-Dichloroethene	370	70	70	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U
Tetrachloroethene	0.11	5	5	0.1 UJ	0.1 U	0.52 U	0.1 U	0.1 U
Total Chlorinated VOCs	NA	NA	NA	0 U	0 U	0 U	**1.3**	**6.6**
trans-1,2-Dichloroethene	110	100	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	1.7	5	5	0.1 UJ	0.1 U	0.5 U	**1.3**	**6.6**
Vinyl Chloride	0.016	2	2	0.1 UJ	0.1 UJ	0.51 U	0.1 U	0.1 U
Semivolatile Organic Compounds (ug/L)								
2-Methylnaphthalene	150	NA	NA			**120**		
Acenaphthene	2200	NA	NA			**5.2**		
Acenaphthylene	2200	NA	NA			**1.6**		
Anthracene	11000	NA	NA			**0.55**		
Fluoranthene	1500	NA	NA			**0.19**		
Fluorene	1500	NA	NA			**6.5**		
High Molecular Weight PAHs	NA	NA	NA			**0.37**		
Low Molecular Weight PAHs	NA	NA	NA			**142.35**		
Naphthalene	0.14	NA	20			**2.6**		
Phenanthrene	1100	NA	NA			**5.9**		
Pyrene	1100	NA	NA			**0.18**		
Total PAHs	NA	NA	NA			**142.72**		
Polycyclic Aromatic Hydrocarbons (ng/L)								
2-Methylnaphthalene	150000	NA	NA					
Acenaphthene	2200000	NA	NA					
Acenaphthylene	2200000	NA	NA					
Anthracene	11000000	NA	NA					
Benzo(a)pyrene Equivalents	2.9	200	200					
Benzo(a)anthracene	29	NA	NA					
Benzo(a)pyrene	2.9	200	200					
Benzo(b)fluoranthene	29	NA	NA					
Benzo(g,h,i)perylene	1100000	NA	NA					
Benzo(k)fluoranthene	290	NA	NA					
Chrysene	2900	NA	NA					
Dibenzo(a,h)anthracene	2.9	NA	NA					
Dibenzofuran	NA	NA	NA					
Fluoranthene	1500000	NA	NA					
Fluorene	1500000	NA	NA					
High Molecular Weight PAHs	NA	NA	NA					
Indeno(1,2,3-cd)pyrene	29	NA	NA					
Low Molecular Weight PAHs	NA	NA	NA					
Naphthalene	6200	NA	20000					
Phenanthrene	1100000	NA	NA					
Pyrene	1100000	NA	NA					
Total PAHs	NA	NA	NA					

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**		**RIDEM**	**MW16-05S**	**MW16-06S**	**MW16-07S**	**MW16-11S**	**MW16-15S**
Sample Number	**Regional**	**Federal**	**GA GW**	**MW16-05S-NWG-052107**	**MW16-06S-NWG-082807**	**MW16-07S-NWG-082907**	**MW16-11S-NWG-071607**	**MW16-15S-NWG-071407**
Sample Code	**Screening**	**MCL**	**Objectives**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**			**20070521**	**20070828**	**20070829**	**20070716**	**20070714**
Area	**Tap Water**			**NCENTRAL EASTERN**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**BUILDING 41**	**BUILDING 41**
Filtered Polycyclic Aromatic Hydrocarbons (ng/L)								
Acenaphthene	2200000	NA	NA					
Acenaphthylene	2200000	NA	NA					
Anthracene	11000000	NA	NA					
Benzo(a)pyrene Equivalents	2.9	0.2	0.2					
Benzo(a)anthracene	29	NA	NA					
Benzo(a)pyrene	2.9	0.2	0.2					
Benzo(b)fluoranthene	29	NA	NA					
Benzo(g,h,i)perylene	1100000	NA	NA					
Benzo(k)fluoranthene	290	NA	NA					
Chrysene	2900	NA	NA					
Dibenzo(a,h)anthracene	2.9	NA	NA					
Dibenzofuran	NA	NA	NA					
Fluoranthene	1500000	NA	NA					
Fluorene	1500000	NA	NA					
High Molecular Weight PAHs	NA	NA	NA					
Indeno(1,2,3-cd)pyrene	29	NA	NA					
Low Molecular Weight PAHs	NA	NA	NA					
Naphthalene	6200	NA	20					
Phenanthrene	1100000	NA	NA					
Pyrene	1100000	NA	NA					
Total PAHs	NA	NA	NA					
Inorganics (ug/L)								
Aluminum	37000	NA	NA	14 U	37 U	37 U	98.2 U	249 U
Arsenic	0.045	10	NA	**2.4 J**	1 U	**3**	0.04 U	0.04 UJ
Barium	7300	2000	2000	**4.8**	**18.4**	**25.2**	**5.1**	**34.3**
Beryllium	73	4	4	0.15 U	0.051 U	0.051 U	0.15 U	0.15 U
Cadmium	18	5	5	0.1 U	0.11 U	0.11 U	0.1 UJ	0.1 UJ
Calcium	NA	NA	NA	**14300**	**17600**	**76400**	**860**	**9650**
Chromium	110	100	100	0.38 U	0.22 U	**23.5**	**0.97**	**1**
Cobalt	11	NA	NA	**7.5**	0.79 U	**2.7**	0.73 U	0.49 U
Copper	1500	1300	NA	6.3 U	1.7 U	**2.8**	6.3 U	6.3 U
Iron	26000	NA	NA	**31200**	**198 J**	**11400 J**	**470**	**486**
Magnesium	NA	NA	NA	**1840**	**3590**	**7580**	239 U	**2170**
Manganese	880	NA	NA	**1550**	**13.2**	**214**	**20.8**	7.5 U
Nickel	730	NA	100	3.1 U	1.1 U	2.5 U	**1.5**	**0.66 J**
Potassium	NA	NA	NA	**1540**	**2170**	**3590**	**614**	**3570**
Selenium	180	50	50	0.98 U	5.2 U	**11.3**	2.3 U	1.8 U
Sodium	NA	NA	NA	**4250**	**56700**	**35800**	**6620**	**73900**
Thallium	2.4	2	2	0.008 U	1 U	1 U	0.015 U	0.023 U
Vanadium	180	NA	NA	0.47 U	0.4 U	0.43 U	0.47 U	0.47 U
Zinc	11000	NA	NA	15.6 U	19.8 U	15.2 U	**35.6**	**17.7**

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-05S**	**MW16-06S**	**MW16-07S**	**MW16-11S**	**MW16-15S**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-05S-NWG-052107**	**MW16-06S-NWG-082807**	**MW16-07S-NWG-082907**	**MW16-11S-NWG-071607**	**MW16-15S-NWG-071407**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070521**	**20070828**	**20070829**	**20070716**	**20070714**
Area	**Tap Water**			**NCENTRAL EASTERN**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**BUILDING 41**	**BUILDING 41**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA					
Arsenic	0.045	10	NA					
Barium	7300	2000	2000					
Cadmium	18	5	5					
Calcium	NA	NA	NA					
Chromium	110	100	100					
Cobalt	11	NA	NA					
Iron	26000	NA	NA					
Magnesium	NA	NA	NA					
Manganese	880	NA	NA					
Nickel	730	NA	100					
Potassium	NA	NA	NA					
Sodium	NA	NA	NA					
Petroleum Hydrocarbons (mg/L)								
TPH (C09-C36)	NA	NA	NA					
TPH (C09-C44)	NA	NA	NA					
Miscellaneous Parameters								
Turbidity (NTUs)	NA	NA	NA	**4.5**	**4.59**	**3.69**	**4.26**	**4.33**
pH	NA	NA	NA	**6.11**	**5.33**	**6.28**	**4.62**	**5.8**
Conductivity (mS/cm)	NA	NA	NA	**0.255**	**4.52**	**1.34**	**0.045**	**0.483**
DO (mg/L)	NA	NA	NA	**16.56**	**3.25**	**0.62**	**9.88**	**7.66**
Salinity	NA	NA	NA	**0**	**0.2**	**0.1**	**0**	**0**

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 7 OF 28

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-17S**	**MW16-17S**	**MW16-17S**	**MW16-23S**	**MW16-25S**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-17S-NWG-061607**	**MW16-17S-NWG-061607-AVG**	**MW16-17S-NWG-061607-D**	**MW16-23S-NWG-071307**	**MW16-25S-NWG-052107**
Sample Code	**Screening**	**MCL**	**GA GW**	**ORIG**	**AVG**	**DUP**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070616**	**20070616**	**20070616**	**20070713**	**20070521**
Area	**Tap Water**			**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Volatile Organic Compounds (ug/L)								
Benzene	0.41	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ
BTEX	NA	NA	NA	0 U	0 U	0 U	0 U	0 U
Chloroform	0.19	80	NA	**0.18**	**0.18**	**0.18**	0.1 U	0.1 UJ
cis-1,2-Dichloroethene	370	70	70	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U
Tetrachloroethene	0.11	5	5	0.1 U	0.1 U	0.1 U	**0.4**	0.1 UJ
Total Chlorinated VOCs	NA	NA	NA	0 U	0 U	0 U	**30.4**	**1.5**
trans-1,2-Dichloroethene	110	100	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	1.7	5	5	0.1 U	0.1 U	0.1 U	**30**	**1.5 J**
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ
Semivolatile Organic Compounds (ug/L)								
2-Methylnaphthalene	150	NA	NA					
Acenaphthene	2200	NA	NA					
Acenaphthylene	2200	NA	NA					
Anthracene	11000	NA	NA					
Fluoranthene	1500	NA	NA					
Fluorene	1500	NA	NA					
High Molecular Weight PAHs	NA	NA	NA					
Low Molecular Weight PAHs	NA	NA	NA					
Naphthalene	0.14	NA	20					
Phenanthrene	1100	NA	NA					
Pyrene	1100	NA	NA					
Total PAHs	NA	NA	NA					
Polycyclic Aromatic Hydrocarbons (ng/L)								
2-Methylnaphthalene	150000	NA	NA					
Acenaphthene	2200000	NA	NA					
Acenaphthylene	2200000	NA	NA					
Anthracene	11000000	NA	NA					
Benzo(a)pyrene Equivalents	2.9	200	200					
Benzo(a)anthracene	29	NA	NA					
Benzo(a)pyrene	2.9	200	200					
Benzo(b)fluoranthene	29	NA	NA					
Benzo(g,h,i)perylene	1100000	NA	NA					
Benzo(k)fluoranthene	290	NA	NA					
Chrysene	2900	NA	NA					
Dibenzo(a,h)anthracene	2.9	NA	NA					
Dibenzofuran	NA	NA	NA					
Fluoranthene	1500000	NA	NA					
Fluorene	1500000	NA	NA					
High Molecular Weight PAHs	NA	NA	NA					
Indeno(1,2,3-cd)pyrene	29	NA	NA					
Low Molecular Weight PAHs	NA	NA	NA					
Naphthalene	6200	NA	20000					
Phenanthrene	1100000	NA	NA					
Pyrene	1100000	NA	NA					
Total PAHs	NA	NA	NA					

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-17S**	**MW16-17S**	**MW16-17S**	**MW16-23S**	**MW16-25S**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-17S-NWG-061607**	**MW16-17S-NWG-061607-AVG**	**MW16-17S-NWG-061607-DUP**	**MW16-23S-NWG-071307**	**MW16-25S-NWG-052107**
Sample Code	**Screening**	**MCL**	**GA GW**	**ORIG**	**AVG**	**DUP**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070616**	**20070616**	**20070616**	**20070713**	**20070521**
Area	**Tap Water**			**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Filtered Polycyclic Aromatic Hydrocarbons (ng/L)								
Acenaphthene	2200000	NA	NA					
Acenaphthylene	2200000	NA	NA					
Anthracene	11000000	NA	NA					
Benzo(a)pyrene Equivalents	2.9	0.2	0.2					
Benzo(a)anthracene	29	NA	NA					
Benzo(a)pyrene	2.9	0.2	0.2					
Benzo(b)fluoranthene	29	NA	NA					
Benzo(g,h,i)perylene	1100000	NA	NA					
Benzo(k)fluoranthene	290	NA	NA					
Chrysene	2900	NA	NA					
Dibenzo(a,h)anthracene	2.9	NA	NA					
Dibenzofuran	NA	NA	NA					
Fluoranthene	1500000	NA	NA					
Fluorene	1500000	NA	NA					
High Molecular Weight PAHs	NA	NA	NA					
Indeno(1,2,3-cd)pyrene	29	NA	NA					
Low Molecular Weight PAHs	NA	NA	NA					
Naphthalene	6200	NA	20					
Phenanthrene	1100000	NA	NA					
Pyrene	1100000	NA	NA					
Total PAHs	NA	NA	NA					
Inorganics (ug/L)								
Aluminum	37000	NA	NA	**51.1**	**42.35**	**33.6**	32.1 U	**1040**
Arsenic	0.045	10	NA	0.022 UJ	0.022 UJ	0.022 UJ	0.04 UJ	**0.786**
Barium	7300	2000	2000	**3.1 J**	**3 J**	**2.9 J**	**24.4**	**11**
Beryllium	73	4	4	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Cadmium	18	5	5	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U
Calcium	NA	NA	NA	**1390**	**1370**	**1350**	**10900**	**3020**
Chromium	110	100	100	**0.48 J**	**0.335 J**	0.38 U	**0.76**	**1.5**
Cobalt	11	NA	NA	0.15 U	0.15 U	0.15 U	0.49 U	1 U
Copper	1500	1300	NA	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U
Iron	26000	NA	NA	**158**	**112.1**	**66.2**	82.2 U	**2080**
Magnesium	NA	NA	NA	**509**	**501**	**493**	**2950**	**1480**
Manganese	880	NA	NA	**3.7**	**3.05 J**	**2.4 J**	9.5 U	**32.8**
Nickel	730	NA	100	**1 J**	**0.6475 J**	0.59 U	0.59 U	1.7 U
Potassium	NA	NA	NA	**1250**	**1235**	**1220**	**3330**	**1170**
Selenium	180	50	50	2.8 U	2.1 U	1.4 U	0.98 UJ	1 U
Sodium	NA	NA	NA	**2570**	**2530**	**2490**	**84500**	**6690**
Thallium	2.4	2	2	0.008 U	0.0085 U	0.009 U	0.059 U	0.05 U
Vanadium	180	NA	NA	0.47 U	0.47 U	0.47 U	0.47 U	**1.5**
Zinc	11000	NA	NA	**20.7**	**12.8**	9.8 U	**34.9**	**35.7**

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-17S**	**MW16-17S**	**MW16-17S**	**MW16-23S**	**MW16-25S**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-17S-NWG-061607**	**MW16-17S-NWG-061607-AVG**	**MW16-17S-NWG-061607-D**	**MW16-23S-NWG-071307**	**MW16-25S-NWG-052107**
Sample Code	**Screening**	**MCL**	**GA GW**	**ORIG**	**AVG**	**DUP**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070616**	**20070616**	**20070616**	**20070713**	**20070521**
Area	**Tap Water**			**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA					**23.5 J**
Arsenic	0.045	10	NA					0.056 U
Barium	7300	2000	2000					**5.3**
Cadmium	18	5	5					0.1 U
Calcium	NA	NA	NA					**2770**
Chromium	110	100	100					**0.39 J**
Cobalt	11	NA	NA					0.39 U
Iron	26000	NA	NA					83.4 U
Magnesium	NA	NA	NA					**1120**
Manganese	880	NA	NA					6.9 U
Nickel	730	NA	100					0.93 U
Potassium	NA	NA	NA					**948**
Sodium	NA	NA	NA					**6710**
Petroleum Hydrocarbons (mg/L)								
TPH (C09-C36)	NA	NA	NA					
TPH (C09-C44)	NA	NA	NA					
Miscellaneous Parameters								
Turbidity (NTUs)	NA	NA	NA	**1.4**			**2.33**	**23**
pH	NA	NA	NA	**5.51**			**5.67**	**5.1**
Conductivity (mS/cm)	NA	NA	NA	**0.133**			**0.537**	**0.62**
DO (mg/L)	NA	NA	NA	**9.44**			**8.41**	**6.38**
Salinity	NA	NA	NA				**0**	**0**

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-33S**	**MW16-37S**	**MW16-40S**	**MW16-44S**	**MW16-45S**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-33S-NWG-061607**	**MW16-37S-NWG-061407**	**MW16-40S-NWG-082207**	**MW16-44S-NWG-081207**	**MW16-45S-NWG-081107**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070616**	**20070614**	**20070822**	**20070812**	**20070811**
Area	**Tap Water**			**EASTERN AREA**	**EASTERN AREA**	**NCENTRAL EASTERN**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Volatile Organic Compounds (ug/L)								
Benzene	0.41	5	5	0.1 U	0.1 U	0.1 U	**0.36**	0.1 U
BTEX	NA	NA	NA	0 U	0 U	0 U	**0.36**	0 U
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ
cis-1,2-Dichloroethene	370	70	70	0.53 U	0.53 U	**4.1**	**9**	**3.2**
Tetrachloroethene	0.11	5	5	**0.21**	0.1 U	0.1 U	0.1 U	0.1 U
Total Chlorinated VOCs	NA	NA	NA	**0.21**	**30**	**30.1**	**17.5**	**3.57**
trans-1,2-Dichloroethene	110	100	100	0.5 U	0.5 U	0.5 U	**1.5**	0.5 U
Trichloroethene	1.7	5	5	0.1 U	**30**	0.1 U	**1.7**	**0.11**
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	**26**	**5.3**	**0.26**
Semivolatile Organic Compounds (ug/L)								
2-Methylnaphthalene	150	NA	NA					
Acenaphthene	2200	NA	NA					
Acenaphthylene	2200	NA	NA					
Anthracene	11000	NA	NA					
Fluoranthene	1500	NA	NA					
Fluorene	1500	NA	NA					
High Molecular Weight PAHs	NA	NA	NA					
Low Molecular Weight PAHs	NA	NA	NA					
Naphthalene	0.14	NA	20					
Phenanthrene	1100	NA	NA					
Pyrene	1100	NA	NA					
Total PAHs	NA	NA	NA					
Polycyclic Aromatic Hydrocarbons (ng/L)								
2-Methylnaphthalene	150000	NA	NA				4.1 U	2.9 U
Acenaphthene	2200000	NA	NA				**3 J**	**37**
Acenaphthylene	2200000	NA	NA				10 U	**0.91 J**
Anthracene	11000000	NA	NA				**0.85 J**	**1.2 J**
Benzo(a)pyrene Equivalents	2.9	200	200				10 U	**5.61**
Benzo(a)anthracene	29	NA	NA				10 U	10 U
Benzo(a)pyrene	2.9	200	200				10 U	10 U
Benzo(b)fluoranthene	29	NA	NA				10 U	10 U
Benzo(g,h,i)perylene	1100000	NA	NA				1.6 U	4.1 U
Benzo(k)fluoranthene	290	NA	NA				10 U	10 U
Chrysene	2900	NA	NA				1.2 U	2.1 U
Dibenzo(a,h)anthracene	2.9	NA	NA				10 U	**5.1 J**
Dibenzofuran	NA	NA	NA					
Fluoranthene	1500000	NA	NA				4 U	4 U
Fluorene	1500000	NA	NA				3 U	8.6 U
High Molecular Weight PAHs	NA	NA	NA				0 U	**10.2**
Indeno(1,2,3-cd)pyrene	29	NA	NA				10 U	**5.1 J**
Low Molecular Weight PAHs	NA	NA	NA				**3.85**	**39.11**
Naphthalene	6200	NA	20000				7.4 U	7 U
Phenanthrene	1100000	NA	NA				5 U	4.7 U
Pyrene	1100000	NA	NA				2.4 U	3.5 U
Total PAHs	NA	NA	NA				**3.85**	**49.31**

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Area	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	10 MW16-33S MW16-33S-NWG-061607 NORMAL 20070616 EASTERN AREA	10 MW16-37S MW16-37S-NWG-061407 NORMAL 20070614 EASTERN AREA	10 MW16-40S MW16-40S-NWG-082207 NORMAL 20070822 NCENTRAL EASTERN	10 MW16-44S MW16-44S-NWG-081207 NORMAL 20070812 NORTH CEN FFTA	10 MW16-45S MW16-45S-NWG-081107 NORMAL 20070811 NORTH CEN FFTA
Filtered Polycyclic Aromatic Hydrocarbons (ng/L)								
Acenaphthene	2200000	NA	NA					
Acenaphthylene	2200000	NA	NA					
Anthracene	11000000	NA	NA					
Benzo(a)pyrene Equivalents	2.9	0.2	0.2					
Benzo(a)anthracene	29	NA	NA					
Benzo(a)pyrene	2.9	0.2	0.2					
Benzo(b)fluoranthene	29	NA	NA					
Benzo(g,h,i)perylene	1100000	NA	NA					
Benzo(k)fluoranthene	290	NA	NA					
Chrysene	2900	NA	NA					
Dibenzo(a,h)anthracene	2.9	NA	NA					
Dibenzofuran	NA	NA	NA					
Fluoranthene	1500000	NA	NA					
Fluorene	1500000	NA	NA					
High Molecular Weight PAHs	NA	NA	NA					
Indeno(1,2,3-cd)pyrene	29	NA	NA					
Low Molecular Weight PAHs	NA	NA	NA					
Naphthalene	6200	NA	20					
Phenanthrene	1100000	NA	NA					
Pyrene	1100000	NA	NA					
Total PAHs	NA	NA	NA					
Inorganics (ug/L)								
Aluminum	37000	NA	NA	**17.5 J**	**97.3**	131 U	14 U	**84.5**
Arsenic	0.045	10	NA	0.022 UJ	0.022 UJ	1 U	**6.2**	**18**
Barium	7300	2000	2000	2.1 U	**19.7**	**36.6**	**30.2**	**14.4**
Beryllium	73	4	4	0.15 U	0.15 U	**0.12**	0.15 U	0.15 U
Cadmium	18	5	5	0.1 U	**0.88**	2.4 U	**0.21**	**0.23**
Calcium	NA	NA	NA	**1570**	**6160**	**18900**	**36100**	**57800**
Chromium	110	100	100	0.38 U	0.38 U	0.22 U	0.55 U	6.8 U
Cobalt	11	NA	NA	0.15 U	0.24 U	**61.2**	**16.2**	**3.7**
Copper	1500	1300	NA	6.3 U	6.3 U	1.7 U	6.3 U	6.3 U
Iron	26000	NA	NA	19 U	**149**	**27700**	**28200**	**30200**
Magnesium	NA	NA	NA	**485**	**2130**	**2930**	**3540**	**7390**
Manganese	880	NA	NA	1.8 U	**17.2**	**2930**	**1200**	**691**
Nickel	730	NA	100	0.59 U	**5.2**	**51.8**	**5.2**	**2.8**
Potassium	NA	NA	NA	**454**	**1220**	**2380**	**4460**	**5330**
Selenium	180	50	50	0.98 U	1.8 U	5.2 U	8.8 U	14.6 U
Sodium	NA	NA	NA	**3810**	**12300**	**71300**	**23000**	**60700**
Thallium	2.4	2	2	0.008 U	0.027 U	1 U	0.025 U	0.041 U
Vanadium	180	NA	NA	0.47 U	0.47 U	1.8 U	0.47 U	0.47 U
Zinc	11000	NA	NA	14.6 U	**299**	**52.2**	21.4 U	16.3 U

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**		**RIDEM**	**MW16-33S**	**MW16-37S**	**MW16-40S**	**MW16-44S**	**MW16-45S**
Sample Number	**Regional**	**Federal**	**GA GW**	**MW16-33S-NWG-061607**	**MW16-37S-NWG-061407**	**MW16-40S-NWG-082207**	**MW16-44S-NWG-081207**	**MW16-45S-NWG-081107**
Sample Code	**Screening**	**MCL**	**Objectives**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**			**20070616**	**20070614**	**20070822**	**20070812**	**20070811**
Area	**Tap Water**			**EASTERN AREA**	**EASTERN AREA**	**NCENTRAL EASTERN**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA					14 U
Arsenic	0.045	10	NA					**19.5**
Barium	7300	2000	2000					**14**
Cadmium	18	5	5					**0.17 J**
Calcium	NA	NA	NA					**59100**
Chromium	110	100	100					0.38 U
Cobalt	11	NA	NA					**3.7**
Iron	26000	NA	NA					**30500**
Magnesium	NA	NA	NA					**7590**
Manganese	880	NA	NA					**701**
Nickel	730	NA	100					**2.6**
Potassium	NA	NA	NA					**5430**
Sodium	NA	NA	NA					**62100**
Petroleum Hydrocarbons (mg/L)								
TPH (C09-C36)	NA	NA	NA				0.03 U	0.03 U
TPH (C09-C44)	NA	NA	NA				0.033 U	0.033 U
Miscellaneous Parameters								
Turbidity (NTUs)	NA	NA	NA	**0**	**5**	**3.71**	**3.2**	**7.5**
pH	NA	NA	NA	**5.29**	**5.48**	**5.95**	**6.19**	**6.9**
Conductivity (mS/cm)	NA	NA	NA	**0.742**	**0.175**	**0.561**	**5.42**	**2.32**
DO (mg/L)	NA	NA	NA	**9.35**	**9.78**	**0.67**	**0.45**	**0.44**
Salinity	NA	NA	NA		**0**	**0**	**0.3**	**0.1**

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Area	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	10 MW16-45S MW16-45S-NWG-102507 NORMAL 20071025 NORTH CEN FFTA	10 MW16-46S MW16-46S-NWG-081207 ORIG 20070812 NORTH CEN FFTA	10 MW16-46S MW16-46S-NWG-081207-AVG AVG 20070812 NORTH CEN FFTA	10 MW16-46S MW16-46S-NWG-081207-D DUP 20070812 NORTH CEN FFTA	10 MW16-46S MW16-46S-NWG-102507 NORMAL 20071025 NORTH CEN FFTA
Volatile Organic Compounds (ug/L)								
Benzene	0.41	5	5		**1.1**	**1.1**	**1.1**	
BTEX	NA	NA	NA		**1.1**	**1.1**	**1.1**	
Chloroform	0.19	80	NA		0.1 UJ	0.1 UJ	0.1 UJ	
cis-1,2-Dichloroethene	370	70	70		0.53 U	0.53 U	0.53 U	
Tetrachloroethene	0.11	5	5		0.1 U	0.1 U	0.1 U	
Total Chlorinated VOCs	NA	NA	NA		**0.53**	**0.52**	**0.51**	
trans-1,2-Dichloroethene	110	100	100		0.5 U	0.5 U	0.5 U	
Trichloroethene	1.7	5	5		0.1 U	0.1 U	0.1 U	
Vinyl Chloride	0.016	2	2		**0.53**	**0.52**	**0.51**	
Semivolatile Organic Compounds (ug/L)								
2-Methylnaphthalene	150	NA	NA					
Acenaphthene	2200	NA	NA					
Acenaphthylene	2200	NA	NA					
Anthracene	11000	NA	NA					
Fluoranthene	1500	NA	NA					
Fluorene	1500	NA	NA					
High Molecular Weight PAHs	NA	NA	NA					
Low Molecular Weight PAHs	NA	NA	NA					
Naphthalene	0.14	NA	20					
Phenanthrene	1100	NA	NA					
Pyrene	1100	NA	NA					
Total PAHs	NA	NA	NA					
Polycyclic Aromatic Hydrocarbons (ng/L)								
2-Methylnaphthalene	150000	NA	NA	1.4 U	**240 J**	**260 J**	**280**	**220**
Acenaphthene	2200000	NA	NA	**30**	**830 J**	**875 J**	**920**	**940**
Acenaphthylene	2200000	NA	NA	**3.3 J**	**15 J**	**13.5 J**	**12**	**19**
Anthracene	11000000	NA	NA	1.8 U	**5 J**	**4.55 J**	**4.1 J**	**4.1 J**
Benzo(a)pyrene Equivalents	2.9	200	200	1.9 U	10 U	**1.5**	**1.5**	2.2 U
Benzo(a)anthracene	29	NA	NA	1.1 U	10 UJ	10 UJ	10 U	2 U
Benzo(a)pyrene	2.9	200	200	1.9 U	10 UJ	10 UJ	10 U	2.2 U
Benzo(b)fluoranthene	29	NA	NA	1.3 U	10 UJ	10 UJ	10 U	2.8 U
Benzo(g,h,i)perylene	1100000	NA	NA	1.4 U	10 UJ	6.25 UJ	2.5 U	1.8 U
Benzo(k)fluoranthene	290	NA	NA	1.2 U	10 UJ	10 UJ	10 U	2.4 U
Chrysene	2900	NA	NA	1.3 U	10 UJ	5.65 UJ	1.3 U	3.4 U
Dibenzo(a,h)anthracene	2.9	NA	NA	0.72 U	10 UJ	**1.5 J**	**1.5 J**	0.71 U
Dibenzofuran	NA	NA	NA					
Fluoranthene	1500000	NA	NA	1.3 U	1.8 U	2.85 U	3.9 U	**4.5 J**
Fluorene	1500000	NA	NA	**9.5 J**	**170 J**	**180 J**	**190**	**200**
High Molecular Weight PAHs	NA	NA	NA	0 U	0 U	**1.5**	**1.5**	**8.4**
Indeno(1,2,3-cd)pyrene	29	NA	NA	1.6 U	10 UJ	6.35 UJ	2.7 U	1.6 U
Low Molecular Weight PAHs	NA	NA	NA	**42.8**	**2360**	**2483.05**	**2606.1**	**2587.1**
Naphthalene	6200	NA	20000	3 U	**1100 J**	**1150 J**	**1200**	**1200**
Phenanthrene	1100000	NA	NA	2.1 U	3.5 U	4.3 U	5.1 U	**4 J**
Pyrene	1100000	NA	NA	1.6 U	10 UJ	6.8 UJ	3.6 U	**3.9 J**
Total PAHs	NA	NA	NA	**42.8**	**2360**	**2484.55**	**2607.6**	**2595.5**

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-45S**	**MW16-46S**	**MW16-46S**	**MW16-46S**	**MW16-46S**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-45S-NWG-102507**	**MW16-46S-NWG-081207**	**MW16-46S-NWG-081207-AVG**	**MW16-46S-NWG-081207-D**	**MW16-46S-NWG-102507**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**ORIG**	**AVG**	**DUP**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20071025**	**20070812**	**20070812**	**20070812**	**20071025**
Area	**Tap Water**			**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Filtered Polycyclic Aromatic Hydrocarbons (ng/L)								
Acenaphthene	2200000	NA	NA					
Acenaphthylene	2200000	NA	NA					
Anthracene	11000000	NA	NA					
Benzo(a)pyrene Equivalents	2.9	0.2	0.2					
Benzo(a)anthracene	29	NA	NA					
Benzo(a)pyrene	2.9	0.2	0.2					
Benzo(b)fluoranthene	29	NA	NA					
Benzo(g,h,i)perylene	1100000	NA	NA					
Benzo(k)fluoranthene	290	NA	NA					
Chrysene	2900	NA	NA					
Dibenzo(a,h)anthracene	2.9	NA	NA					
Dibenzofuran	NA	NA	NA					
Fluoranthene	1500000	NA	NA					
Fluorene	1500000	NA	NA					
High Molecular Weight PAHs	NA	NA	NA					
Indeno(1,2,3-cd)pyrene	29	NA	NA					
Low Molecular Weight PAHs	NA	NA	NA					
Naphthalene	6200	NA	20					
Phenanthrene	1100000	NA	NA					
Pyrene	1100000	NA	NA					
Total PAHs	NA	NA	NA					
Inorganics (ug/L)								
Aluminum	37000	NA	NA		14 U	14 U	14 U	
Arsenic	0.045	10	NA		**13.7**	**13.85**	**14**	
Barium	7300	2000	2000		**8.4**	**8.25**	**8.1**	
Beryllium	73	4	4		0.15 U	0.15 U	0.15 U	
Cadmium	18	5	5		**0.15 J**	**0.175 J**	**0.2**	
Calcium	NA	NA	NA		**83300**	**85450**	**87600**	
Chromium	110	100	100		0.38 U	0.38 U	0.38 U	
Cobalt	11	NA	NA		**4.6**	**4.75**	**4.9**	
Copper	1500	1300	NA		6.3 U	6.3 U	6.3 U	
Iron	26000	NA	NA		**33700**	**34650**	**35600**	
Magnesium	NA	NA	NA		**10200**	**10450**	**10700**	
Manganese	880	NA	NA		**657**	**678**	**699**	
Nickel	730	NA	100		**3.9**	**4**	**4.1**	
Potassium	NA	NA	NA		**7580**	**7825**	**8070**	
Selenium	180	50	50		10.3 U	9.85 U	9.4 U	
Sodium	NA	NA	NA		**47100**	**48750**	**50400**	
Thallium	2.4	2	2		0.025 U	0.0275 U	0.03 U	
Vanadium	180	NA	NA		0.47 U	0.47 U	0.47 U	
Zinc	11000	NA	NA		**38.9**	**40.15**	**41.4**	

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**		**RIDEM**	**MW16-45S**	**MW16-46S**	**MW16-46S**	**MW16-46S**	**MW16-46S**
Sample Number	**Regional**	**Federal**	**GA GW**	**MW16-45S-NWG-102507**	**MW16-46S-NWG-081207**	**MW16-46S-NWG-081207-AVG**	**MW16-46S-NWG-081207-D**	**MW16-46S-NWG-102507**
Sample Code	**Screening**	**MCL**	**Objectives**	**NORMAL**	**ORIG**	**AVG**	**DUP**	**NORMAL**
Sample Date	**Level**			**20071025**	**20070812**	**20070812**	**20070812**	**20071025**
Area	**Tap Water**			**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**	**NORTH CEN FFTA**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA					
Arsenic	0.045	10	NA					
Barium	7300	2000	2000					
Cadmium	18	5	5					
Calcium	NA	NA	NA					
Chromium	110	100	100					
Cobalt	11	NA	NA					
Iron	26000	NA	NA					
Magnesium	NA	NA	NA					
Manganese	880	NA	NA					
Nickel	730	NA	100					
Potassium	NA	NA	NA					
Sodium	NA	NA	NA					
Petroleum Hydrocarbons (mg/L)								
TPH (C09-C36)	NA	NA	NA	**0.13**	**2 J**	**1.01 J**	0.054 U	**0.18**
TPH (C09-C44)	NA	NA	NA	**0.38**	**0.057 J**	**0.037 J**	0.033 U	**0.39**
Miscellaneous Parameters								
Turbidity (NTUs)	NA	NA	NA	**4**	**4.5**			**3.98**
pH	NA	NA	NA	**7.03**	**6.8**			**7.07**
Conductivity (mS/cm)	NA	NA	NA	**0.665**	**4.08**			**0.691**
DO (mg/L)	NA	NA	NA	**0.3**	**0.47**			**0.32**
Salinity	NA	NA	NA		**0.2**			

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Area	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	10 MW16-47S MW16-47S-NWG-121707 NORMAL 20071217 CREOSOTE DIP TANK	10 MW16-58S MW16-58S-NWG-082707 NORMAL 20070827 NCENTRAL EASTERN	10 RMW-01S RMW-01S-NWG-101907 NORMAL 20071019 UPGRADIENT	10 TW16-108S TW16-108S-NWG-072807 ORIG 20070728 BUILDING 41	10 TW16-108S W16-108S-NWG-072807-AV AVG 20070728 BUILDING 41
Volatile Organic Compounds (ug/L)								
Benzene	0.41	5	5		0.1 U	0.1 U	0.5 U	0.5 U
BTEX	NA	NA	NA	0 U	0 U	0 U	0 U	0 U
Chloroform	0.19	80	NA		0.1 UJ	0.1 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	370	70	70	0.14 U	0.53 U	0.14 U	0.53 U	0.53 U
Tetrachloroethene	0.11	5	5		0.1 U	0.1 U	**0.53**	**0.55**
Total Chlorinated VOCs	NA	NA	NA	0 U	**0.63**	0 U	**181**	**171**
trans-1,2-Dichloroethene	110	100	100	0.13 U	0.5 U	0.13 U	0.5 U	0.5 U
Trichloroethene	1.7	5	5		**0.63**	0.1 U	**180**	**170**
Vinyl Chloride	0.016	2	2		0.1 U	0.1 U	0.5 U	0.5 U
Semivolatile Organic Compounds (ug/L)								
2-Methylnaphthalene	150	NA	NA					
Acenaphthene	2200	NA	NA					
Acenaphthylene	2200	NA	NA					
Anthracene	11000	NA	NA					
Fluoranthene	1500	NA	NA					
Fluorene	1500	NA	NA					
High Molecular Weight PAHs	NA	NA	NA					
Low Molecular Weight PAHs	NA	NA	NA					
Naphthalene	0.14	NA	20					
Phenanthrene	1100	NA	NA					
Pyrene	1100	NA	NA					
Total PAHs	NA	NA	NA					
Polycyclic Aromatic Hydrocarbons (ng/L)								
2-Methylnaphthalene	150000	NA	NA					
Acenaphthene	2200000	NA	NA					
Acenaphthylene	2200000	NA	NA					
Anthracene	11000000	NA	NA					
Benzo(a)pyrene Equivalents	2.9	200	200					
Benzo(a)anthracene	29	NA	NA					
Benzo(a)pyrene	2.9	200	200					
Benzo(b)fluoranthene	29	NA	NA					
Benzo(g,h,i)perylene	1100000	NA	NA					
Benzo(k)fluoranthene	290	NA	NA					
Chrysene	2900	NA	NA					
Dibenzo(a,h)anthracene	2.9	NA	NA					
Dibenzofuran	NA	NA	NA					
Fluoranthene	1500000	NA	NA					
Fluorene	1500000	NA	NA					
High Molecular Weight PAHs	NA	NA	NA					
Indeno(1,2,3-cd)pyrene	29	NA	NA					
Low Molecular Weight PAHs	NA	NA	NA					
Naphthalene	6200	NA	20000					
Phenanthrene	1100000	NA	NA					
Pyrene	1100000	NA	NA					
Total PAHs	NA	NA	NA					

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-47S**	**MW16-58S**	**RMW-01S**	**TW16-108S**	**TW16-108S**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-47S-NWG-121707**	**MW16-58S-NWG-082707**	**RMW-01S-NWG-101907**	**TW16-108S-NWG-072807**	**W16-108S-NWG-072807-AV**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**AVG**
Sample Date	**Level**		**Objectives**	**20071217**	**20070827**	**20071019**	**20070728**	**20070728**
Area	**Tap Water**			**CREOSOTE DIP TANK**	**NCENTRAL EASTERN**	**UPGRADIENT**	**BUILDING 41**	**BUILDING 41**
Filtered Polycyclic Aromatic Hydrocarbons (ng/L)								
Acenaphthene	2200000	NA	NA					
Acenaphthylene	2200000	NA	NA					
Anthracene	11000000	NA	NA					
Benzo(a)pyrene Equivalents	2.9	0.2	0.2					
Benzo(a)anthracene	29	NA	NA					
Benzo(a)pyrene	2.9	0.2	0.2					
Benzo(b)fluoranthene	29	NA	NA					
Benzo(g,h,i)perylene	1100000	NA	NA					
Benzo(k)fluoranthene	290	NA	NA					
Chrysene	2900	NA	NA					
Dibenzo(a,h)anthracene	2.9	NA	NA					
Dibenzofuran	NA	NA	NA					
Fluoranthene	1500000	NA	NA					
Fluorene	1500000	NA	NA					
High Molecular Weight PAHs	NA	NA	NA					
Indeno(1,2,3-cd)pyrene	29	NA	NA					
Low Molecular Weight PAHs	NA	NA	NA					
Naphthalene	6200	NA	20					
Phenanthrene	1100000	NA	NA					
Pyrene	1100000	NA	NA					
Total PAHs	NA	NA	NA					
Inorganics (ug/L)								
Aluminum	37000	NA	NA	**364 J**	**63.9**	**261 J**		
Arsenic	0.045	10	NA	0.103 U	1 U	1 U		
Barium	7300	2000	2000	**24.6**	11 U	11 U		
Beryllium	73	4	4	0.051 U	0.051 U	0.051 U		
Cadmium	18	5	5	0.11 U	0.11 U	0.11 U		
Calcium	NA	NA	NA	**138000**	**21800**	**2820**		
Chromium	110	100	100	**0.46**	0.22 U	1.4 U		
Cobalt	11	NA	NA	0.84 U	0.8 U	0.46 U		
Copper	1500	1300	NA	1.7 U	1.7 U	1.7 U		
Iron	26000	NA	NA	**464 J**	**729 J**	**413 J**		
Magnesium	NA	NA	NA	**9140**	**1790**	**1570 J**		
Manganese	880	NA	NA	**104**	**6.8**	12.9 U		
Nickel	730	NA	100	**5.3**	0.78 U	1.5 U		
Potassium	NA	NA	NA	**7550**	**2730**	**624**		
Selenium	180	50	50	15.9 U	5.2 U	5.2 U		
Sodium	NA	NA	NA	**9910**	**36200**	**9590**		
Thallium	2.4	2	2	**0.125 J**	1 U	1 U		
Vanadium	180	NA	NA	2.2 U	0.41 U	0.64 U		
Zinc	11000	NA	NA	20.4 U	**32.2**	22.7 U		

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-47S**	**MW16-58S**	**RMW-01S**	**TW16-108S**	**TW16-108S**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-47S-NWG-121707**	**MW16-58S-NWG-082707**	**RMW-01S-NWG-101907**	**TW16-108S-NWG-072807**	**W16-108S-NWG-072807-AV**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**AVG**
Sample Date	**Level**		**Objectives**	**20071217**	**20070827**	**20071019**	**20070728**	**20070728**
Area	**Tap Water**			**CREOSOTE DIP TANK**	**NCENTRAL EASTERN**	**UPGRADIENT**	**BUILDING 41**	**BUILDING 41**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA					
Arsenic	0.045	10	NA					
Barium	7300	2000	2000					
Cadmium	18	5	5					
Calcium	NA	NA	NA					
Chromium	110	100	100					
Cobalt	11	NA	NA					
Iron	26000	NA	NA					
Magnesium	NA	NA	NA					
Manganese	880	NA	NA					
Nickel	730	NA	100					
Potassium	NA	NA	NA					
Sodium	NA	NA	NA					
Petroleum Hydrocarbons (mg/L)								
TPH (C09-C36)	NA	NA	NA					
TPH (C09-C44)	NA	NA	NA					
Miscellaneous Parameters								
Turbidity (NTUs)	NA	NA	NA	**0**	**3.89**	**5**	**3.21**	
pH	NA	NA	NA	**6.74**	**6.54**	**5.87**	**6.3**	
Conductivity (mS/cm)	NA	NA	NA	**0.724**	**2.82**	**0.088**	**0.361**	
DO (mg/L)	NA	NA	NA	**5.35**	**4.91**	**7.01**	**6.33**	
Salinity	NA	NA	NA	**0**	**0.1**		**0**	

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**TW16-108S**	**TW16-110S**	**TW16-110S**	**TW16-111S**	**TW16-111S**
Sample Number	**Regional**	**Federal**	**RIDEM**	**TW16-108S-NWG-072807-D**	**TW16-110S-NWG-081207**	**/16-110S-NWG-081207(FILTI**	**TW16-111S-NWG-081207**	**TW16-111S-NWG-081207-D**
Sample Code	**Screening**	**MCL**	**GA GW**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**DUP**
Sample Date	**Level**		**Objectives**	**20070728**	**20070812**	**20070812**	**20070812**	**20070812**
Area	**Tap Water**			**BUILDING 41**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Volatile Organic Compounds (ug/L)								
Benzene	0.41	5	5	0.5 U				
BTEX	NA	NA	NA	0 U				
Chloroform	0.19	80	NA	0.5 U				
cis-1,2-Dichloroethene	370	70	70	0.53 U				
Tetrachloroethene	0.11	5	5	**0.57**				
Total Chlorinated VOCs	NA	NA	NA	**161**				
trans-1,2-Dichloroethene	110	100	100	0.5 U				
Trichloroethene	1.7	5	5	**160**				
Vinyl Chloride	0.016	2	2	0.5 U				
Semivolatile Organic Compounds (ug/L)								
2-Methylnaphthalene	150	NA	NA					
Acenaphthene	2200	NA	NA					
Acenaphthylene	2200	NA	NA					
Anthracene	11000	NA	NA					
Fluoranthene	1500	NA	NA					
Fluorene	1500	NA	NA					
High Molecular Weight PAHs	NA	NA	NA					
Low Molecular Weight PAHs	NA	NA	NA					
Naphthalene	0.14	NA	20					
Phenanthrene	1100	NA	NA					
Pyrene	1100	NA	NA					
Total PAHs	NA	NA	NA					
Polycyclic Aromatic Hydrocarbons (ng/L)								
2-Methylnaphthalene	150000	NA	NA		**230**		5 U	
Acenaphthene	2200000	NA	NA		**12000 J**		**2.7 J**	**3.3 J**
Acenaphthylene	2200000	NA	NA		**33**		**3.4 J**	**7.7 J**
Anthracene	11000000	NA	NA		**83**		**1.4 J**	**4.6 J**
Benzo(a)pyrene Equivalents	2.9	200	200		**0.1125**		**0.3229**	
Benzo(a)anthracene	29	NA	NA		**1.1 J**		**1.6 J**	**17**
Benzo(a)pyrene	2.9	200	200		11 U		10 U	**9.1 J**
Benzo(b)fluoranthene	29	NA	NA		11 U		10 U	**12**
Benzo(g,h,i)perylene	1100000	NA	NA		11 U		**1.8 J**	**6 J**
Benzo(k)fluoranthene	290	NA	NA		11 U		10 U	**12**
Chrysene	2900	NA	NA		**2.5 J**		**2.9 J**	
Dibenzo(a,h)anthracene	2.9	NA	NA		11 U		10 U	10 U
Dibenzofuran	NA	NA	NA		**1400**		10 U	10 U
Fluoranthene	1500000	NA	NA		**68**		7.6 U	**60**
Fluorene	1500000	NA	NA		**2700**		**2.9 J**	**5.2 J**
High Molecular Weight PAHs	NA	NA	NA		**116.6**		**7.9**	
Indeno(1,2,3-cd)pyrene	29	NA	NA		11 U		**1.6 J**	**5.4 J**
Low Molecular Weight PAHs	NA	NA	NA		**16046**		**10.4**	
Naphthalene	6200	NA	20000		**420**		5.6 U	**13 B**
Phenanthrene	1100000	NA	NA		**580**		8.6 U	**32**
Pyrene	1100000	NA	NA		**45**		6.4 U	**52**
Total PAHs	NA	NA	NA		**16162.6**		**18.3**	

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**TW16-108S**	**TW16-110S**	**TW16-110S**	**TW16-111S**	**TW16-111S**
Sample Number	**Regional**	**Federal**	**RIDEM**	**TW16-108S-NWG-072807-D**	**TW16-110S-NWG-081207**	**/16-110S-NWG-081207(FILT**	**TW16-111S-NWG-081207**	**TW16-111S-NWG-081207-D**
Sample Code	**Screening**	**MCL**	**GA GW**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**DUP**
Sample Date	**Level**		**Objectives**	**20070728**	**20070812**	**20070812**	**20070812**	**20070812**
Area	**Tap Water**			**BUILDING 41**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Filtered Polycyclic Aromatic Hydrocarbons (ng/L)								
Acenaphthene	2200000	NA	NA			**100 J**		
Acenaphthylene	2200000	NA	NA			**1.6 J**		
Anthracene	11000000	NA	NA			**2.3 J**		
Benzo(a)pyrene Equivalents	2.9	0.2	0.2			**3.1051**		
Benzo(a)anthracene	29	NA	NA			**1.6 J**		
Benzo(a)pyrene	2.9	0.2	0.2			**0.79 J**		
Benzo(b)fluoranthene	29	NA	NA			**1.6 J**		
Benzo(g,h,i)perylene	1100000	NA	NA			**2 J**		
Benzo(k)fluoranthene	290	NA	NA			**1.3 J**		
Chrysene	2900	NA	NA			**2.1 J**		
Dibenzo(a,h)anthracene	2.9	NA	NA			**1.8 J**		
Dibenzofuran	NA	NA	NA			**17**		
Fluoranthene	1500000	NA	NA			4 U		
Fluorene	1500000	NA	NA			**37 J**		
High Molecular Weight PAHs	NA	NA	NA			**16.79**		
Indeno(1,2,3-cd)pyrene	29	NA	NA			**1.8 J**		
Low Molecular Weight PAHs	NA	NA	NA			**153.9**		
Naphthalene	6200	NA	20			5.6 U		
Phenanthrene	1100000	NA	NA			**13 J**		
Pyrene	1100000	NA	NA			**3.8 J**		
Total PAHs	NA	NA	NA			**170.69**		
Inorganics (ug/L)								
Aluminum	37000	NA	NA					
Arsenic	0.045	10	NA					
Barium	7300	2000	2000					
Beryllium	73	4	4					
Cadmium	18	5	5					
Calcium	NA	NA	NA					
Chromium	110	100	100					
Cobalt	11	NA	NA					
Copper	1500	1300	NA					
Iron	26000	NA	NA					
Magnesium	NA	NA	NA					
Manganese	880	NA	NA					
Nickel	730	NA	100					
Potassium	NA	NA	NA					
Selenium	180	50	50					
Sodium	NA	NA	NA					
Thallium	2.4	2	2					
Vanadium	180	NA	NA					
Zinc	11000	NA	NA					

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**TW16-108S**	**TW16-110S**	**TW16-110S**	**TW16-111S**	**TW16-111S**
Sample Number	**Regional**	**Federal**	**RIDEM**	**TW16-108S-NWG-072807-D**	**TW16-110S-NWG-081207**	**/16-110S-NWG-081207(FILTI**	**TW16-111S-NWG-081207**	**TW16-111S-NWG-081207-D**
Sample Code	**Screening**	**MCL**	**GA GW**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**DUP**
Sample Date	**Level**		**Objectives**	**20070728**	**20070812**	**20070812**	**20070812**	**20070812**
Area	**Tap Water**			**BUILDING 41**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA					
Arsenic	0.045	10	NA					
Barium	7300	2000	2000					
Cadmium	18	5	5					
Calcium	NA	NA	NA					
Chromium	110	100	100					
Cobalt	11	NA	NA					
Iron	26000	NA	NA					
Magnesium	NA	NA	NA					
Manganese	880	NA	NA					
Nickel	730	NA	100					
Potassium	NA	NA	NA					
Sodium	NA	NA	NA					
Petroleum Hydrocarbons (mg/L)								
TPH (C09-C36)	NA	NA	NA		0.22 U		0.19 U	
TPH (C09-C44)	NA	NA	NA		0.035 U		0.035 U	
Miscellaneous Parameters								
Turbidity (NTUs)	NA	NA	NA		**3.04**		**1**	
pH	NA	NA	NA		**6.29**		**6.26**	
Conductivity (mS/cm)	NA	NA	NA		**0.275**		**0.313**	
DO (mg/L)	NA	NA	NA		**1.13**		**1.85**	
Salinity	NA	NA	NA		**0**		**0**	

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Area	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	10 TW16-111S 16-111S-NWG-081207(FILT NORMAL 20070812 CREOSOTE DIP TANK	10 TW16-111S 6-111S-NWG-081207(FILTE DUP 20070812 CREOSOTE DIP TANK	10 TW16-112S TW16-112S-NWG-102507 ORIG 20071025 CREOSOTE DIP TANK	10 TW16-112S W16-112S-NWG-102507-AV AVG 20071025 CREOSOTE DIP TANK	10 TW16-112S TW16-112S-NWG-102507-D DUP 20071025 CREOSOTE DIP TANK
Volatile Organic Compounds (ug/L)								
Benzene	0.41	5	5					
BTEX	NA	NA	NA					
Chloroform	0.19	80	NA					
cis-1,2-Dichloroethene	370	70	70					
Tetrachloroethene	0.11	5	5					
Total Chlorinated VOCs	NA	NA	NA					
trans-1,2-Dichloroethene	110	100	100					
Trichloroethene	1.7	5	5					
Vinyl Chloride	0.016	2	2					
Semivolatile Organic Compounds (ug/L)								
2-Methylnaphthalene	150	NA	NA					
Acenaphthene	2200	NA	NA					
Acenaphthylene	2200	NA	NA					
Anthracene	11000	NA	NA					
Fluoranthene	1500	NA	NA					
Fluorene	1500	NA	NA					
High Molecular Weight PAHs	NA	NA	NA					
Low Molecular Weight PAHs	NA	NA	NA					
Naphthalene	0.14	NA	20					
Phenanthrene	1100	NA	NA					
Pyrene	1100	NA	NA					
Total PAHs	NA	NA	NA					
Polycyclic Aromatic Hydrocarbons (ng/L)								
2-Methylnaphthalene	150000	NA	NA			**10 J**	**8.45 J**	**6.9 J**
Acenaphthene	2200000	NA	NA			10 U	9.8 U	9.6 U
Acenaphthylene	2200000	NA	NA			**3.8 J**	**4.1 J**	**4.4 J**
Anthracene	11000000	NA	NA			**3 J**	**3.05 J**	**3.1 J**
Benzo(a)pyrene Equivalents	2.9	200	200			**0.90756**	**1.130395**	**1.35323**
Benzo(a)anthracene	29	NA	NA			**0.21 J**	**0.365 J**	**0.52 J**
Benzo(a)pyrene	2.9	200	200			**0.38 J**	**0.5 J**	**0.62 J**
Benzo(b)fluoranthene	29	NA	NA			**0.6 J**	**0.77 J**	**0.94 J**
Benzo(g,h,i)perylene	1100000	NA	NA			**0.69 J**	**0.895 J**	**1.1 J**
Benzo(k)fluoranthene	290	NA	NA			**0.41 J**	**0.52 J**	**0.63 J**
Chrysene	2900	NA	NA			**0.46 J**	**0.695 J**	**0.93 J**
Dibenzo(a,h)anthracene	2.9	NA	NA			**0.37 J**	**0.425 J**	**0.48 J**
Dibenzofuran	NA	NA	NA					
Fluoranthene	1500000	NA	NA			**4.3 J**	**4.6 J**	**4.9 J**
Fluorene	1500000	NA	NA			**2.2 J**	**2.15 J**	**2.1 J**
High Molecular Weight PAHs	NA	NA	NA			**11.14**	**13.03**	**14.92**
Indeno(1,2,3-cd)pyrene	29	NA	NA			**0.72 J**	**0.86 J**	**1 J**
Low Molecular Weight PAHs	NA	NA	NA			**53**	**51.25**	**49.5**
Naphthalene	6200	NA	20000			**14**	**13.5**	**13**
Phenanthrene	1100000	NA	NA			**20**	**20**	**20**
Pyrene	1100000	NA	NA			**3 J**	**3.4 J**	**3.8 J**
Total PAHs	NA	NA	NA			**64.14**	**64.28**	**64.42**

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**TW16-111S**	**TW16-111S**	**TW16-112S**	**TW16-112S**	**TW16-112S**
Sample Number	**Regional**	**Federal**	**RIDEM**	**/16-111S-NWG-081207(FILT**	**6-111S-NWG-081207(FILTE**	**TW16-112S-NWG-102507**	**W16-112S-NWG-102507-AV**	**TW16-112S-NWG-102507-D**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**DUP**	**ORIG**	**AVG**	**DUP**
Sample Date	**Level**		**Objectives**	**20070812**	**20070812**	**20071025**	**20071025**	**20071025**
Area	**Tap Water**			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Filtered Polycyclic Aromatic Hydrocarbons (ng/L)								
Acenaphthene	2200000	NA	NA	10 UJ	10 U			
Acenaphthylene	2200000	NA	NA	**0.92 J**	**1.9 J**			
Anthracene	11000000	NA	NA	**0.56 J**	**1 J**			
Benzo(a)pyrene Equivalents	2.9	0.2	0.2	**0.00064**				
Benzo(a)anthracene	29	NA	NA	10 UJ	10 U			
Benzo(a)pyrene	2.9	0.2	0.2	10 UJ	10 U			
Benzo(b)fluoranthene	29	NA	NA	10 UJ	10 U			
Benzo(g,h,i)perylene	1100000	NA	NA	**0.71 J**	10 U			
Benzo(k)fluoranthene	290	NA	NA	10 UJ	10 U			
Chrysene	2900	NA	NA	**0.64 J**				
Dibenzo(a,h)anthracene	2.9	NA	NA	10 UJ	10 U			
Dibenzofuran	NA	NA	NA	10 U	10 U			
Fluoranthene	1500000	NA	NA	0.87 U	**1 JB**			
Fluorene	1500000	NA	NA	**0.95 J**	**0.75 JB**			
High Molecular Weight PAHs	NA	NA	NA	**1.35**				
Indeno(1,2,3-cd)pyrene	29	NA	NA	10 UJ	10 U			
Low Molecular Weight PAHs	NA	NA	NA	**2.43**				
Naphthalene	6200	NA	20	3.5 U	**3.8 JB**			
Phenanthrene	1100000	NA	NA	2.2 U	**1.9 JB**			
Pyrene	1100000	NA	NA	0.78 U	**0.78 JB**			
Total PAHs	NA	NA	NA	**3.78**				
Inorganics (ug/L)								
Aluminum	37000	NA	NA					
Arsenic	0.045	10	NA					
Barium	7300	2000	2000					
Beryllium	73	4	4					
Cadmium	18	5	5					
Calcium	NA	NA	NA					
Chromium	110	100	100					
Cobalt	11	NA	NA					
Copper	1500	1300	NA					
Iron	26000	NA	NA					
Magnesium	NA	NA	NA					
Manganese	880	NA	NA					
Nickel	730	NA	100					
Potassium	NA	NA	NA					
Selenium	180	50	50					
Sodium	NA	NA	NA					
Thallium	2.4	2	2					
Vanadium	180	NA	NA					
Zinc	11000	NA	NA					

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**TW16-111S**	**TW16-111S**	**TW16-112S**	**TW16-112S**	**TW16-112S**
Sample Number	**Regional**	**Federal**	**RIDEM**	**/16-111S-NWG-081207(FILT**	**16-111S-NWG-081207(FILTE**	**TW16-112S-NWG-102507**	**W16-112S-NWG-102507-AV**	**TW16-112S-NWG-102507-D**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**DUP**	**ORIG**	**AVG**	**DUP**
Sample Date	**Level**		**Objectives**	**20070812**	**20070812**	**20071025**	**20071025**	**20071025**
Area	**Tap Water**			**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**	**CREOSOTE DIP TANK**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA					
Arsenic	0.045	10	NA					
Barium	7300	2000	2000					
Cadmium	18	5	5					
Calcium	NA	NA	NA					
Chromium	110	100	100					
Cobalt	11	NA	NA					
Iron	26000	NA	NA					
Magnesium	NA	NA	NA					
Manganese	880	NA	NA					
Nickel	730	NA	100					
Potassium	NA	NA	NA					
Sodium	NA	NA	NA					
Petroleum Hydrocarbons (mg/L)								
TPH (C09-C36)	NA	NA	NA			**0.12**	**0.1065**	**0.093**
TPH (C09-C44)	NA	NA	NA			**0.13**	**0.115**	**0.1**
Miscellaneous Parameters								
Turbidity (NTUs)	NA	NA	NA			**3.47**		
pH	NA	NA	NA			**6.04**		
Conductivity (mS/cm)	NA	NA	NA			**0.745**		
DO (mg/L)	NA	NA	NA			**2.7**		
Salinity	NA	NA	NA					

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Area	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	10 TW16-112S '16-112S-NWG-102507(FILTI ORIG 20071025 CREOSOTE DIP TANK	10 TW16-112S -112S-NWG-102507(FILTER AVG 20071025 CREOSOTE DIP TANK	10 TW16-112S 6-112S-NWG-102507(FILTE DUP 20071025 CREOSOTE DIP TANK
Volatile Organic Compounds (ug/L)						
Benzene	0.41	5	5			
BTEX	NA	NA	NA			
Chloroform	0.19	80	NA			
cis-1,2-Dichloroethene	370	70	70			
Tetrachloroethene	0.11	5	5			
Total Chlorinated VOCs	NA	NA	NA			
trans-1,2-Dichloroethene	110	100	100			
Trichloroethene	1.7	5	5			
Vinyl Chloride	0.016	2	2			
Semivolatile Organic Compounds (ug/L)						
2-Methylnaphthalene	150	NA	NA			
Acenaphthene	2200	NA	NA			
Acenaphthylene	2200	NA	NA			
Anthracene	11000	NA	NA			
Fluoranthene	1500	NA	NA			
Fluorene	1500	NA	NA			
High Molecular Weight PAHs	NA	NA	NA			
Low Molecular Weight PAHs	NA	NA	NA			
Naphthalene	0.14	NA	20			
Phenanthrene	1100	NA	NA			
Pyrene	1100	NA	NA			
Total PAHs	NA	NA	NA			
Polycyclic Aromatic Hydrocarbons (ng/L)						
2-Methylnaphthalene	150000	NA	NA			
Acenaphthene	2200000	NA	NA			
Acenaphthylene	2200000	NA	NA			
Anthracene	11000000	NA	NA			
Benzo(a)pyrene Equivalents	2.9	200	200			
Benzo(a)anthracene	29	NA	NA			
Benzo(a)pyrene	2.9	200	200			
Benzo(b)fluoranthene	29	NA	NA			
Benzo(g,h,i)perylene	1100000	NA	NA			
Benzo(k)fluoranthene	290	NA	NA			
Chrysene	2900	NA	NA			
Dibenzo(a,h)anthracene	2.9	NA	NA			
Dibenzofuran	NA	NA	NA			
Fluoranthene	1500000	NA	NA			
Fluorene	1500000	NA	NA			
High Molecular Weight PAHs	NA	NA	NA			
Indeno(1,2,3-cd)pyrene	29	NA	NA			
Low Molecular Weight PAHs	NA	NA	NA			
Naphthalene	6200	NA	20000			
Phenanthrene	1100000	NA	NA			
Pyrene	1100000	NA	NA			
Total PAHs	NA	NA	NA			

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Area	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	10 TW16-112S '16-112S-NWG-102507(FILTI ORIG 20071025 CREOSOTE DIP TANK	10 TW16-112S -112S-NWG-102507(FILTER AVG 20071025 CREOSOTE DIP TANK	10 TW16-112S 6-112S-NWG-102507(FILTE DUP 20071025 CREOSOTE DIP TANK
Filtered Polycyclic Aromatic Hydrocarbons (ng/L)						
Acenaphthene	2200000	NA	NA	10 UJ	9.8 UJ	9.6 UJ
Acenaphthylene	2200000	NA	NA	0.83 U	0.855 U	0.88 U
Anthracene	11000000	NA	NA	**0.54 J**	**0.54 J**	9.6 UJ
Benzo(a)pyrene Equivalents	2.9	0.2	0.2	**0.29**	**0.9528**	**1.0778**
Benzo(a)anthracene	29	NA	NA	10 UJ	**0.21 J**	**0.21 J**
Benzo(a)pyrene	2.9	0.2	0.2	10 UJ	**0.48 J**	**0.48 J**
Benzo(b)fluoranthene	29	NA	NA	10 UJ	**0.35 J**	**0.35 J**
Benzo(g,h,i)perylene	1100000	NA	NA	0.51 U	0.665 U	0.82 U
Benzo(k)fluoranthene	290	NA	NA	10 UJ	**0.18 J**	**0.18 J**
Chrysene	2900	NA	NA	0.29 U	0.395 U	0.5 U
Dibenzo(a,h)anthracene	2.9	NA	NA	**0.29 J**	**0.415 J**	**0.54 J**
Dibenzofuran	NA	NA	NA			
Fluoranthene	1500000	NA	NA	0.49 U	0.52 U	0.55 U
Fluorene	1500000	NA	NA	0.92 U	0.96 U	1 U
High Molecular Weight PAHs	NA	NA	NA	**0.29**	**1.635**	**1.76**
Indeno(1,2,3-cd)pyrene	29	NA	NA	0.45 U	0.59 U	0.73 U
Low Molecular Weight PAHs	NA	NA	NA	**0.54**	**0.54**	0 U
Naphthalene	6200	NA	20	1.8 U	1.7 U	1.6 U
Phenanthrene	1100000	NA	NA	1.6 U	1.6 U	1.6 U
Pyrene	1100000	NA	NA	0.6 U	0.585 U	0.57 U
Total PAHs	NA	NA	NA	**0.83**	**2.175**	**1.76**
Inorganics (ug/L)						
Aluminum	37000	NA	NA			
Arsenic	0.045	10	NA			
Barium	7300	2000	2000			
Beryllium	73	4	4			
Cadmium	18	5	5			
Calcium	NA	NA	NA			
Chromium	110	100	100			
Cobalt	11	NA	NA			
Copper	1500	1300	NA			
Iron	26000	NA	NA			
Magnesium	NA	NA	NA			
Manganese	880	NA	NA			
Nickel	730	NA	100			
Potassium	NA	NA	NA			
Selenium	180	50	50			
Sodium	NA	NA	NA			
Thallium	2.4	2	2			
Vanadium	180	NA	NA			
Zinc	11000	NA	NA			

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **Area**	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**10** **TW16-112S** **'16-112S-NWG-102507(FILTI** **ORIG** **20071025** **CREOSOTE DIP TANK**	**10** **TW16-112S** **-112S-NWG-102507(FILTER** **AVG** **20071025** **CREOSOTE DIP TANK**	**10** **TW16-112S** **6-112S-NWG-102507(FILTE** **DUP** **20071025** **CREOSOTE DIP TANK**
Filtered Inorganics (ug/L)						
Aluminum	37000	NA	NA			
Arsenic	0.045	10	NA			
Barium	7300	2000	2000			
Cadmium	18	5	5			
Calcium	NA	NA	NA			
Chromium	110	100	100			
Cobalt	11	NA	NA			
Iron	26000	NA	NA			
Magnesium	NA	NA	NA			
Manganese	880	NA	NA			
Nickel	730	NA	100			
Potassium	NA	NA	NA			
Sodium	NA	NA	NA			
Petroleum Hydrocarbons (mg/L)						
TPH (C09-C36)	NA	NA	NA			
TPH (C09-C44)	NA	NA	NA			
Miscellaneous Parameters						
Turbidity (NTUs)	NA	NA	NA			
pH	NA	NA	NA			
Conductivity (mS/cm)	NA	NA	NA			
DO (mg/L)	NA	NA	NA			
Salinity	NA	NA	NA			

TABLE 4-32

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
GA = Drinking water suitability
GW = Groundwater
MCL = Maximum Contaminant Level
NA = Not applicable/not available
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
VOC = Volatile organic compound

Footnotes:
Bolding indicates that the chemical was detected in the sample.
1 - The calculation of the BTEX and the total chlorinated VOCs are defined in the Section 4 text. "0 U" indicates that this chemical group was not detected in the sample analyzed.
2 - A concentration that is shaded exceeds one or more criterion presented in the table.
3 - A blank cell in the table indicates that the sample was not analyzed for the target analyte.
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C9 to C36.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C9 to C44.

TABLE 4-33

SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-02I MW16-02I-NWG-093004 NORMAL 9/30/2004	08 MW16-04I MW16-04I-NWG-100404 ORIG 10/4/2004	08 MW16-04I MW16-04I-NWG-100404-AVG AVG 10/4/2004	08 MW16-04I MW16-04I-NWG-100404-D DUP 10/4/2004	08 MW16-05I MW16-05I-NWG-092904 NORMAL 9/29/2004	08 MW16-13I MW16-13I-NWG-100704 NORMAL 10/7/2004	08 MW16-14I MW16-14I-NWG-100704 NORMAL 10/7/2004
Volatile Organics (ug/L)										
1,1-Dichloroethene	340	7	7							
Acetone	22000	NA	NA	10 UR	5 UR	5 UR	5 UR	5 UR	5 U	5 U
Bromodichloromethane	1.1	80	NA	2 U	1 U	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	**0.0106**	**0.016**	**0.0161**	**0.0161**	**0.0169**	0 U	0 U
Carbon Disulfide	1000	NA	NA	2 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ
Chlorodibromomethane	0.8	80	NA	2 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	**0.603 J**	1 U	1 U	1 U	**23**	1 U	1 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Methane	NA	NA	NA	3.3 U	**5 J**	**6.5 J**	**8 J**	**1600**	3.3 U	**1.6 J**
Tetrachloroethene	0.11	5	5	2 U	1 U	1 U	1 U	1 U	**0.473 J**	1 U
Toluene	2300	1000	1000	2 U	1 U	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	**1.12 J**	1 U	1 U	1 U	**24.1**	1 U	1 U
Total Chlorinated VOCs[1]	NA	NA	NA	**64.8**	**0.503**	**0.538**	**0.561**	**496**	**9.62**	**10**
trans-1,2-Dichloroethene	110	100	100	**0.515 J**	1 U	1 U	1 U	**1.1**	1 U	1 U
Trichloroethene	1.7	5	5	**63**	**0.492 J**	**0.5265 J**	**0.561 J**	**470**	**9.15**	**10**
Low-Level Volatile Organics (ug/L)										
1,1,2-Trichloroethane	0.24	5	5	**0.0114 J**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	**0.641**	0.1 U	0.1 U	0.1 U	**1.52**	0.1 U	0.1 U
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	0.43	75	75	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
Benzene	0.41	5	5	**0.0106 J**	**0.016 J**	**0.01605 J**	**0.0161 J**	**0.0169 J**	0.1 U	0.1 U
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	**0.0113 J**	**0.0113 J**	0.1 U	**0.413**	0.1 U	0.1 U
Total Metals (ug/L)										
Aluminum	37000	NA	NA	**13800 J**	**23.3**	**13.5 J**	**3.7 J**	**29.1 J**	**1240**	**230**
Arsenic	0.045	10	NA	0.42 U	0.42 U	0.42 U	0.42 U	**0.9**	**0.64 J**	0.42 U
Barium	7300	2000	2000	**195**	**8.4**	**8.8**	**9.2**	**27.7**	**38.3**	**3.9**
Beryllium	73	4	4	**2.7**	0.11 UJ	0.11 UJ	0.11 UJ	0.11 U	**0.19 J**	0.11 U
Cadmium	18	5	5	**1.6**	**0.1 J**	**0.065 J**	0.06 U	0.16 U	**0.48**	0.06 U
Calcium	NA	NA	NA	**44700 J**	**13900**	**14900**	**15900**	**8730**	**18200**	**516**
Chromium	110	100	100	**13.5**	0.88 U	0.845 U	0.81 U	1.3 U	**2.9**	**1.4**
Cobalt	11	NA	NA	**19.3**	0.05 U	0.05 U	0.05 U	**1.4**	**27.2**	0.09 U
Copper	1500	1300	NA	**136**	0.4 U	0.4 U	0.4 U	**0.89**	**7.4**	**2**
Iron	26000	NA	NA	**16900**	**96.5 J**	**60.75 J**	50 U	**985**	**4680**	**305**
Lead	NA	15	15	**73.2**	**0.2**	**0.145 J**	**0.09 J**	**0.35**	**4.7**	**0.78**
Magnesium	NA	NA	NA	**7780 J**	**9730**	**10065**	**10400**	**10100**	**6800**	**160**
Manganese	880	NA	NA	**278**	**7.6**	**7.85**	**8.1**	**290**	**320**	**4.4**
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.081 U	0.021 U
Nickel	730	NA	100	**43.1**	**0.96**	**1.03**	**1.1**	**1.6**	**41.9**	**0.41 J**
Potassium	NA	NA	NA	**3790**	**2640**	**2710**	**2780**	**5080**	**2220**	**428**
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Sodium	NA	NA	NA	**8370 J**	**23000**	**22950**	**22900**	**25900**	**32100**	**22100**
Thallium	2.4	2	2	**0.17**	0.07 U	0.07 U	0.07 U	**0.07 J**	**0.13 J**	0.07 U
Vanadium	180	NA	NA	**37.9**	**0.56 J**	**0.555 J**	**0.55 J**	0.4 U	**4**	**0.58 J**
Zinc	11000	NA	NA	**170**	**13.3 J**	**7.05 J**	1.6 U	**14**	**82.6 J**	**4.7**
Dissolved Metals (ug/L)										
Aluminum	37000	NA	NA	**2.4**	**2.6**	**18.95**	**35.3**	0.72 U	**4.4**	**2.1**
Arsenic	0.045	10	NA	**0.26**	**0.13 J**	**0.145 J**	**0.16 J**	**0.47**	**0.14 J**	**0.14 J**
Barium	7300	2000	2000	**10**	**9.1**	**8.9**	**8.7**	**26.8**	**26.6**	**2.6 J**
Cadmium	18	5	5	0.06 U	0.02 U	**0.035**	**0.06**	0.02 U	**0.43**	0.03 U
Calcium	NA	NA	NA	**7150**	**17200**	**16200**	**15200**	**8550**	**18100**	**491**
Chromium	110	100	100	**0.67**	**3**	**3.05**	**3.1**	**1.9**	**1.7**	**1.5**
Cobalt	11	NA	NA	**1.6**	**0.04**	**0.05**	**0.06**	**1.3**	**20.2**	**0.03**
Copper	1500	1300	NA	**0.26 J**	0.16 U	**0.19 J**	**0.3 J**	**0.23 J**	**0.87 J**	**0.66**
Iron	26000	NA	NA	50 U	**50.5 J**	**90.75 J**	**131**	**322**	**176**	50 U
Lead	NA	15	15	**0.4**	0.08 U	**0.085 J**	**0.13 J**	**0.13 J**	0.078 UJ	**0.26**
Magnesium	NA	NA	NA	**3400**	**11100**	**10850**	**10600**	**9150**	**6510**	**118**
Manganese	880	NA	NA	**21.4**	**8.7**	**8.6**	**8.5**	**286**	**64.7**	**0.48**
Nickel	730	NA	100	**6.2**	**0.96**	**0.97**	**0.98**	**1.7**	**36.7**	**0.31**

TABLE 4-33

SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date**	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**08** **MW16-02I** **MW16-02I-NWG-093004** **NORMAL** **9/30/2004**	**08** **MW16-04I** **MW16-04I-NWG-100404** **ORIG** **10/4/2004**	**08** **MW16-04I** **MW16-04I-NWG-100404-AVG** **AVG** **10/4/2004**	**08** **MW16-04I** **MW16-04I-NWG-100404-D** **DUP** **10/4/2004**	**08** **MW16-05I** **MW16-05I-NWG-092904** **NORMAL** **9/29/2004**	**08** **MW16-13I** **MW16-13I-NWG-100704** **NORMAL** **10/7/2004**	**08** **MW16-14I** **MW16-14I-NWG-100704** **NORMAL** **10/7/2004**
Dissolved Metals (ug/L) (Continued)										
Potassium	NA	NA	NA	**1880**	**3080**	**3010**	**2940**	**4900**	**1970**	**455**
Selenium	180	50	50	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Silver	180	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Sodium	NA	NA	NA	**8410**	**22400**	**22350**	**22300**	**25800**	**31700**	**21200 J**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	**0.18**	**0.82**	**0.85**	**0.88**	**0.52**	**0.21**	**0.32**
Zinc	11000	NA	NA	**9.7 J**	**1.2 J**	**1.45 J**	**1.7 J**	**4.7 J**	**65.2 J**	**1.9**
Miscellaneous Parameters (mg/L)										
Alkalinity	NA	NA	NA	**11.5**	**60**	**55.5**	**51**	**89.5**	**7.3**	**11**
Ammonia	NA	NA	NA	**0.21**	0.1 U	0.1 U	0.1 U	**0.71**	**0.12**	**0.15**
Chloride	NA	NA	NA	**20.2**	**48.1**	**44.9**	**41.7**	**23.9**	**132**	**19**
Dissolved Inorganic Carbon	NA	NA	NA	1 U	**3**	**3**	**3**	**5**	**3**	**2**
Dissolved Organic Carbon	NA	NA	NA	**3**	**2**	**2**	**2**	**3**	**2**	**2**
Hydrogen Sulfide	110	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Nitrate	58000	10	NA	**3.9**	**4.65**	**4.755**	**4.86**	0.1 U	**5.48**	**6.43**
Salinity (ppth)	NA	NA	NA	**0.068**	**0.166**	**0.1575**	**0.149**	**0.137**	**0.258**	**0.059**
Sulfate	NA	NA	NA	**9.99**	**14.4**	**13.55**	**12.7**	**4.94**	**11.6**	**3.2**
pH	NA	NA	NA	**5.84**	**5.47**			**6.8**	**5.65**	**6.22**
Conductivity (ms/cm)	NA	NA	NA	**0.09**	**0.264**			**0.205**	**0.427**	**0.111**
DO (mg/L)	NA	NA	NA	**4.1**	**1.5**			**4.4**	**2.94**	**8.45**
Turbidity (NTUs)	NA	NA	NA	**>1100**	**0**			**9.24**	**19.2**	**8.5**

TABLE 4-33

SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-16I MW16-16I-NWG-100604 NORMAL 10/6/2004	08 MW16-17I MW16-17I-NWG-100404 NORMAL 10/4/2004	08 MW16-18I MW16-18I-NWG-100504 ORIG 10/5/2004	08 MW16-18I MW16-18I-NWG-100504-AVG AVG 10/5/2004	08 MW16-18I MW16-18I-NWG-100504-D DUP 10/5/2004
Volatile Organics (ug/L)								
1,1-Dichloroethene	340	7	7					
Acetone	22000	NA	NA	5 U	5 UR	5 UR	5 UR	5 UR
Bromodichloromethane	1.1	80	NA	**0.219 J**	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	1 UJ	1 U	1 U	1 U	1 U
Chlorodibromomethane	0.8	80	NA	**0.387 J**	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	**0.441 J**	1 U	1 U	1 U	1 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Methane	NA	NA	NA	3.3 U	**1 J**	**1.1 J**	**1.1 J**	**1.1 J**
Tetrachloroethene	0.11	5	5	1 U	**0.766 J**	**2.02**	**1.975**	**1.93**
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	**0.441 J**	1 U	1 U	1 U	1 U
Total Chlorinated VOCs[1]	NA	NA	NA	**49.5**	**0.766**	**79**	**74.5**	**69.9**
trans-1,2-Dichloroethene	110	100	100	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1.7	5	5	**49**	1 U	**77**	**72.5**	**68**
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	**0.0235 J**	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	0.43	75	75	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
Benzene	0.41	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloroform	0.19	80	NA	0.12 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total Metals (ug/L)								
Aluminum	37000	NA	NA	**107000**	**18.4**	**70.8**	**47.2**	**23.6**
Arsenic	0.045	10	NA	**26.7**	0.42 U	0.42 U	0.42 U	0.42 U
Barium	7300	2000	2000	**383**	**0.62 J**	**3.8**	**3.5**	**3.2**
Beryllium	73	4	4	**5.4**	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ
Cadmium	18	5	5	**3 J**	0.06 U	0.06 U	0.06 U	0.06 U
Calcium	NA	NA	NA	**42800**	**1660**	**2250**	**2240**	**2230**
Chromium	110	100	100	**140**	1 U	1.3 U	1.2 U	1.1 U
Cobalt	11	NA	NA	**129**	0.05 U	0.05 U	0.05 U	0.05 U
Copper	1500	1300	NA	**341**	0.4 U	0.4 U	0.4 U	0.4 U
Iron	26000	NA	NA	**233000**	50 U	**119**	**72**	50 U
Lead	NA	15	15	**101**	0.05 U	**0.18**	**0.135 J**	**0.09 J**
Magnesium	NA	NA	NA	**44100**	**628**	**821**	**802.5**	**784**
Manganese	880	NA	NA	**3350**	**2.1**	**2.8**	**2.35**	**1.9**
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U
Nickel	730	NA	100	**217**	0.35 U	**0.53 J**	**0.3525 J**	0.35 U
Potassium	NA	NA	NA	**15800**	**465**	**744**	**745.5**	**747**
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	**0.25**	0.05 U	0.05 U	0.05 U	0.05 U
Sodium	NA	NA	NA	11800 U	**4940**	**4880**	**4825**	**4770**
Thallium	2.4	2	2	**1.2**	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	**182**	0.4 U	0.4 U	0.415 U	0.43 U
Zinc	11000	NA	NA	**726**	**2**	4.6 U	3.55 U	2.5 U
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA	**2**	**3**	**3.9**	**3.95**	**4**
Arsenic	0.045	10	NA	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
Barium	7300	2000	2000	**5.8**	2.1 U	**3.4 J**	**3.75 J**	**4.1 J**
Cadmium	18	5	5	0.05 U	0.03 U	0.02 U	0.02 U	0.02 U
Calcium	NA	NA	NA	**4190**	**1720**	**2270**	**2335**	**2400**
Chromium	110	100	100	**1.2**	**0.58**	**0.79**	**0.8**	**0.81**
Cobalt	11	NA	NA	**0.09**	0.01 U	0.01 U	0.01 U	0.01 U
Copper	1500	1300	NA	**0.17 J**	0.16 U	0.16 U	0.16 U	0.16 U
Iron	26000	NA	NA	50 U	50 U	50 U	50 U	50 U
Lead	NA	15	15	**0.27**	0.08 U	**0.2**	**0.12**	0.08 U
Magnesium	NA	NA	NA	**1610**	**691**	**811**	**812.5**	**814**
Manganese	880	NA	NA	**2.9**	**1.8 J**	**1.4**	**1.4**	**1.4**
Nickel	730	NA	100	**1**	0.12 U	**0.54**	**0.395**	**0.25**

TABLE 4-33

SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-16I MW16-16I-NWG-100604 NORMAL 10/6/2004	08 MW16-17I MW16-17I-NWG-100404 NORMAL 10/4/2004	08 MW16-18I MW16-18I-NWG-100504 ORIG 10/5/2004	08 MW16-18I MW16-18I-NWG-100504-AVG AVG 10/5/2004	08 MW16-18I MW16-18I-NWG-100504-D DUP 10/5/2004
Dissolved Metals (ug/L) (Continued)								
Potassium	NA	NA	NA	**1230**	**479**	**807**	**804**	**801**
Selenium	180	50	50	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Silver	180	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Sodium	NA	NA	NA	**9390**	**4960**	**5190 J**	**5120 J**	**5050**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	**0.24**	**0.08 J**	**0.11 J**	**0.125 J**	**0.14 J**
Zinc	11000	NA	NA	**4.3**	**0.77 J**	**5.4 J**	**3.5 J**	**1.6 J**
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**9**	**2.7**	**4.8**	**4.8**	**4.8**
Ammonia	NA	NA	NA	**0.1**	0.1 U	0.1 U	0.1 U	0.1 U
Chloride	NA	NA	NA	**11.6**	**6.48**	**5.13**	**5.19**	**5.25**
Dissolved Inorganic Carbon	NA	NA	NA	**3**	1 U	1 U	1 U	1 U
Dissolved Organic Carbon	NA	NA	NA	**2**	**2**	**2**	**2**	**2**
Hydrogen Sulfide	110	NA	NA	**0.156**	0.05 U	0.05 U	0.05 U	0.05 U
Nitrate	58000	10	NA	**3.59**	**2.85**	**3.32**	**3.38**	**3.44**
Salinity (ppth)	NA	NA	NA	**0.051**	**0.024**	**0.026**	**0.0265**	**0.027**
Sulfate	NA	NA	NA	**11.2**	**5.5**	**6.53**	**6.875**	**7.22**
pH	NA	NA	NA	**5.95**	**5.89**	**5.84**		
Conductivity (ms/cm)	NA	NA	NA	**0.085**	**0.043**	**0.051**		
DO (mg/L)	NA	NA	NA	**5.63**	**6.96**	**7.16**		
Turbidity (NTUs)	NA	NA	NA	**230**	**0.78**	**6**		

TABLE 4-33

SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-19I MW16-19I-NWG-100504 NORMAL 10/5/2004	08 MW16-20I MW16-20I-NWG-102804 NORMAL 10/28/2004	08 MW16-21I MW16-21I-NWG-100104 NORMAL 10/1/2004	08 MW16-22I MW16-22I-NWG-100604 NORMAL 10/6/2004	08 MW16-24I MW16-24I-NWG-100104 ORIG 10/1/2004	08 MW16-24I MW16-24I-NWG-100104-AVG AVG 10/1/2004	08 MW16-24I MW16-24I-NWG-100104-D DUP 10/1/2004
Volatile Organics (ug/L)										
1,1-Dichloroethene	340	7	7							
Acetone	22000	NA	NA	5 UR	5 U	5 UR	5 U	5 UR	5 U	5 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	0 U	**0.0122**	**0.0122**	0 U
Carbon Disulfide	1000	NA	NA	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	1 U	**0.158 J**	**0.304 J**	**0.681 J**	**1.41**	**1.54**	**1.67**
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Methane	NA	NA	NA	**1 J**	3.3 U	**2.3 J**	**1.2 J**	**1.2 J**	**1.2 J**	**1.2 J**
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	**0.905 J**	1 U	1 U	1 U
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	1 U	**0.158 J**	**0.304 J**	**0.681 J**	**1.41**	**1.54**	**1.67**
Total Chlorinated VOCs[1]	NA	NA	NA	**15**	**7.5**	**43.3**	**112**	**33.5**	**36.7**	**39.8**
trans-1,2-Dichloroethene	110	100	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1.7	5	5	**15**	**7.34**	**43**	**110**	**32**	**35**	**38**
Low-Level Volatile Organics (ug/L)										
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	**0.0143 J**	**0.0143 J**	0.1 U
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U	0.1 U	**0.0168 J**	**0.125**	**0.1425**	**0.16**
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	0.43	75	75	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
Benzene	0.41	5	5	0.1 U	0.1 U	0.1 U	0.1 U	**0.0122 J**	**0.0122 J**	0.1 U
Chloroform	0.19	80	NA	0.1 U	0.1 U	**0.146**	**0.252**	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total Metals (ug/L)										
Aluminum	37000	NA	NA	**18**	**9.1**	**27900**	**61100**	**12.6**	**13.1**	**13.6**
Arsenic	0.045	10	NA	0.42 U	0.42 U	**7.1 J**	**10.6 J**	0.42 U	0.42 U	0.42 U
Barium	7300	2000	2000	**3.8**	**6.9**	**159**	**310**	**16.1**	**16.5**	**16.9**
Beryllium	73	4	4	0.11 UJ	0.11 UJ	**2 J**	**3.9**	0.11 UJ	0.11 UJ	0.11 UJ
Cadmium	18	5	5	**0.09 J**	0.061 UJ	**1.1**	**1.9 J**	**0.09 J**	**0.095 J**	**0.1 J**
Calcium	NA	NA	NA	**3190**	**3800**	**21300**	**31600**	**14200**	**14450**	**14700**
Chromium	110	100	100	1.4 U	1.1 U	**41.8**	**90.5**	1.4 U	1.35 U	1.3 U
Cobalt	11	NA	NA	0.05 U	0.05 U	**27.2**	**67.8**	0.05 U	0.05 U	0.05 U
Copper	1500	1300	NA	0.4 U	8.4 U	**89.4**	**170**	**0.89**	**0.94**	**0.99**
Iron	26000	NA	NA	50 U	50 U	**48600**	**101000**	50 U	**39.9 J**	**54.8 J**
Lead	NA	15	15	**0.12**	**0.07 J**	**34.4**	**61.6**	0.05 U	**0.0375 J**	**0.05 J**
Magnesium	NA	NA	NA	**2060**	**1830**	**13300**	**26100**	**5810**	**6010**	**6210**
Manganese	880	NA	NA	**2.5**	**2.9 J**	**602**	**1230**	**13.9**	**14.1**	**14.3**
Mercury	11	2	2	0.021 U	0.14 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U
Nickel	730	NA	100	0.35 U	**0.38 J**	**70.7**	**148**	**0.78**	**0.815**	**0.85**
Potassium	NA	NA	NA	**1510**	**2290**	**5920**	**10100**	**5940**	**6090**	**6240**
Selenium	180	50	50	0.29 U	0.29 UJ	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	0.05 U	**0.05 J**	**0.14**	**0.25**	**0.14**	**0.145**	**0.15**
Sodium	NA	NA	NA	**7340**	**19200 J**	**14300**	**12300 J**	**73700**	**74850**	**76000**
Thallium	2.4	2	2	**0.08 J**	0.07 U	**0.29**	**0.69**	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	0.4 U	0.4 U	**67**	**114**	0.4 U	0.4 U	0.4 U
Zinc	11000	NA	NA	3.2 U	**11.1 J**	**200**	**428**	**4.3 J**	**5.9 J**	**7.5 J**
Dissolved Metals (ug/L)										
Aluminum	37000	NA	NA	**5.9**	**7**	**3.8**	**2.4**	**10.6**	**10.8**	**11**
Arsenic	0.045	10	NA	**0.1 J**	0.09 UJ	**0.2**	**0.1 J**	0.09 U	0.09 U	0.09 U
Barium	7300	2000	2000	**4.5**	**7.6**	**4.8**	**7.3**	**16.8**	**16.85**	**16.9**
Cadmium	18	5	5	0.02 U	0.02 U	0.07 U	0.06 U	0.16 U	0.16 U	0.16 U
Calcium	NA	NA	NA	**3290**	**4360**	**3640**	**5620**	**14800**	**14800**	**14800**
Chromium	110	100	100	**0.93**	1 U	**1.5**	**0.89**	**0.87**	**0.83**	**0.79**
Cobalt	11	NA	NA	0.01 U	**0.02 J**	**1.5**	**0.67**	**0.03**	**0.03**	**0.03**
Copper	1500	1300	NA	0.16 U	1.3 U	**0.49**	**0.37**	**1**	**0.91**	**0.82**
Iron	26000	NA	NA	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Lead	NA	15	15	**0.15 J**	**0.23**	**0.4**	**0.17**	**0.23**	**0.23**	**0.23**
Magnesium	NA	NA	NA	**2140**	**2170**	**1680**	**1900**	**6690**	**6715**	**6740**
Manganese	880	NA	NA	**2.3**	**2.5**	**13.8 J**	**3.1**	**13.7 J**	**13.9 J**	**14.1 J**
Nickel	730	NA	100	**0.45**	**0.55 J**	**4**	**3.5**	**1.2**	**1.15**	**1.1**

TABLE 4-33

SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-19I MW16-19I-NWG-100504 NORMAL 10/5/2004	08 MW16-20I MW16-20I-NWG-102804 NORMAL 10/28/2004	08 MW16-21I MW16-21I-NWG-100104 NORMAL 10/1/2004	08 MW16-22I MW16-22I-NWG-100604 NORMAL 10/6/2004	08 MW16-24I MW16-24I-NWG-100104 ORIG 10/1/2004	08 MW16-24I MW16-24I-NWG-100104-AVG AVG 10/1/2004	08 MW16-24I MW16-24I-NWG-100104-D DUP 10/1/2004
Dissolved Metals (ug/L) (Continued)										
Potassium	NA	NA	NA	**1650**	**2240**	**1280**	**1100**	**6370**	**6350**	**6330**
Selenium	180	50	50	0.3 U	0.3 UJ	**0.43 J**	**0.64**	0.3 U	0.3 U	0.3 U
Silver	180	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	**0.13**	**0.135**	**0.14**
Sodium	NA	NA	NA	**7810 J**	**17800**	**13400**	**10500**	**77400**	**78700**	**80000**
Thallium	2.4	2	2	0.07 U	0.074 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	**0.21**	0.17 U	**0.65**	**0.37**	**0.14 J**	**0.135 J**	**0.13 J**
Zinc	11000	NA	NA	**1 J**	**10.8 J**	**7.4**	**5.2**	**7.9**	**7.35**	**6.8**
Miscellaneous Parameters (mg/L)										
Alkalinity	NA	NA	NA	**4.5**	**6.5**	**7.5**	**11**	**2.8**	**2.9**	**3**
Ammonia	NA	NA	NA	**0.11**	**0.1**	**0.16**	**0.14**	0.1 U	0.1 U	0.1 U
Chloride	NA	NA	NA	**24.2**	**34.1**	**18.1**	**14.8**	**154**	**157**	**160**
Dissolved Inorganic Carbon	NA	NA	NA	1 U	**2**	1 U	**2**	1 U	1 U	1 U
Dissolved Organic Carbon	NA	NA	NA	**2**	**3**	**2**	**2**	**2**	**2**	**2**
Hydrogen Sulfide	110	NA	NA	0.05 U	0.05 U	**0.143**	**0.09**	0.05 U	0.05 U	0.05 U
Nitrate	58000	10	NA	**3.3**	**3.66**	**3.46**	**3.39**	**5.31**	**5.32**	**5.33**
Salinity (ppth)	NA	NA	NA	**0.045**	**0.075**	**0.06**	**0.06**	**0.309**	**0.3085**	**0.308**
Sulfate	NA	NA	NA	**5.08**	**7.78**	**11.9**	**12.7**	**2.87**	**2.65**	**2.43**
pH	NA	NA	NA	**5.56**	**5.56**	**5.36**	**5.61**	**5.44**		
Conductivity (ms/cm)	NA	NA	NA	**0.096**	**0.117**	**0.102**	**0.106**	**0.552**		
DO (mg/L)	NA	NA	NA	**7.18**	**0.7**	**4.84**	**0.98**	**6.44**		
Turbidity (NTUs)	NA	NA	NA	**3**	**1.8**	**>1100**	**>1100**	**1.75**		

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SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-25I MW16-25I-NWG-100804 NORMAL 10/8/2004	08 MW16-27I MW16-27I-NWG-101404 NORMAL 10/14/2004	08 MW16-28I MW16-28I-NWG-101404 NORMAL 10/14/2004	08 MW16-33I MW16-33I-NWG-100404 NORMAL 10/4/2004	08 MW16-34I MW16-34I-NWG-092904 NORMAL 9/29/2004	08 MW16-35I MW16-35I-NWG-092904 NORMAL 9/29/2004	08 MW16-37I MW16-37I-NWG-100504 NORMAL 10/5/2004
Volatile Organics (ug/L)										
1,1-Dichloroethene	340	7	7							
Acetone	22000	NA	NA	25 U	12 U	5 U	5 UR	5 UR	5 UR	250 U
Bromodichloromethane	1.1	80	NA	5 U	1 U	1 U	1 U	1 U	1 U	50 U
BTEX[1]	NA	NA	NA	0 U	**0.0267**	**0.0136**	0 U	0 U	**0.0164**	0 U
Carbon Disulfide	1000	NA	NA	5 U	1 U	1 U	1 U	**0.222 J**	1 U	50 UJ
Chlorodibromomethane	0.8	80	NA	5 U	1 U	1 U	1 U	1 U	1 U	50 U
cis-1,2-Dichloroethene	370	70	70	5 U	**6.93**	1 U	1 U	1 U	1 U	50 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Methane	NA	NA	NA	3.3 U	3.3 U	**6.7 J**	**1.1 J**	3.3 U	3.3 U	**1.3 J**
Tetrachloroethene	0.11	5	5	5 U	1 U	1 U	**18**	**3.9**	**3.81**	50 U
Toluene	2300	1000	1000	5 U	1 U	1 U	1 U	1 U	1 U	50 U
Total 1,2-Dichloroethene	330	NA	70	5 U	**7.17**	1 U	1 U	1 U	1 U	50 U
Total Chlorinated VOCs[1]	NA	NA	NA	**120**	**127**	**1.29**	**19.5**	**3.9**	**4.37**	**1700**
trans-1,2-Dichloroethene	110	100	100	5 U	**0.238 J**	1 U	1 U	1 U	1 U	50 U
Trichloroethene	1.7	5	5	**120**	**120**	**1.29**	**1.5**	1 U	**0.555 J**	**1700**
Low-Level Volatile Organics (ug/L)										
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	**0.0326 J**	**0.314**	0.1 U	0.1 U	0.1 U	0.1 U	**0.044 J**
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	0.43	75	75	0.1 UJ	0.1 U	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
Benzene	0.41	5	5	0.1 U	**0.0267 J**	**0.0136 J**	0.1 U	0.1 U	**0.0164 J**	0.1 U
Chloroform	0.19	80	NA	0.113 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.286**
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total Metals (ug/L)										
Aluminum	37000	NA	NA	**739**	**1640 J**	**267**	**16.9**	**83.3 J**	**4.3 J**	**27400**
Arsenic	0.045	10	NA	**0.48 J**	**0.88**	**0.84**	**0.56 J**	0.42 U	0.42 U	**7.3 J**
Barium	7300	2000	2000	**7.1**	**53.2**	**43**	**1.6**	**2.2**	**0.74 J**	**90.6**
Beryllium	73	4	4	0.11 U	**0.17 J**	0.11 U	0.11 UJ	0.11 U	0.11 U	**1.2**
Cadmium	18	5	5	0.06 U	**0.53**	0.061 U	0.06 U	0.06 U	0.06 U	**0.51**
Calcium	NA	NA	NA	**4200**	**19700**	**30800**	**2270**	**2340**	**1660**	**9980**
Chromium	110	100	100	**2.7**	**3.6**	1.6 U	1.4 U	1.9 U	1.6 U	**29.6**
Cobalt	11	NA	NA	**0.86**	**24.5**	**3.4**	0.05 U	0.05 U	0.05 U	**10.8**
Copper	1500	1300	NA	**1.5**	5.7 U	1.4 U	**0.47 J**	**0.49 J**	0.4 U	**62.4**
Iron	26000	NA	NA	**1400**	**3150**	**1430**	**104**	**122**	50 U	**42500**
Lead	NA	15	15	**0.51**	**1.7**	**0.47**	**0.06 J**	**0.19**	**0.22**	**25.1**
Magnesium	NA	NA	NA	**1940**	**13900**	**11000**	**902**	**1230**	**794**	**10500**
Manganese	880	NA	NA	**29.8**	**250 J**	**857 J**	**16.3**	**3.2**	**1**	**531**
Mercury	11	2	2	0.068 U	0.021 U	0.021 U	0.021 U	0.07 U	0.021 U	0.021 U
Nickel	730	NA	100	**2.8**	**37**	**3.1**	0.35 U	0.35 U	0.35 U	**35.5**
Potassium	NA	NA	NA	**1520**	**38700**	**7820**	**684**	**635**	**526**	**4680**
Selenium	180	50	50	0.29 U	**0.38 J**	**0.37 J**	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	0.05 U	0.052 U	0.052 U	0.05 U	0.05 U	0.05 U	**0.11**
Sodium	NA	NA	NA	**10200**	**223000**	**34300**	**8830**	**6460 J**	**5680**	7460 U
Thallium	2.4	2	2	0.07 U	0.066 U	**0.08 J**	0.07 U	0.07 U	0.07 U	**0.23**
Vanadium	180	NA	NA	**1.3**	**3**	**0.86**	**0.52 J**	0.4 U	0.4 U	**38.1**
Zinc	11000	NA	NA	**10 J**	**35.1**	**8.7**	**4.1**	**4.2**	1.1 U	**105**
Dissolved Metals (ug/L)										
Aluminum	37000	NA	NA	**4.5**	**7.9**	**5.5**	**3.5**	**2.8**	**9.7**	**3.6**
Arsenic	0.045	10	NA	**0.27**	**0.22**	**0.37**	**0.78**	0.09 U	**0.1 J**	**0.1 J**
Barium	7300	2000	2000	**4.4**	**50.4**	**43.6**	**2.6 J**	2.1 U	2.1 U	**2.1 J**
Cadmium	18	5	5	0.06 U	**0.51**	0.04 U	0.04 U	0.02 U	0.05 U	0.05 U
Calcium	NA	NA	NA	**4090**	**22100**	**33200**	**2290**	**2270**	**1690 J**	**2370**
Chromium	110	100	100	**1.5**	**4.8**	**7.9**	**1.1**	**0.91**	**1.3**	**0.95**
Cobalt	11	NA	NA	**0.21**	**24.1**	**3.1**	**0.03**	0.01 U	0.01 U	**0.02 J**
Copper	1500	1300	NA	0.16 UJ	2 U	0.32 U	**0.2 J**	0.16 U	**0.75**	0.16 U
Iron	26000	NA	NA	**91.6 J**	**214**	**771**	**74.1 J**	50 U	50 U	50 U
Lead	NA	15	15	0.078 UJ	**0.12 J**	**0.1 J**	**0.2**	0.08 U	**0.16**	**0.22**
Magnesium	NA	NA	NA	**1550**	**13100**	**10500**	**986**	**1130**	**794**	**941**
Manganese	880	NA	NA	**13**	**222 J**	**845 J**	**15.8 J**	**1**	**1.1**	**3.3**
Nickel	730	NA	100	**1.6**	**36**	**3**	**0.66**	**0.13**	**0.2**	**0.38**

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SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-25I MW16-25I-NWG-100804 NORMAL 10/8/2004	08 MW16-27I MW16-27I-NWG-101404 NORMAL 10/14/2004	08 MW16-28I MW16-28I-NWG-101404 NORMAL 10/14/2004	08 MW16-33I MW16-33I-NWG-100404 NORMAL 10/4/2004	08 MW16-34I MW16-34I-NWG-092904 NORMAL 9/29/2004	08 MW16-35I MW16-35I-NWG-092904 NORMAL 9/29/2004	08 MW16-37I MW16-37I-NWG-100504 NORMAL 10/5/2004
Dissolved Metals (ug/L) (Continued)										
Potassium	NA	NA	NA	**1420 J**	**39200**	**8170**	**712**	**607**	**516**	**893**
Selenium	180	50	50	0.3 U	**0.68**	**0.57 J**	0.3 U	0.3 U	0.3 U	0.3 U
Silver	180	NA	NA	0.02 U	0.021 U	0.021 U	0.02 U	0.02 U	0.02 U	0.02 U
Sodium	NA	NA	NA	**9450**	**225000**	**34100**	**8950**	**5630**	**5060**	**6000**
Thallium	2.4	2	2	0.07 U	0.074 U	0.074 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	**0.29**	**1.2**	**2.2**	**0.29**	**0.14 J**	0.28 U	**0.22**
Zinc	11000	NA	NA	**1.8 J**	**38.9 J**	**20.5 J**	**1.3 J**	**2.8 J**	**1.9 J**	**2**
Miscellaneous Parameters (mg/L)										
Alkalinity	NA	NA	NA	**12**	**50**	**115**	**12.2**	**5**	**5.2**	**5.2**
Ammonia	NA	NA	NA	0.1 U	**0.1**	**0.36**	0.1 U	0.1 U	0.16 U	0.1 U
Chloride	NA	NA	NA	**9.92**	**358**	**56.4**	**5.16**	**5.72**	**4.95**	**6.52**
Dissolved Inorganic Carbon	NA	NA	NA	**2**	**11**	**14**	1 U	1 U	**7**	**13**
Dissolved Organic Carbon	NA	NA	NA	**3**	**2**	**2**	**2**	**3**	**1**	**15**
Hydrogen Sulfide	110	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Nitrate	58000	10	NA	**2.56**	**4.56 J**	**3.88 J**	**2.66**	**3.36**	**2.92**	**4.68**
Salinity (ppth)	NA	NA	NA	**0.05**	**0.797**	**0.254**	**0.037**	**0.031**	**0.024**	**0.032**
Sulfate	NA	NA	NA	**12.9**	**62.3**	**29.3**	**8.58**	**8.47**	**5.46**	**7.38**
pH	NA	NA	NA	**5.92**	**6.48**	**6.35**	**6.25**	**6.01**	**5.85**	**5.45**
Conductivity (ms/cm)	NA	NA	NA	**0.084**	**1.182**	**0.407**	**0.081**	**0.056**	**0.042**	**0.062**
DO (mg/L)	NA	NA	NA	**1.39**	**0.71**	**0.46**	**2.18**	**5.76**	**3.14**	**5.51**
Turbidity (NTUs)	NA	NA	NA	**4.8**	**22.3**	**11**	**1.5**	**3.12**	**0**	**400**

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SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-38I MW16-38I-NWG-102704 NORMAL 10/27/2004	08 MW16-39I MW16-39I-NWG-100604 NORMAL 10/6/2004	08 MW16-40I MW16-40I-NWG-101204 NORMAL 10/12/2004	08 MW16-41I MW16-41I-NWG-093004 NORMAL 9/30/2004	08 MW16-42I MW16-42I-NWG-093004 NORMAL 9/30/2004	08 MW16-43I MW16-43I-NWG-093004 NORMAL 9/30/2004
Volatile Organics (ug/L)									
1,1-Dichloroethene	340	7	7						
Acetone	22000	NA	NA	100 U	10 U	5 U	25 UR	5 UR	5 UR
Bromodichloromethane	1.1	80	NA	20 U	2 U	1 U	5 U	1 U	1 U
BTEX[1]	NA	NA	NA	**0.0259**	0 U	0 U	0 U	**0.397**	**0.0223**
Carbon Disulfide	1000	NA	NA	20 U	2 U	1 U	5 U	**0.166 J**	1 U
Chlorodibromomethane	0.8	80	NA	20 U	2 U	1 U	5 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	20 U	2 U	1 U	5 U	**38**	**0.333 J**
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	**12**	6.2 U
Methane	NA	NA	NA	3.3 U	3.3 U	3.3 U	**1.1 J**	**16000**	**13**
Tetrachloroethene	0.11	5	5	20 U	2 U	1 U	5 U	1 U	1 U
Toluene	2300	1000	1000	20 U	2 U	1 U	5 U	**0.302 J**	1 U
Total 1,2-Dichloroethene	330	NA	70	20 U	2 U	1 U	5 U	**41**	**0.486 J**
Total Chlorinated VOCs[1]	NA	NA	NA	**821**	**77.2**	**82**	**89**	**77**	**5.14**
trans-1,2-Dichloroethene	110	100	100	20 U	2 U	1 U	5 U	**3.03**	**0.153 J**
Trichloroethene	1.7	5	5	**820**	**77**	**82**	**89**	1 U	**4.47**
Low-Level Volatile Organics (ug/L)									
1,1,2-Trichloroethane	0.24	5	5	**0.628**	**0.0901 J**	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	**0.299**	**0.0952 J**	**0.0138 J**	**0.0144 J**	**2.99 J**	**0.187**
1,2-Dichloroethane	0.15	5	5	**0.0479 J**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	0.43	75	75	0.1 U	0.1 U	**0.0126 J**	0.1 UJ	0.1 UJ	0.1 UJ
Benzene	0.41	5	5	**0.0259 J**	0.1 U	0.1 U	0.1 U	**0.0951 J**	**0.0223 J**
Chloroform	0.19	80	NA	**0.301**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	**0.0155 J**	0.1 U	**33**	0.1 U
Total Metals (ug/L)									
Aluminum	37000	NA	NA	**71600**	**428**	**2960**	**6.6**	**323 J**	**21.7 J**
Arsenic	0.045	10	NA	**13.1 J**	**0.73 J**	**0.58 J**	0.42 U	**39.5**	**1.4**
Barium	7300	2000	2000	**237**	**3.5**	**45**	**8.9**	**21.4**	**23.2**
Beryllium	73	4	4	**3.9 J**	0.11 U	**0.31 J**	0.11 UJ	0.11 U	0.11 U
Cadmium	18	5	5	**2 J**	0.06 U	0.21 U	0.06 U	0.06 U	0.15 U
Calcium	NA	NA	NA	**29800**	**473**	**18800**	**10200**	**86000**	**34500**
Chromium	110	100	100	**111**	**4**	**6.8 J**	1.1 U	0.84 U	0.48 U
Cobalt	11	NA	NA	**67.2**	**0.62**	**2.2**	0.05 U	**10**	**2.2**
Copper	1500	1300	NA	**178 J**	**2.1**	**12.6**	0.4 U	**2.7 J**	**0.92**
Iron	26000	NA	NA	**135000**	**738**	**5310**	50 U	**38600**	**7110**
Lead	NA	15	15	**58.6**	**0.81**	**5.5**	0.05 U	**1.4 J**	**0.24**
Magnesium	NA	NA	NA	**31900**	**475**	**6920**	**3850**	**7010 J**	**5550 J**
Manganese	880	NA	NA	**1380**	**14.8**	**85.2 J**	**2.8**	**566**	**338**
Mercury	11	2	2	0.11 U	0.021 U	0.021 U	**0.39**	0.021 U	0.021 U
Nickel	730	NA	100	**165 J**	**1.4**	**7.3**	**2.9**	**3.6 J**	**6.7**
Potassium	NA	NA	NA	**11500**	**501**	**6140**	**2070**	**8220**	**3390**
Selenium	180	50	50	0.29 UJ	**2**	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	**0.38**	0.05 U	**0.09 J**	0.05 U	0.05 U	0.05 U
Sodium	NA	NA	NA	**12300 J**	**19500**	**82600 J**	**33000**	**82200**	**56100**
Thallium	2.4	2	2	**0.91**	0.07 U	**0.09 J**	0.07 U	**0.08 J**	0.07 U
Vanadium	180	NA	NA	**146**	**1.8**	**7.3 J**	0.4 U	**1.4**	0.4 U
Zinc	11000	NA	NA	**486 J**	**4.6**	**21 J**	**3**	**6.1 J**	**7.5**
Dissolved Metals (ug/L)									
Aluminum	37000	NA	NA	**21.8 J**	**7.1**	**20.3**	**3**	**1 J**	0.72 U
Arsenic	0.045	10	NA	**0.16 J**	**0.61**	0.09 U	0.09 U	**56.8**	**0.18 J**
Barium	7300	2000	2000	**5.9**	2.1 U	**25.8**	**9.5**	**20.1**	**20.4**
Cadmium	18	5	5	0.11 U	0.02 U	0.13 U	0.08 U	0.02 U	0.06 U
Calcium	NA	NA	NA	**6340**	**448**	**17800**	**10400**	**89500**	**35000**
Chromium	110	100	100	0.72 U	**2.1**	**2**	**1.6**	**7**	**2.2**
Cobalt	11	NA	NA	**2.3**	**0.32**	**0.13**	**0.07**	**4.8**	**1.9**
Copper	1500	1300	NA	0.42 U	**0.19 J**	1 U	**0.34**	**0.64 J**	**0.5**
Iron	26000	NA	NA	**350**	50 U	**54.5 J**	50 U	**39800**	**853**
Lead	NA	15	15	**0.23**	**0.18**	0.08 U	**0.24**	**0.33 J**	**0.38**
Magnesium	NA	NA	NA	**2650 J**	**384**	**5860**	**4100**	**6660**	**5120**
Manganese	880	NA	NA	**39.1 J**	**8.7**	**15.1 J**	**2.8 J**	**588**	**169**
Nickel	730	NA	100	**4 J**	**0.65**	**1.8 J**	**3.1**	**2.2 J**	**6.5**

TABLE 4-33

SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-38I MW16-38I-NWG-102704 NORMAL 10/27/2004	08 MW16-39I MW16-39I-NWG-100604 NORMAL 10/6/2004	08 MW16-40I MW16-40I-NWG-101204 NORMAL 10/12/2004	08 MW16-41I MW16-41I-NWG-093004 NORMAL 9/30/2004	08 MW16-42I MW16-42I-NWG-093004 NORMAL 9/30/2004	08 MW16-43I MW16-43I-NWG-093004 NORMAL 9/30/2004
Dissolved Metals (ug/L) (Continued)									
Potassium	NA	NA	NA	**1300**	**470**	**5280**	**2070**	**8450**	**3430**
Selenium	180	50	50	0.3 UJ	**2.1**	0.3 U	0.3 U	**0.41 J**	0.3 U
Silver	180	NA	NA	0.02 U	0.02 U	**0.05**	0.02 U	0.02 U	0.02 U
Sodium	NA	NA	NA	**9860**	**19600 J**	**74100**	**33200**	**74900**	**52300**
Thallium	2.4	2	2	0.074 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	0.31 U	**0.8**	**0.23**	**0.43**	**2**	**0.53**
Zinc	11000	NA	NA	**8.4 J**	**1.3**	**3.8 J**	**3.3**	**0.85 J**	**3.8 J**
Miscellaneous Parameters (mg/L)									
Alkalinity	NA	NA	NA	**9.5**	**16.3**	**7.2**	**10.5**	**364**	**87.5**
Ammonia	NA	NA	NA	**0.15**	0.1 U	**0.1**	0.1 U	**2.64**	**0.11**
Chloride	NA	NA	NA	**14**	**7.42**	**177**	**92.7**	**93.1**	**110**
Dissolved Inorganic Carbon	NA	NA	NA	**2**	**4**	**2**	1 U	1 U	1 U
Dissolved Organic Carbon	NA	NA	NA	**2**	**4**	**4**	**2**	**6**	**3**
Hydrogen Sulfide	110	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Nitrate	58000	10	NA	**1.34**	**2.6**	**4.67**	**4.87**	**0.103**	**1.36**
Salinity (ppth)	NA	NA	NA	**0.063**	**0.053**	**0.336**	**0.148**	**0.532**	**0.3**
Sulfate	NA	NA	NA	**19.7**	**12.2**	**6.46**	**8.59**	**1.92**	**8.11**
pH	NA	NA	NA	**5.87**	**6.41**	**5.4**	**5.1**	**6.89**	**6.53**
Conductivity (ms/cm)	NA	NA	NA	**0.111**	**0.089**	**0.502**	**0.271**	**0.943**	**0.498**
DO (mg/L)	NA	NA	NA	**0.25**	**0.66**	**1.38**	**5.3**	**5.18**	**5.53**
Turbidity (NTUs)	NA	NA	NA	**>1100**	**6**	**386**	**0.93**	**16**	**41**

TABLE 4-33

SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-44I MW16-44I-NWG-092704 NORMAL 9/27/2004	08 MW16-45I MW16-45I-NWG-092804 NORMAL 9/28/2004	08 MW16-46I MW16-46I-NWG-092804 NORMAL 9/28/2004	08 MW16-48I MW16-48I-NWG-100404 ORIG 10/4/2004	08 MW16-48I MW16-48I-NWG-100404-AVG AVG 10/4/2004	08 MW16-48I MW16-48I-NWG-100404-D DUP 10/4/2004
Volatile Organics (ug/L)									
1,1-Dichloroethene	340	7	7						
Acetone	22000	NA	NA	5 U	5 UR	5 UR	1.45 J	1.45 J	5 UR
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0.0157	0.0304	0.478	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	1 U	0.153 J	1 U	1 U	1 U	1 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	4.14	6.15	0.349 J	1 U	1 U	1 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Methane	NA	NA	NA	37	6.9 U	110	3.3 U	1.5 J	1.5 J
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	4.46	6.7	0.843 J	1 U	1 U	1 U
Total Chlorinated VOCs[1]	NA	NA	NA	8.91	527	1.79	0.137	0.206	0.274
trans-1,2-Dichloroethene	110	100	100	0.316 J	0.552 J	0.494 J	1 U	1 U	1 U
Trichloroethene	1.7	5	5	3.14	520	0.454 J	0.137 J	0.2055 J	0.274 J
Low-Level Volatile Organics (ug/L)									
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	0.386	0.484	0.497	0.1 U	0.1 U	0.1 U
1,2-Dichloroethane	0.15	5	5	0.1 U	0.0366 J	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	0.43	75	75	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
Benzene	0.41	5	5	0.0157 J	0.0304 J	0.478	0.1 U	0.1 U	0.1 U
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.926	0.117	0.1 U	0.1 U	0.1 U	0.1 U
Total Metals (ug/L)									
Aluminum	37000	NA	NA	68.4 J	184 J	11.7	148	146	144
Arsenic	0.045	10	NA	0.42 U	3.4	25.2	0.42 U	0.42 U	0.42 U
Barium	7300	2000	2000	8.2	29.8	20	18.3	18.2	18.1
Beryllium	73	4	4	0.11 U	0.11 U	0.11 U	0.11 UJ	0.11 UJ	0.11 UJ
Cadmium	18	5	5	0.53	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
Calcium	NA	NA	NA	17400	14900	68400	25500	25150	24800
Chromium	110	100	100	0.51 U	0.58 U	0.34 U	1.8 U	1.45 U	1.1 U
Cobalt	11	NA	NA	6.2	2	5.5	1.1	0.995	0.89
Copper	1500	1300	NA	0.97	2.3	0.4 U	1.2	1.25	1.3
Iron	26000	NA	NA	4200	7380	40500	508	511.5	515
Lead	NA	15	15	0.19	0.56	0.1 J	1.7	1.65	1.6
Magnesium	NA	NA	NA	2000	4990	7230	4500	4475	4450
Manganese	880	NA	NA	621	889	391	29.3	27.4	25.5
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.27	0.14025	0.021 U
Nickel	730	NA	100	1.9	1.8	3.4 J	0.94	0.94	0.94
Potassium	NA	NA	NA	2630 J	2250 J	4690	2980	2970	2960
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	0.05 U	0.05 U	0.05 U	0.06 J	0.0425 J	0.05 U
Sodium	NA	NA	NA	30400 J	35500	28300	12700	12600	12500
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	0.4 U	0.4 U	0.4 U	0.85	0.78 J	0.71 J
Zinc	11000	NA	NA	3.6 U	9.7 J	5.1 J	8.6 J	5.875 J	6.3 U
Dissolved Metals (ug/L)									
Aluminum	37000	NA	NA	1 J	0.72 U	0.72 U	1.3 J	1.35 J	1.4 J
Arsenic	0.045	10	NA	0.21 J	3.5 J	25.8 J	0.11 J	0.105 J	0.1 J
Barium	7300	2000	2000	7.5	28.3	17.7	17.5	17.3	17.1
Cadmium	18	5	5	0.43	0.02 U	0.04 U	0.02 U	0.02 U	0.02 U
Calcium	NA	NA	NA	18100	15200	66300 J	26800	26550	26300
Chromium	110	100	100	5	1.9	7.5	2.8	2.6	2.4
Cobalt	11	NA	NA	6.2	1.9	5.6	0.03	0.025 J	0.02 J
Copper	1500	1300	NA	0.55	0.45	0.27 J	0.44	0.475	0.51
Iron	26000	NA	NA	3350	6710	36500	76.1 J	77.9 J	79.7 J
Lead	NA	15	15	0.13 J	0.21	0.18 J	0.08 U	0.08 U	0.08 U
Magnesium	NA	NA	NA	2110	4730	6780	4700	4685	4670
Manganese	880	NA	NA	632	916	382	1.5	1.55	1.6
Nickel	730	NA	100	2	1.7	3.7 J	0.8	0.75	0.7

TABLE 4-33

SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-44I MW16-44I-NWG-092704 NORMAL 9/27/2004	08 MW16-45I MW16-45I-NWG-092804 NORMAL 9/28/2004	08 MW16-46I MW16-46I-NWG-092804 NORMAL 9/28/2004	08 MW16-48I MW16-48I-NWG-100404 ORIG 10/4/2004	08 MW16-48I MW16-48I-NWG-100404-AVG AVG 10/4/2004	08 MW16-48I MW16-48I-NWG-100404-D DUP 10/4/2004
Dissolved Metals (ug/L) (Continued)									
Potassium	NA	NA	NA	**2690**	**2260**	**4460**	**3220**	**3215**	**3210**
Selenium	180	50	50	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Silver	180	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Sodium	NA	NA	NA	**32200 J**	**38600 J**	**30900 J**	**14100**	**13950**	**13800**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	**1.3**	**0.47**	**2**	**0.66**	**0.625**	**0.59**
Zinc	11000	NA	NA	**13 J**	**7.3 J**	**3.7 J**	**1.8 J**	**6.45 J**	**11.1 J**
Miscellaneous Parameters (mg/L)									
Alkalinity	NA	NA	NA	**52.5**	**39.5**	**317**	**54.5**	**54.5**	**54.5**
Ammonia	NA	NA	NA	0.36 U	0.1 U	0.61 U	0.1 U	0.1 U	0.1 U
Chloride	NA	NA	NA	**48.3**	**63.1**	**61.2**	**30.9**	**38.1**	**45.3**
Dissolved Inorganic Carbon	NA	NA	NA	**12**	**6**	**27**	**1**	**1.5**	**2**
Dissolved Organic Carbon	NA	NA	NA	**7**	**2**	**24**	**2**	**2**	**2**
Hydrogen Sulfide	110	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Nitrate	58000	10	NA	**1.5**	0.1 U	0.1 U	**16.2**	**16.35**	**16.5**
Salinity (ppth)	NA	NA	NA	**0.144**	**0.175**	**0.3**	**0.144**	**0.144**	**0.144**
Sulfate	NA	NA	NA	**6.16**	**16.7**	**16.4**	**11.6**	**11.7**	**11.8**
pH	NA	NA	NA	**4.98**	**6.69**	**6.89**	**6.09**		
Conductivity (ms/cm)	NA	NA	NA	**0.202**	**0.316**	**0.535**	**0.213**		
DO (mg/L)	NA	NA	NA	**3.63**	**2.8**	**1.21**	**9.6**		
Turbidity (NTUs)	NA	NA	NA	**17.2**	**13.7**	**20.4**	**30.7**		

TABLE 4-33

SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-49I MW16-49I-NWG-101104 NORMAL 10/11/2004	08 MW16-50I MW16-50I-NWG-102604 NORMAL 10/26/2004	08 MW16-56I MW16-56I-NWG-101404 NORMAL 10/14/2004	08 MW16-57I MW16-57I-NWG-102604 NORMAL 10/26/2004	08 MW16-58I1 MW16-58I1-NWG-101304 NORMAL 10/13/2004	08 MW16-58I2 MW16-58I2-NWG-101304 NORMAL 10/13/2004	08 MW16-59I MW16-59I-NWG-102504 NORMAL 10/25/2004
Volatile Organics (ug/L)										
1,1-Dichloroethene	340	7	7							
Acetone	22000	NA	NA	5 U	5 U	5 U	5 U	5 U	5 U	15 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	0.0126	0.0314	0.0177	0.322
Carbon Disulfide	1000	NA	NA	1 U	0.563 J	1 U	0.134 J	1 U	1 U	0.156 J
Chlorodibromomethane	0.8	80	NA	1 U	1 U	0.364 J	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	1.31 U	1 U	1 U	1.2	1.67 U	28	3.3
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Methane	NA	NA	NA	16	12000	3.3 U	3.3 U	1300	6100	3.3 U
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U	1 U	0.303 J
Total 1,2-Dichloroethene	330	NA	70	1 U	1 U	1 U	1.5	1 U	29.7	3.3
Total Chlorinated VOCs[1]	NA	NA	NA	0.096	0 U	0.851	312	0.0304	113	674
trans-1,2-Dichloroethene	110	100	100	1 U	1 U	1 U	0.307 J	1 U	1.73	1 U
Trichloroethene	1.7	5	5	1 U	1 U	0.851 J	310	1 U	82	670
Low-Level Volatile Organics (ug/L)										
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.0204 J	0.1 U
1,1-Dichloroethene	340	7	7	0.096 J	0.1 U	0.1 U	0.443	0.1 U	0.163	0.131
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.0283 J	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	0.43	75	75	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzene	0.41	5	5	0.1 U	0.1 U	0.1 U	0.0126 J	0.0314 J	0.0177 J	0.0188 J
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.1 U	0.022 J	0.0304 J	1.23	0.158
Total Metals (ug/L)										
Aluminum	37000	NA	NA	168	85.6	365	4670	19800	1860	245000
Arsenic	0.045	10	NA	9.2	2.1	0.76 J	4.6	8.2	2.9	13.2
Barium	7300	2000	2000	44.1	9.7	100	25.1	64.7	49.9	1230
Beryllium	73	4	4	0.11 UJ	0.11 UR	0.11 U	0.28	0.81 J	0.14 J	10.4 R
Cadmium	18	5	5	0.06 U	0.06 U	0.061 U	0.06 U	0.27	0.06 U	8.7
Calcium	NA	NA	NA	19700	14400 J	40700	687	37600	37600	138000
Chromium	110	100	100	1.5 U	1.2 U	1.4 U	6.5	20.8 J	4.7 J	311
Cobalt	11	NA	NA	3.7	0.05 U	0.21	2.4	8.5	4.2	394
Copper	1500	1300	NA	0.82 U	5.3 J	3.8 U	13.7	40.3	5.8 U	896
Iron	26000	NA	NA	9380	619	749	6510	32500	9890	612000
Lead	NA	15	15	0.19	0.12	0.7	6.5	18.3	2.2	149
Magnesium	NA	NA	NA	5020	38600	5390	1210	8790	5680	116000
Manganese	880	NA	NA	417 J	55.2	25.2 J	62	959 J	3690 J	12500
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U
Nickel	730	NA	100	1.2	0.8 J	1.7	8.6	19.7	4.8	642
Potassium	NA	NA	NA	8870	34500	10700	1630	7210	6700	45200
Selenium	180	50	50	0.46 J	6.1	1.2	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	0.05 U	0.05 U	0.052 U	0.05 U	0.08 J	0.05 U	1.2
Sodium	NA	NA	NA	30000 J	429000 J	276000	22000 J	90000 J	42000 J	17500 J
Thallium	2.4	2	2	0.07 U	0.07 U	0.12 J	0.07 U	0.28	0.07 U	1.2
Vanadium	180	NA	NA	0.52 U	0.56 J	1.1	7.1	24.5 J	3.9 J	382
Zinc	11000	NA	NA	2.6 J	2.6 U	8.4	18.5	62.3 J	26.9 J	1930
Dissolved Metals (ug/L)										
Aluminum	37000	NA	NA	6.1	5.3	3.9	8.5	26.8	3.1	8.7
Arsenic	0.045	10	NA	10.2	2.4	0.22	3.5	5.9	2.7	1.2
Barium	7300	2000	2000	41.2	8.5	108	2.1 U	21	43.7	17.6
Cadmium	18	5	5	0.26 U	0.02 U	0.025 U	0.02 U	0.02 U	0.06 U	0.02 U
Calcium	NA	NA	NA	20700	13400	44800	400	45300	41200	6750
Chromium	110	100	100	3.1	9.3	5.8	0.79 U	3.1	3.6	0.96 U
Cobalt	11	NA	NA	3.6	0.01 U	0.14 U	0.06	1	2.3	1.1
Copper	1500	1300	NA	0.79 U	3.5	2.4 U	0.23 J	1.2 U	0.51 U	0.23 J
Iron	26000	NA	NA	9050	403	154	81.8 J	6130	6430	6050
Lead	NA	15	15	0.08 U	0.08 U	0.078 U	0.11 J	0.24	0.14 J	0.56
Magnesium	NA	NA	NA	5040	33400	5020	165	3380	5150	2650
Manganese	880	NA	NA	404 J	66.7	21.9 J	8.3	784 J	3710 J	271
Nickel	730	NA	100	0.98 J	0.64	1	0.42	1 J	1.7 J	1.4

TABLE 4-33

SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-49I MW16-49I-NWG-101104 NORMAL 10/11/2004	08 MW16-50I MW16-50I-NWG-102604 NORMAL 10/26/2004	08 MW16-56I MW16-56I-NWG-101404 NORMAL 10/14/2004	08 MW16-57I MW16-57I-NWG-102604 NORMAL 10/26/2004	08 MW16-58I1 MW16-58I1-NWG-101304 NORMAL 10/13/2004	08 MW16-58I2 MW16-58I2-NWG-101304 NORMAL 10/13/2004	08 MW16-59I MW16-59I-NWG-102504 NORMAL 10/25/2004
Dissolved Metals (ug/L) (Continued)										
Potassium	NA	NA	NA	**8540**	**34700**	**11100**	**915**	**6990**	**6600**	**3260**
Selenium	180	50	50	**0.6**	**5.7**	**1.7**	0.3 U	0.3 U	0.3 U	0.3 U
Silver	180	NA	NA	0.02 U	0.02 U	**0.03 J**	0.02 U	0.02 U	0.02 U	0.02 U
Sodium	NA	NA	NA	**28700**	**429000**	**280000**	**22100**	**89400**	**42200**	**15800**
Thallium	2.4	2	2	0.07 U	0.07 U	**0.09 J**	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	**0.82**	**3.1**	**1.6**	0.29 U	**0.87**	**0.93**	0.17 U
Zinc	11000	NA	NA	**6.3 J**	**1.5**	**19.5 J**	0.65 U	**9 J**	**21.9 J**	**6.2**
Miscellaneous Parameters (mg/L)										
Alkalinity	NA	NA	NA	**118**	**362**	**101**	**19.5**	**155**	**169**	**27**
Ammonia	NA	NA	NA	**0.62**	**3.39**	0.1 U	0.1 U	**0.97**	**2.34**	**1.25**
Chloride	NA	NA	NA	**20**	**554**	**413**	**9.68**	**287**	**75.3**	**13.2**
Dissolved Inorganic Carbon	NA	NA	NA	**20**	**23**	**11**	**1**	**14**	**14**	**19**
Dissolved Organic Carbon	NA	NA	NA	**2**	**10**	**3**	**2**	**4**	**4**	**3**
Hydrogen Sulfide	110	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Nitrate	58000	10	NA	0.1 U	0.1 U	**14.2 J**	**0.121**	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA	**0.167**	**1.35**	**0.898**	**0.055**	**0.405**	**0.29**	**0.081**
Sulfate	NA	NA	NA	**10**	**33.1**	**18.8**	**17.2**	**4.84**	**0.968**	**26**
pH	NA	NA	NA	**6.38**	**7.55**	**6.33**	**6.53**	**7.18**	**6.8**	**6.83**
Conductivity (ms/cm)	NA	NA	NA	**0.307**	**2.003**	**1.185**	**0.115**	**0.562**	**0.462**	**0.131**
DO (mg/L)	NA	NA	NA	**0.06**	**-4.97**	**1.5**	**0.73**	**0.21**	**1.8**	**0.12**
Turbidity (NTUs)	NA	NA	NA	**9**	**5.3**	**10**	**52**	**454**	**40**	**>1100**

TABLE 4-33

SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-61I MW16-61I-NWG-102504 NORMAL 10/25/2004	08 MW16-62I MW16-62I-NWG-102604 NORMAL 10/26/2004	08 MW16-63I MW16-63I-NWG-102604 NORMAL 10/26/2004	08 MW16-64I MW16-64I-NWG-102704 NORMAL 10/27/2004	08 MW16-65I MW16-65I-NWG-102804 NORMAL 10/28/2004	09 MW16-66I MW16-66I-NWG-111604 NORMAL 11/16/2004	09 MW16-67I MW16-67I-NWG-111604 NORMAL 11/16/2004	09 MW16-68I MW16-68I-NWG-111604 NORMAL 11/16/2004
Volatile Organics (ug/L)											
1,1-Dichloroethene	340	7	7						1 U	1 U	1 U
Acetone	22000	NA	NA	6.16 U	15 U	5 U	10 U	5 U	5 U	5 U	16 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	**0.0151**	0 U	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	**0.139 J**	1 U	1 U	**0.295 J**	**0.114 J**	1 U	1 U	**0.355 J**
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	**0.529 J**	**0.815 J**	**0.303 J**	**0.238 J**	1 U	1 U	1 U	1 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Methane	NA	NA	NA	3.3 U	3.3 U	3.3 U	10 U	7.2 U	4.7 U	3.9 U	3.3 U
Tetrachloroethene	0.11	5	5	1 U	**0.322 J**	**0.311 J**	**0.431 J**	1 U			
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	**0.529 J**	**0.815 J**	**0.303 J**	**0.238 J**	1 U	2 U	2 U	2 U
Total Chlorinated VOCs[1]	NA	NA	NA	**9.93**	**21.1**	**19.6**	**32.7**	**3.19**	**1.58**	**11**	**11**
trans-1,2-Dichloroethene	110	100	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1.7	5	5	**9.4**	**20**	**19**	**32**	**3.19**	**1.58**	**11**	**11**
Low-Level Volatile Organics (ug/L)											
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			
1,4-Dichlorobenzene	0.43	75	75	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			
Benzene	0.41	5	5	0.1 U	0.1 U	0.1 U	**0.0151 J**	0.1 U			
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			
Total Metals (ug/L)											
Aluminum	37000	NA	NA	**19700**	**2690**	**18300**	**24500**	**21300**			
Arsenic	0.045	10	NA	**2**	**0.51 J**	1.8 U	**2.7**	**1.5**			
Barium	7300	2000	2000	**101**	**66.6**	**56.3**	**92.9**	**108**			
Beryllium	73	4	4	2.4 R	**0.31**	**1.4**	2.3 R	**1.2 J**			
Cadmium	18	5	5	**0.59**	0.19 U	0.37 U	**0.55**	**0.36 J**			
Calcium	NA	NA	NA	**13900 J**	**21400**	**9050**	**16100**	**17100 J**			
Chromium	110	100	100	**16.7**	**3.5**	**16.3**	**22.6**	**26.3**			
Cobalt	11	NA	NA	**11.7**	**1.3**	**6.5**	**10.9**	**15.3 J**			
Copper	1500	1300	NA	**39.5 J**	**5.6**	**32.9**	**42.1**	**29.5 J**			
Iron	26000	NA	NA	**28300**	**4480**	**23200**	**33500**	**27300**			
Lead	NA	15	15	**17.3**	**2.1**	**14**	**18.6**	**13.5**			
Magnesium	NA	NA	NA	**11600**	**8520**	**6970**	**8890**	**8850**			
Manganese	880	NA	NA	**397**	**103**	**278**	**384**	**371**			
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U	0.078 U			
Nickel	730	NA	100	**22.8 J**	**3.5**	**15.4**	**30.1**	**32.5 J**			
Potassium	NA	NA	NA	**6070**	**3950**	**4350**	**7130**	**5390 J**			
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	0.29 U	0.29 UJ			
Silver	180	NA	NA	**0.17**	**0.1 J**	**0.1 J**	**0.11**	**0.09 J**			
Sodium	NA	NA	NA	**110000 J**	**76100 J**	**15300 J**	**13600 J**	**11400 J**			
Thallium	2.4	2	2	0.13 U	0.07 U	0.09 U	0.11 U	**0.43**			
Vanadium	180	NA	NA	**24.2**	**4.1**	**22.2**	**28.8**	**31.9 J**			
Zinc	11000	NA	NA	**84.2**	**13.5**	**55.7**	**94.6**	**87.7 J**			
Dissolved Metals (ug/L)											
Aluminum	37000	NA	NA	**5.7**	**46.5**	**6.4**	**244**	**63.1 J**			
Arsenic	0.045	10	NA	0.09 U	0.09 U	**0.64**	**1.2**	**0.89 J**			
Barium	7300	2000	2000	**26.3**	**53.9**	**2.5 J**	**7.7**	**9.2**			
Cadmium	18	5	5	0.02 U	0.15 U	0.02 U	0.02 U	0.02 U			
Calcium	NA	NA	NA	**10300**	**20000**	**4590**	**11900**	**18300**			
Chromium	110	100	100	0.7 U	0.89 U	**2**	**1.5**	1 U			
Cobalt	11	NA	NA	**0.38**	**0.05**	**0.03**	**0.04**	**0.02 J**			
Copper	1500	1300	NA	**1.1**	**0.73**	**0.22 J**	**0.37 J**	0.16 U			
Iron	26000	NA	NA	50 U	50 U	50 U	50 U	50 U	49.1 U	32.2 U	32.2 U
Lead	NA	15	15	0.08 U	**0.16**	**0.42**	**0.12 J**	0.08 U			
Magnesium	NA	NA	NA	**5920**	**7940**	**1880**	**1410**	**2520 J**			
Manganese	880	NA	NA	**30**	**40.3**	**8**	0.81 U	**2.1 J**	**15.4**	**109**	**21.6**
Nickel	730	NA	100	**0.88**	**0.62**	**0.35**	**0.63 J**	**0.44 J**			

TABLE 4-33

SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	**ORNL**			**08**	**08**	**08**	**08**	**08**	**09**	**09**	**09**
Location	**Regional**	**Federal**	**RIDEM**	**MW16-61I**	**MW16-62I**	**MW16-63I**	**MW16-64I**	**MW16-65I**	**MW16-66I**	**MW16-67I**	**MW16-68I**
Sample Number	**Screening**	**MCL**	**GA GW**	**MW16-61I-NWG-102504**	**MW16-62I-NWG-102604**	**MW16-63I-NWG-102604**	**MW16-64I-NWG-102704**	**MW16-65I-NWG-102804**	**MW16-66I-NWG-111604**	**MW16-67I-NWG-111604**	**MW16-68I-NWG-111604**
Sample Code	**Level**		**Objectives**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Tap Water**			**10/25/2004**	**10/26/2004**	**10/26/2004**	**10/27/2004**	**10/28/2004**	**11/16/2004**	**11/16/2004**	**11/16/2004**
Dissolved Metals (ug/L) (Continued)											
Potassium	NA	NA	NA	**4640**	**3340**	**2010**	**5150**	**2140**			
Selenium	180	50	50	0.3 U	0.3 U	0.3 U	**0.45 J**	**0.47 J**			
Silver	180	NA	NA	**0.03 J**	**0.06**	0.02 U	0.02 U	0.02 U			
Sodium	NA	NA	NA	**116000**	**74000**	**14400**	**15700**	**11600**			
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.074 UJ			
Vanadium	180	NA	NA	0.16 U	0.14 U	**0.79**	**1.3**	**3.1**			
Zinc	11000	NA	NA	**6.1**	**2.9**	**1.6**	0.44 U	0.64 U			
Miscellaneous Parameters (mg/L)											
Alkalinity	NA	NA	NA	**7**	**3.5**	**7**	**38**	**29.7**	**7**	**10**	**5**
Ammonia	NA	NA	NA	**0.13**	**0.12**	**0.13**	0.1 U	**0.13**	**0.2**	**0.44**	0.1 U
Chloride	NA	NA	NA	**184**	**162**	**31.6**	**18.1**	**30.3**	**11.1**	**39.5**	**268**
Dissolved Inorganic Carbon	NA	NA	NA	**1**	**1**	**1**	**2**	**1**	**2**	**4**	**2**
Dissolved Organic Carbon	NA	NA	NA	**2**	**2**	**2**	**2**	**3**	**2**	**1**	**3**
Hydrogen Sulfide	110	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Nitrate	58000	10	NA	**6.33**	**4.99**	**2.92**	**4.52**	**4.71**	**3.76**	**3.06**	**9.74**
Salinity (ppth)	NA	NA	NA	**0.379**	**0.32**	**0.069**	**0.087**	**0.102**			
Sulfate	NA	NA	NA	**5.98**	**2.46**	**10**	**11.6**	**12**	**6.72**	**7.76**	**14.2**
pH	NA	NA	NA	**5.76**	**5.31**	**5.76**	**8.47**	**10**	**6.24**	**6.07**	**5.69**
Conductivity (ms/cm)	NA	NA	NA	**0.717**	**0.61**	**0.138**	**0.152**	**0.179**	**0.077**	**0.167**	**0.731**
DO (mg/L)	NA	NA	NA	**4.33**	**9.07**	**7.05**	**4.49**	**1.64**	**0.99**	**5.29**	**7.84**
Turbidity (NTUs)	NA	NA	NA	**42**	**32.4**	**500**	**676**	**500**	**97.8**	**4.22**	**170**

TABLE 4-33

SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	09 MW16-69I MW16-69I-NWG-120904 NORMAL 12/9/2004	09 MW16-70I MW16-70I-NWG-111704 NORMAL 11/17/2004	09 MW16-71I MW16-71I-NWG-111704 ORIG 11/17/2004	09 MW16-71I MW16-71I-NWG-111704-AVG AVG 11/17/2004	09 MW16-71I MW16-71I-NWG-111704-D DUP 11/17/2004
Volatile Organics (ug/L)								
1,1-Dichloroethene	340	7	7	**0.302 J**	1 U	1 U	1 U	1 U
Acetone	22000	NA	NA	5 U	5 U	8.2 U	6.6 U	5 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	1 U	1 U	1 U	1 U	1 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	**1.36**	1 U	**0.174 J**	**0.174 J**	1 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Methane	NA	NA	NA	**15 J**	5.2 U	3.8 U	3.55 U	3.3 U
Tetrachloroethene	0.11	5	5					
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	**1 J**	2 U	**0.174 J**	**0.174 J**	2 U
Total Chlorinated VOCs[1]	NA	NA	NA	**551**	**11**	**12.2**	**12.2**	**12**
trans-1,2-Dichloroethene	110	100	100	**0.201 J**	1 U	1 U	1 U	1 U
Trichloroethene	1.7	5	5	**550**	**11**	**12**	**12**	**12**
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5					
1,1-Dichloroethene	340	7	7					
1,2-Dichloroethane	0.15	5	5					
1,4-Dichlorobenzene	0.43	75	75					
Benzene	0.41	5	5					
Chloroform	0.19	80	NA					
Vinyl Chloride	0.016	2	2					
Total Metals (ug/L)								
Aluminum	37000	NA	NA					
Arsenic	0.045	10	NA					
Barium	7300	2000	2000					
Beryllium	73	4	4					
Cadmium	18	5	5					
Calcium	NA	NA	NA					
Chromium	110	100	100					
Cobalt	11	NA	NA					
Copper	1500	1300	NA					
Iron	26000	NA	NA					
Lead	NA	15	15					
Magnesium	NA	NA	NA					
Manganese	880	NA	NA					
Mercury	11	2	2					
Nickel	730	NA	100					
Potassium	NA	NA	NA					
Selenium	180	50	50					
Silver	180	NA	NA					
Sodium	NA	NA	NA					
Thallium	2.4	2	2					
Vanadium	180	NA	NA					
Zinc	11000	NA	NA					
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA					
Arsenic	0.045	10	NA					
Barium	7300	2000	2000					
Cadmium	18	5	5					
Calcium	NA	NA	NA					
Chromium	110	100	100					
Cobalt	11	NA	NA					
Copper	1500	1300	NA					
Iron	26000	NA	NA	32.2 UJ	32.2 UJ	32.2 U	34.65 U	37.1 U
Lead	NA	15	15					
Magnesium	NA	NA	NA					
Manganese	880	NA	NA	**93.1**	**13.4**	**6.4**	**6.4**	**6.4**
Nickel	730	NA	100					

TABLE 4-33

SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	09 MW16-69I MW16-69I-NWG-120904 NORMAL 12/9/2004	09 MW16-70I MW16-70I-NWG-111704 NORMAL 11/17/2004	09 MW16-71I MW16-71I-NWG-111704 ORIG 11/17/2004	09 MW16-71I MW16-71I-NWG-111704-AVG AVG 11/17/2004	09 MW16-71I MW16-71I-NWG-111704-D DUP 11/17/2004
Dissolved Metals (ug/L) (Continued)								
Potassium	NA	NA	NA					
Selenium	180	50	50					
Silver	180	NA	NA					
Sodium	NA	NA	NA					
Thallium	2.4	2	2					
Vanadium	180	NA	NA					
Zinc	11000	NA	NA					
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**11.5**	1 U	**9**	**9**	**9**
Ammonia	NA	NA	NA	**0.11**	**0.19**	**0.22**	**0.135**	0.1 U
Chloride	NA	NA	NA	**70**	**126**	**110**	**108.5**	**107**
Dissolved Inorganic Carbon	NA	NA	NA	**7**	**3**	**2**	**2.5**	**3**
Dissolved Organic Carbon	NA	NA	NA	**1**	**3**	**1**	**1**	**1**
Hydrogen Sulfide	110	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Nitrate	58000	10	NA	**1.4**	**9.84**	**8.98**	**9.03**	**9.08**
Salinity (ppth)	NA	NA	NA					
Sulfate	NA	NA	NA	**20**	**13.4**	**25.8**	**25.7**	**25.6**
pH	NA	NA	NA	**6.32**	**5.55**	**6.32**		
Conductivity (ms/cm)	NA	NA	NA	**0.142**	**0.482**	**0.46**		
DO (mg/L)	NA	NA	NA	**4.31**	**8.4**	**6.45**		
Turbidity (NTUs)	NA	NA	NA	**4**	**26.4**	**1.49**		

TABLE 4-33

SUMMARY OF CHEMICALS DETECTED
2004 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Description:
08 - CTO 97 Supplemental Phase II Investigation
09 - CTO 107 HRC Injection Study

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.
R - Rejected value.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.
AVG - Average of the two samples collected at this location.

Acronyms:
GA = Drinking water suitability
GW = Groundwater
MCL = Maximum Contaminant Level
NA = Not applicable/not available
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
VOC = Volatile organic compound

Footnotes:
1 - The calculation of the BTEX and the total chlorinated VOCs are defined in the Section 4 text. "0 U" indicates that this chemical group was not detected in the sample analyzed.
2 - A concentrtion that is shaded exceeds one or more criterion presented in the table.
3 - A blank cell in the table indicates that the sample was not analyzed for the target analyte.

TABLE 4-34

SUMMARY OF CHEMICALS DETECTED
2007 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-04I**	**MW16-05I**	**MW16-05I**	**MW16-13I**	**MW16-17I**	**MW16-18I**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-04I-NWG-082107**	**MW16-05I-NWG-052107**	**MW16-05I-NWG-052107-**	**MW16-13I-NWG-071007**	**MW16-17I-NWG-061607**	**MW16-18I-NWG-061507**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070821**	**20070521**	**20070521**	**20070710**	**20070616**	**20070615**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**	**GW**
Area				**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**BUILDING 41**	**EASTERN AREA**	**EASTERN AREA**
Volatile Organic Compounds (ug/L)									
1,1-Dichloroethene	340	7	7	0.1 U	2 UJ	2 UJ	0.1 U	0.1 U	0.4 U
Acetone	22000	NA	NA	3.9 UR	20 UR	3.9 UR	3.9 U	3.9 UR	3.9 UR
BTEX	NA	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	0.69 U	3.5 U	0.69 U	0.69 U	0.69 U	0.69 U
Chloroform	0.19	80	NA	0.1 UJ	**7.1 J**	**7.6 J**	0.1 U	**0.2**	**0.62**
cis-1,2-Dichloroethene	370	70	70	0.53 U	**20**	**23**	0.53 U	0.53 U	0.53 U
Methyl Acetate	37000	NA	NA	0.67 U	3.4 U	0.67 U	0.67 UJ	0.67 UJ	0.67 UJ
Methyl Tert-Butyl Ether	12	NA	40	0.71 U	3.6 U	0.71 U	0.71 U	0.71 U	0.71 U
Tetrachloroethene	0.11	5	5	0.1 U	2 UJ	2 U	0.1 U	0.1 U	**1.4**
Total Chlorinated VOCs	NA	NA	NA	0 U	**670**	**723**	**13**	0 U	**62.4**
Total Xylenes	200	10000	10000	1 U	7.5 U	1.5 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	110	100	100	0.5 U	2.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	1.7	5	5	0.1 U	**650**	**700**	**13**	0.1 U	**61**
Vinyl Chloride	0.016	2	2	0.1 U	2 UJ	2 UJ	0.1 U	0.1 U	0.4 U
Inorganics (ug/L)									
Aluminum	37000	NA	NA	145 U	**94.1**	**86.4**	**696**	**54.4**	**61.2**
Antimony	15	6	6	4.4 U	3.8 U	1.2 U	1.2 UJ	1.2 U	1.2 U
Arsenic	0.045	10	NA	1 U	**2.7**	**2.6**	0.04 UJ	0.022 UJ	0.022 UJ
Barium	7300	2000	2000	**16.1 J**	**73.2**	**68.7**	**21.6**	2.1 U	**5.3**
Beryllium	73	4	4	0.051 U	**0.71**	**0.64**	0.15 U	0.15 U	0.15 U
Cadmium	18	5	5	0.56 U	**0.28**	**0.31**	0.1 UJ	0.1 U	0.1 U
Calcium	NA	NA	NA	**20500**	**22100**	**21300**	**9930**	**1930**	**3140**
Chromium	110	100	100	1.3 U	0.38 U	0.38 U	**1.5**	**0.56 J**	**0.45 J**
Cobalt	11	NA	NA	1.1 U	**2.9**	**2.8**	**10.5**	0.15 U	0.15 U
Copper	1500	1300	NA	1.7 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U
Iron	26000	NA	NA	**436**	**10800**	**9780**	**1730**	**78.5**	**104**
Lead	NA	15	15	1.2 U	0.46 U	0.46 U	0.46 UJ	0.46 U	0.46 U
Magnesium	NA	NA	NA	**15700**	**18900**	**18400**	**3970**	**854**	**1330**
Manganese	880	NA	NA	**11**	**651**	**636**	**54**	**2.9 J**	**3.8**
Nickel	730	NA	100	2.1 U	**4**	3.6 U	**19**	0.59 U	**0.99 J**
Potassium	NA	NA	NA	**3990**	**6410**	**6260**	**1490**	**524**	**934**
Selenium	180	50	50	5.2 U	7.6 U	8.8 U	0.98 UJ	2.1 U	2.7 U
Silver	180	NA	NA	**4.2**	0.91 U	0.91 U	0.91 U	0.91 U	0.91 U
Sodium	NA	NA	NA	**28500**	**27600**	**26800**	**32300**	**5390**	**5870**
Thallium	2.4	2	2	1 U	**0.167**	**0.179**	**0.111**	0.01 U	0.016 U
Vanadium	180	NA	NA	0.8 U	**0.8 J**	**0.74 J**	**1.2**	0.47 U	0.47 U
Zinc	11000	NA	NA	29.2 U	**27**	**25.2**	**55.5**	12.5 U	**17.2**

TABLE 4-34

SUMMARY OF CHEMICALS DETECTED
2007 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation				**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-04I**	**MW16-05I**	**MW16-05I**	**MW16-13I**	**MW16-17I**	**MW16-18I**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-04I-NWG-082107**	**MW16-05I-NWG-052107**	**MW16-05I-NWG-052107-**	**MW16-13I-NWG-071007**	**MW16-17I-NWG-061607**	**MW16-18I-NWG-061507**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070821**	**20070521**	**20070521**	**20070710**	**20070616**	**20070615**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**	**GW**
Area				**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**BUILDING 41**	**EASTERN AREA**	**EASTERN AREA**
Filtered Inorganics (ug/L)									
Aluminum	37000	NA	NA	37 U	14 U	14 U	14 U		
Antimony	15	6	6	4.4 U	2.7 U	3.8 U	1.2 UJ		
Arsenic	0.045	10	NA	1 U	**0.417**	**0.406**	0.04 UJ		
Barium	7300	2000	2000	**17 J**	**56**	**52.9**	**17.7**		
Beryllium	73	4	4	0.051 U	0.15 U	0.15 U	0.15 U		
Cadmium	18	5	5	0.39 U	0.1 U	0.1 U	0.1 UJ		
Calcium	NA	NA	NA	**23000**	**21100**	**20300**	**9820**		
Chromium	110	100	100	0.56 U	0.38 U	0.38 U	**0.5 J**		
Cobalt	11	NA	NA	0.3 U	**3.4**	**3.3**	**9.7**		
Iron	26000	NA	NA	89 U	**726**	**660**	226 U		
Magnesium	NA	NA	NA	**17900**	**18700**	**17900**	**3660**		
Manganese	880	NA	NA	**6**	**622**	**597**	**40.7**		
Nickel	730	NA	100	2.4 U	3.5 U	**3.9**	**17.1**		
Potassium	NA	NA	NA	**4070**	**6300**	**5990**	**1260**		
Selenium	180	50	50	5.2 U	6.2 U	11.4 U	1.7 U		
Silver	180	NA	NA	**4.4**	0.91 U	0.91 U	0.91 U		
Sodium	NA	NA	NA	**28500**	**27000**	**25800**	**31400**		
Thallium	2.4	2	2	1 U	**0.156**	**0.169**	0.071 U		
Vanadium	180	NA	NA	0.4 U	0.47 U	0.47 U	**0.82 J**		
Zinc	11000	NA	NA	21.7 U	**19.7**	**28.5**	**57.8**		
Miscellaneous Parameters									
Turbidity	NA	NA	NA	**7.05**	**150**		**11.3**	**1.4**	**2.5**
pH	NA	NA	NA	**5.91**	**6.56**		**5.8**	**5.55**	**5.68**
Conductivity	NA	NA	NA	**0.374**	**0.54**		**0.261**	**0.371**	**0.08**
DO	NA	NA	NA	**2.2**	**12.71**		**7.95**	**6.91**	**8.61**
Salinity	NA	NA	NA	**0**	**0**		**0**		**0**

TABLE 4-34

SUMMARY OF CHEMICALS DETECTED
2007 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-19I**	**MW16-20I**	**MW16-20I**	**MW16-25I**	**MW16-25I**	**MW16-27I**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-19I-NWG-061507**	**MW16-20I-NWG-061707**	**MW16-20I-NWG-061707-**	**MW16-25I-NWG-052107**	**MW16-25I-NWG-061707**	**MW16-27I-NWG-082607**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070615**	**20070617**	**20070617**	**20070521**	**20070617**	**20070826**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**	**GW**
Area				**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Volatile Organic Compounds (ug/L)									
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U	0.1 U	0.4 UJ	0.4 U	**2.4**
Acetone	22000	NA	NA	3.9 UR	3.9 UR	3.9 UR	3.9 UR	3.9 UR	3.9 UR
BTEX	NA	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
Chloroform	0.19	80	NA	0.1 U	**0.18**	0.1 U	0.4 UJ	0.4 U	1 UJ
cis-1,2-Dichloroethene	370	70	70	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	**4.2**
Methyl Acetate	37000	NA	NA	0.67 UJ	0.67 UJ	0.67 UJ	0.67 U	0.67 UJ	0.67 U
Methyl Tert-Butyl Ether	12	NA	40	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	**1.7**
Tetrachloroethene	0.11	5	5	**0.11**	0.1 U	0.1 U	0.4 UJ	0.4 U	1 U
Total Chlorinated VOCs	NA	NA	NA	**10.0**	**5.4**	**4.9**	**85**	**76**	**187**
Total Xylenes	200	10000	10000	1 U	1 U	1 U	1.5 U	1 U	1 U
trans-1,2-Dichloroethene	110	100	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	1.7	5	5	**9.9**	**5.4**	**4.9**	**85**	**76**	**180**
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.1 U	0.4 UJ	0.4 U	1 UJ
Inorganics (ug/L)									
Aluminum	37000	NA	NA	**50.3**	**26.5 J**	**21.9 J**	**598**	**215**	**108**
Antimony	15	6	6	1.5 U	1.2 U	1.2 U	1.6 U	2.9 U	4.4 U
Arsenic	0.045	10	NA	0.022 UJ	0.022 UJ	0.022 UJ	**0.46**	0.022 UJ	**2.1**
Barium	7300	2000	2000	**3.9 J**	**7.6**	**4.6**	**8.6**	**8.4**	**87.1**
Beryllium	73	4	4	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.051 U
Cadmium	18	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.31**
Calcium	NA	NA	NA	**2450**	**2390**	**2300**	**5130**	**5110**	**20700**
Chromium	110	100	100	**0.54 J**	**0.63 J**	0.38 U	**2.1**	**1.3**	0.22 U
Cobalt	11	NA	NA	0.15 U	0.81 U	0.15 U	0.85 U	0.95 U	**31.4**
Copper	1500	1300	NA	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	**3.3**
Iron	26000	NA	NA	**85.4**	**47.6**	**45**	**1210**	**454**	**799 J**
Lead	NA	15	15	0.46 U	0.46 U	0.46 U	0.46 U	0.71 U	1.2 U
Magnesium	NA	NA	NA	**1410**	**1340**	**1360**	**2000**	**1820**	**13000**
Manganese	880	NA	NA	**3.1 J**	**3.4 J**	**2.4 J**	**20.1**	**14.5**	**178**
Nickel	730	NA	100	0.59 U	**5.8**	**4.6**	2.7 U	**2.4**	**46.3**
Potassium	NA	NA	NA	**1410**	**1590**	**1590**	**1600**	**1710**	**26100**
Selenium	180	50	50	4.7 U	7 U	4.9 U	5.4 U	5.2 U	5.2 U
Silver	180	NA	NA	0.91 U	0.91 U	0.91 U	0.91 U	0.91 U	1.5 U
Sodium	NA	NA	NA	**8180**	**13400**	**13400**	**9590**	**10000**	**209000**
Thallium	2.4	2	2	0.015 U	0.015 U	0.016 U	0.025 U	0.035 U	1 U
Vanadium	180	NA	NA	0.47 U	**0.84 J**	0.47 U	**1.3**	**0.66 J**	1.2 U
Zinc	11000	NA	NA	**17.1**	**28.5**	**23.4**	19.5 U	**20.1**	**56.9**

TABLE 4-34

SUMMARY OF CHEMICALS DETECTED
2007 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation				**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-19I**	**MW16-20I**	**MW16-20I**	**MW16-25I**	**MW16-25I**	**MW16-27I**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-19I-NWG-061507**	**MW16-20I-NWG-061707**	**MW16-20I-NWG-061707-**	**MW16-25I-NWG-052107**	**MW16-25I-NWG-061707**	**MW16-27I-NWG-082607**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070615**	**20070617**	**20070617**	**20070521**	**20070617**	**20070826**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**	**GW**
Area				**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Filtered Inorganics (ug/L)									
Aluminum	37000	NA	NA				14 U	**17.8 J**	37 U
Antimony	15	6	6				1.2 U	1.2 U	4.4 U
Arsenic	0.045	10	NA				**0.351**	0.022 UJ	**1.7**
Barium	7300	2000	2000				**5.3**	**5.9**	**88.6**
Beryllium	73	4	4				0.15 U	0.15 U	0.051 U
Cadmium	18	5	5				0.1 U	0.1 U	**0.18**
Calcium	NA	NA	NA				**4880**	**5080**	**21100**
Chromium	110	100	100				**1.2**	**0.77**	0.77 U
Cobalt	11	NA	NA				0.5 U	0.48 U	**31.5**
Iron	26000	NA	NA				75.8 U	**71**	**667 J**
Magnesium	NA	NA	NA				**1660**	**1760**	**13400**
Manganese	880	NA	NA				8.9 U	**10.2**	**185**
Nickel	730	NA	100				2.1 U	**1.5**	**45.8**
Potassium	NA	NA	NA				**1440**	**1610**	**26800**
Selenium	180	50	50				1.7 U	8.2 U	**6.2**
Silver	180	NA	NA				0.91 U	0.91 U	1.4 U
Sodium	NA	NA	NA				**9470**	**9970**	**214000**
Thallium	2.4	2	2				0.008 U	0.02 U	1 U
Vanadium	180	NA	NA				0.47 U	0.47 U	0.4 U
Zinc	11000	NA	NA				**22.6**	**22.8**	**60**
Miscellaneous Parameters									
Turbidity	NA	NA	NA	**2.9**	**0.1**		**8.2**	**17.4**	**10.58**
pH	NA	NA	NA	**5.63**	**5.55**		**5.94**	**6.26**	**5.91**
Conductivity	NA	NA	NA	**0.095**	**0.781**		**0.755**	**0.139**	**3.96**
DO	NA	NA	NA	**8.49**	**5.12**		**9.82**	**6.3**	**0.45**
Salinity	NA	NA	NA	**0**			**0**	**0**	**0.2**

TABLE 4-34

SUMMARY OF CHEMICALS DETECTED
2007 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-28I**	**MW16-33I**	**MW16-37I**	**MW16-39I**	**MW16-39I**	**MW16-41I**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-28I-NWG-081107**	**MW16-33I-NWG-061407**	**MW16-37I-NWG-061907**	**MW16-39I-NWG-052207**	**MW16-39I-NWG-063007**	**MW16-41I-NWG-082507**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070811**	**20070614**	**20070618**	**20070522**	**20070630**	**20070825**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**	**GW**
Area				**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**NCENTRAL EASTERN**
Volatile Organic Compounds (ug/L)									
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U	0.76 U	0.5 UJ	0.4 UJ	0.1 U
Acetone	22000	NA	NA	3.9 UR	3.9 UR	3.9 UR	3.9 UR	3.9 U	3.9 UR
BTEX	NA	NA	NA	0 U	**1.1**	0 U	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
Chloroform	0.19	80	NA	0.1 UJ	0.1 U	0.35 U	0.5 UJ	**0.46 J**	0.1 UJ
cis-1,2-Dichloroethene	370	70	70	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U
Methyl Acetate	37000	NA	NA	0.67 U	0.67 UJ	0.67 UJ	0.67 U	0.67 U	0.67 U
Methyl Tert-Butyl Ether	12	NA	40	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U
Tetrachloroethene	0.11	5	5	0.1 U	**15 J**	**1.6**	0.5 UJ	0.4 UJ	0.1 U
Total Chlorinated VOCs	NA	NA	NA	**1**	**16.7**	**232**	**140**	**75**	**71.4**
Total Xylenes	200	10000	10000	1 U	**1.1**	1 U	1.5 U	1 U	1 U
trans-1,2-Dichloroethene	110	100	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	1.7	5	5	**1**	**1.7**	**230**	**140**	**75**	**64**
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.51 U	0.5 UJ	0.4 UJ	**7.4 J**
Inorganics (ug/L)									
Aluminum	37000	NA	NA	**296**	32.7 U	**3000**	**806**	**155**	37 U
Antimony	15	6	6	9.7 U	1.2 U	2.2 U	1.2 U	3.2 U	4.4 U
Arsenic	0.045	10	NA	0.022 UJ	0.103 U	0.022 UJ	**1.1**	0.04 UJ	1 U
Barium	7300	2000	2000	**39.4**	2.1 U	**20.3**	**9.9**	**3.4 J**	**32.9**
Beryllium	73	4	4	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.051 U
Cadmium	18	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.33**
Calcium	NA	NA	NA	**41300**	**2450**	**6110**	**856**	**696**	**32600**
Chromium	110	100	100	1.2 U	**0.97**	**3.7**	**6.2**	**3.1**	0.26 U
Cobalt	11	NA	NA	**4.7**	0.15 U	**1.6**	**1.9**	**1.4**	1.2 U
Copper	1500	1300	NA	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	**2.1**
Iron	26000	NA	NA	**1630**	**122**	**4480**	**1650**	**368**	**174 J**
Lead	NA	15	15	0.46 U	0.46 U	3.1 U	1.9 U	1.1 U	1.2 U
Magnesium	NA	NA	NA	**13700**	**1160**	**3250**	**1070**	**921**	**12400**
Manganese	880	NA	NA	**949**	**22.9**	**71.3**	**34.3**	**25.7**	**7.7**
Nickel	730	NA	100	**4.7**	0.59 U	**4.2**	3.3 U	1.8 U	**10.5**
Potassium	NA	NA	NA	**7260**	**3100**	**2030**	**851**	**659**	**3980**
Selenium	180	50	50	10.1 U	0.98 U	0.98 UJ	4.2 U	13.8 U	5.2 U
Silver	180	NA	NA	4.2 U	0.91 U	0.91 U	0.91 U	1.2 U	2.6 U
Sodium	NA	NA	NA	**31900**	**13900**	**11100**	**17200**	**17600**	**86100**
Thallium	2.4	2	2	0.114 U	0.076 U	0.024 U	0.024 U	0.018 U	1 U
Vanadium	180	NA	NA	0.47 U	0.47 U	**5**	**2.9**	1.5 U	0.4 U
Zinc	11000	NA	NA	18.8 U	16.1 U	26.2 U	**21.8**	17.9 U	23.1 U

TABLE 4-34

SUMMARY OF CHEMICALS DETECTED
2007 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-28I**	**MW16-33I**	**MW16-37I**	**MW16-39I**	**MW16-39I**	**MW16-41I**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-28I-NWG-081107**	**MW16-33I-NWG-061407**	**MW16-37I-NWG-061907**	**MW16-39I-NWG-052207**	**MW16-39I-NWG-063007**	**MW16-41I-NWG-082507**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070811**	**20070614**	**20070618**	**20070522**	**20070630**	**20070825**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**	**GW**
Area				**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**NCENTRAL EASTERN**
Filtered Inorganics (ug/L)									
Aluminum	37000	NA	NA	14 U		14 U	14 U		
Antimony	15	6	6	8.5 U		1.2 U	3.2 U		
Arsenic	0.045	10	NA	0.022 UJ		0.022 UJ	**0.55**		
Barium	7300	2000	2000	**42.1**		**4.8**	**3.4 J**		
Beryllium	73	4	4	0.15 U		0.15 U	0.15 U		
Cadmium	18	5	5	0.1 U		0.1 U	0.1 U		
Calcium	NA	NA	NA	**43000**		**5120**	**733**		
Chromium	110	100	100	0.55 U		**0.73 J**	**2.2**		
Cobalt	11	NA	NA	**4.7**		0.15 U	1.1 U		
Iron	26000	NA	NA	**852**		30.6 U	31.2 U		
Magnesium	NA	NA	NA	**14900**		**2120**	**753**		
Manganese	880	NA	NA	**962**		9 U	**17.2**		
Nickel	730	NA	100	**4.3**		**0.87 J**	2 U		
Potassium	NA	NA	NA	**7590**		**1410**	**660**		
Selenium	180	50	50	8.9 U		5.7 U	6.7 U		
Silver	180	NA	NA	6.6 U		0.91 U	0.91 U		
Sodium	NA	NA	NA	**33000**		**10800**	**16500**		
Thallium	2.4	2	2	0.103 U		0.013 U	0.007 U		
Vanadium	180	NA	NA	0.47 U		0.47 U	**0.89 J**		
Zinc	11000	NA	NA	15.8 U		19.8 U	**22.1**		
Miscellaneous Parameters									
Turbidity	NA	NA	NA	**20**	**0.6**	**25.5**	**25**	**4.6**	**3.8**
pH	NA	NA	NA	**6.21**	**6.12**	**5.33**	**6.17**	**6.01**	**5.48**
Conductivity	NA	NA	NA	**0.99**	**0.081**	**0.137**	**0.093**	**4.71**	**11.4**
DO	NA	NA	NA	**0.44**	**5.4**	**5.89**	**15.73**	**1.62**	**4**
Salinity	NA	NA	NA	**0**	**0**		**0**	**0.2**	**0.6**

TABLE 4-34

SUMMARY OF CHEMICALS DETECTED
2007 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation				**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-45I**	**MW16-48I**	**MW16-49I**	**MW16-57I**	**MW16-58I2**	**MW16-59I**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-45I-NWG-081207**	**MW16-48I-NWG-082407**	**MW16-49I-NWG-072907**	**MW16-57I-NWG-063007**	**MW16-58I2-NWG-08270**	**MW16-59I-NWG-071107**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070812**	**20070824**	**20070729**	**20070630**	**20070827**	**20070711**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**	**GW**
Area				**NORTH CEN FFTA**	**NCENTRAL EASTERN**	**EASTERN AREA**	**EASTERN AREA**	**NCENTRAL EASTERN**	**EASTERN AREA**
Volatile Organic Compounds (ug/L)									
1,1-Dichloroethene	340	7	7	0.76 U	0.1 U	0.1 U	0.76 U	0.2 U	0.76 U
Acetone	22000	NA	NA	3.9 UR	3.9 UR	3.9 UR	3.9 U	3.9 UR	3.9 U
BTEX	NA	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
Chloroform	0.19	80	NA	0.35 U	0.1 UJ	0.1 U	0.35 U	0.2 UJ	0.35 U
cis-1,2-Dichloroethene	370	70	70	**5.6**	0.53 U	0.53 U	0.53 U	**25**	**3.3**
Methyl Acetate	37000	NA	NA	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U	**1.1 J**
Methyl Tert-Butyl Ether	12	NA	40	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U
Tetrachloroethene	0.11	5	5	0.52 U	0.1 U	0.1 U	0.52 U	0.2 U	0.52 U
Total Chlorinated VOCs	NA	NA	NA	**618**	0 U	0 U	**210**	**90.2**	**793**
Total Xylenes	200	10000	10000	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	110	100	100	**2.4**	0.5 U	0.5 U	0.5 U	**1.2**	0.5 U
Trichloroethene	1.7	5	5	**610**	0.1 U	0.1 U	**210**	**48**	**790**
Vinyl Chloride	0.016	2	2	0.51 U	0.1 UJ	0.1 U	0.51 U	**16 J**	0.51 U
Inorganics (ug/L)									
Aluminum	37000	NA	NA	**1800**	90.8 U	**164**	**5030**	**2330**	**238000**
Antimony	15	6	6	1.9 U	4.4 U	**2.4 J**	1.2 U	4.4 U	1.2 UJ
Arsenic	0.045	10	NA	**3**	1 U	**12.4**	**2.5 J**	**19**	**30.2**
Barium	7300	2000	2000	**40.6**	**18.5 J**	**50.5 J**	**33.2**	**129**	**752**
Beryllium	73	4	4	**0.23**	0.051 U	0.15 UJ	**0.36**	**0.27**	**16.8**
Cadmium	18	5	5	**0.17 J**	0.23 U	0.1 UJ	0.1 U	**0.45**	**9.7 J**
Calcium	NA	NA	NA	**17400**	**23300**	**29900**	**837**	**104000**	**103000**
Chromium	110	100	100	2.6 U	0.51 U	0.38 UJ	**7.5**	0.22 U	**368**
Cobalt	11	NA	NA	**5.6**	1.3 U	**7.3 J**	**2.7**	**11**	**342**
Copper	1500	1300	NA	**8.9 J**	4.1 U	6.3 U	**13.8**	**4.4**	**554**
Iron	26000	NA	NA	**12800**	**274**	**17500 J**	**7150**	**52800 J**	**696000**
Lead	NA	15	15	1.5 U	3.5 U	0.63 U	**5.8**	1.2 U	**283**
Magnesium	NA	NA	NA	**5910**	**3530**	**7000 J**	**1470**	**8730**	**123000**
Manganese	880	NA	NA	**1200**	**7.2**	**626 J**	**75.5**	**4270**	**9530**
Nickel	730	NA	100	**6.8**	1.6 U	2.5 U	**10**	**7.7**	**540**
Potassium	NA	NA	NA	**2740**	**2810**	**8830**	**3000**	**10700**	**36000**
Selenium	180	50	50	5.4 U	5.2 U	9.4 U	2.1 U	**15.3**	**18.3 J**
Silver	180	NA	NA	0.91 U	**5.7**	0.91 U	0.91 U	1.2 U	0.91 U
Sodium	NA	NA	NA	**40100**	**13500**	**28100**	**20400**	**134000**	**17600**
Thallium	2.4	2	2	0.052 U	1 U	0.024 U	0.066 U	1 U	**1.6**
Vanadium	180	NA	NA	**3**	0.69 U	0.47 UJ	**8.7**	2.9 U	**479**
Zinc	11000	NA	NA	**34.7**	25.6 U	**2.7 J**	**35.5**	**41.5**	**1500**

TABLE 4-34

SUMMARY OF CHEMICALS DETECTED
2007 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-45I**	**MW16-48I**	**MW16-49I**	**MW16-57I**	**MW16-58I2**	**MW16-59I**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-45I-NWG-081207**	**MW16-48I-NWG-082407**	**MW16-49I-NWG-072907**	**MW16-57I-NWG-063007**	**MW16-58I2-NWG-08270**	**MW16-59I-NWG-071107**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070812**	**20070824**	**20070729**	**20070630**	**20070827**	**20070711**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**	**GW**
Area				**NORTH CEN FFTA**	**NCENTRAL EASTERN**	**EASTERN AREA**	**EASTERN AREA**	**NCENTRAL EASTERN**	**EASTERN AREA**
Filtered Inorganics (ug/L)									
Aluminum	37000	NA	NA	14 U		14 U	14 U	37 U	99.7 U
Antimony	15	6	6	4.2 U		4.2 U	1.5 U	**9.2**	1.2 UJ
Arsenic	0.045	10	NA	**2.4**		**9.6 J**	**0.604 J**	**4**	**0.547 J**
Barium	7300	2000	2000	**32.6**		**49.9**	2.1 U	**111**	**24.4**
Beryllium	73	4	4	0.15 U		0.15 U	0.15 U	0.051 U	0.15 U
Cadmium	18	5	5	0.1 U		0.1 U	0.1 U	**0.31**	0.1 UJ
Calcium	NA	NA	NA	**18500**		**30300**	**698**	**101000**	**8230**
Chromium	110	100	100	0.38 U		0.38 U	0.38 U	0.22 U	**1**
Cobalt	11	NA	NA	**3.7**		**7.7**	0.15 U	**8**	**4.8**
Iron	26000	NA	NA	**8950**		**16800**	63.8 U	**34700 J**	**8380**
Magnesium	NA	NA	NA	**5680**		**7190**	**271**	**7730**	**4010**
Manganese	880	NA	NA	**1270**		**632**	**12.4**	**4010**	**342**
Nickel	730	NA	100	**2.1**		2.5 U	0.59 U	3.3 U	**3**
Potassium	NA	NA	NA	**2570**		**9050**	**1940**	**9990**	**3100**
Selenium	180	50	50	4.9 U		9.4 U	6.2 U	**5.9**	0.98 UJ
Silver	180	NA	NA	0.91 U		0.91 U	0.91 U	1.7 U	0.91 U
Sodium	NA	NA	NA	**43900**		**29100**	**20200**	**130000**	**16700**
Thallium	2.4	2	2	0.027 U		0.02 U	0.01 U	1 U	0.028 U
Vanadium	180	NA	NA	0.47 U		0.47 U	0.66 U	0.4 U	0.47 U
Zinc	11000	NA	NA	19.3 U		**11.2**	**44.2**	23.8 U	**78.8**
Miscellaneous Parameters									
Turbidity	NA	NA	NA	**50**	**3.11**	**5.94**	**98.2**	**81.2**	**> 1100**
pH	NA	NA	NA	**6.39**	**5.42**	**6.39**	**6.29**	**6.54**	**6.56**
Conductivity	NA	NA	NA	**2.63**	**0.229**	**0.421**	**4.33**	**2.1**	**0.187**
DO	NA	NA	NA	**0.54**	**4**	**0.54**	**0.91**	**0.24**	**0.54**
Salinity	NA	NA	NA	**0.1**	**0**	**0**	**0.2**	**0.1**	**0**

TABLE 4-34

SUMMARY OF CHEMICALS DETECTED
2007 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-64I**	**MW16-65I**	**RMW-01I**	**SB16-A2-15/MW16-89ID**	**SB16-A2-30/MW16-87I**	**SB16-A2-31/MW16-88I**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-64I-NWG-071407**	**MW16-65I-NWG-072507**	**RMW-01I-NWG-102607**	**MW16-89I-NWG-121807**	**MW16-87I-NWG-121807**	**MW16-88I-NWG-121707**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070714**	**20070725**	**20071026**	**20071218**	**20071218**	**20071217**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**	**GW**
Area				**EASTERN AREA**	**UPGRADIENT**	**UPGRADIENT**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Volatile Organic Compounds (ug/L)									
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U	0.1 U	**0.48**	0.1 U	1 U
Acetone	22000	NA	NA	3.9 U	3.9 UR	1.9 UR	1.9 UR	**9.4 J**	1.9 UR
BTEX	NA	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	0.69 U	0.69 U	1 U	1 U	1 U	**1.1**
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	**0.15**	0.087 U
cis-1,2-Dichloroethene	370	70	70	0.53 U	0.53 U	0.14 U	**1**	0.14 U	**2.3**
Methyl Acetate	37000	NA	NA	0.67 UJ	0.67 U	1 U	1 U	1 U	1 U
Methyl Tert-Butyl Ether	12	NA	40	0.71 U	0.71 U	0.58 U	0.58 U	0.58 U	0.58 U
Tetrachloroethene	0.11	5	5	**0.4 J**	0.1 U	0.1 U	0.1 U	**0.58**	0.59 U
Total Chlorinated VOCs	NA	NA	NA	**28.4**	**1.6**	0 U	**16.5**	**9.28**	**712**
Total Xylenes	200	10000	10000	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	110	100	100	0.5 U	0.5 U	0.13 U	0.13 U	0.13 U	0.13 U
Trichloroethene	1.7	5	5	**28 J**	**1.6**	0.1 U	**15**	**4.8**	**710**
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.1 U	0.1 U	**3.9**	0.54 U
Inorganics (ug/L)									
Aluminum	37000	NA	NA	**3110**	14 U	**91.4 J**	**4400 J**	**14500 J**	**14600 J**
Antimony	15	6	6	1.2 UJ	1.6 U	4.4 U	4.4 U	4.4 U	4.4 U
Arsenic	0.045	10	NA	**0.366 J**	0.108 U	1 U	**9.3**	**5.9**	**1.1**
Barium	7300	2000	2000	**26.8**	**8 J**	11 U	**70.2**	**88.3**	**82.3**
Beryllium	73	4	4	0.15 U	0.15 UJ	0.051 U	0.051 U	0.26 U	0.051 U
Cadmium	18	5	5	0.1 UJ	0.13 U	0.11 U	0.11 U	0.22 U	0.34 U
Calcium	NA	NA	NA	**8720**	**9240**	**3920**	**6060**	**4320**	**4230**
Chromium	110	100	100	**5**	0.59 U	0.3 U	**8.5**	**36.6**	**31.1**
Cobalt	11	NA	NA	**1.9**	0.49 U	6.2 U	**5.4 J**	**8.8 J**	**12.3 J**
Copper	1500	1300	NA	6.3 U	6.3 U	1.7 U	**17.3**	**55.4**	**43.9**
Iron	26000	NA	NA	**5390**	**43.3 J**	**2250 J**	**11500 J**	**25500 J**	**24500 J**
Lead	NA	15	15	0.46 UJ	0.46 UJ	2 U	6.5 U	**33**	**13.2**
Magnesium	NA	NA	NA	**3080**	**3220 J**	**1780 J**	**12300**	**5520**	**6270**
Manganese	880	NA	NA	**65.9**	4.7 U	**135 J**	**428**	**377**	**353**
Nickel	730	NA	100	**4.4**	1.6 U	7.7 U	**9.8**	**23**	**25**
Potassium	NA	NA	NA	**1890**	**1160**	**757**	**12900**	**7420**	**10800**
Selenium	180	50	50	4.1 U	6.6 U	5.2 U	5.2 U	5.2 U	5.6 U
Silver	180	NA	NA	0.91 U	0.91 U	1.2 U	1.2 U	8.5 U	**16.7**
Sodium	NA	NA	NA	**15700**	**22100**	**6370**	**65400**	**27200**	**57500**
Thallium	2.4	2	2	0.031 U	0.135 U	1 U	0.075 U	**0.113 J**	0.075 U
Vanadium	180	NA	NA	**5.1**	0.79 U	0.4 U	**9.7**	**20.7**	**22.6**
Zinc	11000	NA	NA	**27**	**9.7 J**	23.3 U	**29.6**	**67.1**	**77.3**

TABLE 4-34

SUMMARY OF CHEMICALS DETECTED
2007 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-64I**	**MW16-65I**	**RMW-01I**	**SB16-A2-15/MW16-89ID**	**SB16-A2-30/MW16-87I**	**SB16-A2-31/MW16-88I**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-64I-NWG-071407**	**MW16-65I-NWG-072507**	**RMW-01I-NWG-102607**	**MW16-89I-NWG-121807**	**MW16-87I-NWG-121807**	**MW16-88I-NWG-121707**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070714**	**20070725**	**20071026**	**20071218**	**20071218**	**20071217**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**	**GW**
Area				**EASTERN AREA**	**UPGRADIENT**	**UPGRADIENT**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Filtered Inorganics (ug/L)									
Aluminum	37000	NA	NA	14 U	**4160**		37 U	**503**	**292**
Antimony	15	6	6	1.2 UJ	2.1 U		4.4 U	4.4 U	4.4 U
Arsenic	0.045	10	NA	0.04 UJ	0.108 UJ		**7**	**0.641**	**0.983**
Barium	7300	2000	2000	**10.4**	**30.1**		**44.2**	11 U	11 U
Beryllium	73	4	4	0.15 U	**0.34**		0.051 U	0.051 U	0.051 U
Cadmium	18	5	5	0.1 UJ	0.1 U		0.11 U	0.11 U	0.11 U
Calcium	NA	NA	NA	**8240**	**9580**		**5440**	**1970**	**2500**
Chromium	110	100	100	**1.4**	**6.5**		0.38 U	**1.6**	1.1 U
Cobalt	11	NA	NA	0.24 U	2.8 U		1.1 U	0.57 U	0.53 U
Iron	26000	NA	NA	73 U	**6290**		**3990**	1210 U	557 U
Magnesium	NA	NA	NA	**1970**	**4670**		**10600**	**1320**	**1710**
Manganese	880	NA	NA	8.4 U	**71.6**		**351**	**108**	**58.1**
Nickel	730	NA	100	**0.62 J**	7.2 U		1.6 U	1.9 U	1.6 U
Potassium	NA	NA	NA	**1310**	**2120**		**11800**	**4570**	**7040**
Selenium	180	50	50	3.2 U	4.5 U		5.2 U	5.2 U	6.3 U
Silver	180	NA	NA	0.91 U	0.91 U		3.1 U	4 U	8.5 U
Sodium	NA	NA	NA	**15600**	**22200**		**64100**	**26000**	**53600**
Thallium	2.4	2	2	0.02 U	0.2 U		0.075 U	0.075 U	0.075 U
Vanadium	180	NA	NA	0.47 U	**7.7**		0.4 U	1 U	0.67 U
Zinc	11000	NA	NA	**24**	**27.2**		**15.4**	**15.7**	**14.8**
Miscellaneous Parameters									
Turbidity	NA	NA	NA		**43.3**	**4.54**	**104**	**90.2**	**122**
pH	NA	NA	NA	**6.19**	**5.86**	**6.2**	**9.44**	**7.29**	**8.45**
Conductivity	NA	NA	NA	**0.15**	**0.202**	**0.079**	**0.437**	**0.146**	**0.275**
DO	NA	NA	NA	**7.65**	**6.92**	**0.65**	**2.07**	**2.81**	**2.8**
Salinity	NA	NA	NA	**0**	**0**		**0**	**0**	**0**

TABLE 4-34

SUMMARY OF CHEMICALS DETECTED
2007 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**SB16-UG-05/MW16-10I**	**MW16-55I**	**MW16-76I**	**MW16-77I**	**MW16-79I**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-10I-NWG-102407**	**TW16-102I-NWG-070207**	**TW16-106I-NWG-072907**	**TW16-107I-NWG-072807**	**TW16-109I-NWG-073007**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20071024**	**20070702**	**20070729**	**20070728**	**20070730**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**UPGRADIENT**	**UPGRADIENT**	**EASTERN AREA**	**BUILDING 41**	**BUILDING 41**
Volatile Organic Compounds (ug/L)								
1,1-Dichloroethene	340	7	7	0.1 U	0.1 UJ	0.1 U	15 U	0.1 U
Acetone	22000	NA	NA	1.9 U	3.9 U	3.9 UR	78 UR	3.9 UR
BTEX	NA	NA	NA	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	1 U	0.69 U	0.69 U	14 U	0.69 U
Chloroform	0.19	80	NA	**0.37**	0.1 UJ	0.1 U	7 U	0.1 U
cis-1,2-Dichloroethene	370	70	70	0.14 U	0.53 U	0.53 U	11 U	0.53 U
Methyl Acetate	37000	NA	NA	1 U	0.67 U	0.67 U	13 U	0.67 U
Methyl Tert-Butyl Ether	12	NA	40	0.58 U	0.71 U	0.71 U	14 U	0.71 U
Tetrachloroethene	0.11	5	5	**1.7**	0.1 UJ	**0.28**	10 U	0.1 U
Total Chlorinated VOCs	NA	NA	NA	**4.6**	0 U	**0.79**	**7700**	0 U
Total Xylenes	200	10000	10000	1 U	1 U	1 U	20 U	1 U
trans-1,2-Dichloroethene	110	100	100	0.13 U	0.5 U	0.5 U	10 U	0.5 U
Trichloroethene	1.7	5	5	**2.9**	0.1 UJ	**0.51**	**7700**	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	0.1 UJ	0.1 U	10 U	0.1 U
Inorganics (ug/L)								
Aluminum	37000	NA	NA	**1140 J**				
Antimony	15	6	6	4.4 U				
Arsenic	0.045	10	NA	1 U				
Barium	7300	2000	2000	24.8 U				
Beryllium	73	4	4	0.051 U				
Cadmium	18	5	5	0.11 U				
Calcium	NA	NA	NA	**25300**				
Chromium	110	100	100	**8.1**				
Cobalt	11	NA	NA	7.8 U				
Copper	1500	1300	NA	3.1 U				
Iron	26000	NA	NA	**1940 J**				
Lead	NA	15	15	4.9 U				
Magnesium	NA	NA	NA	**2660 J**				
Manganese	880	NA	NA	**79.5 J**				
Nickel	730	NA	100	12 U				
Potassium	NA	NA	NA	**4240**				
Selenium	180	50	50	**9.9 J**				
Silver	180	NA	NA	1.2 U				
Sodium	NA	NA	NA	**13200**				
Thallium	2.4	2	2	1 U				
Vanadium	180	NA	NA	12.1 U				
Zinc	11000	NA	NA	22.5 U				

TABLE 4-34

SUMMARY OF CHEMICALS DETECTED
2007 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**SB16-UG-05/MW16-10I**	**MW16-55I**	**MW16-76I**	**MW16-77I**	**MW16-79I**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-10I-NWG-102407**	**TW16-102I-NWG-070207**	**TW16-106I-NWG-072907**	**TW16-107I-NWG-072807**	**TW16-109I-NWG-073007**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20071024**	**20070702**	**20070729**	**20070728**	**20070730**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**UPGRADIENT**	**UPGRADIENT**	**EASTERN AREA**	**BUILDING 41**	**BUILDING 41**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA	**327**				
Antimony	15	6	6	4.4 U				
Arsenic	0.045	10	NA	1 U				
Barium	7300	2000	2000	20.4 U				
Beryllium	73	4	4	0.051 U				
Cadmium	18	5	5	0.11 U				
Calcium	NA	NA	NA	**24800**				
Chromium	110	100	100	4.5 U				
Cobalt	11	NA	NA	5.1 U				
Iron	26000	NA	NA	**588**				
Magnesium	NA	NA	NA	**2340**				
Manganese	880	NA	NA	**50.2**				
Nickel	730	NA	100	8.6 U				
Potassium	NA	NA	NA	**4070**				
Selenium	180	50	50	**8.6 J**				
Silver	180	NA	NA	1.2 U				
Sodium	NA	NA	NA	**13100**				
Thallium	2.4	2	2	1 U				
Vanadium	180	NA	NA	10.7 U				
Zinc	11000	NA	NA	17.2 U				
Miscellaneous Parameters								
Turbidity	NA	NA	NA		**4.36**	**4.14**	**6.27**	**70.2**
pH	NA	NA	NA	**9.98**	**6.63**	**6.71**	**6.36**	**6.81**
Conductivity	NA	NA	NA	**0.218**	**5.18**	**0.113**	**0.502**	**0.225**
DO	NA	NA	NA	**0.55**	**0.83**	**1.09**	**0.8**	**0.25**
Salinity	NA	NA	NA		**0.3**	**0**	**0**	**0**

TABLE 4-34

SUMMARY OF CHEMICALS DETECTED
2007 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
GA = Drinking water suitability
GW = Groundwater
MCL = Maximum Contaminant Level
NA = Not applicable/not available
ORNl = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
VOC = Volatile organic compound

Footnotes:
Bolding indicates that the chemical was detected in the sample.
1 - The calculation of the BTEX and the total chlorinated VOCs are defined in the Section 4 text. "0 U" indicates that this chemical group was not detected in the sample analyzed.
2 - A concentration that is shaded exceeds one or more criterion presented in the table.
3 - A blank cell in the table indicates that the sample was not analyzed for the target analyte.

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	09 INJ16-01D INJ16-01D-NWG-111704 NORMAL 11/17/2004	09 INJ16-02D INJ16-02D-NWG-120904 NORMAL 12/9/2004	09 INJ16-03D INJ16-03D-NWG-111704 NORMAL 11/17/2004	09 INJ16-04D INJ16-04D-NWG-112204 NORMAL 11/22/2004	09 INJ16-05D INJ16-05D-NWG-112204 NORMAL 11/22/2004
Volatile Organics (ug/L)								
1,1-Dichloroethane	2.4	NA	NA	25 U	1 U	25 U	25 U	50 U
1,1-Dichloroethene	340	7	7	25 U	1 U	25 U	25 U	50 U
Acetone	22000	NA	NA	130 U	5 U	130 U	130 U	250 U
Bromodichloromethane	1.1	80	NA	25 U	1 U	25 U	25 U	50 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	25 U	1 U	25 U	25 U	50 U
Chlorodibromomethane	0.8	80	NA	25 U	1 U	25 U	25 U	50 U
Chloroform	0.19	80	NA	25 U	1 U	25 U	25 U	50 U
Chloromethane	1.8	NA	NA	25 U	1 U	25 U	25 U	50 U
cis-1,2-Dichloroethene	370	70	70	25 U	**6.25**	25 U	25 U	50 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	4.5 U	**15 J**	4.4 U	4 U	4.2 U
Tetrachloroethene	0.11	5	5					
Toluene	2300	1000	1000	25 U	1 U	25 U	25 U	50 U
Total 1,2-Dichloroethene	330	NA	70	50 U	**6.25**	50 U	50 U	100 U
Total Chlorinated VOCs[1]	NA	NA	NA	**710**	**367**	**830**	**770**	**1200**
trans-1,2-Dichloroethene	110	100	100	25 U	1 U	25 U	25 U	50 U
Trichloroethene	1.7	5	5	**710**	**360**	**830**	**770**	**1200**
Vinyl Chloride	0.016	2	2	25 U	**0.366 J**	25 U	25 U	50 U
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5					
1,1-Dichloroethene	340	7	7					
1,2-Dichloroethane	0.15	5	5					
1,4-Dichlorobenzene	0.43	75	75					
Benzene	0.41	5	5					
Chloroform	0.19	80	NA					
Vinyl Chloride	0.016	2	2					
Total Metals (ug/L)								
Aluminum	37000	NA	NA					
Antimony	15	6	6					
Arsenic	0.045	10	NA					
Barium	7300	2000	2000					
Beryllium	73	4	4					
Cadmium	18	5	5					
Calcium	NA	NA	NA					
Chromium	110	100	100					
Cobalt	11	NA	NA					
Copper	1500	1300	NA					
Iron	26000	NA	NA					
Lead	NA	15	15					
Magnesium	NA	NA	NA					
Manganese	880	NA	NA					
Nickel	730	NA	100					
Potassium	NA	NA	NA					
Selenium	180	50	50					
Silver	180	NA	NA					
Sodium	NA	NA	NA					
Thallium	2.4	2	2					
Vanadium	180	NA	NA					
Zinc	11000	NA	NA					
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA					
Arsenic	0.045	10	NA					
Barium	7300	2000	2000					
Beryllium	73	4	4					
Calcium	NA	NA	NA					
Chromium	110	100	100					
Cobalt	11	NA	NA					
Copper	1500	1300	NA					
Iron	26000	NA	NA	**482**	**50.2 J**	**3090**	**1160**	**6620**
Lead	NA	15	15					
Magnesium	NA	NA	NA					
Manganese	880	NA	NA	**438**	**191**	**848**	**526**	**493**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	09 INJ16-01D INJ16-01D-NWG-111704 NORMAL 11/17/2004	09 INJ16-02D INJ16-02D-NWG-120904 NORMAL 12/9/2004	09 INJ16-03D INJ16-03D-NWG-111704 NORMAL 11/17/2004	09 INJ16-04D INJ16-04D-NWG-112204 NORMAL 11/22/2004	09 INJ16-05D INJ16-05D-NWG-112204 NORMAL 11/22/2004
Dissolved Metals (ug/L) (Continued)								
Mercury	11	2	2					
Nickel	730	NA	100					
Potassium	NA	NA	NA					
Selenium	180	50	50					
Sodium	NA	NA	NA					
Vanadium	180	NA	NA					
Zinc	11000	NA	NA					
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**15.5**	**18**	**28.5**	**26.5**	**21.3**
Ammonia	NA	NA	NA	**0.56**	**0.16**	**0.14**	**0.14**	**0.14**
Chloride	NA	NA	NA	**118**	**110**	**17.4**	**55.7**	**20.9**
Dissolved Inorganic Carbon	NA	NA	NA	**4**	**5**	**3**	**3**	**4**
Dissolved Organic Carbon	NA	NA	NA	**1**	**2**	**3**	**3**	**2**
Nitrate	58000	10	NA	**1.71**	**2.1**	0.1 U	**0.288**	0.1 U
Salinity (ppth)	NA	NA	NA					
Sulfate	NA	NA	NA	**16.4**	**23**	**18.4**	**17.6**	**18.8**
pH	NA	NA	NA	**6.1**	**6.65**	**6.69**	**6.5**	**6.54**
Conductivity (ms/cm)	NA	NA	NA	**0.279**	**0.289**	**0.17**	**0.28**	**0.171**
DO (mg/L)	NA	NA	NA	**0.84**	**0.46**	**3**	**0.28**	**0.25**
Turbidity (NTUs)	NA	NA	NA	**9.5**	**395**	**4.62**	**11.1**	**32.2**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	09 INJ16-06D INJ16-06D-NWG-112204 NORMAL 11/22/2004	09 INJ16-07D INJ16-07D-NWG-120904 NORMAL 12/9/2004	09 INJ16-08D INJ16-08D-NWG-112204 NORMAL 11/22/2004	09 INJ16-09D INJ16-09D-NWG-112304 NORMAL 11/23/2004	09 INJ16-10D INJ16-10D-NWG-112304 NORMAL 11/23/2004	09 INJ16-11D INJ16-11D-NWG-111904 NORMAL 11/19/2004	09 INJ16-12D INJ16-12D-NWG-111904 NORMAL 11/19/2004
Volatile Organics (ug/L)										
1,1-Dichloroethane	2.4	NA	NA	25 U	1 U	25 U	25 U	25 U	25 U	50 U
1,1-Dichloroethene	340	7	7	25 U	**0.303 J**	25 U	25 U	25 U	25 U	50 U
Acetone	22000	NA	NA	130 U	5 U	130 U	130 U	130 U	130 U	250 U
Bromodichloromethane	1.1	80	NA	25 U	1 U	25 U	25 U	25 U	25 U	50 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	25 U	1 U	25 U	25 U	25 U	25 U	50 U
Chlorodibromomethane	0.8	80	NA	25 U	1 U	25 U	25 U	25 U	25 U	50 U
Chloroform	0.19	80	NA	25 U	**0.134 J**	25 U	25 U	25 U	25 U	50 U
Chloromethane	1.8	NA	NA	25 U	1 U	25 U	25 U	25 U	25 U	50 U
cis-1,2-Dichloroethene	370	70	70	25 U	**1.52**	25 U	25 U	25 U	25 U	50 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	4.2 U	6.3 U	4.1 U	4.7 U	4.8 U	3.8 U	4 U
Tetrachloroethene	0.11	5	5							
Toluene	2300	1000	1000	25 U	1 U	25 U	25 U	25 U	25 U	50 U
Total 1,2-Dichloroethene	330	NA	70	50 U	**1.63 J**	50 U	50 U	50 U	50 U	100 U
Total Chlorinated VOCs[1]	NA	NA	NA	**860**	**482**	**640**	**810**	**870**	**760**	**1700**
trans-1,2-Dichloroethene	110	100	100	25 U	**0.111 J**	25 U	25 U	25 U	25 U	50 U
Trichloroethene	1.7	5	5	**860**	**480**	**640**	**810**	**870**	**760**	**1700**
Vinyl Chloride	0.016	2	2	25 U	1 U	25 U	25 U	25 U	25 U	50 U
Low-Level Volatile Organics (ug/L)										
1,1,2-Trichloroethane	0.24	5	5							
1,1-Dichloroethene	340	7	7							
1,2-Dichloroethane	0.15	5	5							
1,4-Dichlorobenzene	0.43	75	75							
Benzene	0.41	5	5							
Chloroform	0.19	80	NA							
Vinyl Chloride	0.016	2	2							
Total Metals (ug/L)										
Aluminum	37000	NA	NA							
Antimony	15	6	6							
Arsenic	0.045	10	NA							
Barium	7300	2000	2000							
Beryllium	73	4	4							
Cadmium	18	5	5							
Calcium	NA	NA	NA							
Chromium	110	100	100							
Cobalt	11	NA	NA							
Copper	1500	1300	NA							
Iron	26000	NA	NA							
Lead	NA	15	15							
Magnesium	NA	NA	NA							
Manganese	880	NA	NA							
Nickel	730	NA	100							
Potassium	NA	NA	NA							
Selenium	180	50	50							
Silver	180	NA	NA							
Sodium	NA	NA	NA							
Thallium	2.4	2	2							
Vanadium	180	NA	NA							
Zinc	11000	NA	NA							
Dissolved Metals (ug/L)										
Aluminum	37000	NA	NA							
Arsenic	0.045	10	NA							
Barium	7300	2000	2000							
Beryllium	73	4	4							
Calcium	NA	NA	NA							
Chromium	110	100	100							
Cobalt	11	NA	NA							
Copper	1500	1300	NA							
Iron	26000	NA	NA	**5840**	**6180**	**6120**	**6280**	**3580**	**8240**	**3000**
Lead	NA	15	15							
Magnesium	NA	NA	NA							
Manganese	880	NA	NA	**392**	**386**	**386**	**366**	**584**	**539**	**387**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	09 INJ16-06D INJ16-06D-NWG-112204 NORMAL 11/22/2004	09 INJ16-07D INJ16-07D-NWG-120904 NORMAL 12/9/2004	09 INJ16-08D INJ16-08D-NWG-112204 NORMAL 11/22/2004	09 INJ16-09D INJ16-09D-NWG-112304 NORMAL 11/23/2004	09 INJ16-10D INJ16-10D-NWG-112304 NORMAL 11/23/2004	09 INJ16-11D INJ16-11D-NWG-111904 NORMAL 11/19/2004	09 INJ16-12D INJ16-12D-NWG-111904 NORMAL 11/19/2004
Dissolved Metals (ug/L) (Continued)										
Mercury	11	2	2							
Nickel	730	NA	100							
Potassium	NA	NA	NA							
Selenium	180	50	50							
Sodium	NA	NA	NA							
Vanadium	180	NA	NA							
Zinc	11000	NA	NA							
Miscellaneous Parameters (mg/L)										
Alkalinity	NA	NA	NA	**28.5**	**27.5**	**24.5**	**21.5**	**33.5**	**22**	**15**
Ammonia	NA	NA	NA	**0.1**	0.1 U	**0.19**	**0.11**	**0.11**	**0.11**	**0.1**
Chloride	NA	NA	NA	**15.2**	**26**	**14.3**	**13.8**	**19.6**	**13.6**	**11.8**
Dissolved Inorganic Carbon	NA	NA	NA	**5**	**7**	**4**	**4**	**5**	**5**	**10**
Dissolved Organic Carbon	NA	NA	NA	**2**	**1**	**2**	**1**	**1**	**1**	**2**
Nitrate	58000	10	NA	0.1 U	**1.2**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA							
Sulfate	NA	NA	NA	**22.5**	**26**	**18.7**	**19.1**	**18.2**	**18.4**	**18.6**
pH	NA	NA	NA	**6.97**	**6.73**	**6.63**	**6.66**	**7.36**	**6.82**	**6.49**
Conductivity (ms/cm)	NA	NA	NA	**0.177**	**0.176**	**0.153**	**0.152**	**0.139**	**0.161**	**0.14**
DO (mg/L)	NA	NA	NA	**0.45**	**1.31**	**3.17**	**0.71**	**0**	**0.25**	**0**
Turbidity (NTUs)	NA	NA	NA	**6**	**27**	**3.22**	**12.4**	**7.2**	**5.03**	**3.87**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-01D MW16-01D-NWG-100704 NORMAL 10/7/2004	08 MW16-02D MW16-02D-NWG-093004 NORMAL 9/30/2004	08 MW16-03D MW16-03D-NWG-100804 NORMAL 10/8/2004	08 MW16-04D MW16-04D-NWG-100404 NORMAL 10/4/2004	08 MW16-05D MW16-05D-NWG-092904 NORMAL 9/29/2004	08 MW16-06D MW16-06D-NWG-092804 NORMAL 9/28/2004	08 MW16-07D MW16-07D-NWG-092804 NORMAL 9/28/2004
Volatile Organics (ug/L)										
1,1-Dichloroethane	2.4	NA	NA	1 U	50 U	1 U	1 U	**0.164 J**	1 U	1 U
1,1-Dichloroethene	340	7	7							
Acetone	22000	NA	NA	5 U	250 UR	5 U	5 UR	5 U	5 UR	5 UR
Bromodichloromethane	1.1	80	NA	1 U	50 U	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	**0.0277**	**0.0345**	0 U	0 U
Carbon Disulfide	1000	NA	NA	1 UJ	50 U	1 UJ	1 U	1 U	1 U	1 U
Chlorodibromomethane	0.8	80	NA	1 U	50 U	1 U	1 U	1 U	1 U	1 U
Chloroform	0.19	80	NA							
Chloromethane	1.8	NA	NA	1 U	50 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	1 U	50 U	1 U	**4.79**	**4.83**	1 U	1 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	3.3 U	3.3 U	3.3 U	**2.7 J**	**23**	3.3 U	3.3 U
Tetrachloroethene	0.11	5	5	1 U	50 U	1 U	1 U	1 U	1 U	1 U
Toluene	2300	1000	1000	1 U	50 U	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	1 U	50 U	1 U	**5.05**	**5.36**	1 U	1 U
Total Chlorinated VOCs[1]	NA	NA	NA	**6.04**	**1201**	**0.163**	**346**	**1107**	**1.33**	**2.83**
trans-1,2-Dichloroethene	110	100	100	1 U	50 U	1 U	**0.26 J**	**0.527 J**	1 U	1 U
Trichloroethene	1.7	5	5	**6.04**	**1200**	**0.142 J**	**340**	**1100**	**1.33**	**2.82**
Vinyl Chloride	0.016	2	2							
Low-Level Volatile Organics (ug/L)										
1,1,2-Trichloroethane	0.24	5	5	0.1 U	**0.516**	0.1 U	0.1 U	**0.609**	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	0.1 U	**0.598**	**0.021 J**	**0.382**	**0.948**	0.1 U	0.1 U
1,2-Dichloroethane	0.15	5	5	0.1 U	0.023 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	0.43	75	75	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ
Benzene	0.41	5	5	0.1 U	0.1 U	0.1 U	**0.0277 J**	**0.0345 J**	0.1 U	0.1 U
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	**0.0397 J**	0.1 U	**0.134**	**0.0486 J**	0.1 U	**0.0132 J**
Total Metals (ug/L)										
Aluminum	37000	NA	NA	**44.5**	3.3 UJ	**704**	**33.8**	**220 J**	**5.9 J**	**141 J**
Antimony	15	6	6	0.17 U	0.23 U	0.17 U	0.2 U	0.26 U	0.17 U	0.31 U
Arsenic	0.045	10	NA	**2**	**0.94**	**0.57 J**	**5.4**	0.42 U	**1.4**	**2**
Barium	7300	2000	2000	**19.9**	**7.5**	**10.8**	**13.1**	**6.1**	**15**	**13.2**
Beryllium	73	4	4	0.11 U	0.11 U	0.11 U	**0.6 J**	0.11 U	0.11 U	0.11 U
Cadmium	18	5	5	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
Calcium	NA	NA	NA	**15000**	**5710 J**	**7470**	**6010**	**4210**	**12700**	**8370**
Chromium	110	100	100	0.88 U	0.41 U	1.7 U	0.74 U	1.7 U	0.34 U	1.3 U
Cobalt	11	NA	NA	**5.8**	**1.5**	**0.87**	**0.83**	**1.6**	**3.1**	**1.8**
Copper	1500	1300	NA	**0.71 J**	**0.56 J**	**3.1**	**0.67 J**	**0.89**	0.4 U	**0.85**
Iron	26000	NA	NA	**17200**	**1930**	**1330**	**12500**	**736**	**10200**	**8640**
Lead	NA	15	15	**0.11**	**0.07 J**	**0.82**	**0.45**	**0.38**	**0.11**	**0.37**
Magnesium	NA	NA	NA	**5400**	**2270 J**	**6040**	**2080**	**1910**	**5760**	**3300**
Manganese	880	NA	NA	**849**	**203**	**106**	**228**	**97.4**	**656**	**461**
Nickel	730	NA	100	**3.4**	**1.5**	**2.3**	**1**	**2.1**	**2.6**	**1.4**
Potassium	NA	NA	NA	**2230**	**1320**	**2020**	**1280**	**1180**	**2090**	**1690**
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	**0.23**	0.05 U	**0.14**	0.05 U	0.05 U	0.05 U	0.05 U
Sodium	NA	NA	NA	**17800 J**	**11100 J**	**24400**	**52800**	**14800 J**	**20000**	**40800**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	0.4 U	0.4 U	**1.3**	**0.49 J**	**0.41 J**	0.4 U	0.4 U
Zinc	11000	NA	NA	**20.7 J**	**9.1**	**5.3 J**	**8.9**	**6.5**	**8.5 J**	**7.4**
Dissolved Metals (ug/L)										
Aluminum	37000	NA	NA	0.72 U	**1.1 J**	**2**	0.72 U	**1.6**	**1.1 J**	0.72 U
Arsenic	0.045	10	NA	**1.1**	**1**	**0.13 J**	**0.41**	**0.23**	**1.6 J**	**1.7**
Barium	7300	2000	2000	**18.8**	**8.8**	**8.6**	**10.4**	**5.1**	**14.9**	**12.2**
Beryllium	73	4	4	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Calcium	NA	NA	NA	**14700**	**5740**	**7420**	**6390**	**4240**	**12700 J**	**8020**
Chromium	110	100	100	**0.75**	**0.49**	**2.5**	**1.3**	**0.75**	1.1 U	**0.61**
Cobalt	11	NA	NA	**5.4**	**1.6**	**0.45**	**0.65**	**1.1**	**3.3**	**0.93**
Copper	1500	1300	NA	0.16 UJ	**0.68**	**0.26 J**	0.16 U	0.16 U	**0.32**	**0.29 J**
Iron	26000	NA	NA	**13100**	**1950**	50 U	**1170**	**321**	**10100**	**7310**
Lead	NA	15	15	0.078 UJ	**0.19**	**0.08 J**	**0.09 J**	0.08 U	**0.46**	**0.42**
Magnesium	NA	NA	NA	**5130**	**2090**	**5490**	**2260**	**1700**	**5680**	**2920**
Manganese	880	NA	NA	**786**	**204**	**100**	**216**	**85**	**651**	**439**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-01D MW16-01D-NWG-100704 NORMAL 10/7/2004	08 MW16-02D MW16-02D-NWG-093004 NORMAL 9/30/2004	08 MW16-03D MW16-03D-NWG-100804 NORMAL 10/8/2004	08 MW16-04D MW16-04D-NWG-100404 NORMAL 10/4/2004	08 MW16-05D MW16-05D-NWG-092904 NORMAL 9/29/2004	08 MW16-06D MW16-06D-NWG-092804 NORMAL 9/28/2004	08 MW16-07D MW16-07D-NWG-092804 NORMAL 9/28/2004
Dissolved Metals (ug/L) (Continued)										
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U	0.04 U	0.035 U	0.051 U
Nickel	730	NA	100	**3.1**	**1.7**	**1.4**	**1**	**1.7**	**2.7**	**0.94**
Potassium	NA	NA	NA	**2250**	**1280**	**1920 J**	**1450**	**1160**	**2080**	**1590**
Selenium	180	50	50	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Sodium	NA	NA	NA	**16500**	**9720**	**23800**	**52100**	**13100**	**21700**	**38700**
Vanadium	180	NA	NA	**0.13 J**	**0.08 J**	**0.67**	**0.29**	**0.15**	0.25 U	**0.08 J**
Zinc	11000	NA	NA	**10.9 J**	**12.4 J**	**1.7 J**	**4.9**	**5.7 J**	**15.3 J**	**2.5 J**
Miscellaneous Parameters (mg/L)										
Alkalinity	NA	NA	NA	**11**	**14.5**	**27**	**41.5**	**16**	**20**	**20.7**
Ammonia	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.1**
Chloride	NA	NA	NA	**83.9**	**13.8**	**33.5**	**57.1**	**10.9**	**61.6**	**57.9**
Dissolved Inorganic Carbon	NA	NA	NA	**2**	1 U	**6**	1 U	**4**	**4**	**5**
Dissolved Organic Carbon	NA	NA	NA	**2**	**3**	**2**	**2**	**1**	**2**	**2**
Nitrate	58000	10	NA	0.1 U	0.1 U	**6.3**	0.1 U	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA	**0.167**	**0.064**	**0.118**	**0.165**	**0.062**	**0.146**	**0.16**
Sulfate	NA	NA	NA	**18.7**	**17.2**	**17**	**18.4**	**17.6**	**19.7**	**21.3**
pH	NA	NA	NA	**6.23**	**6.03**	**5.64**	**6.43**	**6.25**	**6.45**	**6.68**
Conductivity (ms/cm)	NA	NA	NA	**0.289**	**0.119**	**0.194**	**0.312**	**0.1**	**0.26**	**0.239**
DO (mg/L)	NA	NA	NA	**0.53**	**2.08**	**4.8**	**13.8**	**7.51**	**3.62**	**0.91**
Turbidity (NTUs)	NA	NA	NA	**10.86**	**1.5**	**5.4**	**55**	**0.38**	**1**	**21.6**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-08D MW16-08D-NWG-100804 NORMAL 10/8/2004	08 MW16-09D MW16-09D-NWG-100804 NORMAL 10/8/2004	08 MW16-10D MW16-10D-NWG-100704 NORMAL 10/7/2004	08 MW16-11D MW16-11D-NWG-100604 NORMAL 10/6/2004	08 MW16-12D MW16-12D-NWG-101204 NORMAL 10/12/2004	08 MW16-13D MW16-13D-NWG-100704 NORMAL 10/7/2004	08 MW16-14D MW16-14D-NWG-100704 NORMAL 10/7/2004	08 MW16-15D MW16-15D-NWG-101404 NORMAL 10/14/2004
Volatile Organics (ug/L)											
1,1-Dichloroethane	2.4	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	50 U	1 U
1,1-Dichloroethene	340	7	7								
Acetone	22000	NA	NA	5 U	5 U	5 U	5 U	5 U	**2.57 J**	250 U	5 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U	1 U	50 U	**0.294 J**
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	**0.0194**
Carbon Disulfide	1000	NA	NA	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 UJ	50 UJ	1 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U	1 U	50 U	**0.579 J**
Chloroform	0.19	80	NA								
Chloromethane	1.8	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	50 U	1 U
cis-1,2-Dichloroethene	370	70	70	**3.76**	1 U	1 U	1 U	1 U	1 U	50 U	**2.19**
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	**210**	3.3 U	3.3 U
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	1 U	1 U	1 U	50 U	1 U
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U	1 U	50 U	1 U
Total 1,2-Dichloroethene	330	NA	70	**3.92**	1 U	1 U	1 U	1 U	1 U	50 U	**2.47**
Total Chlorinated VOCs[1]	NA	NA	NA	**324**	**0.236**	**0.497**	0 U	**32**	**0.326**	**2000**	**1403**
trans-1,2-Dichloroethene	110	100	100	**0.158 J**	1 U	1 U	1 U	1 U	1 U	50 U	**0.275 J**
Trichloroethene	1.7	5	5	**320**	**0.216 J**	**0.497 J**	1 U	**32**	**0.326 J**	**2000**	**1400**
Vinyl Chloride	0.016	2	2								
Low-Level Volatile Organics (ug/L)											
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	**0.25**
1,1-Dichloroethene	340	7	7	**0.188**	**0.0197 J**	0.1 U	0.1 U	**0.0212 J**	0.1 UJ	**0.137**	**0.442**
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U
1,4-Dichlorobenzene	0.43	75	75	**1.45 J**	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U
Benzene	0.41	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	**0.0194 J**
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	**0.386**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	**0.0193 J**
Total Metals (ug/L)											
Aluminum	37000	NA	NA	3.3 U	**387**	**197**	**150**	**36.7**	**79.8**	**5.9 J**	**174**
Antimony	15	6	6	0.17 U	0.17 U	0.18 U	0.27 U	0.27 U	0.18 U	0.23 U	0.26 U
Arsenic	0.045	10	NA	0.42 U	**1.8**	**2**	**2.2**	**1**	**2**	**0.48 J**	**1.1**
Barium	7300	2000	2000	**11.9**	**11.5**	**7.5**	**20.5**	**9.7**	**8**	**8.8**	**12.2**
Beryllium	73	4	4	0.11 U	0.11 U	0.11 U	0.11 U	0.11 UJ	0.11 U	0.11 U	0.11 U
Cadmium	18	5	5	**0.09 J**	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.061 U
Calcium	NA	NA	NA	**15200**	**5420**	**6260**	**11100**	**6850**	**8710**	**5910**	**7380**
Chromium	110	100	100	0.58 U	1.5 U	1.3 U	**0.88**	1.5 U	1.7 U	1.5 U	1.4 U
Cobalt	11	NA	NA	**2.1**	**1.9**	**2.2**	**3.2**	**6.3**	**0.65**	**3**	**3.9**
Copper	1500	1300	NA	**4.2**	**1.4**	**4.8**	1.2 U	0.54 U	**1**	**0.64 J**	1.5 U
Iron	26000	NA	NA	**1190**	**8350**	**6430**	**15900**	**2210**	**6180**	**1850**	**3230**
Lead	NA	15	15	**0.31**	**0.95**	**0.52**	**0.29**	**0.08 J**	**0.26**	**0.14**	**0.37**
Magnesium	NA	NA	NA	**5490**	**2250**	**2620**	**4590**	**2690**	**2230**	**2040**	**2770**
Manganese	880	NA	NA	**434**	**484**	**721**	**718**	**208 J**	**454**	**213**	**243 J**
Nickel	730	NA	100	**8.6**	**1.2**	**2.1**	**1.5**	**10.1**	**0.64 J**	**3.4**	**5.6**
Potassium	NA	NA	NA	**2210**	**1590**	**2530**	**1950**	**1660**	**1540**	**2130**	**2170**
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	0.05 U	0.05 U	**0.13**	**0.23**	0.05 U	0.05 U	0.05 U	**0.2**
Sodium	NA	NA	NA	**28600**	**12100**	**12600 J**	**23100**	**11000 J**	**10500 J**	**8620**	**14000**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	**0.07 J**	0.066 U
Vanadium	180	NA	NA	0.4 U	**0.83**	0.4 U	**0.43 J**	0.4 U	0.4 U	0.4 U	**0.68 J**
Zinc	11000	NA	NA	**12.2 J**	**6.4 J**	**14.3 J**	**6.6**	**9 J**	**3.1 J**	**9.3 J**	**14.7**
Dissolved Metals (ug/L)											
Aluminum	37000	NA	NA	**0.78 J**	**3.7**	0.72 U	**0.98 J**	**1.1 J**	0.72 U	0.72 U	**0.88 J**
Arsenic	0.045	10	NA	**0.25**	**1.7**	**1.7**	**1.5**	**0.8**	**1.7**	**0.5**	**0.82**
Barium	7300	2000	2000	**12.5**	**10.3**	**6.8**	**19.1**	**9.8**	**7.5**	**8.8**	**11.6**
Beryllium	73	4	4	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 UJ
Calcium	NA	NA	NA	**15100**	**5390**	**6100**	**11700**	**7130**	**8320**	**5490**	**7730**
Chromium	110	100	100	**0.89**	**1**	**1.1**	**0.92**	0.68 U	**1.4**	**1.1**	**1.7**
Cobalt	11	NA	NA	**2.1**	**1.4**	**1.9**	**3.5**	**6.1**	**0.49**	**2.6**	**3.6**
Copper	1500	1300	NA	**0.28 J**	0.16 UJ	**0.17 J**	**0.19 J**	0.2 U	0.16 UJ	0.16 UJ	0.16 U
Iron	26000	NA	NA	**1010**	**6740**	**5300**	**15600**	**1620**	**5170**	**1580**	**2530**
Lead	NA	15	15	0.078 UJ	**0.2 J**	**0.16 J**	**0.15 J**	**0.15 J**	**0.08 J**	0.078 UJ	0.078 U
Magnesium	NA	NA	NA	**5030**	**2040**	**2230**	**4830**	**2710**	**2080**	**1780**	**2560**
Manganese	880	NA	NA	**443**	**441**	**635**	**809**	**202 J**	**406**	**180**	**234 J**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-08D MW16-08D-NWG-100804 NORMAL 10/8/2004	08 MW16-09D MW16-09D-NWG-100804 NORMAL 10/8/2004	08 MW16-10D MW16-10D-NWG-100704 NORMAL 10/7/2004	08 MW16-11D MW16-11D-NWG-100604 NORMAL 10/6/2004	08 MW16-12D MW16-12D-NWG-101204 NORMAL 10/12/2004	08 MW16-13D MW16-13D-NWG-100704 NORMAL 10/7/2004	08 MW16-14D MW16-14D-NWG-100704 NORMAL 10/7/2004	08 MW16-15D MW16-15D-NWG-101404 NORMAL 10/14/2004
Dissolved Metals (ug/L) (Continued)											
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U	**0.062**	0.021 U	0.021 U	0.021 U
Nickel	730	NA	100	**8.1**	**1**	**2.1**	**1.5**	**9.9 J**	**0.45**	**2.9**	**5**
Potassium	NA	NA	NA	**2270 J**	**1510 J**	**2470**	**2080**	**1640**	**1460**	**2330**	**2200**
Selenium	180	50	50	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Sodium	NA	NA	NA	**26700**	**11000**	**10400 J**	**23000 J**	**10300**	**9670**	**7660**	**14300**
Vanadium	180	NA	NA	**0.18**	**0.25**	**0.24**	**0.2**	**0.14 J**	**0.16**	**0.16**	0.39 U
Zinc	11000	NA	NA	**6.5 J**	**3.4 J**	**6.6 J**	**4.6**	**10.8 J**	**0.53 J**	**7.2 J**	**12.4 J**
Miscellaneous Parameters (mg/L)											
Alkalinity	NA	NA	NA	**9**	**16.5**	**16.3**	**10.5**	**19.2**	**23.7**	**15**	**18**
Ammonia	NA	NA	NA	**0.21**	**0.11**	**0.11**	0.1 U	0.1 U	**0.12**	**0.12**	0.1 U
Chloride	NA	NA	NA	**69.5**	**11.2**	**16.5**	**69.5**	**20.9**	**12.9**	**10.1**	**20.9**
Dissolved Inorganic Carbon	NA	NA	NA	**8**	**2**	**2**	**4**	**3**	**3**	**3**	**3**
Dissolved Organic Carbon	NA	NA	NA	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**2**
Nitrate	58000	10	NA	**3.65**	**0.704**	0.1 U	**0.527**	0.1 U	**0.506**	**0.258**	0.1 UJ
Salinity (ppth)	NA	NA	NA	**0.167**	**0.066**	**0.073**	**0.157**	**0.074**	**0.072**	**0.059**	**0.081**
Sulfate	NA	NA	NA	**17.2**	**21.4**	**19**	**17**	**21.4**	**19.1**	**17.3**	**21.2**
pH	NA	NA	NA	**6.1**	**6.68**	**6.54**	**6.53**	**5.95**	**7.05**	**5.69**	**6.38**
Conductivity (ms/cm)	NA	NA	NA	**0.262**	**0.121**	**0.161**	**0.295**	**0.123**	**0.156**	**0.108**	**0.133**
DO (mg/L)	NA	NA	NA	**1.66**	**0.5**	**0.84**	**0.91**	**1.71**	**0.38**	**0.43**	**0.42**
Turbidity (NTUs)	NA	NA	NA	**4**	**23**	**8.3**	**28**	**5**	**5.09**	**1.9**	**14**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-16D MW16-16D-NWG-100604 ORIG 10/6/2004	08 MW16-16D MW16-16D-NWG-100604-AVG AVG 10/6/2004	08 MW16-16D MW16-16D-NWG-100604-D DUP 10/6/2004	08 MW16-17D MW16-17D-NWG-100404 NORMAL 10/4/2004	08 MW16-18D MW16-18D-NWG-100504 NORMAL 10/5/2004	08 MW16-19D MW16-19D-NWG-100504 NORMAL 10/5/2004	08 MW16-20D MW16-20D-NWG-102804 NORMAL 10/28/2004
Volatile Organics (ug/L)										
1,1-Dichloroethane	2.4	NA	NA	**0.247 J**	**0.2505 J**	**0.254 J**	1 U	1 U	1 U	1 U
1,1-Dichloroethene	340	7	7							
Acetone	22000	NA	NA	5 U	5 U	5 U	5 U	5 UR	**1.83 J**	5 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	0 U	0 U	**0.0155**	**0.013**
Carbon Disulfide	1000	NA	NA	1 UJ	1 UJ	1 UJ	1 U	1 U	1 U	1 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	0.19	80	NA							
Chloromethane	1.8	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	1 U	1 U	1 U	1 U	1 U	**0.492 J**	1 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	3.3 U	**1.1 J**	**1.1 J**	**1.1 J**	**1.1 J**	**1.3 J**	3.3 U
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	1 U	1 U	1 U	1 U	1 U	**0.492 J**	1 U
Total Chlorinated VOCs[1]	NA	NA	NA	**44.2**	**44.3**	**44.3**	0 U	**0.165**	**261**	**10.3**
trans-1,2-Dichloroethene	110	100	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1.7	5	5	**44**	**44**	**44**	1 U	**0.165 J**	**260**	**9.96**
Vinyl Chloride	0.016	2	2							
Low-Level Volatile Organics (ug/L)										
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.187**
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.0274 J**	**0.0483 J**
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.0529 J**
1,4-Dichlorobenzene	0.43	75	75	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U
Benzene	0.41	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.0155 J**	**0.013 J**
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.125**	**0.0592 J**
Total Metals (ug/L)										
Aluminum	37000	NA	NA	**18.1**	**16.8**	**15.5**	**1490**	**49.7**	**4.7 J**	**459**
Antimony	15	6	6	0.21 U	0.21 U	0.21 U	0.27 U	0.2 U	0.22 U	0.17 U
Arsenic	0.045	10	NA	**0.83 J**	**0.84 J**	**0.85**	**1.5**	**1.4**	**0.95**	**1.5**
Barium	7300	2000	2000	**6.4**	**6.35**	**6.3**	**15.2**	**7.9**	**14.2**	**7.8**
Beryllium	73	4	4	0.11 U	0.11 U	0.11 U	**0.16 J**	0.11 UJ	0.11 UJ	0.11 UJ
Cadmium	18	5	5	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.061 UJ
Calcium	NA	NA	NA	**5020**	**5035**	**5050**	**5780**	**3990**	**4570**	**3160**
Chromium	110	100	100	**0.84**	**0.775**	**0.71**	**3.4**	0.91 U	0.92 U	1.7 U
Cobalt	11	NA	NA	**1.4**	**1.4**	**1.4**	**3**	**1.8**	**1.5**	**1.2**
Copper	1500	1300	NA	0.4 U	0.41 U	0.42 U	**5.9**	**0.48 J**	0.4 U	2.3 U
Iron	26000	NA	NA	**2880**	**2830**	**2780**	**10700**	**6000**	**3860**	**3650**
Lead	NA	15	15	**0.06 J**	**0.07 J**	**0.08 J**	**1.9**	**0.16**	0.05 U	**0.64**
Magnesium	NA	NA	NA	**1780**	**1775**	**1770**	**2600**	**1850**	**1920**	**1350**
Manganese	880	NA	NA	**172**	**172**	**172**	**392**	**241**	**174**	**317**
Nickel	730	NA	100	**1.2**	**1.2**	**1.2**	**3.3**	**0.68 J**	**0.88**	**1.6 J**
Potassium	NA	NA	NA	**1140**	**1140**	**1140**	**1690**	**1230**	**1230**	**1650**
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.31 U
Silver	180	NA	NA	0.05 U	0.05 U	0.05 U	**0.79**	0.05 U	0.05 U	**0.25**
Sodium	NA	NA	NA	**8680**	**8705**	**8730**	**9580**	**9130**	**10100**	**22300 J**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	0.4 U	0.4 U	0.4 U	**2.7**	**0.49 J**	0.4 U	1.1 U
Zinc	11000	NA	NA	**7.1**	**7.35**	**7.6**	**15.7**	**7.5**	4.7 U	6 U
Dissolved Metals (ug/L)										
Aluminum	37000	NA	NA	0.72 U	0.72 U	0.72 U	**12.7**	0.72 U	0.72 U	**5.4**
Arsenic	0.045	10	NA	**0.87**	**0.88**	**0.89**	**1.5**	**1.3**	**0.83**	**1.3 J**
Barium	7300	2000	2000	**7.2**	**6.7**	**6.2**	**7.6**	**7.5**	**14.6**	**4.9**
Beryllium	73	4	4	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 UJ
Calcium	NA	NA	NA	**5270**	**5195**	**5120**	**5620**	**3950**	**4790**	**3530**
Chromium	110	100	100	**0.92**	**0.885**	**0.85**	**0.75**	**0.95**	**0.93**	0.98 U
Cobalt	11	NA	NA	**1.6**	**1.6**	**1.6**	**1.7**	**1.7**	**1.4**	**0.81**
Copper	1500	1300	NA	**0.18 J**	**0.13 J**	0.16 U	**0.22 J**	0.16 U	0.16 U	0.23 U
Iron	26000	NA	NA	**2490**	**2500**	**2510**	**7090**	**5080**	**3360**	**2590**
Lead	NA	15	15	**0.16**	**0.1**	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Magnesium	NA	NA	NA	**1820**	**1795**	**1770**	**2240**	**1860**	**2030**	**1430**
Manganese	880	NA	NA	**190**	**188.5**	**187**	**364 J**	**242**	**182**	**301**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-16D MW16-16D-NWG-100604 ORIG 10/6/2004	08 MW16-16D MW16-16D-NWG-100604-AVG AVG 10/6/2004	08 MW16-16D MW16-16D-NWG-100604-D DUP 10/6/2004	08 MW16-17D MW16-17D-NWG-100404 NORMAL 10/4/2004	08 MW16-18D MW16-18D-NWG-100504 NORMAL 10/5/2004	08 MW16-19D MW16-19D-NWG-100504 NORMAL 10/5/2004	08 MW16-20D MW16-20D-NWG-102804 NORMAL 10/28/2004
Dissolved Metals (ug/L) (Continued)										
Mercury	11	2	2	0.12 U	0.085 U	0.05 U	0.021 U	0.021 U	0.021 U	0.054 U
Nickel	730	NA	100	**1.4**	**1.25**	**1.1**	**0.77**	**0.53**	**0.87**	**0.76 J**
Potassium	NA	NA	NA	**1260**	**1240**	**1220**	**1370**	**1300**	**1340**	**1430**
Selenium	180	50	50	0.3 U	0.3 U	0.3 U	**0.48 J**	0.3 U	0.3 U	0.3 UJ
Sodium	NA	NA	NA	**8690**	**8510**	**8330**	**9610**	**9500 J**	**11000 J**	**19300 J**
Vanadium	180	NA	NA	**0.2**	**0.195**	**0.19**	**0.14 J**	**0.19**	**0.21**	0.21 U
Zinc	11000	NA	NA	**5.2**	**5.45**	**5.7**	**4**	**4.3**	**4.9**	**1.9 J**
Miscellaneous Parameters (mg/L)										
Alkalinity	NA	NA	NA	**12.5**	**12.5**	**12.5**	**25**	**13.5**	**16.7**	**29**
Ammonia	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloride	NA	NA	NA	**8.69**	**8.52**	**8.35**	**10.4**	**9.6**	**13.4**	**10.3**
Dissolved Inorganic Carbon	NA	NA	NA	**4**	**3.5**	**3**	1 U	1 U	1 U	**3**
Dissolved Organic Carbon	NA	NA	NA	**2**	**2.5**	**3**	**2**	**2**	**1**	**3**
Nitrate	58000	10	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA	**0.056**	**0.056**	**0.056**	**0.067**	**0.053**	**0.059**	**0.065**
Sulfate	NA	NA	NA	**18.3**	**17.75**	**17.2**	**18**	**15.9**	**19.2**	**17.8**
pH	NA	NA	NA	**5.81**			**6.05**	**6.59**	**6.53**	**6.78**
Conductivity (ms/cm)	NA	NA	NA	**0.1**			**0.113**	**0.104**	**0.12**	**0.126**
DO (mg/L)	NA	NA	NA	**1.84**			**6**	**5.03**	**4.53**	**0.48**
Turbidity (NTUs)	NA	NA	NA	**36**			**82.9**	**20.5**	**3.87**	**24**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-21D MW16-21D-NWG-100104 NORMAL 10/1/2004	08 MW16-22D MW16-22D-NWG-100604 NORMAL 10/6/2004	08 MW16-23D MW16-23D-NWG-101404 NORMAL 10/14/2004	08 MW16-24D MW16-24D-NWG-100104 NORMAL 10/1/2004	08 MW16-25D MW16-25D-NWG-100504 ORIG 10/5/2004	08 MW16-25D MW16-25D-NWG-100504-AVG AVG 10/5/2004	08 MW16-25D MW16-25D-NWG-100504-D DUP 10/5/2004
Volatile Organics (ug/L)										
1,1-Dichloroethane	2.4	NA	NA	**0.176 J**	1 U	1 U	1 U	1 U	**0.136 J**	**0.136 J**
1,1-Dichloroethene	340	7	7							
Acetone	22000	NA	NA	5 UR	5 U	5 U	5 UR	5 UR	**1.53 J**	**1.53 J**
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	**0.0313**	0 U	0 U	**0.0566**	**0.0196**	**0.0193**	**0.019**
Carbon Disulfide	1000	NA	NA	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	0.19	80	NA							
Chloromethane	1.8	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	**1.31**	**2.39**	**25**	**11**	**0.231 J**	**0.2285 J**	**0.226 J**
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	**1.6 J**	**1 J**	**6.6 J**	**6.9**	**1.1 J**	**1.1 J**	**1.1 J**
Tetrachloroethene	0.11	5	5	**0.371 J**	1 U	1 U	1 U	**0.388 J**	**0.3825 J**	**0.377 J**
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	**1.57**	**2.77**	**25.5**	**11.4**	**0.231 J**	**0.229 J**	**0.226 J**
Total Chlorinated VOCs[1]	NA	NA	NA	**863**	**1503**	**1927**	**710**	**421**	**416**	**411**
trans-1,2-Dichloroethene	110	100	100	**0.255 J**	**0.38 J**	**0.48 J**	**0.367 J**	1 U	1 U	1 U
Trichloroethene	1.7	5	5	**860**	**1500**	**1900**	**690**	**420**	**415**	**410**
Vinyl Chloride	0.016	2	2							
Low-Level Volatile Organics (ug/L)										
1,1,2-Trichloroethane	0.24	5	5	**0.018 J**	0.1 U	**0.464**	**0.019 J**	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	**0.386**	**0.422**	**0.844**	**0.624**	**0.025 J**	**0.0257 J**	**0.0264 J**
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	**0.0933 J**	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	0.43	75	75	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
Benzene	0.41	5	5	**0.0313 J**	0.1 U	0.1 U	**0.0566 J**	**0.0196 J**	**0.0193 J**	**0.019 J**
Chloroform	0.19	80	NA	**0.286**	0.152 U	0.1 U	**0.132**	**0.148**	**0.1425**	**0.137**
Vinyl Chloride	0.016	2	2	**0.0322 J**	**0.0273 J**	**0.0918 J**	**7.87**	0.1 U	0.1 U	0.1 U
Total Metals (ug/L)										
Aluminum	37000	NA	NA	**1240**	**68.9**	**1290**	**73.9**	**7.3**	**8.65**	**10**
Antimony	15	6	6	0.29 U	0.26 U	0.35 U	0.31 U	0.19 U	0.195 U	0.2 U
Arsenic	0.045	10	NA	0.42 U	**0.62 J**	**1.2**	0.42 U	0.42 U	0.42 U	0.42 U
Barium	7300	2000	2000	**9.5**	**10.2**	**14.7**	**8**	**6.5**	**6.45**	**6.4**
Beryllium	73	4	4	**0.23 J**	0.11 U	**0.12 J**	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ
Cadmium	18	5	5	**0.08 J**	0.06 U	0.061 U	0.06 U	0.06 U	0.06 U	0.06 U
Calcium	NA	NA	NA	**5330**	**7220**	**3660**	**4780**	**4920**	**4910**	**4900**
Chromium	110	100	100	**2.7**	**0.96**	**3.6**	1.5 U	0.86 U	0.865 U	0.87 U
Cobalt	11	NA	NA	**3.4**	**2.1**	**1.7**	**2.2**	**1.3**	**1.3**	**1.3**
Copper	1500	1300	NA	**6.6**	1.2 U	7.2 U	**0.81**	0.4 U	0.4 U	0.4 U
Iron	26000	NA	NA	**3370**	**2890**	**5750**	**2170**	**1330**	**1355**	**1380**
Lead	NA	15	15	**2**	**0.26**	**2.9**	**0.42**	0.05 U	**0.0425 J**	**0.06 J**
Magnesium	NA	NA	NA	**2300**	**2480**	**2020**	**1860**	**1780**	**1790**	**1800**
Manganese	880	NA	NA	**70.3**	**171**	**243 J**	**100**	**114**	**114.5**	**115**
Nickel	730	NA	100	**7.7**	**3.3**	**4.5**	**4.2**	**2.3**	**2.3**	**2.3**
Potassium	NA	NA	NA	**1390**	**1560**	**1460**	**1330**	**1380**	**1395**	**1410**
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	0.05 U	0.05 U	**0.15**	0.05 U	0.05 U	0.05 U	0.05 U
Sodium	NA	NA	NA	**8670**	**10900**	**19900**	**11500**	**8610**	**8580**	**8550**
Thallium	2.4	2	2	0.07 U	0.07 U	0.066 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	**2.3**	0.4 U	**3.7**	0.4 U	0.4 U	0.4 U	0.4 U
Zinc	11000	NA	NA	**17.5**	**12**	**32.7**	**22.2**	**9.1**	**9.3**	**9.5**
Dissolved Metals (ug/L)										
Aluminum	37000	NA	NA	**1.9**	**1.2 J**	**3.7**	**1.8**	**0.92 J**	**0.875 J**	**0.83 J**
Arsenic	0.045	10	NA	**0.31**	**0.72**	**0.7**	**0.39**	**0.43**	**0.43**	**0.43**
Barium	7300	2000	2000	**5.2**	**9.6**	**6.3**	**8**	**6.6**	**6.6**	**6.6**
Beryllium	73	4	4	0.12 U	0.12 U	0.12 UJ	0.12 U	0.12 U	0.12 U	0.12 U
Calcium	NA	NA	NA	**5600**	**7550**	**3700**	**4850**	**4990**	**5060**	**5130**
Chromium	110	100	100	**0.79**	**0.82**	1.3 U	**0.79**	**0.61**	**0.71**	**0.81**
Cobalt	11	NA	NA	**2.6**	**2.3**	**1.4**	**1.8**	**1.3**	**1.3**	**1.3**
Copper	1500	1300	NA	**0.94**	**0.28 J**	0.16 U	**0.24 J**	0.16 U	0.16 U	0.16 U
Iron	26000	NA	NA	**905**	**2710**	**3270**	**1840**	**1280**	**1315**	**1350**
Lead	NA	15	15	**0.38**	**0.13 J**	**0.2**	**0.15 J**	**0.14 J**	**0.09 J**	0.08 U
Magnesium	NA	NA	NA	**2140**	**2510**	**1450**	**2050**	**1830**	**1860**	**1890**
Manganese	880	NA	NA	**53.1 J**	**186**	**203 J**	**98 J**	**116**	**119**	**122**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-21D MW16-21D-NWG-100104 NORMAL 10/1/2004	08 MW16-22D MW16-22D-NWG-100604 NORMAL 10/6/2004	08 MW16-23D MW16-23D-NWG-101404 NORMAL 10/14/2004	08 MW16-24D MW16-24D-NWG-100104 NORMAL 10/1/2004	08 MW16-25D MW16-25D-NWG-100504 ORIG 10/5/2004	08 MW16-25D MW16-25D-NWG-100504-AVG AVG 10/5/2004	08 MW16-25D MW16-25D-NWG-100504-D DUP 10/5/2004
Dissolved Metals (ug/L) (Continued)										
Mercury	11	2	2	0.07 U	0.021 U	0.021 U	0.024 U	0.021 U	**0.25025**	**0.49**
Nickel	730	NA	100	**5.5**	**3.4**	**1.3**	**3.1**	**2.4**	**2.35**	**2.3**
Potassium	NA	NA	NA	**1230**	**1680**	**1160**	**1370**	**1510**	**1520**	**1530**
Selenium	180	50	50	**0.31 J**	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Sodium	NA	NA	NA	**9400**	**10600**	**18100**	**11700**	**9120**	**9195**	**9270**
Vanadium	180	NA	NA	**0.19**	**0.2**	0.34 U	**0.19**	**0.12 J**	**0.14 J**	**0.16**
Zinc	11000	NA	NA	**17.8**	**11.6**	**4.1 J**	**8.8**	**8.9**	**8.55**	**8.2**
Miscellaneous Parameters (mg/L)										
Alkalinity	NA	NA	NA	**10.2**	**11**	**18.5**	**11.8**	**13.5**	**13.75**	**14**
Ammonia	NA	NA	NA	0.1 U	**0.1**	**0.1**	**0.12**	0.1 U	0.1 U	0.1 U
Chloride	NA	NA	NA	**12.1**	**19.6**	**13**	**12.7**	**9.16**	**9.15**	**9.14**
Dissolved Inorganic Carbon	NA	NA	NA	1 U	**2**	**2**	1 U	1 U	1 U	1 U
Dissolved Organic Carbon	NA	NA	NA	**2**	**2**	**2**	**2**	**2**	**2**	**2**
Nitrate	58000	10	NA	**0.145**	**0.175**	**0.488 J**	**0.938**	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA	**0.058**	**0.075**	**0.064**	**0.06**	**0.054**	**0.054**	**0.054**
Sulfate	NA	NA	NA	**18.7**	**8.91**	**17.5**	**17.2**	**17.2**	**17.2**	**17.2**
pH	NA	NA	NA	**5.96**	**6.13**	**6.94**	**6.27**	**6**		
Conductivity (ms/cm)	NA	NA	NA	**0.117**	**0.137**	**0.11**	**0.122**	**0.106**		
DO (mg/L)	NA	NA	NA	**0.51**	**1.26**	**1.65**	**3.38**	**1.87**		
Turbidity (NTUs)	NA	NA	NA	**62.8**	**5.8**	**104.1**	**2.4**	**4.8**		

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-26D MW16-26D-NWG-100704 NORMAL 10/7/2004	08 MW16-27D MW16-27D-NWG-101204 NORMAL 10/12/2004	08 MW16-28D MW16-28D-NWG-101104 NORMAL 10/11/2004	08 MW16-29D MW16-29D-NWG-100704 NORMAL 10/7/2004	08 MW16-30D MW16-30D-NWG-101204 NORMAL 10/12/2004
Volatile Organics (ug/L)								
1,1-Dichloroethane	2.4	NA	NA	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	340	7	7					
Acetone	22000	NA	NA	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	**0.0126**	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	1 UJ	1 U	1 UJ	1 UJ	1 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U
Chloroform	0.19	80	NA					
Chloromethane	1.8	NA	NA	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	1 U	**8.95**	**1.15**	**35**	1 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	**14**	**11**	3.3 U	**3000**	**110**
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	1 U	1 U
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	1 U	**9.64**	**1.15**	**37**	1 U
Total Chlorinated VOCs[1]	NA	NA	NA	**0.0786**	**201**	**201**	**2939**	**0.0717**
trans-1,2-Dichloroethene	110	100	100	1 U	**0.686 J**	1 U	**2.02**	1 U
Trichloroethene	1.7	5	5	1 U	**190**	**200**	**2900**	1 U
Vinyl Chloride	0.016	2	2					
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	0.1 U	**0.811**	**0.18**	**1.17**	0.1 U
1,2-Dichloroethane	0.15	5	5	0.1 U	**0.0753 J**	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	0.43	75	75	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ
Benzene	0.41	5	5	0.1 U	**0.0126 J**	0.1 U	0.1 U	0.1 U
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	**0.0786 J**	**0.0506 J**	0.1 U	**0.515**	**0.0717 J**
Total Metals (ug/L)								
Aluminum	37000	NA	NA	**30.4**	**41.1**	**23.1**	**51.3**	**13200**
Antimony	15	6	6	0.17 U	0.31 U	0.17 U	0.2 U	0.36 U
Arsenic	0.045	10	NA	**3.1**	**0.53 J**	**1**	**0.86**	**2.2**
Barium	7300	2000	2000	**12.4**	**17.4**	**7.1**	**18.4**	**60.7**
Beryllium	73	4	4	0.11 U	0.11 UJ	0.11 U	0.11 U	**0.76 J**
Cadmium	18	5	5	0.06 U	0.06 U	0.06 U	**0.1 J**	0.19 U
Calcium	NA	NA	NA	**12000**	**9410**	**19900**	**18800**	**11400**
Chromium	110	100	100	0.79 U	2 U	0.75 U	0.72 U	**17.5 J**
Cobalt	11	NA	NA	**0.44**	**4.4**	**1.3**	**1.1**	**10.1**
Copper	1500	1300	NA	**0.68 J**	1.6 U	**1.4**	**3.8**	**34.8**
Iron	26000	NA	NA	**9910**	**3630**	**1490**	**1030**	**25900**
Lead	NA	15	15	**0.06 J**	**0.3**	**0.51**	**0.15**	**10.3**
Magnesium	NA	NA	NA	**3440**	**4010**	**7320**	**5170**	**6660**
Manganese	880	NA	NA	**733**	**276 J**	**375**	**590**	**853 J**
Nickel	730	NA	100	**0.4 J**	**4.2**	**1.9**	**1.3**	**19**
Potassium	NA	NA	NA	**1620**	**3940**	**5270**	**3890**	**5040**
Selenium	180	50	50	0.29 U	0.29 U	**1.4**	0.29 U	0.29 U
Silver	180	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	**9.3**
Sodium	NA	NA	NA	**12500 J**	**70800 J**	**81000**	**33400**	**10200 J**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	**0.34**
Vanadium	180	NA	NA	0.4 U	0.4 UJ	0.4 U	0.4 U	**21.2 J**
Zinc	11000	NA	NA	**3.6 J**	**15.3 J**	**5.2 J**	**8.9 J**	**59.1 J**
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA	0.72 U	**2.5**	0.72 U	**0.76 J**	**3.9**
Arsenic	0.045	10	NA	**2.8**	**0.85**	**0.99**	**0.68**	**1.7**
Barium	7300	2000	2000	**11.9**	**17.1**	**7.4**	**18**	**6.8**
Beryllium	73	4	4	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Calcium	NA	NA	NA	**11500**	**9470**	**20800**	**17900**	**11900**
Chromium	110	100	100	**1.2**	**1**	**1.5**	**3.5**	0.79 U
Cobalt	11	NA	NA	**0.33**	**4**	**1.1**	**0.84**	**0.36**
Copper	1500	1300	NA	0.16 UJ	1.4 U	**0.94 J**	**1.1 J**	0.46 U
Iron	26000	NA	NA	**8580**	**3290**	**1220**	**912**	**3780**
Lead	NA	15	15	0.078 UJ	**0.18**	**0.1 J**	**0.08 J**	**0.24**
Magnesium	NA	NA	NA	**3060**	**3770**	**7290**	**4480**	**2110**
Manganese	880	NA	NA	**663**	**257 J**	**363**	**517**	**564 J**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
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Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-26D MW16-26D-NWG-100704 NORMAL 10/7/2004	08 MW16-27D MW16-27D-NWG-101204 NORMAL 10/12/2004	08 MW16-28D MW16-28D-NWG-101104 NORMAL 10/11/2004	08 MW16-29D MW16-29D-NWG-100704 NORMAL 10/7/2004	08 MW16-30D MW16-30D-NWG-101204 NORMAL 10/12/2004
Dissolved Metals (ug/L) (Continued)								
Mercury	11	2	2	0.021 U	0.021 U	0.11 U	0.021 U	0.021 U
Nickel	730	NA	100	**0.3**	**4 J**	**1.7**	**0.92**	**0.63 J**
Potassium	NA	NA	NA	**1560**	**3620**	**5450 J**	**3770**	**1790**
Selenium	180	50	50	0.3 U	0.3 U	**1.8**	0.3 U	0.3 U
Sodium	NA	NA	NA	**10400 J**	**64800**	**85100**	**32300**	**10400**
Vanadium	180	NA	NA	**0.26**	**0.2**	**0.33**	**0.98**	**0.17**
Zinc	11000	NA	NA	**1.2 J**	**23.5 J**	**3.8 J**	**1.7 J**	**18.4 J**
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**18.5**	**40.1**	**32**	**85**	**36**
Ammonia	NA	NA	NA	**0.1**	**0.1**	0.1 U	**1.22**	**0.18**
Chloride	NA	NA	NA	**41.7**	**126**	**86.2**	**34.9**	**15.3**
Dissolved Inorganic Carbon	NA	NA	NA	**1**	**4**	**5**	**7**	**2**
Dissolved Organic Carbon	NA	NA	NA	**3**	**2**	**2**	**3**	**3**
Nitrate	58000	10	NA	0.1 U	0.1 U	0.1 U	**0.394**	0.1 U
Salinity (ppth)	NA	NA	NA	**0.099**	**0.248**	**0.209**	**0.167**	**0.086**
Sulfate	NA	NA	NA	**18.8**	**13.3**	**25.7**	**13.2**	**19**
pH	NA	NA	NA	**6.14**	**6.36**	**6.31**	**6.62**	**5.75**
Conductivity (ms/cm)	NA	NA	NA	**0.205**	**0.396**	**0.35**	**0.296**	**0.163**
DO (mg/L)	NA	NA	NA	**0.01**	**0.96**	**1.01**	**0.68**	**4.32**
Turbidity (NTUs)	NA	NA	NA	**4.7**	**2.89**	**3.48**	**4**	**546**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
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Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-31D MW16-31D-NWG-101204 NORMAL 10/12/2004	08 MW16-32D MW16-32D-NWG-110104 NORMAL 11/1/2004	08 MW16-33D MW16-33D-NWG-100404 NORMAL 10/4/2004	08 MW16-34D MW16-34D-NWG-092904 NORMAL 9/29/2004	08 MW16-35D MW16-35D-NWG-092904 NORMAL 9/29/2004
Volatile Organics (ug/L)								
1,1-Dichloroethane	2.4	NA	NA	1 U	10 U	1 U	1 U	1 U
1,1-Dichloroethene	340	7	7					
Acetone	22000	NA	NA	5 U	26 U	5 UR	5 UR	5 U
Bromodichloromethane	1.1	80	NA	1 U	10 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	**0.0267**	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	1 U	10 U	1 U	1 U	1 U
Chlorodibromomethane	0.8	80	NA	1 U	10 U	1 U	1 U	1 U
Chloroform	0.19	80	NA					
Chloromethane	1.8	NA	NA	1 U	10 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	1 U	10 U	1 U	1 U	1 U
Ethane	NA	NA	NA	6.2 U	**1.3 J**	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	3.3 U	1.7 U	**1.6 J**	3.3 U	3.3 U
Tetrachloroethene	0.11	5	5	1 U	10 U	1 U	**7.91**	1 U
Toluene	2300	1000	1000	1 U	10 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	**0.143 J**	10 U	1 U	1 U	1 U
Total Chlorinated VOCs[1]	NA	NA	NA	**150**	**291**	**0.399**	**9.52**	**0.665**
trans-1,2-Dichloroethene	110	100	100	**0.143 J**	10 U	1 U	1 U	1 U
Trichloroethene	1.7	5	5	**150**	**290**	**0.399 J**	**1.61**	**0.633 J**
Vinyl Chloride	0.016	2	2					
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	**0.0295 J**	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	**0.197**	**0.479**	0.1 U	0.1 U	0.1 U
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	**0.0317 J**
1,4-Dichlorobenzene	0.43	75	75	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ
Benzene	0.41	5	5	0.1 U	**0.0267 J**	0.1 U	0.1 U	0.1 U
Chloroform	0.19	80	NA	0.1 U	0.148 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	**0.111**	**0.0231 J**	0.1 U	0.1 U	0.1 U
Total Metals (ug/L)								
Aluminum	37000	NA	NA	**1340**	**485**	**51**	**12.4 J**	**35200 J**
Antimony	15	6	6	0.29 U	0.68 U	0.33 U	0.28 U	0.35 U
Arsenic	0.045	10	NA	**1.1**	0.42 U	**2.4**	**0.53 J**	**0.96**
Barium	7300	2000	2000	**17.5**	**1390**	**9.3**	**8.6**	**257**
Beryllium	73	4	4	**0.12 J**	0.11 U	0.11 UJ	0.11 U	**3.1 J**
Cadmium	18	5	5	0.06 U	**0.27 J**	0.06 U	0.06 U	**1.4 J**
Calcium	NA	NA	NA	**6530**	**311000**	**8480**	**5840**	**32300 J**
Chromium	110	100	100	**3.8 J**	**6.2 J**	1.1 U	1 U	**40.3**
Cobalt	11	NA	NA	**3.7**	**0.48**	**1.2**	**3.2**	**40.1**
Copper	1500	1300	NA	4.6 U	2.5 U	**0.93**	0.4 U	**115**
Iron	26000	NA	NA	**7120**	**895**	**6270**	**741**	**73800**
Lead	NA	15	15	**1.3**	**3.3 J**	**0.3**	**0.08 J**	**63.9**
Magnesium	NA	NA	NA	**2920**	**58.2 J**	**2020**	**1990**	**14700**
Manganese	880	NA	NA	**633 J**	**2.5**	**455**	**238**	**1290**
Nickel	730	NA	100	**3.6**	**6.8 J**	**0.86**	**2.6**	**74.7**
Potassium	NA	NA	NA	**2210**	**6540 J**	**1660**	**1110**	**5870**
Selenium	180	50	50	0.29 U	**0.36 J**	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	**0.23**	0.05 U	0.05 U	0.05 U	**1.4**
Sodium	NA	NA	NA	**12700 J**	**19800 J**	**8910**	**9420 J**	**7210**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	**0.55**
Vanadium	180	NA	NA	**2.8 J**	**1.1 J**	0.4 U	0.4 U	**55.9**
Zinc	11000	NA	NA	**13.9 J**	**14.3**	**6.2**	**8.1**	**242 J**
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA	**2**	**446**	**1.8**	**0.72 J**	**5.3**
Arsenic	0.045	10	NA	**1**	**0.12 J**	**2.6**	**0.42**	**0.88 J**
Barium	7300	2000	2000	**9.6**	**1270**	**9.6**	**8.6**	**8.6**
Beryllium	73	4	4	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Calcium	NA	NA	NA	**6740**	**298000**	**8580**	**5730**	**4000 J**
Chromium	110	100	100	0.8 U	**5.5 J**	**0.89**	**0.65**	0.78 U
Cobalt	11	NA	NA	**1.3**	**0.37 J**	**1.2**	**3.1**	**1**
Copper	1500	1300	NA	0.79 U	1.4 U	**0.26 J**	**0.17 J**	0.16 U
Iron	26000	NA	NA	**4300**	**823**	**6240**	**724**	**3950**
Lead	NA	15	15	**0.21**	**1.4 J**	**0.13 J**	**0.08 J**	**0.15 J**
Magnesium	NA	NA	NA	**2400**	50 U	**2380**	**1820**	**1880 J**
Manganese	880	NA	NA	**604 J**	0.5 U	**483 J**	**230**	**202**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-31D MW16-31D-NWG-101204 NORMAL 10/12/2004	08 MW16-32D MW16-32D-NWG-110104 NORMAL 11/1/2004	08 MW16-33D MW16-33D-NWG-100404 NORMAL 10/4/2004	08 MW16-34D MW16-34D-NWG-092904 NORMAL 9/29/2004	08 MW16-35D MW16-35D-NWG-092904 NORMAL 9/29/2004
Dissolved Metals (ug/L) (Continued)								
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.027 U	0.037 U
Nickel	730	NA	100	**0.83 J**	**6 J**	**0.78**	**2.7**	**1.3**
Potassium	NA	NA	NA	**1720**	**5420 J**	**1570**	**1100**	**1660**
Selenium	180	50	50	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Sodium	NA	NA	NA	**11700**	**14500 J**	**9480**	**8010**	**9410**
Vanadium	180	NA	NA	**0.15**	**1.4 J**	**0.23**	**0.24**	0.21 U
Zinc	11000	NA	NA	**10.5 J**	**9.4**	**5.6**	**3 J**	**5.1 J**
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**18.5**	**812**	**27**	**17**	**147**
Ammonia	NA	NA	NA	**0.14**	**0.17**	0.1 U	0.1 U	0.2 U
Chloride	NA	NA	NA	**22**	**18.2**	**21.2**	**10.7**	**7.38**
Dissolved Inorganic Carbon	NA	NA	NA	**3**	**2**	**1**	**2**	**9**
Dissolved Organic Carbon	NA	NA	NA	**2**	**16**	**1**	**2**	**6**
Nitrate	58000	10	NA	**0.133**	0.1 U	**0.402**	**0.421**	0.1 U
Salinity (ppth)	NA	NA	NA	**0.076**	**2.1**	**0.077**	**0.055**	**0.048**
Sulfate	NA	NA	NA	**16.4**	**10.9**	**16.9**	**15.6**	**15**
pH	NA	NA	NA	**6.21**	**12.38**	**6.45**	**6.27**	**6.44**
Conductivity (ms/cm)	NA	NA	NA	**0.149**	**3.022**	**0.162**	**0.098**	**0.082**
DO (mg/L)	NA	NA	NA	**0.91**	**0.6**	**0.24**	**0.47**	**3.26**
Turbidity (NTUs)	NA	NA	NA	**53.8**		**4**	**0.98**	**>1100**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-36D MW16-36D-NWG-100504 NORMAL 10/5/2004	08 MW16-37D MW16-37D-NWG-100504 NORMAL 10/5/2004	08 MW16-39D MW16-39D-NWG-100604 NORMAL 10/6/2004	08 MW16-40D MW16-40D-NWG-101204 NORMAL 10/12/2004	08 MW16-41D MW16-41D-NWG-093004 NORMAL 9/30/2004	08 MW16-42D MW16-42D-NWG-093004 ORIG 9/30/2004	08 MW16-42D MW16-42D-NWG-093004-AVG AVG 9/30/2004
Volatile Organics (ug/L)										
1,1-Dichloroethane	2.4	NA	NA	1 U	1 U	1 U	1 U	20 U	20 U	20 U
1,1-Dichloroethene	340	7	7							
Acetone	22000	NA	NA	5 UR	5 U	5 U	5 U	100 UR	100 UR	100 UR
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	20 U	20 U	20 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	1 U	**0.188 J**	1 U	1 U	20 U	20 U	20 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	20 U	20 U	20 U
Chloroform	0.19	80	NA							
Chloromethane	1.8	NA	NA	1 U	1 U	1 U	1 U	20 U	20 U	20 U
cis-1,2-Dichloroethene	370	70	70	1 U	1 U	1 U	**4.84**	**4.4 J**	**4.92 J**	**4.82 J**
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	**1.1 J**	3.3 U	**1.6 J**	3.3 U	**1.6 J**	3.3 U	3.3 U
Tetrachloroethene	0.11	5	5	1 U	**1.58**	1 U	**0.426 J**	20 U	20 U	20 U
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	20 U	20 U	20 U
Total 1,2-Dichloroethene	330	NA	70	1 U	1 U	1 U	**5.17**	**4.4 J**	**4.92 J**	**4.82 J**
Total Chlorinated VOCs[1]	NA	NA	NA	0 U	**14.6**	**1.5**	**776**	**615**	**735**	**730**
trans-1,2-Dichloroethene	110	100	100	1 U	1 U	1 U	**0.329 J**	20 U	20 U	20 U
Trichloroethene	1.7	5	5	1 U	**13**	**1.44**	**770**	**610**	**730**	**725**
Vinyl Chloride	0.016	2	2							
Low-Level Volatile Organics (ug/L)										
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U	0.1 U	**0.441**	**0.429**	**0.381**	**0.374**
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	0.43	75	75	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
Benzene	0.41	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	**0.0557 J**	**0.189**	**0.106**	**0.134**	**0.135**
Total Metals (ug/L)										
Aluminum	37000	NA	NA	**6.4 J**	3.3 U	**114000**	**1130**	**9.8**	**1300 J**	**1320 J**
Antimony	15	6	6	0.19 U	0.26 U	0.42 U	0.35 U	0.32 U	0.24 U	0.245 U
Arsenic	0.045	10	NA	0.42 U	**0.53 J**	**23.9**	**2.7**	**0.56 J**	**0.57 J**	**0.64 J**
Barium	7300	2000	2000	**10**	**6**	**500**	**16.9**	**17.7**	**19.5**	**19.6**
Beryllium	73	4	4	0.11 UJ	0.11 U	**4.1**	**0.14 J**	0.11 UJ	**0.18 J**	**0.185 J**
Cadmium	18	5	5	0.06 U	0.06 U	**3.5 J**	0.1 U	0.06 U	0.07 U	0.07 U
Calcium	NA	NA	NA	**3720**	**4890**	**67400**	**11700**	**12600**	**12100**	**12150**
Chromium	110	100	100	1.2 U	**0.89**	**172**	**4.4 J**	0.72 U	**4.5**	**4.5**
Cobalt	11	NA	NA	**0.59**	**1.4**	**154**	**4.6**	**5.7**	**4.6**	**4.55**
Copper	1500	1300	NA	0.4 U	0.4 U	**424**	6.9 U	**1.9**	**10.9**	**10.85**
Iron	26000	NA	NA	**1660**	**2140**	**334000**	**5750**	**10200**	**4510**	**4540**
Lead	NA	15	15	**0.05 J**	0.05 U	**135**	**3.2**	**0.07 J**	**2.6**	**2.65**
Magnesium	NA	NA	NA	**1130**	**1720**	**73900**	**4530**	**4700**	**4950**	**4930**
Manganese	880	NA	NA	**95.1**	**184**	**7190**	**530 J**	**1040**	**375**	**373.5**
Nickel	730	NA	100	**0.59 J**	**1.5**	**278**	**14**	**3.9**	**11**	**10.9**
Potassium	NA	NA	NA	**1310**	**1160**	**29600**	**2540**	**2170**	**2240**	**2260**
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	0.05 U	0.05 U	**0.77**	**0.14**	0.05 U	**0.51**	**0.52**
Sodium	NA	NA	NA	**7050**	**8660 J**	**45400 J**	**19700 J**	**27500**	**18200**	**18350**
Thallium	2.4	2	2	0.07 U	0.07 U	**1.6**	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	**0.71 J**	0.4 U	**222**	**3.1 J**	0.4 U	**2.2**	**2.25**
Zinc	11000	NA	NA	**11.5**	**4.9**	**901**	**13.9 J**	**12.9**	**16.2**	**14.65**
Dissolved Metals (ug/L)										
Aluminum	37000	NA	NA	**1.5**	**1.7**	**3.4**	**5.5**	**0.77 J**	**1.7**	**1.5 J**
Arsenic	0.045	10	NA	**0.49**	**0.65**	**2.8**	**0.38**	**0.81**	**0.27**	**0.285**
Barium	7300	2000	2000	**10.8**	**5.9**	**25.5**	**11.2**	**17.2**	**12.6**	**12.45**
Beryllium	73	4	4	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Calcium	NA	NA	NA	**3810**	**4960**	**8610**	**12200**	**12700**	**11700**	**11600**
Chromium	110	100	100	**0.51**	**0.84**	**0.9**	0.61 U	**0.85**	**0.62**	**0.615**
Cobalt	11	NA	NA	**0.61**	**1.6**	**0.28**	**2.9**	**5.5**	**2.8**	**2.85**
Copper	1500	1300	NA	0.16 U	0.16 U	**0.27 J**	0.31 U	**0.18 J**	**1.1**	**0.67 J**
Iron	26000	NA	NA	**1660**	**2210**	**3630**	**1570**	**10100**	**1480**	**1495**
Lead	NA	15	15	**0.2**	0.08 U	**0.15 J**	**0.22**	0.08 U	**0.18**	**0.145 J**
Magnesium	NA	NA	NA	**1180**	**1760**	**3250**	**4090**	**4960**	**3850**	**3850**
Manganese	880	NA	NA	**99.4**	**204**	**406**	**454 J**	**995 J**	**330**	**328.5**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-36D MW16-36D-NWG-100504 NORMAL 10/5/2004	08 MW16-37D MW16-37D-NWG-100504 NORMAL 10/5/2004	08 MW16-39D MW16-39D-NWG-100604 NORMAL 10/6/2004	08 MW16-40D MW16-40D-NWG-101204 NORMAL 10/12/2004	08 MW16-41D MW16-41D-NWG-093004 NORMAL 9/30/2004	08 MW16-42D MW16-42D-NWG-093004 ORIG 9/30/2004	08 MW16-42D MW16-42D-NWG-093004-AVG AVG 9/30/2004
Dissolved Metals (ug/L) (Continued)										
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.024 U
Nickel	730	NA	100	**0.78**	**1.6**	**0.46**	**11.5 J**	**3.8**	**8.3**	**8.25**
Potassium	NA	NA	NA	**1420**	**1240**	**1880**	**2220**	**2130**	**1980**	**1965**
Selenium	180	50	50	0.3 U	0.3 U	**0.65**	0.3 U	0.3 U	0.3 U	0.3 U
Sodium	NA	NA	NA	**7480**	**8490 J**	**42500 J**	**18400**	**27100**	**16900**	**16750**
Vanadium	180	NA	NA	**0.21**	**0.19**	**0.21**	**0.13 J**	**0.16**	**0.09 J**	**0.09 J**
Zinc	11000	NA	NA	**8.5**	**7.7**	**5**	**7.7 J**	**12.4**	**7.5 J**	**8.9 J**
Miscellaneous Parameters (mg/L)										
Alkalinity	NA	NA	NA	**14.5**	**15**	**35**	**11.1**	**14.3**	**11.5**	**11.5**
Ammonia	NA	NA	NA	0.1 U	**0.1**	**0.39**	**0.11**	**0.19**	0.1 U	0.1 U
Chloride	NA	NA	NA	**6.37**	**8.05**	**48**	**59.5**	**66.1**	**46**	**45.05**
Dissolved Inorganic Carbon	NA	NA	NA	**4**	**56**	**11**	**3**	1 U	1 U	**1.25**
Dissolved Organic Carbon	NA	NA	NA	**2**	**140**	**6**	**2**	**2**	**2**	**2**
Nitrate	58000	10	NA	**0.708**	0.1 U	0.1 U	**0.766**	0.1 U	**0.356**	**0.33**
Salinity (ppth)	NA	NA	NA	**0.042**	**0.052**	**0.16**	**0.128**	**0.166**	**0.12**	**0.12**
Sulfate	NA	NA	NA	**10.9**	**17.5**	**26.3**	**15.5**	**17.1**	**17.2**	**17.1**
pH	NA	NA	NA	**6.61**	**6.27**	**6.88**	**6.14**	**6.24**	**6.07**	
Conductivity (ms/cm)	NA	NA	NA	**0.082**	**0.107**	**0.234**	**0.241**	**0.297**	**0.213**	
DO (mg/L)	NA	NA	NA	**1.24**	**2.68**	**0.08**	**5.05**	**0.26**	**3**	
Turbidity (NTUs)	NA	NA	NA	**0.4**	**2.1**	**>1100**	**80**	**2.43**	**148**	

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-42D MW16-42D-NWG-093004-D DUP 9/30/2004	08 MW16-43D MW16-43D-NWG-093004 NORMAL 9/30/2004	08 MW16-44D MW16-44D-NWG-100104 NORMAL 10/1/2004	08 MW16-45D MW16-45D-NWG-092804 NORMAL 9/28/2004	08 MW16-46D MW16-46D-NWG-092804 NORMAL 9/28/2004	08 MW16-47D MW16-47D-NWG-092704 NORMAL 9/27/2004	08 MW16-48D MW16-48D-NWG-100404 NORMAL 10/4/2004
Volatile Organics (ug/L)										
1,1-Dichloroethane	2.4	NA	NA	20 U	1 U	1 U	20 U	10 U	1 U	1 U
1,1-Dichloroethene	340	7	7							
Acetone	22000	NA	NA	100 UR	5 UR	5 UR	100 UR	50 UR	5 UR	5 UR
Bromodichloromethane	1.1	80	NA	20 U	1 U	1 U	20 U	10 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	0 U	**0.0167**	**0.0125**	**0.0163**	0 U	0 U
Carbon Disulfide	1000	NA	NA	20 U	1 U	1 U	20 U	10 U	1 U	1 U
Chlorodibromomethane	0.8	80	NA	20 U	1 U	1 U	20 U	10 U	1 U	1 U
Chloroform	0.19	80	NA							
Chloromethane	1.8	NA	NA	20 U	1 U	1 U	20 U	10 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	**4.72 J**	**6.91**	**13**	**6.94 J**	**5.36 J**	1 U	1 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	3.3 U	3.3 U	**1.6 J**	3.3 U	3.6 U	3.3 U	**1.9 J**
Tetrachloroethene	0.11	5	5	20 U	1 U	1 U	20 U	10 U	1 U	1 U
Toluene	2300	1000	1000	20 U	1 U	1 U	20 U	10 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	**4.72 J**	**7.53**	**13.6**	**6.94 J**	**5.36 J**	1 U	1 U
Total Chlorinated VOCs[1]	NA	NA	NA	**725**	**818**	**1315**	**687**	**386**	0 U	0 U
trans-1,2-Dichloroethene	110	100	100	20 U	**0.618 J**	**0.618 J**	20 U	10 U	1 U	1 U
Trichloroethene	1.7	5	5	**720**	**810**	**1300**	**680**	**380**	1 U	1 U
Vinyl Chloride	0.016	2	2							
Low-Level Volatile Organics (ug/L)										
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	**0.0241 J**	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	**0.367**	**0.83**	**0.764**	**0.196**	**0.576**	0.1 U	0.1 U
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	**0.0296 J**	0.1 U	0.1 U
1,4-Dichlorobenzene	0.43	75	75	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ
Benzene	0.41	5	5	0.1 U	0.1 U	**0.0167 J**	**0.0125 J**	**0.0163 J**	0.1 U	0.1 U
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	**0.136**	**0.139**	**0.322**	**0.0212 J**	**0.113**	0.1 U	0.1 U
Total Metals (ug/L)										
Aluminum	37000	NA	NA	**1340 J**	**105 J**	**65.8**	**1650**	**105**	**214 J**	**29.2**
Antimony	15	6	6	0.25 U	0.25 U	0.29 U	0.35 U	0.24 U	0.26 U	0.18 U
Arsenic	0.045	10	NA	**0.71 J**	**0.84**	0.42 U	**1.4**	**0.81 J**	**1.5**	0.42 U
Barium	7300	2000	2000	**19.7**	**10.8**	**9.2**	**17.6**	**10.4**	**13.5**	**5.7**
Beryllium	73	4	4	**0.19 J**	0.11 U	0.11 UJ	**0.19 J**	0.11 U	0.11 U	0.11 UJ
Cadmium	18	5	5	0.07 U	0.06 U	0.06 U	0.06 U	0.06 U	**0.45**	0.06 U
Calcium	NA	NA	NA	**12200**	**12500**	**11300**	**12800 J**	**9200**	**10300**	**5130**
Chromium	110	100	100	**4.5**	1.2 U	1.2 U	2.8 U	0.71 U	0.69 U	1.1 U
Cobalt	11	NA	NA	**4.5**	**1.9**	**3**	**2.5**	**1.8**	**1.8**	**0.33**
Copper	1500	1300	NA	**10.8**	**2.1**	**0.89**	**5.4**	**1.1**	**1.8**	**1.9**
Iron	26000	NA	NA	**4570**	**6590**	**1230**	**9700**	**2660**	**7730**	**53.9 J**
Lead	NA	15	15	**2.7**	**0.14**	**0.2**	**1.5**	**0.31**	**0.53**	**0.48**
Magnesium	NA	NA	NA	**4910**	**4660 J**	**3610**	**5000**	**3520**	**4290**	**4670**
Manganese	880	NA	NA	**372**	**457**	**648**	**560**	**437**	**519**	**4.9**
Nickel	730	NA	100	**10.8**	**2.2**	**2.4**	**4.2**	**3.3**	**1.6**	**0.8**
Potassium	NA	NA	NA	**2280**	**2040**	**2220**	**2950**	**1940**	**1910 J**	**1700**
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	**0.53**	**0.52**	0.05 U	**1.3**	0.05 U	**0.08 J**	0.05 U
Sodium	NA	NA	NA	**18500**	**25000**	**22700**	**29500**	**45600**	**23800**	**27000**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	**2.3**	0.4 U	0.4 U	**2.4**	0.4 U	0.4 U	0.43 U
Zinc	11000	NA	NA	**13.1**	**6**	**4.5**	**22.3 J**	**11.1 J**	**7.4 J**	**24.1**
Dissolved Metals (ug/L)										
Aluminum	37000	NA	NA	**1.3 J**	**1 J**	0.72 U	**0.96 J**	**0.75 J**	**1.4 J**	**3.1**
Arsenic	0.045	10	NA	**0.3**	**0.77**	**0.49**	**0.92 J**	**0.83 J**	**1.5 J**	**0.23**
Barium	7300	2000	2000	**12.3**	**10.5**	**8.6**	**11.8**	**9.4**	**12.3**	**5.7**
Beryllium	73	4	4	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Calcium	NA	NA	NA	**11500**	**12600**	**11200**	**12200 J**	**8650 J**	**10300**	**5300**
Chromium	110	100	100	**0.61**	**0.66**	**1**	1.1 U	**1.6**	1.1 U	**2**
Cobalt	11	NA	NA	**2.9**	**1.7**	**2.8**	**0.89**	**1.8**	**1.7**	**0.18**
Copper	1500	1300	NA	**0.24 J**	**0.35**	**0.24 J**	**0.32**	**0.37**	**0.2 J**	**0.5**
Iron	26000	NA	NA	**1510**	**5970**	**984**	**4010**	**2220**	**6770**	50 U
Lead	NA	15	15	**0.11 J**	**0.43**	**0.44**	0.08 U	**0.23**	0.08 U	0.08 U
Magnesium	NA	NA	NA	**3850**	**4170**	**3870**	**4000**	**3130**	**4040**	**4850**
Manganese	880	NA	NA	**327**	**449**	**605 J**	**374**	**417**	**535**	**4.9**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-42D MW16-42D-NWG-093004-D DUP 9/30/2004	08 MW16-43D MW16-43D-NWG-093004 NORMAL 9/30/2004	08 MW16-44D MW16-44D-NWG-100104 NORMAL 10/1/2004	08 MW16-45D MW16-45D-NWG-092804 NORMAL 9/28/2004	08 MW16-46D MW16-46D-NWG-092804 NORMAL 9/28/2004	08 MW16-47D MW16-47D-NWG-092704 NORMAL 9/27/2004	08 MW16-48D MW16-48D-NWG-100404 NORMAL 10/4/2004
Dissolved Metals (ug/L) (Continued)										
Mercury	11	2	2	0.027 U	0.021 U	0.021 U	0.087 U	0.056 U	0.021 U	0.021 U
Nickel	730	NA	100	**8.2**	**2.3**	**2.6**	**0.93**	**3.6**	**1.1**	**0.74**
Potassium	NA	NA	NA	**1950**	**2000**	**2200**	**12600**	**1840**	**1890**	**1850**
Selenium	180	50	50	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Sodium	NA	NA	NA	**16600**	**23700**	**22400**	**33900**	**49000 J**	**25500 J**	**25900**
Vanadium	180	NA	NA	**0.09 J**	**0.1 J**	**0.22**	0.25 U	0.39 U	0.26 U	**0.48**
Zinc	11000	NA	NA	**10.3 J**	**5.5 J**	**3**	**3 J**	**8.9 J**	**5.1 J**	**26.3**
Miscellaneous Parameters (mg/L)										
Alkalinity	NA	NA	NA	**11.5**	**22.2**	**15.5**	**26**	**28.3**	**25**	**34**
Ammonia	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.11 U	0.18 U	0.12 U	0.1 U
Chloride	NA	NA	NA	**44.1**	**59.2**	**54.1**	**58.6**	**66.8**	**46.4**	**25.8**
Dissolved Inorganic Carbon	NA	NA	NA	**2**	**3**	1 U	**6**	**7**	**7**	**5**
Dissolved Organic Carbon	NA	NA	NA	**2**	**2**	**3**	**1**	**1**	**5 J**	**2**
Nitrate	58000	10	NA	**0.304**	0.1 U	**0.301**	**0.139**	**0.172**	0.1 U	**5.26**
Salinity (ppth)	NA	NA	NA	**0.12**	**0.151**	**0.123**	**0.157**	**0.175**	**0.123**	**0.107**
Sulfate	NA	NA	NA	**17**	**18.5**	**15.9**	**17.6**	**17.3**	**20.5**	**18.8**
pH	NA	NA	NA		**6.6**	**6.55**	**6.55**	**6.24**	**6.47**	**5.9**
Conductivity (ms/cm)	NA	NA	NA		**0.224**	**0.222**	**0.315**	**0.267**	**0.2**	**0.191**
DO (mg/L)	NA	NA	NA		**0.71**	**1.45**	**3.51**	**0.78**	**0.9**	**0.84**
Turbidity (NTUs)	NA	NA	NA		**19.7**	**7.45**	**18**	**5.61**	**18.1**	**2.6**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-49D MW16-49D-NWG-101104 NORMAL 10/11/2004	08 MW16-50D MW16-50D-NWG-101304 NORMAL 10/13/2004	08 MW16-51D MW16-51D-NWG-102904 NORMAL 10/29/2004	08 MW16-52D MW16-52D-NWG-102704 NORMAL 10/27/2004	08 MW16-54D MW16-54D-NWG-101304 NORMAL 10/13/2004	08 MW16-55D MW16-55D-NWG-092904 NORMAL 9/29/2004	08 MW16-56D MW16-56D-NWG-101404 NORMAL 10/14/2004
Volatile Organics (ug/L)										
1,1-Dichloroethane	2.4	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	340	7	7							
Acetone	22000	NA	NA	5 U	5 U	5 U	5 U	5 U	5 UR	12 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	**0.0135**
Carbon Disulfide	1000	NA	NA	1 UJ	**0.49 J**	**0.579 J**	1 U	1 U	1 U	**0.258 J**
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	0.19	80	NA							
Chloromethane	1.8	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	1 U	1 U	**0.336 J**	1 U	1 U	1 U	**0.33 J**
Ethane	NA	NA	NA	6.2 U	6.2 U	**1.3 J**	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	3.3 U	**54 J**	**51**	**61**	3.3 U	3.3 U	3.3 U
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	1 U	1 U	**0.336 J**	1 U	1 U	1 U	**0.33 J**
Total Chlorinated VOCs[1]	NA	NA	NA	**0.498**	**0.031**	**0.884**	**0.614**	0 U	0 U	**50.6**
trans-1,2-Dichloroethene	110	100	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1.7	5	5	1 U	1 U	**0.504 J**	**0.55 J**	1 U	1 U	**50**
Vinyl Chloride	0.016	2	2							
Low-Level Volatile Organics (ug/L)										
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.111**
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U	**0.0237 J**	0.1 U	0.1 U	0.1 U	**0.0809 J**
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.0746 J**
1,4-Dichlorobenzene	0.43	75	75	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U
Benzene	0.41	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.0135 J**
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	**0.498**	**0.031 J**	**0.0198 J**	**0.0641 J**	0.1 U	0.1 U	**0.0301 J**
Total Metals (ug/L)										
Aluminum	37000	NA	NA	**91.4**	**4.7 J**	3.3 U	**81.6**	**41100**	**2480 J**	**417**
Antimony	15	6	6	1.1 U	**3.2 J**	0.71 U	0.57 U	0.44 U	0.28 U	0.34 U
Arsenic	0.045	10	NA	**5.5**	**16.3**	**3.4**	**5.9**	**15.8**	**5.9**	**1.5**
Barium	7300	2000	2000	**38.4**	**41.3**	**43.3**	**29.8**	**319**	**25.7**	**7.9**
Beryllium	73	4	4	**0.66 J**	0.11 R	0.11 UJ	0.11 UJ	**2.4**	**0.26**	0.11 U
Cadmium	18	5	5	0.06 U	0.061 U	0.061 UJ	0.061 UJ	**1.2 J**	**0.88**	0.061 U
Calcium	NA	NA	NA	**409000**	**216000**	**62300 J**	**50300 J**	**35300**	**16700**	**4820**
Chromium	110	100	100	1.6 U	1.4 U	0.72 U	0.87 U	**67.6**	**4.5**	2 U
Cobalt	11	NA	NA	**0.92**	**1 J**	**1.6 J**	**4 J**	**57.3**	**2.3**	**1**
Copper	1500	1300	NA	**39.2 J**	160 R	**55.2 J**	**24.5 J**	**137**	**8.5**	2.9 U
Iron	26000	NA	NA	**15500**	**2220**	**2940**	**7100**	**114000**	**5280**	**1090**
Lead	NA	15	15	**0.4 J**	0.048 U	**0.05 J**	**0.06 J**	**51.1**	**4.2**	**0.61**
Magnesium	NA	NA	NA	**78700 J**	**435000**	**106000**	**152000**	**23600**	**4110**	**1260**
Manganese	880	NA	NA	**3070 J**	**1540 J**	**344**	**325**	**3170 J**	**398**	**406 J**
Nickel	730	NA	100	**6.4 J**	**7.6 J**	**3.1 J**	**7.1 J**	**99.7**	**4.6**	**1.1**
Potassium	NA	NA	NA	**31000**	**178000**	**79400**	**73600**	**12200**	**3010**	**4970**
Selenium	180	50	50	**24.1**	**60.6**	**14 J**	**16.8 J**	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	0.05 U	0.052 U	0.05 U	0.05 U	**0.36**	0.05 U	**0.62**
Sodium	NA	NA	NA	**1610000 J**	**5080000**	**1360000 J**	**1590000 J**	**12200**	**11800 J**	**33700**
Thallium	2.4	2	2	**0.11 J**	0.066 U	0.07 U	0.07 U	**0.77**	**0.09 J**	0.066 U
Vanadium	180	NA	NA	0.4 UJ	0.4 U	0.4 U	0.4 U	**86.9**	**5.4**	**0.78 J**
Zinc	11000	NA	NA	**117 J**	**10.7 J**	**10.6 J**	**17.8 J**	**305**	**30.1**	**5.8**
Dissolved Metals (ug/L)										
Aluminum	37000	NA	NA	**0.83 J**	**2.2 J**	**0.84 J**	**1.1 J**	**2.9**	**2.1**	**8.7**
Arsenic	0.045	10	NA	**6.7**	**16.9**	**3.7 J**	**6.1 J**	**1.7**	**7.5**	**1.4**
Barium	7300	2000	2000	**38.6**	**40.4 J**	**41.3**	**28.8**	**40.2**	**6.7**	**5.1**
Beryllium	73	4	4	**0.21 J**	0.12 U	0.12 UJ	0.12 UJ	0.12 UJ	0.12 U	0.12 UJ
Calcium	NA	NA	NA	**363000**	**176000**	**67600**	**53800**	**7460**	**16000**	**5000**
Chromium	110	100	100	**1.2**	**7.4**	**3.2**	**4**	**2**	**1.3**	**2.5**
Cobalt	11	NA	NA	**0.74 J**	**0.7**	**1.3**	**3.5**	**1.1**	0.01 U	**0.68**
Copper	1500	1300	NA	**23.9 J**	**167 J**	24.2 U	15.1 U	0.17 U	0.16 U	0.34 U
Iron	26000	NA	NA	**4430**	**1950**	**2590 J**	**7440**	**5200**	**70.9 J**	**360**
Lead	NA	15	15	**0.17 J**	0.078 U	**0.35 J**	**0.14 J**	**0.15 J**	**0.16**	**0.32**
Magnesium	NA	NA	NA	**79000 J**	**358000**	**102000**	**147000**	**1820**	**2640**	**1030**
Manganese	880	NA	NA	**3030 J**	**1200 J**	**324 J**	**295 J**	**557 J**	**232**	**380 J**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-49D MW16-49D-NWG-101104 NORMAL 10/11/2004	08 MW16-50D MW16-50D-NWG-101304 NORMAL 10/13/2004	08 MW16-51D MW16-51D-NWG-102904 NORMAL 10/29/2004	08 MW16-52D MW16-52D-NWG-102704 NORMAL 10/27/2004	08 MW16-54D MW16-54D-NWG-101304 NORMAL 10/13/2004	08 MW16-55D MW16-55D-NWG-092904 NORMAL 9/29/2004	08 MW16-56D MW16-56D-NWG-101404 NORMAL 10/14/2004
Dissolved Metals (ug/L) (Continued)										
Mercury	11	2	2	0.021 U	0.021 U	0.068 U	0.052 U	0.021 U	0.036 U	0.021 U
Nickel	730	NA	100	**7 J**	**6 J**	**3.2 J**	**6.6 J**	**0.55**	**0.45**	**0.61**
Potassium	NA	NA	NA	**27500**	**156000**	**82200**	**72400**	**2580**	**1910**	**4920**
Selenium	180	50	50	**30**	**61**	**13.9 J**	**16.3 J**	**0.34 J**	0.3 U	0.3 U
Sodium	NA	NA	NA	**1470000 J**	**4200000**	**1290000**	**1530000**	**11100**	**10600**	**33000**
Vanadium	180	NA	NA	0.08 U	**0.81**	**0.61**	**0.84**	**0.49**	**0.3**	**0.65**
Zinc	11000	NA	NA	**5.1 J**	**18.6 J**	**7.4 J**	**12.2 J**	**1.5 J**	**2.4 J**	**28.1 J**
Miscellaneous Parameters (mg/L)										
Alkalinity	NA	NA	NA	**63**	**275**	**195**	**180**	**40.5**	**69.8**	**59.5**
Ammonia	NA	NA	NA	**0.19**	**0.32**	**0.37**	**0.45**	**0.39**	**0.17**	**0.14**
Chloride	NA	NA	NA	**2880**	**7160**	**2540**	**2970**	**10.6**	**5.54**	**9.45**
Dissolved Inorganic Carbon	NA	NA	NA	**5**	**17**	**12**	**19**	**1**	**11**	**5**
Dissolved Organic Carbon	NA	NA	NA	**3**	**2**	**6**	**3**	**3**	**2**	**2**
Nitrate	58000	10	NA	0.1 U	**1.89 J**	0.5 U	0.5 U	0.1 UJ	0.1 U	0.1 UJ
Salinity (ppth)	NA	NA	NA	**5.65**	**13.9**	**4.88**	**5.16**	**0.078**	**0.088**	**0.818**
Sulfate	NA	NA	NA	**428**	**1030**	**372**	**381**	**19.9**	**7.69**	**19.7**
pH	NA	NA	NA		**7.19**	**6.85**	**6.58**	**7.03**	**8.2**	**7.47**
Conductivity (ms/cm)	NA	NA	NA		**23.4**	**7.82**	**7.73**	**0.124**	**0.138**	**0.152**
DO (mg/L)	NA	NA	NA		**0.16**	**1.87**	**0.1**	**0.09**	**2.97**	**0.46**
Turbidity (NTUs)	NA	NA	NA		**1.03**	**7**	**4**	**>1100**	**>1100**	**16.5**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-57D MW16-57D-NWG-102604 NORMAL 10/26/2004	08 MW16-58D MW16-58D-NWG-101304 NORMAL 10/13/2004	08 MW16-59D MW16-59D-NWG-102504 NORMAL 10/25/2004	08 MW16-60D MW16-60D-NWG-102704 NORMAL 10/27/2004	08 MW16-61D MW16-61D-NWG-102504 NORMAL 10/25/2004	08 MW16-62D MW16-62D-NWG-102604 NORMAL 10/26/2004	08 MW16-63D MW16-63D-NWG-102604 NORMAL 10/26/2004
Volatile Organics (ug/L)										
1,1-Dichloroethane	2.4	NA	NA	1 U	0.196 J	0.135 J	1 U	10 U	20 U	20 U
1,1-Dichloroethene	340	7	7							
Acetone	22000	NA	NA	5 U	4.31 U	14 U	6.8 U	50 U	46 U	100 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	10 U	20 U	20 U
BTEX[1]	NA	NA	NA	0 U	0.0338	0.0619	0.0323	0.0182	0.0167	0.0133
Carbon Disulfide	1000	NA	NA	0.117 J	1 U	0.197 J	0.249 J	10 U	20 U	20 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	10 U	20 U	20 U
Chloroform	0.19	80	NA							
Chloromethane	1.8	NA	NA	1 U	1 U	1 U	1 U	10 U	20 U	20 U
cis-1,2-Dichloroethene	370	70	70	1 U	6.24	14	1.67	10 U	20 U	20 U
Ethane	NA	NA	NA	6.2 U	6.2 U	0.85 J	0.68 J	6.2 U	1.6 J	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	0.88 J	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	1 U	10 U	20 U	20 U
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	10 U	20 U	20 U
Total 1,2-Dichloroethene	330	NA	70	1 U	7.09	14.4	1.93	10 U	20 U	20 U
Total Chlorinated VOCs[1]	NA	NA	NA	0.706	1410	2320	1604	220	550	540
trans-1,2-Dichloroethene	110	100	100	1 U	0.845 J	0.392 J	0.255 J	10 U	20 U	20 U
Trichloroethene	1.7	5	5	0.678 J	1400	2300	1600	220	550	540
Vinyl Chloride	0.016	2	2							
Low-Level Volatile Organics (ug/L)										
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.897	1.9	1.28	0.267	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	0.1 U	1.85	2.82	0.527	0.0465 J	0.336	0.356
1,2-Dichloroethane	0.15	5	5	0.1 U	0.0484 J	0.119	0.0229 J	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	0.43	75	75	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzene	0.41	5	5	0.1 U	0.0338 J	0.0619 J	0.0323 J	0.0182 J	0.0167 J	0.0133 J
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.159	0.13	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.028 J	0.116	0.947	0.0236 J	0.1 U	0.0306 J	0.1 U
Total Metals (ug/L)										
Aluminum	37000	NA	NA	10000	193	14900	12.4	91800	81	443
Antimony	15	6	6	0.16 U	0.24 U	0.16 U	0.16 U	0.35 U	0.16 U	0.21 U
Arsenic	0.045	10	NA	3.2	0.49 J	1.9	0.42 U	21.2	0.42 U	1.1
Barium	7300	2000	2000	55.6	6.7	63.7	9.7	305	23.1	12
Beryllium	73	4	4	0.49	0.11 UJ	1.9 R	0.11 UJ	6.6 R	0.11 U	0.11 U
Cadmium	18	5	5	0.13 U	0.06 U	0.59	0.061 UJ	2.3 J	0.09 U	0.06 U
Calcium	NA	NA	NA	7680	5160	10500 J	8390	35300	17100	8460
Chromium	110	100	100	11.8	1.6 U	24.7	1 U	146	1.3 U	1.7 U
Cobalt	11	NA	NA	7.8	1.5	12.1	3.5	78	5.1	2.3
Copper	1500	1300	NA	16.3	0.84 U	44.8 J	0.4 UJ	272	1.2	1.6
Iron	26000	NA	NA	19800	1740	26200	1650	187000	3280	3540
Lead	NA	15	15	8.8	0.22	17	0.05 U	84	0.22	0.82
Magnesium	NA	NA	NA	5910	1750	8140	2880	39900	7120	3000
Manganese	880	NA	NA	528	161 J	595	323	2510	1020	315
Nickel	730	NA	100	14.8	1.9	24.5 J	5.8 J	175	4.1	4.1
Potassium	NA	NA	NA	3370	1340	4280	2030	16400	3140	1970
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	0.29 UJ	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	0.08 J	0.05 U	8.5	0.05 U	0.36	0.05 U	0.05 U
Sodium	NA	NA	NA	65600 J	10400 J	12900 J	13200 J	11700 J	39500 J	11000 J
Thallium	2.4	2	2	0.07 U	0.07 U	0.15 U	0.07 U	0.95	0.07 U	0.07 U
Vanadium	180	NA	NA	14.4	0.74 J	19	0.4 U	184	0.4 U	0.82
Zinc	11000	NA	NA	50.7	9.1 J	66.5	9.8 J	551	10.4	11.2
Dissolved Metals (ug/L)										
Aluminum	37000	NA	NA	1.9	3.5	5.3	1.6	3	2.8	2.6
Arsenic	0.045	10	NA	3.9	0.5	2.2	0.57 J	0.1 J	0.39	0.99
Barium	7300	2000	2000	10.5	7	8.6	10.4	3.9 J	22.6	9.4
Beryllium	73	4	4	0.12 UJ	0.12 U	0.12 U	0.12 UJ	0.12 U	0.12 U	0.12 UJ
Calcium	NA	NA	NA	5140	5760	8220	9950	5270	16100	7620
Chromium	110	100	100	1.6	0.71 U	0.81 U	0.96 U	0.71 U	1 U	1 U
Cobalt	11	NA	NA	0.11	1.5	1.5	3.4	1.2	4.4	1.7
Copper	1500	1300	NA	0.66	0.49 U	0.22 J	0.16 UJ	0.22 J	0.4	0.28 J
Iron	26000	NA	NA	1190	1060	3040	1660	50 U	2020	2110
Lead	NA	15	15	0.08 J	0.27	0.14 J	0.2	0.12 J	0.11 J	0.19
Magnesium	NA	NA	NA	1300	1780	2580	3190	2010	6990	2520
Manganese	880	NA	NA	232	158 J	367	319	110	903	282

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-57D MW16-57D-NWG-102604 NORMAL 10/26/2004	08 MW16-58D MW16-58D-NWG-101304 NORMAL 10/13/2004	08 MW16-59D MW16-59D-NWG-102504 NORMAL 10/25/2004	08 MW16-60D MW16-60D-NWG-102704 NORMAL 10/27/2004	08 MW16-61D MW16-61D-NWG-102504 NORMAL 10/25/2004	08 MW16-62D MW16-62D-NWG-102604 NORMAL 10/26/2004	08 MW16-63D MW16-63D-NWG-102604 NORMAL 10/26/2004
Dissolved Metals (ug/L) (Continued)										
Mercury	11	2	2	**0.024 J**	0.021 U	0.021 U	0.049 U	0.021 U	0.021 U	0.021 U
Nickel	730	NA	100	**0.33**	**2 J**	**1.3**	**6.2 J**	**1.7**	**3.7**	**3.2**
Potassium	NA	NA	NA	**1430**	**1390**	**1870**	**1980 J**	**2930**	**2800**	**1710**
Selenium	180	50	50	**0.44 J**	0.3 U	0.3 U	0.3 UJ	0.3 U	0.3 U	0.3 U
Sodium	NA	NA	NA	**65500**	**10400**	**13500**	**12300 J**	**10400**	**38700**	**10400**
Vanadium	180	NA	NA	0.33 U	**0.13 J**	0.15 U	0.19 U	0.3 U	0.19 U	0.21 U
Zinc	11000	NA	NA	0.81 U	**13.7 J**	**11.3**	**11.1 J**	**12.5**	**6.7**	**8.2**
Miscellaneous Parameters (mg/L)										
Alkalinity	NA	NA	NA	**64.5**	**15.5**	**22.5**	**12.5**	**17.5**	**20**	**19.5**
Ammonia	NA	NA	NA	**0.13**	0.1 U	**0.11**	0.1 U	**0.31**	0.1 U	**0.13**
Chloride	NA	NA	NA	**47.3**	**18.2**	**20.2**	**27.9**	**11.5**	**77**	**16.7**
Dissolved Inorganic Carbon	NA	NA	NA	**6**	**3**	**2**	**3**	**2**	**2**	**3**
Dissolved Organic Carbon	NA	NA	NA	**2**	**3**	**3**	**2**	**3**	**3**	**2**
Nitrate	58000	10	NA	0.1 U	0.1 U	0.1 U	0.1 U	**2.85**	**0.537**	**0.144**
Salinity (ppth)	NA	NA	NA	**0.191**	**0.062**	**0.078**	**0.083**	**0.058**	**0.185**	**0.071**
Sulfate	NA	NA	NA	**32.2**	**18**	**19.7**	**19.5**	**12.7**	**15.1**	**18.6**
pH	NA	NA	NA	**6.93**	**6.17**	**6.58**	**5.91**	**6.26**	**6.14**	**6.55**
Conductivity (ms/cm)	NA	NA	NA	**0.323**	**0.083**	**0.172**	**0.175**	**0.12**	**0.281**	**0.127**
DO (mg/L)	NA	NA	NA	**0.23**	**0.41**	**0.17**	**0.65**	**1.87**	**0.72**	**0.7**
Turbidity (NTUs)	NA	NA	NA	**231**	**25**	**650**	**4.3**	**>1100**	**34**	**19**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-64D MW16-64D-NWG-102704 NORMAL 10/27/2004	08 MW16-65D MW16-65D-NWG-102804 NORMAL 10/28/2004	09 MW16-66D MW16-66D-NWG-111604 NORMAL 11/16/2004	09 MW16-67D MW16-67D-NWG-111604 NORMAL 11/16/2004	09 MW16-68D MW16-68D-NWG-111604 ORIG 11/16/2004	09 MW16-68D MW16-68D-NWG-111604-AVG AVG 11/16/2004	09 MW16-68D MW16-68D-NWG-111604-D DUP 11/16/2004
Volatile Organics (ug/L)										
1,1-Dichloroethane	2.4	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	340	7	7			1 U	**0.487 J**	**0.335 J**	**0.3355 J**	**0.336 J**
Acetone	22000	NA	NA	5 U	5 U	5 U	5 U	7.29 U	7.97 U	8.65 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	**0.252**	0 U	0 U	0 U	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	**0.264 J**	**0.136 J**	1 U	1 U	**0.309 J**	**0.3215 J**	**0.334 J**
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	0.19	80	NA			1 U	1 U	1 U	1 U	1 U
Chloromethane	1.8	NA	NA	1 U	1 U	1 U	**0.212 J**	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	**1.28**	1 U	**1.33**	**2.53**	**1.74**	**1.76**	**1.78**
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	3.5 U	3.3 U	4.5 U	3.3 U	3.3 U	5.4 U	7.5 U
Tetrachloroethene	0.11	5	5	1 U	1 U					
Toluene	2300	1000	1000	**0.237 J**	1 U	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	**1.43**	1 U	**1.33 J**	**2.53**	**1.74 J**	**1.87 J**	**2**
Total Chlorinated VOCs[1]	NA	NA	NA	**382**	0 U	**19.3**	**983**	**792**	**782**	**772**
trans-1,2-Dichloroethene	110	100	100	**0.145 J**	1 U	1 U	**0.245 J**	1 U	**0.133 J**	**0.133 J**
Trichloroethene	1.7	5	5	**380**	1 U	**18**	**980**	**790**	**780**	**770**
Vinyl Chloride	0.016	2	2			1 U	1 U	1 U	1 U	1 U
Low-Level Volatile Organics (ug/L)										
1,1,2-Trichloroethane	0.24	5	5	**0.1 J**	0.1 U					
1,1-Dichloroethene	340	7	7	**0.289**	0.1 U					
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U					
1,4-Dichlorobenzene	0.43	75	75	0.1 U	0.1 U					
Benzene	0.41	5	5	**0.0151 J**	0.1 U					
Chloroform	0.19	80	NA	0.1 U	0.1 U					
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U					
Total Metals (ug/L)										
Aluminum	37000	NA	NA	**170**	**24.3**					
Antimony	15	6	6	0.16 U	0.21 U					
Arsenic	0.045	10	NA	0.88 U	**1.5**					
Barium	7300	2000	2000	**6.2**	**16.1**					
Beryllium	73	4	4	0.11 UR	0.11 UJ					
Cadmium	18	5	5	0.07 U	0.061 UJ					
Calcium	NA	NA	NA	**5670 J**	**15300 J**					
Chromium	110	100	100	0.95 U	0.95 U					
Cobalt	11	NA	NA	**3.4**	**2.7 J**					
Copper	1500	1300	NA	**1.3 J**	0.4 UJ					
Iron	26000	NA	NA	**1510**	**11600**					
Lead	NA	15	15	**0.29**	**0.1**					
Magnesium	NA	NA	NA	**2190**	**4080**					
Manganese	880	NA	NA	**295**	**911**					
Nickel	730	NA	100	**3.8 J**	**1.3 J**					
Potassium	NA	NA	NA	**1490**	**2620 J**					
Selenium	180	50	50	**0.61**	0.37 U					
Silver	180	NA	NA	0.05 U	0.05 U					
Sodium	NA	NA	NA	**11100 J**	**17000 J**					
Thallium	2.4	2	2	0.07 U	0.07 U					
Vanadium	180	NA	NA	0.4 U	0.4 U					
Zinc	11000	NA	NA	**12.6**	**8 J**					
Dissolved Metals (ug/L)										
Aluminum	37000	NA	NA	**2.6**	**1.2 J**					
Arsenic	0.045	10	NA	**0.83**	**1.7 J**					
Barium	7300	2000	2000	**5.2**	**16**					
Beryllium	73	4	4	0.12 UJ	0.12 UJ					
Calcium	NA	NA	NA	**5510**	**17000**					
Chromium	110	100	100	0.95 U	0.85 U					
Cobalt	11	NA	NA	**3.1**	**2.4**					
Copper	1500	1300	NA	**0.24 J**	0.16 UJ					
Iron	26000	NA	NA	**1040**	**12300**	**9460**	**5160**	**5320**	**5440**	**5560**
Lead	NA	15	15	**0.14 J**	**0.17**					
Magnesium	NA	NA	NA	**2050**	**4440**					
Manganese	880	NA	NA	**323**	**859**	**1130**	**654**	**498**	**507**	**516**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-64D MW16-64D-NWG-102704 NORMAL 10/27/2004	08 MW16-65D MW16-65D-NWG-102804 NORMAL 10/28/2004	09 MW16-66D MW16-66D-NWG-111604 NORMAL 11/16/2004	09 MW16-67D MW16-67D-NWG-111604 NORMAL 11/16/2004	09 MW16-68D MW16-68D-NWG-111604 ORIG 11/16/2004	09 MW16-68D MW16-68D-NWG-111604-AVG AVG 11/16/2004	09 MW16-68D MW16-68D-NWG-111604-D DUP 11/16/2004
Dissolved Metals (ug/L) (Continued)										
Mercury	11	2	2	0.021 U	0.059 U					
Nickel	730	NA	100	**3.2**	**1.4 J**					
Potassium	NA	NA	NA	**1380**	**2440**					
Selenium	180	50	50	0.3 U	0.3 UJ					
Sodium	NA	NA	NA	**11500**	**14800**					
Vanadium	180	NA	NA	0.2 U	0.16 U					
Zinc	11000	NA	NA	**4.2**	**3.5 J**					
Miscellaneous Parameters (mg/L)										
Alkalinity	NA	NA	NA	**14.5**	**14.5**	**11.3**	**25**	**26**	**25.3**	**24.6**
Ammonia	NA	NA	NA	0.1 U	0.1 U	**0.27**	**0.33**	**0.1**	**0.15**	**0.2**
Chloride	NA	NA	NA	**17.6**	**57.2**	**92.8**	**32.8**	**14**	**15**	**16**
Dissolved Inorganic Carbon	NA	NA	NA	**3**	**3**	**6**	**7**	**6**	**6.5**	**7**
Dissolved Organic Carbon	NA	NA	NA	**2**	**2**	1 U	1 U	**1**	**1.5**	**2**
Nitrate	58000	10	NA	**1.19**	0.1 U	**1.07**	0.1 U	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA	**0.061**	**0.133**					
Sulfate	NA	NA	NA	**12.4**	**18.7**	**21.5**	**19**	**18.5**	**18.45**	**18.4**
pH	NA	NA	NA	**6.19**	**6.71**	**6.21**	**6.74**	**6.53**		
Conductivity (ms/cm)	NA	NA	NA	**0.125**	**0.239**	**0.425**	**0.185**	**0.158**		
DO (mg/L)	NA	NA	NA	**6.53**	**4.93**	**0.28**	**0.02**	**0.18**		
Turbidity (NTUs)	NA	NA	NA	**6.9**	**13**	**160**	**6.61**	**17**		

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	09 MW16-69D MW16-69D-NWG-111604 NORMAL 11/16/2004	09 MW16-70D MW16-70D-NWG-111704 NORMAL 11/17/2004	09 MW16-71D MW16-71D-NWG-111704 NORMAL 11/17/2004
Volatile Organics (ug/L)						
1,1-Dichloroethane	2.4	NA	NA	1 U	25 U	1 U
1,1-Dichloroethene	340	7	7	**0.74 J**	25 U	**0.295 J**
Acetone	22000	NA	NA	17 U	130 U	9.17 U
Bromodichloromethane	1.1	80	NA	1 U	25 U	1 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	**1.11**	25 U	1 U
Chlorodibromomethane	0.8	80	NA	1 U	25 U	1 U
Chloroform	0.19	80	NA	1 U	25 U	1 U
Chloromethane	1.8	NA	NA	1 U	25 U	1 U
cis-1,2-Dichloroethene	370	70	70	**7.67**	25 U	**1.57**
Ethane	NA	NA	NA	**3.5 J**	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	6.2 U	5.6 U	3.3 U
Tetrachloroethene	0.11	5	5			
Toluene	2300	1000	1000	1 U	25 U	1 U
Total 1,2-Dichloroethene	330	NA	70	**8.2**	50 U	**1.57 J**
Total Chlorinated VOCs[1]	NA	NA	NA	**979**	**730**	**792**
trans-1,2-Dichloroethene	110	100	100	**0.164 J**	25 U	1 U
Trichloroethene	1.7	5	5	**970**	**730**	**790**
Vinyl Chloride	0.016	2	2	1 U	25 U	1 U
Low-Level Volatile Organics (ug/L)						
1,1,2-Trichloroethane	0.24	5	5			
1,1-Dichloroethene	340	7	7			
1,2-Dichloroethane	0.15	5	5			
1,4-Dichlorobenzene	0.43	75	75			
Benzene	0.41	5	5			
Chloroform	0.19	80	NA			
Vinyl Chloride	0.016	2	2			
Total Metals (ug/L)						
Aluminum	37000	NA	NA			
Antimony	15	6	6			
Arsenic	0.045	10	NA			
Barium	7300	2000	2000			
Beryllium	73	4	4			
Cadmium	18	5	5			
Calcium	NA	NA	NA			
Chromium	110	100	100			
Cobalt	11	NA	NA			
Copper	1500	1300	NA			
Iron	26000	NA	NA			
Lead	NA	15	15			
Magnesium	NA	NA	NA			
Manganese	880	NA	NA			
Nickel	730	NA	100			
Potassium	NA	NA	NA			
Selenium	180	50	50			
Silver	180	NA	NA			
Sodium	NA	NA	NA			
Thallium	2.4	2	2			
Vanadium	180	NA	NA			
Zinc	11000	NA	NA			
Dissolved Metals (ug/L)						
Aluminum	37000	NA	NA			
Arsenic	0.045	10	NA			
Barium	7300	2000	2000			
Beryllium	73	4	4			
Calcium	NA	NA	NA			
Chromium	110	100	100			
Cobalt	11	NA	NA			
Copper	1500	1300	NA			
Iron	26000	NA	NA	**3210**	**2730**	**1230**
Lead	NA	15	15			
Magnesium	NA	NA	NA			
Manganese	880	NA	NA	**1470**	**688**	**175**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation Location Sample Number Sample Code Sample Date	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**09 MW16-69D MW16-69D-NWG-111604 NORMAL 11/16/2004**	**09 MW16-70D MW16-70D-NWG-111704 NORMAL 11/17/2004**	**09 MW16-71D MW16-71D-NWG-111704 NORMAL 11/17/2004**
Dissolved Metals (ug/L) (Continued)						
Mercury	11	2	2			
Nickel	730	NA	100			
Potassium	NA	NA	NA			
Selenium	180	50	50			
Sodium	NA	NA	NA			
Vanadium	180	NA	NA			
Zinc	11000	NA	NA			
Miscellaneous Parameters (mg/L)						
Alkalinity	NA	NA	NA	**39.7**	**26.7**	**13**
Ammonia	NA	NA	NA	**0.16**	**0.18**	**0.12**
Chloride	NA	NA	NA	**16**	**16.4**	**16.6**
Dissolved Inorganic Carbon	NA	NA	NA	**7**	**7**	**5**
Dissolved Organic Carbon	NA	NA	NA	**2**	**1**	1 U
Nitrate	58000	10	NA	0.1 U	0.1 U	**0.904**
Salinity (ppth)	NA	NA	NA			
Sulfate	NA	NA	NA	**19.7**	**20.6**	**14**
pH	NA	NA	NA	**7.58**	**6.68**	**6.09**
Conductivity (ms/cm)	NA	NA	NA	**0.188**	**0.159**	**0.131**
DO (mg/L)	NA	NA	NA	**0.2**	**0.43**	**0.9**
Turbidity (NTUs)	NA	NA	NA	**151**	**7.6**	**8.66**

TABLE 4-35

SUMMARY OF CHEMICALS DETECTED
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Description:
08 - CTO 97 Supplemental Phase II Investigation
09 - CTO 107 HRC Injection Study

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.
R - Rejected value.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.
AVG - Average of the two samples collected at this location.

Acronyms:
GA = Drinking water suitability
GW = Groundwater
MCL = Maximum Contaminant Level
NA = Not applicable/not available
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
VOC = Volatile organic compound

Footnotes:
1 - The calculation of the BTEX and the total chlorinated VOCs are defined in the Section 4 text. "0 U" indicates that this chemical group was not detected in the sample analyzed.
2 - A concentration that is shaded exceeds one or more criterion presented in the table.
3 - A blank cell in the table indicates that the sample was not analyzed for the target analyte.

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**INJ16-01D**	**INJ16-05D**	**MW-Z4-02**	**MW-Z4-02**	**MW16-01D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**INJ16-01D-072507**	**INJ16-05D-071707**	**MW-Z4-02-NWG-080107**	**MW-Z4-02-NWG-121707**	**MW16-01D-NWG-073107**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070725**	**20070717**	**20070801**	**20071217**	**20070731**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**BUILDING 41**	**BUILDING 41**	**UPGRADIENT**	**UPGRADIENT**	**CREOSOTE DIP TANK**
Volatile Organic Compounds (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.5 U	0.75 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethane	2.4	NA	NA	0.5 U	0.5 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	0.5 U	0.76 U	0.1 U	0.1 U	0.1 U
1,2,4-Trichlorobenzene	19	70	70	0.62 U	0.62 U	0.62 U	1 U	0.62 U
Acetone	22000	NA	NA	3.9 UR	3.9 UR	3.9 UR	1.9 UR	3.9 UR
Carbon Disulfide	1000	NA	NA	0.69 U	0.69 U	0.69 U	1 U	0.69 U
Chloroform	0.19	80	NA	0.5 U	0.35 U	0.1 U	0.1 U	0.1 U
Chloromethane	1.8	NA	NA	0.58 U	0.58 U	0.58 U	**2.3**	0.58 U
cis-1,2-Dichloroethene	370	70	70	**2.3**	**1.3**	0.53 U	0.14 U	0.53 U
Tetrachloroethene	0.11	5	5	0.5 U	0.52 U	0.1 U	0.1 U	0.1 U
Total Chlorinated VOCs	NA	NA	NA	**622**	**1101**	0 U	**2.3**	**9.6**
trans-1,2-Dichloroethene	110	100	100	0.5 U	0.5 U	0.5 U	0.13 U	0.5 U
Trichloroethene	1.7	5	5	**620**	**1100**	0.1 U	0.1 U	**9.6**
Vinyl Chloride	0.016	2	2	0.5 U	0.51 U	0.1 U	0.1 U	0.1 U
Inorganics (ug/L)								
Aluminum	37000	NA	NA	14 U	24.6 U	14 U	**1100 J**	**157**
Antimony	15	6	6	1.2 UJ	1.2 UJ	1.2 UJ	4.4 U	1.2 UJ
Arsenic	0.045	10	NA	0.022 U	**0.712**	**3.5**	**4.1**	**0.657**
Barium	7300	2000	2000	**14 J**	**13.3**	**11.1 J**	**16.2 J**	**24.9 J**
Beryllium	73	4	4	0.15 UJ	0.15 U	0.15 UJ	0.051 U	0.15 UJ
Cadmium	18	5	5	0.22 U	0.1 UJ	0.1 UJ	0.11 U	0.1 UJ
Calcium	NA	NA	NA	**12700**	**11000**	**15000**	**12500**	**18500**
Chromium	110	100	100	0.38 UJ	**0.45 J**	0.38 UJ	**1.6**	0.38 UJ
Cobalt	11	NA	NA	5.8 U	**2.3**	0.75 U	0.84 U	**7.9 J**
Copper	1500	1300	NA	6.3 U	6.3 U	6.3 U	**3.3 J**	6.3 U
Iron	26000	NA	NA	**1390 J**	**8720**	**1790 J**	**5790 J**	**17600 J**
Lead	NA	15	15	0.46 UJ	0.46 UJ	0.46 UJ	1.4 U	0.46 UJ
Magnesium	NA	NA	NA	**4560 J**	**4020**	**2790 J**	**2750**	**7110 J**
Manganese	880	NA	NA	**603 J**	**483**	**322 J**	**406**	**1030 J**
Mercury	11	2	2	0.047 U	0.047 UJ	0.047 U	0.16 U	**0.05 J**
Nickel	730	NA	100	**8.6 J**	**3.8**	0.88 U	2.1 U	4.7 U
Potassium	NA	NA	NA	**1890**	**1930**	**5810**	**3460**	**3020**
Selenium	180	50	50	8.1 U	3.9 U	4.1 U	9.5 U	11.8 U
Silver	180	NA	NA	**1.2 J**	0.91 U	0.91 U	1.2 U	0.91 U
Sodium	NA	NA	NA	**26000**	**14800**	**20500**	**14500**	**22700**
Thallium	2.4	2	2	0.119 U	0.072 U	0.017 U	0.075 U	0.055 U
Vanadium	180	NA	NA	0.58 U	0.47 U	0.47 UJ	1.4 U	0.47 UJ
Zinc	11000	NA	NA	**7.1 J**	**16.9**	**31.7 J**	15.9 U	**17.9 J**

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**INJ16-01D**	**INJ16-05D**	**MW-Z4-02**	**MW-Z4-02**	**MW16-01D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**INJ16-01D-072507**	**INJ16-05D-071707**	**MW-Z4-02-NWG-080107**	**MW-Z4-02-NWG-121707**	**MW16-01D-NWG-073107**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070725**	**20070717**	**20070801**	**20071217**	**20070731**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**BUILDING 41**	**BUILDING 41**	**UPGRADIENT**	**UPGRADIENT**	**CREOSOTE DIP TANK**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA				37 U	
Antimony	15	6	6				4.4 U	
Arsenic	0.045	10	NA				**3.5**	
Barium	7300	2000	2000				11 U	
Beryllium	73	4	4				0.051 U	
Cadmium	18	5	5				0.11 U	
Calcium	NA	NA	NA				**11900**	
Chromium	110	100	100				0.22 U	
Cobalt	11	NA	NA				0.13 U	
Copper	1500	1300	NA				1.7 U	
Iron	26000	NA	NA				**3120**	
Magnesium	NA	NA	NA				**2350**	
Manganese	880	NA	NA				**372**	
Nickel	730	NA	100				0.73 U	
Potassium	NA	NA	NA				**3220**	
Selenium	180	50	50				5.8 U	
Silver	180	NA	NA				1.2 U	
Sodium	NA	NA	NA				**14400**	
Vanadium	180	NA	NA				0.4 U	
Zinc		NA	NA				11.5 U	
Miscellaneous Parameters								
Turbidity	NA	NA	NA	**3.34**	**4.56**			**3.64**
pH	NA	NA	NA	**6.08**	**6.57**	**7.45**	**10.5**	**6.31**
Conductivity	NA	NA	NA	**0.262**	**0.184**	**0.214**	**0.147**	**0.366**
DO	NA	NA	NA	**0.94**	**0.4**	**0.8**	**1.36**	**0.37**
Salinity %	NA	NA	NA	**0**	**0**	**0**	**0**	**0**

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-02D**	**MW16-03D**	**MW16-04D**	**MW16-05D**	**MW16-06D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-02D-NWG-052207**	**MW16-03D-NWG-082107**	**MW16-04D-NWG-052207**	**MW16-05D-NWG-052107**	**MW16-06D-NWG-082207**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070522**	**20070821**	**20070522**	**20070521**	**20070822**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**CREOSOTE DIP TANK**
Volatile Organic Compounds (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	5 UJ	0.1 U	0.8 UJ	4 UJ	0.1 U
1,1-Dichloroethane	2.4	NA	NA	5 UJ	0.1 U	0.8 UJ	4 UJ	0.1 U
1,1-Dichloroethene	340	7	7	5 UJ	0.1 U	0.8 UJ	4 UJ	0.1 U
1,2,4-Trichlorobenzene	19	70	70	6.2 U	0.62 U	1.2 U	0.62 U	0.62 U
Acetone	22000	NA	NA	39 UR	3.9 UR	7.8 UR	3.9 UR	3.9 UR
Carbon Disulfide	1000	NA	NA	6.9 U	0.69 U	1.4 U	0.69 U	0.69 U
Chloroform	0.19	80	NA	**20 J**	0.1 UJ	0.8 UJ	**15 J**	0.1 UJ
Chloromethane	1.8	NA	NA	5.8 U	0.58 U	1.2 U	0.58 U	0.58 U
cis-1,2-Dichloroethene	370	70	70	5.3 U	0.53 U	**4.4**	**4.8**	0.53 U
Tetrachloroethene	0.11	5	5	5 UJ	0.1 U	0.8 UJ	4.4 U	0.1 U
Total Chlorinated VOCs	NA	NA	NA	**1900**	0 U	**324**	**1205**	**1.7**
trans-1,2-Dichloroethene	110	100	100	5 U	0.5 U	1 U	0.5 U	0.5 U
Trichloroethene	1.7	5	5	**1900**	0.1 U	**320**	**1200**	**1.7 J**
Vinyl Chloride	0.016	2	2	5 UJ	0.1 U	0.8 UJ	4 UJ	0.1 U
Inorganics (ug/L)								
Aluminum	37000	NA	NA	**368**	**2480**	14 U	**70.7**	37 U
Antimony	15	6	6	3.9 U	5.3 U	3.1 U	3 U	14 U
Arsenic	0.045	10	NA	**1.4**	1 U	**1.1**	**0.268**	**1.2 J**
Barium	7300	2000	2000	**22.9**	**25.6**	**10.7**	**11.1**	**29**
Beryllium	73	4	4	0.15 U	**0.21**	0.15 U	0.15 U	**0.075 J**
Cadmium	18	5	5	0.1 U	0.8 U	0.1 U	0.1 U	1.7 U
Calcium	NA	NA	NA	**12100**	**12300**	**8210**	**8730**	**21900**
Chromium	110	100	100	**0.71 J**	**4.1**	0.38 U	0.38 U	0.22 U
Cobalt	11	NA	NA	**3.3**	2.9 U	0.88 U	**3**	**10.2**
Copper	1500	1300	NA	6.3 U	8.1 U	6.3 U	6.3 U	1.7 U
Iron	26000	NA	NA	**7030**	**4250**	**3150**	**1110**	**18500**
Lead	NA	15	15	0.46 U	4.2 U	0.46 U	0.46 U	1.2 U
Magnesium	NA	NA	NA	**3830**	**10400**	**2930**	**3840**	**8950**
Manganese	880	NA	NA	**633**	**157**	**347**	**231**	**1200**
Mercury	11	2	2	0.13 U	0.11 U	0.13 U	0.13 U	0.11 U
Nickel	730	NA	100	2.8 U	6.6 U	1.2 U	3.6 U	5.5 U
Potassium	NA	NA	NA	**2820**	**2500**	**1550**	**1750**	**2550**
Selenium	180	50	50	7.4 U	5.2 U	3.7 U	5.5 U	5.2 U
Silver	180	NA	NA	0.91 U	1.2 U	0.91 U	1.2 U	1.2 U
Sodium	NA	NA	NA	**13200**	**31600**	**53300**	**19500**	**31600**
Thallium	2.4	2	2	0.058 U	1 U	0.016 U	0.04 U	1 U
Vanadium	180	NA	NA	**0.64 J**	**5.2**	0.47 U	0.47 U	1.1 U
Zinc	11000	NA	NA	**32.9**	33.5 U	18 U	**27.8**	29.4 U

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-02D**	**MW16-03D**	**MW16-04D**	**MW16-05D**	**MW16-06D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-02D-NWG-052207**	**MW16-03D-NWG-082107**	**MW16-04D-NWG-052207**	**MW16-05D-NWG-052107**	**MW16-06D-NWG-082207**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070522**	**20070821**	**20070522**	**20070521**	**20070822**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**CREOSOTE DIP TANK**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA		37 U	14 U		
Antimony	15	6	6		5.3 U	2.2 U		
Arsenic	0.045	10	NA		1 U	**0.578**		
Barium	7300	2000	2000		**13.4 J**	**10.3**		
Beryllium	73	4	4		0.051 U	0.15 U		
Cadmium	18	5	5		0.42 U	0.1 U		
Calcium	NA	NA	NA		**10800**	**8310**		
Chromium	110	100	100		0.65 U	0.38 U		
Cobalt	11	NA	NA		0.72 U	1 U		
Copper	1500	1300	NA		2 U	6.3 U		
Iron	26000	NA	NA		89 U	**1840**		
Magnesium	NA	NA	NA		**8640**	**2990**		
Manganese	880	NA	NA		**89.1**	**323**		
Nickel	730	NA	100		2.9 U	1.8 U		
Potassium	NA	NA	NA		**2150**	**1630**		
Selenium	180	50	50		5.2 U	0.98 U		
Silver	180	NA	NA		**2.6**	0.91 U		
Sodium	NA	NA	NA		**31900**	**54900**		
Vanadium	180	NA	NA		0.4 U	0.47 U		
Zinc		NA	NA		23.6 U	19.1 U		
Miscellaneous Parameters								
Turbidity	NA	NA	NA	**1.4**	**31**	**30**	**0.4**	**4.36**
pH	NA	NA	NA	**6.09**	**5.81**	**6.39**	**6.07**	**6.27**
Conductivity	NA	NA	NA	**0.199**	**0.299**	**0.74**	**0.245**	**0.406**
DO	NA	NA	NA	**17.83**	**2.98**	**9.33**	**13.76**	**0.72**
Salinity %	NA	NA	NA	**0**	**0**	**0**	**0**	**0**

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-09D**	**MW16-10D**	**MW16-14D**	**MW16-17D**	**MW16-19D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-09D-NWG-051907**	**MW16-10D-NWG-071707**	**MW16-14D-NWG-071607**	**MW16-17D-NWG-061807**	**MW16-19D-NWG-061907**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070519**	**20070717**	**20070716**	**20070618**	**20070618**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**UPGRADIENT**	**UPGRADIENT**	**BUILDING 41**	**EASTERN AREA**	**EASTERN AREA**
Volatile Organic Compounds (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 UJ	0.1 U	**1.6**	0.1 U	0.75 U
1,1-Dichloroethane	2.4	NA	NA	0.1 UJ	0.1 U	0.5 U	0.1 U	0.5 U
1,1-Dichloroethene	340	7	7	0.1 UJ	0.1 U	**1.5**	0.1 U	0.76 U
1,2,4-Trichlorobenzene	19	70	70	**1.3**	0.62 UJ	0.62 U	0.62 U	0.62 U
Acetone	22000	NA	NA	3.9 UR	3.9 U	3.9 UR	3.9 U	3.9 UR
Carbon Disulfide	1000	NA	NA	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
Chloroform	0.19	80	NA	0.1 UJ	0.1 U	0.35 U	0.1 U	0.35 U
Chloromethane	1.8	NA	NA	0.58 U	0.58 U	0.58 U	0.58 U	0.58 UJ
cis-1,2-Dichloroethene	370	70	70	0.53 U	0.53 U	**1.6**	0.53 U	0.53 U
Tetrachloroethene	0.11	5	5	0.1 UJ	0.1 U	0.52 U	0.1 U	0.52 U
Total Chlorinated VOCs	NA	NA	NA	**0.12**	0 U	**2305**	0 U	**200**
trans-1,2-Dichloroethene	110	100	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	1.7	5	5	**0.12 J**	0.1 U	**2300**	0.1 U	**200**
Vinyl Chloride	0.016	2	2	0.1 UJ	0.1 U	0.51 U	0.1 U	0.51 U
Inorganics (ug/L)								
Aluminum	37000	NA	NA	**965**	145 U	79.5 U	**284**	25.3 U
Antimony	15	6	6	4.2 U	1.2 UJ	1.2 UJ	2.8 U	1.2 U
Arsenic	0.045	10	NA	**1**	**0.525**	**0.644**	**0.687 J**	0.221 U
Barium	7300	2000	2000	**15.7**	**8.9**	**10.1**	**12.4**	**9.1**
Beryllium	73	4	4	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Cadmium	18	5	5	0.1 U	0.1 UJ	0.1 UJ	0.1 U	0.12 U
Calcium	NA	NA	NA	**5240**	**4810**	**7750**	**7160**	**5550**
Chromium	110	100	100	**1.7**	**0.75 J**	**0.41 J**	**0.92**	**0.74 J**
Cobalt	11	NA	NA	**3**	**2**	**5.3**	**3**	**2.3**
Copper	1500	1300	NA	**8.8 J**	6.3 U	6.3 U	6.3 U	6.3 U
Iron	26000	NA	NA	**6320**	**3410**	**3050**	**9130**	**5020**
Lead	NA	15	15	**3.6**	0.46 UJ	0.46 UJ	1.9 U	1.9 U
Magnesium	NA	NA	NA	**2260**	**2150**	**2940**	**2890**	**2590**
Manganese	880	NA	NA	**435**	**542**	**271**	**502**	**276**
Mercury	11	2	2	0.12 U	0.047 UJ	0.047 UJ	0.047 U	0.047 U
Nickel	730	NA	100	2.8 U	**1.9**	**6.4**	**1.7**	**1.5**
Potassium	NA	NA	NA	**1510**	**1660**	**2100**	**1870**	**1460**
Selenium	180	50	50	1.7 U	0.98 UJ	6.3 U	2.3 U	2.5 U
Silver	180	NA	NA	0.91 U	0.91 U	0.91 U	1.6 U	0.91 U
Sodium	NA	NA	NA	**8630**	**9230**	**10800**	**11300**	**10900**
Thallium	2.4	2	2	0.05 U	0.036 U	0.038 U	0.021 U	0.022 U
Vanadium	180	NA	NA	**2**	0.47 U	0.47 U	0.47 U	0.47 U
Zinc	11000	NA	NA	**68.9**	**33.7**	**39.9**	24.1 U	24.2 U

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SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-09D**	**MW16-10D**	**MW16-14D**	**MW16-17D**	**MW16-19D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-09D-NWG-051907**	**MW16-10D-NWG-071707**	**MW16-14D-NWG-071607**	**MW16-17D-NWG-061807**	**MW16-19D-NWG-061907**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070519**	**20070717**	**20070716**	**20070618**	**20070618**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**UPGRADIENT**	**UPGRADIENT**	**BUILDING 41**	**EASTERN AREA**	**EASTERN AREA**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA	**22.7 J**	14 U		24.4 U	
Antimony	15	6	6	1.9 U	1.2 UJ		2 U	
Arsenic	0.045	10	NA	**0.427**	**0.243**		**0.693 J**	
Barium	7300	2000	2000	**10.2**	**8.3**		**10.2**	
Beryllium	73	4	4	0.15 U	0.15 U		0.15 U	
Cadmium	18	5	5	0.1 U	0.1 UJ		0.1 U	
Calcium	NA	NA	NA	**5040**	**4950**		**6900**	
Chromium	110	100	100	0.38 U	0.38 U		**0.52 J**	
Cobalt	11	NA	NA	**2.2**	**2.1**		**2.5**	
Copper	1500	1300	NA	6.3 U	6.3 U		6.3 U	
Iron	26000	NA	NA	**2920**	**2780**		**7830**	
Magnesium	NA	NA	NA	**1940**	**2280**		**2730**	
Manganese	880	NA	NA	**405**	**588**		**478**	
Nickel	730	NA	100	2 U	**1.5**		**1.2**	
Potassium	NA	NA	NA	**1280**	**1690**		**1740**	
Selenium	180	50	50	4.5 U	0.98 UJ		0.98 UJ	
Silver	180	NA	NA	0.91 U	0.91 U		0.91 U	
Sodium	NA	NA	NA	**9100**	**9630**		**10900**	
Vanadium	180	NA	NA	0.47 U	0.47 U		0.47 U	
Zinc		NA	NA	**57.4**	**31**		21 U	
Miscellaneous Parameters								
Turbidity	NA	NA	NA	**45**	**6.72**	**2.19**	**10.1**	**1.15**
pH	NA	NA	NA	**6.05**	**6.1**	**6.19**	**6.36**	**6.17**
Conductivity	NA	NA	NA	**0.105**	**0.102**	**0.134**	**18.2**	**4.46**
DO	NA	NA	NA	**13.8**	**2.14**	**0.45**	**1.2**	**1.28**
Salinity %	NA	NA	NA	**0**	**0**	**0**		

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SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-25D**	**MW16-26D**	**MW16-27D**	**MW16-28D**	**MW16-30D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-25D-NWG-052107**	**MW16-26D-NWG-121807**	**MW16-27D-NWG-082607**	**MW16-28D-NWG-081107**	**MW16-30D-NWG-072807**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070521**	**20071218**	**20070826**	**20070811**	**20070728**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**EASTERN AREA**	**UPGRADIENT**	**EASTERN AREA**	**EASTERN AREA**	**BUILDING 41**
Volatile Organic Compounds (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	2 UJ		0.75 U	0.4 U	0.1 U
1,1-Dichloroethane	2.4	NA	NA	2 UJ	0.1 U	0.5 U	0.4 U	0.1 U
1,1-Dichloroethene	340	7	7	2 UJ		0.76 U	0.4 U	0.1 U
1,2,4-Trichlorobenzene	19	70	70	3.1 U	1 U	0.62 U	0.62 U	0.62 U
Acetone	22000	NA	NA	20 UR	1.9 UR	3.9 UR	3.9 UR	3.9 UR
Carbon Disulfide	1000	NA	NA	3.5 U	1 U	0.69 U	0.69 U	0.69 U
Chloroform	0.19	80	NA	**10 J**		0.35 U	0.4 UJ	0.1 U
Chloromethane	1.8	NA	NA	2.9 U	0.66 U	0.58 U	0.58 U	0.58 U
cis-1,2-Dichloroethene	370	70	70	2.7 U	0.14 U	**7.3**	**1.4**	0.53 U
Tetrachloroethene	0.11	5	5	2.2 U	0.1 U	0.52 U	0.4 U	0.1 U
Total Chlorinated VOCs	NA	NA	NA	**530**	0 U	**167**	**85.4**	0 U
trans-1,2-Dichloroethene	110	100	100	2.5 U	0.13 U	0.5 U	0.5 U	0.5 U
Trichloroethene	1.7	5	5	**530**		**160**	**84**	0.1 U
Vinyl Chloride	0.016	2	2	2 UJ		0.51 U	0.4 U	0.1 U
Inorganics (ug/L)								
Aluminum	37000	NA	NA	**49.1**	**77.3 J**	37 U	14 U	**8610**
Antimony	15	6	6	4.5 U	4.4 U	4.4 U	2.2 U	**1.6 J**
Arsenic	0.045	10	NA	**0.467**	**2.2**	1 U	**0.203 J**	**1.1**
Barium	7300	2000	2000	**8.3**	**17.8 J**	**81.7**	**5.9**	**45.6 J**
Beryllium	73	4	4	0.15 U	0.051 U	0.051 U	0.15 U	**0.73 J**
Cadmium	18	5	5	**0.4**	0.25 U	0.11 U	0.1 U	0.12 U
Calcium	NA	NA	NA	**5450**	**15700**	**44400**	**9380**	**18500**
Chromium	110	100	100	**0.42 J**	0.22 U	0.22 U	1.5 U	**13.1 J**
Cobalt	11	NA	NA	**2.4**	0.89 U	**15.2**	**1.7**	**7.7 J**
Copper	1500	1300	NA	6.3 U	**2.9 J**	1.7 U	6.3 U	**21.9**
Iron	26000	NA	NA	**1610**	**15500 J**	**10700 J**	**975**	**18800 J**
Lead	NA	15	15	0.46 U	1.2 U	1.2 U	0.93 U	**17.2 J**
Magnesium	NA	NA	NA	**2060**	**4740**	**19700**	**4060**	**7710 J**
Manganese	880	NA	NA	**163**	**1000**	**1000**	**183**	**1320 J**
Mercury	11	2	2	0.12 U	0.16 U	0.11 U	0.047 U	0.047 U
Nickel	730	NA	100	**4.5**	1.1 U	**14.2**	**3.7**	**14.3 J**
Potassium	NA	NA	NA	**2090**	**1910**	**7480**	**4710**	**4630**
Selenium	180	50	50	3.9 U	5.2 U	**11.9**	4 U	11.5 U
Silver	180	NA	NA	0.91 U	1.2 U	1.6 U	1.9 U	0.91 U
Sodium	NA	NA	NA	**9300**	**15300**	**163000**	**57200**	**18100**
Thallium	2.4	2	2	0.038 U	0.075 U	1 U	0.08 U	0.176 U
Vanadium	180	NA	NA	0.47 U	0.4 U	0.4 U	0.47 U	**16.1 J**
Zinc	11000	NA	NA	**32**	12.2 U	**53.7**	23.8 U	**45.3 J**

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SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-25D**	**MW16-26D**	**MW16-27D**	**MW16-28D**	**MW16-30D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-25D-NWG-052107**	**MW16-26D-NWG-121807**	**MW16-27D-NWG-082607**	**MW16-28D-NWG-081107**	**MW16-30D-NWG-072807**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070521**	**20071218**	**20070826**	**20070811**	**20070728**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**EASTERN AREA**	**UPGRADIENT**	**EASTERN AREA**	**EASTERN AREA**	**BUILDING 41**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA	14 U				**16.7**
Antimony	15	6	6	3 U				1.3 U
Arsenic	0.045	10	NA	**0.326**				**0.588 J**
Barium	7300	2000	2000	**7.7**				**7.6**
Beryllium	73	4	4	0.15 U				0.15 U
Cadmium	18	5	5	**0.44**				0.1 U
Calcium	NA	NA	NA	**5640**				**12300**
Chromium	110	100	100	0.38 U				0.38 U
Cobalt	11	NA	NA	**2.1**				1.7 U
Copper	1500	1300	NA	6.3 U				6.3 U
Iron	26000	NA	NA	**1040**				**3490**
Magnesium	NA	NA	NA	**2130**				**3040**
Manganese	880	NA	NA	**156**				**1100**
Nickel	730	NA	100	**4.1**				2.5 U
Potassium	NA	NA	NA	**2210**				**1940**
Selenium	180	50	50	4.9 U				8.2 U
Silver	180	NA	NA	0.91 U				0.91 U
Sodium	NA	NA	NA	**9780**				**9090**
Vanadium	180	NA	NA	0.47 U				0.72 U
Zinc		NA	NA	**36**				2.3 U
Miscellaneous Parameters								
Turbidity	NA	NA	NA	**7.8**	**4.25**	**3.11**		**88.2**
pH	NA	NA	NA	**6.17**	**9.49**	**6.11**	**6.25**	**6.62**
Conductivity	NA	NA	NA	**2.45**	**0.258**	**15.8**	**35.9**	**0.153**
DO	NA	NA	NA	**0.84**	**5**	**0.65**	**1.65**	**0.37**
Salinity %	NA	NA	NA	**0.1**	**0**	**0.9**	**2.2**	**0**

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SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-31D**	**MW16-32D**	**MW16-33D**	**MW16-34D**	**MW16-36D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-31D-NWG-051907**	**MW16-32D-NWG-071507**	**MW16-33D-NWG-061607**	**MW16-34D-NWG-061507**	**MW16-36D-NWG-061707**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070519**	**20070715**	**20070616**	**20070615**	**20070617**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**BUILDING 41**	**BUILDING 41**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Volatile Organic Compounds (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.4 UJ	0.75 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethane	2.4	NA	NA	0.4 UJ	0.5 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	0.4 UJ	0.76 U	0.1 U	0.1 U	0.1 U
1,2,4-Trichlorobenzene	19	70	70	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U
Acetone	22000	NA	NA	3.9 UR	3.9 UR	3.9 UR	3.9 UR	3.9 UR
Carbon Disulfide	1000	NA	NA	0.69 U	**19**	0.69 U	0.69 U	0.69 U
Chloroform	0.19	80	NA	0.4 UJ	0.35 U	0.1 U	0.1 U	0.1 U
Chloromethane	1.8	NA	NA	0.58 U	0.58 U	0.58 U	0.58 UJ	0.58 UJ
cis-1,2-Dichloroethene	370	70	70	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U
Tetrachloroethene	0.11	5	5	0.4 UJ	0.52 U	0.1 U	**10 J**	0.1 U
Total Chlorinated VOCs	NA	NA	NA	**100**	**260**	0 U	**13.1**	0 U
trans-1,2-Dichloroethene	110	100	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	1.7	5	5	**100**	**260**	0.1 U	**3.1**	0.1 U
Vinyl Chloride	0.016	2	2	0.4 UJ	0.51 U	0.1 U	0.1 U	0.1 U
Inorganics (ug/L)								
Aluminum	37000	NA	NA	**873**	224 U	**38.2**	**35.3**	**21.8 J**
Antimony	15	6	6	3.7 U	1.2 UJ	2.8 U	1.2 U	1.2 U
Arsenic	0.045	10	NA	**1.1**	0.04 UJ	1.9 U	0.022 UJ	0.022 UJ
Barium	7300	2000	2000	**29.5**	**172**	**11.8**	**12.1**	**13.3**
Beryllium	73	4	4	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Cadmium	18	5	5	**0.1 J**	0.1 UJ	0.1 U	0.1 U	0.1 U
Calcium	NA	NA	NA	**12300**	**13900**	**10700**	**5360**	**4040**
Chromium	110	100	100	**8.4**	**1.7**	0.38 U	0.38 U	0.38 U
Cobalt	11	NA	NA	**7.8**	0.55 U	**2.1**	**2.1**	**1.6**
Copper	1500	1300	NA	**8.6 J**	6.3 U	6.3 U	6.3 U	6.3 U
Iron	26000	NA	NA	**6650**	102 U	**7590**	**685**	**176**
Lead	NA	15	15	**33**	0.46 UJ	0.61 U	0.46 U	0.46 U
Magnesium	NA	NA	NA	**4990**	237 U	**2930**	**1780**	**1320**
Manganese	880	NA	NA	**944**	1.8 U	**634**	**215**	**77.2**
Mercury	11	2	2	0.13 U	0.047 UJ	0.047 U	0.047 U	0.047 U
Nickel	730	NA	100	**5.6**	**1.4**	0.59 U	**1.7**	**1.8**
Potassium	NA	NA	NA	**2350**	**5070**	**1640**	**1160**	**1250**
Selenium	180	50	50	2.7 U	0.98 UJ	9.1 U	5.4 U	0.98 U
Silver	180	NA	NA	0.91 U	1.1 U	0.91 U	0.91 U	0.91 U
Sodium	NA	NA	NA	**18700**	**18000**	**11000**	**8610**	**7600**
Thallium	2.4	2	2	**0.103**	0.008 U	0.011 U	0.029 U	0.016 U
Vanadium	180	NA	NA	**2.6**	**1**	0.47 U	0.47 U	0.47 U
Zinc	11000	NA	NA	**40.6**	**16.4**	15.9 U	15.7 U	**21.8**

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SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation Location Sample Number Sample Code Sample Date Matrix Area	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	10 MW16-31D MW16-31D-NWG-051907 NORMAL 20070519 GW BUILDING 41	10 MW16-32D MW16-32D-NWG-071507 NORMAL 20070715 GW BUILDING 41	10 MW16-33D MW16-33D-NWG-061607 NORMAL 20070616 GW EASTERN AREA	10 MW16-34D MW16-34D-NWG-061507 NORMAL 20070615 GW EASTERN AREA	10 MW16-36D MW16-36D-NWG-061707 NORMAL 20070617 GW EASTERN AREA
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA	**20.2 J**				
Antimony	15	6	6	2 U				
Arsenic	0.045	10	NA	**0.403**				
Barium	7300	2000	2000	**21.9**				
Beryllium	73	4	4	0.15 U				
Cadmium	18	5	5	**0.18 J**				
Calcium	NA	NA	NA	**10900**				
Chromium	110	100	100	**0.41 J**				
Cobalt	11	NA	NA	**4.2**				
Copper	1500	1300	NA	6.3 U				
Iron	26000	NA	NA	**3730**				
Magnesium	NA	NA	NA	**4220**				
Manganese	880	NA	NA	**828**				
Nickel	730	NA	100	3.4 U				
Potassium	NA	NA	NA	**1920**				
Selenium	180	50	50	5.2 U				
Silver	180	NA	NA	0.91 U				
Sodium	NA	NA	NA	**17100**				
Vanadium	180	NA	NA	0.47 U				
Zinc		NA	NA	**26.2**				
Miscellaneous Parameters								
Turbidity	NA	NA	NA	**32**	**1.87**	**1.1**	**2.1**	**0.3**
pH	NA	NA	NA	**5.93**	**9.47**	**6.5**	**6.19**	**6.15**
Conductivity	NA	NA	NA	**0.27**	**0.164**	**3.95**	**0.111**	**4.14**
DO	NA	NA	NA	**>12**	**3.92**	**1.34**	**5.99**	**1.24**
Salinity %	NA	NA	NA	**0**	**0**		**0**	

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SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-37D**	**MW16-39D**	**MW16-39D**	**MW16-41D**	**MW16-44D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-37D-NWG-061407**	**MW16-39D-NWG-052207**	**MW16-39D-NWG-070107**	**MW16-41D-NWG-082507**	**MW16-44D-NWG-082507**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070614**	**20070522**	**20070701**	**20070825**	**20070825**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**NCENTRAL EASTERN**	**NORTH CEN FFTA**
Volatile Organic Compounds (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 UJ	0.1 UJ	0.75 U	0.75 U
1,1-Dichloroethane	2.4	NA	NA	**0.11**	0.1 UJ	0.1 UJ	0.5 U	0.5 U
1,1-Dichloroethene	340	7	7	**0.23**	0.1 UJ	0.1 UJ	0.76 U	0.76 U
1,2,4-Trichlorobenzene	19	70	70	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U
Acetone	22000	NA	NA	3.9 UR	3.9 UR	3.9 U	3.9 UR	3.9 UR
Carbon Disulfide	1000	NA	NA	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
Chloroform	0.19	80	NA	0.1 U	0.1 UJ	0.1 UJ	0.35 U	0.35 U
Chloromethane	1.8	NA	NA	0.58 U	0.58 U	0.58 U	0.58 U	0.58 U
cis-1,2-Dichloroethene	370	70	70	0.53 U	0.53 U	0.53 U	**3.1**	**9.5**
Tetrachloroethene	0.11	5	5	**1.2**	0.1 UJ	0.1 UJ	0.52 U	0.52 U
Total Chlorinated VOCs	NA	NA	NA	**14.5**	**0.46**	0 U	**463**	**1210**
trans-1,2-Dichloroethene	110	100	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	1.7	5	5	**13**	**0.46 J**	0.1 UJ	**460**	**1200**
Vinyl Chloride	0.016	2	2	0.1 U	0.1 UJ	0.1 UJ	0.51 U	0.51 U
Inorganics (ug/L)								
Aluminum	37000	NA	NA	**26.9 J**	**81900**	**198000**	37 U	**53.9**
Antimony	15	6	6	2 U	1.2 U	1.2 U	4.4 U	4.4 U
Arsenic	0.045	10	NA	0.022 UJ	**92.2**	**28.2 J**	1 U	1 U
Barium	7300	2000	2000	**7.3**	**547**	**718**	**22.2**	**20.5**
Beryllium	73	4	4	0.15 U	**2.7**	**11.5**	0.051 U	0.051 U
Cadmium	18	5	5	0.1 U	**4.6 J**	**4.8**	0.11 U	0.11 U
Calcium	NA	NA	NA	**5450**	**94800**	**70600**	**16500**	**22700**
Chromium	110	100	100	0.38 U	**127**	**279**	0.22 U	0.22 U
Cobalt	11	NA	NA	**1.9**	**107 J**	**217**	**7.2**	**4.6**
Copper	1500	1300	NA	6.3 U	**382**	**442**	1.7 U	1.7 U
Iron	26000	NA	NA	**2680**	**242000**	**494000**	**10300 J**	**2890 J**
Lead	NA	15	15	0.49 U	**120**	**210**	1.2 U	1.2 U
Magnesium	NA	NA	NA	**1950**	**51100**	**111000**	**6170**	**8160**
Manganese	880	NA	NA	**242**	**6220**	**8690**	**1160**	**1030**
Mercury	11	2	2	0.047 U	0.15 U	**0.063 J**	0.11 U	0.11 U
Nickel	730	NA	100	**1.8**	**215 J**	**396 J**	4 U	3.2 U
Potassium	NA	NA	NA	**1290**	**15900**	**34300**	**2320**	**3050**
Selenium	180	50	50	11.1 U	0.98 UJ	17.1 U	5.2 U	5.2 U
Silver	180	NA	NA	0.91 U	4 U	0.91 U	1.2 U	1.8 U
Sodium	NA	NA	NA	**8940**	**43400**	**46200**	**25000**	**33300**
Thallium	2.4	2	2	0.038 U	**5.9**	**1.9 J**	1 U	1 U
Vanadium	180	NA	NA	0.47 U	**159**	**385**	0.4 U	0.48 U
Zinc	11000	NA	NA	**23.4**	**781**	**1230**	**38**	**28.5**

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-37D**	**MW16-39D**	**MW16-39D**	**MW16-41D**	**MW16-44D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-37D-NWG-061407**	**MW16-39D-NWG-052207**	**MW16-39D-NWG-070107**	**MW16-41D-NWG-082507**	**MW16-44D-NWG-082507**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070614**	**20070522**	**20070701**	**20070825**	**20070825**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**NCENTRAL EASTERN**	**NORTH CEN FFTA**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA		14 U	**21.8 J**	**107**	**48.7**
Antimony	15	6	6		1.5 U	2.1 U	4.4 U	4.4 U
Arsenic	0.045	10	NA		**2.7**	**1.5 J**	1 U	1 U
Barium	7300	2000	2000		**33.5**	**43**	**23.4**	**18.6**
Beryllium	73	4	4		0.15 U	0.15 U	0.051 U	0.051 U
Cadmium	18	5	5		0.1 U	0.1 U	0.11 U	**0.17**
Calcium	NA	NA	NA		**10000**	**11300**	**17000**	**22200**
Chromium	110	100	100		**0.39 J**	0.38 U	0.22 U	0.22 U
Cobalt	11	NA	NA		0.15 U	0.36 U	**7.4**	**3.8**
Copper	1500	1300	NA		6.3 U	6.3 U	1.7 U	1.7 U
Iron	26000	NA	NA		**3710**	**3290**	**11600 J**	**2070 J**
Magnesium	NA	NA	NA		**3350**	**3580**	**6360**	**8000**
Manganese	880	NA	NA		**432**	**480**	**1200**	**833**
Nickel	730	NA	100		0.77 U	0.65 U	**5.4**	3.1 U
Potassium	NA	NA	NA		**1880**	**2190**	**2410**	**3030**
Selenium	180	50	50		4.3 U	7.7 U	**5.3**	5.2 U
Silver	180	NA	NA		0.91 U	1.3 U	1.2 U	1.2 U
Sodium	NA	NA	NA		**42300**	**47700**	**25400**	**32100**
Vanadium	180	NA	NA		0.47 U	0.47 U	0.4 U	0.4 U
Zinc		NA	NA		19.2 U	16.4 U	**36.8**	25.4 U
Miscellaneous Parameters								
Turbidity	NA	NA	NA	**1.2**	**> 999**	**> 1100**	**10.92**	**9.13**
pH	NA	NA	NA	**6.36**	**6.72**	**6.82**	**6.06**	**6.02**
Conductivity	NA	NA	NA	**0.125**	**8.68**	**1.77**	**14.7**	**15.1**
DO	NA	NA	NA	**6**	**2.35**	**0.66**	**1.63**	**1.88**
Salinity %	NA	NA	NA	**0**	**0.5**	**0.1**	**0.8**	**0.8**

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-45D**	**MW16-48D**	**MW16-48D**	**MW16-49D**	**MW16-52D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-45D-NWG-081207**	**MW16-48D-NWG-082407**	**MW16-48D-NWG-082407-D**	**MW16-49D-NWG-072907**	**MW16-52D-NWG-073107**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070812**	**20070824**	**20070824**	**20070729**	**20070731**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**NORTH CEN FFTA**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**EASTERN AREA**	**EASTERN AREA**
Volatile Organic Compounds (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.75 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethane	2.4	NA	NA	0.5 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	0.76 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2,4-Trichlorobenzene	19	70	70	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U
Acetone	22000	NA	NA	3.9 UR	3.9 UR	3.9 UR	3.9 UR	**5.7 J**
Carbon Disulfide	1000	NA	NA	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
Chloroform	0.19	80	NA	0.35 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U
Chloromethane	1.8	NA	NA	0.58 U	0.58 U	0.58 U	0.58 U	0.58 U
cis-1,2-Dichloroethene	370	70	70	**5.6**	0.53 U	0.53 U	0.53 U	0.53 U
Tetrachloroethene	0.11	5	5	0.52 U	0.1 U	0.1 U	0.1 U	0.1 U
Total Chlorinated VOCs	NA	NA	NA	**626**	0 U	0 U	**4.5**	0 U
trans-1,2-Dichloroethene	110	100	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	1.7	5	5	**620**	0.1 U	0.1 U	**4.5**	0.1 U
Vinyl Chloride	0.016	2	2	0.51 U	0.1 U	0.1 U	0.1 U	0.1 U
Inorganics (ug/L)								
Aluminum	37000	NA	NA	**6560**	254 U	195 U	**10500**	14 U
Antimony	15	6	6	4.2 U	6.8 U	7.3 U	1.2 UJ	7.3 U
Arsenic	0.045	10	NA	**1.4**	1 U	1 U	**1.8**	**7.4**
Barium	7300	2000	2000	**49.5**	**11.5 J**	**11.5 J**	**83.7 J**	**39.8 J**
Beryllium	73	4	4	**0.74**	0.051 U	**0.06 J**	**0.86 J**	0.15 UJ
Cadmium	18	5	5	**0.25**	0.34 U	0.35 U	0.1 UJ	0.15 U
Calcium	NA	NA	NA	**16400**	**9050**	**8380**	**773**	**45700**
Chromium	110	100	100	**12**	1.1 U	0.98 U	**24.9 J**	0.38 UJ
Cobalt	11	NA	NA	**7.7**	2.5 U	3.3 U	**6.5 J**	**8.5 J**
Copper	1500	1300	NA	**31.8**	6 U	7.1 U	**20.3**	6.3 U
Iron	26000	NA	NA	**18800**	**440**	**350**	**16600 J**	**2770 J**
Lead	NA	15	15	4.9 U	3.2 U	4.8 U	**9.5 J**	0.46 UJ
Magnesium	NA	NA	NA	**7340**	**8310**	**7620**	**3640 J**	**115000 J**
Manganese	880	NA	NA	**987**	**17.8**	**16.5**	**217 J**	**417 J**
Mercury	11	2	2	0.047 U	0.11 U	0.11 U	0.047 U	0.047 U
Nickel	730	NA	100	**15.5**	2.3 U	1.8 U	**14.9 J**	**11.1 J**
Potassium	NA	NA	NA	**4640**	**1910**	**2030**	**6200**	**66400**
Selenium	180	50	50	10.6 U	5.2 U	5.2 U	3.1 U	15 U
Silver	180	NA	NA	10.8 U	**1.6 J**	**1.8 J**	0.91 U	**2.4**
Sodium	NA	NA	NA	**35800**	**25100**	**28100**	**58300**	**1410000**
Thallium	2.4	2	2	0.071 U	1 U	1 U	0.163 U	**0.297**
Vanadium	180	NA	NA	**10.1**	0.87 U	1.2 U	**19.1 J**	1.4 U
Zinc	11000	NA	NA	**56.1**	37.7 U	41.3 U	**51.1 J**	**90.5 J**

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-45D**	**MW16-48D**	**MW16-48D**	**MW16-49D**	**MW16-52D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-45D-NWG-081207**	**MW16-48D-NWG-082407**	**MW16-48D-NWG-082407-D**	**MW16-49D-NWG-072907**	**MW16-52D-NWG-073107**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070812**	**20070824**	**20070824**	**20070729**	**20070731**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**NORTH CEN FFTA**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**EASTERN AREA**	**EASTERN AREA**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA	**30.2**	37 U	37 U	**92.5**	
Antimony	15	6	6	3.7 U	5 U	5.4 U	2.1 U	
Arsenic	0.045	10	NA	**0.684 J**	1 U	1 U	**1.3 J**	
Barium	7300	2000	2000	**15**	**11 J**	11 U	**5.7**	
Beryllium	73	4	4	0.15 U	0.051 U	0.051 U	0.15 U	
Cadmium	18	5	5	0.1 U	0.27 U	0.28 U	0.1 U	
Calcium	NA	NA	NA	**17100**	**9370**	**8910**	487 U	
Chromium	110	100	100	0.38 U	0.53 U	0.4 U	0.6 U	
Cobalt	11	NA	NA	**3.3**	1.3 U	1 U	0.24 U	
Copper	1500	1300	NA	6.3 U	1.7 U	1.7 U	6.3 U	
Iron	26000	NA	NA	**7810**	89 U	89 U	**360**	
Magnesium	NA	NA	NA	**5580**	**8730**	**8280**	**507**	
Manganese	880	NA	NA	**856**	**8**	**8.9**	**37.6**	
Nickel	730	NA	100	**2.2**	2.2 U	1.9 U	1.1 U	
Potassium	NA	NA	NA	**2820**	**1960**	**1870**	**3140**	
Selenium	180	50	50	4.3 U	5.2 U	5.2 U	2.4 U	
Silver	180	NA	NA	0.91 U	**2.1 J**	**1.9 J**	0.91 U	
Sodium	NA	NA	NA	**36700**	**26000**	**25500**	**56600**	
Vanadium	180	NA	NA	0.47 U	0.65 U	0.4 U	0.56 U	
Zinc		NA	NA	21.5 U	25.7 U	27.1 U	**11.2**	
Miscellaneous Parameters								
Turbidity	NA	NA	NA	**450**	**8.67**		**130**	**1.41**
pH	NA	NA	NA	**6.35**	**5.46**		**7.17**	**6.46**
Conductivity	NA	NA	NA	**22.7**	**0.234**		**0.231**	**7.73**
DO	NA	NA	NA	**1.35**	**1.17**		**1.11**	**0.56**
Salinity %	NA	NA	NA	**1.7**	**0**		**0**	**0.4**

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-54D**	**MW16-57D**	**MW16-58D**	**MW16-58D**	**MW16-59D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-54D-NWG-072707**	**MW16-57D-NWG-063007**	**MW16-58D-NWG-082707**	**MW16-58D-NWG-082707-D**	**MW16-59D-NWG-052007**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**ORIG**
Sample Date	**Level**		**Objectives**	**20070727**	**20070630**	**20070827**	**20070827**	**20070520**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**UPGRADIENT**	**EASTERN AREA**	**NCENTRAL EASTERN**	**NCENTRAL EASTERN**	**EASTERN AREA**
Volatile Organic Compounds (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 UJ	0.75 U	0.75 U	**1.2 J**
1,1-Dichloroethane	2.4	NA	NA	0.1 U	0.1 UJ	0.5 U	0.5 U	0.8 UJ
1,1-Dichloroethene	340	7	7	0.1 U	0.1 UJ	**2.3**	**2.2**	**2.5 J**
1,2,4-Trichlorobenzene	19	70	70	0.62 U	0.62 U	0.62 U	0.62 U	12 U
Acetone	22000	NA	NA	3.9 UR	3.9 U	3.9 UR	3.9 UR	78 UR
Carbon Disulfide	1000	NA	NA	0.69 U	0.69 U	0.69 U	0.69 U	14 U
Chloroform	0.19	80	NA	0.1 U	0.1 UJ	0.35 U	0.35 U	0.8 UJ
Chloromethane	1.8	NA	NA	0.58 U	0.58 U	0.58 U	0.58 U	12 U
cis-1,2-Dichloroethene	370	70	70	0.53 U	0.53 U	**4**	**4.8**	11 U
Tetrachloroethene	0.11	5	5	0.1 U	0.1 UJ	0.52 U	0.52 U	0.8 UJ
Total Chlorinated VOCs	NA	NA	NA	0 U	**1.3**	**1606**	**1607**	**2204**
trans-1,2-Dichloroethene	110	100	100	0.5 U	0.5 U	0.5 U	0.5 U	10 U
Trichloroethene	1.7	5	5	0.1 U	**1.3 J**	**1600**	**1600**	**2200**
Vinyl Chloride	0.016	2	2	0.1 U	0.1 UJ	0.51 U	0.51 U	0.8 UJ
Inorganics (ug/L)								
Aluminum	37000	NA	NA	**58600**	**11500**	**48.1**	37 U	**11700**
Antimony	15	6	6	5.1 U	3.2 U	4.4 U	4.4 U	2.4 U
Arsenic	0.045	10	NA	**7.2**	**4.5 J**	1 U	1 U	**23.4**
Barium	7300	2000	2000	**301 J**	**68.9**	**14.2**	**13.2**	**53.3**
Beryllium	73	4	4	**3.9 J**	**0.84**	**0.09**	**0.07**	**0.88**
Cadmium	18	5	5	0.1 UJ	0.1 U	0.11 U	0.11 U	**0.49**
Calcium	NA	NA	NA	**27200**	**6820**	**14900**	**14400**	**14800**
Chromium	110	100	100	**84.1 J**	**15.3**	0.22 U	0.52 U	**27.8**
Cobalt	11	NA	NA	**59.7 J**	**9.9**	**3.1**	**3.1**	**13.7**
Copper	1500	1300	NA	**91**	**14.4**	1.7 U	1.7 U	**50.6**
Iron	26000	NA	NA	**140000 J**	**26000**	**3160 J**	**1600 J**	**34800**
Lead	NA	15	15	**53.4 J**	**9.6**	1.2 U	1.2 U	**17.2**
Magnesium	NA	NA	NA	**32700 J**	**6620**	**5540**	**5310**	**8770**
Manganese	880	NA	NA	**3000 J**	**609**	**253**	**246**	**778**
Mercury	11	2	2	0.047 U	**0.061 J**	0.11 U	0.11 U	0.13 U
Nickel	730	NA	100	**107 J**	**18.8**	**5.4**	**5.5**	**26.8**
Potassium	NA	NA	NA	**12800**	**3980**	**1930**	**1890**	**15800**
Selenium	180	50	50	**28.2 J**	13.7 U	5.2 U	5.2 U	0.98 U
Silver	180	NA	NA	0.91 UJ	0.91 U	1.2 U	1.2 U	9.8 U
Sodium	NA	NA	NA	**12700**	**61100**	**18700**	**18300**	**20000**
Thallium	2.4	2	2	**0.922**	**0.134 J**	1 U	1 U	**0.356**
Vanadium	180	NA	NA	**113 J**	**21.2**	0.4 U	0.4 U	**20.6**
Zinc	11000	NA	NA	**328 J**	**73.3**	26.7 U	24 U	**103**

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation Location Sample Number Sample Code Sample Date Matrix Area	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	10 MW16-54D MW16-54D-NWG-072707 NORMAL 20070727 GW UPGRADIENT	10 MW16-57D MW16-57D-NWG-063007 NORMAL 20070630 GW EASTERN AREA	10 MW16-58D MW16-58D-NWG-082707 ORIG 20070827 GW NCENTRAL EASTERN	10 MW16-58D MW16-58D-NWG-082707-D DUP 20070827 GW NCENTRAL EASTERN	10 MW16-59D MW16-59D-NWG-052007 ORIG 20070520 GW EASTERN AREA
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA	**26.8**	**17.7 J**	37 U	**50.1**	**15.9 J**
Antimony	15	6	6	1.2 U	6.6 U	**7.2**	4.4 U	1.2 U
Arsenic	0.045	10	NA	**1.1 J**	**2.5 J**	1 U	1 U	**2.5**
Barium	7300	2000	2000	**40.4**	**10.6**	**13.9**	**14.2**	**14.2**
Beryllium	73	4	4	0.15 U	0.15 U	0.051 U	**0.088**	0.15 U
Cadmium	18	5	5	0.1 U	0.1 U	0.11 U	0.11 U	0.1 U
Calcium	NA	NA	NA	**9870**	**4300**	**14500**	**15000**	**11800**
Chromium	110	100	100	0.38 U	0.38 U	**7.2**	0.22 U	0.38 U
Cobalt	11	NA	NA	2.1 U	0.18 U	**3.3**	**3.4**	**3**
Copper	1500	1300	NA	6.3 U	6.3 U	1.7 U	1.7 U	6.3 U
Iron	26000	NA	NA	**7730**	**849**	**1730 J**	**3240 J**	**1900**
Magnesium	NA	NA	NA	**2640**	**1150**	**5460**	**5600**	**3860**
Manganese	880	NA	NA	**593**	**204**	**243**	**266**	**504**
Nickel	730	NA	100	0.86 U	0.94 U	**5.3**	**5.3**	2.6 U
Potassium	NA	NA	NA	**2120**	**1280**	**1840**	**1920**	**13500**
Selenium	180	50	50	3.3 U	5.8 U	5.2 U	5.2 U	4.7 U
Silver	180	NA	NA	0.91 U	3 U	1.2 U	1.2 U	0.91 U
Sodium	NA	NA	NA	**11500**	**60100**	**17700**	**18600**	**19600**
Vanadium	180	NA	NA	0.47 U	0.47 U	0.4 U	0.4 U	0.47 U
Zinc		NA	NA	**10.8**	19.4 U	**30.3**	**28.9**	**24.9**
Miscellaneous Parameters								
Turbidity	NA	NA	NA		**247**	**17.2**		**800**
pH	NA	NA	NA	**6.58**	**7.02**	**5.77**		**7.33**
Conductivity	NA	NA	NA	**0.153**	**6.02**	**2.27**		**0.257**
DO	NA	NA	NA	**0.36**	**0.87**	**0.42**		**3.94**
Salinity %	NA	NA	NA	**0**	**0.3**	**0.1**		**0**

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-59D**	**MW16-59D**	**MW16-60D**	**MW16-65D**	**MW16-67D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-59D-NWG-052007-D**	**MW16-59D-NWG-071307**	**MW16-60D-NWG-071107**	**MW16-65D-NWG-072607**	**MW16-67D-NWG-052007**
Sample Code	**Screening**	**MCL**	**GA GW**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070519**	**20070713**	**20070711**	**20070726**	**20070520**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**UPGRADIENT**	**BUILDING 41**
Volatile Organic Compounds (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	10 UJ	**1.3**	**1.2**	0.1 U	2.5 UJ
1,1-Dichloroethane	2.4	NA	NA	10 UJ	0.5 U	0.5 U	0.1 U	**4.9 J**
1,1-Dichloroethene	340	7	7	10 UJ	**3**	0.76 U	0.1 U	2.5 UJ
1,2,4-Trichlorobenzene	19	70	70	9.9 U	0.62 U	0.62 U	0.62 U	2.5 U
Acetone	22000	NA	NA	62 UR	3.9 U	3.9 U	3.9 UR	16 UR
Carbon Disulfide	1000	NA	NA	11 U	0.69 U	0.69 U	0.69 U	2.8 U
Chloroform	0.19	80	NA	**42 J**	0.35 U	0.35 U	0.1 U	**9.1 J**
Chloromethane	1.8	NA	NA	9.3 U	0.58 U	0.58 U	0.58 U	2.3 U
cis-1,2-Dichloroethene	370	70	70	8.5 U	**19**	**1.8**	0.53 U	2.1 U
Tetrachloroethene	0.11	5	5	10 UJ	0.52 U	0.52 U	0.1 U	2.1 UJ
Total Chlorinated VOCs	NA	NA	NA	**2100**	**2423**	**2003**	0 U	**855**
trans-1,2-Dichloroethene	110	100	100	8 U	0.5 U	0.5 U	0.5 U	2 U
Trichloroethene	1.7	5	5	**2100**	**2400**	**2000**	0.1 U	**850**
Vinyl Chloride	0.016	2	2	10 UJ	0.51 U	0.51 U	0.1 U	2.5 UJ
Inorganics (ug/L)								
Aluminum	37000	NA	NA	**12200**	**3770**	29.1 U	14 U	**2060**
Antimony	15	6	6	1.2 U	1.2 UJ	1.2 UJ	3.2 U	1.2 U
Arsenic	0.045	10	NA	**22**	**6.1**	**0.274 J**	**1.5**	**2.2**
Barium	7300	2000	2000	**54.7**	**27.6**	**14.4**	**33.7 J**	**28.2**
Beryllium	73	4	4	**0.94**	**0.37**	0.15 U	0.15 UJ	0.15 U
Cadmium	18	5	5	**0.48**	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U
Calcium	NA	NA	NA	**15400**	**13700**	**11900**	**27400**	**12900**
Chromium	110	100	100	**29.7**	**7.1**	**0.73 J**	0.38 UJ	**5**
Cobalt	11	NA	NA	**14.9**	**7.8**	**7.5**	**6.9 J**	**4.5**
Copper	1500	1300	NA	**52.5**	**11.5**	6.3 U	6.3 U	**12.1 J**
Iron	26000	NA	NA	**36700**	**12600**	**2400**	**24300 J**	**10800**
Lead	NA	15	15	**17.8**	0.46 UJ	0.46 UJ	0.46 UJ	**4**
Magnesium	NA	NA	NA	**9240**	**6030**	**4450**	**8470 J**	**4770**
Manganese	880	NA	NA	**802**	**755**	**435**	**1600 J**	**659**
Mercury	11	2	2	0.13 U	0.047 UJ	0.047 UJ	0.047 U	0.12 U
Nickel	730	NA	100	**28.7**	**8.9**	**10.6**	3.5 U	**7.1**
Potassium	NA	NA	NA	**16500**	**3440**	**2000**	**3080**	**2500**
Selenium	180	50	50	0.98 U	0.98 UJ	0.98 UJ	12 U	5.5 U
Silver	180	NA	NA	10 U	0.91 U	0.91 U	0.91 U	0.91 U
Sodium	NA	NA	NA	**20800**	**16600**	**21500**	**31100**	**23900**
Thallium	2.4	2	2	**0.238**	0.073 U	0.045 U	0.214 U	**0.097**
Vanadium	180	NA	NA	**22**	**6**	0.47 U	0.47 UJ	**3.8**
Zinc	11000	NA	NA	**111**	**49.4**	**22.9**	**7.3 J**	**37.5**

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-59D**	**MW16-59D**	**MW16-60D**	**MW16-65D**	**MW16-67D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-59D-NWG-052007-D**	**MW16-59D-NWG-071307**	**MW16-60D-NWG-071107**	**MW16-65D-NWG-072607**	**MW16-67D-NWG-052007**
Sample Code	**Screening**	**MCL**	**GA GW**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20070519**	**20070713**	**20070711**	**20070726**	**20070520**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**UPGRADIENT**	**BUILDING 41**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA	14 U	66 U			14 U
Antimony	15	6	6	3.5 U	1.2 UJ			1.2 U
Arsenic	0.045	10	NA	**2.5**	**3**			**1.3**
Barium	7300	2000	2000	**13.2**	**11.7**			**17.3**
Beryllium	73	4	4	0.15 U	0.15 U			0.15 U
Cadmium	18	5	5	0.1 U	0.1 UJ			0.1 U
Calcium	NA	NA	NA	**11600**	**13700**			**13000**
Chromium	110	100	100	0.38 U	0.38 U			0.38 U
Cobalt	11	NA	NA	**2.9**	**4.8**			**2.6**
Copper	1500	1300	NA	6.3 U	6.3 U			6.3 U
Iron	26000	NA	NA	**1770**	**4080**			**5720**
Magnesium	NA	NA	NA	**3830**	**4580**			**4200**
Manganese	880	NA	NA	**487**	**683**			**624**
Nickel	730	NA	100	2.9 U	**2.9**			3.6 U
Potassium	NA	NA	NA	**13500**	**2710**			**2070**
Selenium	180	50	50	5.9 U	4.2 U			5.8 U
Silver	180	NA	NA	0.91 U	0.91 U			0.91 U
Sodium	NA	NA	NA	**19600**	**17000**			**24400**
Vanadium	180	NA	NA	**0.59 J**	0.47 U			0.47 U
Zinc		NA	NA	**24.7**	**29.5**			**24.8**
Miscellaneous Parameters								
Turbidity	NA	NA	NA			**2.68**	**4.22**	**85**
pH	NA	NA	NA		**6.31**	**6.09**	**6.53**	**6.79**
Conductivity	NA	NA	NA		**0.225**	**0.225**	**0.491**	**0.011**
DO	NA	NA	NA		**0.5**	**6.1**	**0.96**	**6.41**
Salinity %	NA	NA	NA		**0**	**0**	**0**	**0**

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-67D**	**MW16-68D**	**MW16-70D**	**RMW-02D**	**RMW-02D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-67D-NWG-071507**	**MW16-68D-NWG-051907**	**MW16-70D-NWG-071407**	**RMW-02D-NWG-121807**	**RMW-02D-NWG-121807-D**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**
Sample Date	**Level**		**Objectives**	**20070715**	**20070519**	**20070714**	**20071218**	**20071218**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**UPGRADIENT**	**UPGRADIENT**
Volatile Organic Compounds (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.75 U	2 UJ	6 U	0.1 U	0.1 U
1,1-Dichloroethane	2.4	NA	NA	0.5 U	2 UJ	4 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	0.76 U	2 UJ	6.1 U	0.1 U	0.1 U
1,2,4-Trichlorobenzene	19	70	70	0.62 U	2.5 U	5 U	1 U	1 U
Acetone	22000	NA	NA	3.9 UR	16 UR	31 UR	1.9 UR	1.9 UR
Carbon Disulfide	1000	NA	NA	0.69 U	2.8 U	5.5 U	1 U	1 UJ
Chloroform	0.19	80	NA	0.35 U	**7.5 J**	2.8 U	0.1 U	0.1 U
Chloromethane	1.8	NA	NA	0.58 U	2.3 U	4.6 U	0.66 U	0.66 U
cis-1,2-Dichloroethene	370	70	70	**2.1**	2.1 U	4.2 U	0.14 U	0.14 U
Tetrachloroethene	0.11	5	5	0.52 U	2 UJ	4.2 U	0.1 U	0.1 U
Total Chlorinated VOCs	NA	NA	NA	**1202**	**670**	**680**	0 U	0 U
trans-1,2-Dichloroethene	110	100	100	0.5 U	2 U	4 U	0.13 U	0.13 U
Trichloroethene	1.7	5	5	**1200**	**670**	**680**	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.51 U	2 UJ	4.1 U	0.1 U	0.1 U
Inorganics (ug/L)								
Aluminum	37000	NA	NA	114 U	14 U	81.6 U	**6460 J**	**10600 J**
Antimony	15	6	6	1.2 UJ	3.4 U	1.2 UJ	4.4 U	4.4 U
Arsenic	0.045	10	NA	**1.4**	**1.7**	**0.974 J**	0.103 U	0.103 U
Barium	7300	2000	2000	**18.3**	**28.3**	**13.7**	**38.9**	**48.2**
Beryllium	73	4	4	0.15 U	0.15 U	0.15 U	0.051 U	0.051 U
Cadmium	18	5	5	0.1 UJ	0.1 U	0.1 UJ	0.28 U	0.47 U
Calcium	NA	NA	NA	**11700**	**9080**	**10400**	**10100**	**10500**
Chromium	110	100	100	0.38 U	0.38 U	**0.48 J**	**8.5**	**14.2**
Cobalt	11	NA	NA	**3.4**	1.3 U	**3.4**	**9.1 J**	**13 J**
Copper	1500	1300	NA	6.3 U	6.3 U	6.3 U	**16.1**	**23.3**
Iron	26000	NA	NA	**7220**	**6330**	**6090**	**15200 J**	**25200 J**
Lead	NA	15	15	0.46 UJ	0.46 U	0.46 UJ	6.7 U	9.1 U
Magnesium	NA	NA	NA	**4010**	**2730**	**3470**	**6810**	**8450**
Manganese	880	NA	NA	**607**	**456**	**521**	**804**	**877**
Mercury	11	2	2	0.047 UJ	0.12 U	0.047 UJ	0.16 U	0.16 U
Nickel	730	NA	100	**3.5**	1.4 U	**2.8**	**16.7**	**24.4**
Potassium	NA	NA	NA	**1900**	**1650**	**2740**	**3040**	**3580**
Selenium	180	50	50	0.98 UJ	3.6 U	1.3 U	5.2 U	5.2 U
Silver	180	NA	NA	0.91 U	0.91 U	0.91 U	1.6 U	3.1 U
Sodium	NA	NA	NA	**18900**	**10300**	**12900**	**10800**	**10800**
Thallium	2.4	2	2	0.027 U	**0.033**	0.037 U	0.075 U	0.075 U
Vanadium	180	NA	NA	0.47 U	0.47 U	0.47 U	**10.2**	**16.8**
Zinc	11000	NA	NA	**23.6**	**28**	**19.5**	**59.3**	**84.9**

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**MW16-67D**	**MW16-68D**	**MW16-70D**	**RMW-02D**	**RMW-02D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-67D-NWG-071507**	**MW16-68D-NWG-051907**	**MW16-70D-NWG-071407**	**RMW-02D-NWG-121807**	**RMW-02D-NWG-121807-D**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**
Sample Date	**Level**		**Objectives**	**20070715**	**20070519**	**20070714**	**20071218**	**20071218**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**UPGRADIENT**	**UPGRADIENT**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA		14 U		**344**	**335**
Antimony	15	6	6		4.3 U		4.4 U	4.4 U
Arsenic	0.045	10	NA		**1.4**		0.103 U	0.103 U
Barium	7300	2000	2000		**27**		11 U	11 U
Beryllium	73	4	4		0.15 U		0.051 U	0.051 U
Cadmium	18	5	5		0.1 U		0.11 U	0.12 U
Calcium	NA	NA	NA		**9620**		**8470**	**8450**
Chromium	110	100	100		0.38 U		0.83 U	0.83 U
Cobalt	11	NA	NA		1.3 U		**4 J**	**3.7 J**
Copper	1500	1300	NA		6.3 U		2.4 U	3.9 U
Iron	26000	NA	NA		**5480**		**1750**	**1730**
Magnesium	NA	NA	NA		**2920**		**4770**	**4830**
Manganese	880	NA	NA		**471**		**715**	**708**
Nickel	730	NA	100		1.7 U		**7.1**	**7.3**
Potassium	NA	NA	NA		**1760**		**1750**	**1690**
Selenium	180	50	50		5.6 U		7.4 U	5.8 U
Silver	180	NA	NA		0.91 U		2.9 U	6.5 U
Sodium	NA	NA	NA		**11000**		**10400**	**10400**
Vanadium	180	NA	NA		0.47 U		0.67 U	0.76 U
Zinc		NA	NA		**23.9**		**23.9**	**20.5**
Miscellaneous Parameters								
Turbidity	NA	NA	NA	**4.95**	**13**	**4.83**	**222**	
pH	NA	NA	NA	**6.33**	**6.46**	**6.41**	**6.99**	
Conductivity	NA	NA	NA	**0.227**	**0.17**	**0.179**	**0.133**	
DO	NA	NA	NA	**0.68**	**11.18**	**0.47**	**3.5**	
Salinity %	NA	NA	NA	**0**	**0**	**0**	**0**	

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**SB16-A2-32/MW16-90ID**	**SB16-A2-32/MW16-90ID**	**SB16-A3-40/MW16-85D**	**SB16-A3-40/MW16-85D**	**SB16-A3-40/MW16-85D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-90D-020608**	**MW16-90D-020608F**	**MW16-85D-NWG-102407**	**MW16-85D-NWG-102407-D**	**W16-85D-NWG-102407-F-**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**DUP**
Sample Date	**Level**		**Objectives**	**20080206**	**20080206**	**20071024**	**20071024**	**20071024**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**EASTERN AREA**	**EASTERN AREA**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**
Volatile Organic Compounds (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U		0.82 U	0.82 U	
1,1-Dichloroethane	2.4	NA	NA	0.1 U		0.082 U	0.082 U	
1,1-Dichloroethene	340	7	7	0.1 U		1 U	1 U	
1,2,4-Trichlorobenzene	19	70	70	0.49 U		1 U	1 U	
Acetone	22000	NA	NA	4.6 UR		1.9 UR	1.9 UJ	
Carbon Disulfide	1000	NA	NA	0.25 U		1 U	1 U	
Chloroform	0.19	80	NA	0.1 U		0.087 U	0.087 U	
Chloromethane	1.8	NA	NA	0.44 U		0.66 U	0.66 U	
cis-1,2-Dichloroethene	370	70	70	**2.4**		**6.7**	**6.3**	
Tetrachloroethene	0.11	5	5	0.1 U		0.59 U	0.59 U	
Total Chlorinated VOCs	NA	NA	NA	**18.4**		**4808**	**4807**	
trans-1,2-Dichloroethene	110	100	100	0.44 U		**1.1**	**1.1**	
Trichloroethene	1.7	5	5	**16**		**4800**	**4800**	
Vinyl Chloride	0.016	2	2	0.1 U		0.54 U	0.54 U	
Inorganics (ug/L)								
Aluminum	37000	NA	NA	235 U		**13100 J**	**27500 J**	
Antimony	15	6	6	4.4 U		4.4 U	4.4 U	
Arsenic	0.045	10	NA	**5.5**		1 U	1 U	
Barium	7300	2000	2000	**15.5 J**		**89.9**	**116**	
Beryllium	73	4	4	0.068 U		0.051 U	0.051 U	
Cadmium	18	5	5	0.11 U		0.11 U	0.11 U	
Calcium	NA	NA	NA	**10300**		**13500**	**16300**	
Chromium	110	100	100	1.1 U		**16.5**	**36.8**	
Cobalt	11	NA	NA	2.1 U		13.3 U	**24**	
Copper	1500	1300	NA	5.7 U		**21.5**	**41.3**	
Iron	26000	NA	NA	**2580**		**22100 J**	**49600 J**	
Lead	NA	15	15	1.2 U		14.5 U	21.7 U	
Magnesium	NA	NA	NA	**14300**		**8390 J**	**14300 J**	
Manganese	880	NA	NA	**216**		**635 J**	**942 J**	
Mercury	11	2	2	0.22 U		0.11 UJ	0.11 UJ	
Nickel	730	NA	100	**2.8**		**25.4**	**48.8**	
Potassium	NA	NA	NA	**14100**		**8340**	**10100**	
Selenium	180	50	50	5.2 U		5.2 U	5.2 U	
Silver	180	NA	NA	1.2 U		5 U	**12**	
Sodium	NA	NA	NA	**133000**		**20700**	**21200**	
Thallium	2.4	2	2	0.078 U		1 U	1 U	
Vanadium	180	NA	NA	1.2 U		**20.1**	**42.7**	
Zinc	11000	NA	NA	16.9 U		**75**	**137**	

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**SB16-A2-32/MW16-90ID**	**SB16-A2-32/MW16-90ID**	**SB16-A3-40/MW16-85D**	**SB16-A3-40/MW16-85D**	**SB16-A3-40/MW16-85D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-90D-020608**	**MW16-90D-020608F**	**MW16-85D-NWG-102407**	**MW16-85D-NWG-102407-D**	**W16-85D-NWG-102407-F**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**DUP**
Sample Date	**Level**		**Objectives**	**20080206**	**20080206**	**20071024**	**20071024**	**20071024**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**EASTERN AREA**	**EASTERN AREA**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA		37 U	37 U		37 U
Antimony	15	6	6		4.4 U	4.4 U		4.4 U
Arsenic	0.045	10	NA		**5.9**	1 U		1 U
Barium	7300	2000	2000		**11.6 J**	19.3 U		18.7 U
Beryllium	73	4	4		0.051 U	0.051 U		0.051 U
Cadmium	18	5	5		0.11 U	0.11 U		0.11 U
Calcium	NA	NA	NA		**10100**	**10200**		**10300**
Chromium	110	100	100		0.24 U	0.22 U		0.22 U
Cobalt	11	NA	NA		1.4 U	4.4 U		4.5 U
Copper	1500	1300	NA		1.7 U	1.7 U		1.7 U
Iron	26000	NA	NA		**2040**	**2230**		**2210**
Magnesium	NA	NA	NA		**14100**	**4100**		**4250**
Manganese	880	NA	NA		**208**	**401**		**403**
Nickel	730	NA	100		1.9 U	4.7 U		5 U
Potassium	NA	NA	NA		**13800**	**5520**		**5720**
Selenium	180	50	50		5.2 U	5.2 U		5.2 U
Silver	180	NA	NA		1.2 U	1.2 U		1.2 U
Sodium	NA	NA	NA		**130000**	**19800**		**20500**
Vanadium	180	NA	NA		0.4 U	0.4 U		0.4 U
Zinc		NA	NA		13 U	19 U		18 U
Miscellaneous Parameters								
Turbidity	NA	NA	NA					
pH	NA	NA	NA		**6.55**	**6.37**		
Conductivity	NA	NA	NA		**0.705**	**0.217**		
DO	NA	NA	NA		**0.8**	**0.28**		
Salinity %	NA	NA	NA		**0.35**			

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Matrix Area	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	10 SB16-A3-43/MW16-86D MW16-86D-NWG-121707 NORMAL 20071217 GW EASTERN AREA	10 SB16-UG-03/MW16-82D MW16-82D-NWG-102407 NORMAL 20071024 GW UPGRADIENT	10 SB16-UG-06/MW16-84D MW16-84D-NWG-121607 NORMAL 20071216 GW UPGRADIENT	10 SB16-UG-08/MW16-83D MW16-83D-NWG-121807 NORMAL 20071218 GW UPGRADIENT	10 MW16-72D TW16-101D-NWG-070107 NORMAL 20070701 GW EASTERN AREA
Volatile Organic Compounds (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	**0.34 J**
1,1-Dichloroethane	2.4	NA	NA	0.1 U	0.1 U	**0.15**	0.1 U	**0.18 J**
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U	0.1 U	0.1 U	**0.31 J**
1,2,4-Trichlorobenzene	19	70	70	1 U	1 U	1 U	1 U	0.62 U
Acetone	22000	NA	NA	1.9 UR	1.9 U	1.9 UR	1.9 UR	3.9 U
Carbon Disulfide	1000	NA	NA	1 U	1 U	1 U	1 U	0.69 U
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	**0.1 J**
Chloromethane	1.8	NA	NA	0.66 U	0.66 U	0.66 U	0.66 U	0.58 U
cis-1,2-Dichloroethene	370	70	70	0.14 U	0.14 U	0.14 U	0.14 U	0.53 U
Tetrachloroethene	0.11	5	5	**0.1**	0.1 U	0.1 U	0.1 U	0.1 UJ
Total Chlorinated VOCs	NA	NA	NA	**0.1**	0 U	**0.15**	0 U	**30.0**
trans-1,2-Dichloroethene	110	100	100	0.13 U	0.13 U	0.13 U	0.13 U	0.5 U
Trichloroethene	1.7	5	5	0.1 U	0.1 U	0.1 U	0.1 U	**29**
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.1 U	0.1 U	**0.14 J**
Inorganics (ug/L)								
Aluminum	37000	NA	NA	**4490 J**	**117000 J**	**11700 J**	**2030 J**	
Antimony	15	6	6	4.4 U	**10.3**	4.4 U	4.4 U	
Arsenic	0.045	10	NA	**1.1**	**3.4**	**0.347**	**1.5**	
Barium	7300	2000	2000	**39**	**307**	**72.9**	**25**	
Beryllium	73	4	4	0.051 U	0.051 U	0.051 U	0.051 U	
Cadmium	18	5	5	0.15 U	0.11 U	0.44 U	0.12 U	
Calcium	NA	NA	NA	**10300**	**33700**	**12000**	**8280**	
Chromium	110	100	100	**6.4**	**170**	**16.9**	**3.6**	
Cobalt	11	NA	NA	**4.4 J**	**109 J**	**16.4 J**	**3.6 J**	
Copper	1500	1300	NA	**11.3**	**164**	**25.5**	**7.4**	
Iron	26000	NA	NA	**12500 J**	**237000 J**	**39000 J**	**10500 J**	
Lead	NA	15	15	3.3 U	**74.4 J**	**9.7**	4.3 U	
Magnesium	NA	NA	NA	**4490**	**61600 J**	**9480**	**3350**	
Manganese	880	NA	NA	**662**	**3650 J**	**859**	**716**	
Mercury	11	2	2	0.16 U	0.11 UJ	0.16 U	0.16 U	
Nickel	730	NA	100	**6.9**	**193 J**	**22**	**26.3**	
Potassium	NA	NA	NA	**9060**	**25800**	**6170**	**4040**	
Selenium	180	50	50	5.2 U	5.2 U	5.2 U	6.7 U	
Silver	180	NA	NA	1.7 U	**61.4 J**	7.2 U	1.2 U	
Sodium	NA	NA	NA	**21000**	**18900**	**34700**	**18000**	
Thallium	2.4	2	2	0.075 U	1 U	**0.089 J**	**0.113 J**	
Vanadium	180	NA	NA	**5.9**	**173**	**16.9**	2.9 U	
Zinc	11000	NA	NA	**30.9**	**591**	**76.6**	23.8 U	

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**			**SB16-A3-43/MW16-86D**	**SB16-UG-03/MW16-82D**	**SB16-UG-06/MW16-84D**	**SB16-UG-08/MW16-83D**	**MW16-72D**
Sample Number	**Regional**	**Federal**	**RIDEM**	**MW16-86D-NWG-121707**	**MW16-82D-NWG-102407**	**MW16-84D-NWG-121607**	**MW16-83D-NWG-121807**	**TW16-101D-NWG-070107**
Sample Code	**Screening**	**MCL**	**GA GW**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**		**Objectives**	**20071217**	**20071024**	**20071216**	**20071218**	**20071701**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**EASTERN AREA**	**UPGRADIENT**	**UPGRADIENT**	**UPGRADIENT**	**EASTERN AREA**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA	37 U	37 U	37 U	37 U	
Antimony	15	6	6	4.4 U	4.4 U	4.4 U	4.4 U	
Arsenic	0.045	10	NA	**1.1**	**2.6**	**0.286**	**1.3**	
Barium	7300	2000	2000	**20.3 J**	20.2 U	**29.4**	**14.9 J**	
Beryllium	73	4	4	0.051 U	0.051 U	0.051 U	0.051 U	
Cadmium	18	5	5	0.11 U	0.11 U	0.11 U	0.11 U	
Calcium	NA	NA	NA	**9390**	**16100**	**9870**	**8340**	
Chromium	110	100	100	0.22 U	0.22 U	0.22 U	0.25 U	
Cobalt	11	NA	NA	1.1 U	0.96 U	**5 J**	1.5 U	
Copper	1500	1300	NA	1.7 U	1.7 U	**3.4 J**	2.7 U	
Iron	26000	NA	NA	**4540**	**1020**	**13700**	**6310**	
Magnesium	NA	NA	NA	**2710**	**3320**	**4060**	**2650**	
Manganese	880	NA	NA	**546**	**529**	**560**	**674**	
Nickel	730	NA	100	1.8 U	1.7 U	**3.2**	1.1 U	
Potassium	NA	NA	NA	**7970**	**7230**	**3720**	**3440**	
Selenium	180	50	50	8.6 U	**9.5 J**	5.8 U	5.2 U	
Silver	180	NA	NA	1.2 U	1.2 U	1.2 U	4.8 U	
Sodium	NA	NA	NA	**20300**	**17500**	**33600**	**17700**	
Vanadium	180	NA	NA	0.4 U	0.9 U	0.4 U	0.4 U	
Zinc		NA	NA	14.9 U	15.6 U	15.9 U	**15**	
Miscellaneous Parameters								
Turbidity	NA	NA	NA	**96**	**1100**		**48**	**4.55**
pH	NA	NA	NA	**9.48**	**7.74**	**8.93**	**7.1**	**6.7**
Conductivity	NA	NA	NA	**0.196**	**0.209**	**0.277**	**0.167**	**3.62**
DO	NA	NA	NA	**0**	**0.27**	**0.05**	**0.05**	**0.92**
Salinity %	NA	NA	NA	**0**		**0**	**0**	**0.2**

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **Matrix** **Area**	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**10** **MW16-73D** **TW16-103D-NWG-071007** **NORMAL** **20070710** **GW** **UPGRADIENT**	**10** **MW16-74D** **TW16-104D-NWG-071207** **NORMAL** **20070712** **GW** **UPGRADIENT**
Volatile Organic Compounds (ug/L)					
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U
1,1-Dichloroethane	2.4	NA	NA	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U
1,2,4-Trichlorobenzene	19	70	70	**1.2**	0.62 U
Acetone	22000	NA	NA	5 U	3.9 UR
Carbon Disulfide	1000	NA	NA	1 U	0.69 U
Chloroform	0.19	80	NA	0.1 U	0.1 U
Chloromethane	1.8	NA	NA	1 U	0.58 U
cis-1,2-Dichloroethene	370	70	70	1 U	0.53 U
Tetrachloroethene	0.11	5	5	0.1 U	0.1 U
Total Chlorinated VOCs	NA	NA	NA	0 U	**2.5**
trans-1,2-Dichloroethene	110	100	100	1 U	0.5 U
Trichloroethene	1.7	5	5	0.1 U	**2.5**
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U
Inorganics (ug/L)					
Aluminum	37000	NA	NA		
Antimony	15	6	6		
Arsenic	0.045	10	NA		
Barium	7300	2000	2000		
Beryllium	73	4	4		
Cadmium	18	5	5		
Calcium	NA	NA	NA		
Chromium	110	100	100		
Cobalt	11	NA	NA		
Copper	1500	1300	NA		
Iron	26000	NA	NA		
Lead	NA	15	15		
Magnesium	NA	NA	NA		
Manganese	880	NA	NA		
Mercury	11	2	2		
Nickel	730	NA	100		
Potassium	NA	NA	NA		
Selenium	180	50	50		
Silver	180	NA	NA		
Sodium	NA	NA	NA		
Thallium	2.4	2	2		
Vanadium	180	NA	NA		
Zinc	11000	NA	NA		

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **Matrix** **Area**	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**10** **MW16-73D** **TW16-103D-NWG-071007** **NORMAL** **20070710** **GW** **UPGRADIENT**	**10** **MW16-74D** **TW16-104D-NWG-071207** **NORMAL** **20070712** **GW** **UPGRADIENT**
Filtered Inorganics (ug/L)					
Aluminum	37000	NA	NA		
Antimony	15	6	6		
Arsenic	0.045	10	NA		
Barium	7300	2000	2000		
Beryllium	73	4	4		
Cadmium	18	5	5		
Calcium	NA	NA	NA		
Chromium	110	100	100		
Cobalt	11	NA	NA		
Copper	1500	1300	NA		
Iron	26000	NA	NA		
Magnesium	NA	NA	NA		
Manganese	880	NA	NA		
Nickel	730	NA	100		
Potassium	NA	NA	NA		
Selenium	180	50	50		
Silver	180	NA	NA		
Sodium	NA	NA	NA		
Vanadium	180	NA	NA		
Zinc		NA	NA		
Miscellaneous Parameters					
Turbidity	NA	NA	NA	**9.82**	**9.8**
pH	NA	NA	NA	**7.86**	**6.7**
Conductivity	NA	NA	NA	**0.193**	**0.218**
DO	NA	NA	NA	**0.67**	**0.65**
Salinity %	NA	NA	NA	**0**	**0**

TABLE 4-36

SUMMARY OF CHEMICALS DETECTED
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
GA = Drinking water suitability
GW = Groundwater
MCL = Maximum Contaminant Level
NA = Not applicable/not available
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
VOC = Volatile organic compound

Footnotes:
Bolding indicates that the chemical was detected in the sample.
1 - The calculation of the BTEX and the total chlorinated VOCs are defined in the Section 4 text. "0 U" indicates that this chemical group was not detected in the sample analyzed.
SIM Volatile Organics (ug/L)
1,1-DICHLOROETHANE
TETRACHLOROETHENE
2 - A concentration that is shaded exceeds one or more criterion presented in the table.
3 - A blank cell in the table indicates that the sample was not analyzed for the target analyte.

TABLE 4-37

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-01R MW16-01R-NWG-101204 NORMAL 10/12/2004	08 MW16-02R MW16-02R-NWG-093004 ORIG 9/30/2004	08 MW16-02R MW16-02R-NWG-093004-AVG AVG 9/30/2004	08 MW16-02R MW16-02R-NWG-093004-D DUP 9/30/2004
Volatile Organics (ug/L)							
1,1-Dichloroethane	2.4	NA	NA	1 U	25 U	37.5 U	50 U
1,1-Dichloroethene	340	7	7				
2-Butanone	7100	NA	NA	5 U	130 U	190 U	250 U
2-Hexanone	NA	NA	NA	5 U	130 U	190 U	250 U
Acetone	22000	NA	NA	23 U	130 UR	190 UR	250 UR
Bromodichloromethane	1.1	80	NA	1 U	25 U	37.5 U	50 U
BTEX[1]	NA	NA	NA	**0.211**	**0.03**	**0.0321**	**0.0341**
Carbon Disulfide	1000	NA	NA	1 U	25 U	37.5 U	50 U
Chlorodibromomethane	0.8	80	NA	1 U	25 U	37.5 U	50 U
cis-1,2-Dichloroethene	370	70	70	1 U	**19 J**	**19.5 J**	**20 J**
Ethane	NA	NA	NA	6.2 U	**4.5 J**	**4.75 J**	**5 J**
Ethene	NA	NA	NA	5.8 U	**1.9 J**	**2.05 J**	**2.2 J**
Methane	NA	NA	NA	3.3 U	**8.4**	**8.4**	**8.4**
Tetrachloroethene	0.11	5	5	1 U	25 U	37.5 U	50 U
Toluene	2300	1000	1000	**0.211 J**	25 U	37.5 U	50 U
Total 1,2-Dichloroethene	330	NA	70	1 U	**19 J**	**19.5 J**	**20 J**
Total Chlorinated VOCs[1]	NA	NA	NA	**4.92**	**1221**	**1171**	**1122**
trans-1,2-Dichloroethene	110	100	100	1 U	25 U	37.5 U	50 U
Trichloroethene	1.7	5	5	**4.92**	**1200**	**1150**	**1100**
Low-Level Volatile Organics (ug/L)							
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	**0.0117 J**	**0.0117 J**
1,1-Dichloroethene	340	7	7	0.1 U	**1.59**	**1.46**	**1.33**
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U
Benzene	0.41	5	5	0.1 U	**0.03 J**	**0.03205 J**	**0.0341 J**
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	**0.393**	**0.3705**	**0.348**
Total Metals (ug/L)							
Aluminum	37000	NA	NA	**10.5**	**468 J**	**306 J**	**144 J**
Arsenic	0.045	10	NA	0.42 U	**0.53 J**	**0.475 J**	**0.42 J**
Barium	7300	2000	2000	**37.4**	**9.5**	**8.6**	**7.7**
Beryllium	73	4	4	0.11 UJ	0.11 UJ	0.11 UJ	0.11 U
Cadmium	18	5	5	0.06 U	0.06 U	0.06 U	0.06 U
Calcium	NA	NA	NA	**15200**	**8050**	**7970 J**	**7890 J**
Chromium	110	100	100	1.7 U	1.8 U	1.205 U	0.61 U
Cobalt	11	NA	NA	**3.6**	**2.1**	**1.85**	**1.6**
Copper	1500	1300	NA	0.4 U	**1.8**	**1.45**	**1.1**
Iron	26000	NA	NA	**15800**	**7180**	**6315**	**5450**
Lead	NA	15	15	0.05 U	**0.63**	**0.58**	**0.53**
Magnesium	NA	NA	NA	**5160**	**2440**	**2545 J**	**2650 J**
Manganese	880	NA	NA	**919 J**	**606**	**587.5**	**569**
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U
Nickel	730	NA	100	**2.1**	**1.9**	**1.55**	**1.2**

TABLE 4-37

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-01R MW16-01R-NWG-101204 NORMAL 10/12/2004	08 MW16-02R MW16-02R-NWG-093004 ORIG 9/30/2004	08 MW16-02R MW16-02R-NWG-093004-AVG AVG 9/30/2004	08 MW16-02R MW16-02R-NWG-093004-D DUP 9/30/2004
Total Metals (ug/L) (Continued)							
Potassium	NA	NA	NA	**2970**	**2040**	**2000**	**1960**
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U
Sodium	NA	NA	NA	**19700 J**	**10200**	**10850 J**	**11500 J**
Thallium	2.4	2	2	0.07 U	**0.12 J**	**0.0775 J**	0.07 U
Vanadium	180	NA	NA	0.4 UJ	**0.93**	**0.565**	0.4 U
Zinc	11000	NA	NA	**12.8 J**	**22.4 J**	**17.7 J**	**13 J**
Dissolved Metals (ug/L)							
Aluminum	37000	NA	NA	0.72 U	**0.87 J**	**0.615 J**	0.72 U
Arsenic	0.045	10	NA	**0.52**	**0.49**	**0.435**	**0.38**
Barium	7300	2000	2000	**37**	**7**	**7**	**7**
Calcium	NA	NA	NA	**15800**	**7960**	**7800**	**7640**
Chromium	110	100	100	0.6 U	**0.96**	**0.73**	**0.5**
Cobalt	11	NA	NA	**3.5**	**1.4**	**1.3**	**1.2**
Copper	1500	1300	NA	0.21 U	0.16 U	0.16 U	0.16 U
Iron	26000	NA	NA	**14700**	**3830**	**3865**	**3900**
Lead	NA	15	15	**0.14 J**	0.08 U	0.08 U	0.08 U
Magnesium	NA	NA	NA	**5010**	**2350**	**2320**	**2290**
Manganese	880	NA	NA	**866 J**	**570 J**	**549.5 J**	**529**
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U
Nickel	730	NA	100	**2.1 J**	**0.56**	**0.54**	**0.52**
Potassium	NA	NA	NA	**2860**	**1890**	**1870**	**1850**
Selenium	180	50	50	0.3 U	0.3 U	0.3 U	0.3 U
Silver	180	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U
Sodium	NA	NA	NA	**17100**	**9800**	**9720**	**9640**
Vanadium	180	NA	NA	**0.12 J**	**0.23**	**0.155 J**	**0.08 J**
Zinc	11000	NA	NA	**3.4 J**	**2.2 J**	**2.05 J**	**1.9 J**
Miscellaneous Parameters (mg/L)							
Alkalinity	NA	NA	NA	**23.7**	**25.5**	**26.75**	**28**
Ammonia	NA	NA	NA	**0.1**	**0.1**	**0.075**	0.1 U
Chloride	NA	NA	NA	**76.3**	**14.2**	**14.6**	**15**
Cyanide	730	200	200	10 UJ	10 U	10 U	10 U
Dissolved Inorganic Carbon	NA	NA	NA	**3**	1 U	1 U	1 U
Dissolved Organic Carbon	NA	NA	NA	**1**	**3**	**3**	**3**
Hydrogen Sulfide	110	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U
Nitrate	58000	10	NA	0.1 U	0.1 U	0.1 U	0.1 U
Nitrite	3700	1	NA	0.1 U	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA	**0.175**	**0.068**	**0.071**	**0.074**
Sulfate	NA	NA	NA	**19.1**	**13.7**	**13.45**	**13.2**
pH	NA	NA	NA	**6.91**	**6.92**		**11.43**
Conductivity	NA	NA	NA	**0.285**	**0.152**		**0.305**
DO	NA	NA	NA	**0.43**	**1.26**		**0.31**
Turbidity	NA	NA	NA	**5.48**	**17**		**1.15**

TABLE 4-37

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-03R MW16-03R-NWG-101204 NORMAL 10/12/2004	08 MW16-05R MW16-05R-NWG-092904 NORMAL 9/29/2004	08 MW16-06R MW16-06R-NWG-092804 NORMAL 9/28/2004	08 MW16-10R MW16-10R-NWG-100704 NORMAL 10/7/2004	08 MW16-14R MW16-14R-NWG-102704 NORMAL 10/27/2004
Volatile Organics (ug/L)								
1,1-Dichloroethane	2.4	NA	NA	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	340	7	7					
2-Butanone	7100	NA	NA	5 U	5 U	5 U	**1.33 J**	5 U
2-Hexanone	NA	NA	NA	5 U	5 U	5 U	5 U	5 U
Acetone	22000	NA	NA	18 U	5 U	5 U	**7.45**	14 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	**0.0271**	**0.165**	0 U	0 U
Carbon Disulfide	1000	NA	NA	1 U	**0.15 J**	**0.724 J**	1 UJ	1 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	3.32 U	**8.08**	1 U	1 U	1 U
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	3.3 U	5.3 U	**78**	**540**	3.3 U
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	1 U	1 U
Toluene	2300	1000	1000	1 U	1 U	**0.15 J**	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	1 U	**8.46**	1 U	1 U	1 U
Total Chlorinated VOCs[1]	NA	NA	NA	**31.1**	**869**	0 U	**0.0919**	**0.85**
trans-1,2-Dichloroethene	110	100	100	1 U	**0.376 J**	1 U	1 U	1 U
Trichloroethene	1.7	5	5	**31**	**860**	1 U	1 U	**0.85 J**
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	**0.0433 J**	**0.549**	0.1 U	**0.0274 J**	0.1 U
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzene	0.41	5	5	0.1 U	**0.0271 J**	**0.0152 J**	0.1 U	0.1 U
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	**0.0373 J**	**0.141**	0.1 U	**0.0645 J**	0.1 U
Total Metals (ug/L)								
Aluminum	37000	NA	NA	**1140**	**416 J**	**279**	**74.4**	**28.3**
Arsenic	0.045	10	NA	**0.53 J**	**0.92**	**0.59 J**	**0.52 J**	0.5 U
Barium	7300	2000	2000	**13.3**	**7.1**	**25.5**	**1.2**	**6.7**
Beryllium	73	4	4	**0.14 J**	**0.12 J**	0.11 UJ	0.11 U	0.11 UJ
Cadmium	18	5	5	0.06 U	0.06 U	0.06 U	0.06 U	0.061 UJ
Calcium	NA	NA	NA	**15200**	**3120**	**10600 J**	**4740**	**18400**
Chromium	110	100	100	**4.1 J**	1.6 U	0.34 U	0.89 U	0.73 U
Cobalt	11	NA	NA	**1.1**	**0.51**	**0.14**	**1.9**	0.05 U
Copper	1500	1300	NA	2.8 U	**2.9**	**0.57 J**	**7.8**	0.8 U
Iron	26000	NA	NA	**7460**	**8360**	**15900**	**25400**	**409**
Lead	NA	15	15	**1.5**	**0.76**	**0.24**	**1.1**	**0.23**
Magnesium	NA	NA	NA	**2850**	**1110**	**454**	**638**	**2270**
Manganese	880	NA	NA	**534 J**	**186**	**247**	**397**	**158**
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U	0.12 U
Nickel	730	NA	100	**2.9**	**1.4**	**1.7**	**2.6**	**0.65 J**

TABLE 4-37

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-03R MW16-03R-NWG-101204 NORMAL 10/12/2004	08 MW16-05R MW16-05R-NWG-092904 NORMAL 9/29/2004	08 MW16-06R MW16-06R-NWG-092804 NORMAL 9/28/2004	08 MW16-10R MW16-10R-NWG-100704 NORMAL 10/7/2004	08 MW16-14R MW16-14R-NWG-102704 NORMAL 10/27/2004
Total Metals (ug/L) (Continued)								
Potassium	NA	NA	NA	**3230**	**2280**	**19800**	**3340**	**2760**
Selenium	180	50	50	0.29 U	**0.59**	0.29 U	0.29 U	0.29 UJ
Silver	180	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Sodium	NA	NA	NA	**30100 J**	**93400**	**27500**	**7800 J**	**8720 J**
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	**2.3 J**	**0.9**	0.4 U	**0.6 J**	0.4 U
Zinc	11000	NA	NA	**28.5 J**	**34.1**	**110 J**	**46.7 J**	2.2 U
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA	**1.8**	**1.4 J**	**50.6**	**1.6**	**3.1**
Arsenic	0.045	10	NA	**0.36**	**0.66**	**0.53 J**	0.09 U	**0.7 J**
Barium	7300	2000	2000	**6.5**	**3.7 J**	**23.3**	2.1 U	**6.3**
Calcium	NA	NA	NA	**15800**	**2980**	**12000 J**	**4590**	**21200**
Chromium	110	100	100	**0.91**	**0.89**	0.62 U	**0.88**	0.96 U
Cobalt	11	NA	NA	**0.05**	0.01 U	0.01 U	0.01 U	**0.02 J**
Copper	1500	1300	NA	0.78 U	**0.51**	**0.26 J**	**0.25 J**	0.17 U
Iron	26000	NA	NA	**2160**	50 U	50 U	**76.4 J**	50 U
Lead	NA	15	15	**0.09 J**	**0.12 J**	**0.45**	**0.17 J**	**0.15 J**
Magnesium	NA	NA	NA	**2420**	**800**	**403 J**	**424**	**2610**
Manganese	880	NA	NA	**455 J**	**42**	**5**	**96.5**	**145**
Mercury	11	2	2	0.021 U	0.031 U	0.043 U	0.021 U	0.056 U
Nickel	730	NA	100	**0.52 J**	**0.3**	**1.1**	**0.57**	**0.45 J**
Potassium	NA	NA	NA	**2880**	**2200**	**22000**	**2060**	**2670 J**
Selenium	180	50	50	0.3 U	**0.8**	0.3 U	0.3 U	**0.36 J**
Silver	180	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Sodium	NA	NA	NA	**27500**	**87400**	**30900**	**6140 J**	**8260 J**
Vanadium	180	NA	NA	**0.17**	**0.18**	0.11 U	**0.17**	0.32 U
Zinc	11000	NA	NA	**5.3 J**	**0.76 J**	**2.3 J**	**3.3 J**	0.78 U
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**47**	**48**	**51.2**	**21**	**55.5**
Ammonia	NA	NA	NA	**0.1**	**0.11**	0.1 U	**0.18**	**0.12**
Chloride	NA	NA	NA	**49.5**	**100**	**41.1**	**7.81**	**14.4**
Cyanide	730	200	200	10 UJ	10 U	10 U	10 U	10 U
Dissolved Inorganic Carbon	NA	NA	NA	**4**	**4**	1 U	**1**	**4**
Dissolved Organic Carbon	NA	NA	NA	**1**	**2**	**2**	**3**	**1**
Hydrogen Sulfide	110	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Nitrate	58000	10	NA	0.1 U	0.1 U	**0.233**	0.1 U	0.1 U
Nitrite	3700	1	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA	**0.146**	**0.267**	**0.162**	**0.36**	**0.09**
Sulfate	NA	NA	NA	**18.7**	**32.1**	**15.6**	**0.133**	**15.4**
pH	NA	NA	NA	**7.53**	**7.9**	**10.83**	**9.01**	**8.51**
Conductivity	NA	NA	NA	**0.258**	**0.4**	**0.341**	**0.076**	**0.155**
DO	NA	NA	NA	**0.72**	**0.94**	**0.33**	**0.3**	**0.28**
Turbidity	NA	NA	NA	**58.9**	**45**	**84**	**29**	**6**

TABLE 4-37

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-15R MW16-15R-NWG-101404 ORIG 10/14/2004	08 MW16-15R MW16-15R-NWG-101404-AVG AVG 10/14/2004	08 MW16-15R MW16-15R-NWG-101404-D DUP 10/14/2004	08 MW16-17R MW16-17R-NWG-100504 NORMAL 10/5/2004	08 MW16-25R MW16-25R-NWG-100504 NORMAL 10/5/2004
Volatile Organics (ug/L)								
1,1-Dichloroethane	2.4	NA	NA	1 U	1 U	1 U	1 U	**0.285 J**
1,1-Dichloroethene	340	7	7					
2-Butanone	7100	NA	NA	5 U	5 U	5 U	5 U	5 U
2-Hexanone	NA	NA	NA	5 U	5 U	5 U	5 U	5 U
Acetone	22000	NA	NA	5 U	5 U	5 U	5 UR	5 UR
Bromodichloromethane	1.1	80	NA	**0.235 J**	**0.235 J**	1 U	1 U	1 U
BTEX[1]	NA	NA	NA	**0.0307**	**0.0313**	**0.0318**	0 U	**0.0236**
Carbon Disulfide	1000	NA	NA	**0.759 J**	**0.826 J**	**0.893 J**	**0.228 J**	**0.704 J**
Chlorodibromomethane	0.8	80	NA	**0.322 J**	**0.322 J**	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	**49**	**54.5**	**60**	1 U	1 U
Ethane	NA	NA	NA	**5.4 J**	**5.05 J**	**4.7 J**	6.2 U	6.2 U
Ethene	NA	NA	NA	**4.2 J**	**3.9 J**	**3.6 J**	5.8 U	5.8 U
Methane	NA	NA	NA	**1100 J**	**835 J**	**570 J**	**44**	**26**
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	1 U	1 U
Toluene	2300	1000	1000	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	**49.2**	**54.7**	**60.2**	1 U	1 U
Total Chlorinated VOCs[1]	NA	NA	NA	**520**	**761**	**1002**	0 U	**0.73**
trans-1,2-Dichloroethene	110	100	100	**0.184 J**	**0.213 J**	**0.242 J**	1 U	1 U
Trichloroethene	1.7	5	5	**470 J**	**705 J**	**940 J**	1 U	**0.445 J**
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	**0.131 J**	**0.186 J**	**0.241 J**	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	**0.567 J**	**0.8185 J**	**1.07 J**	0.1 U	0.1 U
1,2-Dichloroethane	0.15	5	5	0.1 U	**0.0263 J**	**0.0263 J**	0.1 U	0.1 U
Benzene	0.41	5	5	**0.0307 J**	**0.03125 J**	**0.0318 J**	0.1 U	**0.0236 J**
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	**0.235**	**0.2705**	**0.306**	0.1 U	0.1 U
Total Metals (ug/L)								
Aluminum	37000	NA	NA	**10.7**	**9.5**	**8.3**	**38.1**	**24.5**
Arsenic	0.045	10	NA	**1**	**1**	**1**	0.42 U	**0.57 J**
Barium	7300	2000	2000	**3.5**	**4**	**4.5**	**3.4**	**2.4**
Beryllium	73	4	4	0.11 U	0.11 U	0.11 U	0.11 U	0.11 UJ
Cadmium	18	5	5	0.061 U	0.061 U	0.061 U	0.06 U	0.06 U
Calcium	NA	NA	NA	**5950**	**6050**	**6150**	**10100**	**6560**
Chromium	110	100	100	1.1 U	1.15 U	1.2 U	**0.94**	0.9 U
Cobalt	11	NA	NA	**0.16**	**0.27**	**0.38**	**0.49**	**0.72**
Copper	1500	1300	NA	0.43 U	0.435 U	0.44 U	0.93 U	**0.47 J**
Iron	26000	NA	NA	**4470**	**4990**	**5510**	**3630**	**5810**
Lead	NA	15	15	**0.06 J**	**0.08 J**	**0.1**	**0.08 J**	**0.1**
Magnesium	NA	NA	NA	**1520**	**1630**	**1740**	**1690**	**1990**
Manganese	880	NA	NA	**164 J**	**217.5 J**	**271 J**	**437**	**275**
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U	0.13 U
Nickel	730	NA	100	**0.47 J**	**1.185 J**	**1.9**	**0.43 J**	**1.7**

TABLE 4-37

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-15R MW16-15R-NWG-101404 ORIG 10/14/2004	08 MW16-15R MW16-15R-NWG-101404-AVG AVG 10/14/2004	08 MW16-15R MW16-15R-NWG-101404-D DUP 10/14/2004	08 MW16-17R MW16-17R-NWG-100504 NORMAL 10/5/2004	08 MW16-25R MW16-25R-NWG-100504 NORMAL 10/5/2004
Total Metals (ug/L) (Continued)								
Potassium	NA	NA	NA	**3270**	**2865**	**2460**	**1660**	**3350**
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Silver	180	NA	NA	0.052 U	0.052 U	0.052 U	0.05 U	0.05 U
Sodium	NA	NA	NA	**18700**	**18450**	**18200**	**10600 J**	**11700**
Thallium	2.4	2	2	0.066 U	0.066 U	0.066 U	0.07 U	0.07 U
Vanadium	180	NA	NA	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Zinc	11000	NA	NA	**16.7**	**14.95**	**13.2**	**7.8**	**24.2**
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA	0.72 U	0.72 U	0.72 U	**0.85 J**	**0.88 J**
Arsenic	0.045	10	NA	**0.58**	**0.585**	**0.59**	**0.47**	**0.72**
Barium	7300	2000	2000	**3.4 J**	**3.65 J**	**3.9 J**	**3.5 J**	**2.5 J**
Calcium	NA	NA	NA	**6540**	**6585**	**6630**	**10300**	**6840**
Chromium	110	100	100	**1.5**	**1.45**	**1.4**	**0.91**	**0.75**
Cobalt	11	NA	NA	**0.1**	**0.095**	**0.09**	**0.51**	**0.11**
Copper	1500	1300	NA	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
Iron	26000	NA	NA	**937**	**922**	**907**	**1760**	**791**
Lead	NA	15	15	0.078 U	**0.1045**	**0.17**	**0.14 J**	0.08 U
Magnesium	NA	NA	NA	**1440**	**1450**	**1460**	**1700**	**2060**
Manganese	880	NA	NA	**135 J**	**135.5 J**	**136 J**	**455**	**243**
Mercury	11	2	2	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U
Nickel	730	NA	100	**0.21**	**0.33**	**0.45**	**0.62**	**0.35**
Potassium	NA	NA	NA	**3490**	**3565**	**3640**	**1780**	**3660**
Selenium	180	50	50	0.3 U	0.3 U	0.3 U	**0.38 J**	**0.33 J**
Silver	180	NA	NA	0.021 U	0.021 U	0.021 U	0.02 U	0.02 U
Sodium	NA	NA	NA	**18400**	**18300**	**18200**	**10600 J**	**12300**
Vanadium	180	NA	NA	0.35 U	0.335 U	0.32 U	**0.23**	**0.16**
Zinc	11000	NA	NA	**7.4 J**	**6.35 J**	**5.3 J**	**3.2**	**1.9 J**
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**33**	**33.25**	**33.5**	**31.7**	**32.7**
Ammonia	NA	NA	NA	**0.12**	**0.11**	**0.1**	**0.11**	0.1 U
Chloride	NA	NA	NA	**20.9**	**21**	**21.1**	**9.95**	**9.24**
Cyanide	730	200	200	10 U	10 U	10 U	10 U	10 U
Dissolved Inorganic Carbon	NA	NA	NA	**3**	**3**	**3**	**7**	1 U
Dissolved Organic Carbon	NA	NA	NA	**2**	**2**	**2**	**8**	**2**
Hydrogen Sulfide	110	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Nitrate	58000	10	NA	0.1 UJ	**0.184 J**	**0.318 J**	0.1 U	0.1 U
Nitrite	3700	1	NA	0.1 U	0.1 U	0.1 U	**0.11**	0.1 U
Salinity (ppth)	NA	NA	NA	**0.078**	**0.0775**	**0.077**	**0.072**	**0.066**
Sulfate	NA	NA	NA	**3.97**	**3.85**	**3.73**	**15.4**	**13**
pH	NA	NA	NA	**6.98**		**9.72**	**7.13**	**7.39**
Conductivity	NA	NA	NA	**0.119**		**0.139**	**0.139**	**0.068**
DO	NA	NA	NA	**0.26**		**4.6**	**2**	**2.43**
Turbidity	NA	NA	NA	**5.89**		**34**	**20**	**25.2**

TABLE 4-37

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-27R MW16-27R-NWG-101204 NORMAL 10/12/2004	08 MW16-28R MW16-28R-NWG-101104 NORMAL 10/11/2004	08 MW16-32R MW16-32R-NWG-102904 NORMAL 10/29/2004	08 MW16-36R MW16-36R-NWG-100504 NORMAL 10/5/2004	08 MW16-44R MW16-44R-NWG-100104 NORMAL 10/1/2004
Volatile Organics (ug/L)								
1,1-Dichloroethane	2.4	NA	NA	1 U	1 U	5 U	1 U	1 U
1,1-Dichloroethene	340	7	7					
2-Butanone	7100	NA	NA	5 U	5 U	25 U	5 U	5 U
2-Hexanone	NA	NA	NA	5 U	5 U	25 U	5 U	5 U
Acetone	22000	NA	NA	5 U	5 U	29 U	**11 J**	5 UR
Bromodichloromethane	1.1	80	NA	1 U	1 U	5 U	1 U	1 U
BTEX[(1)]	NA	NA	NA	0 U	0 U	**0.0201**	**0.0132**	**1.19**
Carbon Disulfide	1000	NA	NA	1 U	1 UJ	5 U	**0.264 J**	1 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	5 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	1.64 U	1 U	5 U	1 U	**22**
Ethane	NA	NA	NA	6.2 U	6.2 U	**1 J**	6.2 U	**6.6**
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	**7.8**
Methane	NA	NA	NA	3.3 U	**28**	3.3 U	**1.6 J**	**11**
Tetrachloroethene	0.11	5	5	1 U	1 U	5 U	1 U	1 U
Toluene	2300	1000	1000	1 U	1 U	5 U	1 U	**1.17**
Total 1,2-Dichloroethene	330	NA	70	1 U	1 U	5 U	1 U	**22.4**
Total Chlorinated VOCs[(1)]	NA	NA	NA	**0.66**	**0.0157**	**110**	0 U	**1423**
trans-1,2-Dichloroethene	110	100	100	1 U	1 U	5 U	1 U	**0.405 J**
Trichloroethene	1.7	5	5	2.01 U	1 U	**110**	1 U	**1400**
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U	**0.12**	0.1 U	**0.51**
1,2-Dichloroethane	0.15	5	5	0.1 U	**0.0157 J**	0.1 U	0.1 U	0.1 U
Benzene	0.41	5	5	0.1 U	0.1 U	**0.0201 J**	**0.0132 J**	**0.0205 J**
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	**0.66 J**	0.1 U	0.1 U	0.1 U	**0.461**
Total Metals (ug/L)								
Aluminum	37000	NA	NA	**71.2**	**6680**	**227**	**65.2**	**204**
Arsenic	0.045	10	NA	**3.6**	**3**	**0.89**	0.42 U	0.42 U
Barium	7300	2000	2000	**37.1**	**76.5**	**12.6**	**21.9**	**9.4**
Beryllium	73	4	4	0.11 UJ	**0.6**	0.11 UJ	0.11 UJ	0.11 UJ
Cadmium	18	5	5	0.06 U	0.06 U	0.061 UJ	0.06 U	0.06 U
Calcium	NA	NA	NA	**200000**	**3510**	**16700 J**	**7500**	**12600**
Chromium	110	100	100	1.3 U	**24.6 J**	1.2 U	0.54 U	1.5 U
Cobalt	11	NA	NA	**1.1**	**5.4**	**0.24 J**	**0.18**	**0.43**
Copper	1500	1300	NA	7.8 U	**19.6**	1.5 U	0.4 U	**0.87**
Iron	26000	NA	NA	**52400**	**14800**	**548**	**14900**	**12800**
Lead	NA	15	15	**1.3 J**	**7.7**	**0.32**	**0.14 J**	**0.27**
Magnesium	NA	NA	NA	**41000 J**	**4530**	**1120**	**934**	**3490**
Manganese	880	NA	NA	**2060 J**	**361 J**	**41.2**	**194**	**754**
Mercury	11	2	2	0.021 U	0.021 U	0.075 U	**0.68**	0.021 U
Nickel	730	NA	100	**4.7 J**	**11.7**	**2.4 J**	**0.74**	**0.82**

TABLE 4-37

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-27R MW16-27R-NWG-101204 NORMAL 10/12/2004	08 MW16-28R MW16-28R-NWG-101104 NORMAL 10/11/2004	08 MW16-32R MW16-32R-NWG-102904 NORMAL 10/29/2004	08 MW16-36R MW16-36R-NWG-100504 NORMAL 10/5/2004	08 MW16-44R MW16-44R-NWG-100104 NORMAL 10/1/2004
Total Metals (ug/L) (Continued)								
Potassium	NA	NA	NA	**11100**	**7160 J**	**6240 J**	**5490**	**2450**
Selenium	180	50	50	**11**	**0.37 J**	0.32 U	0.29 U	0.29 U
Silver	180	NA	NA	0.05 U	**0.11**	0.05 U	0.05 U	0.05 U
Sodium	NA	NA	NA	**749000 J**	**96800 J**	**11000 J**	**9190**	**11800**
Thallium	2.4	2	2	0.07 UJ	**0.26**	0.07 U	0.07 U	0.07 U
Vanadium	180	NA	NA	0.5 U	**14.2 J**	0.66 U	0.4 U	**0.63 J**
Zinc	11000	NA	NA	**24 J**	**40.1 J**	5 U	5.8 U	**43**
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA	**1.1 J**	**6.8**	**43.8**	**5.4**	0.72 U
Arsenic	0.045	10	NA	**2.9**	**2.2**	**1 J**	**0.18 J**	**0.36**
Barium	7300	2000	2000	**36**	**15.3**	**10.8**	**18.9**	**7.8**
Calcium	NA	NA	NA	**189000**	**3800**	**18900**	**8210**	**12500**
Chromium	110	100	100	0.82 U	**1.5**	0.7 U	**0.52**	**0.97**
Cobalt	11	NA	NA	**0.2 J**	**0.68**	**0.05**	0.01 U	**0.24**
Copper	1500	1300	NA	**5 J**	1.7 U	0.53 U	0.16 U	0.16 U
Iron	26000	NA	NA	**1720**	**3780**	**56.7 J**	**161**	**6050**
Lead	NA	15	15	0.08 U	**0.21**	**0.09 J**	0.08 U	**0.16**
Magnesium	NA	NA	NA	**41800 J**	**3280**	**1090**	**1020**	**3730**
Manganese	880	NA	NA	**1830 J**	**292 J**	**26.3**	**20.3**	**694 J**
Mercury	11	2	2	0.021 U	0.021 U	0.073 U	0.021 U	0.058 U
Nickel	730	NA	100	**2.8 J**	**1.7 J**	**1.9 J**	**0.15**	**0.8**
Potassium	NA	NA	NA	**10900**	**5590**	**5950**	**6120**	**2340**
Selenium	180	50	50	**12.5**	**1**	0.3 UJ	0.3 U	0.3 U
Silver	180	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Sodium	NA	NA	NA	**699000**	**98200**	**10500**	**10500**	**11800**
Vanadium	180	NA	NA	0.08 U	**0.48**	0.24 U	**0.11 J**	**0.21**
Zinc	11000	NA	NA	**4 J**	**9.2 J**	**2.2 J**	**9.3**	**1.9 J**
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**60.7**	**75.8**	**32.7**	**33.3**	**27**
Ammonia	NA	NA	NA	**0.18**	**0.16**	**0.14**	0.1 U	**0.41**
Chloride	NA	NA	NA	**1440**	**81.9**	**13.2**	**8.47**	**35.5**
Cyanide	730	200	200	10 UJ	10 UJ	10 U	10 U	10 U
Dissolved Inorganic Carbon	NA	NA	NA	**5**	**6**	**2**	**14**	**1**
Dissolved Organic Carbon	NA	NA	NA	**2**	**2**	**3**	**22**	**2**
Hydrogen Sulfide	110	NA	NA	0.05 U	**0.066**	0.05 U	0.05 U	0.05 U
Nitrate	58000	10	NA	0.1 U	0.1 U	0.1 U	0.1 U	**0.212**
Nitrite	3700	1	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA	**2.76**	**0.251**	**0.082**	**0.065**	**0.104**
Sulfate	NA	NA	NA	**201**	**21.9**	**21.1**	**12.1**	**9.64**
pH	NA	NA	NA	**7.39**	**7.04**	**10.23**	**8.69**	**6.9**
Conductivity	NA	NA	NA	**4.212**	**7.969**	**0.166**	**0.105**	**0.189**
DO	NA	NA	NA	**1.74**	**0.91**	**0.35**	**0.49**	**2.59**
Turbidity	NA	NA	NA	**44.8**	**32.6**	**15**	**57.4**	**11**

TABLE 4-37

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-51R MW16-51R-NWG-102904 NORMAL 10/29/2004	08 MW16-52R MW16-52R-NWG-110104 NORMAL 11/1/2004	08 MW16-55R MW16-55R-NWG-100704 NORMAL 10/7/2004	08 MW16-56R MW16-56R-NWG-101404 NORMAL 10/14/2004	08 MW16-58R MW16-58R-NWG-101304 NORMAL 10/13/2004
Volatile Organics (ug/L)								
1,1-Dichloroethane	2.4	NA	NA	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	340	7	7					
2-Butanone	7100	NA	NA	5 U	5 U	5 U	5 U	5 U
2-Hexanone	NA	NA	NA	5 U	5 U	5 U	5 U	5 U
Acetone	22000	NA	NA	16 U	6.57 U	**8.4**	8.63 U	7.87 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U
BTEX[(1)]	NA	NA	NA	**0.199**	**0.0126**	0 U	0 U	**0.0171**
Carbon Disulfide	1000	NA	NA	**0.262 J**	**0.504 J**	**0.254 J**	1 U	1 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	1 U	1 U	1 U	**1.5**	**6.65**
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	**11**	**160**	3.3 U	3.3 U	**5**
Tetrachloroethene	0.11	5	5	1 U	1 U	1 U	1 U	1 U
Toluene	2300	1000	1000	**0.186 J**	1 U	1 U	1 U	1 U
Total 1,2-Dichloroethene	330	NA	70	1 U	1 U	1 U	**1.5**	**7.31**
Total Chlorinated VOCs[(1)]	NA	NA	NA	0 U	**0.0738**	0 U	**18.8**	**328**
trans-1,2-Dichloroethene	110	100	100	1 U	1 U	1 U	1 U	**0.663 J**
Trichloroethene	1.7	5	5	1 U	1 U	1 U	**17**	**320**
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	0.1 U	**0.0738 J**	0.1 U	0.1 U	**0.295**
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U	0.1 U	**0.279**	**0.715**
1,2-Dichloroethane	0.15	5	5	0.1 U	0.1 U	0.1 U	**0.0124 J**	0.1 U
Benzene	0.41	5	5	**0.0134 J**	**0.0126 J**	0.1 U	0.1 U	**0.0171 J**
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.1 U	**0.0498 J**	**0.112**
Total Metals (ug/L)								
Aluminum	37000	NA	NA	**7.5**	**46.9**	**94.7**	**135**	**230**
Arsenic	0.045	10	NA	**11.4**	**13.2**	**0.44 J**	**1.3**	0.42 U
Barium	7300	2000	2000	**126**	**50.5**	**12.7**	**19.5**	**2.3**
Beryllium	73	4	4	0.11 UJ	0.11 U	0.11 U	0.11 U	**0.12 J**
Cadmium	18	5	5	0.061 UJ	0.06 U	**0.2**	0.061 U	0.08 U
Calcium	NA	NA	NA	**2460000**	**1340000**	**11300**	**22500**	**10900**
Chromium	110	100	100	0.67 U	0.81 U	1.2 U	1.8 U	2.5 U
Cobalt	11	NA	NA	**3.4 J**	**3.1**	**0.12**	0.054 U	**0.42**
Copper	1500	1300	NA	**163 J**	**744**	**2.4**	0.94 U	1.5 U
Iron	26000	NA	NA	**36700**	**124000**	**3570**	**420**	**2440**
Lead	NA	15	15	**0.37 J**	**1 J**	**0.95**	**0.37**	**1.5**
Magnesium	NA	NA	NA	**502000**	**946000**	**2320**	**961**	**2350**
Manganese	880	NA	NA	**15400**	**32100**	**60.1**	**22 J**	**240 J**
Mercury	11	2	2	0.059 U	0.076 U	0.021 U	0.021 U	0.021 U
Nickel	730	NA	100	**25.4 J**	**15.7 J**	**0.76**	**0.7**	**0.88**

TABLE 4-37

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-51R MW16-51R-NWG-102904 NORMAL 10/29/2004	08 MW16-52R MW16-52R-NWG-110104 NORMAL 11/1/2004	08 MW16-55R MW16-55R-NWG-100704 NORMAL 10/7/2004	08 MW16-56R MW16-56R-NWG-101404 NORMAL 10/14/2004	08 MW16-58R MW16-58R-NWG-101304 NORMAL 10/13/2004
Total Metals (ug/L) (Continued)								
Potassium	NA	NA	NA	80800	139000 J	5100	11900	3530
Selenium	180	50	50	62.8 J	77.1	0.29 U	0.51 J	0.29 U
Silver	180	NA	NA	0.05 U	0.06 J	0.05 U	0.052 U	0.05 U
Sodium	NA	NA	NA	3690000 J	6870000 J	12100	13200	13300 J
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U	0.066 U	0.07 U
Vanadium	180	NA	NA	0.4 U	0.4 U	0.4 U	2.4	0.52 U
Zinc	11000	NA	NA	24.6 J	14.1	11.8 J	5	24.2 J
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA	0.72 UJ	2	1.8	39.8	1.3 J
Arsenic	0.045	10	NA	7.4 J	14.4	0.16 J	1.3	0.26
Barium	7300	2000	2000	86	46.1	10.5	19.5	2.1 U
Calcium	NA	NA	NA	2400000	1270000	11100	23800	12000
Chromium	110	100	100	2	2.6 J	1.2	1.5	0.88
Cobalt	11	NA	NA	3.4 J	3.5 J	0.01 U	0.014 U	0.16
Copper	1500	1300	NA	168 J	1270	0.16 UJ	0.22 U	0.41 U
Iron	26000	NA	NA	23600 J	120000	50 U	69.3 J	412
Lead	NA	15	15	0.08 UJ	0.08 U	0.078 UJ	0.22	0.23
Magnesium	NA	NA	NA	456000	905000	2230	917	2370
Manganese	880	NA	NA	15600	30400	19.3	14.1 J	218 J
Mercury	11	2	2	0.072 U	0.021 U	0.021 U	0.021 U	0.021 U
Nickel	730	NA	100	25.8 J	15 J	0.27	0.88	0.53 J
Potassium	NA	NA	NA	75900	132000 J	5200	12100	3570
Selenium	180	50	50	62.6 J	91.1	0.3 U	0.74	0.3 U
Silver	180	NA	NA	0.03 U	0.06	0.02 U	0.021 U	0.02 U
Sodium	NA	NA	NA	3160000 J	6340000	11700	13300	12600
Vanadium	180	NA	NA	0.08 U	0.08 U	0.27	2.6	0.17
Zinc	11000	NA	NA	16.5 J	10.9	0.09 J	5.5 J	7.8 J
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	38.7	82.5	54.2	38	42.7
Ammonia	NA	NA	NA	0.37	0.1 U	0.11	0.13	0.11
Chloride	NA	NA	NA	9970	15100	7.04	24.9	17.7
Cyanide	730	200	200	10 U	10 U	10 U	10 U	10 UJ
Dissolved Inorganic Carbon	NA	NA	NA	10	6	8	2	2
Dissolved Organic Carbon	NA	NA	NA	2	5	2	5	2
Hydrogen Sulfide	110	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Nitrate	58000	10	NA	1 U	0.5 U	0.1 U	0.203 J	0.1 U
Nitrite	3700	1	NA	1 U	0.5 U	0.1 U	0.519	0.1 U
Salinity (ppth)	NA	NA	NA	18.1	24.8	0.079	0.105	0.092
Sulfate	NA	NA	NA	1190	1810	8.62	19.9	14.5
pH	NA	NA	NA	6.98	6.63	8.54	10.33	6.71
Conductivity	NA	NA	NA	18.26	35.09	0.163	0.197	0.131
DO	NA	NA	NA	0	0	0.74	0.19	0.05
Turbidity	NA	NA	NA	4.92	7.1	20	6	25

TABLE 4-37

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation **Location** **Sample Number** **Sample Code** **Sample Date**	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**08** **MW16-59R** **MW16-59R-NWG-102504** **NORMAL** **10/25/2004**	**08** **MW16-60R** **MW16-60R-NWG-102704** **NORMAL** **10/27/2004**	**08** **MW16-65R** **MW16-65R-NWG-102804** **NORMAL** **10/28/2004**	**09** **MW16-66R** **MW16-66R-NWG-111604** **NORMAL** **11/16/2004**	**09** **MW16-67R** **MW16-67R-NWG-111604** **NORMAL** **11/16/2004**
Volatile Organics (ug/L)								
1,1-Dichloroethane	2.4	NA	NA	**0.233 J**	1 U	1 U	1 U	1 U
1,1-Dichloroethene	340	7	7				1 U	**0.533 J**
2-Butanone	7100	NA	NA	5 U	5 U	**8.17**	5 U	5 U
2-Hexanone	NA	NA	NA	5 U	5 U	**11**	5 U	5 U
Acetone	22000	NA	NA	25 U	21 U	**64**	20 U	13 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	1 U	1 U
BTEX[(1)]	NA	NA	NA	**0.0511**	**0.467**	**0.768**	**0.12**	**0.149**
Carbon Disulfide	1000	NA	NA	1 U	**0.679 J**	1 U	1 U	1 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	**23**	**16**	1 U	**0.292 J**	**2.95**
Ethane	NA	NA	NA	**3.2 J**	**3.1 J**	**1 J**	6.2 U	**0.8 J**
Ethene	NA	NA	NA	5.8 U	**1.7 J**	**0.9 J**	5.8 U	5.8 U
Methane	NA	NA	NA	3.3 U	3.3 U	5.4 U	4.4 U	3.9 U
Tetrachloroethene	0.11	5	5	1 U	1 U	**0.824 J**		
Toluene	2300	1000	1000	1 U	**0.41 J**	**0.688 J**	**0.12 J**	**0.149 J**
Total 1,2-Dichloroethene	330	NA	70	**23.6**	**16.7**	1 U	**0.292 J**	**3.16**
Total Chlorinated VOCs[(1)]	NA	NA	NA	**1530**	**1824**	**1.24**	**3.74**	**604**
trans-1,2-Dichloroethene	110	100	100	**0.559 J**	**0.668 J**	1 U	1 U	**0.212 J**
Trichloroethene	1.7	5	5	**1500**	**1800**	**0.415 J**	**3.45**	**600**
Low-Level Volatile Organics (ug/L)								
1,1,2-Trichloroethane	0.24	5	5	**0.734**	**1.54**	0.1 U		
1,1-Dichloroethene	340	7	7	**4.2**	**5.05**	0.1 U		
1,2-Dichloroethane	0.15	5	5	**0.0801 J**	**0.0652 J**	0.1 U		
Benzene	0.41	5	5	**0.0511 J**	**0.0567 J**	**0.08 J**		
Chloroform	0.19	80	NA	0.1 U	**0.104**	0.1 U		
Vinyl Chloride	0.016	2	2	**0.916**	**0.413**	0.1 U		
Total Metals (ug/L)								
Aluminum	37000	NA	NA	**106**	**1280**	**341**		
Arsenic	0.045	10	NA	**1.8**	**3**	0.42 U		
Barium	7300	2000	2000	**10.8**	**13.1**	**2350**		
Beryllium	73	4	4	0.11 U	**0.26 J**	0.11 UJ		
Cadmium	18	5	5	0.06 U	0.061 UJ	0.09 U		
Calcium	NA	NA	NA	**14400**	**9250**	**510000**		
Chromium	110	100	100	**3.1**	**3.8**	0.95 U		
Cobalt	11	NA	NA	**0.6**	**2.8**	**1.9 J**		
Copper	1500	1300	NA	**1.1**	5.7 U	2.1 U		
Iron	26000	NA	NA	**2870**	**5730**	**1300**		
Lead	NA	15	15	**0.86**	**2.8**	**0.37 J**		
Magnesium	NA	NA	NA	**1710**	**2990**	50 U		
Manganese	880	NA	NA	**375**	**650**	0.79 U		
Mercury	11	2	2	0.021 U	0.095 U	0.081 U		
Nickel	730	NA	100	**2**	**4.7 J**	**18.1 J**		

TABLE 4-37

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-59R MW16-59R-NWG-102504 NORMAL 10/25/2004	08 MW16-60R MW16-60R-NWG-102704 NORMAL 10/27/2004	08 MW16-65R MW16-65R-NWG-102804 NORMAL 10/28/2004	09 MW16-66R MW16-66R-NWG-111604 NORMAL 11/16/2004	09 MW16-67R MW16-67R-NWG-111604 NORMAL 11/16/2004
Total Metals (ug/L) (Continued)								
Potassium	NA	NA	NA	**6550**	**2810**	**130000**		
Selenium	180	50	50	0.29 U	0.29 UJ	0.67 U		
Silver	180	NA	NA	0.05 U	0.05 U	0.05 U		
Sodium	NA	NA	NA	**12200 J**	**13000 J**	**76700 J**		
Thallium	2.4	2	2	0.07 U	0.07 U	0.07 U		
Vanadium	180	NA	NA	**1.6**	**3**	0.56 U		
Zinc	11000	NA	NA	**10.9**	**19.3 J**	7 U		
Dissolved Metals (ug/L)								
Aluminum	37000	NA	NA	**9.4**	**0.77 J**	**384**		
Arsenic	0.045	10	NA	**1.9**	**3.2 J**	**0.34 J**		
Barium	7300	2000	2000	**8.2**	**6.9**	**2480**		
Calcium	NA	NA	NA	**13600**	**10500**	**500000**		
Chromium	110	100	100	0.94 U	0.98 U	0.66 U		
Cobalt	11	NA	NA	**0.28**	**1.5**	**1.7 J**		
Copper	1500	1300	NA	0.16 U	0.16 UJ	1.5 U		
Iron	26000	NA	NA	**111**	**2550**	**1220**	89.4 U	32.2 U
Lead	NA	15	15	**0.15 J**	**0.2**	**0.44 J**		
Magnesium	NA	NA	NA	**1560**	**2760**	50 U		
Manganese	880	NA	NA	**291**	**618**	0.63 U	**117**	2 U
Mercury	11	2	2	**0.024 J**	0.057 U	0.07 U		
Nickel	730	NA	100	**0.73**	**1.7 J**	**17.3 J**		
Potassium	NA	NA	NA	**6370**	**2370 J**	**133000**		
Selenium	180	50	50	0.3 U	0.3 UJ	**0.54 J**		
Silver	180	NA	NA	0.02 U	0.02 U	0.02 U		
Sodium	NA	NA	NA	**11900**	**11500 J**	**67100 J**		
Vanadium	180	NA	NA	**1.1**	0.17 U	**0.53**		
Zinc	11000	NA	NA	**2.7**	**5.4 J**	**9.3 J**		
Miscellaneous Parameters (mg/L)								
Alkalinity	NA	NA	NA	**43.5**	**19.5**	**1640**	**33**	**59**
Ammonia	NA	NA	NA	**0.16**	0.1 U	**0.32**	**0.39**	**0.19**
Chloride	NA	NA	NA	**15.4**	**21.1**	**42.7**	**35**	**22**
Cyanide	730	200	200	1.8 U	10 U	**2.3 J**		
Dissolved Inorganic Carbon	NA	NA	NA	**2**	**2**	**2**	**3**	**1**
Dissolved Organic Carbon	NA	NA	NA	**2**	**3**	**11**	**1**	**1**
Hydrogen Sulfide	110	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Nitrate	58000	10	NA	0.1 U	0.1 U	**0.7**	0.1 U	0.1 U
Nitrite	3700	1	NA	**0.114**	0.1 U	**4.74**	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA	**0.095**	**0.081**	**3.82**		
Sulfate	NA	NA	NA	**18.1**	**19.5**	**6.21**	**19.4**	**15.5**
pH	NA	NA	NA	**10.03**	**6.53**	**12.72**	**10.14**	**10.98**
Conductivity	NA	NA	NA	**0.203**	**0.155**	**4.937**	**0.199**	**0.313**
DO	NA	NA	NA	**1.54**	**0.31**	**1.08**	**0.67**	**0.17**
Turbidity	NA	NA	NA	**17**	**90**	**8**	**10.06**	**1.7**

TABLE 4-37

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation Location Sample Number Sample Code Sample Date	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**09 MW16-68R MW16-68R-NWG-111604 ORIG 11/16/2004**	**09 MW16-68R MW16-68R-NWG-111604-AVG AVG 11/16/2004**	**09 MW16-68R MW16-68R-NWG-111604-D DUP 11/16/2004**	**09 MW16-69R MW16-69R-NWG-111704 ORIG 11/17/2004**
Volatile Organics (ug/L)							
1,1-Dichloroethane	2.4	NA	NA	1 U	1 U	1 U	10 U
1,1-Dichloroethene	340	7	7	**0.317 J**	**0.327 J**	**0.337 J**	10 U
2-Butanone	7100	NA	NA	**0.63 J**	**0.63 J**	5 U	50 U
2-Hexanone	NA	NA	NA	5 U	5 U	5 U	50 U
Acetone	22000	NA	NA	27 U	**25 J**	**25 J**	15 U
Bromodichloromethane	1.1	80	NA	1 U	1 U	1 U	10 U
BTEX[1]	NA	NA	NA	**0.173**	**0.173**	0 U	0 U
Carbon Disulfide	1000	NA	NA	1 U	1 U	1 U	10 U
Chlorodibromomethane	0.8	80	NA	1 U	1 U	1 U	10 U
cis-1,2-Dichloroethene	370	70	70	**1.32**	**1.335**	**1.35**	**8.15 J**
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	6.2 U
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	3.3 U	5.2 U	7.1 U	3.3 U
Tetrachloroethene	0.11	5	5				
Toluene	2300	1000	1000	**0.173 J**	**0.173 J**	1 U	10 U
Total 1,2-Dichloroethene	330	NA	70	**1.45 J**	**1.5 J**	**1.54 J**	**8.15 J**
Total Chlorinated VOCs[1]	NA	NA	NA	**622**	**612**	**602**	**248**
trans-1,2-Dichloroethene	110	100	100	**0.129 J**	**0.13 J**	**0.131 J**	10 U
Trichloroethene	1.7	5	5	**620**	**610**	**600**	**240**
Low-Level Volatile Organics (ug/L)							
1,1,2-Trichloroethane	0.24	5	5				
1,1-Dichloroethene	340	7	7				
1,2-Dichloroethane	0.15	5	5				
Benzene	0.41	5	5				
Chloroform	0.19	80	NA				
Vinyl Chloride	0.016	2	2				
Total Metals (ug/L)							
Aluminum	37000	NA	NA				
Arsenic	0.045	10	NA				
Barium	7300	2000	2000				
Beryllium	73	4	4				
Cadmium	18	5	5				
Calcium	NA	NA	NA				
Chromium	110	100	100				
Cobalt	11	NA	NA				
Copper	1500	1300	NA				
Iron	26000	NA	NA				
Lead	NA	15	15				
Magnesium	NA	NA	NA				
Manganese	880	NA	NA				
Mercury	11	2	2				
Nickel	730	NA	100				

TABLE 4-37

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	09 MW16-68R MW16-68R-NWG-111604 ORIG 11/16/2004	09 MW16-68R MW16-68R-NWG-111604-AVG AVG 11/16/2004	09 MW16-68R MW16-68R-NWG-111604-D DUP 11/16/2004	09 MW16-69R MW16-69R-NWG-111704 ORIG 11/17/2004
Total Metals (ug/L) (Continued)							
Potassium	NA	NA	NA				
Selenium	180	50	50				
Silver	180	NA	NA				
Sodium	NA	NA	NA				
Thallium	2.4	2	2				
Vanadium	180	NA	NA				
Zinc	11000	NA	NA				
Dissolved Metals (ug/L)							
Aluminum	37000	NA	NA				
Arsenic	0.045	10	NA				
Barium	7300	2000	2000				
Calcium	NA	NA	NA				
Chromium	110	100	100				
Cobalt	11	NA	NA				
Copper	1500	1300	NA				
Iron	26000	NA	NA	56.5 U	44.35 UJ	32.2 UJ	47.3 U
Lead	NA	15	15				
Magnesium	NA	NA	NA				
Manganese	880	NA	NA	**5.2**	**4.35 J**	**3.5 J**	**98.2**
Mercury	11	2	2				
Nickel	730	NA	100				
Potassium	NA	NA	NA				
Selenium	180	50	50				
Silver	180	NA	NA				
Sodium	NA	NA	NA				
Vanadium	180	NA	NA				
Zinc	11000	NA	NA				
Miscellaneous Parameters (mg/L)							
Alkalinity	NA	NA	NA	**60**	**55.25**	**50.5**	**48.5**
Ammonia	NA	NA	NA	**0.23**	**0.235**	**0.24**	**0.14**
Chloride	NA	NA	NA	**17.9**	**18.15**	**18.4**	**13**
Cyanide	730	200	200				
Dissolved Inorganic Carbon	NA	NA	NA	**2**	**2.5**	**3**	**7**
Dissolved Organic Carbon	NA	NA	NA	**2**	**2**	**2**	**3**
Hydrogen Sulfide	110	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U
Nitrate	58000	10	NA	0.1 U	0.1 U	0.1 U	0.1 U
Nitrite	3700	1	NA	**0.13**	**0.1285**	**0.127**	0.1 U
Salinity (ppth)	NA	NA	NA				
Sulfate	NA	NA	NA	**18.7**	**17.9**	**17.1**	**18.4**
pH	NA	NA	NA	**11.44**			**9.91**
Conductivity	NA	NA	NA	**0.609**			**0.185**
DO	NA	NA	NA	**0.45**			**0.42**
Turbidity	NA	NA	NA	**12.8**			**11**

TABLE 4-37

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date**	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**09** **MW16-69R** **MW16-69R-NWG-111704-AVG** **AVG** **11/17/2004**	**09** **MW16-69R** **MW16-69R-NWG-111704-D** **DUP** **11/17/2004**	**09** **MW16-70R** **MW16-70R-NWG-111704** **NORMAL** **11/17/2004**	**09** **MW16-71R** **MW16-71R-NWG-111704** **NORMAL** **11/17/2004**
Volatile Organics (ug/L)							
1,1-Dichloroethane	2.4	NA	NA	10 U	10 U	1 U	**0.172 J**
1,1-Dichloroethene	340	7	7	10 U	10 U	**0.403 J**	**2.56**
2-Butanone	7100	NA	NA	50 U	50 U	5 U	5 U
2-Hexanone	NA	NA	NA	50 U	50 U	5 U	5 U
Acetone	22000	NA	NA	24 U	33 U	**67 J**	20 U
Bromodichloromethane	1.1	80	NA	10 U	10 U	1 U	1 U
BTEX[(1)]	NA	NA	NA	0 U	0 U	0 U	**0.141**
Carbon Disulfide	1000	NA	NA	10 U	10 U	**0.166 J**	1 U
Chlorodibromomethane	0.8	80	NA	10 U	10 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	**8.155 J**	**8.16 J**	**3.93**	**23**
Ethane	NA	NA	NA	6.2 U	6.2 U	6.2 U	**1.3 J**
Ethene	NA	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U
Methane	NA	NA	NA	3.3 U	3.3 U	3.7 U	3.3 U
Tetrachloroethene	0.11	5	5				
Toluene	2300	1000	1000	10 U	10 U	1 U	**0.141 J**
Total 1,2-Dichloroethene	330	NA	70	**8.16 J**	**8.16 J**	**4.12**	**24**
Total Chlorinated VOCs[(1)]	NA	NA	NA	**248**	**248**	**63.5**	**1127**
trans-1,2-Dichloroethene	110	100	100	10 U	10 U	1 U	**1.04**
Trichloroethene	1.7	5	5	**240**	**240**	**59**	**1100**
Low-Level Volatile Organics (ug/L)							
1,1,2-Trichloroethane	0.24	5	5				
1,1-Dichloroethene	340	7	7				
1,2-Dichloroethane	0.15	5	5				
Benzene	0.41	5	5				
Chloroform	0.19	80	NA				
Vinyl Chloride	0.016	2	2				
Total Metals (ug/L)							
Aluminum	37000	NA	NA				
Arsenic	0.045	10	NA				
Barium	7300	2000	2000				
Beryllium	73	4	4				
Cadmium	18	5	5				
Calcium	NA	NA	NA				
Chromium	110	100	100				
Cobalt	11	NA	NA				
Copper	1500	1300	NA				
Iron	26000	NA	NA				
Lead	NA	15	15				
Magnesium	NA	NA	NA				
Manganese	880	NA	NA				
Mercury	11	2	2				
Nickel	730	NA	100				

TABLE 4-37

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	09 MW16-69R MW16-69R-NWG-111704-AVG AVG 11/17/2004	09 MW16-69R MW16-69R-NWG-111704-D DUP 11/17/2004	09 MW16-70R MW16-70R-NWG-111704 NORMAL 11/17/2004	09 MW16-71R MW16-71R-NWG-111704 NORMAL 11/17/2004
Total Metals (ug/L) (Continued)							
Potassium	NA	NA	NA				
Selenium	180	50	50				
Silver	180	NA	NA				
Sodium	NA	NA	NA				
Thallium	2.4	2	2				
Vanadium	180	NA	NA				
Zinc	11000	NA	NA				
Dissolved Metals (ug/L)							
Aluminum	37000	NA	NA				
Arsenic	0.045	10	NA				
Barium	7300	2000	2000				
Calcium	NA	NA	NA				
Chromium	110	100	100				
Cobalt	11	NA	NA				
Copper	1500	1300	NA				
Iron	26000	NA	NA	40.5 U	33.7 U	32.2 UJ	47.6 U
Lead	NA	15	15				
Magnesium	NA	NA	NA				
Manganese	880	NA	NA	**105.1**	**112**	**20.2**	**13.1**
Mercury	11	2	2				
Nickel	730	NA	100				
Potassium	NA	NA	NA				
Selenium	180	50	50				
Silver	180	NA	NA				
Sodium	NA	NA	NA				
Vanadium	180	NA	NA				
Zinc	11000	NA	NA				
Miscellaneous Parameters (mg/L)							
Alkalinity	NA	NA	NA	**48.75**	**49**	**29**	**64.5**
Ammonia	NA	NA	NA	**0.13**	**0.12**	**0.15**	**0.11**
Chloride	NA	NA	NA	**15.1**	**17.2**	**11.6**	**13.1**
Cyanide	730	200	200				
Dissolved Inorganic Carbon	NA	NA	NA	**6.5**	**6**	**3**	**2**
Dissolved Organic Carbon	NA	NA	NA	**2**	**1**	**2**	**1**
Hydrogen Sulfide	110	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U
Nitrate	58000	10	NA	0.1 U	0.1 U	0.1 U	0.1 U
Nitrite	3700	1	NA	0.1 U	0.1 U	0.1 U	0.1 U
Salinity (ppth)	NA	NA	NA				
Sulfate	NA	NA	NA	**18.95**	**19.5**	**17.1**	**26.1**
pH	NA	NA	NA			**9.87**	**12.32**
Conductivity	NA	NA	NA			**0.183**	**0.288**
DO	NA	NA	NA			**0.33**	**0.6**
Turbidity	NA	NA	NA			**12**	**7.58**

TABLE 4-37

SUMMARY OF CHEMICALS DETECTED
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Description:
08 - CTO 97 Supplemental Phase II Investigation
09 - CTO 107 HRC Injection Study

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.
AVG - Average of the two samples collected at this location.

Acronyms:
GA = Drinking water suitability
GW = Groundwater
MCL = Maximum Contaminant Level
NA = Not applicable/not available
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
VOC = Volatile organic compound

Footnotes:
1 - The calculation of the BTEX and the total chlorinated VOCs are defined in the Section 4 text. "0 U" indicates that this chemical group was not detected in the sample analyzed.
2 - A concentration that is shaded exceeds one or more criterion presented in the table.
3 - A blank cell in the table indicates that the sample was not analyzed for the target analyte.

TABLE 4-38

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Matrix Area	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	10 MW16-01R MW16-01R-NWG-073107 NORMAL 20070731 GW CREOSOTE DIP TANK	10 MW16-02R MW16-02R-NWG-052207 NORMAL 20070522 GW NCENTRAL EASTERN	10 MW16-03R MW16-03R-NWG-082107 NORMAL 20070821 GW NCENTRAL EASTERN	10 MW16-05R MW16-05R-NWG-082307 NORMAL 20070823 GW NCENTRAL EASTERN	10 MW16-06R MW16-06R-NWG-082207 NORMAL 20070822 GW CREOSOTE DIP TANK
Volatile Organic Compounds (ug/L)								
1,1-Dichloroethane	2.4	NA	NA	0.1 U	5 UJ	0.1 U	2.5 U	0.1 U
1,1-Dichloroethene	340	7	7	0.1 U	5 UJ	0.1 U	3.8 U	0.1 U
2-Hexanone	NA	NA	NA	0.96 UJ	15 U	0.96 UJ	4.8 U	0.96 UJ
Acetone	22000	NA	NA	3.9 UR	62 UR	3.9 UR	20 UR	3.9 UR
Carbon Disulfide	1000	NA	NA	0.69 U	11 U	0.69 U	3.5 U	0.69 U
Chloroform	0.19	80	NA	0.1 U	5 UJ	0.1 UJ	1.8 U	0.1 UJ
cis-1,2-Dichloroethene	370	70	70	0.53 U	8.5 U	**3 J**	**11**	0.53 U
Tetrachloroethene	0.11	5	5	0.1 U	5 UJ	0.1 U	2.6 U	0.1 U
Total Chlorinated VOCs	NA	NA	NA	**8.8**	**1900**	**33**	**1211**	0 U
Trichloroethene	1.7	5	5	**8.8**	**1900**	**30 J**	**1200**	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	5 UJ	0.1 U	2.6 U	0.1 U
Inorganics (ug/L)								
Aluminum	37000	NA	NA	14 U	14 U	**329**	**625**	73.3 U
Antimony	15	6	6	1.2 UJ	4.8 U	9.6 U	7.2 U	9.1 U
Arsenic	0.045	10	NA	**0.664**	**1.1**	1 U	1 U	1 U
Barium	7300	2000	2000	**29.7 J**	**20.8**	11 U	11 U	**18.3 J**
Beryllium	73	4	4	0.15 UJ	0.15 U	**0.15**	**0.18**	0.051 U
Cadmium	18	5	5	0.1 UJ	0.1 U	1.3 U	1.1 U	1 U
Calcium	NA	NA	NA	**18900**	**12000**	**22000**	**3240**	**30800**
Chromium	110	100	100	0.38 UJ	0.38 U	0.79 U	1.1 U	0.22 U
Cobalt	11	NA	NA	**8.5 J**	**2**	3.2 U	2.9 U	4 U
Copper	1500	1300	NA	6.3 U	6.3 U	1.7 U	1.9 U	1.7 U
Iron	26000	NA	NA	**19100 J**	**5070**	**12800**	**10300**	**9530**
Lead	NA	15	15	0.46 UJ	0.46 U	1.2 U	1.2 U	1.2 U
Magnesium	NA	NA	NA	**7040 J**	**3610**	**3870**	**1470**	**6030**
Manganese	880	NA	NA	**1060 J**	**598**	**800**	**233**	**816**
Mercury	11	2	2	**0.055 J**	0.13 U	0.11 U	0.11 U	0.11 U
Nickel	730	NA	100	4.7 U	1.8 U	2.6 U	2.7 U	2.2 U
Potassium	NA	NA	NA	**2940**	**2710**	**1980**	**1710**	**3330**
Selenium	180	50	50	4.6 U	6.4 U	5.2 U	5.2 U	5.2 U
Silver	180	NA	NA	0.91 U	0.91 U	1.2 U	1.2 U	**1.2 J**
Sodium	NA	NA	NA	**22000**	**13300**	**31100**	**86400**	**22700**
Thallium	2.4	2	2	0.024 U	0.006 U	1 U	1 U	1 U
Vanadium	180	NA	NA	0.47 UJ	0.47 U	1.5 U	1.5 U	0.82 U
Zinc	11000	NA	NA	**23.1 J**	**20.9**	**159**	35 U	**47.4**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA		14 U	37 U	37 U	37 U
Arsenic	0.045	10	NA		**1.3**	1 U	1 U	1 U
Barium	7300	2000	2000		**15.8**	11 U	11 U	**18.5 J**
Calcium	NA	NA	NA		**11100**	**22100**	**3690**	**29400**
Chromium	110	100	100		0.38 U	0.22 U	0.53 U	0.22 U

TABLE 4-38

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **Matrix** **Area**	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**10** **MW16-01R** **MW16-01R-NWG-073107** **NORMAL** **20070731** **GW** **CREOSOTE DIP TANK**	**10** **MW16-02R** **MW16-02R-NWG-052207** **NORMAL** **20070522** **GW** **NCENTRAL EASTERN**	**10** **MW16-03R** **MW16-03R-NWG-082107** **NORMAL** **20070821** **GW** **NCENTRAL EASTERN**	**10** **MW16-05R** **MW16-05R-NWG-082307** **NORMAL** **20070823** **GW** **NCENTRAL EASTERN**	**10** **MW16-06R** **MW16-06R-NWG-082207** **NORMAL** **20070822** **GW** **CREOSOTE DIP TANK**
Filtered Inorganics (ug/L) (continued)								
Cobalt	11	NA	NA		**3.2**	1.3 U	1.2 U	2.8 U
Copper	1500	1300	NA		6.3 U	1.7 U	1.7 U	1.7 U
Iron	26000	NA	NA		**4190**	**3020**	**452**	**5140**
Magnesium	NA	NA	NA		**4050**	**3540**	**1150**	**5620**
Manganese	880	NA	NA		**394**	**648**	**83.7**	**691**
Nickel	730	NA	100		**4.4**	1.5 U	0.26 U	2 U
Potassium	NA	NA	NA		**1800**	**1970**	**1590**	**4610**
Selenium	180	50	50		7.2 U	5.2 U	5.2 U	5.2 U
Silver	180	NA	NA		0.91 U	**3.7**	1.2 U	**3.2**
Sodium	NA	NA	NA		**13500**	**31400**	**87000**	**23800**
Vanadium	180	NA	NA		0.47 U	0.4 U	0.4 U	0.53 U
Zinc	11000	NA	NA		**22**	25.6 U	19.9 U	31.4 U
Miscellaneous Parameters								
Turbidity (NTUs)	NA	NA	NA	**2.96**	**13**	**25**	**29.6**	**13.9**
pH	NA	NA	NA	**6.39**	**6.63**	**7.16**	**7.05**	**6.88**
Conductivity (mS/cm)	NA	NA	NA	**0.39**	**0.2**	**0.304**	**0.441**	**0.327**
DO (mg/L)	NA	NA	NA	**0.36**	**16.11**	**0.59**	**0.57**	**0.52**
Salinity (%)	NA	NA	NA	**0**	**0**	**0**	**0**	**0**

TABLE 4-38

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **Matrix** **Area**	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**10** **MW16-10R** **MW16-10R-NWG-071707** **NORMAL** **20070717** **GW** **UPGRADIENT**	**10** **MW16-14R** **MW16-14R-NWG-071607** **NORMAL** **20070716** **GW** **BUILDING 41**	**10** **MW16-17R** **MW16-17R-NWG-061607** **NORMAL** **20070616** **GW** **EASTERN AREA**	**10** **MW16-25R** **MW16-25R-NWG-061707** **NORMAL** **20070617** **GW** **EASTERN AREA**	**10** **MW16-27R** **MW16-27R-NWG-082607** **NORMAL** **20070826** **GW** **EASTERN AREA**
Volatile Organic Compounds (ug/L)								
1,1-Dichloroethane	2.4	NA	NA	0.1 U	0.1 U	0.1 U	**0.29**	0.1 U
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Hexanone	NA	NA	NA	0.96 UJ	0.96 UJ	0.96 U	0.96 U	0.96 UJ
Acetone	22000	NA	NA	3.9 U	3.9 U	3.9 UR	3.9 UR	3.9 UR
Carbon Disulfide	1000	NA	NA	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
Chloroform	0.19	80	NA	0.1 U	0.1 U	**0.24**	0.1 U	0.1 UJ
cis-1,2-Dichloroethene	370	70	70	0.53 U	0.53 U	0.53 U	0.53 U	**1.5**
Tetrachloroethene	0.11	5	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total Chlorinated VOCs	NA	NA	NA	0 U	**4.4**	0 U	**0.41**	**3.4**
Trichloroethene	1.7	5	5	0.1 U	**4.4**	0.1 U	**0.12**	**1.9**
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Inorganics (ug/L)								
Aluminum	37000	NA	NA	55.6 U	20 U	**57.6**	**20.6 J**	37 U
Antimony	15	6	6	1.2 UJ	1.2 UJ	3.3 U	1.2 U	4.4 U
Arsenic	0.045	10	NA	0.04 U	**0.233**	0.022 UJ	0.376 U	1 U
Barium	7300	2000	2000	2.1 U	**7.1**	**3.9 J**	**3 J**	**41.1**
Beryllium	73	4	4	0.15 U	0.15 U	0.15 U	0.15 U	0.051 U
Cadmium	18	5	5	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.11 U
Calcium	NA	NA	NA	**666**	**25500**	**10200**	**7160**	**121000**
Chromium	110	100	100	**0.71 J**	0.38 U	**0.4 J**	0.38 U	0.22 U
Cobalt	11	NA	NA	0.32 U	**1.2**	0.9 U	0.25 U	**4**
Copper	1500	1300	NA	6.3 U	6.3 U	6.3 U	6.3 U	**4.6**
Iron	26000	NA	NA	**10300**	**765**	**2670**	**1750**	**3220 J**
Lead	NA	15	15	0.46 UJ	0.46 UJ	0.46 U	0.46 U	**2.3**
Magnesium	NA	NA	NA	223 U	**3440**	**1940**	**2190**	**29100**
Manganese	880	NA	NA	**305**	**245**	**541**	**272**	**1600**
Mercury	11	2	2	0.047 UJ	0.047 UJ	0.047 U	0.047 U	0.11 U
Nickel	730	NA	100	**0.75 J**	**0.69 J**	0.59 U	0.59 U	3.2 U
Potassium	NA	NA	NA	**231 J**	**2800**	**1800**	**4020**	**7760**
Selenium	180	50	50	2.5 U	3 U	8.7 U	4.9 U	**8.4**
Silver	180	NA	NA	0.91 U	2.1 U	0.91 U	0.91 U	**9.7**
Sodium	NA	NA	NA	**1600**	**9640**	**11500**	**13400**	**533000**
Thallium	2.4	2	2	0.011 U	0.006 U	0.01 U	0.008 U	1 U
Vanadium	180	NA	NA	0.47 U	0.47 U	0.47 U	0.47 U	0.46 U
Zinc	11000	NA	NA	**29.8**	**18.3**	**23.6**	**20**	16.8 U
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA	14 U			14 U	
Arsenic	0.045	10	NA	0.04 U				
Barium	7300	2000	2000	2.1 U			**2.9 J**	
Calcium	NA	NA	NA	**921**			**7010**	
Chromium	110	100	100	**0.64 J**			0.38 U	

TABLE 4-38

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Matrix Area	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	10 MW16-10R MW16-10R-NWG-071707 NORMAL 20070717 GW UPGRADIENT	10 MW16-14R MW16-14R-NWG-071607 NORMAL 20070716 GW BUILDING 41	10 MW16-17R MW16-17R-NWG-061607 NORMAL 20070616 GW EASTERN AREA	10 MW16-25R MW16-25R-NWG-061707 NORMAL 20070617 GW EASTERN AREA	10 MW16-27R MW16-27R-NWG-082607 NORMAL 20070826 GW EASTERN AREA
Filtered Inorganics (ug/L) (continued)								
Cobalt	11	NA	NA	0.15 U			0.16 U	
Copper	1500	1300	NA	6.3 U			6.3 U	
Iron	26000	NA	NA	**498**			**385**	
Magnesium	NA	NA	NA	209 U			**2150**	
Manganese	880	NA	NA	**233**			**258**	
Nickel	730	NA	100	0.59 U			0.59 U	
Potassium	NA	NA	NA	**249 J**			**3980**	
Selenium	180	50	50	0.98 UJ			5.8 U	
Silver	180	NA	NA	0.91 U			0.91 U	
Sodium	NA	NA	NA	**1600**			**13300**	
Vanadium	180	NA	NA	0.47 U			0.47 U	
Zinc	11000	NA	NA	**15.4**			16.2 U	
Miscellaneous Parameters								
Turbidity (NTUs)	NA	NA	NA	**13.2**	**3.53**	**4.1**	**11**	**4.09**
pH	NA	NA	NA	**6.89**	**7.99**	**6.64**	**7.26**	**7.31**
Conductivity (mS/cm)	NA	NA	NA	**0.02**	**0.195**	**0.565**	**0.571**	**7.11**
DO (mg/L)	NA	NA	NA	**0.76**	**0.5**	**4.33**	**6.56**	**0.59**
Salinity (%)	NA	NA	NA	**0**	**0**		**0**	**0.4**

TABLE 4-38

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Matrix Area	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	10 MW16-28R MW16-28R-NWG-081107 NORMAL 20070811 GW EASTERN AREA	10 MW16-32R MW16-32R-NWG-071607 NORMAL 20070716 GW BUILDING 41	10 MW16-36R MW16-36R-NWG-061707 NORMAL 20070617 GW EASTERN AREA	10 MW16-44R MW16-44R-NWG-082507 NORMAL 20070825 GW NORTH CEN FFTA	10 MW16-51R MW16-51R-NWG-072607 ORIG 20070726 GW EASTERN AREA
Volatile Organic Compounds (ug/L)								
1,1-Dichloroethane	2.4	NA	NA	0.1 U	0.5 U	0.1 U	0.5 U	0.1 U
1,1-Dichloroethene	340	7	7	0.1 U	0.76 U	0.1 U	**2.4**	0.1 U
2-Hexanone	NA	NA	NA	0.96 UJ	0.96 U	0.96 U	0.96 UJ	0.96 U
Acetone	22000	NA	NA	3.9 UR	3.9 UR	3.9 UR	3.9 UR	3.9 UR
Carbon Disulfide	1000	NA	NA	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
Chloroform	0.19	80	NA	0.1 UJ	0.35 U	0.1 U	0.35 U	0.1 U
cis-1,2-Dichloroethene	370	70	70	0.53 U	0.53 U	0.53 U	**13**	0.53 U
Tetrachloroethene	0.11	5	5	0.1 U	0.52 U	0.1 U	0.52 U	0.1 U
Total Chlorinated VOCs	NA	NA	NA	**0.47**	**52**	0 U	**1615**	0 U
Trichloroethene	1.7	5	5	**0.47**	**52 J**	0.1 U	**1600**	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	0.51 U	0.1 U	0.51 U	0.1 U
Inorganics (ug/L)								
Aluminum	37000	NA	NA	**78.1**	17.7 U	**20.1 J**	37 U	14 U
Antimony	15	6	6	17.3 U	1.2 UJ	1.2 U	4.4 U	**64.9 J**
Arsenic	0.045	10	NA	**7.8**	**0.422**	0.022 UJ	1 U	**29.4**
Barium	7300	2000	2000	**39.1**	**8.4**	**6.7**	**11.3**	**50.9 J**
Beryllium	73	4	4	**0.24**	0.15 U	0.15 U	0.051 U	0.15 UJ
Cadmium	18	5	5	0.1 U	0.1 UJ	0.1 U	**0.13**	0.1 UJ
Calcium	NA	NA	NA	**330000**	**23500**	**13000**	**17500**	**2630000**
Chromium	110	100	100	0.38 UJ	0.38 U	0.38 U	0.22 U	0.38 UJ
Cobalt	11	NA	NA	**17.4 J**	**1**	0.15 U	1.2 U	**105 J**
Copper	1500	1300	NA	**9.4 J**	6.3 U	6.3 U	1.7 U	**60.3 J**
Iron	26000	NA	NA	**15300**	**895**	**1880**	**7060 J**	**23100 J**
Lead	NA	15	15	0.46 U	0.46 UJ	0.46 U	1.2 U	**8.7 J**
Magnesium	NA	NA	NA	**78700**	**3210**	**2220**	**5110**	**318000 J**
Manganese	880	NA	NA	**2690**	**146**	**177**	**1020**	**10700 J**
Mercury	11	2	2	0.047 U	0.047 UJ	**0.06 J**	0.11 U	**0.089 J**
Nickel	730	NA	100	**16.4 J**	**0.61 J**	0.59 U	0.75 U	**83.4 J**
Potassium	NA	NA	NA	**28200**	**2560**	**3620**	**2160**	**80900**
Selenium	180	50	50	0.98 UJ	0.98 UJ	8.1 U	**8**	0.98 UJ
Silver	180	NA	NA	**24.5 J**	1.9 U	0.91 U	1.2 U	**168**
Sodium	NA	NA	NA	**1500000**	**9770**	**9500**	**15300**	**3780000**
Thallium	2.4	2	2	0.075 U	0.006 U	0.008 U	1 U	0.452 U
Vanadium	180	NA	NA	0.47 UJ	0.47 U	0.47 U	0.4 U	0.47 UJ
Zinc	11000	NA	NA	**58.8 J**	**15**	**17.2**	22.6 U	2.3 UJ
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA	14 U				
Arsenic	0.045	10	NA	**8**				
Barium	7300	2000	2000	**38.6**				
Calcium	NA	NA	NA	**333000**				
Chromium	110	100	100	0.38 UJ				

TABLE 4-38

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Matrix Area	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	10 MW16-28R MW16-28R-NWG-081107 NORMAL 20070811 GW EASTERN AREA	10 MW16-32R MW16-32R-NWG-071607 NORMAL 20070716 GW BUILDING 41	10 MW16-36R MW16-36R-NWG-061707 NORMAL 20070617 GW EASTERN AREA	10 MW16-44R MW16-44R-NWG-082507 NORMAL 20070825 GW NORTH CEN FFTA	10 MW16-51R MW16-51R-NWG-072607 ORIG 20070726 GW EASTERN AREA
Filtered Inorganics (ug/L) (continued)								
Cobalt	11	NA	NA	**16.9 J**				
Copper	1500	1300	NA	**10.3 J**				
Iron	26000	NA	NA	**7650**				
Magnesium	NA	NA	NA	**79900**				
Manganese	880	NA	NA	**2700**				
Nickel	730	NA	100	**16.1 J**				
Potassium	NA	NA	NA	**28000**				
Selenium	180	50	50	0.98 UJ				
Silver	180	NA	NA	**27.4 J**				
Sodium	NA	NA	NA	**1480000**				
Vanadium	180	NA	NA	0.47 UJ				
Zinc	11000	NA	NA	9.9 U				
Miscellaneous Parameters								
Turbidity (NTUs)	NA	NA	NA	**26**	**3.88**	**3.8**	**3.81**	**4.52**
pH	NA	NA	NA	**7.37**	**7.94**	**8.34**	**6.83**	**6.71**
Conductivity (mS/cm)	NA	NA	NA	**20.6**	**0.196**	**1.25**	**3.44**	**31.1**
DO (mg/L)	NA	NA	NA	**0.36**	**0.6**	**0.88**	**0.61**	**2.67**
Salinity (%)	NA	NA	NA	**1**	**0**		**0.2**	**2**

TABLE 4-38

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Matrix Area	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	10 MW16-51R MW16-51R-NWG-072607-D DUP 20070726 GW EASTERN AREA	10 MW16-56R MW16-56R-NWG-082807 NORMAL 20070828 GW EASTERN AREA	10 MW16-59R MW16-59R-NWG-071107 ORIG 20070711 GW EASTERN AREA	10 MW16-59R MW16-59R-NWG-071107-D DUP 20070711 GW EASTERN AREA	10 MW16-60R MW16-60R-NWG-052007 NORMAL 20070520 GW EASTERN AREA
Volatile Organic Compounds (ug/L)								
1,1-Dichloroethane	2.4	NA	NA	0.1 U	0.1 U	0.5 U	0.5 U	2 UJ
1,1-Dichloroethene	340	7	7	0.1 U	**0.24**	**4.6**	**4.7**	2 UJ
2-Hexanone	NA	NA	NA	0.96 U	0.96 UJ	0.96 U	0.96 U	3.8 U
Acetone	22000	NA	NA	3.9 UR	3.9 UR	3.9 U	3.9 U	16 UR
Carbon Disulfide	1000	NA	NA	0.69 U	0.69 U	0.69 U	0.69 U	2.8 U
Chloroform	0.19	80	NA	0.1 U	0.1 UJ	0.35 U	0.35 U	**7.9 J**
cis-1,2-Dichloroethene	370	70	70	0.53 U	**1.2**	**29**	**29**	2.1 U
Tetrachloroethene	0.11	5	5	0.1 U	0.1 U	0.52 U	0.52 U	2 UJ
Total Chlorinated VOCs	NA	NA	NA	0 U	**19.4**	**1935**	**2035**	**660**
Trichloroethene	1.7	5	5	0.1 U	**18**	**1900**	**2000**	**660**
Vinyl Chloride	0.016	2	2	0.1 U	0.1 UJ	**1.5 J**	**1.1 J**	2 UJ
Inorganics (ug/L)								
Aluminum	37000	NA	NA	14 U	**161**	76.4 U	74.3 U	**43.5**
Antimony	15	6	6	**58.5 J**	4.4 U	1.2 UJ	1.2 UJ	2 U
Arsenic	0.045	10	NA	**27.1**	1 U	**1.9**	**1.7**	**0.258**
Barium	7300	2000	2000	**50.9 J**	**22.5**	**6.9**	**7.5**	**10.5**
Beryllium	73	4	4	0.15 UJ	0.051 U	0.15 U	0.15 U	0.15 U
Cadmium	18	5	5	0.1 UJ	0.11 U	0.1 UJ	0.1 UJ	0.1 U
Calcium	NA	NA	NA	**2740000**	**21600**	**13300**	**13700**	**4930**
Chromium	110	100	100	0.38 UJ	0.22 U	0.38 U	**1.8**	**1.1**
Cobalt	11	NA	NA	**106 J**	0.66 U	**1.6**	**1.8**	**2.6**
Copper	1500	1300	NA	**61 J**	1.7 U	6.3 U	6.3 U	6.3 U
Iron	26000	NA	NA	**22300 J**	**2240 J**	**9450**	**9740**	**1120**
Lead	NA	15	15	**9.2 J**	1.2 U	0.46 UJ	0.46 UJ	2.1 U
Magnesium	NA	NA	NA	**317000 J**	**2510**	**3070**	**3130**	**1550**
Manganese	880	NA	NA	**10700 J**	**115**	**770**	**783**	**150**
Mercury	11	2	2	**0.051 J**	0.11 U	0.047 UJ	0.047 UJ	0.12 U
Nickel	730	NA	100	**84.3 J**	0.96 U	**0.61 J**	**1.2**	**5.9**
Potassium	NA	NA	NA	**75000**	**6770**	**2300**	**2350**	**1270**
Selenium	180	50	50	0.98 UJ	**5.2**	5.4 U	1.6 U	1.3 U
Silver	180	NA	NA	**171**	1.2 U	0.91 U	0.91 U	0.91 U
Sodium	NA	NA	NA	**3790000**	**12300**	**11800**	**11900**	**7900**
Thallium	2.4	2	2	0.621 U	1 U	0.015 U	0.019 U	0.028 U
Vanadium	180	NA	NA	0.47 UJ	0.4 U	0.47 U	0.47 U	**0.5 J**
Zinc	11000	NA	NA	2.3 UJ	20.3 U	**19.7**	**23.3**	**94.1**
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA		37 U	14 U	62 U	
Arsenic	0.045	10	NA		1 U	**1.5**	**1.6**	
Barium	7300	2000	2000		**20.2**	**7.8**	**8**	
Calcium	NA	NA	NA		**21400**	**14100**	**14000**	
Chromium	110	100	100		0.22 U	**0.5 J**	0.38 U	

TABLE 4-38

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **Matrix** **Area**	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**10** **MW16-51R** **MW16-51R-NWG-072607-D** **DUP** **20070726** **GW** **EASTERN AREA**	**10** **MW16-56R** **MW16-56R-NWG-082807** **NORMAL** **20070828** **GW** **EASTERN AREA**	**10** **MW16-59R** **MW16-59R-NWG-071107** **ORIG** **20070711** **GW** **EASTERN AREA**	**10** **MW16-59R** **MW16-59R-NWG-071107-D** **DUP** **20070711** **GW** **EASTERN AREA**	**10** **MW16-60R** **MW16-60R-NWG-052007** **NORMAL** **20070520** **GW** **EASTERN AREA**
Filtered Inorganics (ug/L) (continued)								
Cobalt	11	NA	NA		0.86 U	**1.2**	**1.2**	
Copper	1500	1300	NA		1.7 U	6.3 U	6.3 U	
Iron	26000	NA	NA		**366 J**	**3110**	**2840**	
Magnesium	NA	NA	NA		**2390**	**3120**	**3040**	
Manganese	880	NA	NA		**98.1**	**750**	**723**	
Nickel	730	NA	100		0.87 U	0.59 U	**0.59 J**	
Potassium	NA	NA	NA		**7130**	**2490**	**2490**	
Selenium	180	50	50		5.2 U	0.98 UJ	8.1 U	
Silver	180	NA	NA		1.4 U	0.91 U	0.91 U	
Sodium	NA	NA	NA		**12700**	**11800**	**11900**	
Vanadium	180	NA	NA		0.53 U	0.47 U	**2.3**	
Zinc	11000	NA	NA		**27**	**16.5**	**16.7**	
Miscellaneous Parameters								
Turbidity (NTUs)	NA	NA	NA		**12**	**23.6**		**3.9**
pH	NA	NA	NA		**8.41**	**6.85**		**5.69**
Conductivity (mS/cm)	NA	NA	NA		**1.7**	**0.17**		**0.238**
DO (mg/L)	NA	NA	NA		**0.37**	**0.5**		**4.99**
Salinity (%)	NA	NA	NA		**0.1**	**0**		**0**

TABLE 4-38

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**Federal**	**RIDEM**	**MW16-65R**	**MW16-67R**	**MW16-68R**	**MW16-68R**	**MW16-68R**
Sample Number	**Regional**	**MCL**	**GA GW**	**MW16-65R-NWG-072507**	**MW16-67R-NWG-071507**	**MW16-68R-NWG-051907**	**MW16-68R-L-081307**	**MW16-68R-U-081307**
Sample Code	**Screening**		**Objectives**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**			**20070725**	**20070715**	**20070519**	**20070813**	**20070813**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**UPGRADIENT**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**
Volatile Organic Compounds (ug/L)								
1,1-Dichloroethane	2.4	NA	NA	0.1 U	0.5 U	2 UJ	0.5 U	0.5 U
1,1-Dichloroethene	340	7	7	0.1 U	0.76 U	2 UJ	0.76 U	0.76 U
2-Hexanone	NA	NA	NA	**4.7 J**	0.96 U	3.8 U	0.96 UJ	0.96 UJ
Acetone	22000	NA	NA	**20 J**	3.9 UR	16 UR	3.9 UR	3.9 UR
Carbon Disulfide	1000	NA	NA	0.69 U	0.69 U	2.8 U	**47**	**6.3**
Chloroform	0.19	80	NA	0.1 U	0.35 U	**8.1 J**	0.35 U	0.35 U
cis-1,2-Dichloroethene	370	70	70	0.53 U	**1.9**	2.1 U	**3.3**	**1.2**
Tetrachloroethene	0.11	5	5	**0.15**	0.52 U	2 UJ	0.52 U	0.52 U
Total Chlorinated VOCs	NA	NA	NA	**1.35**	**252**	**500**	**173**	**511**
Trichloroethene	1.7	5	5	**1.2**	**250**	**500**	**170**	**510**
Vinyl Chloride	0.016	2	2	0.1 U	0.51 U	2 UJ	0.51 U	0.51 U
Inorganics (ug/L)								
Aluminum	37000	NA	NA	**457**	341 U	**43200**		
Antimony	15	6	6	**14.6 J**	1.2 UJ	1.2 U		
Arsenic	0.045	10	NA	0.108 U	**0.52 J**	**16.9**		
Barium	7300	2000	2000	**2190 J**	**6.5**	**272**		
Beryllium	73	4	4	0.15 UJ	0.15 U	**2.6**		
Cadmium	18	5	5	0.1 UJ	0.1 UJ	**0.56 J**		
Calcium	NA	NA	NA	**583000**	**20400**	**43600**		
Chromium	110	100	100	0.38 UJ	**1.1**	**65.6**		
Cobalt	11	NA	NA	**25.9 J**	0.97 U	**44.6 J**		
Copper	1500	1300	NA	**16.1 J**	6.3 U	**142**		
Iron	26000	NA	NA	**2690 J**	**519**	**123000**		
Lead	NA	15	15	0.46 UJ	0.46 UJ	**52.1**		
Magnesium	NA	NA	NA	20 UJ	**2740**	**23300**		
Manganese	880	NA	NA	3.8 U	**130**	**1790**		
Mercury	11	2	2	0.047 U	0.047 UJ	0.13 U		
Nickel	730	NA	100	**44.2 J**	**2.2**	**97.1 J**		
Potassium	NA	NA	NA	**26200**	**2180**	**10100**		
Selenium	180	50	50	0.98 UJ	5.5 U	0.98 UJ		
Silver	180	NA	NA	**40.8**	1.6 U	2.9 U		
Sodium	NA	NA	NA	**50800**	**9430**	**11200**		
Thallium	2.4	2	2	0.081 U	0.018 U	**1.2**		
Vanadium	180	NA	NA	0.47 UJ	**1.4**	**89.5**		
Zinc	11000	NA	NA	2.3 UJ	**17.8**	**290**		
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA			14 U		
Arsenic	0.045	10	NA			**0.698**		
Barium	7300	2000	2000			**40.5**		
Calcium	NA	NA	NA			**15900**		
Chromium	110	100	100			0.38 U		

TABLE 4-38

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **Matrix** **Area**	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**10** **MW16-65R** **MW16-65R-NWG-072507** **NORMAL** **20070725** **GW** **UPGRADIENT**	**10** **MW16-67R** **MW16-67R-NWG-071507** **NORMAL** **20070715** **GW** **BUILDING 41**	**10** **MW16-68R** **MW16-68R-NWG-051907** **NORMAL** **20070519** **GW** **BUILDING 41**	**10** **MW16-68R** **MW16-68R-L-081307** **NORMAL** **20070813** **GW** **BUILDING 41**	**10** **MW16-68R** **MW16-68R-U-081307** **NORMAL** **20070813** **GW** **BUILDING 41**
Filtered Inorganics (ug/L) (continued)								
Cobalt	11	NA	NA			0.27 U		
Copper	1500	1300	NA			6.3 U		
Iron	26000	NA	NA			**1270**		
Magnesium	NA	NA	NA			**2230**		
Manganese	880	NA	NA			**271**		
Nickel	730	NA	100			0.8 U		
Potassium	NA	NA	NA			**2260**		
Selenium	180	50	50			12.1 U		
Silver	180	NA	NA			0.91 U		
Sodium	NA	NA	NA			**9670**		
Vanadium	180	NA	NA			0.47 U		
Zinc	11000	NA	NA			17.3 U		
Miscellaneous Parameters								
Turbidity (NTUs)	NA	NA	NA	**4.58**	**4.64**	**> 1100**	**79.9**	**19.7**
pH	NA	NA	NA	**12.33**	**7.81**	**7.49**	**7.88**	**7.07**
Conductivity (mS/cm)	NA	NA	NA	**5.82**	**0.18**	**0.183**	**0.187**	**0.192**
DO (mg/L)	NA	NA	NA	**0.54**	**0.7**	**5.43**	**0.76**	**0.53**
Salinity (%)	NA	NA	NA	**0.3**	**0**	**0**	**0**	**0**

TABLE 4-38

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**Federal**	**RIDEM**	**MW16-70R**	**MW16-70R**	**MW16-70R**	**SB16-A3-41/MW16-13R**	**SB16-A3-42/MW16-86R**
Sample Number	**Regional**	**MCL**	**GA GW**	**MW16-70R-NWG-052007**	**MW16-70R-L-081307**	**MW16-70R-U-081307**	**MW16-13R-NWG-102507**	**MW16-86R-NWG-121707**
Sample Code	**Screening**		**Objectives**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Level**			**20070520**	**20070813**	**20070813**	**20071025**	**20071217**
Matrix	**Tap Water**			**GW**	**GW**	**GW**	**GW**	**GW**
Area				**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**BUILDING 41**	**EASTERN AREA**
Volatile Organic Compounds (ug/L)								
1,1-Dichloroethane	2.4	NA	NA	0.1 UJ	0.5 U	0.5 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	**0.15 J**	0.76 U	0.76 U	0.1 U	0.1 U
2-Hexanone	NA	NA	NA	**4.2 J**	0.96 UJ	0.96 UJ	1.6 U	1.6 U
Acetone	22000	NA	NA	**30 J**	3.9 UR	3.9 UR	1.9 U	1.9 UR
Carbon Disulfide	1000	NA	NA	0.69 U	**23**	**32 J**	1 U	1 U
Chloroform	0.19	80	NA	0.1 UJ	0.35 U	0.35 U	0.1 U	0.1 U
cis-1,2-Dichloroethene	370	70	70	**1.7**	0.53 U	**2.4 J**	0.14 U	0.14 U
Tetrachloroethene	0.11	5	5	0.1 U	0.52 U	0.52 U	0.1 U	0.1 U
Total Chlorinated VOCs	NA	NA	NA	**39.9**	**16**	**63.4**	0 U	0 U
Trichloroethene	1.7	5	5	**38**	**16**	**61 J**	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.1 UJ	0.51 U	0.51 U	0.1 U	0.1 U
Inorganics (ug/L)								
Aluminum	37000	NA	NA	**680**			**11700 J**	**2320 J**
Antimony	15	6	6	2.2 U			4.4 U	4.4 U
Arsenic	0.045	10	NA	**1.4**			**2.3**	**0.571**
Barium	7300	2000	2000	**1270**			63.2 U	**25.6**
Beryllium	73	4	4	0.15 U			0.051 U	0.056 U
Cadmium	18	5	5	0.1 U			0.11 U	0.11 U
Calcium	NA	NA	NA	**417000**			**12200**	**12700**
Chromium	110	100	100	0.38 UJ			**30.3**	**2.2**
Cobalt	11	NA	NA	0.15 U			6.6 U	**1.6 J**
Copper	1500	1300	NA	6.3 U			**40.9**	**6**
Iron	26000	NA	NA	**1880**			**14600 J**	**7080 J**
Lead	NA	15	15	0.46 U			6.9 U	1.5 U
Magnesium	NA	NA	NA	20 U			**5150 J**	**3620**
Manganese	880	NA	NA	**17.8 J**			**634 J**	**647**
Mercury	11	2	2	0.15 U			0.11 UJ	0.16 U
Nickel	730	NA	100	2.7 U			11.7 U	2.8 U
Potassium	NA	NA	NA	**12500**			**23000**	**8420**
Selenium	180	50	50	**81.5**			**11.3**	10 U
Silver	180	NA	NA	0.91 U			**29.3**	1.2 U
Sodium	NA	NA	NA	**31900**			**23800**	**19300**
Thallium	2.4	2	2	0.049 U			1 U	0.075 U
Vanadium	180	NA	NA	0.47 UJ			12.9 U	2 U
Zinc	11000	NA	NA	13.6 U			41.2 U	21.4 U
Filtered Inorganics (ug/L)								
Aluminum	37000	NA	NA	**631**			37 U	37 U
Arsenic	0.045	10	NA	**1.5**			**2**	**0.389**
Barium	7300	2000	2000	**1180**			11 U	**16.6 J**
Calcium	NA	NA	NA	**383000**			**10200**	**12100**
Chromium	110	100	100	0.38 UJ			0.22 U	**0.24 J**

TABLE 4-38

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **Matrix** **Area**	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**10** **MW16-70R** **MW16-70R-NWG-052007** **NORMAL** **20070520** **GW** **BUILDING 41**	**10** **MW16-70R** **MW16-70R-L-081307** **NORMAL** **20070813** **GW** **BUILDING 41**	**10** **MW16-70R** **MW16-70R-U-081307** **NORMAL** **20070813** **GW** **BUILDING 41**	**10** **SB16-A3-41/MW16-13R** **MW16-13R-NWG-102507** **NORMAL** **20071025** **GW** **BUILDING 41**	**10** **SB16-A3-42/MW16-86R** **MW16-86R-NWG-121707** **NORMAL** **20071217** **GW** **EASTERN AREA**
Filtered Inorganics (ug/L) (continued)								
Cobalt	11	NA	NA	0.15 U			0.31 U	0.43 U
Copper	1500	1300	NA	6.3 U			1.7 U	1.7 U
Iron	26000	NA	NA	32.6 U			**203**	**4550**
Magnesium	NA	NA	NA	20 U			**2280**	**2950**
Manganese	880	NA	NA	1.8 U			**309**	**602**
Nickel	730	NA	100	2.4 U			0.58 U	1.7 U
Potassium	NA	NA	NA	**11500**			**17300**	**8040**
Selenium	180	50	50	**79.1**			**10.2 J**	6 U
Silver	180	NA	NA	0.91 UJ			1.2 U	1.2 U
Sodium	NA	NA	NA	**29400**			**21200**	**19200**
Vanadium	180	NA	NA	0.47 UJ			0.4 U	0.4 U
Zinc	11000	NA	NA	15.4 U			15 U	21.9 U
Miscellaneous Parameters								
Turbidity (NTUs)	NA	NA	NA	**6.2**	**16.3**	**5.84**	**184**	**40**
pH	NA	NA	NA	**12.35**	**11.99**	**11.86**	**8.97**	**10.36**
Conductivity (mS/cm)	NA	NA	NA	**4.31**	**3.87**	**2.8**	**0.233**	**0.207**
DO (mg/L)	NA	NA	NA	**5.8**	**1**	**0.86**	**0.36**	**0**
Salinity (%)	NA	NA	NA	**0.2**	**0.2**	**0.1**		**0**

TABLE 4-38

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Matrix Area	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	10 SB16-UG-04/MW16-82R MW16-82R-NWG-102407 NORMAL 20071024 GW UPGRADIENT	10 SB16-UG-07/MW16-84R MW16-84R-NWG-121607 NORMAL 20071216 GW UPGRADIENT	10 SB16-UG-09/MW16-83R MW16-83R-NWG-121807 ORIG 20071218 GW UPGRADIENT	10 SB16-UG-09/MW16-83R MW16-83R-NWG-121807-D DUP 20071218 GW UPGRADIENT
Volatile Organic Compounds (ug/L)							
1,1-Dichloroethane	2.4	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	340	7	7	0.1 U	0.1 U	0.1 U	0.1 U
2-Hexanone	NA	NA	NA	1.6 U	1.6 U	1.6 U	1.6 U
Acetone	22000	NA	NA	1.9 UR	**12 J**	1.9 UR	1.9 UR
Carbon Disulfide	1000	NA	NA	1 U	**2.8**	1 U	1 U
Chloroform	0.19	80	NA	0.1 U	0.1 U	0.1 U	0.1 U
cis-1,2-Dichloroethene	370	70	70	0.14 U	0.14 U	0.14 U	0.14 U
Tetrachloroethene	0.11	5	5	0.1 U	0.1 U	0.1 U	0.1 U
Total Chlorinated VOCs	NA	NA	NA	0 U	0 U	0 U	0 U
Trichloroethene	1.7	5	5	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	0.1 U	0.1 U	0.1 U	0.1 U
Inorganics (ug/L)							
Aluminum	37000	NA	NA	**24800 J**	**2300 J**	**3220 J**	**2460 J**
Antimony	15	6	6	4.4 U	4.4 U	4.4 U	4.4 U
Arsenic	0.045	10	NA	1 U	**0.568**	**4.3**	**4.4**
Barium	7300	2000	2000	**122**	**27**	**17.9 J**	**14.8 J**
Beryllium	73	4	4	0.99 U	0.051 U	0.051 U	0.051 U
Cadmium	18	5	5	0.11 U	0.15 U	0.11 U	0.11 U
Calcium	NA	NA	NA	**23400**	**11600**	**17400**	**17200**
Chromium	110	100	100	**68.5**	**4**	**10.1**	**8.9**
Cobalt	11	NA	NA	18.5 U	**4.5 J**	**2.6 J**	**2 J**
Copper	1500	1300	NA	**81.9**	**8.1**	**8.5**	**7.7**
Iron	26000	NA	NA	**45300 J**	**16900 J**	**4870 J**	**3880 J**
Lead	NA	15	15	28.9 U	2.1 U	2.3 U	2.4 U
Magnesium	NA	NA	NA	**11900 J**	**4810**	**4050**	**3750**
Manganese	880	NA	NA	**753 J**	**604**	**482**	**460**
Mercury	11	2	2	0.11 UJ	0.16 U	0.16 U	0.16 U
Nickel	730	NA	100	**41.6**	**4.5**	**9.1**	**7.9**
Potassium	NA	NA	NA	**12100**	**4910**	**6310**	**5970**
Selenium	180	50	50	5.2 U	5.2 U	7.6 U	9.8 U
Silver	180	NA	NA	10.1 U	1.9 U	1.2 U	1.2 U
Sodium	NA	NA	NA	**24400**	**19800**	**30600**	**29800**
Thallium	2.4	2	2	1 U	0.075 U	0.075 U	0.075 U
Vanadium	180	NA	NA	**32.3**	1.7 U	**4.5**	**3.3**
Zinc	11000	NA	NA	**153**	21.2 U	**29**	**25.9**
Filtered Inorganics (ug/L)							
Aluminum	37000	NA	NA	**39.2 J**	37 U	37 U	37 U
Arsenic	0.045	10	NA	1 U	**0.689**	**4.4**	**4.2**
Barium	7300	2000	2000	11 U	**16 J**	11 U	11 U
Calcium	NA	NA	NA	**18800**	**11400**	**17400**	**18000**
Chromium	110	100	100	0.23 U	0.22 U	0.22 U	0.31 U

TABLE 4-38

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **Matrix** **Area**	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**10** **SB16-UG-04/MW16-82R** **MW16-82R-NWG-102407** **NORMAL** **20071024** **GW** **UPGRADIENT**	**10** **SB16-UG-07/MW16-84R** **MW16-84R-NWG-121607** **NORMAL** **20071216** **GW** **UPGRADIENT**	**10** **SB16-UG-09/MW16-83R** **MW16-83R-NWG-121807** **ORIG** **20071218** **GW** **UPGRADIENT**	**10** **SB16-UG-09/MW16-83R** **MW16-83R-NWG-121807-D** **DUP** **20071218** **GW** **UPGRADIENT**
Filtered Inorganics (ug/L) (continued)							
Cobalt	11	NA	NA	0.59 U	**2.9 J**	0.13 U	0.068 U
Copper	1500	1300	NA	1.7 U	**3 J**	1.7 U	2 U
Iron	26000	NA	NA	**109 J**	**12700**	89 U	89 U
Magnesium	NA	NA	NA	**4000**	**4020**	**3050**	**3110**
Manganese	880	NA	NA	**126**	**558**	**434**	**445**
Nickel	730	NA	100	1.4 U	2 U	1.7 U	1.1 U
Potassium	NA	NA	NA	**5750**	**4770**	**5220**	**5300**
Selenium	180	50	50	**8.8 J**	5.8 U	5.7 U	9.4 U
Silver	180	NA	NA	1.2 U	1.2 U	2.4 U	4.2 U
Sodium	NA	NA	NA	**23200**	**21600**	**27900**	**28200**
Vanadium	180	NA	NA	1.5 U	0.4 U	0.4 U	0.48 U
Zinc	11000	NA	NA	12.6 U	15 U	**16.1**	**13.6**
Miscellaneous Parameters							
Turbidity (NTUs)	NA	NA	NA	**>1100**	**21**	**35**	
pH	NA	NA	NA	**8.33**	**9.98**	**8.14**	
Conductivity (mS/cm)	NA	NA	NA	**0.229**	**0.235**	**0.253**	
DO (mg/L)	NA	NA	NA	**0.43**	**0.05**	**0.3**	
Salinity (%)	NA	NA	NA		**0**	**0**	

TABLE 4-38

SUMMARY OF CHEMICALS DETECTED
2007 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
GA = Drinking water suitability
GW = Groundwater
MCL = Maximum Contaminant Level
NA = Not applicable/not available
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
VOC = Volatile organic compound

Footnotes:
Bolding indicates that the chemical was detected in the sample.
1 - The calculation of total chlorinated VOCs are defined in the Section 4 text. "0 U" indicates that this chemical group was not detected in the sample analyzed.
2 - A concentration that is shaded exceeds one or more criterion presented in the table.
3 - A blank cell in the table indicates that the sample was not analyzed for the target analyte.

TABLE 4-39

SUMMARY OF CHEMICALS DETECTED
2004 DEEP BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 1 OF 5

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	08 MW16-02R2 MW16-02R2-NWG-100604 ORIG 10/6/2004	08 MW16-02R2 MW16-02R2-NWG-100604-AVG AVG 10/6/2004	08 MW16-02R2 MW16-02R2-NWG-100604-D DUP 10/6/2004	08 MW16-05R2 MW16-05R2-NWG-102604 NORMAL 10/26/2004
Volatile Organics (ug/L)							
1,1-Dichloroethane	2.4	NA	NA	10 U	**0.184 J**	**0.184 J**	1 U
Bromodichloromethane	1.1	80	NA	10 U	5.5 U	1 U	1 U
BTEX[1]	NA	NA	NA	0 U	0 U	0 U	0 U
Carbon Disulfide	1000	NA	NA	10 U	5.5 U	1 U	1 U
Chlorodibromomethane	0.8	80	NA	10 U	5.5 U	1 U	1 U
cis-1,2-Dichloroethene	370	70	70	**5.54 J**	**5.74 J**	**5.94**	**0.597 J**
Methane	NA	NA	NA	**1.1 J**	**1.05 J**	**1 J**	4.3 U
Total 1,2-Dichloroethene	330	NA	70	**5.54 J**	**5.96 J**	**6.39**	**0.597 J**
Total Chlorinated VOCs[1]	NA	NA	NA	**476**	**472**	**468**	**10.1**
trans-1,2-Dichloroethene	110	100	100	10 U	**0.448 J**	**0.448 J**	1 U
Trichloroethene	1.7	5	5	**470**	**465**	**460**	**9.37**
Low-Level Volatile Organics (ug/L)							
1,1-Dichloroethene	340	7	7	**0.587**	**0.5885**	**0.59**	**0.0927 J**
Benzene	0.41	5	5	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	0.016	2	2	**0.342**	**0.3445**	**0.347**	0.1 U
Total Metals (ug/L)							
Aluminum	37000	NA	NA	**153**	**154.5**	**156**	**46**
Arsenic	0.045	10	NA	0.42 U	0.42 U	0.42 U	**8.6**
Barium	7300	2000	2000	**37.9**	**37.8**	**37.7**	**106**
Calcium	NA	NA	NA	**31300**	**31400**	**31500**	**723000**
Chromium	110	100	100	**0.51 J**	**0.53 J**	**0.55 J**	1.3 U
Cobalt	11	NA	NA	**0.27**	**0.265**	**0.26**	**1.2**
Copper	1500	1300	NA	0.59 U	0.545 U	0.5 U	**36.2 J**
Iron	26000	NA	NA	**159**	**155.5**	**152**	**2370**
Lead	NA	15	15	0.05 U	**0.0375 J**	**0.05 J**	**0.2 J**
Magnesium	NA	NA	NA	**1320**	**1315**	**1310**	**193000**
Manganese	880	NA	NA	**224**	**221.5**	**219**	**3050**
Nickel	730	NA	100	**0.88**	**0.845**	**0.81**	**14.3 J**
Potassium	NA	NA	NA	**2740**	**2740**	**2740**	**41000**
Selenium	180	50	50	0.29 U	0.29 U	0.29 U	**41.5**
Sodium	NA	NA	NA	**9950**	**10025**	**10100**	**3000000 J**
Vanadium	180	NA	NA	**1.1**	**1.15**	**1.2**	0.4 U
Zinc	11000	NA	NA	**1.3 J**	**1.25 J**	**1.2 J**	7.3 U
Dissolved Metals (ug/L)							
Aluminum	37000	NA	NA	**129**	**128**	**127**	**1.8**
Arsenic	0.045	10	NA	**0.51**	**0.51**	**0.51**	**10.9**
Barium	7300	2000	2000	**34.6**	**34.8**	**35**	**97.2**
Calcium	NA	NA	NA	**30900**	**30750**	**30600**	**774000**
Chromium	110	100	100	**0.82**	**0.73**	**0.64**	0.98 U
Cobalt	11	NA	NA	**0.13**	**0.13**	**0.13**	**1.3**
Copper	1500	1300	NA	**0.2 J**	**0.27 J**	**0.34**	**29.5 J**
Iron	26000	NA	NA	**125**	**124**	**123**	**2590**

TABLE 4-39

SUMMARY OF CHEMICALS DETECTED
2004 DEEP BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 2 OF 5

Investigation **Location** **Sample Number** **Sample Code** **Sample Date**	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**08** **MW16-02R2** **MW16-02R2-NWG-100604** **ORIG** **10/6/2004**	**08** **MW16-02R2** **MW16-02R2-NWG-100604-AVG** **AVG** **10/6/2004**	**08** **MW16-02R2** **MW16-02R2-NWG-100604-D** **DUP** **10/6/2004**	**08** **MW16-05R2** **MW16-05R2-NWG-102604** **NORMAL** **10/26/2004**
Dissolved Metals (ug/L) (Continued)							
Lead	NA	15	15	0.08 U	0.08 U	0.08 U	**0.11 J**
Magnesium	NA	NA	NA	**1360**	**1340**	**1320**	**214000**
Manganese	880	NA	NA	**134**	**133**	**132**	**3620**
Nickel	730	NA	100	**0.86**	**0.845**	**0.83**	**16.8 J**
Potassium	NA	NA	NA	**2800**	**2770**	**2740**	**44900**
Selenium	180	50	50	**0.43 J**	**0.4 J**	**0.37 J**	**49.9**
Sodium	NA	NA	NA	**9840 J**	**9670 J**	**9500 J**	**3050000**
Vanadium	180	NA	NA	**1.3**	**1.25**	**1.2**	0.08 U
Zinc	11000	NA	NA	**3.3**	**3.3**	**3.3**	**4.8**
Miscellaneous Parameters (mg/L)							
Alkalinity	NA	NA	NA	**96.5**	**97**	**97.5**	**42.5**
Ammonia	NA	NA	NA	**0.15**	**0.1**	0.1 U	**0.15**
Chloride	NA	NA	NA	**10.5**	**9.985**	**9.47**	**5850**
Dissolved Inorganic Carbon	NA	NA	NA	**5**	**4.5**	**4**	**5**
Dissolved Organic Carbon	NA	NA	NA	**3**	**2**	**1**	**2**
Salinity (ppth)	NA	NA	NA	**0.133**	**0.137**	**0.141**	**10.4**
Sulfate	NA	NA	NA	**15.3**	**14.9**	**14.5**	**706**

TABLE 4-39

SUMMARY OF CHEMICALS DETECTED
2004 DEEP BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 3 OF 5

Investigation Location Sample Number Sample Code Sample Date	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**08 MW16-15R2 MW16-15R2-NWG-101404 NORMAL 10/14/2004**	**08 MW16-55R2 MW16-55R2-NWG-092904 NORMAL 9/29/2004**
Volatile Organics (ug/L)					
1,1-Dichloroethane	2.4	NA	NA	1 U	1 U
Bromodichloromethane	1.1	80	NA	**0.303 J**	1 U
BTEX[(1)]	NA	NA	NA	**0.0235**	**0.0281**
Carbon Disulfide	1000	NA	NA	1 U	**1.02**
Chlorodibromomethane	0.8	80	NA	**0.491 J**	1 U
cis-1,2-Dichloroethene	370	70	70	**27**	1 U
Methane	NA	NA	NA	3.3 U	3.3 U
Total 1,2-Dichloroethene	330	NA	70	**27.3**	1 U
Total Chlorinated VOCs[(1)]	NA	NA	NA	**239**	0 U
trans-1,2-Dichloroethene	110	100	100	**0.306 J**	1 U
Trichloroethene	1.7	5	5	**210**	1 U
Low-Level Volatile Organics (ug/L)					
1,1-Dichloroethene	340	7	7	**1.31**	0.1 U
Benzene	0.41	5	5	**0.0235 J**	**0.0281 J**
Vinyl Chloride	0.016	2	2	**0.19**	0.1 U
Total Metals (ug/L)					
Aluminum	37000	NA	NA	**272**	**831**
Arsenic	0.045	10	NA	**3.2**	0.42 U
Barium	7300	2000	2000	**17.9**	**343**
Calcium	NA	NA	NA	**18600**	**153000**
Chromium	110	100	100	1.9 U	1.7 U
Cobalt	11	NA	NA	**0.28**	**0.16 J**
Copper	1500	1300	NA	2.1 U	**12.8 J**
Iron	26000	NA	NA	**3490**	**760**
Lead	NA	15	15	**0.82**	**0.66 J**
Magnesium	NA	NA	NA	**1180**	**369**
Manganese	880	NA	NA	**155 J**	**14.5**
Nickel	730	NA	100	**1.6**	**3.5 J**
Potassium	NA	NA	NA	**4880**	**11600**
Selenium	180	50	50	0.29 U	0.29 U
Sodium	NA	NA	NA	**10300 J**	**14200**
Vanadium	180	NA	NA	**3.8**	0.4 U
Zinc	11000	NA	NA	**18.5**	**9.1 J**
Dissolved Metals (ug/L)					
Aluminum	37000	NA	NA	**67.4**	**610**
Arsenic	0.045	10	NA	**3.2**	0.092 U
Barium	7300	2000	2000	**12.4**	**313**
Calcium	NA	NA	NA	**18900**	**154000 J**
Chromium	110	100	100	1.1 U	0.55 U
Cobalt	11	NA	NA	0.014 U	**0.1 J**
Copper	1500	1300	NA	0.16 U	**0.23 J**
Iron	26000	NA	NA	**58.2 J**	**363**

TABLE 4-39

SUMMARY OF CHEMICALS DETECTED
2004 DEEP BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 4 OF 5

Investigation Location Sample Number Sample Code Sample Date	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**08 MW16-15R2 MW16-15R2-NWG-101404 NORMAL 10/14/2004**	**08 MW16-55R2 MW16-55R2-NWG-092904 NORMAL 9/29/2004**
Dissolved Metals (ug/L) (Continued)					
Lead	NA	15	15	**0.2**	**0.26 J**
Magnesium	NA	NA	NA	**945**	**196**
Manganese	880	NA	NA	**90.7 J**	**0.03 J**
Nickel	730	NA	100	**0.82**	**3.3 J**
Potassium	NA	NA	NA	**4880**	**11300**
Selenium	180	50	50	0.3 U	0.3 U
Sodium	NA	NA	NA	**10300**	**12600**
Vanadium	180	NA	NA	**2.4**	0.27 U
Zinc	11000	NA	NA	**4.4 J**	**1.3 J**
Miscellaneous Parameters (mg/L)					
Alkalinity	NA	NA	NA	**38.5**	**392**
Ammonia	NA	NA	NA	**0.13**	0.31 U
Chloride	NA	NA	NA	**10.4**	**13.2**
Dissolved Inorganic Carbon	NA	NA	NA	**2**	1 U
Dissolved Organic Carbon	NA	NA	NA	**2**	**2**
Salinity (ppth)	NA	NA	NA	**0.078**	**0.983**
Sulfate	NA	NA	NA	**16.9**	**3.08**

TABLE 4-39

SUMMARY OF CHEMICALS DETECTED
2004 DEEP BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Description:
08 - CTO 97 Supplemental Phase II Investigation

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.
AVG - Average of the two samples collected at this location.

Acronyms:
GA = Drinking water suitability
GW = Groundwater
MCL = Maximum Contaminant Level
NA = Not applicable/not available
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
VOC = Volatile organic compound

Footnotes:
1 - The calculation of the BTEX and the total chlorinated VOCs are defined in the Section 4 text. "0 U" indicates that this chemical group was not detected in the sample analyzed.
2 - A concentration that is shaded exceeds one or more criterion presented in the table.
3 - A blank cell in the table indicates that the sample was not analyzed for the target analyte.

TABLE 4-40

SUMMARY OF CHEMICALS DETECTED
2007 DEEP BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation **Location** **Sample Number** **Sample Code** **Sample Date** **matrix** **area**	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**10** **MW16-02R2** **MW16-02R2-NWG-082407** **NORMAL** **20070824** **GW** **NCENTRAL EASTERN**	**10** **MW16-05R2** **MW16-05R2-NWG-082307** **NORMAL** **20070823** **GW** **NCENTRAL EASTERN**
Volatile Organic Compounds (ug/L)					
1,1-Dichloroethene	340	7	7	**3.9**	0.1 U
cis-1,2-Dichloroethene	370	70	70	**7.2**	0.53 U
Total Chlorinated VOCs	NA	NA	NA	**451**	**12**
Trichloroethene	1.7	5	5	**440**	**12**
Inorganics (ug/L)					
Aluminum	37000	NA	NA	**85.6**	37 U
Barium	7300	2000	2000	**22**	**93.8**
Beryllium	73	4	4	0.051 U	0.073 J
Calcium	NA	NA	NA	**32700**	**649000**
Copper	1500	1300	NA	**2**	1.7 UJ
Iron	26000	NA	NA	**193 J**	**147**
Lead	NA	15	15	1.2 U	**16.1 J**
Magnesium	NA	NA	NA	**1790**	**167000**
Manganese	880	NA	NA	**317**	**3880**
Potassium	NA	NA	NA	**2140**	**33700**
Selenium	180	50	50	5.2 U	**12 J**
Silver	180	NA	NA	2.9 U	**155**
Sodium	NA	NA	NA	**11200**	**2490000**
Miscellaneous Parameters					
Turbidity (NTUs)	NA	NA	NA	**3.46**	**3.56**
pH	NA	NA	NA	**10.07**	**9.16**
Conductivity (mS/cm)	NA	NA	NA	**0.241**	**16**
DO (mg/L)	NA	NA	NA	**0.52**	**0.44**
Salinity (%)	NA	NA	NA	**0**	**0.9**

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.

Sample Code Description:
NORMAL - One sample was collected at this location.

Acronyms:
GA = Drinking water suitability
GW = Groundwater
MCL = Maximum Contaminant Level
NA = Not applicable/not available
ORNL = Oak Ridge National Laboratory
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
VOC = Volatile organic compound

Footnotes:
Bolding indicates that the chemical was detected in the sample.
1 - The calculation of total chlorinated VOCs are defined in the Section 4 text. "0 U" indicates that this chemical group was not detected in the sample analyzed.
2 - A concentration that is shaded exceeds one or more criterion presented in the table.
3 - A blank cell in the table indicates that the sample was not analyzed for the target analyte.

TABLE 4-41

SUMMARY OF DESCRIPTIVE STATISTICS
PRE-2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Volatile Organics (ug/L)											
2-Butanone	2/16	1	6	3 - 5	3	4	MW16-07S-NWG-032301 and Dup	NA	7,100 N	NA	NA
4-Methyl-2-Pentanone	1/27	2	2	2 - 5	2	2	MW16-07S-NWG-032301	NA	2,000 N	NA	NA
Acetone	2/16	1	2.94 J	1 - 7	2	2	MW16-40S-NWG-121102-D	NA	22,000 N	NA	NA
Benzene	7/18	0.2	3	1 - 2	0.7	0.8	28-GW08-NGW-101698-8 and Dup	NA	**0.41 C**	5	5
BTEX	16/41	0.06	11.2	---	0.6	1	MW16-46S-NWG-120902	NA	NA	NA	NA
Carbon Disulfide	6/41	0.21 J	0.38 J	1 - 4	0.6	0.3	MW16-42S-NWG-120202	NA	1,000 N	NA	NA
Chlorodibromomethane	2/41	0.19 J	0.22 J	1 - 2	0.5	0.2	MW16-01S-NWG-121002	NA	0.8 C	80	80
Chloromethane	1/41	0.23 J	0.23 J	1 - 2	0.6	0.2	MW16-47S-NWG-120202	NA	1.8 C	NA	NA
cis-1,2-Dichloroethene	7/30	0.5 J	98	1 - 2	5	19	MW16-40S-NWG-121102	NA	370 N	**70**	**70**
Ethane	1/23	3.9 J	3.9 J	2 - 20	2	4	MW16-41S-NWG-121702	NA	NA 0	NA	NA
Ethylbenzene	3/41	0.12 J	1.73	1 - 2	0.6	0.8	MW16-46S-NWG-120902	NA	**1.5 C**	700	700
m+p-Xylenes	4/30	0.11 J	0.36 J	1 - 2	0.8	0.2	MW16-53S-NWG-120602	NA	210 N[7]	10,000 [8]	10,000 [8]
Methane	14/23	5.6 J	720	1	200	330	MW16-45S-NWG-120302	NA	NA	NA	NA
o-Xylene	5/30	0.14 J	0.52 J	1	0.5	0.3	MW16-07S-NWG-120302	NA	1,400 N	10,000 [8]	10,000 [8]
Tetrachloroethene	4/41	0.34 J	1.42	1 - 2	0.6	0.7	MW16-33S-NWG-120202-D	NA	**0.11 C**	5	5
Toluene	5/41	0.1	0.5	1 - 2	0.5	0.2	MW16-07S-NWG-032301-D	NA	2,300 N	1,000	1,000
Total 1,2-Dichloroethene	10/41	0.4	103	1 - 5	5	18	MW16-40S-NWG-121102	NA	330 N	NA	NA
Total Chlorinated VOCs	28/41	0.23	841	---	29	42	MW16-37S-NWG-120402	NA	NA	NA	NA
Total Xylenes	5/41	0.31	0.63	1 - 6	0.6	0.5	MW16-07S-NWG-120302	NA	200 N	10,000	10,000
trans-1,2-Dichloroethene	7/30	0.27 J	5.48	1 - 2	0.8	1	MW16-40S-NWG-121102	NA	110 N	100	100
Trichloroethene	17/41	0.18 J	840	1 - 2.94	22	51	MW16-37S-NWG-120402	NA	**1.7 C**	**5**	**5**
Vinyl Chloride	6/18	0.9	10	1 - 3	2	5	28-GW04-NGW-100898-7	NA	**0.016 C**	**2**	**2**
Low-Level Volatile Organics (ug/L)											
1,1,2-Trichloroethane	2/23	0.5	0.6	0.1 - 2	0.1	0.6	MW16-37S-NWG-120402	NA	**0.24 C**	5	5
1,1-Dichloroethane	1/23	0.1	0.1	0.1 - 2	0.09	0.1	MW16-34S-NWG-112602	NA	2.4 C	NA	NA
1,1-Dichloroethene	3/23	0.09 J	0.3 J	0.1 - 2	0.1	0.1	MW16-44S-NWG-121202	NA	340 C	7	7
1,4-Dichlorobenzene	1/23	0.05 J	0.05 J	0.1 - 2	0.09	0.05	MW16-46S-NWG-120902	NA	0.43 C	75	75
Benzene	7/23	0.06 J	9	0.1 - 2	0.6	2	MW16-46S-NWG-120902	NA	**0.41 C**	**5**	**5**
Chloroform	1/23	0.05 J	0.05 J	0.1 - 2	0.09	0.05	MW16-34S-NWG-112602	NA	0.19 C	80	NA
Vinyl Chloride	8/23	0.1	44	0.1	4	12	MW16-44S-NWG-121202 and Dup	NA	**0.016 C**	**2**	**2**
Semivolatile Organics (ug/L)											
2-Methylnaphthalene	1/23	31	31	1 - 10	4	31	28-GW07-NGW-101498-6	NA	150 N	NA	NA
Acenaphthene	2/18	3	230	1 - 10	16	120	28-GW07-NGW-101498-6	NA	2,200 N	NA	NA
Anthracene	1/18	5	5	1 - 10	3	5	28-GW07-NGW-101498-6	NA	11,000 N	NA	NA
Bis(2-Ethylhexyl) Phthalate	5/24	1 J	53 J	2 - 10	6	17	28-GW1A-NGW-071797-D	NA	**4.8 C**	**6**	**6**
Carbazole	1/23	49	49	1 - 10	5	49	28-GW07-NGW-101498-6	NA	**3.4 C**	NA	NA
Dibenzofuran	2/23	1	130	1 - 10	9	66	28-GW07-NGW-101498-6	NA	NA	NA	NA
Fluoranthene	1/18	14	14	1 - 10	4	14	28-GW07-NGW-101498-6	NA	1,500 N	NA	NA
Fluorene	2/18	1	150	1 - 10	11	76	28-GW07-NGW-101498-6	NA	1,500 N	NA	NA
Naphthalene	2/18	11	41	2 - 10	6	26	28-GW07-NGW-101498-6	NA	**0.14 C**	NA	**20**
Phenanthrene	1/18	160	160	1 - 10	12	160	28-GW07-NGW-101498-6	NA	1,100 N[9]	NA	NA
Pyrene	1/18	7	7	1 - 10	3	7	28-GW07-NGW-101498-6	NA	1,100 N	NA	NA
Total PAHs	2/18	15	638	---	36	330	28-GW07-NGW-101498-6	NA	NA	NA	NA

TABLE 4-41

SUMMARY OF DESCRIPTIVE STATISTICS
PRE-2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Polycyclic Aromatic Hydrocarbons (ug/L)											
Acenaphthene	1/13	0.1	0.1	0.2 - 2	0.2	0.1	MW16-04S-NWG-032101	NA	2,200 N	NA	NA
Fluoranthene	2/13	0.1	1 J	0.1 - 1	0.2	0.4	MW16-07S-NWG-032301-D	NA	1,500 N	NA	NA
Fluorene	1/13	0.1	0.1	0.1 - 2	0.1	0.1	MW16-04S-NWG-032101	NA	1,500 N	NA	NA
Naphthalene	2/13	0.1	0.25 J	0.2 - 2	0.2	0.2	MW16-45S-NWG-120302	NA	**0.14 C**	NA	20
Phenanthrene	2/13	0.04 J	0.1	0.05 - 2	0.1	0.07	MW16-04S-NWG-032101	NA	1,100 N[9]	NA	NA
Total PAHs	4/13	0.04	1	---	0.1	0.4	MW16-07S-NWG-032301-D	NA	NA	NA	NA
Pesticides (ug/L)											
4,4'-DDD	1/21	0.0049 J	0.0049 J	0.002 - 0.1	0.019	0.0049	28-GW02-NGW-101498-8	NA	0.28 C	NA	NA
4,4'-DDT	1/21	0.0063	0.0063	0.003 - 0.1	0.019	0.0063	28-GW02-NGW-101498-8	NA	0.2 C	NA	NA
gamma-BHC (Lindane)	2/21	0.0019 J	0.0049	0.001 - 0.05	0.0095	0.0031	28-GW04-NGW-100898-7	NA	0.061 C	0.2	NA
Heptachlor Epoxide	2/21	0.0025 J	0.06 J	0.001 - 0.05	0.012	0.031	28-GW07-NGW-101498-6	NA	**0.0074 C**	0.2	NA
Total Metals (ug/L)											
Aluminum	3/13	80 J	850 J	122 - 338	202	556	MW16-48S-NWG-121102	12,819	37,000 N	NA	NA
Arsenic	3/13	3.5	23.4	1.3 - 7.2	3.5	10.7	MW16-45S-NWG-120302	**4.62**	**0.045 C**	**10**	NA
Barium	12/13	6.4 J	938	200	112	113	MW16-07S-NWG-032301	**69**	7,300 N	2,000	2,000
Cadmium	3/13	0.07 J	0.25	0.07 - 0.24	0.11	0.16	MW16-40S-NWG-121102	1.75	18 N	5	5
Calcium	13/13	1,800	152,000 J	---	38,300	38,300	MW16-07S-NWG-032301	22,455	NA	NA	NA
Total Metals (ug/L) (Continued)											
Chromium	3/13	0.63 J	0.85 J	0.57 - 50	4.1	0.7	MW16-06S-NWG-032201	217	110 N[10]	100 [10]	100
Cobalt	4/7	1 J	3.6	0.92	1.2	1.8	MW16-05S-NWG-032101	18.8	11 N	NA	NA
Iron	10/13	69 J	37,000 J	24.4 - 100	13,000	16,900	MW16-48S-NWG-121102	**47,378**	**26,000 N**	NA	NA
Lead	5/13	0.11 J	3.7	0.12 - 1.48	0.83	1.3	MW16-07S-NWG-032301-D	3.41	NA	15 [11]	15
Magnesium	13/13	630	14,200	---	4,780	4,780	MW16-07S-NWG-032301	**9,418**	NA	NA	NA
Manganese	13/13	1.5	4,100	---	952	952	MW16-41S-NWG-121702	**4,996**	**880 N**	NA	NA
Mercury	1/13	0.27 J	0.27 J	0.03 - 0.2	0.072	0.27	MW16-45S-NWG-120302	**ND**	11 N[12]	2	2
Nickel	7/13	1.1 J	56 J	1.5 - 200	19.8	13.7	MW16-40S-NWG-121102	200	730 N	NA	100
Potassium	13/13	830	6,990	---	3,630	3,630	MW16-04S-NWG-032101	**7,666**	NA	NA	NA
Selenium	1/13	0.79 J	0.79 J	1 - 6.3	1.9	0.79	MW16-48S-NWG-121102	2	180 N	50	50
Sodium	13/13	4,000	99,800	---	26,700	26,700	MW16-01S-NWG-032901	**18,609**	NA	NA	NA
Thallium	1/13	0.18	0.18	0.07 - 4.74	1.4	0.18	MW16-34S-NWG-112602	3.08	2.4 N	2	2
Zinc	7/13	5	590	0.47 - 31	54.1	95.5	MW16-37S-NWG-120402	**93.7**	11,000 N	NA	NA
Dissolved Metals (ug/L)											
Aluminum	3/14	62 J	300 J	14 - 200	78.3	157	MW16-45S-NWG-120302	NA	37,000 N	NA	NA
Antimony	2/14	0.28 J	4.2 J	0.25 - 2.5	1.3	2.2	28-GW06-NGW-100698-7	NA	15 N	6	6
Arsenic	5/16	2.2 J	24.5	1.3 - 3.1	4.2	11.4	28-GW04-NGW-100898-7	NA	**0.045 C**	**10**	NA
Barium	10/16	15	447	7.4 - 200	97.9	126	28-GW06-NGW-100698-7	NA	7,300 N	2,000	2,000
Cadmium	2/16	0.16	0.19	0.14 - 1.3	0.22	0.18	MW16-40S-NWG-121102	NA	18 N	5	5
Calcium	10/14	1,400	72,200	21.3 - 45800	30,100	37,300	28-GW08-NGW-101698-8	NA	NA	NA	NA
Iron	17/31	170	42,000 J	100 - 30900	11,600	19,300	MW16-05S-NWG-120602	NA	**26,000 N**	NA	NA
Magnesium	12/14	570	8,400	32.9 - 2210	4,050	4,630	MW16-45S-NWG-120302	NA	NA	NA	NA
Manganese	25/31	3.8	3,900	1 - 539	667	800	MW16-41S-NWG-121702	NA	**880 N**	NA	NA
Nickel	2/14	27	44 J	9.6 - 40	13.3	34.0	MW16-40S-NWG-121102	NA	730 N	NA	100
Potassium	9/14	700	6,600	3010 - 8190	3,130	3,480	MW16-45S-NWG-120302	NA	NA	NA	NA
Sodium	9/14	4,100	37,000 J	9340 - 33300	14,400	16,500	MW16-41S-NWG-121702	NA	NA	NA	NA
Zinc	4/14	7.8 J	83	6.8 - 22	19.0	51.9	MW16-37S-NWG-120402	NA	11,000 N	NA	NA

TABLE 4-41

SUMMARY OF DESCRIPTIVE STATISTICS
PRE-2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Parameter	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Range of Non-detects(2)	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration(3)	ORNL Regional Screening Levels - Tap Water(4)	EPA MCL(5)	RIDEM GA Groundwater Objective(6)
Miscellaneous Parameters (mg/L)											
Alkalinity	23/23	2	328	2	110	110	MW16-47S-NWG-120202	NA	NA	NA	NA
Ammonia	16/23	0.11	5.92	0.1	0.9	1	MW16-41S-NWG-121702	NA	NA	NA	NA
Chloride	23/23	2.97	372	---	36	36	MW16-01S-NWG-121002	NA	NA	NA	NA
Dissolved Organic Carbon	13/19	5	150	5	53	77	MW16-47S-NWG-120202	NA	NA	NA	NA
Nitrate	19/21	0.17	29.8	0.1	4	4	MW16-47S-NWG-120202	NA	58,000 N	**10**	NA
Salinity (ppth)	7/29	0.0004 J	1.22	0.1 - 1	0.4	0.3	MW16-04S-NWG-121002	NA	NA	NA	NA
Sulfate	23/23	0.45	69.8	---	16	16	MW16-47S-NWG-120202	NA	NA	NA	NA
Sulfide	7/23	0.06 J	0.34	0.05	0.05	0.1	MW16-43S-NWG-120302	NA	NA	NA	NA
Total Inorganic Carbon	7/23	1 J	16	5	4	7	MW16-07S-NWG-120302	NA	NA	NA	NA
Total Organic Carbon	3/4	30	87	5	40	53	MW16-44S-NWG-121202	NA	NA	NA	NA
Field Parameters (mg/L)											
Carbon Dioxide	23/23	5.64	360	---	110	110	MW16-05S-NWG-120602	NA	NA	NA	NA
Dissolved Oxygen	23/23	0.02	12.67	---	4	4	MW16-17S-NWG-120502	NA	NA	NA	NA
Ferric Iron	18/18	0.01	186	---	22	22	MW16-46S-NWG-120902	NA	NA	NA	NA
Oxidation Reduction Potential (MV)	23/23	-126.3	304.7	---	81	81	MW16-34S-NWG-112602	NA	NA	NA	NA
pH	23/23	5.13	7.15	---	6	6	MW16-02S-NWG-120502	NA	NA	NA	NA
Temperature (C)	23/23	5.76	15.44	---	11	11	MW16-11S-NWG-112102	NA	NA	NA	NA

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Upper prediction limit - See Appendix D.
4 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
5 - USEPA 2006 Edition of the Drinking Water Standards and Health Advisories, August 2006.
6 - RIDEM, DEM-DSR-01-93, February 2004.
7 - Value is for m-xylenes
8 - Value is for total xylenes
9 - The value for pyrene is used as a surrogate for phenanthrene.
10 - The value for hexavalent chromium is presented.
11 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
12 - The value for mercuric chloride is presented.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Qualifiers:
C - Carcinogen.
N - Noncarcinogen.
J - Estimated value.

TABLE 4-41

SUMMARY OF DESCRIPTIVE STATISTICS
PRE-2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and xylene
EPA = United States Environmental Protection Agency
GA = Drinking water suitability
GW = Groundwater
HI = Hazard index
MCL = Maximum Contaminant Level
NA = Criterion not available
ND = Not detected
PAH = Polycyclic aromatic hydrocarbon
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SDWA = Safe Drinking Water Act
UCL = Upper confidence limit on the arithmetic mean
VOCs = Volatile organic chemicals

TABLE 4-42

SUMMARY OF DESCRIPTIVE STATISTICS
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Volatile Organics (ug/L)											
Acetone	1/27	3.46 J	3.46 J	5 - 19	3	3	MW16-48S-NWG-100404	NA	22,000 N	NA	NA
Bromodichloromethane	1/37	0.166 J	0.166 J	1	0.5	0.2	MW16-66S-NWG-111604	NA	1.1 C	80	NA
BTEX	10/37	0.0106	2.24	---	0.2	0.8	MW16-46S-NWG-092804	NA	NA	NA	NA
Carbon Disulfide	7/37	0.146 J	0.262 J	1	0.4	0.2	MW16-71S-NWG-111704	NA	1,000 N	NA	NA
Chlorodibromomethane	2/37	0.152 J	0.269 J	1	0.5	0.2	MW16-66S-NWG-111604	NA	0.8 C	80	NA
Chloromethane	1/37	0.101 J	0.101 J	1	0.5	0.1	MW16-68S-NWG-120904	NA	1.8 C	NA	NA
cis-1,2-Dichloroethene	11/37	0.166 J	91	1	4	11	MW16-40S-NWG-100804	NA	370 N	**70**	**70**
Ethane	3/37	2.6 J	11	6.2	3	8	MW16-41S-NWG-093004	NA	NA	NA	NA
Ethene	1/37	5.3 J	5.3 J	5.8	3	5	MW16-04S-NWG-100404	NA	NA	NA	NA
Ethylbenzene	3/37	0.0936 J	0.288 J	1	0.5	0.2	MW16-07S-NWG-100604	NA	1.5 C	700	700
m+p-Xylenes	3/36	0.275 J	0.747 J	2	1	0.5	MW16-53S-NWG-100704	NA	210 N[7]	10,000 [8]	10,000 [8]
Methane	19/37	1 J	12,000	3.3 - 14	870	1,700	MW16-04S-NWG-100404	NA	NA	NA	NA
o-Xylene	3/36	0.332 J	0.929 J	1	0.5	0.6	MW16-07S-NWG-100604	NA	1,400 N	10,000 [8]	10,000 [8]
Tetrachloroethene	1/31	0.317 J	0.327 J	1	0.5	0.3	MW16-33S-NWG-100404-D	NA	**0.11 C**	5	5
Toluene	2/37	0.143 J	0.228 J	1	0.5	0.2	MW16-41S-NWG-093004	NA	2,300 N	1,000	1,000
Total 1,2-Dichloroethene	11/37	0.166 J	96.2	1 - 2	4	12	MW16-40S-NWG-100804	NA	330 N	NA	**70**
Total Chlorinated VOCs	32/37	0.0121	175	---	13	15	MW16-40S-NWG-100804	NA	NA	NA	NA
Total Xylenes	3/37	0.823 J	1.28 J	1 - 3	0.7	1	MW16-07S-NWG-100604	NA	200 N	10,000	10,000
trans-1,2-Dichloroethene	7/37	0.213 J	5.18	1	0.7	1	MW16-40S-NWG-100804	NA	110 N	100	100
Trichloroethene	24/37	0.135 J	93	0.901 - 1	7	10	MW16-37S-NWG-100504	NA	**1.7 C**	**5**	**5**
Low-Level Volatile Organics (ug/L)											
1,1,2-Trichloroethane	1/31	0.0121 J	0.0121 J	0.1	0.05	0.01	MW16-05S-NWG-110104	NA	0.24 C	5	5
1,1-Dichloroethene	10/31	0.0202 J	6.98	0.1	0.4	1	MW16-40S-NWG-100804	NA	340 C	7	7
1,2-Dichloroethane	1/31	0.0157 J	0.0188 J	0.1	0.05	0.02	MW16-45S-NWG-092804	NA	0.15 C	5	5
Benzene	9/31	0.0106 J	1.98	0.1	0.2	0.4	MW16-46S-NWG-092804	NA	**0.41 C**	5	5
Chloroform	1/31	0.116	0.116	0.1	0.05	0.1	MW16-23S-NWG-102804	NA	0.19 C	80	NA
Vinyl Chloride	9/31	0.0266 J	58	0.1	3	11	MW16-40S-NWG-100804	NA	**0.016 C**	**2**	**2**
Total Metals (ug/L)											
Aluminum	30/31	5.9 J	433	4.8	73.6	76.0	MW16-48S-NWG-100404	12,819	37,000 N	NA	NA
Arsenic	13/31	0.49 J	19.8	0.42	2.6	6.0	MW16-45S-NWG-092804	**4.62**	**0.045 C**	**10**	NA
Barium	31/31	2.5	247	---	41.3	41.3	MW16-04S-NWG-100404	**69**	7,300 N	2,000	2,000
Beryllium	1/30	0.14 J	0.14 J	0.11	0.058	0.14	MW16-11S-NWG-100604	NA	73 N	4	4
Cadmium	8/31	0.06 J	0.66	0.06 - 0.13	0.074	0.18	MW16-11S-NWG-100604	1.75	18 N	5	5
Calcium	31/31	1,140	119,000	---	27,000	27,000	MW16-47S-NWG-092704	**22,455**	NA	NA	NA
Chromium	4/31	0.45 J	1.2	0.34 - 1.8	0.5	0.85	MW16-11S-NWG-100604	217	110 N[9]	100 [9]	100
Cobalt	22/31	0.06 J	19.5	0.05 - 0.07	1.8	2.5	MW16-40S-NWG-100804-D	18.8	**11 N**	NA	NA
Copper	17/31	0.51 J	7.4	0.4 - 2.9	1.1	1.7	MW16-06S-NWG-100604	17.8	1,500 N	1,300 [10]	NA
Iron	24/31	51.7 J	50,600	50	9,590	12,400	MW16-41S-NWG-093004	**47,378**	**26,000 N**	NA	NA
Lead	25/31	0.05 J	2.8	0.05	0.28	0.34	MW16-06S-NWG-100604	3.41	NA	15 [10]	15
Magnesium	31/31	332	9,530	---	3,440	3,440	MW16-46S-NWG-092804	**9,418**	NA	NA	NA
Manganese	31/31	0.94	2,360	---	403	403	MW16-42S-NWG-093004-D	4,996	**880 N**	NA	NA

TABLE 4-42

SUMMARY OF DESCRIPTIVE STATISTICS
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
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FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Total Metals (ug/L) (continued)											
Mercury	1/31	0.54	0.54	0.021 - 0.13	0.034	0.54	MW16-04S-NWG-100404	**ND**	11 N[11]	2	2
Nickel	28/31	0.61 J	14.2	0.35	1.9	2.1	MW16-40S-NWG-100804-D	200	730 N	NA	100
Potassium	31/31	445	6,840 J	---	3,110	3,110	MW16-46S-NWG-092804, MW16-47S-NWG-092704	**7,666**	NA	NA	NA
Selenium	4/31	0.33 J	1.7	0.29 - 0.43	0.22	0.73	MW16-15S-NWG-102804	2	180 N	50	50
Silver	4/31	0.08 J	0.15	0.05	0.036	0.11	MW16-23S-NWG-102804	NA	180 N	NA	NA
Sodium	31/31	2,860	417,000	---	52,900	52,900	MW16-02S-NWG-100604	**18,609**	NA	NA	NA
Thallium	3/31	0.07 J	0.12 J	0.07	0.04	0.088	MW16-47S-NWG-092704	3.08	2.4 N	2	2
Vanadium	8/31	0.45 J	1.8	0.4	0.38	0.89	MW16-65S-NWG-102804	18.4	180 N	NA	NA
Zinc	28/31	2	166	2.9 - 7	16.1	17.6	MW16-11S-NWG-100604	**93.7**	11,000 N	NA	NA
Dissolved Metals (ug/L)											
Aluminum	30/31	0.91 J	123	0.72	13.3	13.8	MW16-08S-NWG-102804	NA	37,000 N	NA	NA
Arsenic	19/31	0.17 J	27.4 J	0.09 - 0.092	3.2	5.2	MW16-45S-NWG-092804	NA	**0.045 C**	**10**	NA
Barium	31/31	2.7 J	259	---	39.4	39.4	MW16-04S-NWG-100404	NA	7,300 N	2,000	2,000
Cadmium	3/31	0.03 J	0.63	0.02 - 0.18	0.057	0.3	MW16-11S-NWG-100604	NA	18 N	5	5
Calcium	31/31	1,110	117,000	---	27,700	27,700	MW16-47S-NWG-092704	NA	NA	NA	NA
Chromium	26/31	0.46	19.3	0.72 - 0.93	3.7	4.3	MW16-47S-NWG-092704	NA	110 N[9]	100 [9]	100
Cobalt	27/31	0.02 J	19.6	0.01	1.8	2.0	MW16-40S-NWG-100804-D	NA	**11 N**	NA	NA
Copper	20/31	0.16 J	6.9	0.16 - 3.1	0.85	1.2	MW16-06S-NWG-100604	NA	1,500 N	1,300 [10]	NA
Iron	18/37	65.4 J	48,900	32.2 - 50	7,370	15,100	MW16-41S-NWG-093004-D	NA	**26,000 N**	NA	NA
Lead	21/31	0.08 J	3	0.078 - 0.09	0.26	0.37	MW16-06S-NWG-100604	NA	NA	15 [10]	15
Magnesium	31/31	285	9,890	---	3,490	3,490	MW16-46S-NWG-092804	NA	NA	NA	NA
Manganese	37/37	0.25	2,310	---	339	339	MW16-42S-NWG-093004-D	NA	**880 N**	NA	NA
Mercury	1/31	0.027 J	0.027 J	0.021 - 0.064	0.017	0.027	MW16-05S-NWG-110104	NA	11 N[11]	2	2
Nickel	30/31	0.25	14.1	0.14 - 0.3	1.9	2.0	MW16-40S-NWG-100804, MW16-40S-NWG-100804-D	NA	730 N	NA	100
Potassium	31/31	464	7,330	---	3,150	3,150	MW16-46S-NWG-092804	NA	NA	NA	NA
Selenium	8/31	0.35 J	0.88	0.3	0.23	0.48	MW16-02S-NWG-100604	NA	180 N	50	50
Silver	2/31	0.04 J	0.11	0.02 - 0.14	0.017	0.075	MW16-01S-NWG-100704	NA	180 N	NA	NA
Sodium	30/31	2,850	450,000	50	49,100	50,700	MW16-02S-NWG-100604	NA	NA	NA	NA
Thallium	1/31	0.09 J	0.09 J	0.07 - 0.074	0.037	0.09	MW16-47S-NWG-092704	NA	2.4 N	2	2
Vanadium	21/31	0.12 J	5.4	0.08 - 0.43	1.0	1.4	MW16-47S-NWG-092704	NA	180 N	NA	NA
Zinc	31/31	1.1 J	136	---	14.2	14.2	MW16-11S-NWG-100604	NA	11,000 N	NA	NA
Miscellaneous Parameters (mg/L)											
Alkalinity	36/37	1.1	283	1	68	70	MW16-47S-NWG-092704	NA	NA	NA	NA
Ammonia	23/37	0.1	4.05	0.1 - 0.31	0.5	0.8	MW16-41S-NWG-093004	NA	NA	NA	NA
Chloride	37/37	2.6	520	---	94	94	MW16-02S-NWG-100604	NA	NA	NA	NA
Dissolved Inorganic Carbon	31/37	1	56	1	8	9	MW16-47S-NWG-092704	NA	NA	NA	NA
Dissolved Organic Carbon	37/37	1	45 J	---	5	5	MW16-44S-NWG-092704	NA	NA	NA	NA
Nitrate	29/37	0.101	38.9	0.1	6	7	MW16-70S-NWG-111704	NA	58,000 N	**10**	NA
Nitrite	1/37	1.5	1.5	0.01 - 0.1	0.09	2	MW16-53S-NWG-100704	NA	3,700 N	**1**	NA

TABLE 4-42

SUMMARY OF DESCRIPTIVE STATISTICS
2004 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Range of Non-detects(2)	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration(3)	ORNL Regional Screening Levels - Tap Water(4)	EPA MCL(5)	RIDEM GA Groundwater Objective(6)
Miscellaneous Parameters (mg/L) (Continued)											
Salinity (ppth)	31/31	0.015	1.26	---	0.3	0.3	MW16-02S-NWG-100604	NA	NA	NA	NA
Sulfate	37/37	1.14	42	---	11	11	MW16-68S-NWG-120904	NA	NA	NA	NA

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Upper prediction limit - See Appendix D.
4 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
5 - USEPA 2006 Edition of the Drinking Water Standards and Health Advisories, August 2006.
6 - RIDEM, DEM-DSR-01-93, February 2004.
7 - Value is for m-xylenes
8 - Value is for total xylenes
9 - The value for hexavalent chromium is presented.
10 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
11 - The value for mercuric chloride is presented.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Qualifiers:
C - Carcinogen.
N - Noncarcinogen.
J - Estimated value.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and xylene
EPA = United States Environmental Protection Agency
GA = Drinking water suitability
GW = Groundwater
HI = Hazard index
MCL = Maximum Contaminant Level
NA = Criterion not available
ND = Not detected
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SDWA = Safe Drinking Water Act
UCL = Upper confidence limit on the arithmetic mean
VOCs = Volatile organic chemicals

TABLE 4-43

SUMMARY OF DESCRIPTIVE STATISTICS
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Volatile Organic Compounds (ug/L)											
Benzene	2/21	0.36	1.1	0.1 - 0.5	0.1	0.7	MW16-46S-NWG-081207, MW16-46S-NWG-081207-D	NA	**0.41 C**	5	5
BTEX	2/22	0.36	1.1	0 - 0	0.07	0.7	MW16-46S-NWG-081207, MW16-46S-NWG-081207-D	NA	NA	NA	NA
Chloroform	2/21	0.17	0.18	0.1 - 0.5	0.08	0.2	MW16-17S-NWG-061607-D, MW16-17S-NWG-061607	NA	0.19 C	80	NA
cis-1,2-Dichloroethene	3/22	3.2	9	0.14 - 0.53	1	5	MW16-44S-NWG-081207	NA	370 N	70	70
Tetrachloroethene	3/21	0.21	0.57	0.1 - 0.52	0.1	0.4	TW16-108S-NWG-072807-D	NA	**0.11 C**	5	5
Total Chlorinated VOCs	12/22	0.21	180.53	0 - 0	13	24	TW16-108S-NWG-072807	NA	NA	NA	NA
trans-1,2-Dichloroethene	1/22	1.5	1.5	0.13 - 0.5	0.3	2	MW16-44S-NWG-081207	NA	110 N	100	100
Trichloroethene	9/21	0.11	180	0.1 - 0.5	12	27	TW16-108S-NWG-072807	NA	**1.7 C**	**5**	**5**
Vinyl Chloride	4/21	0.26	26	0.1 - 0.51	2	8	MW16-40S-NWG-082207	NA	**0.016 C**	**2**	**2**
Semivolatile Organic Compounds (ug/L)											
2-Methylnaphthalene	1/3	120	120	0.1 - 0.1	40	120	MW16-07S-NWG-082907	NA	150 N	NA	NA
Acenaphthene	2/3	0.16	5.2	0.1 - 0.1	2	3	MW16-07S-NWG-082907	NA	2,200 N	NA	NA
Acenaphthylene	1/3	1.6	1.6	0.1 - 0.1	0.6	2	MW16-07S-NWG-082907	NA	2,200 N[7]	NA	NA
Anthracene	1/3	0.55	0.55	0.1 - 0.1	0.2	0.6	MW16-07S-NWG-082907	NA	11,000 N	NA	NA
Fluoranthene	2/3	0.19	0.38	0.1 - 0.1	0.2	0.3	MW16-04S-NWG-082007	NA	1,500 N	NA	NA
Fluorene	2/3	0.15	6.5	0.1 - 0.1	2	3	MW16-07S-NWG-082907	NA	1,500 N	NA	NA
Naphthalene	1/3	2.6	2.6	0.1 - 0.1	0.9	3	MW16-07S-NWG-082907	NA	6.2 N	NA	20
Phenanthrene	2/3	0.3	5.9	0.1 - 0.1	2	3	MW16-07S-NWG-082907	NA	1,100 N[8]	NA	NA
Pyrene	2/3	0.18	0.2	0.1 - 0.1	0.1	0.2	MW16-04S-NWG-082007	NA	1,100 N	NA	NA
Total PAHs	2/3	1.19	142.72	0 - 0	48	72	MW16-07S-NWG-082907	NA	NA	NA	NA
Polycyclic Aromatic Hydrocarbons (ng/L)											
2-Methylnaphthalene	2/5	220	280	1.4 - 4.1	97	240	MW16-46S-NWG-081207-D	NA	150000 N	NA	NA
Acenaphthene	5/5	3 J	940	-	380	380	MW16-46S-NWG-102507	NA	2,200,000 N	NA	NA
Acenaphthylene	4/5	0.91 J	19	10 - 10	8	9	MW16-46S-NWG-102507	NA	2,200,000 N[7]	NA	NA
Anthracene	4/5	0.85 J	5 J	1.8 - 1.8	2	3	MW16-46S-NWG-081207	NA	11,000,000 N	NA	NA
Benzo(a)pyrene Equivalents	2/5	1.5	5.61	1.9 - 10	3	4	MW16-45S-NWG-081107	NA	**2.9 C**	**0.2**	**0.2**
Dibenzo(a,h)anthracene	2/5	1.5 J	5.1 J	0.71 - 10	2	3	MW16-45S-NWG-081107	NA	**2.9 C**	NA	NA
Fluoranthene	1/5	4.5 J	4.5 J	1.3 - 4	2	5	MW16-46S-NWG-102507	NA	1,500,000 N	NA	NA
Fluorene	3/5	9.5 J	200	3 - 8.6	79	130	MW16-46S-NWG-102507	NA	1,500,000 N	NA	NA
Indeno(1,2,3-cd)pyrene	1/5	5.1 J	5.1 J	1.6 - 10	3	5	MW16-45S-NWG-081107	NA	29 C	NA	NA
Naphthalene	2/5	1100 J	1,200	3 - 7.4	470	1,200	MW16-46S-NWG-081207-D, MW16-46S-NWG-102507	NA	**140 C**	NA	**20**
Phenanthrene	1/5	4 J	4 J	2.1 - 5.1	2	4	MW16-46S-NWG-102507	NA	1,100,000 N[8]	NA	NA
Pyrene	1/5	3.9 J	3.9 J	1.6 - 10	2	4	MW16-46S-NWG-102507	NA	1,100,000 N	NA	NA
Total PAHs	5/5	3.85	2,608	-	1,000	1,000	MW16-46S-NWG-081207-D	NA	NA	NA	NA
Inorganics (ug/L)											
Aluminum	11/21	17.5 J	1,040	14 - 249	123	205	MW16-25S-NWG-052107	12,819	37,000 N	NA	NA
Arsenic	7/21	0.786	18	0.022 - 1	2.4	6.6	MW16-45S-NWG-081107	**4.62**	**0.045 C**	**10**	NA
Barium	17/21	2.9 J	295	2.1 - 11	41.5	50.2	MW16-04S-NWG-061507	**69**	7,300 N	2,000	2,000
Beryllium	1/21	0.12	0.12	0.051 - 0.15	0.061	0.12	MW16-40S-NWG-082207	NA	73 N	4	4
Cadmium	5/21	0.15 J	0.88	0.1 - 2.4	0.17	0.33	MW16-37S-NWG-061407	1.75	18 N	5	5
Calcium	21/21	860	138,000	-	31,700	31,700	MW16-47S-NWG-121707	**22,455**	NA	NA	NA
Chromium	7/21	0.46	23.5	0.22 - 6.8	1.6	4.1	MW16-07S-NWG-082907	217	110 N[9]	100 [9]	100
Cobalt	6/21	2.7	61.2	0.15 - 1.1	4.8	16.0	MW16-40S-NWG-082207	**18.8**	**11 N**	NA	NA

TABLE 4-43

SUMMARY OF DESCRIPTIVE STATISTICS
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Inorganics (ug/L) (continued)											
Copper	1/21	2.8	2.8	1.7 - 6.3	2.4	2.8	MW16-07S-NWG-082907	17.8	1,500 N	1,300 [10]	NA
Iron	19/21	66.2	35,600	19 - 82.2	10,400	11,500	MW16-46S-NWG-081207-D	47,378	**26,000 N**	NA	NA
Magnesium	20/21	485	10,700	239 - 239	3,670	3,840	MW16-46S-NWG-081207-D	**9,418**	NA	NA	NA
Manganese	17/21	2.4 J	2,930	1.8 - 12.9	401	494	MW16-40S-NWG-082207	4,996	**880 N**	NA	NA
Nickel	10/21	0.66 J	51.8	0.59 - 3.1	4.1	7.8	MW16-40S-NWG-082207	200	730 N	NA	100
Potassium	21/21	454	8,070	-	3,080	3,080	MW16-46S-NWG-081207-D	**7,666**	NA	NA	NA
Selenium	2/21	8	11.3	0.98 - 17.6	3.7	9.7	MW16-07S-NWG-082907	**2**	180 N	50	50
Sodium	21/21	2,490	190,000	-	38,100	38,100	MW16-01S-NWG-082707	**18,609**	NA	NA	NA
Thallium	1/21	0.125 J	0.125 J	0.007 - 1	0.18	0.13	MW16-47S-NWG-121707	3.08	2.4 N	2	2
Vanadium	1/21	1.5	1.5	0.4 - 2.2	0.38	1.5	MW16-25S-NWG-052107	18.4	180 N	NA	NA
Zinc	11/21	17.7	299	9.8 - 22.7	33.2	54.9	MW16-37S-NWG-061407	**93.7**	11,000 N	NA	NA
Filtered Inorganics (ug/L)											
Aluminum	1/3	23.5 J	23.5 J	14 - 37	16.3	23.5	MW16-25S-NWG-052107	NA	37,000 N	NA	NA
Arsenic	1/3	19.5	19.5	0.056 - 1	6.7	19.5	MW16-45S-NWG-081107	NA	**0.045 C**	**10**	NA
Barium	2/3	5.3	14	11 - 11	8.3	9.7	MW16-45S-NWG-081107	NA	7,300 N	2,000	2,000
Cadmium	1/3	0.17 J	0.17 J	0.1 - 0.11	0.092	0.17	MW16-45S-NWG-081107	NA	18 N	5	5
Calcium	3/3	2,770	59,100	-	27,700	27,700	MW16-45S-NWG-081107	NA	NA	NA	NA
Chromium	2/3	0.39 J	2.1	0.38 - 0.38	0.89	1.2	MW16-03S-NWG-082807	NA	110 N[9]	100 [9]	100
Cobalt	1/3	3.7	3.7	0.39 - 1.3	1.5	3.7	MW16-45S-NWG-081107	NA	11 N	NA	NA
Iron	2/3	314 J	30,500	83.4 - 83.4	10,300	15,400	MW16-45S-NWG-081107	NA	**26,000 N**	NA	NA
Magnesium	3/3	1,120	7,590	-	3,670	3,670	MW16-45S-NWG-081107	NA	NA	NA	NA
Manganese	2/3	42.3	701	6.9 - 6.9	249	372	MW16-45S-NWG-081107	NA	880 N	NA	NA
Nickel	1/3	2.6	2.6	0.84 - 0.93	1.2	2.6	MW16-45S-NWG-081107	NA	730 N	NA	100
Potassium	3/3	948	5,430	-	2,970	2,970	MW16-45S-NWG-081107	NA	NA	NA	NA
Sodium	3/3	6,710	62,100	-	28,100	28,100	MW16-45S-NWG-081107	NA	NA	NA	NA
Petroleum Hydrocarbons (ug/L)											
TPH (C09-C36)	4/11	0.093	2 J	0.025 - 0.22	0.2	0.4	MW16-46S-NWG-081207	NA	NA	NA	NA
TPH (C09-C44)	4/11	0.057 J	0.39	0.032 - 0.041	0.1	0.2	MW16-46S-NWG-102507	NA	NA	NA	NA

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Upper prediction limit, see Appendix D.
4 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
5 - USEPA 2006 Edition of the Drinking Water Standards and Health Advisories, August 2006.
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The value for acenaphthene is used as a surrogate for acenaphthylene.
8 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
9 - The value for hexavalent chromium is presented.
10 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Qualifiers:
C - Carcinogen.
N - Noncarcinogen.
J - Estimated value.

TABLE 4-43

SUMMARY OF DESCRIPTIVE STATISTICS
2007 SHALLOW OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and xylene
EPA = United States Environmental Protection Agency
GA = Drinking water suitability
GW = Groundwater
HI = Hazard index
MCL = Maximum Contaminant Level
NA = Criterion not available
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SDWA = Safe Drinking Water Act
UCL = Upper confidence limit on the arithmetic mean
VOCs = Volatile organic chemicals

TABLE 4-44

SUMMARY OF DESCRIPTIVE STATISTICS
PRE-2004 INTERMEDIATE OVERBURDEN GROUNDWATER
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Volatile Organics (ug/L)											
1,1-Dichloroethane	1/34	0.1 J	0.1 J	1	0.5	0.1	MW16-38I-NWG-112702	NA	2.4 C	NA	NA
1,1-Dichloroethene	2/8	0.4	1	1	0.6	0.7	28-GW05-NGW-100798-44	NA	340 C	7	7
Acetone	4/9	2.92 J	25 J	5	5	9	MW16-34I-NWG-112502-D	NA	22,000 N	NA	NA
BTEX	7/34	0.008	3	---	0.1	0.7	MW16-46I-NWG-120902 and Dup	NA	NA	NA	NA
Carbon Disulfide	13/34	0.19 J	0.97 J	1	0.5	0.5	MW16-42I-NWG-120202	NA	1,000 N	NA	NA
Chlorodibromomethane	1/34	0.32 J	0.32 J	1	0.5	0.3	MW16-13I-NWG-112102	NA	0.8 C	80	NA
Chloromethane	1/34	0.25 J	0.25 J	1	0.5	0.3	MW16-42I-NWG-120202	NA	1.8 C	NA	NA
cis-1,2-Dichloroethene	16/26	0.18 J	51	1	4	5	MW16-42I-NWG-120202	NA	370 N	70	70
Methane	6/27	2.6	3,800	1	150	690	MW16-42I-NWG-120202	NA	NA	NA	NA
Methylene Chloride	2/34	1	6.97 J	1 - 11	1	4	MW16-21I-NWG-121202	NA	**4.8 C**	**5**	**5**
Tetrachloroethene	13/34	0.11 J	25	1	1	3	MW16-33I-NWG-120202-D	NA	**0.11 C**	**5**	**5**
Toluene	3/34	0.19 J	0.97 J	1	0.5	0.4	MW16-33I-NWG-120202-D	NA	2,300 N	1,000	1,000
Total 1,2-Dichloroethene	19/34	0.18	54.8	1 - 2	4	6	MW16-42I-NWG-120202	NA	330 N	NA	70
Total Chlorinated VOCs	30/34	0.63	1,204	---	170	200	MW16-38I-NWG-112702	NA	NA	NA	NA
trans-1,2-Dichloroethene	6/26	0.27 J	3.75	1	0.6	1	MW16-42I-NWG-120202	NA	110 N	100	100
Trichloroethene	28/34	0.22 J	1,200	0.8 - 3.33	170	200	MW16-38I-NWG-112702	NA	**1.7 C**	**5**	**5**
Vinyl Chloride	1/7	3	3	1	0.9	3	28-GW08-NGW-101698-29	NA	**0.016 C**	**2**	**2**
Low-Level Volatile Organics (ug/L)											
1,1,2-Trichloroethane	9/27	0.05 J	2 J	0.1	0.2	0.4	MW16-38I-NWG-112702	NA	**0.24 C**	5	5
1,1-Dichloroethane	3/27	0.05 J	0.2	0.1	0.06	0.1	MW16-38I-NWG-112702	NA	2.4 C	NA	NA
1,1-Dichloroethene	6/27	0.07 J	2	0.1	0.2	0.5	MW16-45I-NWG-120302	NA	340 C	7	7
1,4-Dichlorobenzene	1/27	0.04 J	0.05 J	0.1	0.05	0.05	MW16-46I-NWG-120902-D	NA	0.43 C	75	75
Benzene	5/27	0.008 J	3	0.1	0.2	0.7	MW16-46I-NWG-120902 and Dup	NA	**0.41 C**	5	5
Chloroform	15/27	0.01 J	0.7	0.1	0.1	0.2	MW16-22I-NWG-121802	NA	**0.19 C**	80	NA
Vinyl Chloride	4/27	0.3	25	0.1	1	7	MW16-42I-NWG-120202	NA	**0.016 C**	**2**	**2**
Semivolatile Organics (ug/L)											
2,4,5-Trichlorophenol	1/14	1 J	1 J	1 - 10	2	1	MW16-04I-NWG-121002	NA	3,700 N	NA	NA
2,4,6-Trichlorophenol	1/14	1 J	1 J	1 - 5	1	1	MW16-04I-NWG-121002	NA	37 N[7]	NA	NA
4-Bromophenyl Phenyl Ether	1/14	1 J	1 J	1 - 5	1	1	MW16-04I-NWG-121002	NA	NA	NA	NA
4-Chlorophenyl Phenyl Ether	1/14	1 J	1 J	1 - 5	1	1	MW16-04I-NWG-121002	NA	NA	NA	NA
Acenaphthene	1/7	2	2	1	0.7	2	28-GW07-NGW-101498-27	NA	2,200 N	NA	NA
Bis(2-Ethylhexyl) Phthalate	3/14	2 J	11	2 - 8	3	5	MW16-04I-NWG-121002	NA	**4.8 C**	**6**	**6**
Butyl Benzyl Phthalate	1/14	1 J	1 J	1 - 5	1	1	MW16-04I-NWG-121002	NA	7,300 N	NA	NA
Carbazole	1/14	1 J	1 J	1 - 5	1	1	MW16-04I-NWG-121002	NA	3.4 C	NA	NA
di-n-Butyl Phthalate	2/14	2 J	15	1 - 5	2	9	MW16-45I-NWG-120302	NA	3,700 N	NA	NA
Dibenzofuran	2/14	1	1 J	1 - 5	1	1	28-GW07-NGW-101498-27, MW16-04I-NWG-121002	NA	NA	NA	NA
Diethyl Phthalate	1/14	1 J	1 J	1 - 5	1	1	MW16-04I-NWG-121002	NA	29,000 N	NA	NA
Fluorene	1/7	1	1	1	0.6	1	28-GW07-NGW-101498-27	NA	1,500 N	NA	NA
Hexachlorobenzene	1/14	1 J	1 J	2 - 5	2	1	MW16-04I-NWG-121002	NA	**0.042 C**	1	1
N-Nitrosodiphenylamine	1/14	1 J	1 J	3 - 5	2	1	MW16-04I-NWG-121002	NA	14 C	NA	NA
Phenanthrene	1/7	1	1	1	0.6	1	28-GW07-NGW-101498-27	NA	1,100 N[8]	NA	NA
Total PAHs	1/7	4	4	---	0.6	4	28-GW07-NGW-101498-27	NA	NA	NA	NA

TABLE 4-44

SUMMARY OF DESCRIPTIVE STATISTICS
PRE-2004 INTERMEDIATE OVERBURDEN GROUNDWATER
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Pesticides (ug/L)											
4,4'-DDD	1/14	0.0037 J	0.0037 J	0.002 - 0.01	0.003	0.004	28-GW01-NGW-101598-23	NA	0.28 C	NA	NA
alpha-BHC	1/13	0.0073	0.0073	0.001 - 0.005	0.002	0.007	28-GW04-NGW-100898-42	NA	0.011 C	NA	NA
Endrin Aldehyde	1/14	0.0062 J	0.0062 J	0.006 - 0.01	0.004	0.006	28-GW01-NGW-101598-23	NA	11 N[9]	NA	NA
gamma-BHC (Lindane)	1/14	0.001 J	0.001 J	0.001 - 0.005	0.002	0.001	28-GW07-NGW-101498-27	NA	0.061 C	0.2	NA
Heptachlor Epoxide	3/14	0.0013 J	0.0034 J	0.001 - 0.005	0.002	0.002	28-GW07-NGW-101498-27	NA	0.0074 C	0.2	0.2
Total Metals (ug/L)											
Aluminum	6/7	74 J	45,000 J	1,000	6,880	7,950	MW16-37I-NWG-120402	**12,819**	**37,000 N**	NA	NA
Arsenic	2/7	1.3	3.3	0.52 - 1.3	1.0	2.3	MW16-45I-NWG-120302	4.62	**0.045 C**	10	NA
Barium	7/7	5.4 J	200	200	41.9	41.9	MW16-37I-NWG-120402	**69**	7,300 N	2,000	2,000
Beryllium	1/7	0.32	0.32	1.3	0.6	0.32	MW16-37I-NWG-120402	NA	73 N	4	4
Cadmium	2/7	0.09 J	0.12	0.09 - 1.3	0.32	0.11	MW16-37I-NWG-120402	1.75	18 N	5	5
Calcium	7/7	560	58,000	---	19,900	19,900	MW16-04I-NWG-121002	**22,455**	NA	NA	NA
Chromium	1/7	48 J	48 J	10 - 50	14.0	48.0	MW16-37I-NWG-120402	217	110 N[10]	100 [10]	100
Copper	2/7	11 J	76 J	25 - 120	28.1	43.5	MW16-37I-NWG-120402	**17.8**	1,500 N	1,300 [11]	NA
Iron	6/7	490	78,000 J	100	13,000	15,200	MW16-37I-NWG-120402	**47,378**	**26,000 N**	NA	NA
Lead	5/7	0.4	7.5	1.3	2.0	2.5	MW16-37I-NWG-120402	**3.41**	NA	15 [11]	15
Magnesium	7/7	590	33,000	---	10,000	10,000	MW16-04I-NWG-121002	**9,418**	NA	NA	NA
Total Metals (ug/L) (Continued)											
Manganese	7/7	11	940	---	313	313	MW16-37I-NWG-120402	4,996	**880 N**	NA	NA
Nickel	1/7	62 J	62 J	40 - 200	37.4	62.0	MW16-37I-NWG-120402	200	730 N	NA	100
Potassium	7/7	1,100	13,000	---	5,010	5,010	MW16-37I-NWG-120402	**7,666**	NA	NA	NA
Sodium	7/7	7,400	98,000	---	34,100	34,100	MW16-04I-NWG-121002	**18,609**	NA	NA	NA
Vanadium	1/7	6.1	6.1	0.52 - 1.3	1.4	6.1	MW16-37I-NWG-120402	18.4	180 N	NA	NA
Zinc	4/7	8.7 J	650 J	9.8 - 20	96.0	163	MW16-48I-NWG-121102-D	**93.7**	11,000 N	NA	NA
Dissolved Metals (ug/L)											
Aluminum	2/14	63 J	70 J	18 - 200	55.9	66.5	MW16-04I-NWG-121002	NA	37,000 N	NA	NA
Antimony	1/14	0.8	0.8	2.4 - 2.5	1.2	0.8	MW16-41I-NWG-121702	NA	15 N	6	6
Arsenic	3/14	0.37 J	3.1	1.3 - 1.8	0.99	1.8	MW16-45I-NWG-120302	NA	**0.045 C**	10	NA
Barium	7/14	5.3 J	77.1 J	7.4 - 200	34.5	24.1	28-GW04-NGW-100898-42	NA	7,300 N	2,000	2,000
Cadmium	1/14	0.1	0.1	0.08 - 1.3	0.29	0.1	MW16-41I-NWG-121702	NA	18 N	5	5
Calcium	10/14	710	56,400	7290 - 16700	11,300	13,900	28-GW04-NGW-100898-42	NA	NA	NA	NA
Iron	21/34	48 J	39,000 J	100 - 3460	3,050	4,740	MW16-46I-NWG-120902 and Dup	NA	**26,000 N**	NA	NA
Lead	2/14	0.09 J	1 J	1 - 1.5	0.59	0.55	28-GW06-NGW-100698-35	NA	NA	15 [11]	15
Magnesium	14/14	560	7,100	---	3,910	3,910	MW16-04I-NWG-121002	NA	NA	NA	NA
Manganese	29/34	5.7	1,600	15 - 513	244	274	28-GW08-NGW-101698-29	NA	**880 N**	NA	NA
Nickel	2/14	10.2 J	11.8 J	9.6 - 40	13.3	11.0	28-GW07-NGW-101498-27	NA	730 N	NA	100
Potassium	10/14	990	7,370	2110 - 4000	2,300	2,610	28-GW04-NGW-100898-42	NA	NA	NA	NA
Sodium	11/14	7,400	55,000	14100 - 31000	24,500	28,200	28-GW05-NGW-100798-44	NA	NA	NA	NA
Zinc	7/14	7.6 J	124	8.3 - 68	32.6	50.2	28-GW05-NGW-100798-44	NA	11,000 N	NA	NA
Miscellaneous Parameters (mg/L)											
Alkalinity	27/27	5	358	---	45	45	MW16-42I-NWG-120202	NA	NA	NA	NA
Ammonia	16/27	0.1	3.36	0.1	0.3	0.5	MW16-42I-NWG-120202	NA	NA	NA	NA
Chloride	27/27	4.5	423	---	43	43	MW16-14I-NWG-112102	NA	NA	NA	NA
Dissolved Organic Carbon	11/21	5	140	5	19	34	MW16-42I-NWG-120202	NA	NA	NA	NA
Nitrate	22/26	0.6	10 J	0.1	3	3	MW16-48I-NWG-121102	NA	58,000 N	10	NA
Nitrite	3/26	0.13	0.22	0.1	0.07	0.2	MW16-33I-NWG-120202	NA	3,700 N	1	NA

TABLE 4-44

SUMMARY OF DESCRIPTIVE STATISTICS
PRE-2004 INTERMEDIATE OVERBURDEN GROUNDWATER
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Range of Non-detects(2)	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration(3)	ORNL Regional Screening Levels - Tap Water(4)	EPA MCL(5)	RIDEM GA Groundwater Objective(6)
Miscellaneous Parameters (mg/L) (continued)											
Salinity (ppth)	1/27	0.66	0.66	0.1 - 1	0.4	0.7	MW16-14I-NWG-112102	NA	NA	NA	NA
Sulfate	27/27	0.2	22	---	11	11	MW16-33I-NWG-120202	NA	NA	NA	NA
Sulfide	10/27	0.05 J	1.7 J	0.05	0.1	0.3	MW16-35I-NWG-120402	NA	NA	NA	NA
Total Inorganic Carbon	3/27	1 J	40 J	1 - 5	3	13	MW16-46I-NWG-120902	NA	NA	NA	NA
Total Organic Carbon	5/6	7	34	5	15	17	MW16-44I-NWG-121202	NA	NA	NA	NA
Field Parameters (mg/L)											
Carbon Dioxide	26/26	14	465	---	86	86	MW16-42I-NWG-120202	NA	NA	NA	NA
Dissolved Oxygen	27/27	-0.6	11.47	---	4	4	MW16-34I-NWG-112502	NA	NA	NA	NA
Ferric Iron	13/13	0.01	7.04	---	2	2	MW16-45I-NWG-120302	NA	NA	NA	NA
Oxidation Reduction Potential (MV)	27/27	-139.8	232.8	---	110	110	MW16-14I-NWG-112102	NA	NA	NA	NA
pH	27/27	5.24	7.09	---	6	6	MW16-42I-NWG-120202	NA	NA	NA	NA
Temperature (C)	27/27	7.02	14.38	---	11	11	MW16-22I-NWG-121802	NA	NA	NA	NA

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Upper prediction limit, see Appendix D.
4 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
5 - USEPA 2006 Edition of the Drinking Water Standards and Health Advisories, August 2006.
6 - RIDEM, DEM-DSR-01-93, February 2004.
7 - Ten percent of the noncarcinogenic value is less than the carcinogenic value, therefore the noncarcinogenic value is presented.
8 - The value for pyrene is used as a surrogate for phenanthrene.
9 - The value for endrin is used as a surrogate for endrin aldehyde.
10 - The value for hexavalent chromium is presented.
11 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Qualifiers:
C - Carcinogen.
N - Noncarcinogen.
J - Estimated value.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and xylene
EPA = United States Environmental Protection Agency
GA = Drinking water suitability
GW = Groundwater
HI = Hazard index
MCL = Maximum Contaminant Level
NA = Criterion not available
PAH = Polycyclic aromatic hydrocarbon
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SDWA = Safe Drinking Water Act
UCL = Upper confidence limit on the arithmetic mean
VOCs = Volatile organic chemicals

TABLE 4-45

SUMMARY OF DESCRIPTIVE STATISTICS
2004 INTERMEDIATE OVERBURDEN GROUNDWATER
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Volatile Organics (ug/L)											
1,1-Dichloroethene	1/6	0.302 J	0.302 J	1	0.5	0.3	MW16-69I-NWG-120904	NA	340 C	7	7
Acetone	1/33	1.45 J	1.45 J	5 - 250	9	1	MW16-48I-NWG-100404	NA	22,000 N	NA	NA
Bromodichloromethane	1/48	0.219 J	0.219 J	1 - 50	1	0.2	MW16-16I-NWG-100604	NA	1.1 C	80	NA
BTEX	18/48	0.0106	0.478	---	0.03	0.08	MW16-46I-NWG-092804	NA	NA	NA	NA
Carbon Disulfide	10/48	0.114 J	0.563 J	1 - 50	1	0.2	MW16-50I-NWG-102604	NA	1,000 N	NA	NA
Chlorodibromomethane	2/48	0.364 J	0.387 J	1 - 50	1	0.4	MW16-16I-NWG-100604	NA	0.8 C	80	NA
cis-1,2-Dichloroethene	22/48	0.158 J	38	1 - 50	4	5	MW16-42I-NWG-093004	NA	370 N	70	70
Ethane	1/48	12	12	6.2	3	12	MW16-42I-NWG-093004	NA	NA	NA	NA
Methane	23/48	1 J	16,000	3.3 - 10	780	1,600	MW16-42I-NWG-093004	NA	NA	NA	NA
Tetrachloroethene	10/42	0.311 J	18	1 - 50	2	3	MW16-33I-NWG-100404	NA	**0.11 C**	**5**	**5**
Toluene	2/48	0.302 J	0.303 J	1 - 50	1	0.3	MW16-59I-NWG-102504	NA	2,300 N	1,000	1,000
Total 1,2-Dichloroethene	22/48	0.158 J	41	1 - 50	4	6	MW16-42I-NWG-093004	NA	330 N	NA	70
Total Chlorinated VOCs	47/48	0.0304	1,700	---	130	140	MW16-37I-NWG-100504	NA	NA	NA	NA
trans-1,2-Dichloroethene	11/48	0.153 J	3.03	1 - 50	1	0.8	MW16-42I-NWG-093004	NA	110 N	100	100
Trichloroethene	42/48	0.137 J	1,700	1	130	150	MW16-37I-NWG-100504	NA	**1.7 C**	**5**	**5**
Low-Level Volatile Organics (ug/L)											
1,1,2-Trichloroethane	5/42	0.0114 J	0.628	0.1	0.06	0.2	MW16-38I-NWG-102704	NA	**0.24 C**	5	5
1,1-Dichloroethene	21/42	0.0138 J	2.99 J	0.1	0.2	0.4	MW16-42I-NWG-093004	NA	340 C	7	7
1,2-Dichloroethane	3/42	0.0283 J	0.0479 J	0.1	0.05	0.04	MW16-38I-NWG-102704	NA	0.15 C	5	5
1,4-Dichlorobenzene	1/42	0.0126 J	0.0126 J	0.1	0.05	0.01	MW16-40I-NWG-101204	NA	0.43 C	75	75
Benzene	18/42	0.0106 J	0.478	0.1	0.05	0.05	MW16-46I-NWG-092804	NA	**0.41 C**	5	5
Chloroform	4/42	0.146	0.301	0.1 - 0.12	0.07	0.2	MW16-38I-NWG-102704	NA	**0.19 C**	80	NA
Vinyl Chloride	10/42	0.0113 J	33	0.1	0.9	4	MW16-42I-NWG-093004	NA	**0.016 C**	**2**	**2**
Total Metals (ug/L)											
Aluminum	42/42	3.7 J	245,000	---	16,100	16,100	MW16-59I-NWG-102504	**12,819**	**37,000 N**	NA	NA
Arsenic	28/42	0.48 J	39.5	0.42 - 1.8	4.6	6.7	MW16-42I-NWG-093004	**4.62**	**0.045 C**	**10**	NA
Barium	42/42	0.62 J	1,230	---	88.5	88.5	MW16-59I-NWG-102504	**69**	7,300 N	2,000	2,000
Beryllium	15/38	0.14 J	5.4	0.11	0.66	1.6	MW16-16I-NWG-100604	**NA**	73 N	**4**	**4**
Cadmium	17/42	0.09 J	8.7	0.06 - 0.37	0.56	1.3	MW16-59I-NWG-102504	**1.75**	18 N	**5**	**5**
Calcium	42/42	473	138,000	---	22,600	22,600	MW16-59I-NWG-102504	**22,455**	NA	NA	NA
Chromium	21/42	1.4	311	0.34 - 1.9	21.1	41.7	MW16-59I-NWG-102504	**217**	**110 N**[7]	**100** [7]	**100**
Cobalt	30/42	0.21	394	0.05 - 0.09	20.7	28.9	MW16-59I-NWG-102504	**18.8**	**11 N**	NA	NA
Copper	29/42	0.47 J	896	0.4 - 8.4	50.8	73.0	MW16-59I-NWG-102504	**17.8**	1,500 N	1,300 [8]	NA
Iron	37/42	54.8 J	612,000	50	35,300	40,100	MW16-59I-NWG-102504	**47,378**	**26,000 N**	NA	NA
Lead	40/42	0.05 J	149	0.05	14.7	15.4	MW16-59I-NWG-102504	**3.41**	NA	**15** [8]	**15**
Magnesium	42/42	160	116,000	---	11,200	11,200	MW16-59I-NWG-102504	**9,418**	NA	NA	NA
Manganese	42/42	1	12,500	---	746	746	MW16-59I-NWG-102504	**4,996**	**880 N**	NA	NA
Mercury	2/42	0.27	0.39	0.021 - 0.14	0.028	0.27	MW16-41I-NWG-093004	**ND**	11 N[9]	2	2
Nickel	37/42	0.38 J	642	0.35	37.7	42.7	MW16-59I-NWG-102504	**200**	730 N	NA	**100**
Potassium	42/42	428	45,200	---	7,090	7,090	MW16-59I-NWG-102504	**7,666**	NA	NA	NA
Selenium	6/42	0.37 J	6.1	0.29	0.37	1.8	MW16-50I-NWG-102604	**2**	180 N	50	50

TABLE 4-45

SUMMARY OF DESCRIPTIVE STATISTICS
2004 INTERMEDIATE OVERBURDEN GROUNDWATER
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Total Metals (ug/L) (continued)											
Silver	16/42	0.05 J	1.2	0.05 - 0.052	0.094	0.21	MW16-59I-NWG-102504	**NA**	180 N	NA	NA
Sodium	40/42	4,770	429,000 J	7460 - 11800	49,300	51,600	MW16-50I-NWG-102604	**18,609**	NA	NA	NA
Thallium	16/42	0.07 J	1.2	0.066 - 0.13	0.17	0.38	MW16-16I-NWG-100604, MW16-59I-NWG-102504	3.08	2.4 N	2	2
Vanadium	28/42	0.52 J	382	0.4 - 0.52	27.2	40.6	MW16-59I-NWG-102504	**18.4**	**180 N**	NA	NA
Zinc	37/42	2	1,930	1.1 - 6.3	113	128	MW16-59I-NWG-102504	**93.7**	11,000 N	NA	NA
Dissolved Metals (ug/L)											
Aluminum	38/42	1 J	244	0.72	14.0	15.5	MW16-64I-NWG-102704	NA	37,000 N	NA	NA
Arsenic	32/42	0.1 J	56.8	0.09	2.9	3.7	MW16-42I-NWG-093004	NA	**0.045 C**	**10**	NA
Barium	37/42	2.1 J	108	2.1	17.3	19.5	MW16-56I-NWG-101404	NA	7,300 N	2,000	2,000
Cadmium	4/42	0.06	0.51	0.02 - 0.26	0.057	0.35	MW16-27I-NWG-101404	NA	18 N	5	5
Calcium	42/42	400	89,500	---	16,200	16,200	MW16-42I-NWG-093004	NA	NA	NA	NA
Chromium	35/42	0.58	9.3	0.7 - 1	2.3	2.7	MW16-50I-NWG-102604	NA	110 N[7]	100 [7]	100
Cobalt	35/42	0.02 J	24.1	0.01 - 0.14	2.0	2.4	MW16-27I-NWG-101404	NA	**11 N**	NA	NA
Copper	26/42	0.17 J	3.5	0.16 - 2.4	0.49	0.57	MW16-50I-NWG-102604	NA	1,500 N	1,300 [8]	NA
Iron	22/48	50.5 J	39,800	32.2 - 50	2,470	5,350	MW16-42I-NWG-093004	NA	**26,000 N**	NA	NA
Lead	31/42	0.1 J	0.56	0.078 - 0.08	0.17	0.22	MW16-59I-NWG-102504	NA	NA	15 [8]	15
Magnesium	42/42	118	33,400	---	4,630	4,630	MW16-50I-NWG-102604	NA	NA	NA	NA
Manganese	47/48	0.48	3,710 J	0.81	206	210	MW16-58I2-NWG-101304	NA	**880 N**	NA	NA
Nickel	41/42	0.13	36.7	0.12	3.2	3.3	MW16-13I-NWG-100704	NA	730 N	NA	100
Potassium	42/42	455	39,200	---	4,810	4,810	MW16-27I-NWG-101404	NA	NA	NA	NA
Selenium	11/42	0.41 J	5.7	0.3	0.44	1.3	MW16-50I-NWG-102604	NA	180 N	50	50
Silver	5/42	0.03 J	0.14	0.02 - 0.021	0.016	0.061	MW16-24I-NWG-100104-D	NA	180 N	NA	NA
Sodium	42/42	4,960	429,000	---	49,300	49,300	MW16-50I-NWG-102604	NA	NA	NA	NA
Thallium	1/42	0.09 J	0.09 J	0.07 - 0.074	0.037	0.09	MW16-56I-NWG-101404	NA	2.4 N	2	2
Vanadium	35/42	0.08 J	3.1	0.14 - 0.31	0.71	0.83	MW16-50I-NWG-102604, MW16-65I-NWG-102804	NA	180 N	NA	NA
Zinc	39/42	0.77 J	65.2 J	0.44 - 0.65	7.6	8.2	MW16-13I-NWG-100704	NA	11,000 N	NA	NA
Miscellaneous Parameters (mg/L)											
Alkalinity	47/48	2.7	364	1	51	52	MW16-42I-NWG-093004	NA	NA	NA	NA
Ammonia	29/48	0.1	3.39	0.1 - 0.61	0.3	0.5	MW16-50I-NWG-102604	NA	NA	NA	NA
Chloride	48/48	4.95	554	---	85	85	MW16-50I-NWG-102604	NA	NA	NA	NA
Dissolved Inorganic Carbon	37/48	1	27	1	5	7	MW16-46I-NWG-092804	NA	NA	NA	NA
Dissolved Organic Carbon	48/48	1	24	---	3	3	MW16-46I-NWG-092804	NA	NA	NA	NA
Hydrogen Sulfide	3/48	0.09	0.156	0.05	0.03	0.1	MW16-16I-NWG-100604	NA	110 N	NA	NA
Nitrate	40/48	0.103	16.5	0.1	4	5	MW16-48I-NWG-100404-D	NA	58,000 N	**10**	NA
Salinity (ppth)	42/42	0.024	1.35	---	0.2	0.2	MW16-50I-NWG-102604	NA	NA	NA	NA
Sulfate	48/48	0.968	62.3	---	12	12	MW16-27I-NWG-101404	NA	NA	NA	NA

TABLE 4-45

SUMMARY OF DESCRIPTIVE STATISTICS
2004 INTERMEDIATE OVERBURDEN GROUNDWATER
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Range of Non-detects(2)	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration(3)	ORNL Regional Screening Levels - Tap Water(4)	EPA MCL(5)	RIDEM GA Groundwater Objective(6)

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Upper prediction limit, see Appendix D.
4 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
5 - USEPA 2006 Edition of the Drinking Water Standards and Health Advisories, August 2006.
6 - RIDEM, DEM-DSR-01-93, February 2004.
7 - The value for hexavalent chromium is presented.
8 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
9 - The value for mercuric chloride is presented.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Qualifiers:
C - Carcinogen.
N - Noncarcinogen.
J - Estimated value.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and xylene
EPA = United States Environmental Protection Agency
GA = Drinking water suitability
GW = Groundwater
HI = Hazard index
MCL = Maximum Contaminant Level
NA = Criterion not available
ND = Not Detected
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SDWA = Safe Drinking Water Act
UCL = Upper confidence limit on the arithmetic mean
VOCs = Volatile organic chemicals

TABLE 4-46

SUMMARY OF DESCRIPTIVE STATISTICS
2007 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Volatile Organic Compounds (ug/L)											
1,1-Dichloroethene	2/33	0.48	2.4	0.1 - 15	0.468	1.44	MW16-27I-NWG-082607	NA	340 C	7	7
Acetone	1/8	9.4 J	9.4 J	1.9 - 3.9	2.76	9.40	MW16-87I-NWG-121807	NA	22,000 N	NA	NA
BTEX	1/33	1.1	1.1	0 - 0	0.033	1.10	MW16-33I-NWG-061407	NA	NA	NA	NA
Carbon Disulfide	1/33	1.1	1.1	0.69 - 14	0.610	1.10	MW16-88I-NWG-121707	NA	1,000 N	NA	NA
Chloroform	7/33	0.15	7.6 J	0.087 - 7	0.470	1.32	MW16-05I-NWG-052107-D	NA	**0.19 C**	80	NA
cis-1,2-Dichloroethene	7/33	1	25	0.14 - 11	2.26	8.99	MW16-58I2-NWG-082707	NA	370 N	70	70
Methyl Acetate	1/33	1.1 J	1.1 J	0.67 - 13	0.591	1.10	MW16-59I-NWG-071107	NA	37,000 N	NA	NA
Methyl Tert-Butyl Ether	1/33	1.7	1.7	0.58 - 14	0.609	1.70	MW16-27I-NWG-082607	NA	12 C	NA	40
Tetrachloroethene	8/33	0.11	15 J	0.1 - 10	0.917	2.63	MW16-33I-NWG-061407	NA	**0.11 C**	**5**	**5**
Total Chlorinated VOCs	26/33	0.79	7,700	0 - 0	456	456	TW16-107I-NWG-072807	NA	NA	NA	NA
Total Xylenes	1/33	1.1	1.1	1 - 20	0.874	1.10	MW16-33I-NWG-061407	NA	200 N	10,000	10,000
trans-1,2-Dichloroethene	2/33	1.2	2.4	0.13 - 10	0.475	1.80	MW16-45I-NWG-081207	NA	110 N	100	100
Trichloroethene	26/33	0.51	7,700	0.1 - 0.1	356	451	TW16-107I-NWG-072807	NA	**1.7 C**	**5**	**5**
Vinyl Chloride	2/33	7.4 J	16 J	0.1 - 10	1.00	11.7	MW16-58I2-NWG-082707	NA	**0.016 C**	**2**	**2**
Inorganics (ug/L)											
Aluminum	24/29	21.9 J	238,000	14 - 145	10,051	12,138	MW16-59I-NWG-071107	**12,819**	**37,000 N**	NA	NA
Antimony	1/29	2.4 J	2.4 J	1.2 - 9.7	1.49	2.40	MW16-49I-NWG-072907	8.04	15 N	6	6
Arsenic	13/29	0.366 J	30.2	0.022 - 1	3.20	6.93	MW16-59I-NWG-071107	**4.62**	**0.045 C**	**10**	NA
Barium	25/29	3.4 J	752	2.1 - 24.8	57.0	65.3	MW16-59I-NWG-071107	**69**	7,300 N	2,000	2,000
Beryllium	5/29	0.23	16.8	0.051 - 0.26	0.683	3.67	MW16-59I-NWG-071107	NA	73 N	**4**	**4**
Cadmium	6/29	0.17 J	9.7 J	0.1 - 0.56	0.445	1.88	MW16-59I-NWG-071107	**1.75**	18 N	**5**	**5**
Calcium	29/29	696	104,000	-	17,834	17,834	MW16-58I2-NWG-082707	**22,455**	NA	NA	NA
Chromium	18/29	0.45 J	368	0.22 - 2.6	16.9	27.0	MW16-59I-NWG-071107	**217**	**110 N[7]**	**100 [7]**	**100**
Cobalt	16/29	1.4	342	0.15 - 7.8	15.9	28.2	MW16-59I-NWG-071107	**18.8**	**11 N**	NA	NA
Copper	9/29	2.1	554	1.7 - 6.3	26.2	78.1	MW16-59I-NWG-071107	**17.8**	1,500 N	1300[8]	NA
Iron	29/29	43.3 J	696,000	-	30,390	30,390	MW16-59I-NWG-071107	**47,378**	**26,000 N**	NA	NA
Lead	4/29	5.8	283	0.46 - 6.5	12.2	83.8	MW16-59I-NWG-071107	**3.41**	NA	**15 [8]**	**15**
Magnesium	29/29	854	123,000	-	9,554	9,554	MW16-59I-NWG-071107	**9,418**	NA	NA	NA
Manganese	28/29	2.4 J	9,530	4.7 - 4.7	662	685	MW16-59I-NWG-071107	**4,996**	**880 N**	NA	NA
Nickel	17/29	0.99 J	540	0.59 - 12	25.6	42.5	MW16-59I-NWG-071107	**200**	730 N	NA	**100**
Potassium	29/29	524	36,000	-	5,752	5,752	MW16-59I-NWG-071107	**7,666**	NA	NA	NA
Selenium	3/29	9.9 J	18.3 J	0.98 - 13.8	3.83	14.5	MW16-59I-NWG-071107	**2**	180 N	50	50
Silver	3/29	4.2	16.7	0.91 - 8.5	1.58	8.87	MW16-88I-NWG-121707	NA	180 N	NA	NA
Sodium	29/29	5,390	209,000	-	34,083	34,083	MW16-27I-NWG-082607	**18,609**	NA	NA	NA
Thallium	4/29	0.111	1.6	0.01 - 1	0.204	0.499	MW16-59I-NWG-071107	3.08	2.4 N	2	2
Vanadium	14/29	0.66 J	479	0.4 - 12.1	19.8	40.1	MW16-59I-NWG-071107	**18.4**	**180 N**	NA	NA
Zinc	18/29	2.7 J	1,500	12.5 - 29.2	75.3	115	MW16-59I-NWG-071107	**93.7**	11,000 N	NA	NA
Filtered Inorganics (ug/L)											
Aluminum	5/20	17.8 J	4,160	14 - 99.7	275	1,060	MW16-65I-NWG-072507	NA	37,000 N	NA	NA
Antimony	1/20	9.2	9.2	1.2 - 8.5	1.97	9.20	MW16-58I2-NWG-082707	NA	15 N	**6**	**6**
Arsenic	12/20	0.351	9.6 J	0.022 - 1	1.50	2.40	MW16-49I-NWG-072907	NA	**0.045 C**	10	NA
Barium	16/20	3.4 J	111	2.1 - 20.4	28.2	33.9	MW16-58I2-NWG-082707	NA	7,300 N	2,000	2,000
Beryllium	1/20	0.34	0.34	0.051 - 0.15	0.071	0.340	MW16-65I-NWG-072507	NA	73 N	4	4
Cadmium	2/20	0.18	0.31	0.1 - 0.39	0.078	0.245	MW16-58I2-NWG-082707	NA	18 N	5	5

TABLE 4-46

SUMMARY OF DESCRIPTIVE STATISTICS
2007 INTERMEDIATE OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Range of Non-detects(2)	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration(3)	ORNL Regional Screening Levels - Tap Water(4)	EPA MCL(5)	RIDEM GA Groundwater Objective(6)
Filtered Inorganics (ug/L) (continued)											
Calcium	20/20	698	101,000	-	17,235	17,235	MW16-58I2-NWG-082707	NA	NA	NA	NA
Chromium	9/20	0.5 J	6.5	0.22 - 4.5	1.04	1.77	MW16-65I-NWG-072507	NA	110 N(7)	100 (7)	100
Cobalt	8/20	3.3	31.5	0.15 - 5.1	4.00	9.18	MW16-27I-NWG-082607	NA	**11 N**	NA	NA
Iron	11/20	71	34,700 J	30.6 - 1210	4,158	7,453	MW16-58I2-NWG-082707	NA	**26,000 N**	NA	NA
Magnesium	20/20	271	18,700	-	6,097	6,097	MW16-05I-NWG-052107	NA	NA	NA	NA
Manganese	17/20	6	4,010	8.4 - 9	437	514	MW16-58I2-NWG-082707	NA	**880 N**	NA	NA
Nickel	9/20	0.62 J	45.8	0.59 - 8.6	4.75	8.68	MW16-27I-NWG-082607	NA	730 N	NA	100
Potassium	20/20	660	26,800	-	5,427	5,427	MW16-27I-NWG-082607	NA	NA	NA	NA
Selenium	3/20	5.9	8.6 J	0.98 - 11.4	3.35	6.90	MW16-10I-NWG-102407	NA	180 N	50	50
Silver	1/20	4.4	4.4	0.91 - 8.5	1.16	4.40	MW16-04I-NWG-082107	NA	180 N	NA	NA
Sodium	20/20	9,470	214,000	-	40,727	40,727	MW16-27I-NWG-082607	NA	NA	NA	NA
Thallium	1/20	0.156	0.169	0.007 - 1	0.127	0.163	MW16-05I-NWG-052107-D	NA	2.4 N	2	2
Vanadium	3/20	0.82 J	7.7	0.4 - 10.7	0.942	3.14	MW16-65I-NWG-072507	NA	180 N	NA	NA
Zinc	14/20	11.2	78.8	15.8 - 23.8	25.0	31.5	MW16-59I-NWG-071107	NA	11,000 N	NA	NA

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Upper prediction limit, see Appendix D.
4 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
5 - USEPA 2006 Edition of the Drinking Water Standards and Health Advisories, August 2006.
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The value for hexavalent chromium is presented.
8 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Qualifiers:
C - Carcinogen.
N - Noncarcinogen.
J - Estimated value.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and xylene
EPA = United States Environmental Protection Agency
GA = Drinking water suitability
GW = Groundwater
HI = Hazard index
MCL = Maximum Contaminant Level
NA = Criterion not available
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SDWA = Safe Drinking Water Act
UCL = Upper confidence limit on the arithmetic mean
VOCs = Volatile organic chemicals

TABLE 4-47

SUMMARY OF DESCRIPTIVE STATISTICS
PRE-2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Volatile Organics (ug/L)											
1,1,2-Trichloroethane	2/29	0.3	1	1	0.5	0.7	MW16-21D-NWG-032801	NA	**0.24 C**	5	5
1,1-Dichloroethane	7/81	0.16 J	0.6	1 - 20	0.6	0.3	MW16-16D-NWG-032601	NA	2.4 C	NA	NA
1,1-Dichloroethene	9/32	0.3 J	1	1 - 20	0.9	0.8	4 Samples	NA	340 C	7	7
1,2-Dichloroethane	5/81	0.3	0.4	1 - 20	0.6	0.4	3 Samples	NA	**0.15 C**	5	5
4-Methyl-2-Pentanone	2/61	0.11 J	0.34 J	3 - 100	3	0.2	MW16-47D-NWG-120202	NA	2,000 N	NA	NA
Acetone	14/38	0.8 J	100 J	5 - 17	15	36	MW16-23D-NWG-032801	NA	22,000 N	NA	NA
Benzene	1/32	1	1	1 - 20	0.8	1	MW16-20D-NWG-032801	NA	**0.41 C**	5	5
BTEX	15/81	0.04	1.12	---	0.06	0.3	MW16-14D-NWG-112102	NA	NA	NA	NA
Carbon Disulfide	27/81	0.2 J	1.5	1 - 20	0.6	0.5	MW16-26D-NWG-121202	NA	1,000 N	NA	NA
Chlorodibromomethane	2/81	0.21 J	0.47 J	1 - 20	0.6	0.3	MW16-19D-NWG-112702	NA	0.8 C	80	NA
Chloroethane	1/81	0.6	0.6	1 - 20	0.8	0.6	MW16-14D-NWG-032301	NA	21,000 N	NA	NA
Chloroform	1/29	0.5 J	0.5 J	1	0.5	0.5	MW16-29D-NWG-032101	NA	**0.19 C**	80	NA
cis-1,2-Dichloroethene	36/77	0.23 J	61	1 - 2	4	9	MW16-29D-NWG-121102	NA	370 N	70	70
Ethylbenzene	3/81	0.17 J	0.5	1 - 20	0.6	0.3	MW16-15D-NWG-032701-D	NA	1.5 C	700	700
m+p-Xylenes	2/80	0.1 J	0.47 J	1 - 40	1	0.3	MW16-14D-NWG-112102	NA	210 N[7]	10,000 [8]	10,000 [8]
Methane	12/52	1.5 J	410 J	1	12	52	MW16-29D-NWG-121102	NA	NA	NA	NA
o-Xylene	3/80	0.3 J	0.6	1 - 20	0.6	0.4	MW16-15D-NWG-032701-D	NA	1,400 N	10,000 [8]	10,000 [8]
Tetrachloroethene	17/81	0.11 J	23	1 - 20	0.9	2	MW16-34D-NWG-112602	NA	**0.11 C**	**5**	**5**
Toluene	7/81	0.1 J	0.29 J	1 - 20	0.6	0.2	MW16-32D-NWG-121802	NA	2,300 N	1,000	1,000
Total 1,2-Dichloroethene	37/81	0.23	63	1 - 40	5	9	MW16-29D-NWG-121102	NA	330 N	NA	70
Total Chlorinated VOCs	70/81	0.06	6,404	---	620	720	MW16-15D-NWG-032701-D	NA	NA	NA	NA
Total Xylenes	4/81	0.1	0.77	1 - 20	0.6	0.4	MW16-14D-NWG-112102	NA	200 N	10,000	10,000
trans-1,2-Dichloroethene	23/77	0.12 J	3 J	1 - 2	0.7	0.7	MW16-29D-NWG-032101	NA	110 N	100	100
Trichloroethene	60/81	0.12 J	6,400	1	620	830	MW16-15D-NWG-032701-D	NA	**1.7 C**	**5**	**5**
Vinyl Chloride	1/29	2 J	2 J	1 - 2	1	2	MW16-29D-NWG-032101	NA	**0.016 C**	2	2
Low-Level Volatile Organics (ug/L)											
1,1,2-Trichloroethane	18/52	0.05 J	4	0.1	0.3	0.7	MW16-21D-NWG-121202	NA	**0.24 C**	5	5
1,1-Dichloroethane	18/52	0.06 J	0.8	0.1	0.1	0.2	MW16-21D-NWG-121202	NA	2.4 C	NA	NA
1,1-Dichloroethene	32/52	0.07 J	14	0.1	0.8	1	MW16-24D-NWG-121002	NA	340 C	**7**	**7**
1,4-Dichlorobenzene	2/52	0.07 J	2	0.1	0.09	1	MW16-08D-NWG-121102	NA	**0.43 C**	75	75
Benzene	6/52	0.04 J	0.08 J	0.1	0.05	0.05	MW16-12D-NWG-121002	NA	0.41 C	5	5
Chloroform	18/52	0.04 J	0.7	0.1	0.08	0.1	MW16-21D-NWG-121202	NA	**0.19 C**	80	NA
Vinyl Chloride	14/52	0.05 J	22	0.1	0.5	2	MW16-24D-NWG-121002	NA	**0.016 C**	**2**	**2**
Semivolatile Organics (ug/L)											
1,4-Dichlorobenzene	1/28	2 J	2 J	10 - 11	5	2	MW16-08D-NWG-032801	NA	**0.43 C**	75	75
Bis(2-Ethylhexyl) Phthalate	6/40	1 J	46	2 - 11	5	12	MW16-31D-NWG-121802	NA	**4.8 C**	**6**	**6**
di-n-Butyl Phthalate	2/40	0.6	0.9	1 - 10	4	0.8	MW16-19D-NWG-032801	NA	3,700 N	NA	NA
Polycyclic Aromatic Hydrocarbons (ug/L)											
Naphthalene	2/37	0.1	0.2 J	0.2 - 0.5	0.1	0.2	MW16-09D-NWG-032601	NA	**0.14 C**	NA	20
Phenanthrene	1/40	0.04 J	0.04 J	0.05 - 0.2	0.08	0.04	MW16-52D-NWG-121102	NA	1,100 N[9]	NA	NA
Total PAHs	3/40	0.04	0.2	---	0.009	0.1	MW16-09D-NWG-032601	NA	NA	NA	NA

TABLE 4-47

SUMMARY OF DESCRIPTIVE STATISTICS
PRE-2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Pesticides (ug/L)											
beta-BHC	1/41	0.01	0.01	0.002 - 0.05	0.018	0.010	MW16-07D-NWG-032301	NA	0.037 C	NA	NA
Total Metals (ug/L)											
Aluminum	19/40	110 J	14,000 J	52.6 - 610	1,290	2,570	MW16-54D-NWG-121702	**12,819**	37,000 N	NA	NA
Antimony	1/40	1.1	1.1	0.29 - 3.65	1.6	1.1	MW16-50D-NWG-121902	9.04	15 N	6	6
Arsenic	7/40	2.1	21.5	0.55 - 2.53	2.1	6.4	MW16-50D-NWG-121902	**4.62**	**0.045 C**	**10**	NA
Barium	40/40	5.4	260	---	25.9	25.9	MW16-54D-NWG-121702	**69**	7,300 N	2,000	2,000
Beryllium	4/40	0.18 J	2.35	0.18 - 1.3	0.34	0.8	MW16-54D-NWG-121702	**NA**	73 N	4	4
Cadmium	5/40	0.1	0.97	0.08 - 1.3	0.23	0.41	MW16-54D-NWG-121702	1.75	18 N	5	5
Calcium	40/40	1,100	270,000	---	19,100	19,100	MW16-50D-NWG-121902	**22,455**	NA	NA	NA
Chromium	18/40	0.65 J	18 J	0.57 - 50	3.9	4.1	MW16-54D-NWG-121702	217	110 N[10]	100 [10]	100
Cobalt	20/29	1.1 J	5.4	0.92	1.9	2.6	MW16-14D-NWG-032301	18.8	11 N	NA	NA
Copper	6/40	1.4 J	62 J	0.84 - 120	8.1	17.8	MW16-54D-NWG-121702	**17.8**	1,500 N	1,300 [11]	NA
Iron	40/40	103	41,000 J	---	6,800	6,800	MW16-54D-NWG-121702	**47,378**	**26,000 N**	NA	NA
Total Metals (ug/L) (Continued)											
Lead	17/40	0.28	36.3	0.1 - 2.3	2.3	4.6	MW16-54D-NWG-121702	**3.41**	NA	**15 [11]**	**15**
Magnesium	40/40	1,840	620,000	---	22,800	22,800	MW16-50D-NWG-121902	**9,418**	NA	NA	NA
Manganese	40/40	64.6	2,100	---	512	512	MW16-50D-NWG-121902	4,996	**880 N**	NA	NA
Mercury	1/40	0.52 J	0.52 J	0.03 - 0.2	0.053	0.52	MW16-33D-NWG-120202	**NA**	11 N[12]	2	2
Nickel	19/40	1.4 J	28	1.3 - 200	12.1	5.9	MW16-54D-NWG-121702	200	730 N	NA	100
Potassium	40/40	1,350	230,000	---	11,500	11,500	MW16-50D-NWG-121902	**7,666**	NA	NA	NA
Selenium	4/40	3.5 J	87.1	3.04 - 6.3	4.8	30.5	MW16-50D-NWG-121902	**2**	180 N	**50**	**50**
Silver	5/40	0.13 J	9.2	1.03 - 1.3	0.76	2.3	MW16-45D-NWG-120302	**NA**	180 N	NA	NA
Sodium	38/40	9,300	137,000	5,000	24,600	25,800	MW16-28D-NWG-032701	**18,609**	NA	NA	NA
Thallium	1/40	0.53	0.53	0.09 - 4.74	1.9	0.53	MW16-54D-NWG-121702	3.08	2.4 N	2	2
Vanadium	17/40	0.53 J	29.9 J	0.52 - 8	2.2	4.4	MW16-54D-NWG-121702	**18.4**	180 N	NA	NA
Zinc	30/40	1.8	120	4.2 - 130	16.2	16.4	MW16-37D-NWG-120402	**93.7**	11,000 N	NA	NA
Dissolved Metals (ug/L)											
Aluminum	6/12	84 J	2,200 J	75 - 200	292	494	MW16-54D-NWG-121702	NA	37,000 N	NA	NA
Antimony	2/12	0.53	1.7	0.41 - 2.5	1.1	1.1	MW16-50D-NWG-121902	NA	15 N	6	6
Arsenic	9/12	0.38 J	8.3	0.32 - 1.8	1.7	2.1	MW16-52D-NWG-121102	NA	**0.045 C**	10	NA
Barium	11/12	4.7 J	87	7.4	22.1	23.8	MW16-54D-NWG-121702	NA	7,300 N	2,000	2,000
Beryllium	1/12	0.58	0.58	0.2 - 1.3	0.6	0.58	MW16-54D-NWG-121702	NA	73 N	4	4
Calcium	11/12	730	240,000	11,900	31,200	33,500	MW16-50D-NWG-121902	NA	NA	NA	NA
Chromium	1/12	330 J	330 J	3.3 - 10	31.8	330	MW16-54D-NWG-121702	NA	**110 N**	**100 [10]**	**100**
Cobalt	1/1	9.1 J	9.1 J	---	9.1	9.1	28-GW03-NGW-101298-40	NA	11 N	NA	NA
Copper	1/12	65 J	65 J	4.1 - 25	16.0	65.0	MW16-54D-NWG-121702	NA	1,500 N	1,300 [11]	NA
Iron	48/53	73 J	14,000 J	100 - 935	3,430	3,770	MW16-01D-NWG-121002	NA	26,000 N	NA	NA
Lead	3/12	0.12 J	9.9	1 - 1.3	1.3	3.4	MW16-54D-NWG-121702	NA	NA	15 [11]	15
Magnesium	12/12	510	560,000	---	60,500	60,500	MW16-50D-NWG-121902	NA	NA	NA	NA
Manganese	52/53	18	2,000	15	423	431	MW16-50D-NWG-121902	NA	**880 N**	NA	NA
Nickel	1/12	420	420	9.6 - 40	52.1	420	MW16-54D-NWG-121702	NA	730 N	NA	**100**
Potassium	11/12	1,400	190,000	3,410	24,500	26,600	MW16-50D-NWG-121902	NA	NA	NA	NA

TABLE 4-47

SUMMARY OF DESCRIPTIVE STATISTICS
PRE-2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Range of Non-detects(2)	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration(3)	ORNL Regional Screening Levels - Tap Water(4)	EPA MCL(5)	RIDEM GA Groundwater Objective(6)
Dissolved Metals (ug/L) (continued)											
Selenium	3/12	1.6	25.9	2.2 - 6.3	4.9	11.0	MW16-52D-NWG-121102	NA	180 N	50	50
Silver	1/12	0.22	0.22	1 - 1.3	0.6	0.22	MW16-34D-NWG-112602	NA	180 N	NA	NA
Sodium	9/12	9,200	53,000 J	5000 - 30100	16,100	19,300	MW16-49D-NWG-121902	NA	NA	NA	NA
Thallium	1/12	0.14	0.14	0.06 - 1.3	0.43	0.14	MW16-54D-NWG-121702	NA	2.4 N	2	2
Vanadium	1/12	8.9	8.9	1.3 - 3.2	1.4	8.9	MW16-54D-NWG-121702	NA	180 N	NA	NA
Zinc	4/12	9.6 J	92	12 - 56	20.4	35.9	MW16-36D-NWG-120402	NA	11,000 N	NA	NA
Miscellaneous Parameters (mg/L)											
Alkalinity	51/51	7	1,480 J	---	68	68	MW16-32D-NWG-121802	NA	NA	NA	NA
Ammonia	29/52	0.1	1.25	0.1	0.2	0.2	MW16-29D-NWG-121102	NA	NA	NA	NA
Chloride	52/52	2.73	11,913	---	360	360	MW16-50D-NWG-121902	NA	NA	NA	NA
Dissolved Organic Carbon	25/39	1	61	5	9	13	MW16-51D-NWG-120902	NA	NA	NA	NA
Nitrate	14/51	0.1	8.29 J	0.1 - 10	0.7	2	MW16-08D-NWG-121102	NA	58,000 N	10	NA
Salinity (ppth)	20/66	0.0021 J	6.06	0.1 - 1	0.6	0.8	MW16-52D-NWG-121102	NA	NA	NA	NA
Sulfate	52/52	2.27	1,660	---	64	64	MW16-50D-NWG-121902	NA	NA	NA	NA
Sulfide	13/50	0.05 J	0.29 J	0.05	0.05	0.1	MW16-19D-NWG-112702	NA	NA	NA	NA
Total Inorganic Carbon	12/52	1 J	17	1 - 5	3	5	MW16-49D-NWG-121902	NA	NA	NA	NA
Total Organic Carbon	13/13	4	67	---	18	18	MW16-52D-NWG-121102	NA	NA	NA	NA
Field Parameters (mg/L)											
Carbon Dioxide	47/47	23.6	778	---	83	83	MW16-31D-NWG-121802	NA	NA	NA	NA
Dissolved Oxygen	52/52	-0.09	12.13	---	2	2	MW16-34D-NWG-112602	NA	NA	NA	NA
Ferric Iron	47/47	0.07	15.5	---	3	3	MW16-01D-NWG-121002	NA	NA	NA	NA
Oxidation Reduction Potential (MV)	52/52	-127.4	227.9	---	5	5	MW16-08D-NWG-121102	NA	NA	NA	NA
pH	52/52	5.56	12.53	---	7	7	MW16-32D-NWG-121802	NA	NA	NA	NA
Temperature (C)	52/52	4.6	15.25	---	11	11	MW16-23D-NWG-121802	NA	NA	NA	NA

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Upper prediction limit, see Appendix D.
4 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
5 - USEPA 2006 Edition of the Drinking Water Standards and Health Advisories, August 2006.
6 - RIDEM, DEM-DSR-01-93, February 2004.
7 - Value is for m-xylenes
8 - Value is for total xylenes
9 - The value for pyrene is used as a surrogate for phenanthrene.
10 - The value for hexavalent chromium is presented.
11 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
12 - The value for mercuric chloride is presented.

Shading indicates that the maximum detected concentration exceeds the screening criterion.

TABLE 4-47

SUMMARY OF DESCRIPTIVE STATISTICS
PRE-2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 4 OF 4

Parameter	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Range of Non-detects(2)	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration(3)	ORNL Regional Screening Levels - Tap Water(4)	EPA MCL(5)	RIDEM GA Groundwater Objective(6)

Qualifiers:
C - Carcinogen.
N - Noncarcinogen.
J - Estimated value.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and xylene
EPA = United States Environmental Protection Agency
GA = Drinking water suitability
GW = Groundwater
HI = Hazard index
MCL = Maximum Contaminant Level
NA = Criterion not available
ND = Not Detected
PAH = Polycyclic aromatic hydrocarbon
PRG = Preliminary Remediation goal
RBC = Risk-Based Concentration
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SDWA = Safe Drinking Water Act
UCL = Upper confidence limit on the arithmetic mean
VOCs = Volatile organic chemicals

TABLE 4-48

SUMMARY OF DESCRIPTIVE STATISTICS
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Volatile Organics (ug/L)											
1,1-Dichloroethane	6/81	0.135 J	0.254 J	1 - 50	4	0.2	MW16-16D-NWG-100604-D	NA	2.4 C	NA	NA
1,1-Dichloroethene	5/18	0.295 J	0.74 J	1 - 50	9	0.4	MW16-69D-NWG-111604	NA	340 C	7	7
Acetone	3/62	1.53 J	2.57 J	4.31 - 250	19	2	MW16-13D-NWG-100704	NA	22,000 N	NA	NA
Bromodichloromethane	1/81	0.294 J	0.294 J	1 - 50	4	0.3	MW16-15D-NWG-101404	NA	1.1 C	80	NA
BTEX	21/81	0.0125	0.252	---	0.009	0.04	MW16-64D-NWG-102704	NA	NA	NA	NA
Carbon Disulfide	11/81	0.117 J	1.11	1 - 50	4	0.4	MW16-69D-NWG-111604	NA	1,000 N	NA	NA
Chlorodibromomethane	1/81	0.579 J	0.579 J	1 - 50	4	0.6	MW16-15D-NWG-101404	NA	0.8 C	80	NA
Chloroform	1/18	0.134 J	0.134 J	1 - 50	9	0.1	INJ16-07D-NWG-120904	NA	0.19 C	80	NA
Chloromethane	1/81	0.212 J	0.212 J	1 - 50	4	0.2	MW16-67D-NWG-111604	NA	1.8 C	NA	NA
cis-1,2-Dichloroethene	33/81	0.226 J	35	1 - 50	6	6	MW16-29D-NWG-100704	NA	370 N	70	70
Ethane	6/81	0.68 J	3.5 J	6.2	3	2	MW16-69D-NWG-111604	NA	NA	NA	NA
Ethene	1/81	0.88 J	0.88 J	5.8	3	0.9	MW16-60D-NWG-102704	NA	NA	NA	NA
Methane	26/81	1 J	3,000	1.7 - 7.5	45	140	MW16-29D-NWG-100704	NA	NA	NA	NA
Tetrachloroethene	5/63	0.371 J	7.91	1 - 50	2	2	MW16-34D-NWG-092904	NA	**0.11 C**	**5**	**5**
Toluene	1/81	0.237 J	0.237 J	1 - 50	4	0.2	MW16-64D-NWG-102704	NA	2,300 N	1,000	1,000
Total 1,2-Dichloroethene	34/81	0.143 J	37	1 - 100	8	6	MW16-29D-NWG-100704	NA	330 N	NA	70
Total Chlorinated VOCs	73/81	0.031	2,939	---	530	580	MW16-29D-NWG-100704	NA	NA	NA	NA
trans-1,2-Dichloroethene	22/81	0.111 J	2.02	1 - 50	4	0.4	MW16-29D-NWG-100704	NA	110 N	100	100
Trichloroethene	69/81	0.142 J	2,900	1	520	610	MW16-29D-NWG-100704	NA	**1.7 C**	**5**	**5**
Vinyl Chloride	1/18	0.366 J	0.366 J	1 - 50	9	0.4	INJ16-02D-NWG-120904	NA	**0.016 C**	2	2
Low-Level Volatile Organics (ug/L)											
1,1,2-Trichloroethane	15/63	0.018 J	1.9	0.1	0.1	0.4	MW16-59D-NWG-102504	NA	**0.24 C**	5	5
1,1-Dichloroethene	37/63	0.0197 J	2.82	0.1	0.3	0.5	MW16-59D-NWG-102504	NA	340 C	7	7
1,2-Dichloroethane	9/63	0.0229 J	0.119	0.023 - 0.1	0.05	0.06	MW16-59D-NWG-102504	NA	0.15 C	5	5
1,4-Dichlorobenzene	1/63	1.45 J	1.45 J	0.1	0.07	1	MW16-08D-NWG-100804	NA	**0.43 C**	75	75
Benzene	21/63	0.0125 J	0.0619 J	0.1	0.04	0.02	MW16-59D-NWG-102504	NA	0.41 C	5	5
Chloroform	5/63	0.13	0.286	0.1 - 0.152	0.06	0.2	MW16-21D-NWG-100104	NA	**0.19 C**	80	NA
Vinyl Chloride	36/63	0.0132 J	7.87	0.1	0.2	0.3	MW16-24D-NWG-100104	NA	**0.016 C**	**2**	**2**
Total Metals (ug/L)											
Aluminum	59/63	4.7 J	114,000	3.3	5,360	5,720	MW16-39D-NWG-100604	**12,819**	**37,000 N**	NA	NA
Antimony	1/63	3.2 J	3.2 J	0.16 - 1.1	0.19	3.2	MW16-50D-NWG-101304	8.04	15 N	6	6
Arsenic	51/63	0.48 J	23.9	0.42 - 0.88	2.6	3.1	MW16-39D-NWG-100604	**4.62**	**0.045 C**	**10**	NA
Barium	63/63	5.7	1,390	---	59.0	59.0	MW16-32D-NWG-110104	**69**	7,300 N	2,000	2,000
Beryllium	15/59	0.12 J	4.1	0.11	0.27	0.9	MW16-39D-NWG-100604	**NA**	73 N	**4**	**4**
Cadmium	11/63	0.08 J	3.5 J	0.06 - 0.19	0.2	0.99	MW16-39D-NWG-100604	**1.75**	18 N	5	5
Calcium	63/63	3,160	409,000	---	26,900	26,900	MW16-49D-NWG-101104	**22,455**	NA	NA	NA
Chromium	19/63	0.71	172	0.34 - 2.8	8.6	27.2	MW16-39D-NWG-100604	217	**110 N[7]**	**100 [7]**	**100**
Cobalt	63/63	0.33	154	---	7.8	7.8	MW16-39D-NWG-100604	**18.8**	**11 N**	NA	NA
Copper	41/62	0.48 J	424	0.4 - 7.2	20.3	30.3	MW16-39D-NWG-100604	**17.8**	1,500 N	1,300 [8]	NA
Iron	63/63	53.9 J	334,000	---	16,900	16,900	MW16-39D-NWG-100604	**47,378**	**26,000 N**	NA	NA

TABLE 4-48

SUMMARY OF DESCRIPTIVE STATISTICS
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Total Metals (ug/L) (continued)											
Lead	59/63	0.05 J	135	0.048 - 0.05	6.4	6.9	MW16-39D-NWG-100604	3.41	NA	**15 [8]**	**15**
Magnesium	63/63	58.2 J	435,000	---	17,700	17,700	MW16-50D-NWG-101304	**9,418**	NA	NA	NA
Manganese	63/63	2.5	7,190	---	658	658	MW16-39D-NWG-100604	**4,996**	**880 N**	NA	NA
Nickel	63/63	0.4 J	278	---	14.0	14.0	MW16-39D-NWG-100604	**200**	730 N	NA	**100**
Potassium	63/63	1,110	178,000	---	8,720	8,720	MW16-50D-NWG-101304	**7,666**	NA	NA	NA
Selenium	7/63	0.36 J	60.6	0.29 - 0.37	2.0	16.8	MW16-50D-NWG-101304	**2**	180 N	**50**	**50**
Silver	22/63	0.08 J	9.3	0.05 - 0.052	0.43	1.2	MW16-30D-NWG-101204	**NA**	180 N	NA	NA
Sodium	63/63	7,050	5,080,000	---	173,000	173,000	MW16-50D-NWG-101304	**18,609**	NA	NA	NA
Thallium	8/63	0.07 J	1.6	0.066 - 0.15	0.1	0.56	MW16-39D-NWG-100604	3.08	2.4 N	2	2
Vanadium	27/63	0.41 J	222	0.4 - 1.1	10.2	23.6	MW16-39D-NWG-100604	**18.4**	**180 N**	NA	NA
Zinc	61/63	3.1 J	901	4.7 - 6	46.2	47.6	MW16-39D-NWG-100604	**93.7**	11,000 N	NA	NA
Dissolved Metals (ug/L)											
Aluminum	51/63	0.72 J	446	0.72	9.1	11.1	MW16-32D-NWG-110104	NA	37,000 N	NA	NA
Arsenic	63/63	0.1 J	16.9	---	1.6	1.6	MW16-50D-NWG-101304	NA	**0.045 C**	**10**	NA
Barium	63/63	3.9 J	1,270	---	32.5	32.5	MW16-32D-NWG-110104	NA	7,300 N	2,000	2,000
Beryllium	1/63	0.21 J	0.21 J	0.12	0.062	0.21	MW16-49D-NWG-101104	NA	73 N	4	4
Calcium	63/63	3,530	363,000	---	23,100	23,100	MW16-49D-NWG-101104	NA	NA	NA	NA
Chromium	45/63	0.49	7.4	0.61 - 1.3	1.2	1.5	MW16-50D-NWG-101304	NA	110 N[7]	100 [7]	100
Cobalt	62/63	0.11	6.1	0.01	1.8	1.9	MW16-12D-NWG-101204	NA	11 N	NA	NA
Copper	33/63	0.17 J	167 J	0.16 - 24.2	3.6	6.1	MW16-50D-NWG-101304	NA	1,500 N	1,300 [8]	NA
Iron	78/81	50.2 J	15,600	50	3,740	3,880	MW16-11D-NWG-100604	NA	26,000 N	NA	NA
Lead	47/63	0.08 J	1.4 J	0.078 - 0.08	0.17	0.22	MW16-32D-NWG-110104	NA	NA	15 [8]	15
Magnesium	62/63	1,030	358,000	50	13,600	13,800	MW16-50D-NWG-101304	NA	NA	NA	NA
Manganese	80/81	4.9	3,030 J	0.5	448	453	MW16-49D-NWG-101104	NA	**880 N**	NA	NA
Mercury	3/63	0.024 J	0.49	0.021 - 0.12	0.02	0.11	MW16-25D-NWG-100504-D	NA	11 N[9]	2	2
Nickel	63/63	0.3	11.5 J	---	2.7	2.7	MW16-40D-NWG-101204	NA	730 N	NA	100
Potassium	63/63	1,100	156,000	---	7,420	7,420	MW16-50D-NWG-101304	NA	NA	NA	NA
Selenium	10/63	0.31 J	61	0.3	2.1	12.5	MW16-50D-NWG-101304	NA	180 N	**50**	**50**
Sodium	63/63	7,480	4,200,000	---	154,000	154,000	MW16-50D-NWG-101304	NA	NA	NA	NA
Vanadium	46/63	0.08 J	1.4 J	0.08 - 0.39	0.25	0.3	MW16-32D-NWG-110104	NA	180 N	NA	NA
Zinc	62/63	0.53 J	28.1 J	0.81	8.1	8.2	MW16-56D-NWG-101404	NA	11,000 N	NA	NA
Miscellaneous Parameters (mg/L)											
Alkalinity	81/81	9	812	---	42	42	MW16-32D-NWG-110104	NA	NA	NA	NA
Ammonia	47/81	0.1	1.22	0.1 - 0.2	0.1	0.2	MW16-29D-NWG-100704	NA	NA	NA	NA
Chloride	81/81	5.54	7,160	---	220	220	MW16-50D-NWG-101304	NA	NA	NA	NA
Dissolved Inorganic Carbon	71/81	1	56	1	5	6	MW16-37D-NWG-100504	NA	NA	NA	NA
Dissolved Organic Carbon	78/81	1	140	1	4	4	MW16-37D-NWG-100504	NA	NA	NA	NA
Nitrate	32/81	0.133	6.3	0.1 - 0.5	0.5	1	MW16-03D-NWG-100804	NA	58,000 N	10	NA
Salinity (ppth)	63/63	0.042	13.9	---	0.6	0.6	MW16-50D-NWG-101304	NA	NA	NA	NA
Sulfate	81/81	7.69	1,030	---	44	44	MW16-50D-NWG-101304	NA	NA	NA	NA

TABLE 4-48

SUMMARY OF DESCRIPTIVE STATISTICS
2004 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Range of Non-detects(2)	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration(3)	ORNL Regional Screening Levels - Tap Water(4)	EPA MCL(5)	RIDEM GA Groundwater Objective(6)

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Upper prediction limit, see Appendix D.
4 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
5 - USEPA 2006 Edition of the Drinking Water Standards and Health Advisories, August 2006.
6 - RIDEM, DEM-DSR-01-93, February 2004.
7 - The value for hexavalent chromium is presented.
8 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
9 - The value for mercuric chloride is presented.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Qualifiers:
C - Carcinogen.
N - Noncarcinogen.
J - Estimated value.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and xylene
EPA = United States Environmental Protection Agency
GA = Drinking water suitability
GW = Groundwater
HI = Hazard index
MCL = Maximum Contaminant Level
NA = Criterion not available
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SDWA = Safe Drinking Water Act
UCL = Upper confidence limit on the arithmetic mean
VOCs = Volatile organic chemicals

TABLE 4-49

SUMMARY OF DESCRIPTIVE STATISTICS
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Volatile Organic Compounds (ug/L)											
1,1,2-Trichloroethane	5/48	0.34 J	1.6	0.1 - 10	0.466	1.13	MW16-14D	NA	**0.24 C**	5	5
1,1-Dichloroethane	4/55	0.11	4.9 J	0.082 - 10	0.407	1.34	MW16-67D	NA	**2.4 C**	NA	NA
1,1-Dichloroethene	6/48	0.23	3	0.1 - 10	0.555	1.63	MW16-59D	NA	340 C	7	7
1,2,4-Trichlorobenzene	2/55	1.2	1.3	0.49 - 12	0.617	1.25	MW16-09D	NA	19 C	70	70
Acetone	1/10	5.7 J	5.7 J	1.9 - 5	2.28	5.70	MW16-52D	NA	22,000 N	NA	NA
Carbon Disulfide	1/55	19	19	0.25 - 14	0.983	19.0	MW16-32D	NA	1,000 N	NA	NA
Chloroform	7/48	0.1 J	42 J	0.087 - 2.8	1.85	11.8	MW16-59D	NA	**0.19 C**	80	NA
Chloromethane	1/55	2.3	2.3	0.44 - 12	0.568	2.30	MW-Z4-02	NA	**1.8 C**	NA	NA
cis-1,2-Dichloroethene	16/55	1.3	19	0.14 - 11	1.79	4.84	MW16-59D	NA	370 N	70	70
Tetrachloroethene	3/55	1.2	10 J	0.1 - 10	0.551	3.77	MW16-34D	NA	**0.11 C**	**5**	**5**
Total Chlorinated VOCs	38/55	0.1	4,808	0 - 0	502	726	SB16-A3-40/MW16-85D	NA	NA	NA	NA
trans-1,2-Dichloroethene	1/55	1.1	1.1	0.13 - 10	0.446	1.10	SB16-A3-40/MW16-85D	NA	110 N	100	100
Trichloroethene	35/49	0.12 J	4,800	0.1 - 0.1	561	785	SB16-A3-40/MW16-85D	NA	**1.7 C**	**5**	**5**
Vinyl Chloride	1/48	0.14 J	0.14 J	0.1 - 10	0.379	0.140	TW16-101D	NA	**0.016 C**	2	2
Inorganics (ug/L)											
Aluminum	32/52	21.8 J	198,000	14 - 254	10,862	17,629	MW16-39D	**12,819**	**37,000 N**	NA	NA
Antimony	2/52	1.6 J	10.3	1.2 - 14	1.78	5.95	SB16-UG-03/MW16-82D	**8.04**	15 N	**6**	**6**
Arsenic	37/52	0.203 J	92.2	0.022 - 1.9	4.17	5.74	MW16-39D	**4.62**	**0.045 C**	**10**	NA
Barium	52/52	5.9	718	-	64.2	64.2	MW16-39D	**69**	7,300 N	2,000	2,000
Beryllium	13/52	0.06 J	11.5	0.051 - 0.15	0.486	1.77	MW16-39D	NA	73 N	**4**	**4**
Cadmium	6/52	0.1 J	4.8	0.1 - 1.7	0.284	1.77	MW16-39D	**1.75**	18 N	5	5
Calcium	52/52	773	94,800	-	16,259	16,259	MW16-39D	**22,455**	NA	NA	NA
Chromium	30/52	0.41 J	279	0.22 - 1.5	16.5	28.5	MW16-39D	**217**	**110 N**[7]	**100** [7]	**100**
Cobalt	42/52	1.6	217	0.55 - 13.3	14.1	17.2	MW16-39D	**18.8**	**11 N**	NA	NA
Copper	20/52	2.9 J	442	1.7 - 8.1	27.9	68.1	MW16-39D	**17.8**	1,500 N	1,300 [8]	NA
Iron	51/52	176	494,000	102 - 102	30,403	30,998	MW16-39D	**47,378**	**26,000 N**	NA	NA
Lead	12/52	3.6	210	0.46 - 21.7	11.5	46.8	MW16-39D	**3.41**	NA	**15** [8]	**15**
Magnesium	51/52	1,320	115,000 J	237 - 237	12,031	12,265	MW16-52D	**9,418**	NA	NA	NA
Manganese	51/52	16.5	8,690	1.8 - 1.8	949	968	MW16-39D	**4,996**	**880 N**	NA	NA
Mercury	3/52	0.05 J	0.063 J	0.047 - 0.22	0.047	0.058	MW16-39D	NA	11 N[9]	2	2
Nickel	36/52	1.4	396 J	0.59 - 6.6	24.0	34.1	MW16-39D	**200**	730 N	NA	**100**
Potassium	52/52	1,160	66,400	-	6,309	6,309	MW16-52D	**7,666**	NA	NA	NA
Selenium	2/52	11.9	28.2 J	0.98 - 17.1	3.45	20.1	MW16-54D	**2**	180 N	50	50
Silver	5/52	1.2 J	61.4 J	0.91 - 10.8	2.18	14.8	SB16-UG-03/MW16-82D	NA	180 N	NA	NA
Sodium	52/52	7,600	1,410,000	-	54,195	54,195	MW16-52D	**18,609**	NA	NA	NA
Thallium	11/52	0.033	5.9	0.008 - 1	0.295	0.899	MW16-39D	**3.08**	**2.4 N**	**2**	**2**
Vanadium	20/52	0.64 J	385	0.4 - 2.9	19.6	50.3	MW16-39D	**18.4**	**180 N**	NA	NA
Zinc	38/52	7.1 J	1,230	12.2 - 41.3	86.9	115	MW16-39D	**93.7**	11,000 N	NA	NA

TABLE 4-49

SUMMARY OF DESCRIPTIVE STATISTICS
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Filtered Inorganics (ug/L)											
Aluminum	13/30	15.9 J	344	14 - 66	34.8	60.7	RMW-02D	NA	37,000 N	NA	NA
Antimony	1/30	7.2	7.2	1.2 - 6.6	1.73	4.70	MW16-58D	NA	15 N	**6**	**6**
Arsenic	23/30	0.243	5.9	0.103 - 1	1.30	1.56	SB16-A2-32/MW16-90ID	NA	**0.045 C**	10	NA
Barium	26/30	5.7	43	11 - 20.2	16.0	17.2	MW16-39D	NA	7,300 N	2,000	2,000
Beryllium	1/30	0.088	0.088	0.051 - 0.15	0.055	0.057	MW16-58D	NA	73 N	4	4
Cadmium	3/30	0.17	0.44	0.1 - 0.42	0.081	0.263	MW16-25D	NA	18 N	5	5
Calcium	29/30	4,300	22,200	487 - 487	10,439	10,791	MW16-44D	NA	NA	NA	NA
Chromium	4/30	0.39 J	7.2	0.22 - 0.83	0.324	1.24	MW16-58D	NA	110 N[7]	100 [7]	100
Cobalt	14/30	2.1	7.4	0.13 - 4.5	1.98	3.58	MW16-41D	NA	11 N	NA	NA
Copper	1/30	3.4 J	3.4 J	1.7 - 6.3	2.28	3.40	SB16-UG-06/MW16-84D	NA	1,500 N	1,300 [8]	NA
Iron	28/30	360	13,700	89 - 89	3,848	4,119	SB16-UG-06/MW16-84D	NA	26,000 N	NA	NA
Magnesium	30/30	507	14,100	-	4,229	4,229	SB16-A2-32/MW16-90ID	NA	NA	NA	NA
Manganese	30/30	8	1,200	-	505	505	MW16-41D	NA	**880 N**	NA	NA
Nickel	9/30	1.2	7.3	0.65 - 5	1.80	3.67	RMW-02D	NA	730 N	NA	100
Potassium	30/30	1,280	13,800	-	3,466	3,466	SB16-A2-32/MW16-90ID	NA	NA	NA	NA
Selenium	2/30	5.3	9.5 J	0.98 - 8.6	2.79	7.40	SB16-UG-03/MW16-82D	NA	180 N	50	50
Silver	2/30	1.9 J	2.6	0.91 - 6.5	0.791	2.30	MW16-03D	NA	180 N	NA	NA
Sodium	30/30	9,090	130,000	-	28,158	28,158	SB16-A2-32/MW16-90ID	NA	NA	NA	NA
Vanadium	1/30	0.59 J	0.59 J	0.4 - 0.9	0.247	0.413	MW16-59D	NA	180 N	NA	NA
Zinc	14/30	10.8	57.4	2.3 - 27.1	17.4	27.1	MW16-09D	NA	11,000 N	NA	NA

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Upper prediction limit, see Appendix D.
4 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
5 - USEPA 2006 Edition of the Drinking Water Standards and Health Advisories, August 2006.
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The value for hexavalent chromium is presented.
8 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
9 - The value for mercuric chloride is presented.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Qualifiers:
C - Carcinogen.
N - Noncarcinogen.
J - Estimated value.

TABLE 4-49

SUMMARY OF DESCRIPTIVE STATISTICS
2007 DEEP OVERBURDEN GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and xylene
EPA = United States Environmental Protection Agency
GA = Drinking water suitability
GW = Groundwater
HI = Hazard index
MCL = Maximum Contaminant Level
NA = Criterion not available
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SDWA = Safe Drinking Water Act
UCL = Upper confidence limit on the arithmetic mean
VOCs = Volatile organic chemicals

TABLE 4-50

SUMMARY OF DESCRIPTIVE STATISTICS
PRE-2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Volatile Organics (ug/L)											
1,1,2-Trichloroethane	1/6	0.3	0.3	1 - 50	5	0.3	MW16-02R-NWG-032901	NA	**0.24 C**	5	5
1,1-Dichloroethane	2/20	0.1 J	0.12 J	1 - 50	2	0.1	MW16-02R-NWG-121002	NA	2.4 C	NA	NA
1,1-Dichloroethene	1/6	2	2	1 - 50	5	2	MW16-02R-NWG-032901	NA	340 C	7	7
Acetone	9/14	13 J	750 J	5	81	120	MW16-06R-NWG-112502	NA	22,000 N	NA	NA
BTEX	9/20	0.05	12	---	0.8	2	MW16-44R-NWG-121202	NA	NA	NA	NA
Carbon Disulfide	7/20	0.19 J	4	1 - 50	2	1	MW16-10R-NWG-032701	NA	1,000 N	NA	NA
Chloroform	1/6	0.4	0.4	1 - 50	5	0.4	MW16-25R-NWG-032701	NA	**0.19 C**	80	NA
Chloromethane	2/20	0.13 J	0.16 J	1 - 100	3	0.1	MW16-28R-NWG-121202	NA	1.8 C	NA	NA
cis-1,2-Dichloroethene	8/20	1	110	1 - 2	11	27	MW16-15R-NWG-032701	NA	370 N	**70**	**70**
Ethane	1/14	9.1	9.1	2	2	9	MW16-15R-NWG-112502	NA	NA	NA	NA
Ethene	1/14	6.8	6.8	3	2	7	MW16-15R-NWG-112502	NA	NA	NA	NA
Ethylbenzene	1/20	0.13 J	0.13 J	1 - 50	2	0.1	MW16-15R-NWG-112502	NA	1.5 C	700	700
Methane	4/14	2	40	1	4	12	MW16-10R-NWG-112602	NA	NA	NA	NA
Toluene	7/20	0.11 J	12	1 - 50	2	2	MW16-44R-NWG-121202	NA	2,300 N	1,000	1,000
Total 1,2-Dichloroethene	8/20	1	110	1 - 2	11	27	MW16-15R-NWG-032701	NA	330 N	NA	**70**
Total Chlorinated VOCs	14/20	0.1	4,710	---	590	840	MW16-15R-NWG-032701	NA	NA	NA	NA
trans-1,2-Dichloroethene	5/20	0.13 J	0.95 J	1 - 100	3	0.5	MW16-02R-NWG-121002	NA	110 N	100	100
Trichloroethene	12/20	0.1 J	4,600	1 - 1.9	580	960	MW16-15R-NWG-032701	NA	**1.7 C**	**5**	**5**
Low-Level Volatile Organics (ug/L)											
1,1,2-Trichloroethane	4/14	0.06 J	0.9	0.1	0.2	0.5	MW16-02R-NWG-121002	NA	**0.24 C**	5	5
1,1-Dichloroethane	4/14	0.1	0.4	0.1	0.1	0.2	MW16-25R-NWG-112202	NA	2.4 C	NA	NA
1,1-Dichloroethene	4/14	0.9	5	0.1	0.7	2	MW16-02R-NWG-121002	NA	340 C	7	7
1,4-Dichlorobenzene	1/14	0.05 J	0.05 J	0.1	0.05	0.05	MW16-05R-NWG-120602	NA	0.43 C	75	75
Benzene	3/14	0.05 J	0.1	0.1	0.06	0.08	MW16-15R-NWG-112502	NA	0.41 C	5	5
Chloroform	4/14	0.05 J	0.2	0.1	0.06	0.1	MW16-55R-NWG-121602	NA	**0.19 C**	80	NA
Vinyl Chloride	4/14	0.2 J	0.4	0.1	0.1	0.3	MW16-02R-NWG-121002, MW16-15R-NWG-112502	NA	**0.016 C**	2	2
Polycyclic Aromatic Hydrocarbons (ug/L)											
Phenanthrene	1/7	0.06	0.06	0.05 - 0.2	0.08	0.06	MW16-10R-NWG-032701	NA	1,100 N[7]	NA	NA
Total PAHs	1/7	0.06	0.06	---	0.009	0.06	MW16-10R-NWG-032701	NA	NA	NA	NA
Pesticides (ug/L)											
gamma-Chlordane	1/7	0.004 J	0.004 J	0.005 - 0.05	0.019	0.004	MW16-02R-NWG-032901	NA	0.19 C[8]	2 [8]	NA
Total Metals (ug/L)											
Aluminum	4/7	673	3,100 J	49.2 - 298	1,050	1,790	MW16-17R-NWG-120502	12,819	37,000 N	NA	NA
Antimony	1/7	0.53	0.53	3.65	1.6	0.53	MW16-17R-NWG-120502	8.04	15 N	6	6
Barium	7/7	3.2	53.3	---	24.3	24.3	MW16-28R-NWG-032701	69	7,300 N	2,000	2,000
Beryllium	1/7	0.23 J	0.23 J	0.18 - 0.89	0.17	0.23	MW16-17R-NWG-120502	NA	73 N	4	4
Calcium	7/7	8,940	534,000	---	131,000	131,000	MW16-28R-NWG-032701	**22,455**	NA	NA	NA
Chromium	5/7	0.86 J	7.5	0.89 - 50	6.1	3.5	MW16-28R-NWG-032701	217	110 N[9]	100 [9]	100
Cobalt	2/6	1.9	3.8	0.92	1.3	2.9	MW16-02R-NWG-032901	18.8	11 N	NA	NA
Copper	1/7	0.87 J	0.87 J	0.84 - 120	9.4	0.65	MW16-25R-NWG-032701-D	17.8	1,500 N	1,300 [10]	NA
Iron	7/7	897	16,600	---	8,160	8,160	MW16-28R-NWG-032701	47,378	26,000 N	NA	NA

TABLE 4-50

SUMMARY OF DESCRIPTIVE STATISTICS
PRE-2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 2 OF 3

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Total Metals (ug/L) (continued)											
Lead	4/7	1.2	99.5 J	1.48	8.3	14.0	MW16-25R-NWG-032701-D	**3.41**	NA	**15** [10]	**15**
Magnesium	7/7	2,490	146,000	---	33,300	33,300	MW16-28R-NWG-032701	**9,418**	NA	NA	NA
Manganese	7/7	278	5,270	---	1,730	1,730	MW16-28R-NWG-032701	**4,996**	**880 N**	NA	NA
Nickel	6/7	1.2 J	7	200	17.0	3.2	MW16-02R-NWG-032901	200	730 N	NA	100
Potassium	7/7	2,560	33,100	---	12,400	12,400	MW16-28R-NWG-032701	**7,666**	NA	NA	NA
Silver	1/7	1.2 J	1.2 J	1.03 - 1.3	0.63	1.2	MW16-28R-NWG-032701	**NA**	180 N	NA	NA
Sodium	7/7	9,990	1,880,000	---	418,000	418,000	MW16-28R-NWG-032701	**18,609**	NA	NA	NA
Vanadium	2/7	1.3	4.9	0.52 - 1.4	1.2	3.1	MW16-02R-NWG-032901	18.4	180 N	NA	NA
Zinc	7/7	3.9	200	---	65.1	65.1	MW16-17R-NWG-120502	**93.7**	11,000 N	NA	NA
Dissolved Metals (ug/L)											
Aluminum	1/1	110 J	110 J	---	110	110	MW16-17R-NWG-120502	NA	37,000 N	NA	NA
Calcium	1/1	12,000	12,000	---	12,000	12,000	MW16-17R-NWG-120502	NA	NA	NA	NA
Iron	12/14	68 J	130,000 J	100	12,900	15,000	MW16-52R-NWG-121102	NA	**26,000 N**	NA	NA
Magnesium	1/1	1,900	1,900	---	1,900	1,900	MW16-17R-NWG-120502	NA	NA	NA	NA
Manganese	13/14	7	28,000	15	3,560	3,840	MW16-52R-NWG-121102	NA	**880 N**	NA	NA
Potassium	1/1	4,000	4,000	---	4,000	4,000	MW16-17R-NWG-120502	NA	NA	NA	NA
Sodium	1/1	11,000	11,000	---	11,000	11,000	MW16-17R-NWG-120502	NA	NA	NA	NA
Zinc	1/1	9.2 J	9.2 J	---	9.2	9.2	MW16-17R-NWG-120502	NA	11,000 N	NA	NA
Miscellaneous Parameters (mg/L)											
Alkalinity	14/14	26	272 J	---	52	52	MW16-27R-NWG-121902-D	NA	NA	NA	NA
Ammonia	9/14	0.12	0.53	0.1	0.2	0.2	MW16-52R-NWG-121102	NA	NA	NA	NA
Chloride	14/14	8.71	13,900	---	2,100	2,100	MW16-52R-NWG-121102	NA	NA	NA	NA
Dissolved Organic Carbon	6/10	6	16	5	8	11	MW16-05R-NWG-120602	NA	NA	NA	NA
Nitrate	2/14	0.22	4.94	0.1 - 5	0.6	3	MW16-28R-NWG-121202	NA	58,000 N	10	NA
Nitrite	1/14	0.56	0.56	0.1 - 5	0.3	0.6	MW16-55R-NWG-121602	NA	3,700 N	1	NA
Salinity (ppth)	7/16	1.45	21.6	0.1 - 1	3	7	MW16-15R-NWG-112502	NA	NA	NA	NA
Sulfate	14/14	7.73	1,830	---	280	280	MW16-52R-NWG-121102	NA	NA	NA	NA
Sulfide	4/14	0.06 J	0.31 J	0.05	0.06	0.1	MW16-15R-NWG-112502	NA	NA	NA	NA
Total Inorganic Carbon	2/14	1	2	1 - 5	2	1	MW16-27R-NWG-121902	NA	NA	NA	NA
Total Organic Carbon	4/4	6	49	---	23	23	MW16-52R-NWG-121102	NA	NA	NA	NA
Field Parameters (mg/L)											
Carbon Dioxide	13/13	2.5	242	---	63	63	MW16-51R-NWG-120902	NA	NA	NA	NA
Dissolved Oxygen	14/14	0.49	6.07	---	2	2	MW16-10R-NWG-112602	NA	NA	NA	NA
Ferric Iron	13/13	0.03	50	---	7	7	MW16-52R-NWG-121102	NA	NA	NA	NA
Oxidation Reduction Potential (MV)	14/14	-230.4	158.8	---	-60	-60	MW16-55R-NWG-121602	NA	NA	NA	NA
pH	14/14	6.29	11.12	---	8	8	MW16-55R-NWG-121602	NA	NA	NA	NA
Temperature (C)	14/14	6.95	13.63	---	10	10	MW16-15R-NWG-112502	NA	NA	NA	NA

TABLE 4-50

SUMMARY OF DESCRIPTIVE STATISTICS
PRE-2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Range of Non-detects(2)	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration(3)	ORNL Regional Screening Levels - Tap Water(4)	EPA MCL(5)	RIDEM GA Groundwater Objective(6)

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Upper prediction limit, see Appendix D.
4 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
5 - USEPA 2006 Edition of the Drinking Water Standards and Health Advisories, August 2006.
6 - RIDEM, DEM-DSR-01-93, February 2004.
7 - The value for pyrene is used as a surrogate for phenanthrene.
8 - The value for chlordane is used as a surrogate for gamma chlordane.
9 - The value for hexavalent chromium is presented.
10 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.

Shading indicates that the maximum detected concentration exceeds the screening criterion.

Qualifiers:
C - Carcinogen.
N - Noncarcinogen.
J - Estimated value.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and xylene
EPA = United States Environmental Protection Agency
GA = Drinking water suitability
GW = Groundwater
HI = Hazard index
MCL = Maximum Contaminant Level
NA = Criterion not available
PAH = Polycyclic aromatic hydrocarbon
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SDWA = Safe Drinking Water Act
UCL = Upper confidence limit on the arithmetic mean
VOCs = Volatile organic chemicals

TABLE 4-51

SUMMARY OF DESCRIPTIVE STATISTICS
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Volatile Organics (ug/L)											
1,1-Dichloroethane	3/29	0.172 J	0.285 J	1 - 50	1	0.2	MW16-25R-NWG-100504	NA	2.4 C	NA	NA
1,1-Dichloroethene	4/6	0.317 J	2.56	1 - 10	2	1	MW16-71R-NWG-111704	NA	340 C	7	7
2-Butanone	3/29	0.63 J	8.17	5 - 250	7	3	MW16-65R-NWG-102804	NA	7,100 N	NA	NA
2-Hexanone	1/29	11	11	5 - 250	7	11	MW16-65R-NWG-102804	NA	NA	NA	NA
Acetone	6/25	7.45	67 J	5 - 33	13	30	MW16-70R-NWG-111704	NA	22,000 N	NA	NA
Bromodichloromethane	1/29	0.235 J	0.235 J	1 - 50	1	0.2	MW16-15R-NWG-101404	NA	1.1 C	80	NA
BTEX	19/29	0.0126	1.19	---	0.1	0.2	MW16-44R-NWG-100104	NA	NA	NA	NA
Carbon Disulfide	11/29	0.15 J	0.893 J	1 - 50	1	0.4	MW16-15R-NWG-101404-D	NA	1,000 N	NA	NA
Chlorodibromomethane	1/29	0.322 J	0.322 J	1 - 50	1	0.3	MW16-15R-NWG-101404	NA	0.8 C	80	NA
cis-1,2-Dichloroethene	14/29	0.292 J	60	1 - 5	7	14	MW16-15R-NWG-101404-D	NA	370 N	70	70
Ethane	9/29	0.8 J	6.6	6.2	3	3	MW16-44R-NWG-100104	NA	NA	NA	NA
Ethene	5/29	0.9 J	7.8	5.8	3	3	MW16-44R-NWG-100104	NA	NA	NA	NA
Methane	12/29	1.6 J	1,100 J	3.3 - 7.1	61	150	MW16-15R-NWG-101404	NA	NA	NA	NA
Tetrachloroethene	1/23	0.824 J	0.824 J	1 - 50	1	0.8	MW16-65R-NWG-102804	NA	**0.11 C**	5	5
Toluene	10/29	0.12 J	1.17	1 - 50	1	0.3	MW16-44R-NWG-100104	NA	2,300 N	1,000	1,000
Total 1,2-Dichloroethene	14/29	0.292 J	60.2	1 - 5	7	14	MW16-15R-NWG-101404-D	NA	330 N	NA	70
Total Chlorinated VOCs	24/29	0.0157	1,824	---	370	450	MW16-60R-NWG-102704	NA	NA	NA	NA
trans-1,2-Dichloroethene	9/29	0.129 J	1.04	1 - 50	1	0.5	MW16-71R-NWG-111704	NA	110 N	100	100
Trichloroethene	20/29	0.415 J	1,800	1 - 2.01	360	530	MW16-60R-NWG-102704	NA	**1.7 C**	**5**	**5**
Low-Level Volatile Organics (ug/L)											
1,1,2-Trichloroethane	6/23	0.0117 J	1.54	0.1	0.2	0.5	MW16-60R-NWG-102704	NA	**0.24 C**	5	5
1,1-Dichloroethene	11/23	0.0274 J	5.05	0.1	0.6	1	MW16-60R-NWG-102704	NA	340 C	7	7
1,2-Dichloroethane	5/23	0.0124 J	0.0801 J	0.1	0.05	0.04	MW16-59R-NWG-102504	NA	0.15 C	5	5
Benzene	14/23	0.0126 J	0.08 J	0.1	0.04	0.03	MW16-65R-NWG-102804	NA	0.41 C	5	5
Chloroform	1/23	0.104	0.104	0.1	0.05	0.1	MW16-60R-NWG-102704	NA	0.19 C	80	NA
Vinyl Chloride	11/23	0.0373 J	0.916	0.1	0.2	0.3	MW16-59R-NWG-102504	NA	**0.016 C**	2	2
Total Metals (ug/L)											
Aluminum	23/23	7.5	6,680	---	514	514	MW16-28R-NWG-101104	**12,819**	37,000 N	NA	NA
Arsenic	16/23	0.42 J	13.2	0.42 - 0.5	1.9	2.7	MW16-52R-NWG-110104	**4.62**	**0.045 C**	**10**	NA
Barium	23/23	1.2	2,350	---	124	124	MW16-65R-NWG-102804	**NA**	7,300 N	**2,000**	**2,000**
Beryllium	5/23	0.12 J	0.6	0.11	0.097	0.25	MW16-28R-NWG-101104	NA	73 N	4	4
Cadmium	1/23	0.2	0.2	0.06 - 0.09	0.039	0.2	MW16-55R-NWG-100704	1.75	18 N	5	5
Calcium	23/23	3,120	2,460,000	---	205,000	205,000	MW16-51R-NWG-102904	**22,455**	NA	NA	NA
Chromium	5/23	0.94	24.6 J	0.34 - 2.5	2.0	7.3	MW16-28R-NWG-101104	217	110 N[7]	100 [7]	100
Cobalt	21/23	0.12	5.4	0.05 - 0.054	1.3	1.4	MW16-28R-NWG-101104	18.8	11 N	NA	NA
Copper	11/23	0.47 J	744	0.4 - 7.8	41.6	85.8	MW16-52R-NWG-110104	**17.8**	1,500 N	1,300 [8]	NA
Iron	23/23	409	124,000	---	15,900	15,900	MW16-52R-NWG-110104	**47,378**	**26,000 N**	NA	NA
Lead	22/23	0.06 J	7.7	0.05	0.98	1.0	MW16-28R-NWG-101104	**3.41**	NA	15 [8]	15
Magnesium	22/23	454	946,000	50	66,500	69,500	MW16-52R-NWG-110104	**9,418**	NA	NA	NA
Manganese	22/23	22 J	32,100	0.79	2,440	2,560	MW16-52R-NWG-110104	**4,996**	**880 N**	NA	NA

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SUMMARY OF DESCRIPTIVE STATISTICS
2004 SHALLOW BEDROCK GROUNDWATER SAMPLES
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Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Total Metals (ug/L) (continued)											
Mercury	1/23	0.68	0.68	0.021 - 0.13	0.05	0.68	MW16-36R-NWG-100504	**NA**	11 N[9]	2	2
Nickel	23/23	0.43 J	25.4 J	---	4.6	4.6	MW16-51R-NWG-102904	200	730 N	NA	100
Potassium	23/23	1,660	139,000 J	---	19,800	19,800	MW16-52R-NWG-110104	**7,666**	NA	NA	NA
Selenium	6/23	0.37 J	77.1	0.29 - 0.67	6.7	25.4	MW16-52R-NWG-110104	2	180 N	**50**	**50**
Silver	2/23	0.06 J	0.11	0.05 - 0.052	0.03	0.085	MW16-28R-NWG-101104	NA	180 N	NA	NA
Sodium	23/23	7,800 J	6,870,000 J	---	514,000	514,000	MW16-52R-NWG-110104	**18,609**	NA	NA	NA
Thallium	2/23	0.12 J	0.26	0.066 - 0.07	0.046	0.17	MW16-28R-NWG-101104	3.08	2.4 N	2	2
Vanadium	9/23	0.6 J	14.2 J	0.4 - 0.66	1.3	2.9	MW16-28R-NWG-101104	18.4	180 N	NA	NA
Zinc	19/23	5	110 J	2.2 - 7	22.8	27.0	MW16-06R-NWG-092804	**93.7**	11,000 N	NA	NA
Dissolved Metals (ug/L)											
Aluminum	19/23	0.77 J	384	0.72	24.3	29.3	MW16-65R-NWG-102804	NA	37,000 N	NA	NA
Arsenic	22/23	0.16 J	14.4	0.09	1.8	1.8	MW16-52R-NWG-110104	NA	**0.045 C**	**10**	NA
Barium	21/23	2.5 J	2,480	2.1	124	135	MW16-65R-NWG-102804	NA	7,300 N	**2,000**	**2,000**
Calcium	23/23	2,980	2,400,000	---	199,000	199,000	MW16-51R-NWG-102904	NA	NA	NA	NA
Chromium	15/23	0.5	2.6 J	0.6 - 0.98	0.91	1.2	MW16-52R-NWG-110104	NA	110 N[7]	100 [7]	100
Cobalt	17/23	0.02 J	3.5	0.01 - 0.014	0.75	1.0	MW16-01R-NWG-101204, MW16-52R-NWG-110104	NA	11 N	NA	NA
Copper	6/23	0.25 J	1,270	0.16 - 1.7	62.9	241	MW16-52R-NWG-110104	NA	1,500 N	1,300 [8]	NA
Iron	19/29	56.7 J	120,000	32.2 - 89.4	6,350	9,680	MW16-52R-NWG-110104	NA	**26,000 N**	NA	NA
Lead	16/23	0.09 J	0.45	0.078 - 0.08	0.15	0.19	MW16-06R-NWG-092804	NA	NA	15 [8]	15
Magnesium	22/23	403 J	905,000	50	62,700	65,500	MW16-52R-NWG-110104	NA	NA	NA	NA
Manganese	27/29	3.5 J	30,400	0.63 - 2	1,840	1,970	MW16-52R-NWG-110104	NA	**880 N**	NA	NA
Mercury	1/23	0.024 J	0.024 J	0.021 - 0.073	0.017	0.024	MW16-59R-NWG-102504	NA	11 N[9]	2	2
Nickel	23/23	0.15	25.8 J	---	3.3	3.3	MW16-51R-NWG-102904	NA	730 N	NA	100
Potassium	23/23	1,780	133,000	---	19,400	19,400	MW16-65R-NWG-102804	NA	NA	NA	NA
Selenium	10/23	0.33 J	91.1	0.3	7.5	17.0	MW16-52R-NWG-110104	NA	180 N	**50**	**50**
Silver	1/23	0.06	0.06	0.02 - 0.03	0.012	0.06	MW16-52R-NWG-110104	NA	180 N	NA	NA
Sodium	23/23	6,140 J	6,340,000	---	465,000	465,000	MW16-52R-NWG-110104	NA	NA	NA	NA
Vanadium	15/23	0.08 J	2.6	0.08 - 0.35	0.32	0.44	MW16-56R-NWG-101404	NA	180 N	NA	NA
Zinc	22/23	0.09 J	16.5 J	0.78	4.9	5.2	MW16-51R-NWG-102904	NA	11,000 N	NA	NA
Miscellaneous Parameters (mg/L)											
Alkalinity	29/29	19.5	1,640	---	98	98	MW16-65R-NWG-102804	NA	NA	NA	NA
Ammonia	24/29	0.1	0.41	0.1	0.2	0.2	MW16-44R-NWG-100104	NA	NA	NA	NA
Chloride	29/29	7.04	15,100	---	940	940	MW16-52R-NWG-110104	NA	NA	NA	NA
Cyanide (ug/L)	1/23	2.3 J	2.3 J	1.8 - 10	5	2	MW16-65R-NWG-102804	NA	730 N	200	200
Dissolved Inorganic Carbon	26/29	1	14	1	4	4	MW16-36R-NWG-100504	NA	NA	NA	NA
Dissolved Organic Carbon	29/29	1	22	---	3	3	MW16-36R-NWG-100504	NA	NA	NA	NA
Hydrogen Sulfide	1/29	0.066	0.066	0.05	0.03	0.07	MW16-28R-NWG-101104	NA	110 N	NA	NA
Nitrate	5/29	0.203 J	0.7	0.1 - 1	0.1	0.3	MW16-65R-NWG-102804	NA	58,000 N	10	NA

TABLE 4-51

SUMMARY OF DESCRIPTIVE STATISTICS
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Parameter	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Range of Non-detects(2)	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration(3)	ORNL Regional Screening Levels - Tap Water(4)	EPA MCL(5)	RIDEM GA Groundwater Objective(6)
Miscellaneous Parameters (mg/L) (continued)											
Nitrite	5/29	0.11	4.74	0.1 - 1	0.3	1	MW16-65R-NWG-102804	NA	3,700 N	**1**	NA
Salinity (ppth)	23/23	0.065	24.8	---	2	2	MW16-52R-NWG-110104	NA	NA	NA	NA
Sulfate	29/29	0.133	1,810	---	120	120	MW16-52R-NWG-110104	NA	NA	NA	NA

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Upper prediction limit, see Appendix D.
4 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
5 - USEPA 2006 Edition of the Drinking Water Standards and Health Advisories, August 2006.
6 - RIDEM, DEM-DSR-01-93, February 2004.
7 - The value for hexavalent chromium is presented.
8 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
9 - The value for mercuric chloride is presented.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Qualifiers:
C - Carcinogen.
N - Noncarcinogen.
J - Estimated value.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and xylene
EPA = United States Environmental Protection Agency
GA = Drinking water suitability
GW = Groundwater
HI = Hazard index
MCL = Maximum Contaminant Level
NA = Criterion not available
ND = Not detected
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SDWA = Safe Drinking Water Act
UCL = Upper confidence limit on the arithmetic mean
VOCs = Volatile organic chemicals

TABLE 4-52

SUMMARY OF DESCRIPTIVE STATISTICS
2007 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Volatile Organic Compounds (ug/L)											
1,1-Dichloroethane	1/28	0.29	0.29	0.1 - 5	0.314	0.290	MW16-25R-NWG-061707	NA	2.4 C	NA	NA
1,1-Dichloroethene	4/28	0.15 J	4.7	0.1 - 5	0.601	1.86	MW16-59R-NWG-071107-D	NA	340 C	7	7
2-Hexanone	2/31	4.2 J	4.7 J	0.96 - 15	1.17	4.45	MW16-65R-NWG-072507	NA	NA	NA	NA
Acetone	3/7	12 J	30 J	1.9 - 3.9	9.83	20.7	MW16-70R-NWG-052007	NA	22,000 N	NA	NA
Carbon Disulfide	5/31	2.8	47	0.69 - 11	4.17	22.2	MW16-68R-L-081307	NA	1,000 N	NA	NA
Chloroform	4/31	0.24	8.1 J	0.1 - 5	0.710	4.09	MW16-68R-NWG-051907	NA	**0.19 C**	80	NA
cis-1,2-Dichloroethene	11/31	1.2	29	0.14 - 8.5	2.55	6.29	MW16-59R-NWG-071107-D, MW16-59R-NWG-071107	NA	370 N	70	70
Tetrachloroethene	1/28	0.15	0.15	0.1 - 5	0.314	0.150	MW16-65R-NWG-072507	NA	**0.11 C**	5	5
Total Chlorinated VOCs	21/31	0.41	2,035	0 - 0	292	431	MW16-59R-NWG-071107-D	NA	NA	NA	NA
Trichloroethene	21/28	0.12	2,000	0.1 - 0.1	320	427	MW16-59R-NWG-071107-D	NA	**1.7 C**	**5**	**5**
Vinyl Chloride	1/28	1.1 J	1.5 J	0.1 - 5	0.346	1.30	MW16-59R-NWG-071107	NA	**0.016 C**	2	2
Inorganics (ug/L)											
Aluminum	16/27	20.1 J	43,200	14 - 341	3,333	5,602	MW16-68R-NWG-051907	**12,819**	**37,000 N**	NA	NA
Antimony	2/27	14.6 J	64.9 J	1.2 - 17.3	4.71	38.2	MW16-51R-NWG-072607	**8.04**	**15 N**	**6**	**6**
Arsenic	15/27	0.233	29.4	0.022 - 1	2.63	4.48	MW16-51R-NWG-072607	**4.62**	**0.045 C**	**10**	NA
Barium	23/27	3 J	2,190 J	2.1 - 63.2	158	183	MW16-65R-NWG-072507	**69**	7,300 N	**2,000**	**2,000**
Beryllium	4/27	0.15	2.6	0.051 - 0.99	0.182	0.793	MW16-68R-NWG-051907	NA	73 N	4	4
Cadmium	2/27	0.13	0.56 J	0.1 - 1.3	0.131	0.345	MW16-68R-NWG-051907	1.75	18 N	5	5
Calcium	27/27	666	2,740,000	-	166,729	166,729	MW16-51R-NWG-072607-D	**22,455**	NA	NA	NA
Chromium	11/27	0.4 J	68.5	0.22 - 1.1	6.95	16.8	MW16-82R-NWG-102407	217	110 N[7]	100 [7]	100
Cobalt	14/27	1	106 J	0.15 - 18.5	8.99	15.9	MW16-51R-NWG-072607-D	**18.8**	**11 N**	NA	NA
Copper	10/27	4.6	142	1.7 - 6.3	15.6	37.8	MW16-68R-NWG-051907	**17.8**	1,500 N	1,300 [8]	NA
Iron	27/27	519	123,000	-	13,061	13,061	MW16-68R-NWG-051907	**47,378**	**26,000 N**	NA	NA
Lead	3/27	2.3	52.1	0.46 - 28.9	3.38	21.1	MW16-68R-NWG-051907	**3.41**	NA	**15 [8]**	**15**
Magnesium	24/27	1,470	318,000 J	20 - 223	19,561	22,000	MW16-51R-NWG-072607	**9,418**	NA	NA	NA
Manganese	26/27	17.8 J	10,700 J	3.8 - 3.8	1,011	1,050	MW16-51R-NWG-072607, 'MW16-51R-NWG-072607-D	**4,996**	**880 N**	NA	NA
Mercury	3/27	0.051 J	0.089 J	0.047 - 0.16	0.050	0.062	MW16-51R-NWG-072607	NA	11 N[9]	2	2
Nickel	13/27	0.61 J	97.1 J	0.59 - 11.7	12.1	23.6	MW16-68R-NWG-051907	200	730 N	NA	100
Potassium	27/27	231 J	80,900	-	9,618	9,618	MW16-51R-NWG-072607	**7,666**	NA	NA	NA
Selenium	5/27	5.2	81.5	0.98 - 10	6.05	22.9	MW16-70R-NWG-052007	**2**	180 N	**50**	**50**
Silver	6/27	1.2 J	171	0.91 - 10.1	10.8	45.8	MW16-51R-NWG-072607-D	NA	180 N	NA	NA
Sodium	27/27	1,600	3,790,000	-	233,966	233,966	MW16-51R-NWG-072607-D	**18,609**	NA	NA	NA
Thallium	1/27	1.2	1.2	0.006 - 1	0.213	1.20	MW16-68R-NWG-051907	3.08	2.4 N	2	2
Vanadium	5/27	0.5 J	89.5	0.4 - 12.9	5.24	25.5	MW16-68R-NWG-051907	**18.4**	180 N	NA	NA
Zinc	17/27	15	290	2.3 - 41.2	42.0	61.0	MW16-68R-NWG-051907	**93.7**	11,000 N	NA	NA

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SUMMARY OF DESCRIPTIVE STATISTICS
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Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Filtered Inorganics (ug/L)											
Aluminum	2/16	39.2 J	631	14 - 62	54.5	335	MW16-70R-NWG-052007	NA	37,000 N	NA	NA
Arsenic	9/15	0.389	8	0.04 - 1	1.53	2.27	MW16-28R-NWG-081107	NA	**0.045 C**	10	NA
Barium	10/16	2.9 J	1,180	2.1 - 11	86.6	136	MW16-70R-NWG-052007	NA	7,300 N	2,000	2,000
Calcium	16/16	921	383,000	-	56,986	56,986	MW16-70R-NWG-052007	NA	NA	NA	NA
Chromium	3/16	0.24 J	0.64 J	0.22 - 0.53	0.202	0.408	MW16-10R-NWG-071707	NA	110 N[7]	100 [7]	100
Cobalt	4/16	1.2	16.9 J	0.068 - 2.8	1.77	6.05	MW16-28R-NWG-081107	NA	**11 N**	NA	NA
Copper	2/16	3 J	10.3 J	1.7 - 6.3	2.44	6.65	MW16-28R-NWG-081107	NA	1,500 N	1,300 [8]	NA
Iron	14/16	109 J	12,700	32.6 - 89	2,723	3,108	MW16-84R-NWG-121607	NA	26,000 N	NA	NA
Magnesium	14/16	1,150	79,900	20 - 209	7,535	8,603	MW16-28R-NWG-081107	NA	NA	NA	NA
Manganese	15/16	83.7	2,700	1.8 - 1.8	509	543	MW16-28R-NWG-081107	NA	**880 N**	NA	NA
Nickel	3/16	0.59 J	16.1 J	0.26 - 2.4	1.81	6.98	MW16-28R-NWG-081107	NA	730 N	NA	100
Potassium	16/16	249 J	28,000	-	6,669	6,669	MW16-28R-NWG-081107	NA	NA	NA	NA
Selenium	3/16	8.8 J	79.1	0.98 - 12.1	8.37	32.7	MW16-70R-NWG-052007	NA	180 N	**50**	**50**
Silver	3/16	3.2	27.4 J	0.91 - 4.2	2.65	11.4	MW16-28R-NWG-081107	NA	180 N	NA	NA
Sodium	16/16	1,600	1,480,000	-	114,217	114,217	MW16-28R-NWG-081107	NA	NA	NA	NA
Vanadium	1/16	2.3	2.3	0.4 - 1.5	0.324	1.27	MW16-59R-NWG-071107-D	NA	180 N	NA	NA
Zinc	5/16	13.6	27	9.9 - 31.4	12.2	19.2	MW16-56R-NWG-082807	NA	11,000 N	NA	NA

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Upper prediction limit, see Appendix D.
4 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
5 - USEPA 2006 Edition of the Drinking Water Standards and Health Advisories, August 2006.
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The value for hexavalent chromium is presented.
8 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
9 - The value for mercuric chloride is presented.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Qualifiers:
C - Carcinogen.
N - Noncarcinogen.
J - Estimated value.

TABLE 4-52

SUMMARY OF DESCRIPTIVE STATISTICS
2007 SHALLOW BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and xylene
EPA = United States Environmental Protection Agency
GA = Drinking water suitability
GW = Groundwater
HI = Hazard index
MCL = Maximum Contaminant Level
NA = Criterion not available
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SDWA = Safe Drinking Water Act
UCL = Upper confidence limit on the arithmetic mean
VOCs = Volatile organic chemicals

TABLE 4-53

SUMMARY OF DESCRIPTIVE STATISTICS
PRE-2004 DEEP BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Volatile Organics (ug/L)											
1,1-Dichloroethane	1/3	0.13 J	0.13 J	1	0.4	0.1	MW16-02R2-NWG-121002	NA	2.4 C	NA	NA
Acetone	3/3	6.85 J	77 J	---	36	36	MW16-15R2-NWG-112502	NA	22,000 N	NA	NA
BTEX	3/3	0.12	0.24	---	0.2	0.2	MW16-02R2-NWG-121002	NA	NA	NA	NA
cis-1,2-Dichloroethene	2/3	3.24	21	1	8	12	MW16-15R2-NWG-112502	NA	370 N	70	70
Toluene	3/3	0.12 J	0.24 J	---	0.2	0.2	MW16-02R2-NWG-121002	NA	2,300 N	1,000	1,000
Total 1,2-Dichloroethene	2/3	3.42	21.4	1	8	12	MW16-15R2-NWG-112502	NA	330 N	NA	70
Total Chlorinated VOCs	2/3	126	182	---	100	150	MW16-15R2-NWG-112502	NA	NA	NA	NA
trans-1,2-Dichloroethene	2/3	0.18 J	0.35 J	1	0.3	0.3	MW16-15R2-NWG-112502	NA	110 N	100	100
Trichloroethene	2/3	120	160 J	1	94	140	MW16-15R2-NWG-112502	NA	**1.7 C**	**5**	**5**
Low-Level Volatile Organics (ug/L)											
1,1-Dichloroethane	2/3	0.06 J	0.2	0.1	0.1	0.1	MW16-02R2-NWG-121002	NA	2.4 C	NA	NA
1,1-Dichloroethene	2/3	0.8	2	0.1	1	1	MW16-02R2-NWG-121002	NA	340 C	7	7
Benzene	1/3	0.06 J	0.06 J	0.1	0.05	0.06	MW16-15R2-NWG-112502	NA	0.41 C	5	5
Chloroform	3/3	0.2	0.2	---	0.2	0.2	3 Samples	NA	**0.19 C**	80	NA
Vinyl Chloride	1/3	0.2	0.2	0.1	0.1	0.2	MW16-02R2-NWG-121002	NA	**0.016 C**	2	2
Dissolved Metals (ug/L)											
Manganese	2/3	3.2 J	3.5 J	15	4.7	3.4	MW16-55R2-NWG-121602	NA	880 N	NA	NA
Miscellaneous Parameters (mg/L)											
Alkalinity	3/3	291 J	731 J	---	530	530	MW16-55R2-NWG-121602	NA	NA	NA	NA
Ammonia	3/3	0.15	0.35	---	0.2	0.2	MW16-55R2-NWG-121602	NA	NA	NA	NA
Chloride	3/3	13.6	14.8	---	14	14	MW16-02R2-NWG-121002	NA	NA	NA	NA
Nitrite	3/3	0.29	0.94	---	0.6	0.6	MW16-02R2-NWG-121002	NA	3,700 N	1	NA
Salinity (ppth)	1/3	1.2	1.2	1	0.7	1	MW16-02R2-NWG-121002	NA	NA	NA	NA
Sulfate	3/3	0.9	8.29	---	5	5	MW16-15R2-NWG-112502	NA	NA	NA	NA
Sulfide	1/3	0.08 J	0.08 J	0.05	0.04	0.08	MW16-15R2-NWG-112502	NA	NA	NA	NA
Total Inorganic Carbon	1/3	1	1	5	2	1	MW16-55R2-NWG-121602	NA	NA	NA	NA
Total Organic Carbon	1/1	16	16	---	16	16	MW16-02R2-NWG-121002	NA	NA	NA	NA
Field Parameters (mg/L)											
Dissolved Oxygen	3/3	0.31	0.63	---	0.4	0.4	MW16-55R2-NWG-121602	NA	NA	NA	NA
Ferric Iron	2/2	0.44	3.17	---	2	2	MW16-02R2-NWG-121002	NA	NA	NA	NA
Oxidation Reduction Potential (MV)	3/3	-125.8	100.1	---	-2	-2	MW16-02R2-NWG-121002	NA	NA	NA	NA
pH	3/3	12.04	12.45	---	12	12	MW16-02R2-NWG-121002	NA	NA	NA	NA
Temperature (C)	3/3	8.93	13.96	---	11	11	MW16-15R2-NWG-112502	NA	NA	NA	NA

TABLE 4-53

SUMMARY OF DESCRIPTIVE STATISTICS
PRE-2004 DEEP BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 2 OF 2

Parameter	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Range of Non-detects(2)	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration(3)	ORNL Regional Screening Levels - Tap Water(4)	EPA MCL(5)	RIDEM GA Groundwater Objective(6)

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Upper prediction limit, see Appendix D.
4 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
5 - USEPA 2006 Edition of the Drinking Water Standards and Health Advisories, August 2006.
6 - RIDEM, DEM-DSR-01-93, February 2004.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Qualifiers:
C - Carcinogen.
N - Noncarcinogen.
J - Estimated value.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and xylene
EPA = United States Environmental Protection Agency
GA = Drinking water suitability
GW = Groundwater
HI = Hazard index
MCL = Maximum Contaminant Level
NA = Criterion not available
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SDWA = Safe Drinking Water Act
UCL = Upper confidence limit on the arithmetic mean
VOCs = Volatile organic chemicals

TABLE 4-54

SUMMARY OF DESCRIPTIVE STATISTICS
2004 DEEP BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Volatile Organics (ug/L)											
1,1-Dichloroethane	1/4	0.184 J	0.184 J	1 - 10	0.4	0.2	MW16-02R2-NWG-100604-D	NA	2.4 C	NA	NA
Bromodichloromethane	1/4	0.303 J	0.303 J	1 - 10	1	0.3	MW16-15R2-NWG-101404	NA	1.1 C	80	NA
BTEX	2/4	0.0235	0.0281	---	0.01	0.03	MW16-55R2-NWG-092904	NA	NA	NA	NA
Carbon Disulfide	1/4	1.02	1.02	1 - 10	1	1	MW16-55R2-NWG-092904	NA	1,000 N	NA	NA
Chlorodibromomethane	1/4	0.491 J	0.491 J	1 - 10	1	0.5	MW16-15R2-NWG-101404	NA	0.8 C	80	NA
cis-1,2-Dichloroethene	3/4	0.597 J	27	1	8	11	MW16-15R2-NWG-101404	NA	370 N	70	70
Methane	1/4	1 J	1.1 J	3.3 - 4.3	2	1	MW16-02R2-NWG-100604	NA	NA	NA	NA
Total 1,2-Dichloroethene	3/4	0.597 J	27.3	1	9	11	MW16-15R2-NWG-101404	NA	330 N	NA	70
Total Chlorinated VOCs	3/4	10.1	476	---	180	240	MW16-02R2-NWG-100604	NA	NA	NA	NA
trans-1,2-Dichloroethene	2/4	0.306 J	0.448 J	1 - 10	0.4	0.4	MW16-02R2-NWG-100604-D	NA	110 N	100	100
Trichloroethene	3/4	9.37	470	1	170	230	MW16-02R2-NWG-100604	NA	**1.7 C**	**5**	**5**
Low-Level Volatile Organics (ug/L)											
1,1-Dichloroethene	3/4	0.0927 J	1.31	0.1	0.5	0.7	MW16-15R2-NWG-101404	NA	340 C	7	7
Benzene	2/4	0.0235 J	0.0281 J	0.1	0.04	0.03	MW16-55R2-NWG-092904	NA	0.41 C	5	5
Vinyl Chloride	2/4	0.19	0.347	0.1	0.2	0.3	MW16-02R2-NWG-100604-D	NA	**0.016 C**	2	2
Total Metals (ug/L)											
Aluminum	4/4	46	831	---	326	326	MW16-55R2-NWG-092904	12,819	37,000 N	NA	NA
Arsenic	2/4	3.2	8.6	0.42	3.1	5.9	MW16-05R2-NWG-102604	**4.62**	**0.045 C**	10	NA
Barium	4/4	17.9	343	---	126	126	MW16-55R2-NWG-092904	**69**	7,300 N	2,000	2,000
Calcium	4/4	18,600	723,000	---	232,000	232,000	MW16-05R2-NWG-102604	**22,455**	NA	NA	NA
Chromium	1/4	0.51 J	0.55 J	1.3 - 1.9	0.75	0.53	MW16-02R2-NWG-100604-D	217	110 N[7]	100 [7]	100
Cobalt	4/4	0.16 J	1.2	---	0.48	0.48	MW16-05R2-NWG-102604	18.8	11 N	NA	NA
Copper	2/4	12.8 J	36.2 J	0.5 - 2.1	12.6	24.5	MW16-05R2-NWG-102604	**17.8**	1,500 N	1,300 [8]	NA
Iron	4/4	152	3,490	---	1,690	1,690	MW16-15R2-NWG-101404	47,378	26,000 N	NA	NA
Lead	4/4	0.05 J	0.82	0.05	0.43	0.43	MW16-15R2-NWG-101404	3.41	NA	15 [8]	15
Magnesium	4/4	369	193,000	---	49,000	49,000	MW16-05R2-NWG-102604	**9,418**	NA	NA	NA
Manganese	4/4	14.5	3,050	---	860	860	MW16-05R2-NWG-102604	4,996	**880 N**	NA	NA
Nickel	4/4	0.81	14.3 J	---	5.1	5.1	MW16-05R2-NWG-102604	200	730 N	NA	100
Potassium	4/4	2,740	41,000	---	15,100	15,100	MW16-05R2-NWG-102604	**7,666**	NA	NA	NA
Selenium	1/4	41.5	41.5	0.29	10.5	41.5	MW16-05R2-NWG-102604	**2**	180 N	50	50
Sodium	4/4	9,950	3,000,000 J	---	759,000	759,000	MW16-05R2-NWG-102604	**18,609**	NA	NA	NA
Vanadium	2/4	1.1	3.8	0.4	1.3	2.5	MW16-15R2-NWG-101404	18.4	180 N	NA	NA
Zinc	3/4	1.2 J	18.5	7.3	8.1	9.6	MW16-15R2-NWG-101404	93.7	11,000 N	NA	NA
Dissolved Metals (ug/L)											
Aluminum	4/4	1.8	610	---	202	202	MW16-55R2-NWG-092904	NA	37,000 N	NA	NA
Arsenic	3/4	0.51	10.9	0.092	3.7	4.9	MW16-05R2-NWG-102604	NA	**0.045 C**	**10**	NA
Barium	4/4	12.4	313	---	114	114	MW16-55R2-NWG-092904	NA	7,300 N	2,000	2,000
Calcium	4/4	18,900	774,000	---	244,000	244,000	MW16-05R2-NWG-102604	NA	NA	NA	NA
Chromium	1/4	0.64	0.82	0.55 - 1.1	0.51	0.73	MW16-02R2-NWG-100604	NA	110 N[7]	100 [7]	100
Cobalt	3/4	0.1 J	1.3	0.014	0.38	0.51	MW16-05R2-NWG-102604	NA	11 N	NA	NA
Copper	3/4	0.2 J	29.5 J	0.16	7.5	10.0	MW16-05R2-NWG-102604	NA	1,500 N	1,300 [8]	NA

TABLE 4-54

SUMMARY OF DESCRIPTIVE STATISTICS
2004 DEEP BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Dissolved Metals (ug/L) (continued)											
Iron	4/4	58.2 J	2,590	---	784	784	MW16-05R2-NWG-102604	NA	26,000 N	NA	NA
Lead	3/4	0.11 J	0.26 J	0.08	0.15	0.19	MW16-55R2-NWG-092904	NA	NA	15 [9]	15
Magnesium	4/4	196	214,000	---	54,100	54,100	MW16-05R2-NWG-102604	NA	NA	NA	NA
Manganese	4/4	0.03 J	3,620	---	961	961	MW16-05R2-NWG-102604	NA	**880 N**	NA	NA
Nickel	4/4	0.82	16.8 J	---	5.4	5.4	MW16-05R2-NWG-102604	NA	730 N	NA	100
Potassium	4/4	2,740	44,900	---	16,000	16,000	MW16-05R2-NWG-102604	NA	NA	NA	NA
Selenium	2/4	0.37 J	49.9	0.3	12.7	25.2	MW16-05R2-NWG-102604	NA	180 N	50	50
Sodium	4/4	9,500 J	3,050,000	---	771,000	771,000	MW16-05R2-NWG-102604	NA	NA	NA	NA
Vanadium	2/4	1.2	2.4	0.08 - 0.27	0.96	1.8	MW16-15R2-NWG-101404	NA	180 N	NA	NA
Zinc	4/4	1.3 J	4.8	---	3.5	3.5	MW16-05R2-NWG-102604	NA	11,000 N	NA	NA
Miscellaneous Parameters (mg/L)											
Alkalinity	4/4	38.5	392	---	140	140	MW16-55R2-NWG-092904	NA	NA	NA	NA
Ammonia	3/4	0.13	0.15	0.1 - 0.31	0.1	0.1	MW16-02R2-NWG-100604	NA	NA	NA	NA
Chloride	4/4	9.47	5,850	---	1,500	1,500	MW16-05R2-NWG-102604	NA	NA	NA	NA
Dissolved Inorganic Carbon	3/4	2	5	1	3	4	MW16-02R2-NWG-100604	NA	NA	NA	NA
Dissolved Organic Carbon	4/4	1	3	---	2	2	MW16-02R2-NWG-100604	NA	NA	NA	NA
Salinity (ppth)	4/4	0.078	10.4	---	3	3	MW16-05R2-NWG-102604	NA	NA	NA	NA
Sulfate	4/4	3.08	706	---	190	190	MW16-05R2-NWG-102604	NA	NA	NA	NA

TABLE 4-54

SUMMARY OF DESCRIPTIVE STATISTICS
2004 DEEP BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 3 OF 3

Parameter	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Range of Non-detects(2)	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration(3)	ORNL Regional Screening Levels - Tap Water(4)	EPA MCL(5)	RIDEM GA Groundwater Objective(6)

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Upper prediction limit, see Appendix D.
4 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
5 - USEPA 2006 Edition of the Drinking Water Standards and Health Advisories, August 2006.
6 - RIDEM, DEM-DSR-01-93, February 2004.
7 - The value for hexavalent chromium is presented.
8 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Qualifiers:
C - Carcinogen.
N - Noncarcinogen.
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Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and xylene
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HI = Hazard index
MCL = Maximum Contaminant Level
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RI = Remedial Investigation
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SDWA = Safe Drinking Water Act
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VOCs = Volatile organic chemicals

TABLE 4-55

SUMMARY OF DESCRIPTIVE STATISTICS
2007 DEEP BEDROCK GROUNDWATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Non-detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	Background GW Concentration[3]	ORNL Regional Screening Levels - Tap Water[4]	EPA MCL[5]	RIDEM GA Groundwater Objective[6]
Volatile Organic Compounds (ug/L)											
1,1-Dichloroethene	1/2	3.9	3.9	0.1 - 0.1	2	4	MW16-02R2-NWG-082407	NA	340 C	7	7
cis-1,2-Dichloroethene	1/2	7.2	7.2	0.53 - 0.53	4	7	MW16-02R2-NWG-082407	NA	370 N	70	70
Total Chlorinated VOCs	2/2	12	451	-	230	230	MW16-02R2-NWG-082407	NA	NA	NA	NA
Trichloroethene	2/2	12	440	-	230	230	MW16-02R2-NWG-082407	NA	**1.7 C**	**5**	**5**
Inorganics (ug/L)											
Aluminum	1/2	85.6	85.6	37 - 37	52.1	85.6	MW16-02R2-NWG-082407	12,819	37,000 N	NA	NA
Barium	2/2	22	93.8	-	57.9	57.9	MW16-05R2-NWG-082307	**69**	7,300 N	2,000	2,000
Beryllium	1/2	0.073 J	0.073 J	0.051 - 0.051	0.049	0.073	MW16-05R2-NWG-082307	NA	73 N	4	4
Calcium	2/2	32,700	649,000	-	341,000	341,000	MW16-05R2-NWG-082307	**22,455**	NA	NA	NA
Copper	1/2	2	2	1.7 - 1.7	1.4	2.0	MW16-02R2-NWG-082407	17.8	1,500 N	1,300 [7]	NA
Iron	2/2	147	193 J	-	170	170	MW16-02R2-NWG-082407	47,378	26,000 N	NA	NA
Lead	1/2	16.1 J	16.1 J	1.2 - 1.2	8.4	16.1	MW16-05R2-NWG-082307	**3.41**	NA	**15 [7]**	**15**
Magnesium	2/2	1,790	167,000	-	84,400	84,400	MW16-05R2-NWG-082307	**9,418**	NA	NA	NA
Manganese	2/2	317	3,880	-	2,100	2,100	MW16-05R2-NWG-082307	4,996	**880 N**	NA	NA
Potassium	2/2	2,140	33,700	-	17,900	17,900	MW16-05R2-NWG-082307	**7,666**	NA	NA	NA
Selenium	1/2	12 J	12 J	5.2 - 5.2	7.3	12.0	MW16-05R2-NWG-082307	**2**	180 N	50	50
Silver	1/2	155	155	2.9 - 2.9	78.2	155	MW16-05R2-NWG-082307	NA	180 N	NA	NA
Sodium	2/2	11,200	2,490,000	-	1,250,000	1,250,000	MW16-05R2-NWG-082307	**18,609**	NA	NA	NA

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
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VOCs = Volatile organic chemicals

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N - Noncarcinogen.
J - Estimated value.

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**28-GW-01**	**28-GW-02**	**28-GW-03**	**28-GW-04**	**28-GW-05**	**28-GW-06**	**28-GW-07**	**28-GW-08**	**28-GW-01A**	**EBS81-01**	**EBS81-02**
Investigation	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 2**	**Round 3**	**Round 3**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**AVG**	**AVG**	**NORMAL**	**NORMAL**
Shallow Overburden											
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	2 U
Trichloroethene	1 U	**0.8**	**4**	**1**	1 U	1 U	1 U	1 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	2 U
1,1-Dichloroethane, LV											
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	3 U	3 U
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene	1 U	1 U	**7 J**	**31 J**	1 U	**0.4**	1 U	1 U	2 U	5 U	5 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	2 U
1,2-Dichloroethane, LV											
Vinyl Chloride	1 U	1 U	**2 J**	**10**	**3**	**8**	1 U	**4**	2 U	3 U	3 U
Vinyl Chloride, LV											
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	2 U
Ethane											
Ethene											
Methane											

Well Node	**28-GW-01**	**28-GW-02**	**28-GW-03**	**28-GW-04**	**28-GW-05**	**28-GW-06**	**28-GW-07**	**28-GW-08**	**28-GW-01A**	**EBS81-01**	**EBS81-02**
Investigation	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 2**	**Round 3**	**Round 3**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**
Intermediate Overburden											
Tetrachloroethene	1 U	1 U		1 U	1 U	1 U	1 U	1 U			
Trichloroethene	1 U	0.8 U		**570 J**	**210 J**	**2**	1 U	**49 J**			
`	1 U	1 U		1 U	1 U	1 U	1 U	1 U			
1,1-Dichloroethane, LV											
1,1-Dichloroethene	1 U	1 U		**0.4**	**1**	1 U	1 U	1 U			
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene	1 U	1 U		**13 J**	**4**	1 U	1 U	**2**			
1,2-Dichloroethane	1 U	1 U		1 U	1 U	1 U	1 U	1 U			
1,2-Dichloroethane, LV											
Vinyl Chloride	1 U	1 U		1 U	1 U	1 U	1 U	**3**			
Vinyl Chloride, LV											
Chloroethane	1 U	1 U		1 U	1 U	1 U	1 U	1 U			
Ethane											
Ethene											
Methane											

Well Node	**28-GW-01**	**28-GW-02**	**28-GW-03**	**28-GW-04**	**28-GW-05**	**28-GW-06**	**28-GW-07**	**28-GW-08**	**28-GW-01A**	**EBS81-01**	**EBS81-02**
Investigation	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 2**	**Round 3**	**Round 3**
Sample Code	**NS**	**NS**	**NORMAL**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Deep Overburden											
Tetrachloroethene			1 UJ								
Trichloroethene			**160 J**								
1,1-Dichloroethane			1 UJ								
1,1-Dichloroethane, LV											
1,1-Dichloroethene			**0.3 J**								
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene			**2 J**								
1,2-Dichloroethane			1 UJ								
1,2-Dichloroethane, LV											
Vinyl Chloride			1 UJ								
Vinyl Chloride, LV											
Chloroethane			1 UJ								
Ethane											
Ethene											
Methane											

Well Node	**28-GW-01**	**28-GW-02**	**28-GW-03**	**28-GW-04**	**28-GW-05**	**28-GW-06**	**28-GW-07**	**28-GW-08**	**28-GW-01A**	**EBS81-01**	**EBS81-02**
Investigation	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 2**	**Round 3**	**Round 3**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Shallow Bedrock											
Tetrachloroethene											
Trichloroethene											
1,1-Dichloroethane											
1,1-Dichloroethane, LV											
1,1-Dichloroethene											
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene											
1,2-Dichloroethane											
1,2-Dichloroethane, LV											
Vinyl Chloride											
Vinyl Chloride, LV											
Chloroethane											
Ethane											
Ethene											
Methane											

Well Node	**28-GW-01**	**28-GW-02**	**28-GW-03**	**28-GW-04**	**28-GW-05**	**28-GW-06**	**28-GW-07**	**28-GW-08**	**28-GW-01A**	**EBS81-01**	**EBS81-02**
Investigation	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 3**	**Round 2**	**Round 3**	**Round 3**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Deep Bedrock											
Tetrachloroethene											
Trichloroethene											
1,1-Dichloroethane											
1,1-Dichloroethane, LV											
1,1-Dichloroethene											
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene											
1,2-Dichloroethane											
1,2-Dichloroethane, LV											
Vinyl Chloride											
Vinyl Chloride, LV											
Chloroethane											
Ethane											
Ethene											
Methane											

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-01**				**MW16-02**				**MW16-03**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**AVG**	**NORMAL**	**NORMAL**
Shallow Overburden												
Tetrachloroethene	1 U	1 U	1 U	0.1 U	1 U	1 U	1 U		1 U	1 U	1 U	0.1 U
Trichloroethene	**1**	**1.65**	**1.28**	0.1 U	1 U	1 U	**1.19**		1 U	1.62 U	1 U	0.1 U
1,1-Dichloroethane	1 U	1 U	1 U	0.1 U	1 U	1 U	1 U		1 U	1 U	1 U	0.1 U
1,1-Dichloroethane, LV		0.1 U				0.1 U				0.1 U		
1,1-Dichloroethene	1 U			0.1 U	1 U				1 U			0.1 U
1,1-Dichloroethene, LV		0.1 U	0.1 UJ			0.1 U	**0.029 J**			0.1 U	**0.0202 J**	
cis-1,2-Dichloroethene	2 U	1 U	1 U	0.53 U	2 U	1 U	**0.166 J**		2 U	1 U	1 U	0.53 U
trans-1,2-Dichloroethene	2 U	1 U	1 U	0.5 U	2 U	1 U	1 U		2 U	1 U	1 U	0.5 U
Total 1,2-Dichloroethene	2 U	1 U	1 U		2 U	1 U	**0.166 J**		2 U	1 U	1 U	
1,2-Dichloroethane	1 U	1 U		0.1 U	1 U	1 U			1 U	1 U		0.1 U
1,2-Dichloroethane, LV			0.1 U				0.1 U				0.1 U	
Vinyl Chloride	2 U			0.1 U	2 U				2 U			0.1 U
Vinyl Chloride, LV		0.1 U	0.1 U			0.1 U	0.1 U			0.1 U	0.1 U	
Chloroethane	2 U	1 U	1 U	0.9 U	2 U	1 UJ	1 U		2 U	1 U	1 U	0.9 U
Ethane		2 U	6.2 U			2 UJ	6.2 U			2 UJ	6.2 U	
Ethene		3 U	5.8 U			3 UJ	5.8 U			3 UJ	5.8 U	
Methane		1 U	3.3 U			**7.3 J**	**1.8 J**			**55.5**	**140**	

Well Node	**MW16-01**				**MW16-02**				**MW16-03**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**	**NS**	**NS**
Intermediate Overburden												
Tetrachloroethene						1 U	2 U					
Trichloroethene						**61**	**63**					
`						1 U	2 U					
1,1-Dichloroethane, LV						0.1 U						
1,1-Dichloroethene												
1,1-Dichloroethene, LV						0.1 U	**0.641**					
cis-1,2-Dichloroethene						**0.53 J**	**0.603 J**					
trans-1,2-Dichloroethene						1 U	**0.515 J**					
Total 1,2-Dichloroethene						**0.53**	**1.12 J**					
1,2-Dichloroethane						1 U						
1,2-Dichloroethane, LV							0.1 U					
Vinyl Chloride												
Vinyl Chloride, LV						0.1 U	0.1 U					
Chloroethane						1 UJ	2 U					
Ethane						2 UJ	6.2 U					
Ethene						3 UJ	5.8 U					
Methane						1 UJ	3.3 U					

Well Node	**MW16-01**				**MW16-02**				**MW16-03**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**AVG**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Deep Overburden												
Tetrachloroethene	1 U	1 U	1 U	0.1 U	1 U	**0.14 J**	50 U	5 UJ	1 U	1 U	1 U	0.1 U
Trichloroethene	**3**	**3.78**	**6.04**	**9.6**	**2100**	**1500 J**	**1200**	**1900**	1 U	1 U	**0.142 J**	0.1 U
1,1-Dichloroethane	1 U	1 U	1 U	0.1 U	1 U	1 U	50 U	5 UJ	1 U	1 U	1 U	0.1 U
1,1-Dichloroethane, LV		0.1 U				**0.07 J**				0.1 U		
1,1-Dichloroethene	1 U			0.1 U	**1**			5 UJ	1 U			0.1 U
1,1-Dichloroethene, LV		0.1 U	0.1 U			**1.5 J**	**0.598**			0.1 U	**0.021 J**	
cis-1,2-Dichloroethene	2 U	1 U	1 U	0.53 U	**5**	**6.295**	50 U	5.3 U	2 U	1 U	1 U	0.53 U
trans-1,2-Dichloroethene	2 U	1 U	1 U	0.5 U	**0.8**	**0.95 J**	50 U	5 U	2 U	1 U	1 U	0.5 U
Total 1,2-Dichloroethene	2 U	1 U	1 U		**5.8**	**7.25**	50 U		2 U	1 U	1 U	
1,2-Dichloroethane	1 U	1 U		0.1 U	1 U	1 U		5 UJ	1 U	1 U		0.1 U
1,2-Dichloroethane, LV			0.1 U				0.023 U				0.1 U	
Vinyl Chloride	2 U			0.1 U	2 U			5 UJ	2 U			0.1 U
Vinyl Chloride, LV		0.1 U	0.1 U			**0.085 J**	**0.04 J**			0.1 U	0.1 U	
Chloroethane	2 U	1 U	1 U	0.9 U	2 U	1 UJ	50 U	9 U	2 U	1 U	1 U	0.9 U
Ethane		2 U	6.2 U			2 UJ	6.2 U			2 UJ	6.2 U	
Ethene		3 U	5.8 U			3 UJ	5.8 U			3 UJ	5.8 U	
Methane		1 U	3.3 U			1 UJ	3.3 U			1 U	3.3 U	

Well Node	**MW16-01**				**MW16-02**				**MW16-03**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**AVG**	**NORMAL**	**NS**	**NS**	**NORMAL**	**NORMAL**
Shallow Bedrock												
Tetrachloroethene			1 U	0.1 U	1 U	1 U	37.5 U	5 UJ			1 U	0.1 U
Trichloroethene			**4.92**	**8.8**	**3100**	**840**	**1150**	**1900**			**31**	**30 J**
1,1-Dichloroethane			1 U	0.1 U	1 U	**0.12 J**	37.5 U	5 UJ			1 U	0.1 U
1,1-Dichloroethane, LV						**0.2**						
1,1-Dichloroethene				0.1 U	**2**			5 UJ				0.1 U
1,1-Dichloroethene, LV			0.1 U			**5**	**1.46**				**0.0433 J**	
cis-1,2-Dichloroethene			1 U	0.53 U	**7**	**19**	**19.5 J**	8.5 U			3.32 U	**3 J**
trans-1,2-Dichloroethene			1 U	0.5 U	**0.9**	**0.95 J**	37.5 U	8 U			1 U	0.5 U
Total 1,2-Dichloroethene			1 U		**7.9**	**20**	**19.5 J**				1 U	
1,2-Dichloroethane				0.1 U	1 U	1 U		5 UJ				0.1 U
1,2-Dichloroethane, LV			0.1 U				0.1 U				0.1 U	
Vinyl Chloride				0.1 U	2 U			5 UJ				0.1 U
Vinyl Chloride, LV			0.1 U			**0.4**	**0.371**				**0.0373 J**	
Chloroethane			1 U	0.9 U	2 U	1 U	37.5 U	14 U			1 U	0.9 U
Ethane			6.2 U			2 U	**4.75 J**				6.2 U	
Ethene			5.8 U			3 U	**2.05 J**				5.8 U	
Methane			3.3 U			1 U	**8.4**				3.3 U	

Well Node	**MW16-01**				**MW16-02**				**MW16-03**			
Investigation	**Round 5**	**Round 6**	**Round 8**		**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**		**NS**	**NORMAL**	**AVG**	**NORMAL**	**NS**	**NS**	**NS**	**NS**
Deep Bedrock												
Tetrachloroethene						1 U	5.5 U	0.52 U				
Trichloroethene						**120**	**465**	**440**				
1,1-Dichloroethane						**0.13 J**	**0.184 J**	0.5 U				
1,1-Dichloroethane, LV						**0.2**						
1,1-Dichloroethene								**3.9**				
1,1-Dichloroethene, LV						**2**	**0.589**					
cis-1,2-Dichloroethene						**3.24**	**5.74 J**	**7.2**				
trans-1,2-Dichloroethene						**0.18 J**	**0.448 J**	0.5 U				
Total 1,2-Dichloroethene						**3.42**	**5.96 J**					
1,2-Dichloroethane						1 U		0.45 U				
1,2-Dichloroethane, LV							0.1 U					
Vinyl Chloride								0.51 U				
Vinyl Chloride, LV						**0.2**	**0.345**					
Chloroethane						1 U	5.5 U	0.9 U				
Ethane						2 U	6.2 U					
Ethene						3 U	5.8 U					
Methane						1 U	**1.05 J**					

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-04**				**MW16-05**				**MW16-06**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Shallow Overburden												
Tetrachloroethene	1 U	1 U	1 U	0.1 U	1 U	1 U	1 U	0.1 UJ	1 U	1 UJ	1 U	0.1 U
Trichloroethene	**0.5**	1 U	1 U	0.1 U	1 U	1 UJ	1 U	0.1 UJ	**1**	**0.73 J**	**0.25 J**	0.1 U
1,1-Dichloroethane	1 U	1 U	1 U	0.1 U	1 U	1 U	1 U	0.1 UJ	1 U	1 UJ	1 U	0.1 U
1,1-Dichloroethane, LV		0.1 U				0.1 U				0.1 U		
1,1-Dichloroethene	1 U			0.1 U	1 U			0.1 UJ	1 U			0.1 U
1,1-Dichloroethene, LV		0.1 U	**0.027 J**			0.1 U	0.1 U			0.1 U	0.1 U	
cis-1,2-Dichloroethene	2 U	1 U	1 U	0.53 U	2 U	1 U	1 U	0.53 U	2 U	1 UJ	1 U	0.53 U
trans-1,2-Dichloroethene	2 U	1 U	1 U	0.5 U	2 U	1 U	1 U	0.5 U	2 U	1 UJ	1 U	0.5 U
Total 1,2-Dichloroethene	2 U	1 U	1 U		2 U	1 U	1 U		2 U	1 U	1 U	
1,2-Dichloroethane	1 U	1 U		0.1 U	1 U	1 U		0.1 UJ	1 U	1 UJ		0.1 U
1,2-Dichloroethane, LV			0.1 U				0.1 U				0.1 U	
Vinyl Chloride	**0.9**			0.1 U	2 U			0.1 UJ	2 U			0.1 UJ
Vinyl Chloride, LV		**0.3**	**0.521**			0.1 U	0.1 U			0.1 U	0.1 U	
Chloroethane	2 U	1 U	1 U	0.9 U	2 U	1 U	1 U	0.9 U	2 U	1 UJ	1 U	0.9 U
Ethane		20 U	6.2 U			2 U	6.2 U			2 U	6.2 U	
Ethene		30 U	**5.3 J**			3 U	5.8 U			3 U	5.8 U	
Methane		**700**	**12000**			**18**	**65**			1 U	**1.3 J**	

Well Node	**MW16-04**				**MW16-05**				**MW16-06**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NORMAL**	**AVG**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**AVG**	**NS**	**NS**	**NS**	**NS**
Intermediate Overburden												
Tetrachloroethene		1 U	1 U	0.1 U		1 U	1 U	2 UJ				
Trichloroethene		**0.63 J**	**0.527 J**	0.1 U		**750**	**470**	**675**				
`		1 U	1 U	0.1 U		1 U	1 U	2 UJ				
1,1-Dichloroethane, LV		0.1 U				**0.05 J**						
1,1-Dichloroethene				0.1 U				2 UJ				
1,1-Dichloroethene, LV		0.1 U	0.1 U			**0.6**	**1.52**					
cis-1,2-Dichloroethene		1 U	1 U	0.53 U		**19**	**23**	**21.5**				
trans-1,2-Dichloroethene		1 U	1 U	0.5 U		**0.73 J**	**1.1**	1.5 U				
Total 1,2-Dichloroethene		1 U	1 U			**19.7**	**24.1**					
1,2-Dichloroethane		1 U		0.1 U		1 U		2 UJ				
1,2-Dichloroethane, LV			0.1 U				0.1 U					
Vinyl Chloride				0.1 U				2 UJ				
Vinyl Chloride, LV		0.1 U	**0.011 J**			**0.3**	**0.413**					
Chloroethane		1 U	1 U	0.9 U		1 U	1 U	2.7 U				
Ethane		2 U	6.2 U			2 U	6.2 U					
Ethene		3 U	5.8 U			3 U	5.8 U					
Methane		1 U	**6.5 J**			**270**	**1600**					

Well Node	**MW16-04**				**MW16-05**				**MW16-06**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**AVG**	**AVG**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Deep Overburden												
Tetrachloroethene	1 U	1 U	1 U	0.8 UJ	1 U	**0.11 J**	1 U	4.4 U	1 U	1 U	1 U	0.1 U
Trichloroethene	**560**	**260**	**340**	**320**	**2250**	**1450 J**	**1100**	**1200**	1 U	**1.72 J**	**1.33**	**1.7 J**
1,1-Dichloroethane	1 U	1 U	1 U	0.8 UJ	1 U	**0.195 J**	**0.164 J**	4 UJ	1 U	1 U	1 U	0.1 U
1,1-Dichloroethane, LV		0.1 U				**0.125 J**				0.1 U		
1,1-Dichloroethene	2 U			0.8 UJ	2 U			4 UJ	1 U			0.1 U
1,1-Dichloroethene, LV		**0.9 J**	**0.382**			**1.1 J**	**0.948**			0.1 U	0.1 U	
cis-1,2-Dichloroethene	**6**	**4.21**	**4.79**	**4.4**	**6.5**	**5.075 J**	**4.83**	**4.8**	2 U	1 U	1 U	0.53 U
trans-1,2-Dichloroethene	2 U	**0.22 J**	**0.26 J**	1 U	**0.85**	**0.445 J**	**0.527 J**	0.5 U	2 U	1 U	1 U	0.5 U
Total 1,2-Dichloroethene	**6**	**4.43**	**5.05**		**7.35**	**5.52**	**5.36**		2 U	1 U	1 U	
1,2-Dichloroethane	1 U	1 U		0.8 UJ	1 U	1 U		4 UJ	1 U	1 U		0.1 U
1,2-Dichloroethane, LV			0.1 U				0.1 U				0.1 U	
Vinyl Chloride	2 U			0.8 UJ	2 U			4 UJ	2 U			0.1 U
Vinyl Chloride, LV		**0.09 J**	**0.134**			**0.075 J**	**0.049 J**			0.1 U	0.1 U	
Chloroethane	2 U	1 U	1 U	1.8 U	2 U	1 U	1 U	0.9 U	2 U	1 U	1 U	0.9 U
Ethane		2 U	6.2 U			2 U	6.2 U			2 U	6.2 U	
Ethene		3 U	5.8 U			3 U	5.8 U			3 U	5.8 U	
Methane		1 U	**2.7 J**			**2.1 J**	**23**			1 U	3.3 U	

Well Node	**MW16-04**				**MW16-05**				**MW16-06**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**
Shallow Bedrock												
Tetrachloroethene						1 U	1 U	2.6 U		1 U	1 U	0.1 U
Trichloroethene						**750 J**	**860**	**1200**		**1.09 J**	1 U	0.1 U
1,1-Dichloroethane						**0.1 J**	1 U	2.5 U		1 U	1 U	0.1 U
1,1-Dichloroethane, LV						**0.2 J**				0.1 U		
1,1-Dichloroethene								3.8 U				0.1 U
1,1-Dichloroethene, LV						**2 J**	**0.549**			0.1 U	0.1 U	
cis-1,2-Dichloroethene						**8.2 J**	**8.08**	**11**		1 U	1 U	0.53 U
trans-1,2-Dichloroethene						**0.29 J**	**0.376 J**	2.5 U		1 U	1 U	0.5 U
Total 1,2-Dichloroethene						**8.49**	**8.46**			1 U	1 U	
1,2-Dichloroethane						1 U		2.3 U		1 U		0.1 U
1,2-Dichloroethane, LV							0.1 U				0.1 U	
Vinyl Chloride								2.6 U				0.1 U
Vinyl Chloride, LV						**0.2 J**	**0.141**			0.1 U	0.1 U	
Chloroethane						1 U	1 U	4.5 U		1 U	1 U	0.9 U
Ethane						2 U	6.2 U			2 U	6.2 U	
Ethene						3 U	5.8 U			3 U	5.8 U	
Methane						1 UJ	5.3 U			1 U	**78**	

Well Node	**MW16-04**				**MW16-05**				**MW16-06**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**	**NS**
Deep Bedrock												
Tetrachloroethene							1 U	0.1 U				
Trichloroethene							**9.37**	**12**				
1,1-Dichloroethane							1 U	0.1 U				
1,1-Dichloroethane, LV												
1,1-Dichloroethene								0.1 U				
1,1-Dichloroethene, LV							**0.093 J**					
cis-1,2-Dichloroethene							**0.597 J**	0.53 U				
trans-1,2-Dichloroethene							1 U	0.5 U				
Total 1,2-Dichloroethene							**0.597 J**					
1,2-Dichloroethane								0.1 U				
1,2-Dichloroethane, LV							0.1 U					
Vinyl Chloride								0.1 UJ				
Vinyl Chloride, LV							0.1 U					
Chloroethane							1 U	0.9 U				
Ethane							6.2 U					
Ethene							5.8 U					
Methane							4.3 U					

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-07**				**MW16-08**			**MW16-09**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**AVG**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NORMAL**	**NS**	**NS**	**NS**	**NS**
Shallow Overburden											
Tetrachloroethene	1 U	1 U	1 U	0.52 U			1 U				
Trichloroethene	**0.8**	1 U	**0.546 J**	0.5 U			**4.19**				
1,1-Dichloroethane	1 U	1 U	1 U	0.5 U			1 U				
1,1-Dichloroethane, LV		0.1 U									
1,1-Dichloroethene	1 U			0.76 U							
1,1-Dichloroethene, LV		0.1 U	0.1 U				0.1 U				
cis-1,2-Dichloroethene	2 U	1 U	1 U	0.53 U			1 U				
trans-1,2-Dichloroethene	2 U	1 U	1 U	0.5 U			1 U				
Total 1,2-Dichloroethene	2 U	1 U	1 U				1 U				
1,2-Dichloroethane	1 U	1 U		0.45 U							
1,2-Dichloroethane, LV			0.1 U				0.1 U				
Vinyl Chloride	2 U			0.51 U							
Vinyl Chloride, LV		0.1 U	0.1 U				0.1 U				
Chloroethane	2 U	1 U	1 U	0.9 U			1 U				
Ethane		2 UJ	6.2 U				6.2 U				
Ethene		3 UJ	5.8 U				5.8 U				
Methane		**5.6 J**	**200**				3.3 U				

Well Node	**MW16-07**				**MW16-08**			**MW16-09**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Intermediate Overburden											
Tetrachloroethene											
Trichloroethene											
`											
1,1-Dichloroethane, LV											
1,1-Dichloroethene											
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene											
1,2-Dichloroethane											
1,2-Dichloroethane, LV											
Vinyl Chloride											
Vinyl Chloride, LV											
Chloroethane											
Ethane											
Ethene											
Methane											

Well Node	**MW16-07**				**MW16-08**			**MW16-09**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Deep Overburden											
Tetrachloroethene	1 U	1 U	1 U		1 U	**0.2 J**	1 U	1 U	1 UJ	1 U	0.1 UJ
Trichloroethene	**1**	1 U	**2.82**		**190**	**140**	**320**	1 U	**7.66 J**	**0.216 J**	**0.12 J**
1,1-Dichloroethane	1 U	1 U	1 U		1 U	1 U	1 U	1 U	1 UJ	1 U	0.1 UJ
1,1-Dichloroethane, LV		0.1 U				0.1 U			0.1 U		
1,1-Dichloroethene	1 U				1 U			1 U			0.1 UJ
1,1-Dichloroethene, LV		0.1 U	0.1 U			**0.2**	**0.188**		0.1 U	**0.0197 J**	
cis-1,2-Dichloroethene	2 U	1 U	1 U		**2**	**2.44**	**3.76**	2 U	1 UJ	1 U	0.53 U
trans-1,2-Dichloroethene	2 U	1 U	1 U		2 U	1 U	**0.158 J**	2 U	1 UJ	1 U	0.5 U
Total 1,2-Dichloroethene	2 U	1 U	1 U		**2**	**2.44**	**3.92**	2 U	1 U	1 U	
1,2-Dichloroethane	1 U	1 U			1 UJ	1 U		**0.4**	1 UJ		0.1 UJ
1,2-Dichloroethane, LV			0.1 U				0.1 U			0.1 U	
Vinyl Chloride	2 U				2 U			2 U			0.1 UJ
Vinyl Chloride, LV		0.1 U	**0.013 J**			**0.3**	**0.386**		0.1 U	0.1 U	
Chloroethane	2 U	1 U	1 U		2 U	1 U	1 U	2 U	1 UJ	1 U	0.9 U
Ethane		2 U	6.2 U			2 U	6.2 U		2 U	6.2 U	
Ethene		3 U	5.8 U			3 U	5.8 U		3 U	5.8 U	
Methane		**5.7**	3.3 U			1 U	3.3 U		1 U	3.3 U	

Well Node	**MW16-07**				**MW16-08**			**MW16-09**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Shallow Bedrock											
Tetrachloroethene											
Trichloroethene											
1,1-Dichloroethane											
1,1-Dichloroethane, LV											
1,1-Dichloroethene											
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene											
1,2-Dichloroethane											
1,2-Dichloroethane, LV											
Vinyl Chloride											
Vinyl Chloride, LV											
Chloroethane											
Ethane											
Ethene											
Methane											

Well Node	**MW16-07**				**MW16-08**			**MW16-09**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Deep Bedrock											
Tetrachloroethene											
Trichloroethene											
1,1-Dichloroethane											
1,1-Dichloroethane, LV											
1,1-Dichloroethene											
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene											
1,2-Dichloroethane											
1,2-Dichloroethane, LV											
Vinyl Chloride											
Vinyl Chloride, LV											
Chloroethane											
Ethane											
Ethene											
Methane											

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-10**				**MW16-11**				**MW16-12**		
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NORMAL**
Shallow Overburden											
Tetrachloroethene						1 U	1 U	0.1 U			1 U
Trichloroethene						**0.9 J**	**0.266 J**	**1.3**			**3.52**
1,1-Dichloroethane						1 U	1 U	0.1 U			1 U
1,1-Dichloroethane, LV						0.1 U					
1,1-Dichloroethene								0.1 U			
1,1-Dichloroethene, LV						0.1 U	0.1 U				0.1 U
cis-1,2-Dichloroethene						1 U	1 U	0.53 U			**0.972 J**
trans-1,2-Dichloroethene						1 U	1 U	0.5 U			1 U
Total 1,2-Dichloroethene						1 U	1 U				**0.972 J**
1,2-Dichloroethane						1 U		0.1 U			
1,2-Dichloroethane, LV							0.1 U				0.1 U
Vinyl Chloride								0.1 U			
Vinyl Chloride, LV						0.1 U	0.1 U				0.1 U
Chloroethane						1 U	1 U	0.9 U			1 U
Ethane						2 UJ	6.2 U				6.2 U
Ethene						3 UJ	5.8 U				5.8 U
Methane						1 UJ	3.3 U				3.3 U

Well Node	**MW16-10**				**MW16-11**				**MW16-12**		
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**
Sample Code	**NS**	**NS**	**NS**	**NORMAL**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Intermediate Overburden											
Tetrachloroethene				**1.7**							
Trichloroethene				**2.9**							
`				0.1 U							
1,1-Dichloroethane, LV											
1,1-Dichloroethene				0.1 U							
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene				0.14 U							
trans-1,2-Dichloroethene				0.13 U							
Total 1,2-Dichloroethene											
1,2-Dichloroethane				0.1 U							
1,2-Dichloroethane, LV											
Vinyl Chloride				0.1 U							
Vinyl Chloride, LV											
Chloroethane				0.85 U							
Ethane											
Ethene											
Methane											

Well Node	**MW16-10**				**MW16-11**				**MW16-12**		
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**
Sample Code	**AVG**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**
Deep Overburden											
Tetrachloroethene	**0.55**	1 UJ	1 U	0.1 U	1 U	1 U	1 U		1 U	1 U	1 U
Trichloroethene	1 U	1 UJ	**0.497 J**	0.1 U	1 U	**4.94**	1 U		**21**	**23**	**32**
1,1-Dichloroethane	1 U	1 UJ	1 U	0.1 U	1 U	1 U	1 U		1 U	1 U	1 U
1,1-Dichloroethane, LV		**0.1**				0.1 U				**0.1**	
1,1-Dichloroethene	1 U			0.1 U	1 U				1 U		
1,1-Dichloroethene, LV		**0.6**	0.1 U			0.1 U	0.1 U			**0.08 J**	**0.021 J**
cis-1,2-Dichloroethene	2 U	1 UJ	1 U	0.53 U	2 U	1 U	1 U		2 U	1 U	1 U
trans-1,2-Dichloroethene	2 U	1 UJ	1 U	0.5 U	2 U	1 U	1 U		2 U	1 U	1 U
Total 1,2-Dichloroethene	2 U	1 U	1 U		2 U	1 U	1 U		2 U	1 U	1 U
1,2-Dichloroethane	**0.3**	1 UJ		0.1 U	**0.4**	1 U			1 U	1 U	
1,2-Dichloroethane, LV			0.1 U				0.1 U				0.1 U
Vinyl Chloride	2 U			0.1 U	2 U				2 U		
Vinyl Chloride, LV		0.1 U	0.1 U			0.1 U	0.1 U			0.1 U	0.1 U
Chloroethane	2 U	1 UJ	1 U	0.9 U	2 U	1 U	1 U		2 U	1 U	1 U
Ethane		2 U	6.2 U			2 UJ	6.2 U			2 U	6.2 U
Ethene		3 U	5.8 U			3 UJ	5.8 U			3 U	5.8 U
Methane		1 U	3.3 U			1 UJ	3.3 U			1 U	3.3 U

Well Node	**MW16-10**				**MW16-11**				**MW16-12**		
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Shallow Bedrock											
Tetrachloroethene	1 U	1 U	1 U	0.1 U							
Trichloroethene	1 U	1 U	1 U	0.1 U							
1,1-Dichloroethane	1 U	1 U	1 U	0.1 U							
1,1-Dichloroethane, LV		0.1 U									
1,1-Dichloroethene	1 U			0.1 U							
1,1-Dichloroethene, LV		0.1 U	**0.027 J**								
cis-1,2-Dichloroethene	2 U	1 U	1 U	0.53 U							
trans-1,2-Dichloroethene	2 U	1 U	1 U	0.5 U							
Total 1,2-Dichloroethene	2 U	1 U	1 U								
1,2-Dichloroethane	1 U	1 U		0.1 U							
1,2-Dichloroethane, LV			0.1 U								
Vinyl Chloride	2 U			0.1 U							
Vinyl Chloride, LV		0.1 U	**0.065 J**								
Chloroethane	2 U	1 U	1 U	0.9 U							
Ethane		2 U	6.2 U								
Ethene		3 U	5.8 U								
Methane		**40**	**540**								

Well Node	**MW16-10**				**MW16-11**				**MW16-12**		
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Deep Bedrock											
Tetrachloroethene											
Trichloroethene											
1,1-Dichloroethane											
1,1-Dichloroethane, LV											
1,1-Dichloroethene											
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene											
1,2-Dichloroethane											
1,2-Dichloroethane, LV											
Vinyl Chloride											
Vinyl Chloride, LV											
Chloroethane											
Ethane											
Ethene											
Methane											

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-13**				**MW16-14**				**MW16-15**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**
Shallow Overburden												
Tetrachloroethene											1 U	0.1 U
Trichloroethene											**6.15**	**6.6**
1,1-Dichloroethane											1 U	0.1 U
1,1-Dichloroethane, LV												
1,1-Dichloroethene												0.1 U
1,1-Dichloroethene, LV											0.1 U	
cis-1,2-Dichloroethene											1 U	0.53 U
trans-1,2-Dichloroethene											1 U	0.5 U
Total 1,2-Dichloroethene											1 U	
1,2-Dichloroethane												0.1 U
1,2-Dichloroethane, LV											0.1 U	
Vinyl Chloride												0.1 U
Vinyl Chloride, LV											0.1 U	
Chloroethane											1 U	0.9 U
Ethane											6.2 U	
Ethene											5.8 U	
Methane											3.3 U	

Well Node	**MW16-13**				**MW16-14**				**MW16-15**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**	**NS**	**NS**
Intermediate Overburden												
Tetrachloroethene		**1.64**	**0.473 J**	0.1 U		**0.17 J**	1 U					
Trichloroethene		**5.28**	**9.15**	**13**		**26**	**10**					
`		1 U	1 U	0.1 U		1 U	1 U					
1,1-Dichloroethane, LV		0.1 U				0.1 U						
1,1-Dichloroethene				0.1 U								
1,1-Dichloroethene, LV		0.1 U	0.1 U			0.1 U	0.1 U					
cis-1,2-Dichloroethene		1 U	1 U	0.53 U		**0.34 J**	1 U					
trans-1,2-Dichloroethene		1 U	1 U	0.5 U		1 U	1 U					
Total 1,2-Dichloroethene		1 U	1 U			**0.34**	1 U					
1,2-Dichloroethane		1 U		0.1 U		1 U						
1,2-Dichloroethane, LV			0.1 U				0.1 U					
Vinyl Chloride				0.1 U								
Vinyl Chloride, LV		0.1 U	0.1 U			0.1 U	0.1 U					
Chloroethane		1 U	1 U	0.9 U		1 U	1 U					
Ethane		2 UJ	6.2 U			2 UJ	6.2 U					
Ethene		3 UJ	5.8 U			3 UJ	5.8 U					
Methane		1 UJ	3.3 U			1 UJ	**1.6 J**					

Well Node	**MW16-13**				**MW16-14**				**MW16-15**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**AVG**	**NORMAL**	**NORMAL**	**NS**
Deep Overburden												
Tetrachloroethene	1 U	1 U	1 U		1 U	**0.3 J**	50 U	0.52 U	**0.7**	**0.67 J**	1 U	
Trichloroethene	1 U	**0.32 J**	**0.326 J**		**4900**	**3000 J**	**2000**	**2300**	**6300**	**2700 J**	**1400**	
1,1-Dichloroethane	1 U	1 U	1 U		1 U	1 U	50 U	0.5 U	1 U	1 U	1 U	
1,1-Dichloroethane, LV		0.1 U				0.1 U				0.1 U		
1,1-Dichloroethene	1 U				1 U			**1.5**	**0.85 J**			
1,1-Dichloroethene, LV		0.1 U	0.1 UJ			**0.5**	**0.137**			0.1 U	**0.442**	
cis-1,2-Dichloroethene	2 U	**0.23 J**	1 U		**5**	**1.87**	50 U	**1.6**	**3**	**2.18**	**2.19**	
trans-1,2-Dichloroethene	2 U	1 U	1 U		2 U	**0.27 J**	50 U	0.5 U	**0.7**	**0.25 J**	**0.275 J**	
Total 1,2-Dichloroethene	2 U	**0.23**	1 U		**5**	**2.14**	50 U		**3.35**	**2.43**	**2.47**	
1,2-Dichloroethane	**0.3**	1 U			1 U	1 U		0.45 U	1 UJ	1 U		
1,2-Dichloroethane, LV			0.1 UJ				0.1 U				0.1 U	
Vinyl Chloride	2 U				2 U			0.51 U	2 UJ			
Vinyl Chloride, LV		0.1 U	0.1 UJ			0.1 U	0.1 U			0.1 U	**0.0193 J**	
Chloroethane	2 U	1 U	1 U		**0.6**	1 U	50 U	0.9 U	2 U	1 U	1 U	
Ethane		2 UJ	6.2 U			2 UJ	6.2 U			2 U	6.2 U	
Ethene		3 UJ	5.8 U			3 UJ	5.8 U			3 U	5.8 U	
Methane		**92 J**	**210**			1 UJ	3.3 U			1 U	3.3 U	

Well Node	**MW16-13**				**MW16-14**				**MW16-15**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NORMAL**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**AVG**	**NS**
Shallow Bedrock												
Tetrachloroethene				0.1 U			1 U	0.1 U	50 U	1 U	1 U	
Trichloroethene				0.1 U			**0.85 J**	**4.4**	**4600**	**1300 J**	**705 J**	
1,1-Dichloroethane				0.1 U			1 U	0.1 U	50 U	1 U	1 U	
1,1-Dichloroethane, LV										**0.1**		
1,1-Dichloroethene				0.1 U				0.1 U	50 U			
1,1-Dichloroethene, LV							0.1 U			**1**	**0.8185 J**	
cis-1,2-Dichloroethene				0.14 U			1 U	0.53 U	**110**	**52 J**	**54.5**	
trans-1,2-Dichloroethene				0.13 U			1 U	0.5 U	100 U	**0.3 J**	**0.213 J**	
Total 1,2-Dichloroethene							1 U		**110**	**52.3**	**54.7**	
1,2-Dichloroethane				0.1 U				0.1 U	50 U	1 U		
1,2-Dichloroethane, LV							0.1 U				**0.0263 J**	
Vinyl Chloride				0.1 U				0.1 U	100 U			
Vinyl Chloride, LV							0.1 U			**0.4**	**0.2705**	
Chloroethane				0.85 U			1 U	0.9 U	100 U	1 U	1 U	
Ethane							6.2 U			**9.1**	**5.05 J**	
Ethene							5.8 U			**6.8**	**3.9 J**	
Methane							3.3 U			1 U	**835 J**	

Well Node	**MW16-13**				**MW16-14**				**MW16-15**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NS**
Deep Bedrock												
Tetrachloroethene										1 U	1 U	
Trichloroethene										**160 J**	**210**	
1,1-Dichloroethane										1 U	1 U	
1,1-Dichloroethane, LV										**0.06 J**		
1,1-Dichloroethene												
1,1-Dichloroethene, LV										**0.8**	**1.31**	
cis-1,2-Dichloroethene										**21**	**27**	
trans-1,2-Dichloroethene										**0.35 J**	**0.306 J**	
Total 1,2-Dichloroethene										**21.4**	**27.3**	
1,2-Dichloroethane										1 U		
1,2-Dichloroethane, LV											0.1 U	
Vinyl Chloride												
Vinyl Chloride, LV										0.1 U	**0.19**	
Chloroethane										1 U	1 U	
Ethane										2 U	6.2 U	
Ethene										3 U	5.8 U	
Methane										1 U	3.3 U	

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-16**			**MW16-17**				**MW16-18**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**	**AVG**	**NS**	**NS**	**NS**	**NS**
Shallow Overburden											
Tetrachloroethene					1 U	1 U	0.1 U				
Trichloroethene					1 U	1 U	0.1 U				
1,1-Dichloroethane					1 U	1 U	0.1 U				
1,1-Dichloroethane, LV					0.1 U						
1,1-Dichloroethene							0.1 U				
1,1-Dichloroethene, LV					0.1 U	0.1 U					
cis-1,2-Dichloroethene					1 U	1 U	0.53 U				
trans-1,2-Dichloroethene					1 U	1 U	0.5 U				
Total 1,2-Dichloroethene					1 U	1 U					
1,2-Dichloroethane					1 U		0.1 U				
1,2-Dichloroethane, LV						0.1 U					
Vinyl Chloride							0.1 U				
Vinyl Chloride, LV					0.1 U	0.1 U					
Chloroethane					1 U	1 U	0.9 U				
Ethane					2 UJ	6.2 U					
Ethene					3 UJ	5.8 U					
Methane					1 UJ	**1 J**					

Well Node	**MW16-16**			**MW16-17**				**MW16-18**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NORMAL**	**NORMAL**	**NS**	**AVG**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**AVG**	**NORMAL**
Intermediate Overburden											
Tetrachloroethene		1 U	1 U		**0.835 J**	**0.766 J**	0.1 U		**1.08**	**1.975**	**1.4**
Trichloroethene		**200 J**	**49**		**0.43 J**	1 U	0.1 U		**23**	**72.5**	**61**
`		1 U	1 U		1 U	1 U	0.1 U		1 U	1 U	0.4 U
1,1-Dichloroethane, LV		0.1 U			0.1 U				0.1 U		
1,1-Dichloroethene							0.1 U				0.4 U
1,1-Dichloroethene, LV		**0.07 J**	**0.0235 J**		0.1 U	0.1 U			0.1 U	0.1 U	
cis-1,2-Dichloroethene		**0.47 J**	**0.441 J**		1 U	1 U	0.53 U		1 U	1 U	0.53 U
trans-1,2-Dichloroethene		1 U	1 U		1 U	1 U	0.5 U		1 U	1 U	0.5 U
Total 1,2-Dichloroethene		**0.47**	**0.441 J**		1 U	1 U			1 U	1 U	
1,2-Dichloroethane		1 U			1 U		0.1 U		1 U		0.4 U
1,2-Dichloroethane, LV			0.1 U			0.1 U				0.1 U	
Vinyl Chloride							0.1 U				0.4 U
Vinyl Chloride, LV		0.1 U	0.1 U		0.1 U	0.1 U			0.1 U	0.1 U	
Chloroethane		1 U	1 U		1 U	1 U	0.9 U		1 UJ	1 U	0.9 U
Ethane		2 UJ	6.2 U		2 U	6.2 U			2 UJ	6.2 U	
Ethene		3 UJ	5.8 U		3 U	5.8 U			3 UJ	5.8 U	
Methane		1 UJ	3.3 U		1 U	**1 J**			1 UJ	**1.1 J**	

Well Node	**MW16-16**			**MW16-17**				**MW16-18**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NORMAL**	**NORMAL**	**AVG**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Deep Overburden											
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	0.1 U	1 U	1 U	1 U	
Trichloroethene	**89**	**51 J**	**44**	1 U	1 U	1 U	0.1 U	**0.7**	1 U	**0.165 J**	
1,1-Dichloroethane	**0.6**	**0.35 J**	**0.2505 J**	1 U	1 U	1 U	0.1 U	1 U	1 U	1 U	
1,1-Dichloroethane, LV		**0.5**			0.1 U				**0.2**		
1,1-Dichloroethene	**0.7**			1 U			0.1 U	1 U			
1,1-Dichloroethene, LV		**0.5**	0.1 U		0.1 U	0.1 U			0.1 U	0.1 U	
cis-1,2-Dichloroethene	2 U	1 U	1 U	2 U	1 U	1 U	0.53 U	2 U	1 U	1 U	
trans-1,2-Dichloroethene	2 U	1 U	1 U	2 U	1 U	1 U	0.5 U	2 U	1 U	1 U	
Total 1,2-Dichloroethene	2 U	1 U	1 U	2 U	1 U	1 U		2 U	1 U	1 U	
1,2-Dichloroethane	1 U	1 U		1 UJ	1 U		0.1 U	1 U	1 U		
1,2-Dichloroethane, LV			0.1 U			0.1 U				0.1 U	
Vinyl Chloride	2 U			2 U			0.1 U	2 U			
Vinyl Chloride, LV		0.1 U	0.1 U		0.1 U	0.1 U			0.1 U	0.1 U	
Chloroethane	2 U	1 U	1 U	2 U	1 UJ	1 U	0.9 U	2 U	1 UJ	1 U	
Ethane		2 U	6.2 U		2 UJ	6.2 U			2 UJ	6.2 U	
Ethene		3 U	5.8 U		3 UJ	5.8 U			3 UJ	5.8 U	
Methane		1 U	**1.1 J**		1 UJ	**1.1 J**			1 UJ	**1.1 J**	

Well Node	**MW16-16**			**MW16-17**				**MW16-18**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**	**NS**
Shallow Bedrock											
Tetrachloroethene					1 U	1 U	0.1 U				
Trichloroethene					**0.34 J**	1 U	0.1 U				
1,1-Dichloroethane					1 U	1 U	0.1 U				
1,1-Dichloroethane, LV					0.1 U						
1,1-Dichloroethene							0.1 U				
1,1-Dichloroethene, LV					0.1 U	0.1 U					
cis-1,2-Dichloroethene					1 U	1 U	0.53 U				
trans-1,2-Dichloroethene					1 U	1 U	0.5 U				
Total 1,2-Dichloroethene					1 U	1 U					
1,2-Dichloroethane					1 U		0.1 U				
1,2-Dichloroethane, LV						0.1 U					
Vinyl Chloride							0.1 U				
Vinyl Chloride, LV					0.1 U	0.1 U					
Chloroethane					1 U	1 U	0.9 U				
Ethane					2 U	6.2 U					
Ethene					3 U	5.8 U					
Methane					1 U	**44**					

Well Node	**MW16-16**			**MW16-17**				**MW16-18**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Deep Bedrock											
Tetrachloroethene											
Trichloroethene											
1,1-Dichloroethane											
1,1-Dichloroethane, LV											
1,1-Dichloroethene											
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene											
1,2-Dichloroethane											
1,2-Dichloroethane, LV											
Vinyl Chloride											
Vinyl Chloride, LV											
Chloroethane											
Ethane											
Ethene											
Methane											

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-19**				**MW16-20**				**MW16-21**		
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Shallow Overburden											
Tetrachloroethene											
Trichloroethene											
1,1-Dichloroethane											
1,1-Dichloroethane, LV											
1,1-Dichloroethene											
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene											
1,2-Dichloroethane											
1,2-Dichloroethane, LV											
Vinyl Chloride											
Vinyl Chloride, LV											
Chloroethane											
Ethane											
Ethene											
Methane											

Well Node	**MW16-19**				**MW16-20**				**MW16-21**		
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**
Sample Code	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**
Intermediate Overburden											
Tetrachloroethene		1 UJ	1 U	**0.11**		1 U	1 U	0.1 U		1 UJ	1 U
Trichloroethene		**32 J**	**15**	**9.9**		**12**	**7.34**	**5.15**		**14 J**	**43**
`		1 UJ	1 U	0.1 U		1 U	1 U	0.1 U		1 UJ	1 U
1,1-Dichloroethane, LV		0.1 U				0.1 U				0.1 U	
1,1-Dichloroethene				0.1 U				0.1 U			
1,1-Dichloroethene, LV		0.1 U	0.1 U			0.1 U	0.1 U			0.1 U	0.1 U
cis-1,2-Dichloroethene		1 UJ	1 U	0.53 U		**0.28 J**	**0.158 J**	0.53 U		**0.18 J**	**0.304 J**
trans-1,2-Dichloroethene		1 UJ	1 U	0.5 U		1 U	1 U	0.5 U		1 UJ	1 U
Total 1,2-Dichloroethene		1 U	1 U			**0.28**	**0.158 J**			**0.18**	**0.304 J**
1,2-Dichloroethane		1 U		0.1 U		1 U		0.1 U		1 UJ	
1,2-Dichloroethane, LV			0.1 U				0.1 U				0.1 U
Vinyl Chloride				0.1 U				0.1 U			
Vinyl Chloride, LV		0.1 U	0.1 U			0.1 U	0.1 U			0.1 U	0.1 U
Chloroethane		1 UJ	1 U	0.9 U		1 U	1 U	0.9 U		1 UJ	1 U
Ethane		2 U	6.2 U			2 U	6.2 U			2 UJ	6.2 U
Ethene		3 U	5.8 U			3 U	5.8 U			3 UJ	5.8 U
Methane		1 U	**1 J**			1 U	3.3 U			1 UJ	**2.3 J**

Well Node	**MW16-19**				**MW16-20**				**MW16-21**		
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**
Deep Overburden											
Tetrachloroethene	1 U	1 U	1 U	0.52 U	1 U	1 U	1 U		**0.4**	**0.24 J**	**0.371 J**
Trichloroethene	**390**	**320**	**260**	**200**	**1**	**11**	**9.96**		**1900**	**650 J**	**860**
1,1-Dichloroethane	1 U	**0.17 J**	1 U	0.5 U	1 U	1 U	1 U		1 U	**0.17 J**	**0.176 J**
1,1-Dichloroethane, LV		**0.2**				0.1 U				**0.8**	
1,1-Dichloroethene	1 U			0.76 U	1 U				**0.7**		
1,1-Dichloroethene, LV		**0.3**	**0.0274 J**			0.1 U	**0.0483 J**			**2**	**0.386**
cis-1,2-Dichloroethene	2 U	**0.62 J**	**0.492 J**	0.53 U	2 U	1 U	1 U		**1**	**0.78 J**	**1.31**
trans-1,2-Dichloroethene	2 U	1 U	1 U	0.5 U	2 U	1 U	1 U		2 U	**0.12 J**	**0.255 J**
Total 1,2-Dichloroethene	2 U	**0.62**	**0.492 J**		2 U	1 U	1 U		**1**	**0.9**	**1.57**
1,2-Dichloroethane	1 U	1 U		0.45 U	1 U	1 U			1 U	1 U	
1,2-Dichloroethane, LV			0.1 U				**0.0529 J**				0.1 U
Vinyl Chloride	2 U			0.51 U	2 U				2 U		
Vinyl Chloride, LV		0.1 U	**0.125**			0.1 U	**0.0592 J**			0.1 U	**0.0322 J**
Chloroethane	2 U	1 U	1 U	0.9 U	2 U	1 U	1 U		2 U	1 U	1 U
Ethane		2 U	6.2 U			2 U	6.2 U			2 U	6.2 U
Ethene		3 U	5.8 U			3 U	5.8 U			3 U	5.8 U
Methane		1 U	**1.3 J**			1 U	3.3 U			1 U	**1.6 J**

Well Node	**MW16-19**				**MW16-20**				**MW16-21**		
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Shallow Bedrock											
Tetrachloroethene											
Trichloroethene											
1,1-Dichloroethane											
1,1-Dichloroethane, LV											
1,1-Dichloroethene											
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene											
1,2-Dichloroethane											
1,2-Dichloroethane, LV											
Vinyl Chloride											
Vinyl Chloride, LV											
Chloroethane											
Ethane											
Ethene											
Methane											

Well Node	**MW16-19**				**MW16-20**				**MW16-21**		
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Deep Bedrock											
Tetrachloroethene											
Trichloroethene											
1,1-Dichloroethane											
1,1-Dichloroethane, LV											
1,1-Dichloroethene											
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene											
1,2-Dichloroethane											
1,2-Dichloroethane, LV											
Vinyl Chloride											
Vinyl Chloride, LV											
Chloroethane											
Ethane											
Ethene											
Methane											

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-22**			**MW16-23**				**MW16-24**		**MW16-25**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**
Shallow Overburden													
Tetrachloroethene						1 U	**0.4**					1 U	0.1 UJ
Trichloroethene						**31**	**30**					**2.9**	**1.5 J**
1,1-Dichloroethane						1 U	0.1 U					1 U	0.1 UJ
1,1-Dichloroethane, LV													
1,1-Dichloroethene							0.1 U						0.1 UJ
1,1-Dichloroethene, LV						0.1 U						0.1 U	
cis-1,2-Dichloroethene						**0.61 J**	0.53 U					**0.233 J**	0.53 U
trans-1,2-Dichloroethene						1 U	0.5 U					1 U	0.5 U
Total 1,2-Dichloroethene						**0.61 J**						**0.233 J**	
1,2-Dichloroethane							0.1 U						0.1 UJ
1,2-Dichloroethane, LV						0.1 U						0.1 U	
Vinyl Chloride							0.1 U						0.1 UJ
Vinyl Chloride, LV						0.1 U						0.1 U	
Chloroethane						1 U	0.9 U					1 U	0.9 U
Ethane						6.2 U						6.2 U	
Ethene						5.8 U						5.8 U	
Methane						5.3 U						3.3 U	

Well Node	**MW16-22**			**MW16-23**				**MW16-24**		**MW16-25**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**		**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**		**NORMAL**	**AVG**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**
Intermediate Overburden													
Tetrachloroethene		**1.28**	**0.905 J**					**0.11 J**	1 U		1 UJ	5 U	0.4 UJ
Trichloroethene		**190**	**110**					**41**	**35**		**220 J**	**120**	**85**
`		1 U	1 U					1 U	1 U		1 UJ	5 U	0.4 UJ
1,1-Dichloroethane, LV		0.1 U						0.1 U			0.1 U		
1,1-Dichloroethene		1 U											0.4 UJ
1,1-Dichloroethene, LV		0.1 U	**0.0168 J**					0.1 U	**0.1425**		**0.07 J**	**0.0326 J**	
cis-1,2-Dichloroethene			**0.681 J**					**0.63 J**	**1.54**		**1.11 J**	5 U	0.53 U
trans-1,2-Dichloroethene			1 U					1 U	1 U		1 UJ	5 U	0.5 U
Total 1,2-Dichloroethene		2 U	**0.681 J**					**0.63**	**1.54**		**1.11**	5 U	
1,2-Dichloroethane		1 U						1 U			1 U		0.4 UJ
1,2-Dichloroethane, LV			0.1 U						0.1 U			0.1 U	
Vinyl Chloride													0.4 UJ
Vinyl Chloride, LV		0.1 U	0.1 U					0.1 U	0.1 U		0.1 U	0.1 U	
Chloroethane		1 U	1 U					1 U	1 U		1 UJ	5 U	0.9 U
Ethane		2 UJ	6.2 U					2 U	6.2 U		2 U	6.2 U	
Ethene		3 UJ	5.8 U					3 U	5.8 U		3 U	5.8 U	
Methane		1 UJ	**1.2 J**					1 U	**1.2 J**		1 U	3.3 U	

Well Node	**MW16-22**			**MW16-23**				**MW16-24**		**MW16-25**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**AVG**	**NORMAL**
Deep Overburden													
Tetrachloroethene	1 U	**0.29 J**	1 U	1 U	20 U	1 U		1 U	1 U	**0.5**	1 UJ	**0.3825 J**	2.2 U
Trichloroethene	**2600**	**920**	**1500**	**3500**	**500**	**1900**		**520**	**690**	**890**	**470 J**	**415**	**530**
1,1-Dichloroethane	1 U	1 U	1 U	1 U	20 U	1 U		1 U	1 U	**0.4 J**	1 UJ	**0.136 J**	2 UJ
1,1-Dichloroethane, LV		**0.1**			0.1 U			**0.2**			**0.2**		
1,1-Dichloroethene	**1**	1 U		**0.5**	20 U					**0.7**			2 UJ
1,1-Dichloroethene, LV		**1**	**0.422**		**0.4**	**0.844**		**14**	**0.624**		**0.3**	**0.0257 J**	
cis-1,2-Dichloroethene	**10**		**2.39**	**4**		**25**		**48**	**11**	**2**	1 UJ	**0.2285 J**	2.7 U
trans-1,2-Dichloroethene	**0.6**		**0.38 J**	2 U		**0.48 J**		**0.66 J**	**0.367 J**	2 UJ	1 UJ	1 U	2.5 U
Total 1,2-Dichloroethene	**10.6**	2 U	**2.77**	**4**	40 U	**25.5**		**48.7**	**11.4**	**2**	1 U	**0.229 J**	
1,2-Dichloroethane	1 UJ	1 U		1 U	20 U			1 U		**0.4**	1 U		2 UJ
1,2-Dichloroethane, LV			0.1 U			0.1 U			**0.0933 J**			0.1 U	
Vinyl Chloride	2 U			2 U						2 UJ			2 UJ
Vinyl Chloride, LV		**0.05 J**	**0.0273 J**		**0.05 J**	**0.0918 J**		**22**	**7.87**		0.1 U	0.1 U	
Chloroethane	2 U	1 U	1 U	2 U	20 U	1 U		1 U	1 U	2 U	1 UJ	1 U	4.5 U
Ethane		2 UJ	6.2 U		2 UJ	6.2 U		2 U	6.2 U		2 U	6.2 U	
Ethene		3 UJ	5.8 U		3 UJ	5.8 U		3 U	5.8 U		3 U	5.8 U	
Methane		1 UJ	**1 J**		**24 J**	**6.6 J**		1 U	**6.9**		1 U	**1.1 J**	

Well Node	**MW16-22**			**MW16-23**				**MW16-24**		**MW16-25**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**AVG**	**NORMAL**	**NORMAL**	**NORMAL**
Shallow Bedrock													
Tetrachloroethene										1 U	1 UJ	1 U	0.1 U
Trichloroethene										1 U	**1.08 J**	**0.445 J**	**0.12**
1,1-Dichloroethane										1 U	1 UJ	**0.285 J**	**0.29**
1,1-Dichloroethane, LV											**0.4**		
1,1-Dichloroethene										1 U			0.1 U
1,1-Dichloroethene, LV											0.1 U	0.1 U	
cis-1,2-Dichloroethene										2 U	1 UJ	1 U	0.53 U
trans-1,2-Dichloroethene										2 U	1 UJ	1 U	0.5 U
Total 1,2-Dichloroethene										2 U	1 U	1 U	
1,2-Dichloroethane										1 UJ	1 U		0.1 U
1,2-Dichloroethane, LV												0.1 U	
Vinyl Chloride										2 U			0.1 U
Vinyl Chloride, LV											0.1 U	0.1 U	
Chloroethane										2 U	1 UJ	1 U	0.9 U
Ethane											2 U	6.2 U	
Ethene											3 U	5.8 U	
Methane											1 U	**26**	

Well Node	**MW16-22**			**MW16-23**				**MW16-24**		**MW16-25**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Deep Bedrock													
Tetrachloroethene													
Trichloroethene													
1,1-Dichloroethane													
1,1-Dichloroethane, LV													
1,1-Dichloroethene													
1,1-Dichloroethene, LV													
cis-1,2-Dichloroethene													
trans-1,2-Dichloroethene													
Total 1,2-Dichloroethene													
1,2-Dichloroethane													
1,2-Dichloroethane, LV													
Vinyl Chloride													
Vinyl Chloride, LV													
Chloroethane													
Ethane													
Ethene													
Methane													

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-26**				**MW16-27**				**MW16-28**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Shallow Overburden												
Tetrachloroethene												
Trichloroethene												
1,1-Dichloroethane												
1,1-Dichloroethane, LV												
1,1-Dichloroethene												
1,1-Dichloroethene, LV												
cis-1,2-Dichloroethene												
trans-1,2-Dichloroethene												
Total 1,2-Dichloroethene												
1,2-Dichloroethane												
1,2-Dichloroethane, LV												
Vinyl Chloride												
Vinyl Chloride, LV												
Chloroethane												
Ethane												
Ethene												
Methane												

Well Node	**MW16-26**				**MW16-27**				**MW16-28**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NORMAL**	**NORMAL**
Intermediate Overburden												
Tetrachloroethene							1 U	1 U			1 U	0.1 U
Trichloroethene							**120**	**180**			**1.29**	**1**
`							1 U	1 U			1 U	0.1 U
1,1-Dichloroethane, LV												
1,1-Dichloroethene								**2.4**				0.1 U
1,1-Dichloroethene, LV							**0.314**				0.1 U	
cis-1,2-Dichloroethene							**6.93**	**4.2**			1 U	0.53 U
trans-1,2-Dichloroethene							**0.238 J**	0.5 U			1 U	0.5 U
Total 1,2-Dichloroethene							**7.17**				1 U	
1,2-Dichloroethane								1 U				0.1 U
1,2-Dichloroethane, LV							0.1 U				0.1 U	
Vinyl Chloride								1 UJ				0.1 U
Vinyl Chloride, LV							0.1 U				0.1 U	
Chloroethane							1 U	0.9 U			1 U	0.9 U
Ethane							6.2 U				6.2 U	
Ethene							5.8 U				5.8 U	
Methane							3.3 U				**6.7 J**	

Well Node	**MW16-26**				**MW16-27**				**MW16-28**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Deep Overburden												
Tetrachloroethene	1 U	1 U	1 U	0.1 U	1 U	1 U	1 U	0.52 U	1 U	1 U	1 U	0.4 U
Trichloroethene	**0.7**	1 UJ	1 U	0.1 U	**310**	**240**	**190**	**160**	**120**	**59 J**	**200**	**84**
1,1-Dichloroethane	1 U	1 U	1 U	0.1 U	1 U	1 U	1 U	0.5 U	1 U	1 U	1 U	0.4 U
1,1-Dichloroethane, LV		0.1 U				0.1 U				0.1 U		
1,1-Dichloroethene	1 U			0.1 U	**1**			0.76 U	1 U			0.4 U
1,1-Dichloroethene, LV		0.1 U	0.1 U			**1**	**0.811**			**0.5**	**0.18**	
cis-1,2-Dichloroethene	2 U	1 U	1 U	0.14 U	**9**	**10**	**8.95**	**7.3**	**0.8**	**0.94 J**	**1.15**	**1.4**
trans-1,2-Dichloroethene	2 U	1 U	1 U	0.13 U	**0.7**	**0.75 J**	**0.686 J**	0.5 U	2 U	1 U	1 U	0.5 U
Total 1,2-Dichloroethene	2 U	1 U	1 U		**9.7**	**10.8**	**9.64**		**0.8**	**0.94**	**1.15**	
1,2-Dichloroethane	1 U	1 U		0.1 U	1 UJ	1 U		0.45 U	1 U	1 U		0.4 U
1,2-Dichloroethane, LV			0.1 U				**0.0753 J**				0.1 U	
Vinyl Chloride	2 U			0.1 U	2 U			0.51 U	2 U			0.4 U
Vinyl Chloride, LV		0.1 U	**0.0786 J**			**0.06 J**	**0.0506 J**			0.1 U	0.1 U	
Chloroethane	2 U	1 U	1 U	0.85 U	2 U	1 U	1 U	0.9 U	2 U	1 U	1 U	0.9 U
Ethane		2 U	6.2 U			2 UJ	6.2 U			2 U	6.2 U	
Ethene		3 U	5.8 U			3 UJ	5.8 U			3 U	5.8 U	
Methane		**35**	**14**			**3.4 J**	**11**			1 U	3.3 U	

Well Node	**MW16-26**				**MW16-27**				**MW16-28**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 8**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**AVG**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Shallow Bedrock												
Tetrachloroethene					1 U	1 U	1 U	0.1 U	1 U	1 U	1 U	0.1 U
Trichloroethene					**1**	1.895 U	2.01 U	**1.9**	**0.9**	1 UJ	1 U	**0.47**
1,1-Dichloroethane					1 U	1 U	1 U	0.1 U	1 U	1 U	1 U	0.1 U
1,1-Dichloroethane, LV						0.1 U				0.1 U		
1,1-Dichloroethene					1 U			0.1 U	1 U			0.1 U
1,1-Dichloroethene, LV						0.1 U	0.1 U			0.1 U	0.1 U	
cis-1,2-Dichloroethene					**1**	**1.35**	1.64 U	**1.5**	2 U	1 U	1 U	0.53 U
trans-1,2-Dichloroethene					2 U	1 U	1 U	0.5 U	2 U	1 U	1 U	0.5 U
Total 1,2-Dichloroethene					**1**	**1.35**	1 U		2 U	1 U	1 U	
1,2-Dichloroethane					1 UJ	1 U		0.1 U	1 UJ	1 U		0.1 U
1,2-Dichloroethane, LV							0.1 U				**0.016 J**	
Vinyl Chloride					2 U			0.1 U	2 U			0.1 U
Vinyl Chloride, LV						0.1 U	**0.66 J**			0.1 U	0.1 U	
Chloroethane					2 U	1 U	1 U	0.9 U	2 U	1 U	1 U	0.9 U
Ethane						2 UJ	6.2 U			2 U	6.2 U	
Ethene						3 UJ	5.8 U			3 U	5.8 U	
Methane						1 UJ	3.3 U			1 U	**28**	

Well Node	**MW16-26**				**MW16-27**				**MW16-28**			
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**	**Round 5**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Deep Bedrock												
Tetrachloroethene												
Trichloroethene												
1,1-Dichloroethane												
1,1-Dichloroethane, LV												
1,1-Dichloroethene												
1,1-Dichloroethene, LV												
cis-1,2-Dichloroethene												
trans-1,2-Dichloroethene												
Total 1,2-Dichloroethene												
1,2-Dichloroethane												
1,2-Dichloroethane, LV												
Vinyl Chloride												
Vinyl Chloride, LV												
Chloroethane												
Ethane												
Ethene												
Methane												

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node		**MW16-29**			**MW16-30**			**MW16-31**			**MW16-32**	
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Shallow Overburden												
Tetrachloroethene												
Trichloroethene												
1,1-Dichloroethane												
1,1-Dichloroethane, LV												
1,1-Dichloroethene												
1,1-Dichloroethene, LV												
cis-1,2-Dichloroethene												
trans-1,2-Dichloroethene												
Total 1,2-Dichloroethene												
1,2-Dichloroethane												
1,2-Dichloroethane, LV												
Vinyl Chloride												
Vinyl Chloride, LV												
Chloroethane												
Ethane												
Ethene												
Methane												

Well Node		**MW16-29**			**MW16-30**			**MW16-31**			**MW16-32**	
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Intermediate Overburden												
Tetrachloroethene												
Trichloroethene												
`												
1,1-Dichloroethane, LV												
1,1-Dichloroethene												
1,1-Dichloroethene, LV												
cis-1,2-Dichloroethene												
trans-1,2-Dichloroethene												
Total 1,2-Dichloroethene												
1,2-Dichloroethane												
1,2-Dichloroethane, LV												
Vinyl Chloride												
Vinyl Chloride, LV												
Chloroethane												
Ethane												
Ethene												
Methane												

Well Node		**MW16-29**			**MW16-30**			**MW16-31**			**MW16-32**	
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Deep Overburden												
Tetrachloroethene	1 UJ	1 U	1 U	1 U	1 U	0.1 U	**0.14 J**	1 U	0.4 UJ	**0.61 J**	10 U	0.52 U
Trichloroethene	**2700**	**1200**	**2900**	**0.38 J**	1 U	0.1 U	**210**	**150**	**100**	**2700**	**290**	**260**
1,1-Dichloroethane	1 UJ	1 U	1 U	1 U	1 U	0.1 U	1 U	1 U	0.4 UJ	1 U	10 U	0.5 U
1,1-Dichloroethane, LV		0.1 U		0.1 U			0.1 U			**0.09 J**		
1,1-Dichloroethene	3 UJ			1 U		0.1 U			0.4 UJ			0.76 U
1,1-Dichloroethene, LV		**4**	**1.17**	0.1 U	0.1 U		**0.1**	**0.197**		**2**	**0.479**	
cis-1,2-Dichloroethene	**52 J**	**61**	**35**		1 U	0.53 U	**0.82 J**	1 U	0.53 U	**7.03**	10 U	0.53 U
trans-1,2-Dichloroethene	**3 J**	**2.03**	**2.02**		1 U	0.5 U	**0.13 J**	**0.143 J**	0.5 U	**1.81**	10 U	0.5 U
Total 1,2-Dichloroethene	**55**	**63**	**37**	2 U	1 U		**0.95**	**0.143 J**		**8.84**	10 U	
1,2-Dichloroethane	1 UJ	1 U		1 U		0.1 U	1 U		0.4 UJ	1 U		0.45 U
1,2-Dichloroethane, LV			0.1 U		0.1 U			0.1 U			0.1 U	
Vinyl Chloride	**2 J**					0.1 U			0.4 UJ			0.51 U
Vinyl Chloride, LV		**1**	**0.515**	0.1 U	**0.0717 J**		0.1 U	**0.111**		0.1 U	**0.023 J**	
Chloroethane	2 UJ	1 U	1 U	1 U	1 U	0.9 U	1 U	1 U	0.9 U	1 U	10 U	0.9 U
Ethane		2 U	6.2 U	2 UJ	6.2 U		2 UJ	6.2 U		2 UJ	**1.3 J**	
Ethene		3 U	5.8 U	3 UJ	5.8 U		3 UJ	5.8 U		3 UJ	5.8 U	
Methane		**410 J**	**3000**	**1.5 J**	**110**		1 UJ	3.3 U		1 UJ	1.7 U	

Well Node		**MW16-29**			**MW16-30**			**MW16-31**			**MW16-32**	
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**
Shallow Bedrock												
Tetrachloroethene											5 U	0.52 U
Trichloroethene											**110**	**52 J**
1,1-Dichloroethane											5 U	0.5 U
1,1-Dichloroethane, LV												
1,1-Dichloroethene												0.76 U
1,1-Dichloroethene, LV											**0.12**	
cis-1,2-Dichloroethene											5 U	0.53 U
trans-1,2-Dichloroethene											5 U	0.5 U
Total 1,2-Dichloroethene											5 U	
1,2-Dichloroethane												0.45 U
1,2-Dichloroethane, LV											0.1 U	
Vinyl Chloride												0.51 U
Vinyl Chloride, LV											0.1 U	
Chloroethane											5 U	0.9 U
Ethane											**1 J**	
Ethene											5.8 U	
Methane											3.3 U	

Well Node		**MW16-29**			**MW16-30**			**MW16-31**			**MW16-32**	
Investigation	**Round 5**	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Deep Bedrock												
Tetrachloroethene												
Trichloroethene												
1,1-Dichloroethane												
1,1-Dichloroethane, LV												
1,1-Dichloroethene												
1,1-Dichloroethene, LV												
cis-1,2-Dichloroethene												
trans-1,2-Dichloroethene												
Total 1,2-Dichloroethene												
1,2-Dichloroethane												
1,2-Dichloroethane, LV												
Vinyl Chloride												
Vinyl Chloride, LV												
Chloroethane												
Ethane												
Ethene												
Methane												

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-33**			**MW16-34**			**MW16-35**		**MW16-36**			**MW16-37**		
Investigation	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**AVG**	**AVG**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**
Shallow Overburden														
Tetrachloroethene	**1.375**	**0.322 J**	**0.21**	**0.69 J**	1 U		**0.34 J**	1 U				**0.58 J**	1 U	0.1 U
Trichloroethene	**0.75 J**	**0.17 J**	0.1 U	1 U	1 U		1 U	1 U				**840**	**93**	**30**
1,1-Dichloroethane	1 U	1 U	0.1 U	1 U	1 U		1 U	1 U				1 U	1 U	0.1 U
1,1-Dichloroethane, LV	0.1 U			**0.1**			0.1 U					0.1 U		
1,1-Dichloroethene			0.1 U											0.1 U
1,1-Dichloroethene, LV	0.1 U	0.1 U		**0.09 J**	0.1 U		0.1 U	0.1 U				0.1 U	0.1 U	
cis-1,2-Dichloroethene	1 U	1 U	0.53 U	1 U	1 U		1 U	1 U				1 U	1 U	0.53 U
trans-1,2-Dichloroethene	1 U	1 U	0.5 U	1 U	1 U		1 U	1 U				1 U	1 U	0.5 U
Total 1,2-Dichloroethene	1 U	1 U		1 U	1 U		1 U	1 U				1 U	1 U	
1,2-Dichloroethane	1 U		0.1 U	1 U			1 U					1 U		0.1 U
1,2-Dichloroethane, LV		0.1 U			0.1 U			0.1 U					0.1 U	
Vinyl Chloride			0.1 U											0.1 U
Vinyl Chloride, LV	0.1 U	0.1 U		0.1 U	0.1 U		0.1 U	0.1 U				0.1 U	0.1 U	
Chloroethane	1 U	1 U	0.9 U	1 U	1 U		1 UJ	1 U				1 U	1 U	0.9 U
Ethane	2 UJ	6.2 U		2 U	6.2 U		2 UJ	6.2 U				2 UJ	6.2 U	
Ethene	3 U	5.8 U		3 U	5.8 U		3 UJ	5.8 U				3 UJ	5.8 U	
Methane	1 U	**1.1 J**		1 U	3.3 U		1 UJ	3.3 U				1 UJ	**1.1 J**	

Well Node	**MW16-33**			**MW16-34**			**MW16-35**		**MW16-36**			**MW16-37**		
Investigation	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**AVG**	**NORMAL**	**NORMAL**	**AVG**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**
Intermediate Overburden														
Tetrachloroethene	**24**	**18**	**15 J**	**4.77 J**	**3.9**		**3.76**	**3.81**				**0.94 J**	50 U	**1.6**
Trichloroethene	2.015 U	**1.5**	**1.7**	**2.74 J**	1 U		**0.6 J**	**0.555 J**				**1100**	**1700**	**230**
`	1 U	1 U	0.1 U	1 UJ	1 U		1 U	1 U				1 U	50 U	0.5 U
1,1-Dichloroethane, LV	0.1 U			0.1 U			0.1 U					0.1 U		
1,1-Dichloroethene			0.1 U											0.76 U
1,1-Dichloroethene, LV	0.1 U	0.1 U		0.1 U	0.1 U		0.1 U	0.1 U				0.1 U	**0.044 J**	
cis-1,2-Dichloroethene	1 U	1 U	0.53 U	1 UJ	1 U		1 U	1 U				1 U	50 U	0.53 U
trans-1,2-Dichloroethene	1 U	1 U	0.5 U	1 UJ	1 U		1 U	1 U				1 U	50 U	0.5 U
Total 1,2-Dichloroethene	1 U	1 U		1 U	1 U		1 U	1 U				1 U	50 U	
1,2-Dichloroethane	1 U		0.1 U	1 UJ			1 U					1 U		0.45 U
1,2-Dichloroethane, LV		0.1 U			0.1 U			0.1 U					0.1 U	
Vinyl Chloride			0.1 U											0.51 U
Vinyl Chloride, LV	0.1 U	0.1 U		0.1 U	0.1 U		0.1 U	0.1 U				0.1 U	0.1 U	
Chloroethane	1 U	1 U	0.9 U	1 UJ	1 U		1 U	1 U				1 U	50 U	0.9 U
Ethane	2 UJ	6.2 U		2 U	6.2 U		2 UJ	6.2 U				2 UJ	6.2 U	
Ethene	3 U	5.8 U		3 U	5.8 U		3 UJ	5.8 U				3 UJ	5.8 U	
Methane	1 UJ	**1.1 J**		1 U	3.3 U		1 UJ	3.3 U				1 UJ	**1.3 J**	

Well Node	**MW16-33**			**MW16-34**			**MW16-35**		**MW16-36**			**MW16-37**		
Investigation	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Deep Overburden														
Tetrachloroethene	1 U	1 U	0.1 U	**23**	**7.91**	**10 J**	1 U	1 U	1 UJ	1 U	0.1 U	**1.35**	**1.58**	**1.2**
Trichloroethene	1 U	**0.399 J**	0.1 U	**5.03**	**1.61**	**3.1**	1 U	**0.633 J**	1 UJ	1 U	0.1 U	**21**	**13**	**13**
1,1-Dichloroethane	1 U	1 U	0.1 U	1 U	1 U	0.1 U	1 U	1 U	1 UJ	1 U	0.1 U	**0.16 J**	1 U	**0.11**
1,1-Dichloroethane, LV	**0.06 J**			**0.1**			**0.1**		0.1 U			**0.1**		
1,1-Dichloroethene			0.1 U			0.1 U					0.1 U			**0.23**
1,1-Dichloroethene, LV	0.1 U	0.1 U		**0.09 J**	0.1 U		**0.07 J**	0.1 U	0.1 U	0.1 U		**0.2**	0.1 U	
cis-1,2-Dichloroethene	1 U	1 U	0.53 U	1 U	1 U	0.53 U	1 U	1 U	1 UJ	1 U	0.53 U	1 U	1 U	0.53 U
trans-1,2-Dichloroethene	1 U	1 U	0.5 U	1 U	1 U	0.5 U	1 U	1 U	1 UJ	1 U	0.5 U	1 U	1 U	0.5 U
Total 1,2-Dichloroethene	1 U	1 U		1 U	1 U		1 U	1 U	1 U	1 U		1 U	1 U	
1,2-Dichloroethane	1 U		0.1 U	1 U		0.1 U	1 U		1 UJ		0.1 U	1 U		0.1 U
1,2-Dichloroethane, LV		0.1 U			0.1 U			**0.032 J**		0.1 U			0.1 U	
Vinyl Chloride			0.1 U			0.1 U					0.1 U			0.1 U
Vinyl Chloride, LV	0.1 U	0.1 U		0.1 U	0.1 U		0.1 U	0.1 U	0.1 U	0.1 U		0.1 U	0.1 U	
Chloroethane	1 U	1 U	0.9 U	1 U	1 U	0.9 U	1 UJ	1 U	1 UJ	1 U	0.9 U	1 U	1 U	0.9 U
Ethane	2 UJ	6.2 U		2 U	6.2 U		2 UJ	6.2 U	2 UJ	6.2 U		2 UJ	6.2 U	
Ethene	3 U	5.8 U		3 U	5.8 U		3 UJ	5.8 U	3 UJ	5.8 U		3 UJ	5.8 U	
Methane	1 U	**1.6 J**		1 U	3.3 U		1 UJ	3.3 U	1 UJ	**1.1 J**		1 UJ	3.3 U	

Well Node	**MW16-33**			**MW16-34**			**MW16-35**		**MW16-36**			**MW16-37**		
Investigation	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**
Shallow Bedrock														
Tetrachloroethene									1 U	1 U	0.1 U			
Trichloroethene									1 U	1 U	0.1 U			
1,1-Dichloroethane									1 U	1 U	0.1 U			
1,1-Dichloroethane, LV									0.1 U					
1,1-Dichloroethene											0.1 U			
1,1-Dichloroethene, LV									0.1 U	0.1 U				
cis-1,2-Dichloroethene									1 U	1 U	0.53 U			
trans-1,2-Dichloroethene									1 U	1 U	0.5 U			
Total 1,2-Dichloroethene									1 U	1 U				
1,2-Dichloroethane									1 U		0.1 U			
1,2-Dichloroethane, LV										0.1 U				
Vinyl Chloride											0.1 U			
Vinyl Chloride, LV									0.1 U	0.1 U				
Chloroethane									1 U	1 U	0.9 U			
Ethane									2 UJ	6.2 U				
Ethene									3 UJ	5.8 U				
Methane									1 UJ	**1.6 J**				

Well Node	**MW16-33**			**MW16-34**			**MW16-35**		**MW16-36**			**MW16-37**		
Investigation	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Deep Bedrock														
Tetrachloroethene														
Trichloroethene														
1,1-Dichloroethane														
1,1-Dichloroethane, LV														
1,1-Dichloroethene														
1,1-Dichloroethene, LV														
cis-1,2-Dichloroethene														
trans-1,2-Dichloroethene														
Total 1,2-Dichloroethene														
1,2-Dichloroethane														
1,2-Dichloroethane, LV														
Vinyl Chloride														
Vinyl Chloride, LV														
Chloroethane														
Ethane														
Ethene														
Methane														

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-38**		**MW16-39**			**MW16-40**			**MW16-41**			**MW16-42**	
Investigation	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**AVG**	**AVG**	**NORMAL**	**NORMAL**	**AVG**	**NS**	**NORMAL**	**AVG**
Shallow Overburden													
Tetrachloroethene						1 U	1 U	0.1 U	1 U	1 U		1 U	1 U
Trichloroethene						**14.5**	**14**	0.1 U	1 U	**0.418 J**		1 U	1 U
1,1-Dichloroethane						1 U	1 U	0.1 U	1 U	1 U		1 U	1 U
1,1-Dichloroethane, LV						0.1 U			2 U			0.1 U	
1,1-Dichloroethene								0.1 U					
1,1-Dichloroethene, LV						**0.1**	**6.68**		2 U	**1.24**		0.1 U	**0.7455**
cis-1,2-Dichloroethene						**93.5**	**87**	**4.1**	**7.06**	**3.86**		**2.5**	**5.195**
trans-1,2-Dichloroethene						**5.37**	**5.175**	0.5 U	**1.44**	**1.1**		**0.27 J**	**0.575 J**
Total 1,2-Dichloroethene						**98.9**	**92.2**		**8.5**	**4.96**		**2.77**	**5.77**
1,2-Dichloroethane						1 U		0.1 U	1 U			1 U	
1,2-Dichloroethane, LV							0.1 U			0.1 U			0.1 U
Vinyl Chloride								**26**					
Vinyl Chloride, LV						**10**	**55**		**36**	**24**		**5**	**9.28**
Chloroethane						1 U	1 U	0.9 U	1 U	1 U		1 U	1 U
Ethane						2 U	**9.55**		**3.9 J**	**10.5**		2 UJ	**2.85 J**
Ethene						3 U	5.8 U		3 UJ	5.8 U		3 UJ	5.8 U
Methane						**340 J**	**2600**		**300 J**	**1650**		**200**	**1750**

Well Node	**MW16-38**		**MW16-39**			**MW16-40**			**MW16-41**			**MW16-42**	
Investigation	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Intermediate Overburden													
Tetrachloroethene	**0.64 J**	20 U	**0.26 J**	2 U	0.5 UJ		1 U		**0.45 J**	5 U	0.1 U	1 U	1 U
Trichloroethene	**1200**	**820**	**86 J**	**77**	**140**		**82**		**96**	**89**	**64**	1 U	1 U
`	**0.1 J**	20 U	1 U	2 U	0.5 UJ		1 U		1 U	5 U	0.1 U	1 U	1 U
1,1-Dichloroethane, LV	**0.2**		0.1 U						0.1 U			0.1 U	
1,1-Dichloroethene					0.5 UJ						0.1 U		
1,1-Dichloroethene, LV	**0.4**	**0.299**	**0.1**	**0.095 J**			**0.0138 J**		0.1 U	**0.0144 J**		0.1 U	**2.99 J**
cis-1,2-Dichloroethene	**0.49 J**	20 U	**0.29 J**	2 U	0.53 U		1 U		**0.5 J**	5 U	0.53 U	**51**	**38**
trans-1,2-Dichloroethene	1 U	20 U	1 U	2 U	0.5 U		1 U		1 U	5 U	0.5 U	**3.75**	**3.03**
Total 1,2-Dichloroethene	**0.49**	20 U	**0.29**	2 U			1 U		**0.5**	5 U		**54.8**	**41**
1,2-Dichloroethane	1 U		1 U		0.5 UJ				1 U		0.1 U	1 U	
1,2-Dichloroethane, LV		**0.048 J**		0.1 U			0.1 U			0.1 U			0.1 U
Vinyl Chloride					0.5 UJ						**7.4 J**		
Vinyl Chloride, LV	0.1 U	0.1 U	0.1 U	0.1 U			**0.0155 J**		0.1 U	0.1 U		**25**	**33**
Chloroethane	1 U	20 U	1 U	2 U	0.9 U		1 U		1 U	5 U	0.9 U	1 U	1 U
Ethane	2 U	6.2 U	2 U	6.2 U			6.2 U		2 UJ	6.2 U		20 UJ	**12**
Ethene	3 U	5.8 U	3 U	5.8 U			5.8 U		3 UJ	5.8 U		30 U	5.8 U
Methane	1 U	3.3 U	1 U	3.3 U			3.3 U		1 UJ	**1.1 J**		**3800**	**16000**

Well Node	**MW16-38**		**MW16-39**			**MW16-40**			**MW16-41**			**MW16-42**	
Investigation	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**
Sample Code	**NS**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**AVG**
Deep Overburden													
Tetrachloroethene			1 U	1 U	0.1 UJ		**0.426 J**		**0.34 J**	20 U	0.52 U	**0.66 J**	20 U
Trichloroethene			1 U	**1.44**	**0.46 J**		**770**		**410**	**610**	**460**	**990**	**725**
1,1-Dichloroethane			1 U	1 U	0.1 UJ		1 U		1 U	20 U	0.5 U	1 U	20 U
1,1-Dichloroethane, LV			**0.2**						0.1 U			0.1 U	
1,1-Dichloroethene					0.1 UJ						0.76 U		
1,1-Dichloroethene, LV			0.1 U	0.1 U			**0.441**		**0.9**	**0.429**		**1**	**0.374**
cis-1,2-Dichloroethene			1 U	1 U	0.53 U		**4.84**		**4.11**	**4.4 J**	**3.1**	**6.87**	**4.82 J**
trans-1,2-Dichloroethene			1 U	1 U	0.5 U		**0.329 J**		**0.24 J**	20 U	0.5 U	**0.32 J**	20 U
Total 1,2-Dichloroethene			1 U	1 U			**5.17**		**4.35**	**4.4 J**		**7.19**	**4.82 J**
1,2-Dichloroethane			1 U		0.1 UJ				1 U		0.45 U	1 U	
1,2-Dichloroethane, LV				0.1 U			0.1 U			0.1 U			0.1 U
Vinyl Chloride					0.1 UJ						0.51 U		
Vinyl Chloride, LV			0.1 U	**0.056 J**			**0.189**		**0.1**	**0.106**		**0.2**	**0.135**
Chloroethane			1 U	1 U	0.9 U		1 U		1 U	20 U	0.9 U	1 U	20 U
Ethane			2 U	6.2 U			6.2 U		2 UJ	6.2 U		2 UJ	6.2 U
Ethene			3 U	5.8 U			5.8 U		3 UJ	5.8 U		3 UJ	5.8 U
Methane			1 U	**1.6 J**			3.3 U		1 UJ	**1.6 J**		1 U	3.3 U

Well Node	**MW16-38**		**MW16-39**			**MW16-40**			**MW16-41**			**MW16-42**	
Investigation	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Shallow Bedrock													
Tetrachloroethene													
Trichloroethene													
1,1-Dichloroethane													
1,1-Dichloroethane, LV													
1,1-Dichloroethene													
1,1-Dichloroethene, LV													
cis-1,2-Dichloroethene													
trans-1,2-Dichloroethene													
Total 1,2-Dichloroethene													
1,2-Dichloroethane													
1,2-Dichloroethane, LV													
Vinyl Chloride													
Vinyl Chloride, LV													
Chloroethane													
Ethane													
Ethene													
Methane													

Well Node	**MW16-38**		**MW16-39**			**MW16-40**			**MW16-41**			**MW16-42**	
Investigation	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Deep Bedrock													
Tetrachloroethene													
Trichloroethene													
1,1-Dichloroethane													
1,1-Dichloroethane, LV													
1,1-Dichloroethene													
1,1-Dichloroethene, LV													
cis-1,2-Dichloroethene													
trans-1,2-Dichloroethene													
Total 1,2-Dichloroethene													
1,2-Dichloroethane													
1,2-Dichloroethane, LV													
Vinyl Chloride													
Vinyl Chloride, LV													
Chloroethane													
Ethane													
Ethene													
Methane													

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-43**		**MW16-44**			**MW16-45**			**MW16-46**		
Investigation	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NORMAL**	**NORMAL**	**AVG**	**AVG**	**NORMAL**	**NORMAL**	**AVG**	**NORMAL**	**NORMAL**	**NORMAL**	**AVG**
Shallow Overburden											
Tetrachloroethene	1 U	1 U	1 U	1 U	0.1 U	1 U	1 U	0.1 U	1 U	1 U	0.1 U
Trichloroethene	**0.37 J**	0.901 U	**2.475**	**3.625**	**1.7**	1 U	1 U	**0.11**	**0.18 J**	1 U	0.1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	0.1 U	1 U	1 U	0.1 U	1 U	1 U	0.1 U
1,1-Dichloroethane, LV	0.1 U		0.1 U			0.1 U			0.1 U		
1,1-Dichloroethene					0.1 U			0.1 U			0.1 U
1,1-Dichloroethene, LV	0.1 U	**0.357**	**0.25 J**	**2.23**		0.1 U	**0.7605**		0.1 U	**0.244**	
cis-1,2-Dichloroethene	**7.17**	**4.1**	**15**	**19.5**	**9**	**3.9**	**3.405**	**3.2**	**0.5 J**	**0.731 J**	0.53 U
trans-1,2-Dichloroethene	**0.38 J**	**0.213 J**	**1.215**	**1.76**	**1.5**	**1.06**	**0.729 J**	0.5 U	**0.32 J**	**0.245 J**	0.5 U
Total 1,2-Dichloroethene	**7.55**	**4.31**	**16.2**	**21.3**		**4.96**	**4.13**		**0.82**	**0.976 J**	
1,2-Dichloroethane	1 U		1 U		0.1 U	1 U		0.1 U	1 U		0.1 U
1,2-Dichloroethane, LV		0.1 U		0.1 U			**0.0173 J**			0.1 U	
Vinyl Chloride					**5.3**			**0.26**			**0.52**
Vinyl Chloride, LV	**2**	**0.415**	**44**	**12**		**0.1**	**0.1805**		**2**	**1.86**	
Chloroethane	1 U	1 U	1 U	1 U	0.9 U	1 UJ	1 U	0.9 U	1 U	1 U	0.9 U
Ethane	2 U	6.2 U	2 U	6.2 U		2 UJ	6.2 U		20 U	6.2 U	
Ethene	3 U	5.8 U	3 U	5.8 U		3 UJ	5.8 U		30 U	5.8 U	
Methane	**580**	**1500**	**525 J**	**2700**		**720**	**1385 J**		**460**	**4100**	

Well Node	**MW16-43**		**MW16-44**			**MW16-45**			**MW16-46**		
Investigation	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NORMAL**	**NORMAL**	**AVG**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**AVG**	**NORMAL**	**NS**
Intermediate Overburden											
Tetrachloroethene	1 U	1 U	1 U	1 U		1 U	1 U	0.52 U	1 U	1 U	
Trichloroethene	**3.09**	**4.47**	**2.7525 J**	**3.14**		**820**	**520**	**610**	**0.445 J**	**0.454 J**	
`	1 U	1 U	1 U	1 U		1 U	1 U	0.5 U	1 U	1 U	
1,1-Dichloroethane, LV	0.1 U		0.1 U			**0.06 J**			0.1 U		
1,1-Dichloroethene								0.76 U			
1,1-Dichloroethene, LV	0.1 U	**0.187**	0.1 U	**0.386**		**2**	**0.484**		0.1 U	**0.497**	
cis-1,2-Dichloroethene	**0.87 J**	**0.333 J**	**3.28**	**4.14**		**7.19**	**6.15**	**5.6**	**0.425 J**	**0.349 J**	
trans-1,2-Dichloroethene	**0.65 J**	**0.153 J**	**0.28 J**	**0.316 J**		**0.54 J**	**0.552 J**	**2.4**	**0.435 J**	**0.494 J**	
Total 1,2-Dichloroethene	**1.52**	**0.486 J**	**3.56**	**4.46**		**7.73**	**6.7**		**0.86**	**0.843 J**	
1,2-Dichloroethane	1 U		1 U			1 U		0.45 U	1 U		
1,2-Dichloroethane, LV		0.1 U		0.1 U			**0.0366 J**			0.1 U	
Vinyl Chloride								0.51 U			
Vinyl Chloride, LV	0.1 U	0.1 U	**0.55 J**	**0.926**		**0.3**	**0.117**		0.1 U	0.1 U	
Chloroethane	1 U	1 U	1 U	1 U		1 U	1 U	0.9 U	1 U	1 U	
Ethane	2 U	6.2 U	2 U	6.2 U		2 UJ	6.2 U		2 U	6.2 U	
Ethene	3 U	5.8 U	3 U	5.8 U		3 UJ	5.8 U		3 U	5.8 U	
Methane	**16**	**13**	**3.75**	**37**		**2.6**	6.9 U		**54.5**	**110**	

Well Node	**MW16-43**		**MW16-44**			**MW16-45**			**MW16-46**		
Investigation	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**
Deep Overburden											
Tetrachloroethene	1 U	1 U	1 U	1 U	0.52 U	1 U	20 U	0.52 U	1 U	10 U	
Trichloroethene	**770**	**810**	**660 J**	**1300**	**1200**	**780**	**680**	**620**	**360**	**380**	
1,1-Dichloroethane	1 U	1 U	1 U	1 U	0.5 U	1 U	20 U	0.5 U	1 U	10 U	
1,1-Dichloroethane, LV	0.1 U		0.1 U			0.1 U			0.1 U		
1,1-Dichloroethene					0.76 U			0.76 U			
1,1-Dichloroethene, LV	**2**	**0.83**	**2**	**0.764**		**1**	**0.196**		**2**	**0.576**	
cis-1,2-Dichloroethene	**8.79**	**6.91**	**16**	**13**	**9.5**	**9.21**	**6.94 J**	**5.6**	**5.38**	**5.36 J**	
trans-1,2-Dichloroethene	**0.42 J**	**0.618 J**	**0.28 J**	**0.618 J**	0.5 U	**0.37 J**	20 U	0.5 U	**0.54 J**	10 U	
Total 1,2-Dichloroethene	**9.21**	**7.53**	**16.3**	**13.6**		**9.58**	**6.94 J**		**5.92**	**5.36 J**	
1,2-Dichloroethane	1 U		1 U		0.45 U	1 U		0.45 U	1 U		
1,2-Dichloroethane, LV		0.1 U		0.1 U			0.1 U			**0.0296 J**	
Vinyl Chloride					0.51 U			0.51 U			
Vinyl Chloride, LV	0.1 U	**0.139**	**0.3**	**0.322**		**0.2**	**0.0212 J**		**0.2**	**0.113**	
Chloroethane	1 U	1 U	1 U	1 U	0.9 U	1 U	20 U	0.9 U	1 U	10 U	
Ethane	2 U	6.2 U	2 U	6.2 U		2 UJ	6.2 U		2 U	6.2 U	
Ethene	3 U	5.8 U	3 U	5.8 U		3 UJ	5.8 U		3 U	5.8 U	
Methane	1 U	3.3 U	1 U	**1.6 J**		1 U	3.3 U		1 U	3.6 U	

Well Node	**MW16-43**		**MW16-44**			**MW16-45**			**MW16-46**		
Investigation	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Shallow Bedrock											
Tetrachloroethene			1 U	1 U	0.52 U						
Trichloroethene			**940 J**	**1400**	**1600**						
1,1-Dichloroethane			1 U	1 U	0.5 U						
1,1-Dichloroethane, LV			0.1 U								
1,1-Dichloroethene					**2.4**						
1,1-Dichloroethene, LV			**0.9**	**0.51**							
cis-1,2-Dichloroethene			**15**	**22**	**13**						
trans-1,2-Dichloroethene			**0.13 J**	**0.405 J**	0.5 U						
Total 1,2-Dichloroethene			**15.1**	**22.4**							
1,2-Dichloroethane			1 U		0.45 U						
1,2-Dichloroethane, LV				0.1 U							
Vinyl Chloride					0.51 U						
Vinyl Chloride, LV			**0.3 J**	**0.461**							
Chloroethane			1 U	1 U	0.9 U						
Ethane			2 U	**6.6**							
Ethene			3 U	**7.8**							
Methane			**2**	**11**							

Well Node	**MW16-43**		**MW16-44**			**MW16-45**			**MW16-46**		
Investigation	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Deep Bedrock											
Tetrachloroethene											
Trichloroethene											
1,1-Dichloroethane											
1,1-Dichloroethane, LV											
1,1-Dichloroethene											
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene											
1,2-Dichloroethane											
1,2-Dichloroethane, LV											
Vinyl Chloride											
Vinyl Chloride, LV											
Chloroethane											
Ethane											
Ethene											
Methane											

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-47**			**MW16-48**			**MW16-49**			**MW16-50**	
Investigation	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Shallow Overburden											
Tetrachloroethene	1 U	1 U	0.1 U	1 U	1 U						
Trichloroethene	1 U	1 U	0.1 U	1 U	1 U						
1,1-Dichloroethane	1 U	1 U	0.1 U	1 U	1 U						
1,1-Dichloroethane, LV	0.1 U			0.1 U							
1,1-Dichloroethene			0.1 U								
1,1-Dichloroethene, LV	0.1 U	0.1 U		0.1 U	0.1 U						
cis-1,2-Dichloroethene	1 U	1 U	0.14 U	1 U	1 U						
trans-1,2-Dichloroethene	1 U	1 U	0.13 U	1 U	1 U						
Total 1,2-Dichloroethene	1 U	1 U		1 U	1 U						
1,2-Dichloroethane	1 U		0.1 U	1 U							
1,2-Dichloroethane, LV		0.1 U			0.1 U						
Vinyl Chloride			0.1 U								
Vinyl Chloride, LV	0.1 U	0.1 U		0.1 U	0.1 U						
Chloroethane	1 U	1 U	0.85 U	1 U	1 U						
Ethane	2 UJ	6.2 U		2 U	6.2 U						
Ethene	3 U	5.8 U		3 U	5.8 U						
Methane	1 U	3.3 U		**580 J**	**2900**						

Well Node	**MW16-47**			**MW16-48**			**MW16-49**			**MW16-50**	
Investigation	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**
Sample Code	**NS**	**NS**	**NS**	**AVG**	**AVG**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**
Intermediate Overburden											
Tetrachloroethene				1 U	1 U	0.1 U		1 U	0.1 U		1 U
Trichloroethene				1 U	**0.2055 J**	0.1 U		1 U	0.1 U		1 U
`				1 U	1 U	0.1 U		1 U	0.1 U		1 U
1,1-Dichloroethane, LV				0.1 U							
1,1-Dichloroethene						0.1 U			0.1 U		
1,1-Dichloroethene, LV				0.1 U	0.1 U			**0.096 J**			0.1 U
cis-1,2-Dichloroethene				1 U	1 U	0.53 U		1.31 U	0.53 U		1 U
trans-1,2-Dichloroethene				1 U	1 U	0.5 U		1 U	0.5 U		1 U
Total 1,2-Dichloroethene				1 U	1 U			1 U			1 U
1,2-Dichloroethane				1 U		0.1 U			0.1 U		
1,2-Dichloroethane, LV					0.1 U			0.1 U			0.1 U
Vinyl Chloride						0.1 UJ			0.1 U		
Vinyl Chloride, LV				0.1 U	0.1 U			0.1 U			0.1 U
Chloroethane				1 U	1 U	0.9 U		1 U	0.9 U		1 U
Ethane				2 U	6.2 U			6.2 U			6.2 U
Ethene				3 U	5.8 U			5.8 U			5.8 U
Methane				1 U	**1.5 J**			**16**			**12000**

Well Node	**MW16-47**			**MW16-48**			**MW16-49**			**MW16-50**	
Investigation	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**
Sample Code	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**AVG**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Deep Overburden											
Tetrachloroethene	1 U	1 U		1 U	1 U	0.1 U	1 U	1 U	0.1 U	1 U	1 U
Trichloroethene	1 U	1 U		**0.12 J**	1 U	0.1 U	**1.99**	1 U	**4.5**	**2.05**	1 U
1,1-Dichloroethane	1 U	1 U		1 U	1 U	0.1 U	1 U	1 U	0.1 U	1 U	1 U
1,1-Dichloroethane, LV	0.1 U			0.1 U			0.1 U			0.1 U	
1,1-Dichloroethene						0.1 U			0.1 U		
1,1-Dichloroethene, LV	0.1 U	0.1 U		0.1 U	0.1 U		**0.1**	0.1 U		**0.07 J**	0.1 U
cis-1,2-Dichloroethene	1 U	1 U		**0.35 J**	1 U	0.53 U	1 U	1 U	0.53 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U		1 U	1 U	0.5 U	1 U	1 U	0.5 U	1 U	1 U
Total 1,2-Dichloroethene	1 U	1 U		**0.35**	1 U		1 U	1 U		1 U	1 U
1,2-Dichloroethane	1 U			1 U		0.1 U	1 U		0.1 U	1 U	
1,2-Dichloroethane, LV		0.1 U			0.1 U			0.1 U			0.1 U
Vinyl Chloride						0.1 U			0.1 U		
Vinyl Chloride, LV	0.1 U	0.1 U		0.1 U	0.1 U		0.1 UJ	**0.498**		0.1 U	**0.031 J**
Chloroethane	1 U	1 U		1 U	1 U	0.9 U	1 U	1 U	0.9 U	1 U	1 U
Ethane	2 UJ	6.2 U		2 U	6.2 U		2 UJ	6.2 U		2 UJ	6.2 U
Ethene	3 UJ	5.8 U		3 U	5.8 U		3 UJ	5.8 U		3 UJ	5.8 U
Methane	1 U	3.3 U		1 U	**1.9 J**		**7.1 J**	3.3 U		**10 J**	**54 J**

Well Node	**MW16-47**			**MW16-48**			**MW16-49**			**MW16-50**	
Investigation	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Shallow Bedrock											
Tetrachloroethene											
Trichloroethene											
1,1-Dichloroethane											
1,1-Dichloroethane, LV											
1,1-Dichloroethene											
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene											
1,2-Dichloroethane											
1,2-Dichloroethane, LV											
Vinyl Chloride											
Vinyl Chloride, LV											
Chloroethane											
Ethane											
Ethene											
Methane											

Well Node	**MW16-47**			**MW16-48**			**MW16-49**			**MW16-50**	
Investigation	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Deep Bedrock											
Tetrachloroethene											
Trichloroethene											
1,1-Dichloroethane											
1,1-Dichloroethane, LV											
1,1-Dichloroethene											
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene											
1,2-Dichloroethane											
1,2-Dichloroethane, LV											
Vinyl Chloride											
Vinyl Chloride, LV											
Chloroethane											
Ethane											
Ethene											
Methane											

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-51**			**MW16-52**			**MW16-53**		**MW16-54**			**MW16-55**	
Investigation	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**	**NS**	**NS**
Shallow Overburden													
Tetrachloroethene							1 U	1 U					
Trichloroethene							**1.32**	**0.177 J**					
1,1-Dichloroethane							1 U	1 U					
1,1-Dichloroethane, LV							0.1 U						
1,1-Dichloroethene													
1,1-Dichloroethene, LV							0.1 U	0.1 U					
cis-1,2-Dichloroethene							1 U	1 U					
trans-1,2-Dichloroethene							1 U	1 U					
Total 1,2-Dichloroethene							1 U	1 U					
1,2-Dichloroethane							1 U						
1,2-Dichloroethane, LV								0.1 U					
Vinyl Chloride													
Vinyl Chloride, LV							0.1 U	0.1 U					
Chloroethane							1 U	1 U					
Ethane							2 UJ	6.2 U					
Ethene							3 UJ	5.8 U					
Methane							**75 J**	**1200**					

Well Node	**MW16-51**			**MW16-52**			**MW16-53**		**MW16-54**			**MW16-55**	
Investigation	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Intermediate Overburden													
Tetrachloroethene													
Trichloroethene													
`													
1,1-Dichloroethane, LV													
1,1-Dichloroethene													
1,1-Dichloroethene, LV													
cis-1,2-Dichloroethene													
trans-1,2-Dichloroethene													
Total 1,2-Dichloroethene													
1,2-Dichloroethane													
1,2-Dichloroethane, LV													
Vinyl Chloride													
Vinyl Chloride, LV													
Chloroethane													
Ethane													
Ethene													
Methane													

Well Node	**MW16-51**			**MW16-52**			**MW16-53**		**MW16-54**			**MW16-55**	
Investigation	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**
Sample Code	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Deep Overburden													
Tetrachloroethene	1 U	1 U		1 U	1 U	0.1 U			1 U	1 U	0.1 U	1 U	1 U
Trichloroethene	**0.44 J**	**0.504 J**		1 U	**0.55 J**	0.1 U			1 U	1 U	0.1 U	1 UJ	1 U
1,1-Dichloroethane	1 U	1 U		1 U	1 U	0.1 U			1 U	1 U	0.1 U	1 U	1 U
1,1-Dichloroethane, LV	0.1 U			0.1 U					**0.06 J**			0.1 U	
1,1-Dichloroethene						0.1 U					0.1 U		
1,1-Dichloroethene, LV	**0.08 J**	**0.0237 J**		0.1 U	0.1 U				**0.1**	0.1 U		0.1 U	0.1 U
cis-1,2-Dichloroethene	**0.26 J**	**0.336 J**		1 U	1 U	0.53 U			1 U	1 U	0.53 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U		1 U	1 U	0.5 U			1 U	1 U	0.5 U	1 U	1 U
Total 1,2-Dichloroethene	**0.26**	**0.336 J**		1 U	1 U				1 U	1 U		1 U	1 U
1,2-Dichloroethane	1 U			1 U		0.1 U			1 U		0.1 U	1 U	
1,2-Dichloroethane, LV		0.1 U			0.1 U					0.1 U			0.1 U
Vinyl Chloride						0.1 U					0.1 U		
Vinyl Chloride, LV	0.1 U	**0.0198 J**		0.1 U	**0.0641 J**				0.1 U	0.1 U		0.1 U	0.1 U
Chloroethane	1 U	1 U		1 U	1 U	0.9 U			1 U	1 U	0.9 U	1 U	1 U
Ethane	2 U	**1.3 J**		2 U	6.2 U				2 UJ	6.2 U		2 UJ	6.2 U
Ethene	3 U	5.8 U		3 U	5.8 U				3 UJ	5.8 U		3 UJ	5.8 U
Methane	**23**	**51**		**14**	**61**				1 UJ	3.3 U		1 UJ	3.3 U

Well Node	**MW16-51**			**MW16-52**			**MW16-53**		**MW16-54**			**MW16-55**	
Investigation	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**
Sample Code	**NORMAL**	**NORMAL**	**AVG**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**
Shallow Bedrock													
Tetrachloroethene	1 U	1 U	0.1 U	1 U	1 U							1 U	1 U
Trichloroethene	**0.1 J**	1 U	0.1 U	1 U	1 U							1 U	1 U
1,1-Dichloroethane	1 U	1 U	0.1 U	1 U	1 U							1 U	1 U
1,1-Dichloroethane, LV	0.1 U			0.1 U								0.1 U	
1,1-Dichloroethene			0.1 U										
1,1-Dichloroethene, LV	0.1 U	0.1 U		0.1 U	0.1 U							0.1 U	0.1 U
cis-1,2-Dichloroethene	1 U	1 U	0.53 U	1 U	1 U							1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	0.5 U	1 U	1 U							1 U	1 U
Total 1,2-Dichloroethene	1 U	1 U		1 U	1 U							1 U	1 U
1,2-Dichloroethane	1 U		0.1 U	1 U								1 U	
1,2-Dichloroethane, LV		0.1 U			0.1 U								0.1 U
Vinyl Chloride			0.1 U										
Vinyl Chloride, LV	0.1 U	0.1 U		0.1 U	0.1 U							0.1 U	0.1 U
Chloroethane	1 U	1 U	0.9 U	1 U	1 U							1 U	1 U
Ethane	2 U	6.2 U		2 U	6.2 U							2 UJ	6.2 U
Ethene	3 U	5.8 U		3 U	5.8 U							3 UJ	5.8 U
Methane	**3.8**	**11**		**3.8**	**160**							1 UJ	3.3 U

Well Node	**MW16-51**			**MW16-52**			**MW16-53**		**MW16-54**			**MW16-55**	
Investigation	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**	**Round 6**	**Round 8**	**Round 10**	**Round 6**	**Round 8**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**
Deep Bedrock													
Tetrachloroethene												1 U	1 U
Trichloroethene												1 UJ	1 U
1,1-Dichloroethane												1 U	1 U
1,1-Dichloroethane, LV												0.1 U	
1,1-Dichloroethene													
1,1-Dichloroethene, LV												0.1 U	0.1 U
cis-1,2-Dichloroethene												1 U	1 U
trans-1,2-Dichloroethene												1 U	1 U
Total 1,2-Dichloroethene												1 U	1 U
1,2-Dichloroethane												1 U	
1,2-Dichloroethane, LV													0.1 U
Vinyl Chloride													
Vinyl Chloride, LV												0.1 U	0.1 U
Chloroethane												1 U	1 U
Ethane												2 UJ	6.2 U
Ethene												3 UJ	5.8 U
Methane												1 UJ	3.3 U

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-56**		**MW16-57**		**MW16-58**		**MW16-59**		**MW16-60**		**MW16-61**	**MW16-62**
Investigation	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 8**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**	**NS**	**NS**
Shallow Overburden												
Tetrachloroethene					1 U	0.1 U	1 U					
Trichloroethene					1 U	**0.63**	**21**					
1,1-Dichloroethane					1 U	0.1 U	1 U					
1,1-Dichloroethane, LV												
1,1-Dichloroethene						0.1 U						
1,1-Dichloroethene, LV					0.1 U		0.1 U					
cis-1,2-Dichloroethene					1 U	0.53 U	1 U					
trans-1,2-Dichloroethene					1 U	0.5 U	1 U					
Total 1,2-Dichloroethene					1 U		1 U					
1,2-Dichloroethane						0.1 U						
1,2-Dichloroethane, LV					0.1 U		0.1 U					
Vinyl Chloride						0.1 U						
Vinyl Chloride, LV					**0.0266 J**		0.1 U					
Chloroethane					1 U	0.9 U	1 U					
Ethane					6.2 U		6.2 U					
Ethene					5.8 U		5.8 U					
Methane					**22**		3.3 U					

Well Node	**MW16-56**		**MW16-57**		**MW16-58**		**MW16-59**		**MW16-60**		**MW16-61**	**MW16-62**
Investigation	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 8**	**Round 8**	**Round 8**
Sample Code	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NORMAL**	**NORMAL**
Intermediate Overburden												
Tetrachloroethene	1 U		1 U	0.52 U	1 U	0.2 U	1 U	0.52 U			1 U	**0.322 J**
Trichloroethene	**0.851 J**		**310**	**210**	1 U	**48**	**670**	**790**			**9.4**	**20**
`	1 U		1 U	0.5 U	1 U	0.2 U	1 U	0.5 U			1 U	1 U
1,1-Dichloroethane, LV												
1,1-Dichloroethene				0.76 U		0.2 U		0.76 U				
1,1-Dichloroethene, LV	0.1 U		**0.443**		0.1 U		**0.131**				0.1 U	0.1 U
cis-1,2-Dichloroethene	1 U		**1.2**	0.53 U	1.67 U	**25**	**3.3**	**3.3**			**0.529 J**	**0.815 J**
trans-1,2-Dichloroethene	1 U		**0.307 J**	0.5 U	1 U	**1.2**	1 U	0.5 U			1 U	1 U
Total 1,2-Dichloroethene	1 U		**1.5**		1 U		**3.3**				**0.529 J**	**0.815 J**
1,2-Dichloroethane				0.45 U		0.2 U		0.45 U				
1,2-Dichloroethane, LV	0.1 U		**0.0283 J**		0.1 U		0.1 U				0.1 U	0.1 U
Vinyl Chloride				0.51 U		**16 J**		0.51 U				
Vinyl Chloride, LV	0.1 U		**0.022 J**		**0.0304 J**		**0.158**				0.1 U	0.1 U
Chloroethane	1 U		1 U	0.9 U	1 U	0.9 U	1 U	0.9 U			1 U	1 U
Ethane	6.2 U		6.2 U		6.2 U		6.2 U				6.2 U	6.2 U
Ethene	5.8 U		5.8 U		5.8 U		5.8 U				5.8 U	5.8 U
Methane	3.3 U		3.3 U		**1300**		3.3 U				3.3 U	3.3 U

Well Node	**MW16-56**		**MW16-57**		**MW16-58**		**MW16-59**		**MW16-60**		**MW16-61**	**MW16-62**
Investigation	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 8**
Sample Code	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**AVG**	**NORMAL**	**AVG**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Deep Overburden												
Tetrachloroethene	1 U		1 U	0.1 UJ	1 U	0.52 U	1 U	5.4 UJ	1 U	0.52 U	10 U	20 U
Trichloroethene	**50**		**0.678 J**	**1.3 J**	**1400**	**1600**	**2300**	**2150**	**1600**	**2000**	**220**	**550**
1,1-Dichloroethane	1 U		1 U	0.1 UJ	**0.196 J**	0.5 U	**0.135 J**	5.4 UJ	1 U	0.5 U	10 U	20 U
1,1-Dichloroethane, LV												
1,1-Dichloroethene				0.1 UJ		**2.25**		**2.5 J**		0.76 U		
1,1-Dichloroethene, LV	**0.0809 J**		0.1 U		**1.85**		**2.82**		**0.527**		**0.0465 J**	**0.336**
cis-1,2-Dichloroethene	**0.33 J**		1 U	0.53 U	**6.24**	**4.4**	**14**	9.75 U	**1.67**	**1.8**	10 U	20 U
trans-1,2-Dichloroethene	1 U		1 U	0.5 U	**0.845 J**	0.5 U	**0.392 J**	9 U	**0.255 J**	0.5 U	10 U	20 U
Total 1,2-Dichloroethene	**0.33 J**		1 U		**7.09**		**14.4**		**1.93**		10 U	20 U
1,2-Dichloroethane				0.1 UJ		0.45 U		5.4 UJ		0.45 U		
1,2-Dichloroethane, LV	**0.0746 J**		0.1 U		**0.0484 J**		**0.119**		**0.0229 J**		0.1 U	0.1 U
Vinyl Chloride				0.1 UJ		0.51 U		5.4 UJ		0.51 U		
Vinyl Chloride, LV	**0.0301 J**		**0.028 J**		**0.116**		**0.947**		**0.0236 J**		0.1 U	**0.0306 J**
Chloroethane	1 U		1 U	0.9 U	1 U	0.9 U	1 U	16 U	1 U	0.9 U	10 U	20 U
Ethane	6.2 U		6.2 U		6.2 U		**0.85 J**		**0.68 J**		6.2 U	**1.6 J**
Ethene	5.8 U		5.8 U		5.8 U		5.8 U		**0.88 J**		5.8 U	5.8 U
Methane	3.3 U		3.3 U		3.3 U		3.3 U		3.3 U		3.3 U	3.3 U

Well Node	**MW16-56**		**MW16-57**		**MW16-58**		**MW16-59**		**MW16-60**		**MW16-61**	**MW16-62**
Investigation	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 8**
Sample Code	**NORMAL**	**NORMAL**	**NS**	**NS**	**NORMAL**	**NS**	**NORMAL**	**NS**	**NORMAL**	**NS**	**NS**	**NS**
Shallow Bedrock												
Tetrachloroethene	1 U	0.1 U			1 U		1 U	0.52 U	1 U	2 UJ		
Trichloroethene	**17**	**18**			**320**		**1500**	**1950**	**1800**	**660**		
1,1-Dichloroethane	1 U	0.1 U			1 U		**0.233 J**	0.5 U	1 U	2 UJ		
1,1-Dichloroethane, LV												
1,1-Dichloroethene		**0.24**						**4.65**		2 UJ		
1,1-Dichloroethene, LV	**0.279**				**0.715**		**4.2**		**5.05**			
cis-1,2-Dichloroethene	**1.5**	**1.2**			**6.65**		**23**	**29**	**16**	2.1 U		
trans-1,2-Dichloroethene	1 U	0.5 U			**0.663 J**		**0.559 J**	0.5 U	**0.668 J**	2 U		
Total 1,2-Dichloroethene	**1.5**				**7.31**		**23.6**		**16.7**			
1,2-Dichloroethane		0.1 U						0.45 U		2 UJ		
1,2-Dichloroethane, LV	**0.0124 J**				0.1 U		**0.0801 J**		**0.0652 J**			
Vinyl Chloride		0.1 UJ						**1.3 J**		2 UJ		
Vinyl Chloride, LV	**0.0498 J**				**0.112**		**0.916**		**0.413**			
Chloroethane	1 U	0.9 U			1 U		1 U	0.9 U	1 U	3.6 U		
Ethane	6.2 U				6.2 U		**3.2 J**		**3.1 J**			
Ethene	5.8 U				5.8 U		5.8 U		**1.7 J**			
Methane	3.3 U				**5**		3.3 U		3.3 U			

Well Node	**MW16-56**		**MW16-57**		**MW16-58**		**MW16-59**		**MW16-60**		**MW16-61**	**MW16-62**
Investigation	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 8**	**Round 8**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Deep Bedrock												
Tetrachloroethene												
Trichloroethene												
1,1-Dichloroethane												
1,1-Dichloroethane, LV												
1,1-Dichloroethene												
1,1-Dichloroethene, LV												
cis-1,2-Dichloroethene												
trans-1,2-Dichloroethene												
Total 1,2-Dichloroethene												
1,2-Dichloroethane												
1,2-Dichloroethane, LV												
Vinyl Chloride												
Vinyl Chloride, LV												
Chloroethane												
Ethane												
Ethene												
Methane												

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-63**	**MW16-64**		**MW16-65**		**MW16-66**	**MW16-67**		**MW16-68**		**MW16-69**
Investigation	**Round 8**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 9**	**Round 9**	**Round 10**	**Round 9**	**Round 10**	**Round 9**
Sample Code	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NS**	**NORMAL**
Shallow Overburden											
Tetrachloroethene				1 U							
Trichloroethene				**1.24**		**4.01**	**6.81**		**12**		**10**
1,1-Dichloroethane				1 U		1 U	1 U		1 U		1 U
1,1-Dichloroethane, LV											
1,1-Dichloroethene						1 U	1 U		1 U		1 U
1,1-Dichloroethene, LV				0.1 U							
cis-1,2-Dichloroethene				1 U		1 U	1 U		1 U		1 U
trans-1,2-Dichloroethene				1 U		1 U	1 U		1 U		1 U
Total 1,2-Dichloroethene				1 U		2 U	2 U		2 U		2 U
1,2-Dichloroethane						1 U	1 U		1 U		1 U
1,2-Dichloroethane, LV				0.1 U							
Vinyl Chloride						1 U	1 U		1 U		1 U
Vinyl Chloride, LV				0.1 U							
Chloroethane				1 U		1 U	1 U		1 U		1 U
Ethane				6.2 U		6.2 U	6.2 U		6.2 U		6.2 U
Ethene				5.8 U		5.8 U	5.8 U		5.8 U		5.8 U
Methane				5.3 U		5 U	4.4 U		14 U		3.3 U

Well Node	**MW16-63**	**MW16-64**		**MW16-65**		**MW16-66**	**MW16-67**		**MW16-68**		**MW16-69**
Investigation	**Round 8**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 9**	**Round 9**	**Round 10**	**Round 9**	**Round 10**	**Round 9**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NS**	**NORMAL**
Intermediate Overburden											
Tetrachloroethene	**0.311 J**	**0.431 J**	**0.4 J**	1 U	0.1 U						
Trichloroethene	**19**	**32**	**28 J**	**3.19**	**1.6**	**1.58**	**11**		**11**		**550**
`	1 U	1 U	0.1 U	1 U	0.1 U	1 U	1 U		1 U		1 U
1,1-Dichloroethane, LV											
1,1-Dichloroethene			0.1 U		0.1 U	1 U	1 U		1 U		**0.302 J**
1,1-Dichloroethene, LV	0.1 U	0.1 U		0.1 U							
cis-1,2-Dichloroethene	**0.303 J**	**0.238 J**	0.53 U	1 U	0.53 U	1 U	1 U		1 U		**1.36**
trans-1,2-Dichloroethene	1 U	1 U	0.5 U	1 U	0.5 U	1 U	1 U		1 U		**0.201 J**
Total 1,2-Dichloroethene	**0.303 J**	**0.238 J**		1 U		2 U	2 U		2 U		**1 J**
1,2-Dichloroethane			0.1 U		0.1 U	1 U	1 U		1 U		1 U
1,2-Dichloroethane, LV	0.1 U	0.1 U		0.1 U							
Vinyl Chloride			0.1 U		0.1 U	1 U	1 U		1 U		1 U
Vinyl Chloride, LV	0.1 U	0.1 U		0.1 U							
Chloroethane	1 U	1 U	0.9 U	1 U	0.9 U	1 U	1 U		1 U		1 U
Ethane	6.2 U	6.2 U		6.2 U		6.2 U	6.2 U		6.2 U		6.2 U
Ethene	5.8 U	5.8 U		5.8 U		5.8 U	5.8 U		5.8 U		5.8 U
Methane	3.3 U	10 U		7.2 U		4.7 U	3.9 U		3.3 U		**15 J**

Well Node	**MW16-63**	**MW16-64**		**MW16-65**		**MW16-66**	**MW16-67**		**MW16-68**		**MW16-69**
Investigation	**Round 8**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 9**	**Round 9**	**Round 10**	**Round 9**	**Round 10**	**Round 9**
Sample Code	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**AVG**	**NORMAL**	**NORMAL**
Deep Overburden											
Tetrachloroethene	20 U	1 U		1 U	0.1 U			0.52 U		2 UJ	
Trichloroethene	**540**	**380**		1 U	0.1 U	**18**	**980**	**1200**	**780**	**670**	**970**
1,1-Dichloroethane	20 U	1 U		1 U	0.1 U	1 U	1 U	0.5 U	1 U	2 UJ	1 U
1,1-Dichloroethane, LV											
1,1-Dichloroethene					0.1 U	1 U	**0.487 J**	0.76 U	**0.3355 J**	2 UJ	**0.74 J**
1,1-Dichloroethene, LV	**0.356**	**0.289**		0.1 U							
cis-1,2-Dichloroethene	20 U	**1.28**		1 U	0.53 U	**1.33**	**2.53**	**2.1**	**1.76**	2.1 U	**7.67**
trans-1,2-Dichloroethene	20 U	**0.145 J**		1 U	0.5 U	1 U	**0.245 J**	0.5 U	**0.133 J**	2 U	**0.164 J**
Total 1,2-Dichloroethene	20 U	**1.43**		1 U		**1.33 J**	**2.53**		**1.87 J**		**8.2**
1,2-Dichloroethane					0.1 U	1 U	1 U	0.45 U	1 U	2 UJ	1 U
1,2-Dichloroethane, LV	0.1 U	0.1 U		0.1 U							
Vinyl Chloride					0.1 U	1 U	1 U	0.51 U	1 U	2 UJ	1 U
Vinyl Chloride, LV	0.1 U	0.1 U		0.1 U							
Chloroethane	20 U	1 U		1 U	0.9 U	1 U	1 U	0.9 U	1 U	3.6 U	1 U
Ethane	6.2 U	6.2 U		6.2 U		6.2 U	6.2 U		6.2 U		**3.5 J**
Ethene	5.8 U	5.8 U		5.8 U		5.8 U	5.8 U		5.8 U		5.8 U
Methane	3.3 U	3.5 U		3.3 U		4.5 U	3.3 U		5.4 U		6.2 U

Well Node	**MW16-63**	**MW16-64**		**MW16-65**		**MW16-66**	**MW16-67**		**MW16-68**		**MW16-69**
Investigation	**Round 8**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 9**	**Round 9**	**Round 10**	**Round 9**	**Round 10**	**Round 9**
Sample Code	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**AVG**	**NORMAL**	**AVG**
Shallow Bedrock											
Tetrachloroethene				**0.824 J**	**0.15**			0.52 U		0.52 U	
Trichloroethene				**0.415 J**	**1.2**	**3.45**	**600**	**250**	**610**	**510**	**240**
1,1-Dichloroethane				1 U	0.1 U	1 U	1 U	0.5 U	1 U	0.5 U	10 U
1,1-Dichloroethane, LV											
1,1-Dichloroethene					0.1 U	1 U	**0.533 J**	0.76 U	**0.327 J**	0.76 U	10 U
1,1-Dichloroethene, LV				0.1 U							
cis-1,2-Dichloroethene				1 U	0.53 U	**0.292 J**	**2.95**	**1.9**	**1.335**	**1.2**	**8.155 J**
trans-1,2-Dichloroethene				1 U	0.5 U	1 U	**0.212 J**	0.5 U	**0.13 J**	0.5 U	10 U
Total 1,2-Dichloroethene				1 U		**0.292 J**	**3.16**		**1.5 J**		**8.16 J**
1,2-Dichloroethane					0.1 U	1 U	1 U	0.45 U	1 U	0.45 U	10 U
1,2-Dichloroethane, LV				0.1 U							
Vinyl Chloride					0.1 U	1 U	1 U	0.51 U	1 U	0.51 U	10 U
Vinyl Chloride, LV				0.1 U							
Chloroethane				1 U	0.9 U	1 U	1 U	0.9 U	1 U	0.9 U	10 U
Ethane				**1 J**		6.2 U	**0.8 J**		6.2 U		6.2 U
Ethene				**0.9 J**		5.8 U	5.8 U		5.8 U		5.8 U
Methane				5.4 U		4.4 U	3.9 U		5.2 U		3.3 U

Well Node	**MW16-63**	**MW16-64**		**MW16-65**		**MW16-66**	**MW16-67**		**MW16-68**		**MW16-69**
Investigation	**Round 8**	**Round 8**	**Round 10**	**Round 8**	**Round 10**	**Round 9**	**Round 9**	**Round 10**	**Round 9**	**Round 10**	**Round 9**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Deep Bedrock											
Tetrachloroethene											
Trichloroethene											
1,1-Dichloroethane											
1,1-Dichloroethane, LV											
1,1-Dichloroethene											
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene											
1,2-Dichloroethane											
1,2-Dichloroethane, LV											
Vinyl Chloride											
Vinyl Chloride, LV											
Chloroethane											
Ethane											
Ethene											
Methane											

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-70**		**MW16-71**	**INJ16-01D**		**INJ16-02D**	**INJ16-03D**	**INJ16-04D**	**INJ16-05D**		**INJ16-06D**	**INJ16-07D**
Investigation	**Round 9**	**Round 10**	**Round 9**	**Round 9**	**Round 10**	**Round 9**	**Round 9**	**Round 9**	**Round 9**	**Round 10**	**Round 9**	**Round 9**
Sample Code	**NORMAL**	**NS**	**NORMAL**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Shallow Overburden												
Tetrachloroethene												
Trichloroethene	**20**		**4.58**									
1,1-Dichloroethane	1 U		1 U									
1,1-Dichloroethane, LV												
1,1-Dichloroethene	1 U		1 U									
1,1-Dichloroethene, LV												
cis-1,2-Dichloroethene	1 U		1 U									
trans-1,2-Dichloroethene	1 U		1 U									
Total 1,2-Dichloroethene	2 U		2 U									
1,2-Dichloroethane	1 U		1 U									
1,2-Dichloroethane, LV												
Vinyl Chloride	1 U		1 U									
Vinyl Chloride, LV												
Chloroethane	1 U		1 U									
Ethane	6.2 U		6.2 U									
Ethene	5.8 U		5.8 U									
Methane	4.6 U		4.2 U									

Well Node	**MW16-70**		**MW16-71**	**INJ16-01D**		**INJ16-02D**	**INJ16-03D**	**INJ16-04D**	**INJ16-05D**		**INJ16-06D**	**INJ16-07D**
Investigation	**Round 9**	**Round 10**	**Round 9**	**Round 9**	**Round 10**	**Round 9**	**Round 9**	**Round 9**	**Round 9**	**Round 10**	**Round 9**	**Round 9**
Sample Code	**NORMAL**	**NS**	**AVG**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Intermediate Overburden												
Tetrachloroethene												
Trichloroethene	**11**		**12**									
`	1 U		1 U									
1,1-Dichloroethane, LV												
1,1-Dichloroethene	1 U		1 U									
1,1-Dichloroethene, LV												
cis-1,2-Dichloroethene	1 U		**0.174 J**									
trans-1,2-Dichloroethene	1 U		1 U									
Total 1,2-Dichloroethene	2 U		**0.174 J**									
1,2-Dichloroethane	1 U		1 U									
1,2-Dichloroethane, LV												
Vinyl Chloride	1 U		1 U									
Vinyl Chloride, LV												
Chloroethane	1 U		1 U									
Ethane	6.2 U		6.2 U									
Ethene	5.8 U		5.8 U									
Methane	5.2 U		3.55 U									

Well Node	**MW16-70**		**MW16-71**	**INJ16-01D**		**INJ16-02D**	**INJ16-03D**	**INJ16-04D**	**INJ16-05D**		**INJ16-06D**	**INJ16-07D**
Investigation	**Round 9**	**Round 10**	**Round 9**	**Round 9**	**Round 10**	**Round 9**	**Round 9**	**Round 9**	**Round 9**	**Round 10**	**Round 9**	**Round 9**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Deep Overburden												
Tetrachloroethene		4.2 U			0.5 U					0.52 U		
Trichloroethene	**730**	**680**	**790**	**710**	**620**	**360**	**830**	**770**	**1200**	**1100**	**860**	**480**
1,1-Dichloroethane	25 U	4 U	1 U	25 U	0.5 U	1 U	25 U	25 U	50 U	0.5 U	25 U	1 U
1,1-Dichloroethane, LV												
1,1-Dichloroethene	25 U	6.1 U	**0.295 J**	25 U	0.5 U	1 U	25 U	25 U	50 U	0.76 U	25 U	**0.303 J**
1,1-Dichloroethene, LV												
cis-1,2-Dichloroethene	25 U	4.2 U	**1.57**	25 U	**2.3**	**6.25**	25 U	25 U	50 U	**1.3**	25 U	**1.52**
trans-1,2-Dichloroethene	25 U	4 U	1 U	25 U	0.5 U	1 U	25 U	25 U	50 U	0.5 U	25 U	**0.111 J**
Total 1,2-Dichloroethene	50 U		**1.57 J**	50 U		**6.25**	50 U	50 U	100 U		50 U	**1.63 J**
1,2-Dichloroethane	25 U	3.6 U	1 U	25 U	0.5 U	1 U	25 U	25 U	50 U	0.45 U	25 U	1 U
1,2-Dichloroethane, LV												
Vinyl Chloride	25 U	4.1 U	1 U	25 U	0.5 U	**0.366 J**	25 U	25 U	50 U	0.51 U	25 U	1 U
Vinyl Chloride, LV												
Chloroethane	25 U	13 U	1 U	25 UJ	0.9 U	1 U	25 UJ	25 UJ	50 UJ	0.9 U	25 U	1 U
Ethane	6.2 U		6.2 U	6.2 U		6.2 U	6.2 U	6.2 U	6.2 U		6.2 U	6.2 U
Ethene	5.8 U		5.8 U	5.8 U		5.8 U	5.8 U	5.8 U	5.8 U		5.8 U	5.8 U
Methane	5.6 U		3.3 U	4.5 U		**15 J**	4.4 U	4 U	4.2 U		4.2 U	6.3 U

Well Node	**MW16-70**		**MW16-71**	**INJ16-01D**		**INJ16-02D**	**INJ16-03D**	**INJ16-04D**	**INJ16-05D**		**INJ16-06D**	**INJ16-07D**
Investigation	**Round 9**	**Round 10**	**Round 9**	**Round 9**	**Round 10**	**Round 9**	**Round 9**	**Round 9**	**Round 9**	**Round 10**	**Round 9**	**Round 9**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Shallow Bedrock												
Tetrachloroethene		0.52 U										
Trichloroethene	**59**	**61 J**	**1100**									
1,1-Dichloroethane	1 U	0.5 U	**0.172 J**									
1,1-Dichloroethane, LV												
1,1-Dichloroethene	**0.403 J**	0.76 U	**2.56**									
1,1-Dichloroethene, LV												
cis-1,2-Dichloroethene	**3.93**	**2.4 J**	**23**									
trans-1,2-Dichloroethene	1 U	0.5 U	**1.04**									
Total 1,2-Dichloroethene	**4.12**		**24**									
1,2-Dichloroethane	1 U	0.45 U	1 U									
1,2-Dichloroethane, LV												
Vinyl Chloride	1 U	0.51 U	1 U									
Vinyl Chloride, LV												
Chloroethane	1 U	0.9 U	1 U									
Ethane	6.2 U		**1.3 J**									
Ethene	5.8 U		5.8 U									
Methane	3.7 U		3.3 U									

Well Node	**MW16-70**		**MW16-71**	**INJ16-01D**		**INJ16-02D**	**INJ16-03D**	**INJ16-04D**	**INJ16-05D**		**INJ16-06D**	**INJ16-07D**
Investigation	**Round 9**	**Round 10**	**Round 9**	**Round 9**	**Round 10**	**Round 9**	**Round 9**	**Round 9**	**Round 9**	**Round 10**	**Round 9**	**Round 9**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Deep Bedrock												
Tetrachloroethene												
Trichloroethene												
1,1-Dichloroethane												
1,1-Dichloroethane, LV												
1,1-Dichloroethene												
1,1-Dichloroethene, LV												
cis-1,2-Dichloroethene												
trans-1,2-Dichloroethene												
Total 1,2-Dichloroethene												
1,2-Dichloroethane												
1,2-Dichloroethane, LV												
Vinyl Chloride												
Vinyl Chloride, LV												
Chloroethane												
Ethane												
Ethene												
Methane												

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**INJ16-08D**	**INJ16-09D**	**INJ16-10D**	**INJ16-11D**	**INJ16-12D**	**RMW-01**	**RMW-02**	**TW16-108**	**MW16-82**	**MW16-83**	**MW16-84**	**MW16-85**	**MW16-86**
Investigation	**Round 9**	**Round 9**	**Round 9**	**Round 9**	**Round 9**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NORMAL**	**NS**	**AVG**	**NS**	**NS**	**NS**	**NS**	**NS**
Shallow Overburden													
Tetrachloroethene						0.1 U		**0.55**					
Trichloroethene						0.1 U		**170**					
1,1-Dichloroethane						0.1 U		0.5 U					
1,1-Dichloroethane, LV													
1,1-Dichloroethene						0.1 U		0.5 U					
1,1-Dichloroethene, LV													
cis-1,2-Dichloroethene						0.14 U		0.53 U					
trans-1,2-Dichloroethene						0.13 U		0.5 U					
Total 1,2-Dichloroethene													
1,2-Dichloroethane						0.1 U		0.5 U					
1,2-Dichloroethane, LV													
Vinyl Chloride						0.1 U		0.5 U					
Vinyl Chloride, LV													
Chloroethane						0.85 U		0.9 U					
Ethane													
Ethene													
Methane													

Well Node	**INJ16-08D**	**INJ16-09D**	**INJ16-10D**	**INJ16-11D**	**INJ16-12D**	**RMW-01**	**RMW-02**	**TW16-108**	**MW16-82**	**MW16-83**	**MW16-84**	**MW16-85**	**MW16-86**
Investigation	**Round 9**	**Round 9**	**Round 9**	**Round 9**	**Round 9**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Intermediate Overburden													
Tetrachloroethene													
Trichloroethene													
`													
1,1-Dichloroethane, LV													
1,1-Dichloroethene													
1,1-Dichloroethene, LV													
cis-1,2-Dichloroethene													
trans-1,2-Dichloroethene													
Total 1,2-Dichloroethene													
1,2-Dichloroethane													
1,2-Dichloroethane, LV													
Vinyl Chloride													
Vinyl Chloride, LV													
Chloroethane													
Ethane													
Ethene													
Methane													

Well Node	**INJ16-08D**	**INJ16-09D**	**INJ16-10D**	**INJ16-11D**	**INJ16-12D**	**RMW-01**	**RMW-02**	**TW16-108**	**MW16-82**	**MW16-83**	**MW16-84**	**MW16-85**	**MW16-86**
Investigation	**Round 9**	**Round 9**	**Round 9**	**Round 9**	**Round 9**	**Round 10**		**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NS**			**NORMAL**	**NORMAL**	**NORMAL**	**AVG**	**NORMAL**
Deep Overburden													
Tetrachloroethene							0.1 U		0.1 U	0.1 U	0.1 U	0.59 U	**0.1**
Trichloroethene	**640**	**810**	**870**	**760**	**1700**		0.1 U		0.1 U	0.1 U	0.1 U	**4800**	0.1 U
1,1-Dichloroethane	25 U	25 U	25 U	25 U	50 U		0.1 U		0.1 U	0.1 U	**0.15**	0.082 U	0.1 U
1,1-Dichloroethane, LV													
1,1-Dichloroethene	25 U	25 U	25 U	25 U	50 U		0.1 U		0.1 U	0.1 U	0.1 U	1 U	0.1 U
1,1-Dichloroethene, LV													
cis-1,2-Dichloroethene	25 U	25 U	25 U	25 U	50 U		0.14 U		0.14 U	0.14 U	0.14 U	**6.5**	0.14 U
trans-1,2-Dichloroethene	25 U	25 U	25 U	25 U	50 U		0.13 U		0.13 U	0.13 U	0.13 U	**1.1**	0.13 U
Total 1,2-Dichloroethene	50 U	50 U	50 U	50 U	100 U								
1,2-Dichloroethane	25 U	25 U	25 U	25 U	50 U		0.1 U		0.1 U	0.1 U	0.1 U	0.12 U	0.1 U
1,2-Dichloroethane, LV													
Vinyl Chloride	25 U	25 U	25 U	25 U	50 U		0.1 U		0.1 U	0.1 U	0.1 U	0.54 U	0.1 U
Vinyl Chloride, LV													
Chloroethane	25 UJ	25 U	25 U	25 UJ	50 UJ		0.85 U		0.85 U	0.85 U	0.85 U	0.85 U	0.85 U
Ethane	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U								
Ethene	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U								
Methane	4.1 U	4.7 U	4.8 U	3.8 U	4 U								

Well Node	**INJ16-08D**	**INJ16-09D**	**INJ16-10D**	**INJ16-11D**	**INJ16-12D**	**RMW-01**	**RMW-02**	**TW16-108**	**MW16-82**	**MW16-83**	**MW16-84**	**MW16-85**	**MW16-86**
Investigation	**Round 9**	**Round 9**	**Round 9**	**Round 9**	**Round 9**	**Round 10**		**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**				**NORMAL**	**AVG**	**NORMAL**		**NORMAL**
Shallow Bedrock													
Tetrachloroethene									0.1 U	0.1 U	0.1 U		0.1 U
Trichloroethene									0.1 U	0.1 U	0.1 U		0.1 U
1,1-Dichloroethane									0.1 U	0.1 U	0.1 U		0.1 U
1,1-Dichloroethane, LV													
1,1-Dichloroethene									0.1 U	0.1 U	0.1 U		0.1 U
1,1-Dichloroethene, LV													
cis-1,2-Dichloroethene									0.14 U	0.14 U	0.14 U		0.14 U
trans-1,2-Dichloroethene									0.13 U	0.13 U	0.13 U		0.13 U
Total 1,2-Dichloroethene													
1,2-Dichloroethane									0.1 U	0.1 U	0.1 U		0.1 U
1,2-Dichloroethane, LV													
Vinyl Chloride									0.1 U	0.1 U	0.1 U		0.1 U
Vinyl Chloride, LV													
Chloroethane									0.85 U	0.85 U	0.85 U		0.85 U
Ethane													
Ethene													
Methane													

Well Node	**INJ16-08D**	**INJ16-09D**	**INJ16-10D**	**INJ16-11D**	**INJ16-12D**	**RMW-01**	**RMW-02**	**TW16-108**	**MW16-82**	**MW16-83**	**MW16-84**	**MW16-85**	**MW16-86**
Investigation	**Round 9**	**Round 9**	**Round 9**	**Round 9**	**Round 9**	**Round 10**		**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**								
Deep Bedrock													
Tetrachloroethene													
Trichloroethene													
1,1-Dichloroethane													
1,1-Dichloroethane, LV													
1,1-Dichloroethene													
1,1-Dichloroethene, LV													
cis-1,2-Dichloroethene													
trans-1,2-Dichloroethene													
Total 1,2-Dichloroethene													
1,2-Dichloroethane													
1,2-Dichloroethane, LV													
Vinyl Chloride													
Vinyl Chloride, LV													
Chloroethane													
Ethane													
Ethene													
Methane													

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Well Node	**MW16-87**	**MW16-88**	**MW16-89**	**MW16-90**	**TW16-101**	**TW16-102**	**TW16-103**	**TW16-104**	**TW16-106**	**TW16-107**	**TW16-109**
Investigation	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Shallow Overburden											
Tetrachloroethene											
Trichloroethene											
1,1-Dichloroethane											
1,1-Dichloroethane, LV											
1,1-Dichloroethene											
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene											
1,2-Dichloroethane											
1,2-Dichloroethane, LV											
Vinyl Chloride											
Vinyl Chloride, LV											
Chloroethane											
Ethane											
Ethene											
Methane											

Well Node	**MW16-87**	**MW16-88**	**MW16-89**	**MW16-90**	**TW16-101**	**TW16-102**	**TW16-103**	**TW16-104**	**TW16-106**	**TW16-107**	**TW16-109**
Investigation	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NORMAL**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NORMAL**
Intermediate Overburden											
Tetrachloroethene	**0.58**	0.59 U	0.1 U			0.1 UJ			**0.28**	10 U	0.1 U
Trichloroethene	**4.8**	**710**	**15**			0.1 UJ			**0.51**	**7700**	0.1 U
`	0.1 U	0.082 U	0.1 U			0.1 UJ			0.1 U	10 U	0.1 U
1,1-Dichloroethane, LV											
1,1-Dichloroethene	0.1 U	1 U	**0.48**			0.1 UJ			0.1 U	15 U	0.1 U
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene	0.14 U	**2.3**	**1**			0.53 U			0.53 U	11 U	0.53 U
trans-1,2-Dichloroethene	0.13 U	0.13 U	0.13 U			0.5 U			0.5 U	10 U	0.5 U
Total 1,2-Dichloroethene											
1,2-Dichloroethane	0.1 U	0.12 U	0.1 U			0.1 UJ			0.1 U	9 U	0.1 U
1,2-Dichloroethane, LV											
Vinyl Chloride	0.1 U	0.54 U	0.1 U			0.1 UJ			0.1 U	10 U	0.1 U
Vinyl Chloride, LV											
Chloroethane	0.85 U	0.85 U	0.85 U			0.9 U			0.9 U	18 U	0.9 U
Ethane											
Ethene											
Methane											

Well Node	**MW16-87**	**MW16-88**	**MW16-89**	**MW16-90**	**TW16-101**	**TW16-102**	**TW16-103**	**TW16-104**	**TW16-106**	**TW16-107**	**TW16-109**
Investigation	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**
Sample Code	**NS**	**NS**	**NS**	**NORMAL**	**NORMAL**	**NS**	**NORMAL**	**NORMAL**	**NS**	**NS**	**NS**
Deep Overburden											
Tetrachloroethene				0.1 U	0.1 UJ		0.1 U	0.1 U			
Trichloroethene				**16**	**29**		0.1 U	**2.5**			
1,1-Dichloroethane				0.1 U	**0.18 J**		0.1 U	0.1 U			
1,1-Dichloroethane, LV											
1,1-Dichloroethene				0.1 U	**0.31 J**		0.1 U	0.1 U			
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene				**2.4**	0.53 U		1 U	0.53 U			
trans-1,2-Dichloroethene				0.44 U	0.5 U		1 U	0.5 U			
Total 1,2-Dichloroethene											
1,2-Dichloroethane				0.1 U	0.1 UJ		0.1 U	0.1 U			
1,2-Dichloroethane, LV											
Vinyl Chloride				0.1 U	**0.14 J**		0.1 U	0.1 U			
Vinyl Chloride, LV											
Chloroethane				0.75 U	0.9 U		1 U	0.9 U			
Ethane											
Ethene											
Methane											

Well Node	**MW16-87**	**MW16-88**	**MW16-89**	**MW16-90**	**TW16-101**	**TW16-102**	**TW16-103**	**TW16-104**	**TW16-106**	**TW16-107**	**TW16-109**
Investigation	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**
Sample Code											
Shallow Bedrock											
Tetrachloroethene											
Trichloroethene											
1,1-Dichloroethane											
1,1-Dichloroethane, LV											
1,1-Dichloroethene											
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene											
1,2-Dichloroethane											
1,2-Dichloroethane, LV											
Vinyl Chloride											
Vinyl Chloride, LV											
Chloroethane											
Ethane											
Ethene											
Methane											

Well Node	**MW16-87**	**MW16-88**	**MW16-89**	**MW16-90**	**TW16-101**	**TW16-102**	**TW16-103**	**TW16-104**	**TW16-106**	**TW16-107**	**TW16-109**
Investigation	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**	**Round 10**
Sample Code											
Deep Bedrock											
Tetrachloroethene											
Trichloroethene											
1,1-Dichloroethane											
1,1-Dichloroethane, LV											
1,1-Dichloroethene											
1,1-Dichloroethene, LV											
cis-1,2-Dichloroethene											
trans-1,2-Dichloroethene											
Total 1,2-Dichloroethene											
1,2-Dichloroethane											
1,2-Dichloroethane, LV											
Vinyl Chloride											
Vinyl Chloride, LV											
Chloroethane											
Ethane											
Ethene											
Methane											

TABLE 4-56

SUMMARY OF PRIMARY CHLORINATED VOCs AND DEGRADATION PRODUCTS
BY GROUNDWATER ZONE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Description:
02 - EBS Phase II Follow-On Sampling
03 - EBS Phase II Follow-On Addendum Sampling
05 - Stage II Phase I RI Sampling Event
06 - Phase II RI Sampling Event
08 - CTO 97 Supplemental Phase II Investigation
09 - CTO 107 HRC Injection Study
10 - Phase III Sampling Event

Qualifiers:
J - Estimated value.
U - Nondetected result.
UJ - Nondetected result is estimated.

Sample Code Description:
NORMAL - One sample was collected at this location.
NS - No sample collected during this sampling event.
AVG - Average concentration for duplicate samples.

Acronyms:
LV = Low level
RI = Remedial Investigation
VOC = Volatile organic compound

A blank cell indicates that the chemical was not a target analyte for the sampling event.

TABLE 4-57

SUMMARY OF CHEMICALS DETECTED IN ALLEN HARBOR WATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**TW16-AH-01**	**TW16-AH-01**	**TW16-AH-01**	**TW16-AH-02**	**TW16-AH-02**	**TW16-AH-03**	**TW16-AH-03**	**TW16-AH-03**
Sample Number	**TW16-AH-01-0305**	**TW16-AH-01-0810**	**TW16-AH-01-0810-D**	**TW16-AH-02-0305**	**TW16-AH-02-0810**	**TW16-AH-03-0305**	**TW16-AH-03-0810**	**TW16-AH-03-0810-D**
Sample Date	**20070807**	**20070807**	**20070807**	**20070807**	**20070807**	**20070809**	**20070809**	**20070809**
Samle Code	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**	**ORIG**	**DUP**
Depth Range (feet)	**3 - 5**	**8 - 10**	**8 - 10**	**3 - 5**	**8 - 10**	**3 - 5**	**8 - 10**	**8 - 10**
Matrix	**GW**	**GW**	**GW**	**GW**	**GW**	**GW**	**GW**	**GW**
Duplicate			**TW16-AH-01-0810**					**TW16-AH-03-0810**
Area	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**
Volatile Organic Compounds (ug/L)								
1,1-Dichloroethene	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	**1.4**	**3.2**	0.5 U	0.5 U
BTEX	0 U	0 U	0 U	0 U	**1.4**	**4.7**	0 U	0 U
cis-1,2-Dichloroethene	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U
Methyl Tert-Butyl Ether	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	**1.4**
Toluene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	**1.5**	0.33 U	0.33 UJ
Total Chlorinated VOCs	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
trans-1,2-Dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl Chloride	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U
Miscellaneous Parameters								
Turbidity	**4.45**	**6.8**		**9.43**	**90.4**	**3.77**	**4.55**	

TABLE 4-57

SUMMARY OF CHEMICALS DETECTED IN ALLEN HARBOR WATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**TW16-AH-04**	**TW16-AH-04**	**SW16-AH-05S**	**TW16-AH-05/SW16-05C**	**TW16-AH-05/SW16-05C**	**TW16-AH-05/SW16-05C**	**TW16-AH-06**	**TW16-AH-06**
Sample Number	**TW16-AH-04-0305**	**TW16-AH-04-0810**	**SW16-AH-05S-081107**	**TW16-AH-05-0305**	**TW16-AH-05-0810**	**SW16-AH-05C-081107**	**TW16-AH-06-0305**	**TW16-AH-06-0810**
Sample Date	**20070807**	**20070807**	**20070811**	**20070808**	**20070808**	**20070811**	**20070810**	**20070810**
Samle Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Depth Range (feet)	**3 - 5**	**8 - 10**	**Above Sediments**	**3 - 5**	**8 - 10**	**Above Sediments**	**3 - 5**	**8 - 10**
Matrix	**GW**	**GW**	**SW**	**GW**	**GW**	**SW**	**GW**	**GW**
Duplicate								
Area	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**
Volatile Organic Compounds (ug/L)								
1,1-Dichloroethene	0.76 U	0.76 U	0.1 U	0.76 U	0.76 U	0.1 U	0.76 U	0.76 U
Benzene	0.5 U	0.5 U	0.1 U	0.5 U	0.5 U	0.1 U	0.5 U	0.5 U
BTEX	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
cis-1,2-Dichloroethene	0.53 U	**3**	0.53 U	**130**	**20**	0.53 U	0.53 U	**5**
Methyl Tert-Butyl Ether	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U
Toluene	0.33 U	0.33 UJ	0.33 UJ	0.33 U	0.33 U	0.33 UJ	0.33 UJ	0.33 UJ
Total Chlorinated VOCs	0 U	**21**	0 U	**360**	**1122**	0 U	**93**	**465**
trans-1,2-Dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	0.5 U	**18**	0.1 U	**230 J**	**1100 J**	0.1 U	**93 J**	**460**
Vinyl Chloride	0.51 U	0.51 U	0.1 U	0.51 U	**2**	0.1 U	0.51 U	0.51 U
Miscellaneous Parameters								
Turbidity	**7.2**	**115**		**20.3**	**151**		**147**	**212**

TABLE 4-57

SUMMARY OF CHEMICALS DETECTED IN ALLEN HARBOR WATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**SW16-AH-07S**	**TW16-AH-07/SW16-07C**	**TW16-AH-07/SW16-07C**	**TW16-AH-08**	**TW16-AH-08**	**TW16-AH-09**	**TW16-AH-09**	**TW16-AH-10**
Sample Number	**SW16-AH-07S-081107**	**TW16-AH-07-0305**	**TW16-AH-07-0810**	**TW16-AH-08-0305**	**TW16-AH-08-0810**	**TW16-AH-09-0305**	**TW16-AH-09-0810**	**TW16-AH-10-0305**
Sample Date	**20070811**	**20070809**	**20070809**	**20070809**	**20070809**	**20070811**	**20070811**	**20070809**
Samle Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Depth Range (feet)	**Above Sediments**	**3 - 5**	**8 - 10**	**3 - 5**	**8 - 10**	**3 - 5**	**8 - 10**	**3 - 5**
Matrix	**SW**	**GW**	**GW**	**GW**	**GW**	**GW**	**GW**	**GW**
Duplicate								
Area	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**
Volatile Organic Compounds (ug/L)								
1,1-Dichloroethene	0.1 U	**2.5**	**1**	**1.7**	0.76 U	0.76 U	0.76 U	0.76 U
Benzene	0.1 U	**1.3**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BTEX	0 U	**1.3**	0 U	0 U	0 U	0 U	0 U	0 U
cis-1,2-Dichloroethene	0.53 U	**280 J**	**13**	**190**	**14**	0.53 U	0.53 U	0.53 U
Methyl Tert-Butyl Ether	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U
Toluene	0.33 UJ	0.33 U	0.33 UJ	0.33 U	0.33 U	0.33 UJ	0.33 UJ	0.33 UJ
Total Chlorinated VOCs	0 U	**1044.4**	**744**	**946.8**	**584**	0 U	0 U	**3.2**
trans-1,2-Dichloroethene	0.5 U	**1.9**	0.5 U	**1.3**	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	0.1 U	**760 J**	**730**	**750 J**	**570 J**	0.5 U	0.5 U	**3.2**
Vinyl Chloride	0.1 U	0.51 U	0.51 U	**3.8**	0.51 U	0.51 U	0.51 U	0.51 U
Miscellaneous Parameters								
Turbidity	**4.1**		**4.89**	**43.8**	**9.3**	**23.8**	**30.4**	**71.2**

TABLE 4-57

SUMMARY OF CHEMICALS DETECTED IN ALLEN HARBOR WATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	**10**	**10**	**10**	**10**	**10**
Location	**TW16-AH-10**	**TW16-AH-11**	**TW16-AH-12**	**TW16-AH-12**	**TW16-AH-12**
Sample Number	**TW16-AH-10-0810**	**TW16-AH-11-0810**	**TW16-AH-12-0305**	**TW16-AH-12-0305-D**	**TW16-AH-12-0810**
Sample Date	**20070809**	**20070807**	**20070810**	**20070810**	**20070810**
Samle Code	**NORMAL**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**
Depth Range (feet)	**8 - 10**	**8 - 10**	**3 - 5**	**3 - 5**	**8 - 10**
Matrix	**GW**	**GW**	**GW**	**GW**	**GW**
Duplicate				**TW16-AH-12-0305**	
Area	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**
Volatile Organic Compounds (ug/L)					
1,1-Dichloroethene	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BTEX	0 U	0 U	0 U	0 U	0 U
cis-1,2-Dichloroethene	**1.1**	0.53 U	0.53 U	0.53 U	0.53 U
Methyl Tert-Butyl Ether	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U
Toluene	0.33 UJ	0.33 U	0.33 UJ	0.33 UJ	0.33 UJ
Total Chlorinated VOCs	**66.1**	0 U	0 U	0 U	0 U
trans-1,2-Dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	**65**	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl Chloride	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U
Miscellaneous Parameters					
Turbidity	**3.8**	**57.8**	**46.7**		**9.54**

TABLE 4-57

SUMMARY OF CHEMICALS DETECTED IN ALLEN HARBOR WATER SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Notes:
These are deep surface water and groundwater samples from piezometers advanced to sample groundwater underlying Allen Harbor.
Bolding indicates that the chemical was detected in the sample.
BTEX = Benzene, toluene, ethylbenzene, and total xylenes.
CVOCs = See text for definition of chlorinated VOCs.

Matrix Codes
GW = Groundwater
SW = Surface Water

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

TABLE 4-58

SUMMARY OF CHEMICALS DETECTED IN SEEP SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 1 OF 3

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	Ecological Criteria	03 28-SP-01 28-SP01-NGW-101598 NORMAL 10/15/1998	05 OPW16-01 OPW16-01-NWG-032201 NORMAL 3/22/2001	05 SEEP16-01 SEEP16-01-NWG-032101 ORIG 3/21/2001	05 SEEP16-01 SEEP16-01-NWG-032101-D DUP 3/21/2001	05 SEEP16-02 SEEP16-02-NWG-032601 NORMAL 3/26/2001
Volatile Organic Compounds (ug/L)									
Acetone	22000	NA	NA	1500	5 U	**0.9 J**	5 UJ	5 UJ	5 UJ
cis-1,2-Dichloroethene	370	70	70	2240		2 U	2 U	2 U	**0.7**
Total 1,2-Dichloroethene	330	NA	70	2240	1 U	2 U	2 U	2 U	**0.7**
Total Chlorinated VOCs[1]	NA	NA	NA	NA	0 U	0 U	**0.5**	**0.4**	**1.4**
Trichloroethene	1.7	5	5	20	1 U	1 U	1 U	1 U	**0.7**
Vinyl Chloride	0.016	2	2	NA	1 U	2 U	**0.5 J**	**0.4**	2 U
Semivolatile Organic Compounds (ug/L)									
2-Methylnaphthalene	150	NA	NA	3	1 U	10 U	**1**	**0.8**	
Acenaphthene	2200	NA	NA	71	**17**	10 U	**31**	**31**	
Anthracene	11000	NA	NA	3	1 U	10 U	**1**	**2**	
Bis(2-ethylhexyl)phthalate	4.8	6	6	360	2 U	**39**	10 U	10 U	
di-n-Octyl Phthalate	1500	NA	NA	0.34	1 U	**1**	10 U	10 U	
Dibenzofuran	NA	NA	NA	3.7	**8**	10 U	**11**	**12**	
Fluoranthene	1500	NA	NA	1.6	**4**	10 U	**2**	**5**	
Fluorene	1500	NA	NA	3	**12**	10 U	**17**	**18**	
Naphthalene	0.14	NA	20	23.5	**3**	10 U	**9**	**5**	
Phenanthrene	1100	NA	NA	4.6	**7**	10 U	**10**	**8**	
Pyrene	1100	NA	NA	3	**2**	10 U	**1**	**2**	
Total PAHs[1]	NA	NA	NA	3	**45**	0 U	**72**	**71.8**	
Polycyclic Aromatic Hydrocarbons (ug/L)									
2-Methylnaphthalene	150	NA	NA	3		0.2 U	**1**	**0.9**	0.2 U
Acenaphthene	2200	NA	NA	71		0.2 U	**34**	**37**	0.2 U
Acenaphthylene	2200	NA	NA	3		0.2 U	**0.2 J**	**0.2**	0.2 U
Anthracene	11000	NA	NA	3		0.2 U	**2 J**	**1 J**	0.2 U
Fluoranthene	1500	NA	NA	1.6		**0.1**	**2 J**	**3 J**	0.2 U
Fluorene	1500	NA	NA	3		0.2 U	**14**	**15**	0.2 U
Naphthalene	0.14	NA	20	23.5		0.2 U	**6 J**	**2**	0.2 U
Phenanthrene	1100	NA	NA	4.6		**0.1**	**9**	**5 J**	0.2 U
Pyrene	1100	NA	NA	3		**0.1**	**1**	**1**	0.2 U
Total PAHs[1]	NA	NA	NA	3		**0.3**	**69.2**	**65.1**	0 U
Pesticides (ug/L)									
alpha-BHC	0.011	NA	NA	0.16	0.001 U	0.05 U	**0.03 J**	**0.03**	0.05 U
Dieldrin	0.0042	NA	NA	0.0019	**0.02**	0.1 U	0.1 U	0.1 U	0.1 U
Endrin	11	2	NA	0.0023	**0.0039 J**	0.1 U	0.1 U	0.1 U	0.1 U
Heptachlor Epoxide	0.0074	0.2	NA	0.0036	**0.02 J**	0.05 U	0.05 U	0.05 U	0.05 U
Total Metals (ug/L)									
Barium	7300	2000	2000	4		**9.9**	**300**	**291**	**2.3**
Calcium	NA	NA	NA	NA		**1450**	**46200**	**48300**	**26700**
Chromium	110	100	100	50		**4**	0.57 U	0.57 U	0.76 U
Cobalt	11	NA	NA	23		0.92 U	0.92 U	0.92 U	**10.2**
Copper	1500	1300	NA	3.1		**4**	**8.9**	0.84 U	0.84 U
Iron	26000	NA	NA	1000		**438**	**32000**	**27200**	**6480**
Lead	NA	15	15	8.1		**18.8**	**12.4**	1.48 U	3 U

TABLE 4-58

SUMMARY OF CHEMICALS DETECTED IN SEEP SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	**ORNL Regional Screening Level Tap Water**	**Federal MCL**	**RIDEM GA GW Objectives**	**Ecological Criteria**	**03 28-SP-01 28-SP01-NGW-101598 NORMAL 10/15/1998**	**05 OPW16-01 OPW16-01-NWG-032201 NORMAL 3/22/2001**	**05 SEEP16-01 SEEP16-01-NWG-032101 ORIG 3/21/2001**	**05 SEEP16-01 SEEP16-01-NWG-032101-D DUP 3/21/2001**	**05 SEEP16-02 SEEP16-02-NWG-032601 NORMAL 3/26/2001**
Total Metals (ug/L) (Continued)									
Magnesium	NA	NA	NA	NA		**280**	**4820**	**4840**	**27000**
Manganese	880	NA	NA	120		**8.9**	**441**	**450**	**2170**
Mercury	11	2	2	0.94		0.08 U	0.11 U	0.03 U	**0.1**
Nickel	730	NA	100	8.2		1.3 U	3.5 U	1.5 U	**1.1 J**
Potassium	NA	NA	NA	NA		**173**	**3610**	**3590**	**10800**
Sodium	NA	NA	NA	NA		**3130**	**13700**	**13200**	**182000**
Vanadium	180	NA	NA	20		1.8 U	**3.2**	0.52 U	0.52 U
Zinc	11000	NA	NA	81		**32.6**	**23.6**	1.2 U	**43.8**
Dissolved Metals (ug/L)									
Aluminum	37000	NA	NA	87	**2630**	120 U	100 U	108 U	53.7 U
Arsenic	0.045	10	NA	36	**1.9 J**	2.53 U	2.53 U	2.53 U	2.53 U
Barium	7300	2000	2000	4	**370**	**4.5**	**280**	**263**	**1.8**
Beryllium	73	4	4	0.53	**0.21 J**	0.18 U	0.18 U	0.18 U	0.18 U
Calcium	NA	NA	NA	NA	48700 U	**1320**	**49100**	**46800**	**25700**
Cobalt	11	NA	NA	23	6.3 U	0.92 U	0.92 U	0.92 U	**9**
Iron	26000	NA	NA	1000	34600 U	**35**	**21600**	**19800**	**5100**
Lead	NA	15	15	8.1	**29.3**	**1.9 J**	1.48 U	1.48 U	2.9 U
Magnesium	NA	NA	NA	NA	**8900**	**203**	**4930**	**4710**	**26200**
Manganese	880	NA	NA	120	431 U	**4**	**456**	**434**	**2040**
Mercury	11	2	2	0.94	0.2 U	0.04 U	0.11 U	0.05 U	**0.07**
Nickel	730	NA	100	8.2	9.6 U	1 U	0.72 U	0.72 U	**2.1**
Potassium	NA	NA	NA	NA	6030 U	**107**	**3670**	**3480**	**10500**
Sodium	NA	NA	NA	NA	**51900**	**3080**	**13600**	**13000**	**176000**
Vanadium	180	NA	NA	20	**8.1 J**	0.52 U	0.52 U	0.52 U	0.52 U
Zinc	11000	NA	NA	81	54.8 U	**20.1**	0.85 U	1.5 U	10.5 U
Miscellaneous Parameters (ppth)									
Salinity	NA	NA	NA	NA			**0.08 J**		**0.62 J**

Investigation Description:
03 - EBS Phase II Follow-On Addendum Sampling
05 - Stage II Phase I RI Sampling Event

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

TABLE 4-58

SUMMARY OF CHEMICALS DETECTED IN SEEP SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Tap Water	Federal MCL	RIDEM GA GW Objectives	Ecological Criteria	03 28-SP-01 28-SP01-NGW-101598 NORMAL 10/15/1998	05 OPW16-01 OPW16-01-NWG-032201 NORMAL 3/22/2001	05 SEEP16-01 SEEP16-01-NWG-032101 ORIG 3/21/2001	05 SEEP16-01 SEEP16-01-NWG-032101-D DUP 3/21/2001	05 SEEP16-02 SEEP16-02-NWG-032601 NORMAL 3/26/2001

Acronyms:
GA = Drinking water suitability
GW = Groundwater
MCL = Maximum Contaminant Level
NA = Not Applicable/Not Available
PAH = Polycyclic aromatic Hydrocarbon
PRG = Preliminary Remediation Goal
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
VOC = Volatile Organic Compound

Footnotes:
1 - The calculation of the Total PAHs is defined in Section 4. "0U" indicates that this chemical group was not detected in the sample analyzed.
2 - A concentration that is shaded exceeds the criteria presented in the table.
3 - A blank cell indicates that the sample was not analyzed for the target analyte.

TABLE 4-59

SUMMARY OF CHEMICALS DETECTED IN 2007 SEEP SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date Area	ORNL Regional Screening Levels Tap Water	Federal MCL	RIDEM GA GW Objectives	Ecological Criteria	10 SP16-AH-01 SP16-AH-01-082807 ORIG 20070828 ALLEN HARBOR	10 SP16-AH-01 SP16-AH-01-082807-AVG AVG 20070828 ALLEN HARBOR	10 SP16-AH-01 SP16-AH-01-082807-DUP DUP 20070828 ALLEN HARBOR	10 SP16-AH-01 SP16-AH-01-082807(FILTER) ORIG 20070828 ALLEN HARBOR	10 SP16-AH-01 SP16-AH-01-082807(FILTER) AVG 20070828 ALLEN HARBOR	10 SP16-AH-01 SP16-AH-01-082807(FILTER) DUP 20070828 ALLEN HARBOR
Polycyclic Aromatic Hydrocarbons (ng/L)										
2-Methylnaphthalene	150000	NA	NA	3000	5.1 U	**4.78 J**	**7 J**			
Acenaphthene	2200000	NA	NA	71000	**730**	**765 J**	**800 J**			
Acenaphthylene	2200000	NA	NA	3000	**26**	**27 J**	**28 J**			
Anthracene	11000000	NA	NA	3000	**53 J**	**40.5 J**	**28 J**			
BaP Equivalent	NA	NA	NA	NA	10 U	**5.71**	**6.03**			
Benzo(a)anthracene	29	NA	NA	3000	1.1 U	**3.68 J**	**6.8 J**			
Benzo(a)pyrene	2.9	200	200	3000	10 U	**2.1 J**	**2.1 J**			
Benzo(b)fluoranthene	29	NA	NA	3000	10 U	**9.6 J**	**9.6 J**			
Benzo(g,h,i)perylene	1100000	NA	NA	3000	**1.1 J**	**3 J**	**4.9 J**			
Benzo(k)fluoranthene	290	NA	NA	3000	10 U	**7.3 J**	**7.3 J**			
Chrysene	2900	NA	NA	3000	1.7 U	**7.43**	**14**			
Dibenzo(a,h)anthracene	2.9	NA	NA	3000	10 U	**1.7 J**	**1.7 J**			
Dibenzofuran	NA	NA	NA	3700	**230**		**240**			
Fluoranthene	1500000	NA	NA	1600	**120**	**135 J**	**150 J**			
Fluorene	1500000	NA	NA	3000	**360**	**365 J**	**370 J**			
High Molecular Weight PAHs	NA	NA	NA	3000	**177**	**240**	**276**			
Indeno(1,2,3-cd)pyrene	29	NA	NA	3000	10 U	**5 J**	**5 J**			
Low Molecular Weight PAHs	NA	NA	NA	3000	**1235**	**1285**	**1330**			
Naphthalene	140	NA	20000	3000	6.8 U	**6.55 J**	**9.7 J**			
Phenanthrene	1100000	NA	NA	4600	**66**	**76.5 J**	**87 J**			
Pyrene	1100000	NA	NA	3000	**56**	**65.5 J**	**75 J**			
Total PAHs	NA	NA	NA	3000	**1412**	**1526**	**1606**			
Total PAHs Ecosd	NA	NA	NA	3000	**1411**	**1501**	**1579**			
Filtered Polycyclic Aromatic Hydrocarbons (ng/L)										
Acenaphthylene	2200000	NA	NA	3000				**0.61 J**	**0.905 J**	**1.2 J**
Anthracene	11000000	NA	NA	3000				10 UJ	**1.4 J**	**1.4 J**
Dibenzofuran	NA	NA	NA	3700				10 U		**1.4 J**
Fluoranthene	1500000	NA	NA	1600				**6 J**	**6.25 J**	**6.5 J**
High Molecular Weight PAHs	NA	NA	NA	3000				**6**	**6.25**	**6.5**
Low Molecular Weight PAHs	NA	NA	NA	3000				**0.61**	**2.31**	**2.6**
Total PAHs	NA	NA	NA	3000				**6.61**	**8.56**	**9.1**
Total PAHs Ecosd	NA	NA	NA	3000				**6.61**	**8.56**	**9.1**
Petroleum Hydrocarbons (mg/L)										
TPH (C09-C36)	NA	NA	NA	NA	**0.12**	**0.14**	**0.16**			
TPH (C09-C44)	NA	NA	NA	NA	**0.094**	**0.117**	**0.14**			

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Acronyms:
GA = Drinking water suitability
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MCL = Maximum Contaminant Level
NA = Not Applicable/Not Available
PAH = Polycyclic aromatic Hydrocarbon
PRG = Preliminary Remediation Goal
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management

Footnotes:
1 - The calculation of the Total PAHs is defined in Section 4. "0U" indicates that this chemical group was not detected in the sample analyzed.
2 - A concentration that is shaded exceeds the criteria presented in the table.
3 - A blank cell indicates that the sample was not analyzed for the target analyte.

TABLE 4-60

SUMMARY OF DESCRIPTIVE STATISTICS - SEEP SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects	Mean Concentration[2]	Average of Positive Detects[2]	Sample with Maximum Detection	ORNL Regional Screening Levels - Tap Water[3]	EPA MCL[4]	RIDEM GA Groundwater Objective[5]	Ecological Criterion	Source
Volatile Organic Compounds (ug/L)												
Acetone	1/4	0.9 J	0.9 J	5 - 5	2.10	0.900	OPW16-01-NWG-032201	22,000 N	NA	NA	1,500	1
cis-1,2-Dichloroethene	1/3	0.7	0.7	2 - 2	0.900	0.700	SEEP16-02-NWG-032601	370 N	70	70	2,240	2[11]
Total 1,2-Dichloroethene	1/4	0.7	0.7	1 - 2	0.800	0.700	SEEP16-02-NWG-032601	330 N	NA	70	2,240	2[11]
Total Chlorinated VOCs	2/4	0.4	1.4	1 - 1	0.713	0.925	SEEP16-02-NWG-032601	NA	NA	NA	NA	
Trichloroethene	1/4	0.7	0.7	1 - 1	0.550	0.700	SEEP16-02-NWG-032601	1.7 C	5	5	20	2[11]
Vinyl Chloride	1/4	0.4	0.5 J	1 - 2	0.738	0.450	SEEP16-01-NWG-032101	**0.016 C**	2	2	NA	
Semivolatile Organic Compounds (ug/L)												
2-Methylnaphthalene	1/3	0.8	1	1 - 10	2.13	0.900	SEEP16-01-NWG-032101	150 N	NA	NA	3	2[11]
Acenaphthene	2/3	17	31	10 - 10	17.7	24.0	SEEP16-01-NWG-032101-D	2,200 N	NA	NA	71	2[12]
Acenaphthene	2/3	17	31	10 - 10	17.7	24.0	SEEP16-01-NWG-032101	2,200 N	NA	NA	71	2[12]
Anthracene	1/3	1	2	1 - 10	2.33	1.50	SEEP16-01-NWG-032101-D	11,000 N	NA	NA	3	2[11]
Bis(2-ethylhexyl)phthalate	1/3	39	39	2 - 10	15.0	39.0	OPW16-01-NWG-032201	**4.8 C**	**6**	**6**	360	2
di-n-Octyl Phthalate	1/3	1	1	1 - 10	2.17	1.00	OPW16-01-NWG-032201	1,500 N	NA	NA	**0.34**	2[12]
Dibenzofuran	2/3	8	12	10 - 10	8.17	9.75	SEEP16-01-NWG-032101-D	NA	NA	NA	**3.7**	1
Fluoranthene	2/3	2	5	10 - 10	4.17	3.75	SEEP16-01-NWG-032101-D	1,500 N	NA	NA	**1.6**	2[12]
Fluorene	2/3	12	18	10 - 10	11.5	14.8	SEEP16-01-NWG-032101-D	1,500 N	NA	NA	**3**	2[11]
High Molecular Weight PAHs	2/3	3	7	10 - 10	5.33	5.50	SEEP16-01-NWG-032101-D	NA	NA	NA	NA	NA
Low Molecular Weight PAHs	2/3	39	69	10 - 10	37.0	53.0	SEEP16-01-NWG-032101	NA	NA	NA	NA	NA
Naphthalene	2/3	3	9	10 - 10	5.00	5.00	SEEP16-01-NWG-032101	**0.14 C**	NA	20	23.5	2[11]
Phenanthrene	2/3	7	10	10 - 10	7.00	8.00	SEEP16-01-NWG-032101	1,100 N[6]	NA	NA	**4.6**	2
Pyrene	2/3	1	2	10 - 10	2.83	1.75	28-SP01-NGW-101598, SEEP16-01-NWG-032101-D	1,100 N	NA	NA	3	2[11]
Total PAHs	2/3	45	72	0 - 0	39.0	58.5	SEEP16-01-NWG-032101	NA	NA	NA	**3**	2[11]
Polycyclic Aromatic Hydrocarbons (ng/L)												
2-Methylnaphthalene	2/4	7 J	1,000	5.1 - 200	289	477	SEEP16-01-NWG-032101	150,000 N	NA	NA	3,000	2[11]
Acenaphthene	2/4	550	37,000	200 - 200	9,116	18,133	SEEP16-01-NWG-032101-D	2,200,000 N	NA	NA	71,000	2[12]
Acenaphthylene	2/4	13	200 J	200 - 200	107	114	SEEP16-01-NWG-032101, SEEP16-01-NWG-032101-D	2,200,000 N[7]	NA	NA	3,000	2[11]
Anthracene	2/4	28 J	2,000 J	200 - 200	435	770	SEEP16-01-NWG-032101	11,000,000 N	NA	NA	3,000	2[11]
Benzo(a)pyrene Equivalents	1/4	6.027	6.027	0 - 10	1.43	5.71	SP16-AH-01-082807-D	**2.9 C**	200	200	NA	
Benzo(a)anthracene	1/4	2.4 JB	6.8 J	1.1 - 200	75.9	3.68	SP16-AH-01-082807-D	29 C	NA	NA	3,000	2[11]
Benzo(a)pyrene	1/4	2.1 J	2.1 J	10 - 200	75.5	2.10	SP16-AH-01-082807-D	2.9 C	200	200	3,000	2[11]
Benzo(b)fluoranthene	1/4	9.6 J	9.6 J	10 - 200	77.4	9.60	SP16-AH-01-082807-D	29 C	NA	NA	3,000	2[11]
Benzo(g,h,i)perylene	1/4	1.1 J	4.9 J	200 - 200	75.8	3.00	SP16-AH-01-082807-D	1,100,000 N[6]	NA	NA	3,000	2[11]
Benzo(k)fluoranthene	1/4	7.3 J	7.3 J	10 - 200	76.8	7.30	SP16-AH-01-082807-D	290 C	NA	NA	3,000	2[11]
Chrysene	1/4	14	14	1.7 - 200	76.9	7.43	SP16-AH-01-082807-D	2,900 C	NA	NA	3,000	2[11]
Dibenzo(a,h)anthracene	1/4	1.7 J	1.7 J	10 - 200	75.4	1.70	SP16-AH-01-082807-D	2.9 C	NA	NA	3,000	2[11]
Fluoranthene	3/4	100	3,000 J	200 - 200	709	912	SEEP16-01-NWG-032101-D	1,500,000 N	NA	NA	**1,600**	2[12]
Fluorene	2/4	270	15,000	200 - 200	3,766	7,433	SEEP16-01-NWG-032101-D	1,500,000 N	NA	NA	**3,000**	2[11]
High Molecular Weight PAHs	3/4	177.1	4,000	200 - 200	1,010	1,313	SEEP16-01-NWG-032101-D	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1/4	5 J	5 J	10 - 200	76.3	5.00	SP16-AH-01-082807-D	29 C	NA	NA	3,000	2[11]
Low Molecular Weight PAHs	3/4	100	66,200	200 - 200	16,284	21,678	SEEP16-01-NWG-032101	NA	NA	NA	NA	NA
Naphthalene	2/4	9.7 J	6,000 J	6.8 - 200	1,052	2,003	SEEP16-01-NWG-032101	**1,400 C**	NA	20,000	23,500	2[11]
Phenanthrene	3/4	66	9,000	200 - 200	1,819	2,392	SEEP16-01-NWG-032101	1,100,000 N[6]	NA	NA	**4,600**	2

TABLE 4-60

SUMMARY OF DESCRIPTIVE STATISTICS - SEEP SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects	Mean Concentration[2]	Average of Positive Detects[2]	Sample with Maximum Detection	ORNL Regional Screening Levels - Tap Water[3]	EPA MCL[4]	RIDEM GA Groundwater Objective[5]	Ecological Criterion	Source
Polycyclic Aromatic Hydrocarbons (ng/L) (continued)												
Pyrene	3/4	56	1,000	200 - 200	316	389	SEEP16-01-NWG-032101-D, SEEP16-01-NWG-032101	1,100,000 N	NA	NA	3,000	2[11]
Total PAHs	3/4	300	69,200	0 - 0	17,256	23,009	SEEP16-01-NWG-032101	NA	NA	NA	**3,000**	2[11]
Filtered Polycyclic Aromatic Hydrocarbons (ng/L)												
Acenaphthylene	1/1	0.61 J	1.2 J	-	0.905	0.905	SP16-AH-01-082807(FILTER)-D	2,200,000 N[7]	NA	NA	3,000	2[11]
Anthracene	1/1	1.4 J	1.4 J	10 - 10	1.40	1.40	SP16-AH-01-082807(FILTER)-D	11,000,000 N	NA	NA	3,000	2[11]
Fluoranthene	1/1	6 J	6.5 J	-	6.25	6.25	SP16-AH-01-082807(FILTER)-D	1,500,000 N	NA	NA	1,600	2[12]
High Molecular Weight PAHs	1/1	6	6.5	-	6.25	6.25	SP16-AH-01-082807(FILTER)-D	NA	NA	NA	NA	NA
Low Molecular Weight PAHs	1/1	0.61	2.6	-	2.31	2.31	SP16-AH-01-082807(FILTER)-D	NA	NA	NA	NA	NA
Total PAHs	1/1	6.61	9.1	-	8.56	8.56	SP16-AH-01-082807(FILTER)-D	NA	NA	NA	3,000	2[11]
Pesticides/PCBs (ug/L)												
alpha-BHC	1/4	0.03 J	0.03 J	0.001 - 0.05	0.020	0.030	SEEP16-01-NWG-032101, SEEP16-01-NWG-032101-D	**0.011 C**	NA	NA	0.16	3[13]
Dieldrin	1/4	0.02	0.02	0.1 - 0.1	0.043	0.020	28-SP01-NGW-101598	**0.0042 C**	NA	NA	**0.0019**	3
Endrin	1/4	0.0039 J	0.0039 J	0.1 - 0.1	0.038	0.004	28-SP01-NGW-101598	11 N	2	NA	**0.0023**	3
Heptachlor Epoxide	1/4	0.02 J	0.02 J	0.05 - 0.05	0.024	0.020	28-SP01-NGW-101598	**0.0074 C**	0.2	0.2	**0.0036**	3
Inorganics (ug/L)												
Barium	3/3	2.3	300	-	103	103	SEEP16-01-NWG-032101	7,300 N	2,000	2,000	**4**	1
Calcium	3/3	1,450	48,300	-	25,133	25,133	SEEP16-01-NWG-032101-D	NA	NA	NA	NA	-
Chromium	1/3	4	4	0.57 - 0.76	1.56	4.00	OPW16-01-NWG-032201	110 N[8]	100 [8]	100 [8]	50	3
Cobalt	1/3	10.2	10.2	0.92 - 0.92	3.71	10.2	SEEP16-02-NWG-032601	11 N	NA	NA	23	1
Copper	2/3	4	8.9	0.84 - 0.84	3.03	4.33	SEEP16-01-NWG-032101	1,500 N	1,300 [9]	NA	**3.1**	3
Iron	3/3	438	32,000	-	12,173	12,173	SEEP16-01-NWG-032101	**26,000 N**	NA	NA	**1,000**	3[14]
Lead	2/3	12.4	18.8	1.48 - 3	8.96	12.7	OPW16-01-NWG-032201	NA	**15 [9]**	**15**	**8.1**	3
Magnesium	3/3	280	27,000	-	10,703	10,703	SEEP16-02-NWG-032601	NA	NA	NA	NA	-
Manganese	3/3	8.9	2,170	-	875	875	SEEP16-02-NWG-032601	**880 N**	NA	NA	**120**	1
Mercury	1/3	0.1	0.1	0.03 - 0.11	0.058	0.100	SEEP16-02-NWG-032601	11 N[10]	2	2	0.94	3
Nickel	1/3	1.1 J	1.1 J	1.3 - 3.5	1.00	1.10	SEEP16-02-NWG-032601	730 N	NA	100	8.2	3
Potassium	3/3	173	10,800	-	4,858	4,858	SEEP16-02-NWG-032601	NA	NA	NA	NA	-
Sodium	3/3	3,130	182,000	-	66,193	66,193	SEEP16-02-NWG-032601	NA	NA	NA	NA	-
Vanadium	1/3	3.2	3.2	0.52 - 1.8	0.963	1.73	SEEP16-01-NWG-032101	180 N	NA	NA	20	1
Zinc	3/3	23.6	43.8	1.2 - 1.2	29.5	29.5	SEEP16-02-NWG-032601	11,000 N	NA	NA	81	3
Filtered Inorganics (ug/L)												
Aluminum	1/4	2,630	2,630	53.7 - 120	692	2,630	28-SP01-NGW-101598	37,000 N	NA	NA	**87**	3[14]
Arsenic	1/4	1.9 J	1.9 J	2.53 - 2.53	1.42	1.90	28-SP01-NGW-101598	**0.045 C**	10	NA	36	3
Barium	4/4	1.8	370	-	162	162	28-SP01-NGW-101598	7,300 N	2,000	2,000	**4**	1
Beryllium	1/4	0.21 J	0.21 J	0.18 - 0.18	0.120	0.210	28-SP01-NGW-101598	73 N	4	4	0.53	2[12,14]
Calcium	3/4	1,320	49,100	48700 - 48700	24,830	24,990	SEEP16-01-NWG-032101	NA	NA	NA	NA	-
Cobalt	1/4	9	9	0.92 - 6.3	3.27	9.00	SEEP16-02-NWG-032601	11 N	NA	NA	23	1
Iron	3/4	35	21,600	34600 - 34600	10,784	8,612	SEEP16-01-NWG-032101	26,000 N	NA	NA	**1,000**	3[14]
Lead	2/4	1.9 J	29.3	1.48 - 2.9	8.35	15.6	28-SP01-NGW-101598	NA	**15 [9]**	**15**	**8.1**	3
Magnesium	4/4	203	26,200	-	10,031	10,031	SEEP16-02-NWG-032601	NA	NA	NA	NA	-
Manganese	3/4	4	2,040	431 - 431	676	830	SEEP16-02-NWG-032601	**880 N**	NA	NA	**120**	1
Mercury	1/4	0.07	0.07	0.04 - 0.2	0.058	0.070	SEEP16-02-NWG-032601	11 N[10]	2	2	0.94	3
Nickel	1/4	2.1	2.1	0.72 - 9.6	1.94	2.10	SEEP16-02-NWG-032601	730 N	NA	100	8.2	3
Potassium	3/4	107	10,500	6030 - 6030	4,299	4,727	SEEP16-02-NWG-032601	NA	NA	NA	NA	-

TABLE 4-60

SUMMARY OF DESCRIPTIVE STATISTICS - SEEP SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects	Mean Concentration[2]	Average of Positive Detects[2]	Sample with Maximum Detection	ORNL Regional Screening Levels - Tap Water[3]	EPA MCL[4]	RIDEM GA Groundwater Objective[5]	Ecological Criterion	Source
Filtered Inorganics (ug/L) (continued)												
Sodium	4/4	3,080	176,000	-	61,070	61,070	SEEP16-02-NWG-032601	NA	NA	NA	NA	-
Vanadium	1/4	8.1 J	8.1 J	0.52 - 0.52	2.22	8.10	28-SP01-NGW-101598	180 N	NA	NA	20	1
Zinc	1/4	20.1	20.1	0.85 - 54.8	13.3	20.1	OPW16-01-NWG-032201	11,000 N	NA	NA	81	3
Miscellaneous Parameters												
Salinity	2/2	0.08 J	0.62 J	-	0.350	0.350	SEEP16-02-NWG-032601	NA	NA	NA	NA	NA
Petroleum Hydrocarbons (mg/L)												
TPH (C09-C36)	1/1	0.12	0.16	-	0.140	0.140	SP16-AH-01-082807-D	NA	NA	NA	NA	NA
TPH (C09-C44)	1/1	0.094	0.14	-	0.117	0.117	SP16-AH-01-082807-D	NA	NA	NA	NA	NA

Notes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
4 - USEPA 2006 Edition of the Drinking Water Standards and Health Advisories, August 2006.
5 - RIDEM, DEM-DSR-01-93, February 2004.
6 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
7 - The value for acenaphthene is used as a surrogate for acenaphthylene.
8 - The value for chromium VI is presented.
9 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
10 - The value for mercuric chloride is presented.
11 - Calculated by multiplying the acute LOEL by 0.01 to estimate a chronic NOEL.
12 - Calculated by multiplying the chronic LOEL by 0.1 to estimate a chronic NOEL.
13 - Acute value for gamma-BHC multiplied by 0.1.
14 - Freshwater value.
Shading indicates that the maximum detected concentration exceeds the screening criteria.

Sources for Ecological Screening Criteria:
1 - Freshwater values (Suter and Tsao, 1996)
2 - Saltwater values (Buchman, 1999)
3 - Water Quality Criteria (USEPA, 2004)

Qualifiers:
C - Carcinogen.
N - Noncarcinogen.
J - Estimated value.

Acronyms:
CSF = Cancer Slope Factor
HI = Hazard Index
LOEL = Lowest Observed Effect Level
MCL = Maximum Contaminant Level
NA = No Criteria Available
NOEL = No Observed Effect Level
PAH = Polycyclic aromatic hydrocarbon
PRG = Preliminary Remediation Goal
RBC = Risk-Based Concentration
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SDWA = Safe Drinking Water Act
U.S. EPA = United States Environmental Protection Agency
VOC = Volatile Organic Carbon

TABLE 4-61

SUMMARY OF CHEMICALS DETECTED IN 2004 SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure Residential	Ecological Criteria	07 AH-03 AH-03-NSD-032304 NORMAL 3/23/2004	07 AH-06 AH-06-NSD-032304 ORIG 3/23/2004	07 AH-06 AH-06-NSD-032304-D DUP 3/23/2004	07 AH-08 AH-08-NSD-032204 NORMAL 3/22/2004	07 AH-11 AH-11-NSD-032204 ORIG 3/22/2004	07 AH-11 AH-11-NSD-032204-D DUP 3/22/2004	07 AH-17 AH-17-NSD-032304 NORMAL 3/23/2004	07 AH-23 AH-23-NSD-032404 NORMAL 3/24/2004
Volatile Organic Compounds (ug/kg)											
1,1-Dichloroethene	250000	200	NA	7 U	12 U	10 U	17 R	11 UJ	12 U	15 U	10 U
2-Butanone	28000000	10000000	NA	**7 J**	**10 J**	**14 J**	33 R	21 U	23 U	**20 J**	21 U
Acetone	61000000	7800000	NA	**220**	**390 J**	**83 J**	210 R	110 U	150 U	**200**	210 U
Carbon Disulfide	670000	NA	NA	11 U	12 U	11 U	24 R	11 U	12 U	24 U	10 U
cis-1,2-Dichloroethene	780000	630000	NA	7 U	12 U	10 U	17 R	11 UJ	12 U	15 U	10 U
Total 1,2-Dichloroethene	700000	630000	NA	7 U	12 U	10 U	17 U	11 U	12 U	15 U	10 U
Total Chlorinated VOCs	NA	NA	NA	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
trans-1,2-Dichloroethene	110000	1100000	---	7 U	12 U	10 U	17 R	11 UJ	12 U	15 U	10 U
Trichloroethene	2800	13000	41	7 U	12 U	10 U	17 R	11 UJ	12 U	15 U	10 U
Semivolatile Organic Compounds (ug/kg)											
2-Methylnaphthalene	310000	123000	70	**6.97 J**	**9.24 J**	**8.24 J**	**16.1 J**	**13.4**	**16.3**	**21.5 J**	**23.1**
Acenaphthene	3400000	43000	16	**10.7**	**8.62**	**7.73**	**13.7 J**	**20.3**	**22.8**	**22.9 J**	**56.5**
Acenaphthylene	3400000	23000	44	**90.1 J**	**58.7 J**	**53.0 J**	**116 J**	**122**	**149**	**172 J**	**260**
Anthracene	17000000	35000	85.3	**275**	**93.4**	**78.6**	**181 J**	**167**	**188**	**208 J**	**390**
Bap Equivalent[1]	NA	400	NA	**1240**	**325**	**295**	**593**	**635**	**694**	**753**	**1253**
Benzo(a)anthracene	150	900	261	**715**	**167**	**155**	**333 J**	**325**	**326**	**381 J**	**665**
Benzo(a)pyrene	15	400	430	**792**	**214**	**195**	**386 J**	**426**	**465**	**497 J**	**829**
Benzo(b)fluoranthene	150	900	1800	**1408**	**281**	**254**	**572 J**	**526 J**	**584**	**642 J**	**1137**
Benzo(g,h,i)perylene	1700000	800	670	**516**	**173**	**153**	**310 J**	**327**	**360**	**412 J**	**606**
Benzo(k)fluoranthene	1500	900	1800	**1101**	**271**	**245**	**519 J**	**500 J**	**552**	**617 J**	**1000**
Bis(2-ethylhexyl)phthalate	35000	46000	182								
Chrysene	15000	400	384	**1644**	**292**	**252**	**616 J**	**549 J**	**571**	**627 J**	**1111**
di-n-Butyl Phthalate	6100000	NA	61								
Dibenzo(a,h)anthracene	15	400	63.4	**156**	**43.4**	**39.3**	**74.9 J**	**82.3**	**90.6**	**101 J**	**160**
Dibenzofuran	NA	NA	110								
Fluoranthene	2300000	20000	600	**1870**	**376**	**335**	**660 J**	**695 J**	**746**	**1084 J**	**1915**
Fluorene	2300000	28000	19	**30.4**	**16.8**	**14.5**	**25.1 J**	**30.1**	**33.6**	**39.4 J**	**73.4**
High Molecular Weight PAHs[1]	NA	NA	1700	**7155**	**1499**	**1345**	**3196**	**2868**	**3094**	**3738**	**6638**
Indeno(1,2,3-cd)pyrene	150	900	600	**663**	**205**	**179**	**357 J**	**367 J**	**412**	**462 J**	**722**
Low Molecular Weight PAHs[1]	NA	NA	552	**776**	**382**	**336**	**685**	**775**	**917**	**1007**	**1774**
Naphthalene	3900	54000	160	**13.6 J**	**18.3 J**	**16.9 J**	**29.7 J**	**26.8**	**32.9**	**45.1 J**	**46.1**
Phenanthrene	1700000	40000	240	**349**	**177**	**157**	**304 J**	**396**	**474**	**498 J**	**925**
Pyrene	1700000	13000	665	**1977**	**406**	**369**	**1125 J**	**791**	**894**	**1049 J**	**1957**
Total PAHs[1]	NA	NA	NA	**11619**	**2810**	**2512**	**5639**	**5363**	**5919**	**6878**	**11876**
Total PAHs Ecosd[1]	NA	NA	4022	**7931**	**1881**	**1681**	**3881**	**3643**	**4011**	**4745**	**8412**
Polycyclic Aromatic Hydrocarbons (ug/kg)											
Acenaphthene	3400000	43000	16								
Acenaphthylene	3400000	23000	44								
Anthracene	17000000	35000	85.3								
Bap Equivalent[1]	NA	400	NA								
Benzo(a)anthracene	150	900	261								
Benzo(a)pyrene	15	400	430								
Benzo(b)fluoranthene	150	900	1800								
Benzo(g,h,i)perylene	1700000	800	670								
Benzo(k)fluoranthene	1500	900	1800								
Chrysene	15000	400	384								
Fluoranthene	2300000	20000	600								
Fluorene	2300000	28000	19								
High Molecular Weight PAHs[1]	NA	NA	1700								
Indeno(1,2,3-cd)pyrene	150	900	600								
Low Molecular Weight PAHs[1]	NA	NA	552								
Phenanthrene	1700000	40000	240								
Pyrene	1700000	13000	665								
Total PAHs Ecosd[1]	NA	NA	4022								
Total PAHs[1]	NA	NA	NA								
Pesticides/PCBs (ug/kg)											
4,4'-DDD	2000	NA	1.22	1.3 U	1.7 U		1.3 R	1.8 U	1.8 U	1.5 U	1.8 U
4,4'-DDE	1400	NA	2.2	**1.6**	1.7 U		**1.6 J**	1.8 UJ	**2.7 J**	1.5 U	**3.4 J**
4,4'-DDT	1700	NA	1.58	1.3 U	1.7 U		1.3 R	1.8 U	1.8 U	1.5 U	1.8 U
alpha-Chlordane	1600	NA	2.26	0.65 U	0.86 U		0.68 R	0.94 U	0.92 U	0.76 U	0.94 U
Aroclor-1260	220	NA	22.7	13 U	**19 J**	**21**	**21 J**	**30 J**	**34**	**17 J**	**70**
delta-BHC	77	NA	0.32	0.65 U	0.86 U		0.68 R	0.94 U	0.92 U	0.76 U	0.94 U
Dieldrin	30	40	280	1.3 U	1.7 U		1.3 R	1.8 U	1.8 U	1.5 U	9.6 R
Endosulfan Sulfate	370000	NA	5.4	1.3 U	1.7 U		1.3 R	1.8 U	1.8 U	1.5 U	1.8 U
Endrin Ketone	18000	NA	9.9	1.3 U	1.7 U		1.3 R	1.8 UJ	1.8 U	1.5 U	1.8 U

TABLE 4-61

SUMMARY OF CHEMICALS DETECTED IN 2004 SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure Residential	Ecological Criteria	07 AH-03 AH-03-NSD-032304 NORMAL 3/23/2004	07 AH-06 AH-06-NSD-032304 ORIG 3/23/2004	07 AH-06 AH-06-NSD-032304-D DUP 3/23/2004	07 AH-08 AH-08-NSD-032204 NORMAL 3/22/2004	07 AH-11 AH-11-NSD-032204 ORIG 3/22/2004	07 AH-11 AH-11-NSD-032204-D DUP 3/22/2004	07 AH-17 AH-17-NSD-032304 NORMAL 3/23/2004	07 AH-23 AH-23-NSD-032404 NORMAL 3/24/2004
Pesticides/PCBs (ug/Kg) (Continued)											
gamma-Chlordane	1600	NA	2.26	0.66 R	0.86 U		0.68 R	1.7 J	3.4 J	5.3 J	10
Heptachlor	110	NA	0.3	1.2 R	0.86 U		1.4 R	3 R	0.92 U	0.76 U	0.94 U
Heptachlor Epoxide	53	NA	0.3	0.65 U	0.86 U		2.1 R	0.94 U	0.92 U	6.4 R	0.94 U
Total Aroclor[1]	NA	NA	22.7	13 U	19	21	21	30	34	17	70
Total DDT[1]	NA	NA	1.58	1.6			1.6		2.7		3.4
Total PCB Congeners[1]	NA	NA	22.7		19	21	21	30	34	17	70
Inorganics (mg/kg)											
Aluminum	77000	NA	18000	6540	10900	10600	12000	11200	12000	15400	13700
Antimony	31	10	2	1.1 R	1.3 R	1.4 R	1.9 R	1.6 R	1.5 R	1.8 R	1.5 R
Arsenic	0.39	7	8.2	7.4	7.8	7.7	10.7	9.5	10.3	17	15.4
Barium	15000	5500	48	35.5	62.7	64.7	60.8	52.8	102	85.1	60.5
Beryllium	160	0.4	NA	0.85	1.3	1.3	1.5	1.3	1.4	1.9	1.6
Cadmium	70	39	1.2	0.22	0.53	0.58	0.81	0.38	0.57	2.4	0.95
Calcium	NA	NA	NA	22600	2670 U	2490 U	3860 U	2170 U	2450 U	4510 U	2050 U
Chromium	230	390	81	26.7	46.2	45.8	50.3	41.8	52.6	65.7	58.4
Cobalt	23	NA	10	5.3	7.4	7.2	8.5	7.5	7.8	10.1	8.8
Copper	3100	3100	34	79.6	87	90.8	148	83.5	126	212	164
Iron	55000	NA	220000	18400	25200	25700	31100	27100	28000	38800	35700
Lead	400	150	46.7	60.6 J	48.9 J	50.1 J	70.1 J	59.9 J	64.4 J	96.9 J	92.9 J
Magnesium	NA	NA	NA	4230	6680	6800	7190	6260	7170	7890	6050
Manganese	1800	390	260	134	197	196	210	200	217	260	215
Mercury	23	23	0.15	0.15	0.23	0.25	0.29	0.23	0.29	0.38	0.34
Nickel	1600	1000	20.9	16.6	20.2	20.3	23.6	19.4	23.8	30.1	27.8
Potassium	NA	NA	NA	1760 J	2980 J	3040 J	3400 J	3040 J	3400 J	4310 J	3270 J
Selenium	390	390	1	1.2 U	1.4 U	1.6 U	2.1 U	1.7 U	1.6 U	2 U	1.7 U
Silver	390	200	1	0.23 U	0.27 U	0.41	0.62	0.43	0.41	0.38 U	0.32 U
Sodium	NA	NA	NA	11500 U	16200 U	18100 U	19800 U	15600 U	18800 U	18200 U	6960 U
Vanadium	390	550	57	24.2	34.3	33.7	49.7	37.4	46.7	71	57
Zinc	23000	6000	150	217	154	159	256	149	193	449	246
Avs/Sem Parameters (UMO/G)											
Cadmium	NA	NA	1.2	0.00372	0.00549	0.00595	0.00793	0.00629	0.00517	0.00795	0.00871
Copper	NA	NA	34	0.14	0.13	0.09	0.04	0.03 J	0.18 J	0.19	0.56
Lead	NA	NA	46.7	0.17	0.13	0.14	0.25	0.2	0.18	0.28	0.35
Mercury	NA	NA	0.15	0.00004 U	0.00006 U	0.00006 U	0.00008 U	0.00006 U	0.00007 U	0.00008 U	0.00006 U
Nickel	NA	NA	20.9	0.12	0.03 U	0.04 U	0.08	0.04 U	0.04 U	0.07	0.05
SEM/AVS	NA	NA	NA	71.54	51.59	69.23	144.49	40.14	36.74	156.59	16.3
Sum of SEM	NA	NA	NA	2.59	1.65	1.71	3.02	2.07	2.15	3.45	3.54
Zinc	NA	NA	150	2.14	1.34	1.42	2.63	1.78	1.74	2.89	2.55
Miscellaneous Parameters (%)											
Percent Gravel	NA	NA	NA	14.1			4.8	9.7		0.4	
Percent Sand	NA	NA	NA	58	1.8	1.5	22.4	79.4	2.1	3.8	20.8
Percent Silt/Clay	NA	NA	NA	27.9	98.2	98.5	72.9	10.9	97.9	95.8	79.2
pH (S.U.)	NA	NA	NA								
Total Organic Carbon	NA	NA	NA	2.77	3.17	3.22	4.68	3.99	3.8	5.25	3.73

TABLE 4-61

SUMMARY OF CHEMICALS DETECTED IN 2004 SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure Residential	Ecological Criteria	07 AH-26 AH-26-NSD-032704 NORMAL 3/27/2004	07 AH-28 AH-28-NSD-032504 NORMAL 3/25/2004	07 AH-29 AH-29-NSD-032604 NORMAL 3/26/2004	07 AH-32 AH-32-NSD-032604 NORMAL 3/26/2004	07 AH-33 AH-33-NSD-032604 ORIG 3/26/2004	07 AH-33 AH-33-NSD-032604-D DUP 3/26/2004	07 AH-35 AH-35-NSD-032604 NORMAL 3/26/2004	07 AH-40 AH-40-NSD-032704 NORMAL 3/27/2004
Volatile Organic Compounds (ug/kg)											
1,1-Dichloroethene	250000	200	NA	8 U	5 U	13 U	11 U	10 U	10 U	12 U	5 U
2-Butanone	28000000	10000000	NA	17 U	10 U	27 U	**17 J**	**17 J**	**23**	**20 J**	**8**
Acetone	61000000	7800000	NA	67 UJ	84 UJ	93 UJ	130 U	120 U	85 U	91 U	45 U
Carbon Disulfide	670000	NA	NA	9 U	5 U	13 U	11 U	10 U	10 U	12 U	10 U
cis-1,2-Dichloroethene	780000	630000	NA	8 U	5 U	13 U	**5 J**	**6 J**	10 U	12 U	5 U
Total 1,2-Dichloroethene	700000	630000	NA	8 U	5 U	13 U	**5**	**6**	10 U	12 U	5 U
Total Chlorinated VOCs	NA	NA	NA	0 U	0 U	0 U	**5**	**6**	0 U	0 U	0 U
trans-1,2-Dichloroethene	110000	1100000	---	8 U	5 U	13 U	11 U	10 U	10 U	12 U	5 U
Trichloroethene	2800	13000	41	8 U	5 U	13 U	11 U	10 U	10 U	12 U	5 U
Semivolatile Organic Compounds (ug/kg)											
2-Methylnaphthalene	310000	123000	70	**21.2 J**	**39.7**	**213 J**	**23.6**	**25.5**	**17.8**	**44.8**	**22.2 J**
Acenaphthene	3400000	43000	16	**37.7**	**56.5**	**97.4**	**39.1**	**70.7 J**	**34.1 J**	**295**	**116**
Acenaphthylene	3400000	23000	44	**286 J**	**785**	**535 J**	**273**	**276**	**197**	**231**	**28.0 J**
Anthracene	17000000	35000	85.3	**314**	**792**	**758**	**309**	**374**	**254**	**693**	**203**
Bap Equivalent[(1)]	NA	400	NA	**999**	**2405**	**2282**	**1054**	**1235**	**828**	**2331**	**587**
Benzo(a)anthracene	150	900	261	**535**	**1339**	**1187**	**505**	**684**	**452**	**1597**	**441**
Benzo(a)pyrene	15	400	430	**664**	**1623**	**1503**	**703**	**820**	**544**	**1561**	**390**
Benzo(b)fluoranthene	150	900	1800	**789**	**1746**	**2195**	**850**	**982**	**724**	**1766**	**421**
Benzo(g,h,i)perylene	1700000	800	670	**498**	**1244**	**1068**	**569**	**635**	**427**	**1001**	**245**
Benzo(k)fluoranthene	1500	900	1800	**710**	**1725**	**2034**	**827**	**983**	**658**	**1644**	**434**
Bis(2-ethylhexyl)phthalate	35000	46000	182								
Chrysene	15000	400	384	**871**	**2227**	**1974**	**893**	**1096**	**746**	**2035**	**501**
di-n-Butyl Phthalate	6100000	NA	61								
Dibenzo(a,h)anthracene	15	400	63.4	**137**	**318**	**288**	**142**	**164**	**109**	**293**	**75.8**
Dibenzofuran	NA	NA	110								
Fluoranthene	2300000	20000	600	**1519**	**4082**	**4751**	**1441**	**2004**	**1549**	**3720**	**1100**
Fluorene	2300000	28000	19	**74.2**	**145**	**137**	**60.2**	**87.4 J**	**50.9 J**	**249**	**89.7**
High Molecular Weight PAHs[(1)]	NA	NA	1700	**5261**	**13733**	**14027**	**5263**	**6672**	**4790**	**12528**	**3413**
Indeno(1,2,3-cd)pyrene	150	900	600	**573**	**1361**	**1295**	**643**	**734**	**501**	**1233**	**307**
Low Molecular Weight PAHs[(1)]	NA	NA	552	**1963**	**5203**	**3355**	**1734**	**2054**	**1346**	**4149**	**1268**
Naphthalene	3900	54000	160	**36.5 J**	**67.8**	**128 J**	**47.3**	**51.4**	**33.6**	**91.7**	**45.6 J**
Phenanthrene	1700000	40000	240	**1193**	**3316**	**1486**	**982**	**1169**	**759**	**2545**	**763**
Pyrene	1700000	13000	665	**1533**	**4143**	**4322**	**1579**	**1905**	**1391**	**3323**	**905**
Total PAHs[(1)]	NA	NA	NA	**9794**	**25012**	**23974**	**9886**	**12060**	**8445**	**22321**	**6086**
Total PAHs Ecosd[(1)]	NA	NA	4022	**7224**	**18936**	**17382**	**6997**	**8727**	**6136**	**16677**	**4680**
Polycyclic Aromatic Hydrocarbons (ug/kg)											
Acenaphthene	3400000	43000	16								
Acenaphthylene	3400000	23000	44								
Anthracene	17000000	35000	85.3								
Bap Equivalent[(1)]	NA	400	NA								
Benzo(a)anthracene	150	900	261								
Benzo(a)pyrene	15	400	430								
Benzo(b)fluoranthene	150	900	1800								
Benzo(g,h,i)perylene	1700000	800	670								
Benzo(k)fluoranthene	1500	900	1800								
Chrysene	15000	400	384								
Fluoranthene	2300000	20000	600								
Fluorene	2300000	28000	19								
High Molecular Weight PAHs[(1)]	NA	NA	1700								
Indeno(1,2,3-cd)pyrene	150	900	600								
Low Molecular Weight PAHs[(1)]	NA	NA	552								
Phenanthrene	1700000	40000	240								
Pyrene	1700000	13000	665								
Total PAHs Ecosd[(1)]	NA	NA	4022								
Total PAHs[(1)]	NA	NA	NA								
Pesticides/PCBs (ug/kg)											
4,4'-DDD	2000	NA	1.22	1.6 R	**1.6**	**3.3**	1.9 R	1.8 U	1.7 U	1.3 U	**1.7**
4,4'-DDE	1400	NA	2.2	1.6 R	1.4 R	1.3 U	1.9 R	2.2 R	**2 J**	1.3 U	0.87 U
4,4'-DDT	1700	NA	1.58	1.6 R	0.94 U	1.3 U	1.9 R	1.8 U	1.7 U	1.3 U	0.87 U
alpha-Chlordane	1600	NA	2.26	0.84 R	2.4 R	0.68 U	0.99 R	0.91 U	0.89 U	0.68 U	0.45 U
Aroclor-1260	220	NA	22.7	**41**	**23**	**22**	**55**	**37 J**	**49**	**22**	**32 J**
delta-BHC	77	NA	0.32	0.84 R	0.48 U	0.68 U	0.99 R	0.91 U	0.89 U	0.68 U	**0.92 J**
Dieldrin	30	40	280	1.6 R	**8.1**	4.2 R	1.9 R	1.8 U	3 R	1.3 U	**3.7**
Endosulfan Sulfate	370000	NA	5.4	1.6 R	0.94 U	1.3 U	1.9 R	1.8 U	1.7 U	1.3 U	0.87 U
Endrin Ketone	18000	NA	9.9	1.6 R	2 R	1.3 U	1.9 R	1.8 U	1.7 U	1.3 U	0.87 U

TABLE 4-61

SUMMARY OF CHEMICALS DETECTED IN 2004 SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure Residential	Ecological Criteria	07 AH-26 AH-26-NSD-032704 NORMAL 3/27/2004	07 AH-28 AH-28-NSD-032504 NORMAL 3/25/2004	07 AH-29 AH-29-NSD-032604 NORMAL 3/26/2004	07 AH-32 AH-32-NSD-032604 NORMAL 3/26/2004	07 AH-33 AH-33-NSD-032604 ORIG 3/26/2004	07 AH-33 AH-33-NSD-032604-D DUP 3/26/2004	07 AH-35 AH-35-NSD-032604 NORMAL 3/26/2004	07 AH-40 AH-40-NSD-032704 NORMAL 3/27/2004
Pesticides/PCBs (ug/Kg) (Continued)											
gamma-Chlordane	1600	NA	2.26	**5.4 J**	2.3 R	5.4 R	**6.1 J**	**7.1**	**6.5 J**	**5.1 J**	0.45 U
Heptachlor	110	NA	0.3	0.97 R	0.48 U	0.68 U	2.1 R	1.4 R	2.5 R	9 R	0.45 U
Heptachlor Epoxide	53	NA	0.3	0.84 R	0.48 U	8.8 R	0.99 R	0.91 U	0.89 U	0.68 U	0.45 U
Total Aroclor[1]	NA	NA	22.7	**41**	**23**	**22**	**55**	**37**	**49**	**22**	**32**
Total DDT[1]	NA	NA	1.58		**1.6**	**3.3**			**2**		**1.7**
Total PCB Congeners[1]	NA	NA	22.7	**41**	**23**	**22**	**55**	**37**	**49**	**22**	**32**
Inorganics (mg/kg)											
Aluminum	77000	NA	18000	**7790**	**3760**	**15900**	**14600**	**12800**	**10900**	**12900**	**3330**
Antimony	31	10	2	1.4 U	0.87 R	2.1 U	1.7 U	1.8 U	1.7 U	2.1 U	0.8 U
Arsenic	0.39	7	8.2	**8.8**	**3.9**	**18**	**13.4**	**13.7**	**13.6**	**14.1**	**3**
Barium	15000	5500	48	**89.9**	**48.3**	**66.1**	**133**	**40.1**	**78.3**	**75**	**18.4**
Beryllium	160	0.4	NA	**1**	**1**	**1.8**	**1.7**	**1.5**	**1.3**	**1.5**	**0.41**
Cadmium	70	39	1.2	**0.64**	**0.32**	**1.1**	**0.78**	**0.74**	**0.73**	**0.83**	0.08 U
Calcium	NA	NA	NA	2300 U	1930 U	2590 U	2630 U	2460 U	1930 U	6840 U	710 U
Chromium	230	390	81	**32.4**	**32.1**	**66.8**	**59.7**	**54.5**	**48.9**	**51.8**	**7.7**
Cobalt	23	NA	10	**5.8**	**5.6**	**10.2**	**9.3**	**8.3**	**7.5**	**8.2**	**2.3**
Copper	3100	3100	34	**85.5**	**118**	**204**	**146**	**142**	**132**	**168**	**32.7**
Iron	55000	NA	220000	**21700**	**11300**	**38400**	**33600**	**35900**	**29500**	**34600**	**12500**
Lead	400	150	46.7	**54.8**	**96.4**	**101**	**86.6**	**84.9**	**75.9**	**78.1**	**22**
Magnesium	NA	NA	NA	**4430**	**2100**	**7290**	**6570**	**5420**	**5370**	**6620**	1430 U
Manganese	1800	390	260	**156**	**97.4**	**312**	**261**	**248**	**215**	**229**	**61.1**
Mercury	23	23	0.15	**0.21**	**0.06**	**0.3**	**0.31**	**0.28**	**0.33**	**0.3**	**0.03 J**
Nickel	1600	1000	20.9	**19.7**	**33.1**	**31.6**	**28.2**	**25.8**	**22.4**	**23.1**	**6.6**
Potassium	NA	NA	NA	**2330**	924 U	**4380**	**3920**	**3220**	**2800**	**3900**	546 U
Selenium	390	390	1	1.5 U	0.96 U	2.3 U	1.9 U	2 U	1.9 U	2.3 U	0.88 U
Silver	390	200	1	0.84 U	0.33 U	1.5 U	1.3 U	0.87 U	0.62 U	0.64 U	0.17 U
Sodium	NA	NA	NA	11900 U	4670 U	11800 U	9030 U	2660 U	6010 U	15000 U	1240 U
Vanadium	390	550	57	**33**	**14.8**	**80.9**	**60.1**	**54.5**	**47.3**	**57.6**	**13.3**
Zinc	23000	6000	150	**176**	**427**	**317**	**236**	**224**	**212**	**262**	**72.2**
Avs/Sem Parameters (UMO/G)											
Cadmium	NA	NA	1.2	**0.00606**	**0.00188**	**0.00885**	**0.00785**	**0.00674**	**0.00772**	**0.00681**	0.00126 U
Copper	NA	NA	34	**0.05**	**0.06**	**0.07**	**0.35**	**0.48**	**0.6**	**0.03**	**0.16**
Lead	NA	NA	46.7	**0.16**	**0.31**	**0.38**	**0.34**	**0.32**	**0.36**	**0.27**	**0.19**
Mercury	NA	NA	0.15	0.00005 U	0.00003 U	0.00007 U	0.00006 U	0.00006 U	0.00006 U	0.00007 U	0.00003 U
Nickel	NA	NA	20.9	**0.09**	**0.21**	**0.05**	**0.05**	0.04 U	**0.05**	**0.09**	**0.03**
SEM/AVS	NA	NA	NA	**85.88**	**18.72**	**64.29**	**46.84**	**26.11 J**	**45.87 J**	**176.88**	**10.16**
Sum of SEM	NA	NA	NA	**2.44**	**5.38**	**3.37**	**3.22**	**3.04**	**3.56**	**3.03**	**1.1**
Zinc	NA	NA	150	**2.12**	**4.78**	**2.84**	**2.46**	**2.18**	**2.54**	**2.62**	**0.71**
Miscellaneous Parameters (%)											
Percent Gravel	NA	NA	NA	**0.7**	**5.2**					**1.3**	**1.4**
Percent Sand	NA	NA	NA	**23.2**	**78.7**	**2.6**	**4.4**	**7.3**	**7.4**	**10.3**	**92**
Percent Silt/Clay	NA	NA	NA	**76.1**	**16.1**	**97.4**	**95.5**	**92.7**	**92.6**	**88.4**	**6.6**
pH (S.U.)	NA	NA	NA								
Total Organic Carbon	NA	NA	NA	**3.1**	**2.1**	**5.01**	**4.29**	**4.05**	**3.73**	**4.55**	**0.78**

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SUMMARY OF CHEMICALS DETECTED IN 2004 SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure Residential	Ecological Criteria	07 AH-42 AH-42-NSD-032704 NORMAL 3/27/2004	07 AH-45 AH-45-NSD-032604 NORMAL 3/26/2004	07 AH-47 AH-47-NSD-032604 NORMAL 3/26/2004	07 AH-49 AH-49-NSD-032504 NORMAL 3/25/2004	07 AH-51 AH-51-NSD-032704 NORMAL 3/27/2004	07 CORE1-BOT CORE1-BOTNSD-032704 NORMAL 3/27/2004	07 CORE1-TOP CORE1-TOPNSD-032704 NORMAL 3/27/2004	05 OPSED16-01 OPSED16-01-NSD-03220 NORMAL 3/22/2001
Volatile Organic Compounds (ug/kg)											
1,1-Dichloroethene	250000	200	NA	5 U	12 U	**0.9 J**	5 U	11 U	5 U	5 U	6 UJ
2-Butanone	28000000	10000000	NA	**8 J**	**15 J**	**8 J**	10 U	**16 J**	**5 J**	**5 J**	13 UJ
Acetone	61000000	7800000	NA	52 UJ	190 U	72 UJ	79 U	210 UJ	65 UJ	20 U	**89 J**
Carbon Disulfide	670000	NA	NA	5 U	12 U	5 U	5 U	11 U	5 U	5 U	6 UJ
cis-1,2-Dichloroethene	780000	630000	NA	5 U	12 U	**880**	5 U	11 U	5 U	5 U	6 UJ
Total 1,2-Dichloroethene	700000	630000	NA	5 U	12 U	**883**	5 U	11 U	5 U	5 U	6 U
Total Chlorinated VOCs	NA	NA	NA	0 U	0 U	**886**	0 U	0 U	0 U	0 U	0 U
trans-1,2-Dichloroethene	110000	1100000	---	5 U	12 U	**3 J**	5 U	11 U	5 U	5 U	6 UJ
Trichloroethene	2800	13000	41	5 U	12 U	**2 J**	5 U	11 U	5 U	5 U	6 UJ
Semivolatile Organic Compounds (ug/kg)											
2-Methylnaphthalene	310000	123000	70	**16.5**	**15.8 J**	**16.1**	**51.6 J**	**22.8 J**	**6.28**	**32.8**	1600 U
Acenaphthene	3400000	43000	16	**30.7**	**36.6 J**	**32.7**	**70.2**	**33.4 J**	**19.0**	**214**	1600 U
Acenaphthylene	3400000	23000	44	**314**	**144 J**	**238**	**791 J**	**355 J**	**33.3**	**54.2**	**100**
Anthracene	17000000	35000	85.3	**325**	**198 J**	**244**	**814**	**359 J**	**79.7**	**302**	**68**
Bap Equivalent[(1)]	NA	400	NA	**1252**	**691**	**806**	**2463**	**1119**	**179**	**997**	**275**
Benzo(a)anthracene	150	900	261	**700**	**363 J**	**503**	**1502**	**530 J**	**145**	**737**	**180**
Benzo(a)pyrene	15	400	430	**847**	**453 J**	**549**	**1654**	**740 J**	**110**	**668**	**200**
Benzo(b)fluoranthene	150	900	1800	**952**	**592 J**	**554**	**1725**	**906 J**	**196**	**719**	**400**
Benzo(g,h,i)perylene	1700000	800	670	**575**	**360 J**	**386**	**1242**	**634 J**	**84.5**	**402**	**270**
Benzo(k)fluoranthene	1500	900	1800	**931**	**532 J**	**568**	**1799**	**876 J**	**188**	**717**	**130**
Bis(2-ethylhexyl)phthalate	35000	46000	182								**3600**
Chrysene	15000	400	384	**1079**	**583 J**	**739**	**2416**	**981 J**	**274**	**856**	**350**
di-n-Butyl Phthalate	6100000	NA	61								1600 U
Dibenzo(a,h)anthracene	15	400	63.4	**163**	**94.8 J**	**101**	**331**	**157 J**	**22.7**	**124**	1600 U
Dibenzofuran	NA	NA	110								1600 U
Fluoranthene	2300000	20000	600	**1743**	**1019 J**	**1455**	**4873**	**1947 J**	**777**	**1784**	**810**
Fluorene	2300000	28000	19	**82.3**	**43.7 J**	**63.4**	**230**	**52.9 J**	**16.3**	**155**	1600 U
High Molecular Weight PAHs[(1)]	NA	NA	1700	**6238**	**3446**	**4700**	**15497**	**6137**	**1934**	**5730**	**2090**
Indeno(1,2,3-cd)pyrene	150	900	600	**658**	**422 J**	**433**	**1350**	**689 J**	**102**	**506**	**150**
Low Molecular Weight PAHs[(1)]	NA	NA	552	**2231**	**994**	**1655**	**6530**	**1976**	**298**	**2293**	**728**
Naphthalene	3900	54000	160	**32.2**	**30.5 J**	**31.4**	**78.5 J**	**39.3 J**	**9.45**	**92.9**	1600 U
Phenanthrene	1700000	40000	240	**1430**	**526 J**	**1029**	**4494**	**1115 J**	**134**	**1442**	**560**
Pyrene	1700000	13000	665	**1705**	**933 J**	**1353**	**4721**	**1781 J**	**604**	**1561**	**550**
Total PAHs[(1)]	NA	NA	NA	**11586**	**6346**	**8297**	**28142**	**11218**	**2803**	**10367**	**3768**
Total PAHs Ecosd[(1)]	NA	NA	4022	**8469**	**4439**	**6355**	**22027**	**8113**	**2232**	**8023**	**2818**
Polycyclic Aromatic Hydrocarbons (ug/kg)											
Acenaphthene	3400000	43000	16								720 U
Acenaphthylene	3400000	23000	44								**110 J**
Anthracene	17000000	35000	85.3								480 UJ
Bap Equivalent[(1)]	NA	400	NA								**397**
Benzo(a)anthracene	150	900	261								**200**
Benzo(a)pyrene	15	400	430								**300**
Benzo(b)fluoranthene	150	900	1800								**480 J**
Benzo(g,h,i)perylene	1700000	800	670								**380**
Benzo(k)fluoranthene	1500	900	1800								**340**
Chrysene	15000	400	384								**450**
Fluoranthene	2300000	20000	600								**1700 J**
Fluorene	2300000	28000	19								720 UJ
High Molecular Weight PAHs[(1)]	NA	NA	1700								**2990**
Indeno(1,2,3-cd)pyrene	150	900	600								**250**
Low Molecular Weight PAHs[(1)]	NA	NA	552								**900**
Phenanthrene	1700000	40000	240								**790 J**
Pyrene	1700000	13000	665								**340**
Total PAHs Ecosd[(1)]	NA	NA	4022								**3890**
Total PAHs[(1)]	NA	NA	NA								**5340**
Pesticides/PCBs (ug/kg)											
4,4'-DDD	2000	NA	1.22	1.2 U	1.3 U	0.94 U	0.88 U	**2.2 J**	**1.7 J**	**1.7 J**	4 U
4,4'-DDE	1400	NA	2.2	1.2 U	1.3 U	0.94 U	1.4 R	**2.3 J**	0.79 U	0.84 UJ	**1.7**
4,4'-DDT	1700	NA	1.58	1.2 U	1.3 U	0.94 U	0.88 U	2 U	0.79 U	0.84 UJ	**1.4 J**
alpha-Chlordane	1600	NA	2.26	0.62 U	0.68 U	**2**	0.45 U	1 U	0.41 U	0.43 UJ	2 U
Aroclor-1260	220	NA	22.7	**37**	**16**	**21**	8.8 U	**59 J**	**38 J**	**25 J**	20 U
delta-BHC	77	NA	0.32	0.62 U	2.2 R	0.49 U	0.45 U	1 U	**0.53 J**	**2 J**	**1.5**
Dieldrin	30	40	280	1.2 U	3.2 R	0.94 U	0.88 U	2.4 R	0.79 U	0.84 UJ	4 U
Endosulfan Sulfate	370000	NA	5.4	1.2 U	1.3 U	0.94 U	0.88 U	2 U	0.79 U	0.84 UJ	4 U
Endrin Ketone	18000	NA	9.9	1.2 U	1.3 U	0.94 U	0.88 U	2 U	0.79 U	0.84 UJ	**1.6**

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PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure Residential	Ecological Criteria	07 AH-42 AH-42-NSD-032704 NORMAL 3/27/2004	07 AH-45 AH-45-NSD-032604 NORMAL 3/26/2004	07 AH-47 AH-47-NSD-032604 NORMAL 3/26/2004	07 AH-49 AH-49-NSD-032504 NORMAL 3/25/2004	07 AH-51 AH-51-NSD-032704 NORMAL 3/27/2004	07 CORE1-BOT CORE1-BOTNSD-032704 NORMAL 3/27/2004	07 CORE1-TOP CORE1-TOPNSD-032704 NORMAL 3/27/2004	05 OPSED16-01 OPSED16-01-NSD-03220 NORMAL 3/22/2001
Pesticides/PCBs (ug/Kg) (Continued)											
gamma-Chlordane	1600	NA	2.26	1.8 R	2.2 R	2.8 R	0.63 R	**8.7**	0.41 U	**0.88 J**	**1.7**
Heptachlor	110	NA	0.3	0.62 U	0.83 R	1.1 R	0.45 U	1.4 R	0.41 U	0.43 UJ	2 U
Heptachlor Epoxide	53	NA	0.3	0.62 U	20 R	0.49 U	0.45 U	4.5 R	0.41 U	0.43 UJ	**1.2 J**
Total Aroclor[1]	NA	NA	22.7	**37**	**16**	**21**	8.8 U	**59**	**38**	**25**	20 U
Total DDT[1]	NA	NA	1.58					**4.5**	**1.7**	**1.7**	
Total PCB Congeners[1]	NA	NA	22.7	**37**	**16**	**21**		**59**	**38**	**25**	
Inorganics (mg/kg)											
Aluminum	77000	NA	18000	**3830**	**11800**	**3670**	**2410**	**6670**	**3600**	**5430**	**2370**
Antimony	31	10	2	0.9 U	2.4 U	0.77 U	0.6 R	1.5 U	0.78 U	1 U	**0.5 J**
Arsenic	0.39	7	8.2	**3.7**	**15**	**3.1**	2.2 U	**6.9**	**2.8**	**4.9**	**0.97**
Barium	15000	5500	48	**18.1**	**64.2**	**13.8**	**19.3**	**126**	**21**	**37.1**	**23.5**
Beryllium	160	0.4	NA	**0.49**	**1.4**	**0.51**	**0.29**	**0.99**	**0.44**	**0.68**	**0.33**
Cadmium	70	39	1.2	**0.23**	**0.7**	0.1 U	0.03 U	**0.54**	**0.19**	**0.39**	0.06 U
Calcium	NA	NA	NA	**5110**	9610 U	3760 U	453 U	2340 U	**6000**	**9680**	**1380**
Chromium	230	390	81	**14.2**	**49.8**	**14.4**	**11**	**29.3**	**9.4**	**18.6**	**33.5**
Cobalt	23	NA	10	**2.9**	**7.7**	**3.7**	**2.1**	**5.3**	**2.6**	**3.6**	**2.4**
Copper	3100	3100	34	**37.2**	**164**	**32.7**	**23**	**104**	**22.8**	**56.9**	**35.2 J**
Iron	55000	NA	220000	**10000**	**34500**	**11900**	**5820**	**18000**	**10100**	**14700**	**6400**
Lead	400	150	46.7	**31**	**77.5**	**36.6**	**53.1 J**	**88.9**	**35.2**	**35.3**	**154 J**
Magnesium	NA	NA	NA	**2270**	**5980**	**1690**	1240 U	**3120**	1470 U	**2700**	**994 J**
Manganese	1800	390	260	**74.2**	**301**	**79.9**	**46.2**	**172**	**72.8**	**99.4**	**89 J**
Mercury	23	23	0.15	**0.06**	**0.29**	**0.03 J**	0.02 U	**0.21**	**0.03 J**	**0.11**	0.01 U
Nickel	1600	1000	20.9	**7.9**	**21.2**	**8.2**	**6.3**	**30.3**	**7**	**10.3**	**11.5**
Potassium	NA	NA	NA	935 U	**3430**	637 U	416 U	1620 U	685 U	1400 U	**599**
Selenium	390	390	1	0.99 U	2.6 U	0.85 U	0.67 U	1.6 U	0.86 U	1.1 U	0.29 U
Silver	390	200	1	0.29 U	0.49 U	0.23 U	0.13 U	0.46 U	0.25 U	0.54 U	0.1 U
Sodium	NA	NA	NA	4970 U	7970 U	573 U	1780 U	6360 U	406 U	3750 U	73.4 U
Vanadium	390	550	57	**14.3**	**50.7**	**15.6**	**8.6**	**32.1**	**12.1**	**23.7**	**15.8**
Zinc	23000	6000	150	**93.5**	**254**	**88.2**	**66.9**	**218**	**52.7**	**101**	**163**
Avs/Sem Parameters (UMO/G)											
Cadmium	NA	NA	1.2	**0.00167**	**0.00576**	0.00126 U	0.00124 U	**0.00337**	**0.0016**	**0.00287**	0.000623 U
Copper	NA	NA	34	**0.31**	**0.22**	**0.13**	**0.08**	**0.04**	**0.1**	0.01 U	**0.305 J**
Lead	NA	NA	46.7	**0.09**	**0.3**	**0.09**	**0.09**	**0.39**	**0.11**	**0.12**	**0.283**
Mercury	NA	NA	0.15	0.00003 U	0.00008 U	0.00003 U	0.00003 U	0.00005 U	0.00003 U	0.00004 U	0.000049 U
Nickel	NA	NA	20.9	**0.22**	0.05 U	**0.02**	**0.03**	**0.04**	**0.03**	**0.22**	**0.0664**
SEM/AVS	NA	NA	NA	**6.17**	**220.22**	**10.87**	**2.27**	**19.25**	**50.56**	**70.47**	0.1 UJ
Sum of SEM	NA	NA	NA	**1.51**	**3.26**	**0.96**	**0.92**	**2.04**	**0.86**	**1.48**	
Zinc	NA	NA	150	**0.88**	**2.67**	**0.7**	**0.71**	**1.54**	**0.61**	**1.12**	**1.17 J**
Miscellaneous Parameters (%)											
Percent Gravel	NA	NA	NA	**11.3**	**9.1**	**11.9**	**0.8**	**1.8**	**21.2**	**5.7**	
Percent Sand	NA	NA	NA	**80.5**	**15.9**	**78**	**97.8**	**54.2**	**59.2**	**79.7**	
Percent Silt/Clay	NA	NA	NA	**8.1**	**75**	**10.1**	**1.4**	**44**	**19.6**	**14.6**	
pH (S.U.)	NA	NA	NA								**7.3**
Total Organic Carbon	NA	NA	NA	**1.13**	**4.97**	**1.6**	**1.36**	**5.05**	**1.18**	**1.27**	

TABLE 4-61

SUMMARY OF CHEMICALS DETECTED IN 2004 SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure Residential	Ecological Criteria	05 SED16-01 SED16-01-NSD-032101 ORIG 3/21/2001	05 SED16-01 SED16-01-NSD-032101-D DUP 3/21/2001	05 SED16-02 SED16-02-NSD-032601 NORMAL 3/26/2001
Volatile Organic Compounds (ug/kg)						
1,1-Dichloroethene	250000	200	NA	12 U	5 U	20 U
2-Butanone	28000000	10000000	NA	24 UJ	10 UJ	41 UJ
Acetone	61000000	7800000	NA	**84 J**	**30 J**	**120 J**
Carbon Disulfide	670000	NA	NA	**5 J**	**50 J**	**12**
cis-1,2-Dichloroethene	780000	630000	NA	12 U	5 U	20 U
Total 1,2-Dichloroethene	700000	630000	NA	12 U	5 U	20 U
Total Chlorinated VOCs	NA	NA	NA	0 U	0 U	0 U
trans-1,2-Dichloroethene	110000	1100000	---	12 U	5 U	20 U
Trichloroethene	2800	13000	41	12 U	5 U	20 U
Semivolatile Organic Compounds (ug/kg)						
2-Methylnaphthalene	310000	123000	70	1600 U	400 U	1300 UJ
Acenaphthene	3400000	43000	16	**1100**	**780**	1300 UJ
Acenaphthylene	3400000	23000	44	1600 U	400 U	1300 UJ
Anthracene	17000000	35000	85.3	**450**	**190**	1300 UJ
Bap Equivalent[(1)]	NA	400	NA	**608**	**95.7**	**8.3**
Benzo(a)anthracene	150	900	261	**960**	**110**	1300 UJ
Benzo(a)pyrene	15	400	430	**370**	**66**	1300 UJ
Benzo(b)fluoranthene	150	900	1800	**1100**	**130**	**83 J**
Benzo(g,h,i)perylene	1700000	800	670	**230**	**56**	1300 UJ
Benzo(k)fluoranthene	1500	900	1800	**310**	**42**	1300 UJ
Bis(2-ethylhexyl)phthalate	35000	46000	182	**430**	**210**	**600 J**
Chrysene	15000	400	384	**2000 J**	**170 J**	1300 UJ
di-n-Butyl Phthalate	6100000	NA	61	1600 U	400 U	1300 UJ
Dibenzo(a,h)anthracene	15	400	63.4	1600 U	400 U	1300 UJ
Dibenzofuran	NA	NA	110	**270**	**240**	1300 UJ
Fluoranthene	2300000	20000	600	**9800 J**	**1900 J**	**99 J**
Fluorene	2300000	28000	19	**600**	**500**	1300 UJ
High Molecular Weight PAHs[(1)]	NA	NA	1700	**18530**	**2926**	**199**
Indeno(1,2,3-cd)pyrene	150	900	600	**270**	**51**	1300 UJ
Low Molecular Weight PAHs[(1)]	NA	NA	552	**4550**	**1860**	**100**
Naphthalene	3900	54000	160	1600 U	400 U	1300 UJ
Phenanthrene	1700000	40000	240	**2400 J**	**390 J**	**100 J**
Pyrene	1700000	13000	665	**5400 J**	**680 J**	**100 J**
Total PAHs[(1)]	NA	NA	NA	**24990**	**5065**	**382**
Total PAHs Ecosd[(1)]	NA	NA	4022	**23080**	**4786**	**299**
Polycyclic Aromatic Hydrocarbons (ug/kg)						
Acenaphthene	3400000	43000	16	**1200 J**	**610**	78 U
Acenaphthylene	3400000	23000	44	620 UJ	620 U	78 U
Anthracene	17000000	35000	85.3	620 UJ	**210**	78 U
Bap Equivalent[(1)]	NA	400	NA	**33.2**	**12.1**	**6.13**
Benzo(a)anthracene	150	900	261	**140**	**120 J**	**20**
Benzo(a)pyrene	15	400	430	620 U	620 U	78 U
Benzo(b)fluoranthene	150	900	1800	**190 J**	620 U	**41**
Benzo(g,h,i)perylene	1700000	800	670	620 U	620 U	**23**
Benzo(k)fluoranthene	1500	900	1800	620 U	620 U	78 U
Chrysene	15000	400	384	**190**	**130 J**	**34**
Fluoranthene	2300000	20000	600	**2000 J**	**1600**	**64**
Fluorene	2300000	28000	19	**800 J**	**360 J**	78 U
High Molecular Weight PAHs[(1)]	NA	NA	1700	**3040**	**2850**	**186**
Indeno(1,2,3-cd)pyrene	150	900	600	620 U	620 U	78 UJ
Low Molecular Weight PAHs[(1)]	NA	NA	552	**2260**	**1660**	**44**
Phenanthrene	1700000	40000	240	**260 J**	**480**	**44**
Pyrene	1700000	13000	665	**710**	**1000 J**	**68**
Total PAHs Ecosd[(1)]	NA	NA	4022	**5300**	**4510**	**230**
Total PAHs[(1)]	NA	NA	NA	**5490**	**4510**	**294**
Pesticides/PCBs (ug/kg)						
4,4'-DDD	2000	NA	1.22	**4.4 J**	**2.5 J**	**2 J**
4,4'-DDE	1400	NA	2.2	4.1 U	4 U	**1.5 J**
4,4'-DDT	1700	NA	1.58	4.1 U	4 U	**1.8 J**
alpha-Chlordane	1600	NA	2.26	2.1 U	2.1 U	3.3 U
Aroclor-1260	220	NA	22.7	**36**	**36**	33 U
delta-BHC	77	NA	0.32	2.1 U	2.1 U	3.3 U
Dieldrin	30	40	280	4.1 U	4 U	**1.7 J**
Endosulfan Sulfate	370000	NA	5.4	**2.2 J**	4 U	6.5 U
Endrin Ketone	18000	NA	9.9	**0.76 J**	4 U	**0.64 J**

TABLE 4-61

SUMMARY OF CHEMICALS DETECTED IN 2004 SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure Residential	Ecological Criteria	05 SED16-01 SED16-01-NSD-032101 ORIG 3/21/2001	05 SED16-01 SED16-01-NSD-032101-D DUP 3/21/2001	05 SED16-02 SED16-02-NSD-032601 NORMAL 3/26/2001
Pesticides/PCBs (ug/Kg) (Continued)						
gamma-Chlordane	1600	NA	2.26	2.1 U	2.1 U	3.3 U
Heptachlor	110	NA	0.3	**0.8**	**0.45 J**	**0.71**
Heptachlor Epoxide	53	NA	0.3	2.1 U	2.1 U	3.3 U
Total Aroclor[1]	NA	NA	22.7	**36**	**36**	33 U
Total DDT[1]	NA	NA	1.58			
Total PCB Congeners[1]	NA	NA	22.7			
Inorganics (mg/kg)						
Aluminum	77000	NA	18000	**5710**	**5350**	**5670**
Antimony	31	10	2	**1.5 J**	1.1 UJ	**1.2 J**
Arsenic	0.39	7	8.2	**4.5**	**6**	**36.6**
Barium	15000	5500	48	**99.2**	**121**	**29.9**
Beryllium	160	0.4	NA	**0.97**	**0.84**	**0.32**
Cadmium	70	39	1.2	0.05 U	0.07 U	**0.19**
Calcium	NA	NA	NA	**1970**	**1660**	**1660 J**
Chromium	230	390	81	**19.5**	**26**	**11.7**
Cobalt	23	NA	10	**6**	**6.1**	**37.9**
Copper	3100	3100	34	**132 J**	**122 J**	**13.4 J**
Iron	55000	NA	220000	**53800**	**72900**	**40900**
Lead	400	150	46.7	**128 J**	**85.6 J**	**11.4**
Magnesium	NA	NA	NA	**1360 J**	**1790 J**	**2020 J**
Manganese	1800	390	260	**176 J**	**233 J**	**788**
Mercury	23	23	0.15	**0.07**	**0.04**	0.03 UJ
Nickel	1600	1000	20.9	**53.1**	**54.5**	**19.3**
Potassium	NA	NA	NA	**690**	**615**	**916**
Selenium	390	390	1	**1.1**	0.92 U	0.57 U
Silver	390	200	1	0.12 U	0.1 U	0.19 U
Sodium	NA	NA	NA	**299**	**180**	197 U
Vanadium	390	550	57	**17.1**	**13.8**	**22.9**
Zinc	23000	6000	150	**374**	**318**	**50.5**
Avs/Sem Parameters (UMO/G)						
Cadmium	NA	NA	1.2	**0.0169**	**0.00107**	**0.00507**
Copper	NA	NA	34	**3.63 J**	**146.18 J**	**0.161 J**
Lead	NA	NA	46.7	**0.273**	**0.385**	**0.0521**
Mercury	NA	NA	0.15	0.000049 U	**0.000049**	0.000049 U
Nickel	NA	NA	20.9	**0.463**	**0.632**	**0.133**
SEM/AVS	NA	NA	NA	0.1 UJ	**0.3 J**	0.1 UJ
Sum of SEM	NA	NA	NA			
Zinc	NA	NA	150	**3.38 J**	**9.62 J**	**0.356 J**
Miscellaneous Parameters (%)						
Percent Gravel	NA	NA	NA			
Percent Sand	NA	NA	NA			
Percent Silt/Clay	NA	NA	NA			
pH (S.U.)	NA	NA	NA	**7.3**	**7.1**	**7.2**
Total Organic Carbon	NA	NA	NA			

TABLE 4-61

SUMMARY OF CHEMICALS DETECTED IN 2004 SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Description:
05 - Stage II Phase I RI Sampling Event
07 - Supplemental SD RI Investigation

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
R - Rejected value.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

Acronyms:
AVS = Acid Volatile Sulfide
ECOSD = Ecological Sediment
NA = Not Applicable/Not Available
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PRG = Preliminary Remediation Goal
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SEM = Simultaneously Extracted Metals
VOC = Volatile Organic Compound

Footnotes:
1 - The calculation of this value is defined in Section 4.0.
2 - A concentration that is shaded exceeds one or more criterion presented in the table.
3 - A blank cell indicates that the sample was not analyzed for the target analyte.

TABLE 4-62

SUMMARY OF CHEMICALS DETECTED
STORM CATCH BASIN SEDIMENT SAMPLE
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	**ORNL Regional Screening Level Residential**	**RIDEM Soil Direct Exposure - Residential**	**Ecological Criterion**	**SOURCE4-1 SOURCE4-1-NSD-032404 NORMAL 3/24/2004**
Semivolatile Organics (ug/kg)				
2-Methylnaphthalene	310000	123000	70	15.3 J
Acenaphthene	3400000	43000	16	**24.4**
Acenaphthylene	3400000	23000	44	**172** J
Anthracene	17000000	35000	85.3	**212**
Bap Equivalent(1)	NA	400	NA	**577**
Benzo(a)anthracene	150	900	261	**322**
Benzo(a)pyrene	15	400	430	**370**
Benzo(b)fluoranthene	150	900	1800	**495**
Benzo(g,h,i)perylene	1700000	800	670	357
Benzo(k)fluoranthene	1500	900	1800	464
Chrysene	15000	400	384	**636**
Dibenzo(a,h)anthracene	15	400	63.4	**84.0**
Fluoranthene	2300000	20000	600	**1202**
Fluorene	2300000	28000	19	**44.4**
High Molecular Weight PAHs(1)	NA	---	1700	**3703**
Indeno(1,2,3-cd)pyrene	150	900	600	**363**
Low Molecular Weight PAHs(1)	NA	---	552	**1414**
Naphthalene	3900	54000	160	29.7 J
Phenanthrene	1700000	40000	240	**916**
Pyrene	1700000	13000	665	**1090**
Total PAHs(1)	NA	NA	NA	6796
Total PAHs Ecosd(1)	NA	---	4022	**5117**

Qualifiers:
J - Estimated value.

Sample Code Description:
NORMAL - One sample was collected at this location.

Acronyms:
NA = Not applicable/Not available
PAH = Polycyclic aromatic hydrocarbon
PRG = Preliminary Remediation Goal
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management

Footnotes:
1 - The calculation of this value is defined in Section 4.0.
2 - A concentration that is shaded exceeds one or more criterion presented in the table.

TABLE 4-63

SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED IN ALLEN HARBOR SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	**10**	**10**	**10**
Location	**SD16-AH-01**	**SD16-AH-03**	**SD16-AH-03**
Sample Number	**SD16-AH-01-SD-0506**	**SD16-AH-03-SD-0304**	**SD16-AH-03-SD-0809**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**20070806**	**20070806**	**20070806**
Depth Range (feet)	**5 - 6**	**3 - 4**	**8 - 9**
Matrix	**SD**	**SD**	**SD**
Area	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**
Volatile Organic Compounds (ug/kg)			
BTEX	0 U	0 U	0 U
cis-1,2-Dichloroethene	**20**	0.32 U	0.37 U
Methylene Chloride	0.6 U	**1.1 J**	0.64 U
Total Chlorinated VOCs	**26.5**	**8.5**	**11**
Trichloroethene	**6.5**	**7.4**	**11**
Color-Tec	**0.4**	**0.15**	**0.1**

Notes:
BTEX = Benzene, toluene, ethylbenzene, and total xylenes.
0 U - Not detected.
Bolding indicates that the chemical was detected in the sample.

Matrix Codes
SD = Sediment

Qualifiers:
J - Estimated value.
U - Non-detected result.

Sample Code Description:
NORMAL - One sample was collected at this location.

TABLE 4-64

SUMMARY OF CHEMICALS DETECTED IN 2007SHALLOW SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation				**10**	**10**	**10**	**10**	**10**
Location	**ORNL**	**RIDEM**		**SD16-AH-01**	**SD16-AH-03**	**SD16-AH-03**	**SD16-AH-05**	**SD16-AH-05**
Sample Number	**Regional**	**Soil Direct**	**Ecological**	**SD16-AH-01-SD-0506**	**SD16-AH-03-SD-0304**	**SD16-AH-03-SD-0809**	**SD16-AH-05-SD-0001**	**SD16-AH-05-SD-0001-D**
Sample code	**Screening**	**Exposure**	**Screening**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**DUP**
Sample Date	**Level**	**Residential**	**Criteria**	**8/6/2007**	**8/6/2007**	**8/6/2007**	**8/8/2007**	**8/8/2007**
Depth Range (feet)	**Residential**	**Criterion**		**5 - 6**	**3 - 4**	**8 - 9**	**0 - 1**	**0 - 1**
Matrix				**SD**	**SD**	**SD**	**SD**	**SD**
Area				**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**	**ALLEN HARBOR**
Volatile Organic Compounds (ug/kg)								
1,2,4-Trichlorobenzene	78000	96000	48	0.52 U	0.49 U	0.56 U		
2-Hexanone	NA	NA	NA	0.38 UJ	0.35 UJ	0.4 UJ		
Acetone	61000000	7800000	NA	1.3 U	1.2 U	1.3 U		
cis-1,2-Dichloroethene	780000	630000	NA	**20**	0.32 U	0.37 U		
Methyl Acetate	78000000	NA	NA	1.7 U	1.6 U	1.8 U		
Methyl Tert-Butyl Ether	39000	390000	NA	0.32 U	0.29 U	0.34 U		
Methylene Chloride	11000	45000	NA	0.6 U	**1.1 J**	0.64 U		
Total Chlorinated VOCs	NA	NA	NA	**26.5**	**8.5**	**11**		
Trichloroethene	2800	13000	41	**6.5**	**7.4**	**11**		
Semivolatile Organic Compounds (ug/kg)								
2-Methylnaphthalene	310000	123000	70					
Acenaphthene	3400000	43000	16					
Anthracene	17000000	35000	85.3					
Benzo(a)anthracene	150	900	261					
Benzo(a)pyrene	15	400	430					
Benzo(b)fluoranthene	150	900	1800					
Benzo(g,h,i)perylene	1700000	800	670					
Benzo(k)fluoranthene	1500	900	1800					
Bis(2-ethylhexyl)phthalate	35000	46000	182					
Carbazole	24000	NA	NA					
Chrysene	15000	400	384					
Dibenzofuran	NA	NA	110					
Fluoranthene	2300000	20000	600					
Fluorene	2300000	28000	19					
Indeno(1,2,3-cd)pyrene	150	900	600					
Naphthalene	3900	54000	160					
Phenanthrene	1700000	40000	240					
Pyrene	1700000	13000	665					
Polycyclic Aromatic Hydrocarbons (ug/kg)								
2-Methylnaphthalene	310000	123000	70				**44**	
Acenaphthene	3400000	43000	16				**120**	**110**
Acenaphthylene	3400000	23000	44				**200**	**200**
Anthracene	17000000	35000	85.3				**190**	**200**
BaP Equivalent	15	NA	NA				**1033**	
Benzo(a)anthracene	150	900	261				**540**	**500**
Benzo(a)fluoranthene	NA	NA	NA				**140**	**120**
Benzo(a)pyrene	15	400	430				**640**	**580**
Benzo(b)fluoranthene	150	900	1800				**1000**	**880**
Benzo(g,h,i)perylene	1700000	800	670				**660**	**620**
Benzo(k)fluoranthene	1500	900	1800				**940**	**830**

TABLE 4-64

SUMMARY OF CHEMICALS DETECTED IN 2007SHALLOW SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample code Sample Date Depth Range (feet) Matrix Area	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure Residential Criterion	Ecological Screening Criteria	10 SD16-AH-01 SD16-AH-01-SD-0506 NORMAL 8/6/2007 5 - 6 SD ALLEN HARBOR	10 SD16-AH-03 SD16-AH-03-SD-0304 NORMAL 8/6/2007 3 - 4 SD ALLEN HARBOR	10 SD16-AH-03 SD16-AH-03-SD-0809 NORMAL 8/6/2007 8 - 9 SD ALLEN HARBOR	10 SD16-AH-05 SD16-AH-05-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-05 SD16-AH-05-SD-0001-D DUP 8/8/2007 0 - 1 SD ALLEN HARBOR
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)								
Chrysene	15000	400	384				**1000**	
Dibenzo(a,h)anthracene	15	400	63.4				**160**	**150**
Dibenzofuran	NA	NA	110				**44**	**38**
Fluoranthene	2300000	20000	600				**2500**	**2300**
Fluorene	2300000	28000	19				**75**	**69**
High Molecular Weight PAHs	NA	NA	1700				**10530**	
Indeno(1,2,3-cd)pyrene	150	900	600				**690**	**650**
Low Molecular Weight PAHs	NA	NA	552				**1893**	
Naphthalene	3900	54000	160				**64**	**58**
Phenanthrene	1700000	40000	240				**1200**	**1100**
Pyrene	1700000	13000	665				**2400**	**2200**
Total PAHs	NA	NA	NA				**12423**	
Total PAHs Ecosd	NA	NA	4022				**9133**	
Inorganics (mg/kg)								
Aluminum	77000	NA	18000					
Antimony	31	10	2					
Arsenic	0.39	7	8.2					
Barium	15000	5500	48					
Beryllium	160	0.4	NA					
Cadmium	70	39	2.2					
Calcium	NA	NA	NA					
Chromium	230	390	81					
Cobalt	23	NA	10					
Copper	3100	3100	34					
Iron	55000	NA	220000					
Lead	400	150	46.7					
Magnesium	NA	NA	NA					
Manganese	1800	390	260					
Mercury	23	23	0.15					
Nickel	1600	1000	20.9					
Potassium	NA	NA	NA					
Silver	390	200	2					
Sodium	NA	NA	NA					
Vanadium	39	550	57					
Zinc	23000	6000	150					
Petroleum Hydrocarbons (mg/kg)								
TPH (C09-C36)	NA	500	NA				**500**	
TPH (C09-C44)	NA	500	NA				**440**	

TABLE 4-64

SUMMARY OF CHEMICALS DETECTED IN 2007SHALLOW SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample code Sample Date Depth Range (feet) Matrix Area	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure Residential Criterion	Ecological Screening Criteria	10 SD16-AH-06 SD16-AH-06-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-07 SD16-AH-07-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-08 SD16-AH-08-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-09 SD16-AH-09-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-10 SD16-AH-10-SD-0001 ORIG 8/8/2007 0 - 1 SD ALLEN HARBOR
Volatile Organic Compounds (ug/kg)								
1,2,4-Trichlorobenzene	78000	96000	48					
2-Hexanone	NA	NA	NA					
Acetone	61000000	7800000	NA					
cis-1,2-Dichloroethene	780000	630000	NA					
Methyl Acetate	78000000	NA	NA					
Methyl Tert-Butyl Ether	39000	390000	NA					
Methylene Chloride	11000	45000	NA					
Total Chlorinated VOCs	NA	NA	NA					
Trichloroethene	2800	13000	41					
Semivolatile Organic Compounds (ug/kg)								
2-Methylnaphthalene	310000	123000	70					
Acenaphthene	3400000	43000	16					
Anthracene	17000000	35000	85.3					
Benzo(a)anthracene	150	900	261					
Benzo(a)pyrene	15	400	430					
Benzo(b)fluoranthene	150	900	1800					
Benzo(g,h,i)perylene	1700000	800	670					
Benzo(k)fluoranthene	1500	900	1800					
Bis(2-ethylhexyl)phthalate	35000	46000	182					
Carbazole	24000	NA	NA					
Chrysene	15000	400	384					
Dibenzofuran	NA	NA	110					
Fluoranthene	2300000	20000	600					
Fluorene	2300000	28000	19					
Indeno(1,2,3-cd)pyrene	150	900	600					
Naphthalene	3900	54000	160					
Phenanthrene	1700000	40000	240					
Pyrene	1700000	13000	665					
Polycyclic Aromatic Hydrocarbons (ug/kg)								
2-Methylnaphthalene	310000	123000	70	**43**	**39**	**34**	**38**	**57 J**
Acenaphthene	3400000	43000	16	**32**	**45**	**71**	**24**	**53 J**
Acenaphthylene	3400000	23000	44	**190**	**210**	**160**	**170**	**290**
Anthracene	17000000	35000	85.3	**170**	**190**	**170**	**140**	**260**
BaP Equivalent	15	NA	NA	**629**	**898**	**902**	**632**	**1061**
Benzo(a)anthracene	150	900	261	**400**	**500**	**610**	**360**	**800 J**
Benzo(a)fluoranthene	NA	NA	NA		**120**	**110**	**91**	**150**
Benzo(a)pyrene	15	400	430	**330**	**550**	**580**	**360**	**650 J**
Benzo(b)fluoranthene	150	900	1800	**790**	**890**	**810**	**720**	**970**
Benzo(g,h,i)perylene	1700000	800	670	**500**	**570**	**480**	**460**	**590**
Benzo(k)fluoranthene	1500	900	1800	**740**	**790**	**770**	**620**	**880**

TABLE 4-64

SUMMARY OF CHEMICALS DETECTED IN 2007SHALLOW SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample code Sample Date Depth Range (feet) Matrix Area	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure Residential Criterion	Ecological Screening Criteria	10 SD16-AH-06 SD16-AH-06-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-07 SD16-AH-07-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-08 SD16-AH-08-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-09 SD16-AH-09-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-10 SD16-AH-10-SD-0001 ORIG 8/8/2007 0 - 1 SD ALLEN HARBOR
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)								
Chrysene	15000	400	384	880	980	920	810	1200
Dibenzo(a,h)anthracene	15	400	63.4	120	140	120	110	160
Dibenzofuran	NA	NA	110		37	39	31	100
Fluoranthene	2300000	20000	600	1800	1900	4200	1600	2900 J
Fluorene	2300000	28000	19	66	71	71	58	250 J
High Molecular Weight PAHs	NA	NA	1700	7980	8920	13300	7310	11390
Indeno(1,2,3-cd)pyrene	150	900	600	520	600	510	470	640
Low Molecular Weight PAHs	NA	NA	552	1522	1709	1556	1581	3393
Naphthalene	3900	54000	160	61	54	50	51	83 J
Phenanthrene	1700000	40000	240	960	1100	1000	1100	2400 J
Pyrene	1700000	13000	665	1900	2000	4300	1800	2600 J
Total PAHs	NA	NA	NA	9502	10629	14856	8891	14783
Total PAHs Ecosd	NA	NA	4022	6952	7779	12286	6621	11703
Inorganics (mg/kg)								
Aluminum	77000	NA	18000					
Antimony	31	10	2					
Arsenic	0.39	7	8.2					
Barium	15000	5500	48					
Beryllium	160	0.4	NA					
Cadmium	70	39	2.2					
Calcium	NA	NA	NA					
Chromium	230	390	81					
Cobalt	23	NA	10					
Copper	3100	3100	34					
Iron	55000	NA	220000					
Lead	400	150	46.7					
Magnesium	NA	NA	NA					
Manganese	1800	390	260					
Mercury	23	23	0.15					
Nickel	1600	1000	20.9					
Potassium	NA	NA	NA					
Silver	390	200	2					
Sodium	NA	NA	NA					
Vanadium	39	550	57					
Zinc	23000	6000	150					
Petroleum Hydrocarbons (mg/kg)								
TPH (C09-C36)	NA	500	NA	750	430	320	490	210
TPH (C09-C44)	NA	500	NA	1000	470	210	510	290

TABLE 4-64

SUMMARY OF CHEMICALS DETECTED IN 2007SHALLOW SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample code Sample Date Depth Range (feet) Matrix Area	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure Residential Criterion	Ecological Screening Criteria	10 SD16-AH-10 SD16-AH-10-SD-0001-D DUP 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-11 SD16-AH-11-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-12 SD16-AH-12-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-15 SD16-AH-15-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-16 SD16-AH-16-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR
Volatile Organic Compounds (ug/kg)								
1,2,4-Trichlorobenzene	78000	96000	48					
2-Hexanone	NA	NA	NA					
Acetone	61000000	7800000	NA					
cis-1,2-Dichloroethene	780000	630000	NA					
Methyl Acetate	78000000	NA	NA					
Methyl Tert-Butyl Ether	39000	390000	NA					
Methylene Chloride	11000	45000	NA					
Total Chlorinated VOCs	NA	NA	NA					
Trichloroethene	2800	13000	41					
Semivolatile Organic Compounds (ug/kg)								
2-Methylnaphthalene	310000	123000	70					
Acenaphthene	3400000	43000	16					
Anthracene	17000000	35000	85.3					
Benzo(a)anthracene	150	900	261					
Benzo(a)pyrene	15	400	430					
Benzo(b)fluoranthene	150	900	1800					
Benzo(g,h,i)perylene	1700000	800	670					
Benzo(k)fluoranthene	1500	900	1800					
Bis(2-ethylhexyl)phthalate	35000	46000	182					
Carbazole	24000	NA	NA					
Chrysene	15000	400	384					
Dibenzofuran	NA	NA	110					
Fluoranthene	2300000	20000	600					
Fluorene	2300000	28000	19					
Indeno(1,2,3-cd)pyrene	150	900	600					
Naphthalene	3900	54000	160					
Phenanthrene	1700000	40000	240					
Pyrene	1700000	13000	665					
Polycyclic Aromatic Hydrocarbons (ug/kg)								
2-Methylnaphthalene	310000	123000	70	**31 J**	**20**	**40**	**30**	**270**
Acenaphthene	3400000	43000	16	**24 J**	**15**	**37**	**2100**	**67000 J**
Acenaphthylene	3400000	23000	44	**210**	**180**	**370**	**380**	**8200**
Anthracene	17000000	35000	85.3	**170**	**170**	**350**	**1000**	**100000 J**
BaP Equivalent	15	NA	NA	**419**	**366**	**1196**	**1912**	**39900**
Benzo(a)anthracene	150	900	261	**440 J**	**410**	**770**	**3000**	**76000 J**
Benzo(a)fluoranthene	NA	NA	NA			**160**	**240**	
Benzo(a)pyrene	15	400	430	**110 J**	**120**	**780**	**1100**	**22000 J**
Benzo(b)fluoranthene	150	900	1800	**770**	**610**	**950**	**2300**	**40000 J**
Benzo(g,h,i)perylene	1700000	800	670	**470**	**370**	**650**	**580**	**11000**
Benzo(k)fluoranthene	1500	900	1800	**740**	**550**	**870**	**2100**	**46000 J**

TABLE 4-64

SUMMARY OF CHEMICALS DETECTED IN 2007SHALLOW SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample code Sample Date Depth Range (feet) Matrix Area	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure Residential Criterion	Ecological Screening Criteria	10 SD16-AH-10 SD16-AH-10-SD-0001-D DUP 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-11 SD16-AH-11-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-12 SD16-AH-12-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-15 SD16-AH-15-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-16 SD16-AH-16-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)								
Chrysene	15000	400	384	990	870	1300	7000	140000 J
Dibenzo(a,h)anthracene	15	400	63.4	130	100	170	180	4200
Dibenzofuran	NA	NA	110			46	230	
Fluoranthene	2300000	20000	600	1500 J	1600 J	2800	20000 J	1100000 J
Fluorene	2300000	28000	19	83 J	58	110	340	64000 J
High Molecular Weight PAHs	NA	NA	1700	7150	6510	11830	48000	2054200
Indeno(1,2,3-cd)pyrene	150	900	600	500	380	640	740	15000
Low Molecular Weight PAHs	NA	NA	552	1855	1667	3250	6940	521770
Naphthalene	3900	54000	160	37 J	24	43	590	2300
Phenanthrene	1700000	40000	240	1300 J	1200 J	2300	2500	280000 J
Pyrene	1700000	13000	665	1500 J	1500 J	2900	11000 J	600000 J
Total PAHs	NA	NA	NA	9005	8177	15080	54940	2575970
Total PAHs Ecosd	NA	NA	4022	6525	6267	11970	49220	2463970
Inorganics (mg/kg)								
Aluminum	77000	NA	18000					
Antimony	31	10	2					
Arsenic	0.39	7	8.2					
Barium	15000	5500	48					
Beryllium	160	0.4	NA					
Cadmium	70	39	2.2					
Calcium	NA	NA	NA					
Chromium	230	390	81					
Cobalt	23	NA	10					
Copper	3100	3100	34					
Iron	55000	NA	220000					
Lead	400	150	46.7					
Magnesium	NA	NA	NA					
Manganese	1800	390	260					
Mercury	23	23	0.15					
Nickel	1600	1000	20.9					
Potassium	NA	NA	NA					
Silver	390	200	2					
Sodium	NA	NA	NA					
Vanadium	39	550	57					
Zinc	23000	6000	150					
Petroleum Hydrocarbons (mg/kg)								
TPH (C09-C36)	NA	500	NA	200	79	310	340	4900
TPH (C09-C44)	NA	500	NA	280	100	520	360	4800

TABLE 4-64

SUMMARY OF CHEMICALS DETECTED IN 2007SHALLOW SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample code Sample Date Depth Range (feet) Matrix Area	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure Residential Criterion	Ecological Screening Criteria	10 SD16-AH-17 SD16-AH-17-SD-0001 ORIG 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-17 SD16-AH-17-SD-0001-D DUP 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-18 SD16-AH-18-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-19 SD16-AH-19-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SP16-AH-01 AH-1-SHEEN-121907 NORMAL 12/19/2007 0 - 0.5 SD ALLEN HARBOR
Volatile Organic Compounds (ug/kg)								
1,2,4-Trichlorobenzene	78000	96000	48					**2.1 J**
2-Hexanone	NA	NA	NA					**3.1 J**
Acetone	61000000	7800000	NA					**95 J**
cis-1,2-Dichloroethene	780000	630000	NA					6.9 U
Methyl Acetate	78000000	NA	NA					**12 J**
Methyl Tert-Butyl Ether	39000	390000	NA					**1.7 J**
Methylene Chloride	11000	45000	NA					6.9 U
Total Chlorinated VOCs	NA	NA	NA					
Trichloroethene	2800	13000	41					6.9 U
Semivolatile Organic Compounds (ug/kg)								
2-Methylnaphthalene	310000	123000	70					**99**
Acenaphthene	3400000	43000	16					**4100**
Anthracene	17000000	35000	85.3					**2200**
Benzo(a)anthracene	150	900	261					**680**
Benzo(a)pyrene	15	400	430					**180**
Benzo(b)fluoranthene	150	900	1800					**350**
Benzo(g,h,i)perylene	1700000	800	670					**110**
Benzo(k)fluoranthene	1500	900	1800					**140**
Bis(2-ethylhexyl)phthalate	35000	46000	182					**320 J**
Carbazole	24000	NA	NA					**390**
Chrysene	15000	400	384					**590**
Dibenzofuran	NA	NA	110					**2300**
Fluoranthene	2300000	20000	600					**21000**
Fluorene	2300000	28000	19					**4300**
Indeno(1,2,3-cd)pyrene	150	900	600					**94**
Naphthalene	3900	54000	160					**830**
Phenanthrene	1700000	40000	240					**21000**
Pyrene	1700000	13000	665					**19000**
Polycyclic Aromatic Hydrocarbons (ug/kg)								
2-Methylnaphthalene	310000	123000	70	**30**	**31**	**23**	**98**	
Acenaphthene	3400000	43000	16	**40**	**34**	**34**	**18000 J**	
Acenaphthylene	3400000	23000	44	**220**	**180**	**72**	**2000**	
Anthracene	17000000	35000	85.3	**140**	**100**	**110**	**24000 J**	
BaP Equivalent	15	NA	NA	**546**	**514**	**314**	**42610**	
Benzo(a)anthracene	150	900	261	**320**	**280**	**160**	**57000 J**	
Benzo(a)fluoranthene	NA	NA	NA	**68**			**2000**	
Benzo(a)pyrene	15	400	430	**330**	**320**	**200**	**25000 J**	
Benzo(b)fluoranthene	150	900	1800	**580**	**510**	**300**	**52000 J**	
Benzo(g,h,i)perylene	1700000	800	670	**340**	**320**	**190**	**18000 J**	
Benzo(k)fluoranthene	1500	900	1800	**480**	**460**	**260**	**52000 J**	

TABLE 4-64

SUMMARY OF CHEMICALS DETECTED IN 2007SHALLOW SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample code Sample Date Depth Range (feet) Matrix Area	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure Residential Criterion	Ecological Screening Criteria	10 SD16-AH-17 SD16-AH-17-SD-0001 ORIG 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-17 SD16-AH-17-SD-0001-D DUP 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-18 SD16-AH-18-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SD16-AH-19 SD16-AH-19-SD-0001 NORMAL 8/8/2007 0 - 1 SD ALLEN HARBOR	10 SP16-AH-01 AH-1-SHEEN-121907 NORMAL 12/19/2007 0 - 0.5 SD ALLEN HARBOR
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)								
Chrysene	15000	400	384	580	560	310	90000 J	
Dibenzo(a,h)anthracene	15	400	63.4	84	78	45	4300	
Dibenzofuran	NA	NA	110	28			18000 D	
Fluoranthene	2300000	20000	600	1600	1400	810	460000 J	
Fluorene	2300000	28000	19	47	36	28	44000 J	
High Molecular Weight PAHs	NA	NA	1700	6284	5548	3305	1096300	
Indeno(1,2,3-cd)pyrene	150	900	600	370	320	200	18000 J	
Low Molecular Weight PAHs	NA	NA	552	1107	892	594	458198	
Naphthalene	3900	54000	160	40	41	27	100	
Phenanthrene	1700000	40000	240	590	470	300	370000 J	
Pyrene	1700000	13000	665	1600	1300	830	320000 J	
Total PAHs	NA	NA	NA	7391	6440	3899	1554498	
Total PAHs Ecosd	NA	NA	4022	5621	4830	2949	1414498	
Inorganics (mg/kg)								
Aluminum	77000	NA	18000					4450
Antimony	31	10	2					1.4 J
Arsenic	0.39	7	8.2					5.7
Barium	15000	5500	48					64.1
Beryllium	160	0.4	NA					0.33
Cadmium	70	39	2.2					0.74 J
Calcium	NA	NA	NA					2080
Chromium	230	390	81					11.4
Cobalt	23	NA	10					5.1 J
Copper	3100	3100	34					95.5
Iron	55000	NA	220000					39400
Lead	400	150	46.7					84.2
Magnesium	NA	NA	NA					1120
Manganese	1800	390	260					82
Mercury	23	23	0.15					0.04
Nickel	1600	1000	20.9					26.8
Potassium	NA	NA	NA					870
Silver	390	200	2					7.5
Sodium	NA	NA	NA					496
Vanadium	39	550	57					14
Zinc	23000	6000	150					261
Petroleum Hydrocarbons (mg/kg)								
TPH (C09-C36)	NA	500	NA	1500	1100	1300	1900	
TPH (C09-C44)	NA	500	NA	1300 J	690 J	1300	1900	

TABLE 4-64

SUMMARY OF CHEMICALS DETECTED IN 2007SHALLOW SEDIMENT SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Notes:
Bolding indicates that the chemical was detected in the sample.
PAHs samples were analyzed by AWL by method SW8270-SIM.
BaP Equivalents = Benzo(a)pyrene equivalent concentration
High Molecular Weight PAHs = Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene
High Molecular Weight PAHs Ecosd = Benzo(a)anthracene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Pyrene
Low Molecular Weight PAHs = 2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
Low Molecular Weight PAHs Ecosd = 2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C_9 to C_{36}.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C_9 to C_{44}.

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

TABLE 4-65

SUMMARY OF DESCRIPTIVE STATISTICS
ALLEN HARBOR SEDIMENTS
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Nondetects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential[3]	ORNL Regional Screening Level - Industrial[3]	RIDEM Soil Direct Exposure Residential Criterion[4]	RIDEM Soil Direct Exposure Industrial Criterion[4]	Ecological Criterion	
Volatile Organic Compounds (ug/kg)													
1,1-Dichloroethene	1/26	0.9 J	0.9 J	1 - 20	4.00	0.900	AH-47-NSD-032604	250,000 N	1,100,000 N	200	9,500	NA	
1,2,4-Trichlorobenzene	1/4	2.1 J	2.1 J	0.49 - 0.56	0.721	2.10	AH-1-SHEEN-121907	78,000 N[5]	790,000 N	96,000	10,000,000	48	
2-Butanone	13/25	5 J	23	1 - 41	10.1	12.4	AH-33-NSD-032604-D	28,000,000 N	190,000,000 N	10,000,000	10,000,000	NA	
2-Hexanone	1/26	3.1 J	3.1 J	0.35 - 41	7.99	3.10	AH-1-SHEEN-121907	NA	NA	NA	NA	NA	
Acetone	7/26	30 J	390 J	1.2 - 210	70.8	145	AH-06-NSD-032304	61,000,000 N	610,000,000 N	7,800,000	10,000,000	NA	
Carbon Disulfide	2/26	5 J	50 J	1.4 - 24	5.43	19.8	SED16-01-NSD-032101-D	670,000 N	3,000,000 N	NA	NA	NA	
cis-1,2-Dichloroethene	4/26	5 J	880	0.32 - 20	38.5	228	AH-47-NSD-032604	780,000 N	10,000,000 N	630,000	10,000,000	NA	
Methyl Acetate	1/4	12 J	12 J	1.6 - 1.8	3.64	12.0	AH-1-SHEEN-121907	78,000,000 N	########## N	NA	NA	NA	
Methyl Tert-Butyl Ether	1/4	1.7 J	1.7 J	0.29 - 0.34	0.544	1.70	AH-1-SHEEN-121907	39,000 C	190,000 C	390,000	10,000,000	NA	
Methylene Chloride	1/26	1.1 J	1.1 J	0.6 - 89	7.18	1.10	SD16-AH-03-SD-0304	11,000 C	54,000 C	45,000	760,000	NA	
Total Chlorinated VOCs	6/26	5	886	5 - 20	40.0	157	AH-47-NSD-032604	NA	NA	NA	NA	NA	
trans-1,2-Dichloroethene	1/26	3 J	3 J	0.45 - 20	4.05	3.00	AH-47-NSD-032604	110,000 N	500,000 N	1,100,000	10,000,000	NA	
Trichloroethene	4/26	2 J	11	5 - 20	4.94	6.73	SD16-AH-03-SD-0809	2,800 C	14,000 C	13,000	520,000	41	5
Semivolatile Organic Compounds (ug/kg)													
2-Methylnaphthalene	21/24	6.28	213 J	400 - 1600	112	35.2	AH-29-NSD-032604	310,000 N	4,100,000 N	123,000	10,000,000	**70**	2
Acenaphthene	22/24	7.73	4,100	1300 - 1600	323	287	AH-1-SHEEN-121907	3,400,000 N	33,000,000 N	43,000	10,000,000	**16**	2
Acenaphthylene	21/24	27.95 J	791 J	46 - 1600	267	249	AH-49-NSD-032504	3,400,000 N[6]	33,000,000 N[6]	23,000	10,000,000	**44**	2
Anthracene	23/24	68	2,200	1300 - 1300	428	418	AH-1-SHEEN-121907	17,000,000 N	170,000,000 N	35,000	10,000,000	**85.3**	2
BaP Equivalent	23/23	8.3	2,463	-	1,028	1,028	AH-49-NSD-032504	**15 C**	**210 C**	**400**	**800**	NA	
Benzo(a)anthracene	23/24	110	1,597	1300 - 1300	637	636	AH-35-NSD-032604	**150 C**	2,100 C	**900**	7,800	**261**	2
Benzo(a)pyrene	23/24	66	1,654	1300 - 1300	690	691	AH-49-NSD-032504	**15 C**	**210 C**	**400**	**800**	**430**	2
Benzo(b)fluoranthene	24/24	83 J	2,195	-	846	846	AH-29-NSD-032604	**150 C**	**2,100 C**	**900**	7,800	**1,800**	5
Benzo(g,h,i)perylene	23/24	56	1,244	1300 - 1300	515	509	AH-28-NSD-032504	1,700,000 N[7]	17,000,000 N[7]	**800**	10,000,000	**670**	5
Benzo(k)fluoranthene	23/24	42	2,034	1300 - 1300	788	794	AH-29-NSD-032604	**1,500 C**	21,000 C	**900**	78,000	**1,800**	5
Bis(2-ethylhexyl)phthalate	4/4	210	3,600	-	1,210	1,210	OPSED16-01-NSD-032201	35,000 C	120,000 C	46,000	410,000	**182**	3
Carbazole	1/4	390	390	400 - 1600	585	390	AH-1-SHEEN-121907	24,000 C	86,000 C	NA	NA	NA	
Chrysene	23/24	170 J	2,416	1300 - 1300	994	1,009	AH-49-NSD-032504	15,000 C	210,000 C	**400**	780,000	**384**	2
di-n-Octyl Phthalate	1/4	550	550	400 - 1600	483	550	OPSED16-01-NSD-032201	2,400,000 N	25,000,000 N	NA	NA	**61**	5
Dibenzo(a,h)anthracene	20/24	22.72	331	46 - 1600	207	150	AH-49-NSD-032504	**15 C**	**210 C**	400	800	**63.4**	2
Dibenzofuran	2/4	240	2,300	1300 - 1600	1,001	1,278	AH-1-SHEEN-121907	NA	NA	NA	NA	**110**	5
Fluoranthene	24/24	99 J	21,000	-	2,765	2,765	AH-1-SHEEN-121907	2,300,000 N	22,000,000 N	**20,000**	10,000,000	**600**	2
Fluorene	22/24	14.45	4,300	1300 - 1600	333	297	AH-1-SHEEN-121907	2,300,000 N	22,000,000 N	28,000	10,000,000	**19**	2
High Molecular Weight PAHs	23/23	199	18,530	-	6,165	6,165	SED16-01-NSD-032101	NA	NA	NA	NA	**1,700**	2
Indeno(1,2,3-cd)pyrene	23/24	51	1,361	1300 - 1300	585	582	AH-28-NSD-032504	**150 C**	2,100 C	**900**	7,800	**600**	5
Low Molecular Weight PAHs	23/23	100	6,530	-	1,949	1,949	AH-49-NSD-032504	NA	NA	NA	NA	**552**	2
Naphthalene	21/24	9.45	830	400 - 1600	156	85.0	AH-1-SHEEN-121907	3,900 C	20,000 C	54,000	10,000,000	**160**	2
Phenanthrene	24/24	100 J	21,000	-	1,965	1,965	AH-1-SHEEN-121907	1,700,000 N[7]	17,000,000 N[7]	40,000	10,000,000	**240**	2
Pyrene	24/24	100 J	19,000	-	2,506	2,506	AH-1-SHEEN-121907	1,700,000 N	17,000,000 N	**13,000**	10,000,000	**665**	2
Total PAHs	23/23	382	28,142	-	10,851	10,851	AH-49-NSD-032504	NA	NA	NA	NA	**4,022**	2
Total PAHs Ecosd	23/23	299	23,080	-	8,114	8,114	SED16-01-NSD-032101	NA	NA	NA	NA	**4,022**	2
Polycyclic Aromatic Hydrocarbons (ug/kg)													
2-Methylnaphthalene	13/16	20	270	78 - 620	83.9	58.0	SD16-AH-16-SD-0001	310,000 N	4,100,000 N	123,000	10,000,000	**70**	2
Acenaphthene	14/16	15	67,000 J	78 - 720	5,554	6,318	SD16-AH-16-SD-0001	3,400,000 N	33,000,000 N	**43,000**	10,000,000	**16**	2
Acenaphthylene	14/16	72	8,200	78 - 620	815	907	SD16-AH-16-SD-0001	3,400,000 N[6]	33,000,000 N[6]	23,000	10,000,000	**44**	2
Anthracene	14/16	100	100,000 J	78 - 620	7,957	9,074	SD16-AH-16-SD-0001	17,000,000 N	170,000,000 N	**35,000**	10,000,000	**85.3**	2
BaP Equivalent	16/16	6.13	42,610	-	5,756	5,756	SD16-AH-19-SD-0001	**15 C**	**210 C**	**400**	**800**	NA	
Benzo(a)anthracene	16/16	20	76,000 J	-	8,814	8,814	SD16-AH-16-SD-0001	**150 C**	**2,100 C**	**900**	**7,800**	**261**	2
Benzo(a)pyrene	14/16	110 J	25,000 J	78 - 620	3,313	3,762	SD16-AH-19-SD-0001	**15 C**	**210 C**	**400**	**800**	**430**	2
Benzo(b)fluoranthene	16/16	41	52,000 J	620 - 620	6,406	6,406	SD16-AH-19-SD-0001	**150 C**	**2,100 C**	**900**	**7,800**	**1,800**	5

TABLE 4-65

SUMMARY OF DESCRIPTIVE STATISTICS
ALLEN HARBOR SEDIMENTS
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Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Nondetects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential[3]	ORNL Regional Screening Level - Industrial[3]	RIDEM Soil Direct Exposure Residential Criterion[4]	RIDEM Soil Direct Exposure Industrial Criterion[4]	Ecological Criterion	
Polycyclic Aromatic Hydrocarbons (ug/kg) (continued)													
Benzo(g,h,i)perylene	15/16	23	18,000 J	620 - 620	2,190	2,315	SD16-AH-19-SD-0001	1,700,000 N[7]	17,000,000 N[7]	**800**	10,000,000	**670**	5
Benzo(k)fluoranthene	14/16	260	52,000 J	78 - 620	6,726	7,661	SD16-AH-19-SD-0001	**1,500 C**	**21,000 C**	**900**	78,000	**1,800**	5
Chrysene	16/16	34	140,000 J	-	15,399	15,399	SD16-AH-16-SD-0001	**15,000 C**	210,000 C	**400**	780,000	**384**	2
Dibenzo(a,h)anthracene	13/16	45	4,300	78 - 620	654	759	SD16-AH-19-SD-0001	**15 C**	**210 C**	**400**	**800**	**63.4**	2
Dibenzofuran	7/7	28	18,000 D	-	2,632	2,632	SD16-AH-19-SD-0001	NA	NA	NA	NA	**110**	5
Fluoranthene	16/16	64	1,100,000 J	-	100,280	100,280	SD16-AH-16-SD-0001	2,300,000 N	22,000,000 N	**20,000**	10,000,000	**600**	2
Fluorene	14/16	28	64,000 J	78 - 720	6,879	7,833	SD16-AH-16-SD-0001	2,300,000 N	22,000,000 N	**28,000**	10,000,000	**19**	2
High Molecular Weight PAHs	16/16	186	2,054,200	-	205,593	205,593	SD16-AH-16-SD-0001	NA	NA	NA	NA	**1,700**	2
High Molecular Weight PAHs Ecosd	13/13	2,355	1,942,200	-	230,899	230,899	SD16-AH-16-SD-0001	NA	NA	NA	NA	**1,700**	2
Indeno(1,2,3-cd)pyrene	14/16	200	18,000 J	78 - 620	2,454	2,780	SD16-AH-19-SD-0001	**150 C**	**2,100 C**	**900**	**7,800**	**600**	5
Low Molecular Weight PAHs	16/16	44	521,770	-	62,957	62,957	SD16-AH-16-SD-0001	NA	NA	NA	NA	**552**	2
Low Molecular Weight PAHs Ecosd	13/13	594	521,770	-	77,254	77,254	SD16-AH-16-SD-0001	NA	NA	NA	NA	**552**	2
Naphthalene	13/16	24	2,300	78 - 620	253	267	SD16-AH-16-SD-0001	3,900 C	20,000 C	54,000	10,000,000	**160**	2
Phenanthrene	16/16	44	370,000 J	-	41,578	41,578	SD16-AH-19-SD-0001	1,700,000 N[7]	17,000,000 N[7]	**40,000**	10,000,000	**240**	2
Pyrene	16/16	68	600,000 J	-	59,587	59,587	SD16-AH-16-SD-0001	1,700,000 N	17,000,000 N	**13,000**	10,000,000	**665**	2
Total PAHs	16/16	294	2,575,970	-	268,657	268,657	SD16-AH-16-SD-0001	NA	NA	NA	NA	**4,022**	2
Total PAHs Ecosd	16/16	230	2,463,970	-	250,945	250,945	SD16-AH-16-SD-0001	NA	NA	NA	NA	**4,022**	2
Pesticides/PCBs (ug/kg)													
4,4'-DDD	8/21	1.6	4.4 J	0.88 - 4.6	1.41	2.21	SED16-01-NSD-032101	2,000 C	7,200 C	NA	NA	**1.22**	3
4,4'-DDE	8/20	1.5 J	3.4 J	0.79 - 4.6	1.30	1.99	AH-23-NSD-032404	1,400 C	5,100 C	NA	NA	**2.2**	2
4,4'-DDT	2/21	1.4 J	1.8 J	0.79 - 4.6	0.887	1.60	SED16-02-NSD-032601	1,700 C	7,000 C	NA	NA	**1.58**	2
alpha-Chlordane	1/20	2	2	0.41 - 3.3	0.606	2.00	AH-47-NSD-032604	1,600 C[8])	6,500 C[8]	NA	NA	2.26	3
Aroclor-1260	19/24	16	70	8.8 - 46	28.8	33.2	AH-23-NSD-032404	220 C	740 C	NA	NA	**22.7** [12]	2
delta-BHC	4/20	0.53 J	2 J	0.45 - 3.3	0.679	1.24	CORE1-TOPNSD-032704	77 C[9]	270 C[9]	NA	NA	**0.32** [15]	3
Dieldrin	3/17	1.7 J	8.1	0.79 - 4.6	1.58	4.50	AH-28-NSD-032504	30 C	110 C	40	400	280	1
Endosulfan Sulfate	1/21	2.2 J	2.2 J	0.79 - 6.5	0.993	2.20	SED16-01-NSD-032101	370,000 N[10]	3,700,000 N[10]	NA	NA	5.4 [10]	6
Endrin Ketone	3/20	0.64 J	1.6	0.79 - 4.6	0.797	1.00	OPSED16-01-NSD-032201	18,000 N[11]	180,000 N[11]	NA	NA	9.9	1
gamma-Chlordane	10/16	0.88 J	10	0.41 - 3.3	3.58	5.25	AH-23-NSD-032404	1,600 C[8])	6,500 C[8]	NA	NA	**2.26**	3
Heptachlor	2/15	0.45 J	0.8	0.41 - 2.4	0.469	0.668	SED16-01-NSD-032101	110 C	380 C	NA	NA	**0.3**	5
Heptachlor Epoxide	1/17	1.2 J	1.2 J	0.41 - 3.3	0.544	1.20	OPSED16-01-NSD-032201	53 C	190 C	NA	NA	**0.3** [16]	5
Total Aroclor	19/23	16	70	8.8 - 33	29.0	33.2	AH-23-NSD-032404	240 C	860 C	10,000	10,000	**22.7**	2
Total DDT	11/11	1.6	4.5	-	2.35	2.35	AH-51-NSD-032704	NA	NA	NA	NA	**1.58**	2
Total PCB Congeners	18/18	16	70	-	33.0	33.0	AH-23-NSD-032404	240 C[12]	860 C[12]	NA	NA	**22.7** [12]	2
Inorganics (mg/kg)													
Aluminum	24/24	2,370	15,900	-	8,148	8,148	AH-29-NSD-032604	77,000 N	990,000 N	NA	NA	18,000	5
Antimony	4/16	0.5 J	1.5 J	0.77 - 2.4	0.795	1.03	SED16-01-NSD-032101	31 N	410 N	10	820	2	4
Arsenic	23/24	0.97	36.6	2.2 - 2.2	9.54	9.91	SED16-02-NSD-032601	**0.39 C**	**1.6 C**	**7**	**7**	**8.2**	2
Barium	24/24	13.8	133	-	58.3	58.3	AH-32-NSD-032604	15,000 N	190,000 N	5,500	10,000	**48**	5
Beryllium	24/24	0.29	1.9	-	1.000	1.000	AH-17-NSD-032304	160 N	2,000 N	**0.4**	**1.3**	NA	
Cadmium	19/24	0.19	2.4	0.03 - 0.1	0.540	0.673	AH-17-NSD-032304	70 N	810 N	39	1,000	**1.2**	2
Calcium	8/24	1,380	22,600	453 - 9610	3,152	6,291	AH-03-NSD-032304	NA	NA	NA	NA	NA	
Chromium	24/24	7.7	66.8	-	34.3	34.3	AH-29-NSD-032604	230 N[13]	3,100 N[5,13]	390	10,000	81	2
Cobalt	24/24	2.1	37.9	-	7.35	7.35	SED16-02-NSD-032601	**23 N**	300 N	NA	NA	**10**	5
Copper	24/24	13.4 J	212	-	100	100	AH-17-NSD-032304	3,100 N	41,000 N	3,100	10,000	**34**	2
Iron	24/24	5,820	72,900	-	25,703	25,703	SED16-01-NSD-032101-D	**55,000 N**	720,000 N	NA	NA	220,000	5
Lead	24/24	11.4	154 J	-	69.4	69.4	OPSED16-01-NSD-032201	400	800	**150**	500	**46.7**	2
Magnesium	21/24	994 J	7,890	1240 - 1470	3,948	4,414	AH-17-NSD-032304	NA	NA	NA	NA	NA	
Manganese	24/24	46.2	788	-	191	191	SED16-02-NSD-032601	1,800 N	19,000 N	**390**	10,000	**260**	5
Inorganics (mg/kg) (continued)													

TABLE 4-65

SUMMARY OF DESCRIPTIVE STATISTICS
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PHASE III RI FOR IR PROGRAM SITE 16
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Parameter	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Range of Nondetects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential[3]	ORNL Regional Screening Level - Industrial[3]	RIDEM Soil Direct Exposure Residential Criterion[4]	RIDEM Soil Direct Exposure Industrial Criterion[4]	Ecological Criterion	
Mercury	21/24	0.03 J	0.38	0.01 - 0.03	0.168	0.190	AH-17-NSD-032304	23 N[14]	310 N[14]	23	610	**0.15**	2
Nickel	24/24	6.3	54.5	-	21.2	21.2	SED16-01-NSD-032101-D	1,600 N	20,000 N	1,000	10,000	**20.9**	2
Potassium	16/24	599	4,380	416 - 1620	1,940	2,686	AH-29-NSD-032604	NA	NA	NA	NA	NA	
Selenium	1/24	1.1	1.1	0.15 - 2.6	0.691	0.780	SED16-01-NSD-032101	390 N	5,100 N	390	10,000	**1**	5
Silver	4/24	0.41	7.5	0.1 - 1.5	0.560	2.20	AH-1-SHEEN-121907	390 N	5,100 N	200	10,000	**1**	2
Sodium	2/24	180	496	73.4 - 19800	3,674	368	AH-1-SHEEN-121907	NA	NA	NA	NA	NA	
Vanadium	24/24	8.6	80.9	-	33.9	33.9	AH-29-NSD-032604	390 N	5,200 N	550	10,000	**57**	5
Zinc	24/24	50.5	449	-	204	204	AH-17-NSD-032304	23,000 N	310,000 N	6,000	10,000	**150**	2
Acid Volatile Sulfide / Simultaneously Extractable Metals (UMOL/G)													
Cadmium	19/23	0.00107	0.0169	0.000624 - 0.00126	0.005	0.006	SED16-01-NSD-032101	NA	NA	39	1,000	1.2	2
Copper	22/23	0.03 J	146 J	0.01 - 0.01	3.42	3.58	SED16-01-NSD-032101-D	NA	NA	3,100	10,000	**34**	2
Lead	23/23	0.0521	0.39	-	0.227	0.227	AH-51-NSD-032704	NA	NA	150	500	46.7	2
Mercury	1/23	0.000049	0.000049	0.00003 - 0.00008	0.00003	0.00004	SED16-01-NSD-032101-D	NA	NA	23	610	0.15	2
Nickel	20/23	0.02	0.632	0.03 - 0.05	0.098	0.109	SED16-01-NSD-032101-D	NA	NA	1,000	10,000	20.9	2
SEM/AVS	21/23	0.3 J	220	0.1 - 0.1	56.8	62.2	AH-45-NSD-032604	NA	NA	NA	NA	NA	
Sum of SEM	20/20	0.86	5.38	-	2.46	2.46	AH-28-NSD-032504	NA	NA	NA	NA	NA	
Zinc	23/23	0.356 J	9.62 J	-	2.07	2.07	SED16-01-NSD-032101-D	NA	NA	6,000	10,000	150	2
Petroleum Hydrocarbons(mg/kg)													
TPH (C09-C36)	13/13	79	4,900	-	986	986	SD16-AH-16-SD-0001	NA	**500**	**2,500**	NA	NA	
TPH (C09-C44)	13/13	100	4,800	-	992	992	SD16-AH-16-SD-0001	NA	**500**	**2,500**	NA	NA	
Miscellaneous Parameters													
Percent Gravel	15/15	0.4	21.2	-	6.63	6.63	CORE1-BOTNSD-032704	NA	NA	NA	NA	NA	
Percent Sand	20/20	1.5	97.8	-	41.6	41.6	AH-49-NSD-032504	NA	NA	NA	NA	NA	
Percent Silt/Clay	20/20	1.4	98.5	-	53.7	53.7	AH-06-NSD-032304-D	NA	NA	NA	NA	NA	
pH	3/3	7.1	7.3	-	7.23	7.23	SED16-01-NSD-032101, OPSED16-01-NSD-032201	NA	NA	NA	NA	NA	
Total Inorganic Carbon	20/20	0.78	5.25	-	3.19	3.19	AH-17-NSD-032304	NA	NA	NA	NA	NA	

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ALLEN HARBOR SEDIMENTS
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Range of Nondetects(2)	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	ORNL Regional Screening Level - Residential(3)	ORNL Regional Screening Level - Industrial(3)	RIDEM Soil Direct Exposure Residential Criterion(4)	RIDEM Soil Direct Exposure Industrial Criterion(4)	Ecological Criterion

Notes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Oak Ridge National Laboratory (ORNL) Regional Screening Levels, July 7, 2008. [Cancer benchmark value = 1E-06, HI = 1.0].
4 - RIDEM, DEM-DSR-01-93, February 2004.
5 - Ten percent of the noncarcinogenic value is less than the carcinogenic value, therefore the noncarcinogenic value is presented.
6 - The value for acenaphthene was used as a surrogate for acenaphthylene.
7 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
8 - The value for chlordane is used as a surrogate for alpha- and gamma-chlordane.
9 - The value for alpha-BHC has been used as a surrogate for delta BHC.
10 - The value for endosulfan has been used as a surrogate for Endosulfan Sulfate.
11 - The value for endrin has been used as a surrogate for endrin ketone.
12 - The value for Total PCB congeners (Aroclors) is presented.
13 - The value for chromium VI is presented.
14 - The value for mercuric chloride is presented.
15 - The value for gamma-BHC is used as a surrogate.
16 - The value for heptachlor has been used as a surrogate for heptachlor epoxide.

Shading indicates that the maximum detected concentration exceeds the screening criteria.

Sources for Ecological Screening Criteria:
1 - Sediment Quality Benchmark for Dieldrin and Endrin (assume 1% total organic carbon) (EPA, 1996)
2 - ER-L (Long et al., 1995)
3 - TEL (MacDonald, 1994)
4 - ER-L (Long and Morgan, 1991)
5 - AET (Buchman, 1999)
6 - SQB from Ecotox Thresholds (EPA, 1996)

Qualifiers
C - Carcinogen.
N - Non-carcinogen.
MAX - Ceiling limit.
J - Estimated value.

Acronyms:
AET = Apparent Effects Threshold
AVS = Acid Volatile Sulfide
ECOSD = Ecological Sediment
EPA = United States Environmental Protection Agency
ER-L = Effects Range-Low
HI = Hazard Index
NA = No Criteria Available
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PRG = Preliminary Remediation Goal
RBC = Risk-Based Concentration
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SEM = Simultaneously Extractable Metals
SQB = Sediment Quality Benchmark
TEL = Threshold Effects Level
EPA = United States Environmental Protection Agency

TABLE 4-66

SUMMARY OF CHEMICALS DETECTED
SEDIMENT REFERENCE LOCATION 01 SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure - Residential	Ecological Criterion	07 REF1-1 REF1-1-NSD-032404 NORMAL 3/24/2004	07 REF1-2 REF1-2-NSD-032404 NORMAL 3/24/2004	07 REF1-4 REF1-4-NSD-032404 NORMAL 3/24/2004
Volatile Organic Compounds (ug/kg)						
2-Butanone	28000000	10000000	NA	10 U	10 U	**38**
Carbon Disulfide	670000	NA	NA	**46**	**12**	16 U
Total Chlorinated VOCs[1]	NA	NA	NA	**1**	0 U	0 U
Trichloroethene	2800	13000	41	**1 J**	5 U	7 U
Semivolatile Organic Compounds (ug/kg)						
2-Methylnaphthalene	310000	123000	70	0.25 U	**0.43**	**5.07 J**
Acenaphthene	3400000	43000	16	**0.1 J**	**0.15 J**	**2.15**
Acenaphthylene	3400000	23000	44	**0.56**	**0.92**	**13.02 J**
Anthracene	17000000	35000	85.3	**0.86**	**1.24**	**18.21**
Bap Equivalent[1]	NA	400	NA	**3.57**	**6.08**	**83.8**
Benzo(a)anthracene	150	900	261	**2.01**	**2.51**	**36.82**
Benzo(a)pyrene	15	400	430	**2.41**	**3.9**	**54.75**
Benzo(b)fluoranthene	150	900	1800	**2.52**	**4.76**	**68.74**
Benzo(g,h,i)perylene	1700000	800	670	**2.16**	**4.36**	**52.46**
Benzo(k)fluoranthene	1500	900	1800	**2.42**	**4.58**	**58.71**
Chrysene	15000	400	384	**2.35**	**3.67**	**48.48**
Dibenzo(a,h)anthracene	15	400	63.4	**0.44**	**0.92**	**11.73**
Fluoranthene	2300000	20000	600	**4.73**	**6.22**	**90.43**
Fluorene	2300000	28000	19	**0.28**	**0.43**	**5.97**
High Molecular Weight PAHs[1]	NA	NA	1700	**16.1**	**23**	**321**
Indeno(1,2,3-cd)pyrene	150	900	600	**2.45**	**4.86**	**61.45**
Low Molecular Weight PAHs[1]	NA	NA	552	**4.92**	**6**	**89.6**
Naphthalene	3900	54000	160	0.86 U	1 U	**10.82 J**
Phenanthrene	1700000	40000	240	**3.12**	**2.83**	**34.4**
Pyrene	1700000	13000	665	**4.15**	**5.76**	**78.35**
Total PAHs[1]	NA	NA	4022	**30.6**	**47.5**	**652**
Total PAHs Ecosd[1]	NA	NA	4022	**21**	**29**	**410**
Inorganics (mg/kg)						
Aluminum	77000	NA	18000	**1920**	**3200**	**4060**
Arsenic	0.39	7	8.2	1.3 U	1.5 U	**2.8**
Barium	15000	5500	48	2.8 U	4.3 U	**7.2**
Beryllium	160	0.4	NA	**0.14**	**0.23**	**0.23**
Cadmium	70	39	1.2	**0.04 J**	0.03 U	0.04 U
Calcium	NA	NA	NA	290 U	1220 U	**66800**
Chromium	230	390	81	**4.4**	**9**	**13.7**
Cobalt	23	NA	10	**1.3**	**1.9**	**2.4**
Iron	55000	NA	220000	**3650**	**5430**	**8150**
Lead	400	150	46.7	**3.9 J**	**7.9 J**	**13.5 J**
Magnesium	NA	NA	NA	1120 U	1690 U	**3420**
Manganese	1800	390	260	**45.6**	**71**	**112**
Mercury	23	23	0.15	0.02 U	**0.03**	**0.07**
Nickel	1600	1000	20.9	**3.3**	**4.7**	**6.5**
Silver	390	200	1	0.15 U	0.14 U	**0.26 J**
Vanadium	390	550	57	**3.6**	**6.1**	**9.6**
Zinc	23000	6000	150	13.7 U	20.7 U	**36.1**
AVS/SEM Parameters (UMO/g)						
Copper	NA	NA	34	**0.01**	**0.07**	**0.07**
Lead	NA	NA	46.7	**0.01**	**0.03**	**0.08**
Nickel	NA	NA	20.9	0.01 U	0.01 U	**0.05**
SEM/AVS	NA	NA	NA	**2.19**	**12.47**	**28.32**
Sum of SEM	NA	NA	NA	**0.14**	**0.3**	**0.66**
Zinc	NA	NA	150	**0.1**	**0.17**	**0.45**
Miscellaneous Parameters (%)						
Cyanide (mg/kg)	NA	NA	NA	0.2 R	0.19 R	0.21 R
Percent Gravel	NA	NA	NA			**14.3**
Percent Sand	NA	NA	NA	**98.4**	**95.5**	**57.3**
Percent Silt/Clay	NA	NA	NA	**1.6**	**4.5**	**28.4**
Total Organic Carbon	NA	NA	NA	**0.18**	**0.31**	**1.97**

TABLE 4-66

SUMMARY OF CHEMICALS DETECTED
SEDIMENT REFERENCE LOCATION 01 SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	**ORNL**			**07**	**07**	**07**
Location	**Regional**	**RIDEM**		**REF1-1**	**REF1-2**	**REF1-4**
Sample Number	**Screening**	**Soil Direct**	**Ecological**	**REF1-1-NSD-032404**	**REF1-2-NSD-032404**	**REF1-4-NSD-032404**
Sample Code	**Level**	**Exposure -**	**Criterion**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Residential**	**Residential**		**3/24/2004**	**3/24/2004**	**3/24/2004**

Investigation Description:
07 - Supplemental SD RI Investigation

Qualifiers:
J - Estimated value.
U - Non-detected result.
R - Rejected value.

Sample Code Description:
NORMAL - One sample was collected at this location.

Acronyms:
AVS = Acid Volatile Sulfide
ECOSD = Ecological Sediment
NA = Not applicable/Not available
PAH = Polycyclic aromatic hydrocarbon
PRG = Preliminary Remediation Goal
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SEM = Simultaneously Extracted Metals
VOC = Volatile organic compound

Footnotes:
1 - The calculation of this value is defined in Section 4.0.
2 - A concentration that is shaded exceeds one or more criterion presented in the table.

TABLE 4-67

SUMMARY OF CHEMICALS DETECTED
SEDIMENT REFERENCE LOCATION 02 SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 1 OF 2

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure - Residential	Ecological Criterion	07 REF2-1 REF2-1-NSD-032404 NORMAL 3/24/2004	07 REF2-3 REF2-3-NSD-032404 NORMAL 3/24/2004	07 REF2-5 REF2-5-NSD-032404 NORMAL 3/24/2004
Semivolatile Organic Compounds (ug/kg)						
2-Methylnaphthalene	310000	123000	70	**8.16 J**	**5.02**	**0.91**
Acenaphthene	3400000	43000	16	**3.46**	**2.11**	**0.46**
Acenaphthylene	3400000	23000	44	**18.3 J**	**11.84**	**2.32**
Anthracene	17000000	35000	85.3	**24.55**	**15.87**	**2.95**
Bap Equivalent[1]	NA	400	NA	**112**	**73.7**	**14.2**
Benzo(a)anthracene	150	900	261	**48.84**	**31.22**	**6.96**
Benzo(a)pyrene	15	400	430	**74.11**	**48.35**	**9.49**
Benzo(b)fluoranthene	150	900	1800	**92.88**	**57.66**	**10.15**
Benzo(g,h,i)perylene	1700000	800	670	**67.1**	**46.21**	**8.7**
Benzo(k)fluoranthene	1500	900	1800	**80.25**	**50.46**	**10**
Chrysene	15000	400	384	**64.66**	**43.4**	**8.54**
Dibenzo(a,h)anthracene	15	400	63.4	**15.1**	**10.59**	**1.89**
Fluoranthene	2300000	20000	600	**115.97**	**68.33**	**14.47**
Fluorene	2300000	28000	19	**8.62**	**5.25**	**1.01**
High Molecular Weight PAHs[1]	NA	NA	1700	**423**	**266**	**55.1**
Indeno(1,2,3-cd)pyrene	150	900	600	**79.62**	**53.12**	**9.98**
Low Molecular Weight PAHs[1]	NA	NA	552	**123**	**81.4**	**17.84**
Naphthalene	3900	54000	160	**16.73 J**	**10.33**	**2.78**
Phenanthrene	1700000	40000	240	**43.53**	**31**	**7.41**
Pyrene	1700000	13000	665	**104.41**	**64.5**	**13.73**
Total PAHs[1]	NA	NA	4022	**866**	**555**	**112**
Total PAHs Ecosd[1]	NA	NA	4022	**546**	**348**	**72.9**
Pesticides PCBs (ug/kg)						
Aroclor-1260	220	NA	22.7	**11 J**	12 U	8.1 U
Total Aroclor[1]	NA	10000	22.7	**11**	12 U	8.1 U
Total PCB Congeners[1]	NA	NA	22.7	**11**		
Inorganics (mg/kg)						
Aluminum	77000	NA	18000	**10900**	**9800**	**6790**
Arsenic	0.39	7	8.2	**5.4**	**4.4**	**3.9**
Barium	15000	5500	48	**26.4**	**16.9**	**8.1**
Beryllium	160	0.4	NA	**1**	**0.7**	**0.47**
Calcium	NA	NA	NA	**8170**	**7900**	**5700**
Chromium	230	390	81	**40**	**29.7**	**15.1**
Cobalt	23	NA	10	**7.2**	**6.4**	**4.8**
Copper	3100	3100	34	**33.2**	**21.8**	8.2 U
Iron	55000	NA	220000	**22400**	**19700**	**13100**
Lead	400	150	46.7	**45.5 J**	**30.7 J**	**11.7 J**
Magnesium	NA	NA	NA	**6820**	**5570**	**3380**
Manganese	1800	390	260	**204**	**170**	**105**
Mercury	23	23	0.15	**0.18**	**0.12**	**0.06**
Nickel	1600	1000	20.9	**17.9**	**15.3**	**9.6**
Potassium	NA	NA	NA	**3190 J**	**2160 J**	**876 U**
Vanadium	390	550	57	**36.4**	**25.9**	**12.9**
Zinc	23000	6000	150	**108**	**81.1**	**41.6**
AVS/SEM Parameters (UMO/g)						
Cadmium	NA	NA	1.2	0.00233 U	**0.00197**	0.00124 U
Copper	NA	NA	34	**0.25**	**0.15**	**0.05**
Lead	NA	NA	46.7	**0.21**	**0.14**	**0.04**
Nickel	NA	NA	20.9	**0.08**	**0.05**	**0.02**
SEM/AVS	NA	NA	NA	**84.21**	**40.54**	**1.85**
Sum of SEM	NA	NA	NA	**1.79**	**1.11**	**0.44**
Zinc	NA	NA	150	**1.23**	**0.76**	**0.32**
Miscellaneous Parameters (%)						
Percent Gravel	NA	NA	NA		**10.6**	**3.1**
Percent Sand	NA	NA	NA	**1.2**	**62.1**	**87.7**
Percent Silt/Clay	NA	NA	NA	**98.8**	**27.4**	**9.2**
Total Organic Carbon	NA	NA	NA	**2.85**	**2.51**	**1.03**

TABLE 4-67

SUMMARY OF CHEMICALS DETECTED
SEDIMENT REFERENCE LOCATION 02 SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	**ORNL**			**07**	**07**	**07**
Location	**Regional**	**RIDEM**		**REF2-1**	**REF2-3**	**REF2-5**
Sample Number	**Screening**	**Soil Direct**	**Ecological**	**REF2-1-NSD-032404**	**REF2-3-NSD-032404**	**REF2-5-NSD-032404**
Sample Code	**Level**	**Exposure -**	**Criterion**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Residential**	**Residential**		**3/24/2004**	**3/24/2004**	**3/24/2004**

Investigation Description:
07 - Supplemental SD RI Investigation

Qualifiers:
J - Estimated value.
U - Non-detected result.

Sample Code Description:
NORMAL - One sample was collected at this location.

Acronyms:
AVS = Acid Volatile Sulfide
ECOSD = Ecological Sediment
NA = Not applicable/Not available
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PRG = Preliminary Remediation Goal
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SEM = Simultaneously Extracted Metals

Footnotes:
1 - The calculation of this value is defined n Section 4.0.
2 - A concentration that is shaded exceeds one or more criterion presented in the table.

TABLE 4-68

SUMMARY OF CHEMICALS DETECTED
SEDIMENT REFERENCE LOCATION 03 SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 1 OF 2

Investigation Location Sample Number Sample Code Sample Date	ORNL Regional Screening Level Residential	RIDEM Soil Direct Exposure - Residential	Ecological Criterion	07 REF3-1 REF3-1-NSD-032504 NORMAL 3/25/2004	07 REF3-2 REF3-2-NSD-032504 NORMAL 3/25/2004	07 REF3-4 REF3-4-NSD-032504 NORMAL 3/25/2004
Volatile Organic Compounds (ug/kg)						
2-Butanone	28000000	10000000	NA	**13 J**	**13 J**	**13**
Semivolatile Organic Compounds (ug/kg)						
2-Methylnaphthalene	310000	123000	70	**4.77**	**5.42 J**	**3.18**
Acenaphthene	3400000	43000	16	**4.08**	**5.82**	**3.27**
Acenaphthylene	3400000	23000	44	**18.54**	**27.11 J**	**12.51**
Anthracene	17000000	35000	85.3	**28.79**	**52.05**	**24.61**
Bap Equivalent[(1)]	NA	400	NA	**170**	**302**	**131**
Benzo(a)anthracene	150	900	261	**86.82**	**175.29**	**74.24**
Benzo(a)pyrene	15	400	430	**115.78**	**206.95**	**90.04**
Benzo(b)fluoranthene	150	900	1800	**120.11**	**203.99**	**89.22**
Benzo(g,h,i)perylene	1700000	800	670	**91.76**	**148.83**	**65.5**
Benzo(k)fluoranthene	1500	900	1800	**119.13**	**202.15**	**83.62**
Chrysene	15000	400	384	**103.7**	**188.13**	**78.42**
Dibenzo(a,h)anthracene	15	400	63.4	**21.04**	**36.27**	**15.99**
Fluoranthene	2300000	20000	600	**199.6**	**406.54**	**168.96**
Fluorene	2300000	28000	19	**9.77**	**16.22**	**7.01**
High Molecular Weight PAHs[(1)]	NA	NA	1700	**699**	**1358**	**571**
Indeno(1,2,3-cd)pyrene	150	900	600	**112.25**	**186.49**	**79.31**
Low Molecular Weight PAHs[(1)]	NA	NA	552	**155**	**285**	**123**
Naphthalene	3900	54000	160	**10.41**	**13.96 J**	**7.23**
Phenanthrene	1700000	40000	240	**78.59**	**164.01**	**64.8**
Pyrene	1700000	13000	665	**172.48**	**345.26**	**143.79**
Total PAHs[(1)]	NA	NA	4022	**1298**	**2384**	**1012**
Total PAHs Ecosd[(1)]	NA	NA	4022	**854**	**1643**	**694**
Inorganics (mg/kg)						
Aluminum	77000	NA	18000	**9280**	**9850**	**6480**
Arsenic	0.39	7	8.2	**6.1**	**6.6**	**4.9**
Barium	15000	5500	48	**20.4**	**23.3**	**14.8**
Beryllium	160	0.4	NA	**1.1**	**1.1**	**0.74**
Cadmium	70	39	1.2	**0.38**	**0.34**	0.12 U
Calcium	NA	NA	NA	**7530**	2150 U	1620 U
Chromium	230	390	81	**39.5**	**43.3**	**26.8**
Cobalt	23	NA	10	**5.4**	**6.1**	**4.2**
Copper	3100	3100	34	**72.6**	**66**	**52.6**
Iron	55000	NA	220000	**19800**	**21700**	**13500**
Lead	400	150	46.7	**39.4**	**45**	**25.7**
Magnesium	NA	NA	NA	**5630**	**6200**	**4020**
Manganese	1800	390	260	**162**	**175**	**116**
Mercury	23	23	0.15	**0.47**	**0.48**	**0.21**
Nickel	1600	1000	20.9	**14.8**	**15.8**	**9.9**
Potassium	NA	NA	NA	**2740**	**2870**	**1860**
Vanadium	390	550	57	**29.3**	**31.5**	**19.7**
Zinc	23000	6000	150	**106**	**119**	**73.2**
AVS/SEM Parameters (UMO/g)						
Cadmium	NA	NA	1.2	**0.00363**	**0.00252**	0.00177 U
Copper	NA	NA	34	**0.22**	**0.16**	**0.17**
Lead	NA	NA	46.7	**0.17**	**0.16**	**0.09**
Nickel	NA	NA	20.9	0.03 U	0.03 U	**0.09**
SEM/AVS	NA	NA	NA	**13.01**	**16.55**	**3.19**
Sum of SEM	NA	NA	NA	**1.65**	**1.33**	**0.92**
Zinc	NA	NA	150	**1.22**	**0.97**	**0.55**
Miscellaneous Parameters (%)						
Percent Gravel	NA	NA	NA	**1.5**		
Percent Sand	NA	NA	NA	**12.7**	**13.3**	**32.7**
Percent Silt/Clay	NA	NA	NA	**85.8**	**86.7**	**67.3**
Total Organic Carbon	NA	NA	NA	**2.86**		**1.89**

TABLE 4-68

SUMMARY OF CHEMICALS DETECTED
SEDIMENT REFERENCE LOCATION 03 SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	**ORNL**			**07**	**07**	**07**
Location	**Regional**	**RIDEM**		**REF3-1**	**REF3-2**	**REF3-4**
Sample Number	**Screening**	**Soil Direct**	**Ecological**	**REF3-1-NSD-032504**	**REF3-2-NSD-032504**	**REF3-4-NSD-032504**
Sample Code	**Level**	**Exposure -**	**Criterion**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**Residential**	**Residential**		**3/25/2004**	**3/25/2004**	**3/25/2004**

Investigation Description:
07 - Supplemental SD RI Investigation

Qualifiers:
J - Estimated value.
U - Non-detected result.

Sample Code Description:
NORMAL - One sample was collected at this location.

Acronyms:
AVS = Acid Volatile Sulfide
ECOSD = Ecological Sediment
NA = Not applicable/Not available
PAH = Polycyclic aromatic hydrocarbon
PRG = Preliminary Remediation Goal
RI = Remedial Investigation
RIDEM = Rhode Island Department of Environmental Management
SEM = Simultaneously Extracted Metals

Footnotes:
1 - The calculation of this value is defined in Section 4.0.
2 - A concentration that is shaded exceeds one or more criterion presented in the table.

TABLE 4-69

SUMMARY OF CHEMICALS DETECTED IN SOIL GAS SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Area	USEPA Target Soil Gas Concentration[1]		Bldg E-107	Bldg E-107	Bldg E-107	North Cen FFTA	North Cen FFTA	North Cen FFTA
Location			SG16-001-001	SG16-001-002	SG16-001-003	SG16-002-001	SG16-002-002	SG16-002-003
Sample Number			SG16-001-001	SG16-001-002	SG16-001-003	SG16-002-001	SG16-002-002	SG16-002-003
Sample Code	Shallow	Deep	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	(< 5 feet bgs)	(> 5 feet bgs)	8/10/2007	8/10/2007	8/10/2007	8/6/2007	8/7/2007	8/7/2007
Depth (feet)			3 - 4	2.5 - 3.5	4 - 5	5 - 6	5 - 6	5 - 6
Volatile Organics (ppbv)								
1,1,2-Trichloroethane	0.28	2.8	0.24 U	0.15 U	2.9 U	0.37 U	1.4 U	0.21 U
1,1-Dichloroethane	1200	12000	0.24 U	0.15 U	2.9 U	0.37 U	1.4 U	**0.14 J**
1,2,4-Trichlorobenzene	270	2700	1.2 U	0.73 U	12 U	1.9 U	6.9 U	**0.11 J**
1,2-Dibromoethane	0.014	0.14	0.24 U	0.15 U	2.9 U	0.37 U	1.4 U	**0.89 J**
1,2-Dichlorobenzene	330	3300	**0.093 J**	**0.12 J**	2.9 U	**0.12 J**	1.4 U	**0.22**
1,3-Dichlorobenzene	170	1700	0.24 U	0.15 U	2.9 U	0.37 U	1.4 U	**0.1 J**
1,4-Dichlorobenzene	1300	13000	**0.13 J**	**0.19**	2.9 U	**0.18 J**	1.4 U	**0.31**
2-Butanone	3400	34000	**8.9**	**28**	**6.6**	**4**	1.4 U	**19**
4-Methyl-2-Pentanone	200	2000	0.24 U	0.15 U	2.9 U	0.37 U	1.4 U	0.21 U
Acetone	1500	15000	**42**	**120 J**	**24**	**80**	**42**	**370 J**
Benzene	0.98	9.8	**4.1**	**19**	**4.7**	**4.5**	**7**	**15**
Bromomethane	NA	NA	0.24 U	0.15 U	2.9 U	0.37 UJ	1.4 UJ	0.21 UJ
BTEX[2]	NA	NA	**25**	**52**	**16**	**30**	**28**	**67**
Carbon Disulfide	2200	22000	**0.74 J**	**1.2**	2.9 U	**1.8 J**	**3.4 J**	**2.1**
Carbon Tetrachloride	0.26	2.6	0.24 U	0.15 U	2.9 U	0.37 U	1.4 U	0.21 U
Chloroform	0.22	2.2	**1.6**	**0.66**	2.9 U	0.37 U	1.4 U	0.21 U
Chloromethane	12	120	0.24 U	0.15 U	12 U	**1**	1.4 U	**0.62**
cis-1,2-Dichloroethene	88	880	0.24 U	**0.28**	2.9 U	**3.1**	**2.1**	**1.7**
Dichlorodifluoromethane	400	4000	0.24 U	**0.05 J**	2.9 U	0.37 U	1.4 U	0.21 U
Ethylbenzene	5.1	51	**4.1**	**4.3**	**1.4 J**	**2.4**	**2.2**	**4.9**
Isopropanol	NA	NA	12 U	**18**	**16**	**27**	**39**	**2000 J**
m+p-Xylenes	16000	160000	**3.7**	**6.4**	**4.9**	**3.7**	**4.2**	**8.8**
Methyl Tert-Butyl Ether	8300	83000	**5.2**	0.15 U	**10**	0.37 U	1.4 U	0.21 U
Methylene Chloride	15	150	0.49 UJ	0.29 UJ	2.9 U	0.75 UJ	2.8 UJ	0.42 UJ
o-Xylene	16000	160000	**1.7**	**4.5**	2.9 U	**2**	**2.4**	**4.5**
Styrene	2300	23000	**0.47**	**2.2**	2.9 U	**0.5**	**0.4 J**	**0.8**
Tetrachloroethene	1.2	12	**0.16 J**	**0.14 J**	2.9 U	0.37 U	1.4 U	**0.42**
Toluene	1100	11000	**11**	**18**	**5.3**	**17**	**12**	**34**
Total Chlorinated VOCs[2]	NA	NA	**0.16**	**0.50**	0 U	**114**	**352**	**4.2**
trans-1,2-Dichloroethene	180	1800	0.24 U	0.15 U	2.9 U	0.37 U	1.4 U	0.21 U
Trichloroethene	0.041	0.41	0.036 U	0.22 U	2.9 U	**0.07 J**	**0.09 J**	**0.24**
Trichlorofluoromethane	1200	12000	**0.47**	0.15 U	2.9 U	0.37 U	1.4 U	0.21 U
Vinyl Chloride	1.1	11	0.24 U	**0.08 J**	2.9 U	**110**	**350**	**1.1**

TABLE 4-69

SUMMARY OF CHEMICALS DETECTED IN SOIL GAS SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Area	**USEPA Target Soil Gas Concentration[1]**		**North Cen FFTA**	**North Cen FFTA**	**North Cen FFTA**	**North Cen South**	**North Cen South**	**North Cen South**
Location			**SG16-002-004**	**SG16-002-005**	**SG16-002-005**	**SG16-003-001**	**SG16-003-002**	**SG16-003-003**
Sample Number			**SG16-002-004**	**SG16-002-005**	**SG16-002-005-D**	**SG16-003-001**	**SG16-003-002**	**SG16-003-003**
Sample Code	**Shallow**	**Deep**	**NORMAL**	**ORIG**	**DUP**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**(< 5 feet bgs)**	**(> 5 feet bgs)**	**8/7/2007**	**8/7/2007**	**8/7/2007**	**8/9/2007**	**8/10/2007**	**8/10/2007**
Depth (feet)			**4 - 5**	**4 - 5**	**4 - 5**	**7 - 8**	**7 - 8**	**7 - 8**
Volatile Organics (ppbv)								
1,1,2-Trichloroethane	0.28	2.8	0.18 U	2.1 U	0.86 U	0.82 U	3 U	0.17 U
1,1-Dichloroethane	1200	12000	0.18 U	2.1 U	0.86 U	0.82 U	3 U	0.17 U
1,2,4-Trichlorobenzene	270	2700	0.88 U	11 U	4.3 U	4.1 U	15 U	0.86 U
1,2-Dibromoethane	0.014	0.14	0.18 U	2.1 U	0.86 U	0.82 U	3 U	0.17 U
1,2-Dichlorobenzene	330	3300	**0.24**	2.1 U	0.86 U	0.82 U	3 U	**0.12 J**
1,3-Dichlorobenzene	170	1700	0.18 U	2.1 U	0.86 U	0.82 U	3 U	0.17 U
1,4-Dichlorobenzene	1300	13000	**0.26**	2.1 U	0.86 U	**0.28 J**	3 U	**0.14 J**
2-Butanone	3400	34000	**22**	2.1 U	**3.2**	**4.3**	**28**	**24**
4-Methyl-2-Pentanone	200	2000	0.18 U	2.1 U	0.86 U	0.82 U	3 U	**0.43**
Acetone	1500	15000	**100 J**	**14 J**	**29 J**	**24**	**260**	**160 J**
Benzene	0.98	9.8	**6.2**	**6.3**	**5.2**	**2.9**	**6.9**	**1.6**
Bromomethane	NA	NA	0.18 UJ	2.1 UJ	0.86 UJ	0.82 U	3 U	0.17 U
BTEX[2]	NA	NA	**103**	**35**	**29**	**18**	**19**	**9.1**
Carbon Disulfide	2200	22000	**1.6**	**4.5 J**	**1.2 J**	4.1 U	**6.5 J**	**0.96**
Carbon Tetrachloride	0.26	2.6	0.18 U	2.1 U	0.86 U	0.82 U	3 U	0.17 U
Chloroform	0.22	2.2	0.18 U	2.1 U	0.86 U	0.82 U	3 U	**0.17**
Chloromethane	12	120	**0.21**	2.1 U	0.86 U	0.82 U	3 U	0.17 U
cis-1,2-Dichloroethene	88	880	**0.34**	**12**	**12**	**32**	3 U	0.17 U
Dichlorodifluoromethane	400	4000	0.18 U	2.1 U	0.86 U	0.82 U	3 U	**0.079 J**
Ethylbenzene	5.1	51	**7.4**	**3.2**	**2.8**	**1.8**	3 U	**0.82**
Isopropanol	NA	NA	**520 J**	**62 J**	**590 J**	**31**	**1900 J**	**19**
m+p-Xylenes	16000	160000	**17**	**4.9**	**4.4**	**5.6**	**2.4 J**	**2.4**
Methyl Tert-Butyl Ether	8300	83000	0.18 U	2.1 U	0.86 U	0.82 U	3 U	0.17 U
Methylene Chloride	15	150	0.35 UJ	4.3 UJ	1.7 UJ	**1.1 J**	6 UJ	0.34 UJ
o-Xylene	16000	160000	**6.3**	**2.8**	**2.6**	**2.5**	**1.1 J**	**1.3**
Styrene	2300	23000	**0.71**	2.1 U	**0.46 J**	**0.41 J**	3 U	**0.28**
Tetrachloroethene	1.2	12	**0.28**	2.1 U	0.86 U	0.82 U	3 U	**0.11 J**
Toluene	1100	11000	**66 J**	**18**	**14**	**5.3**	**8.4**	**3**
Total Chlorinated VOCs[2]	NA	NA	**0.87**	**272**	**262**	**300**	0 U	**0.11**
trans-1,2-Dichloroethene	180	1800	0.18 U	2.1 U	0.86 U	**16**	3 U	0.17 U
Trichloroethene	0.041	0.41	**0.04**	**0.07 J**	**0.053 J**	**0.51**	0.6 U	0.025 U
Trichlorofluoromethane	1200	12000	0.18 U	2.1 U	0.86 U	0.82 U	3 U	**0.63**
Vinyl Chloride	1.1	11	0.18 U	**260**	**250**	**250 J**	3 U	0.17 U

TABLE 4-69

SUMMARY OF CHEMICALS DETECTED IN SOIL GAS SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Area	**USEPA Target Soil Gas Concentration[1]**		**North Cen South**	**Nor Central South**	**Bldg 41 West**	**Bldg 41 West**	**Bldg 41 West**	**Bldg 41 West**
Location			**SG16-003-004**	**SG16-003-005**	**SG16-004-001**	**SG16-004-002**	**SG16-004-003**	**SG16-004-004**
Sample Number			**SG16-003-004**	**SG16-003-005**	**SG16-004-001**	**SG16-004-002**	**SG16-004-003**	**SG16-004-004**
Sample Code	**Shallow**	**Deep**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**(< 5 feet bgs)**	**(> 5 feet bgs)**	**8/10/2007**	**8/9/2007**	**8/7/2007**	**8/7/2007**	**8/8/2007**	**8/8/2007**
Depth (feet)			**7 - 8**	**7 - 8**	**5 - 5.5**	**7 - 8**	**7 - 8**	**7 - 8**
Volatile Organics (ppbv)								
1,1,2-Trichloroethane	0.28	2.8	0.17 U	0.18 U	1.7 U	3.4 U	**0.55 J**	3.2 U
1,1-Dichloroethane	1200	12000	0.17 U	0.18 U	1.7 U	3.4 U	1.3 U	3.2 U
1,2,4-Trichlorobenzene	270	2700	0.86 U	0.88 U	8.6 U	17 U	5 U	16 U
1,2-Dibromoethane	0.014	0.14	0.17 U	0.18 U	1.7 U	3.4 U	1.3 U	3.2 U
1,2-Dichlorobenzene	330	3300	0.17 U	**0.18**	1.7 U	3.4 U	1.3 U	3.2 U
1,3-Dichlorobenzene	170	1700	0.17 U	0.18 U	1.7 U	3.4 U	1.3 U	3.2 U
1,4-Dichlorobenzene	1300	13000	0.17 U	**0.26**	1.7 U	3.4 U	1.3 U	3.2 U
2-Butanone	3400	34000	**160 J**	**2.9**	**31**	**6.8**	**18**	**11**
4-Methyl-2-Pentanone	200	2000	**2.6**	**0.31**	**16**	3.4 U	**0.63 J**	3.2 U
Acetone	1500	15000	**670 J**	**19**	**5000 J**	**63**	**100**	**190**
Benzene	0.98	9.8	**10**	**1**	**6.7**	**4**	**7.3**	**5.4**
Bromomethane	NA	NA	**0.21**	0.18 U	1.7 UJ	3.4 U	**0.49 J**	3.2 U
BTEX[2]	NA	NA	**53**	**14**	**28**	**21**	**24**	**18**
Carbon Disulfide	2200	22000	**2.3**	0.88 U	**2.9 J**	**7.9 J**	**2**	**5.7 J**
Carbon Tetrachloride	0.26	2.6	0.17 U	0.18 U	1.7 U	3.4 U	**0.26 J**	3.2 U
Chloroform	0.22	2.2	0.17 U	0.18 U	1.7 U	**3.6**	**89**	**26**
Chloromethane	12	120	**0.88**	0.18 U	1.7 U	3.4 U	5 U	3.2 U
cis-1,2-Dichloroethene	88	880	**0.22**	**24**	1.7 U	3.4 U	1.3 U	3.2 U
Dichlorodifluoromethane	400	4000	**0.31**	0.18 U	1.7 U	3.4 U	**0.51 J**	3.2 U
Ethylbenzene	5.1	51	**4**	**1.1**	**2**	3.4 U	**1.8**	**1.8 J**
Isopropanol	NA	NA	**32**	**48**	**14000 J**	**57 J**	**26**	**31**
m+p-Xylenes	16000	160000	**4.9**	**4.4**	**6**	**5.2**	**3.4**	**3.1 J**
Methyl Tert-Butyl Ether	8300	83000	0.17 U	0.18 U	1.7 U	3.4 U	1.3 U	3.2 U
Methylene Chloride	15	150	0.34 UJ	0.35 UJ	3.4 UJ	6.8 UJ	**0.92 J**	6.3 UJ
o-Xylene	16000	160000	**2.2**	**2**	**3.5**	**1.8 J**	**1.9**	**1.4 J**
Styrene	2300	23000	**0.55**	**0.29**	1.7 U	3.4 U	**0.44 J**	3.2 U
Tetrachloroethene	1.2	12	0.17 U	**0.21**	**5.2**	3.4 U	**3.5**	**2.8 J**
Toluene	1100	11000	**32**	**5.5**	**10**	**10**	**10**	**6.6**
Total Chlorinated VOCs[2]	NA	NA	**1.1**	**44**	**265**	**900**	**275**	**413**
trans-1,2-Dichloroethene	180	1800	0.17 U	**4.2**	1.7 U	3.4 U	1.3 U	3.2 U
Trichloroethene	0.041	0.41	**0.045**	0.34 U	**260**	**900**	**270**	**410**
Trichlorofluoromethane	1200	12000	**0.23**	**0.066 J**	**0.93 J**	**96**	**6.1**	**3.6**
Vinyl Chloride	1.1	11	0.17 U	**16**	1.7 U	3.4 U	1.3 U	3.2 U

TABLE 4-69

SUMMARY OF CHEMICALS DETECTED IN SOIL GAS SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Area	**USEPA Target Soil Gas Concentration[1]**		**Bldg 41 West**	**Bldg 41 East**	**Bldg 41 East**	**Bldg 41 East**	**Bldg 41 East**	**Bldg 41 East**
Location			**SG16-004-005**	**SG16-005-001**	**SG16-005-002**	**SG16-005-003**	**SG16-005-004**	**SG16-005-005**
Sample Number			**SG16-004-005**	**SG16-005-001**	**SG16-005-002**	**SG16-005-003**	**SG16-005-004**	**SG16-005-005**
Sample Code	**Shallow**	**Deep**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**(< 5 feet bgs)**	**(> 5 feet bgs)**	**8/8/2007**	**8/8/2007**	**8/8/2007**	**8/8/2007**	**8/8/2007**	**8/8/2007**
Depth (feet)			**7 - 8**	**7 - 8**	**7 - 8**	**7 - 8**	**7 - 8**	**7 - 8**
Volatile Organics (ppbv)								
1,1,2-Trichloroethane	0.28	2.8	6.4 U	1.8 U	3.4 U	1.3 U	1.4 U	1.8 U
1,1-Dichloroethane	1200	12000	6.4 U	1.8 U	3.4 U	1.3 U	1.4 U	1.8 U
1,2,4-Trichlorobenzene	270	2700	26 U	8.8 U	17 U	6.6 U	7 U	9.1 U
1,2-Dibromoethane	0.014	0.14	6.4 U	1.8 U	3.4 U	1.3 U	1.4 U	1.8 U
1,2-Dichlorobenzene	330	3300	6.4 U	1.8 U	3.4 U	1.3 U	1.4 U	1.8 U
1,3-Dichlorobenzene	170	1700	6.4 U	1.8 U	3.4 U	1.3 U	1.4 U	1.8 U
1,4-Dichlorobenzene	1300	13000	6.4 U	1.8 U	3.4 U	1.3 U	1.4 U	1.8 U
2-Butanone	3400	34000	**9.9**	**12**	**5.6**	**9.8**	**11**	**13**
4-Methyl-2-Pentanone	200	2000	6.4 U	1.8 U	3.4 U	**0.67 J**	**0.56 J**	**0.78 J**
Acetone	1500	15000	**210**	**140**	**61**	**95**	**110**	**120**
Benzene	0.98	9.8	**2.5 J**	**4.4**	**4.5**	**2.9**	**2.8**	**2.4**
Bromomethane	NA	NA	6.4 U	1.8 U	3.4 U	1.3 U	1.4 U	1.8 U
BTEX[2]	NA	NA	**18**	**21**	**18**	**27**	**26**	**15**
Carbon Disulfide	2200	22000	6.4 U	8.8 U	**4.4 J**	**1.7 J**	7 U	9.1 U
Carbon Tetrachloride	0.26	2.6	**1.3 J**	1.8 U	3.4 U	1.3 U	1.4 U	1.8 U
Chloroform	0.22	2.2	**43**	**2.3**	**2 J**	1.3 U	1.4 U	1.8 U
Chloromethane	12	120	26 U	1.8 U	3.4 U	1.3 U	1.4 U	1.8 U
cis-1,2-Dichloroethene	88	880	6.4 U	1.8 U	3.4 U	1.3 U	1.4 U	1.8 U
Dichlorodifluoromethane	400	4000	6.4 U	1.8 U	3.4 U	1.3 U	1.4 U	1.8 U
Ethylbenzene	5.1	51	**1.7 J**	**1.8**	3.4 U	**2.4**	**2.4**	**1.2 J**
Isopropanol	NA	NA	**40**	**63**	**48**	**200**	**320**	**59**
m+p-Xylenes	16000	160000	**4.2 J**	**3.7**	**5.2**	**5.7**	**4.6**	**2.7**
Methyl Tert-Butyl Ether	8300	83000	6.4 U	1.8 U	3.4 U	1.3 U	1.4 U	1.8 U
Methylene Chloride	15	150	6.4 U	3.5 UJ	6.7 UJ	**1.5 J**	2.8 UJ	3.6 UJ
o-Xylene	16000	160000	**1.8 J**	**2**	**2.3 J**	**2.7**	**2.3**	**1.4 J**
Styrene	2300	23000	6.4 U	**0.52 J**	3.4 U	**0.51 J**	**0.5 J**	1.8 U
Tetrachloroethene	1.2	12	**21**	1.8 U	3.4 U	**1.2 J**	**0.97 J**	**3.5**
Toluene	1100	11000	**7.5**	**9.4**	**6**	**13**	**14**	**7**
Total Chlorinated VOCs[2]	NA	NA	**1822**	**380**	**870**	**333**	**121**	**584**
trans-1,2-Dichloroethene	180	1800	6.4 U	1.8 U	3.4 U	1.3 U	1.4 U	1.8 U
Trichloroethene	0.041	0.41	**1800**	**380**	**870**	**330**	**120**	**580**
Trichlorofluoromethane	1200	12000	**150**	**1.1 J**	**2.3 J**	**0.84 J**	**0.92 J**	**1.2 J**
Vinyl Chloride	1.1	11	6.4 U	1.8 U	3.4 U	1.3 U	1.4 U	1.8 U

TABLE 4-69

SUMMARY OF CHEMICALS DETECTED IN SOIL GAS SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Area	**USEPA Target Soil Gas Concentration[1]**		**Bldg 41 East**	**Bldg 41 East**	**Bldg 41 East**
Location			**SG16-005-006**	**SG16-005-006**	**SG16-005-007**
Sample Number			**SG16-005-006**	**SG16-005-006-D**	**SG16-005-007**
Sample Code	**Shallow**	**Deep**	**ORIG**	**DUP**	**NORMAL**
Sample Date	**(< 5 feet bgs)**	**(> 5 feet bgs)**	**8/9/2007**	**8/9/2007**	**8/9/2007**
Depth (feet)			**7 - 8**	**7 - 8**	**7 - 8**
Volatile Organics (ppbv)					
1,1,2-Trichloroethane	0.28	2.8	3.3 U	3.7 U	0.39 U
1,1-Dichloroethane	1200	12000	3.3 U	3.7 U	0.39 U
1,2,4-Trichlorobenzene	270	2700	16 U	19 U	2 U
1,2-Dibromoethane	0.014	0.14	3.3 U	3.7 U	0.39 U
1,2-Dichlorobenzene	330	3300	3.3 U	3.7 U	**0.2 J**
1,3-Dichlorobenzene	170	1700	3.3 U	3.7 U	0.39 U
1,4-Dichlorobenzene	1300	13000	3.3 U	3.7 U	**0.2 J**
2-Butanone	3400	34000	**4.4**	**4.8**	**15**
4-Methyl-2-Pentanone	200	2000	3.3 U	3.7 U	**0.79**
Acetone	1500	15000	**51**	**54**	**110**
Benzene	0.98	9.8	**2.6 J**	**2.6 J**	**13**
Bromomethane	NA	NA	3.3 U	3.7 U	0.39 U
BTEX[2]	NA	NA	**11**	**11**	**38**
Carbon Disulfide	2200	22000	16 U	19 U	**0.94 J**
Carbon Tetrachloride	0.26	2.6	3.3 U	3.7 U	0.39 U
Chloroform	0.22	2.2	3.3 U	3.7 U	**0.59**
Chloromethane	12	120	3.3 U	3.7 U	0.39 U
cis-1,2-Dichloroethene	88	880	**7.2**	**7**	0.39 U
Dichlorodifluoromethane	400	4000	3.3 U	3.7 U	**0.47**
Ethylbenzene	5.1	51	3.3 U	3.7 U	**2.3**
Isopropanol	NA	NA	**71 J**	**22 J**	**200 J**
m+p-Xylenes	16000	160000	**3 J**	**3.3 J**	**7.3**
Methyl Tert-Butyl Ether	8300	83000	3.3 U	3.7 U	0.39 U
Methylene Chloride	15	150	6.6 UJ	7.5 UJ	0.78 UJ
o-Xylene	16000	160000	**1.6 J**	**1.2 J**	**3.7**
Styrene	2300	23000	3.3 U	3.7 U	**0.44**
Tetrachloroethene	1.2	12	3.3 U	3.7 U	**0.27 J**
Toluene	1100	11000	**3.4**	**4.2**	**12**
Total Chlorinated VOCs[2]	NA	NA	**1207**	**1307**	**130**
trans-1,2-Dichloroethene	180	1800	3.3 U	3.7 U	0.39 U
Trichloroethene	0.041	0.41	**1200**	**1300**	**130**
Trichlorofluoromethane	1200	12000	3.3 U	3.7 U	**1.6**
Vinyl Chloride	1.1	11	3.3 U	3.7 U	0.39 U

TABLE 4-69

SUMMARY OF CHEMICALS DETECTED IN SOIL GAS SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
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Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.

Acronyms:
bgs -Below ground surface.

Footnotes:
1 - Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils. November 2002. EPA530-F-02-052.
Values are from Table 2c and correspond to a target cancer risk level of 1×10^{-6} or HI =1 and an attenuation factor of 0.01.
2 - The calculation of the BTEX and the total chlorinated VOCs are defined in the Section 4 text. "0 U" indicates that this chemical group was not detected in the sample analyzed.

TABLE 4-70

SUMMARY OF DESCRIPTIVE STATISTICS
SHALLOW SOIL GAS SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
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Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	USEPA Target Shallow Soil Gas Concentration[3]
Volatile Organics (ppbv)								
1,2-Dichlorobenzene	3/5	0.093 J	0.24	0.86 - 2.9	0.529	0.151	SG16-002-004	330
1,4-Dichlorobenzene	3/5	0.13 J	0.26	0.86 - 2.9	0.554	0.193	SG16-002-004	1,300
2-Butanone	5/5	3.2	28	2.1 - 2.1	13.5	13.5	SG16-001-002	3,400
Acetone	5/5	14 J	120 J	- - -	61.5	61.5	SG16-001-002	1,500
Benzene	5/5	4.1	19	- - -	7.95	7.95	SG16-001-002	**0.98**
BTEX[4]	5/5	16.3	103	- - -	45.6	45.6	SG16-002-004	NA
Carbon Disulfide	4/5	0.74 J	4.5 J	2.9 - 2.9	1.57	1.60	SG16-002-005	2,200
Chloroform	2/5	0.66	1.6	0.18 - 2.9	0.908	1.13	SG16-001-001	**0.22**
Chloromethane	1/5	0.21	0.21	0.15 - 12	1.43	0.210	SG16-002-004	12
cis-1,2-Dichloroethene	3/5	0.28	12	0.24 - 2.9	2.84	4.21	SG16-002-005, SG16-002-005-D	88
Dichlorodifluoromethane	1/5	0.049 J	0.049 J	0.18 - 2.9	0.490	0.049	SG16-001-002	400
Ethylbenzene	5/5	1.4 J	7.4	- - -	4.04	4.04	SG16-002-004	**5.1**
Isopropanol	4/5	16	590 J	12 - 12	177	220	SG16-002-005-D	NA
m+p-Xylenes	5/5	3.7	17	- - -	7.33	7.33	SG16-002-004	16,000
Methyl Tert-Butyl Ether	2/5	5.2	10	0.15 - 2.1	3.22	7.60	SG16-001-003	8,300
o-Xylene	4/5	1.7	6.3	2.9 - 2.9	3.33	3.80	SG16-002-004	16,000
Styrene	4/5	0.46 J	2.2	2.1 - 2.9	1.06	0.960	SG16-001-002	2,300
Tetrachloroethene	3/5	0.14 J	0.28	0.86 - 2.9	0.554	0.193	SG16-002-004	1.2
Toluene	5/5	5.3	66 J	- - -	23.3	23.3	SG16-002-004	1,100
Total Chlorinated VOCs[4]	4/4	0.16	272	- - -	67.1	67.1	SG16-002-005	NA
Trichloroethene	2/5	0.041	0.074 J	0.036 - 2.9	0.337	0.052	SG16-002-005	**0.041**
Trichlorofluoromethane	1/5	0.47	0.47	0.15 - 2.9	0.565	0.470	SG16-001-001	1,200
Vinyl Chloride	2/5	0.078 J	260	0.18 - 2.9	51.3	128	SG16-002-005	**1.1**

TABLE 4-70

SUMMARY OF DESCRIPTIVE STATISTICS
SHALLOW SOIL GAS SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 2 OF 2

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils. November 2002. EPA530-F-02-052.
Values are from Table 2c and correspond to a target cancer risk level of 1×10^{-6} or HI =1 and an attenuation factor of 0.1.
4 - The calculation of the BTEX and the total chlorinated VOCs are defined in the Section 4 text.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and xylene
EPA = United States Environmental Protection Agency
VOCs = Volatile organic chemicals

Qualifiers:
J - Estimated value.

TABLE 4-71

SUMMARY OF DESCRIPTIVE STATISTICS
DEEP SOIL GAS SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 1 OF 2

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects[2]	Mean Concentration	Average of Positive Detects	Sample with Maximum Detection	USEPA Target Deep Soil Gas Concentration[3]
Volatile Organics (ppbv)								
1,1,2-Trichloroethane	1/20	0.55 J	0.55 J	0.17 - 6.4	0.893	0.550	SG16-004-003	2.8
1,1-Dichloroethane	1/20	0.14 J	0.14 J	0.17 - 6.4	0.900	0.140	SG16-002-003	12,000
1,2,4-Trichlorobenzene	1/20	0.11 J	0.11 J	0.86 - 26	4.28	0.110	SG16-002-003	2,700
1,2-Dibromoethane	1/20	0.89 J	0.89 J	0.17 - 6.4	0.937	0.890	SG16-002-003	**0.14**
1,2-Dichlorobenzene	5/20	0.12 J	0.22	0.17 - 6.4	0.907	0.168	SG16-002-003	3,300
1,3-Dichlorobenzene	1/20	0.1 J	0.1 J	0.17 - 6.4	0.898	0.100	SG16-002-003	1,700
1,4-Dichlorobenzene	6/20	0.14 J	0.31	0.17 - 6.4	0.913	0.228	SG16-002-003	13,000
2-Butanone	19/20	2.9	160 J	1.4 - 1.4	19.5	20.5	SG16-003-004	34,000
4-Methyl-2-Pentanone	9/20	0.31	16	0.21 - 6.4	1.83	2.53	SG16-004-001	2,000
Acetone	20/20	19	5,000 J	- - -	394	394	SG16-004-001	15,000
Benzene	20/20	1	15	- - -	5.37	5.37	SG16-002-003	**9.8**
Bromomethane	2/20	0.21	0.49 J	0.17 - 6.4	0.896	0.350	SG16-004-003	NA
BTEX[4]	20/20	9.12	67	- - -	25.2	25.2	SG16-002-003	NA
Carbon Disulfide	13/20	0.94 J	7.9 J	0.88 - 19	3.47	3.28	SG16-004-002	22,000
Carbon Tetrachloride	2/20	0.26 J	1.3 J	0.17 - 3.7	0.783	0.780	SG16-004-005	2.6
Chloroform	8/20	0.17	89	0.17 - 3.7	8.73	20.8	SG16-004-003	**2.2**
Chloromethane	3/20	0.62	1	0.17 - 26	1.59	0.833	SG16-002-001	120
cis-1,2-Dichloroethene	7/20	0.22	32	0.17 - 6.4	4.24	10.0	SG16-003-001	880
Dichlorodifluoromethane	4/20	0.079 J	0.51 J	0.18 - 6.4	0.915	0.342	SG16-004-003	4,000
Ethylbenzene	16/20	0.82	4.9	3 - 3.7	2.06	2.16	SG16-002-003	51
Isopropanol	20/20	19	14,000 J	- - -	959	959	SG16-004-001	NA
m+p-Xylenes	20/20	2.4 J	8.8	- - -	4.53	4.53	SG16-002-003	160,000
Methylene Chloride	3/20	0.92 J	1.5 J	0.34 - 7.5	1.63	1.17	SG16-005-003	150
o-Xylene	20/20	1.1 J	4.5	- - -	2.21	2.21	SG16-002-003	160,000
Styrene	12/20	0.28	0.8	1.7 - 6.4	0.942	0.470	SG16-002-003	23,000
Tetrachloroethene	11/20	0.11 J	21	0.17 - 3.7	2.41	3.56	SG16-004-005	**12**
Toluene	20/20	3	34	- - -	11.3	11.3	SG16-002-003	11,000
Total Chlorinated VOCs[4]	19/19	0.11	1,822	- - -	430	430	SG16-004-005	NA
trans-1,2-Dichloroethene	2/20	4.2	16	0.17 - 6.4	1.88	10.1	SG16-003-001	1,800
Trichloroethene	17/20	0.045	1,800	0.025 - 0.6	365	429	SG16-004-005	**0.41**
Trichlorofluoromethane	14/20	0.066 J	150	0.21 - 3.7	13.5	19.0	SG16-004-005	12,000
Vinyl Chloride	5/20	1.1	350	0.17 - 6.4	37.2	145	SG16-002-002	**11**

TABLE 4-71

SUMMARY OF DESCRIPTIVE STATISTICS
DEEP SOIL GAS SAMPLES
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 2 OF 2

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils. November 2002. EPA530-F-02-052.
Values are from Table 2c and correspond to a target cancer risk level of 1×10^{-6} or HI =1 and an attenuation factor of 0.01.
4 - The calculation of the BTEX and the total chlorinated VOCs are defined in the Section 4 text.
Shading indicates that the maximum detected concentration exceeds the screening criterion.

Acronyms:
BTEX = Benzene, toluene, ethylbenzene, and xylene
EPA = United States Environmental Protection Agency
VOCs = Volatile organic chemicals

Qualifiers:
J - Estimated value.

TABLE 4-72

SUMMARY OF CHEMICALS DETECTED IN PAVEMENT/PILING SAMPLES - STANDARD EPA PAHs
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 1 OF 5

Investigation	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Location	**PAV16-13**	**PAV16-14**	**PAV16-15**	**PAV16-16**	**PAV16-17**	**PAV16-18**	**PAV16-19**
Sample Number	**PAV-13**	**PAV-14**	**PAV-15**	**PAV-16**	**PAV-17**	**PAV-18**	**PAV-19**
Sample Code	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
Sample Date	**20070808**	**20070808**	**20070808**	**20070808**	**20070808**	**20070808**	**20070808**
Matrix	**PV**	**PV**	**PV**	**PV**	**PV**	**PV**	**PV**
Area	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**	**EASTERN AREA**
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	**480 J**	**1000 J**	**390 J**	**6500**	**890 J**	**8200**	**110000**
Acenaphthene	2000 U	**1200 J**	**100 J**	**1900 J**	**370 J**	2100 U	**34000**
Acenaphthylene	**410 J**	**380 J**	**720 J**	**390 J**	**1500 J**	**1600 J**	**280000**
Anthracene	**360 J**	**780 J**	**900 J**	**4900**	**2500**	**1900 J**	**200000**
BaP Equivalent	**3789**	**516**	**12048**	**13703**	**7574**	**2340**	**252270**
Benzo(a)anthracene	**1400 J**	**320 J**	**6000**	**8100**	**5200**	**1200 J**	**230000**
Benzo(a)pyrene	**1700 J**	**410 J**	**8400**	**10000**	**5000**	**1400 J**	**180000**
Benzo(b)fluoranthene	**3600**	**490 J**	**7200**	**6800**	**5100**	**2100**	**110000**
Benzo(g,h,i)perylene	**4600**	**1200 J**	**10000**	**9600**	**4200**	**2100**	**79000**
Benzo(k)fluoranthene	**950 J**	**210 J**	**3400**	**3500**	**4700**	**1600 J**	**120000**
Chrysene	**9400**	**1200 J**	**14000**	**18000**	**7300**	**4200**	**270000**
Dibenzo(a,h)anthracene	**1400 J**	2000 U	**1900 J**	**1800 J**	**1200 J**	**490 J**	**29000**
Fluoranthene	**4000**	**1700 J**	**11000**	**18000**	**13000**	**7100**	**420000**
Fluorene	**570 J**	**1400 J**	**600 J**	**4100**	**1200 J**	**640 J**	**94000**
High Molecular Weight PAHs	**34450**	**8450**	**85700**	**104400**	**60600**	**37190**	**2136000**
High Molecular Weight PAHs Ecosd	**23600**	**6330**	**61300**	**80900**	**43700**	**30390**	**1749000**
Indeno(1,2,3-cd)pyrene	**1700 J**	**220 J**	**3800**	**3600**	**2900**	**1000 J**	**78000**
Low Molecular Weight PAHs	**6450**	**22020**	**7130**	**48490**	**14940**	**26840**	**1524000**
Low Molecular Weight PAHs Ecosd	**6450**	**22020**	**7130**	**48490**	**14940**	**26840**	**1524000**
Naphthalene	**330 J**	**260 J**	**320 J**	**1700 J**	**280 J**	**2500**	**76000**
Phenanthrene	**4300**	**17000**	**4100**	**29000**	**8200**	**12000**	**730000**
Pyrene	**5700**	**2700**	**20000**	**25000**	**12000**	**16000**	**620000**
Total PAHs	**40900**	**30470**	**92830**	**152890**	**75540**	**64030**	**3660000**
Total PAHs Ecosd	**30050**	**28350**	**68430**	**129390**	**58640**	**57230**	**3273000**
Petroleum Hydrocarbons (mg/kg)							
TPH (C09-C36)	**60000**	**29000**	**64000**	**89000**	**58000**	**80000**	**100000**
TPH (C09-C44)	**120000**	**81000**	**140000**	**180000**	**160000**	**180000**	**210000**

TABLE 4-72

SUMMARY OF CHEMICALS DETECTED IN PAVEMENT/PILING SAMPLES - STANDARD EPA PAHs
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	10	10	10	10	10	10	10
Location	PAV16-20	PAV16-21	PAV16-22	PAV16-23	PIL16-01	PIL16-02	PIL16-03
Sample Number	PAV-20	PAV-21	PAV-22	PAV-23	PIL16-01	PIL16-02	PIL16-03
Sample Code	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	20070808	20070808	20070808	20070808	20070808	20070808	20070808
Matrix	PV	PV	PV	PV	BM	BM	BM
Area	EASTERN AREA	NORTH CEN EASTERN	BLDG E107-NORTH	NORTH CEN FFTA	ALLEN HARBOR	ALLEN HARBOR	ALLEN HARBOR
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	690 J	8200	570 J	850 J	14000000 J	13000000 J	420000 J
Acenaphthene	240 J	620 J	2100 U	2000 U	23000000 J	15000000 J	290000 J
Acenaphthylene	2200	1900 J	670 J	380 J	2700000 J	1900000 J	36000 J
Anthracene	460 J	1000 J	1000 J	340 J	25000000 J	23000000 J	170000 J
BaP Equivalent	33464	4626	9926	2648	2193400	1915100	4954
Benzo(a)anthracene	13000	2000 J	1500 J	950 J	5300000 J	4500000 J	9200 J
Benzo(a)pyrene	25000	2300	6600	1600 J	1300000 J	1100000 J	3200 J
Benzo(b)fluoranthene	13000	4500	6000	1900 J	1700000 J	1800000 J	3300 J
Benzo(g,h,i)perylene	26000	4300	10000	4200	300000 J	300000 J	1600 J
Benzo(k)fluoranthene	4000	1400 J	2700	1100 J	1600000 J	1700000 J	3200 J
Chrysene	24000	12000	8600	2400	5400000 J	6100000 J	12000 J
Dibenzo(a,h)anthracene	5100	1500 J	2200	570 J	130000 J	120000 J	320 J
Fluoranthene	6400	11000	3100	5300	53000000 J	53000000 J	100000 J
Fluorene	570 J	870 J	900 J	950 J	29000000 J	18000000 J	350000 J
High Molecular Weight PAHs	160500	50100	50000	26020	99150000	98040000	364220
High Molecular Weight PAHs Ecosd	110500	38400	27900	17020	95130000	93820000	354720
Indeno(1,2,3-cd)pyrene	7000	1500 J	3400	1800 J	420000 J	420000 J	1400 J
Low Molecular Weight PAHs	5600	33990	4660	6160	266700000	239900000	3291000
Low Molecular Weight PAHs Ecosd	5600	33990	4660	6160	266700000	239900000	3291000
Naphthalene	240 J	3400	220 J	340 J	53000000 J	69000000 J	25000 J
Phenanthrene	1200 J	18000	1300 J	3300	120000000 J	100000000 J	2000000 J
Pyrene	37000	9600	5900	6200	30000000 J	29000000 J	230000 J
Total PAHs	166100	84090	54660	32180	365850000	337940000	3655220
Total PAHs Ecosd	116100	72390	32560	23180	361830000	333720000	3645720
Petroleum Hydrocarbons (mg/kg)							
TPH (C09-C36)	130000	130000	72000	60000	620000 J	590000 J	620000 J
TPH (C09-C44)	270000 J	260000	160000	150000	570000 J	550000 J	620000 J

TABLE 4-72

SUMMARY OF CHEMICALS DETECTED IN PAVEMENT/PILING SAMPLES - STANDARD EPA PAHs
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	10	10	10	10	10	10	10
Location	PIL16-04	PIL16-05	PIL16-05	PIL16-06	PIL16-06	PIL16-06	PIL16-07
Sample Number	PIL16-04	PIL16-05	PIL16-05-D	PIL16-06(INNER)	PIL16-06(MID)	PIL16-06(OUTER)	PIL16-07
Sample Code	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL
Sample Date	20070808	20070808	20070808	20070808	20070808	20070808	20070808
Matrix	BM	BM	BM	BM	BM	BM	PV
Area	ALLEN HARBOR	ALLEN HARBOR	ALLEN HARBOR	ALLEN HARBOR	ALLEN HARBOR	ALLEN HARBOR	ALLEN HARBOR
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	13000 J	36000000 J	32000000 J	34000000 J	25000000 J	20000000 J	190000 J
Acenaphthene	180000 J	58000000 J	46000000 J	18000000 J	23000000 J	16000000 J	3200000 J
Acenaphthylene	16000 J	3300000 J	2200000 J	1100000 J	990000 J	820000 J	3000000 J
Anthracene	150000 J	35000000 J	27000000 J	8200000 J	23000000 J	14000000 J	4400000 J
BaP Equivalent	2789	5131600	4696900	5613900	7567000	7865000	2495000
Benzo(a)anthracene	7300 J	8900000 J	8100000 J	6400000 J	8600000 J	8400000 J	2300000 J
Benzo(a)pyrene	1500 J	3400000 J	3000000 J	3800000 J	5200000 J	5000000 J	1200000 J
Benzo(b)fluoranthene	2400 J	4000000 J	3900000 J	4500000 J	5700000 J	7600000 J	6100000 J
Benzo(g,h,i)perylene	580 J	1100000 J	950000 J	1900000 J	2400000 J	2500000 J	1200000 J
Benzo(k)fluoranthene	2200 J	4200000 J	3800000 J	4600000 J	5700000 J	6200000 J	5000000 J
Chrysene	13000 J	9600000 J	8900000 J	7900000 J	10000000 J	13000000 J	15000000 J
Dibenzo(a,h)anthracene	220 J	280000 J	330000 J	500000 J	650000 J	910000 J	250000 J
Fluoranthene	130000 J	74000000 J	60000000 J	34000000 J	46000000 J	50000000 J	110000000 J
Fluorene	70000 J	47000000 J	36000000 J	17000000 J	22000000 J	16000000 J	6200000 J
High Molecular Weight PAHs	357840	156580000	128180000	88300000	118450000	128410000	199450000
High Molecular Weight PAHs Ecosd	352020	146180000	118330000	75600000	102450000	109310000	185750000
Indeno(1,2,3-cd)pyrene	640 J	1100000 J	1200000 J	1700000 J	2200000 J	2800000 J	1400000 J
Low Molecular Weight PAHs	1237700	489300000	383200000	324300000	266990000	213820000	103061000
Low Molecular Weight PAHs Ecosd	1237700	489300000	383200000	324300000	266990000	213820000	103061000
Naphthalene	8700 J	140000000 J	120000000 J	180000000 J	82000000 J	58000000 J	71000 J
Phenanthrene	800000 J	170000000 J	120000000 J	66000000 J	91000000 J	89000000 J	86000000 J
Pyrene	200000 J	50000000 J	38000000 J	23000000 J	32000000 J	32000000 J	57000000 J
Total PAHs	1595540	645880000	511380000	412600000	385440000	342230000	302511000
Total PAHs Ecosd	1589720	635480000	501530000	399900000	369440000	323130000	288811000
Petroleum Hydrocarbons (mg/kg)							
TPH (C09-C36)	570000 J	660000 J	650000 J	740000 J	590000 J	540000 J	480000 J
TPH (C09-C44)	580000 J	680000 J	660000 J	760000 J	600000 J	570000 J	500000 J

TABLE 4-72

SUMMARY OF CHEMICALS DETECTED IN PAVEMENT/PILING SAMPLES - STANDARD EPA PAHs
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Investigation	**10**
Location	**POLE16-17**
Sample Number	**POLE-17**
Sample Code	**NORMAL**
Sample Date	**20070808**
Matrix	**PV**
Area	**BLDG E107-NORTH**
Polycyclic Aromatic Hydrocarbons (ug/kg)	
2-Methylnaphthalene	**7200000**
Acenaphthene	**3100000**
Acenaphthylene	**3200000**
Anthracene	**2500000**
BaP Equivalent	**527600**
Benzo(a)anthracene	**770000**
Benzo(a)pyrene	**250000**
Benzo(b)fluoranthene	**1100000**
Benzo(g,h,i)perylene	**150000**
Benzo(k)fluoranthene	**1200000**
Chrysene	**6600000**
Dibenzo(a,h)anthracene	**52000**
Fluoranthene	**45000000**
Fluorene	**8400000**
High Molecular Weight PAHs	**82322000**
High Molecular Weight PAHs Ecosd	**79672000**
Indeno(1,2,3-cd)pyrene	**200000**
Low Molecular Weight PAHs	**122400000**
Low Molecular Weight PAHs Ecosd	**122400000**
Naphthalene	**10000000**
Phenanthrene	**88000000**
Pyrene	**27000000**
Total PAHs	**204722000**
Total PAHs Ecosd	**202072000**
Petroleum Hydrocarbons (mg/kg)	
TPH (C09-C36)	**440000**
TPH (C09-C44)	**510000**

TABLE 4-72

SUMMARY OF CHEMICALS DETECTED IN PAVEMENT/PILING SAMPLES - STANDARD EPA PAHs
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Notes:
Bolding indicates that the chemical was detected in the sample.
PAHs samples were analyzed by AWL by method SW8270-SIM.
BaP Equivalents = Benzo(a)pyrene equivalent concentration
High Molecular Weight PAHs = Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene
High Molecular Weight PAHs Ecosd = Benzo(a)anthracene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthrancene, Fluoranthene, Pyrene
Low Molecular Weight PAHs = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
Low Molecular Weight PAHs Ecosd = 2-Methylnaphthalene, Acenaphthene, Acenapthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene
TPH (C09-C36) = Total petroleum hydrocarbons carbon ranges C_9 to C_{36}.
TPH (C09-C44) = Total petroleum hydrocarbons carbon ranges C_9 to C_{44}.

Matrix Codes
PV = Pavement
BM = Bulk Material

Qualifiers:
J - Estimated value.
U - Non-detected result.
UJ - Non-detected result is estimated.
UR - Non-detected result is rejected.

Sample Code Description:
NORMAL - One sample was collected at this location.
ORIG - First of two samples collected at this location.
DUP - Second of two samples collected at this location.

TABLE 4-73

SUMMARY OF DESCRIPTIVE STATISTICS - PILING SAMPLES - STANDARD EPA PAHs
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects	Mean Concentration[2]	Average of Positive Detects[2]	Sample with Maximum Detection
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	9/9	13,000 J	36,000,000 J	-	16,000,000	16,000,000	PIL16-05
Acenaphthene	9/9	180,000 J	58,000,000 J	-	17,000,000	17,000,000	PIL16-05
Acenaphthylene	9/9	16,000 J	3,300,000 J	-	1,500,000	1,500,000	PIL16-05
Anthracene	9/9	150,000 J	35,000,000 J	-	14,000,000	14,000,000	PIL16-05
BaP Equivalent	9/9	2,789	7,865,000	-	3,600,000	3,600,000	PIL16-06(OUTER)
Benzo(a)anthracene	9/9	7,300 J	8,900,000 J	-	4,900,000	4,900,000	PIL16-05
Benzo(a)pyrene	9/9	1,500 J	5,200,000 J	-	2,300,000	2,300,000	PIL16-06(MID)
Benzo(b)fluoranthene	9/9	2,400 J	7,600,000 J	-	3,500,000	3,500,000	PIL16-06(OUTER)
Benzo(g,h,i)perylene	9/9	580 J	2,500,000 J	-	1,100,000	1,100,000	PIL16-06(OUTER)
Benzo(k)fluoranthene	9/9	2,200 J	6,200,000 J	-	3,200,000	3,200,000	PIL16-06(OUTER)
Chrysene	9/9	12,000 J	15,000,000 J	-	7,400,000	7,400,000	PIL16-07
Dibenzo(a,h)anthracene	9/9	220 J	910,000 J	-	320,000	320,000	PIL16-06(OUTER)
Fluoranthene	9/9	100,000 J	110,000,000 J	-	46,000,000	46,000,000	PIL16-07
Fluorene	9/9	70,000 J	47,000,000 J	-	17,000,000	17,000,000	PIL16-05
High Molecular Weight PAHs	9/9	357,840	199,450,000	-	97,000,000	97,000,000	PIL16-07
High Molecular Weight PAHs Ecosd	9/9	352,020	185,750,000	-	88,000,000	88,000,000	PIL16-07
Indeno(1,2,3-cd)pyrene	9/9	640 J	2,800,000 J	-	1,100,000	1,100,000	PIL16-06(OUTER)
Low Molecular Weight PAHs	9/9	1,237,700	489,300,000	-	210,000,000	210,000,000	PIL16-05
Low Molecular Weight PAHs Ecosd	9/9	1,237,700	489,300,000	-	210,000,000	210,000,000	PIL16-05
Naphthalene	9/9	8,700 J	180,000,000 J	-	64,000,000	64,000,000	PIL16-06(INNER)
Phenanthrene	9/9	800,000 J	170,000,000 J	-	78,000,000	78,000,000	PIL16-05
Pyrene	9/9	200,000 J	57,000,000 J	-	27,000,000	27,000,000	PIL16-07
Total PAHs	9/9	1,595,540	645,880,000	-	300,000,000	300,000,000	PIL16-05
Total PAHs Ecosd	9/9	1,589,720	635,480,000	-	290,000,000	290,000,000	PIL16-05
Petroleum Hydrocarbons (mg/kg)							
TPH (C09-C36)	9/9	480,000 J	740,000 J	-	600,000	600,000	PIL16-06(INNER)
TPH (C09-C44)	9/9	500,000 J	760,000 J	-	600,000	600,000	PIL16-06(INNER)

TABLE 4-73

SUMMARY OF DESCRIPTIVE STATISTICS - PILING SAMPLES - STANDARD EPA PAHs
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Notes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Sample and duplicate are average first before calculating over all average.
BaP Equivalents = Benzo(a)pyrene equivalent concentration.
High Molecular Weight PAHs = Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene.
High Molecular Weight PAHs Ecosd = Benzo(a)anthracene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Pyrene.
Low Molecular Weight PAHs = 2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene.
Low Molecular Weight PAHs Ecosd = 2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene.
TPH (C09-C36) = Total petroleum hydrocarbon range as specified in the Phase II QAPP for Site 16 (March, 2007).
TPH (C09-C44) = Total petroleum hydrocarbon range evaluated for purposes of forensics analysis.

Qualifiers:
J - Estimated value.

TABLE 4-74

SUMMARY OF DESCRIPTIVE STATISTICS - PAVEMENT SAMPLES - STANDARD EPA PAHS
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND
PAGE 1 OF 2

Parameter	Frequency of Detection	Minimum Detected Concentration[1]	Maximum Detected Concentration[1]	Range of Non-Detects	Mean Concentration[2]	Average of Positive Detects[2]	Sample with Maximum Detection
Polycyclic Aromatic Hydrocarbons (ug/kg)							
2-Methylnaphthalene	11/11	390 J	110,000	-	13,000	13,000	PAV-19
Acenaphthene	7/11	100 J	34,000	2,000 - 2,100	3,900	5,500	PAV-19
Acenaphthylene	11/11	380 J	280,000	-	26,000	26,000	PAV-19
Anthracene	11/11	340 J	200,000	-	19,000	19,000	PAV-19
BaP Equivalent	11/11	516	250,000	-	31,000	31,000	PAV-19
Benzo(a)anthracene	11/11	320 J	230,000	-	25,000	25,000	PAV-19
Benzo(a)pyrene	11/11	410 J	180,000	-	22,000	22,000	PAV-19
Benzo(b)fluoranthene	11/11	490 J	110,000	-	15,000	15,000	PAV-19
Benzo(g,h,i)perylene	11/11	1,200 J	79,000	-	14,000	14,000	PAV-19
Benzo(k)fluoranthene	11/11	210 J	120,000	-	13,000	13,000	PAV-19
Chrysene	11/11	1,200 J	270,000	-	34,000	34,000	PAV-19
Dibenzo(a,h)anthracene	10/11	490 J	29,000	2,000	4,200	4,500	PAV-19
Fluoranthene	11/11	1,700 J	420,000	-	46,000	46,000	PAV-19
Fluorene	11/11	570 J	94,000	-	9,600	9,600	PAV-19
High Molecular Weight PAHs	11/11	8,450	2,136,000	-	250,000	250,000	PAV-19
High Molecular Weight PAHs Ecosd	11/11	6,330	1,749,000	-	200,000	200,000	PAV-19
Indeno(1,2,3-cd)pyrene	11/11	220 J	78,000	-	9,500	9,500	PAV-19
Low Molecular Weight PAHs	11/11	4,660	1,524,000	-	150,000	150,000	PAV-19
Low Molecular Weight PAHs Ecosd	11/11	4,660	1,524,000	-	150,000	150,000	PAV-19
Naphthalene	11/11	220 J	76,000	-	7,800	7,800	PAV-19
Phenanthrene	11/11	1,200 J	730,000	-	75,000	75,000	PAV-19
Pyrene	11/11	2,700	620,000	-	69,000	69,000	PAV-19
Total PAHs	11/11	30,470	3,660,000	-	400,000	400,000	PAV-19
Total PAHs Ecosd	11/11	23,180	3,273,000	-	350,000	350,000	PAV-19
Petroleum Hydrocarbons (mg/kg)							
TPH (C09-C36)	11/11	29,000	130,000	-	79,000	79,000	PAV-20, PAV-21
TPH (C09-C44)	11/11	81,000	270,000 J	-	170,000	170,000	PAV-20

TABLE 4-74

SUMMARY OF DESCRIPTIVE STATISTICS - PAVEMENT SAMPLES - STANDARD EPA PAHS
PHASE III RI FOR IR PROGRAM SITE 16
FORMER NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

Notes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Sample and duplicate are average first before calculating over all average.
BaP Equivalents = Benzo(a)pyrene equivalent concentration.
High Molecular Weight PAHs = Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene.
High Molecular Weight PAHs Ecosd = Benzo(a)anthracene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Pyrene.
Low Molecular Weight PAHs = 2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene.
Low Molecular Weight PAHs Ecosd = 2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Anthracene, Fluorene, Naphthalene, Phenanthrene.
TPH (C09-C36) = Total petroleum hydrocarbon range as specified in the Phase II QAPP for Site 16 (March, 2007).
TPH (C09-C44) = Total petroleum hydrocarbon range evaluated for purposes of forensics analysis.

Qualifiers:
J - Estimated value.