3.10 Parcel 49 – Former Squier Laboratory Complex, Museum Storage Facility, and MP Battery Test Facility

3.10.1 Site Description

Parcel 49 encompasses the buildings associated with the former Squier Laboratory and other facilities with similar operational histories in the north-central portion of the MP. The Squier Laboratory Complex included existing Bldgs 283, 285, 288, 292, 293, and 298, and former Bldgs S-5, S-6, S-6 Annex, S-9, S-10, S-11, S-12, and S-15. Bldgs 291, 294, and 295, and former Bldgs 289, 290, L-3, T-45, X-9, and X-7 have a similar operational history and are included in Parcel 49 along with the Squier Laboratory buildings. Historic aerial photographs and site plans which show the location of former buildings are included in **Appendix G** for reference. Many of the "buildings" were identified as part of the Squier Laboratory Complex in historic reports, without any indication of the specific location of these facilities. It is assumed that these buildings were small, temporary, and/or auxiliary structures in the immediate vicinity of Squier Laboratory and nearby buildings, such that they did not warrant individual identification on historic site plans of the area.

In 1934, FTMM laboratory operations were consolidated in a new facility, Squier Laboratory. Squier Laboratory continued to be the principal laboratory on post until 1954 when the new R&D facility, Myer Center (Bldg 2700), was opened. The Squier Laboratory complex supported the Signal Corps Laboratories' research into batteries and electronics coatings. Environmental conditions were identified for some of the laboratory operations based on the size and intensity of historical operations and the timeframe during which the services took place. A detailed description of process operations that took place in this area is presented in Section 4.3.2 of the FTMM Phase I ECP (1). Environmental concerns associated with Squier Laboratory operations include the use of chemicals, solvents, radioisotopes, and metals when waste handling procedures may not have been sufficiently protective to preclude a release to the environment. The potential for a release to the environment from laboratory operations in the following buildings is considered to be a Recognized Environmental Condition:

- Squier Laboratory in Bldg 283. Bldg 283 has a long and extensive history of laboratory operations.
- Bldg 288 was historically used for reproduction and photoprocessing.
- Bldg 291 formerly housed the Crystal Section where crystals were grown.
- Bldg 292 formerly housed the Climatic Section where testing of electronic equipment at environmental extremes was conducted.
- Former Bldg 293 housed a battery testing operation. A ground stain was observed emanating from the vicinity of Bldg 293 in aerial photographs taken in

1969 and 1974 (18). Aerial photographs are included in **Appendix G**. Bldg 293 was destroyed by a fire. A second Bldg 293 was constructed. The new building is currently used for battery testing. Current battery testing operations are not considered a data gap.

- Bldg 294 formerly housed a shock and vibration testing operation.
- Bldg 295 was used for R&D fabrication for reinforced plastics.
- Operations in Bldgs S-5, S-9, S-10, S-11, and S-12 used various laboratory chemicals in hoods for the manufacture and testing of dry cell batteries.
- Bldg L-3 was used for paint experimentation.
- Bldg T-45 was used for the experimental manufacture of storage batteries.
- Bldg X-9 was used for testing gasoline engines.
- Bldg X-7 was used for mixing acids.

A corollary investigation of the historical use of RAMs was conducted by Cabrera. A Special Investigation Report issued in 1951 for the Squier Signal Laboratory Director discussed a wipe test performed on samples of aluminum covered with polonium lacquer (approximately 230 microcuries) to ensure that no hazard was present at Bldg 283. Bldg 292 serves as storage space for the communications-electronics museum. This storage space contains or contained a Chinese radio and a vacuum tube where radiological commodities were identified with radiological readings above background levels, and radium-contaminated components were found in a posted radioactive storage locker. This storage space once contained 65 items containing RAM, but numerous non-radioactive items have since been removed (3).

Recommendations for SI activity related to RAM were prepared based on the HSA results and will be conducted at Bldg 283 and Bldg 292 upon departure of the current tenants from the FTMM property (45). Additional information pertaining to this parcel can be found in Section 3.3, Section 4.3.2.1.1, Section 4.3.2.1.2, Section 4.3.2.1.6, Section 4.4.4.2, Table 4-3, Section 4.4.4.3, Table 4-4, Section 4.6.2.7, Section 5.1.1.2.1, Section 5.8, Table 5-16, Section 5.13.3, Section 5.13.4, and Section 5.13.6 of the Phase I ECP (1).

3.10.2 Previous Investigations

Multiple former USTs associated with buildings throughout Parcel 49 have been removed under the FTMM UST Management Program and are summarized within the FTMM Phase I ECP Report (1). Bldg 283 groundwater and soil contamination associated with former USTs that were removed is currently being addressed under the FTMM IRP as site FTMM-61.

3.10.3 Site Investigation Sampling

As noted in **Section 3.10.2**, numerous former USTs have been removed within Parcel 49, and contamination identified in association with the former USTs at Bldg 283 is currently being addressed under the FTMM IRP. However, limited evaluation of potential discharges related to previous building operations has been conducted within Parcel 49. A review of historical site plans, IRP documents, sanitary plans, and stormwater management plans was conducted to evaluate potential discharge locations throughout the parcel. The following soil sampling, sediment sampling, and groundwater sampling was performed to determine if any contamination exists.

Geoprobe® Investigation

Soil and groundwater samples were collected in December 2007 in Parcel 49 in order to determine if any contamination exists as a result of former industrial and laboratory operations. A total of six surface soil samples and seven subsurface soil samples (including one duplicate sample) were collected from six distinct Geoprobe® borings located throughout Parcel 49 (**Figure 3.10-1**). Surface soil samples for non-VO analysis were collected from the 0- to 6-inch interval bgs. For borings located in paved areas, non-VO surface soil samples were collected from the 0- to 6-inch interval directly below the pavement sub-base. Surface soil samples for VO analysis were collected from the 18- to 24-inch interval bgs. Subsurface soil samples were collected from the 6-inch interval directly above the water table. Field screening of soil boring cores were conducted using PID and FID instruments. No visual or olfactory evidence of contaminated soil was noted.

A total of two groundwater samples were collected from two distinct temporary wells that were installed using the Geoprobe® rig. P49GW-1 was installed north of Bldg 293, and P49GW-2 was installed east of former Bldg 289. Temporary wells were constructed of PVC and 5 ft of factory-slotted screen. A total of five groundwater samples (including one duplicate sample) were collected from four existing FTMM monitoring wells located along the northern perimeter of the former Squier Complex area to evaluate groundwater on a parcel-wide basis (**Figure 3.10-1**).

Surface Soil Investigation

Surface samples were collected in December 2007 in Parcel 49. A total of seven surface soil samples, located throughout Parcel 49, were collected from seven distinct hand augered borings (**Figure 3.10-1**). Samples P49SS-7 and 8 were collected near doorways in the courtyard of Bldg 283 to investigate potential discharges from previous laboratory operations. Sample P49SS-9 was collected near the eastern doorway of Bldg 291 to investigate potential discharges from previous laboratory operations. Samples P49SS-10;13 were collected around a concrete slab for former Bldg 293 to investigate potential discharges from a fire that destroyed the building. Surface soil samples for non-VO analysis were collected from the 0- to 6-inch interval bgs. Surface soil samples collected for VO analysis were collected from the 18- to 24-inch interval bgs. No visual or olfactory evidence of soil contamination was noted.

Sediment Investigation

Sediment samples were collected in December 2007 in Parcel 49. A total of seven (including one duplicate sample) sediment samples were collected from three distinct hand augered borings located along the south bank of Parkers Creek (**Figure 3.10-1**). Samples were collected in order to determine if previous discharges from former septic and sump systems associated with the Squier Complex have impacted sediment within Parkers Creek. Sediment samples for non-VO and VO analysis were collected from the 0- to 6-inch interval bgs and the 18- to 24-inch interval bgs. No visual or olfactory evidence of contamination was noted.

Table 3.10-1 presents a summary of all field activities, and all sample locations are provided on **Figure 3.10-1**. An analytical summary of sampling activities, including sample IDs, collection dates, and analytical parameters, is provided in **Table 3.10-2**.

Table 3.10-1
Parcel 49 Sampling Location, Rationale and Analytical

Sample Location	Sample Media	Sample Location Rationale	Analytical Suite
49SS-1 and 2 (2 samples)	Surface soil	Soil samples were collected from the 0- to 6-inch bgs interval from Geoprobe® borings located north of Bldg 293 and east of former Bldg 289 to investigate potential discharges from previous industrial activities within the buildings.	TCL+30 (w/o pesticides), TAL Metals, cyanide
49SB-1 and 2 (2 samples)	Subsurface soil	Soil samples were collected from the 6-inch interval directly above the water table (depths ranging from 5.5 to 9.0 ft bgs) from Geoprobe® borings located north of Bldg 293 and east of former Bldg 289 to investigate potential discharges from previous industrial activities within the buildings. Field screening of the entire Geoprobe® soil core was conducted using PID and FID meters.	TCL+30 (w/o pesticides), TAL Metals, cyanide
49GW-1 and 2 (2 samples)	Groundwater	Groundwater samples were collected from the specified Geoprobe® borings located north of Bldg 293 and east of former Bldg 289 to investigate potential discharges from previous industrial activities within the buildings.	TCL+30 (w/o pesticides/PCBs), tertiary butyl alcohol (TBA)
49SS-3 and 4 (2 samples)	Surface soil	Soil samples were collected from the 0- to 6-inch bgs interval from Geoprobe® borings located at loading docks of Bldg 283 to investigate potential historical discharges from previous laboratory operations.	TCL+30 (w/o pesticides), TAL Metals, cyanide

Sample Location	Sample Media	Sample Location Rationale	Analytical Suite
49SB-3 and 4 (2 samples)	Subsurface soil	Soil samples collected from the 6-inch interval directly above the water table (depths ranging from 3.5 to 8.0 ft bgs) from Geoprobe® borings located at loading docks of Bldg 283 to investigate potential historical discharges from previous laboratory operations. Field screening of the entire Geoprobe® soil core was conducted using PID and FID meters.	TCL+30 (w/o pesticides), TAL Metals, cyanide
49SS-5 and 6 (2 samples)	Surface soil	Soil samples were collected from the 0- to 6-inch bgs interval from Geoprobe® borings located at loading dock and garage doors of Bldg 292 to investigate potential historical discharges from previous laboratory operations. Numerous underground utilities are present in the immediate vicinity of the loading dock on the east side of Bldg 292. Therefore, the location of 49SS-5 had to be moved east of the originally proposed location.	TCL+30 (w/o pesticides), TAL Metals, cyanide
49SB-5 and 6 (3 samples – includes 1 duplicate sample)	Subsurface soil	Soil samples were collected from the 6-inch interval directly above the water table (depth 6.0 to 6.5 ft bgs) from Geoprobe® borings located at loading docks and garage doors of Bldg 292 to investigate potential historical discharges from previous laboratory operations. Field screening of the entire Geoprobe® soil core was conducted using PID and FID meters. Numerous underground utilities are present in the immediate vicinity of the loading dock on the east side of Bldg 292. Therefore, the location of 49SS-5 had to be moved east of the originally proposed location.	TCL+30 (w/o pesticides), TAL Metals, cyanide
49SS-7 and 8 (2 samples)	Surface soil	Soil samples were collected from the 0- to 6-inch bgs interval at doorways within courtyard of Bldg 283 to investigate potential historical discharges from previous laboratory operations.	TCL+30 (w/o pesticides), TAL Metals, cyanide
49SS-9 (1 sample)	Surface soil	A soil sample was collected from the 0- to 6-inch bgs interval at a western doorway of Bldg 291 to investigate potential historical discharges from previous laboratory operations.	TCL+30 (w/o pesticides), TAL Metals, cyanide
49SS-10, 11, 12, and 13 (4 samples)	Surface soil	Soil samples were collected from the 0- to 6-inch bgs interval around the concrete slab for former Bldg 293 (immediately north of current building) to investigate potential discharges from the fire which destroyed the building.	TCL+30 (w/o pesticides), TAL Metals, cyanide
296MW07, 283MW03, 283MW01, B4MW0B4 (4 samples)	Groundwater	Groundwater samples were collected from the existing monitoring wells located along the northern perimeter of the former Squier Complex area to evaluate groundwater on a parcel-wide basis.	TCL+30 (w/o pesticides), TBA, TAL Metals, cyanide

Sample Location	Sample Media	Sample Location Rationale	Analytical Suite
49SD-1, 49SD-1D (2 samples)	Sediment	Sediment samples were collected from the 0- to 6-inch bgs interval and at the 18- to 24-inch interval bgs to investigate potential discharges from the former septic system that was associated with former Bldg 78.	TCL+30 (w/o pesticides), TAL Metals, cyanide
49SD-2, 49SD-2D (3 samples – includes 1 duplicate sample)	Sediment	Sediment samples were collected from the 0- to 6-inch bgs interval and at the 18- to 24-inch interval bgs to investigate potential discharges from sump pumps identified within the basement of Bldg 283.	TCL+30 (w/o pesticides), TAL Metals, cyanide
49SD-3, 49SD-3D (2 samples)	Sediment	Sediment samples were collected from the 0- to 6-inch bgs interval and at the 18- to 24-inch interval bgs to investigate potential downgradient impact to sediment from the sump pumps in the basement of Bldg 283 and the former septic discharge from former Bldg 78.	TCL+30 (w/o pesticides), TAL Metals, cyanide

3.10.4 Site Investigation Results

Geoprobe®/Soil Investigation Results

Surface and subsurface soil samples were analyzed for TCL+30 (minus pesticides), TAL metals, and cyanide. Groundwater samples 49GW-1;2 were analyzed for TCL+30 (minus pesticides/PCBs) and TBA. Monitoring well groundwater samples were analyzed for TCL+30 (minus pesticides), TBA, TAL metals, and cyanide.

Soil

Five VOs, 22 B/Ns, 20 metals, and one Aroclor were detected in Parcel 49 soil samples, presented in **Table 3.10-3**. The five VOs were detected at concentrations below NJDEP NRDCSCC. Seven of the 22 detected B/Ns (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) were detected at concentrations that exceeded NJDEP NRDCSCC. B/Ns were detected above the NRDCSCC and their respective MPBC in five surface soil samples, P49-SB4-A, P49-SS7-A, P49-SS8-A, P49-SS9-A, and P49-SS13-A. Of the 20 metals, one (arsenic) was detected at concentrations that exceeded NJDEP NRDCSCC.

Four soil samples (49SB-5A, 49SB-5C, 49SB-6A, and 49SB-6C) each contained an unknown TIC at elevated concentrations ranging from 330 mg/kg to 460 mg/kg. The retention time for the unknown TIC ranged from 7.23 minutes to 7.27 minutes in the four samples. This suggests the same unknown TIC was identified in all four samples. One or more semi-volatile constituents were identified in each of the four samples; however, no TCL organic constituents were identified at concentrations greater than the NRDCSCC.

Arsenic was detected above the NRDCSCC of 20 mg/kg in four subsurface soil samples collected in Parcel 49 at concentrations ranging from 21.5 mg/kg in sample P49-SB5-C to 24.3 mg/kg in sample P49-SB2-C. The arsenic concentrations in two samples also exceeded the MPBC of 22.9 mg/kg. The three isolated locations at which arsenic was detected at concentrations marginally above the NRDCSCC of 20 mg/kg are all greater than 6 ft bgs, and no detections in exceedance of criteria were present in surface soil.

There are several factors both natural and anthropogenic that can have an influence on arsenic levels in the soil at FTMM. The primary natural influence on the chemical concentrations in the soil at FTMM is parent material. The parent material at FTMM is glauconitic soil of the Tinton and Red Bank sands and their fluvially- and tidally-reworked equivalents (47). Total arsenic levels in glauconite-bearing soils in New Jersey have been reported to range up to 131 mg/kg, with a median of 30 mg/kg (48). Anthropogenic influences on arsenic levels in the soil include the use of pesticides and herbicides. Arsenic was a common constituent of herbicides and pesticides in the past. As a result of these natural and anthropogenic influences, arsenic is not considered a COC in the soil.

As shown in **Table 3.10-3**, one PCB, Aroclor 1260, was detected in one surface soil sample (P49-SS8-A) at a concentration of 8.85 mg/kg, which exceeds the NJDEP NRDCSCC of 2 mg/kg.

Cyanide was not detected in soil.

B/Ns and PCBs are COCs in soil at Parcel 49.

Groundwater

A total of nine VOs were detected in groundwater samples collected in Parcel 49. Two (benzene and bromodichloromethane) were detected at concentrations that exceed the respective GWQC. Benzene was detected at a concentration that exceeded the NJDEP GWQC of 1 μg/L in one groundwater sample (P49-GW-1) at a concentration of 1.24 μg/L. Bromodichloromethane was detected at a concentration that exceeded the NJDEP GWQC of 1 μg/L in one groundwater sample (P49-GW-2) at a concentration of 1.35 μg/L.

A total of four B/Ns were detected in Parcel 49 groundwater samples. Of the four B/Ns, one (bis[2-ethylhexyl]phthalate) was detected at concentrations that exceeded NJDEP GWQC. Bis(2-ethylhexyl)phthalate was detected at concentrations exceeding the NJDEP GWQC of 3 μg/L in three groundwater samples at concentrations ranging from 3.55 μg/L in P49-296-MW7 to 25.94 μg/L in P49-GW-1. Bis(2-ethylhexyl)phthalate is present in a wide variety of plastic products, is commonly detected in field and laboratory QC samples, and was detected in the field blank associated with these samples. Therefore, it is not considered a COC in groundwater at Parcel 49.

A total of 18 metals were detected in Parcel 49 groundwater samples collected from monitoring wells. Of the 18 metals detected, six (aluminum, arsenic, beryllium, iron,

manganese, and sodium) were detected at concentrations that exceeded NJDEP GWQC.

Several natural and anthropogenic factors contribute to the wide range in concentrations of metals in soils, which impact the concentration of metals in groundwater. Soils derived from glauconitic sands contain abundant aluminum, calcium, potassium, iron, magnesium, manganese, and sodium (among others), which are likely to be present at elevated concentrations in the groundwater (47). Sodium concentrations can also be influenced by saltwater intrusion at FTMM. Due to the naturally elevated levels of these native metals in the groundwater, aluminum, iron, manganese, and sodium are not considered COCs. The remaining metals detected in groundwater samples have been compared to the respective GWQC and MBCs, presented in **Appendix H**, to determine COCs.

Arsenic was detected at concentrations exceeding the NJDEP GWQC of 3 μg/L in two samples, 49MW-3 (3.68 μg/L) and 49MW-7 (6.17 μg/L). However, these concentrations did not exceed the MPBC of 89.3 μg/L. In addition, arsenic is associated with the native glauconitic sands (48). The elevated arsenic concentrations in the native soil in turn influence the arsenic levels in groundwater. Beryllium was detected at concentrations exceeding the NJDEP GWQC of 1 μg/L in two samples, 49MW-1 (1.28 μg/L) and 49MW-1-DUP (1.33 μg/L). However, these concentrations did not exceed the MPBC of 2.1 μg/L. Therefore, arsenic and beryllium are not considered COCs.

As shown in **Table 3.10-4**, cyanide was not detected in the groundwater samples.

Benzene and bromodichloromethane are COCs in groundwater at Parcel 49.

Sediment Investigation Results

Sediment samples were analyzed for TCL+30 (without pesticides), TAL metals, and cyanide. Parkers Creek is a tidally influenced water body in this portion of the facility; therefore, sediment analytical results were evaluated in relation to the Marine/Estuarine Sediment Screening Values-ER-L.

As presented in **Table 3.10-5**, one VO, ten B/Ns, and 20 metals were detected in Parcel 49 sediment samples. The VO acetone and B/Ns were detected at concentrations below the ER-L. Of the 20 metals, nine (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc) were detected at concentrations that exceeded the ER-L. Two metals, zinc and chromium, were detected above the ER-M.

Arsenic was detected above the ER-L of 8.2 mg/kg and the MPBC of 14.5 mg/kg in all seven sediment samples collected in Parcel 49 at concentrations ranging from 14.8 mg/kg in sample P49SD-2A to 29.7 mg/kg in sample P49SD-3A.

Cadmium was detected above the ER-L of 1.2 mg/kg in four sediment samples (including the duplicate) collected in Parcel 49 at concentrations ranging from 1.41 mg/kg in sample P43SD-2B to 5.55 mg/kg in sample P43SD-2A-DUP. A background concentration has not been established for cadmium.

Chromium was detected above the ER-L of 81 mg/kg and the MPBC of 88.1 mg/kg in all seven sediment samples (including the duplicate sample) collected in Parcel 49 at concentrations ranging from 149 mg/kg in sample P49SD-3A to 394 mg/kg in sample P49SD-2B. Chromium was detected in one sample, P49SD-2B, at a concentration above the ER-M of 370 mg/kg.

Copper was detected above the ER-L of 34 mg/kg and the MPBC of 48.4 mg/kg in three sediment samples collected in Parcel 49 at concentrations of 76.5 mg/kg in sample P49SD-3A, 82.3 mg/kg in sample P49SD-2A, and 111 mg/kg in sample P49SD-2A-DUP.

Lead was detected above the ER-L of 47 mg/kg and the MPBC of 64.1 mg/kg in one sediment sample collected in Parcel 49 at a concentration of 148 mg/kg in sample P49SD-3A.

Mercury was detected above the ER-L of 0.15 mg/kg in three sediment samples collected in Parcel 49 at concentrations ranging from 0.23 mg/kg in sample P49SD-3A to 0.53 mg/kg in sample P49SD-2A-DUP. The mercury concentrations did not exceed the MPBC of 1.7 mg/kg.

Nickel was detected above the ER-L of 21 mg/kg in two sediment samples collected in Parcel 49 at concentrations of 44 mg/kg in sample P43SD-2A and 68.5 mg/kg in sample P49SD-2A-DUP. The nickel concentrations did not exceed the MPBC of 131 mg/kg.

Silver was detected above the ER-L of 1 mg/kg in one sediment sample collected in Parcel 49 at a concentration of 1.4 mg/kg in sample P49SD-2A. A background concentration has not been established for silver.

Zinc was detected above the ER-L of 150 mg/kg in three sediment samples collected in Parcel 49 at concentrations ranging from 155 mg/kg in sample P49SD-2B to 2,090 mg/kg in sample P49SD-2A-DUP. The zinc concentration in P49SD-2A and P49SD-2A DUP exceeded the MPBC of 162 mg/kg and the ER-M of 410 mg/kg. Metals are COCs in sediment at Parcel 49.

PCBs and cyanide were not detected in Parcel 49 sediment samples.

3.10.5 Summary and Conclusions

Analytical results for soil samples exceeded NJDEP NRDCSCC for B/Ns and Aroclor 1260. Aroclor 1260 and B/Ns (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) are COCs in soil at Parcel 49 and further delineation is recommended. The B/N COCs identified in soil at Parcel 49 are polycyclic aromatic

hydrocarbons (PAHs). PAHs are contained in asphalt and are commonly detected in soil under asphalt pavement. Re-collection of samples at locations that are currently paved and/or were paved in the past will be conducted as part of the further evaluation to determine if the PAHs detected in soil are attributable to asphalt.

Benzene and bromodichloromethane were detected at concentrations slightly above the NJDEP GWQC and are considered COCs in groundwater. Benzene and bromodichloromethane in groundwater at Parcel 49 will be incorporated into the existing M-18 groundwater CEA.

Seven metals (arsenic, cadmium, chromium, copper, lead, silver, and zinc) were detected in sediment at concentrations greater than the Marine/Estuarine Sediment Screening Values-ER-L and MPBC. They are considered COCs in Parcel 49 sediment. Sediment at Parcel 49 is recommended for further evaluation as part of a facility-wide baseline ecological evaluation.

Table 3.10-2
Parcel 49 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
BLANK	TRIP	TRIP BLANK-SO	12/06/07	-	--	--		X							
SOIL	HAND AUGER	P49-SS10-A	12/06/07	9:15	0.0	0.5			X	X	X	X			
SOIL	HAND AUGER	P49-SS10-B	12/06/07	9:15	1.5	2.0		X							
SOIL	HAND AUGER	P49-SS11-A	12/06/07	9:30	0.0	0.5			X	X	X	X			
SOIL	HAND AUGER	P49-SS11-B	12/06/07	9:30	1.5	2.0		X							
SOIL	HAND AUGER	P49-SS12-A	12/06/07	10:45	0.0	0.5			X	X	X	X			
SOIL	HAND AUGER	P49-SS12-B	12/06/07	10:45	1.5	2.0		X							
SOIL	HAND AUGER	P49-SS13-A	12/06/07	10:50	0.0	0.5			X	X	X	X			
SOIL	HAND AUGER	P49-SS13-B	12/06/07	10:50	1.5	2.0		X							
SOIL	HAND AUGER	P49-SS9-A	12/06/07	11:05	0.0	0.5			X	X	X	X			
SOIL	HAND AUGER	P49-SS9-B	12/06/07	11:05	1.5	2.0		X							
SOIL	HAND AUGER	P49-SS8-A	12/06/07	11:30	0.0	0.5			X	X	X	X			
SOIL	HAND AUGER	P49-SS8-B	12/06/07	11:30	1.5	2.0		X							
SOIL	HAND AUGER	P49-SS7-A	12/06/07	11:25	0.0	0.5			X	X	X	X			
SOIL	HAND AUGER	P49-SS7-B	12/06/07	11:25	1.5	2.0		X							
SOIL	GEOPROBE	P49-SB1-A	12/06/07	13:30	0.0	0.5			X	X	X	X			
SOIL	GEOPROBE	P49-SB1-B	12/06/07	13:30	1.5	2.0		X							
SOIL	GEOPROBE	P49-SB1-C	12/06/07	13:40	5.5	6.0		X	X	X	X	X			
SD	HAND AUGER	P49-SD1-A	12/06/07	14:40	0.0	0.5			X	X	X	X			
SD	HAND AUGER	P49-SD1-A	12/27/07	13:30	0.0	0.5		X							Associated trip blank collected with Parcel 27 data. No field blank or duplicate collected 12/27/07.
SD	HAND AUGER	P49-SD1-B	12/06/07	14:40	1.5	2.0		X							
SD	HAND AUGER	P49-SD1-B	12/27/07	13:30	1.5	2.0			X	X	X	X			Associated trip blank collected with Parcel 27 data. No field blank or duplicate collected 12/27/07.
SD	HAND AUGER	P49-SD2-A	12/06/07	15:00	0.0	0.5			X	X	X	X			
SD	HAND AUGER	P49-SD2-A	12/27/07	13:45	0.0	0.5		X							Associated trip blank collected with Parcel 27 data. No field blank or duplicate collected 12/27/07.
SD	HAND AUGER	P49-SD2-A DUPLICATE	12/06/07	15:00	0.0	0.5			X	X	X	X			Mistake on chain of custody. VOAs were collected at 1.5-2.0. The duplicate for VOAs should have been listed as a separate sample associated with B depth.
SD	HAND AUGER	P49-SD2-B	12/06/07	15:00	1.5	2.0		X							

Table 3.10-2
Parcel 49 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	HAND AUGER	P49-SD2-B DUPLICATE	12/06/07	15:00	1.5	2		X							Mistakenly labeled at A depth (0.0-0.5) on chain of custody.
SD	HAND AUGER	P49-SD2-B	12/27/07	13:45	1.5	2.0			X	X	X	X			Associated trip blank collected with Parcel 27 data. No field blank or duplicate collected 12/27/07.
SD	HAND AUGER	P49-SD3-A	12/06/07	15:30	0.0	0.5			X	X	X	X			
SD	HAND AUGER	P49-SD3-A	12/27/07	13:55	0.0	0.5		X							Associated trip blank collected with Parcel 27 data. No field blank or duplicate collected 12/27/07.
SD	HAND AUGER	P49-SD3-B	12/06/07	15:30	1.5	2.0		X							
SD	HAND AUGER	P49-SD3-B	12/27/07	13:55	1.5	2.0			X	X	X	X			Associated trip blank collected with Parcel 27 data. No field blank or duplicate collected 12/27/07.
BLANK	FIELD	FIELD BLANK-SO	12/06/07	15:40	--	--		X	X	X	X	X			
BLANK	TRIP	TRIP BLANK	12/07/07	-	--	--		X							
SOIL	GEOPROBE	P49-SB2-A	12/07/07	9:20	0.5	1.0			X	X	X	X			Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P49-SB2-B	12/07/07	9:20	1.5	2.0		X							
SOIL	GEOPROBE	P49-SB2-C	12/07/07	9:40	9.0	9.5		X	X	X	X	X			Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P49-SB4-A	12/07/07	10:10	0.5	1.0			X	X	X	X			Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P49-SB4-B	12/07/07	10:10	1.5	2.0		X							
SOIL	GEOPROBE	P49-SB4-C	12/07/07	10:20	8.0	8.5		X	X	X	X	X			Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P49-SB3-A	12/07/07	11:00	0.0	0.5			X	X	X	X			
SOIL	GEOPROBE	P49-SB3-B	12/07/07	11:00	1.5	2.0		X							
SOIL	GEOPROBE	P49-SB3-C	12/07/07	11:10	3.5	4.0		X	X	X	X	X			
BLANK	FIELD	FIELD BLANK	12/07/07	11:30	--	--		X	X	X	X	X			
SOIL	GEOPROBE	P49-SB5-A	12/07/07	13:50	0.0	0.5			X	X	X	X			
SOIL	GEOPROBE	P49-SB5-B	12/07/07	13:50	1.5	2.0		X							
SOIL	GEOPROBE	P49-SB5-C	12/07/07	14:05	6.0	6.5		X	X	X	X	X			

Table 3.10-2
Parcel 49 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P49-SB5-C DUPLICATE	12/07/07	14:05	6.0	6.5		X	X	X	X	X			
SOIL	GEOPROBE	P49-SB6-A	12/07/07	14:25	0.5	1.0			X	X	X	X			Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P49-SB6-B	12/07/07	14:25	1.5	2.0		X							
SOIL	GEOPROBE	P49-SB6-C	12/07/07	14:40	6.5	7.0		X	X	X	X	X			Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
BLANK	TRIP	TRIP BLANK-AQ	12/08/07	8:30	--	--		X							
BLANK	FIELD	FIELD BLANK-AQ	12/08/07	10:00	--	--		X	X	X	X	X			
GW	GEOPROBE	P49-GW-1	12/08/07	12:30	5.0	10.0		X	X						
GW	GEOPROBE	P49-GW-2	12/08/07	12:00	9.0	14.0		X	X						
GW	MONITORING WELL	P49-296MW-7	12/08/07	14:30	1.8	11.8		X	X	X	X	X			
GW	MONITORING WELL	P49-283MW-3	12/08/07	13:00	14.1	24.1		X	X	X	X	X			
GW	MONITORING WELL	P49-283MW-1	12/08/07	12:40	9.8	19.8		X	X	X	X	X			
GW	MONITORING WELL	P49-283MW-1 DUPLICATE	12/08/07	12:40	9.8	19.8		X	X	X	X	X			
GW	MONITORING WELL	P49-B4MW0B4	12/08/07	15:30	7.1	17.1		X	X	X	X	X			

X = Sample analyzed for the indicated analytical parameter suite

Table 3.10-3
Fort Monmouth Phase II Site Investigation, Parcel 49
Summary of Analytical Parameters Detected in Soil (mg/kg)

			Analytical Results											
		Sample ID:	P49-SB1-A	P49-SB1-B	P49-SB1-C	P49-SB2-A	P49-SB2-B	P49-SB2-C	P49-SB3-A	P49-SB3-B	P49-SB3-C	P49-SB4-A	P49-SB4-B	P49-SB4-C
		Lab ID:	7051517	7051518	7051519	7051603	7051604	7051605	7051609	7051610	7051611	7051606	7051607	7051608
		Date Sampled:	12/06/2007	12/06/2007	12/06/2007	12/07/2007	12/07/2007	12/07/2007	12/07/2007	12/07/2007	12/07/2007	12/07/2007	12/07/2007	12/07/2007
		Depth (ft. bgs):	0.0-0.5	1.5-2.0	5.5-6.0	0.5-1.0	1.5-2.0	9.0-9.5	0.0-0.5	1.5-2.0	3.5-4.0	0.5-1.0	1.5-2.0	8.0-8.5
Chemical	NRDCSCC[2]	IGWSCC[3]	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Volatiles														
Acetone	1000	100	NT	**0.390 B**	**0.420 B**	NT	**0.230 J**	0.300 U	NT	**0.260 J**	**0.370 J**	NT	**0.280**	**0.290 J**
Carbon disulfide	NLE	NLE	NT	**0.028 J**	0.330 U	NT	0.260 U	0.300 U	NT	0.320 U	0.380 U	NT	0.270 U	0.320 U
Ethylbenzene	1000	100	NT	0.290 U	0.330 U	NT	0.260 U	0.300 U	NT	0.320 U	0.380 U	NT	0.270 U	0.320 U
Toluene	1000	500	NT	0.290 U	0.330 U	NT	0.260 U	0.300 U	NT	0.320 U	0.380 U	NT	0.270 U	0.320 U
Xylenes (Total)	1000	67	NT	0.870 U	0.990 U	NT	0.780 U	0.900 U	NT	0.960 U	1.150 U	NT	0.810 U	0.970 U
Semi-Volatiles														
Acenaphthene	10000	100	1.100 U	NT	**1.300**	1.100 U	NT	1.300 U	1.200 U	NT	1.200 U	1.100 U	NT	1.300 U
Acenaphthylene	NLE	NLE	**0.056 J**	NT	**0.210 J**	1.100 U	NT	1.300 U	1.200 U	NT	1.200 U	**0.920 J**	NT	1.300 U
Anthracene	10000	100	1.100 U	NT	**0.590 J**	1.100 U	NT	1.300 U	**0.100 J**	NT	**0.034 J**	**0.370 J**	NT	1.300 U
Benzo[a]anthracene	4	500	**0.091 J**	NT	**0.730 J**	1.100 U	NT	1.300 U	**0.550 J**	NT	**0.110 J**	**2.500**	NT	1.300 U
Benzo[a]pyrene	0.66	100	**0.083 J**	NT	**0.560 J**	1.100 U	NT	1.300 U	**0.440 J**	NT	1.200 U	**2.200**	NT	1.300 U
Benzo[b]fluoranthene	4	50	**0.120 J**	NT	**0.750 J**	1.100 U	NT	1.300 U	**0.670 J**	NT	**0.120 J**	**2.800**	NT	1.300 U
Benzo[g,h,i]perylene	NLE	NLE	1.100 U	NT	1.100 U	1.100 U	NT	1.300 U	1.200 U	NT	1.200 U	**0.900 J**	NT	1.300 U
Benzo[k]fluoranthene	4	500	**0.038 J**	NT	**0.320 J**	1.100 U	NT	1.300 U	**0.260 J**	NT	**0.047 J**	**0.890 J**	NT	1.300 U
bis(2-Ethylhexyl)phthalate	210	100	**0.058 J**	NT	1.100 U	1.100 U	NT	1.300 U	**0.450 J**	NT	**0.130 J**	1.100 U	NT	1.300 U
Butyl benzyl phthalate	10000	100	1.100 U	NT	1.100 U	1.100 U	NT	1.300 U	**1.800**	NT	**0.250 J**	1.100 U	NT	1.300 U
Chrysene	40	500	**0.120 J**	NT	**0.810 J**	1.100 U	NT	1.300 U	**0.610 J**	NT	**0.130 J**	**3.500**	NT	1.300 U
Dibenz[a,h]anthracene	0.66	100	1.100 U	NT	1.100 U	1.100 U	NT	1.300 U	1.200 U	NT	1.200 U	1.100 U	NT	1.300 U
Dibenzofuran	NLE	NLE	1.100 U	NT	**0.440 J**	1.100 U	NT	1.300 U	1.200 U	NT	1.200 U	1.100 U	NT	1.300 U
Di-n-butyl phthalate	10000	100	**1.500**	NT	**1.100 B**	**0.420 JB**	NT	**1.100 JB**	**0.810 JB**	NT	**8.500 B**	**1.800 B**	NT	**0.940 JB**
Fluoranthene	10000	100	**0.110 J**	NT	**1.600**	1.100 U	NT	1.300 U	**1.000 J**	NT	**0.220 J**	**1.500**	NT	1.300 U
Fluorene	10000	100	1.100 U	NT	**1.100 J**	1.100 U	NT	1.300 U	1.200 U	NT	1.200 U	**0.130 J**	NT	1.300 U
Indeno[1,2,3-cd]pyrene	4	500	1.100 U	NT	**0.140 J**	1.100 U	NT	1.300 U	**0.160 J**	NT	1.200 U	**0.680 J**	NT	1.300 U
2-Methylnaphthalene	NLE	NLE	1.100 U	NT	**0.190 J**	1.100 U	NT	1.300 U	1.200 U	NT	1.200 U	**0.098 J**	NT	1.300 U
4-Methylphenol	10000	NLE	1.100 U	NT	1.100 U	1.100 U	NT	1.300 U	1.200 U	NT	1.200 U	1.100 U	NT	1.300 U
Naphthalene	4200	100	1.100 U	NT	**0.110 J**	1.100 U	NT	1.300 U	1.200 U	NT	1.200 U	**0.100 J**	NT	1.300 U
Phenanthrene	NLE	NLE	**0.038 J**	NT	**2.300**	1.100 U	NT	1.300 U	**0.500 J**	NT	**0.210 J**	**0.230 J**	NT	1.300 U
Pyrene	10000	100	**0.170 J**	NT	**2.000**	1.100 U	NT	1.300 U	**1.000 J**	NT	**0.210 J**	**4.800**	NT	1.300 U
PCBs														
Aroclor 1260	2	50	0.0041 U	NT	0.0040 U	0.0042 U	NT	0.0041 U	**0.34**	NT	**0.10**	0.0039 U	NT	0.0040 U
Metals														
Aluminum	NLE	NLE	**12700 B**	NT	**9810 B**	**7840 B**	NT	**27700 B**	**21600 B**	NT	**28300 B**	**13200 B**	NT	**27600 B**
Antimony	340	NLE	0.410 U	NT	**1.05**	0.426 U	NT	0.514 U	0.470 U	NT	0.511 U	0.389 U	NT	0.549 U
Arsenic	20	NLE	**6.32**	NT	**11.4**	**4.67**	NT	**24.3**	**12.8**	NT	**17.1**	**6.15**	NT	**23.4**
Barium	47000	NLE	**32.3 B**	NT	**73.5 B**	**22.0**	NT	**51.1**	**54.5**	NT	**65.9**	**65.0**	NT	**676**
Beryllium	140	NLE	**1.34**	NT	**0.903**	**0.899**	NT	**3.96**	**2.35**	NT	**3.09**	**1.60**	NT	**3.08**
Cadmium	100	NLE	**1.02**	NT	**1.54**	**0.202**	NT	**1.29**	**1.81**	NT	**1.52**	**0.444**	NT	**1.58**
Calcium	NLE	NLE	**4860 B**	NT	**1070 B**	**1700**	NT	**1110**	**11300**	NT	**4630**	**11600**	NT	**421**
Chromium (Total)	NLE	NLE	**104**	NT	**74.2**	**62.2**	NT	**328**	**313**	NT	**400**	**79.5**	NT	**484**
Cobalt	NLE	NLE	**3.37**	NT	**2.05**	**0.968**	NT	**4.57**	**3.93**	NT	**0.517**	**1.85**	NT	0.418 U
Copper	45000	NLE	**20.9 B**	NT	**33.8 B**	**4.63 B**	NT	**13.2 B**	**36.9 B**	NT	**18.1 B**	**9.85 B**	NT	**13.6 B**
Iron	NLE	NLE	**42300 B**	NT	**26100 B**	**26500**	NT	**106000**	**75000**	NT	**95900**	**33800**	NT	**110000**
Lead	800	NLE	**11.7**	NT	**204**	**5.78**	NT	0.416 U	**91.7**	NT	**19.6**	**14.8**	NT	0.445 U
Magnesium	NLE	NLE	**6590 B**	NT	**3140 B**	**3040**	NT	**17400**	**12700**	NT	**14600**	**5370**	NT	**16200**
Manganese	NLE	NLE	**93.1 B**	NT	**197 B**	**41.1**	NT	**36.6**	**53.7**	NT	**34.1**	**146**	NT	**32.0**
Mercury	270	NLE	**0.91**	NT	**0.36**	0.099 U	NT	0.122 U	**1.19**	NT	**0.33**	0.097 U	NT	0.123 U
Nickel (Soluble Salts)	2400	NLE	**9.48 B**	NT	**12.4 B**	**4.38**	NT	**12.1**	**10.7**	NT	**7.95**	**7.91**	NT	**6.44**
Potassium	NLE	NLE	**11400 B**	NT	**5630 B**	**4600 B**	NT	**34100 B**	**22900 B**	NT	**30400 B**	**7220 B**	NT	**32100 B**
Sodium	NLE	NLE	35.545 U	NT	38.353 U	36.920 U	NT	44.587 U	40.728 U	NT	44.277 U	33.720 U	NT	47.589 U
Vanadium	7100	NLE	**62.4**	NT	**44.0**	**40.6**	NT	**108**	**114**	NT	**145**	**48.1**	NT	**154**
Zinc	1500	NLE	**75.1 B**	NT	**223 B**	**49.4**	NT	**124**	**174**	NT	**110**	**74.9**	NT	**99.0**

[1] NJDEP Residential Direct Contact Soil Cleanup Criteria per NJAC 7:26D, 1999. Beryllium, Copper and Lead criteria per NJAC 7:26D, 2008.

[2] NJDEP Non-Residential Direct Contact Soil Cleanup Criteria per NJAC 7:26D, 1999. Beryllium, Copper and Lead criteria per NJAC 7:26D, 2008.

[3] NJDEP Impact to Groundwater Soil Cleanup Criteria per NJAC 7:26D, 1999.

DUP = Duplicate Sample.

ft. bgs = Feet below ground surface.

NT = Not tested.

NLE = No limit established.

mg/kg = milligram per kilogram.

Bold = Analyte was detected.

Shaded = Concentration exceeds level of concern.
(Surface soil compared to NRDCSCC. Subsurface soil compared to IGWSCC when available, otherwise compared to NRDCSCC).

B = The compound was found in the associated method blank as well as in the sample.

D = Sample was diluted.

E = The compound's concentration exceeds the calibration range of the instrument for that specific analysis.

J = Mass spec and retention time data indicate the presence of a compound however the result is less than the MDL but greater than zero.

U = The compound was analyzed for but not detected.

Table 3.10-3
Fort Monmouth Phase II Site Investigation, Parcel 49
Summary of Analytical Parameters Detected in Soil (mg/kg)

			Analytical Results											
		Sample ID:	P49-SB5-A	P49-SB5-B	P49-SB5-C	P49-SB5-C DUP	P49-SB6-A	P49-SB6-B	P49-SB6-C	P49-SS7-A	P49-SS7-B	P49-SS8-A	P49-SS8-B	P49-SS9-A
		Lab ID:	7051613	7051614	7051615	7051602	7051616	7051617	7051618	7051515	7051516	7051513	7051514	7051511
		Date Sampled:	12/07/2007	12/07/2007	12/07/2007	12/07/2007	12/07/2007	12/07/2007	12/07/2007	12/06/2007	12/06/2007	12/06/2007	12/06/2007	12/06/2007
		Depth (ft. bgs):	0.0-0.5	1.5-2.0	6.0-6.5	6.0-6.5	0.5-1.0	1.5-2.0	6.5-7.0	0.0-0.5	1.5-2.0	0.0-0.5	1.5-2.0	0.0-0.5
Chemical	NRDCSCC[2]	IGWSCC[3]	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Volatiles														
Acetone	1000	100	NT	**0.045 J**	0.290 U	**0.330**	NT	0.250 U	0.330 U	NT	**1.000 B**	NT	**0.680 B**	NT
Carbon disulfide	NLE	NLE	NT	0.300 U	0.290 U	0.290 U	NT	0.250 U	0.330 U	NT	0.280 U	NT	0.270 U	NT
Ethylbenzene	1000	100	NT	0.300 U	0.290 U	0.290 U	NT	0.250 U	0.330 U	NT	0.280 U	NT	0.270 U	NT
Toluene	1000	500	NT	0.300 U	0.290 U	0.290 U	NT	0.250 U	0.330 U	NT	0.280 U	NT	0.270 U	NT
Xylenes (Total)	1000	67	NT	0.900 U	0.860 U	0.880 U	NT	0.750 U	0.980 U	NT	0.850 U	NT	0.810 U	NT
Semi-Volatiles														
Acenaphthene	10000	100	1.100 U	NT	1.200 U	1.200 U	1.000 U	NT	1.200 U	**20.000 JD**	NT	**0.660 J**	NT	**0.180 J**
Acenaphthylene	NLE	NLE	**0.260 J**	NT	1.200 U	1.200 U	**0.076 J**	NT	1.200 U	**0.450 J**	NT	**0.048 J**	NT	**0.490 J**
Anthracene	10000	100	**0.099 J**	NT	1.200 U	1.200 U	1.000 U	NT	1.200 U	**46.000 JD**	NT	**1.800**	NT	**3.000**
Benzo[a]anthracene	4	500	**0.420 J**	NT	1.200 U	1.200 U	1.000 U	NT	1.200 U	**80.000 D**	NT	**3.600**	NT	**10.000 JD**
Benzo[a]pyrene	0.66	100	**0.460 J**	NT	1.200 U	1.200 U	**0.110 J**	NT	1.200 U	**54.000 JD**	NT	**2.600**	NT	**9.600**
Benzo[b]fluoranthene	4	50	**0.460 J**	NT	1.200 U	1.200 U	**0.140 J**	NT	1.200 U	**75.000 D**	NT	**3.900**	NT	**9.200 JD**
Benzo[g,h,i]perylene	NLE	NLE	**0.260 J**	NT	1.200 U	1.200 U	1.000 U	NT	1.200 U	**16.000 JD**	NT	**0.840 J**	NT	**3.500**
Benzo[k]fluoranthene	4	500	**0.160 J**	NT	1.200 U	1.200 U	1.000 U	NT	1.200 U	**29.000 JD**	NT	**1.500**	NT	**6.200**
bis(2-Ethylhexyl)phthalate	210	100	**0.240 J**	NT	1.200 U	1.200 U	1.000 U	NT	**0.100 J**	1.100 U	NT	**0.690 J**	NT	1.200 U
Butyl benzyl phthalate	10000	100	1.100 U	NT	1.200 U	1.200 U	1.000 U	NT	1.200 U	**0.670 J**	NT	**0.520 J**	NT	1.200 U
Chrysene	40	500	**0.610 J**	NT	1.200 U	1.200 U	**0.150 J**	NT	1.200 U	**79.000 D**	NT	**3.700**	NT	**10.000 JD**
Dibenz[a,h]anthracene	0.66	100	1.100 U	NT	1.200 U	1.200 U	1.000 U	NT	1.200 U	**2.600**	NT	**0.340 J**	NT	**1.300**
Dibenzofuran	NLE	NLE	1.100 U	NT	1.200 U	1.200 U	1.000 U	NT	1.200 U	**12.000**	NT	**0.390 J**	NT	**0.340 J**
Di-n-butyl phthalate	10000	100	**1.700 B**	NT	**1.500 B**	**0.620 JB**	**1.000 B**	NT	**0.760 JB**	1.100 U	NT	**0.630 JB**	NT	**1.200 B**
Fluoranthene	10000	100	**0.410 J**	NT	1.200 U	1.200 U	**0.071 J**	NT	1.200 U	**190.000 D**	NT	**9.000**	NT	**23.000 D**
Fluorene	10000	100	1.100 U	NT	1.200 U	1.200 U	1.000 U	NT	1.200 U	**17.000 JD**	NT	**0.640 J**	NT	1.200 U
Indeno[1,2,3-cd]pyrene	4	500	**0.180 J**	NT	1.200 U	1.200 U	1.000 U	NT	1.200 U	**18.000 JD**	NT	**0.930 J**	NT	**3.500**
2-Methylnaphthalene	NLE	NLE	1.100 U	NT	1.200 U	1.200 U	1.000 U	NT	1.200 U	**4.400**	NT	**0.130 J**	NT	**0.240 J**
4-Methylphenol	10000	NLE	1.100 U	NT	1.200 U	1.200 U	1.000 U	NT	1.200 U	**0.320 J**	NT	1.200 U	NT	1.200 U
Naphthalene	4200	100	1.100 U	NT	1.200 U	1.200 U	1.000 U	NT	1.200 U	**11.000**	NT	**0.280 J**	NT	**0.098 J**
Phenanthrene	NLE	NLE	**0.380 J**	NT	1.200 U	1.200 U	1.000 U	NT	1.200 U	**170.000 D**	NT	**7.100**	NT	**13.000**
Pyrene	10000	100	**0.890 J**	NT	1.200 U	1.200 U	**0.190 J**	NT	1.200 U	**160.000 D**	NT	**7.300**	NT	**20.000 D**
PCBs														
Aroclor 1260	2	50	0.0040 U	NT	0.0041 U	0.0040 U	0.0042 U	NT	0.0039 U	**0.47**	NT	**8.85**	NT	0.0041 U
Metals														
Aluminum	NLE	NLE	**13700 B**	NT	**31400 B**	**26900 B**	**11500 B**	NT	**15100 B**	**15100 B**	NT	**14600 B**	NT	**17500 B**
Antimony	340	NLE	0.421 U	NT	0.457 U	0.445 U	0.438 U	NT	0.491 U	0.432 U	NT	0.434 U	NT	0.456 U
Arsenic	20	NLE	**10.5**	NT	**21.5**	**21.6**	**5.10**	NT	**8.92**	**10.1**	NT	**10.6**	NT	**17.4**
Barium	47000	NLE	**76.9**	NT	**77.5**	**80.6**	**26.2**	NT	**41.0**	**93.6 B**	NT	**95.5 B**	NT	**53.8 B**
Beryllium	140	NLE	**1.06**	NT	**5.22**	**4.36**	**0.422**	NT	**2.50**	**1.87**	NT	**1.61**	NT	**2.11**
Cadmium	100	NLE	**0.786**	NT	**2.90**	**2.21**	**0.199**	NT	**0.875**	**1.86**	NT	**3.66**	NT	**1.31**
Calcium	NLE	NLE	**13300**	NT	**2460**	**2740**	**758**	NT	**1340**	**3750 B**	NT	**2790 B**	NT	**2500 B**
Chromium	NLE	NLE	**92.4**	NT	**351**	**312**	**33.7**	NT	**167**	**146**	NT	**144**	NT	**135**
Cobalt	NLE	NLE	**1.47**	NT	**5.15**	**4.67**	**1.56**	NT	**2.45**	**1.20**	NT	**1.55**	NT	**3.01**
Copper	45000	NLE	**28.3 B**	NT	**7.42 B**	**7.74 B**	**19.8 B**	NT	**10.5 B**	**73.1 B**	NT	**115 B**	NT	**27.3 B**
Iron	NLE	NLE	**29000**	NT	**146000**	**125000**	**20300**	NT	**57400**	**47800 B**	NT	**43000 B**	NT	**69500 B**
Lead	800	NLE	**176**	NT	0.370 U	0.360 U	**9.84**	NT	**11.7**	**49.1**	NT	**109**	NT	**22.7**
Magnesium	NLE	NLE	**4320**	NT	**21100**	**17500**	**1200**	NT	**8430**	**6220 B**	NT	**6000 B**	NT	**6630 B**
Manganese	NLE	NLE	**104**	NT	**30.2**	**28.0**	**82.6**	NT	**16.0**	**68.7 B**	NT	**120 B**	NT	**163 B**
Mercury	270	NLE	**0.16**	NT	0.111 U	0.120 U	0.093 U	NT	0.114 U	0.113 U	NT	0.119 U	NT	0.109 U
Nickel	2400	NLE	**9.88**	NT	**17.2**	**12.1**	**6.69**	NT	**9.67**	**8.80 B**	NT	**12.1 B**	NT	**14.7 B**
Potassium	NLE	NLE	**7010 B**	NT	**47500 B**	**38300 B**	**1940 B**	NT	**19800 B**	**13200 B**	NT	**10700 B**	NT	**13800 B**
Sodium	NLE	NLE	36.475 U	NT	39.649 U	38.587 U	**89.8**	NT	42.551 U	37.456 U	NT	37.629 U	NT	39.562 U
Vanadium	7100	NLE	**58.3**	NT	**137**	**103**	**43.4**	NT	**81.1**	**74.2**	NT	**71.8**	NT	**85.8**
Zinc	1500	NLE	**304**	NT	**138**	**147**	**32.9**	NT	**110**	**255 B**	NT	**206 B**	NT	**193 B**

[1] NJDEP Residential Direct Contact Soil Cleanup Criteria per NJAC 7:26D, 1999. Beryllium, Copper and Lead criteria per NJAC 7:26D, 2008.

[2] NJDEP Non-Residential Direct Contact Soil Cleanup Criteria per NJAC 7:26D, 1999. Beryllium, Copper and Lead criteria per NJAC 7:26D, 2008.

[3] NJDEP Impact to Groundwater Soil Cleanup Criteria per NJAC 7:26D, 1999.

DUP = Duplicate Sample.

ft. bgs = Feet below ground surface.

NT = Not tested.

NLE = No limit established.

mg/kg = milligram per kilogram.

Bold = Analyte was detected.

Shaded = Concentration exceeds level of concern.
(Surface soil compared to NRDCSCC. Subsurface soil compared to IGWSCC when available, otherwise compared to NRDCSCC).

B = The compound was found in the associated method blank as well as in the sample.

D = Sample was diluted.

E = The compound's concentration exceeds the calibration range of the instrument for that specific analysis.

J = Mass spec and retention time data indicate the presence of a compound however the result is less than the MDL but greater than zero.

U = The compound was analyzed for but not detected.

Table 3.10-3
Fort Monmouth Phase II Site Investigation, Parcel 49
Summary of Analytical Parameters Detected in Soil (mg/kg)

			Analytical Results								
		Sample ID:	P49-SS9-B	P49-SS10-A	P49-SS10-B	P49-SS11-A	P49-SS11-B	P49-SS12-A	P49-SS12-B	P49-SS13-A	P49-SS13-B
		Lab ID:	7051512	7051503	7051504	7051505	7051506	7051507	7051508	7051509	7051510
		Date Sampled:	12/06/2007	12/06/2007	12/06/2007	12/06/2007	12/06/2007	12/06/2007	12/06/2007	12/06/2007	12/06/2007
		Depth (ft. bgs):	1.5-2.0	0.0-0.5	1.5-2.0	0.0-0.5	1.5-2.0	0.0-0.5	1.5-2.0	0.0-0.5	1.5-2.0
Chemical	NRDCSCC[2]	IGWSCC[3]	Result	Result	Result	Result	Result	Result	Result	Result	Result
Volatiles											
Acetone	1000	100	**0.760 B**	NT	**0.770 B**	NT	**0.670 B**	NT	**0.670**	NT	**0.780 B**
Carbon disulfide	NLE	NLE	0.320 U	NT	0.280 U	NT	0.300 U	NT	0.280 U	NT	0.290 U
Ethylbenzene	1000	100	**0.058 J**	NT	0.280 U	NT	0.300 U	NT	0.280 U	NT	0.290 U
Toluene	1000	500	**0.047 J**	NT	0.280 U	NT	0.300 U	NT	0.280 U	NT	0.290 U
Xylenes (Total)	1000	67	**0.119 J**	NT	0.850 U	NT	0.890 U	NT	0.850 U	NT	0.880 U
Semi-Volatiles											
Acenaphthene	10000	100	NT	1.100 U	NT	1.100 U	NT	1.100 U	NT	1.200 U	NT
Acenaphthylene	NLE	NLE	NT	**0.073 J**	NT	**0.059 J**	NT	**0.130 J**	NT	**0.097 J**	NT
Anthracene	10000	100	NT	**0.083 J**	NT	**0.093 J**	NT	**0.100 J**	NT	**0.200 J**	NT
Benzo[a]anthracene	4	500	NT	**0.470 J**	NT	**0.350 J**	NT	**0.380 J**	NT	**0.810 J**	NT
Benzo[a]pyrene	0.66	100	NT	**0.610 J**	NT	**0.310 J**	NT	**0.360 J**	NT	**0.730 J**	NT
Benzo[b]fluoranthene	4	50	NT	**0.960 J**	NT	**0.430 J**	NT	**0.580 J**	NT	**1.200**	NT
Benzo[g,h,i]perylene	NLE	NLE	NT	1.100 U	NT	1.100 U	NT	1.100 U	NT	1.200 U	NT
Benzo[k]fluoranthene	4	500	NT	**0.340 J**	NT	**0.220 J**	NT	**0.220 J**	NT	**0.490 J**	NT
bis(2-Ethylhexyl)phthalate	210	100	NT	**0.160 J**	NT	**0.150 J**	NT	**0.500 J**	NT	**0.220 J**	NT
Butyl benzyl phthalate	10000	100	NT	1.100 U	NT	1.100 U	NT	1.100 U	NT	1.200 U	NT
Chrysene	40	500	NT	**0.600 J**	NT	**0.440 J**	NT	**0.480 J**	NT	**0.860 J**	NT
Dibenz[a,h]anthracene	0.66	100	NT	1.100 U	NT	1.100 U	NT	1.100 U	NT	1.200 U	NT
Dibenzofuran	NLE	NLE	NT	1.100 U	NT	1.100 U	NT	1.100 U	NT	1.200 U	NT
Di-n-butylphthalate	10000	100	NT	**1.300 B**	NT	**0.380 JB**	NT	**1.900 B**	NT	**0.800 JB**	NT
Fluoranthene	10000	100	NT	**0.780 J**	NT	**0.670 J**	NT	**0.690 J**	NT	**1.600**	NT
Fluorene	10000	100	NT	1.100 U	NT	1.100 U	NT	1.100 U	NT	1.200 U	NT
Indeno[1,2,3-cd]pyrene	4	500	NT	1.100 U	NT	1.100 U	NT	1.100 U	NT	1.200 U	NT
2-Methylnaphthalene	NLE	NLE	NT	1.100 U	NT	1.100 U	NT	1.100 U	NT	1.200 U	NT
4-Methylphenol	10000	NLE	NT	1.100 U	NT	1.100 U	NT	1.100 U	NT	1.200 U	NT
Naphthalene	4200	100	NT	1.100 U	NT	1.100 U	NT	1.100 U	NT	1.200 U	NT
Phenanthrene	NLE	NLE	NT	**0.270 J**	NT	**0.370 J**	NT	**0.380 J**	NT	**0.750 J**	NT
Pyrene	10000	100	NT	1.100 U	NT	**0.770 J**	NT	**1.100 J**	NT	**2.200**	NT
PCBs											
Aroclor 1260	2	50	NT	0.0041 U	NT	0.0039 U	NT	0.0041 U	NT	0.0041 U	NT
Metals											
Aluminum	NLE	NLE	NT	**7420 B**	NT	**7720 B**	NT	**10500 B**	NT	**7310 B**	NT
Antimony	340	NLE	NT	0.472 U	NT	0.451 U	NT	0.433 U	NT	0.475 U	NT
Arsenic	20	NLE	NT	**6.32**	NT	**7.66**	NT	**10.3**	NT	**5.23**	NT
Barium	47000	NLE	NT	**39.7 B**	NT	**39.4 B**	NT	**55.0 B**	NT	**38.4 B**	NT
Beryllium	140	NLE	NT	**0.361**	NT	**0.381**	NT	**0.818**	NT	**0.346**	NT
Cadmium	100	NLE	NT	**0.511**	NT	**0.429**	NT	**0.723**	NT	**0.424**	NT
Calcium	NLE	NLE	NT	**34800 B**	NT	**44700 B**	NT	**23100 B**	NT	**65400 B**	NT
Chromium	NLE	NLE	NT	**27.1**	NT	**25.6**	NT	**71.7**	NT	**25.9**	NT
Cobalt	NLE	NLE	NT	**2.19**	NT	**2.36**	NT	**2.07**	NT	**2.20**	NT
Copper	45000	NLE	NT	**19.5 B**	NT	**24.3 B**	NT	**36.8 B**	NT	**26.8 B**	NT
Iron	NLE	NLE	NT	**15600 B**	NT	**13600 B**	NT	**25400 B**	NT	**12900 B**	NT
Lead	800	NLE	NT	**46.0**	NT	**35.0**	NT	**101**	NT	**49.7**	NT
Magnesium	NLE	NLE	NT	**2830 B**	NT	**4190 B**	NT	**4130 B**	NT	**5610 B**	NT
Manganese	NLE	NLE	NT	**132 B**	NT	**115 B**	NT	**95.9 B**	NT	**281 B**	NT
Mercury	270	NLE	NT	0.113 U	NT	0.106 U	NT	0.108 U	NT	0.107 U	NT
Nickel	2400	NLE	NT	**8.10 B**	NT	**15.5 B**	NT	**9.12 B**	NT	**8.09 B**	NT
Potassium	NLE	NLE	NT	**1320 B**	NT	**1270 B**	NT	**5470 B**	NT	**1280 B**	NT
Sodium	NLE	NLE	NT	40.910 U	NT	39.056 U	NT	37.562 U	NT	41.153 U	NT
Vanadium	7100	NLE	NT	**32.8**	NT	**33.1**	NT	**46.7**	NT	**32.3**	NT
Zinc	1500	NLE	NT	**115 B**	NT	**57.9 B**	NT	**190 B**	NT	**64.8 B**	NT

[1] NJDEP Residential Direct Contact Soil Cleanup Criteria per NJAC 7:26D, 1999. Beryllium, Copper and Lead criteria per NJAC 7:26D, 2008.

[2] NJDEP Non-Residential Direct Contact Soil Cleanup Criteria per NJAC 7:26D, 1999. Beryllium, Copper and Lead criteria per NJAC 7:26D, 2008.

[3] NJDEP Impact to Groundwater Soil Cleanup Criteria per NJAC 7:26D, 1999.

DUP = Duplicate Sample.

ft. bgs = Feet below ground surface.

NT = Not tested.

NLE = No limit established.

mg/kg = milligram per kilogram.

Bold = Analyte was detected.

Shaded = Concentration exceeds level of concern.
(Surface soil compared to NRDCSCC. Subsurface soil compared to IGWSCC when available, otherwise compared to NRDCSCC).

B = The compound was found in the associated method blank as well as in the sample.

D = Sample was diluted.

E = The compound's concentration exceeds the calibration range of the instrument for that specific analysis.

J = Mass spec and retention time data indicate the presence of a compound however the result is less than the MDL but greater than zero.

U = The compound was analyzed for but not detected.

Table 3.10-4
Fort Monmouth Phase II Site Investigation, Parcel 49
Summary of Analytical Parameters Detected in Groundwater (µg/L)

		Analytical Results						
Sample ID:		P49-283-MW1	P49-283-MW1 DUP	P49-283-MW3	P49-296-MW7	P49-B4MWOB4	P49-GW-1	P49-GW-2
Lab ID:		7051808	7051803	7051807	7051806	7051809	7051804	7051805
Date Sampled:		12/08/2007	12/08/2007	12/08/2007	12/08/2007	12/08/2007	12/08/2007	12/08/2007
Screened Interval (ft. bgs):		9.8-19.8	9.8-19.8	14.1-24.1	1.8-11.8	7.1-17.1	5-10	9-14
Chemical	Quality Criteria[1]	Result	Result	Result	Result	Result	Result	Result
Volatiles								
Acetone	6000	0.85 U	0.85 U	0.85 U	**1.08**	0.85 U	**14.21**	0.85 U
Benzene	1	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	**1.24**	0.17 U
Bromodichloromethane	1	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	**1.35**
Chloroform	70	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	**3.47**
Ethylbenzene	700	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	**0.25 J**	0.28 U
Methyl ethyl ketone (2-Butanone)	300	0.14 U	0.14 U	0.14 U	**0.61**	0.14 U	**1.35**	0.14 U
Toluene	600	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	**1.39**	0.27 U
Vinyl Chloride	1	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	**0.27 J**	0.30 U
Xylenes (Total)	1000	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	**2.75**	0.49 U
Semi-Volatiles								
Benzoic acid	30000	0.86 U	0.86 U	0.86 U	**6.47**	0.86 U	0.86 U	0.86 U
bis(2-Ethylhexyl)phthalate	3	**0.80 J**	**1.04 J**	**6.77**	**3.55**	1.28 U	**25.94**	**1.22 J**
Diethyl phthalate	6000	0.96 U	0.96 U	0.96 U	0.96 U	0.96 U	**7.70**	0.96 U
Naphthalene	300	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	**0.64 J**	0.76 U
Metals								
Aluminum	200	**4900**	**5110**	**60.8**	**112**	**106**	NT	NT
Arsenic	3	2.70 U	2.70 U	**3.68**	**6.17**	2.70 U	NT	NT
Barium	6000	**123**	**126**	**95.6**	**8.99**	**40.2**	NT	NT
Beryllium	1	**1.28**	**1.33**	0.100 U	0.100 U	0.100 U	NT	NT
Cadmium	4	**0.550 B**	**0.592 B**	**0.273 B**	**0.297 B**	**0.626 B**	NT	NT
Calcium	NLE	**11900**	**12300**	**17100**	**14600**	**7140**	NT	NT
Cobalt	100*	**5.58**	**5.79**	0.200 U	0.200 U	0.200 U	NT	NT
Copper	1300	**2.78**	**2.65**	0.500 U	0.500 U	0.500 U	NT	NT
Iron	300	323 U	323 U	**10200**	**10600**	**1220**	NT	NT
Magnesium	NLE	**22100**	**22900**	**3310**	**3180**	**2850**	NT	NT
Manganese	50	**51.6**	**52.8**	**49.0**	**84.9**	**36.3**	NT	NT
Nickel (Soluble Salts)	100	**14.4**	**14.7**	**7.34**	0.300 U	0.300 U	NT	NT
Potassium	NLE	**6570**	**6810**	**8500**	**6830**	**3470**	NT	NT
Selenium	40	2.70 U	**4.51**	2.70 U	2.70 U	**3.64**	NT	NT
Silver	40	**0.881**	0.800 U	0.800 U	0.800 U	0.800 U	NT	NT
Sodium	50000	**110000 B**	**114000 B**	**8610 B**	**7430 B**	**11000 B**	NT	NT
Vanadium	NLE	0.500 U	0.500 U	0.500 U	**0.854**	0.500 U	NT	NT
Zinc	2000	**103**	**107**	3.58 U	3.58 U	**18.3**	NT	NT

[1] Higher of Practical Quantitation Limits (PQLs) & Groundwater Quality Criterion (GWQC) per NJAC 7:9-6, 2005 (* Interim GWQC).

DUP = Duplicate Sample.
ft. bgs = Feet below ground surface.
NT = Not tested.
NLE = No limit established.
Bold = Analyte was detected.
Shaded = Concentration exceeds Quality Criteria.

µg/L = micrograms per liter.
B = The compound was found in the associated method blank as well as in the sample.
D = Sample was diluted.
E = The compound's concentration exceeds the calibration range of the instrument for that specific analysis.
J = Mass spec and retention time data indicate the presence of a compound however the result is less than the MDL but greater than zero.
U = The compound was analyzed for but not detected.

Table 3.10-5
Fort Monmouth Phase II Site Investigation, Parcel 49
Summary of Analytical Parameters Detected in Sediment (mg/kg)

			Analytical Results													
		Sample ID:	P49-SD1-A	P49-SD1-A	P49-SD1-B	P49-SD1-B	P49-SD2-A	P49-SD2-A	P49-SD2-A DUP	P49-SD2-B	P49-SD2-B	P49-SD2-B	P49-SD3-A	P49-SD3-A	P49-SD3-B	P49-SD3-B
		Lab ID:	12/06/2007	12/27/2007	12/06/2007	12/27/2007	12/06/2007	12/27/2007	12/06/2007	12/06/2007	12/27/2007	12/06/2007	12/06/2007	12/27/2007	12/06/2007	12/27/2007
		Date Sampled:	7051520	7056801	7051521	7056802	7051522	7056803	7051502	7051523	7056804	7051502	7051524	7056805	7051525	7056806
		Depth (ft. bgs):	0.0-0.5	0.0-0.5	1.5-2.0	1.5-2.0	0.0-0.5	0.0-0.5	0.0-0.5	1.5-2.0	1.5-2.0	1.5-2.0	0.0-0.5	0.0-0.5	1.5-2.0	1.5-2.0
Chemical	ER-L[1]	ER-M[2]	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Volatiles																
Acetone	NLE	NLE	NT	0.350 U	**0.460 B**	NT	NT	0.360 U	NT	**0.320 B**	NT	**1.600 B**	NT	0.320 U	**0.420 B**	NT
Semi-Volatiles																
Benzo[a]anthracene	0.261	1.6	0.920 U	NT	NT	1.300 U	2.100 U	NT	2.500 U	NT	1.400 U	NT	**0.200 J**	NT	NT	1.400 U
Benzo[a]pyrene	0.430	1.6	0.920 U	NT	NT	1.300 U	2.100 U	NT	2.500 U	NT	1.400 U	NT	**0.160 J**	NT	NT	1.400 U
Benzo[b]fluoranthene	NLE	NLE	0.920 U	NT	NT	1.300 U	2.100 U	NT	2.500 U	NT	1.400 U	NT	**0.240 J**	NT	NT	1.400 U
Benzo[k]fluoranthene	0.240	NLE	0.920 U	NT	NT	1.300 U	2.100 U	NT	2.500 U	NT	1.400 U	NT	**0.091 J**	NT	NT	1.400 U
bis(2-Ethylhexyl)phthalate	NLE	NLE	0.920 U	NT	NT	1.300 U	2.100 U	NT	2.500 U	NT	**0.250 J**	NT	**0.070 J**	NT	NT	**0.520 J**
Chrysene	0.384	2.8	0.920 U	NT	NT	1.300 U	2.100 U	NT	2.500 U	NT	1.400 U	NT	**0.230 J**	NT	NT	1.400 U
Di-n-butylphthalate	NLE	NLE	**0.890 JB**	NT	NT	**0.100 JB**	**2.400 B**	NT	**0.950 JB**	NT	**0.470 JB**	NT	**1.500 B**	NT	NT	1.400 U
Fluoranthene	0.600	5.1	0.920 U	NT	NT	1.300 U	2.100 U	NT	**0.160 J**	NT	1.400 U	NT	**0.410 J**	NT	NT	**0.140 J**
Phenanthrene	0.240	1.5	0.920 U	NT	NT	1.300 U	2.100 U	NT	2.500 U	NT	1.400 U	NT	**0.160 J**	NT	NT	1.400 U
Pyrene	0.665	2.6	0.920 U	NT	NT	1.300 U	2.100 U	NT	**0.130 J**	NT	1.400 U	NT	**0.370 J**	NT	NT	**0.150 J**
Metals																
Aluminum	NLE	NLE	**29200 B**	NT	NT	**29400 B**	**13900 B**	NT	**18500 B**	NT	**36300 B**	NT	**15600 B**	NT	NT	**19200 B**
Arsenic	8.2	70	**16.5**	NT	NT	**16.4**	**14.8**	NT	**22.9**	NT	**16.7**	NT	**29.7**	NT	NT	**17.0**
Barium	NLE	NLE	**96.4 B**	NT	NT	**39.9 B**	**65.3 B**	NT	**79.0 B**	NT	**110 B**	NT	**83.7 B**	NT	NT	**57.2 B**
Beryllium	NLE	NLE	**4.52**	NT	NT	**4.08**	**2.42**	NT	**3.24**	NT	**5.13**	NT	**1.70**	NT	NT	**2.13**
Cadmium	1.2	9.6	**1.65**	NT	NT	**0.971 B**	**4.92**	NT	**5.55**	NT	**1.41 B**	NT	**1.02**	NT	NT	**0.844 B**
Calcium	NLE	NLE	**719 B**	NT	NT	**430 B**	**1690 B**	NT	**2210 B**	NT	**1700 B**	NT	**1360 B**	NT	NT	**804 B**
Chromium (Total)	81	370	**353**	NT	NT	**329**	**176**	NT	**243**	NT	**394**	NT	**149**	NT	NT	**204**
Cobalt	NLE	NLE	**4.91**	NT	NT	**3.22**	**19.4**	NT	**29.3**	NT	**4.18**	NT	**2.10**	NT	NT	0.446 U
Copper	34	270	**18.9 B**	NT	NT	**12.7 B**	**82.3 B**	NT	**111 B**	NT	**21.0 B**	NT	**76.5 B**	NT	NT	**18.9 B**
Iron	NLE	NLE	**120000 B**	NT	NT	**123000 EB**	**48900 B**	NT	**67800 B**	NT	**160000 EB**	NT	**49900 B**	NT	NT	**71100 EB**
Lead	47	218	0.432 U	NT	NT	0.413 U	**41.8**	NT	**45.7**	NT	**4.99**	NT	**148**	NT	NT	**23.4**
Magnesium	NLE	NLE	**20600 B**	NT	NT	**17400 B**	**7610 B**	NT	**10800 B**	NT	**22400 B**	NT	**6190 B**	NT	NT	**8440 B**
Manganese	NLE	NLE	**44.8 B**	NT	NT	**19.3**	**24.2 B**	NT	**28.3 B**	NT	**34.9**	NT	**61.7 B**	NT	NT	**22.8**
Mercury	0.15	0.71	0.124 U	NT	NT	0.119 U	**0.49**	NT	**0.53**	NT	0.145 U	NT	**0.23**	NT	NT	0.134 U
Nickel (Soluble Salts)	21	52	**13.1 B**	NT	NT	**14.6**	**44.0 B**	NT	**68.5 B**	NT	**17.9**	NT	**11.3 B**	NT	NT	**11.1**
Potassium	NLE	NLE	**40800 B**	NT	NT	**38600**	**15800 B**	NT	**22600 B**	NT	**49200**	NT	**11800 B**	NT	NT	**17700**
Silver	1.0	3.7	0.203 U	NT	NT	0.195 U	**1.40**	NT	0.407 U	NT	0.234 U	NT	0.208 U	NT	NT	0.223 U
Sodium	NLE	NLE	**219**	NT	NT	44.262 U	69.037 U	NT	92.593 U	NT	53.211 U	NT	47.409 U	NT	NT	50.781 U
Vanadium	NLE	NLE	**125**	NT	NT	**146**	**82.3**	NT	**118**	NT	**156**	NT	**79.3**	NT	NT	**93.2**
Zinc	150	410	**139 B**	NT	NT	**131**	**1320 B**	NT	**2090 B**	NT	**155**	NT	**117 B**	NT	NT	**93.7**

[1] NJDEP Marine/Estuarine Sediment Screening Guidelines, Effects Range - Low, 1998.

[2] NJDEP Marine/Estuarine Sediment Screening Guidelines, Effects Range - Medium, 1998.

DUP = Duplicate Sample.

ft. bgs = Feet below ground surface.

mg/kg = milligram per kilogram.

Bold = Analyte detected.

Shaded = Concentration exceeds ER-L.

NT = Not tested.

NLE = No limit established.

B = The compound was found in the associated method blank as well as in the sample.

D = Sample was diluted.

E = The compound's concentration exceeds the calibration range of the instrument for that specific analysis.

J = Mass spec and retention time data indicate the presence of a compound however the result is less than the MDL but greater than zero.

U = The compound was analyzed for but not detected.

Sample ID	Media	Depth (ft bgs)	Compound	Concentration (mg/kg)	Criteria	Criteria Value (mg/kg)
P49-SD2-A	SD	0.0-0.5	Arsenic	14.8	ER-L/ER-M	8.2/70
P49-SD2-A DUP	SD	0.0-0.5	Arsenic	22.9	ER-L/ER-M	8.2/70
P49-SD2-A	SD	0.0-0.5	Cadmium	4.92	ER-L/ER-M	1.2/9.6
P49-SD2-A DUP	SD	0.0-0.5	Cadmium	5.55	ER-L/ER-M	1.2/9.6
P49-SD2-A	SD	0.0-0.5	Chromium	176	ER-L/ER-M	81/370
P49-SD2-A DUP	SD	0.0-0.5	Chromium	243	ER-L/ER-M	81/370
P49-SD2-A	SD	0.0-0.5	Copper	82.3 B	ER-L/ER-M	34/270
P49-SD2-A DUP	SD	0.0-0.5	Copper	111 B	ER-L/ER-M	34/270
P49-SD2-A	SD	0.0-0.5	Silver	1.40	ER-L/ER-M	1/3.7
P49-SD2-A	SD	0.0-0.5	Zinc	1320 B	ER-L/ER-M	150/410
P49-SD2-A DUP	SD	0.0-0.5	Zinc	2090 B	ER-L/ER-M	150/410
P49-SD2-B	SD	1.5-2.0	Arsenic	16.7	ER-L/ER-M	8.2/70
P49-SD2-B	SD	1.5-2.0	Cadmium	1.41 B	ER-L/ER-M	1.2/9.6
P49-SD2-B	SD	1.5-2.0	Chromium	394	ER-L/ER-M	81/370

Sample ID	Media	Depth (ft bgs)	Compound	Concentration	Criteria	Criteria Value
P49-GW-2	GW	9-14	Bromodichloromethane	1.35 ug/L	NJ GWQC	1 ug/L

Sample ID	Media	Depth (ft bgs)	Compound	Concentration (ug/L)	Criteria	Criteria Value (ug/L)
P49-GW-1	GW	5-10	Benzene	1.24	NJ GWQC	1

Sample ID	Media	Depth (ft bgs)	Compound	Concentration (mg/kg)	Criteria	Criteria Value (mg/kg)
P49-SS13-A	SS	0.0-0.5	Benzo[a]pyrene	0.730 J	NRDCSCC	0.66

Sample ID	Media	Depth (ft bgs)	Compound	Concentration (mg/kg)	Criteria	Criteria Value (mg/kg)
P49-SS9-A	SS	0.0-0.5	Benzo[a]anthracene	10.000 JD	NRDCSCC	4
P49-SS9-A	SS	0.0-0.5	Benzo[a]pyrene	9.600	NRDCSCC	0.66
P49-SS9-A	SS	0.0-0.5	Benzo[b]fluoranthene	9.200 JD	NRDCSCC	4
P49-SS9-A	SS	0.0-0.5	Benzo[k]fluoranthene	6.200	NRDCSCC	4
P49-SS9-A	SS	0.0-0.5	Dibenz[a,h]anthracene	1.300	NRDCSCC	0.66

Sample ID	Media	Depth (ft bgs)	Compound	Concentration (mg/kg)	Criteria	Criteria Value (mg/kg)
P49-SD1-A	SD	0.0-0.5	Arsenic	16.5	ER-L/ER-M	8.2/70
P49-SD1-A	SD	0.0-0.5	Cadmium	1.65	ER-L/ER-M	1.2/9.6
P49-SD1-A	SD	0.0-0.5	Chromium	353	ER-L/ER-M	81/370
P49-SD1-B	SD	1.5-2.0	Arsenic	16.4	ER-L/ER-M	8.2/70
P49-SD1-B	SD	1.5-2.0	Chromium	329	ER-L/ER-M	81/370

Sample ID	Media	Depth (ft bgs)	Compound	Concentration (mg/kg)	Criteria	Criteria Value (mg/kg)
P49-SD3-A	SD	0.0-0.5	Arsenic	29.7	ER-L/ER-M	8.2/70
P49-SD3-A	SD	0.0-0.5	Chromium	149	ER-L/ER-M	81/370
P49-SD3-A	SD	0.0-0.5	Copper	76.5 B	ER-L/ER-M	34/270
P49-SD3-A	SD	0.0-0.5	Lead	148	ER-L/ER-M	47/218
P49-SD3-B	SD	1.5-2.0	Arsenic	17.0	ER-L/ER-M	8.2/70
P49-SD3-B	SD	1.5-2.0	Chromium	204	ER-L/ER-M	81/370

Sample ID	Media	Depth (ft bgs)	Compound	Concentration (mg/kg)	Criteria	Criteria Value (mg/kg)
P49-SS7-A	SS	0.0-0.5	Benzo[a]anthracene	80.000 D	NRDCSCC	4
P49-SS7-A	SS	0.0-0.5	Benzo[a]pyrene	54.000 JD	NRDCSCC	0.66
P49-SS7-A	SS	0.0-0.5	Benzo[b]fluoranthene	75.000 D	NRDCSCC	4
P49-SS7-A	SS	0.0-0.5	Benzo[k]fluoranthene	29.000 JD	NRDCSCC	4
P49-SS7-A	SS	0.0-0.5	Chrysene	79.000 D	NRDCSCC	40
P49-SS7-A	SS	0.0-0.5	Dibenz[a,h]anthracene	2.6000	NRDCSCC	0.66
P49-SS7-A	SS	0.0-0.5	Indeno[1,2,3-cd]pyrene	18.000 JD	NRDCSCC	4

Sample ID	Media	Depth (ft bgs)	Compound	Concentration (mg/kg)	Criteria	Criteria Value (mg/kg)
P49-SS8-A	SS	0.0-0.5	Benzo[a]pyrene	2.600	NRDCSCC	0.66
P49-SS8-A	SS	0.0-0.5	Aroclor 1260	8.85	NRDCSCC	2

Sample ID	Media	Depth (ft bgs)	Compound	Concentration (mg/kg)	Criteria	Criteria Value (mg/kg)
P49-SB4-A	SB	0.0-0.5	Benzo[a]pyrene	2.200	NRDCSCC	0.66

PARKERS CREEK
M-18
P49-SD1
P49-SD2
P49-SD3
P49-B4MWOB4
145
P49SS/SB/GW-1
P49-SS12
P49-SS11
P49-SS10
289 (Former)
P49-SS13
P49SS/SB/GW-2
P49-283-MW3
P49-SS/SB4
P49-SS7
P49-283-MW1
P49-SS/SB3
P49-SS8
P49-296-MW7
P49-SS/SB6
290 (Former)
50(2)PS/PR*
P49-SS/SB5
P49-SS9
49(7)HS/HR(P)/PS/PR(P)
293
295
292
291
296
600
555
552
288
283
230
222
Sherrill Avenue
Irwin Avenue
Brewer Avenue
Harmon Avenue
Mallerie Avenue

LEGEND

- Geoprobe Soil Sample Location
- Geoprobe Soil and Groundwater Sample Location
- Surface and Subsurface Soil Sample Location
- Sediment Sample Location
- Groundwater Sample Location at Existing Monitoring Well
- Generalized Groundwater Flow Direction. Direction of Generalized Groundwater Flow derived from qualitative evaluation of surface topography, surface water features, and pre-existing IRP site groundwater potentiometric maps where available.
- Building
- IRP Site Boundary
- Installation Boundary

ECP PARCEL CATEGORY DEFINITIONS

7 Areas that are not evaluated or require additional evaluation.

* Parcel not included in Site Investigation. Information pertaining to parcels not included in this Site Investigation is presented in the Fort Monmouth Phase I ECP Report (January 2007).

BRAC PARCEL LABEL DEFINITIONS

8(2)PS
- CONTAMINATION DESCRIPTION
  - HS - Hazardous Substance Storage
  - HR - Hazardous Substance Release
  - PS - Petroleum Storage
  - PR - Petroleum Release
  - (P) - Possible Release or Disposal
- CATEGORY NUMBER
- PARCEL NUMBER

N

SCALE:
0 75 150 300 Feet

Base Realignment and Closure 2005

U.S. Army Corps of Engineers

Shaw® Shaw Environmental, Inc.

FIGURE 3.10-1

FORT MONMOUTH ECP SITE INVESTIGATION

PARCEL 49 SAMPLE LOCATIONS AND CONSTITUENTS OF CONCERN

MAIN POST
FORT MONMOUTH
NEW JERSEY

ArcGIS File: MP_Fig3_10-1_SI_P49_Exceeds_SampLoc.mxd (7/14/2008 12:27:27 PM)

3.11 Parcel 50 – IRP Sites FTMM-54, FTMM-55, and FTMM-61

3.11.1 Site Description

Site FTMM-54 is a former fuel distribution facility on the MP which was abandoned. The tanks and distribution piping were rediscovered during a renovation project at Bldg 296. The facility dates back to the 1940s and is located on Sherrill Avenue. The UST system was comprised of ten 1,000-gallon tanks which stored various types of fuel products. These products were distributed from remote pumping islands located over 450 ft from the UST field and within 50 ft of Parkers Creek (a sensitive estuarine marsh area).

FTMM-55 is the site of a former UST system which was located at Bldg 290. The site formerly served as a motor pool for a military unit that has since left FTMM.

Site FTMM-61 is located off of Sherrill Avenue in the northern section of the MP. On August 28, 1997, a 3,000-gallon steel UST (No. 0081533- 229) was removed. The tank was used to store gasoline. The UST was located within the courtyard of Bldg 283. Additional information pertaining to this parcel can be found in Section 5.2.1.1, Table 5-10, Section 5.13.2, and Appendix G of the Phase I ECP (1).

3.11.2 Previous Investigations

The Bldg 296 site, the Bldg 290 site, and the M-18 Landfill are located in close proximity to one another (44). Due to the close proximity, the RI results for all three sites were reported in one RI Report. This report, submitted to the NJDEP in October 2003, presents a groundwater flow and transport model to evaluate the migration of benzene and metals in groundwater.

FTMM-54: Bldg 296. Between November and December 1993, the previously unknown fuel distribution system was removed and the source of contamination was eliminated. Benzene and lead were detected in site monitoring wells above NJDEP GWQC. An NFA determination was requested for this site. Currently, as part of the monitoring program, seven groundwater monitoring wells are sampled on a quarterly basis. The cleanup strategy is to continue compliance monitoring of seven groundwater monitoring wells.

FTMM-55: Bldg 290. The UST tanks at this location were used to store gasoline and they were both removed on September 2, 1994. On July 2, 1996, a construction activity identified gasoline-contaminated soil within 50 ft of the former UST site. Soils were removed and disposed of in accordance with NJDEP requirements. Additional soil and groundwater samples were collected in March 1998 to further delineate the area of contamination. No additional contaminated soils were identified within the AOC. Arsenic and lead were detected in site monitoring wells above NJDEP GWQC. An NFA determination was requested for this site. The cleanup strategy is to continue compliance monitoring of two groundwater monitoring wells.

FTMM-61: Bldg 283. Approximately 400 cubic yards of contaminated soil (associated with the removed UST) were removed and disposed of in accordance with NJDEP requirements. Benzene, ethyl benzene, toluene, and lead were detected above the NJDEP GWQC. The cleanup strategy is to inject ORC for 2 years and continue compliance monitoring of groundwater (six wells quarterly) and surface water. This is a key component of monitored natural attenuation. ORC injection is anticipated for 2008 and 2009. Injection of ORC is subject to requirements pursuant to N.J.A.C 7:26E-4.1(a)4 and N.J.A.C. 7:26E-6.3(c) related to the performance of a pilot study and approval of a permit-by-rule.

3.11.3 Site Investigation Sampling

Through previous investigations conducted under the IRP, groundwater VO contamination has been identified in close proximity to Bldg 283. All groundwater is currently being addressed under the IRP. However, Bldg 283 is a two-story building with a basement and totals approximately 76,500 square feet in size. The footprint of Bldg 283 covers approximately 50,000 square feet. Per NJDEP guidance and consistent with USEPA policy, the NJDEP recommends investigation of VI where structures are within 100 ft horizontally or vertically of shallow groundwater contamination in excess of GWSLs. In the case of the presence of petroleum hydrocarbon contamination (particularly BTEX), a 30-ft distance criterion is utilized (12). BTEX contaminants have been detected above the GWSLs within 30 ft of the Bldg 283. Therefore, VI at Bldg 283 was evaluated through the collection of near-slab soil gas samples and indoor air samples. No sub-slab soil gas samples were collected at Bldg 283 due to the observation of groundwater intrusion within the basement during the 2006 VSI.

See **Table 3.11-1** for a summary of proposed field activities and **Figure 3.11-1** for sample locations. An analytical summary of sampling activities, including sample IDs, collection dates, and analytical parameters, is provided in **Table 3.11-2**.

Table 3.11-1
Parcel 50 Sampling Location, Rationale and Analytical

Sample Location	Sample Media	Sample Location Rationale	Analytical Suite
50SG-1 through 50SG-5 (5 samples)	Near-slab soil gas	Five near-slab soil gas samples were collected at Bldg 283. Groundwater flow direction is to the northwest, and VOs have been detected above GWSLs in groundwater within the courtyard area of Bldg 283 and near the northwestern corner of the building. Therefore, four sample locations were biased to the walls of Bldg 283 on the northwest side of the courtyard (50SG-1:4), and one was biased to the northwestern corner of the building (50SG-5).	NJDEP – SRWM USEPA TO-15 Method

Sample Location	Sample Media	Sample Location Rationale	Analytical Suite
50IA-1 through 50IA-10 (10 samples – includes 1 duplicate sample)	Indoor air	Nine indoor air samples were collected from within Bldg 283. One additional ambient air sample was collected from outside the building. Sample locations were biased towards potential source areas and potential migration pathways.	NJDEP – SRWM USEPA TO-15 Method

3.11.4 Site Investigation Results

A total of 25 VOs were detected in soil gas samples (**Table 3.11-3**) collected in Parcel 50. Of the 25 VOs detected, two (benzene and PCE) equaled and/or exceeded NJDEP Soil Gas NRSs for soil gas samples. Benzene was detected in two of the five soil gas samples at a concentration equal to the NRS of 26 $\mu g/m^3$ (samples 50SG-2 and 3). PCE was detected in two of the five soil gas samples at concentrations greater than the NRS of 36 $\mu g/m^3$; ranging from 97.6 $\mu g/m^3$ in sample 50SG-1 to 144 $\mu g/m^3$ in sample 50SG-5.

A total of 23 VOs were detected at concentrations below NJDEP Indoor Air NRSs in indoor air samples collected in Bldg 283 (**Table 3.11-4**).

3.11.5 Summary and Conclusions

No constituents were identified above applicable NJDEP criteria in indoor air samples collected from Bldg 283. Two VOs, benzene and PCE, equaled and/or exceeded NJDEP Soil Gas NRSs in soil gas at Parcel 50. Based on NJDEP VI guidance (12), one additional round of indoor air sampling is recommended to confirm constituents are not present above criteria in indoor air at Bldg 283.

Table 3.11-2
Parcel 50 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	B\N+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
IA	CANISTER	50IA-1	12/09/07	11:50	--	--		X							
IA	CANISTER	50IA-2	12/09/07	11:51	--	--		X							
IA	CANISTER	50IA-3	12/09/07	11:52	--	--		X							
IA	CANISTER	50IA-4	12/09/07	12:05	--	--		X							
IA	CANISTER	50IA-5	12/09/07	12:07	--	--		X							
IA	CANISTER	50IA-6	12/09/07	12:12	--	--		X							
IA	CANISTER	50IA-7	12/09/07	12:30	--	--		X							
IA	CANISTER	50IA-8	12/09/07	12:25	--	--		X							
IA	CANISTER	50IA-8 DUPLICATE	12/09/07	12:25	--	--		X							
IA	CANISTER	50IA-9	12/09/07	12:20	--	--		X							
BLANK	AMBIENT	50IA-AMBIENT	12/09/07	12:33	--	--		X							
SG	CANISTER	50SG-1	12/12/07	13:45	5.0	5.0		X							
SG	CANISTER	50SG-2	12/12/07	14:25	5.0	5.0		X							
SG	CANISTER	50SG-3	12/12/07	15:05	5.0	5.0		X							
SG	CANISTER	50SG-4	12/12/07	15:55	5.0	5.0		X							
SG	CANISTER	50SG-5	12/12/07	12:40	5.0	5.0		X							

X = Sample analyzed for the indicated analytical parameter suite

Table 3.11-3
Fort Monmouth ECP Site Investigation, Parcel 50
Summary of Analytical Parameters Detected in Indoor Air (µg/m^3)

Chemical	RAL[3]	IA Non-residential[2]	Analytical Results					
		Sample ID:	50IA-1	50IA-2	50IA-3	50IA-4	50IA-5	50IA-6
		Lab ID:	J78674-1	J78674-2	J78674-3	J78674-4	J78674-5	J78674-6
		Date Sampled:	12/09/07	12/09/07	12/09/07	12/09/07	12/09/07	12/09/07
			Result	Result	Result	Result	Result	Result
Volatiles								
Acetone	6,600	4,600	**4.5**	**4.3**	**11**	**8.1**	**7.8**	**7.1**
Benzene	14	2	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**	**1.1**
Chloromethane	NLE	130	**0.97**	**0.95**	**1.0**	**1.0**	**1.0**	**1.0**
Dichlorodifluoromethane	NLE	260	**2.2**	**2.2**	**2.5**	**2.3**	**2.4**	**2.3**
Dichloromethane	400	9	**1.1**	**0.52 J**	**0.80**	**0.49 J**	**0.52 J**	**0.52 J**
Ethanol	NLE	NLE	**4.7**	**6.2**	**4.1**	**18**	**16**	**14**
Ethyl Acetate	NLE	NLE	<0.3	**2.7**	**4.0**	**1.8**	<0.3	<0.3
Ethylbenzene	2,200	1,500	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083
n-Heptane	NLE	NLE	<0.13	<0.13	<0.13	**0.61 J**	**0.57 J**	<0.13
Isopropyl Alcohol	NLE	NLE	**0.76**	**0.64**	**1.1**	**2.3**	**15**	**12**
Methyl ethyl ketone	NLE	7,200	**0.41 J**	**0.53 J**	**1.4**	**0.86**	**0.94**	**0.94**
Propylene	NLE	NLE	**2.1**	**1.9**	**2.2**	<0.12	<0.12	<0.12
Tetrahydrofuran	NLE	NLE	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	10,000	7,200	**2.0**	**2.1**	**1.9**	**2.1**	**2.1**	**2.2**
1,1,1-Trichloroethane	NLE	1,400	<0.27	<0.27	<0.27	**0.87 J**	<0.27	<0.27
1,1,2-Trichloro-1,2,2-trifluoroethane	NLE	44,000	<0.25	<0.25	**0.77 J**	<0.25	<0.25	<0.25
Trichloroethylene	20	3	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16
Trichlorofluoromethane	NLE	1,000	**1.3**	**1.2**	**1.3**	**1.5**	**2.0**	**2.0**
1,2,4-Trimethylbenzene	NLE	NLE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,3,5-Trimethylbenzene	NLE	NLE	<0.088	<0.088	<0.088	<0.088	<0.088	<0.088
o-Xylene	NLE	NLE	**0.61 J**	**0.43 J**	**0.43 J**	**0.37 J**	<0.096	**0.48 J**
Xylenes (m&p)	NLE	NLE	**1.4**	**1.1**	**1.2**	**1.0**	**0.96**	**1.2**
Xylenes (total)	220	150	**2.0**	**1.6**	**1.7**	**1.4**	**0.96**	**1.7**

[1] NJDEP Generic Vapor Intrusion Screening Levels, Indoor Air Screening Levels, Residential, March 2007.

[2] NJDEP Generic Vapor Intrusion Screening Levels, Indoor Air Screening Levels, Nonresidential, March 2007. Results were compared to these levels.

[3] NJDEP Rapid Action Levels for Indoor Air, March 2007.

J = Indicates an estimated value.

DUP = Duplicate Sample

NLE = No Limit Established

Bold = Analyte detected

Shaded = Concentration exceeds of IA Nonresidential.

Table 3.11-3
Fort Monmouth ECP Site Investigation, Parcel 50
Summary of Analytical Parameters Detected in Indoor Air (µg/m^3)

Chemical	RAL[3]	IA Non-residential[2]	Analytical Results				
		Sample ID:	50IA-7	50IA-8	50IA-8 DUP	50IA-9	50IA-AMBIENT
		Lab ID:	J78674-7	J78674-8	J78674-9	J78674-10	J78674-20
		Date Sampled:	12/09/07	12/09/07	12/09/07	12/09/07	12/09/07
			Result	Result	Result	Result	Result
Volatiles							
Acetone	6,600	4,600	**8.3**	**6.9**	**4.0**	**7.8**	**4.5**
Benzene	14	2	**1.2**	**1.2**	**1.2**	**1.1**	**1.2**
Chloromethane	NLE	130	**1.0**	**1.1**	**1.1**	**1.2**	**1.1**
Dichlorodifluoromethane	NLE	260	**2.3**	**2.3**	**2.6**	**2.7**	**2.7**
Dichloromethane	400	9	**0.52 J**	**0.52 J**	**0.49 J**	**0.56 J**	**0.76**
Ethanol	NLE	NLE	**18**	**6.2**	**3.2**	**19.2**	**5.7**
Ethyl Acetate	NLE	NLE	**2.6**	**2.5**	**4.7**	<0.3	**1.4**
Ethylbenzene	2,200	1,500	**0.78 J**	<0.083	<0.083	**0.42 J**	<0.083
n-Heptane	NLE	NLE	**0.49 J**	<0.13	**0.40 J**	**0.49 J**	<0.13
Isopropyl Alcohol	NLE	NLE	**2.1**	**1.7**	<0.15	**2.7**	**0.76**
Methyl ethyl ketone	NLE	7,200	**2.2**	**0.77**	**0.56 J**	**0.97**	**0.68**
Propylene	NLE	NLE	<0.12	<0.12	**2.2**	<0.12	**2.2**
Tetrahydrofuran	NLE	NLE	**0.83**	<0.2	<0.2	<0.2	<0.2
Toluene	10,000	7,200	**3.4**	**2.0**	**1.9**	**2.1**	**2.0**
1,1,1-Trichloroethane	NLE	1,400	<0.27	<0.27	<0.27	<0.27	<0.27
1,1,2-Trichloro-1,2,2-trifluoroethane	NLE	44,000	<0.25	<0.25	<0.25	<0.25	<0.25
Trichloroethylene	20	3	<0.16	<0.16	<0.16	<0.16	**0.64 J**
Trichlorofluoromethane	NLE	1,000	**2.4**	**1.3**	**1.4**	**2.6**	**1.4**
1,2,4-Trimethylbenzene	NLE	NLE	**2.1**	<0.1	<0.1	**1.2**	<0.1
1,3,5-Trimethylbenzene	NLE	NLE	**0.48 J**	<0.088	<0.088	<0.088	<0.088
o-Xylene	NLE	NLE	**1.1**	**0.40 J**	**0.40 J**	**0.43 J**	**0.40 J**
Xylenes (m&p)	NLE	NLE	**2.7**	**1.0**	**1.1**	**1.3**	**1.1**
Xylenes (total)	220	150	**3.9**	**1.4**	**1.5**	**1.7**	**1.5**

[1] NJDEP Generic Vapor Intrusion Screening Levels, Indoor Air Screening Levels, Residential, March 2007.

[2] NJDEP Generic Vapor Intrusion Screening Levels, Indoor Air Screening Levels, Nonresidential, March 2007. Results were compared to these levels.

[3] NJDEP Rapid Action Levels for Indoor Air, March 2007.

J = Indicates an estimated value.

DUP = Duplicate Sample

NLE = No Limit Established

Bold = Analyte detected

Shaded = Concentration exceeds of IA Nonresidential.

Table 3.11-4
Fort Monmouth ECP Site Investigation, Parcel 50
Summary of Analytical Parameters Detected Soil Gas (ug/m^3)

		Analytical Results				
	Sample ID:	50SG-1	50SG-2	50SG-3	50SG-4	50SG-5
	Lab ID:	J79249-6	J79249-7	J79249-8	J79249-9	J79249-5
	Date Sampled:	12/12/07	12/12/07	12/12/07	12/12/07	12/12/07
	Depth (ft. bgs):	5'	5'	5'	5'	5'
Chemical	SG Non-residential[2]	Result	Result	Result	Result	Result
Volatiles						
Acetone	230,000	**102**	**40.6**	**60.6**	**14**	**24.5**
Benzene	26	**22**	**26**	**26**	<0.7	<0.7
Carbon disulfide	51,000	**6.2**	**4.7 J**	**4.4 J**	**3.4 J**	**6.5**
Cyclohexane	430,000	**6.2**	**11**	**6.9**	<1.2	<1.2
Ethanol	NLE	**50.3**	<2.3	**26.6**	**34.3**	**25.4**
Ethylbenzene	74,000	**8.3**	**6.1 J**	**4.8 J**	<0.65	**3.6 J**
4-Ethyltoluene	NLE	**6.4 J**	<0.69	<0.69	<0.69	<0.69
n-Heptane	NLE	**20**	**32**	**32**	<0.98	<0.98
n-Hexane	51,000	**40.9**	**79.3**	**56.0**	<0.99	<0.99
2-Hexanone	NLE	**4.9 J**	<1.6	<1.6	<1.6	<1.6
Isopropyl Alcohol	NLE	**5.7**	<1.2	<1.2	<1.2	**9.8**
4-Methyl-2-pentanone (MIBK)	220,000	**8.2**	<0.82	<0.82	<0.82	<0.82
Methyl ethyl ketone	360,000	**4.7**	<0.91	<0.91	<0.91	<0.91
Methyl tertiary butyl ether (MTBE)	180	**6.1**	<1.3	<1.3	<1.3	<1.3
Propylene	NLE	**15**	**20.4**	**14**	**5.7 J**	**12**
Tertiary Butyl Alcohol	4,600	<1.1	<1.1	<1.1	**3.0 J**	<1.1
Tetrachloroethylene	36	**97.6**	**9.5 J**	**14**	<1.3	**144**
Toluene	360,000	**55.8**	**62.6**	**56.9**	**8.7**	**8.7**
Trichloroethylene	27	<1.3	**9.7**	<1.3	<1.3	**26**
1,2,4-Trimethylbenzene	NLE	**35**	**7.4 J**	<0.84	**6.4 J**	**17**
1,3,5-Trimethylbenzene	NLE	**7.9**	<0.69	<0.69	<0.69	<0.69
2,2,4-Trimethylpentane	NLE	**22**	**38**	**34**	**8.4**	<0.75
Xylenes (m&p)	NLE	**36**	**24**	**20**	**7.8**	**18**
o-Xylene	NLE	**13**	**8.3**	**6.9**	<0.74	**7.4**
Xylenes (total)	7,700	**49.5**	**32**	**27**	**7.8**	**25**

[1] NJDEP Generic Vapor Intrusion Screening Levels, Soil Gas Screening Levels, Residential, March 2007.

[2] NJDEP Generic Vapor Intrusion Screening Levels, Soil Gas Screening Levels, Nonresidential, March 2007. Results were compared to these levels.

(a) = Sum of cis-1,2-Dichloroethylene and trans-1,2-Dichloroethylene.

J = Indicates an estimated value.

DUP = Duplicate Sample

NLE = No Limit Established

Bold = Analyte detected.

Shaded = Concentration exceeds SG Nonresidential.

Sample ID	Media	Depth (ft bgs)	Compound	Concentration (ug/m^3)	Criteria	Criteria Value (ug/m3)
50SG-5	SG	5	PCE	144	SG Non-residential	36

Sample ID	Media	Depth (ft bgs)	Compound	Concentration (ug/m^3)	Criteria	Criteria Value (ug/m3)
50SG-3	SG	5	Benzene	26	SG Non-residential	26

Sample ID	Media	Depth (ft bgs)	Compound	Concentration (ug/m^3)	Criteria	Criteria Value (ug/m3)
50SG-2	SG	5	Benzene	26	SG Non-residential	26

Sample ID	Media	Depth (ft bgs)	Compound	Concentration (ug/m^3)	Criteria	Criteria Value (ug/m3)
50SG-1	SG	5	PCE	97.6	SG Non-residential	36

PARKERS CREEK
M-18
145
295
288
292
291
296
555
283
50SG-5
50IA-6
50IA-5
50IA-4
50IA-7
50SG-4
50SG-3
50IA-9
50IA-8
50SG-2
50SG-1
50IA-10 (Ambient)
50IA-3
50IA-1
50IA-2
50(2)PS/PR
Sherrill Avenue
Irwin Avenue
Brewer Avenue
Russel

LEGEND

- Soil-Gas Sample Location
- Indoor Air Sample Location
- Generalized Groundwater Flow Direction. Direction of Generalized Groundwater Flow derived from qualitative evaluation of surface topography, surface water features, and pre-existing IRP site groundwater potentiometric maps where available.
- Building
- IRP Site Boundary

ECP PARCEL CATEGORY DEFINITIONS

2 — Areas where only release or disposal of petroleum products has occurred.

BRAC PARCEL LABEL DEFINITIONS

8(2)PS
- CONTAMINATION DESCRIPTION
  - HS - Hazardous Substance Storage
  - HR - Hazardous Substance Release
  - PS - Petroleum Storage
  - PR - Petroleum Release
  - (P) - Possible Release or Disposal
- CATEGORY NUMBER
- PARCEL NUMBER

N

SCALE:
0 37.5 75 150 Feet

Base Realignment and Closure 2005

U.S. Army Corps of Engineers

Shaw® Shaw Environmental, Inc.

FIGURE 3.11-1

FORT MONMOUTH ECP SITE INVESTIGATION

PARCEL 50 SAMPLE LOCATIONS AND CONSTITUENTS OF CONCERN

MAIN POST
FORT MONMOUTH
NEW JERSEY

ArcGIS File: MP_Fig3_11-1_SI_P50_Exceeds_SampLoc.mxd (7/14/2008 12:51:46 PM)