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SITE REASSESSMENT REPORT

AIRTRON A DIVISION OF LITTON INDUSTRIES INC.

EPA ID# NJD030239412

HANOVER TOWNSHIP
MORRIS COUNTY

VOLUME 2 OF 3

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL MEASUREMENTS AND SITE ASSESSMENT

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ATTACHMENT F
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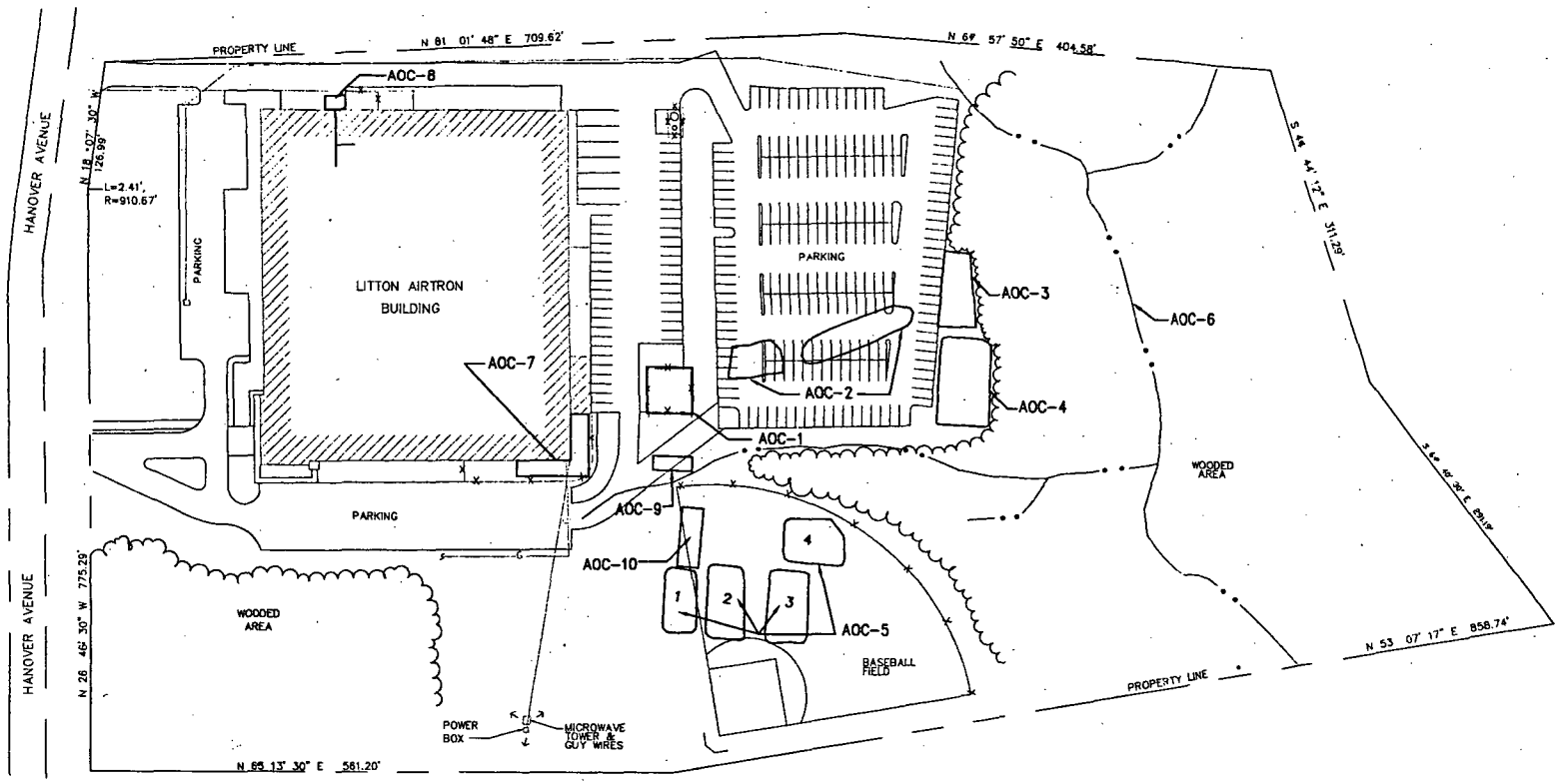

AREAS OF CONCERN

AOC-1	HAZARDOUS MATERIALS STORAGE BUILDING AREA
AOC-2	FORMER PARKING ISLAND DRUM STORAGE AREA 1
AOC-3	FORMER DRUM STORAGE AREA 2 (REAR OF PARKING LOT)
AOC-4	FORMER SLUDGE LAGOON 5
AOC-5	FORMER SLUDGE LAGOONS 1-4
AOC-6	STREAM SEDIMENTS
AOC-7	PAINT STRIPPING AREA/FORMER 10,000 GALLON UST
AOC-8	GALLIUM ARSENIDE WING TRENCH
AOC-9	FORMER 15,000 GALLON HEATING OIL UST
AOC-10	FORMER 20,000 GALLON UST
AOC-11	GROUND WATER

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Figure 3-1. Locations of Areas of Concern (AOC)

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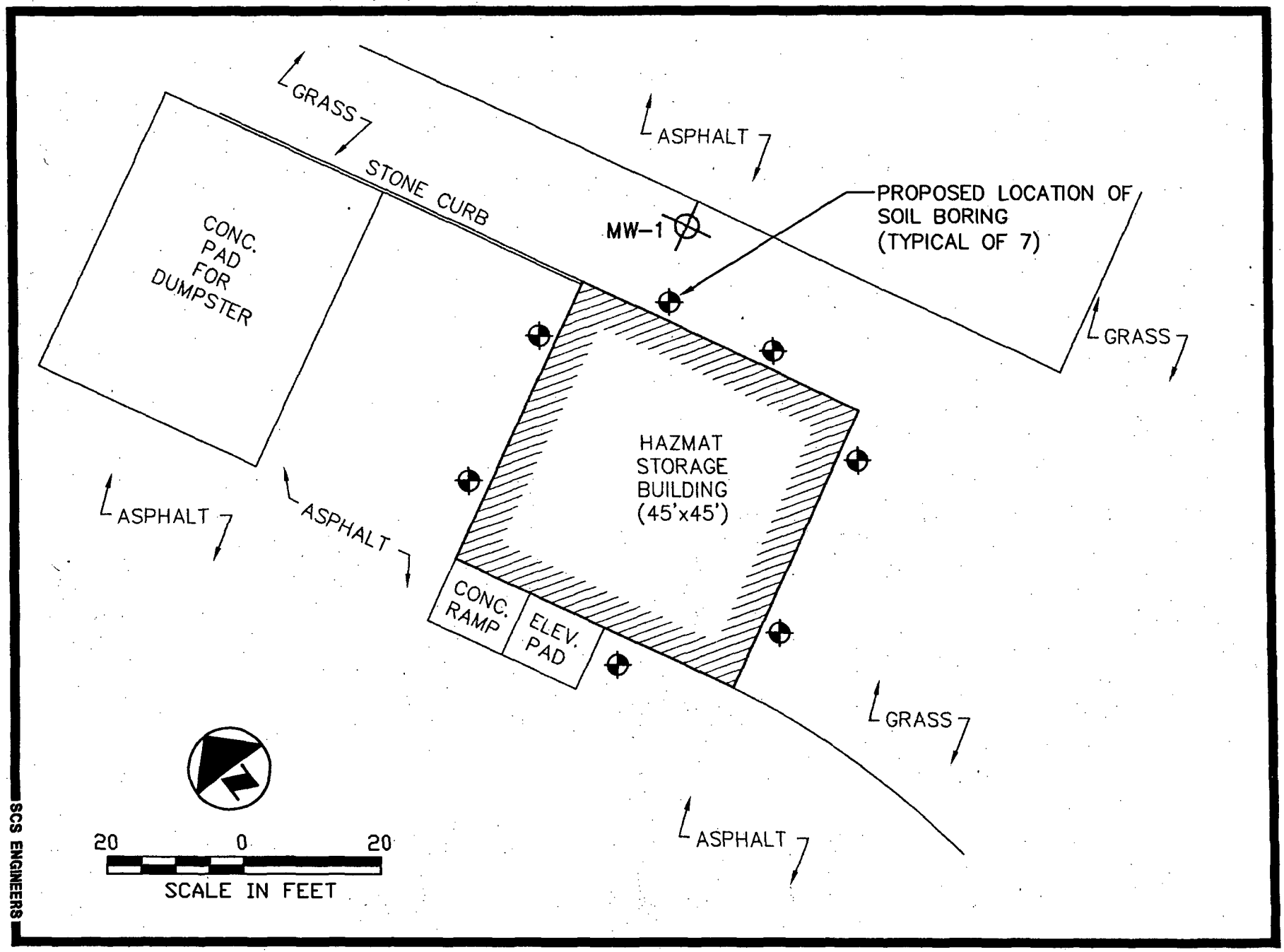

Figure 3-2. Proposed Soil Borings Around AOC-1

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3.1.2 History

The current hazardous material storage building was constructed in January 1992. Prior to its construction, Airtron stored hazardous materials on a fenced concrete pad located in the same area as the current building. The former concrete pad storage area was constructed about 1973.

One soil boring was completed adjacent to this AOC. Groundwater monitoring well MW-1 was installed on the northeast side of AOC-1 in 1981 during the preliminary investigation performed at the facility to assess the quality of the aquifer.

3.1.3 Proposed Investigation

The AOC-1 investigation will consist of performing soil borings around the four sides of the hazardous materials storage building. Two soil borings will be performed on three sides of the building; one soil boring will be performed on the access ramp side of the building. Each sampling point will be located immediately adjacent to the hazardous materials storage building. The soil borings will be performed in accordance with Section 3.6(a) of N.J.A.C. 7:26E. All non-aqueous samples for VOC analyses shall be collected in accordance with the methanol preservation method outlined in proposed Technical Rule N.J.A.C. 7:26E-2.1(a)4. Specifically, the investigation of AOC-1 will include:

- Continuous split spoon sampling shall be performed. Vertical sampling and screening will continue to a minimum depth of 10 feet below grade (fbg) or, if fill is present, a minimum of ten feet below the fill/native soil interface. In addition, if contamination is encountered, vertical sampling and screening will continue until two consecutive split spoon samples from native soil are screened as non-detectable by field equipment and appear clean by visual inspection.

- The uppermost continuous split spoon sample collected from 0 to 24 inches (2 foot interval) directly below any material used for regrading or fill (i.e., non-native soil, gravel, asphalt) will be screened with a calibrated PID/FID.

- From the initial 0 to 24 inch interval sample beneath the fill/native soil interface, an undisturbed sample from the six-inch interval indicating the highest apparent contamination, as determined by field instrument, and/or visual observation, shall be sub-sampled from the split spoon and lab-analyzed. If all intervals register the same measurement and no visual indication of contamination is observed, the VOC sample interval shall be collected at 18 to 24 inches since the soils are known to consist of 15 to 50 percent silt/clay, pursuant to 7:26E 3.6(a)4ii. All other initial characterization soil samples for laboratory analysis will be collected at zero to six inches below the fill/native soil interface.

- An undisturbed sample from the bottom six-inch interval in the final split spoon sample shall be sub-sampled from the split spoon and lab analyzed. The final sample, which will be obtained from an interval at which no VOCs are detected using the PID/FID and visual observation, will be used to verify via laboratory analysis the absence of VOCs at depth. If field screening indicates the presence of potential contamination at the shallower depth, then the final split spoon will be analyzed for each of the compounds analyzed for in the shallower samples.

- Detailed logs of each boring shall be prepared to document encountered subsurface conditions, including soil types, description of non-soil materials, depth to groundwater, depth to groundwater or perched water layers, indications of soil mottling, field instrument measurements, presence of odors, vapors, soil discoloration, and free product. Where applicable, the logs will indicate fill depth and transition depth to natural soil materials. Soil shall be classified according to the Burmister soil classification system ("Suggested Methods of Test for Identification of Soils", D.M. Burmister, ASTM 1958). An abbreviated guide to classifying soils according to the Burmister method is included in Appendix 3D.

- Soil cuttings generated from drilling activities will be placed back down the borehole to the extent practical, and any remaining soils will be spread out evenly adjacent to sampling locations at the site. Soils will not be spread out within 50 feet of any storm drainage structure.

3.1.4 Analytical Parameters

According to facility employees, chemicals that have been and currently are stored at AOC-1 are classified primarily as VOCs and metal compounds (salts, oxides, and hydroxides). Some waste materials that may have been stored at AOC-1 in the past potentially could have contained heavy metals, primarily derived from plating activities or crystal growing activities.

Soil samples collected from the investigation of AOC-1 will be lab-analyzed for:

1. **Volatile organics** in accordance with EPA Method 8260a with a forward library search for the first 15 tentatively identified compounds (TICs).

2. **Priority pollutant metals** (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc) in accordance with EPA Method 6010A.

3. **Total Petroleum Hydrocarbons** (TPH) in accordance with EPA Method 8015, diesel fraction (EPA Method 3520 extraction).

4. **pH** in accordance with EPA Method 9040.

5. **Cyanide** in accordance with EPA Method 9010.

In addition, a minimum of two soil samples from AOC-1 will also be analyzed for Base Neutral Compounds (B/N+15) in accordance with EPA Method 8270b. The samples submitted for Base Neutral analyses will be the two samples determined most likely to be impacted based on field screening with a PID/FID and visual observations.

3.2 FORMER PARKING ISLAND DRUM STORAGE AREA #1 (AOC-2)

3.2.1 Description and Current Status

AOC-2 is located in the asphalt parking lot northeast of the Airtron plant.

3.2.2 History

This parking lot formerly was separated by two grass islands. The former grass islands comprise an area of approximately 5,400 square feet (sf). According to facility personnel, drums were reportedly stored during the 1950s and/or 1960s on the former parking lot islands. Additionally, some Airtron employees recall the presence of several drums along the grass island within the rear parking lot of the facility when Monroe left the facility in 1958. The former grass islands have since been graded and paved with asphalt.

During the investigation performed by Converse in 1987, two soil borings were performed to assess the impact, if any, from previous drum storage this area. The soil borings were identified as B-119 and B-122. A total of four discrete soil samples were collected from these borings and analyzed for VOCs. None of the samples were collected from the near surface. Tetrachloroethene was detected at a concentration of 29 micrograms per kilogram (µg/kg) in the sample from boring B-119 at 34 to 36 fbg . Other compounds reported in these soil samples were also found in the method blanks, or at estimated concentrations below laboratory reporting limits.

To further evaluate the impact, if any, of the former drum storage on the subsurface soils, a soil gas survey was performed in accordance with the NJDEP-approved Phase I RIWP in 1994. The soil gas survey was performed to assess whether VOCs are present in the shallow subsurface soils in this area. The soil gas survey was intended to serve as a semi-quantitative screening tool. Laboratory analysis of soil samples was used to ascertain the presence of specific VOCs, and provide an approximate delineation of the presence of VOCs in the soil.

In order to evenly distribute the sample locations for the soil gas survey, a grid was oriented over this AOC. Sample points were located on 15-foot centers throughout the grid (see Figure 3-3). Soil samples for laboratory analysis were subsequently collected at the grid points with PID readings above 10 HNu™ units. Four grid points exhibited HNU™ levels above 10 ppm—1C, 2B, 5C, and 5B, as illustrated on Figure 3-3. Table 3-2 summarizes laboratory results for VOCs detected in one or more soil samples.

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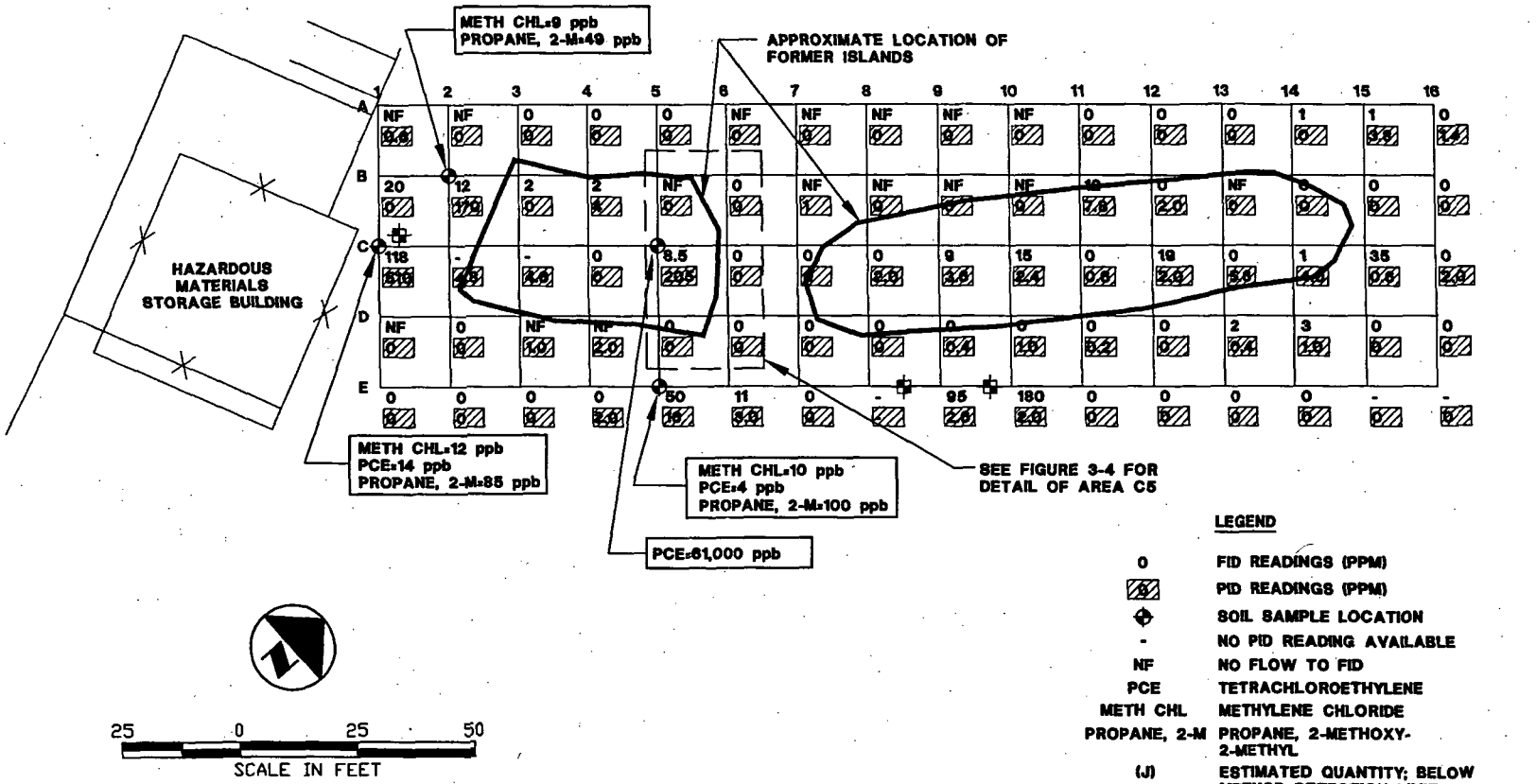

Figure 3-3. Be40 Former Parking Lot Islands (AOC-2)

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Table 3-2. Summary of VOCs Detected in Soil Samples Near AOC-2 During the Phase I Remedial Investigation

Sample ID	Sample Depth (ft)	Volatile Compounds Detected		
051294-5C	5 to 6	Tetrachloroethene	=	61 ppm
051294-2B	5 to 6	Propane, 2-methoxy-2-methyl	=	0.049 ppm
		Methylene chloride	=	0.009 ppm
051294-1C	5 to 6	Tetrachloroethene	=	0.014 ppm
		Propane, 2-methoxy-2-methyl	=	0.085 ppm
		Methylene chloride	=	0.012 ppm
051294-5E	5 to 6	Tetrachloroethene	=	0.004 ppm J
		Propane, 2-methoxy-2-methyl	=	0.100 ppm
		Methylene chloride	=	0.010 ppm

Note: J denotes below Practical Quantitation Limit (PQL); concentration is estimated.
ppm = parts per million

On June 6 and 7, 1996, a supplemental soil gas survey was performed in the vicinity of the former parking lot islands as outlined in the NJDEP-approved Phase II RIWP. The intent of the soil gas survey was to further assess the lateral extent of VOCs that may be present in shallow subsurface soils which were identified during the Phase I RI.

Raw data for the soil gas survey are presented in Table 3-3. As indicated, the following field activities were conducted:

- The RIWP required that soil gas probe rods be driven 5 fbg. During the field activities, significant soil moisture was encountered at depths ranging from 3.5 to 4 feet in the parking lot area. Actual depths of soil gas sample collection are noted in Table 3-3.

- The data presented in Table 3-3 represent the sequential order in which the soil gas samples were collected and screened during the investigation.

Table 3-3. Summary of Soil Gas Readings at AOC-2 During Phase II RI

Soil Gas Point	Sample Depth (ft)	Sample Location	Unfiltered FID (ppm)	Filtered FID (ppm)	HNu PID (ppm)
B2N	4.0	5' north of Point B2	Water in Probe		
B2N	3.5	5' north of Point B2 (2nd attempt)	11	0	0
B2W	4.0	5' west of Point B2	0	0	0
B2S	1.5	5' south of Point B2	Refusal		
B2S+	4.0	6' south/2' west of Point B2	0	0	0
B2E	4.0	5' east of Point B2	Deflection	—	Deflection
C1W	4.0	5' west of Point C1 (duplicate)	1.0	0	0.8
C1W2	4.0	10' west of Point C1 (duplicate)	1.5	0	0
C1N	4.0	5' north of Point C1 (duplicate)	1.5	0	1.0
C1S	4.0	5' south of Point C1 (duplicate)	6.0	0	3.1
C1E	4.0	5' east of Point C1 (duplicate)	2.0	0	1.1
C1	4.0	Original Point	2.5	0	4.4
C1	—	Probe Hole Pushed to 9.6 feet (DTW = 3.8 ft)	—	—	—
C5E	4.0	5' east of Point C5	1150	12	400
C5N	4.0	5' north of Point C5	400	8	740
C5S	4.0	5' south of Point C5	220	390	5.6
C5W	4.0	5' west of Point C5	90	0	190
C5	4.0	Original Point	5	0	1.2
E5N	4.0	5' north of Point E5	2	0	22
E5E	4.0	5' east of Point E5	0	0	9
E5W	4.0	5' west of Point E5	0	0	0
E5S	4.0	5' south of Point E5	0	0	0.8
E5	4.0	Original Point E5	1.2	0	5.2
C5NE2	4.0	5' north/10' east of Point C5	11	3	0.8
C5NE	4.0	5' north/5' east of Point C5	500	0	450
C5NW	4.0	5' north/5' west of Point C5 (tight)	30	0	240
C5NW2	4.0	5' north/10' west of Point C5 (tight)	250	7	380
C5N2	4.0	10' north of Point C5 (bent rod)	100	30	142
C5E2	4.0	10' east of Point C5 (tight)	300	15	490
C5E3	4.0	15' east of Point C5	7	0	0.8
C5NE3	4.0	10' north/5' east of Point C5	900	0	360
C5NW3	4.0	10' north/5' west of Point C5	90	20	300
C5NW4	4.0	10' north/10' west of Point C5	800	0	540
C6	4.0	Original Point C6	200	0	340

- Initial screening results around survey point C1 indicated elevated VOC concentrations. However, a decontamination blank (using ambient air passed through a decontaminated probing rod) indicated elevated VOC readings. The probe rod was again thoroughly decontaminated, this time *without* the acetone rinse. Screening with both the HNu™ PID and the Sensidyne FID indicated that the acetone was causing false positive screening results. Consequently, all soil gas locations completed up to that time were repeated. NJDEP Geologist Greg Giles was present at the site during the quality assurance screening and verbally approved the elimination of acetone from the decontamination procedures for the duration of the soil gas survey.

Figure 3-4 provides a detailed view of the select sampling locations, along with concentrations of VOCs recorded with the FID (note that the FID readings reported on this figure represent the unfiltered FID concentration less the carbon-filtered FID concentration, and thus represents total VOCs less methane).

3.2.3 Proposed Investigation

The AOC-2 investigation will consist of three soil borings to be completed in the immediate vicinity of soil gas sampling point C5, as indicated in Figure 3-4, along with three additional soil borings located in the vicinity of soil gas points E9, E10, and C1. The soil borings will be performed in accordance with Section 3.6 of N.J.A.C. 7:26E. All non-aqueous samples for VOC analysis shall be collected in accordance with the methanol preservation method outlined in proposed Technical Rule N.J.A.C. 7:26E-2.1(a)4. Specifically, the investigation of AOC-2 will include:

- Continuous split spoon sampling shall be performed. Vertical sampling and screening will continue to a minimum depth of 10 feet below grade (fbg) or, if fill is present, a minimum of ten feet below the fill/native soil interface. In addition, if contamination is encountered, vertical sampling and screening will continue until two consecutive split spoon samples from native soil are

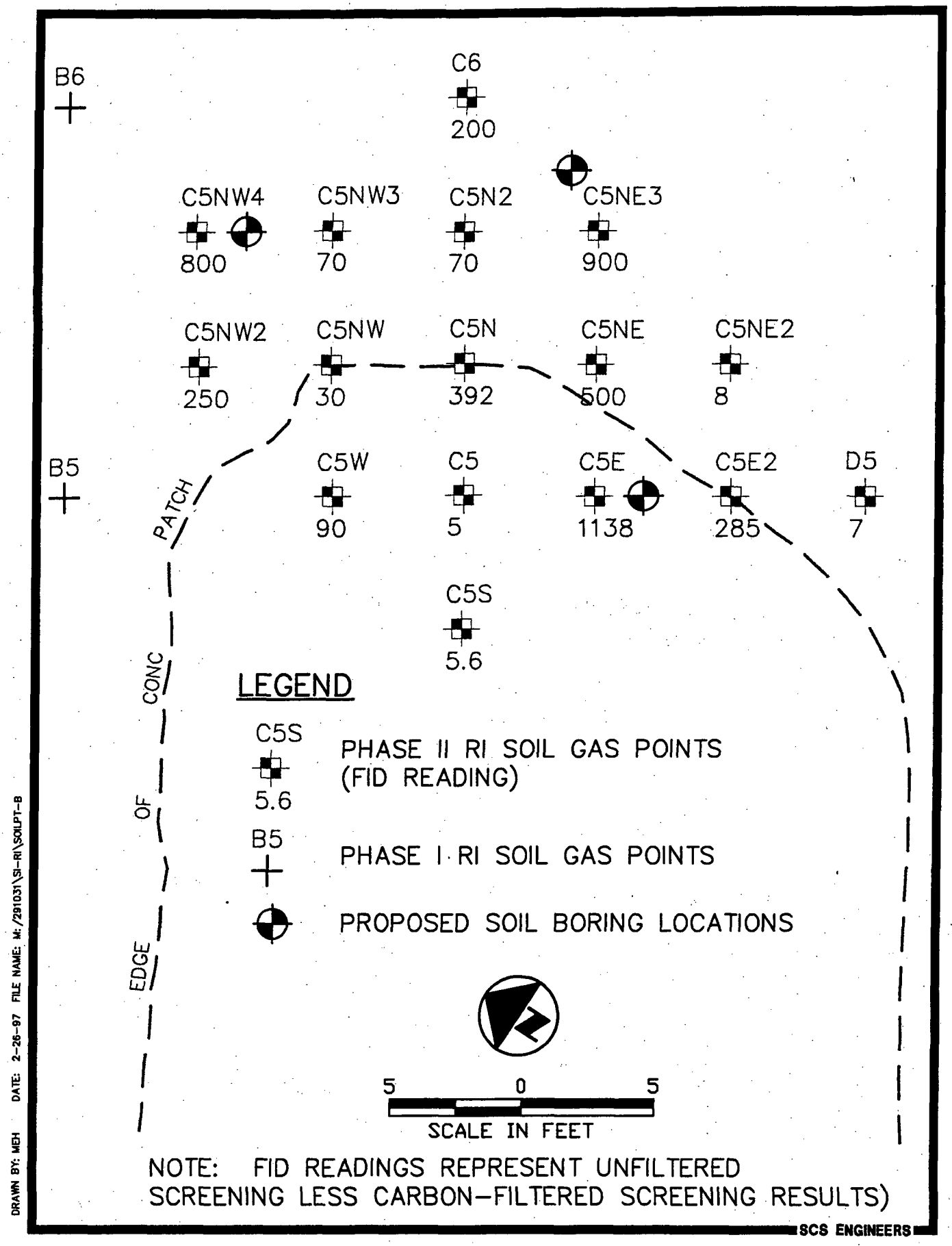

Figure 3-4. Phase II RI Sample Locations at AOC-2 and Proposed Locations Of SI/RI-Borings

screened as non-detectable by field equipment and appear clean by visual inspection.

- The uppermost continuous split spoon sample collected from 0 to 24 inches (2 foot interval) directly below any material used for regrading or fill (i.e., non-native soil, gravel, asphalt) will be screened with a calibrated PID/FID.

- From the initial 0 to 24 inch interval sample beneath the fill/native soil interface, an undisturbed sample from the six-inch interval indicating the highest apparent contamination , as determined by field instrument, and/or visual observation, shall be sub-sampled from the split spoon and lab-analyzed. If all intervals register the same measurement and there is no visual indication of contamination, the VOC sample interval shall be collected at 18 to 24 inches since the soils are known to consist of 15 to 50 percent silt/clay, pursuant to 7:26E 3.6(a)4ii. All other initial characterization soil samples for laboratory analysis will be collected at zero to six inches below the fill/native soil interface.

- An undisturbed sample from the bottom six-inch interval in the final split spoon sample shall be sub-sampled from the split spoon and lab analyzed. The final sample, which will be obtained from an interval at which no VOCs are detected using the PID/FID and visual observation, will be used to verify via laboratory analysis the absence of VOCs at depth. If field screening indicates the presence of potential contamination at the shallower depth, then the final split spoon will be analyzed for each of the compounds analyzed for in the shallower samples.

- Detailed logs of each boring shall be prepared to document encountered subsurface conditions, including soil types, description of non-soil materials, depth to groundwater, depth to groundwater or perched water layers, indications of soil mottling, field instrument measurements, presence of odors, vapors, soil discoloration, and free product. Where applicable, the logs will indicate fill depth and transition depth to natural soil materials. Soil

shall be classified according to the Burmister soil classification system ("Suggested Methods of Test for Identification of Soils", D.M. Burmister, ASTM 1958). An abbreviated guide to classifying soils according to the Burmister method is included in Appendix 3D.

- Soil cuttings generated from drilling activities will be placed back down the borehole to the extent practical, and any remaining soils will be spread out evenly adjacent to sampling locations at the site. Soils will not be spread within 50 feet of any storm drainage structure.

3.2.4 Analytical Parameters

According to interviews with plant personnel, the drummed materials stored at AOC-2 were primarily VOCs. Some waste materials that may have been stored at AOC-2 potentially could have contained heavy metals, primarily derived from plating activities.

Soil samples collected from the investigation of AOC-2 will be lab-analyzed for:

1. **Volatile organics** in accordance with EPA Method 8260a with a forward library search for the first 15 TICs.

2. **Priority pollutant metals** (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc) in accordance with EPA Method 6010A.

3. **TPH** in accordance with EPA Method 8015, diesel fraction (EPA Method 3520 extraction).

4. **pH** in accordance with EPA Method 9040.

5. **Cyanide** in accordance with EPA Method 9010.

In addition, a minimum of one soil sample from AOC-2 will also be analyzed for Base Neutral Compounds (B/N+15) in accordance with EPA Method 8270b. The sample submitted for Base Neutral analyses will be the one sample determined most likely to be impacted based on field screening with a PID/FID and visual observations.

3.3 FORMER DRUM STORAGE AREA #2 (AOC-3)

3.3.1 Description

AOC-3 is located on the north of the rear parking lot at the Airtron facility. This area currently is covered with healthy grass, vegetation, and trees.

3.3.2 History

Facility employees recall the temporary storage of drums at the back side of the parking lot (shown on Figure 3-5). The time period associated with the use of the storage area has not been clearly identified. However, the use of this area as a storage unit is believed to have ended some 25 years ago.

During the investigation performed by Converse in 1987, one soil boring was performed to assess the impact, if any, of the previous drum storage in this area. The soil boring was identified as B-117 and is identified in Figure 3-5. Three discrete soil samples were collected from this boring and analyzed for VOCs. Table 3-4 summarizes the compounds detected at various depths:

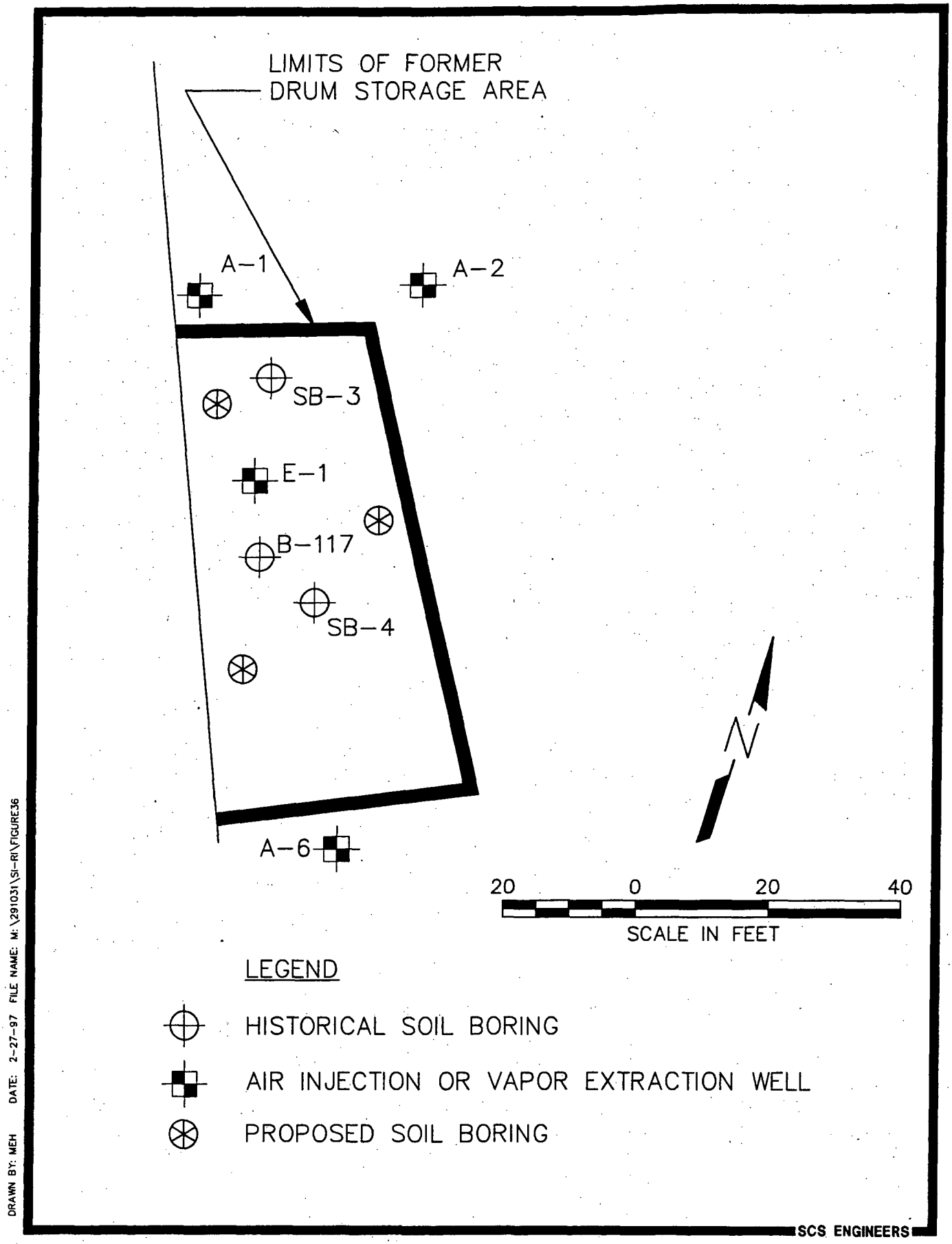

Figure 3-5. Detail of AOC-3

Table 3-4. Summary of Soil Samples Analyzed from Boring B-117 - AOC-3 in 1987

Sample Depth (feet below grade)	4.5 to 5.0	20.0 to 20.5	30.0 to 30.5
Methylene Chloride	220	2	2
Trichlorofluoromethane	520	11	8
Trans-1,2,-Dichloroethene	1,900	8	5
Chloroform	91	ND	ND
Trichloroethene	740	3	4
1,1,2-Trichloroethane	ND	ND	29
Tetrachloroethene	5,800	16	29
Toluene	8,700	25	11
Ethylbenzene	340	ND	ND
Xylenes (Total)	1,400	ND	ND
TICs (Total)	2,000	20	ND

All units are in μg/kg (ppb).

Under the NJDEP-approved Phase I RIWP, an electromagnetic (EM) terrain conductivity survey was performed over approximately 1.4 acres at the former drum storage area and the northern portion of the parking lot. The survey area included the eastern half of the rear parking area, and extended northward from the hazardous material storage building (AOC-1) to the stream bed of the unnamed tributary (AOC-6) in the adjacent woodland. The EM terrain conductivity survey was conducted primarily to assess the areal extent of a suspected discontinuous clay lens encountered at a depth of approximately 8 to 10 feet at the MW-301 location; the discontinuous clay lens is suspected of causing perched water conditions in the area of this monitoring well.

A terrain conductivity anomaly of moderate magnitude and low horizontal gradient was measured in the area of MW-301 and vapor extraction well A-6. The anomaly is lobate in shape and covers approximately 15,000 square feet (0.3 acre). The low horizontal conductivity gradients exhibited by the anomaly suggest the source is an "earth feature" such as a clay layer, and not a "cultural feature" such as buried piping. This anomaly may

represent the horizontal extent of the discontinuous clay lens observed in the boring for MW-301.

Another possible source of the anomaly is residual metal waste from the former lagoon No. 5 (AOC-4) located in the area. Historic data indicate rinse waters containing metal ions may have been present in AOC-4, and the conductivity anomaly may represent the horizontal extent of residual metals in the subsurface environment. However, it is possible that the source of the anomaly is natural deposits of metal ion particles that may be present.

During implementation of the NJDEP-approved Phase II RIWP, further evaluation of the presence of VOCs in the shallow water-bearing zone was planned using the truck-mounted Geoprobe™. These proposed sampling activities could not be completed due to the presence of significant soil moisture ranging from 2.5 to 2.7 fbg.

Under the NJDEP-approved IRMWP, Airtron installed a vapor extraction system (VES) to extract VOCs from the vadose zone of the subsurface. During the feasibility study for designing the VES, two soil borings were performed in the vicinity of AOC-3, as shown on Figure 3-5. Table 3-5 summarizes the compounds detected in the soil samples analyzed.

Table 3-5. Summary of Soil Samples Analyzed from AOC-3 in 1993

Boring ID and Sample Depth (feet below grade)	SB-3	SB-4	SB-4
	5 Feet	10 Feet	15 Feet
Vinyl Chloride	ND	ND	32
Trans-1,2,-Dichloroethene	ND	ND	74
Trichloroethene	ND	ND	ND
Tetrachloroethene	ND	2,800	ND
TICs (Total)	15	ND	ND

All units are in μg/kg (ppb).

In conjunction with the VES, one extraction well (E1) and three air injection wells (A1, A2, and A6) were installed in the vicinity of AOC-3, as shown in Figure 3-5. The VES began operating in February 1993, remained in almost constant operation for approximately 11 months after original start-up, and has operated intermittently since January 1994. However, excessive soil moisture in the vicinity of AOC-3 likely made the VES ineffective in extracting significant quantities of VOCs from the subsurface in the area of AOC-3.

3.3.3 Proposed Investigation

The investigation of AOC-3 will consist of three soil borings completed in the vicinity of historical boring B-117 (see Figure 3-5). The soil borings will be performed in accordance with Section 3.6 of N.J.A.C. 7:26E. All non-aqueous samples for VOC analysis shall be collected in accordance with the methanol preservation method outlined in proposed Technical Rule N.J.A.C. 7:26E-2.1(a)4. Specifically, the investigation of AOC-3 will include:

- Continuous split spoon sampling shall be performed. Vertical sampling and screening will continue to a minimum depth of 10 feet below grade (fbg) or, if fill is present, a minimum of ten feet below the fill/native soil interface. In addition, if contamination is encountered, vertical sampling and screening will continue until two consecutive split spoon samples from native soil are screened as non-detectable by field equipment and appear clean by visual inspection.

- The uppermost continuous split spoon sample collected from 0 to 24 inches (2 foot interval) directly below any material used for regrading or fill (i.e., non-native soil, gravel, asphalt) will be screened with a calibrated PID/FID.

- From the initial 0 to 24 inch interval sample beneath the fill/native soil interface, an undisturbed sample from the six-inch interval indicating the highest apparent contamination , as determined by field instrument, and/or visual observation, shall be sub-sampled from the split spoon and lab-analyzed. If all intervals register the same measurement and there is no visual indication of contamination, the VOC sample interval shall be collected at 18 to 24 inches since the soils are known to consist of 15 to 50 percent

silt/clay, pursuant to 7:26E 3.6(a)4ii. All other initial characterization soil samples for laboratory analysis will be collected at zero to six inches below the fill/native soil interface.

- An undisturbed sample from the bottom six-inch interval in the final split spoon sample shall be sub-sampled from the split spoon and lab analyzed. The final sample, which will be obtained from an interval at which no VOCs are detected using the PID/FID and visual observation, will be used to verify via laboratory analysis the absence of VOCs at depth. If field screening indicates the presence of potential contamination at the shallower depth, then the final split spoon will be analyzed for each of the compounds analyzed for in the shallower samples.

- Detailed logs of each boring shall be prepared to document encountered subsurface conditions, including soil types, description of non-soil materials, depth to groundwater, depth to groundwater or perched water layers, indications of soil mottling, field instrument measurements, presence of odors, vapors, soil discoloration, and free product. Where applicable, the logs will indicate fill depth and transition depth to natural soil materials. Soil shall be classified according to the Burmister soil classification system ("Suggested Methods of Test for Identification of Soils", D.M. Burmister, ASTM 1958). An abbreviated guide to classifying soils according to the Burmister method is included in Appendix 3D.

- Soil cuttings generated from drilling activities will be placed back down the borehole to the extent practical, and any remaining soils will be spread out evenly adjacent to sampling locations at the site. Soils will not be spread out within 50 feet of any storm drainage structure.

3.3.4 Analytical Parameters

Facility employees recall that the chemicals that were stored at AOC-3 were primarily classified as VOCs. Some waste materials that may have been stored at AOC-3 potentially could have contained heavy metals, primarily derived from plating activities. No other compounds are have known to have been stored at AOC-3.

Soil samples collected from the investigation of AOC-3 will be lab-analyzed for:

1. **Volatile organics** in accordance with EPA Method 8260a with a forward library search for the first 15 TICs.

2. **Priority pollutant metals** (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc) in accordance with EPA Method 6010A.

3. **TPH** in accordance with EPA Method 8015, both gasoline (purge and trap) and diesel (EPA Method 3520 extraction).

4. **pH** in accordance with EPA Method 9040.

5. **Cyanide** in accordance with EPA Method 9010.

In addition, a minimum of one soil sample from AOC-3 will also be analyzed for Base Neutral Compounds (B/N+15) in accordance with EPA Method 8270b. The sample submitted for Base Neutral analyses will be the one sample determined most likely to be impacted based on field screening with a PID/FID and visual observations.

3.4 FORMER SLUDGE LAGOON 5 (AOC-4)

3.4.1 Description

AOC-4 is located to the east of the rear parking lot at the Airtron facility, immediately south of AOC-3. This area currently is covered with healthy grass, vegetation, and trees.

3.4.2 History

Airtron installed a settling basin off the east side of the rear parking lot at the facility (shown in Figure 3-6 [Lagoon #5]) in 1963. This settling pond received rinse water.

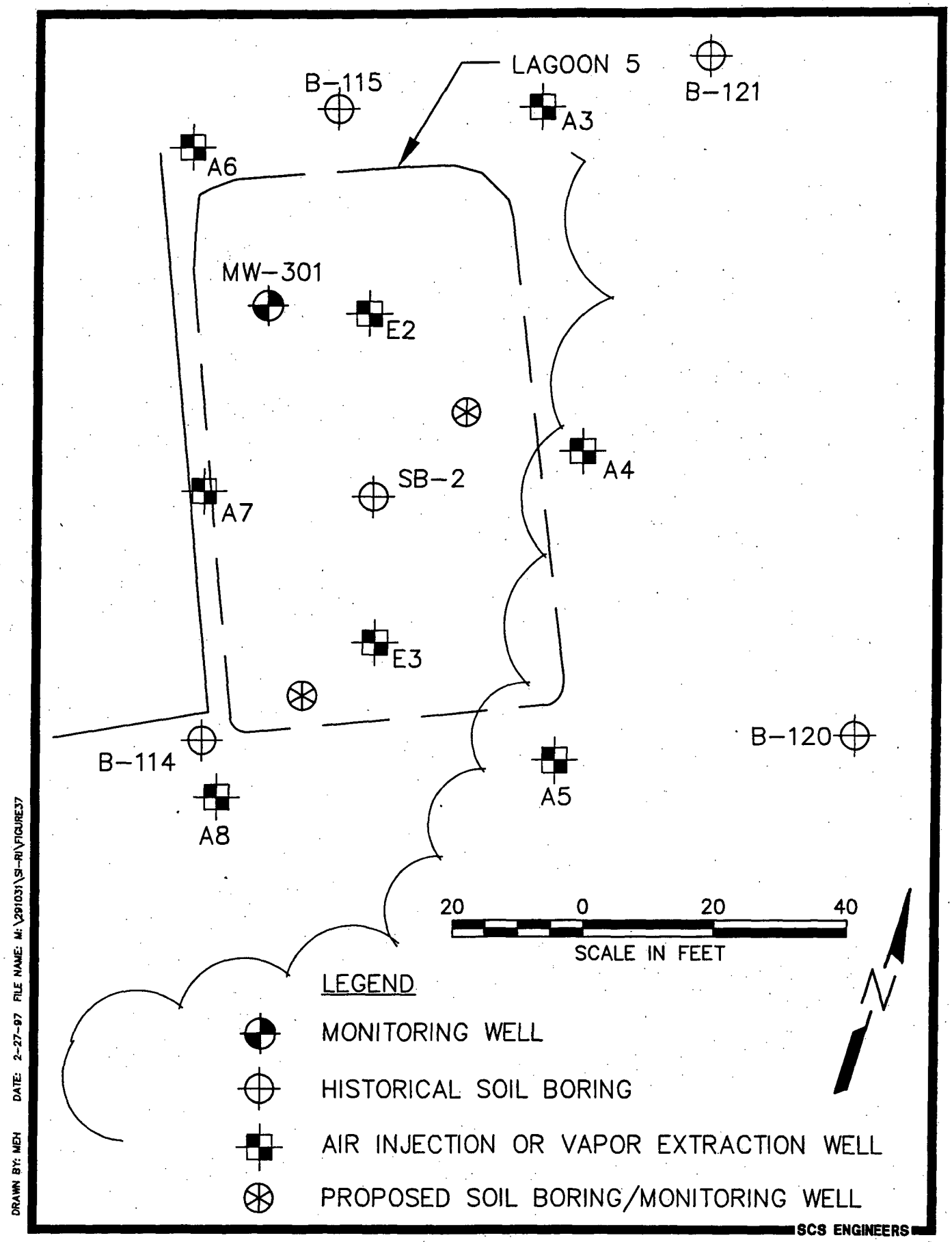

Figure 3-6. Detail of AOC-4

Airtron received an Administrative Order from NJDEP dated December 14, 1979. This Order directed Airtron to cease use of the sludge beds, and implement a groundwater investigation to determine the possible impact of the sludge beds on the subsurface. Implementation of this groundwater investigation is discussed further under AOC-11.

Lagoon #5 was operated until the end of 1980—until its excavation and removal under NJDEP supervision during the concurrent closure of the other 4 lagoons (AOC-5). Prior to their excavation and removal, samples of the liquid and sludge present in these lagoons were obtained for heavy metals analyses. No VOC analyses were performed. Sludge and underlying soil from the removal operation was disposed off-site. There is no record that post-excavation sampling and analysis was required by NJDEP.

A February 9, 1981, letter from NJDEP acknowledges the proper and complete closure of the lagoons. The lagoons were replaced by the dewatering portion of the current wastewater treatment system which dewaters the sludge into a filter cake for off-site disposal.

During the investigation performed by Converse in 1987, four soil borings were performed to assess the impact, if any, of the former lagoon on surrounding soils. The soil borings were identified as B-114, B-115, B-120 and B-121. Eight discrete soil samples were collected from these borings and analyzed for VOCs. Table 3-6 summarizes the compounds detected at various depths:

Table 3-6. Summary of Soil Samples Analyzed from AOC-4 in 1987

Soil Boring ID	B-114			B-115			B-120	B-121
Sample Depth (feet below grade)	14.0	20.0	29.5	10.5	25.5	35.0	19.5	24.5
Methylene Chloride	8	9	19	11	17	21	9	9
Trichlorofluoromethane	13	13	11	4	5	8	4	2
Trans-1,2,-Dichloroethene	81	3	95	41	4	13	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND

Soil Boring ID / Sample Depth (feet below grade)	B-114			B-115			B-120	B-121
	14.0	20.0	29.5	10.5	25.5	35.0	19.5	24.5
Trichloroethene	43	5	9	ND	2	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	60	67	150	2	2	4	ND	ND
Toluene	2	2	3	4	4	7	2	2
Ethylbenzene	ND	ND	ND	ND	ND	ND	1	ND
Xylenes (Total)	ND	ND	ND	ND	ND	ND	ND	ND
TICs (Total)	ND	224	310	ND	ND	ND	ND	ND

All units are μg/kg (ppb).

Converse later performed a Phase II Soil and Groundwater Investigation for Airtron in 1990. During this investigation, a shallow groundwater well was installed in the vicinity of AOC-4 (MW-301). Soil samples were not collected from this boring for laboratory analysis during the Phase II Soil and Groundwater Investigation. Results of groundwater sampling are discussed in Subsection 3.11.

As discussed in Subsection 3.3, Airtron performed an electromagnetic (EM) terrain conductivity survey over approximately 1.4 acres at the former drum storage area, former Lagoon #5, and the northern portion of the parking lot under the NJDEP-approved Phase I RIWP. The EM terrain conductivity survey was conducted primarily to assess the areal extent of a suspected discontinuous clay lens encountered at a depth of approximately 8 to 10 feet at the MW-301 location; the discontinuous clay lens is suspected of causing perched water conditions in the area of this monitoring well.

A terrain conductivity anomaly of moderate magnitude and low horizontal gradient was measured in the area of MW-301 and well A-6. The anomaly is lobate in shape and covers approximately 15,000 square feet (0.3 acre). The low horizontal conductivity gradients exhibited by the anomaly suggest the source is an "earth feature" such as a clay layer, and not a "cultural feature" such as buried piping. This anomaly may represent the horizontal extent of the discontinuous clay lens observed in the boring for MW-301.

During implementation of the NJDEP-approved Phase II RIWP, further evaluation of the presence of VOCs in the shallow water-bearing zone was planned, using a truck-mounted Geoprobe™. These proposed sampling activities could not be completed due to the presence of significant soil moisture at depths ranging from 2.5 to 2.7 feet.

Under the NJDEP-approved IRMWP, Airtron installed a VES to extract VOCs from the vadose zone of the subsurface. During the feasibility study for designing the VES, one soil boring was performed in the vicinity of AOC-4, as shown on Figure 3-6. Table 3-7 summarizes results for the compounds detected in the soil samples.

Table 3-7. Summary of Soil Samples Analyzed from AOC-4 in 1993

Boring ID / Sample Depth (feet below grade)	SB-2	
	5 Feet	15 Feet
Vinyl Chloride	ND	ND
Trans-1,2,-Dichloroethene	ND	61
Trichloroethene	ND	73
Tetrachloroethene	ND	ND
TICs (Total)	23	22

All units are µg/kg (ppb)

In conjunction with the VES, two extraction wells (E2 and E3) and six air injection wells (A3, A4, A5, A6, A7 and A8) were installed in the vicinity of AOC-4, as shown in Figure 3-6. The VES began operating in February 1993, remained in almost constant operation for approximately 11 months after original start-up, and has operated intermittently since January 1994. However, excessive soil moisture in the vicinity of AOC-4 likely made the VES ineffective in extracting significant quantities of VOCs from the subsurface in the area of AOC-4.

3.4.3 Proposed Investigation

The investigation of AOC-4 will include the installation of a minimum of two soil borings, both of which will be completed as monitoring wells. Proposed locations are provided in Figure 3-6. The soil borings will be performed in accordance with Section 3.6 of N.J.A.C.

7:26E. All non-aqueous samples for VOC analysis shall be collected in accordance with the methanol preservation method outlined in proposed Technical Rule N.J.A.C. 7:26E-2.1(a)4. Specifically, the investigation of AOC-4 will include:

- Continuous split spoon sampling shall be performed. Vertical sampling and screening will continue to a minimum depth of 10 feet below grade (fbg) or, if fill is present, a minimum of ten feet below the fill/native soil interface. In addition, if contamination is encountered, vertical sampling and screening will continue until two consecutive split spoon samples from native soil are screened as non-detectable by field equipment and appear clean by visual inspection.

- The uppermost continuous split spoon sample collected from 0 to 24 inches (2 foot interval) directly below any material used for regrading or fill (i.e., non-native soil, gravel, asphalt) will be screened with a calibrated PID/FID.

- From the initial 0 to 24 inch interval sample beneath the fill/native soil interface, an undisturbed sample from the six-inch interval indicating the highest apparent contamination , as determined by field instrument, and/or visual observation, shall be sub-sampled from the split spoon and lab-analyzed. If all intervals register the same measurement and there is no visual indication of contamination, the VOC sample interval shall be collected at 18 to 24 inches since the soils are known to consist of 15 to 50 percent silt/clay, pursuant to 7:26E 3.6(a)4ii. All other initial characterization soil samples for laboratory analysis will be collected at zero to six inches below the fill/native soil interface.

- An undisturbed sample from the bottom six-inch interval in the final split spoon sample shall be sub-sampled from the split spoon and lab analyzed. The final sample, which will be obtained from an interval at which no VOCs are detected using the PID/FID and visual observation, will be used to verify via laboratory analysis the absence of VOCs at depth. If field screening indicates the presence of potential contamination at the shallower depth, then the final split spoon will be analyzed for each of the compounds analyzed for in the shallower samples.

- Detailed logs of each boring shall be prepared to document encountered subsurface conditions, including soil types, description of non-soil materials, depth to groundwater, depth to groundwater or perched water layers, indications of soil mottling, field instrument measurements, presence of odors, vapors, soil discoloration, and free product. Where applicable, the logs will indicate fill depth and transition depth to natural soil materials. Soil shall be classified according to the Burmister soil classification system ("Suggested Methods of Test for Identification of Soils", D.M. Burmister, ASTM 1958). An abbreviated guide to classifying soils according to the Burmister method is included in Appendix 3D.

- Soil cuttings generated from drilling activities will be placed back down the borehole to the extent practical, and any remaining soils will be spread out evenly adjacent to sampling locations at the site. Soils will not be spread out within 50 feet of any storm drainage structure.

- Upon completion of these two soil borings, two-inch-diameter groundwater monitoring wells will be constructed. These new wells will not be constructed to the specifications required in the "Field Sampling Procedures Manual" (NJDEP, May 1992) due to the existence of a high water table. These two new wells will be constructed as follows:

  - The wells will be constructed of two-inch-diameter polyvinyl chloride (PVC) well screen, the interval of which shall extend from the bottom of the well up to five feet below the ground surface. The top five feet of the well will be constructed using non-slotted riser pipe.

  - The screen slot size shall be 0.020-inch factory slotted, and casing lengths will have threaded ends for assembly in the field.

  - The well shall be completed with a suitable sand pack that extends up to two feet above the screened interval.

  - The remainder of the annular space will be grouted with a bentonite-Portland cement-sand slurry.

- A stick-up steel protective casing will be grouted in place.

- The new groundwater monitoring wells will be developed by the driller in accordance with "Field Sampling Procedures Manual" (NJDEP, May 1992).

- The wells will be allowed to stabilize for a minimum period of two weeks, after which the new wells will be purged and sampled in accordance with "Field Sampling Procedures Manual" (NJDEP, May 1992).

- The top of well casing will be surveyed by a New Jersey licensed professional land surveyor.

3.4.4 Analytical Parameters

AOC-4 was operated as a settling pond for rinse water. Constituents that potentially were discharged by this system include volatile organics and priority pollutant metals. No other known constituents are suspected to have been discharged in this waste stream.

Soil samples collected from the investigation of AOC-4 will be lab-analyzed for:

1. **Volatile organics** in accordance with EPA Method 8260a with a forward library search for the first 15 TICs.

2. **Priority pollutant metals** (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc) in accordance with EPA Method 6010A.

3. **TPH** in accordance with EPA Method 8015, both gasoline (purge and trap) and diesel (EPA Method 3520 extraction).

4. **pH** in accordance with EPA Method 9040.

5. **Cyanide** in accordance with EPA Method 9010.

In addition, a minimum of one soil sample from AOC-4 will also be analyzed for Base Neutral Compounds (B/N+15) in accordance with EPA Method 8270b. The sample submitted for Base Neutral analyses will be the one sample determined most likely to be impacted based on field screening with a PID/FID and visual observations.

3.5 FORMER WASTEWATER LAGOONS 1-4 (AOC-5)

3.5.1 Description

AOC-5 is located off the southeast corner of the Airtron facility. This area currently is being used as a softball field; the location of AOC-5 is illustrated on Figure 3-7.

3.5.2 History

Airtron installed two sludge beds (lagoons) to accept wastewater treatment sludge in 1963. These sludge beds were located off the southeast corner of the building, shown in Figure 3-7 as Lagoons #1 and #2. The sludge beds accepted precipitated solids from settling tanks and/or the batch wastewater treatment systems. These beds provided a storage area where the sludge could be dewatered, dried, excavated, and removed from the site. The two lagoons, designed by Lancy Laboratories, Incorporated (Lancy), were intended to operate individually.

According to the Lancy design, one lagoon would remain in operation accepting sludge while the second was taken off-line. The off-line lagoon would be allowed to settle prior to sludge removal. Each sludge bed was expected to take one to three years to fill. However, facility records do not indicate periodic removal of sludge from the beds, implying that sludge generation was less than anticipated by Lancy. Because of the reduced sludge generation rates, removal and disposal of the sludge was unnecessary until the lagoons were removed from service in 1980. In 1972, Airtron added two more lagoons to handle an increased quantity of wastewater sludge. These two lagoons are shown on Figure 3-7 as Lagoons #3 and #4.

Airtron received an Administrative Order from the NJDEP dated December 14, 1979. This Order directed Airtron to cease use of the sludge beds, and implement a groundwater investigation to determine the possible impact of the sludge beds on the subsurface.

DRWN BY: MEN FILE NAME: DATE: 7-9-97 FILE NAME: M:\291031\SI-RI\FIGURE 3B

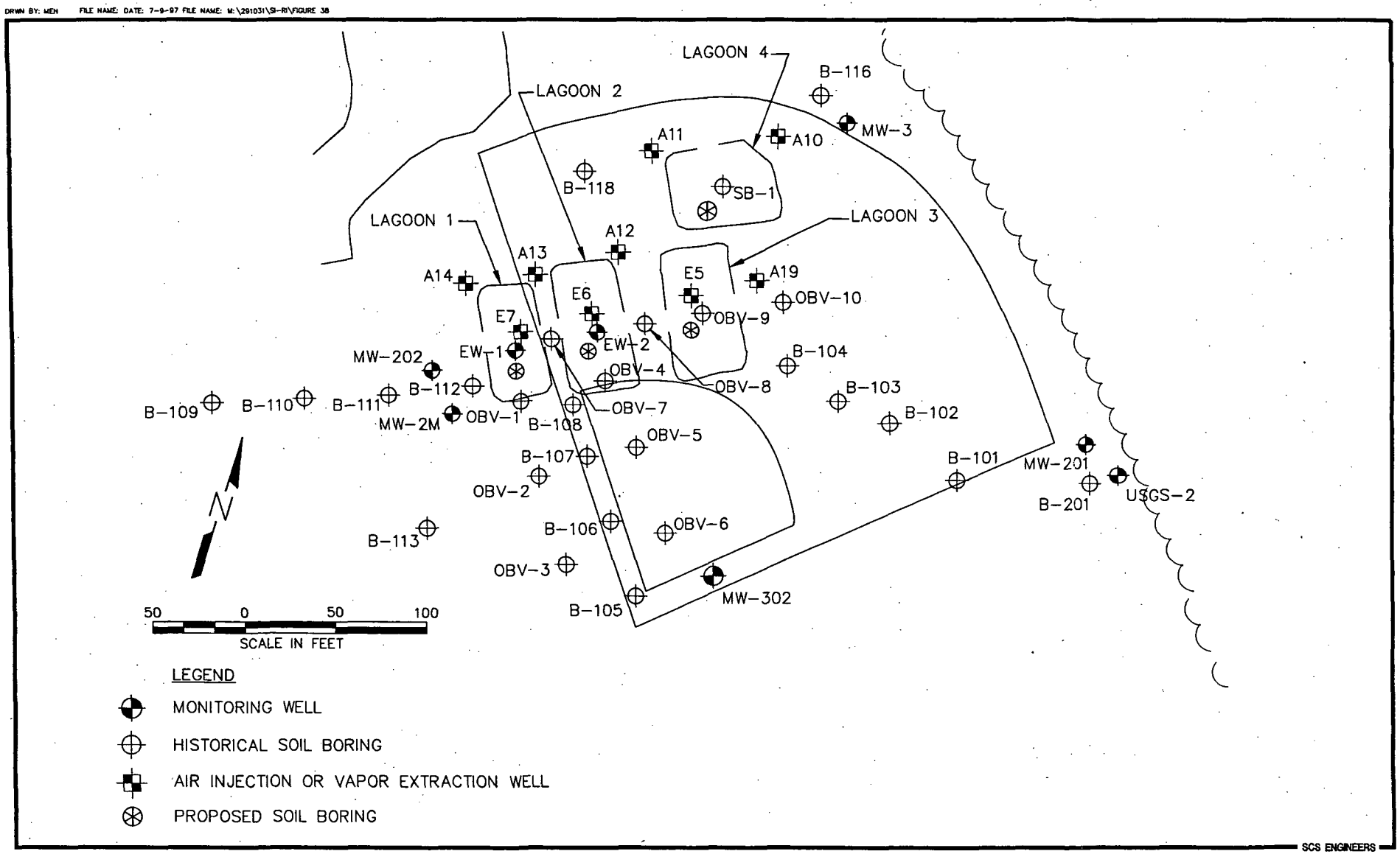

Figure 3-7. Detail of AOC-5

The lagoons were operated until the end of 1980, when they were excavated and removed under NJDEP supervision. Prior to their excavation and removal, samples of the liquid and sludge present in these lagoons were obtained for heavy metals analyses. It is uncertain whether VOC analyses were performed. Sludge and underlying soil from the removal operation was disposed off-site. There is no record that post-excavation sampling and analysis was required by NJDEP. A February 9, 1981, letter from NJDEP acknowledges the proper and complete closure of the lagoons. The lagoons were replaced by the sludge dewatering portion of the current wastewater treatment system which dewaters the sludge into a filter cake, which is disposed off-site.

Five groundwater monitoring wells were installed on the site (MW-1, MW-1M, MW-2, MW-2M, and MW-3) in 1981. Figure 3-7 depicts the locations of the groundwater monitoring wells discussed in this subsection. The newly-installed wells were sampled under NJDEP supervision on January 13, 1981, along with three previously existing wells (referred to as USGS-1, USGS-2, and USGS-3). Samples were analyzed for VOCs. These wells were re-sampled in June 1981, June 1982, July 1982, and September 1983. (Note: The three "USGS" wells are 17.5-inch-diameter wells installed by Artesian Well and Equipment Company for Monroe in 1952 for production uses. Several analytical reports refer to these production wells as "Well #1," "Well #2," and "Well #3").

During the investigation performed by Converse in 1987, 16 soil borings were performed to assess the impact, if any, the former lagoons may have had. The 16 soil borings were identified as B-101, B-102, B-103, B-104 and B-201 to the east of the lagoons, B-116 and B-118 to the north of the lagoons (upgradient), B-109, B-110, B-111 and B-112 to the west of the lagoons, and B-105, B-106, B-107, B-108 and B-113 to the south of the lagoons. A total of 34 discrete soil samples were collected from these borings and analyzed for VOCs. Tables 3-8, 3-9, 3-10 and 3-11 summarize the compounds detected at various depths in the borings performed on the east, north, west, and south sides of the lagoons, respectively.

Table 3-8. Summary of Soil Samples Analyzed from the East of AOC-5 in 1987

Soil Boring ID / Sample Depth (feet below grade)	B-101	B-102			B-103			B-104	
	40.0	4.0	14.0	19.0	4.0	14.0	29.5	5.0	35.0
Methylene Chloride	3	4	5	5	5	7	5	23	2
Trichlorofluoromethane	3	3	3	3	13	4	3	5	5
Trans-1,2,-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	1	ND	ND	ND	ND	ND	ND	1
Trichloroethene	ND	5	1	1	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1	1	1	1	ND	1	ND	ND	ND
Toluene	2	2	2	ND	4	2	2	2	2
Ethylbenzene	ND	1	ND	ND	ND	ND	ND	ND	ND
Xylenes (Total)	ND	ND	ND	ND	ND	1	ND	ND	ND
TICs (Total)	ND	25	ND	ND	240	60	100	ND	20

All units are μg/kg (ppb).

Table 3-9. Summary of Soil Samples Analyzed from the North of AOC-5 in 1987

Soil Boring ID / Sample Depth (feet below grade)	B-116	B-118		
	40.0	20.0	39.5	44.5
Methylene Chloride	2	3	3	16
Trichlorofluoromethane	8	12	12	ND
Trans-1,2,-Dichloroethene	3	8	2	53
Chloroform	ND	ND	ND	ND
Trichloroethene	11	13	9	74
1,1,2-Trichloroethane	ND	ND	ND	ND
Tetrachloroethene	35	7	15	55
Toluene	11	2	2	ND
Ethylbenzene	ND	ND	ND	ND
Xylenes (Total)		ND	ND	ND
TICs (Total)	ND	140	150	490

All units are μg/kg (ppb).

Table 3-10. Summary of Soil Samples Analyzed from the West of AOC-5 in 1987

Soil Boring ID / Sample Depth (feet below grade)	B-109			B-110		B-111			B-112		
	35.0	50.0	55.0	30.0	55.0	45.0	50.0	55.0	4.5	45.0	55.0
Methylene Chloride	4	ND	1	2	6	ND	ND	ND	13	19	22
Trichlorofluoromethane	ND	ND	3	3	8	3	10	7	8	ND	8
Trans-1,2,-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND
Trichloroethene	28	30	3	3	ND	4	5	4	ND	6	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND
Tetrachloroethene	6	ND	11	ND	3	3	3	3	ND	2	1
Toluene	ND	2	2	ND	2	2	2	ND	1	1	1
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (Total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TICs (Total)	ND	ND	ND	ND	51	ND	ND	ND	ND	34	20

All units are μg/kg (ppb)

Table 3-11. Summary of Soil Samples Analyzed from the South of AOC-5 in 1987

Soil Boring ID / Sample Depth (Feet Below Grade)	B-105	B-106	B-107			B-108	
	50.0	40.0	34.5	39.5	50.0	9.5	45.0
Methylene Chloride	1	2	5	3	1	1	2
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND
Trans-1,2,-Dichloroethene	ND	3	ND	ND	ND	ND	1
Chloroform	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	1	39	1	4	5	ND	18
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	2	21	1	3	8	ND	19
Toluene	ND	2	1	ND	2	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND
Xylenes (Total)	ND	ND	ND	ND	ND	ND	ND
TICs (Total)	20	ND	ND	20	17	20	ND

All units are μg/kg (ppb).

In addition to these soil borings, one additional groundwater monitoring well was installed to further assess the quality of the lower aquifers beneath the site near AOC-5. Monitoring well MW-202 was installed in the lower aquifer, with the soils above the clay-bearing aquatard cased-off. A detailed discussion of groundwater quality is presented in Subsection 3.11.

Under the NJDEP-approved IRMWP, Airtron installed a VES to extract VOCs from the vadose zone. During the feasibility study for designing the VES, four soil borings were performed in the vicinity of AOC-5 (one in each former lagoon area), as shown on Figure 3-7. Table 3-12 summarizes the compounds detected in the soil samples analyzed.

Table 3-12. Summary of Soil Samples Analyzed from AOC-5 in 1993

Soil Boring ID	EW-1 (fill to 12')				EW-2		OBV-9		SB-1	
Sample Depth (feet below grade)	15	25	30	50	15	50	15	45	5	15
Vinyl Chloride	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Trans-1,2,-Dichloroethene	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Trichloroethene	BDL	BDL	BDL	BDL	13	BDL	7	BDL	BDL	BDL
Tetrachloroethene	BDL	BDL	BDL	BDL	BDL	7	BDL	6	BDL	6
TICs (Total)	9	31,700	189	8	6	16	7	7	9	17

All units are $\mu g/kg$ (ppb)

NOTE: 1. All samples run by EPA Method 8240. Only compounds detected in one or more samples are listed. Analyses performed by Northeastern Analytical Laboratory, a New Jersey-certified laboratory.

2. BDL = below detection limits

3. *TICs identified in the soil samples from EW-1 are as follows (listed from highest to lowest concentrations):* Nonane, Propylbenzene, 3,4,4- trimethyl-2-hexane, 1,1,3-trimethylcyclohexane.

In conjunction with the VES, four extraction wells (E4 through E7) and 10 air injection wells (A9 through A18) were installed in the vicinity of AOC-5, as shown in Figure 3-7. The VES began operating in February 1993, remained in almost constant operation for approximately 11 months after original start-up, and has operated intermittently since January 1994. Based on extracted air sampling and analysis, Airtron estimates that

approximately 429 pounds of VOCs were extracted from the soils beneath the former lagoons as of January 1994 (Reference: SCS Engineers, Status Report on Vapor Extraction System at Airtron Site, October 24, 1994).

3.5.3 Proposed Investigation

The investigation of AOC-5 will consist of one soil boring completed in each of the former lagoons comprising AOC-5 (see Figure 3-7). The soil borings will be performed in accordance with Section 3.6 of N.J.A.C. 7:26E. All non-aqueous samples shall be collected in accordance with the methanol preservation method outlined in proposed Technical Rule N.J.A.C. 7:26E-2.1(a)4. Specifically, the investigation of AOC-5 will include:

- Continuous split spoon sampling shall be performed. Vertical sampling and screening will continue to a minimum depth of 10 feet below grade (fbg) or, if fill is present, a minimum of ten feet below the fill/native soil interface. In addition, if contamination is encountered, vertical sampling and screening will continue until two consecutive split spoon samples from native soil are screened as non-detectable by field equipment and appear clean by visual inspection.

- The uppermost continuous split spoon sample collected from 0 to 24 inches (2 foot interval) directly below any material used for regrading or fill (i.e., non-native soil, gravel, asphalt) will be screened with a calibrated PID/FID.

- From the initial 0 to 24 inch interval sample beneath the fill/native soil interface, an undisturbed sample from the six-inch interval indicating the highest apparent contamination , as determined by field instrument, and/or visual observation, shall be sub-sampled from the split spoon and lab-analyzed. If all intervals register the same measurement and there is no visual indication of contamination, the VOC sample interval shall be collected at 18 to 24 inches since the soils are known to consist of 15 to 50 percent silt/clay, pursuant to 7:26E 3.6(a)4ii. All other initial characterization soil samples for laboratory analysis will be collected at zero to six inches below the fill/native soil interface.

- An undisturbed sample from the bottom six-inch interval in the final split spoon sample shall be sub-sampled from the split spoon and lab analyzed. The final sample, which will be obtained from an interval at which no VOCs are detected using the PID/FID and visual observation, will be used to verify via laboratory analysis the absence of VOCs at depth. If field screening indicates the presence of potential contamination at the shallower depth, then the final split spoon will be analyzed for each of the compounds analyzed for in the shallower samples.

- Detailed logs of each boring shall be prepared to document encountered subsurface conditions, including soil types, description of non-soil materials, depth to groundwater, depth to groundwater or perched water layers, indications of soil mottling, field instrument measurements, presence of odors, vapors, soil discoloration, and free product. Where applicable, the logs will indicate fill depth and transition depth to natural soil materials. Soil shall be classified according to the Burmister soil classification system ("Suggested Methods of Test for Identification of Soils", D.M. Burmister, ASTM 1958). An abbreviated guide to classifying soils according to the Burmister method is included in Appendix 3D.

- Soil cuttings generated from drilling activities will be placed back down the borehole to the extent practical, and any remaining soils will be spread out evenly adjacent to sampling locations at the site. Soils will not be spread out within 50 feet of any storm drainage structure.

3.5.4 Analytical Parameters

AOC-5 was operated as sludge drying beds for waste water discharged from the Airtron on-site wastewater treatment system. Constituents that potentially were discharged by this system include volatile organics and priority pollutant metals. No other known constituents are suspected to have been discharged in this waste stream.

Soil samples collected from the fill material/native soil interface collected from the investigation of AOC-5 will be lab-analyzed for:

1. **Volatile organics** in accordance with EPA Method 8260a with a forward library search for the first 15 TICs.

2. **Priority pollutant metals** (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc) in accordance with EPA Method 6010A.

3. **TPH** in accordance with EPA Method 8015, both gasoline (purge and trap) and diesel (EPA Method 3520 extraction).

4. **pH** in accordance with EPA Method 9040.

5. **Cyanide** in accordance with EPA Method 9010.

In addition, a minimum of one soil sample from each boring completed for AOC-5 will also be analyzed for Base Neutral Compounds (B/N+15) in accordance with EPA Method 8270b. The sample submitted for Base Neutral analyses will be the one sample from each boring determined most likely to be impacted based on field screening with a PID/FID and visual observations.

3.6 STREAM SEDIMENTS

3.6.1 Description

An intermittent stream exists on the east edge of the Airtron property, as shown on Figure 3-8. The stream flows onto the property from the north, and flows south off the property, ultimately joining the Whippany River approximately one mile to the east of the Airtron site. During much of the year, this stream bed is dry with the exception of the water contributed by two of Airtron's NJPDES permitted outfalls, namely Outfall 001 (discharge from industrial wastewater treatment system) and Outfall 003 (discharge from the site remediation system/groundwater pump and treat system). As such, this unit may be more accurately described as a drainage ditch, as opposed to a stream.

Airtron has operated the current wastewater treatment system since 1980. The treated water from this system is discharged to the drainage ditch under the NJPDES permit. The

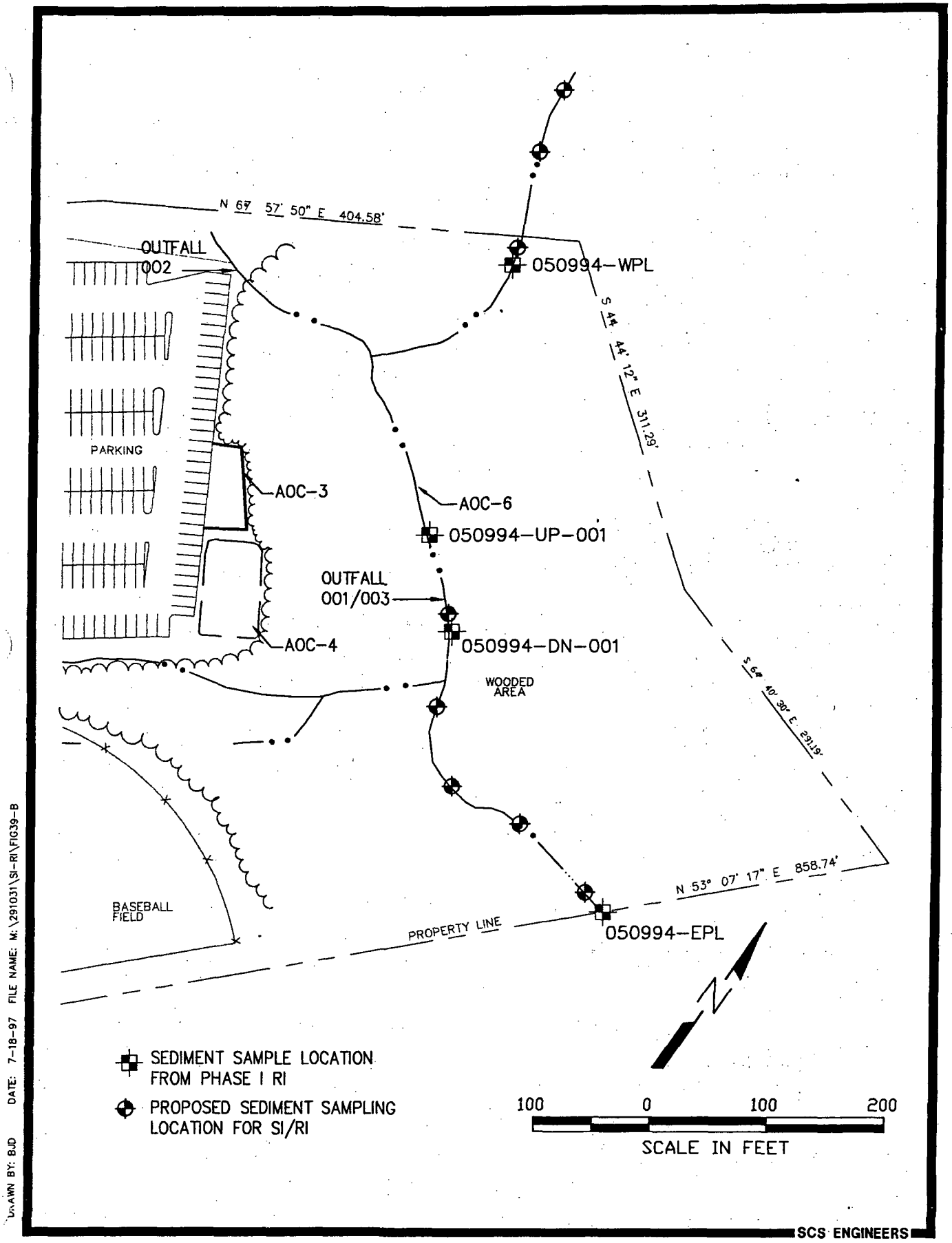

Figure 3-8. Detail of Intermittent Stream (AOC-6)

distance from the wastewater treatment system treated effluent outfall to the downstream property boundary is approximately 300 feet.

The NJPDES permit allows the release of arsenic within the permit-specified mass discharge limits. Until June 1, 1994, the permit limits for arsenic were 0.003 kilograms per day (kg/day) monthly average and 0.008 kg/day daily maximum. Airtron was issued a revised NJPDES permit (Permit No. NJ0025739), effective June 1, 1994, which raised the arsenic limits for discharge from this wastewater treatment system outfall to 0.028 kg/day (28,000 mg/day) monthly average, and 0.071 kg/day (71,000 mg/day) daily maximum for arsenic. The current NJPDES permit also allows for the discharge of several other metals as follows:

	NJPDES Permit Discharge Limits		
Metal	(kg/day)*	(mg/day)*	(mg/year)**
Arsenic	0.071	71,000	10,220,000
Cadmium	0.038	38,000	3,577,000
Chromium	0.1	100,000	23,725,000
Copper	0.13	130,000	28,470,000
Lead	0.04	40,000	7,300,000
Nickel	0.15	150,000	32,850,000
Silver	0.016	16,000	3,321,500
Zinc	0.099	99,000	20,440,000

*Based upon daily maximum limit **Based upon monthly average limit

3.6.2 History

Stream sediment data have been generated under the following three sampling and analysis efforts:

- Township of Hanover, Department of Health, performed in 1986
- Assessment at the adjacent Mennen Warehouse Property, performed in 1986 by Dames and Moore
- Airtron Remedial Investigation, performed in 1994 by SCS Engineers

Each of the aforementioned sampling efforts is described below.

3.6.2.1 Township of Hanover, Department of Health

On May 12, 1986, Dr. George Van Orden from the Township of Hanover Department of Health collected sediment samples from the "unnamed tributary of the Whippany River". The only information available regarding the 1986 sediment sampling and analysis is one page of handwritten notes and a brief, one-page laboratory report. A copy of the notes and laboratory report are provided as Appendix 3A. The existing information is limited to sample location, sample depth, and a brief description of sediment/soil type.

No formal report was prepared to document the 1986 sampling and analyses, nor is any field or laboratory QA/QC information available. Insufficient details are provided regarding sampling equipment and methodology, sample preservation, chain of custody (COC), equipment decontamination, analytical methods, holding times, or QA samples. A review of the available information does not instill a high degree of confidence. As such, the quality of the data is questionable.

In summary, the available information indicates that Dr. Van Orden collected five sediment samples along the tributary, in the following locations:

- One immediately downgradient of Airtron Outfall 002 (Sample 1)
- One immediately downgradient of Airtron outfall 001 (Sample 25)
- One immediately downgradient of Horsehill Road (Sample 512)
- One immediately downgradient of Ridgedale Avenue (Sample 1234)
- One immediately downgradient of the railroad tracks, prior to discharging into the Whippany River (Sample 4321).

Each sample represented a scrape of stream sediment approximately 1/2" to 1" deep. The sediment samples apparently were analyzed by the Borough of Madison for arsenic. Table 3-13 summarizes the Department of Health's findings.

TABLE 3–13. SUMMARY OF SEDIMENT SAMPLE RESULTS AND SEDIMENT EVALUATION CRITERIA FOR ARSENIC

	SEDIMENT CHARACTERIZATION DATA									SEDIMENT EVALUATION CRITERIA						
	1986 Hanover Department of Health					1994 Airtron				NOAA Sediment Criteria				NJPDES Permit Discharge Limits		
Metals	Sample 1 Outfall 2	Sample 25 Outfall 1	Sample 512 Horsehill Rd	Sample 1234 Ridgedale Av	Sample 4321 Whippany	West Property Line	Upgrad. Outfall 001	Downgrad. Outfall 001	East Property Line	ERL	ERM	ERL/ERM Confidence Level	Overall Apparent Effects Threshold	(kg/day)	(mg/day)	(mg/year)
Arsenic	0.88	120	2.8	11.5	1.75	7.26	47.5	9.55	65.6	33	85	Low/Mod	50	0.028	28,000	10,220,000

Sediment sample results, ERL, ERM, and Overall Apparent Effects Threshold in milligrams per kilogram (parts per million).

Mod: Moderate

Reference for NOAA ERL, ERM, and Overall Apparent Effects Threshold Values:
National Oceanic and Atmospheric Administration Technical Memorandum NOS OMA 52
"The Potential for Biological Effects of Sediment–Sorbed Contaminants Tested in the National Status and Trends Program"
NOAA, Seattle, Washington, August 1991

3.6.2.2 Assessment of Adjacent Mennen Warehouse Property

In 1986, prior to construction of the Mennen Warehouse (located adjacent to Airtron), an assessment of the undeveloped parcel was conducted by Dames & Moore.

The report indicates that a sediment sample was obtained from the stream at the property boundary between Airtron and the undeveloped Mennen Warehouse parcel. The sample was analyzed for base/neutral extractable semi-volatile organic compounds by GC/MS, and priority pollutant metals. The report provides no explanation or discussion of the basis for selection of these analytical parameters. Table 3-14 summarizes the constituents detected.

3.6.2.3 Airtron Remedial Investigation

On May 9, 1994, SCS conducted sampling of the sediments of AOC-6. In accordance with the NJDEP-approved Phase I RIWP, four sampling points were selected for characterization:

- At the west property line, as surface water flows onto the Airtron site (050994-WPL)
- Immediately upgradient of the NJPDES-permitted outfall from the on-site wastewater treatment plant (050994-UP-001)
- Immediately downgradient of the NJPDES-permitted outfall from the on-site WWTP (050994-DN-001)
- At the east property line, as surface water flows off the Airtron site (050994-EPL)

Locations of these sampling points are illustrated on Figure 3-8. Results are summarized in Table 3-13. The arsenic sediment concentrations from this sampling event ranged from 7.26 mg/kg to 65.6 mg/kg.

3.6.3 Evaluation of Existing Data

Table 3-13 summarizes the existing sampling and analysis data from the three rounds of sediment characterization performed since 1986. Two separate methods for evaluation of these data are presented. First, the results are compared with sediment guidelines recommended by NJDEP and developed by the National Oceanic and Atmospheric Administration (NOAA). Second, the arsenic results are evaluated with respect to the allowable arsenic discharge rates contained in Airtron's NJPDES permit.

3.6.3.1 Evaluation of Sediment Results Using NOAA Guidelines

For evaluation, these values are compared with the following limits provided in the NJDEP Guidance for Sediment Quality Evaluations (March 1991), as recommended by NJDEP correspondence dated December 11, 1996.

- Effects Range—Low (ERL): "a concentration at the low end of the range in which effects had been observed"

- Effects Range—Medium (ERM): "a concentration approximately midway in the range of reported values associated with biological effects"

The ERL and ERM values presented in the NJDEP guidance are obtained from a nationwide sediment sampling and biological effects evaluation performed by the National Oceanic and Atmospheric Administration (NOAA). The NOAA program includes the collection and laboratory analysis of sediment data from about 200 sites nationwide. The sediment data are then evaluated using measures of biological effects to determine or indicate the significance of sediment contamination. The findings of the NOAA assessment are presented in the following report (hereinafter referred to as "the NOAA report"):

> The Potential for Biological Effects of Sediment-Sorbed Contaminants Tested in the National Status and Trends Program, NOAA Technical Memorandum NOS OMA 52, NOAA, National Ocean Service, Seattle Washington, August 1991.

The NOAA report also presents information regarding NOAA's confidence level in each of the ERL and ERM values. The confidence levels are presented in Tables 3-13 and 3-14. As noted in the NOAA report (page 1): "Note that these ER-L and ER-M values are not to be construed as NOAA standards or criteria."

The NOAA report also presents Overall Apparent Effects Thresholds. These values are also presented in Tables 3-13 and 3-14.

A discussion of the existing sediment data in comparison to the NOAA values is presented below for each of the constituents that has been detected in the sediments. While sediment results are directly compared with the ERL and ERM values, it must be understood that this comparison standard is very stringent. The ERL and ERM values represent concentrations at which biological effects to aquatic life may be observed in sediments that support aquatic life.. Surface water flow in the Airtron stream/drainage ditch is intermittent and does not support significant aquatic life. Thus, the more appropriate point of application of the ERL and ERM values is the Whippany River, located a little over 5,000 feet downgradient of Airtron. Sediments, if any, that migrate to the Whippany will be attenuated along the way, and will be subject to further attenuation once they enter the Whippany. Thus, it is unlikely that the sediment results observed at Airtron could result in ERL or ERM concentrations in sediments in the Whippany.

With respect to arsenic, the 1994 sediment characterization performed by Airtron found concentrations ranging from 7.26 to 65.6 mg/kg. For comparison, the ERL and ERM values are 33 mg/kg and 85 mg/kg, respectively. Two of the four sediment sample results exceed the ERL; none of the four results exceeds the ERM.

A beryllium concentration of 1 mg/kg was reported by D&M. No ERL or ERM values have been established for beryllium by NOAA.

A cadmium concentration of 1 mg/kg was reported by D&M. This concentration is below both the ERL and ERM values of 5 mg/kg and 9 mg/kg, respectively.

TABLE 3-14. SUMMARY OF DAMES & MOORE 1986 SEDIMENT SAMPLE RESULTS AND SEDIMENT EVALUATION CRITERIA

		SEDIMENT EVALUATION CRITERIA								
		NOAA Sediment Criteria				NJPDES Permit Discharge Limits				
Metals	1986 D&M Results	ERL	ERM	ERL/ERM Confidence Level	Overall Apparent Effects Threshold	Daily Maximum (kg/day)	Daily Maximum (mg/day)	Monthly Average (kg/day)	Monthly Average (mg/day)	Monthly Average (mg/year)
Arsenic	72	33	85	Low/Mod	50	0.071	71,000	0.028	28,000	10,220,000
Beryllium	1	NE	NE	NE	NE	NL	NL	NL	NL	NL
Cadmium	5	5	9	High/High	5	0.038	38,000	0.0098	9,800	3,577,000
Chromium	30	80	145	Mod/Mod	NE	0.1	100,000	0.065	65,000	23,725,000
Lead	84	35	110	Mod/High	300	0.04	40,000	0.02	20,000	7,300,000
Nickel	17	30	50	Mod/Mod	NE	0.15	150,000	0.09	90,000	32,850,000
Silver	4	1	2.2	Mod/Mod	1.7	0.016	16,000	0.0091	9,100	3,321,500
Zinc	232	120	270	High/High	260	0.099	99,000	0.056	56,000	20,440,000
Semi-Volatiles										
Anthracene	0.0769	0.085	0.860	Low/Mod	0.300	NL	NL			NL
Fluoranthene	0.299	0.600	3.600	High/High	1.000	NL	NL			NL
Phenanthrene	0.308	0.225	1.380	Mod/Mod	0.260	NL	NL			NL
Pyrene	0.245	0.350	2.200	Mod/Mod	1.000	NL	NL			NL

Sediment sample results, ERL, ERM, and Overall Apparent Effects Threshold in milligrams per kilogram.

Mod: Moderate
NE: Not Established
NL: No Limit

Reference for NOAA ERL, ERM, and Overall Apparent Effects Threshold Values:
National Oceanic and Atmospheric Administration Technical Memorandum NOS OMA 52
"The Potential for Biological Effects of Sediment-Sorbed Contaminants Tested in the National Status and Trends Program"
NOAA, Seattle, Washington, August 1991

A chromium concentration of 30 mg/kg was reported by D&M. This is below both the ERL and ERM values of 80 mg/kg and 145 mg/kg, respectively.

A lead concentration of 84 mg/kg was reported by D&M. The ERL and ERM values are 35 mg/kg and 110 mg/kg. The overall apparent effects concentration for lead is 300 mg/kg.

A nickel concentration of 17 mg/kg was reported by D&M. This is below both the ERL and ERM values of 30 mg/kg and 50 mg/kg, respectively.

A silver concentration of 4 mg/kg was reported by D&M. The ERL and ERM values are 1.0 mg/kg and 2.2 mg/kg.

The only sediment data for zinc is the single sample obtained by D&M in 1986. A zinc concentration of 232 mg/kg was reported. The ERL and ERM values are 120 mg/kg and 270 mg/kg. The overall apparent effects concentration for zinc is 260 mg/kg.

An anthracene concentration of 76.9 μg/kg was reported by D&M, below both ERL and ERM values of 85 μg/kg and 860 μg/kg, respectively.

A fluoranthene concentration of 299 μg/kg was reported by D&M, below both ERL and ERM values of 600 μg/kg and 3600 μg/kg, respectively.

A phenanthrene concentration of 308 μg/kg was reported by D&M. The ERL and ERM values are 225 μg/kg and 1,380 μg/kg, respectively.

A pyrene concentration of 245 μg/kg was reported by D&M, below both ERL and ERM values of 350 μg/kg and 1,000 μg/kg, respectively.

3.6.3.2 Comparison of Arsenic Sediment Results with NJPDES Allowable Discharge Limits

As discussed during the review meeting held at Airtron on December 11, 1996, Airtron believes that the arsenic concentrations that have been detected in stream sediments are

consistent with the facility's NJPDES discharge permit, which allows the discharge of arsenic and several other heavy metals. Tables 3-13 and 3-14 summarize the current NJPDES discharge limits. NJDEP representatives stated that they would consider a demonstration that the arsenic concentrations detected in the stream sediments are consistent with the amount of arsenic that Airtron is allowed to discharge under their NJPDES permit. This demonstration is presented below, and consists of the following components:

- Identification of annual allowable arsenic discharge
- Estimation of sediment mass
- Calculation of allowable annual increase in arsenic sediment concentration
- Interpretation

3.6.3.2.1 Identification of annual allowable arsenic discharge--Airtron' s existing NJPDES permit includes the following arsenic discharge limits:

- 0.028 kg/day monthly average
- 0.071 kg/day daily maximum

For purposes of this demonstration, the lower monthly average rate of 0.028 kg/day is used. This rate converts to an annual arsenic discharge allowance of 10.22 kg (equal to 10,220,000 mg) of arsenic.

3.6.3.2.2 Estimation of sediment mass--Assumptions incorporated into this estimate include:

- Average stream width: 6 feet
- Average sediment depth: 6 inches
- Fraction of stream surface covered with sediment: 0.50
- Stream length upon which arsenic is deposited during one year: 1,000 feet
- Suspended versus dissolved fraction of arsenic concentration: 0.50

Based upon these assumptions, the sediment volume is 1,500 cubic feet (55.6 cubic yards). Assuming a sediment density of 3,000 pounds per cubic yard, the sediment mass is estimated at 166,800 pounds (75,800 kg).

3.6.3.2.3 Calculation of allowable annual increase in arsenic sediment concentration--An annual discharge of 10,220,000 mg of arsenic, half of which is assumed to be suspended, would result in 5,110,000 mg of arsenic being deposited as sediment on an annual basis. This material is assumed to be deposited in the total mass of sediment (75,800 kg) which results in an annual increase (above existing, background concentrations) of 67.5 mg of arsenic per kg of sediment.

3.6.3.2.4 Interpretation--As discussed in Subsection 3.6.2, the most recent round of sediment sampling and analysis was performed by Airtron in 1994. The arsenic concentrations detected by this effort were 7.26 mg/kg, 47.5 mg/kg, 9.55 mg/kg and 65.6 mg/kg. The maximum detected value is comparable to the concentration which is calculated based on Airtron's NJPDES permit. The discharge limits specified in the NJPDES permit are calculated by the NJDEP to be protective of human health and the environment. As such, the arsenic concentrations detected in the sediments are protective of the environment.

3.6.4 Proposed Investigation

While the findings of previous sediment monitoring episodes generally compare favorably with the risk-based ERL and ERM limits established by NOAA, additional sampling and analyses of sediments and surface waters will be performed for select constituents. The goal of the additional monitoring will be to develop more definitive conclusions regarding whether certain constituents are present at concentrations that may exceed applicable risk-based criteria. Collection of samples will be performed in accordance with the Field Sampling Procedures Manual, Chapter 7, Section 7, *Collection of Sediment and Liquid Samples from Streams, Rivers, Channels, Sewers, Ponds, Lakes, Lagoons, Estuaries and Marine Waters.*

3.6.4.1 Analytical Parameters for Sediment Characterization

Analytical parameters for sediment samples will include:

- Priority Pollutant Metals: antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc, in accordance with EPA Method 6010A, except mercury by EPA method 7470.

- pH (as required by NJAC 7:26E -3.8(b)3.iii): in accordance with EPA Method 9040.

- Total organic carbon (as required by NJAC 7:26E -3.8(b)3.iii): in accordance with EPA Method 9060.

- Grain size (as required by NJAC 7:26E -3.8(b)3.iii): using grain size hydrometer, ASTM Method D422. Additionally, constituent clay, sand, and gravel will be reported as a percent contribution to the sample.

As discussed above, previous sampling and analysis for PAHs found detectable concentrations of only four constituents. Comparison of the laboratory results for these four PAHs finds that the concentrations of three of the four PAHs are below both the ERL and ERM levels established by NOAA and recommended by NJDEP. The fourth PAH, phenanthrene, was detected at 0.308 mg/kg, which is slightly above the ERL of 0.225 mg/kg, but well below the ERM of 1.380 mg/kg.

As indicated in Airtron's NJPDES permit renewal application (November 1992), PAHs are not believed to be present in effluent from the wastewater treatment system. Nonetheless, Airtron's current NJPDES permit requires monitoring the effluent for Total Toxic Organics (TTO), a list of various volatile and semi-volatile organics including select PAHs. The permit allows the discharge of wastewater include TTO constituents up to the TTO limit of 0.130 kg/day (130,000 mg/day or 47,450,000 mg/year). Three of the four PAHs reportedly detected by the 1986 Dames & Moore effort are included on the TTO list. These include fluoranthene, phenanthrene, and pyrene. No detectable concentrations of these PAHs have been found in the NJPDES permit effluent monitoring.

Based upon the existing analytical results, the ERL and ERM levels, the types of chemicals used at the facility, and the absence of PAHs in the NJPDES permitted discharge, no further characterization for PAHs appears warranted.

3.6.4.2 Sediment Sampling Locations

The selection of locations for the collection of sediment samples ideally includes identification of low flow, depositional areas within the stream. Sediment deposition appears fairly constant along the length of the stream. As a result of the uniform deposition of stream sediments, Airtron proposes to collect sediment samples at the following locations:

UPSTREAM (BACKGROUND)

- At the upstream property boundary
- Approximately 50 feet upstream of the property boundary
- Approximately 100 feet upstream of the property boundary

Upgradient sediment samples will be obtained a minimum of 50 feet apart.

DOWNSTREAM

Immediately downstream of the discharge from the combined 001/003 outfalls, and at approximately 75 foot intervals to the downstream property boundary. The distance from the discharge to the property boundary is approximately 300 feet. Thus, five sediment samples will be obtained along this stretch.

3.6.4.3 Analytical Parameters for Surface Water Characterization

Analytical parameters for surface water samples will include:

- Priority Pollutant Metals (both total and dissolved): antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc, in accordance with EPA Method 6010A, except mercury by EPA method 7470.

- Hardness: each surface water sample will be field-analyzed for dissolved oxygen, temperature, and pH.

3.6.4.4 Surface Water Sampling Locations

The intermittent stream that flows across the Airtron property has been observed to have flowing waters upgradient of the combined 001/003 outfall during wet seasons of the year, specifically after periods of steady precipitation. Airtron proposes to determine the presence/absence of flow at least monthly in the intermittent stream immediately upgradient of outfall 001/003. Airtron also will collect surface water samples at the following two locations:

UPSTREAM (BACKGROUND)

One grab sample will be collected at the western (upstream) property boundary

DOWNSTREAM

One grab sample will be collected at the eastern property boundary downstream of the discharge from the combined 001/003 outfalls.

Additionally, at the time the samples are collected, the width and maximum depth of the stream will be measured at the upstream and downstream property boundaries. If the stream is not flowing at the time this field investigation is implemented, Airtron will notify the NJDEP Case Manager, and a sample will not be collected from the upgradient property line.

3.7 PAINT STRIPPING AREA/FORMER 10,000-GALLON UNDERGROUND STORAGE TANK (UST) (AOC-7)

3.7.1 Description

AOC-7 is located on the southeast corner of the Airtron building (see Figure 3-9). The area is covered with grass and asphalt. The concrete pad for the blowers and associated vapor extraction system equipment is also located in this area.

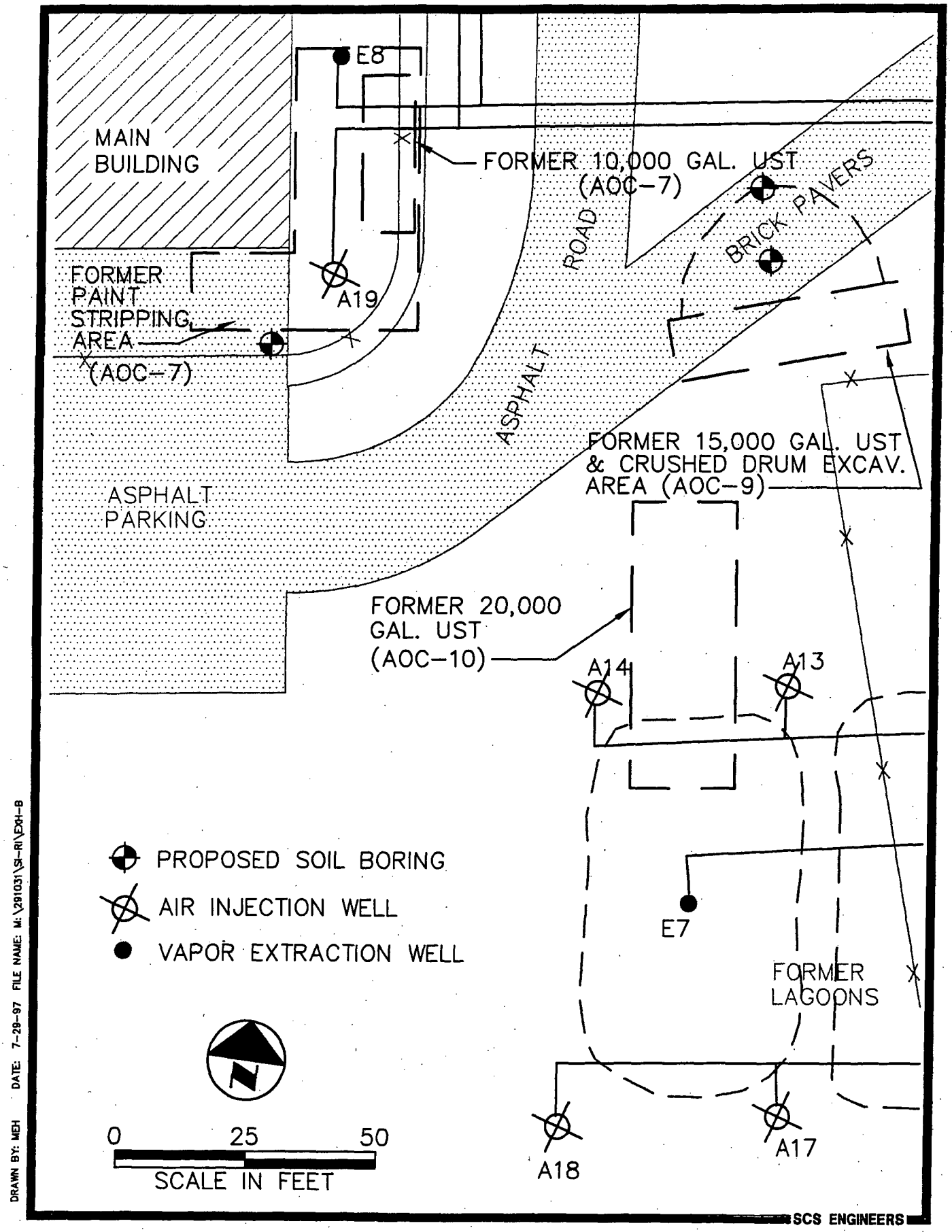

Figure 3-9. Detail of Former Underground Storage Tanks and Crushed Drum Excavation Area (AOC-7, AOC-9, and AOC-10)

3.7.2 History

Two boilers are located in the southeast corner of the Airtron building. These boilers were converted from No. 4 heating oil to natural gas in the summer of 1990. Heating oil was formerly stored in a 10,000-gallon steel UST located adjacent to the boiler room outside the building (see Figure 3-9). This UST (Registration No. 0166980) was installed in 1966; upon conversion to natural gas, the UST was removed from the ground (TMS #C90-0412) on January 21, 1991, by Environmental Services, Incorporated (ENSI). A closure report entitled "UST Closure Report Litton-Airtron," detailing the removal process and site assessment requirements for closure, was submitted to NJDEP on June 20, 1991. Approximately 151 tons of petroleum-impacted soils were removed from the excavation for off-site treatment and recycling at Riverside Brick and Supply, Richmond, Virginia.

During the post-closure sampling of this UST, chlorinated VOCs were present in soil samples collected from beneath the former UST. Table 3-15 summarizes the VOCs detected in these soil samples.

Table 3-15. Summary of VOCs Detected During 1991 UST Removal

Sample ID	PE-1	SP-2
Tetrachloroethene	5,400	570
1,1,2-trichloroethene	200	ND
1,1,2,2-tetrachloroethane	170	150

All units are μg/kg (ppb).

Airtron interviewed facility personnel to determine a possible source for the VOCs discovered in the subsurface soils. Reportedly, personnel may have conducted paint stripping outside the southeast corner of the building in past years, using various commercial solvents.

Under the NJDEP-approved IRMWP, Airtron installed an additional leg of the VES to extract VOCs that may have been present in the subsurface at AOC-7. One extraction well (E-8) and one injection well (A19) were installed in 1992. The VES began operating in February 1993, remained in almost constant operation for approximately 11 months after original start-up, and has operated intermittently since January 1994.

Based on extracted air sampling and analysis, Airtron estimates that approximately 429 pounds of VOCs were extracted from the subsurface soils as of January 1994 (Reference: SCS Engineers, Status Report on Vapor Extraction System at Airtron Site, October 24, 1994).

3.7.3 Proposed Investigation

The investigation of AOC-7 will include the installation of one soil boring, as indicated in Figure 3-9. The soil boring will be performed in accordance with Section 3.6 of N.J.A.C. 7:26E. All non-aqueous samples for VOC analysis shall be collected in accordance with the methanol preservation method outlined in proposed Technical Rule N.J.A.C. 7:26E-2.1(a)4. Specifically, the investigation of AOC-7 will include:

- Continuous split spoon sampling shall be performed. Vertical sampling and screening will continue to a minimum depth of 10 fbg or, if fill is present, a minimum of ten feet below the fill/native soil interface. In addition, if contamination is encountered, vertical sampling and screening will continue until two consecutive split spoon samples from native soil are screened as non-detectable by field equipment and appear clean by visual inspection.

- The uppermost continuous split spoon sample collected from 0 to 24 inches (2 foot interval) directly below any material used for regrading or fill (i.e., non-native soil, gravel, asphalt) will be screened with a calibrated PID/FID.

- From the initial 0 to 24 inch interval sample beneath the fill/native soil interface, an undisturbed sample from the six-inch interval indicating the highest apparent contamination , as determined by field instrument, and/or visual observation, shall be sub-sampled from the split spoon and lab-analyzed. If all intervals register the same measurement and there is no visual indication of contamination, the VOC sample interval shall be collected at 18 to 24 inches since the soils are known to consist of 15 to 50 percent silt/clay, pursuant to 7:26E 3.6(a)4ii. All other initial characterization soil samples for laboratory analysis will be collected at zero to six inches below the fill/native soil interface.

- An undisturbed sample from the bottom six-inch interval in the final split spoon sample shall be sub-sampled from the split spoon and lab analyzed. The final sample, which will be obtained from an interval at which no VOCs are detected using the PID/FID and visual observation, will be used to verify via laboratory analysis the absence of VOCs at depth. If field screening indicates the presence of potential contamination at the shallower depth, then the final split spoon will be analyzed for each of the compounds analyzed for in the shallower samples.

- Detailed logs of each boring shall be prepared to document encountered subsurface conditions, including soil types, description of non-soil materials, depth to groundwater, depth to groundwater or perched water layers, indications of soil mottling, field instrument measurements, presence of odors, vapors, soil discoloration, and free product. Where applicable, the logs will indicate fill depth and transition depth to natural soil materials. Soil shall be classified according to the Burmister soil classification system ("Suggested Methods of Test for Identification of Soils", D.M. Burmister, ASTM 1958). An abbreviated guide to classifying soils according to the Burmister method is included in Appendix 3D.

- Soil cuttings generated from drilling activities will be placed back down the borehole to the extent practical, and any remaining soils will be spread out evenly adjacent to sampling locations at the site. Soils will not be spread out within 50 feet of any storm drainage structure.

3.7.4 Analytical Parameters

AOC-7 was formerly a storage tank for No. 4 heating oil, and reportedly where paint stripping was conducted for some time. Constituents that potentially were released by either the UST or the stripping activities include VOCs. Based on the results of the previous laboratory analyses, no other constituents are suspected to have been discharged in the vicinity of this AOC.

The soil sample collected from the fill material/native soil interface collected from the investigation of AOC-7 will be lab-analyzed for **volatile organics** in accordance with EPA Method 8260a with a forward library search for the first 15 TICs.

3.8 GALLIUM ARSENIDE WING TRENCH (AOC-8)

3.8.1 Description

AOC-8 is an inactive concrete vault located on the north side of the Airtron building (see Figure 3-1). This subgrade vault is currently empty; steel plate doors cover the vault to prevent precipitation from accumulating within the structure. The steel doors are locked.

3.8.2 History

The concrete subsurface vault was constructed in 1982 on the west side of the facility. This vault was designed to contain two 55-gallon drums. The drums were placed in the subgrade vault to receive waste methanol from the gallium arsenide operations. Gravity flow from a collection sink within the building was used to transfer waste methanol to the drums using extra heavy duty cast iron piping installed in a sub-grade concrete trench. The pipes were placed into the existing concrete floor on a sand bedding, and a new concrete floor was constructed directly on top of the drain pipes. A copy of a drawing by LAN Associates dated February 23, 1982 is provided in Appendix 3B which details the way the trench was constructed, along with the dimensions of the storage vault.

The vault was used for approximately six months, around 1984 or 1985. The two drums were routinely checked for fluid level, and were replaced when filled. There are no records of any releases from the 55-gallon drums or piping into the vault. There are no records of any releases from the vault to the surrounding environment.

SCS performed an inspection of the vault on July 1, 1993. The vault contained several inches of stormwater, indicating that it is liquid-tight (i.e., liquids do not drain from the vault to surrounding soil). A PID scan of the vault interior found no readings above background. No odor was observed. Two live frogs were present in the vault.

Water was pumped from the vault to allow visual inspection of the walls and floor. The visual inspection indicated that the walls and floor appear to be in good condition, and are coated with a paint or sealant. A second PID scan, performed after water removal, also detected no readings above background. No staining of the walls or floor was observed, other than that left by the standing water. In summary:

- The vault condition appears sound.
- There are no indications that hazardous substances were present in the vault, with the exception of the methanol contained in the former 55-gallon drums.
- No indications were found that releases have occurred within the vault.

3.8.3 Proposed Investigation

Based on the results of the vault inspection, NJDEP has concluded that "The vault has been inspected and is no longer considered an AOC" (Reference: NJDEP letter dated to Airtron, December 11, 1996).

The NJDEP letter also states: "However, if the trench is in any way utilized for handling solvent wastes, at a minimum, an inspection would need to be performed to ensure there have been no discharges associated with those operations. Please address this concern in the SI/RIWP and include a copy of the February 12, 1992 drawing referenced in Table 2-2 of the 1993 RIWP."

As discussed, neither the vault nor the belowgrade piping currently are used for solvent wastes. During the time when the piping and vault were used, there were no releases from the piping. The 1993 inspection of the vault found no stains, odors, or other indications that any releases occurred. The drain piping in the floor is not accessible for inspection.

No further investigation of the trench is required.

3.9 FORMER 15,000-GALLON HEATING OIL UST AND CRUSHED DRUM EXCAVATION AREA (AOC-9)

3.9.1 Description

AOC-9 is located off the southeast corner of the Airtron buildings, as shown in Figure 3-1.

3.9.2 History

In July 1992, during the installation of a vadose zone VES, an abandoned 15,000-gallon heating oil UST was encountered off the southeast corner of the building (NJDEP Hotline Case No. 92-7-10-1150-13 and 92-7-16-1442-24). The tank was cleaned and removed from the ground by ENSI. Gas chromatograph analysis of the residuals in the UST fingerprinted (i.e., comparison of GC chromatographs) the former contents of the UST as "Bunker C" heating oil.

While excavating the UST, several crushed 55-gallon drums were encountered adjacent to the UST. Extensive analytical testing, including scans for polychlorinated biphenyls (PCBs), VOCs, metals, base/neutral acid extractables (BNAs) and total petroleum hydrocarbons (TPHCs), indicated that the drums were crushed and empty prior to being placed in the ground. A closure report prepared by SCS Engineers entitled "UST Closure Report Litton-Airtron" was submitted to NJDEP on August 24, 1992. A copy of this report is included as Appendix 3C.

3.9.3 Proposed Investigation

The AOC-9 investigation will consist of performing two soil borings in the location of the former 15,000-gallon UST and the buried crushed drums. One boring will be positioned in the approximate center of the former crushed drum area, and one will be positioned on the edge of the former excavation area for the crushed drums, as illustrated in Figure 3-9. These locations are selected to allow the collection of native soil samples from the approximate floor and sidewall of the former excavation. The soil borings will be performed in accordance with Section 3.6(a) of N.J.A.C. 7:26E. All non-aqueous samples for VOC analysis shall be collected in accordance with the methanol preservation method

outlined in proposed Technical Rule N.J.A.C. 7:26E-2.1(a)4. Specifically, the investigation of AOC-9 will include:

- Continuous split spoon sampling shall be performed. Vertical sampling and screening will continue to a minimum depth of 10 fbg or, if fill is present, a minimum of 10 feet below the fill/native soil interface. In addition, if contamination is encountered, vertical sampling and screening will continue until two consecutive split spoon samples from native soil are screened as non-detectable by field equipment and appear clean by visual inspection.

- The uppermost continuous split spoon sample collected from 0 to 24 inches (2 foot interval) directly below any material used for regrading or fill (i.e., non-native soil, gravel, asphalt) will be screened with a calibrated PID/FID.

- From the initial 0 to 24 inch interval sample beneath the fill/native soil interface, an undisturbed sample from the six-inch interval indicating the highest apparent contamination , as determined by field instrument, and/or visual observation, shall be sub-sampled from the split spoon and lab-analyzed. If all intervals register the same measurement and there is no visual indication of contamination, the VOC sample interval shall be collected at 18 to 24 inches since the soils are known to consist of 15 to 50 percent silt/clay, pursuant to 7:26E 3.6(a)4ii. All other initial characterization soil samples for laboratory analysis will be collected at zero to six inches below the fill/native soil interface.

- An undisturbed sample from the bottom six-inch interval in the final split spoon sample shall be sub-sampled from the split spoon and lab analyzed. The final sample, which will be obtained from an interval at which no VOCs are detected using the PID/FID and visual observation, will be used to verify via laboratory analysis the absence of VOCs at depth. If field screening indicates the presence of potential contamination at the shallower depth, then the final split spoon will be analyzed for each of the compounds analyzed for in the shallower samples.

- Detailed logs of each boring shall be prepared to document encountered subsurface conditions, including soil types, description of non-soil materials, depth to groundwater, depth to groundwater or perched water layers, indications of soil mottling, field instrument measurements, presence of odors, vapors, soil discoloration, and free product. Where applicable, the logs will indicate fill depth and transition depth to natural soil materials. Soil shall be classified according to the Burmister soil classification system ("Suggested Methods of Test for Identification of Soils", D.M. Burmister, ASTM 1958). An abbreviated guide to classifying soils according to the Burmister method is included in Appendix 3D.

- Soil cuttings generated from drilling activities will be placed back down the borehole to the extent practical, and any remaining soils will be spread out evenly adjacent to sampling locations at the site. Soils will not be spread within 50 feet of any storm drainage structure.

3.9.4 Analytical Parameters

Soil samples collected from the investigation of AOC-9 will be lab-analyzed for:

1. **Volatile organics** in accordance with EPA Method 8260a with a forward library search for the first 15 tentatively identified compounds (TICs).

2. **Priority pollutant metals** (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc) in accordance with EPA Method 6010A.

3. **Total Petroleum Hydrocarbons** (TPH) in accordance with EPA Method 8015, diesel fraction (EPA Method 3520 extraction).

4. **pH** in accordance with EPA Method 9040.

5. **Cyanide** in accordance with EPA Method 9010.

In addition, a minimum of one soil sample from AOC-9 will also be analyzed for Base Neutral Compounds (B/N+15) in accordance with EPA Method 8270b. The sample submitted for Base Neutral analyses will be the one sample determined most likely to be impacted based on field screening with a PID/FID and visual observations.

3.10 FORMER 20,000-GALLON UST (AOC-10)

3.10.1 Description

AOC-10 is located in the north portion of the ballfield on the Airtron property (see Figure 3-1). Airtron's facility personnel maintain this area for recreational use.

3.10.2 History

While conducting a review of Airtron's files for the preparation of the Phase I RIWP, a set of drawings dated 1952 was reviewed. One drawing depicts an underground fuel oil tank located off the southeast corner of the facility. The tank was specified as 20,000 gallons in capacity, and is shown located 74 feet east and 84 feet south of the corner of the building.

The following summary of the UST excavation and closure is presented in NJDEP's December 11, 1996 letter:

> "This UST was removed in 1994 and a UST Closure Report, dated June 22, 1994, was submitted to the Department. A review of the UST Closure Report was performed and the Department has determined that the tank closure and post excavation sampling was conducted in substantial compliance with the Technical Rules. Post excavation sampling results indicate that no soil contamination above the Department's RDCSCC or IGWSCC remain at this location. Therefore, the Department has determined that no further action for soils is required at this AOC."

3.10.3 Proposed Investigation

No additional investigation is required for AOC-10.

3.11 GROUNDWATER (AOC-11)

3.11.1 Description

Geraghty & Miller, Inc. was retained by Airtron in 1996 to evaluate groundwater flow and quality conditions on the Airtron property as well as the extent of VOC contamination in the areas surrounding the Airtron property. This assessment is based upon the review of extensive site-specific and regional subsurface and site operation information compiled since 1979.

3.11.2 History

Numerous subsurface investigations have been completed to assess VOC impacts to groundwater within the upper unconfined aquifer on and in the vicinity of both the Airtron and Mennen properties (refer to Table 3-16). These investigations primarily provide information on the hydrogeologic setting and groundwater flow, potential sources of groundwater contamination, and the extent and concentrations of groundwater contamination. Groundwater flow and contamination have primarily been evaluated through water-level measurements and groundwater sampling activities using an extensive network of groundwater monitoring wells and other groundwater sampling/observation points. The locations of monitoring wells and other sampling points are shown on Figure 3-10; existing well network characteristics are summarized on Table 3-17.

3.11.2.1 Hydrogeologic Setting and Groundwater Flow

Groundwater in the vicinity of the Airtron/Mennen properties occurs within unconsolidated deposits of glacial origin, which range to depths of approximately 150 feet below land surface. These deposits, typically heterogeneous in nature, are characterized by unstratified sediments (till and morainal deposits) and stratified sediments (glacial drift and outwash) which have been separated into five distinct hydrogeologic units (Converse, 1987; ERM-Northeast, 1993; SCS Engineers, 1994). The surficial unit (upper till deposit) consists of poorly-sorted, brown sandy silts and silty sands, with coarser gravels and finer-

Table 3-16. Summary of Previous Investigations at the Airtron and Mennen Sites

Organization	Report Date	Report
AIRTRON		
Converse, Ward, Davis, Dixon, Inc.	8/10/81	Final Report of Groundwater Monitoring Program
Converse Consultants	8/15/82	Report of Aquifer Test Using Mennen Production Well
Converse Consultants	8/16/82	Letter Supplement to Aquifer Test Report
Converse Environmental East	11/24/87	Report on Soil and Groundwater Remedial Investigation Phase I Results
Converse Environmental East	4/19/90	Phase II Soil and Groundwater Investigation Report, Litton Industries-Airtron Division
SCS Engineers	1/91	Groundwater Monitoring Report: 3-Year Groundwater Quality Graphs for 18 Wells
SCS Engineers	8/24/93	Position Paper: Outstanding Issues Related to Environmental Investigation and Remediation at Litton-Airtron Facility
SCS Engineers	10/25/93	Phase I Remedial Investigation Work Plan for Litton-Airtron - Vol 1 and Vol. II.
Aerial Photos	1959, 1963, 1969, 1974, March & April 1990	From: Phase I RI Work Plan
SCS Engineers	12/9/93	Interim Remedial Measures Work Plan for Airtron Division of Litton Systems, Inc.
SCS Engineers	8/15/94	Remedial Investigation Report for the Airtron Division of Litton Systems, Inc.
SCS Engineers/Litton Airtron		Litton-Airtron's Response to November 4, 1994 NJDEP Comments
SCS Engineers	4/27/95	Summary Report of the Interim Remedial Measures at Litton-Airtron
SCS Engineers	9/9/96	Twelve-Month Pump-and-Treat Evaluation Report
MENNEN		
ERM-Northeast	4/88	Groundwater Investigation, The Mennen Company, Morris Township, NJ
ERM-Northeast	10/93	ECRA/ISRA Site Investigation Report, The Mennen Company, ECRA Case No. 92105 (Volume I and II)

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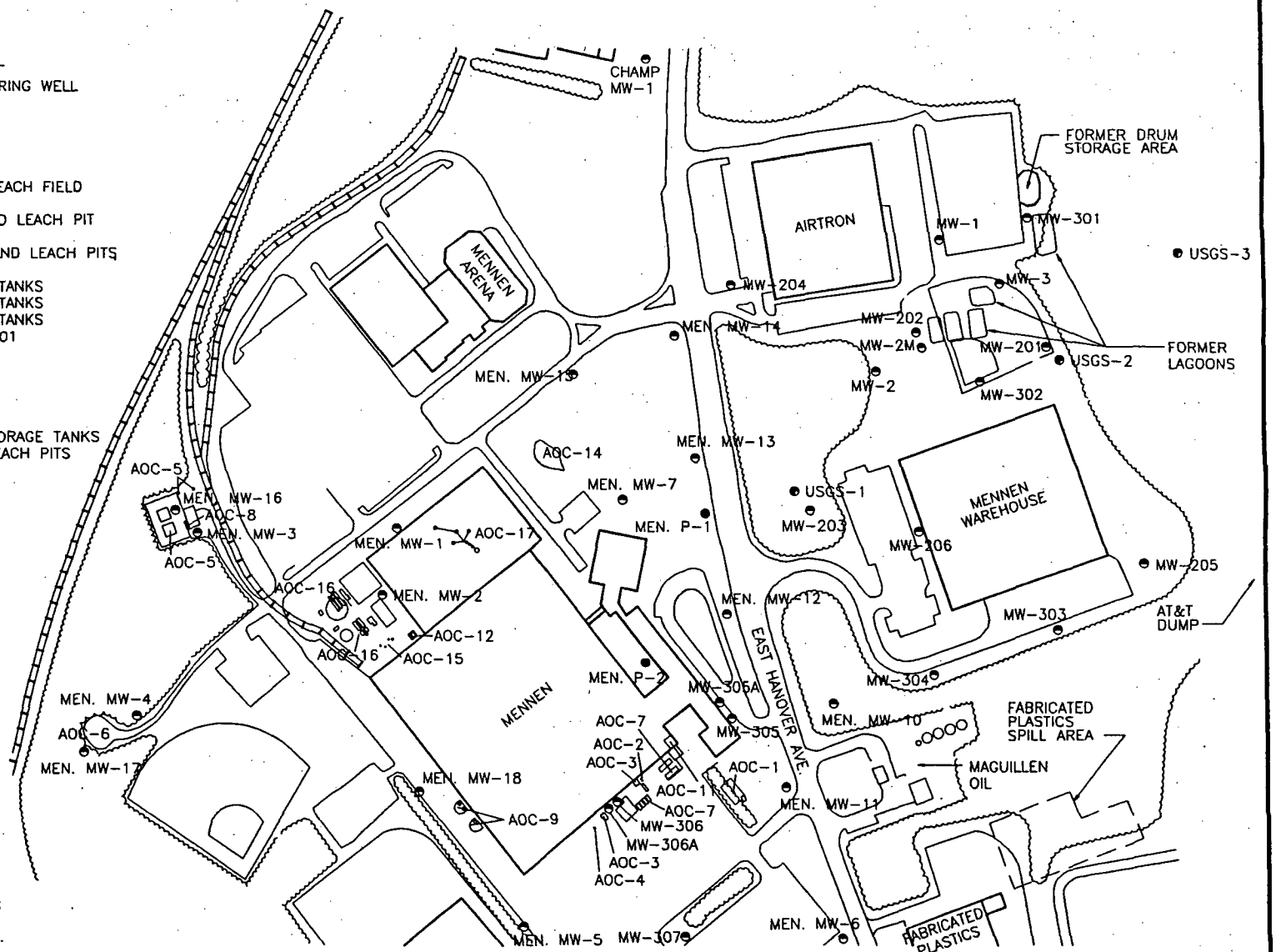
LEGEND

- MONITORING WELL
- WATER PRODUCTION WELL
- LARGE DIAMETER MONITORING WELL
- U.S.G.S. TEST WELL

MENNEN AREAS OF CONCERN

AOC-1	DISTRIBUTION BOX AND LEACH FIELD
AOC-2	GREASE TRAPS
AOC-3	SEPARATION CHAMBER AND LEACH PIT
AOC-4	ACCUMULATION PIT
AOC-5	WASTE WATER LAGOONS AND LEACH PITS
AOC-6	AEROSOL CAN DISPOSAL
AOC-7	UNDERGROUND STORAGE TANKS
AOC-8	UNDERGROUND STORAGE TANKS
AOC-9	UNDERGROUND STORAGE TANKS
AOC-10	STORM WATER OUTFALL 001
AOC-11	TRANSORMER ROOM
AOC-12	TRANSFORMER PAD
AOC-13	DETENTION BASIN-1
AOC-14	DETENTION BASIN-2
AOC-15	SANITARY SEPTIC SYSTEM
AOC-16	FREON ABOVEGROUND STORAGE TANKS
AOC-17	CONCRETE TANKS AND LEACH PITS



NOTES

1. SOURCE: 1994, SCS ENGINEERS REMEDIAL INVESTIGATION REPORT EVALUATION REPORT FIGURE 2-5.

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MONITORING WELL AND SAMPLING POINT LOCATIONS

SI/RI WORK PLAN
AIRTRON DIVISION OF LITTON SYSTEMS
MORRIS PLAINS, NEW JERSEY

FIGURE **3-10**

Table 3-17. Area-Wide Observation/Monitoring Well Network Details (1,2)

LOCATION	WELL DETAILS							SURVEY DATA (3)		
	Well Designation (3)	Installed By	Installation Date	Screened Aquifer	Screen I.D. and Material	Screened Interval (ft, bls)	Screen Length (ft)	Land Surface	Top of Inner Casing	Top of Outer Casing
Airtron Property	USGS-2	USGS	1952	Upper Unconfined	17 in. Steel	76-84	8	401.05	401.05	402.28
	USGS-3	USGS	1952	Upper Unconfined	17 in. Steel	60-68	8	396.00	396.29	397.33
	MW-2M	Airtron	1980	Upper Unconfined	2 in. PVC	49-69	20	402.64	403.82	404.58
	MW-1	Airtron	1981	Upper Unconfined	3 in. PVC	65-75	10	396.20	397.72	398.03
	MW-2	Airtron	1981	Upper Unconfined	3 in. PVC	70-75	5	403.10	404.69	405.04
	MW-3	Airtron	1981	Upper Unconfined	3 in. PVC	55-65	10	396.60	398.02	398.35
	MW-201	Airtron	1987	Lower Confined	4 in. PVC	116-126	10	398.49	397.62	397.99
	MW-202	Airtron	1987	Lower Confined	4 in. PVC	118-125	7	402.60	403.83	404.07
	MW-204	Airtron	1987	Upper Unconfined	4 in. PVC	47-67	20	400.61	401.98	403.46
	MW-301	Airtron	1989	Perched	4 in. PVC	3-18	15	392.06	393.70	394.04
	MW-302	Airtron	1989	Upper Unconfined	4 in. PVC	38-68	30	401.00	402.47	402.91
	RW-1	Airtron	1994	Upper Unconfined	6 in. PVC	50-90	40	N/A	404.96 (5)	N/A
	PZ-1	Airtron	1994	Upper Unconfined	2 in. PVC	40-90	50	N/A	404.24	404.46
	PZ-2	Airtron	1994	Upper Unconfined	2 in. PVC	39-89	50	N/A	405.08	405.28
Mennen Property	P-1	Mennen	1953	Upper Unconfined	17 in. Steel	56-76	20	399.50	392.28	399.48
	P-2	Mennen	1953	Upper Unconfined	6 in. Steel	75-95	20	394.60	386.63	394.76
	MEN.MW-1	Mennen	1985	Upper Unconfined	4 in. PVC	40-60	20	394.10	397.33	397.52
	MEN.MW-2	Mennen	1985	Upper Unconfined	4 in. PVC	40-60	20	392.80	394.51	395.58
	MEN.MW-3	Mennen	1987	Upper Unconfined	4 in. PVC	36-56	20	383.40	385.33	385.81
	MEN.MW-4	Mennen	1987	Upper Unconfined	4 in. PVC	40-60	20	390.90	392.59	393.00
	MEN.MW-5	Mennen	1987	Upper Unconfined	4 in. PVC	27-57	30	392.10	394.17	394.75
	MEN.MW-6	Mennen	1987	Upper Unconfined	4 in. PVC	43.7-63.7	20	384.60	386.51	386.74
	MEN.MW-7	Mennen	1987	Upper Unconfined	4 in. PVC	43-63	20	397.30	398.59	398.88
	MW-305	Airtron	1989	Upper Unconfined	4 in. PVC	39-69	30	392.10	391.74	392.12
	MW-306	Airtron	1990	Upper Unconfined	4 in. PVC	38-58	20	392.80	392.53	392.83
	MW-307	Airtron	1990	Upper Unconfined	4 in. PVC	36.5-56.5	20	389.90	390.43	390.73
	MEN.MW-11	Mennen	1993	Upper Unconfined	2 in. PVC	53-63	10	389.51	389.23	389.52
	MEN.MW-12	Mennen	1993	Upper Unconfined	2 in. PVC	71.5-81.5	10	391.96	391.76	391.97
	MEN.MW-13	Mennen	1993	Upper Unconfined	2 in. PVC	53-63	10	400.35	399.95	400.36
	MEN.MW-14	Mennen	1993	Upper Unconfined	2 in. PVC	53.5-63.5	10	401.35	401.13	401.35
	MEN.MW-15	Mennen	1993	Upper Unconfined	2 in. PVC	67-77	10	399.21	398.94	399.24
	MEN.MW-16	Mennen	1993	Upper Unconfined	2 in. PVC	29.5-39.5	10	381.48	383.36	384.60
	MEN.MW-17	Mennen	1993	Upper Unconfined	2 in. PVC	50-60	10	391.65	393.89	394.11
	MEN.MW-18	Mennen	1993	Upper Unconfined	2 in. PVC	37-47	10	392.19	394.19	394.43
	MW-305A	Mennen	1993	Upper Unconfined	2 in. PVC	37-47	10	392.11	391.83	392.14
	MW-306A	Mennen	1993	Upper Unconfined	2 in. PVC	39-49	10	382.87	392.44	392.89
Warehouse Property	USGS-1	USGS	1952	Upper Unconfined	17 in. Steel	78-86	14	402.00	400.64	402.02
	MEN.MW-10	Mennen	1986	Upper Unconfined	4 in. PVC	40-55	15	389.20	390.97	391.21
	MW-203	Airtron	1987	Lower Confined	4 in. PVC	122-130	8	401.39	402.64	403.16
	MW-205	Airtron	1987	Upper Unconfined	4 in. PVC	53-58	5	387.50	388.91	389.18
	MW-206	Airtron	1987	Upper Unconfined	4 in. PVC	43-63	20	396.87	396.28	396.70
	MW-303	Airtron	1989	Upper Unconfined	4 in. PVC	39-69	30	390.70	392.72	393.07
	MW-304	Airtron	1989	Upper Unconfined	4 in. PVC	29-79	50	391.20	392.32	393.05
Champion	CH.MW-1	Champion	1986	Upper Unconfined	4 in. PVC	32-52	20	395.60	396.01	396.63

Notes and Abbreviations:

ID inner diameter
in. inches
PVC polyvinyl chloride material
ft feet
bls below land surface
N/A *not available*

1. Sources: 1993, ERM-Northeast ECRA/ISRA Site Investigation Report, The Mennen Company.
   SCS Engineers (for RW-1, PZ-1, and PZ-2 details only).
2. Area-wide refers to Airton, Mennen, and Champion sites and vicinity.
3. MW-# designates monitoring well
   P-# designates production well
   RW-# designates groundwater extraction/recovery well
   USGS-# indicates large diameter test well
   PZ-# indicates piezometer (for water-level measurement only)
4. Survey data referenced in feet above mean sea level (1929 NGVD) as reported by ERM-Northeast, 1993, except RW-1, PZ-1 and PZ-2 surveyed by Bruce R. Blair, NJPLS #15098.
5. PVC casing for RW-1 capped with a metal plate. Elevation is for top of plate attached to PVC casing.

grained clays mixed within. From a hydrogeologic perspective, this unit exhibits relatively low permeability characteristics which impede infiltration through the unsaturated zone. In some areas (specifically underlying Airtron AOC-4), localized perched water-table zones occur within the upper till that appear to be discontinuous based upon intrusive investigation and geophysical surveys (SCS Engineers, 1994). The water table is encountered at depths ranging from approximately 40 to 50 feet within the underlying unit which consists of fine- to coarse-grained sand with lenses of gravel and clay. This uppermost water-bearing unit is referenced as the upper unconfined aquifer, exhibiting higher permeability characteristics indicated by aquifer testing and its historic use as a process water-supply by Mennen. At the base of this unit, generally at depths of approximately 70 to 90 feet below land surface, lies a less permeable grey-brown silty clay and clayey silt, which appears to be continuous within the area and ranges from 20 to 30 ft in thickness, based on site-specific and regional subsurface investigations. Given this unit's low permeability characteristics, thickness and extent, it is referred to hydrogeologically as a confining unit, or aquitard, effectively impeding vertical groundwater flow (and, therefore, contaminant migration) between the upper unconfined aquifer and a lower confined aquifer immediately underlying the aquitard. The deepest unconsolidated hydrogeologic unit appears to be a basal till deposit overlying bedrock. Previous groundwater investigations have primarily been focused in the upper unconfined aquifer, within which VOCs have been detected.

The NJDEP theorizes, based on previous investigations and more recent findings reported by ERM Northeast (Final Remedial Action Report, February 1997, prepared for The Mennen Company), that there is a geologic zone of preferred groundwater flow parallel to observed groundwater contours as suggested by:

- The continuity of groundwater contamination regionally
- Elevated hydraulic conductivities in selected wells (MEN MW-10, 11, 12, and MW-305)
- Elevated permeabilities implied from gamma logs (in Wells MW-303, MW-304, MW-305, MW-306, MEN-5, MEN-10, and MW-203)

- Water-level changes recorded during pumping and non-pumping of recovery wells.

However, Geraghty & Miller believes that groundwater flow and the subsequent migration of contaminants in the unconfined aquifer at the site are governed primarily by hydraulic gradients as a result of historical groundwater extraction from Mennen Well P-1, and subsequently Airtron Recovery Well RW-1. Our interpretation of the site hydrogeology and contaminant transport is discussed below.

Regional groundwater flow in the upper unconfined aquifer generally flows to the west and southwest, draining toward the Whippany River which serves as a discharge boundary. A recent preliminary groundwater modeling effort conducted by Geraghty & Miller during 1996 and 1997, supports this regional groundwater flow pattern inferred from site-specific water-level data. This modeling effort was conducted to develop and construct a groundwater flow model that could be used as an additional tool to assess groundwater flow patterns under various hydrologic conditions. Specifically, the modeling effort and model design (presented to the NJDEP on March 20, 1997) were structured to address critical groundwater issues at and around the Airtron facility relating to impact of historic and more recent pumping stresses. The resultant model design, which represents two-dimensional, steady-state groundwater flow within the heterogeneous upper unconfined aquifer, provides a numerical representation of the conceptualized groundwater system consistent with site-specific and regional geologic, hydrogeologic, hydrologic and water usage information. The model was used to simulate aquifer response to pumping stresses during operation of Mennen P-1 and Airtron RW-1 (including capture zone analysis of the Airtron groundwater extraction system). The modeling simulations indicated these pumping stresses have a significant impact on groundwater flow patterns at and around the Airtron property.

On an area-wide basis and below the Airtron facility, groundwater flow patterns have varied over time, primarily as a result of the aquifer's response to changes in pumping stresses within the upper unconfined aquifer. As contamination enters the groundwater system through the unsaturated zone, the bulk of contamination migrates along the primary direction of groundwater flow (advective transport). Therefore, an evaluation of groundwater flow is an important component in assessing contaminant migration. Based on groundwater contours generated from water-level measurements collected throughout

various groundwater investigation activities, the significant variation in overall groundwater flow patterns can be divided into three periods: groundwater flow conditions during Mennen P-1 operation, groundwater flow under non-pumping conditions, and groundwater flow conditions during operation of Airtron's groundwater extraction system. The impact of pumping conditions on groundwater flow during the first and third time-frames is further supported by the modeling effort and indicates the observed groundwater flow patterns are representative of groundwater conditions within the upper unconfined aquifer. A summary of groundwater flow conditions and resulting groundwater patterns for each of these time-frames is presented in the following paragraphs.

Mennen P-1 Pumping Conditions (1951 - 1991) [Figure 3-11]: The natural groundwater flow conditions below the Airtron facility have been greatly influenced by groundwater withdrawal on the neighboring Mennen property (Mennen Production Well P-1) which has diverted groundwater flow from the Airtron property to the production well. Mennen P-1 operated from 1951 until July 1991. Mennen P-1 was initially operated at a rate of approximately 400 gallons per minute (gpm). In response to a concern by the USGS in 1966 that the regional aquifer was being overstressed by the operation of Mennen well P-1, Mennen reduced the pumping rate (short term well yield test indicated operational capacity of 225 gpm). Within at least the last 10 years of operation, pumping rates were further reduced. Pumping of Mennen P-1 was typically continuous (24 hours) during weekdays and occurred about one-third to one-half of the time on weekends.

The aquifer's response to Mennen P-1 pumping (i.e., drawdown) superimposed on natural groundwater flow patterns, results in groundwater flow conditions shown on Figure 3-11. These groundwater flow patterns (observed during February 1990 when Mennen P-1 pumpage averaged about 55 gpm) are considered to be representative for the upper unconfined aquifer during Mennen P-1 operation. During the time when Mennen P-1 was pumping at higher pumping rates, it is likely that its radius of influence, or cone of depression, and more importantly its capture zone, was greater in extent than that shown for February 1990. In addition, considering the length of time and the consistency of application of this pumping stress as well as historic water-level data, the influence on groundwater flow patterns created by Mennen P-1, once established, appears only minimally affected by variability of pumping schedules and rates (i.e., conditions reflect steady-state equilibrium). As such, groundwater flowed perpendicular to groundwater contours/equipotential lines depicted on Figure 3-11, radially toward P-1 during this time-

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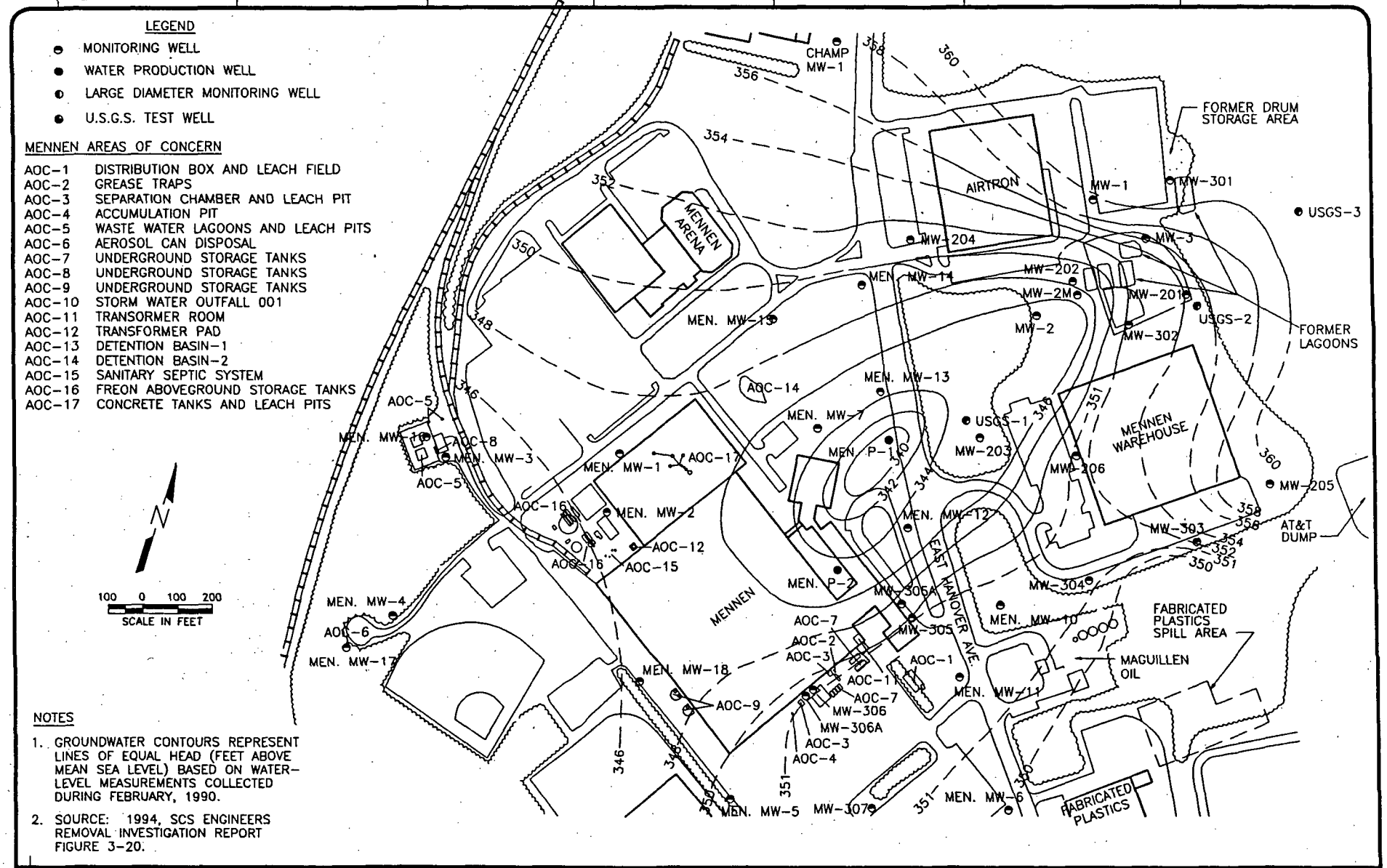

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GROUNDWATER CONTOURS DURING MENNEN P-1 OPERATION (FEBRUARY 1990)

SI/RI WORK PLAN
AIRTRON DIVISION OF LITTON SYSTEMS
MORRIS PLAINS, NEW JERSEY

FIGURE **3-11**

frame. Both the Airtron and Mennen properties are within Mennen P-1's capture zone, as well as a considerable portion of the Mennen warehouse property and the AT&T dump.

Groundwater modeling simulations of Mennen P-1 operation generally support these observed groundwater flow patterns, and specifically support inferred groundwater flow paths from the Airtron facility, indicating groundwater flow towards Mennen P-1. In addition, the groundwater modeling effort provided additional insights into the effects of aquifer heterogeneity on groundwater flow. Variations in distribution of hydraulic conductivities explored during the model calibration did not support the hypothesis of a buried channel of higher permeability material conveying groundwater in a preferential flow path oriented parallel to observed groundwater contours (ERM-Northeast, 1993). The groundwater modeling effort indicated that although heterogeneity exists, the considerable pumping stress imposed by Mennen P-1 on the aquifer system was the primary controlling factor on groundwater flow from the Airtron facility. If such a preferential flow path existed to control groundwater flow beyond Mennen P-1's controlling influence, existing water-level data should suggest such a flow pattern. Interpretation of water-level data by others (ERM-Northeast, 1993; SCS Engineers, 1994) does not appear to infer such a preferential flow path based on groundwater contours.

Non-Pumping Conditions (July 1991 - April 1995) [Figure 3-12]: Groundwater began to resume its natural flow pattern between July 1991 and April 1995, once pumping of Mennen P-1 ceased. Previous evaluation of changes in water-levels by ERM-Northeast (1993) during this period (1991 to 1995) indicated a variability in the rate of recovery between water-level observation points, demonstrating the heterogeneous nature of the aquifer system and suggesting a transient response (nonsteady-state conditions) during this period. Although recovery measured in some wells was greater than others, inferring a varying degree of the former influence of Mennen P-1, the spatial distribution of this "interference" effect is superimposed upon natural fluctuations in water-levels collected from all wells to assess the changing groundwater flow paths and the decreasing extent of the former Mennen P-1 capture zone. In other words, the former zone of influence of Mennen P-1 inferred from recovery data must be superimposed on the natural flow field in order to evaluate flow paths and the former capture zone.

Figure 3-12 shows one "snapshot" of groundwater flow patterns (July 1993) during this transient period as the aquifer system was returning to its natural state under non-pumping

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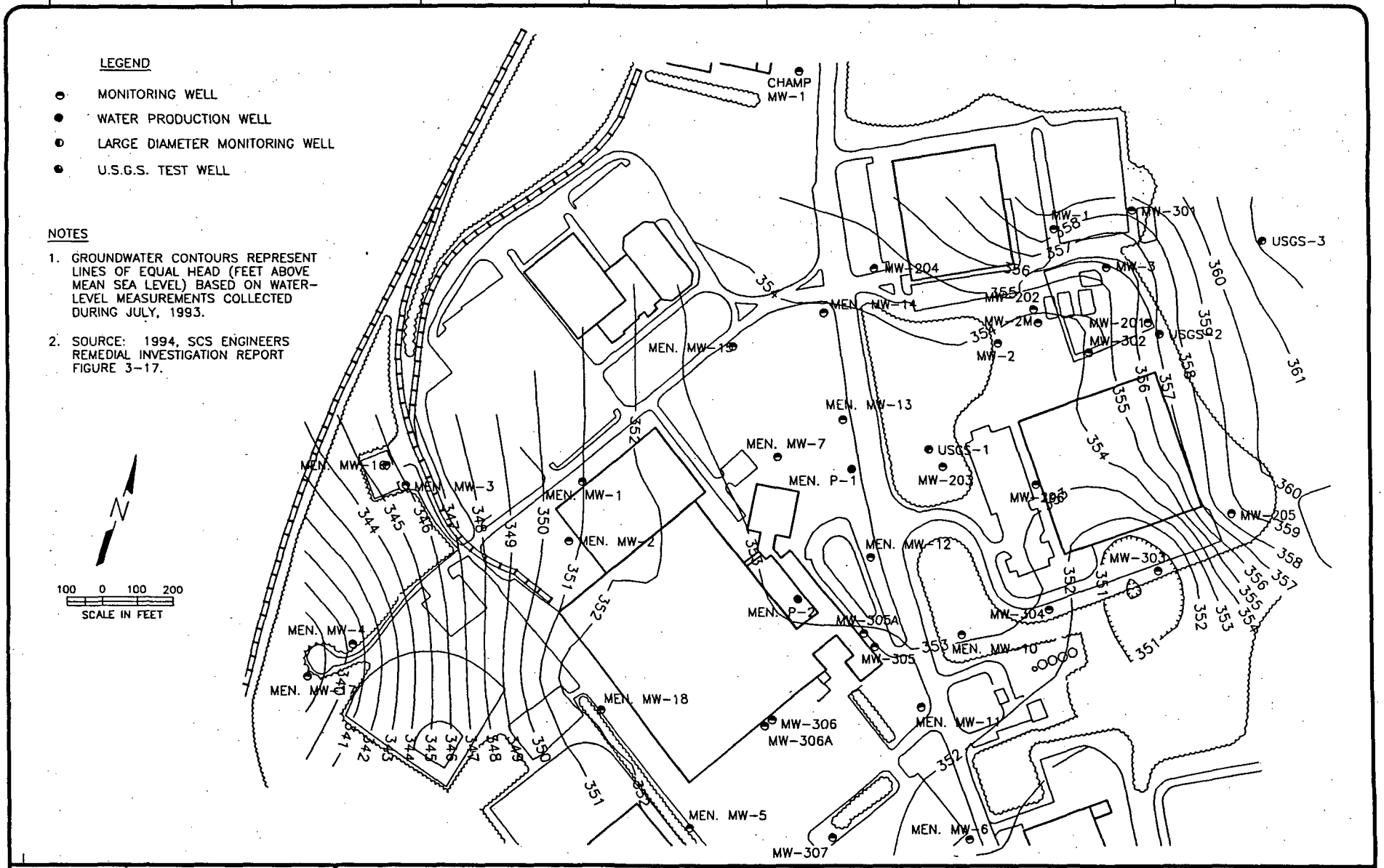

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GROUNDWATER CONTOURS UNDER NON-PUMPING CONDITIONS (JULY 1993)

SI/RI WORK PLAN
AIRTRON DIVISION OF LITTON SYSTEMS
MORRIS PLAINS, NEW JERSEY

FIGURE 3-12

conditions. Groundwater contours indicate that flow paths between the Airtron facility and Mennen P-1 are oriented primarily from west to southwest, consistent with more regional flow patterns. The area underlying most of the Airtron facility and the Mennen facility surrounding Mennen P-1 is characterized by relatively shallow hydraulic gradients compared to areas upgradient of Airtron and downgradient of Mennen (west to the Whippany River). During this time period, it is possible that dissolved VOC contamination generally moving along groundwater flow paths began to migrate west onto the Mennen property, and more southerly onto the Mennen warehouse property, from the area between Airtron and Mennen P-1. Migration of VOCs during this time period was slow because of the relatively flat hydraulic gradient on the Airtron property.

The groundwater model was not used as a tool to evaluate groundwater flow patterns during this period because the steady-state assumption inherent in the model design is not completely valid for the transient aquifer response observed (although the aquifer was approaching equilibrium conditions). However, the spatial distribution of hydraulic conductivity in the model generally supports the variation in hydraulic gradients across the area. Hydrogeologically, transition from zones of lower permeability to higher permeability is characterized by steeper hydraulic gradients (and typically higher groundwater elevations) to shallower hydraulic gradients (and lower groundwater elevations). The representation of aquifer heterogeneity in the model (i.e., varying zones of hydraulic conductivity), as presented in March 1997 by Geraghty & Miller, is consistent with these observed variations in hydraulic gradient.

Airtron RW-1 Pumping Conditions (April 1995 to present) [Figure 3-13]: Beginning in April 1995, the operation of Airtron's Recovery Well RW-1 again altered natural groundwater flow conditions and maintained groundwater capture and containment beneath the Airtron site and extending some distance beyond Airtron's property to the west and south. Airtron has been pumping RW-1 since April 17, 1995, at an average discharge rate of approximately 30 gpm over the first 12 months of operation. Airtron has continued to operate RW-1 at approximately this pumping rate through the present, based on recommendations in the "Twelve-Month Pump-and-Treat Evaluation Report," dated September 9, 1996, presented by SCS Engineers. Groundwater contour maps, generated from water-levels collected periodically during this time period, have been used to assess the impact of RW-1 on groundwater flow patterns at the Airtron facility and to evaluate the development and extent of the resulting capture zone. Flow net analyses indicate that

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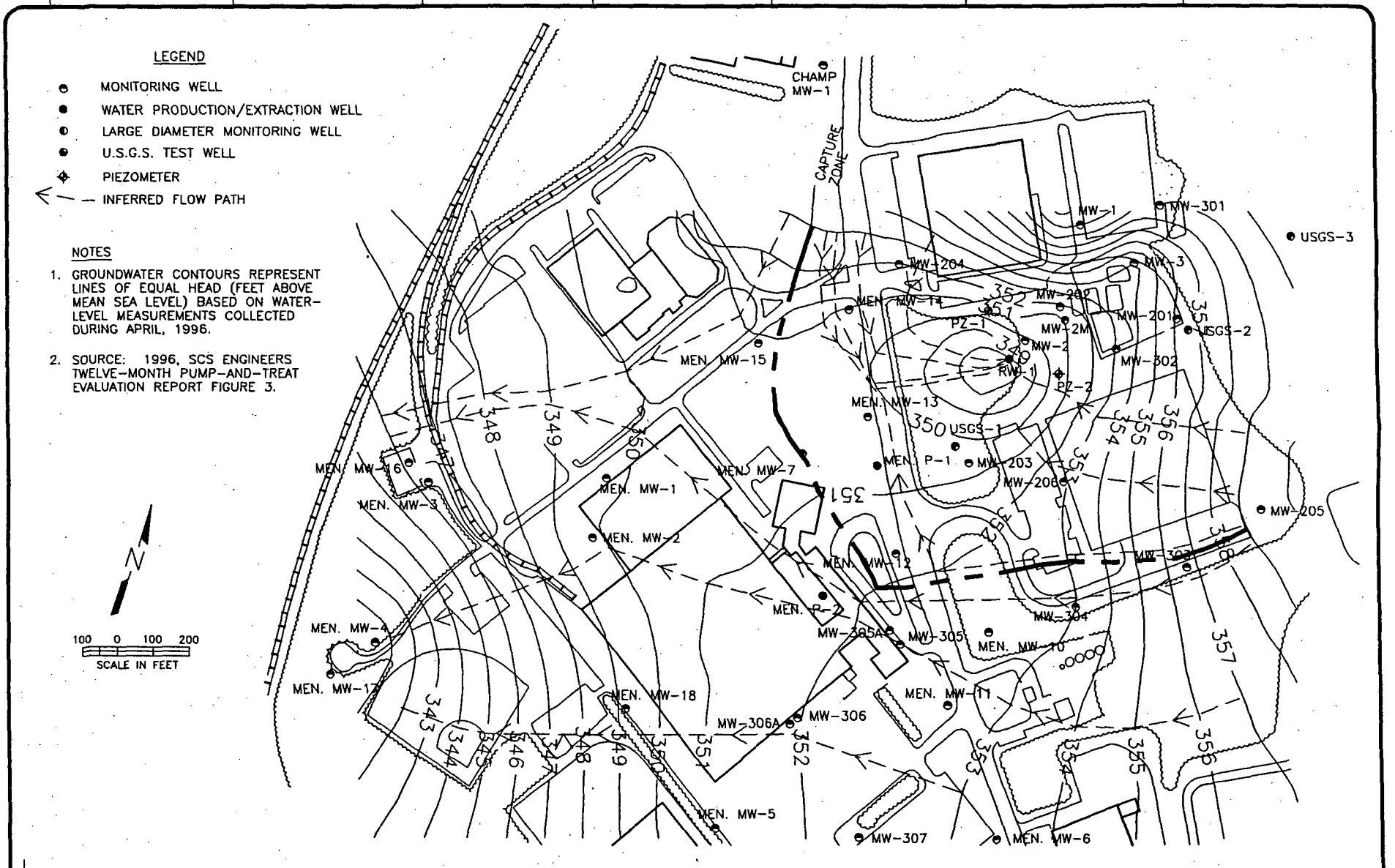

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GROUNDWATER CONTOURS DURING AIRTRON RW-1 OPERATION (APRIL 1996)

SI/RI WORK PLAN
AIRTRON DIVISION OF LITTON SYSTEMS
MORRIS PLAINS, NEW JERSEY

FIGURE
3-13

the capture zone of RW-1 has enlarged over time because of pumping, establishing hydraulic control at the downgradient Airtron property boundary (west and south) within the first year of operation. In addition, evaluation of drawdown effects as well as the configuration of groundwater contours indicate the aquifer has nearly reached equilibrium after one year (April 1996 - refer to Figure 3-13). Based on inferred flow paths perpendicular to groundwater contours depicted on Figure 3-13, the downgradient limit of the capture zone extends southwest, across East Hanover Avenue, approximately to MEN.MW-7 and MEN.MW-12, and south beyond MW-206. Groundwater flow modeling simulations of RW-1 pumping conditions support the general extent of capture beyond the Airtron property boundary.

3.11.2.2 Airtron Site

Groundwater at the Airtron facility has been investigated since 1979 by several consulting firms (including Converse and SCS Engineers) in accordance with various NJPDES/DGW permitting requirements, an Interim Remedial Measures Program (Phase I and Phase II) and ACOs with the NJDEP, dated December 14, 1979 and December 16, 1992. The principal subsurface investigations that have taken place on the Airtron properties are included in Table 3-16.

The results of the groundwater investigations on Airtron's property have indicated the presence of VOC's, primarily trichloroethene (TCE), tetrachloroethene (PCE), and trans-1,2-dichloroethene, in the upper unconfined aquifer that underlies the Airtron site. Concentrations of VOCs detected have exceeded federal Maximum Contaminant Levels (MCLs) as well as New Jersey Ground Water Quality Standards, prompting groundwater extraction and treatment by Airtron that began in 1995. In addition, a soil vapor extraction system (SVE) was installed to remediate residual VOCs.

Based on Geraghty & Miller's review of the historical database, the VOC distribution is primarily oriented toward Mennen Production Well P-1 which acted, in effect, as a groundwater containment well in the region (primary receptor) from 1951 until 1991 when the well was shut down. Airtron offered to take over the operation and treatment of Mennen well P-1 to maintain control of the VOC plume; however, operation of Well P-1 was halted. Groundwater recovery was resumed at the site in 1995 when Airtron activated Recovery Well RW-1.

Airtron's lagoons, which are considered the primary source of VOCs (resulting from Airtron's operations) that are detected on-site, became operational in 1967 and closed in 1980. Considering historic groundwater flow patterns influenced by pumping stresses, impacts from these lagoons were controlled and contained by the operation of Mennen Well P-1 until 1991 and subsequent to activation of RW-1 in April 1995. A more detailed description of the Airtron lagoons are provided in Subsections 3.4 and 3.5 (AOCs 4 and 5).

3.11.2.3 Mennen Property and Other Properties

Groundwater has been investigated on the Mennen property, the warehouse property, and to a lesser extent in areas southeast of the warehouse property. The presence of VOCs has also been documented on the Mennen property the warehouse property within the upper unconfined aquifer. These investigations are noted in Table 3-16. Based on a review of source area evaluation by others (Converse, 1987; ERM-Northeast, 1993; SCS Engineers, 1994) as well as NJDEP correspondence (Draft Joint Mennen/Airtron ACO, dated March 1991), potential source areas of groundwater contamination, including TCE and PCE, exist on the Mennen property. These primarily include former on-site wastewater disposal structures such as Mennen AOC-1 (distribution box and leach field), AOC-3 (separation chamber and leach pit), and AOC-17 (wastewater injection system), as well as Mennen AOC-2, AOC-4, AOC-5 and AOC-15. In addition, Mennen AOC-16 (Freon 11 tanks and associated piping) has contaminated groundwater beneath the site based on detected Freon 11 concentrations in groundwater, indicative of discharges to groundwater from the Mennen operations.

The area southeast of Mennen P-1 in the vicinity of the Mennen warehouse property and beyond, which is not part of Airtron's operation, in Geraghty & Miller's opinion is the area least understood in terms of potential sources and groundwater flow conditions. However, historical groundwater flow patterns and the distribution of VOCs area-wide were greatly influenced by the Mennen P-1 pumping effects between 1951 and 1991. Groundwater flow from the Mennen warehouse property and beyond was most likely to the west/ northwest toward Mennen P-1. Potential sources of VOCs at the Mennen warehouse property and beyond, under this groundwater flow scenario, could very likely have had an impact on groundwater quality in wells MW-206, MEN.MW-10, MW-205, MW-303, MW-304 and MW-305. It should be noted that Wells MW-205, MW-303 and MW-304 are distinguished from all other monitoring wells at the Airtron and Mennen sites by the fact

that PCE has not been detected consistently (if at all) in these wells, which may indicate a separate contributing source to the area-wide VOC concentrations. Potential source areas at the Mennen warehouse property and beyond that have not been well documented (based on review of publicly-available records) include the AT&T dump, Fabricated Plastics spill area and the Magullian oil property.

3.11.2.4 Current Activities at Airtron Property

Fifteen wells are currently monitored both on and off the Airtron property to assess the progress of Airtron's groundwater restoration program (Figure 3-14). Quarterly monitoring at the Airtron site has taken place since 1984. Based upon monthly water level readings collected by SCS in 1995, the influence and capture zone of Airtron's Well RW-1, by April 1996 (after approximately one year of operation) extends beneath the Airtron property and as far west as MW-15 on the Mennen property and as far south as MW-206 on the Mennen warehouse property (Figure 3-13). Groundwater modeling completed by Geraghty & Miller supports the observed influence that the extraction system exerts on groundwater flow patterns in the vicinity of Airtron, as well as the general extent of the capture zone (i.e., beyond Airtron's property boundary), and its ability to contain and capture impacted groundwater emanating from the Airtron property.

3.11.3 Proposed Investigation

Based on Geraghty & Miller's understanding of the groundwater conditions on both the Airtron site and adjoining properties, the following work tasks are recommended (refer to Figure 3-15 for locations of explorations for the proposed investigations):

- Additional groundwater investigations of perched water-table conditions as proposed for AOC-4, Former Sludge Lagoon 5 (refer to Subsection 3.4).

- Further delineation of the perched groundwater zone identified near Well MW-301 through geophysical logging of new and existing wells in the area of the known perched groundwater zone.

- Geophysical logging of selected wells on the Airtron property, provided the wells are accessible, for comparison with gamma logs prepared by ERM

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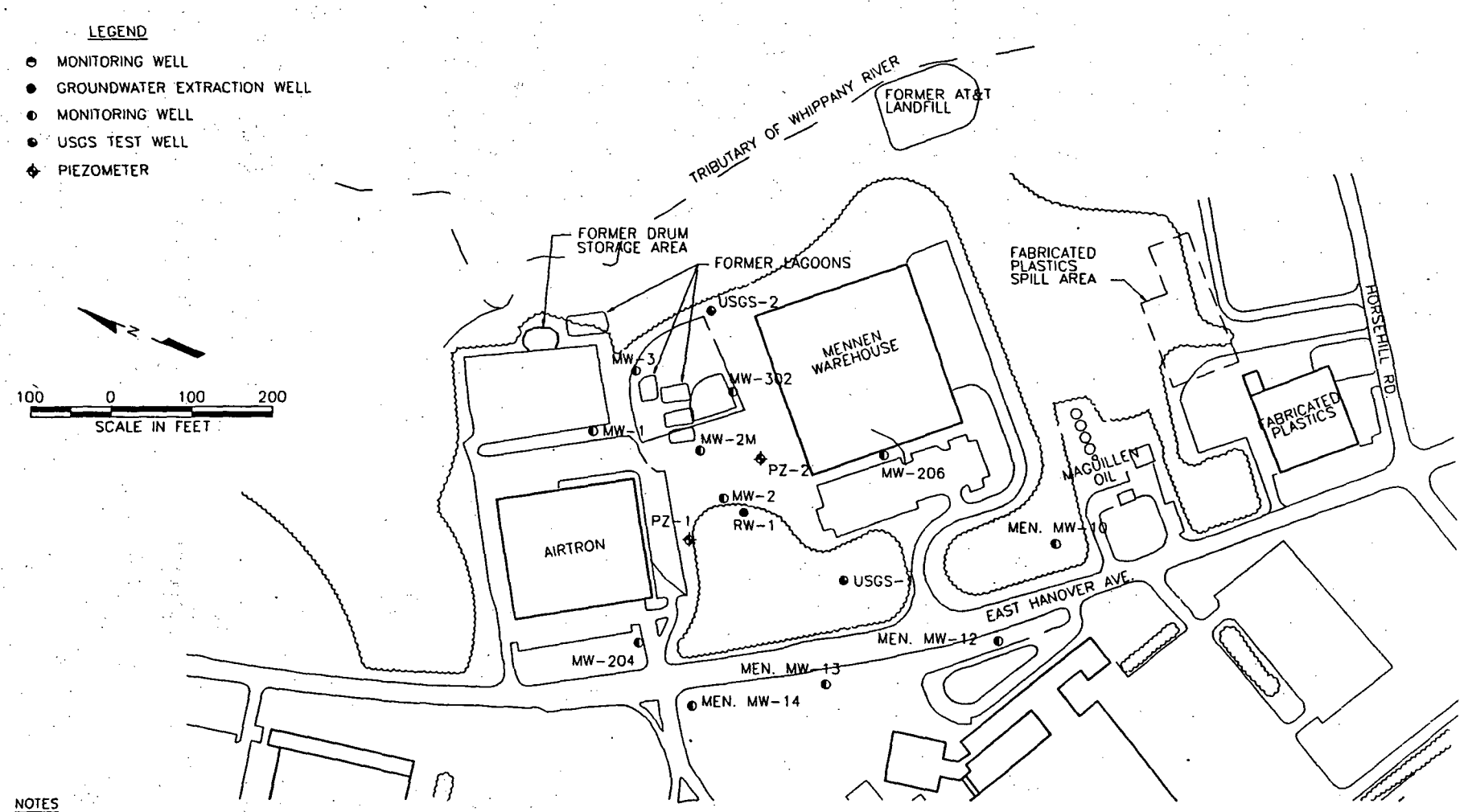

NOTES

1. SOURCE: 1996, SCS ENGINEERS TWELVE-MONTH PUMP-AND-TREAT EVALUATION REPORT FIGURE 1.

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LOCATIONS OF MONITORING WELLS IN EFFECTIVENESS MONITORING PROGRAM

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FIGURE 3-14

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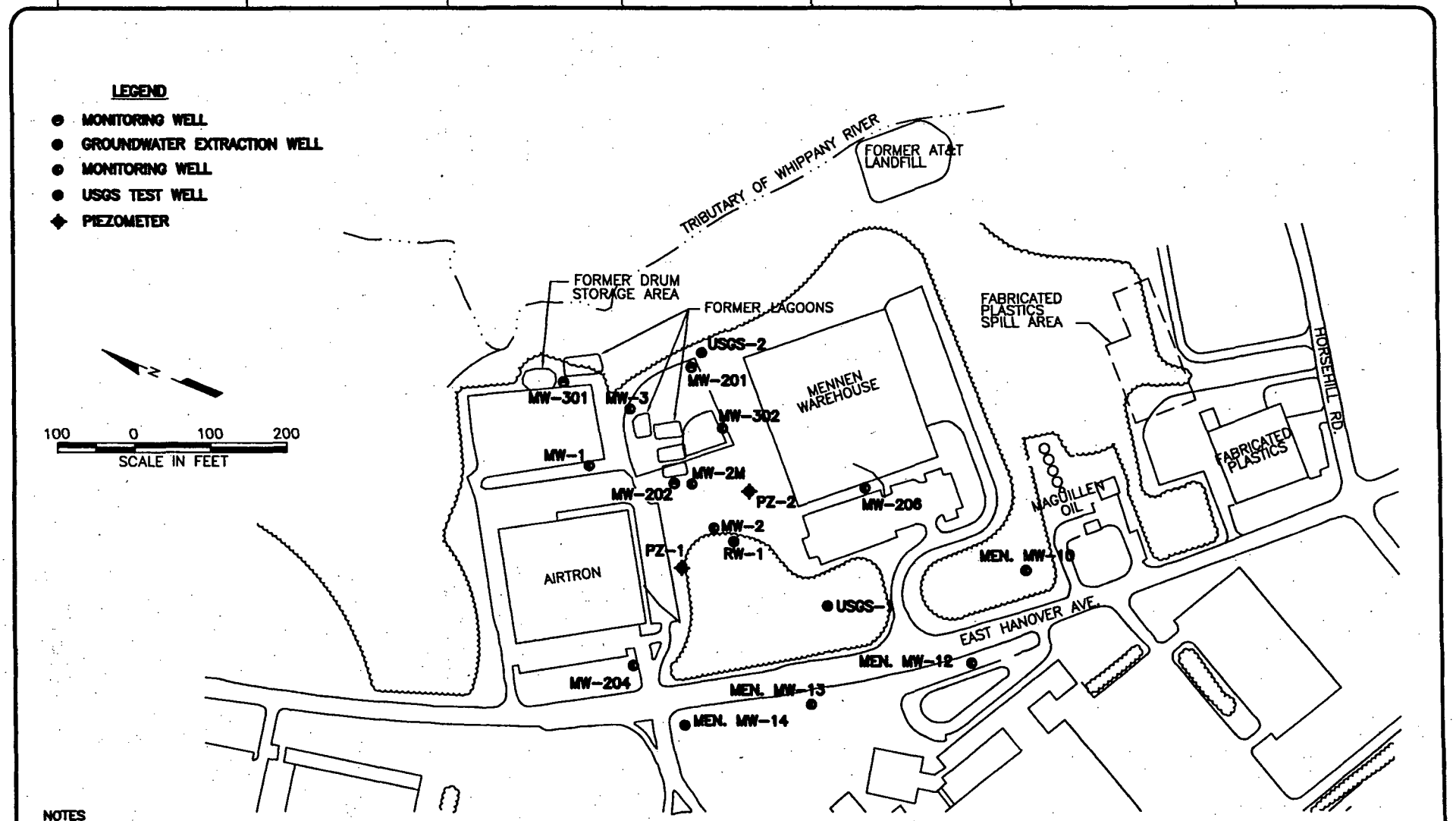

NOTES

1. SOURCE: 1996, SCS ENGINEERS TWELVE-MONTH PUMP-AND-TREAT EVALUATION REPORT FIGURE 1.

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LOCATIONS OF WELLS FOR PROPOSED GROUNDWATER INVESTIGATION (AOC-11)

SI/RI WORK PLAN
AIRTRON DIVISION OF LITTON SYSTEMS
MORRIS PLAINS, NEW JERSEY

FIGURE 3-15

Northeast for off-site wells. Specifically, the following wells are proposed for natural gamma geophysical logging: MW-1, -2, -3, -201, -202, -204, and-302; PZ-1 and -2; and USGS-1. It is proposed that one of the wells logged by Mennen be logged during this survey to allow comparison of data between the sites.

- Assessment of groundwater flow and contaminant migration during the period 1991 through 1995 (as described in more detail below).

- Continued effectiveness monitoring of the current groundwater remediation system and additional monitoring for SI/RI purposes (as described in more detail below).

Information concerning groundwater flow direction and potential off-site migration of VOCs during the period between the cessation of Mennen Production Well P-1 and the operation of Airtron's Recovery Well RW-1 (time lapsed between 1991 and 1995) should be evaluated to assess the degree to which existing contamination attributable to Airtron could have migrated off-site under non-pumping conditions, and potentially beyond the current RW-1 capture zone. Geraghty & Miller recommends that the advective component of contaminant migration (both direction, rate of travel and distance) from the vicinity of Mennen P-1 be assessed using existing water-level data from this time-frame. Airtron personnel have been collecting water levels from the majority of wells in the area-wide network on a regular basis since shortly after Mennen P-1 was shut down. Using this existing water-level database, groundwater contour maps will be generated on a more detailed temporal basis to be able to assess changing groundwater flow direction and hydraulic gradients representative of the aquifer's transient response during this time-frame. In addition, as part of this advective transport analysis, aquifer parameters (i.e., hydraulic conductivity and porosity) will be based on estimates within a reasonable range of values considering site-specific estimates, estimates obtained through the modeling effort, estimates consistent with previous site-specific groundwater flow velocity/migration assessments, and/or published literature values (in cases where site-specific data are lacking). Based on the results of these analyses, existing water quality can also be reviewed to assess the degree of potential off-site/beyond-capture-zone migration from the Mennen P-1 vicinity and the need for additional monitoring, ultimately as it relates to Classification Exception Area (CEA) delineation.

Groundwater monitoring at the Airtron site is recommended to continue as part of the SI/RI, in accordance with NJDEP-approved Interim Remedial Measures (IRM) Program. As part of this program, the following wells are monitored for water levels and water quality: USGS-1, RW-1, MW-3, MEN.MW-12, MEN.MW-13, MW-206 and MW-302; and wells MW-1, MW-2, MW-204, MW-2M, MEN.MW-10, MEN.MW-14, PZ-1, PZ-2, and USGS-2 which are monitored for water levels only.

Geraghty & Miller recommends monitoring of on-site wells MW-204 (to be additionally monitored for water quality) and MW-301 (to be monitored for water levels and water quality) for SI/RI monitoring purposes only. These two existing wells are recommended for SI/RI monitoring in addition to the monitoring wells proposed for installation and sampling as part of AOC-4, Former Sludge Lagoon 5 (refer to Subsection 3.4). Groundwater samples will be lab-analyzed for volatile organics in accordance with EPA Method 624 with a forward library search for the first 15 TICs.

Based upon the June 26, 1997 meeting, NJDEP has withdrawn the request that Airtron sample wells MW-304, -305, and -306, located on the Mennen property. Mennen appears to routinely monitor these wells; therefore, it would be redundant for Airtron to sample them. Airtron will review recently-reported water quality data for these wells as well as additional water quality data which may become available through the Freedom of Information Act.

ATTACHMENT G

Site Investigation/Remedial Investigation and Remedial Action Selection Report Airtron Division Of Litton Systems, Inc.,

Morris Plains, New Jersey

ARCADIS
GERAGHTY & MILLER

Address:
88 Duryea Road
Melville, New York 11747

REPORT

July 1, 1998

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8. Concentration of Semivolatile Organic Compounds in Soil Samples, Aritron Division of Litton Industries, Morris Plains, New Jersey.
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1.0 Introduction

On December 16, 1992, Airtron Division of Litton Systems, Inc. (Airtron) entered into an Administrative Consent Order with the State of New Jersey Department of Environmental Protection (NJDEP) to address environmental impacts at the facility located at 200 East Hanover Avenue in Morris Plains, New Jersey. The site location is shown on Figure 1. In August 1997, ARCADIS Geraghty & Miller was retained by Airtron to conduct additional investigations at the site provided for in the Site Investigation/Remedial Investigation Workplan (the SI/RI Work Plan) for Airtron/Litton (SCS Engineers, July 1997). The Work Plan was prepared to supplement previous investigations conducted in 1994 and 1996 and to comply with the NJDEP Technical Requirements for Site Remediation under N.J.A.C. 7:26E. The investigations were focused on 11 areas of concern (AOCs) identified during research of historical and current materials handling and storage practices/activities conducted at the site. A summary of AOCs is as follows:

- AOC-1: Hazardous Materials Storage Building Area
- AOC-2: Former Parking Island Drum Storage Area #1
- AOC-3: Former Drum Storage Area #2
- AOC-4: Former Sludge Lagoon #5
- AOC-5: Former Sludge Lagoons #1 - 4
- AOC-6: Stream Sediments
- AOC-7: Paint Stripping Area/Former 10,000-Gallon Underground Storage Tank
- AOC-8: Gallium Arsenide Wing Trench
- AOC-9: Former 15,000-Gallon Underground Storage Tank
- AOC-10: Former 20,000-Gallon Underground Storage Tank
- AOC-11: Groundwater

Figure 2 provides a layout of the site and AOCs discussed in this report. A summary of AOC identifications and previous investigations is provided in the Background Section of this report.

The objective of the SI/RI investigation was (1) to identify, delineate, and characterize the impacts on soil and groundwater quality, if any, associated with the AOCs-1 through 10; (2) assess the effectiveness of the current soil vapor extraction system (VES) and recommend modifications to the VES, if warranted; (3) to further characterize groundwater flow and volatile organic compounds (VOCs) plume migration; and (4) to further evaluate the effectiveness of the groundwater recovery system for the control and remediation of the VOCs plume beneath the facility.

In addition to achieving these objectives, a thorough review was conducted of available information regarding The Mennen Company (Mennen) facility located west and across Hanover Avenue from the Airtron facility. This review was conducted to address concerns regarding conclusions made by Mennen pertaining to site conditions at the Airtron facility. The primary documents which were reviewed included the Final Remedial Action Report, The Mennen Company, ISRA Case No. 92104, February 1997; the Addendum to the February 1997 Final Remedial Action Report for The Mennen Company in Morristown, New Jersey, November 7, 1997; and the draft Administrative Consent Order for both The Mennen Company and Airtron Division of Litton Industries, March 8, 1991. A discussion of these issues is provided in the Conclusions Section of this report.

To identify, delineate, and characterize the impacts at the site, the investigations were conducted in a phased approach. The first phase, which included but was not limited to the scope of work outlined in the SI/RI Work Plan was performed from September 15, 1997 to September 26, 1997. The SI/RI Work Plan scope of work was expanded to delineate soil impacts indicated by field observations and instrument readings recorded from the initial borings. Based on the laboratory analytical results of the first phase of the investigation, a second phase, including the installation and sampling of additional soil borings and monitoring wells, was performed from January 19, 1998 to February 3, 1998. Both phases of the investigations, including the SI/RI Work Plan scope of work, were conducted following the notification and prior approval of Mark Walters, the NJDEP case manager for the facility in accordance with N.J.A.C. 7.26E.

This report will present the methodologies, results, and findings of the site and remedial investigation activities. In addition, this report will provide a summary of the effectiveness of the current soil and groundwater remedial systems and a conceptual plan for applicable remedial technologies to address soil and groundwater impacts at the Airtron facility (Remedial Action Selection).

2.0 Background

The following section presents a summary of site background information used for the remedial investigation. This section provides information on setting, site use, geology,

hydrogeology, summaries of previous investigations, and the identification and selection criteria of areas of concern (AOCs) under investigation at the Airtron facility.

2.1 Setting

The Airtron facility is located on approximately 19 acres of land designated as Block 0601, Lot 1, located in Hanover Township, New Jersey. Approximately two-thirds of the site has been developed and is currently composed of the main building, a hazardous materials storage shed, asphalt parking lots, and a softball field (see Figure 2). The main building and parking lots were constructed in 1952 by Monroe Calculating Machine Company (Monroe). Litton Business Systems purchased the property from Monroe in 1958 and moved the Airtron Division into the facility that year. The hazardous materials storage shed was constructed in January 1992 by Airtron. The same area was used previously to store hazardous materials on a fenced concrete pad which was installed in 1973. The softball field was constructed in 1983. The facility is bound to the south by a warehouse. The southeast side of the warehouse property is located on an abandoned dump currently owned by AT&T. Further south of the warehouse is Magullian Oil Company, a bulk petroleum storage facility. To the west of the facility across East Hanover Avenue are the Mennen Company factory, the William G. Mennen Sports Arena, and a Champion International plant. North of the Airtron facility is a wooded area containing a former sand and gravel quarry, and to the east is undeveloped woodland. Figure 3 shows the adjacent properties of the Airtron facility.

Former structures which are no longer present at the facility include five shallow lagoons (see Figure 2). Four lagoons, previously located beneath left and center field of the softball field, were used for the dewatering of waste water treatment system sludge. Lagoons #1 and #2 were installed in 1963, and Lagoons #3 and #4 were later installed in 1972 to accommodate the increased volume of waste water sludge resulting from higher productivity at the facility. The fifth lagoon, Lagoon #5, was located at the southeast corner of the eastern-most parking lot at the facility. Lagoon #5 was used as a settling basin for rinse water from the facility. Under the direction of an Administrative Order from NJDEP dated December 14, 1979, all five lagoons were properly closed (i.e. their contents were excavated and removed) under supervision of NJDEP in late 1980 (NJDEP correspondence February 9, 1981). The lagoons will be discussed further under the Areas of Concern Section below.

2.2 Site Use

Monroe manufactured mechanical adding machines during their occupancy of the facility. This production included fabrication (sheet metal stamping and alloy casting) and assembly operations. No records have been identified regarding waste treatment and disposal practices during Monroe's occupancy of the site.

The facility is currently used to produce high technology waveguide and microwave components and gallium arsenide ingots and wafers for semiconductor substrate. Both products are used in the commercial, semiconductor, and defense industries. Production activities include manufacturing, engineering, and research and development of these products.

Gallium arsenide ingots and wafers are produced by combining gallium and arsenic to form poly-crystal ingots. The poly-crystal ingots are then used for the base material for the growth of mono-crystal ingots. Mono-crystal ingots are then sawed into wafers, polished, and shipped for use as semiconductor substrate. In addition to gallium and arsenic, materials used in the production of gallium arsenide ingots and the manufacture of finished wafers are: borax powder, methanol, aqua regia (hydrochloric and nitric acids mixture), distilled water, a solution of sulfuric acid and hydrogen peroxide, and lime. Waste fluids are treated through the facility's on-site NJPDES-permitted waste/water treatment system and discharged. Prior to treatment in the waste/water system, arsenic is precipitated and the solids are removed from cutting and polishing fluids by filter press. The filter cake is then disposed as a Resource Conservation and Recovery Act (RCRA) hazardous waste under the codes F006 (metal hydroxides from electroplating operations) and D004 (toxicity characteristic for arsenic).

Waveguide and microwave components produced from aluminum alloys or copper alloys are machined and fabricated in the on-site machine shop. Once completed, the components are cleaned. Airtron uses Axarel™, a high grade kerosene with diisobutyl additives, followed by an isopropyl alcohol rinse. Once cleaned, the components are then put through a plating process using a number of materials including nickel, cadmium, or silver, depending on the intended use of the component. After the plating process, the component is painted and undergoes quality assurance/quality control (QA/QC) bench testing. Wastes from the plating process were batch treated and dewatered in lagoons until 1980. Since 1980, plating wastes have been treated in the on-site NJPDES-permitted waste/water treatment system. All waste solvents (Axarel) are disposed of as RCRA waste.

In addition to the current processes listed above, a number of past processes were performed at the Airtron facility. The following is a summary of these past processes:

- Aluminum alloy casings for microwave components were manufactured by Airtron from 1958 until the foundry process was dismantled at the facility around 1962/1963. These components are now purchased from an outside vendor.

- Ferrite materials (containing iron oxide) were produced by Airtron from 1958 until the early 1970s for use in microwave components. These ferrite materials included iron oxide, magnesium oxide, manganese oxide, nickel oxide, and lead oxide. The ferrite materials are now purchased from an outside vendor. Airtron

continues to blend and machine ferrite materials at the facility. The production and machining of the ferrite materials use several acidic solutions and solvents including nitric acid, sulfuric acid, phosphoric acid, hydrochloric acid, acetic acid, trichloroethylene, methanol, and acetone. Spent acids are diluted and treated in the NJPDES-permitted on-site waste/water treatment system. Spent solvents are disposed of as a RCRA waste.

- Yttrium aluminum garnet (YAG) was produced for use as a laser host material starting in 1967. YAG is an oxide crystal which was grown and then core drilled to produce laser rods. Airtron began relocating production YAG in 1990 and completed relocation by September 1992.

- Potassium titanyl phosphate (KTP) another type of crystal used to enhance laser frequency, was produced at the facility starting in the late 1970s. KTP crystals were grown and cut into wafers and other shapes. Hydrochloric acid was primarily used to rinse KTP products. Spent HCL was diluted and treated through the NJPDES-permitted on-site waste/water treatment system. KTP manufacturing was relocated from this facility to another by September 1992.

- Gallium gadolinium garnet (GGG) a crystalline material for use as a substrate for magnetic bubble storage devices, was produced at the facility starting in 1970 or 1971. GGG crystals were grown, cut into wafers, lapped, and polished in preparation for the application of a film of magnetic material. Wastes generated from the production of GGG included Evercool™ lubricant, tensioning fluid (STC), GGG sludge, silicon carbide sludge, aluminum oxide sludge, sulfuric acid, phosphoric acid, acetic acid, Liquinox™ microcleaner, methanol, Nalco 1060 Colloidal Silica™ (sodium hydroxide, water, and silica), ammonia hydroxide, and acetone. The application of the magnetic film which began in 1975, used lead oxide, bismuth oxide, thallium oxide, iron oxide, vanadium oxide, gallium oxide, chromium trioxide, and magnesium perchlorate as a magnetic media. Once applied, the films were cooled and cleaned using one or a combination of nitric acid, sulfuric acid, phosphoric acid, hydrochloric acid, acetic acid, methanol, or acetone. Waste acids generated from the production of GGG and the application of magnetic films were neutralized and treated in the NJPDES-permitted on-site wastewater treatment system. Spent solvents were disposed of as RCRA wastes. The production of GGG materials at the facility ceased in 1980.

- Yttrium iron garnet (YIG), a crystalline material used in microwave applications, was produced by Airtron in the early 1960s. YIG was grown from molten salt flux and hydrochloric acid was used for rinsing the crystals. Spent hydrochloric acid was neutralized and diluted prior to disposal. YIG is still used by Airtron, however, the production of YIG ceased in 1980 and YIG is currently purchased from an outside supplier.

- Yttrium lithium fluoride (YLF) crystals were grown for use as laser crystal hosts beginning in 1973. YLF crystals were grown using yttrium oxide, lithium fluoride, and neodymium oxide. The YLF crystal growth process also employed a scrubber using potassium hydroxide to neutralize hydrogen fluoride. Spent scrubber solution was discharged to the NJPDES-permitted on-site waste water treatment system. The production of YLF was relocated by May 1992.

- Between 1969 and 1992, jewelry was manufactured at the facility under a group named Diamondair. This process was created to use out-of-specification YAG ingots grown for laser host material. Cubic zirconia (yttrium and zirconia) was also manufactured for a short period of time around 1977. The production of jewelry by Diamondair included the cutting, polishing, and mounting of YAG and cubic zirconia into gold settings purchased from an outside supplier. This process included the use of detergents such as Alconox™ and Oakite-90™, and a cyanide solution for electropolishing of gold settings. Spent process solutions were treated in the NJPDES-permitted on-site waste water treatment system.

Based on this information and a review of facility operations manuals, NJDEP Reports, and the NJPDES permit, a list of chemicals known to have been used at the Airtron facility is provided in Appendix A.

2.3 Hydrogeology

The following sections describe the regional geology of the Morris Plains/Hanover area and site-specific geology of the Airtron facility. The hydrogeology is based on a review of available USGS publications and the results of subsurface investigations at the Airtron facility by ARCADIS Geraghty & Miller and others.

2.3.1 Regional Geology

The Airtron facility is located within the western boundary of the Piedmont Physiographic Province (Triassic lowland subsection). The Piedmont is an elongated down-faulted basin also referred to as the Newark basin. Generally, the Triassic strata dip west-northwest at about 8 to 10 degrees (Nichols 1968). Immediately west of the Airtron facility is a major normal fault which forms the boundary between the Triassic lowland and the New Jersey Highlands. The New Jersey Highlands are located on an upthrown portion of the fault and consist of Paleozoic and Precambrian gneisses, granites, and schists.

The geology of the Morris Plains area consists of a series of glacial units overlying interbedded sedimentary and igneous rock of the Jurasic age (Lyttle and Epstein, 1987). These rocks form part of the Newark Supergroup and are (from top to bottom) the Boonton Formation, Hook Mountain Basalt, Towaco Formation, Preakness Basalt, Feltville Formation, and Orange Mountain basalt. Combined, these rocks were

formerly referred to as the Brunswick Formation. Periods of glaciation occurred during the Pleistocene Epoch, sometime referred to as the Great Ice Age or Glacial Epoch, which began about 2.5 million years ago. During this time in the Morris County area, glaciers advanced and carved valleys into the bedrock, which was partially exposed at the surface at this time. The carving of the exposed bedrock surface by glaciers and streams resulted in a network of extensive and partially interconnected valleys.

During the Pleistocene period, glaciers advanced and retreated several times. As the sheets of ice retreated, the glaciers dropped debris, creating deposits of sediments consisting of clay and crushed rock of all sizes. This material is referred to as till. The thickness of till deposits varies, depending upon the degree of ice movement, the amount of materials caught up in the bottom of the ice, and the bedrock topography (Gill and Vecchioli 1965). Till deposits blanket a large portion of Morris County.

At various times when the glaciers retreated, large rivers were created that carried and deposited sediments. These river deposits are termed meltwater or outwash often these deposits are stratified deposits. The rapidly flowing rivers carried sediments ranging in size from clay to small boulders. As the rivers began to lose velocity, the more massive sediment load was deposited first, followed by the deposition of fine sands and silts. Heavy coarse sand and gravel sediments filled many of the valleys just east of Morris Plains. Some layers of fine sediments still exist within these valleys, however, the resulting deposits consist primarily of sand, gravel, and boulders. This material comprises the Buried Valley Aquifer System, which is a major source of groundwater in Morris County.

2.3.2 Site-Specific Hydrogeology

The stratigraphic units beneath the Airtron facility consist of glacial till deposits overlying two distinct outwash deposits. The till deposits are generally well compacted and are composed of clay, silt, sand, and gravel with occasional cobbles and boulders. The outwash material was deposited by meltwater during the periods of glacial recession when stratified drift was deposited in broad sheets south and then north of the ice front, as the ice melted back and downwashed to the north. These outwash deposits consist of well-sorted silts and sands. The outwash deposits observed beneath the Airtron facility are separated by a low-permeability clayey-silt layer.

The three hydrogeologic units that have been identified at the Airtron facility; are perched groundwater within the glacial till deposits, the upper unconfined aquifer found in the shallow portion of the outwash deposits, and the lower confined aquifer in the deep portion of the outwash deposits. The perched groundwater is found sporadically across the site. Where present, the perched groundwater was observed at depths ranging from approximately 5 feet to approximately 20 feet below land surface.

Perched groundwater generally occurs as a result of isolated clay units or highly compacted zones which create an aquitard resulting in saturated conditions in the normally unsaturated soils. As aquitards merely impede the infiltration of water through the soil, the primary flow of perched groundwater in the subsurface remains vertically downward through and around the aquitard.

The upper unconfined aquifer is encountered at approximately 30 to 40 feet below land surface across the site. This upper unit is unconfined has a gradient of approximately 0.0057 feet per foot (ft/ft) and a regional flow direction to the southwest toward the Whippany River which serves as a discharge boundary.

The lower confined aquifer is located at approximately 70 to 90 feet below land surface, beneath a confining clayey silt unit referenced above. The gradient of the lower confined aquifer is approximately 0.0125 ft/ft with groundwater flow from northwest to southeast. Wells MW-201, MW-202, and MW-203 (see Figure 2) are completed in the deep outwash deposits of the lower confined aquifer. The clayey-silt aquitard separating the shallow portion of the outwash deposit from the deep outwash deposit were observed in soil cores and interpreted from the gamma logs for Wells MW-201, MW-202, and MW-203. The relative elevation of water levels in wells completed in the upper unconfined aquifer and completed in the these lower confined aquifer indicate a vertically upward head gradient.

2.3.3 Surface Water

The Whippany River is located approximately one-half mile southwest of the Airtron facility. The Whippany River flows generally from northwest to southeast through this area.

A drainage ditch located in the wooded area east of the facility flows from north to south across the property. The drainage ditch then turns southeast, bisects the abandoned dump currently owned by AT&T mentioned in the Setting section above, and enters the Whippany River approximately one mile south of the Airtron property. The drainage ditch will be discussed further under the Areas of Concern Section below.

Surface water is also present in the northern end of the former sand and gravel quarry north of the site. Based on field observations, this water body appears to be perennial. However, no stream channels entering this water body were observed. Therefore this water body appears to be either a reflection of the water table and/or accumulated precipitation.

2.4 Areas Of Concern

Eleven areas of concern (AOCs) have been identified at the Airtron facility based on the historical and current materials storage, handling, and disposal practices, as well as the discovery of impacted media. A site plan of the Airtron facility showing the locations of all eleven AOCs is provided in Figure 2. The identity and a brief description of the AOCs follows:

- AOC-1: Hazardous Materials Storage Building Area - The Hazardous Materials Storage Building Area is located off the southeast corner of the Airtron facility main building. The hazardous materials storage building is currently used to store hazardous raw materials and waste for periods under 90 days in duration. The current hazardous materials storage building area 1992 is a covered and fenced enclosure modification to a fenced concrete pad that was constructed about 1973.

- AOC-2: Former Parking Island Drum Storage Area #1 - The Former Parking Island Drum Storage Area #1 was located in the rear parking lot northeast of the Airtron vicinity main building. This area formerly consisted of two grass islands which bisected the parking lot. Facility personnel reported that drums were stored on the grass islands during the 1950s and 1960s while both Monroe and Airtron operated the facility. The former grass islands have since been graded and paved with asphalt.

- AOC-3: Former Drum Storage Area #2 (Rear of Parking Lot) - The Former Drum Storage Area #2 located along the northeastern side of the rear parking lot. This area currently consists of a grass and tree covered area bordering the rear parking lot. Facility personnel reported that drums were stored in this area over an unspecified time period more than 25 years ago.

- AOC-4: Former Sludge Lagoon 5 - The Former Sludge Lagoon 5 located along the northeastern side of the rear parking lot and immediately south of the Former Drum Storage Area #2 (AOC-3). This settling basin was installed in 1963. and received rinse water from the Airtron plant during operations. An Administrative Order from NJDEP dated December 14, 1979 required the cessation of discharge into the settling pond. As a result, the settling pond was excavated and removed under NJDEP supervision in 1980. A February 9, 1981 letter from the NJDEP acknowledges the proper and complete closure of this settling pond and this area is currently covered by grass and trees.

- AOC-5: Former Sludge Lagoons #1-#4 - The Former Sludge Lagoons #1 through #4 located off the southeast corner of the Airtron facility main building. Lagoons #1 and #2 were installed in 1963 and Lagoons #3 and #4 installed in 1972 in order to provide increased capacity. These four sludge lagoons received precipitated solids from the plant settling tanks and/or the batch waste/water treatment systems

to be dewatered and dried prior to their disposal. An Administrative Order from NJDEP dated December 14, 1979 required the cessation of discharge into the sludge lagoons. As a result, the sludge lagoons were excavated and removed under NJDEP supervision in 1980. A February 9, 1981 letter from the NJDEP acknowledges the proper and complete closure of these sludge lagoons and the area is currently a maintained softball field for local adult leagues.

- AOC-6: Stream Sediments - An intermittent stream is present in the wooded area to the northeast of the Airtron facility main building and parking area. This stream enters the Airtron property from the north and flows south until it discharges into the Whippany River approximately one mile from the site. The stream bed is generally dry with constant flow only occurring during precipitation events. In addition, the Airtron facility contributes water to the stream through two NJPDES-permitted outfalls located approximately 300 feet upstream of the Airtron property boundary. Outfall 001 discharges from the on-site waste/water treatment system which has been operating since 1980. Outfall 003 discharges from the Airtron groundwater remedial pump and treat system which has been operating since 1995. The current NJPDES limits are provided in Table 1.

- AOC-7: Former Paint Stripping Area/Former 10,000-Gallon UST - The former Paint Stripping Area/Former 10,000-Gallon UST located at the southeast corner of the Airtron facility main building. The 10,000-gallon UST (NJDEP registration #0166980) was installed in 1966 for No.4 fuel oil storage for two boilers in the plant building. The conversion of these boilers to natural gas in 1990 resulted in the removal of this UST. The UST was removed by Environmental Services, Inc. (ENSI) under NJDEP Bureau of Underground Storage Tanks (BUST) spill number C90-0412. During the removal of the UST, approximately 151 tons of petroleum-impacted soil were removed and recycled at Riverside Brick and Supply in Richmond, Virginia. Post-closure soil samples collected following the removal of this UST detected tetrachloroethene (up to 5.4 ppm), 1,1,2-trichloroethene (up to 0.2 ppm), and 1,1,2,2-tetrachloroethane (up to 0.17 ppm) which are not typically associated with petroleum products. Facility personnel were interviewed to determine the possible source of these VOCs. Individuals indicated that paint stripping may have been performed in this area a number of years ago. This area is currently covered with grass, asphalt, and a concrete pad for existing soil vapor extraction system (SVE) discussed under the 1991 Soil Vapor Extraction Test Program below.

- AOC-8: Gallium Arsenide Wing Trench - The Gallium Arsenide Wing Trench is located on the north side of the Airtron facility main building. Constructed in 1982, the trench is a subsurface concrete vault which was formally used to contain two 55-gallon drums which received methanol waste from the gallium arsenide crystal manufacturing process. The associated drainage piping for this system consisted of cast iron piping installed in a sub-grade concrete trench under the

facility main building floor. The vault was used for approximately six months around 1984 or 1985, and there are no records of any releases from this system. On July 1, 1993, the vault was inspected and screened with a PID which indicated that no hazardous substances were present. Based on this inspection, the NJDEP issued a letter to Airtron, dated December 11, 1996, stating that "the vault has been inspected and is no longer considered an AOC." As a result, no further investigation was proposed in the SI/RI Work Plan for the Gallium Arsenide Wing Trench. The vault remains inactive and is covered with steel plate doors and locked to prevent precipitation and unauthorized personnel from entering.

- AOC-9: Former 15,000-Gallon Heating Oil UST - The Former 15,000-Gallon Heating Oil UST is located off the southeast corner of the Airtron facility main building just south of the Hazardous Materials Storage Building (AOC-1). In July 1992, the 15,000-gallon UST was discovered abandoned during the installation of the SVE system at the site. Fingerprint analysis of the UST contents indicated that the tank contained "Bunker C" heating oil. The UST was removed by ENSI under NJDEP Hotline Case numbers 92-7-10-1150-13 and 92-7-16-1442-24. During the removal of the UST, an undetermined volume of petroleum-impacted soil was removed and disposed. During excavation of the tank, several crushed drums were discovered along the northern side of the UST. Sampling and analysis of the drums indicated that the drums were cleaned and crushed prior to their burial. Post-closure samples collected following the removal of the UST and associated crushed drums detected total petroleum hydrocarbon (TPH) at concentrations up to 260 ppm and total semi-volatile organic compounds (SVOCs) up to 2,768 ppm. This area is currently grass covered.

- AOC-10: Former 20,000-Gallon UST - The Former 20,000-Gallon UST is located to the south of the Airtron facility main building just north of the former Sludge Lagoons 1-4 (AOC-5). A file review by Airtron located a drawing from 1952 depicting a 20,000-gallon fuel oil UST. The tank was located and removed in 1994. Petroleum impacts were not observed in the surrounding soils and no off-site disposal of soils was required. End point soil samples indicated no soil contamination was detected above the NJDEP Residential Direct Contact Soil Cleanup Criteria and Impact to Groundwater Soil Cleanup Criteria. Based on these results, the NJDEP issued a letter to Airtron, dated December 11, 1996, stating that "the Department has determined that no further action for soils is required at this AOC." As a result, no further investigation was proposed in the SI/RI Work Plan for the former 20,000-gallon UST.

- AOC-11: Groundwater - Numerous subsurface investigations have been completed to assess VOC impacts to groundwater on and in the vicinity of the Airtron and nearby Mennen properties (see Previous Investigation Section, below). These investigations primarily provide data on the hydrogeologic setting and groundwater flow, potential sources of groundwater contamination, and the

delineation and concentrations of groundwater contamination in perched groundwater, the upper unconfined aquifer, and the lower confined aquifer. An extensive network of wells have been installed as a result of these investigations to monitor groundwater flow and quality. The locations of monitoring wells and other sampling points are shown on Figure 2. Construction details of the monitoring well network are provided in Table 2.

Perched groundwater has been observed in soil borings and monitoring wells in AOC-1, AOC-2, AOC-3, and AOC-4. Groundwater samples collected from Well MW-301 installed in a perched groundwater zone indicate that this water has been impacted with chlorinated VOCs ranging in concentrations of total VOCs from 12 micrograms per liter (ug/L) to 7,530 ug/L. These concentrations are above the NJDEP Groundwater Quality Criterias (see Perched Groundwater Quality Section below). Perched groundwater discharges vertically downward into the upper unconfined aquifer.

The upper unconfined aquifer is encountered at approximately 30 to 40 feet below grade at the site. Groundwater quality in the upper unconfined aquifer beneath the Airtron facility is also impacted by chlorinated VOC detected above the NJDEP Groundwater Quality Criterias at concentrations of total VOCs ranging from 261 ug/L to 19,230 ug/L.

The lower confined aquifer is beneath a clay and clayey silt unit from approximately 70 to 90 feet below grade and ranges from approximately 20 to 30 feet in thickness. The groundwater flow in this hydrogeologic unit is generally to the southeast. This unit has been observed to exhibit a upward hydraulic head gradient toward the shallow upper unconfined aquifer with relative head measurement differences of up to 9 feet in well clusters. Groundwater quality in the lower confined aquifer indicate that there are no VOC impacts in this unit and that the silty clay/clayey silt unit and the upward groundwater hydraulic head gradient have effectively impeded contaminant flow into the lower confined aquifer.

Based upon previous investigations and more recent findings reported by ERM Northeast (Final Remedial Action Report, February 1997, prepared on behalf of The Mennen Company), the NJDEP has expressed the opinion that there is a geologic zone of preferred groundwater flow parallel to the observed groundwater contours as suggested by:

- the continuity of groundwater contamination regionally (distribution of VOCs),
- elevated hydraulic conductivities in selected wells (MEN MW-10, 11, 12, and MW-305),

- elevated permeabilities implied from gamma logs (Wells MW-303, MW-304, MW-305, MW-306, MEN-5, MEN-10, and MW-203), and

- anomalous water-level changes recorded during pumping and static (non-pumping) conditions.

ARCADIS Geraghty & Miller believes that the presence of a geologic zone of preferred groundwater flow is unsubstantiated and that groundwater flow, and the subsequent migration of contamination in the upper unconfined aquifer at the Airtron facility, are governed primarily by hydraulic gradients as a result of historical groundwater pumping from Mennen Well P-1, and subsequently by Airtron Recovery Well RW-1.

Groundwater beneath the Airtron facility is controlled by the pumping of a groundwater extraction Well RW-1. Airtron currently operates a groundwater pump and treat remedial system to hydraulically contain VOC plume migration and to extract impacted groundwater from the upper unconfined aquifer. The groundwater extraction rate is approximately 30 gallons per minute (gpm) from Well RW-1.

2.5 Previous Investigations

Previous investigations conducted at the Airtron facility were performed in 1981(Converse Ward Davis Dixon, August 1981), 1987 (Converse Environmental East, November 1987), 1990 (Converse Environmental East, April 1990), 1991 (SCS Engineers, March 1991), 1994 (SCS Engineers, August 15, 1994), and 1996 (SCS Engineers, June 1996). A brief summary of the results of each investigation in chronological order is provided below.

2.5.1 1981 Preliminary Investigation

Five monitoring wells (MW-1, MW-1M, MW-2, MW-2M, and MW-3) were installed by Converse Ward Davis Dixon to investigate groundwater quality in conjunction with the closure of the five lagoons at the Airtron facility as directed in an Administrative Order from the NJDEP dated December 14, 1979. On January 13, 1981, the newly-installed wells along with three previously existing wells (USGS-1, USGS-2, and USGS-3) were sampled and analyzed for VOCs. The results of this investigation indicated that VOCs were present in the upper unconfined aquifer above NJDEP cleanup objectives.

2.5.2 1987 Phase I Soil and Groundwater Remedial Investigation

Twenty five soil borings (B-101 through B-122, B-201, B-202, and B-203) and six monitoring wells (MW-201 through MW-206) were drilled at the Airtron facility by Converse Environmental East to assess the impact from two former drum storage areas

and the five lagoons. Laboratory analytical results detected VOCs in a number of soil samples with the highest VOC concentrations (21,711 micrograms per kilogram [ug/kg] total VOCs) observed in soil boring B-117 located in AOC-3. Additional concentrations of VOC were also detected in the groundwater samples collected from the newly installed monitoring wells in the upper unconfined aquifer. However, no VOC impacts were observed in the wells (MW-201, MW-202, and MW-203) completed in the deeper confined aquifer.

2.5.3 1990 Phase II Soil and Groundwater Investigation

Seven monitoring wells (MW-301 through MW-307) were installed by Converse Environmental East to further assess and delineate VOC impacts in groundwater. The investigation primarily focused on the southeastern boundary of the plume in the upper unconfined aquifer.

2.5.4 1991 Soil Vapor Extraction Test Program

A soil vapor extraction (SVE) pilot study was performed by SCS Engineers on one extraction well, EW-1, located in AOC-3. EW-1 was constructed of 2-inch diameter, schedule 40 PVC casing with 30 feet of 0.020 slot screen. The screened interval was reported to be from 14 to 44 feet below land surface. The results of the pilot study reported a calculated radius of influence approximately than 600 feet when vacuum levels were recorded to be 60 inches of water column. Based on this pilot test, a SVE system was installed throughout AOC-3, AOC-4, AOC-5, and AOC-7 in July 1992 by Empire Soils Investigations. This system included nine extraction wells, (E-1 through E-9), and 19 air injection wells, (A-1 through A-19). The SVE system was started in February 1993 and operated for approximately 11 months. The system has operated sporadically since that time due to perched groundwater entering the system.

2.5.5 1994 Phase I Remedial Investigation

In 1994 a soil gas survey and soil sampling program was conducted in AOC-2, sediment sampling from the intermittent stream (AOC-6), and an electromagnetic (EM) terrain conductivity survey was performed in AOC-3 and AOC-4. SCS Engineers conducted a Phase I Remedial Investigation which included the soil gas survey was conducted as a semi-quantitative screening tool for shallow soils. The soil gas was screened using a VOC meter equipped with a photoionization detector (PID) and consisted of 80 sampling points located on a 15-foot grid across AOC-2. Four points (1C, 2B, 5C, and 5B) exhibited PID readings above 10 ppm and were subsequently sampled for laboratory analysis of VOCs. The analytical results detected tetrachloroethene at two grid points; 5C at 61 ppm and 1C at 0.014 ppm. Intermittent Stream sediment sample results detected arsenic at concentrations from 7.26 ppm to 65.6 ppm across the Airtron facility. The EM survey was performed to assess the areal extent of a suspected discontinuous clay lens which was encountered during the installation of Well MW-301 at approximately 8 to 10 feet below grade. The EM

survey indicated a potential "earth feature" (thought to be a clay layer) encompassing the area surrounding MW-301 and vapor extraction well A-6 which is lobate in shape and covers approximately 15,000 square feet.

2.5.6 1996 Phase II Remedial Investigation

A supplementary soil gas survey was conducted by SCS Engineer in AOC-2 to assess the lateral extent of VOCs identified during the Phase I Remedial Investigation in 1994. The results indicated VOC impacts surrounding the area of Sample Point 5C. Additional investigation of VOCs in shallow soils were planned in AOC-3 and AOC-4. However, the proposed soil gas sampling activities could not be completed due to the presence of significant soil moisture ranging from 2.5 to 2.7 feet below grade.

3.0 Methodology

The following section provides a general discussion of methodologies used by ARCADIS Geraghty & Miller during the SI/RI Investigations at the Airtron facility. The procedures and protocols used during the SI/RI field investigation are consistent with the methodologies outlined in the SI/RI Work Plan and in are accordance with Section 3.6(a) of N.J.A.C. 7:26E. The SI/RI field investigation activities included the following:

- Soil Borings,
- Test Pit,
- Stream Sediment Sampling,
- Monitoring Well Installation, and
- Groundwater Sampling

As discussed in the background section above, no further investigations were required or proposed for the Gallium Arsenide Wing Trench (AOC-8) and the Former 20,000-gallon UST (AOC-10). Therefore, these AOCs will not be included in this discussion.

3.1 Soil Borings (AOC-1 Through AOC-5, AOC-7, And AOC-9)

Two phases of soil borings were drilled from September 15, 1997 to September 26, 1997 and again from January 27, 1998 to February 3, 1998 to evaluate soil quality in the vicinity of AOC-1 through AOC-5, AOC-7, and AOC-9 (see Figure 3). A total of 73 soil borings drilled during both phases of the investigation were sampled continuously at 2-foot intervals throughout the entire depth of the borehole. The total

depth of each borehole was based on field screening all split spoon samples using a volatile organic compound (VOC) meter equipped with a photoionization detector (PID). At a minimum, the boreholes were drilled at least 10 feet into native soils. If no VOCs were detected using the PID, the borehole was completed at the minimum depth. However, if elevated PID readings (>5 ppm above background levels) were detected, the borehole was continued until two consecutive split spoons from native soils were screened with no detectable VOCs present.

Five soil borings, B-226 through 230, were drilled along the eastern edge of the rear parking lot north of AOC-3. Since PID readings indicated that VOC impacts extended beyond the northern boundary of AOC-3, Borings B-226 through B-230 were drilled to determine the additional area which would require investigation, as well as the number and location of additional soil borings. To achieve this purpose, these borings were drilled to only four feet below grade, and field screened with the PID. Since these borings were used strictly for screening purposes, soil samples were not submitted for laboratory analysis from these five soil borings.

3.1.1 Soil Sampling

A minimum of two soil samples were collected from each borehole. Additional samples were collected when warranted based on elevated PID readings observed over an extended depth of the borehole (generally >10 vertical feet). The depth and analytical parameters for each sample were based on the field screening results and the following guidelines:

- First Encountered Native Soil: From the first encountered 2-foot split spoon containing native soil, an undisturbed sample from the six-inch interval indicating the highest VOC impacts, as determined by the PID readings and visual observations, was sub-sampled and submitted for laboratory analysis of VOCs. If all readings are generally equal and no visible impacts are observed, the VOC sample was collected from the bottom 6-inch interval of the split spoon pursuant to N.J.A.C. 7:26E 3.6(a)4ii for soils consisting of 15 to 50 percent (%) silt/clay. The sample for the remaining analytical parameters (see Analytical Parameters Section below) was collected from the top six-inch interval of native soil in the split-spoon.

- Bottom of Borehole: From the final split spoon, in which no VOCs were detected using the PID, an undisturbed sub-sample was collected from the bottom six-inch interval and submitted for laboratory analysis of VOCs. If PID screening and visual observations did not detect VOC impacts throughout the borehole, no additional parameters or VOCs were analyzed. However, if PID screening detected the presence of VOCs, a sample from the final split spoon was also analyzed for the remaining parameters as performed in the first encountered native soil sample in that borehole.

Split-spoon soil sampling equipment was field decontaminated between sample collection under the procedures outlined in the Field Sampling Procedures Manual (NJDEP 1992). The following decontamination procedures were used for the steel split spoon samplers:

- Potable water rinse,
- ~2% Detergent (Micro) and potable water wash,
- Distilled water rinse,
- Methanol rinse,
- Air dry,
- 1% Nitric acid rinse, and
- Final distilled water rinse.

All non-sampling drilling equipment (augers, A-rods, hand tools, etc.) was decontaminated between boreholes using a steam cleaner

Soil samples submitted for analysis of VOCs were collected in accordance with the methanol preservation method outlined in the proposed Technical Rule N.J.A.C. 7:26E-2.1(a)4. Soil samples were stored in an ice-filled insulated cooler. The samples were delivered in person or via laboratory courier under strict chain-of custody protocols to the American Environmental Network (AEN) in Whippany, New Jersey.

Field observations and readings from each borehole were recorded on detailed Sample Core Logs. This information consists of subsurface conditions, lithology, moisture content, soil mottling or staining, PID readings, blow counts, odors or vapors, and the thickness of surface fill material, if present. Soil classification was conducted according to the Burmister soil classification system (ASTM 1958). A copy of the completed Sample Core Logs is provided in Appendix B.

Quality Assurance/Quality Control (QA/QC) samples, collected in accordance with the Field Sampling Procedure Manual, included trip blanks for VOCs analysis and field blanks for analysis of the entire parameter list discussed below. A trip blank was comprised of a laboratory supplied methanol preservative-filled soil jar submitted back to the laboratory unused and unopened. Field blanks were prepared by pouring laboratory supplied, demonstrated analyte-free water over a decontaminated split-spoon and into a sample container. All QA/QC samples were submitted for laboratory analysis together with the soil samples shipments.

Soil cuttings generated during the drilling of soil borings were backfilled into the borehole following the collection of the bottom of borehole sample. Additional soil which could not be backfilled was spread out surrounding the boring location. However, no soil was spread within 50 feet of a storm drainage structure on the site.

3.1.2 Analytical Parameters

Laboratory analytical parameters for the soil samples were selected based upon the site history regarding chemical usage, storage, and disposal. The primary materials of interest in this investigation include VOCs, metal compounds (salt, oxides, and hydroxides), and petroleum hydrocarbons. Additional parameters were also analyzed in selected samples based on the historical usage in an individual AOC.

During the first phase of the SI/RI investigation, the samples collected from the first encountered native soil were submitted for analysis of VOCs using United States Environmental Protection Agency (USEPA) Method 8260a plus a library search for the first 15 tentatively identified compounds (TICs); Priority Pollutant Metals using USEPA Methods 6010A and 7470 (for mercury); total petroleum hydrocarbons (TPH) diesel range organics (DRO), extracted using USEPA Method 3520, then analyzed using USEPA Method 8015; pH using USEPA Method 9040; and cyanide using USEPA Method 9010. In AOC-3, AOC-4, and AOC-5 the analysis of TPH also included gasoline range organics (GRO).

As previously mentioned above (Soil Sampling), bottom of borehole samples were analyzed for only VOCs using USEPA Method 8260a plus 15 TICs. When PID readings and visual observations indicated likely VOC impacts, the bottom of borehole samples were analyzed for the full list of parameters used for the first encountered native soils in that borehole.

Additionally, one sample from each soil boring drilled in AOC-5 was also analyzed for base neutral semi-volatile organic compounds (SVOCs) using USEPA Method 8270b with a library search for the first 15 TICs. SVOC analysis was also performed on two samples in AOC-1, and one sample each in AOC-2, AOC-3, AOC-4, and AOC-9. For all AOCs, the soil samples for SVOC analysis were selected from the soil samples which were most likely impacted as indicated by PID readings and visual observations. A list of soil sample designation, depth, and analysis is provided in Table 3.

One soil boring was sampled in AOC-4, which differs from the scope of work outlined in the SI/RI Work Plan. As discussed in the field with Mark Walters of the NJDEP, the two soil borings which were to be completed as perched groundwater monitoring wells as specified in the SI/RI Work Plan, were located outside the historical limits of the settling pond (Lagoon #5). The object of the soil sampling program in this AOC was to characterize the soil quality directly beneath the former settling pond. Therefore, the two soil borings used for the installation of monitoring wells in this area

would not provide this characterization, and no soil samples were submitted for laboratory analysis from these soil borings. A third soil boring was drilled and sampled within the boundary of the former settling pond location to assess the soil quality in AOC-4.

Based on the data from the first phase of the SI/RI investigation, soil samples collected during the second phase of the soil boring program were analyzed for VOCs and selected locations within AOC-3 were also analyzed for Priority Pollutant Metals. The reduction of the parameter list was in response to no detectable concentrations of cyanide in 72 and 73 or all soil samples collected during the first phase of the investigation. The 12 soil samples selected for SVOC analysis yielded only sporadic concentrations of SVOCs that were well below NJDEP Soil Cleanup Criteria. Based on these results, further characterization of cyanide and SVOCs in soils are not warranted.

Total petroleum hydrocarbon (TPH) analysis of the first phase soil samples did not detect DRO or GRO concentrations above the 10,000 mg/kg NJDEP Soil Cleanup Criteria. No DRO concentrations were detected above 1,000 mg/kg and further characterization is not warranted. Only two soil samples contained concentrations of GRO above 1,000 mg/kg. Soil samples containing concentrations of TPH above 1,000 mg/kg only require the analysis of VOCs plus 15 TICs. However, the two samples containing elevated concentrations of GRO correlated with corresponding concentrations of toluene, ethyl benzene, and xylenes (total); which were not detected in any other samples. Therefore, further assessment of TPH impacts may conducted through the analysis of VOCs in soil samples collected during the second phase of the SI/RI investigation.

3.1.3 Test Pit Excavation

One test pit was excavated in the area of B-210 located within AOC-2 (see Figure 3). A review of the first phase of soil borings at the Airtron facility indicated approximately 9,100 mg/kg of tetrachloroethene has detected in a dark sludge-like layer observed at between 10 to 12 feet below grade in Boring B-210 located in AOC-2. Soil samples collected from below and surrounding the 10 to 12-foot interval in B-210 detected levels of tetrachloroethene at concentrations below 2.5 mg/kg indicating that the impacts observed in B-210 were isolated. However, due to the identification of a sludge-like material in the borehole which was not observed in any other boreholes, a test pit was excavated to accurately assess the size, orientation, and potential source of the sludge-like layer.

On January 21, 1998, one test pit, approximately 20 feet long by 20 feet wide, was excavated in the area of B-210 using a track-mounted backhoe. Excavated material was screened using a PID, observed to be impacted by VOCs, and stockpiled on plastic sheeting. The test pit was excavated to approximately 14 feet below land surface. An

isolated pocket, approximately one foot thickness by approximately 20 feet long, of black sludge-like material was observed in the excavation. The excavation was then extended around the pocket of sludge-like material to delineate its extent. Once the pocket of sludge-like material was delineated, the excavation was backfilled to grade in 2 to 3-foot lifts with excavated soil and compacted. Since a groundwater remedial system is operating at the site to address the VOC impacts in the area of B210, no soil was held for disposal from the test pit excavation.

3.2 Stream Sampling (AOC-6)

Stream sampling consisted of the collection and analysis of both sediment and surface water in the intermittent stream in the wooded area to the northeast of the Airtron facility main building. The investigation of stream sediments and surface water has conducted to determine if chemical constituents in the stream exceed the applicable risk-based criteria inherent in the discharge limits of the NJPDES discharge permit for the Airtron facility.

3.2.1 Sediment Sampling

Sediment soil samples were collected at eight locations along the intermittent stream. These soil samples were collected from three upstream locations and five points downstream of the NJPDES permitted combined Outfalls 001/003. The upstream soil samples were located at the property boundary, approximately 50 feet north of the property boundary, and approximately 100 feet north of the property boundary. The down stream samples were collected immediately south (downstream) of the Outfalls 001/003 and at 75-foot intervals downstream to the Airtron property boundary approximately 300 feet away. Great care was used during the collection of the sediment soil samples to prevent the loss of fine sediments that might have been washed out while removing the samples. Sediment soil samples were collected using a stainless steel pond sampler in relatively low flow, depositional areas of the stream bed. The locations of sediment samples are shown on Figure 4.

The pond sampler was field decontaminated between sample collection under the procedures outline in the Field Sampling Procedures Manual (NJDEP 1992). The following decontamination procedures were used for the stainless steel pond sampler:

- Potable water rinse,
- ~2% Detergent (Micro) and potable water wash,
- Distilled water rinse,
- Methanol rinse,

- Air dry,
- 1% Nitric acid rinse, and
- Final distilled water rinse.

One QA/QC sample for the sediment soil sampling consisted of a field blank for the analysis of the entire parameter list discussed below. The field blank was prepared by pouring laboratory supplied, demonstrated analyte-free water over the pond sampler and into a sample container. The QA/QC sample was submitted for laboratory analysis together with the soil sample shipment. Since VOCs were not analyzed in sediment samples (see Analytical Parameters below), a trip blank was not submitted for the sediment sample activities.

Sediment samples for laboratory analysis were placed in an ice-filled insulated cooler and delivered in person under strict chain-of custody protocols to AEN in Whippany, New Jersey. Geotechnical samples (grain size analysis) were submitted to Clarence Welti Associates, Inc., in Glastonbury, Connecticut.

3.2.2 Surface Water Sampling

Two surface water samples were collected from the intermittent stream; one from the northern (upstream) property boundary and one from the southern property boundary downstream of the NJPDES permitted combined outfalls 001/003 (see Figure 4). The water samples were collected by directly filling the sample container by immersing it into the stream flow. For analysis of dissolved constituents (see following section), a surface water sample from each location was field filtered through a 0.45 micron (um) filter prior to preservation. Field filtering was performed by passing the sample through a disposable high capacity filter cartridge under vacuum and discharging the sample directly into the preserved sample container. Since this filtering equipment was disposable, no decontamination of the two sets of used equipment was required. Surface water samples were placed in an ice-filled insulated cooler and delivered in person under strict chain-of custody protocols to AEN in Whippany, New Jersey.

3.2.3 Analytical Parameters

The sediment soil samples were analyzed for Priority Pollutant Metals using USEPA Methods 6010A and 7470 (for mercury), pH using USEPA Method 9040, and total organic carbon (TOC) using USEPA Method 9060. Sediment soil samples were also collected for grain size analysis using American Society for Testing and Materials (ASTM) Method D422. The surface water samples were analyzed for total and dissolved Priority Pollutant Metals using USEPA Methods 6010A and hardness using USEPA Method 130.1. In addition, the dissolved oxygen, temperature, and pH of the surface water samples were measured in the field using portable meters.

3.3 Monitoring Well Installation (AOC-11)

A total of seven monitoring wells, five located in perched groundwater and two in the upper unconfined aquifer, were installed during both phases of the field work conducted by ARCADIS Geraghty & Miller (see Figure 2). Wells MW-401, MW-402, MW-404S, and MW-405 were installed to determine the flow gradient and quality of perched groundwater in conjunction with the previously installed Well MW-301 located in AOC-4. Well MW-403 was installed at the southeastern corner of the Hazardous Materials Storage Building (AOC-1) to assess perched groundwater observed in Soil Boring B-205 at that location. Wells MW-401, MW-402, and MW403 were installed during the first phase of the SI/RI investigation. Following the preliminary assessment of perched groundwater flow and quality in these wells, three additional wells, including a well cluster, were installed adjacent to AOC-4. The additional wells were Well MW-404D installed in the upper unconfined aquifer, which was clustered with MW-404S in the perched groundwater to determine the vertical head gradient and water quality in the perched groundwater and the upper unconfined aquifer in AOC-4. Well MW-406 was installed to assess water near AOC-3.

Except for Well MW-404D, the wells were installed using the hollow stem auger drilling method. Where accessible, a Mobile Drill B-80 truck-mounted drill rig was used for the drilling at the Airtron facility. However, due to the difficult access to many borehole locations, an Ardco all terrain vehicle (ATV) equipped with a Mobile Drill B-53 drill rig was used for drilling outside of parking lot and roadbed areas including MW-404D. Due to the tightness of the formation (till), the depth to the upper unconfined (approximately 35 feet below grade), and the limited torque capabilities of the ATV drill rig, Well MW-404D was drilled using the mud rotary drilling method. This modification of drilling methods was communicated to and verbally approved by Mark Walters, the NJDEP Case Manager for the site.

As previously mentioned, Wells MW-403 and MW-406 were installed in response to observations in Soil Borings B-205 and B-263, respectively. Lithology and soil quality information are presented under the soil boring designations for these locations. For Wells MW-401, MW-402, MW-404S, MW-404D, and MW-405, lithology and field observations are provided on the Sample Core Logs under the monitoring well designation. The Sample Core Logs are provided in Appendix B. Since the location of these monitoring wells were outside the delineation of any AOCs and PID readings did not indicate VOC impacts, no soil samples were collected for laboratory analysis.

The monitoring wells were constructed of 2-inch diameter polyvinyl chloride (PVC) well screen and casing. The well consisted of 15 feet of 0.010-slot screen with blank casing extending to land surface. The wells were installed with a Morie #0 sand pack surrounding and extending approximately two feet above the screened interval. Approximately two feet of bentonite slurry was then installed above the sand pack and the remaining borehole was backfilled with drill cuttings to grade. The wells were completed at grade with a steel protective casing and locking cap. Monitoring well

construction logs for these newly installed wells are provided in Appendix C. A summary of well construction details for the existing and newly installed wells is provided in Table 2.

Once installed, the wells were developed to ensure good communication with the water bearing formation under the specifications provided in the Field Sampling Procedure Manual. Perched groundwater wells, MW-401, MW-402, MW-403, MW-404S, and MW-405, were developed by surging and evacuating the wells using a disposable dedicated polyethylene bailer. Upper unconfined wells, MW-404D and MW-406 were developed by purging and backwashing using a field decontaminated two inch Rediflo submersible pump and dedicated polyethylene tubing. Well development details are provided on the well construction logs provided in Appendix C.

3.4 Geophysical Logging

On September 15 and 16, 1997, natural gamma geophysical logging was performed in 12 monitoring wells at the Airtron facility. Natural gamma logging was performed using COLOG, Inc. MGX console and Model HLP-2375/S (combination electric/natural gamma) probe. This system records natural gamma in counts per second (cps). Readings were recorded at 0.1-foot intervals from at or near land surface to the bottom of the monitoring well. The probe was lowered and retrieved from the borehole using a motorized winch at a rate of approximately 25 feet per minute. Natural gamma was calibrated using a 10.2 microcurie (uc) cesium 137 radiation source. The system was found to be operating within satisfactory standards. Geophysical logs are presented in Appendix D.

3.5 Groundwater Sampling (AOC-11)

Two rounds of groundwater sampling, one during each phase of the SI/RI investigation, were conducted at the Airtron facility. The first round of sampling included Wells MW-204, MW-301, MW-401, MW-402, and MW-403, and was performed on December 9 through December 11, 1997 in concert with the Airtron facility IRM groundwater monitoring of Wells MW-3, MW-206, MW-302, MEN.MW-12, MEN.MW-13, RW-1, and USGS-1. The second round included Wells MW-301, MW-401, MW-402, MW-403, MW-404S, MW-404D, MW-405, and MW-406, and was completed on February 25 , 1998. Both rounds of groundwater sampling were performed two weeks following the installation and development of the new wells. All groundwater sampling procedures were consistent with the Field Sampling Procedures Manual (NJDEP May 1992).

To determine the current groundwater flow regime, and calculate the purge volumes for the monitoring wells, a full round of water-level measurements were collected prior to the start of groundwater sampling activities. Water levels were collected from the entire monitoring well network on and surrounding the Airtron facility including wells

located on the warehouse property, Mennen Company factory, the William G. Mennen Sports Arena, and a Champion International plant. A summary of water-level elevation measurements is provided in Table 4.

Prior to sampling, the wells were purged of three to five times the static water volume of the well. The perched groundwater wells, MW-401, MW-402, MW-403, MW-404S, and MW-405, were purged prior to sample collection using dedicated laboratory decontaminated disposable Teflon bailers. Well MW-301 was purged using the dedicated bladder pump installed in the well. Wells MW-404D and MW-406 were purged using a field decontaminated 2-inch diameter Rediflo submersible pump. Each well was evacuated until field parameters, pH, specific conductivity, and temperature, equalized to within a variance of ten percent or until the well dried. Field parameter measurements are listed on the Water Sampling Logs provided in Appendix E.

All water purged from the wells was treated through carbon prior to being discharged to ground surface. Purge water was either pumped directly through a carbon vessel or accumulated in a 55-gallon drum before pumping it through the carbon.

Once the field parameters stabilized or the water levels recovered (when pumped or bailed dry), the samples were collected in laboratory-supplied bottles. For wells which were purged using disposable bailers, the bottles were filled from the bailer. For wells equipped with a bladder pump, the pump flow rate was reduced to approximately one liter per minute prior to filling the sample container from the pump discharge. For the wells which were purged with a submersible pump, the pump and tubing were removed from the well and the sample collected using a dedicated, laboratory-decontaminated Teflon bailer was then used to collect the sample. The groundwater samples were placed in an ice-filled insulated cooler and delivered in person under strict chain-of custody protocols to AEN in Whippany, New Jersey.

3.5.1 Analytical Parameters

Laboratory analytical parameters for the groundwater samples were selected based on-site history and previous groundwater sampling events. The primary constituents of interest in groundwater are VOCs. Groundwater samples were analyzed for VOCs using USEPA Method 8260A plus a library search for the first 15 TICs

4.0 Results

This section discusses the field and laboratory analytical results from the SI/RI field activities at the Airtron facility in Morris Plains, New Jersey. For clarity, the results of the SI/RI investigation are presented based on the matrices under investigation, i.e. soil and groundwater, and this discussion will be further focused on the AOCs separately. As previously mention, no further investigation of AOC-8 and AOC-10 were required as part of the SI/RI investigation, and those AOCs are not discussed herein.

4.1 Soil Quality

As discussed in the Methodology Section above, soil samples were submitted for laboratory analysis of VOCs, Priority Pollutant Metals surface water, TPH for diesel range organics (DRO) in all AOCs and gasoline range organics (GRO) in selected AOCs, pH, and cyanide with selected samples also analyzed for SVOCs. One of our goals of this SI/RI was to identify, delineate, and characterize the impacts on soil and groundwater quality, if any, associated with the AOCs-1 through 10. To that end, the results of the SI/RI investigation are provided by AOC and in reference to the applicable NJDEP Cleanup Criteria to determine if further investigation or remedial activities, if any, are warranted. For all analytical constituents, the results will be discussed relative to the most stringent NJDEP Soil Cleanup Criteria (Revised 7/11/96) provided in the NJDEP Guidance Document for the Remediation of Contaminated Soils (June 1994). The laboratory analytical data is provided in Tables 5 through 8. Laboratory analytical data packages are provided in Appendix F.

4.1.1 AOC-1: Hazardous Materials Storage Building Area

Concentrations of VOCs in exceedance of the NJDEP Soil Cleanup Criteria-Impact to Groundwater Soil Cleanup Criteria (IGSCC), the most stringent criteria for VOCs, were detected in five of a total of 23 soil samples collected in AOC-1. Tetrachloroethene was detected at 3.9 mg/kg in B-202 0-2, 2.6 mg/kg in B-205 6-8, 1.4 mg/kg in B-205 22-24, 470 mg/kg in B-234 0.5-2, and 78 mg/kg in B-234 4-6 in exceedance of the IGSCC of 1 mg/kg. Typical breakdown products of tetrachloroethene via anaerobic digestion were also detected such as trichloroethene and cis-1,2-dichloroethene at 39 mg/kg and at 8.2 mg/kg, respectively, in B-205 6-8 and at 1.7 mg/kg and 2.4 mg/kg, respectively, in B-234 0.5-2 were detected in exceedance in the IGSCC of 1 mg/kg for each compound. No other VOCs were detected in soil samples collected in AOC-1 above NJDEP Cleanup Criteria. The distribution of tetrachloroethene concentrations in exceedance of the NJDEP IGSCC are depicted on Figures 5, 6, and 7. The results of VOCs analyses of soil samples are provided in Table 5.

Total petroleum hydrocarbons (TPH) as identified under diesel range organics (DRO) were not detected above the NJDEP Maximum Concentration of 10,000 mg/kg. TPH as identified under gasoline range organics (GRO) was detected at 1,270 mg/kg in B-234 0.5-2, however, the analysis of VOCs discussed above detected toluene, ethyl benzene, and xylenes (total) in B-234 0.5-2 but well below the IGSCC. The results of TPH analyses of soil samples are provided in Table 6.

Analysis of the Priority Pollutant Metals and cyanide detected various concentrations of antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver, thallium, and zinc in soil samples collected in AOC-1. No concentrations of these metals were detected above the NJDEP Residential Direct Contact Soil Cleanup Criteria (RDCSCC), the most stringent for inorganic analytes. Mercury and cyanide

were not detected in soil samples from AOC-1 above their respective analytical method detection limits. Table 7 provides the analytical results for Priority Pollutant Metals and cyanide in soil samples.

Field screening indicated soil samples at B-205 6-8 and B-207 4-6 were most likely impacted with PID readings of 80 ppm and 60 ppm, respectfully. Analysis of SVOCs in these samples detected concentrations of bis (2-ethylhexyl) phthalate in both samples and concentrations of naphthalene, phenanthrene, anthracene, and pyrene in B-205 6-8. No concentrations of these compounds exceeded the NJDEP RDCSCC, the most stringent criteria for SVOCs. No other SVOCs were detected in soil samples from AOC-1. The results of SVOCs analyses are provided in Table 8.

4.1.2 AOC-2: Former Parking Island Drum Storage Area #1

Concentrations of VOCs in exceedance of the NJDEP IGSCC were detected in eight samples of a total of 23 soil samples collected in AOC-2. Tetrachloroethene was detected at 13 mg/kg in B-208 2-4, 1.8 mg/kg in B-208 22-24, 1.6 mg/kg in B-209 22-24, 16 mg/kg in B-210 2-4, 9,100 mg/kg in B-210 10-12, 1.5 mg/kg in B-212 14-16, 2.5 mg/kg in B-213 15-17, and 3.2 mg/kg in B-254 22-24 in exceedance of the IGSCC of 1 mg/kg. No other VOCs were detected in soil samples collected in AOC-2 in exceedance of the NJDEP IGSCC. The distribution of tetrachloroethene concentrations in exceedance of the NJDEP IGSCC is depicted in Figures 5 and 8. The results of VOCs analyses of soil samples are provided in Table 5.

Total petroleum hydrocarbons (TPH) as identified under diesel range organics (DRO) were not detected in soil samples in AOC-2 above the analytical method detection limit. The results of TPH analyses of soil samples are provided in Table 6.

Analysis of the Priority Pollutant Metals and cyanide detected various concentrations of arsenic, beryllium, chromium, copper, lead, nickel, selenium, thallium, and zinc in soil samples collected in AOC-2. No concentrations of these metals were detected above the NJDEP RDCSCC. Antimony, cadmium, mercury, silver, and cyanide were not detected in soil samples from AOC-2 above their respective analytical method detection limits. Table 7 provides the analytical results for Priority Pollutant Metals and cyanide in soil samples.

Field screening indicated soil samples at B-210 10-12 was most likely impacted with a PID reading of 1,000 ppm. Analysis of SVOCs in this sample detected concentrations of 2-methylnaphthalene and bis (2-ethylhexyl) phthalate. No concentrations of these compounds exceeded the NJDEP RDCSCC. No other SVOCs were detected in soil samples from AOC-2. The results of SVOCs analyses are provided in Table 8.

4.1.3 AOC-3: Former Drum Storage Area #2

Concentrations of VOCs in exceedance of the NJDEP IGSCC were detected in 32 samples out of a total of 77 soil samples in AOC-3. Tetrachloroethene was detected in 32 soil samples at concentrations ranging from 1.0 mg/kg in B-265 14-16 to 24,000 mg/kg in B-267 2-4 in exceedance of the IGSCC of 1 mg/kg. Typical breakdown products of tetrachloroethene via anaerobic digestion were also detected such as trichloroethene and cis-1,2-dichloroethene. Trichloroethene was detected in seven soil samples at concentrations ranging from 1.2 mg/kg in B-271 16-18 to 390 mg/kg in B-223 2-4 in exceedance of the NJDEP IGSCC of 1 mg/kg. Concentrations of cis-1,2-dichloroethene were detected in exceedance of the NJDEP IGSCC of 1 mg/kg in 12 soil samples ranging from 1.2 mg/kg in B-271 16-18 to 380 mg/kg in B-267 2-4. In addition, xylenes (total) were detected in two samples, B-223 2-4 at 1,300 mg/kg and B-225 3-5 at 19 mg/kg, above the NJDEP IGSCC of 10 mg/kg. Analysis of B-223 2-4 also detected concentrations of ethyl benzene at 410 mg/kg and toluene at 520 mg/kg in exceedance of the NJDEP IGSCC of 100 mg/kg and 500 mg/kg, respectively. Vinyl chloride was detected in one sample, B-267 2-4 at 3.1 mg/kg, above the NJDEP RDCSCC (most stringent for this compound) of 2 mg/kg. No other VOCs were detected in soil samples collected in AOC-2 in exceedance of the NJDEP IGSCC or RDCSCC. The distribution of tetrachloroethene concentrations in AOC-3 are depicted on Figures 5, 9, 10, 11, 12, and 13. The results of VOCs analyses of soil samples are provided in Table 5.

Total petroleum hydrocarbons (TPH) as identified under diesel range organics (DRO) were not detected in soil samples in AOC-3 above 1,000 mg/kg. TPH as identified under gasoline range organics (GRO) was detected in one sample, B-223 2-4 at 7,960 mg/kg, above the 1,000 mg/kg but below the 10,000 mg/kg remedial action limit. As previously discussed, the analysis of VOCs in B-223 2-4 detected toluene, ethyl benzene, and xylenes (total) above the NJDEP IGSCC. The results of TPH analyses of soil samples are provided in Table 6.

Analysis of the Priority Pollutant Metals and cyanide in B-225 3-5 detected cadmium at 92.8 mg/kg, copper at 1,150 mg/kg, and thallium at 3.5 mg/kg in exceedance of the NJDEP RDCSCC of 1 mg/kg, 600 mg/kg, and 2 mg/kg, respectively. Cadmium at 34.2 mg/kg, copper at 9,540 mg/kg, and silver at 321 mg/kg (RDCSCC for silver is 110 mg/kg) were also detected in B-249 0-2 at concentrations above the NJDEP RDCSCC. No other inorganic analytes were detected above the NJDEP RDCSCC. Mercury and cyanide were not detected in soil samples from AOC-3 above their respective analytical method detection limits. Table 7 provides the analytical results for Priority Pollutant Metals and cyanide in soil samples.

Field screening indicated soil samples at B-223 2-4 was most likely impacted with a PID reading of >2,500 ppm. Analysis of SVOCs in this sample detected concentrations of 2-methylnaphthalene, dibenzofuran, diethylphthalate, fluoranthene, pyrene, benzo(a)anthracene, chrysene, bis (2-ethylhexyl) phthalate,

benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene. No concentrations of these compounds exceeded the NJDEP RDCSCC. No other SVOCs were detected in soil samples from AOC-3. The results of SVOCs analyses are provided in Table 8.

4.1.4 AOC-4: Former Sludge Lagoon 5

Concentrations of VOCs in exceedance of the NJDEP IGSCC were detected in one of two soil samples collected in AOC-4. Trichloroethene was detected at 15 mg/kg and cis-1,2-dichloroethene at 2.5 mg/kg were detected in B-219 16-18 in exceedance of the IGSCC of 1 mg/kg for each compound. No other VOCs were detected in soil samples collected in AOC-4 in exceedance of the NJDEP IGSCC. This sample was observed to be saturated indicating that it was collected within the perched groundwater zone previously identified beneath this AOC. Since this perched groundwater is known to be impacted with VOCs, the detection of VOCs in B-219 16-18 is likely the result of the VOC-impacted perched groundwater. Therefore, additional soil borings and samples were not collected in AOC-4. Further discussion of VOC impacts in the perched groundwater zone are discussed below (Groundwater Section). The results of VOCs analyses of soil samples are provided in Table 5.

Total petroleum hydrocarbons (TPH) as identified under diesel range organics (DRO) and gasoline range organics (GRO) were not detected in the soil sample in AOC-4 above the analytical method detection limit. The results of TPH analyses of soil samples are provided in Table 6.

Analysis of the Priority Pollutant Metals and cyanide detected various concentrations of arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver, and zinc in the soil sample collected in AOC-4. No concentrations of these metals were detected above the NJDEP RDCSCC. Antimony, cyanide, mercury, and thallium were not detected in soil samples from AOC-4 above their respective analytical method detection limits. Table 7 provides the analytical results for Priority Pollutant Metals and cyanide in soil samples.

Field screening indicated the soil sample at B-219 4-6 was most likely impacted with a PID reading of 4 ppm. Analysis of SVOCs in this sample detected concentrations of 2-methylnaphthalene, acenaphthene, dibenzofuran, diethylphthalate, fluorene, fluoranthene, pyrene, butylbenzylphthalate, benzo(a)anthracene, chrysene, bis (2-ethylhexyl) phthalate, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene. No concentrations of these compounds exceeded the NJDEP RDCSCC. No other SVOCs were detected in soil samples from AOC-4. The results of SVOCs analyses are provided in Table 8.

4.1.5 AOC-5: Former Sludge Lagoons 1-4

No concentrations of VOCs were detected above the NJDEP IGSCC in the eight samples collected in AOC-5. Tetrachloroethene was detected at 0.79 mg/kg in B-217 4-6; no other VOCs were detected above the analytical detection limits in the soil samples collected in AOC-5. The results of VOCs analyses of soil samples are provided in Table 5.

Total petroleum hydrocarbons (TPH) as identified under diesel range organics (DRO) and gasoline range organics (GRO) were not detected in the soil sample in AOC-5 above the analytical method detection limit. The results of TPH analyses of soil samples are provided in Table 6.

Analysis of the Priority Pollutant Metals detected various concentrations of arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, thallium, and zinc in soil samples collected in AOC-5. No concentrations of these metals were detected above the NJDEP RDCSCC. Antimony, cyanide, mercury, and thallium were not detected in soil samples from AOC-5 above their respective analytical method detection limits. Table 7 provides the analytical results for Priority Pollutant Metals and cyanide in soil samples.

Field screening did not indicate soil samples of the native material (PID readings were consistent with background levels of 2 to 3 ppm) in AOC-5 were impacted. Therefore, the soil samples for SVOCs in AOC-5 were collected from the first encountered native soil encountered beneath the shallow fill material enplaced during the closure of the lagoons. Soil samples for SVOCs analysis were collected at B-214 10-12, B-215 12-14, B-216 4-6, and B-217 4-6. Analysis of SVOCs in these samples detected concentrations of only bis (2-ethylhexyl) phthalate. None of these concentrations exceeded the NJDEP RDCSCC. No other SVOCs were detected in soil samples from AOC-5. The results of SVOCs analyses are provided in Table 8.

4.1.6 AOC-6: Stream Sediments

The sediment samples analytical results are provided in Table 9. The location and designation of sediment samples are shown on Figure 4. The analysis of Priority Pollutant Metals in the upstream samples, 100 feet upstream (north) of the Airtron facility boundary (US-100), 50 feet upstream of the Airtron facility (US-50), and at the upstream Airtron property boundary (US-PB), concentrations of arsenic ranging from 2.2 mg/kg in US-100 to 11.1 mg/kg in US-PB, chromium ranging from 6.2 mg/kg in US-100 to 11.1 mg/kg in US-50, copper ranging from 4.8 mg/kg in US-100 to 9.8 mg/kg in US-PB, lead ranging from 17.6 mg/kg in US-100 to 110 mg/kg in US-PB, nickel ranging from 3.8 mg/kg in US-100 to 7.0 mg/kg in US-PB, and selenium ranging from 0.88 mg/kg in US-100 to 2.7 mg/kg in US-PB, were detected in all three samples. Beryllium at concentrations ranging from 0.34 mg/kg in US-50 to 0.46 in

US-PB and zinc at concentrations ranging from 17 mg/kg in US-100 to 35.3 in US-PB were detected in only two upstream sample locations. Antimony, cadmium, mercury, silver, and thallium were not detected above their respective analytical method detection limits in the upstream sediment samples.

Downstream of the NJPDES combined Outfalls 001/003, samples were collected from the area of the combined outfalls (DS-OF), and at 75-foot intervals downstream (DS-75, DS-150, DS-225, and DS-300) to the southern Airtron property boundary (see Figure 4). Concentrations of the following were detected in all five downstream sediment samples: arsenic ranging from 30.3 mg/kg in DS-75 to 97.4 mg/kg in DS-OF, beryllium ranging from 0.78 mg/kg in DS-150 to 1.5 mg/kg in DS-OF, cadmium ranging from 0.77 mg/kg in DS-225 to 2.0 mg/kg in DS-75, chromium ranging from 63 mg/kg in DS-150 to 155 mg/kg in DS-75, copper ranging from 47.9 mg/kg in DS-300 to 80.6 mg/kg in DS-75, lead ranging from 56.5 mg/kg in DS-300 to 87.6 mg/kg in DS-75, nickel ranging from 11.1 mg/kg in DS-150 to 20.6 mg/kg in DS-75, selenium ranging from 0.89 mg/kg in DS-150 to 2.4 mg/kg in DS-OF, silver ranging from 4.0 mg/kg in DS-300 to 33.1 mg/kg in DS-OF, and zinc ranging from 143 mg/kg in DS-150 to 197 mg/kg in DS-OF. Thallium was detected in two samples ranging from 0.8 mg/kg in DS-300 to 1.1 mg/kg in DS-OF. Antimony and mercury were not detected above their respective analytical method detection limits in the downstream sediment samples.

Due to holding time exceedances of sediment samples, analytical results of pH were rejected. This decision is further discussed under the Quality Assurance/Quality Control Section below.

Grain size analysis determined that the sediment consisted of percent (%) gravel from 0.4 % in US-50 to 39.4 % in DS-OF, % sand from 60.2 % in DS-OF to 97.4 % in DS-150, and % silt and clay from 0.4 % in DS-OF to 4.2 % in DS-75 and DS-225. According to the geotechnical laboratory, Clarence Welti Associates, Inc., the hydrometer analysis could not be conducted due to the small amount of sample passing through the #200 sieve. Based on the sieve analysis, additional sample volume of between 2.6 to 10 pounds of sample would be required to provide approximately 50 grams of silt and clay to facilitate the hydrometer analysis. This volume of sample, if available in the small stream, would likely significantly alter stream channel. Additionally, the initial sieve analysis distribution indicated the silt and clay did not represent a significant component of the stream sediment. Therefore, additional sample was not collected for the hydrometer analysis. To be conservative in the absence of the hydrometer analysis, risk calculation was performed using the total percent silt and clay as the individual total of each grain size classification. Grain size analysis laboratory reports are provided in Appendix G.

The concentrations of Priority Pollutant Metals found in the sediment samples were reviewed based on the Ontario Sediment Quality Guidelines and the NJDEPs

"Guidance for Sediment Quality Evaluations," March 1991, as suggested in the letter from the NJDEP to Airtron, dated December 11, 1996. Based on the Ontario Sediment Quality Guidelines, the concentrations of inorganic analytes in the sediment are compared to the potential effect of these constituents on organisms in the stream channel. These effects are identified as Low Effects Criteria (LEC), impacting less than 5 % of the population of aquatic organisms and Severe Effects Criteria (SEC), impacting greater than 95% of the aquatic population. Lead was detected in two upstream samples above the LEC of 31 mg/kg but below the SEC of 250 mg/kg. Lead was also detected in the five downstream samples at concentrations between the LEC and the SEC. No other concentration of metals was detected above the LEC in the upstream sediment samples. Nickel concentrations detected in the downstream samples were generally at the LEC of 16 mg/kg. Three constituents; chromium, copper, and zinc; were detected at concentrations between the range of the respective LEC and SEC. Chromium was detected in four samples at concentrations between the LEC of 26 mg/kg and the SEC of 110 mg/kg. However, a concentration of chromium was detected above the SEC in DS-75. Copper was detected in the five downstream samples between the LEC of 16 mg/kg and the SEC of 110 mg/kg, and zinc was detected at concentrations between the LEC of 120 mg/kg and the SEC of 820 mg/kg. Arsenic was detected in one downstream sample just below the SEC of 33 mg/kg, the remaining four sediment samples for arsenic were at concentrations above the SEC. Table 9 provides a comparison of the Ontario Sediment Quality Guidelines and the concentrations of Priority Pollutant Metals detected in the sediment samples.

The sediment quality data was also compared to the National Oceanographic and Atmospheric Administration (NOAA) Sediment Quality Screening Criteria. The NOAA criteria provides reference concentrations of constituents based on effects range-low(ER-L) where the concentration would be potentially harmful to approximately 5% of the aquatic life, and the effects range-medium (ER-M) where the concentration would be potentially harmful to approximately half the aquatic life in the stream. Relative to the NOAA criteria, lead values are above the ER-L for two upstream as well as the five downstream samples. No other upstream samples exceeded the ER-L limits. Arsenic was detected below the ER-L in one sample, between the ER-L and ER-M in three samples, and above the ER-M in one sample. Chromium was detected below the ER-L in three samples, between the ER-L and the ER-M in one sample, and above the ER-M in one sample. Copper was detected slightly above the ER-L in one sample only. Silver was detected at concentrations above the ER-M in all five downstream samples, and zinc was detected at concentrations between the ER-L and ER-M in the downstream samples. Table 9 also provides a comparison of the NOAA Sediment Quality Guidelines and the concentrations of Priority Pollutant Metals detected in the sediment samples.

Analysis of surface water samples detected arsenic, chromium, copper, lead, nickel, and zinc in the upstream sample US-01. Arsenic, chromium, copper, nickel, silver, and zinc were detected in the downstream surface water sample DS SW-01. The concentrations of Priority Pollutant Metals in surface water are in compliance with

NJDEP Surface Water Quality Criteria except for arsenic in both upstream sample US-01 at 3.2 ug/L (total) and 3.3 ug/L (dissolved) and downstream sample DS SW-01 at 9.8 ug/L (total) and 10.0 ug/L (dissolved) in exceedance of NJDEP Surface Water Quality Criteria of 0.017 ug/L for FW2 water bodies. Lead detected in the upstream sample US-01 at 10.2 ug/L (total) and 8.0 ug/L (dissolved) also exceeded Surface Water Quality Criteria of 5.0 ug/L for FW2 water bodies. The analysis of both total and field filtered samples (dissolved) indicate that the concentrations of the Priority Pollutant Metals are dissolved in the water and are not derived from particulate matter in the stream. The analysis of hardness in the surface water samples detected 24.4 milligrams per liter (mg/L) in US-01 and 134 mg/L in DS SW-01. Analytical results for surface water samples are provided in Table 10. Surface water sample locations are depicted on Figure 4.

4.1.7 AOC-7: Paint Stripping Area/Former 10,000-Gallon UST

No concentrations of VOCs were detected above the NJDEP IGSCC in the two soil samples collected in AOC-7. No VOCs were detected above the analytical detection limits in the soil samples collected in AOC-7. The results of VOCs analyses of soil samples are provided in Table 5.

Total petroleum hydrocarbons (TPH) as identified under diesel range organics (DRO) and gasoline range organics (GRO) were not detected in the soil sample in AOC-7 above the analytical method detection limit. The results of TPH analyses of soil samples are provided in Table 6.

Analysis of the Priority Pollutant Metals and cyanide detected various concentrations of arsenic, beryllium, chromium, copper, lead, nickel, selenium, and zinc in the soil sample collected in AOC-7. No concentrations of these metals were detected above the NJDEP RDCSCC. Antimony, cadmium, cyanide, mercury, silver, and thallium were not detected in soil samples from AOC-7 above their respective analytical method detection limits. Table 7 provides the analytical results for Priority Pollutant Metals and cyanide in soil samples.

Field screening did not indicate soil samples of the native material (PID readings were consistent with background levels of 2 to 3 ppm) in AOC-7 were impacted. Therefore, the soil sample for SVOCs in AOC-7 was collected from the first encountered native soil encountered in the borehole. The soil sample for SVOCs analysis was collected at B-232 6-8. Analysis of SVOCs in this sample detected only a concentration of bis (2-ethylhexyl) phthalate which did not exceed the NJDEP RDCSCC. No other SVOCs were detected in soil samples from AOC-5. The results of SVOCs analyses are provided in Table 8.

4.1.8 AOC-9: Former 15,000-Gallon Heating Oil UST

Concentrations of VOCs in exceedance of the NJDEP IGSCC were detected in one of eight soil samples collected in AOC-9. Tetrachloroethene was detected at 1.3 mg/kg was detected in B-233 10-12 in exceedance of the IGSCC of 1 mg/kg. No other VOCs were detected in soil samples collected in AOC-9 in exceedance of the NJDEP IGSCC. This sample was observed to be saturated indicating that it was collected within the perched groundwater zone previously identified beneath AOC-1. Since this perched groundwater is known to be impacted with VOCs, the detection of VOCs in B-233 10-12 is likely the result of the VOC-impacted perched groundwater. However, additional soil borings (B-236 and B-237) additional results and soil samples were collected in AOC-9 to delineate potential impacts in B-23 10-12. Further discussion of VOC impacts in the perched groundwater zone are discussed in the Groundwater Section, below. The results of VOCs analyses of soil samples are provided in Table 5.

Total petroleum hydrocarbons (TPH) as identified under diesel range organics (DRO) and gasoline range organics (GRO) were detected in one soil sample in AOC-9 (B-231 5-7) above the analytical method detection limit. However, these concentrations were well below 1,000 mg/kg remedial action limit. The results of TPH analyses of soil samples are provided in Table 6.

Analysis of the Priority Pollutant Metals and cyanide detected various concentrations of arsenic, beryllium, chromium, copper, lead, nickel, selenium, silver, and zinc in the soil sample collected in AOC-9. No concentrations of these metals were detected above the NJDEP RDCSCC. Antimony, cadmium, cyanide, mercury, and thallium were not detected in soil samples from AOC-9 above their respective analytical method detection limits. Table 7 provides the analytical results for Priority Pollutant Metals and cyanide in soil samples.

Field screening indicated the soil sample at B-231 5-7 was most likely impacted with a PID readings of between 10 to 50 ppm. Analysis of SVOCs in this sample detected concentrations of 2-methylnaphthalene, fluorene, pyrene, benzo(a)anthracene, chrysene, bis (2-ethylhexyl) phthalate, and benzo(a)pyrene. No concentrations of these compounds exceeded the NJDEP RDCSCC. No other SVOCs were detected in the soil samples from AOC-9. The results of SVOCs analyses are provided in Table 8.

4.2 Groundwater (AOC-11)

An extensive network of monitoring wells and other groundwater sampling/ observation points are present on and surrounding the Airtron facility. In addition, seven monitoring wells were installed as part of the SI/RI investigation. The locations of monitoring wells and other sampling points are shown on Figure 2. A summary of the construction details for the groundwater monitoring network are provided in Table 2. The flow and water quality of the perched groundwater and the upper unconfined

aquifer are the primary focus of the SI/RI groundwater investigation as they relate to the migration of the VOCs at the site. A groundwater flow modeling effort, conducted by ARCADIS Geraghty & Miller during 1996 and 1997 and documented in Appendix H, was used for assessing critical groundwater issues within the upper unconfined aquifer under various pumping conditions. Geophysical logging was also conducted to assess and correlate lithology in and around the Airtron and Mennen facilities.

4.2.1 Groundwater Flow Analyses

Groundwater flow was investigated and assessed to fully characterize the distribution and transport of VOCs observed regionally in the upper unconfined aquifer. The following is a discussion of the groundwater flow in each of the hydrogeologic units.

4.2.1.1 Perched Groundwater

Between February 25, 1998 and April 1, 1998, weekly water-level measurements were collected from the one existing (MW-301) and six newly installed (MW-401, MW-402, MW-403, MW-404S, MW-404D, and MW-405) perched groundwater monitoring wells. The water-level measurements are provided in Table 4. The horizontal flow gradient, as observed on March 4, 1998, is approximately 0.0162 feet per foot (ft/ft) between Wells MW-301 and MW-404S. The gradient increases to 0.0944 ft/ft from MW-404S to MW-405. This exhibits locally variable horizontal flow in the perched groundwater. The horizontal flow was also observed on February 25, 1998, March 10, 1998, and March 25, 1998 to become radial from Well MW-402 following precipitation events. Water levels were observed to fluctuate in Well MW-402 up to 4.27 feet, from between 380.62 feet above mean sea level (ft msl) on March 4, 1998 to 384.89 ft msl on February 25, 1998. The fluctuation of water levels in MW-402 acted to reverse the horizontal flow between Well MW-402 and both Wells MW-301 and MW-401.

Water-level measurements collected from the Well Cluster MW-404S and MW-404D on February 25, 1998 and March 10, 1998 observed vertically downward head gradients of 0.82 ft/ft and 0.72 ft/ft, respectively. The vertical head gradient is roughly an order of magnitude greater than the horizontal gradient in this area. The relative head differences between the horizontal and vertical head gradients indicates the primary flow path of the perched groundwater is vertically downward.

4.2.1.2 Upper Unconfined Aquifer

On an area-wide basis and beneath the Airtron facility, groundwater flow patterns have varied over time primarily as a result of the aquifer's response to changes in pumping stresses within the upper unconfined aquifer. Compounds that enter the groundwater system through the unsaturated zone, primarily migrate along the direction of and at the average rate of groundwater flow (advective transport). Therefore, an evaluation of groundwater flow patterns is an important component in assessing contaminant

migration. Based on groundwater contours generated from water-level measurements collected throughout various groundwater investigations and further supplemented by Airtron's water-level monitoring program, the significant variation in overall groundwater flow patterns can be divided into three periods: groundwater flow conditions during Mennen P-1 operation, groundwater flow under non-pumping conditions, and groundwater flow conditions during operation of Airtron's groundwater extraction system. The discussion of all three time periods are provided below.

In addition to water-level measurements, the groundwater flow model (documented in Appendix H) was used to assess groundwater flow patterns under various hydrologic conditions. Specifically, the modeling effort and model design were structured to address critical groundwater issues at and around the Airtron facility relating to impact of historic and more recent pumping stresses. In summary, the resultant model design, which represents two-dimensional, steady-state groundwater flow within the heterogeneous upper unconfined aquifer, provides a numerical representation of the conceptualized groundwater system consistent with site-specific and regional geologic, hydrogeologic, hydrologic and water usage information. The objectives of the modeling effort were (1) to simulate aquifer response to pumping stresses during Mennen P-1 operation and during operation of Airtron's groundwater extraction system (including capture zone analysis of Airtron RW-1); and (2) to assess the relative significance of the impacts that these pumping stresses have had and continue to have on groundwater flow patterns on and in the vicinity of the Airtron property.

4.2.1.2.1 Mennen Well P-1 Pumping (1951 to July 1991)

Mennen P-1 operated from 1951 until July 1991. Mennen P-1 was initially operated at a rate of approximately 400 gallons per minute (gpm). In response to a concern by the USGS in 1966 that the regional aquifer was being overstressed by the operation of Mennen well P-1, Mennen reduced the pumping rate (short term well yield test indicated operational capacity of 225 gpm). Within at least the last 10 years of operation, pumping rates were further reduced. Pumping of Mennen P-1 was typically continuous (24 hours) during week days and occurred about one-third to one-half of the time on weekends.

The aquifer's response to Mennen P-1 pumping (i.e., drawdown) superimposed on natural groundwater flow patterns, results in groundwater flow conditions shown on Figure 14. These groundwater flow patterns (observed during February 1990 when Mennen P-1 pumpage averaged about 55 gpm) are considered to be representative for the upper unconfined aquifer during Mennen P-1 operation. During the time when Mennen P-1 was pumping at higher pumping rates, the radius of influence, or cone of depression, and more importantly its capture zone, was greater in extent than that shown for February 1990. Furthermore, considering the length of time and the consistency of this pumping stress as well as historic water-level data, the influence on groundwater flow patterns created by Mennen P-1, once established, appears

minimally affected by variability of pumping schedules and rates (i.e., conditions reflect steady-state equilibrium). As such, both the Airtron and Mennen properties are within Mennen P-1's capture zone, as well as a considerable portion of the Mennen warehouse property and the AT&T dump.

The impact of pumping conditions on groundwater flow during this period is further supported by the modeling effort (documented in Appendix H). The simulation of groundwater system response to historic pumping of Mennen P-1 demonstrates that P-1 had a significant impact on groundwater flow patterns, generating an appreciable capture zone similar in extent to that described above. The modeling effort agrees with the observed groundwater flow patterns that are representative of groundwater conditions within the upper unconfined aquifer during pumping of Mennen P-1.

4.2.1.2.2 Interim Non-Pumping Conditions (July 1991 to April 1995)

Under non-pumping conditions, groundwater began to resume its natural flow patterns once pumping of Mennen P-1 ceased. Previous evaluation of changes in water levels by ERM-Northeast (1993) during this period indicated a variability in the rate of recovery between water-level observation points, demonstrating the heterogeneous nature of the aquifer system and suggesting a transient response (nonsteady-state conditions) during this period. Although recovery measured in some wells was greater than others, inferring a spatially-varying degree of the former influence of Mennen P-1, the spatial distribution of this "interference" should be superimposed upon the natural fluctuations in water levels collected from all wells to completely assess the changing groundwater flow paths and the decreasing extent of the former Mennen P-1 capture zone. In other words, the former zone of influence of Mennen P-1 inferred from recovery data must be superimposed on the natural flow field in order to evaluate flow paths and the former capture zone. As such, generation of groundwater contour maps using the extensive network of wells and associated water-level data collected frequently during this period, is the most appropriate and representative technique to begin to assess groundwater flow and potential contaminant migration pathways during the non-pumping period.

Groundwater contour maps were generated on a detailed temporal basis (quarterly) from water-level data collected by Airtron from the majority of wells in the area-wide network on a regular basis since shortly after Mennen P-1 was shut down. The groundwater contour maps are provided in Appendix I, and depict "snapshots" of varying flow patterns at a sufficient temporal level-of-detail to assess changing groundwater flow direction and hydraulic gradients representative of the aquifer's transient response during this time-frame.

During non-pumping conditions, groundwater contours indicate that flow patterns between the Airtron facility and Mennen P-1 are generally oriented primarily from west to southwest, consistent with more regional flow patterns. The area underlying

most of the Airtron facility and the Mennen facility surrounding Mennen P-1 is characterized by relatively shallow hydraulic gradients compared to areas upgradient of Airtron and downgradient of Mennen (west to the Whippany River). Migration of dissolved VOCs during this time period was slow because of the relatively flat hydraulic gradients characteristic for the area of interest.

The groundwater contour maps provide the basis for assessing the degree to which VOCs, potentially attributable to Airtron, could have migrated off-site under non-pumping conditions, and potentially beyond the current RW-1 capture zone before it was established. Specifically, the advective component of contaminant migration from the vicinity of Mennen P-1 was assessed. Advection describes the process of contaminant migration due to the average bulk movement of groundwater, and is typically the most important factor governing contaminant transport because it defines the direction and rate of travel of a plume's center of mass. The advective transport term is computed by calculating the average linear groundwater velocity, which is a function of hydraulic conductivity, hydraulic gradient, and effective porosity (cross-sectional area open to flow), as shown by the following equation:

$$v = K i / n$$

where: K is the hydraulic conductivity (in feet/day),
i is the horizontal hydraulic gradient (in feet/foot), and
n is the effective porosity (as a percent).

It should be noted that advective transport term represents movement of a "conservative" contaminant (i.e., one that does not react within the flow regime and moves at the rate of groundwater flow). In reality, dissolved contaminants, such as VOCs, typically interact with aquifer material via adsorption and other chemical and physical processes which remove the dissolved constituent from groundwater. Due to these other transport processes, a solute may move slower than the groundwater, a phenomenon known as retardation. Because advection does not take into account retardation of contaminants it is considered to be a conservative analysis.

Contaminant pathways originating from Wells USGS-1, MW-206 and Mennen P-1 were approximated by "tracking" a conservative contaminant particle's movement (i.e., advective transport) under the transient flow conditions. The groundwater contour maps provided information on groundwater flow directions and hydraulic gradients. The flow directions and hydraulic gradients calculated from the groundwater contours depicted on each quarterly groundwater contour map were considered to be representative over each quarterly period (approximately 90 days) for purposes of the analysis.

In addition, representative values for aquifer parameters (i.e., hydraulic conductivity and effective porosity) were based on estimates consistent with previous modeling efforts (Appendix H), previous site-specific groundwater flow velocity/migration

assessments conducted by SCS Engineers and ERM-Northeast, and published literature values (in cases where site-specific data are lacking). Values of 25 ft/day and 25 percent are considered to be reasonable and representative estimates for hydraulic conductivity and effective porosity, respectively.

In conjunction with hydraulic gradients calculated for each quarterly period along a particular contaminant pathway, these aquifer parameter values were used to calculate representative advective velocities for each conservative contaminant particle. The distance each particle traveled along its pathway was calculated by multiplying the advective velocity by 90 days (the amount of time represented by each quarterly time period). These calculations were repeated for each quarter for the entire non-pumping period and extending through October 1995 to include additional information on flow patterns while RW-1's capture zone was still approaching steady-state (equilibrium) conditions.

The results of the advective transport analysis are shown on Figure 15 as contaminant pathlines with the steady-state capture zone resulting from RW-1 operation superimposed. These pathlines depict the probable downgradient VOC migration in the vicinity of Mennen P-1 under non-pumping conditions via advective transport. As shown on Figure 15, the contaminant pathlines do not extend beyond RW-1's capture zone. Also, it should be noted that although some portion of contamination would be expected to move slower and faster than the average, advective velocity, this analysis is conservative because it does not take into account retardation. Retardation, the resulting effect of sorptive processes, would cause the bulk contamination migration rate to be slower than the average advective, velocity. Therefore, the result of the advective transport analysis indicates that contamination existing on the Airtron site during interim non-pumping conditions could not migrate beyond RW-1's current capture zone.

4.2.1.2.3 Current Conditions (April 1995 to Present)

Since operation of Airtron's groundwater extraction system began in April 1995, water-level measurements have been collected frequently and evaluated on a periodic basis to infer Airtron RW-1's capture zone. These capture zone evaluations have been documented by Airtron in submittals to the NJDEP in accordance with the Interim Remedial Measure (IRM) Groundwater Remediation Effectiveness Monitoring Program. These submittals have indicated that the groundwater extraction well (RW-1) continues to maintain hydraulic control at the site at a pumping rate of approximately 30 gpm.

The impact of pumping conditions on groundwater flow during this period is further supported by groundwater modeling (documented in Appendix H). The simulation of groundwater system response to current pumping of Airtron RW-1 demonstrates that RW-1 has a significant impact on groundwater flow patterns, generating a capture zone

which prevents off-site migration of VOC-impacted groundwater beneath the Airtron facility. The modeling further indicates that the observed groundwater flow patterns (e.g., during April 1996, one year after pumping was initiated) are representative of groundwater conditions within the upper unconfined aquifer during pumping of Airtron RW-1.

To assess the current groundwater flow conditions during the pumping of Recovery Well RW-1, water-level measurements were collected from the groundwater monitoring well network at the Airtron facility on February 25, 1998 and again on March 10, 1998 following the installation of Wells MW-404D and MW-406 in the upper unconfined aquifer. Water-level elevations recorded in the newly installed Wells MW-404D and MW-406 indicate localized groundwater mounding beneath AOC-2 and AOC-4. This mounding creates a northerly groundwater flow component in the upper unconfined aquifer in the area of AOC-3. This northerly groundwater flow component moves toward the northern boundary of the site at which point the flow returns to the regional southwesterly direction. The presence of the established surface water body in the former gravel pit to the north of the Airtron facility and water-level elevation measured in the Champion Well MW-1 indicate that this localized flow component extends toward the northern site boundary before the regional southwesterly flow re-emerges. Generally, groundwater flow in the upper unconfined aquifer was observed to be consistent with historical flow conditions during the IRM groundwater recovery program at the site. Figure 16 depicts the groundwater flow net in the upper unconfined aquifer measured on March 10, 1998.

4.2.2 Geophysical Logging

At the request of NJDEP, borehole gamma logs, which record natural radiation in the soil, were collected from 18 wells on both the Airtron facility and the former Mennen warehouse property. In the northeast United States, the primary source of naturally occurring gamma radiation is potassium 40 (K40) which is typically found in clays and arkosic materials. Since the interest in the gamma logs is to attempt to assess the intrinsic permeability of the formation within the upper unconfined aquifer, this discussion will focus on relative gamma radiation responses in the geophysical logs. Due to the variation of well casing diameter (2-inch to 17-inch) and different construction materials (steel vs. PVC), the gamma response in the wells vary in intensity. This variation is evident in gamma logs from Clustered Wells MW-202 and MW-2M. MW-202 is constructed with both an 8-inch outer steel casing to approximately 90 feet and an inner 4-inch diameter PVC casing, and MW-2M is constructed of a single wall 2-inch diameter casing. The resulting gamma response indicates a nearly 20 percent difference in gamma response between the two wells. The thickness of well materials alone do not account for the difference of gamma response below 26 feet in MW-202 within, according to drilling logs, a constant lithological unit. The additional difference of gamma response may be due to a number of causes including borehole skin formation (smearing) or sidewall erosion (increasing borehole diameter) during drilling. This well cluster is evidence of

variations in geophysical logging responses due to drilling techniques and well construction methods and materials.

ARCADIS Geraghty & Miller reviewed and compared geophysical gamma logs from wells installed at the same time and constructed of identical materials. These wells included MW-204 and MW-206; PZ-1 and PZ-2; MW-1, MW-2, and MW-3; USGS-1, USGS-2, and USGS-3; and MW-201, MW-202, and MW-203. Comparison of these gamma logs did not indicate variation of intrinsic permeability in the formation.

4.2.3 Groundwater Quality

Groundwater quality results have been included from both the SI/RI Work Plan scope of work and from the on-going groundwater quality monitoring program as part of the interim remedial measure (IRM) for the upper unconfined groundwater aquifer. The SI/RI investigation was focused on the assessment of water quality of both the perched groundwater and the upper unconfined aquifer. Each groundwater unit is discussed separately below.

4.2.3.1 Perched Groundwater

Water samples from four perched groundwater wells, Wells MW-301, MW-401, MW-402, and MW-403 were collected on December 10, 1997, and from six perched wells (with the addition of MW-404S and MW-405) were collected on February 25, 1998 for laboratory analysis. Tetrachloroethene and its associated breakdown products, trichloroethene, cis-1,2-dichloroethene, and vinyl chloride, were detected at concentrations above the NJDEP Class I-A Groundwater Quality Criteria of 0.4 ug/L, 1.0 ug/L, 10 ug/L, and 0.08 ug/L, respectively, during one or both sampling rounds in the perched groundwater wells. However, no VOCs were detected above the analytical method detection limits in MW-405. No other VOCs were detected in any perched groundwater samples above the NJDEP Groundwater Quality Criteria.

On December 10, 1997, tetrachloroethene were detected at concentrations of between 2.4 ug/L in MW-401 and 390 ug/L in MW-301. Concentrations of trichloroethene were detected ranging from 2.2 ug/L in MW-401 to 160 ug/L in MW-403. Concentrations of cis-1,2-dichloroethene were detected ranging from 24 ug/L in MW-401 to 2,600 ug/L in MW-301. Vinyl chloride was detected in only one well at 4,400 ug/L in MW-301.

On February 25, 1998, tetrachloroethene concentrations were detected in five wells ranging from 1.9 ug/L in MW-401 to 610 ug/L in MW-301. Trichloroethene was detected in four wells at concentrations ranging from 36 ug/L in MW-402 and MW-404S to 150 ug/L in MW-301. Concentrations of cis-1,2-dichloroethene were detected in five wells ranging from 10 ug/L in MW-401 to 1,100 ug/L in MW-301. Vinyl chloride was again detected in only one well at 1,700 ug/L in MW-301. The results of

the perched groundwater sample analyses are provided in Table 11. A summary of the distribution of tetrachloroethene, trichloroethene, cis-1,2-dichloroethene, and vinyl chloride in provided on Figure 17.

4.2.3.2 Upper Unconfined Aquifer

The laboratory analysis of VOCs in groundwater samples collected from the upper unconfined aquifer detected tetrachloroethene and its breakdown products, trichloroethene, cis-1,2-dichloroethene, and vinyl chloride above the NJDEP Class I-A Groundwater Quality Criteria. Tetrachloroethene was detected at concentrations ranging from 3.4 ug/L in MEN-MW-12 to 4,700 ug/L in MW-404D. Trichloroethene was detected at concentrations ranging from 300 ug/L in MEN-MW-13 to 16,000 ug/L in MW-406. Concentrations of cis-1,2-dichloroethene were detected from 7.1 ug/L in MEN-MW-13 to 1,000 ug/L in MW-404D. Vinyl chloride was detected at 7.6 ug/L in MEN-MW-12 and at 12 ug/L in MW-404D. No other VOCs were detected at concentrations above their respective NJDEP Groundwater Quality Criteria, and no VOCs were detected above the analytical method detection limits in Wells MW-204 and USGS-1. The results of VOCs analysis in upper unconfined aquifer groundwater samples are provided in Table 11. The VOC concentrations in exceedance of the NJDEP Groundwater Quality Criteria are presented on Figure 16.

5.0 Quality Assurance/Quality Control

Samples collected at the Airtron facility were reviewed for completeness and technical compliance with the approved SI/RI Work Plan. If any data were determined not to be complete and/or technically compliant, the data reviewer referred to the NJDEP data validation documents for assistance. Inorganic results were reviewed using the criteria specified in the NJDEP Standard Operating Procedure (SOP) 5.A.2. Organic results were reviewed using the criteria specified in NJDEP SOP 5.A.13. The review of the data packages included checking the following:

- Chain-of-custody forms.
- Holding Times.
- Blank contamination.
- Spike recoveries.
- Surrogate recoveries.
- Internal standards.
- Precision of duplicate analyses.
- Laboratory control samples.

Qualification of the sample results that were deemed necessary during the data review were applied to the data tables with the exception of the pH results for soil samples. Since all soil pH results were rejected due to holding time violations, tabulated pH results were not presented. The lack of pH results for the soil samples did not adversely effect the use of the data set for the remaining parameters. Overall, with the exception of the soil pH results, the quality of the analytical results was acceptable. All project data quality objectives were met.

6.0 Findings and Conclusions

This section presents a discussion of the findings and conclusions drawn from the SI/RI investigation at the Airtron facility. As specified in the SI/RI Work Plan, the discussion of the findings will be presented for each AOC separately. As mentioned in the background Section, no further investigation of AOC-8 and AOC-10 is required as part of the SI/RI. AOC-8 as stated in the December 11, 1996 correspondence from the NJDEP, "The vault has been inspected and is no longer considered an AOC". Regarding AOC-10, the same December 11, 1996 correspondence from NJDEP stated that "The Department has determined that no further action for soils is required at this AOC". Therefore, these AOCs are not included in this discussion.

6.1 Findings

The following findings have been derived from the SI/RI investigation activities discussed above:

6.1.1 AOC-1: Hazardous Materials Storage Building Area

Concentrations of VOCs including tetrachloroethene and its breakdown products, trichloroethene and cis-1,2-dichloroethene, were detected at two locations within AOC-1 (at Borings B-205 and B-234) above the NJDEP for Impact to Groundwater Soil Cleanup Criteria (IGSCC). The VOC concentrations in soils have been fully delineated vertically and horizontally under the criteria provided under N.J.A.C. 7:26E-4.1(b)2. No other parameters analyzed in the soil samples including the Priority Pollutant Metals, TPH, cyanide, and SVOCs were detected at concentrations above the most stringent NJDEP Soil Cleanup Criteria.

Perched groundwater was encountered in B-205 beneath AOC-1 and therefore, one monitoring well (MW-403) was installed to assess potential VOC impacts. Perched groundwater quality findings are discussed under AOC-11: Groundwater Section below.

6.1.2 AOC-2: Former Parking Island Drum Storage Area #1

Concentrations of VOCs including tetrachloroethene were detected above the NJDEP IGSCC. The highest concentrations of tetrachloroethene in AOC-2 were observed at Borings B-210 and B-208. The VOC concentrations in soils have been fully delineated vertically and horizontally under the criteria provided under N.J.A.C. 7:26E-4.1(b)2. No other parameters analyzed in the soil samples including the Priority Pollutant Metals, TPH, cyanide, and SVOCs were detected at concentrations above the most stringent NJDEP Soil Cleanup Criteria.

The excavation of the test pit to further investigate the observation of a sludge layer containing a concentration of 9,100 ug/kg in B-210 indicated that the sludge layer was an isolated feature measuring approximately 20 feet long, and approximately one foot in diameter.

6.1.3 AOC-3: Former Drum Storage Area #2

Concentrations of VOCs including tetrachloroethene and its breakdown products, trichloroethene and cis-1,2-dichloroethene, were detected at a number of locations throughout AOC-3 above the NJDEP IGSCC. These VOCs were observed to extend along the eastern edge of the parking lot to the north of the original AOC-3 boundary. The highest VOC concentrations were observed in the vicinity of B-263 and B-267 where VOC concentrations were detected in soils down to the surface of the upper confined aquifer. The VOC concentrations in soils have been fully delineated vertically and horizontally under the criteria provided under N.J.A.C. 7:26E-4.1(b)2. TPH, cyanide, and SVOCs were not detected at concentrations above the most stringent NJDEP Soil Cleanup Criteria through out AOC-3.

Concentrations of the Priority Pollutant Metals cadmium, copper, silver, and thallium were also detected above the NJDEP Residential Direct Contact Soil Cleanup Criteria (RDCSCC) in two soil samples, B-225 and B-249. Further delineation of the metals concentrations in soil detected no additional concentrations of Priority Pollutant Metals beyond the two samples listed above. The metals concentrations have been fully delineated under N.J.A.C. 7:26E-4.1(b)2.

Due to the presence of VOCs in the upper unconfined aquifer, one monitoring well (MW-406) was installed in borehole B-263 to assess groundwater quality beneath AOC-3. Groundwater quality findings are discussed under AOC-11: Groundwater Section below.

6.1.4 AOC-4: Former Sludge Lagoon 5

Laboratory analysis of soil samples from AOC -4 detected concentrations of trichloroethene and cis-1,2-dichloroethene above the NJDEP IGSCC in one sample, B-

219. Based on the concentration of VOCs, the depth of the sample, and the known presence of perched groundwater in AOC-4; these VOC concentrations were believed to be representative of the perched groundwater quality and not soil quality. Further delineation of this VOC impact is discussed under AOC-11: Groundwater. No other parameters analyzed in the soil samples including the Priority Pollutant Metals, TPH, cyanide, and SVOCs were detected at concentrations above the most stringent NJDEP Soil Cleanup Criteria.

6.1.5 AOC-5: Former Sludge Lagoons 1-4

No concentrations of VOCs, Priority Pollutant Metals, TPH, cyanide or SVOCs were detected above the most stringent NJDEP Soil Cleanup Criteria. No residual impacts from the former sludge lagoons were observed.

6.1.6 AOC-6: Stream Sediments

Sediment sample analysis detected concentrations of lead above the Lower Effects Criteria (LEC) but below the Severe Effects Criteria (SEC) of the Ontario Sediment Quality Guidelines in samples collected from both upstream and downstream of the Airtron NJPDES combined Outfall 001/003. In general, concentrations of chromium, copper, and zinc were detected in downstream samples between the LEC and SEC, however, one sample (DS-75) detected chromium above the SEC. Arsenic was detected just below the SEC in one downstream sample with the remaining four downstream samples showing concentrations of arsenic above the SEC.

Relative to the National Oceanographic and Atmospheric Administration (NOAA) Sediment Quality Screening Criteria, concentrations of lead were detected above the effects range-lower (ER-L) in upstream and downstream sample locations. Generally, concentrations of arsenic, chromium, copper, and zinc were detected between the ER-L and the effects range-medium(ER-M), however, one sample for arsenic, one sample for chromium, and five samples for silver were detected above ER-M values.

Surface water quality samples exceeded NJDEP Surface Water Quality Criteria for arsenic in both the upstream and downstream samples, however, the concentrations of arsenic in the surface water samples are an order of magnitude below the NJPDES permit Effluent Limitation for Outfall 001. Lead was also in exceedance of the Surface Water Quality Criteria in the upstream sample only. This concentration of lead is not associated with Airtron facility operations.

6.1.7 AOC-7: Paint Stripping Area/Former 10,000-Gallon UST

No concentrations of VOCs, Priority Pollutant Metals, TPH, cyanide or SVOCs were detected above the most stringent NJDEP Soil Cleanup Criteria. No residual impacts

from the former paint stripping activities or from the former 10,000-gallon UST were observed.

6.1.8 AOC-9: Former 15,000-Gallon Heating Oil UST

Tetrachloroethene was detected slightly above the NJDEP IGSCC in Boring B-233 at 10 to 12 feet below land surface. Based on the depth of the sample, the saturation of the sample, and the proximity to Well MW-403, the concentration of tetrachloroethene is likely the result of VOCs in the perched groundwater beneath AOC-1. The VOC concentrations in soils have been fully delineated vertically and horizontally under the criteria provided under N.J.A.C. 7:26E-4.1(b)2. No other parameters analyzed in the soil samples including the Priority Pollutant Metals, TPH, cyanide, and SVOCs were detected at concentrations above the most stringent NJDEP Soil Cleanup Criteria.

6.1.9 AOC-11: Groundwater

Horizontal flow of the perched groundwater beneath AOC-1 and AOC-4 was observed, based on water-level measurement, to be southeasterly with a generally flat gradient of 0.0162 ft/ft. However, based on the relative head difference in the Well Cluster MW-404S and MW-404D, the primary flow path of the perched groundwater is vertically downward with a vertical flow gradient of between 0.72 and 0.82 ft/ft. Because Well MW-403 is remote from the remaining perched groundwater wells located in AOC-4, MW-403 was not included in the determination of flow of the perched groundwater, however, water-level elevations in MW-403 are in agreement with the observations made in remaining perched groundwater wells.

Perched groundwater samples contained VOCs above the NJDEP Groundwater Quality Criteria beneath AOC-1 and AOC-4. The highest concentrations of VOCs were observed in Well MW-301 with decreased VOC concentrations in surrounding perched wells. Additionally, vinyl chloride, one of the breakdown products of anaerobic degradation of tetrachloroethene, was only detected in MW-301. No concentrations of VOCs were detected in Well MW-405 (farthest horizontally downgradient well). The distribution of VOC concentrations in the perched groundwater does not indicate significant lateral plume migration and is predominantly influenced by downward vertical groundwater flow.

The upper unconfined aquifer flow was observed to be consistent with the regional groundwater flow to the southwest. Localized mounding of the groundwater was observed in Wells MW-1 and MW-404D creating a northerly flow component toward the north end of the rear parking lot (see Figure 16). However, based on the groundwater elevation of the Champion Well MW-1 and the presence of surface water in the former gravel pit to the north of the Airtron facility, this northerly flow component is limited to the northern boundary of the site where the flow returns to the regional southwesterly direction. Water-level measurements also indicate that the

groundwater extraction well, RW-1, has maintained a sufficient cone of depression to capture the VOC-impacted groundwater at the Airtron facility.

The NJDEP's purpose for requesting the collection of gamma logs in monitoring wells at Airtron is to assess intrinsic soil permeabilities. However, the application of gamma radiation to assess permeability in this monitoring well network and hydrogeologic setting is not appropriate. As previously discussed in Section4.2.2 (Geophysical Logging), variations in monitoring well drilling and construction methods create significant differences in the recording of gamma radiation surrounding monitoring wells. According to Mount Sopris Instrument Company, differences in gamma readings will occur from even minimal variations in logging procedures such as using the probe along the sidewall of the well versus through the center of the well. Elevated gamma radiation levels (>40 counts per second [cps]) in sand and gravel soils, as recorded on drilling logs, are indicative of arkosic material in the glacial outwash deposits. Arkosic material can exhibit elevated gamma readings resulting in falsely identifying sandy material as clay/silt units. For example, interpretation of gamma logs collected in Wells MW-2, MW-302, and MW-406 indicate portions of the formation as being predominantly silt and clay (50 to 60 cps) which does not agree with the visual interpretation of the soil core samples from the same depth interval indicating the subsurface material consists principally of sand which exhibits high intrinsic permeability.

6.2 Conclusions

Based on information from the SI/RI and previous investigations at the Airtron facility, the following conclusions have been drawn for each of the AOCs.

Area of Concern:	Conclusion:
AOC-1: Hazardous Materials Storage Building Area	In-situ remediation and run-on/run-off control.
AOC-2: Former Parking Island Drum Storage Area #1	In-situ remediation and run-on/run-off control.
AOC-3: Former Drum Storage Area #2	In-situ remediation and run-on/run-off control.
AOC-4: Former Sludge Lagoon #5	No further action required.
AOC-5: Former Sludge Lagoon #1-4	No further action required.
AOC-6: Stream Sediments	No further action required.
AOC-7: Paint Stripping Area/ Former 10,000-Gallon UST	No further action required.
AOC-8: Gallium Arsenide Wing Trench	No further action required (approved by NJDEP, December 11, 1996).
AOC-9: Former 15,000-Gallon UST	No further action required.
AOC-10: Former 20,000-Gallon UST	No further action required (approved by NJDEP,

December 11, 1996).

AOC-11: Groundwater

Perched Groundwater	In-situ remediation and run-on/run-off control.
Upper Unconfined Aquifer	Continue IRM groundwater remediation.

These conclusions are based on the following information.

6.2.1 Waste Management Areas (AOC 1 to 5, 7 and 9)

Concentrations of chlorinated VOCs were detected in soils above NJDEP Soil Cleanup Criteria beneath AOC-1, AOC-2, and AOC-3. Table 12 provides a summary of VOC concentrations in excess of the NJDEP Soil Cleanup Criteria.

Laboratory analysis of soil samples collected in AOC-4, AOC-5, AOC-7, and AOC-9 detected no concentrations in exceedance of NJDEP Soil Cleanup Criteria. Although individual samples in AOC-4 and AOC-9 detected VOCs slightly above the NJDEP Impact to Groundwater Soil Cleanup Criteria, the depth and moisture content (saturated) of these samples in relation to perched groundwater zones indicate that these concentrations of VOCs are the result of VOCs in perched groundwater in the soil samples. As a result, these sample locations will be addressed as perched groundwater. Based on the results of the RI/SI investigation, no further action is warranted for soils in AOC-4, AOC-5, AOC-7, and AOC-9.

A thorough review of the existing soil vapor extraction (SVE) system at the site was conducted. The current system was determined to be inadequate to address the distribution of VOCs in those areas where high soil moisture or perched groundwater exists. This review is discussed further in the Remedial Action Selection Section below.

The primary VOC detected in soils is tetrachloroethene. VOCs resulting from the anaerobic degradation of tetrachloroethene, including trichloroethene, cis-1,2-dichloroethene, and vinyl chloride were also detected in soils indicating the processes of natural degradation of the VOCs are taking place. This information suggests effective remediation of VOC concentrations in soil can be achieved through enhanced anaerobic conditions in the soil.

Metals concentrations above the NJDEP Residential Direct Contact Soil Cleanup Criteria identified in AOC-3 were determined to be isolated since they were detected in only two discrete soil samples. Site specific Impact to Groundwater Soil Cleanup Criteria were not calculated since concentrations of these metals were not detected in deeper samples. The metals are limited to the shallow till deposits at a depth of less than approximately five to eight feet below grade. Based on the distribution of metals

at AOC-3, they are not likely to impact groundwater in the upper unconfined aquifer. No further action is recommended for metals at the Airtron facility.

Future use of the Airtron facility is to remain as an active industrial manufacturing facility. Current plans for the facility are to construct an addition to the main building over part of the rear parking lot. As part of the construction activities, the rear parking lot will also be renovated thereby effectively capping the area of VOCs detected during the SI/RI. This construction activity will effectively minimize the direct contact exposure pathway (residential or non-residential), to soil contamination as well as minimize infiltration to groundwater in contaminated areas.

6.2.2 Stream Sediments (AOC-6)

The results of the SI/RI sediment sampling program from the intermittent stream in the wooded area east of the Airtron plant building are generally in agreement with previous sediment sampling results (Dames & Moore 1986). Concentrations of lead in exceedance of Ontario Sediment Quality Guidelines (Ontario Criteria) and the NOAA Sediment Quality Screening Criteria (NOAA Criteria) in upstream samples indicate that this analyte does not emanate from the Airtron facility and will not be addressed further. Antimony and mercury were not detected in the sediment samples in either upstream or downstream locations, and nickel was detected at the Ontario Criteria Low Effects Criteria which indicates that nickel would not significantly impact aquatic organisms in the stream. Therefore, antimony, mercury, and nickel do not require further discussion. Concentrations of the remaining Priority Pollutant Metals, arsenic, cadmium, chromium, copper, silver, and zinc, in sediment samples collected downstream of the NJPDES-permitted combined Outfall 001/003 exceed one or more of the Ontario or NOAA Criteria. However, as previously stated in the Background Section of this report and in the SI/RI Work Plan, concentrations of these analytes may enter the stream via the permitted Outfall 001.

It is Airtron's position that the concentrations of metals detected in stream sediments are consistent with what would be expected as a result of the NJPDES permitted discharge to the stream channel. The concentrations of arsenic, cadmium, chromium, copper, silver, and zinc detected in sediment samples were compared to the anticipated concentrations of these analytes resulting from the respective NJPDES Allowable Discharge Limits from Outfall 001 (see Table 1). The anticipated annual accumulated concentration of the analytes listed above in the stream sediments were calculated using the analyte mass (per year) divided by the anticipated sediment mass receiving the deposition from the NJPDES discharge using the following assumptions:

Analyte Mass (per year) = NJPDES Monthly Average Discharge Limit x 3.65 x 10^8
Sediment Mass = stream width x sediment depth x length of deposition x density.

Where:

stream width = 3 feet,
sediment depth = 0.5 feet,
length of deposition = 1,000 feet, and
density = 41.89 kilograms per cubic foot.

The stream channel width, sediment thickness, and percent sediment cover are based on field observations during the SI/RI. The length of the stream channel in which the analytes are deposited is based on the approximate length of open stream channel between the outflow and the culvert beneath the AT&T property. An annual cycle was chosen to account for seasonal variation in the erosion and deposition of sediment in the stream channel. The density of the stream sediment is identified as a loose uniform sand based on sieve analyses (Das, Braja, Principles of Geotechnical Engineering, 1994). The calculation for analyte mass loading into the stream sediments is based on total analyte mass permitted from Outfall 001 since the NJPDES permit does not distinguish particulate versus dissolved analyte mass in the Discharge Limitations.. Since the stream flow is intermittent, by nature, it is a losing stream where water from the stream channel infiltrates into the surrounding formation, thereby contributing particulate and dissolved concentrations of analytes into the stream sediment. Based on this information, the actual and anticipated concentrations of the selected analytes are:

Parameter	Actual Concentration (in mg/kg)	Anticipated Concentration based on NJPDES Permit (in mg/kg)
Arsenic	30.3 - 97.4	163
Cadmium	0.77 - 2.0	57
Chromium	63 - 155	379
Copper	47.9 - 80.6	455
Silver	4 - 33.1	53
Zinc	143 - 197	326

As illustrated, the observed concentrations of these analytes detected during the SI/RI are between 2 and 51 percent of the anticipated analyte concentrations permitted under the NJPDES permit Discharge Limitations for Outfall 001. This comparison demonstrates that the actual contribution of inorganic analytes into the stream sediments is significantly less than the anticipated concentrations permitted under the NJPDES permit Discharge Limitations for the Airtron facility. Since the NJPDES

permit Discharge Limitations are site specific and based upon the protection of human health and the environment, no risk to human health and the environment exists. Therefore, no further action is warranted for the stream sediments under AOC-6.

Surface water samples indicated arsenic in both upstream and downstream samples and lead in the upstream sample only exceed NJDEP Surface Water Quality Criteria. Comparison of the upstream and downstream concentrations of lead and arsenic indicate that these metals represent background conditions. Concentrations of arsenic downstream are consistent with the Airton facility's permitted discharge. Therefore, no further action is recommended for surface water.

6.2.3 Groundwater (AOC-11)

Based on the observed water-level elevation and water quality data collected during the SI/RI investigation, VOCs in perched groundwater beneath the Airtron facility migrate vertically downward into the upper unconfined aquifer. Water-level measurements and calculated vertical hydraulic head gradients between the perched wells and the upper unconfined aquifer were observed to be an order of magnitude greater than the steepest horizontal gradient measured between perched groundwater wells. Additionally, the relative concentrations of VOCs and the presence of daughter compounds such as vinyl chloride in Wells MW-301 and MW-404D indicate a communication between the perched groundwater and the upper unconfined aquifer. The absence of vinyl chloride in the remaining perched groundwater wells along with the absence of VOCs in Well MW-405 indicate that lateral migration of VOCs in the perched groundwater zone is not significant and that perched groundwater flow is predominately vertical. YES OR NO ?

Groundwater flow in the upper unconfined aquifer is controlled by Airtron RW-1. The capture zone created by RW-1 encompasses the area beneath all AOCs. RW-1 provides effective hydraulic containment of impacted groundwater beneath the Airtron site. Remedial extraction of groundwater and associated performance monitoring will be continued at the site in accordance with the IRM Groundwater Remediation Effectiveness Monitoring Program. YES OR NO ?

Since RW-1 is effectively capturing groundwater beneath all of Airtron's AOCs, no additional groundwater remediation measures are necessary. However, measures can be taken to enhance the natural degradation of VOCs in the soil and perched groundwater to expedite the groundwater remediation process. This approach can also be enhanced by facilitating run-on and run-off control (paving) in the AOC areas to minimize further leaching of VOCs into the groundwater system.

The groundwater flow interpretation of a buried channel that connects VOCs in the groundwater at the Airtron site to the VOCs extending to the west of the Mennen property is incorrect. The fact that the Mennen Well P-1 operated continuously for

approximately 40 years at high pumping rates (55 to 400 gpm), and prior to operations at Airtron, adds to the improbability that hydrogeologic conditions could override the extensive and steep hydraulic gradients and capture zone created by P-1. Interim groundwater flow conditions that were observed between the cessation of P-1 operation and the start of RW-1 operation (1991 to 1995) do not indicate transport of VOCs to the west toward Mennen property beyond the Airtron RW-1 capture zone. Furthermore, RW-1 pumping at 30 gpm (approximately 1/2 to 1/10 the rate at which P-1 reportedly operated) demonstrates the sensitivity of local groundwater flow patterns to aquifer pumping stresses.

WHY?

In addition, groundwater flow modeling supports the conclusions regarding the effectiveness of RW-1's capture zone and the relative significance of pumping impacts on the aquifer system. The modeling simulations indicate that the historic (Mennen P-1) and more current (Airtron RW-1) pumping stress had and continue to have significant impact on groundwater flow patterns at and around the Airtron property. The modeling further indicates that groundwater flow and the subsequent migration of contaminants in the upper unconfined aquifer at and in the vicinity of the Airtron site are governed primarily by the groundwater flow patterns and hydraulic gradients resulting from historical groundwater withdrawals by Mennen P-1, and subsequent groundwater extraction by Airtron RW-1. These flow patterns and gradients have been simulated by the model and, more importantly, they have been observed and measured in the field

YES OR NO?

The data collected to support the buried channel theory were obtained using methodologies (slug tests, gamma logging, and general distribution of VOCs) that are limited, inconsistent, and inappropriate to draw this conclusion. For example, the slug tests were all performed in wells of different diameter, screen interval, drilling method, and screen length and therefore cannot be compared with confidence. In addition to concerns with well construction issues, slug tests are inappropriate for accurately determining hydraulic conductivity (K) in an unconfined aquifer in a glacial outwash formation (Fetter, Applied Hydrogeology, 1988). Due to the heterogeneous nature of outwash deposits, a slug test can be easily biased by the sand pack or a limited pocket of formation material within the screened zone of the well and not representative of the formation. True hydraulic conductivity in this formation can only be determined through pumping tests. The inaccuracy of slug tests surrounding the Mennen facility is evident through comparison with K estimations calculated from water-level recovery measurements following pumping events. The estimation of K during water-level recovery measurements were typically between 21.7% to 37.5% of K values calculated from slug tests. This discrepancy in K values through different tests strongly indicates slug tests may be yield erroneously high hydraulic conductivity results.

AGREE OR DISAGREE?

IS THIS CORRECT?

The speculation of intrinsic permeability based on gamma logs is inappropriate for the glacial outwash deposits found at the Airtron site. As previously discussed and demonstrated by gamma logs conducted by ARCADIS Geraghty & Miller in Wells MW-202 and MW-2M, variations in monitoring well drilling and construction

methods will effect the gamma response from the formation. According to Mount Sopris Instrument Company, a two-inch increase in borehole diameter will decrease gamma response by ten percent (i.e. 50 cps in an 8-inch borehole equals 45 cps in a 10-inch borehole). Variation of gamma response can also be influenced by minor variables such as logging through the center of the borehole versus along the sidewall of the well casing, which may vary within a well if the well is not plumb. Additionally, gamma logs can not quantify the content of arkosic material (sands and gravel) versus silt and clay within the outwash deposits. Arkosic materials produce high gamma counts which would mimic counts seen in silts and clays. This condition would misrepresent intrinsic permeability interpreted from the logs. For these reasons, the assessment of relative intrinsic permeability in the outwash formation based on as little as 5 to 10 cps variation of gamma radiation is beyond the limitations of this logging application.

Mennen concluded that the bulk of the contamination found in the East Hanover Avenue area originates as trichloroethene that was disposed of in the Airtron lagoons. Additionally, an estimated volume of trichloroethene was presented in their report (Addendum to the February 1997 Final Remedial Action Report, November 7, 1997) and the assumption was made that this entire volume infiltrated from the lagoons into the groundwater system. Based on the extensive work conducted on the Airtron property, trichloroethene was not the principal solvent detected in soil samples. Much of the trichloroethene present is derived from the degradation of tetrachloroethene. The lagoons contributed only a small quantity of VOCs to the groundwater since most of the solvent compounds volatilized before entering the lagoons. Approximately 90% of solvents used in degreasing operations at Airtron were lost as fugitive emissions in vapor degreasers, therefore these solvents could not have been discharged in large quantities into the lagoons. VOC concentrations in soil samples from beneath the lagoons do not exceed NJDEP Soil Cleanup Criteria which indicate that the estimates made by Mennen are unfounded. Based on the results of the SI/RI, the former drum storage areas on the Airtron property (AOC-1, AOC-2, and AOC-3), were the probable source of intermittent releases of tetrachloroethene as opposed to the presence of a large and continuous source of trichloroethene as suggested by Mennen.

HOW WAS THIS DETERMINED.

ALL THE DATA AVAILABLE TO DATE DOES SUGGEST THIS.

The distribution of VOCs southwest of Mennen Well P-1 originated from a source or sources other than Airtron. A review of historical information about the Mennen facility indicates that significant volumes of chlorinated solvent were used and releases occurred at the Mennen site. This is based on the following information provided to the NJDEP by Mennen:

- A 10-gallon cold batch degreaser was used at the Mennen facility for the repair of process equipment, and no information on the type of solvent used or the disposal of the spent solvent prior to the mid-1980's could be provided. Mennen states that

the solvents used prior to the mid-1980's were not tetrachloroethene or trichloroethene. However, no justification for this statement is provided. Given the time frame, and the application of solvents for parts cleaning, it is likely that tetrachloroethene or trichloroethene would have been used for degreasing. Furthermore, since a 10-gallon degreaser would rapidly become loaded with grease and oil, solvents would have to be disposed of and refilled frequently.

DOCUMENTATION THAT DEGREASERS AT MENNEN USED

- The original draft of the joint ACO from the NJDEP to Airtron and Mennen dated March 11, 1991 states tetrachloroethene and trichloroethene were detected in two areas, in seven seepage pits and in a spill containment drain hole in a loading dock. It is unclear if the seven seepage pits are associated with any current AOCs at the Mennen facility. Regardless, the NJDEP document states that these seven pits contained up to 19,160 ug/kg of tetrachloroethene and up to 842 ug/kg of trichloroethene. In July 1985, sludge was reported to have been removed from the pits, yet no post-excavation samples were collected. The pits were then backfilled and an addition to the Mennen facility was erected over the pits.

DOCUMENTATION THAT DISCHARGES OCCURED AT THE MENNEN SITE? WHERE IS THIS?

- Mennen has speculated that tetrachloroethene and trichloroethene in their waste water systems resulted from impacted groundwater pumped from Well P-1. The presence of VOCs from Well P-1 does not preclude historical disposal by Mennen in their waste water system. Additionally this assumption does not explain the presence of trichloroethene and tetrachloroethene in the loading dock drain hole where waste water would not have been discharged. The presence of trichloroethene and tetrachloroethene in the spill drain hole in the loading dock is indication that these solvents were discharged from the Mennen facility.

- The elevated concentrations of VOCs in MEN-MW-5 are indicative of an additional VOCs source in that area. The concentrations of VOCs in Wells MEN-MW-5, MW-305, and MW-306 are theorized by Mennen to be the result of plume migration from Airtron. However, this theory is based on the analysis of one groundwater sample from MEN-MW-5 prior to the cessation of pumping Mennen P-1. The distribution of VOCs in groundwater in this area is likely to be the result of the reversal of a plume from a yet unaddressed Mennen source following the cessation of pumping of Mennen Well P-1. Based on historical water-level elevations during pumping of P-1, a plume emanating from a location between MEN-MW-5 and MW-306 would primarily flow northeast resulting in the elevated VOC concentrations observed in MW-305 and MW-306. The cessation of pumping P-1 in July 1991 would allow the groundwater to then flow to the southwest with the regional groundwater flow. This effect in the groundwater also explains the distribution of groundwater quality observed on the Mennen property.

SOMETHING I ALSO OBSERVED LAST YEAR

7.0 Remedial Action Selection

ARCADIS Geraghty & Miller, Inc. has developed this remedial action selection based upon the results and findings of the remedial investigations, past interim remedial actions, and the Airtron facility's subsurface conditions. The selected remedial action combines enhanced bioremediation with continued groundwater extraction and engineering controls to minimize infiltration to groundwater. The enhanced bioremediation technique utilizes an in-situ reactive zone that is established in soils and groundwater in order to enhance the natural biodegradation of chlorinated aliphatic hydrocarbons (CAHs), such as tetrachloroethene (and its associated degradation [daughter] products). The biodegradation mechanism that will be enhanced is reductive dechlorination (or dehalogenation). Evidence of an anaerobic, reducing environment and the natural occurrence of this process was previously discussed in this report. Enhanced reductive dechlorination (ERD) will be accomplished by supplying the impacted soils and perched groundwater system with a carbon source in the form of a mixture of molasses and water. Molasses is a cost-effective, innocuous and edible amendment to the subsurface environment and has been accepted by both federal and state regulatory agencies to enhance bioremediation at approximately 20 sites throughout the United States.

This section describes the biogeochemical processes that are responsible for the enhanced biodegradation of the CAHs, as well as the rationale for implementing the in-situ reactive zone technology in the impacted AOCs identified for the Airtron facility. This remedial action selection section has been developed to provide the NJDEP with:

- specific details associated with the enhanced bioremediation technology;
- a conceptual design outlining system installation and operation;
- a system performance monitoring program; and
- a system installation schedule.

7.1 Past Interim Remedial Actions

Past interim remedial actions applied at this site include a soil vapor extraction (SVE) system to address impacted soils and a groundwater pump and treat system to provide hydraulic containment and treatment (by air stripping) of the extracted groundwater. The SVE system has had limited effectiveness in the area of certain AOCs due to operational difficulties. These difficulties included flooding of the system due to subsurface water conditions (perched groundwater zones) that resulted in excessive quantities of water being drawn into the system causing sporadic system shutdowns. Excessive vapor treatment (granular activated carbon) requirements were also

necessary due to high moisture content resulting in frequent carbon change-outs in order to meet discharge standards. Currently, the SVE system is not in operation due to these difficulties. The groundwater pump and treat system, which has been effective in providing hydraulic containment and mass removal, remains in operation.

7.2 Objectives

ERD is intended to address soil and perched groundwater zones impacted by CAHs. Groundwater impacts in the upper unconfined aquifer are already addressed by the existing pump and treat system that is providing hydraulic containment and mass removal. The enhanced biodegradation system, consisting of injection wells and infiltration trenches, will be designed and operated to degrade the CAHs to below NJDEP Impact to Groundwater Soil Cleanup Criteria. Public health and safety will be protected using ERD since the CAHs will be degraded to much less toxic compounds such as carbon dioxide, water, and chloride. The in-situ reactive zone technology will not generate air emissions, thereby eliminating the potential for transfer into another media, as well as the need to pretreat an air discharge vapor stream (as in the case of the SVE system) . The impacts to the environment will be reduced with time as the CAHs are degraded to less toxic compounds.

7.3 Overview of Enhanced Reductive Dechlorination (ERD)

CAHs are relatively insoluble and once discharged to the environment, typically migrate through soils to reach underlying groundwater. The prevalent chlorinated solvent found at this site was tetrachloroethene. Tetrachloroethene can be transformed by naturally occurring chemical and biological processes in the subsurface to form a variety of other CAHs (daughter products), including trichloroethlyene, cis- and trans- 1,2 dichloroethene, vinyl chloride, ethene, ethane and, finally, to carbon dioxide, water and chloride ions. The degradation mechanism for tetrachloroethene is discussed below.

Tetrachloroethene was originally considered nonbiodegradable (or recalcitrant); however, research completed in the last 10 years has demonstrated that, under the proper conditions, tetrachloroethene can be naturally degraded. Tetrachloroethene is degraded through reactions involving indigenous microbes naturally present in the subsurface. Tetrachloroethene is thus degraded via reductive dechlorination, which involves the sequential removal of a chlorine atom from tetrachloroethene and the substitution with a hydrogen atom. The degradation sequence for tetrachloroethene is as follows: tetrachloroethene → trichloroethene → dichloroethene→ vinyl chloride → ethene→ ethane → carbon dioxide, water and chloride.

Figure 18 is a schematic identifying the degradation steps. By monitoring for these daughter compounds, it can be demonstrated that the complete degradation of tetrachloroethene is occurring.

The later steps of this process, such as degradation of DCE (cis-and trans-isomers) to VC, and degradation of VC to ethene, generally require more strongly reducing conditions (typically in the range of -200 to -400 mV) than do the initial degradation steps. The more highly chlorinated compounds are most susceptible to reductive dechlorination because of their higher state of oxidation (McCarty 1995). Often a subsurface environment is not reducing enough (i.e. the oxidation-reduction potential is not negative enough) to allow for the complete degradation to occur and an accumulation of daughter products (such as DCE and VC detected in MW-301) is observed. As a result, the oxidation-reduction potential (ORP) of the subsurface system is dependent on, and can influence, the specific reductive dechlorination processes (Wiedemeier 1996). Generally, stronger reducing conditions, and the depletion of electron acceptors, are needed to foster the latter processes in this sequence. ORP measurements above 0 mV indicate the transition to oxidizing conditions that are not favorable for most anaerobic reductive reactions. Nitrate, iron and manganese reduction are most efficient in the ORP range of 0 to - 150 mV, while sulfate reduction and methanogenesis are most efficient in the -150 to -350 mV range. Reductive dechlorination of the lesser CAHs, such as VC, has been observed at redox potentials corresponding to nitrate- and iron- reducing conditions. However, the reactions are most prevalent and quicker under sulfate-reducing and methanogenic conditions.

Reductive dechlorination mechanisms are primarily co-metabolic processes that occur in anaerobic (oxygen-deficient) environments. Oxygen is the most thermodynamically preferred electron acceptor for degradation, but in its absence, alternate electron acceptors can be utilized in anaerobic subsurface environments to degrade the CAHs. That is, the indigenous microbes utilize an organic carbon source as a primary substrate for obtaining energy. The organic carbon serves as an electron donor and is oxidized during this process. The CAHs serve as electron acceptors and are subsequently reduced, while nitrate, iron, manganese, sulfate, and carbon dioxide all serve as electron acceptors and are also reduced in these reactions. Enzymes and co-factors produced during these reactions fortuitously degrade the source chlorinated volatile organic compounds (McCarty 1995). For reductive dechlorination to occur, there must be a sufficient source of carbon to support microbial growth. The organic carbon necessary for these reactions to occur can either be natural (i.e. in the formation) or anthropogenic (such as in the form of other contaminants).

The chemical redox equations that control degradation of VC through the reduction of dissolved oxygen, denitrification, iron and manganese reduction, sulfanogenesis, and methanogenesis are shown below (Wiedemeier et al. 1996). Stochiometry is provided for VC due to the scrutiny often placed on the fate and transport of VC. The reaction for oxidation of vinyl chloride (C_2H_3Cl) by oxygen (O_2) is:

$$C_2H_3Cl + 2.5O_2 \rightarrow 2CO_2 + H_2O + H^+ + Cl^-$$

A set of chemical equations can also be written for the other redox reactions that degrade VC as follows (Wieidemeier et al. 1996):

$C_2H_3Cl + 2NO_3^- + H^+ \rightarrow 2CO_2 + 2H_2O + N_2 + Cl^-$ (denitrification)

$10Fe^{3+} + 3(OH)^- + C_2H_3Cl + 4H_2O \rightarrow 2CO_2 + 11H^+ + Cl^- + 10Fe^{2+}$
(iron reduction)

$C_2H_3Cl + 5MnO_2 + 9H^+ \rightarrow 2CO_2 + 6H_2O + 5Mn^{2+} + Cl^-$ (manganese reduction)

$C_2H_3Cl + 1.5H^+ + 1.25SO_4^{=} \rightarrow 2CO_2 + 1.25H_2S + H_2O + Cl^-$ (sulfanogenesis)

$C_2H_3Cl + 1.5H_2O \rightarrow 0.75CO_2 + 1.25CH_4 + H^+ + Cl^-$ (methanogenesis)

Evidence of the occurrence of many of these metabolic processes at the Airtron facility were detected during the remedial investigations.

7.4 ERD Through In-Situ Reactive Zones

ERD is founded on the concept of enhancing the natural conditions in the subsurface system in order to drive the conditions to a state that is more conducive to degradation of the CAHs. Often, natural degradation is limited or stalled at a site due to one or more of the following limiting conditions:

- Aerobic or oxidizing conditions.
- Weak reducing conditions.
- Deficiency of organic carbon.
- Deficiency of electron acceptors.
- Deficiency of nutrients.
- Stressed bacterial population.

Typically, the most common rate-limiting factors that result in slow or little degradation are a lack of organic carbon and relatively mild redox conditions (often slightly aerobic). It has been reported that an excess of 100 times the contaminant concentrations of total organic carbon (TOC) is needed for optimal degradation rates. Degradation is often slowed due to the depletion of natural organic carbon and the less than optimal reducing conditions (less than -200 mV).

In order to overcome the lack of adequate natural carbon and insure an adequately reducing environment for the reductive dechlorination of tetrachloroethene and its daughter products, the use of molasses injection is proposed at the Airtron site.

7.5 Conceptual Design

The following is a description of the conceptual design for the Airtron facility. ARCADIS Geraghty & Miller is proposing to install the enhanced biodegradation system in a phased approach. Phase 1 will consist of the installation of two injection wells (IW-1 and IW-2) at AOC 1. The performance data collected during Phase 1 (estimated operational period of 3 to 6 months) will be used to refine the system design and the installation of Phase 2. Phase 2 will consist of the installation of infiltration trenches in AOC-2 and along the eastern boundary of the rear parking lot.

7.5.1 Delivery System

The in-situ reactive zones used to enhance the biodegradation of the CAHs will be established by a system of injection wells and infiltration trenches designed to deliver the molasses solution to the impacted soil and perched groundwater. A description of the delivery system is provided in the next three sections.

7.5.2 Proposed Injection Wells

Two proposed injection wells (IW-1 and IW-2) will be installed at AOC-1 to convey the molasses solution into the subsurface in order to create an effective reactive zone. The wells will be installed by a New Jersey State Licensed driller using the hollow-stem auger method. Each well will be constructed of 4-inch diameter, schedule 40 PVC casing and screen (0.020 slot). IW-1 will be installed on the north side of AOC-1 and screened from 3 to 28 feet below land surface to effect the impacted zone. IW-2 will be installed on the south side of AOC-1 and screened from 2 to 12 below land surface. Figures 19 and 20 are schematics of the injection wells.

7.5.3 Proposed Infiltration Trenches

The proposed infiltration trenches are planned in order to effectively deliver the molasses solution to the larger impacted areas. The proposed infiltration trench in the area of AOC-2 will be constructed by excavating an area approximately 40 feet wide and 100 feet long. The depth of the trench will be approximately one foot. Two-inch diameter, schedule 80 PVC perforated pipe will be laid at the bottom of the trench to deliver the molasses solution. Access ports for the delivery of the molasses solution and for periodic cleaning of the perforated pipes will be installed at land surface. The trench will be backfilled with 9 inches of crushed stone and closed with a 3-inch asphalt cover to match the existing surroundings (parking lot). Figure 21 is a schematic showing the location and details of the infiltration trench in AOC-2.

The infiltration trench area planned for the eastern boundary of the rear parking lot will be approximately 80 feet wide and 350 feet long. As shown on Figure 21, a section of the existing asphalt cover will be removed and some general site clearing will be performed. Once cleared, two-inch diameter, schedule 80 PVC perforated pipe will be laid at land surface to deliver the molasses solution. A concrete retaining wall will be installed to create the step up (bi-level) needed to cover the perforated pipes. Nine inches of crushed stone will be place on top of the pipes with a 3-inch asphalt cover. Access ports for the delivery of the molasses solution and for periodic cleaning of the perforated pipes will be installed. Figure 21 is a schematic showing the location and details of the infiltration trench.

7.6 Molasses Solution Injection

Typical edible blackstrap molasses contains sucrose, reducing sugars, ash, organic non sugars, and water, all of which are soluble in water. The molasses solution will be mixed with potable water to achieve 1 to 10 dilution (1 part molasses and 10 parts water). This mixture will be altered in order to achieve the desired results.

The molasses mixing and injection system will consist of a polypropylene tank used as a mixing vessel, a centrifugal pump, manual valves, tubing, and fittings. The mixing tank will be employed on a small, mounted platform that can be moved throughout the site via a forklift or pickup truck.

During Phase 1 operations, the feed solution will be injected at a frequency of once per week for the first month and monthly thereafter. The solution will be injected in quantities to produce a standing column in the injection wells. This will be done to ensure that the solution will infiltrate into the subsurface as fully as possible in order to establish the in-situ reactive zone.

7.7 System Performance Monitoring

Phase 1 of the enhanced biodegradation system will be conducted for a period of approximately 3 to 6 months. Phase 2 can begin as soon as sufficient data has been collected from the Phase 1 operation to assess the effectiveness of the technology. A system performance monitoring program has been developed consisting of baseline sampling and periodic monitoring to measure the effectiveness of the system in the soil and perched groundwater.

7.7.1 Soil

Baseline soil samples will be collected during the installation of the injection wells, IW-1 and IW-2. Continuous 2-foot split spoon samples will be collected during the drilling of these two wells. Field screening using a photo-ionization detector (PID) instrument will be performed on each spoon and the highest concentration interval

from each well will be sampled for laboratory analysis. Laboratory analysis of the soil samples will consist of the following parameters; VOCs by United States Environmental Protection Agency (USEPA) Method 8260A, total organic carbon by USEPA Method 9060, phosphate by USEPA Modified Method 365.2, sulfate by USEPA Method 9036, sulfide by USEPA Method 9031, and nitrate/nitrite by USEPA Method 9200.

To correlate changes in VOC concentrations in the soil with time, one 1-inch diameter vapor probe will be installed adjacent (within 3 feet) to each injection well to collect baseline vapor samples. Once the highest concentration interval has been identified by PID screening during the installation of the injection wells, the permanent vapor probes will be installed and screened at the same interval for each injection well. The vapor probes will be equipped with a sealing cap and a sampling port. An air sampling pump capable of an air flow rate of approximately 2 liters per minute will be used to collect representative baseline samples. Each vapor probe will be purged by pumping 2 times the volume of the probe prior to sample collection. Vapor samples will be collected in glass air sampling containers for laboratory analysis at Microseeps in Pittsburgh, Pennsylvania for the following parameters; VOCs by USEPA Method T014, permanent gases (methane, carbon dioxide, and oxygen) by Microseeps Method AM-11, ethene and ethane by Microseeps Method AM-1. Vapor samples will be collected on a monthly basis for the first 3 months and quarterly for the remainder of the first year. An evaluation of the data will be performed at the end of the first year to determine the future sampling frequency.

The results of the vapor samples will be used to monitor changing soil conditions. When successful completion of the remediation is suggested by the results, a limited soil boring program will be conducted to provide the necessary endpoint results to discontinue the operation of the system.

7.7.2 Perched Groundwater

To establish baseline perched groundwater conditions prior to the start of the system, an initial round of water samples for laboratory analysis and field parameters from three existing monitoring wells, MW-301, MW-403, and MW-404S will be collected. Due to the sensitive nature of many of the parameters being measured in the perched groundwater each well will be sampled using low flow techniques. Water samples from these wells will be collected and analyzed for VOCs using USEPA Method 8260A, total and dissolved iron and manganese using USEPA Method 6010, total and dissolved organic carbon using USEPA Method 9060, BOD using USEPA Method 405.1, COD using USEPA Method 410.1, ethene and ethane using Microseeps Method AM-1, carbon dioxide using Microseeps Method AM-11, chloride using USEPA Method 9250, sulfate using USEPA Method 9036, sulfide using USEPA Method 9031, and nitrate/nitrite using USEPA Method 9200. Perched groundwater samples will be collected on a monthly basis for the first 3 months and quarterly for the remainder of

the first year. An evaluation of the data will be performed at the end of the first year to determine the future sampling frequency.

The following indicator field parameters will also be measured for the perched groundwater using field equipment:

- Dissolved oxygen (DO);
- Ferrous iron;
- Sulfide;
- Oxidation/reduction potential (ORP);
- pH;
- temperature; and
- specific conductance.

Water extracted from each well using low-flow sampling methods previously described will be directed into a flow-through chamber for DO, ORP, and pH measurements. Monitoring of DO and ORP in the monitoring wells will help to determine whether microbial-induced reducing conditions have developed within the impacted area. The DO and ORP levels are expected to decrease as reducing conditions develop. All field monitoring results will be recorded on log forms. Field parameters will be collected during the baseline perched groundwater sampling event, bi-weekly thereafter for the first 2 months, and quarterly for the remainder of the first year. An evaluation of the data will be performed at the end of the first year to determine the future sampling frequency.

7.8 Data Evaluation

Evaluation of the monitoring data will be conducted to determine the effectiveness of the in-situ reactive zone. The results obtained during the monitoring events will be used for adjusting the molasses solution composition, feed rate, and injection frequency to achieve the desired strongly reducing conditions in the subsurface environment necessary to enhance the biodegradation of the CAHs.

7.9 System Installation Schedule

ARCADIS Geraghty & Miller anticipates beginning the detailed design (engineering drawings, technical specifications, and operations and maintenance plan) of Phase 1 in August 1998 and installing the system by October of 1998. Phase 2 system design is scheduled for the first quarter of 1999 with installation following immediately thereafter. The installation of Phase 2 may coincide with planned building expansion at the Airtron facility, therefore, the installation of Phase 2 will be scheduled within those construction activities, if needed. Actual timing of the design and installation of the ERD System will depend on NDJEP review and approval.

ATTACHMENT H

AOC-6 Stream Sediment Sampling Summary

Airtron Division of Litton Systems, Inc.
Hanover, New Jersey

Oct. 2002

ARCADIS

Infrastructure, buildings, environment, communications

CERTIFICATION

The following certification shall be signed by a principal executive officer of at least the level of vice president:

> "I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties."

Typed/Printed Name: Frank G. Brandenberg Title: Vice President, Litton Systems, Inc.

Signature: Date: 10/25/02

STATE OF NEW JERSEY

COUNTY OF MIDDLESEX

Sworn to and subscribed before me this 25th day of October, 2002.
Witness my hand and official seal.

Kathleen Nodzak Notary Public

KATHLEEN A. NODZAK
A Notary Public of New Jersey
My Commission Expires 8/3/03

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AOC-6 Stream Sediment Sampling Summary
Airtron Division of Litton Systems, Inc.
Hanover, New Jersey

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Appendices

A Analytical Laboratory Results for June 27, 2002 Sampling Event

B Surface Water and Sediment Sampling Data from September 30, 1997 and June 27, 2002 Sampling Events

1. Introduction

This report provides a summary of the surface water and sediment sampling event conducted on June 27, 2002, at the Airtron Division of Litton Systems, Inc. (Airtron) site located at 200 East Hanover Avenue, Hanover, New Jersey. The sampling event was conducted in accordance with the Section 3.1 AOC-6 Stream Sediments narrative, Table 3, and Figure 4 from the September 14, 1999 Supplemental Remedial Investigation Work Plan (SRIW) (ARCADIS Geraghty & Miller 1999) and associated SRIW Addendum (ARCADIS G&M 2001) for the subject site, the New Jersey Department of Environmental Protection (NJDEP) Technical Requirements for Site Remediation (N.J.A.C. 7:26E), NJDEP's Field Sampling Procedures Manual (May 1992), and NJDEP's Guidance for Sediment Quality Evaluations (November 1998).

As stated in the 1999 SRIW (ARCADIS Geraghty & Miller, 1999), this phase of sampling was conducted to complete delineation of site-related metals impacts to the unnamed, intermittent drainage way (Area of Concern [AOC]-6). Once downstream delineation is complete, the results will be used to determine the extent to which evaluations of benthic macroinvertebrate population structure and/or toxicity testing are warranted. Consistent with the 1998 NJDEP guidance, the off-site sampling locations were originally designed to be approximately 50, 100, 150, 300, 450, 600, 800, 1,000, 1,200, and 1,500 feet downstream of the Airtron property line. The final sampling locations were adjusted in the field (based on stream characteristics), marked, and surveyed using a Global Positioning System (GPS). Stream sediment and surface water samples were collected within AOC-6 at 10 locations downstream of Airtron combined Outfall Nos. DN001/DN003, primarily off-site between the downstream Airtron property boundary and the culvert located at Horse Hill Road on property owned by AT&T (Figure 1).

2. Surface Water Sampling Procedures

A surface water sample was collected prior to the sediment sample at each of the 10 locations (OS-50, OS-100, OS-150, OS-300, OS-450, OS-600, OS-800, OS-1000, OS-1200, and OS-1500), downstream to upstream (i.e., OS-1500 to OS-50). Care was taken to insure minimal disturbance of the streambed particulates to maintain the integrity of the surface water sample. A laboratory transfer bottle was submerged into the water to collect the sample. The water was then poured into the appropriate preserved containers. For analysis of dissolved constituents, the sample was field filtered through a 0.45-micron (μm) filter prior to preservation. The samples were filtered in the field using a disposable filter cartridge with a peristaltic pump; the

sample was discharged directly into the sample container. Since the filtering equipment was disposable, no decontamination of used equipment was required. The samples were placed in an ice-filled insulated cooler and submitted to IAL laboratory in Randolph, New Jersey.

Field parameters of the surface water including pH, temperature, dissolved oxygen, and conductivity were measured with a Horiba U-10 at each location. In addition, the depth of the water, flow rate, and width and depth of channel were also recorded. A summary of the surface water field data is in Table 1. During initial field reconnaissance, the portion of the intermittent drainageway upstream of the Airtron combined outfall location (Outfall Nos. DN001/DN003) was observed to be dry.

3. Sediment Sampling Procedures

On June 26, 2002 each location was assessed prior to sampling to determine the best location for sediment sample collection. The bed thickness (i.e., bedload) was measured (see Table 1), and samples were preferentially collected from depositional areas, on June 27, 2002. Additional field data on stream dimensions at each sampling location is also summarized in Table 1.

Sediment samples were collected at 10 locations (i.e., OS-50, OS-100, OS-150, OS-300, OS-450, OS-600, OS-800, OS-1000, OS-1200, and OS-1500) from zero to, no more than, six-inch interval. The samples were collected downstream to upstream (i.e., OS-1500 to OS-50). Care was exercised during the collection of the sediment samples to prevent the loss of fine-grained sediments and porewater. Disposable HDPE trowels were used for the collection of each sample. Since the sampling trowels were disposable, no decontamination of used equipment was required. The samples were placed in an ice-filled insulated cooler and submitted to Integrated Analytical Laboratories (IAL) in Randolph, New Jersey (NJDEP Certification No. 14751).

4. Analytical Methodology and Results

Surface water samples were analyzed for total and dissolved Priority Pollutant Metals using USEPA Method 6010A and hardness using USEPA Method 130.1. The sediment soil samples were analyzed for Priority Pollutant Metals using USEPA Methods 6010A and 7470 (for mercury), pH using USEPA Method 9040, and total organic carbon (TOC) using USEPA Method 9060 (modified). Sediment soil samples were also analyzed for grain size using American Society for Testing and Materials (ASTM) Method D422 (by Golder Asociates).

Analytical results for surface water and sediment samples, and grain size analysis results, are provided in the laboratory report attached as Appendix A. Table 2 provides a summary of the June 2002 surface water sampling results. Table 3 provides a summary of the June 2002 sediment sampling results. In addition, June 2002 surface water and sediment analytical data are presented in Appendix B. Analytical results of eight sediment samples (US-100, US-50, US-PB, DS-OF, DS-075, DS-150, DS-225, and DS-300) and two surface water samples (US-1 and OS-150) collected during the September 30, 1997 sampling event and reported in the 1998 Site Investigation/Remedial Investigation (SI/RI) Report (ARCADIS Geraghty & Miller 1998) also are included in Appendix B. These previous data have been included in the surface water and sediment data analysis for this report as presented in the following sections.

5. Surface Water Data Analysis

The following analysis of surface water quality data incorporates the previous 1997 SI/RI results, in addition to the most recent June 2002 results, to provide a complete evaluation. The maximum detected concentration of total and dissolved metals in surface water were compared to chronic freshwater quality criteria (WQC) (40 CFR Ch. 1 [7-1-00 Edition], pp. 1120) (Table 4). This screening level comparison is very conservative because WQC are often based on organisms not present at the site (e.g., cold-water fish species) and total metal concentrations exaggerate the concentrations organisms are actually exposed to (see below). Only copper and lead exceed the chronic WQC for total metals; however, dissolved concentrations of copper and lead concentrations do not exceed chronic WQC. Dissolved metal concentrations most accurately represent the fraction that is most available to aquatic organisms; therefore, it is appropriate to use dissolved metals analyses in comparison to freshwater WQC (Bergman and Dorward-King 1997; USEPA 1993; USEPA 1995). Based on this conservative comparison, surface water metal concentrations do not pose a risk to aquatic organisms in AOC-6 on-site or off-site immediately downstream of the Airtron site.

6. Sediment Data Analysis

The following analysis of sediment quality data incorporates the previous 1997 SI/RI results, in addition to the most recent June 2002 results, to provide a complete evaluation. The minimum and maximum of detected concentrations for metals, TOC and percent fines within each sampling segment are presented in Table 5. The LEL and SEL concentrations were used as freshwater sediment screening guidelines (New

Jersey Department of Environmental Protection 1998) (see Table 5). The metal concentration at each sampling location is shown in Figures 2 through 10 and compared to the LEL and SEL guideline values for each metal for which screening levels exist (i.e., arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc).

With the exception of lead, all background metal concentrations (i.e., upstream sample locations) are relatively low and below the LEL guideline value. Lead concentrations are elevated upstream of the site, and concentrations on-site are generally consistent with background lead concentrations. At all sediment sampling locations, mercury was detected at concentrations below the LEL. On-site, concentrations of cadmium, lead, nickel and zinc are above the LEL, but below the SEL benchmark. Arsenic and silver exceed the SEL value on-site, whereas chromium and copper each have only a single value over the SEL benchmark on-site. Metal concentrations in sediment rapidly decrease downstream of the site (within approximately 300 to 750 ft downstream of Airtron Outfall Nos. DN001/DN003), with cadmium, chromium, copper, lead, nickel, silver and zinc reaching concentrations below or near their respective LEL values. The concentrations of all metals, except mercury, increase off-site, approximately 1,000 to 1,200 feet downstream of Airtron Outfall Nos. DN001/DN003. Downstream of the site, the maximum concentrations of arsenic, cadmium, chromium, copper, lead, nickel, silver, and zinc were observed adjacent to the two former landfills located on the AT&T property. The concentration of these metals then decrease further downstream to levels generally consistent with LEL values by approximately 2,000 feet downstream of the Airtron Outfall Nos. DN001/DN003. A spatial analysis of these data indicates the former landfills on the AT&T property are a significant off-site source of these metals to AOC-6. Based on a conservative comparison to LEL values and the existence of a significant off-site, downstream source of metals, metals potentially originating from the Airtron site have been delineated in sediment. Concentrations above the LEL value do not necessarily indicate a risk to aquatic organisms, however, only that additional investigation may be warranted.

7. Quality Assurance and Quality Control Sampling Results

One duplicate surface water and one duplicate sediment sample from the OS-1200 sampling location was collected and analyzed according to the methods described above. Two field blanks were analyzed as part of the quality assurance/quality control (QA/QC) protocol in accordance with NJDEP requirements for this sampling event. The field blank for the sediment sampling was prepared by pouring laboratory supplied, demonstrated analyte-free water over a trowel and then into a sample

container. The field blank for the surface water sampling was prepared by pouring laboratory supplied, demonstrated analyte-free water into a transfer bottle and then into a sample container. Since volatile organic compounds (VOCs) were not analyzed, a trip blank was not submitted. Results for the QA/QC samples collected are also summarized on Table 2 (for surface water) and Table 3 (for sediment).

Samples collected in AOC-6 were reviewed for completeness and technical compliance with the approved SRI Work Plan. If any data were determined not to be complete and/or technically compliant, the data reviewer referred to the NJDEP data validation documents for assistance. Inorganic results were reviewed using the criteria specified in the NJEP Standard Operating Procedure (SOP) 5.A.2. The review of the data packages included checking the following:

- Chain-of-custody forms.
- Holding Times.
- Blank contamination.
- Spike recoveries
- Serial dilutions.
- Precision of duplicate analyses.

Qualification of the sample results that were deemed necessary during the data review were applied to the data tables. Data review memos for surface water and sediment analytical results are provided in Appendix A.

8. Conclusions and Recommendations

These following conclusions are supported by this supplemental investigation:

- There is no risk to aquatic organisms associated with metals in surface water;
- Lead and mercury concentrations in sediment are generally consistent with background concentrations (i.e., upstream from the site);

- Concentrations of other metals rapidly decrease downstream of the Airtron Outfall and site;
- There is a significant off-site source of numerous metals approximately 1,000 feet downstream of Airtron Outfall Nos. DN001/DN003; and
- Delineation is complete downstream of the Airtron site for constituents potentially related to the Airtron site.

The concentrations of metals in AOC-6 sediment have been successfully delineated with respect to very conservative LEL values. Certain metals are relatively elevated on-site, but rapidly return to levels consistent with the LEL values downstream. The extent of elevated metals with respect to LEL values is less than 1,000 linear feet. Therefore, no additional delineation effort is necessary. There is no risk to aquatic life with respect to metals in surface water. This conclusion is supported by a comparison of numerous total and dissolved metals analyses to very conservative ambient water quality criteria. Furthermore, manufacturing operations at the facility have recently ceased. Therefore, there are no permitted discharges of metals to surface water associated with plant operations (i.e., Outfall No. DN001). As such, the loading of metals to surface water and sediment has ceased. Concentrations in sediment are expected to decrease over time as clean material upstream of the Site covers the sediment bed on-site and downstream of the Site.

The biological community upstream of the Site is expected to be very limited due to physical habitat limitations. The on-site portion of the drainageway is intermittent (at least upstream of remaining Airtron Outfall No. DN003). Water flow upstream of this outfall and of the Site appears to be primarily associated with stormwater runoff. The physical habitat quality in the drainageway downstream of this outfall and of the Site is also expected to be limited, but currently has a steady source of water associated with discharge from the on-site groundwater pump and treat system (Outfall No. DN003). These physical habitat limitations restrict the biological community that could be present in the drainageway. There is no information to indicate there is an adverse impact to sediment-dwelling organisms. An exceedence of a very conservative LEL value only indicates additional study may be warranted, not that there is an impact to the biological community. In addition, a hypothetical adverse effect associated with metals in sediment is unlikely to affect the biological community as a whole due to the limited spatial extent of relatively elevated metal concentrations. Therefore, no additional assessment activities are recommended for AOC-6.

9. References

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Table 1. Summary of Surface Water and Sediment Field Parameters, June 27, 2002, Airtron Division of Litton Systems, Inc, Hanover, New Jersey

Sample ID				OS-50	OS-100	OS-150	OS-300	OS-450	OS-600	OS-800	OS-1000	OS-1200	OS-1500
Sediment													
	Thickness	(inches)		4	1-2	1-1.5	1-1.5	1.5-2	1-1.5	1-1.5	1.5-2	1-2	0.5-1.0
	Sample Time			13:00	12:35	12:15	11:45	11:35	11:10	10:40	10:20	10:00	9:40
												SED-DUP	
Surface Water													
	Depth	(inches)		6	5	3	2-3	4.5	3	3	8	6	3.5
	pH	(SI units)		7.55	7.57	7.54	7.82	7.14	7.27	7.26	7.33	7.28	7.15
	Dissolved Oxygen	(mg/L)		10.78	10.57	10.59	10.87	10.85	10.38	10.38	10.00	9.78	9.73
	Conductivity	(mS/cm)		0.686	0.564	0.676	0.685	0.681	0.679	0.670	0.666	NA	NA
	Temperature	(oC)		18.3	18.8	19.3	18.8	18.9	19.6	20.1	19.8	20.8	20.7
	Flow Rate	(ft/s)		1.1	0.1	0.7	2.0	0.4	0.9-1.0	0.1	NA	0.4	0.6
	Sample Time			13:05	12:40	12:10	11:40	11:25	11:05	10:30	10:10	9:50	9:30
												SW-DUP	
Stream Dimensions													
	Width of stream	(ft)		4	5.5	4	3.5	14	4.5	5	5.5	7	6
	Width of channel	(ft)		7	8	10	7	21	7	14	10	11	16
	Depth of channel	(ft)		2	3.5-4.0	3.5	2.5	2.5	3	1.5	3.5	3.5	4

NA - data not recorded

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Table 2. Summary of June 2002 Surface Water Sampling Results, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in mg/L)	Site ID: / Sample ID: / Date Sampled:	OS-50 / OS-50 / 06/27/02	OS-100 / OS-100 / 06/27/02	OS-150 / OS-150 / 06/27/02	OS-300 / OS-300 / 06/27/02	OS-450 / OS-450 / 06/27/02	OS-600 / OS-600 / 06/27/02	OS-800 / OS-800 / 06/27/02
METALS								
Antimony		<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Arsenic		<0.004	<0.004	<0.004	<0.004	0.0044	0.0062	0.0066
Beryllium		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cadmium		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium		<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Copper		0.014	<0.008	0.013	0.0081	0.0096	<0.008	<0.008
Lead		<0.002	<0.002	<0.002	<0.002	<0.002	0.0038	<0.002
Mercury		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Nickel		<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Selenium		<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Silver		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium		<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Zinc		0.0093	0.01	0.01	0.01	0.013	0.018	0.0086
DISSOLVED METALS								
Antimony		<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Arsenic		<0.004	<0.004	<0.004	<0.004	<0.004	0.0051	0.0061
Beryllium		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cadmium		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium		<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Copper		<0.008	<0.008	0.013	0.014	0.024	0.022	0.015
Lead		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Mercury		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Nickel		<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Selenium		<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Silver		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium		<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Zinc		0.013	0.012	0.014	0.012	0.016	0.012	0.015
CLASSICAL CHEMISTRY								
Hardness (as CaCO3)		304	312	303	303	299	284	276
Total suspended solids		<5	<5	<5	<5	<5	<5	<5

Notes and Abbreviations:

mg/L Milligrams per Liter.

(1) Analyses performed by Integrated Analytical Laboratories, LLC of Randolph, New Jersey.

Table 2. Summary of June 2002 Surface Water Sampling Results, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in mg/L)	Site ID: / Sample ID: / Date Sampled:	OS-1000 / OS-1000 / 06/27/02	OS-1200 / OS-1200 / 06/27/02	OS-1200 / SW-DUP / 06/27/02	OS-1500 / OS-1500 / 06/27/02	FIELD BLANK / FB062702 SW / 06/27/02
METALS						
Antimony		<0.004	<0.004	<0.004	<0.004	<0.004
Arsenic		0.0074	0.0079	0.0077	0.0081	<0.004
Beryllium		<0.002	<0.002	<0.002	<0.002	<0.002
Cadmium		<0.001	<0.001	<0.001	0.0012	<0.001
Chromium		<0.008	<0.008	<0.008	<0.008	<0.008
Copper		0.023	0.037	0.0094	0.034	<0.008
Lead		<0.002	<0.002	<0.002	<0.002	<0.002
Mercury		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Nickel		<0.004	<0.004	<0.004	<0.004	<0.004
Selenium		<0.008	<0.008	<0.008	<0.008	<0.008
Silver		<0.002	<0.002	<0.002	<0.002	<0.002
Thallium		<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Zinc		0.016	0.014	0.012	0.013	<0.008
DISSOLVED METALS						
Antimony		<0.004	<0.004	<0.004	<0.004	<0.004
Arsenic		0.0071	0.0076	0.0076	0.008	<0.004
Beryllium		<0.002	<0.002	<0.002	<0.002	<0.002
Cadmium		<0.001	<0.001	<0.001	<0.001	<0.001
Chromium		<0.008	<0.008	<0.008	<0.008	<0.008
Copper		0.012	0.012	0.016	<0.008	<0.008
Lead		<0.002	<0.002	<0.002	<0.002	<0.002
Mercury		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Nickel		<0.004	<0.004	<0.004	<0.004	<0.004
Selenium		<0.008	<0.008	<0.008	<0.008	<0.008
Silver		<0.002	<0.002	<0.002	<0.002	<0.002
Thallium		<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Zinc		0.015	0.013	0.011	0.012	<0.008
CLASSICAL CHEMISTRY						
Hardness (as CaCO3)		283	287	272	274	<5.64
Total suspended solids		12	<5	<5	<5	<5

Notes and Abbreviations:

mg/L Milligrams per Liter.

(1) Analyses performed by Integrated Analytical Laboratories, LLC of Randolph, New Jersey.

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Table 3. Summary of June 2002 Sediment Soils Results (1), Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in mg/kg)	Site ID: / Sample ID: / Date Sampled:	OS-50 / OS-50 / 06/27/02	OS-100 / OS-100 / 06/27/02	OS-150 / OS-150 / 06/27/02	OS-300 / OS-300 / 06/27/02	OS-450 / OS-450 / 06/27/02	OS-600 / OS-600 / 06/27/02	OS-800 / OS-800 / 06/27/02	OS-1000 / OS-1000 / 06/27/02	OS-1200 / OS-1200 / 06/27/02	OS-1200 / SED-DUP / 06/27/02	OS-1500 / OS-1500 / 06/27/02	FIELD BLANK* / FB062702 SED / 06/27/02
METALS													
Antimony	NA	<3.81 J	<1.27	<1.4	<1.38	<1.29	<1.39	<1.33	<1.45	<1.35	<1.41	<1.3	<0.1
Arsenic	6/33	35.9 J	33.6	27.4	30.2	41.2	71.3	46.3	34.6	38.9	44.8	19.8	<0.1
Beryllium	NA	<1.91 J	<0.635	0.901	<0.689	1	1.34	1.01	1.09	1.02	1.08	<0.648	<0.05
Cadmium	0.6/10	4.78 J	0.892	0.843	0.922	1.26	3.87	2.4	1.98	2.9	2.98	0.754	<0.025
Chromium	26/110	392 J	48.7	69.1	58.5	53.3	82.5	65.9	54.3	42.5 J	54.8 J	38.5	<0.2
Copper	16/110	185 J	29.2	35	34.8	35	56.4	49.3	39.2	33.8 J	45.7 J	28.7	<0.2
Lead	31/250	178 J	42.4	29.1	32.3	32.6	55.2	48.7	43.9	28.9 J	37.2 J	31.9	<0.05
Mercury	0.2/2	0.116 J	<0.016	0.028	<0.017	<0.016	<0.017	0.019	0.024	<0.017	<0.018	<0.016	<0.0005
Nickel	16/75	49.1 J	9.52	17.2	13.8	11.8	22.4	18.8	19.3	21	18.9	12	<0.1
Selenium	NA	<7.63 J	<2.54	<2.8	<2.76	<2.58	<2.79	<2.67	<2.9	<2.71	<2.83	<2.59	<0.2
Silver	1/3.7	23.8 J	2.08	1.67	2.33	1.54	3.21	2.41	2.3	1.1	1.36	0.755	<0.05
Thallium	NA	<0.381 J	<0.127	<0.14	<0.138	<0.129	<0.139	<0.133	<0.145	<0.135	<0.141	<0.13	<0.01
Zinc	120/820	294 J	119	107	120	140	258	225	223	205	236	153	<0.2
CLASSICAL CHEMISTRY													
Total organic carbon		96000 J	1250	<743	4400	3300	5600	5060	22900	5350 J	14300 J	4860	<1
Corrosivity (pH)		7.05 J	7.33	7.19	7.22	7.26	7.22	7.12	7.05	7.21	7.18	7.01	7.79

Notes and Abbreviations:

mg/kg Milligrams per Kilogram.

(1) Analyses performed by Integrated Analytical Laboratories, LLC of Randolph, New Jersey.

J Estimated value.

* Units Milligrams per Liter, except pH (given in standard units [S.U.]).

Table 4. Summary of Metals Detected in Surface Water, September 30, 1997 and June 27, 2002, Airtron Division of Litton Systems, Hanover, New Jersey

Constituent	Frequency of Detection	Maximum Detected Concentration (mg/L)	Chronic Freshwater Criteria (mg/L)[a]	Exceed Criteria?
Total Metals				
Antimony	0 / 12	ND	NA	----
Arsenic	7 / 12	0.0081	0.19	No
Beryllium	0 / 12	ND	NA	----
Cadmium	1 / 12	0.0012	0.0022	No
Chromium	0 / 12	ND	0.42	No
Copper	9 / 12	0.037	0.028	Yes
Lead	2 / 12	0.0102	0.0078	Yes
Mercury	0 / 12	ND	0.0000012	No
Nickel	0 / 12	ND	0.38	No
Selenium	0 / 12	ND	0.005	No
Silver	1 / 12	0.001	NA	----
Thallium	0 / 12	ND	NA	----
Zinc	10 / 12	0.018	0.26	No
Dissolved Metals				
Antimony	0 / 12	ND	NA	----
Arsenic	7 / 12	0.01	0.19	No
Beryllium	0 / 12	ND	NA	----
Cadmium	0 / 12	ND	0.0022	No
Chromium	2 / 12	0.0048	0.42	No
Copper	9 / 12	0.024	0.028	No
Lead	1 / 12	0.008	0.008	No
Mercury	0 / 12	ND	0.0000012	No
Nickel	2 / 12	0.0094	0.38	No
Selenium	0 / 12	ND	0.005	No
Silver	0 / 12	ND	NA	----
Thallium	0 / 12	ND	NA	----
Zinc	12 / 12	0.071	0.26	No

a. Values are calculated based on an average site-specific hardness of 287 mg/L and a water effects ratio (WER) of 1 (40 CFR Ch. 1 (7-1-00 Edition), pg 1120).

NA - value not available
ND - not detected
Duplicate data was not included in count.

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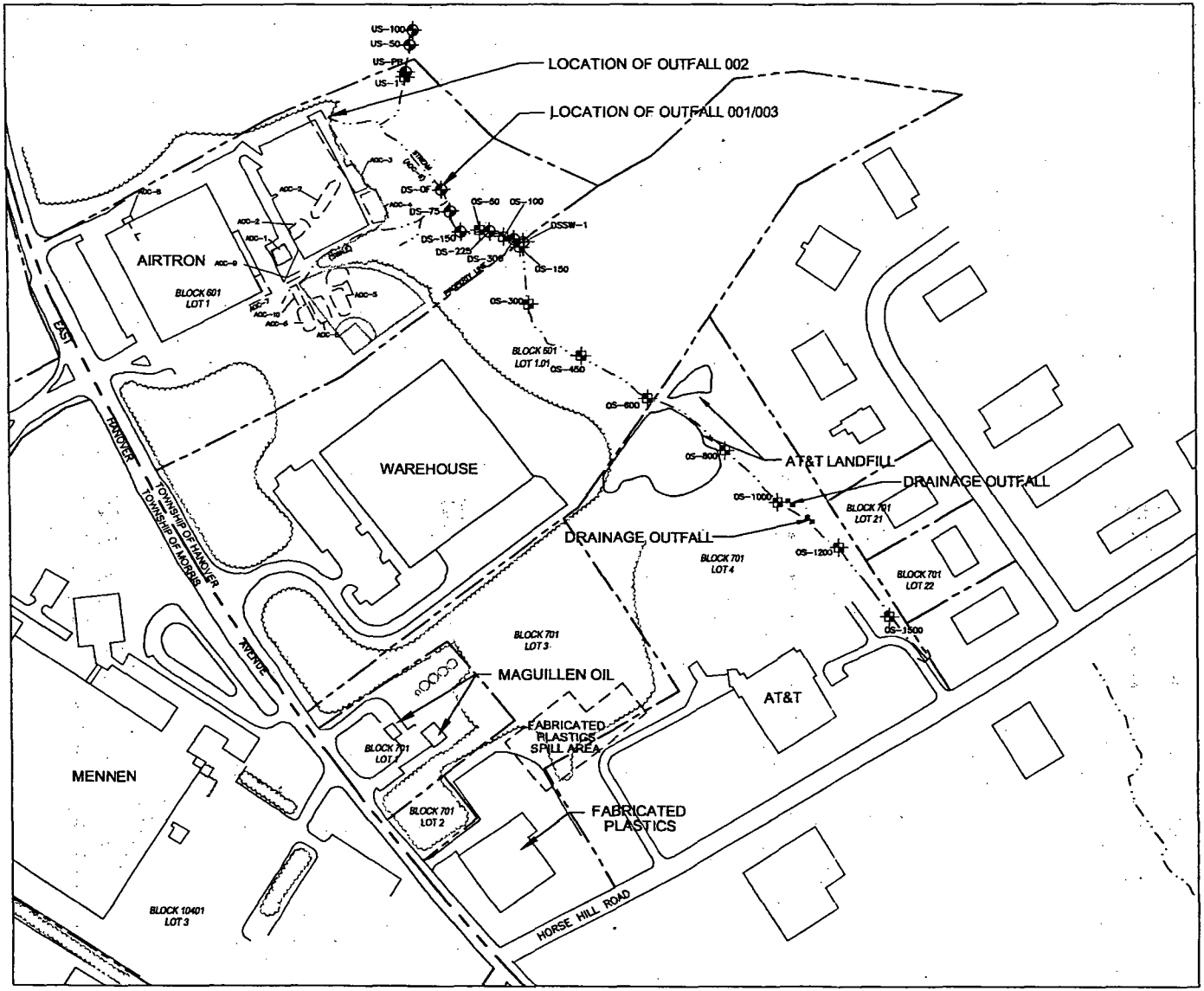
Table 5. Summary of Constituents Detected in Sediment, September 30, 1997 and June 27, 2002, Airtron Division of Litton Systems, Hanover, New Jersey

Constituent	New Jersey Sediment Screening Guidelines		Upstream (off-site/property line)		On-Site		Upstream of AT&T Landfill (off-site)		Adjacent/Downstream of AT&T Landfill (off-site)	
	LEL (mg/kg)	SEL (mg/kg)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)
Antimony	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	6	33	2.2	11.1	30.3	97.4	27.4	41.2	19.8	71.3
Beryllium	NA	NA	0.34	0.46	0.78	1.5	0.901	1	1.01	1.34
Cadmium	0.6	10	ND	ND	0.77	4.78	0.843	1.26	0.754	3.87
Chromium	26	110	6.2	11.1	48.7	392	53.3	69.1	38.5	82.5
Copper	16	110	4.8	9.8	29.2	185	34.8	35	28.7	56.4
Lead	31	250	17.6	110	42.4	178	29.1	32.6	28.9	55.2
Mercury	0.2	2	ND	ND	0.116	0.116	0.028	0.028	0.019	0.024
Nickel	16	75	3.8	7	9.52	49.1	11.8	17.2	12	22.4
Selenium	NA	NA	0.88	2.7	0.89	2.4	ND	ND	ND	ND
Silver[a]	1	3.7	ND	ND	2.08	33.1	1.54	2.33	0.755	3.21
Thallium	NA	NA	ND	ND	0.8	1.1	ND	ND	ND	ND
Zinc	120	820	17	35.3	119	294	107	140	153	258
TOC			3040	24600	1250	96000	3300	4400	4860	22900
Fines (percent)			–	–	3.9	35.6	2.8	11.6	3.7	16.5

LEL Lowest effects level
SEL Severe effects level
mg/kg Milligrams per kilogram.
NA Not available
ND Not detected
– Not determined
Duplicate data was not included in concentrations.
a. LEL and SEL values are based on marine/estuarine screening guidelines. Freshwater sediment screening guidelines are not available.



LEGEND

- OS-50 — JUNE 2002 SEDIMENT/SURFACE WATER SAMPLING LOCATION AND DESIGNATION
- US-PB — 1997 SEDIMENT SAMPLE LOCATIONS
- US-1 — 1997 SURFACE WATER SAMPLE LOCATIONS
- STREAM
- AOC-6 — DESIGNATION AND APPROXIMATE LIMIT OF AREA OF CONCERN (AOC)

NOTES:

1. LOCATION/ALIGNMENT OF STREAM ADJUSTED BASED ON GPS-SURVEYED SAMPLING LOCATIONS (JUNE 2002).
2. BASEMAP FEATURES BASED ON SCS ENGINEERS 1997 S1/R1 WORKPLAN, AERIAL PHOTOS, USGS 7.5 MINUTE QUADRANGLE, 1997/1998 S1/R1 SURVEY DATA, AND TOWNSHIP TAX MAPS.
3. POSITIONS OF BASEMAP FEATURES MAY VARY IN ACCURACY DUE TO SCALE DIFFERENCE BETWEEN BASEMAP DATA SETS.
4. SPATIAL INFORMATION IS MEANT FOR GENERAL REFERENCE ONLY.

0 300 600
SCALE IN FEET

NO.	DATE	REVISION DESCRIPTION	BY / CKD
2	7/16/02	SR1 PHASE 1 - AOC 6	AZ / AZ
1	1/18/01	ADDENDUM	AZ / AZ
0	11/14/00	PROPERTY BOUNDARIES	AZ / AZ

ARCADIS G&M

SUPPLEMENTAL RIW
AIRTRON DIVISION OF LITTON SYSTEMS, INC
HANOVER, NEW JERSEY

SEDIMENT AND SURFACE WATER SAMPLING LOCATIONS AOC-6

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
A.C.	7/16/02	A. ZAHRADNIK	
		LEAD DESIGN PROF.	CHECKED C.E.
		PROJECT NUMBER NY001362.002	FIGURE 1

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ATTACHMENT I

AOC-11 Interim Data Summary, On-Site Source Area Activities, Phase 1 Supplemental Remedial Investigation

Airtron Division of Litton Systems, Inc.
Hanover, New Jersey

May 2003

ARCADIS

Infrastructure, buildings, environment, communications

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1. Introduction

This interim report provides a summary of the data collected during on-site groundwater investigation activities conducted by ARCADIS G&M, Inc. (ARCADIS) in September and October 2002 at and in the vicinity of identified on-site VOC source areas (i.e., AOCs 1 through 4) at the Airtron Division of Litton Systems, Inc. (Airtron) site located at 200 East Hanover Avenue, Hanover, New Jersey. The activities summarized in this interim report represent a significant portion of the on-site elements comprising the first phase (Phase 1) of the Supplemental Remedial Investigation (SRI) for AOC-11 (Groundwater). The on-site source area SRI groundwater activities were conducted in accordance the September 14, 1999 Supplemental Remedial Investigation Work Plan (SRIW) (ARCADIS Geraghty & Miller 1999), associated SRIW Addendum (ARCADIS G&M 2001), and the New Jersey Department of Environmental Protection (NJDEP) Technical Requirements for Site Remediation (N.J.A.C. 7:26E). The SRIW and SRIW Addendum were conditionally approved by the NJDEP via March 19, 2002 correspondence. The on-site source area SRI groundwater activities were also conducted consistent with recent communication with the NJDEP, including a formal meeting with the NJDEP held on July 18, 2002 to discuss Airtron's revised remedial approach for contaminated soils/source areas (AOCs 1 through 4) and the March 19, 2002 conditionally approved AOC-11 (Groundwater) Phase 1 SRI field activities related to on-site source areas.

During the July 2002 meeting, the roles and responsibilities of Airtron's technical project team, consisting of ARCADIS and Panther Technologies, Inc. (Panther), were identified. Panther provided an overview of the proposed source area remedial action approach, consisting of excavation and on-site treatment of impacted soils. ARCADIS presented a practical approach for conducting the on-site Phase 1 SRI investigation activities integrated with the revised remedial action approach, including the deferral of the installation of permanent source area monitoring wells until after on-site source removal and treatment activities were completed. ARCADIS indicated that other conditionally approved components of the on-site Phase 1 SRI program (including soil borings, soil screening, groundwater sampling via vertical profiling and temporary wells, and sampling of existing monitoring wells) would be completed while a pre-design investigation (PDI) supporting the revised remedial action approach was conducted.

Within the context of the overall SRI objectives presented in the SRIW and SRIW Addendum, the on-site source area Phase 1 SRI groundwater activities, completed in conjunction with the PDI, were focused on the following specific goals:

- Delineate the upgradient extent of VOC-impacted groundwater within the upper unconfined aquifer;
- Provide for further delineation of VOC impacts within perched horizon groundwater (in the vicinity of AOCs 3 and 4);
- Determine the base of the upper unconfined aquifer and document groundwater quality at the base of the upper unconfined aquifer in the vicinity of identified source areas (AOCs 1 through 4);
- Obtain groundwater quality data in the vicinity of identified on-site source areas (AOCs 1 through 4) to a) provide further delineation of the distribution of VOC-impacted groundwater as it relates to the identified source areas, and b) support the placement of an adequate network of permanent monitoring wells to be installed following source area remediation activities; and
- Obtain baseline biogeochemical groundwater quality in the vicinity of identified on-site source areas for 1) contingent supplemental in-situ treatment of impacted soils and underlying groundwater in immediate vicinity of identified on-site source areas, 2) use in subsequent evaluation of potential remedial alternatives relating to AOC-11 (Groundwater).

This interim report provides a summary and limited evaluation of data generated as part of the Phase 1 on-site investigation. Additional work activities, as outlined in the SRIW and SRIW Addendum, are planned on-site and off-site. The findings of these investigations, as well as a complete evaluation of more regional hydrogeologic and analytical results will be provided separately.

2. Summary of Field Activities

On-site source area field activities related to AOC-11 (Groundwater) Phase 1 SRI were conducted during September and October 2002 and consisted of the following: 1) a vertical profile boring program focused on the upper unconfined aquifer, 2) temporary well installation and groundwater sampling focused on the perched groundwater horizon, 3) installation of one new permanent monitoring well, and 4) sampling of select existing monitoring wells (including the newly installed monitoring well). Summaries of pertinent details related to each of these field activities are provided in the following sections.

2.1 Vertical Profile Boring Program

The vertical profile boring program primarily consisted of drilling activities (for continuous lithologic logging using rotasonic drilling methods), soil field screening activities, and groundwater sampling activities. Based on conversations with NJDEP Case Geologist Greg Giles, geophysical logging activities originally proposed in the SRIW and SRIW Addendum were to be considered optional, given the use of the rotasonic drilling method and its ability to obtain continuous soil cores for geologic characterization. Actual geophysical logging of soil borings was therefore limited to two boring locations.

Fifteen vertical profile borings (VPBs) were drilled by Prosonic Corporation (Prosonic) under ARCADIS oversight using rotasonic drilling methods at the locations shown on Figure 1. The vertical profile boring program was conducted over two separate 10-day periods from September 9 through September 30, 2002. Vertical profile borings were advanced to depths ranging from 51 to 121 ft below land surface (bls), as summarized on Table 1. Ten VPBs were drilled at the locations originally proposed in the SRIW Addendum within identified on-site soil source areas. The three VPBs originally proposed in the SRIW and SRIW Addendum for upgradient delineation purposes were adjusted in the field as follows: VPB-408 and VPB-409 were moved on-site in the immediate vicinity of the Airtron property line due to adjacent off-site property access issues; VPB-407 was moved to the parking lot in the general vicinity of identified on-site source areas due to identification of wetlands and related access issues (including requisite permitting) associated with the originally proposed location. Two additional locations (VPB-PDI-1 and VPB-PDI-2) were drilled to support PDI purposes related to on-site soil source area delineation and associated VOC impacts to underlying groundwater in the vicinity of the water table.

During drilling activities at each of the VPBs, soil samples were collected continuously from land surface to the end of the boring in 10-ft long, 3-in diameter steel core barrels. For ease of handling, the soil cores were extruded from the steel core barrel inside polyethylene plastic sleeves in 5-ft increments. Upon retrieval, each soil core was cut open to expose the interior of the soil core for field screening and lithologic logging. Each soil core was screened continuously along its length for volatile organic compounds (VOCs) using a photo-ionization detector (PID) of 11.7 eV lamp energy. Based on the PID readings, select portions of the soil core were additionally field screened for the presence of non-aqueous phase liquid (NAPL). Generally, if the PID reading measured above 100 parts-per-million (ppm) of volatile organic vapors, hydrophobic dye field kits were subsequently used on a sample collected from that

portion of the soil core. Field screening results were recorded onto the sample/core log for each VPB; VPB sample/core logs are provided in Appendix A. The soil cores were logged for detailed lithologic descriptions using the Unified Soil Classification System. The lithology encountered and any other relevant observations (e.g., visual or olifactory) were also recorded onto the sample/core logs for each of the VPBs provided in Appendix A.

In accordance with conversations with NDJEP Case Geologist Greg Giles prior to the start of the drilling program, groundwater samples were collected from discrete intervals from the VPBs using the following techniques. Generally, three to four groundwater samples were collected at each VPB to provide data on the horizontal and vertical distribution of dissolved VOCs in groundwater and to document water quality at the base of the upper unconfined aquifer. Actual sampling depth intervals (as well as the ability to collect a representative sample) were dictated by geologic conditions as well as the ability to adequately submerge the sampling apparatus (in the vicinity of the water table). Forty-two (42) samples were collected (excluding field quality assurance/quality control [QA/QC] samples) out of 46 attempted sample locations. All groundwater samples from VPBs were collected using Prosonic's ISOFLOW Vertical Profiling System with modifications to satisfy NJDEP. Following removal of the soil core barrel and retrieval of the soil core at the desired depth, a 5-ft long, 2-in diameter stainless steel temporary well screen section was placed at the bottom of the outer, over-ride casing which was telescoped back to expose the screen (typically two to four feet). Subsequently, the sampling pump assembly and associated discharge tubing was lowered within the outer casing to the top of the screen section. A Grundfos model 5-SQE-NE-170, 3-in diameter submersible pump was used. This 1/3 horsepower pump, rated at 1 to 8 gallons-per-minute (gpm), was selected to achieve an appropriate balance between being able to remove necessary purge volumes in a reasonable period of time and being able to pump at a low enough pumping rate that would not generate significant back pressure or heat problems that could adversely affect the quality of the sample being collected. The volume of water added during drilling between sampling intervals was monitored and recorded on sampling logs provided in Appendix A. A minimum of this volume plus two casing volumes were purged before a representative sample was collected from a separate sampling port connected to the discharge tubing. The one exception to this purging/sampling procedure occurred at the 61 to 66 ft bls sampling interval for VPB 301D. Based on difficulties encountered during purging this horizon (associated with poor formation yield), a groundwater sample was collected after the equivalent of the volume of water added during drilling plus one casing volume was removed. While each selected sampling zone was purged, the following field parameters were monitored and recorded: pH, specific conductance,

temperature, dissolved oxygen (DO), and turbidity. Purge parameter readings were also recorded on the sampling logs provided in Appendix A.

Groundwater samples were submitted to Integrated Analytical Labs (IAL) of Randolph, New Jersey (NJ Cert. #14751) and analyzed for VOCs using United States Environmental Protection Agency (USEPA) Method 8260B plus a forward library search for the first 15 tentatively identified compounds (TICs). Upon collection, samples were immediately placed into a laboratory-provided insulated cooler containing ice. The samples were delivered in person or via laboratory courier under chain-of-custody protocols to IAL at the end of each day. Quality assurance/quality control (QA/QC) samples were also collected. They included two field duplicates, 15 trip blanks, 16 field rinsate blanks, and two matrix spike/matrix spike duplicates (MS/MSDs) for VOC analysis by USEPA Method 8260B. Duplicate samples and MS/MSD samples were collected at a rate of 1 sample per 20 samples. Trip blanks (supplied by the laboratory) accompanied each sample cooler containing samples for VOC analysis. The field rinsate blank was performed on the sampling pump at a rate of 1 per day of sampling. Laboratory-supplied, demonstrated analyte-free water was used for the field rinsate blank. All field QA/QC samples were submitted for laboratory analysis together with associated groundwater sample shipments to IAL.

Upon completion of each VPB, the borehole was grouted with a Portland cement and bentonite mix via a tremie pipe as the outer, over-ride casing was removed with one exception. At VPB-301D, the portion of the borehole below 66 ft bls was allowed to collapse as the outer, over-ride casing was pulled up. This deviation from the established protocol was conducted in order to obtain a groundwater sample at the 61 to 66 ft bls interval that was unable to be sampled as the boring was advanced to depth. The borehole associated with VPB-301D was grouted from a depth of 66 ft bls to land surface using the technique described above.

In accordance with the SRIW and conversations with NJDEP Case Geologist Greg Giles, the sampling pump and discharge tubing were decontaminated between sample locations by pumping a phosphate-free detergent water solution followed by potable water through the sampling pump and discharge tubing. Between sample locations, the sampling pump was stored in a clean plastic bag. Discharge tubing was replaced between boreholes. Once each VPB was completed, all sample core rods and outer, over-ride casing sections were steam cleaned as they were removed from the borehole. Water generated during decontamination activities was initially contained within a self-contained decontamination pad constructed beneath the raised working platform on the rotasonic drill rig.

Limited geophysical logging using natural gamma logging techniques was conducted on two VPBs (VPB-301D and VPB-417). The natural gamma logging was conducted by Earth Data Northeast, Inc. by lowering the natural gamma probe within the outer, steel over-ride casing to the bottom of the borehole. The geophysical logs for VPBs 301D and 417 are provided in Appendix B.

Ten soil samples collected from VPB soil cores (VPB-301D, VPB-408, VPB-414, and VPB-417) were selected for subsequent grain-size analysis by ASTM Method D422 to obtain additional physical characterization of the various unconsolidated deposits encountered during VPB drilling on-site.

Following completion of the VPB program, VPB locations were surveyed by a licensed, professional surveyor (Millennium Surveying & Engineering, Inc.). Land surface elevations at a majority of the VPB locations were also surveyed; land surface elevations for two of the VPBs were estimated based on previously-surveyed land surface elevations from nearby SRI VPBs or PDI soil borings. VPB land surface elevations are summarized on Table 1.

2.2 Temporary Well Installation and Sampling

Five temporary wells (TWs) were advanced and installed by Vironex, Inc. under ARCADIS oversight using direct-push methods (i.e., Geoprobe) at the locations shown on Figure 1. The temporary well installations and subsequent groundwater sampling were conducted on September 30, 2002, in accordance with the NJDEP's Alternative Ground Water Sampling Techniques Guide (July 1994). Four TWs (TW-420S through TW-423S) were advanced at the locations proposed in the SRIW Addendum in the perched water horizon within identified on-site soil source areas AOC-3 and AOC-4. A fifth TW (TW-301S) was advanced adjacent to existing perched monitoring well MW-301S for comparability of sampling results from monitoring well sampling.

Soil borings associated with the temporary well installations were advanced to depths of 20 ft bls. Soil cores were retrieved continuously from each borehole using a 2-in diameter, 4-ft long stainless steel sampling tube (macro-core) fitted with an acetate liner of similar dimension. Upon retrieval of the soil core, the acetate liner was cut open and scanned for VOCs using a PID of 11.7 eV lamp energy. PID measurements were recorded onto a soil/core log. The lithology encountered and any other relevant observations (e.g., visual or olifactory) were recorded onto the soil/core log for each soil boring associated with the temporary wells. Soil/core logs are provided in Appendix C. The direct-push equipment was decontaminated between each sampling

location using a phosphate free detergent mixed with potable water, followed by a deionized water rinse.

When the desired depth was reached, a disposable 1-in diameter PVC temporary well point was installed within the open borehole. Temporary well point screens were constructed of 5 or 10-ft lengths. Construction details are summarized on Table 2. Each temporary well was sampled using a ½-in disposable bailer. Prior to sampling, a water-level measurement was collected at each TW and recorded. On October 3, 2002, water-level measurements were also collected on select perched monitoring wells in the area to assist with a "synoptic" evaluation of perched horizon groundwater elevations. Water-level measurements are summarized on Table 3.

Groundwater samples were submitted for VOC analysis as described in the previous section (Section 2.1). The field rinsate blank was performed on a disposable bailer prior to sampling. Laboratory-supplied, demonstrated analyte-free water was used for the field rinsate blank. All field QA/QC samples were submitted for laboratory analysis together with associated groundwater sample shipments to IAL. Following sample collection, the temporary well point was removed, soil generated from the macro-core sampling was placed back down the borehole, and the remainder of the borehole was grouted to land surface with a Portland cement and bentonite mix.

Following completion of the TW installation and sampling activities, TW locations were surveyed by Millennium Surveying & Engineering, Inc. Land surface elevations at the TW locations were also surveyed and are summarized on Table 2.

2.3 Groundwater Monitoring Well Installation

One new monitoring well (MW-409) was installed on September 30, 2002 using rotasonic drilling methods. Monitoring Well MW-409 was installed adjacent to VPB-409 along the northern Airtron property line (see Figure 1) to assess and further monitor upper unconfined aquifer groundwater conditions hydraulically upgradient of identified on-site source areas. The remaining two upgradient monitoring wells originally proposed in the SRIW and SRIW Addendum were not installed for the following reasons. A monitoring well was not installed at VPB-408 because of elevated PID readings and because positive indications of NAPL presence indicated soil impacts within the upper 20 to 25 ft of surficial deposits were acting as a continuing source of VOC impacts to groundwater; this source area was confirmed by PDI soil quality delineation activities. A monitoring well was not installed at the

originally proposed location of VPB/MW-407 because drilling at that location for the intended purpose has been deferred pending wetland permitting issues.

The monitoring well construction log for MW-409 is provided in Appendix D; Form A and B certifications will be provided separately. A summary of well construction details for the newly installed well and the existing wells is provided in Table 2. The monitoring well screen placement was based on the VPB groundwater quality results as well as PID readings measured during field screening activities.

Once installed, the well was developed to ensure good communication with the water bearing formation under the specifications provided in the NJDEP's Field Sampling Procedure Manual (May 1992). Monitoring Well MW-409 was developed by pumping and mechanical surging using a field decontaminated super whale pump and dedicated polyethylene tubing. Well development details are summarized on the well construction log provided in Appendix D.

Following the monitoring well installation, the well's location was surveyed by Millennium Surveying & Engineering, Inc. The land surface elevation, top of outer casing, and top of inner casing (measuring point) were also surveyed. Survey data (elevations) associated with MW-409 are summarized on Table 2.

2.4 Groundwater Monitoring Well Sampling

Two groundwater sampling events were conducted on select permanent on-site monitoring wells during September 2002 (September 9 through 12, 2002) and October 29, 2002. Groundwater sampling activities were conducted in accordance with the conditionally-approved SRIW and SRIW Addendum, the NJDEP's Field Sampling Procedures Manual (May 1992), and the Remedial Action Workplan (RAW) Addendum (ARCADIS G&M 2001) (conditionally approved by the NJDEP via March 28, 2002 correspondence), as applicable. The September 2002 round included the sampling of 12 existing monitoring wells, seven of which are screened within the upper unconfined aquifer (MW-1, MW-2, MW-3, MW-204, MW-302, MW-404D, and MW-406) and the remaining five of which are screened within the perched groundwater horizon (MW-301S, MW-401S, MW-402S, MW-403S, and MW-404S). The October 29, 2002 sampling event included the sampling of three monitoring wells: two wells screened within the upper unconfined aquifer (upgradient well USGS-3 and newly installed upgradient well MW-409) and one well screened within the perched groundwater horizon (MW-402S). Monitoring Well MW-402S was re-sampled during the October 2002 event based on the relatively elevated VOC concentrations detected

during the September 2002 sampling. The October 29, 2002 sampling event was also conducted at the same time the semi-annual IRM Groundwater Remediation Effectiveness Monitoring October 2002 event was conducted (specifically on October 30 and 31, 2002). The purpose of the groundwater sampling effort was two-fold: 1) to obtain updated on-site groundwater quality (VOCs) and water-level data, particularly from monitoring wells located in the immediate vicinity of identified source areas, prior to source area remediation activities; and 2) to obtain biogeochemical groundwater quality in the vicinity of identified on-site source areas using low flow sampling techniques. The locations of all existing on-site wells, including recently-installed well MW-409, are shown on Figure 1.

During the September 2002 groundwater sampling round, nine of the 12 monitoring wells were sampled using low flow sampling techniques in accordance with the conditionally-approved RAW Addendum and subsequent conversations with NJDEP Case Geologist Greg Giles. The remaining three monitoring wells (perched wells MW-401S, MW-402S, and MW-403S) were sampled using conventional sampling techniques (disposable Teflon-lined bailer) in accordance with the SRIW, SRIW Addendum, and the NJDEP's Field Sampling Procedures Manual. Low flow techniques could not be utilized at these wells due to the limited volume of water and low-yield characteristics typically observed for these wells.

Low flow sampling activities included collection of down-hole (in-situ) field parameter measurements of the seven selected upper unconfined monitoring wells. Down-hole logging was conducted prior to low-flow purging/sampling in order to determine if preferential flow zones could be identified within the screened intervals of the wells as part of determining the placement of the sampling pump intake. In addition, for existing wells with dedicated bladder pumps (MW-1, MW-2, MW-3, MW-204, MW-301S, and MW-302), the bladder pump depth setting was determined. Down-hole logging results are summarized in field documentation provided in Appendix E. Preferential flow zones were not identified based on the down-hole measurements. The placement of the sampling pump intake for each well therefore considered the mid-point of the saturated portion of the screen zone as well as the dedicated bladder pump depth setting (for comparability with previous sampling results), if applicable. The sampling pump intake depth setting, water level, water column height, as well as the dedicated bladder pump depth setting (if applicable) are recorded on the sampling logs provided in Appendix E.

After the sampling pump and associated discharge tubing (¼-in polyethylene tubing) were lowered into each well to be sampled using low flow techniques, monitoring for

field parameters DO, oxidation-reduction potential [ORP], pH, specific conductance, temperature, and turbidity) was conducted during purging and also after obtaining groundwater samples. This was completed through use of an in-line meter and closed flow-through cell. The depth to water was also measured and recorded prior to and during purging. Field parameter readings and depth to water measurement (including calculated drawdown) are recorded on the sampling logs provided in Appendix E. Purging was conducted at a rate of 300 to 500 milliliters per minute (ml/min); purge rate was adjusted during purging in some cases in an attempt to minimize drawdown within the well. Maximum drawdown was less than 0.3 ft with the exception of MW-1, MW-204, and MW-301S. However, relative drawdown measurements in these wells indicated the water level had stabilized prior to sample collection. Once field parameters (DO, ORP, specific conductance, and pH) had stabilized, the pumping rate was reduced to approximately 50 to 100 ml/min and a groundwater sample was collected directly from the discharge tubing into laboratory-supplied containers. Purging and sampling rates are recorded on the sampling logs provided in Appendix E.

Twelve groundwater samples were submitted for VOC analysis as previously described in Section 2.1. The field rinsate blank was performed on the decontaminated sampling pump. Laboratory-supplied, demonstrated analyte-free water was used for the field rinsate blanks. All field QA/QC samples were submitted for laboratory analysis together with associated groundwater sample shipments to IAL.

Nine groundwater samples were also submitted to IAL and Microseeps of Pittsburgh, Pennsylvania and analyzed for a variety of biogeochemical parameters, as specified in the RAW Addendum. Microseeps was selected as a specialized lab used for conducting dissolved gases and light hydrocarbon analyses. In addition, two of the biogeochemical parameters (ferrous iron and hydrogen sulfide) were analyzed in the field using a portable HACH spectrophotometer in accordance with the RAW Addendum.

During the October 2002 round, three monitoring wells (MW-402S, MW-409, and USGS-3) were sampled using conventional sampling techniques in accordance with the SRIW, SRIW Addendum, and the NJDEP's Field Sampling Procedures Manual. Sampling and purging techniques and field measurements for these wells are recorded on the associated sampling logs provided in Appendix E. As part of the October 2002 round, perched well MW-402S was resampled based on review of the September 2002 results. Upper unconfined well MW-409 was sampled approximately 1 month after its installation.

The October 2002 groundwater samples were submitted for VOC analysis as previously described in Section 2.1. The field rinsate blank was performed on the decontaminated sampling pump (used for MW-409). Laboratory-supplied, demonstrated analyte-free water was used for the field rinsate blank. All field QA/QC samples were submitted for laboratory analysis together with associated groundwater sample shipments to IAL.

During each event in September and October 2002, water-level measurements were collected at each well sampled and several additional wells to aid in an evaluation of "synoptic" groundwater flow conditions. During the September 2002 round, additional select on-site wells were measured; during the October 2002 round, the water-level measurements included available on-site and off-site area-wide monitoring wells collected as part of the semi-annual IRM Groundwater Remediation Effectiveness Monitoring Program. Water-level measurements synoptic with these two monitoring events are summarized on Table 3.

3. Summary of Results

This section provides a brief summary of results obtained during the various investigation elements conducted during field activities.

3.1 Vertical Profile Boring Program

The vertical profile boring program provided a variety of results related to on-site geologic conditions, soil field screening for NAPL, limited groundwater elevation data, and groundwater quality (VOCs). These results are summarized below.

3.1.1 Geologic Conditions

A review of the soil/core logs provided in Appendix A generally confirms the stratigraphy (geologic framework) underlying the site presented in previous reports (from a sub-regional and site-wide perspective) with two significant variations that factor into an evaluation of hydrogeologic conditions affecting potential contaminant migration in the vicinity of identified source areas. The results of the vertical profile boring program were also used to determined the base of the upper unconfined aquifer, particularly in the vicinity of identified source areas AOC-1 through AOC-4. In addition, the vertical profile boring program provided lithologic information on the lower confined aquifer and an associated aquitard.

Generally, the stratigraphic units beneath the Airtron facility and surrounding environs consist of surficial glacial till deposits overlying two distinct outwash deposits. The till deposits are generally well compacted and are composed of clay, silt, sand, and gravel with occasional cobbles and boulders. Perched water is found sporadically on-site within the relatively low permeability surficial glacial till deposits. The outwash deposits generally consist of well-sorted silts and sands. The outwash deposits observed beneath the Airtron facility and surrounding environs are separated by a lower permeability silty-clay, clayey-silt layer (lower till/aquitard). Generally, from a more regional perspective, the lower till/aquitard separates the outwash deposits into two hydrogeologic units: the upper unconfined aquifer (shallower outwash deposits above) and the lower confined aquifer (deeper outwash deposits below). The lower till/aquitard has been interpreted as the base of the upper unconfined aquifer. Within the upper outwash deposits comprising the upper unconfined aquifer, variations in the characteristics of the unconsolidated material have been described. The shallower portions of the upper unconfined aquifer typically consist of more permeable deposits (fine to coarse sand) with the deeper portions of the upper unconfined aquifer typically consisting of slightly less permeable deposits (fine to medium sand with some silt and clay lenses).

During the drilling activities, an additional distinct lower permeability silt-clay, clayey-silt layer was encountered underlying a portion of the site within the shallow portion of the upper unconfined aquifer (referred to as the shallow aquitard, upper unconfined aquifer). Additionally, review and subsequent interpretation of the lithologic logs for several VPBs in the northernmost portion of the site indicated that the lower till/aquitard (referred to as the basal aquitard, upper unconfined aquifer) was not present, and that a third layer of lower permeability silty-clay, clayey-silt generally associated with the lower confined aquifer represents the base of the upper unconfined aquifer in this limited area. Based on the review and associated interpretation of lithologic logs subsequent to field activities, it was determined that several VPBs were drilled to depths that encountered the top portion of deposits comprising the lower confined aquifer, above the lower confined aquitard.

The on-site geologic framework in the vicinity of identified on-site source areas described above is clearly depicted on several hydrogeologic cross-sections that also convey the respective geometries (depths, elevations, thickness). The cross-sections (Figures 2 through 5), taken as a whole, include all 15 of the VPBs drilled as part the September/October 2002 field activities. Cross-section transects (for Figures 2 through 5) and their orientations relative to AOCs 1 through 4, are shown on Figure 1.

The extent and top surface of the shallow and basal aquitards associated with the upper unconfined aquifer are presented on Figures 6 and 7, respectively. Information on each of the lower permeability units (aquitards) encountered (or not encountered as the case may be) for each vertical profile boring drilled is provided on Figures 6 and 7. As shown on Figure 6, the extent of the shallow aquitard within the upper unconfined aquifer is limited to the northern property line and the area beneath AOCs 3 and 4; the eastern extent of this unit was not determined during field activities. The top surface of the shallow aquitard generally slopes to the south/southeast. The extent of two isolated shallow clay lenses beneath AOC-2 are also shown on Figure 6; these clay lenses are not interpreted to be continuous with the shallow aquitard (also refer to associated Hydrogeologic Cross-Section B-B' [Figure 3]). As shown on Figure 7, the basal aquitard of the upper unconfined aquifer is generally continuous beneath the majority of the site except for the very northern portion, including the approximate northern half of AOC-3 (also refer to associated Hydrogeologic Cross-Sections A-A' [Figure 2]). The top surface of the basal aquitard generally slopes to the east/southeast and is consistent with the geometry of this unit in this portion of the site as presented from an area-wide context previous reports. Based on the geologic data and comparison of Figures 6 and 7, a relatively small, isolated "window" is interpreted to exist in the northern portion of Airtron's rear parking lot where both the shallow aquitard and the basal aquitard are absent. However, in this area, an aquitard typically encountered within the lower confined aquifer, is reasonably interpreted to exist and locally acts as the base of the upper unconfined aquifer (also refer to Hydrogeologic Cross-Sections A-A' [Figure 2] and C-C' [Figure 4]).

Geophysical (natural gamma) logs for VPB-301D and VPB-417 are provided in Appendix B. Comparison of these gamma logs against the associated lithologic logs did not indicate variation of intrinsic permeability in the formation that would otherwise be inferred from the visual interpretation of the soil core samples for VPB-301D and VPB-417. As mentioned in the July 1998 SI/RI and RAS Report (ARCADIS Geraghty & Miller 1998), the application of gamma radiation to assess intrinsic permeability in this hydrogeologic setting may not be appropriate, at least as the sole geophysical technique. Given the quality (and recovery) of the soil cores afforded by using the rotosonic drilling technique, lithologic interpretation will primarily rely on review of soil cores; geophysical gamma logging by itself will not be utilized as part of future SRI on-site and off-site drilling programs.

A summary of grain-size analysis results is provided in Appendix F (Table F1). The grain-size analysis results provide additional information on the physical characterization of the various deposits encountered during the vertical profile drilling

program, specifically: the shallow aquitard within the upper portion of the upper unconfined aquifer (one sample), the shallow and deeper portions of the upper unconfined aquifer (two and four samples, respectively), the lower confined aquifer (two samples), and the aquitard encountered within, or locally at the top of, the lower confined aquifer (one sample). The grain-size analysis results are generally consistent with the lithologic descriptions provided on the associated soil/core logs and consistent with the description of the geologic framework described above.

3.1.2 Field Screening

Soil field screening activities during the vertical profile boring program provided information on the potential presence of NAPL in underlying site soils. Soil field screening for NAPL was performed (based on PID readings generally consistent with the criterion presented in Section 2) on 15 soil samples associated with 5 vertical profile borings as summarized on Table 4. All five vertical profile borings were located within AOC-3. All samples screened were located within shallow soils (0 to 30 ft bls) above the upper unconfined water table, primarily within the surficial glacial till deposits. Field screening of nine of the 15 samples had positive indications of the presence of NAPL, limited to shallow soil samples collected from three locations (VPB-408, VPB-415, and VPB-PDI-2). Correlation of NAPL screening results to PID readings with respect to the criterion of 100 ppb PID reading was high (approximately 80%), indicating the PID criterion for subsequent NAPL field screening was appropriate. Soil impacts in the three areas of positive indications of NAPL presence was more fully delineated during PDI soil sampling activities that support the definition of soil volumes for source area removal and treatment.

3.1.3 Groundwater Elevations

During the vertical profile boring program, limited water-level data was collected to aid in an evaluation of "synoptic" groundwater flow conditions. The stabilized water-level measurement collected at VPB-408 was used to calculate a groundwater elevation at this location representative of the shallow portion of the upper unconfined aquifer, as summarized on Table 3. This result is incorporated with other groundwater elevation data (collected from monitoring wells) for an evaluation of groundwater flow patterns in the upper unconfined aquifer during the September/October 2002 field activities, which is summarized in Section 4 (Summary of Findings).

3.1.4 Groundwater Quality

The results of the groundwater sample analyses associated with the vertical profile boring program are summarized on Table 5, including the sum of VOCs, or total VOCs (TVOCs), detected. The analytical results associated with QA/QC samples are also summarized on Table 5. Laboratory analytical data packages (and associated electronic data submittals) will be provided separately.

Analytical VOC results were reviewed for completeness and technical compliance with the previously approved 1997 SI/RI Work Plan (SCS Engineers, 1997). If any data were determined not to be complete and/or technically compliant, the data reviewer referred to the NJDEP data validation documents for assistance. Organic results were reviewed using the criteria specified in NJDEP Standard Operating Procedure (SOP) 5.A.13. The review of the data packages included checking the following:

- review of laboratory narrative summary,
- chain-of-custody forms,
- holding times,
- blank contamination,
- spike recoveries,
- surrogate recoveries,
- internal standards,
- precision of duplicate analyses, and
- laboratory control samples.

Qualification of the sample results that were deemed necessary during the data review were applied to the tables summarizing analytical results. The quality of the analytical results reviewed was acceptable. All project data quality objectives were met.

Displays of analytical results (as TVOC concentrations color-coded to indicate the primary target VOC compound detected) for each VPB groundwater sample collected are provided on the hydrogeologic cross-sections (Figures 2 through 5). Data postings for VOCs (TVOC, and key primary target VOCs such as tetrachloroethene [PCE], trichloroethene [TCE], and cis-1,2-dichloroethene [cis-1,2,-DCE], as appropriate) are also provided in plan view on Figures 12 and 13 (with qualifiers indicating the associated representative aquifer horizon). These results are incorporated with other groundwater quality data on VOCs (collected from monitoring wells) for an evaluation of the distribution of VOCs within the groundwater regime during September/October 2002, which is summarized in Section 4 (Summary of Findings).

The majority of the 42 VPB samples analyzed for VOCs were collected from discrete intervals within the upper unconfined aquifer (including the shallow portion of the upper unconfined aquifer [in a few cases from within the shallow aquitard] and the deeper portion of the upper unconfined aquifer [in most cases at the base of the upper unconfined aquifer]. Approximately 11 VPB samples analyzed for VOCs are interpreted to be located within the lower confined aquifer, based on the geologic framework presented above. These include the following sample designations: VPB-407(73-76), VPB-407(93-96), VPB-411(92-96), VPB-415(92-95), VPB-416(93-96), VPB-417(91-96), VPB-417(103-106), VPB-418(103-106), VPB-418(113-116), VPB-419(93-96), and VPB-419(112-116).

In general, TVOC results in VPB groundwater samples ranged from 0 micrograms-per-liter (µg/L), or non-detect, to a maximum TVOC concentration of approximately 15,705 µg/L (at VPB-412[47-49]). This large range in detected concentrations supports the ability of the sampling technique utilized during the vertical profile boring program to obtain representative groundwater quality samples from discrete zones within aquifer(s), including the base of the upper unconfined aquifer. The laboratory analyses for VOCs in numerous groundwater samples collected from the vertical profile borings detected PCE, TCE and cis-1,2-DCE above the NJDEP Class II-A Groundwater Quality Criteria. The highest PCE concentration detected in VPB groundwater samples was 3,110 µg/L, associated with the 61-66 ft, bls sampling interval for VPB-419 (sample designation VPB-419[61-66]). This vertical profile boring is located in the northern portion of AOC-1 in the vicinity of localized PCE soil impacts delineated in AOC-1 and approximately 90 feet southwest of localized PCE soil impacts delineated in AOC-2. The highest TCE concentration detected in VPB groundwater samples was 11,600 µg/L, associated with the 47-79 ft, bls sampling interval for VPB-412 (sample designation VPB-412[47-49]). This vertical profile boring is located in the northern portion of AOC-3, in the vicinity of TCE soil impacts recently identified and delineated during PDI soil sampling activities. The elevated TCE concentration is approximately 1 percent of the respective water solubility (1%=11,000 µg/L); VPB-412 is located approximately 100 ft south of VPB-408. VPB-408 had positive field screening results for NAPL in shallow, unsaturated zone samples. The highest cis-1,2-DCE concentration detected in VPB groundwater samples was 468 µg/L, also associated with sample VPB-412(47-49). Results for four samples (VPB-301D[61-66], VPB-412[72-74], VPB-413[56-57], and VPB-PDI-1[64-66]), also indicated detections of the following VOC compounds above respective NJDEP Class II-A Groundwater Quality Criteria: bromodichloromethane, methylene chloride, and/or 1,1-dichloroethene. The laboratory analyses for VOCs in several groundwater samples collected from the vertical profile borings also indicated non-

detect concentrations of the primary target VOC compounds (including PCE, TCE, and cis-1,2-DCE), or if detected, at concentrations below associated groundwater quality standards. Generally, this occurred at the base of the upper unconfined aquifer (in the vicinity of AOC-3 and AOC-4 and the northern property line) or within the lower confined aquifer. The distribution of VOCs in the groundwater flow regime is more fully discussed in Section 4 (Summary of Findings) by aquifer unit.

3.2 Temporary Well Groundwater Sampling

3.2.1 Groundwater Elevations

During the temporary well groundwater sampling program, water-level data was collected to aid in an evaluation of "synoptic" groundwater flow conditions in the perched horizon. Groundwater elevations calculated from water-level measurements collected from the temporary wells are summarized on Table 3. These results are incorporated with other groundwater elevation data (collected from perched monitoring wells) for an evaluation of groundwater flow patterns in the perched horizon during the September/October 2002 field activities, which is summarized in Section 4 (Summary of Findings).

3.2.2 Groundwater Quality

The results of the groundwater sample analyses associated with the temporary well installations are summarized on Table 6, including the sum of VOCs, or TVOCs, detected. The analytical results associated with QA/QC samples are also summarized on Table 6. Laboratory analytical data packages (and associated electronic data submittals) will be provided separately. Analytical VOC results were reviewed for completeness and technical compliance as previously described in Section 3.1.4. The quality of analytical results reviewed was acceptable. All project data quality objectives were met.

Data postings for VOCs (TVOC, and key primary target VOCs such as PCE, TCE, cis-1,2-DCE, and vinyl chloride [VC], as appropriate) are also provided in plan view on Figure 8. These results are incorporated with other groundwater quality data on VOCs (collected from perched monitoring wells) for an evaluation of the distribution of VOCs within the perched horizon during September/October 2002, which is summarized in Section 4 (Summary of Findings).

In general, TVOC results in TW groundwater samples ranged from approximately 380 µg/L (at TW-301S) to a maximum TVOC concentration of 445,069 µg/L (at TW-421S). The laboratory analyses for VOCs in all five groundwater samples collected from the temporary wells detected PCE, TCE, cis-1,2-DCE, and VC above the NJDEP Class II-A Groundwater Quality Criteria. Trans-1,2-dichloroethene (trans-1,2-DCE) was also detected in one sample (TW-421S) at a concentration exceeding the respective NJDEP Class II-A Groundwater Quality Criterion. The highest concentrations of these primary target VOCs were consistently detected in the TW-421 sample at the following levels: 171,000 µg/L (PCE), 49,200 µg/L (TCE), 197,000 µg/L (cis-1,2-DCE), 1,210 µg/L (trans-1,2-DCE), and 26,500 µg/L (VC). The elevated PCE concentration at TW-421 is greater than the respective water solubility (150,000 µg/L), suggesting the potential presence of NAPL within perched water at and in the vicinity of TW-421. Temporary Well TW-421 is located within the southernmost portion of AOC-3 in the immediate vicinity (within 40 feet) of elevated PCE and TCE soil impacts. Results for three TW samples (TW-420S, TW-421S, and TW-422S), also indicated detections of one or more of the following VOC compounds above respective NJDEP Class II-A Groundwater Quality Criteria: acetone, benzene, 1,1-dichloroethane, and 1,1-dichloroethene.

3.3 Monitoring Well Groundwater Sampling

3.3.1 *Groundwater Elevations*

During the monitoring well groundwater sampling program, water-level data was collected to aid in an evaluation of "synoptic" groundwater flow conditions in the perched horizon as well as the upper unconfined aquifer. Groundwater elevations calculated from water-level measurements collected from the monitoring wells are summarized on Table 3. These results are incorporated with other groundwater elevation data (collected from vertical profiles and temporary wells) for an evaluation of groundwater flow patterns in the perched as well as the upper unconfined aquifer during the September/October 2002 field activities, which are summarized in Section 4 (Summary of Findings).

3.3.2 Groundwater Quality

The results of the groundwater sample VOC analyses associated with the monitoring wells are summarized on Table 7, including the sum of VOCs, or TVOCs, detected. The analytical results associated with QA/QC samples are also summarized on Table 7. Laboratory analytical data packages (and associated electronic data submittals) will be

provided separately. Analytical VOC results were reviewed for completeness and technical compliance as previously described in Section 3.1.4. The quality of analytical results reviewed was acceptable. All project data quality objectives were met.

Results from the on-going semi-annual IRM Groundwater Remediation Effectiveness Monitoring program for the upper unconfined groundwater aquifer (October 2002 round) are also summarized on Table 7 for completeness and include the following wells: MW-3, MW-206, MW-302, MEN.MW-12, MEN.MW-13, Airtron's Recovery Well RW-1, and USGS-1. As mentioned previously in Section 2 (Summary of Field Activities), two of the IRM program monitoring wells (MW-3 and MW-302) were sampled in September 2002 as part of Phase SRI field activities. Data postings for VOCs (TVOC, and key primary target VOCs such as PCE, TCE, cis-1,2,-DCE, and/or VC, as appropriate) are also provided in plan view for perched horizon monitoring wells on Figure 8 and for upper unconfined aquifer monitoring wells on Figures 12 and 13 (with qualifiers indicating the associated representative aquifer horizon[s]). Displays of analytical results (as TVOC concentrations color-coded to indicate the primary target VOC compound detected) for most monitoring wells are also provided on the hydrogeologic cross-sections (Figures 2 through 5). These results are incorporated with other groundwater quality data on VOCs (collected from vertical profile borings or temporary wells) for an evaluation of the distribution of VOCs within the groundwater regime during September/October 2002, which is summarized in Section 4 (Summary of Findings). Results of groundwater sample analyses for biogeochemical parameters are provided separately in Appendix G; the following summary of results focuses on VOCs from perched and upper unconfined monitoring wells.

In general, TVOC results in groundwater samples collected from the five perched monitoring wells ranged from approximately 61 µg/L (at MW-401S) to approximately 9,076 µg/L (at MW-402S during the September 2002 round). Monitoring Well MW-301S had historically exhibited the highest VOC concentrations relative to other perched wells; the recently detected (September 2002) TVOC concentration for MW-301S was approximately 1,634 µg/L. Results of re-sampling of well MW-402S (during October 2002) indicated a decrease in detected TVOC concentrations to approximately 332 µg/L. The laboratory analyses for VOCs in all groundwater samples collected from the five perched monitoring wells detected PCE, TCE and cis-1,2-DCE, above the NJDEP Class II-A Groundwater Quality Criteria. Vinyl chloride, also a breakdown product, was also detected above the NJDEP Class II-A Groundwater Quality Criterion in two samples (MW-301S and MW-402S [September

2002 round]). The highest concentrations of these primary target VOCs were consistently detected in the September 2002 sample from MW-402S at the following levels: 6,040 µg/L (PCE), 976 µg/L (TCE), 1,730 µg/L (cis-1,2-DCE), and 313 µg/L (VC). However, results of re-sampling well MW-402S (during October 2002) indicated a decrease in detected concentrations, at the following levels: 66.6 µg/L (PCE), 23.5 µg/L (TCE), 240 µg/L (cis-1,2-DCE), and non-detect (VC). Monitoring Well MW-301S had historically exhibited the highest concentrations of these primary target VOCs relative to other perched wells; recently detected (September 2002) concentrations for MW-301S were 1,010 µg/L (PCE), 198 µg/L (TCE), 266 µg/L (cis-1,2-DCE), and 155 µg/L (VC). The lowest concentrations of the primary target VOCs were detected in well MW-401S, which is consistent with previous sampling rounds, at the following levels: 9.41 µg/L (PCE), 4.41 µg/L (TCE), 47.2 µg/L (cis-1,2-DCE), and non-detect (VC). Results for the September 2002 sample from MW-402S also indicated a detection of 1,1-dichloroethene slightly above its respective NJDEP Class II-A Groundwater Quality Criterion; however, results indicate 1,1-dichloroethene was not detected during October 2002 re-sampling of well MW-402S.

The significant decrease in VOC concentrations in well MW-402S from September to October 2002 is attributed to relatively significant changes in water levels observed in this well. The September 2002 sample was collected during a relatively low perched water level period with only approximately 4 feet of water column in the MW-402S screened interval; conversely, the October 2002 sample was collected during a relatively high perched water level period with approximately 13 feet of saturated screen. The differences in sampling results when compared to differences in water levels suggest that relatively higher VOC concentrations occur within discrete intervals within the perched horizon, in this case near the bottom of the MW-402S well screen, that may be mixed with lower VOC concentrations when using conventional sampling techniques (e.g., bailer) during times of higher water level conditions.

In general, TVOC results in groundwater samples collected from the nine upper unconfined monitoring wells ranged from non-detect (at USGS-3) to approximately 9,065 µg/L (at MW-406). The laboratory analyses for VOCs in groundwater samples collected from seven of the nine upper unconfined monitoring wells detected PCE , TCE and/or cis-1,2-DCE, above the NJDEP Class II-A Groundwater Quality Criteria. Vinyl chloride, also a breakdown product, was also detected above the NJDEP Class II-A Groundwater Quality Criterion in one sample (MW-404D at 18.8 µg/L). The highest PCE concentration detected in these groundwater samples was 3,730 µg/L at well MW-404D, located to the southeast of delineated PCE soil impacts in the southern portion of AOC-3 and screened below the AOC-3/AOC-4 perched water horizon in the

vicinity of the upper unconfined water table. The highest TCE concentration detected in these groundwater samples was 6,950 µg/L at well MW-406, located in the northern portion of AOC-3 in the vicinity of TCE soil impacts recently identified and delineated during PDI soil sampling activities. The highest cis-1,2-DCE concentration detected in these groundwater samples was 758 µg/L at well MW-404D.

Concentrations of PCE, TCE and cis-1,2-DCE were detected at 273 µg/L, 770 µg/L, and 17.3 µg/L, respectively, above their respective Groundwater Quality Criteria in newly installed well MW-409. This well is located along the northern property line away from identified source areas (approximately 300 ft west of AOC-3 and approximately 300 ft north of AOCs 1 and 2) and was originally intended as an upgradient delineation monitoring location. Concentrations of PCE and TCE were also detected at levels slightly above their respective Groundwater Quality Criteria in well MW-204. This well is located away from source areas in front of the Airtron facility along East Hanover Avenue and has typically been viewed as a side-gradient delineation well, with historical VOC results generally at non-detectable levels. Monitoring Well MW-1, which is located in the immediate vicinity of identified sources area (between AOCs 1 and 2) did not exhibit detectable concentrations of the primary target VOCs; historically, VOCs have not been typically detected at this well. Existing downgradient on-site monitoring wells (MW-2, MW-3, and MW-302), located to the south/southwest of identified source areas, continued to exhibit relatively moderate concentrations of primary target VOC compounds consistent with previous RI and/or IRM sampling events. Results for samples collected using low flow sampling techniques (September 2002) from wells MW-3 and MW-302 were comparable to results for samples collected using conventional techniques during the October 2002 IRM sampling event. Additionally, results for the two discrete samples collected using low flow sampling techniques at well MW-302 were similar, and do not indicate significant variation in concentrations with depth, suggesting localized preferential flow within the screened interval is not occurring.

4. Summary of Findings

The following summary of findings presented in this section are presented for each hydrogeologic unit and, as such, are based on a combination of results obtained under the various field activities, as appropriate. The findings primarily deal with interpretation of hydrogeologic conditions and the distribution of VOCs in the groundwater regime, and are used to support recommendations for additional activities to be conducted during the remainder of Phase 1 of the SRI, as presented in Section 5. As mentioned previously, the evaluation of existing on-site biogeochemical

groundwater conditions is provided separately as Appendix G and is not discussed below.

4.1 Perched Horizon

The following findings are based on groundwater elevations and groundwater quality data for temporary wells and perched monitoring wells.

4.1.1 Hydrogeologic Conditions

Based on groundwater elevations summarized on Table 3 and shown on Figure 8, groundwater flow direction within the perched water horizon in the vicinity of AOCs 3 and 4 is variable, but predominantly to the southeast with some aspects of localized radial flow observed. This finding is consistent with previous 1997/1998 RI results and is supported by historical groundwater elevations collected periodically from perched monitoring wells, as summarized on the hydrograph provided in Appendix H. Over time, localized perched flow directions can vary from southeast to southwest and also to the east-northeast. These variations in flow directions from the predominant southeast direction appear to be short term and likely in response to precipitation events. The groundwater elevations associated with well MW-402S exhibit the greatest variability and appear to be most significantly affected by such events. Vertical head differences at well cluster MW-404S and MW-404D continue to support significant downward potential for perched groundwater flow through and around the relatively low permeability surficial soils. This analysis of perched flow directions is further supported by the VOC distribution summarized below.

Because well MW-403S is remote from the remaining perched groundwater wells located in AOCs-3/4, it was not included in the determination of flow of the perched groundwater; however, groundwater elevations in MW-403S are in agreement with the observations made in remaining perched monitoring wells.

4.1.2 Groundwater Quality (VOC Distribution)

The distribution of VOC impacts in the perched water horizons in the vicinity of AOC-1 and AOCs-3/4 are depicted on Figure 8, contoured based on TVOC concentrations.

In the vicinity of AOC-1, the relatively low VOC concentrations observed in well MW-403S are interpreted to be of limited areal extent and are consistent with PCE and TCE soil impacts delineated within the AOC-1 source area.

In the vicinity of AOCs-3/4, the elevated VOC concentrations (e.g., at TW-421S and TW-420S) are coincident with the highest PCE and TCE soil impacts delineated within the southern portion of the AOC-3 source area. The distribution of resulting dissolved VOC concentrations is oriented to the southeast, consistent with predominant horizontal flow direction. TVOC concentrations in surrounding data points, particularly to the north (TW-422S), west (TW-423S) and east (MW-401S), decrease significantly, indicate a fairly limited lateral extent from which delineation can be reasonably inferred.

The distribution of VOC concentrations in the perched groundwater does not indicate significant lateral plume migration and is predominantly influenced by downward vertical groundwater flow. As depicted on cross-sectional Figure 10, elevated (>1,000 µg/L) perched horizon VOC impacts in the vicinity of AOCs-3/4 migrate laterally (to a limited extent) before migrating vertically downward to the upper unconfined water (e.g., at MW-404D).

4.2 Upper Unconfined Aquifer

The following findings are based on groundwater elevations and groundwater quality data for vertical profile borings and upper unconfined monitoring wells.

4.2.1 Hydrogeologic Conditions

The enclosed Figure 9 is a predominantly site-wide groundwater elevation contour map depicting the configuration of the potentiometric surface of the upper unconfined aquifer; the area-wide version has been presented in the report on October 2002 Results-IRM Groundwater Remediation Effectiveness Monitoring Program (ARCADIS, December 2002). The potentiometric surface is based on water-level measurements collected from wells and piezometers included in the IRM effectiveness monitoring program as well as additional area-wide monitoring wells as measured during the IRM October 2002 round (and summarized on Table 3). The upper unconfined aquifer flow was observed to be consistent with the regional groundwater flow to the southwest. Localized mounding of groundwater on-site was observed in wells MW-1 and MW-404D creating a northerly flow component toward the north end of the rear parking lot. However, this northerly flow component is limited to the northern boundary of the site where the flow returns to the regional southwesterly direction. This localized groundwater pattern was inferred in the past based on the groundwater elevation of the Champion well (CHA-MW-1) and the presence of surface water in the former gravel pit to the north of the Airtron facility and has been

confirmed based on September/October 2002 data (primarily via the installation of new well MW-409). Water-level measurements also indicate that the groundwater extraction well, RW-1, has maintained a sufficient cone of depression to capture the VOC-impacted groundwater at the Airtron facility.

4.2.2 Groundwater Quality (VOC Distribution)

The distribution of on-site VOC impacts in the upper unconfined aquifer, contoured based on TVOC concentrations, are depicted in cross-sectional view (on Figures 10 and 11 corresponding to Hydrogeologic Cross-Sections A-A' and B-B', respectively) and in plan view (on Figures 12 and 13 for the shallow and deeper portions of the upper unconfined aquifer, respectively).

Generally, the highest VOC concentrations detected are found in the shallow portion of the upper unconfined aquifer, coincident with the identified source areas. The primary dissolved VOCs detected beneath the various AOCs are consistent with the primary source area VOCs detected in soil. For example, shallow groundwater beneath the northern portion of AOC-3 (where the highest TCE soil impacts were delineated) is primarily impacted by TCE; shallow groundwater beneath the southern portion of AOC-3/AOC-4, AOC-2, and AOC-1 (where the highest PCE soil impacts were delineated) is primarily impacted by PCE. In addition, the distribution of VOCs is generally consistent with on-site groundwater flow patterns and indicates some commingling of VOC impacts from relatively upgradient source areas (e.g., TCE from the northern portion of AOC-3) with VOC impacts from source areas to the south (e.g., PCE from AOC-2). The shallow aquitard, where it exists, has a significant control on impeding the downward vertical migration of higher VOC impacts to deeper portions of the upper unconfined aquifer beneath AOCs 3 and 4, resulting in significantly lower VOC concentrations, if detected at all, within the deeper portion of the upper unconfined aquifer. As such, the base of the upper unconfined aquifer beneath AOCs 3 and 4 is not significantly impacted by VOCs. Where this shallow aquitard is absent (i.e., beneath AOCs 1 and 2), VOC impacts are generally detected at the base of the aquifer at concentrations similar to those detected in the shallow horizon near the water table. Additional points of clarification and/or exceptions to these general findings are provided below.

Shallow groundwater beneath the southern portion of AOC-3 (where PCE and TCE source area soil impacts were delineated) is not as significantly impacted with VOCs as for the northern portion of AOC-3. This is clearly depicted in cross-sectional view on Figure 10. In this area, the downward vertical migration from source area to upper

unconfined water table immediately underlying soil impacts is impeded by the lower permeability surficial till deposits, constraining the higher VOC impacts to within the perched water horizon. As mentioned in the findings associated with the perched water horizon, and also shown by the VOC distribution on Figure 12, relatively high VOC concentrations migrate into the upper unconfined aquifer after limited lateral migration in the perched horizon, such that relatively elevated VOC impacts at the water table appear laterally offset from the contributing source in overlying soils.

VOC impacts (primarily PCE) detected in the relatively limited saturated thickness of the upper unconfined aquifer at VPB-407 (refer to Hydrogeologic Cross-Section C-C', Figure 4) are partially attributed to the localized migration of dissolved VOCs (primarily TCE) from the northern portion of AOC-3. VOC impacts detected at VPB-407 are also attributed to PCE source area impacts from AOC-2; the contribution of PCE impacts from AOC-2 is explained by a localized northerly migration within the unsaturated zone and immediately at the water table as potentially influenced by a shallow isolated clay lens encountered in VPB-417.

Shallow VOC impacts detected at the water table in well MW-409 (also refer to Hydrogeologic Cross-Section C-C', Figure 4) do not appear to be associated with an identified source area. Although TCE impacts were primarily detected in this well, it is located approximately 300 feet west (side-gradient) of TCE soil impacts delineated in the northern portion of AOC-3. Additionally, based on the analysis of groundwater elevations and groundwater flow patterns, this well appears to be at a hydraulically upgradient location relative to the site, receiving groundwater from the north. Groundwater quality results from the associated VPB (VPB-409) indicate decreasing concentrations with depth, with non-detectable VOC concentrations at the base of the upper unconfined aquifer.

Groundwater quality results for well MW-1, screened in the deeper portion of the upper unconfined aquifer between source areas delineated within AOCs 1 and 2, are considered to be anomalous when compared to nearby VPB groundwater quality results from the same horizon (refer to Figure 11). This well, one of the first wells installed on-site in 1981, has consistently shown low to non-detectable VOC concentrations. Results from nearby VPB samples indicate groundwater at the base of the upper unconfined aquifer beneath AOCs 1 and 2 is impacted by TVOC concentrations in excess of 1,000 μg/L. The higher VPB TVOC concentrations are relied upon in the evaluation of groundwater conditions.

4.3 Lower Confined Aquifer

Although the primary focus of the SRI is on the perched water horizon and the upper unconfined aquifer, it was determined that some data collected during the vertical profile boring program provided information on the lower confined aquifer. This determination was made subsequent to field activities and upon a complete review/interpretation of the on-site geologic framework. Therefore, limited findings related to this hydrogeologic unit are provided below. The following findings are based on groundwater elevations for lower confined monitoring wells and groundwater quality data for vertical profile borings.

4.3.1 Hydrogeologic Conditions

Based on information summarized in previous reports, groundwater flow in the lower confined aquifer is southeasterly, based on data from the three monitoring wells (MW-201 and MW-202, located on-site, and MW-203, located off-site) completed in the deep outwash deposits of the lower confined aquifer. The relative elevation of water levels in wells completed in the upper unconfined aquifer and completed in these lower confined aquifer indicate a vertically upward head gradient. Recent September/October 2002 data for two of the three locations (i.e., MW-202/MW-2M and MW-203/USGS-1) support this upward vertical flow direction; water-level measurements were not collected at the third well, MW-201 (horizontal flow direction within this aquifer unit during September/October 2002 could not, therefore, be evaluated).

4.3.2 Groundwater Quality (VOC Distribution)

Historic groundwater quality results for wells MW-201, MW-202, and MW-203 in the lower confined aquifer indicate that there are no VOC impacts in this hydrogeologic unit. However, during the September/October 2002 on-site source area field activities, low-level concentrations of primary target VOCs were detected in several VPB samples interpreted to be within the lower confined aquifer. For purposes of discussion, refer to cross-sectional Figures 2, 3 and 4 and Table 5.

Four of the 11 lower confined aquifer VPB samples were non-detect for VOCs (at VPB-407, VPB-411, and VPB-415). An additional sample, associated with VPB-417, exhibited very low-level TVOC concentrations, with individual VOCs detected below their respective Groundwater Quality Criteria. The locations with non-detect VOC concentrations, primarily in the northern portion of the rear parking lot in the vicinity

of AOC-3, are significant because the basal aquitard, separating the upper and lower aquifers, is not present just north (upgradient) of these VPB locations. Although the geologic framework indicates a potential for contaminant migration from upper to lower within this limited area, the results indicate the lower confined aquifer is not impacted with VOCs in this portion of the site.

However, the results for the remaining six lower confined aquifer VPB samples indicate low-level TVOC concentrations (less than 10 µg/L) were detected, with individual primary target VOCs (almost solely PCE) at concentrations slightly above the respective Groundwater Quality Criteria. These samples were collected from VPBs drilled within AOC-1 (VPB-418 and VPB-419) and within AOC-2 (VPB-416 and VPB-417). These VPB locations correspond with relatively elevated TVOC concentrations (greater than 1,000 µg/L) detected at the base of the upper unconfined aquifer and where the basal aquitard, separating the two aquifer units, is typically less than 10 ft thick. However, it is important to note the drilling at these VPB locations confirmed the presence of the deeper aquitard within the lower confined aquifer near the bottom of the explorations.

5. Conclusions and Recommendations

Based on the summaries provided in this interim report, preliminary conclusions are as follows:

- The likely presence of NAPL is limited to perched groundwater (southernmost portion of AOC-3) and shallow, unsaturated zone soils (in the northern portion of AOC-3). Although detected concentrations of PCE and/or TCE in some groundwater samples are at or slightly above 1 percent of respective water solubility, the data do not indicate that NAPL exists in the upper unconfined aquifer.

- The groundwater quality distribution of VOCs in perched horizons and the upper unconfined aquifer supports the identification and definition of identified source areas (AOCs 1 through 4) to groundwater that are proposed to be remediated (Panther, February 2003). The one exception is well MW-409, located along the northern (upgradient) property line; detected VOC impacts could be associated with an unidentified off-site, hydraulically upgradient source.

- Although not completely delineated, perched water VOC impacts have been further delineated. Recent investigations further support the previous understanding of limited extent and contaminant migration within the perched horizon.

- The base of the upper unconfined aquifer in the vicinity of each source area AOC was determined through the vertical profile boring program.

- Groundwater quality at the base of the upper unconfined aquifer in the vicinity of each source area AOC was determined through the vertical profile boring program.

- Upgradient delineation activities for upper unconfined aquifer VOC impacts are incomplete; based on information obtained to date, local site geologic conditions (i.e., the presence of the shallow aquitard within the upper unconfined aquifer) need to be considered for the placement of additional monitoring wells (i.e., well clusters).

Consistent with the results, findings, and preliminary conclusions provided above, recommendations for additional SRI activities primarily relate to installation of monitoring wells for purposes of supplemental source area monitoring and upgradient delineation. Table 8 provides a summary of the proposed monitoring well details/rationale to be installed during Phase 1 SRI activities planned for 2003 (and following the completion of identified source area remediation activities). Locations of the proposed (and existing) monitoring wells are shown on Figure 14. The specific recommendations are as follows:

- In addition to eight shallow monitoring wells recently proposed for installation for post-source remediation groundwater monitoring in the Revised RAWP Addendum (Panther, February 2003), the following two additional permanent monitoring wells primarily focusing on the deeper portion of the upper unconfined aquifer are recommended to supplement source area vicinity monitoring: MW-407and MW-417D (AOC-2).

- Additional groundwater investigation in the vicinity of MW-409 (at northern property line) may be warranted; however, it is recommended that the scope of such an investigation, if necessary, be deferred until ISRA facility SI/RI and identified source area remediation activities are completed and potentially provide additional data on this issue.

- One additional perched horizon monitoring well (to the east of the elevated VOC impacts) for continued delineation monitoring of elevated VOC concentrations detected in temporary wells within the southernmost portion of AOC-3.

- Five upgradient delineation monitoring wells within shallow and deeper portions of the upper unconfined aquifer; actual screened intervals will be determined in the field based on vertical profile boring and/or pilot soil boring results. It should be noted that proposed location MW-501/MW-501D is the same as originally proposed in the SRIW and SRIW Addendum (originally designated MW-407).

- The three 3 existing lower confined aquifer monitoring wells should be included in the upcoming SRI Phase 1 area-wide groundwater monitoring program (including water-level measurements) to confirm the lower confined aquifer, regionally, is not impacted.

This interim report provides a summary and limited evaluation of data generated as part of the Phase 1 on-site investigation. Additional work activities, as outlined in the SRIW and SRIW Addendum, are planned on-site and off-site. The findings of these investigations, as well as a complete evaluation of more regional hydrogeologic and analytical results will be provided separately.

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Table 1. Summary of Vertical Profile Boring Completion Details,
On-Site Source Area Activities, AOC-11 (Groundwater),
Phase 1 Supplemental Remedial Investigation,
Airtron Division of Litton Systems, Inc. Hanover, New Jersey.

VPB Designation	Land Surface (ft, msl)	Total Depth (ft, bls)
VPB-301D	392.08	116
VPB-407	394.86	106
VPB-408	392.50	96
VPB-409	398.28	96
VPB-411	390.80	108
VPB-412	391.89	96
VPB-413	392.21	96
VPB-414	392.21	96
VPB-415	391.57	106
VPB-416	393.7 (E)	96
VPB-417	394.99	116
VPB-418	397.43	121
VPB-419	398.29	116
VPB-PDI-1	391.20	66
VPB-PDI-2	391.7 (E)	51

Notes and Abbreviations:

VPB	Vertical Profile Boring
PDI	Pre-design investigation
ft, msl	feet, mean sea level
ft, bls	feet, below land surface
E	Estimated

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Table 2. Summary of Area-Wide Monitoring Well and Temporary Well Completion Details [1,2], On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 Supplemental Remedial Investigation, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

LOCATION	WELL DETAILS								SURVEY DATA (4)		
	Well Designation (3)	Alternate Well Designation (DBMS SITE_ID)	Installed By	Installation Date	Screened Aquifer	Screen I.D. and Material	Screened Interval (ft, bls)	Screen Length (ft)	Land Surface	Top of Inner Casing (5)	Top of Outer Casing
Airtron Property	USGS-2	USGS-02	Airtron	1952	Upper Unconfined	17 in. Steel	76-84	8	401.05	401.05	402.28
	USGS-3	USGS-03	Airtron	1952	Upper Unconfined	17 in. Steel	60-68	8	396.00	396.29	397.33
	MW-2M	AIR-MW-02M	Airtron	1980	Upper Unconfined	2 in. PVC	49-69	20	402.64	403.82	404.58
	MW-1	AIR-MW-01	Airtron	1981	Upper Unconfined	3 in. PVC	65-75	10	396.20	397.72	398.03
	MW-2	AIR-MW-02	Airtron	1981	Upper Unconfined	3 in. PVC	70-75	5	403.10	404.69	405.04
	MW-3	AIR-MW-03	Airtron	1981	Upper Unconfined	3 in. PVC	55-65	10	396.60	398.02	398.35
	MW-201	AIR-MW-201	Airtron	1987	Lower Confined	4 in. PVC	116-126	10	398.49	397.62	397.99
	MW-202	AIR-MW-202	Airtron	1987	Lower Confined	4 in. PVC	118-125	7	402.60	403.83	404.07
	MW-204	AIR-MW-204	Airtron	1987	Upper Unconfined	4 in. PVC	47-67	20	400.61	401.98	403.46
	MW-301	AIR-MW-301S	Airtron	1989	Perched	4 in. PVC	3-18	15	392.06	393.70	394.04
	MW-302	AIR-MW-302	Airtron	1989	Upper Unconfined	4 in. PVC	38-68	30	401.00	402.47	402.91
	MW-401	AIR-MW-401S	Airtron	1997	Perched	2 in. PVC	7-22	15	389.80	392.39	392.65
	MW-402	AIR-MW-402S	Airtron	1997	Perched	2 in. PVC	7-22	15	389.60	392.20	392.49
	MW-403	AIR-MW-403S	Airtron	1997	Perched	2 in. PVC	7-22	15	397.40	399.98	400.27
	MW-404S	AIR-MW-404S	Airtron	1998	Perched	2 in. PVC	5-20	15	388.50	390.70	390.87
	MW-404D	AIR-MW-404D	Airtron	1998	Upper Unconfined	2 in. PVC	31-46	15	389.20	392.56	392.57
	MW-405	AIR-MW-405S	Airtron	1998	Perched	2 in. PVC	7.4-22.4	15	388.40	391.12	391.37
	MW-406	AIR-MW-406	Airtron	1998	Upper Unconfined	2 in. PVC	34-49	15	392.10	394.69	395.26
	MW-409	AIR-MW-409	Airtron	2002	Upper Unconfined	2 in. PVC	36.5-51.5	15	398.31	400.92	401.08
	RW-1	AIR-RW-01	Airtron	1994	Upper Unconfined	6 in. PVC	50-90	40	N/A	404.96	N/A
	PZ-1	AIR-PZ-01	Airtron	1994	Upper Unconfined	2 in. PVC	40-90	50	N/A	404.24	404.46
	PZ-2	AIR-PZ-02	Airtron	1994	Upper Unconfined	2 in. PVC	39-89	50	N/A	405.08	405.28
	TW-420S	(temporary)	Airtron	9/30/02	Perched	1 in. PVC	9.2-19.2	10	390.73	390.73	N/A
	TW-421S	(temporary)	Airtron	9/30/02	Perched	1 in. PVC	14.2-19.2	5	391.57	391.57	N/A
	TW-422S	(temporary)	Airtron	9/30/02	Perched	1 in. PVC	9.5-19.5	10	390.89	390.89	N/A
	TW-423S	(temporary)	Airtron	9/30/02	Perched	1 in. PVC	9.7-19.7	10	392.46	392.46	N/A
	TW-301S	(temporary)	Airtron	9/30/02	Perched	1 in. PVC	15.0-20.0	5	391.61	391.61	N/A
Mennen Property	P-1	MEN-P-01	Mennen	1953	Upper Unconfined	17 in. Steel	56-76	20	399.50	392.28	399.48
	P-2	MEN-P-02	Mennen	1953	Upper Unconfined	6 in. Steel	75-95	20	394.60	386.63	394.76
	MEN.MW-1	MEN-MW-01	Mennen	1985	Upper Unconfined	4 in. PVC	40-60	20	394.10	397.33	397.52
	MEN.MW-2	MEN-MW-02	Mennen	1985	Upper Unconfined	4 in. PVC	40-60	20	392.80	394.51	395.58
	MEN.MW-3	MEN-MW-03	Mennen	1987	Upper Unconfined	4 in. PVC	36-56	20	383.40	385.33	385.81
	MEN.MW-4	MEN-MW-04	Mennen	1987	Upper Unconfined	4 in. PVC	40-60	20	390.90	392.59	393.00
	MEN.MW-5	MEN-MW-05	Mennen	1987	Upper Unconfined	4 in. PVC	27-57	30	392.10	394.17	394.75
	MEN.MW-6	MEN-MW-06	Mennen	1987	Upper Unconfined	4 in. PVC	43.7-63.7	20	384.60	386.51	386.74
	MEN.MW-7	MEN-MW-07	Mennen	1987	Upper Unconfined	4 in. PVC	43-63	20	397.30	398.59	398.88
	MW-305	AIR-MW-305	Airtron	1989	Upper Unconfined	4 in. PVC	39-69	30	392.10	391.74	392.12
	MW-306	AIR-MW-306	Airtron	1990	Upper Unconfined	4 in. PVC	38-58	20	392.80	392.53	392.83
	MW-307	AIR-MW-307	Airtron	1990	Upper Unconfined	4 in. PVC	36.5-56.5	20	389.90	390.43	390.73
	MEN.MW-11	MEN-MW-11	Mennen	1993	Upper Unconfined	2 in. PVC	53-63	10	389.51	389.23	389.52
	MEN.MW-12	MEN-MW-12	Mennen	1993	Upper Unconfined	2 in. PVC	71.5-81.5	10	391.96	391.76	391.97
	MEN.MW-13	MEN-MW-13	Mennen	1993	Upper Unconfined	2 in. PVC	53-63	10	400.35	399.95	400.36
	MEN.MW-14	MEN-MW-14	Mennen	1993	Upper Unconfined	2 in. PVC	53.5-63.5	10	401.35	401.13	401.35
	MEN.MW-15	MEN-MW-15	Mennen	1993	Upper Unconfined	2 in. PVC	67-77	10	399.21	398.94	399.24
	MEN.MW-16	MEN-MW-16	Mennen	1993	Upper Unconfined	2 in. PVC	29.5-39.5	10	381.48	383.36	384.60
	MEN.MW-17	MEN-MW-17	Mennen	1993	Upper Unconfined	2 in. PVC	50-60	10	391.65	393.89	394.11
	MEN.MW-18	MEN-MW-18	Mennen	1993	Upper Unconfined	2 in. PVC	37-47	10	392.19	394.19	394.43
	MW-305A	MEN-MW-305A	Mennen	1993	Upper Unconfined	2 in. PVC	37-47	10	392.11	391.83	392.14
	MW-306A	MEN-MW-306A	Mennen	1993	Upper Unconfined	2 in. PVC	39-49	10	382.87	392.44	392.89
Warehouse Property	USGS-1	USGS-01	Airtron	1952	Upper Unconfined	17 in. Steel	78-86	14	402.00	400.64	402.02
	MEN.MW-10	MEN-MW-10	Mennen	1986	Upper Unconfined	4 in. PVC	40-55	15	389.20	390.97	391.21
	MW-203	AIR-MW-203	Airtron	1987	Lower Confined	4 in. PVC	122-130	8	401.39	402.64	403.16
	MW-205	AIR-MW-205	Airtron	1987	Upper Unconfined	4 in. PVC	53-58	5	387.50	388.91	389.18
	MW-206	AIR-MW-206	Airtron	1987	Upper Unconfined	4 in. PVC	43-63	20	396.87	396.28	396.70
	MW-303	AIR-MW-303	Airtron	1989	Upper Unconfined	4 in. PVC	39-69	30	390.70	392.72	393.07
	MW-304	AIR-MW-304	Airtron	1989	Upper Unconfined	4 in. PVC	29-79	50	391.20	392.32	393.05
Champion Property	CH-MW-1	CHA-MW-01	Champion	1986	Upper Unconfined	4 in. PVC	32-52	20	395.60	396.01	396.63
AT&T Property	MW-1	ATT-MW-01	AT&T	1996	Perched	4 in. PVC	12-22	10	366.2	369.12	369.28
	MW-2	ATT-MW-02	AT&T	1996	Perched	4 in. PVC	10-20	10	363.1	364.54	364.70
	MW-3	ATT-MW-03	AT&T	1996	Perched	4 in. PVC	8.5-18.5	10	361.1	363.06	363.29
	MW-4	ATT-MW-04	AT&T	1996	Perched	4 in. PVC	8-18	10	369.1	371.66	371.89

See last page for notes and abbreviations

Table 2. Summary of Area-Wide Monitoring Well and Temporary Well Completion Details [1,2], On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 Supplemental Remedial Investigation, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Notes and Abbreviations

ID inner diameter
in. inches
PVC polyvinyl chloride
ft Feet
ft, bls Feet below land surface.
ft, msl Elevation in feet, referenced to mean sea level (NGVD, 1929)
-- Not measured
N/A Not applicable or not available

1. Sources: 1993, ERM-Northeast ECRA/ISRA Site Investigation Report, The Mennen Company.
   SCS Engineers (for RW-1, PZ-1, and PZ-2 details only).
   1996, Langan Engineering, AT&T.
   1998, ARCADIS Geraghty & Miller, SI/RI & RAS Report, Airtron Division of Litton Systems, Inc.
2. Area-wide refers to Airtron, Mennen, Champion, and First Industrial (Warehouse) sites and vicinity.
3. MW-# designates monitoring well
   P-# designates production well
   RW-# designates groundwater extraction/recovery well
   USGS-# indicates large diameter test well
   PZ-# indicates piezometer (for water-level measurement only)
4. Survey data referenced in feet above mean sea level (1929 NGVD) as reported by ERM-Northeast, 1993, except RW-1, PZ-1 and PZ-2 (surveyed by Bruce R. Blair, NJPLS #15098);
   MW-401, MW-402, MW-403 MW-404S/D, MW-405, and MW-406 (surveyed by J. Peter Borbas, NJ GS #31653); and
   MW-301 (resurveyed by J. Peter Borbas, NJ GS #31653, during September 1997). NOTE: MW-401 resurveyed February 1998.
   MW-302 Protective steel casing repaired on June 16, 2000; Measuring Point (top of interior PVC casing) appears unaffected and existing surveyed MP elevation presumed to be accurate. Resurvey will be performed during Supplemental Remedial Investigation activities.
   MW-409 (surveyed by Millennium Surveying & Engineering, Inc., October 2002).
5. Additional comments on survey information related to calculating representative groundwater elevations:
   MEN-MW-18 (due to well casing integrity and MP accuracy issues identified since April 1999); and
   MEN-MW-4 (unable to be located due to apparent surface regrading in the vicinity; presumed destroyed since April 2000).
   MW-303 (integrity of well casing reportedly compromised [SCS Engineers]; groundwater elevation is considered anomalous).
   MEN-MW-12 (well casing damaged, apparently by plow hitting curb box; inner PVC casing bent at angle likely affecting accuracy of MP elevation).
   MEN-MW-5 (cut to flush-mount; MP elevation no longer accurate - will need to be resurveyed).
   MEN-MW-6 (cut to flush-mount; MP elevation no longer accurate - will need to be resurveyed).
   MW-307 (cut to flush-mount; MP elevation no longer accurate - will need to be resurveyed).
   PVC casing for RW-1 capped with a metal plate. Elevation is for top of plate attached to PVC casing.
   For USGS-designated wells, measuring point is steel plate casing.

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Table 3. Summary of September and October 2002 Groundwater Elevations, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 Supplemental Remedial Investigation, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

LOCATION	WELL DETAILS						SURVEY DATA (2)	WATER-LEVEL DATA			WATER-LEVEL DATA			WATER-LEVEL DATA		
	Well Designation (1)	Alternate Well Designation	Installed By	Installation Date	Screened Aquifer	Screened Interval (ft, bls)	Measuring Point Elevation (ft, msl) (3)	Date (9/10/02)	Depth to Water (ft) (4)	Water-Level Elevation (ft, msl)	Date	Depth to Water (ft) (4)	Water-Level Elevation (ft, msl)	Date (10/31/02)	Depth to Water (ft) (4)	Water-Level Elevation (ft, msl)
Airtron Property	USGS-2	USGS-02	Airtron	1952	Upper Unconfined	76-84	401.05		50.14	350.91	–	–	–		49.94	351.11
	USGS-3	USGS-03	Airtron	1952	Upper Unconfined	60-68	396.29		37.97	358.32	–	–	–		37.89	358.40
	MW-2M	AIR-MW-02M	Airtron	1980	Upper Unconfined	49-69	403.82		57.48	346.34	–	–	–		–	–
	MW-1	AIR-MW-01	Airtron	1981	Upper Unconfined	65-75	397.72		41.64	356.08	10/3/02	41.70	356.02		40.86	356.86
	MW-2	AIR-MW-02	Airtron	1981	Upper Unconfined	70-75	404.69		58.46	346.23	–	–	–		58.42	346.27
	MW-3	AIR-MW-03	Airtron	1981	Upper Unconfined	55-65	398.02		46.84	351.18	10/3/02	46.98	351.04		47.18	350.84
	MW-201	AIR-MW-201	Airtron	1987	Lower Confined	116-126	397.62		–	–	–	–	–		–	–
	MW-202	AIR-MW-202	Airtron	1987	Lower Confined	118-125	403.83		–	–	–	–	–		47.19	356.64
	MW-204	AIR-MW-204	Airtron	1987	Upper Unconfined	47-67	401.98		53.83	348.15	–	–	–		53.83	348.15
	MW-301	AIR-MW-301S	Airtron	1989	Perched	3-18	393.70		14.10	379.60	10/3/02	14.44	379.26		–	–
	MW-302	AIR-MW-302	Airtron	1989	Upper Unconfined	38-68	402.47		51.55	350.92	–	–	–		52.88	349.59
	MW-401	AIR-MW-401S	Airtron	1997	Perched	7-22	392.39		18.59	373.80	10/3/02	14.00	378.39		10.49	381.90
	MW-402	AIR-MW-402S	Airtron	1997	Perched	7-22	392.20		20.70	371.50	10/3/02	12.06	380.14		10.42	381.78
	MW-403	AIR-MW-403S	Airtron	1997	Perched	7-22	399.98		16.74	383.24	–	–	–		–	–
	MW-404S	AIR-MW-404S	Airtron	1998	Perched	5-20	390.70		14.55	376.15	10/3/02	12.42	378.28		9.64	381.06
	MW-404D	AIR-MW-404D	Airtron	1998	Upper Unconfined	31-46	392.56		33.87	358.69	10/3/02	34.02	358.54		34.05	358.51
	MW-405	AIR-MW-405S	Airtron	1998	Perched	7.4-22.4	391.12		DRY	< 366	–	–	–		DRY	< 366
	MW-406	AIR-MW-406	Airtron	1998	Upper Unconfined	34-49	394.69		42.47	352.22	10/3/02	42.57	352.12		42.72	351.97
	MW-409	AIR-MW-409	Airtron	2002	Upper Unconfined	36.5-51.5	400.92		–	–	–	–	–		42.19	358.73
	RW-1	AIR-RW-01	Airtron	1994	Upper Unconfined	50-90	404.96		–	–	–	–	–		64.65	340.31
	PZ-1	AIR-PZ-01	Airtron	1994	Upper Unconfined	40-90	404.24		57.65	346.59	–	–	–		57.9	346.34
	PZ-2	AIR-PZ-02	Airtron	1994	Upper Unconfined	39-89	405.08		58.7	346.38	–	–	–		–	–
	VPB-408	(temporary)	Airtron	9/10/02	Upper Unconfined	41	392.5		35	(5) 357.5	–	N/A	N/A		N/A	N/A
	TW-420S	(temporary)	Airtron	9/30/02	Perched	9.2-19.2	390.73		N/A	N/A	9/30/02	14.63	376.10		N/A	N/A
	TW-421S	(temporary)	Airtron	9/30/02	Perched	14.2-19.2	391.57		N/A	N/A	9/30/02	8.13	383.44		N/A	N/A
	TW-422S	(temporary)	Airtron	9/30/02	Perched	9.5-19.5	390.89		N/A	N/A	9/30/02	3.3	387.59		N/A	N/A
	TW-423S	(temporary)	Airtron	9/30/02	Perched	9.7-19.7	392.46		N/A	N/A	9/30/02	17.41	375.05		N/A	N/A
	TW-301S	(temporary)	Airtron	9/30/02	Perched	15.0-20.0	391.61		N/A	N/A	9/30/02	14.95	376.66		N/A	N/A
Mennen Property	P-1	MEN-P-01	Mennen	1953	Upper Unconfined	56-76	392.28		–	–	–	–	–		–	–
	P-2	MEN-P-02	Mennen	1953	Upper Unconfined	75-95	386.63		–	–	–	–	–		–	–
	MEN.MW-1	MEN-MW-01	Mennen	1985	Upper Unconfined	40-60	397.33		–	–	–	–	–		50.68	346.65
	MEN.MW-2	MEN-MW-02	Mennen	1985	Upper Unconfined	40-60	394.51		–	–	–	–	–		48.41	346.10
	MEN.MW-3	MEN-MW-03	Mennen	1987	Upper Unconfined	36-56	385.33		–	–	–	–	–		42.12	343.21
	MEN.MW-4	MEN-MW-04	Mennen	1987	Upper Unconfined	40-60	392.59		–	–	–	–	–		–	–
	MEN.MW-5	MEN-MW-05	Mennen	1987	Upper Unconfined	27-57	394.17		–	–	–	–	–		42.89	351.28
	MEN.MW-6	MEN-MW-06	Mennen	1987	Upper Unconfined	43.7-63.7	386.51		–	–	–	–	–		36.84	349.67
	MEN.MW-7	MEN-MW-07	Mennen	1987	Upper Unconfined	43-63	398.59		–	–	–	–	–		51.87	346.72
	MW-305	AIR-MW-305	Airtron	1989	Upper Unconfined	39-69	391.74		–	–	–	–	–		41.99	349.75
	MW-306	AIR-MW-306	Airtron	1990	Upper Unconfined	38-58	392.53		–	–	–	–	–		43.19	349.34
	MW-307	AIR-MW-307	Airtron	1990	Upper Unconfined	36.5-56.5	390.43		–	–	–	–	–		–	349.27
	MEN.MW-11	MEN-MW-11	Mennen	1993	Upper Unconfined	53-63	389.23		–	–	–	–	–		39.70	349.53
	MEN.MW-12	MEN-MW-12	Mennen	1993	Upper Unconfined	71.5-81.5	391.76		–	–	–	–	–		45.14	346.62
	MEN.MW-13	MEN-MW-13	Mennen	1993	Upper Unconfined	53-63	399.95		–	–	–	–	–		53.37	346.58
	MEN.MW-14	MEN-MW-14	Mennen	1993	Upper Unconfined	53.5-63.5	401.13		–	–	–	–	–		54.58	346.55
	MEN.MW-15	MEN-MW-15	Mennen	1993	Upper Unconfined	67-77	398.94		–	–	–	–	–		51.15	347.79
	MEN.MW-16	MEN-MW-16	Mennen	1993	Upper Unconfined	29.5-39.5	383.36		–	–	–	–	–		41.04	342.32
	MEN.MW-17	MEN-MW-17	Mennen	1993	Upper Unconfined	50-60	393.89		–	–	–	–	–		58.80	335.09
	MEN.MW-18	MEN-MW-18	Mennen	1993	Upper Unconfined	37-47	394.19		–	–	–	–	–		–	–
	MW-305A	MEN-MW-305A	Mennen	1993	Upper Unconfined	37-47	391.63		–	–	–	–	–		42.32	349.51
	MW-306A	MEN-MW-306A	Mennen	1993	Upper Unconfined	39-49	392.44		–	–	–	–	–		43.20	349.24

See last page for notes and abbreviations

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Table 3. Summary of September and October 2002 Groundwater Elevations, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 Supplemental Remedial Investigation, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

LOCATION	WELL DETAILS						SURVEY DATA (2)	WATER-LEVEL DATA			WATER-LEVEL DATA			WATER-LEVEL DATA		
	Well Designation (1)	Alternate Well Designation	Installed By	Installation Date	Screened Aquifer	Screened Interval (ft, bls)	Measuring Point Elevation (ft, msl) (3)	Date (9/10/02)	Depth to Water (ft) (4)	Water-Level Elevation (ft, msl)	Date	Depth to Water (ft) (4)	Water-Level Elevation (ft, msl)	Date (10/31/02)	Depth to Water (ft) (4)	Water-Level Elevation (ft, msl)
Warehouse Property	USGS-1	USGS-01	Airtron	1952	Upper Unconfined	78-86	400.64		–	–	–	–			54.14	346.50
	MEN.MW-10	MEN-MW-10	Mennen	1986	Upper Unconfined	40-55	390.97		–	–	–	–	–		41.16	349.81
	MW-203	AIR-MW-203	Airtron	1987	Lower Confined	122-130	402.64		–	–	–	–	–		49.65	352.99
	MW-205	AIR-MW-205	Airtron	1987	Upper Unconfined	53-58	388.91		–	–	–	–	–		32.17	356.74
	MW-206	AIR-MW-206	Airtron	1987	Upper Unconfined	43-63	396.28		–	–	–	–	–		46.23	350.05
	MW-303	AIR-MW-303	Airtron	1989	Upper Unconfined	39-69	392.72		–	–	–	–	–		48.08	344.64
	MW-304	AIR-MW-304	Airtron	1989	Upper Unconfined	29-79	392.32		–	–	–	–	–		42.44	349.88
Champion Property	CH-MW-1	CHA-MW-01	Champion	1986	Upper Unconfined	32-52	396.01		40.19	355.82	–	–	–		–	–
AT&T Property	MW-1	ATT-MW-01	AT&T	1996	Perched	12-22	369.12		–	–	–	–	–		–	–
	MW-2	ATT-MW-02	AT&T	1996	Perched	10-20	364.54		–	–	–	–	–		–	–
	MW-3	ATT-MW-03	AT&T	1996	Perched	8.5-18.5	363.06		–	–	–	–	–		–	–
	MW-4	ATT-MW-04	AT&T	1996	Perched	8-18	371.66		–	–	–	–	–		–	–

See last page for notes and abbreviations

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Table 3. Summary of September and October 2002 Groundwater Elevations, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 Supplemental Remedial Investigation, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Notes and Abbreviations

Sources: 1993, ERM-Northeast ECRA/ISRA Site Investigation Report, The Mennen Company.
SCS Engineers (for RW-1, PZ-1, and PZ-2 details only).
1996, Langan Engineering, AT&T.
1998, ARCADIS Geraghty & Miller, SI/RI & RAS Report, Airtron Division of Litton Systems, Inc.

ft Feet
ft, bls Feet below land surface.
ft, msl Elevation in feet, referenced to mean sea level (NGVD, 1929)
– Not measured
N/A Not applicable or not available

1. MW-# designates monitoring well
P-# designates production well
RW-# designates groundwater extraction/recovery well
USGS-# indicates large diameter test well
PZ-# indicates piezometer (for water-level measurement only)
VPB-H indicates vertical profile boring (temporary)
TW-H indicates vtemporary well (temporary)
2. Survey data referenced in feet above mean sea level (1929 NGVD) as reported by ERM-Northeast, 1993, except RW-1, PZ-1 and PZ-2 (surveyed by Bruce R. Blair, NJPLS #15098); MW-401, MW-402, MW-403 MW-404S/D, MW-405, and MW-406 (surveyed by J. Peter Borbas, NJ GS #31653); and MW-301 (resurveyed by J. Peter Borbas, NJ GS #31653, during September 1997). NOTE: MW-401 resurveyed February 1998. MW-302 Protective steel casing repaired on June 16, 2000; Measuring Point (top of interior PVC casing) appears unaffected and existing surveyed MP elevation presumed to be accurate. Resurvey will be performed during Supplemental Remedial Investigation activities.
MW-409 (Surveyed by Millennium Surveying & Engineering, Inc., October 2002).
3. Additional comments on survey information related to calculating representative groundwater elevations:
MEN-MW-18 (due to well casing integrity and MP accuracy issues identified since April 1999); and
MEN-MW-4 (unable to be located due to apparent surface regrading in the vicinity; presumed destroyed since April 2000).
4. Depth-to-water measured in feet below Measuring Point (MP) on dates indicated.
MW-303 (integrity of well casing reportedly compromised [SCS Engineers]; groundwater elevation is considered anomalous).
MEN-MW-12 (well casing damaged, apparently by plow hitting curb box; inner PVC casing bent at angle likely affecting accuracy of MP elevation).
MEN-MW-5 (cut to flush-mount; MP elevation no longer accurate - will need to be resurveyed).
MEN-MW-6 (cut to flush-mount; MP elevation no longer accurate - will need to be resurveyed).
MW-307 (cut to flush-mount; MP elevation no longer accurate - will need to be resurveyed).
PVC casing for RW-1 capped with a metal plate. Elevation is for top of plate attached to PVC casing.
For USGS-designated wells, measuring point is steel plate casing.
5. VPB-408 water-level measurement was calculated after approximately 3 hours of stabilization; casing open at bottom of borehole at a depth of 41 ft bls.

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Table 4. Summary of NAPL Field Screening Results, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 Supplemental Remedial Investigation, Airtron Division of Litton Systems, Inc. Hanover, New Jersey.

VPB Designation	Depth Interval (ft, bls)	Range of PID Readings (ppm)	NAPL Presence	Comments
VPB-408	6 to 8.5	171 - 2200	(+)	
	8.5 to 11	183 - 1300	(+)	
	11 to 13.5	243 - 4500	(+)	
	13.5 to 16	471 - 6700	(+)	
	16 to 18.5	20.9 - 354	(+)	
	18.5 to 21	16 - 540	(-)	
VPB-412	3 to 6	0.3 - 113	(-)	
	6 to 8.5	28 - 138	(-)	
VPB-415	2.5 to 3	95	(+)	
VPB-PDI-2	0 to 3	17.4 - 124	(+)	
	3 to 6	18.4 - 124	(+)	
	5.5 to 6	564	(+)	Separate Screen for Bottom 6 Inches of Core
VPB-411	6 to 8.5	2.1 - 72.4	(-)	Screened because of odor.
	8.5 to 11	3.7 - 39.4	(-)	Screened because of odor.
	26 to 28.5	5.5 - 64.9	(-)	Screened because of odor.

Notes and Abbreviations:

VPB	Vertical Profile Boring
ft, bls	feet, below land surface
PID	Photo-ionization detector
ppm	parts per million
NAPL	Non-Aqueous Phase Liquid
(+)	Positive indication of NAPL presence
(-)	Negative indication of NAPL presence

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Table 5. Concentrations of VOCs in VPB Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	VPB Designation / Sample ID / Sample Date / Sampling Interval (ft, bls)	VPB-301D VPB301D(46-51) 09/25/02 46-51	VPB-301D VPB301D(61-66) 09/27/02 61-66	VPB-301D VPB301D(81-86) 09/25/02 81-86	VPB-407 VPB407(56-61) 09/30/02 56-61	VPB-407 VPB407(73-76) 09/30/02 73-76
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)					
Tetrachloroethene	1	**197**	**2.59**	<0.91	**2080 D**	<2.75
Trichloroethene	1	**63.2**	**1.16**	<0.17	**857 D**	<0.17
cis-1,2-Dichloroethene	10	**56.9**	0.393	<0.15	**140**	<0.15
trans-1,2-Dichloroethene	100	5.81	<0.17	<0.17	3.29	<0.17
Vinyl chloride	5	<0.3	0.57	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32	<0.32	3.2	<0.32
Remaining Compounds:						
Chloromethane	30	<0.33	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	<0.3	0.422	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22	<0.22
Chloroform	6	0.523	5.18	<0.26	0.583	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	**2.33**	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	2.72	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	3.53	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		323.43	18.47	0.00	3084.50	0.00

See last page for footnotes.

Table 5. Concentrations of VOCs in VPB Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	VPB Designation / Sample ID / Sample Date / Sampling Interval (ft, bls)	VPB-407 VPB407(93-96) 09/30/02 93-96	VPB-408 VPB408(74-76) 09/11/02 74-76	VPB-408 VPB408(86-91) 09/11/02 86-91	VPB-409 VPB409(52-56) 09/23/02 52-56	VPB-409 VPB409(73-76) 09/23/02 73-76
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)					
Tetrachloroethene	1	<1.23	<0.27	<0.27	**7.47**	<0.27
Trichloroethene	1	<0.17	<0.17	0.539	**37**	<0.17
cis-1,2-Dichloroethene	10	<0.15	<0.15	<0.15	1.07	<0.15
trans-1,2-Dichloroethene	100	<0.17	<0.17	<0.17	<0.17	<0.17
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32	<0.32	<0.32	<0.32
Remaining Compounds:						
Chloromethane	30	<0.33	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	<0.3	<0.3	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22	<0.22
Chloroform	6	<0.26	<0.26	<0.26	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		0.00	0.00	0.54	45.54	0.00

See last page for footnotes.

Table 5. Concentrations of VOCs in VPB Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	VPB Designation / Sample ID / Sample Date / Sampling interval (ft, bls)	VPB-409 VPB409(86-90) 09/23/02 86-90	VPB-411 VPB411(48-51) 09/24/02 48-51	VPB-411 VPB411(72-76) 09/24/02 72-76	VPB-411 VPB411(92-96) 09/25/02 92-96	VPB-412 VPB412(47-49) 09/13/02 47-49
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)					
Tetrachloroethene	1	<0.27	**90.7**	<0.27	<0.27	**3600 D**
Trichloroethene	1	<0.17	**34.9**	<0.17	<0.17	**11600 D**
cis-1,2-Dichloroethene	10	<0.15	9.56	<0.15	<0.15	**468 D**
trans-1,2-Dichloroethene	100	<0.17	1.02	<0.17	<0.17	28.4
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32	<0.32	<0.32	6.60
Remaining Compounds:						
Chloromethane	30	<0.33	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	<0.3	<0.3	0.481
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22	<0.22
Chloroform	6	<0.26	<0.26	<0.26	<0.26	0.424
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25	0.743
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		0.00	136.18	0.00	0.00	15704.65

See last page for footnotes.

Table 5. Concentrations of VOCs in VPB Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	VPB Designation / Sample ID / Sample Date / Sampling Interval (ft, bls)	NJDEP Groundwater Quality Standard (2)	VPB-412 VPB412(72-74) 09/13/02 72-74	VPB-412 VPB412(91-93) 09/13/02 91-93	VPB-413 VPB413(56-57) 09/14/02 56-57	VPB-413 VPB-413 (72-76) 09/14/02 72-76	VPB-413 VPB-413 (82-86) 09/14/02 82-86
Primary Target Compounds:							
Tetrachloroethene		1	**7.26**	**1.32**	**45.9**	<0.27	<0.27
Trichloroethene		1	**73.8**	0.872	**5740 D**	**8.41**	0.586
cis-1,2-Dichloroethene		10	<0.15	<0.15	**75.5**	<0.15	<0.15
trans-1,2-Dichloroethene		100	<0.17	<0.17	1.41	<0.17	<0.17
Vinyl chloride		5	<0.3	<0.3	0.74	<0.3	<0.3
1,1,1-Trichloroethane		30	<0.32	<0.32	<0.32	<0.32	<0.32
Remaining Compounds:							
Chloromethane		30	<0.33	<0.33	<0.33	<0.33	<0.33
Bromomethane		10	<0.34	<0.34	<0.34	<0.34	<0.34
Chloroethane		--	<0.21	<0.21	<0.21	<0.21	<0.21
Methylene chloride		2	**4.82**	<1.99	**17.9**	<1.99	<1.99
Acetone		700	<0.69	<0.69	<0.69	<0.69	<0.69
Carbon disulfide		--	<0.27	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene		2	<0.3	<0.3	**3.4**	<0.3	<0.3
1,1-Dichloroethane		70	<0.22	<0.22	<0.22	<0.22	<0.22
Chloroform		6	1.13	<0.26	<0.26	<0.26	<0.26
1,2-Dichloroethane		2	<0.25	<0.25	<0.25	<0.25	<0.25
2-Butanone		300	<0.25	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride		2	<0.25	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane		1	<0.23	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane		2	<0.19	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane		1	<0.18	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene		--	<0.16	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane		10	0.608	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane		3	<0.26	<0.26	<0.26	<0.26	<0.26
Benzene		1	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene		--	<0.22	<0.22	<0.22	<0.22	<0.22
Bromoform		4	0.967	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone		400	<0.26	<0.26	<0.26	<0.26	<0.26
Toluene		1,000	<0.22	<0.22	0.453	<0.22	<0.22
Chlorobenzene		4	<0.18	<0.18	<0.18	<0.18	<0.18
Ethylbenzene		700	<0.15	<0.15	<0.15	<0.15	<0.15
Styrene		100	<0.13	<0.13	<0.13	<0.13	<0.13
Xylene (total)		40	<0.52	<0.52	<0.52	<0.52	<0.52
2-Hexanone		--	<0.25	<0.25	<0.25	<0.25	<0.25
Sum of VOCs			88.59	2.19	5885.30	8.41	0.59

See last page for footnotes.

Table 5. Concentrations of VOCs in VPB Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	VPB Designation / Sample ID / Sample Date / Sampling Interval (ft, bls)	VPB-414 VPB414 (64-66) 09/12/02 63-66	VPB-414 VPB414 (74-76) 09/12/02 74-76	VPB-414 VPB414(91-93.5) 09/12/02 91-93.5	VPB-415 VPB415 (46-51) 09/16/02 46-51	VPB-415 VPB415 (72-76) 09/16/02 72-76
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)					
Tetrachloroethene	1	<0.27	<0.27	<0.27	**113**	<0.27
Trichloroethene	1	**50**	**6.31**	<0.17	**37.8**	<0.17
cis-1,2-Dichloroethene	10	0.721	<0.15	<0.15	**19.4**	<0.15
trans-1,2-Dichloroethene	100	<0.17	<0.17	<0.17	1.61	<0.17
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32	<0.32	<0.32	<0.32
Remaining Compounds:						
Chloromethane	30	<0.33	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	<0.3	<0.3	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22	<0.22
Chloroform	6	<0.26	1.42	<0.26	0.551	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		50.72	7.73	0.00	172.36	0.00

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Table 5. Concentrations of VOCs in VPB Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	VPB Designation / Sample ID / Sample Date / Sampling Interval (ft, bls)	VPB-415 VPB415 (92-95) 09/16/02 92-95	VPB-416 VPB416(44-47) 09/17/02 44-47	VPB-416 REP-1 09/17/02 44-47	VPB-416 VPB416(72-76) 09/17/02 72-76	VPB-416 VPB416(93-96) 09/17/02 93-96
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)					
Tetrachloroethene	1	<0.27	**1720 D**	**1760 D**	**6.2**	**5.08**
Trichloroethene	1	<0.17	**2820 D**	**3020 D**	**4.64**	**1.97**
cis-1,2-Dichloroethene	10	<0.15	**210 D**	**212 D**	<0.15	<0.15
trans-1,2-Dichloroethene	100	<0.17	6.06	5.65	<0.17	<0.17
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	2.46	2.51	<0.32	<0.32
Remaining Compounds:						
Chloromethane	30	<0.33	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	<0.3	<0.3	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22	<0.22
Chloroform	6	<0.26	<0.26	<0.26	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		0.00	4758.52	5000.16	10.84	7.05

See last page for footnotes.

Table 5. Concentrations of VOCs in VPB Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	VPB Designation / Sample ID / Sample Date / Sampling Interval (ft, bls)	VPB-417 VPB417(53-56) 09/26/02 53-56	VPB-417 VPB417(73-76) 09/26/02 73-76	VPB-417 VPB417(91-96) 09/27/02 91-96	VPB-417 VPB417(103-106) 09/27/02 103-106	VPB-418 VPB418(73-76) 09/28/02 73-76
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)					
Tetrachloroethene	1	**1120 D**	**2080 D**	**2.82**	0.989	**1720 D**
Trichloroethene	1	**1250 D**	**1360 D**	0.436	<0.17	**992 D**
cis-1,2-Dichloroethene	10	**69.8**	**167**	<0.15	<0.15	**108**
trans-1,2-Dichloroethene	100	5.43	1.38	<0.17	<0.17	3.1
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	4.41	<0.32	<0.32	2.79
Remaining Compounds:						
Chloromethane	30	<0.33	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	0.83	<0.3	<0.3	0.534
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22	<0.22
Chloroform	6	<0.26	0.558	<0.26	0.363	0.371
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		2445.23	3614.18	3.26	1.35	2826.80

See last page for footnotes.

Table 5. Concentrations of VOCs in VPB Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	VPB Designation / Sample ID / Sample Date / Sampling Interval (ft, bls)	VPB-418 VPB418(103-106) 09/28/02 103-106	VPB-418 VPB418(113-116) 09/28/02 113-116	VPB-419 VPB419(61-66) 09/29/02 61-66	VPB-419 VPB419(71-76) 09/29/02 71-76	VPB-419 REP-2 09/29/02 71-76
Primary Target Compounds:	NJDEP *Groundwater* Quality Standard (2)					
Tetrachloroethene	1	**3.58**	**1.59**	**3110 D**	**2180 D**	**2810 D**
Trichloroethene	1	0.863	<0.17	**1370 D**	**1240 D**	**1300 D**
cis-1,2-Dichloroethene	10	<0.15	<0.15	**176 D**	**152**	**175 D**
trans-1,2-Dichloroethene	100	<0.17	<0.17	14.2	8.53 J	16.6 J
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32	3.67	3.39	4.29
Remaining Compounds:						
Chloromethane	30	<0.33	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	<0.3	0.38	0.493
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22	<0.22
Chloroform	6	<0.26	<0.26	0.936	0.838	1.08
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		4.44	1.59	4674.81	3585.14	4307.46

See last page for footnotes.

Table 5. Concentrations of VOCs in VPB Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	VPB Designation / Sample ID / Sample Date / Sampling Interval (ft, bls)	VPB-419 VPB419(93-96) 09/29/02 93-96	VPB-419 VPB419(112-116) 09/29/02 112-116	VPB-PDI-1 VPB-PDI-1 (64-66) 09/15/02 64-66	VPB-PDI-2 VPB-PDI-2(46-51) 09/18/02 46-51	FIELD BLANK FB9-11-02VPB 09/11/2002
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)					
Tetrachloroethene	1	**7.03**	**2.52**	**18.9**	**536 D**	<0.27
Trichloroethene	1	0.717	<0.17	**3940 D**	**1470 D**	<0.17
cis-1,2-Dichloroethene	10	<0.15	<0.15	**47.6**	**60**	<0.15
trans-1,2-Dichloroethene	100	<0.17	<0.17	0.651	1.33	<0.17
Vinyl chloride	5	<0.3	<0.3	0.6	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32	<0.32	1.05	<0.32
Remaining Compounds:						
Chloromethane	30	<0.33	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	**27.7**	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	**2.92**	<0.3	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22	<0.22
Chloroform	6	<0.26	<0.26	0.845	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	0.361	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		7.75	2.52	4039.58	2068.38	0.00

See last page for footnotes.

Table 5. Concentrations of VOCs in VPB Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	VPB Designation Sample ID Sample Date Sampling Interval (ft, bls)	FIELD BLANK FB9-12-02VPB 09/12/2002	FIELD BLANK FB9-13-02VPB 09/13/2002	FIELD BLANK FB9/14/02VPB 09/14/2002	FIELD BLANK FB9/15/02VPB 09/15/2002	FIELD BLANK FB9/16/02VPB 09/16/2002
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)					
Tetrachloroethene	1	<0.27	<0.27	<0.27	<0.27	<0.27
Trichloroethene	1	<0.17	<0.17	<0.17	<0.17	<0.17
cis-1,2-Dichloroethene	10	<0.15	<0.15	<0.15	<0.15	<0.15
trans-1,2-Dichloroethene	100	<0.17	<0.17	<0.17	<0.17	<0.17
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32	<0.32	<0.32	<0.32
Remaining Compounds:						
Chloromethane	30	<0.33	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	<0.3	<0.3	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22	<0.22
Chloroform	6	<0.26	<0.26	<0.26	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		0.00	0.00	0.00	0.00	0.00

See last page for footnotes.

Table 5. Concentrations of VOCs in VPB Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	VPB Designation Sample ID Sample Date Sampling Interval (ft, bls)	FIELD BLANK FB9/17/02VPB 09/17/2002	FIELD BLANK FB9/18/02VPB 09/18/2002	FIELD BLANK FB9/23/02VPB 09/23/2002	FIELD BLANK FB 9/24/02 VPB 09/24/2002	FIELD BLANK FB9/25/02VPB 09/25/2002
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)					
Tetrachloroethene	1	<0.27	<0.27	<0.27	<0.27	<0.27
Trichloroethene	1	<0.17	<0.17	<0.17	<0.17	<0.17
cis-1,2-Dichloroethene	10	<0.15	<0.15	<0.15	<0.15	<0.15
trans-1,2-Dichloroethene	100	<0.17	<0.17	<0.17	<0.17	<0.17
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32	<0.32	<0.32	<0.32
Remaining Compounds:						
Chloromethane	30	<0.33	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	<0.3	<0.3	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22	<0.22
Chloroform	6	<0.26	<0.26	<0.26	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		0.00	0.00	0.00	0.00	0.00

See last page for footnotes.

Table 5. Concentrations of VOCs in VPB Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	VPB Designation Sample ID Sample Date Sampling Interval (ft, bls)	FIELD BLANK FB9/26/02VPB 09/26/2002	FIELD BLANK FB9/27/02VPB 09/27/2002	FIELD BLANK FB9/28/02VPB 09/28/2002	FIELD BLANK FB9/29/02VPB 09/29/2002	FIELD BLANK FB9/30/02VPB 09/30/2002
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)					
Tetrachloroethene	1	**1.49**	<0.27	<0.27	<0.27	**1.49**
Trichloroethene	1	**1.16**	<0.17	<0.17	<0.17	<0.17
cis-1,2-Dichloroethene	10	<0.15	<0.15	<0.15	<0.15	<0.15
trans-1,2-Dichloroethene	100	<0.17	<0.17	<0.17	<0.17	<0.17
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32	<0.32	<0.32	<0.32
Remaining Compounds:						
Chloromethane	30	<0.33	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34	<0.34
Chloroethane	–	<0.21	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99	<1.99
Acetone	700	12.9	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	–	<0.27	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	<0.3	<0.3	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22	<0.22
Chloroform	6	<0.26	<0.26	<0.26	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	–	<0.16	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	–	<0.22	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52	<0.52
2-Hexanone	–	<0.25	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		15.55	0.00	0.00	0.00	1.49

See last page for footnotes.

Table 5. Concentrations of VOCs in VPB Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	VPB Designation / Sample ID / Sample Date / Sampling Interval (ft, bls)	TRIP BLANK TB9-11-02VPB 09/11/2002	TRIP BLANK TB9-12-02VPB 09/12/2002	TRIP BLANK TB9-13-02VPB 09/13/2002	TRIP BLANK TB9/14/02VPB 09/14/2002	TRIP BLANK TB9/16/02-LVPB 09/16/2002
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)					
Tetrachloroethene	1	<0.27	<0.27	<0.27	<0.27	<0.27
Trichloroethene	1	<0.17	<0.17	<0.17	<0.17	<0.17
cis-1,2-Dichloroethene	10	<0.15	<0.15	<0.15	<0.15	<0.15
trans-1,2-Dichloroethene	100	<0.17	<0.17	<0.17	<0.17	<0.17
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32	<0.32	<0.32	<0.32
Remaining Compounds:						
Chloromethane	30	<0.33	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	<0.3	<0.3	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22	<0.22
Chloroform	6	<0.26	<0.26	<0.26	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		0.00	0.00	0.00	0.00	0.00

See last page for footnotes.

Table 5. Concentrations of VOCs in VPB Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	VPB Designation Sample ID Sample Date Sampling Interval (ft, bls)	TRIP BLANK TB9/17/02VPB 09/17/2002	TRIP BLANK TB9/18/02VPB 09/18/2002	TRIP BLANK TB9/23/02VPB 09/23/2002	TRIP BLANK TB9/24/02AQ.VPB 09/24/2002	TRIP BLANK TB 9/25/02VPB 09/25/2002
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)					
Tetrachloroethene	1	<0.27	<0.27	<0.27	<0.27	<0.27
Trichloroethene	1	<0.17	<0.17	<0.17	<0.17	<0.17
cis-1,2-Dichloroethene	10	<0.15	<0.15	<0.15	<0.15	<0.15
trans-1,2-Dichloroethene	100	<0.17	<0.17	<0.17	<0.17	<0.17
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32	<0.32	<0.32	<0.32
Remaining Compounds:						
Chloromethane	30	<0.33	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	<0.3	<0.3	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22	<0.22
Chloroform	6	<0.26	<0.26	<0.26	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		0.00	0.00	0.00	0.00	0.00

See last page for footnotes.

Table 5. Concentrations of VOCs in VPB Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	VPB Designation Sample ID Sample Date Sampling Interval (ft, bls)	TRIP BLANK TB9/26/02VPB 09/26/2002	TRIP BLANK TB9/27/02VPB 09/27/2002	TRIP BLANK TB9/28/02VPB 09/28/2002	TRIP BLANK TB9/30/02VPB 09/30/2002
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)				
Tetrachloroethene	1	<0.27	<0.27	<0.27	<0.27
Trichloroethene	1	<0.17	<0.17	<0.17	<0.17
cis-1,2-Dichloroethene	10	<0.15	<0.15	<0.15	<0.15
trans-1,2-Dichloroethene	100	<0.17	<0.17	<0.17	<0.17
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32	<0.32	<0.32
Remaining Compounds:					
Chloromethane	30	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	<0.3	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22
Chloroform	6	<0.26	<0.26	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		0.00	0.00	0.00	0.00

See last page for footnotes.

Table 5. Concentrations of VOCs in VPB Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Notes and Abbreviations:

VOC	Volatile organic compounds.
VPB	Vertical Profile Boring
ug/L	Micrograms per Liter.
ft, bls	feet below land surface
REP	Replicate

(1)	Analyses performed by Integrated Analytical Laboratories, LLC of Randolph, New Jersey.
(2)	NJDEP Groundwater Quality Standards are the higher of the Class II-A groundwater quality criteria and Practical Quantitation Levels (PQLs) (Source: Groundwater Quality Standards [N.J.A.C. 7:9-6], January 7, 1993).
D	Analyzed at second dilution factor.
J	Estimated value.
–	Indicates specific standard not available for particular compound.

Bold value indicates detected concentration exceeds NJDEP Groundwater Quality Standard.

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Table 6. Concentrations of VOCs in TW Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	TW Designation: Sample ID Sample Date: Sampling Interval (ft bls):	TW-301S TW-301S 09/30/02 15-20	TW-420S TW-420S 09/30/02 9.2-19.2	TW-421S TW-421S 09/30/02 14.2-19.2	TW-422S TW-422S 09/30/02 9.5-19.5	TW-422S DUP 093002 09/30/02 9.5-19.5
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)					
Tetrachloroethene	1	**259 D**	**1480 D**	**171000 D**	**115**	**97.8**
Trichloroethene	1	**35.3**	**137**	**49200 D**	**11**	**9.15**
cis-1,2-Dichloroethene	10	**67.1**	**8750 D**	**197000 D**	**60.8**	**51.5**
trans-1,2-Dichloroethene	100	0.888	13.5	**1210**	0.618 J	0.43 J
Vinyl chloride	5	**17.1**	**9450 D**	**26500 D**	**97.1 J**	**72.3 J**
1,1,1-Trichloroethane	30	<0.32	<0.32	<16	<0.32	<0.32
Remaining Compounds:						
Chloromethane	30	<0.33	<0.33	<16.5	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<17	<0.34	<0.34
Chloroethane	--	<0.21	23.4	<10.5	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<99.5	<1.99	<1.99
Acetone	700	<0.69	<0.69	**1310**	6.72 J	9.03 J
Carbon disulfide	--	<0.27	<0.27	<13.5	0.551	0.755
1,1-Dichloroethene	2	<0.3	**6.21**	**376**	0.924	0.655
1,1-Dichloroethane	70	<0.22	3.88	**214**	14.1	12
Chloroform	6	<0.26	<0.26	<13	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<12.5	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<12.5	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<12.5	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<11.5	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<9.5	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<9	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<8	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<14.5	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<13	<0.26	<0.26
Benzene	1	0.3	0.364	<10.5	**2.18 J**	**1.76 J**
cis-1,3-Dichloropropene	--	<0.22	<0.22	<11	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<22	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<13	<0.26	<0.26
Toluene	1,000	<0.22	5.41	159	107	93.4
Chlorobenzene	4	<0.18	<0.18	<9	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<7.5	19.8	16.8
Styrene	100	<0.13	<0.13	<6.5	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<26	37.1	32.1
2-Hexanone	--	<0.25	<0.25	<12.5	<0.25	<0.25
Sum of VOCs		379.69	19869.76	445069	472.89	397.68

See last page for footnotes.

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Table 6. Concentrations of VOCs in TW Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	TW Designation: Sample ID Sample Date: Sampling Interval (ft bls):	TW-423S TW-423S 09/30/02 9.7-19.7	FIELD BLANK FB093002VPB 09/30/2002	TRIP BLANK TRIP BLANKVPB 09/30/2002
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)			
Tetrachloroethene	1	**107**	<0.27	<0.27
Trichloroethene	1	**167**	<0.17	<0.17
cis-1,2-Dichloroethene	10	**123**	<0.15	<0.15
trans-1,2-Dichloroethene	100	0.8	<0.17	<0.17
Vinyl chloride	5	**12.3**	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32	<0.32
Remaining Compounds:				
Chloromethane	30	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	1.1	<0.3	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	<0.22
Chloroform	6	<0.26	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25
Sum of VOCs		411.20	0.00	0.00

See last page for footnotes.

Table 6. Concentrations of VOCs in TW Groundwater Samples, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Notes and Abbreviations:

VOC	Volatile organic compounds.
TW	Temporary well
ug/L	Micrograms per Liter.
ft, bls	feet below land surface
DUP	Duplicate
(1)	Analyses performed by Integrated Analytical Laboratories, LLC of Randolph, New Jersey.
(2)	NJDEP Groundwater Quality Standards are the higher of the Class II-A groundwater quality criteria and Practical Quantitation Levels (PQLs) (Source: Groundwater Quality Standards [N.J.A.C. 7:9-6], January 7, 1993).
D	Analyzed at second dilution factor.
J	Estimated value.
–	Indicates specific standard not available for particular compound.

Bold value indicates detected concentration exceeds NJDEP Groundwater Quality Standard.

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Table 7. Concentrations of VOCs in MW Groundwater Samples[1], On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	MW Designation / Sample ID / Sample Date (3) / Sampling Depth (ft, bls) (4) / Screened Interval (ft, bls) (4)	AIR-MW-01 MW-1 09/10/02 69 65-75	AIR-MW-02 MW-2 09/12/02 71 70-75	AIR-MW-03 MW-3 09/10/02 58 55-65	AIR-MW-03 REP-1 09/10/02 58 55-65
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)				
Tetrachloroethene	1	<0.27	**1030 D**	**849 D**	**839 D**
Trichloroethene	1	<0.17	**656 D**	**987 D**	**982 D**
cis-1,2-Dichloroethene	10	<0.15	**81.8**	**82.6**	**80.2**
trans-1,2-Dichloroethene	100	<0.17	0.805	0.867	0.805
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32	<0.32	<0.32
Remaining Compounds:					
Chloromethane	30	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	<0.3	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22
Chloroform	6	<0.26	0.687	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	0.273	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		0.27	1769.29	1919.47	1902.01

See last page for footnotes.

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Table 7. Concentrations of VOCs in MW Groundwater Samples[1], On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	MW Designation / Sample ID / Sample Date (3) / Sampling Depth (ft, bls) (4) / Screened Interval (ft, bls) (4)	AIR-MW-03 / MW-3 / 10/30/2002 / NA / 55-65	AIR-MW-204 / MW-204 / 09/12/02 / 58 / 47-67	AIR-MW-206 / MW-206 / 10/30/2002 / NA / 43-63	AIR-MW-301S / MW-301S / 09/11/02 / 15 / 3-18
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)				
Tetrachloroethene	1	**1050 D**	**1.79**	**1150 D**	**1010 D**
Trichloroethene	1	**1300 D**	**2.88**	**1310 D**	**198**
cis-1,2-Dichloroethene	10	**119**	<0.15	**180**	**266 D**
trans-1,2-Dichloroethene	100	0.548	<0.17	1.12	1.28
Vinyl chloride	5	<0.3	<0.3	<0.3	**155**
1,1,1-Trichloroethane	30	1.55	<0.32	1.56	<0.32
Remaining Compounds:					
Chloromethane	30	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	<0.3	1.15
1,1-Dichloroethane	70	<0.22	<0.22	0.527	2.85
Chloroform	6	<0.26	<0.26	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	0.24	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		2471.10	4.91	2643.21	1634.28

See last page for footnotes.

Table 7. Concentrations of VOCs in MW Groundwater Samples[1], On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	MW Designation / Sample ID / Sample Date (3) / Sampling Depth (ft, bls) (4) / Screened Interval (ft, bls) (4)	AIR-MW-302 MW-302(58) 09/12/02 56 38-68	AIR-MW-302 MW-302(66) 09/12/02 64 38-68	AIR-MW-302 MW-302 10/30/2002 NA 38-68	AIR-MW-401S MW-401 09/11/02 NA 7-22
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)				
Tetrachloroethene	1	**1660 D**	**1610 D**	**1930 D**	**9.41**
Trichloroethene	1	**101**	**105**	**134**	**4.41**
cis-1,2-Dichloroethene	10	**116**	**111**	**167**	**47.2**
trans-1,2-Dichloroethene	100	2.12	4.53	0.894	<0.17
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32	<0.32	<0.32
Remaining Compounds:					
Chloromethane	30	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	<0.3	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22
Chloroform	6	<0.26	<0.26	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		1879.12	1830.53	2231.89	61.02

See last page for footnotes.

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Table 7. Concentrations of VOCs in MW Groundwater Samples[1], On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	MW Designation / Sample ID / Sample Date (3) / Sampling Depth (ft, bls) (4) / Screened Interval (ft, bls) (4)	AIR-MW-402S MW-402 09/11/02 NA 7-22	AIR-MW-402S MW-402 10/29/2002 NA 7-22	AIR-MW-403S MW-403 09/12/02 NA 7-22	AIR-MW-404D MW-404D 09/11/02 36 31-46
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)				
Tetrachloroethene	1	**6040 D**	**66.6**	**97.8**	**3730 D**
Trichloroethene	1	**976 D**	**23.5**	**131**	**494 D**
cis-1,2-Dichloroethene	10	**1730 D**	**240 D**	**51.7**	**758 D**
trans-1,2-Dichloroethene	100	13	2.11	<0.17	4.4
Vinyl chloride	5	**313 D**	<0.3	<0.3	**18.8**
1,1,1-Trichloroethane	30	<0.32	<0.32	<0.32	<0.32
Remaining Compounds:					
Chloromethane	30	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	**3.44**	<0.3	<0.3	1.11
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	0.465
Chloroform	6	<0.26	<0.26	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	0.3	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		9075.74	332.21	280.50	5006.78

See last page for footnotes.

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Table 7. Concentrations of VOCs in MW Groundwater Samples[1], On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	MW Designation / Sample ID / Sample Date (3) / Sampling Depth (ft, bls) (4) / Screened Interval (ft, bls) (4)	AIR-MW-404S / MW-404S / 09/11/02 / 16 / 5-20	AIR-MW-406 / MW-406 / 09/10/02 / 44 / 34-49	AIR-MW-409 / MW-409 / 10/29/2002 / NA / 36.5-51.5	AIR-MW-409 / MW-130 (REP) / 10/29/2002 / NA / 36.5-51.5
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)				
Tetrachloroethene	1	**190**	**1940 D**	**273 D**	**207 D**
Trichloroethene	1	**31.1**	**6950 D**	**770 D**	**596 D**
cis-1,2-Dichloroethene	10	**76.7**	**169**	**17.3**	**13.6**
trans-1,2-Dichloroethene	100	1.69	1.53	<0.17	<0.17
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	3.17	<0.32	<0.32
Remaining Compounds:					
Chloromethane	30	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34
Chloroethane	–	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	–	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	0.571	<0.3	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22
Chloroform	6	<0.26	0.335	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	0.416	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	–	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	–	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	0.375	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52
2-Hexanone	–	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		299.87	9065.02	1060.30	816.60

See last page for footnotes.

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Table 7. Concentrations of VOCs in MW Groundwater Samples[1], On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	MW Designation Sample ID Sample Date (3) Sampling Depth (ft, bls) (4) Screened Interval (ft, bls) (4)	AIR-RW-01 RW-1 10/30/2002 NA 50-90	AIR-RW-01 REP-1 10/30/2002 NA 50-90	MEN-MW-12 MEN MW-12 10/31/2002 NA 71.5-81.5	MEN-MW-13 MEN MW-13 10/31/2002 NA 53-63
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)				
Tetrachloroethene	1	**572 D**	**560 D**	**9.7**	**62.1**
Trichloroethene	1	**856 D**	**823 D**	**898 D**	**277 D**
cis-1,2-Dichloroethene	10	**79.6**	**81.6**	**401 D**	**5.02**
trans-1,2-Dichloroethene	100	0.566	0.63	1.7	<0.17
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	1.43	1.44	<0.32	1.3
Remaining Compounds:					
Chloromethane	30	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34
Chloroethane	–	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	–	<0.27	<0.27	0.722	<0.27
1,1-Dichloroethene	2	0.743	0.671	**3.64**	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	2.13	<0.22
Chloroform	6	0.873	0.925	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	–	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	–	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52
2-Hexanone	–	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		1511.21	1468.27	1316.89	345.42

See last page for footnotes.

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Table 7. Concentrations of VOCs in MW Groundwater Samples[1], On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	MW Designation Sample ID Sample Date (3) Sampling Depth (ft, bls) (4) Screened Interval (ft, bls) (4)	USGS-01 USGS-1 10/30/2002 NA 78-86	USGS-03 USGS-3 10/29/2002 NA 60-68	FIELD BLANK FB9-10-02MW 09/10/2002	FIELD BLANK FB9-11-02MW 09/11/2002
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)				
Tetrachloroethene	1	**206 D**	<0.27	<0.27	<0.27
Trichloroethene	1	**517 D**	<0.17	<0.17	<0.17
cis-1,2-Dichloroethene	10	**17.8**	<0.15	<0.15	<0.15
trans-1,2-Dichloroethene	100	<0.17	<0.17	<0.17	<0.17
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32	<0.32	<0.32
Remaining Compounds:					
Chloromethane	30	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34
Chloroethane	–	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	–	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	<0.3	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22
Chloroform	6	0.807	<0.26	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	–	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	–	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52
2-Hexanone	–	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		741.61	0.00	0.00	0.00

See last page for footnotes.

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Table 7. Concentrations of VOCs in MW Groundwater Samples[1], On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	MW Designation / Sample ID / Sample Date (3) / Sampling Depth (ft, bls) (4) / Screened Interval (ft, bls) (4)	FIELD BLANK FB9-12-02MW 09/12/2002	FIELD BLANK FB-10-29-02 10/29/2002	TRIP BLANK TB9-10-02MW 09/10/2002	TRIP BLANK TB9-11-12-02MW 09/11/2002
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)				
Tetrachloroethene	1	<0.27	<0.27	<0.27	<0.27
Trichloroethene	1	<0.17	<0.17	<0.17	<0.17
cis-1,2-Dichloroethene	10	<0.15	<0.15	<0.15	<0.15
trans-1,2-Dichloroethene	100	<0.17	<0.17	<0.17	<0.17
Vinyl chloride	5	<0.3	<0.3	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32	<0.32	<0.32
Remaining Compounds:					
Chloromethane	30	<0.33	<0.33	<0.33	<0.33
Bromomethane	10	<0.34	<0.34	<0.34	<0.34
Chloroethane	--	<0.21	<0.21	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99	<1.99	<1.99
Acetone	700	<0.69	<0.69	<0.69	<0.69
Carbon disulfide	--	<0.27	<0.27	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3	<0.3	<0.3
1,1-Dichloroethane	70	<0.22	<0.22	<0.22	<0.22
Chloroform	6	<0.26	<0.26	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25	<0.25	<0.25
2-Butanone	300	<0.25	<0.25	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18	<0.18	<0.18
trans-1,3-Dichloropropene	--	<0.16	<0.16	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26	<0.26	<0.26
Benzene	1	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	--	<0.22	<0.22	<0.22	<0.22
Bromoform	4	<0.44	<0.44	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26	<0.26	<0.26
Toluene	1,000	<0.22	<0.22	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15	<0.15	<0.15
Styrene	100	<0.13	<0.13	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52	<0.52	<0.52
2-Hexanone	--	<0.25	<0.25	<0.25	<0.25
Sum of VOCs		0.00	0.00	0.00	0.00

See last page for footnotes.

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Table 7. Concentrations of VOCs in MW Groundwater Samples[1], On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Parameter (units in ug/L)	MW Designation Sample ID Sample Date (3) Sampling Depth (ft, bls) (4) Screened Interval (ft, bls) (4)	TRIP BLANK TB9-11-02MW 09/11/2002	TRIP BLANK TB-10-29-02 10/29/2002
Primary Target Compounds:	NJDEP Groundwater Quality Standard (2)		
Tetrachloroethene	1	<0.27	<0.27
Trichloroethene	1	<0.17	<0.17
cis-1,2-Dichloroethene	10	<0.15	<0.15
trans-1,2-Dichloroethene	100	<0.17	<0.17
Vinyl chloride	5	<0.3	<0.3
1,1,1-Trichloroethane	30	<0.32	<0.32
Remaining Compounds:			
Chloromethane	30	<0.33	<0.33
Bromomethane	10	<0.34	<0.34
Chloroethane	–	<0.21	<0.21
Methylene chloride	2	<1.99	<1.99
Acetone	700	<0.69	<0.69
Carbon disulfide	–	<0.27	<0.27
1,1-Dichloroethene	2	<0.3	<0.3
1,1-Dichloroethane	70	<0.22	<0.22
Chloroform	6	<0.26	<0.26
1,2-Dichloroethane	2	<0.25	<0.25
2-Butanone	300	<0.25	<0.25
Carbon tetrachloride	2	<0.25	<0.25
Bromodichloromethane	1	<0.23	<0.23
1,1,2,2-Tetrachloroethane	2	<0.19	<0.19
1,2-Dichloropropane	1	<0.18	<0.18
trans-1,3-Dichloropropene	–	<0.16	<0.16
Dibromochloromethane	10	<0.29	<0.29
1,1,2-Trichloroethane	3	<0.26	<0.26
Benzene	1	<0.21	<0.21
cis-1,3-Dichloropropene	–	<0.22	<0.22
Bromoform	4	<0.44	<0.44
4-Methyl-2-pentanone	400	<0.26	<0.26
Toluene	1,000	<0.22	<0.22
Chlorobenzene	4	<0.18	<0.18
Ethylbenzene	700	<0.15	<0.15
Styrene	100	<0.13	<0.13
Xylene (total)	40	<0.52	<0.52
2-Hexanone	–	<0.25	<0.25
Sum of VOCs		0.00	0.00

See last page for footnotes.

Table 7. Concentrations of VOCs in MW Groundwater Samples(1), On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 SRI, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Notes and Abbreviations:

VOC	Volatile organic compounds.
MW	Monitoring well
ug/L	Micrograms per Liter.
REP	Replicate
NA	Indicates "not applicable" because low flow sampling techniques were not used.
(1)	Analyses performed by Integrated Analytical Laboratories, LLC of Randolph, New Jersey.
(2)	NJDEP Groundwater Quality Standards are the higher of the Class II-A groundwater quality criteria and Practical Quantitation Levels (PQLs) (Source: Groundwater Quality Standards [N.J.A.C. 7:9-6], January 7, 1993).
(3)	Results for October 2002 IRM Groundwater Remediation Effectiveness Monitoring Program wells (MW-3, MW-206, MW-302, MEN.MW-12, MEN.MW-13, RW-1, and USGS-1) included in this summary for completeness.
(4)	Sampling depth indicates setting of variable speed pump intake in cases where low flow sampling techniques were used;
D	Analyzed at second dilution factor.
J	Estimated value.
–	Indicates specific standard not available for particular compound.

Bold value indicates detected concentration exceeds NJDEP Groundwater Quality Standard.

Table 8. Summary of Proposed Groundwater Monitoring Well Installations, On-Site Source Area Activities, AOC-11 (Groundwater), Phase 1 Supplemental Remedial Investigation, Airtron Division of Litton Systems, Inc., Hanover, New Jersey.

Proposed Well Designation		Well Type	Hydrogeologic Zone	Screened Interval (ft, bls)	Screen Length (ft)	Comments/Rationale
Post-Source Remediation Monitoring Program						
AIR-MW-301S-R	(1)	Replacement	Perched	5 - 20	15	Within 5-ft of existing well AIR-MW-301S for continued monitoring of perched water VOC impacts associated with AOC-3/ AOC-4 source areas.
AIR-MW-403S-R	(1)	Replacement	Perched	15 - 20	5	Within 5-ft of existing well AIR-MW-403S (AOC-1)
AIR-MW-406-R	(1)	Replacement	Upper Unconfined (shallow)	34 - 49	15	Within 5-ft of existing well AIR-MW-406 (AOC-3)
AIR-MW-408	(1)	New	Upper Unconfined (shallow)	32 - 42	10	Within 5-ft of SRI VPB-408 in vicinity of PDI Soil Boring 3C11 (AOC-3)
AIR-MW-419	(1)	New	Upper Unconfined (shallow)	35 - 45	10	Within 5-ft of SRI VPB-419 in vicinity of SI/RI Soil Boring B-234 (AOC-1)
AIR-MW-411	(1)	New	Upper Unconfined (shallow)	35 - 45	10	Within 5-ft of SRI VPB-411 in vicinity of SI/RI Soil Boring B-267 (AOC-3)
AIR-MW-412	(1)	New	Upper Unconfined (shallow)	35 - 45	10	Within 5-ft of SRI VPB-412 in vicinity of PDI Soil Boring 3D06 (AOC-3)
AIR-MW-417	(1)	New	Upper Unconfined (shallow)	35 - 45	10	Within 5-ft of SRI VPB-417 in vicinity of SI/RI Soil Boring B-210 (AOC-2)
Supplemental Source Area Vicinity Monitoring						
AIR-MW-407		New	Upper Unconfined (shallow/deep)	50 - 60	10	Within 5-ft of SRI VPB-407
AIR-MW-417D		New	Upper Unconfined (deep)	65 - 75	10	Within 5-ft of SRI VPB-417 for continued monitoring of deeper portion/base of Upper Unconfined aquifer (AOC-2)
Supplemental Perched Delineation Monitoring						
AIR-MW-503S		New	Perched	10 - 20	10	Delineation/monitoring of perched water VOC impacts associated with AOC-3/ AOC-4 source areas.
Upgradient Delineation Monitoring						
AIR-MW-408D		New	Upper Unconfined (deep)	80 - 90	10	Within 5-ft of SRI VPB-408 for upgradient delineation monitoring of deeper portion of Upper Unconfined aquifer (below shallow aquitard).
AIR-MW-501		New	Upper Unconfined (shallow)	35 - 45 (2)	10	Upgradient delineation monitoring of shallow portion of Upper Unconfined aquifer (above shallow aquitard)
AIR-MW-501D		New	Upper Unconfined (deep)	80 - 90 (2)	10	Upgradient delineation monitoring of deeper portion of Upper Unconfined aquifer (below shallow aquitard)
AIR-MW-502		New	Upper Unconfined (shallow)	35 - 45 (2)	10	Upgradient delineation monitoring of shallow portion of Upper Unconfined aquifer (above shallow aquitard)
AIR-MW-504		New	Upper Unconfined (shallow)	35 - 45 (2)	10	Upgradient delineation monitoring of shallow portion of Upper Unconfined aquifer (above shallow aquitard)

Notes and Abbreviations

ft	feet
bls	below land surface
SI/RI	Site Investigation/Remedial Investigation (1997/1998)
SRI	Supplemental Remedial Investigation (2002 - on-site)
PDI	Pre-Design Investigation (2002)
(1)	New or replacement well proposed for installation as part of Post-Source Remediation Monitoring Well Network, Revised RAWP Addendum, Panther, February 2003.
(2)	Actual screened interval will be determined in the field based on vertical profile boring and/or pilot soil boring results.

Table 1. Summary of NJPDES Effluent Limitations for Outfall 001 and Outfall 003, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Parameters (in ug/L unless noted)	Discharge Limitations	
	Monthly Avg.	Daily Maximum
Petroleum Hydrocarbons (mg/L)	10	15
pH range (S.U.)	NA	9.0
Temperature (° C)	NL	30
Arsenic (kg/day)	0.028	0.071
Cadmium (kg/day)	0.0098	0.038
Chromium (kg/day)	0.065	0.1
Copper (kg/day)	0.078	0.13
Lead (kg/day)	0.02	0.04
Nickel (kg/day)	0.09	0.15
Silver (kg/day)	0.0091	0.016
Zinc (kg/day)	0.056	0.099
Cyanide (kg/day)	0.025	0.045
Volatile Fraction Toxic Organic Pollutants	NL	100
TTO (mg/L)	NL	1.77
Fluoride (kg/day)	0.59	1.1
Chloroform	NL	11.4
Methylene Chloride	NL	9.4
Tetrachloroethylene	NL	9
Trichloroethylene	NL	5.4
Vinyl Chloride	NL	10
1,2-Trans-Dichloroethylene	21	54
Toluene	26	80

ug/L	Micrograms per Liter.
mg/L	Milligrams per Liter.
° C	Degrees Celsius.
kg/day	Kilograms per day.
TTO	Total Toxic Organics.
NL	Not Limited.
NA	Not Applicable.

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Table 2. Area-Wide Monitoring Well Construction Details, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

LOCATION	WELL DETAILS							SURVEY DATA (2)		
	Well Designation (1)	Installed By	Installation Date	Screened Aquifer	Screen I.D. and Material	Screened Interval (ft, bls)	Screen Length (ft)	Land Surface	Top of Inner Casing	Top of Outer Casing
Airtron Property	USGS-2	USGS	1952	Upper Unconfined	17 in. Steel	76-84	8	401.05	401.05	402.28
	USGS-3	USGS	1952	Upper Unconfined	17 in. Steel	60-68	8	396.00	396.29	397.33
	MW-2M	Airtron	1980	Upper Unconfined	2 in. PVC	49-69	20	402.64	403.82	404.58
	MW-1	Airtron	1981	Upper Unconfined	3 in. PVC	65-75	10	396.20	397.72	398.03
	MW-2	Airtron	1981	Upper Unconfined	3 in. PVC	70-75	5	403.10	404.69	405.04
	MW-3	Airtron	1981	Upper Unconfined	3 in. PVC	55-65	10	396.60	398.02	398.35
	MW-201	Airtron	1987	Lower Confined	4 in. PVC	116-126	10	398.49	397.62	397.99
	MW-202	Airtron	1987	Lower Confined	4 in. PVC	118-125	7	402.60	403.83	404.07
	MW-204	Airtron	1987	Upper Unconfined	4 in. PVC	47-67	20	400.61	401.98	403.46
	MW-301	Airtron	1989	Perched	4 in. PVC	3-18	15	392.06	393.70	394.04
	MW-302	Airtron	1989	Upper Unconfined	4 in. PVC	38-68	30	401.00	402.47	402.91
	MW-401	Airtron	1997	Perched	2 in. PVC	7-22	15	389.80	392.39	392.65
	MW-402	Airtron	1997	Perched	2 in. PVC	7-22	15	389.60	392.20	392.49
	MW-403	Airtron	1997	Perched	2 in. PVC	7-22	15	397.40	399.98	400.27
	MW-404S	Airtron	1998	Perched	2 in. PVC	5-20	15	388.50	390.70	390.87
	MW-404D	Airtron	1998	Upper Unconfined	2 in. PVC	31-46	15	389.20	392.56	392.57
	MW-405	Airtron	1998	Perched	2 in. PVC	7.4-22.4	15	388.40	391.12	391.37
	MW-406	Airtron	1998	Upper Unconfined	2 in. PVC	34-49	15	392.10	394.69	395.26
	RW-1	Airtron	1994	Upper Unconfined	6 in. PVC	50-90	40	N/A	404.96 (3)	N/A
	PZ-1	Airtron	1994	Upper Unconfined	2 in. PVC	40-90	50	N/A	404.24	404.46
	PZ-2	Airtron	1994	Upper Unconfined	2 in. PVC	39-89	50	N/A	405.08	405.28
Mennen Property	P-1	Mennen	1953	Upper Unconfined	17 in. Steel	56-76	20	399.50	392.28	399.48
	P-2	Mennen	1953	Upper Unconfined	6 in. Steel	75-95	20	394.60	386.63	394.76
	MEN.MW-1	Mennen	1985	Upper Unconfined	4 in. PVC	40-60	20	394.10	397.33	397.52
	MEN.MW-2	Mennen	1985	Upper Unconfined	4 in. PVC	40-60	20	392.80	394.51	395.58
	MEN.MW-3	Mennen	1987	Upper Unconfined	4 in. PVC	36-56	20	383.40	385.33	385.81
	MEN.MW-4	Mennen	1987	Upper Unconfined	4 in. PVC	40-60	20	390.90	392.59	393.00
	MEN.MW-5	Mennen	1987	Upper Unconfined	4 in. PVC	27-57	30	392.10	394.17	394.75
	MEN.MW-6	Mennen	1987	Upper Unconfined	4 in. PVC	43.7-63.7	20	384.60	386.51	386.74
	MEN.MW-7	Mennen	1987	Upper Unconfined	4 in. PVC	43-63	20	397.30	398.59	398.88
	MW-305	Airtron	1989	Upper Unconfined	4 in. PVC	39-69	30	392.10	391.74	392.12
	MW-306	Airtron	1990	Upper Unconfined	4 in. PVC	38-58	20	392.80	392.53	392.83
	MW-307	Airtron	1990	Upper Unconfined	4 in. PVC	36.5-56.5	20	389.90	390.43	390.73
	MEN.MW-11	Mennen	1993	Upper Unconfined	2 in. PVC	53-63	10	389.51	389.23	389.52
	MEN.MW-12	Mennen	1993	Upper Unconfined	2 in. PVC	71.5-81.5	10	391.96	391.76	391.97
	MEN.MW-13	Mennen	1993	Upper Unconfined	2 in. PVC	53-63	10	400.35	399.95	400.36
	MEN.MW-14	Mennen	1993	Upper Unconfined	2 in. PVC	53.5-63.5	10	401.35	401.13	401.35
	MEN.MW-15	Mennen	1993	Upper Unconfined	2 in. PVC	67-77	10	399.21	398.94	399.24
	MEN.MW-16	Mennen	1993	Upper Unconfined	2 in. PVC	29.5-39.5	10	381.48	383.36	384.60
	MEN.MW-17	Mennen	1993	Upper Unconfined	2 in. PVC	50-60	10	391.65	393.89	394.11
	MEN.MW-18	Mennen	1993	Upper Unconfined	2 in. PVC	37-47	10	392.19	394.19	394.43
	MW-305A	Mennen	1993	Upper Unconfined	2 in. PVC	37-47	10	392.11	391.83	392.14
	MW-306A	Mennen	1993	Upper Unconfined	2 in. PVC	39-49	10	382.87	392.44	392.89
Warehouse Property	USGS-1	USGS	1952	Upper Unconfined	17 in. Steel	78-86	14	402.00	400.64	402.02
	MEN.MW-10	Mennen	1986	Upper Unconfined	4 in. PVC	40-55	15	389.20	390.97	391.21
	MW-203	Airtron	1987	Lower Confined	4 in. PVC	122-130	8	401.39	402.64	403.16
	MW-205	Airtron	1987	Upper Unconfined	4 in. PVC	53-58	5	387.50	388.91	389.18
	MW-206	Airtron	1987	Upper Unconfined	4 in. PVC	43-63	20	396.87	396.28	396.70
	MW-303	Airtron	1989	Upper Unconfined	4 in. PVC	39-69	30	390.70	392.72	393.07
	MW-304	Airtron	1989	Upper Unconfined	4 in. PVC	29-79	50	391.20	392.32	393.05
Champion Property	CH-MW-1	Champion	1986	Upper Unconfined	4 in. PVC	32-52	20	395.60	396.01	396.63

ID inner diameter
in. inches
PVC polyvinyl chloride
ft feet
bls below land surface
N/A not available

Sources: 1993, ERM-Northeast ECRA/ISRA Site Investigation Report, The Mennen Company.
SCS Engineers (for RW-1, PZ-1, and PZ-2 details only).

1. MW-# designates monitoring well
   P-# designates production well
   RW-# designates groundwater extraction/recovery well
   USGS-# indicates large diameter test well
   PZ-# indicates piezometer (for water-level measurement only)
2. Survey data referenced in feet above mean sea level.
3. PVC casing for RW-1 capped with a metal plate. Elevation is for top of plate attached to PVC casing.

Table 3. List of Soil Samples Submitted for Laboratory Analysis During Initial RI/SI Activities, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Sample Designation	Date Collected	Total Depth (ft bls)	VOCs Sampled	Metals Sampled	TPH Sampled DRO	TPH Sampled GRO	Cyanide + pH Sampled	SVOCs Sampled
AOC-1 Haz. Mat. Storage Building								
B201 2-4	9/15/97		x	x	x		x	
B201 12-14	9/15/97	14	x					
B202 0-2	9/15/97		x	x	x		x	
B202 8-10	9/15/97	10	x					
B203 0-2	9/15/97		x	x	x		x	
B203 8-10	9/15/97	22	x					
B204 0-2	9/16/97		x	x	x		x	
B204 8-10	9/16/97	10	x	x	x		x	
B205 0-2	9/16/97		x	x	x		x	
B205 6-8	9/16/97		x	x	x		x	x
B205 22-24	9/16/97	24	x	x	x		x	
B206 0-2	9/17/97		x	x	x		x	
B206 8-10	9/17/97	10	x					
B207 0-2	9/16/97		x	x	x		x	
B207 4-6	9/16/97		x	x	x		x	x
B207 10-12	9/16/97	12	x	x	x		x	
B234 0.5-2	9/25/97		x	x	x	x	x	
B234 4-6	9/25/97		x	x	x		x	
B234 16-18	9/25/97	18	x	x	x		x	
B235 2-4	9/25/97		x	x	x	x	x	
B235 12-14	9/25/97	14	x	x	x		x	
B253 6-8	1/26/98		x					
B253 10-12	1/26/98	12	x					

See last page for footnotes.

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Table 3. List of Soil Samples Submitted for Laboratory Analysis During Initial RI/SI Activities, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Sample Designation	Date Collected	Total Depth (ft bls)	VOCs Sampled	Metals Sampled	TPH Sampled DRO	TPH Sampled GRO	Cyanide + pH Sampled	SVOCs Sampled
AOC-2 Drum Storage Area #1								
B208 2-4	9/17/97		x	x	x		x	
B208 22-24	9/17/97	24	x	x	x		x	
B209 2-4	9/17/97		x	x	x		x	
B209 22-24	9/18/97	24	x	x	x		x	
B210 2-4	9/18/97		x	x	x		x	
B210 10-12	9/19/97		x	x	x		x	x
B210 29-31	9/19/97	31	x	x	x		x	
B211 0-2	9/19/97		x	x	x		x	
B211 10-12	9/19/97	12	x					
B212 0-2	9/19/97			x	x		x	
B212 14-16	9/19/97	16	x	x	x		x	
B213 15-17	9/22/97	17	x	x	x		x	
B238 0.5-2	9/25/97		x	x	x		x	
B238 8-10	9/25/97	10	x					
B239 0.5-2	9/25/97		x	x	x		x	
B239 8-10	9/25/97	10	x					
B254 16-18	1/20/98		x					
B254 22-24	1/20/98	24	x					
B255 2-4	1/19/98		x					
B255 10-12	1/19/98	12	x					
B256 2-4	1/19/98		x					
B256 10-12	1/19/98	12	x					
B257 2-4	1/19/98		x					
B257 10-12	1/19/98	12	x					

See last page for footnotes.

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Table 3. List of Soil Samples Submitted for Laboratory Analysis During Initial RI/SI Activities, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Sample Designation	Date Collected	Total Depth (ft bls)	VOCs Sampled	Metals Sampled	TPH Sampled DRO	TPH Sampled GRO	Cyanide + pH Sampled	SVOCs Sampled
AOC-3 Drum Storage Area #2								
B221 2-4	9/24/97		x	x	x	x	x	
B221 10-12	9/24/97	12	x					
B222 2-4	9/24/97		x	x	x	x	x	
B222 8-10	9/24/97	10	x					
B223 2-4	9/24/97		x	x	x	x	x	x
B223 8-10	9/24/97	12	x	x	x	x	x	
B224 2-4	9/24/97		x	x	x	x	x	
B224 14-16	9/24/97	16	x	x	x	x	x	
B225 3-5	9/24/97		x	x	x	x	x	
B225 9-11	9/24/97	11	x					
B240 0.5-2	9/25/97		x	x	x	x	x	
B240 8-10	9/25/97	10	x					
B241 2-4	9/25/97		x	x	x	x	x	
B241 10-12	9/25/97	12	x					
B242 2-4	9/25/97		x	x	x	x	x	
B242 10-12	9/25/97		x	x	x	x	x	
B242 22-24	9/25/97	24	x	x			x	
B243 0-2	9/25/97			x	x	x	x	
B243 7-9	9/25/97	9	x					
B244 2-4	9/26/97		x	x	x	x	x	
B244 12-14	9/26/97	14	x					

See last page for footnotes.

Table 3. List of Soil Samples Submitted for Laboratory Analysis During Initial RI/SI Activities, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Sample Designation	Date Collected	Total Depth (ft bls)	VOCs Sampled	Metals Sampled	TPH Sampled DRO	TPH Sampled GRO	Cyanide + pH Sampled	SVOCs Sampled
AOC-3 Drum Storage Area #2 (cont.)								
B245 2-4	9/26/97		x	x	x	x	x	
B245 10-12	9/26/97		x	x	x	x	x	
B245 14-16	9/26/97	16	x	x	x	x	x	
B246 0-2	9/26/97		x	x	x	x	x	
B246 16-18	9/26/97	22	x	x	x	x	x	
B247 2-4	9/26/97		x	x	x	x	x	
B247 10-12	9/26/97	12	x					
B248 0-2	9/26/97		x	x	x	x	x	
B248 8-10	9/26/97	10	x					
B249 0-2	9/26/97		x	x	x	x	x	
B249 8-10	9/26/97	10	x					
B250 2-4	9/26/97		x	x	x	x	x	
B250 8-10	9/26/97	10	x					
B251 0-2	9/26/97		x	x	x	x	x	
B251 12-14	9/26/97		x	x	x	x	x	
B251 22-24	9/26/97	24	x	x	x	x	x	
B252 2-4	9/26/97		x	x	x	x	x	
B252 10-12	9/26/97	12	x					
B258 6-8	1/20/98		x					
B258 20-22	1/20/98	24	x					
B259 16-18	1/21/98		x					
B259 22-24	1/21/98	24	x					
B260 12-14	1/22/98		x					
B260 32-34	1/22/98	34	x					

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Table 3. List of Soil Samples Submitted for Laboratory Analysis During Initial RI/SI Activities, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Sample Designation	Date Collected	Total Depth (ft bls)	VOCs Sampled	Metals Sampled	TPH Sampled DRO	TPH Sampled GRO	Cyanide + pH Sampled	SVOCs Sampled
See last page for footnotes.								
AOC-3 Drum Storage Area #2 (cont.)								
B261 12-14	1/29/98		x					
B261 16-18	1/29/98	18	x					
B262 12-14	1/30/98		x					
B262 16-18	1/30/98	18	x					
B263 22-24	1/21/98		x					
B263 34-36	1/21/98	46	x					
B264 12-14	1/22/98		x					
B264 18-20	1/22/98		x					
B264 36-38	1/22/98	38	x					
B265 2-4	1/30/98		x	x				
B265 14-16	1/30/98	16	x	x				
B266 2-4	1/30/98		x	x				
B266 8-10	1/30/98		x	x				
B266 16-18	1/30/98	18	x	x				
B267 2-4	1/26/98		x	x				
B267 16-18	1/26/98		x	x				
B267 30-32	1/26/98	32	x	x				
B268 8-10	1/30/98		x	x				
B268 18-20	1/30/98	22	x	x				
B269 2-4	1/20/98		x	x				
B269 10-12	1/20/98		x	x				
B269 20-22	1/20/98	22	x	x				
See last page for footnotes.								

Table 3. List of Soil Samples Submitted for Laboratory Analysis During Initial RI/SI Activities, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Sample Designation	Date Collected	Total Depth (ft bls)	VOCs Sampled	Metals Sampled	TPH Sampled DRO	TPH Sampled GRO	Cyanide + pH Sampled	SVOCs Sampled
AOC-3 Drum Storage Area #2 (cont.)								
B270 2-4	2/3/98		x	x				
B270 16-18	2/3/98	18	x	x				
B271 2-4	2/2/98		x	x				
B271 8-10	2/2/98		x	x				
B271 16-18	2/2/98		x	x				
B271 22-24	2/2/98		x	x				
B271 32-34	2/2/98	34	x	x				
B272 14-16	2/2/98		x					
B272 18-20	2/2/98	20	x					
B273 8-10	2/2/98		x					
B273 12-14	2/2/98	16	x					
AOC-4 Sludge Lagoon #5								
B219 4-6	9/23/97							x
B219 6-8	9/23/97		x	x	x	x	x	
B219 16-18	9/23/97	18	x					
AOC-5 Sludge Lagoons #1-4								
B214 10-12	9/22/97		x	x	x	x	x	x
B214 20-22	9/22/97	22	x	x	x	x	x	
B215 12-14	9/22/97		x	x	x	x	x	x
B215 20-22	9/22/97	24	x	x	x	x	x	

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Table 3. List of Soil Samples Submitted for Laboratory Analysis During Initial RI/SI Activities, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Sample Designation	Date Collected	Total Depth (ft bls)	VOCs Sampled	Metals Sampled	TPH Sampled DRO	TPH Sampled GRO	Cyanide + pH Sampled	SVOCs Sampled
See last page for footnotes.								
AOC-5 Sludge Lagoons #1-4 (cont.)								
B216 4-6	9/22/97		x	x	x	x	x	x
B216 14-16	9/22/97	16	x					
B217 4-6	9/23/97		x	x	x	x	x	x
B217 14-16	9/23/97	16	x					
AOC-7 Paint Stripping Area/Former 10K-Gal UST								
B232 6-8	9/25/97		x	x	x	x	x	
B232 16-18	9/25/97	18	x	x	x		x	
AOC-9 Former 15K-Gal UST								
B231 5-7	9/25/97		x	x	x	x	x	x
B231 17-19	9/25/97	19	x	x	x	x	x	
B233 2-4	9/25/97		x	x	x	x	x	
B233 10-12	9/25/97	12	x					
B236 0-2	9/25/97		x	x	x	x	x	
B236 9-11	9/25/97	11	x					
B237 2-4	9/25/97		x	x	x	x	x	
B237 8-10	9/25/97	12	x					

ft bls feet below land surface
VOCs Volatile organic compounds.
TPH Total petroleum hydrocarbons.
DRO Diesel range organics.
GRO Gasoline range organics.

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Table 3. List of Soil Samples Submitted for Laboratory Analysis During Initial RI/SI Activities, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Sample Designation	Date Collected	Total Depth (ft bls)	VOCs Sampled	Metals Sampled	TPH Sampled		Cyanide + pH Sampled	SVOCs Sampled
					DRO	GRO		

SVOCs Semivolatile organic compounds.
x Sample submitted for analysis for indicated analytical parameters.

Table 4. Groundwater Elevations for December 1997, February 1998, and March 1998 at the Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Site ID	Date	Measuring Point Elevation	Depth to Water	Water Elevation
AIR-MW-01	12/9/97	397.72	39.22	358.5
AIR-MW-01	2/25/98	397.72	37.76	359.96
AIR-MW-01	3/10/98	397.72	37.62	360.10
AIR-MW-02	12/9/97	404.69	54.63	350.06
AIR-MW-02	2/25/98	404.69	54.90	349.79
AIR-MW-02	3/10/98	404.69	54.90	349.79
AIR-MW-02M	12/9/97	403.82	52.87	350.95
AIR-MW-02M	2/25/98	403.82	52.84	350.98
AIR-MW-02M	3/10/98	403.82	52.63	351.19
AIR-MW-03	12/9/97	398.02	43.78	354.24
AIR-MW-03	2/25/98	398.02	43.99	354.03
AIR-MW-03	3/10/98	398.02	44.00	354.02
AIR-MW-201	12/9/97	397.62	NM	
AIR-MW-201	2/25/98	397.62	40.00	357.62
AIR-MW-202	12/9/97	403.83	NM	
AIR-MW-202	2/25/98	403.83	44.26	359.57
AIR-MW-203	12/9/97	402.64	47.85	354.79
AIR-MW-203	2/25/98	402.64	46.94	355.70
AIR-MW-204	12/9/97	401.98	50.77	351.21
AIR-MW-204	2/25/98	401.98	50.80	351.18
AIR-MW-204	3/10/98	401.98	50.73	351.25
AIR-MW-205	12/9/97	388.91	29.29	359.62
AIR-MW-205	2/25/98	388.91	29.30	359.61
AIR-MW-205	3/10/98	388.91	29.20	359.71
AIR-MW-206	12/9/97	396.28	42.86	353.42
AIR-MW-206	2/25/98	396.28	43.24	353.04
AIR-MW-206	3/10/98	396.28	43.25	353.03
AIR-MW-301	12/9/97	393.70	13.44	380.26
AIR-MW-301	2/25/98	393.70	9.88	383.82
AIR-MW-301	3/4/98	393.70	11.50	382.20
AIR-MW-301	3/10/98	393.70	11.13	382.57
AIR-MW-301	3/18/98	393.70	11.85	381.85
AIR-MW-301	3/25/98	393.70	10.92	382.78
AIR-MW-301	4/1/98	393.70	11.15	382.55
AIR-MW-303	12/9/97	392.72	44.08	348.64
AIR-MW-303	2/25/98	392.72	44.57	348.15
AIR-MW-303	3/10/98	392.72	44.59	348.13
AIR-MW-304	12/9/97	392.32	NM	
AIR-MW-304	2/25/98	392.32	39.31	353.01
AIR-MW-304	3/10/98	392.32	39.47	352.85

Measurements Based on Mean Sea Level

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Table 4. Groundwater Elevations for December 1997, February 1998, and March 1998 at the Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Site ID	Date	Measuring Point Elevation	Depth to Water	Water Elevation
AIR-MW-305	12/9/97	391.74	NM	
AIR-MW-305	2/25/98	391.74	39.02	352.72
AIR-MW-305	3/10/98	391.74	39.05	352.69
AIR-MW-306	12/9/97	392.53	39.83	352.7
AIR-MW-306	2/25/98	392.53	40.19	352.34
AIR-MW-306	3/10/98	392.53	40.21	352.32
AIR-MW-307	12/9/97	390.43	37.33	353.1
AIR-MW-307	2/25/98	390.43	37.78	352.65
AIR-MW-307	3/10/98	390.43	37.71	352.72
AIR-MW-401	12/9/97	392.39	13.41	378.98
AIR-MW-401	2/25/98	392.39	9.77	382.62
AIR-MW-401	3/4/98	392.39	11.17	381.22
AIR-MW-401	3/10/98	392.39	10.55	381.84
AIR-MW-401	3/18/98	392.39	11.33	381.06
AIR-MW-401	3/25/98	392.39	10.95	381.44
AIR-MW-401	4/1/98	392.39	11.20	381.19
AIR-MW-402	12/9/97	392.20	15.64	376.56
AIR-MW-402	2/25/98	392.20	7.31	384.89
AIR-MW-402	3/4/98	392.20	11.58	380.62
AIR-MW-402	3/10/98	392.20	7.45	384.75
AIR-MW-402	3/18/98	392.20	11.58	380.62
AIR-MW-402	3/25/98	392.20	7.97	384.23
AIR-MW-402	4/1/98	392.20	11.38	380.82
AIR-MW-403	12/9/97	399.98	20.22	379.76
AIR-MW-403	2/25/98	399.98	14.36	385.62
AIR-MW-403	3/4/98	399.98	16.42	383.56
AIR-MW-403	3/10/98	399.98	15.75	384.23
AIR-MW-403	3/18/98	399.98	16.52	383.46
AIR-MW-403	3/25/98	399.98	9.95	390.03
AIR-MW-403	4/1/98	399.98	16.83	383.15
AIR-MW-403	3/10/98	399.98	15.75	384.23
AIR-MW-404D	2/25/98	392.56	31.31	361.25
AIR-MW-404D	3/10/98	392.56	31.38	361.18
AIR-MW-404S	2/25/98	390.70	7.58	383.12
AIR-MW-404S	3/4/98	390.70	10.31	380.39
AIR-MW-404S	3/10/98	390.70	8.15	382.55
AIR-MW-404S	3/18/98	390.70	10.37	380.33
AIR-MW-404S	3/25/98	390.70	8.23	382.47
AIR-MW-404S	4/1/98	390.70	10.10	380.60
AIR-MW-405	2/25/98	391.12	18.03	373.09
AIR-MW-405	3/4/98	391.12	17.53	373.59

Measurements Based on Mean Sea Level

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Table 4. Groundwater Elevations for December 1997, February 1998, and March 1998 at the Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Site ID	Date	Measuring Point Elevation	Depth to Water	Water Elevation
AIR-MW-405	3/10/98	391.12	18.10	373.02
AIR-MW-405	3/18/98	391.12	18.05	373.07
AIR-MW-405	3/25/98	391.12	17.38	373.74
AIR-MW-405	4/1/98	391.12	17.18	373.94
AIR-MW-406	2/25/98	394.69	39.65	355.04
AIR-MW-406	3/10/98	394.69	39.65	355.04
AIR-PZ-01	12/9/97	404.24	54.01	350.23
AIR-PZ-01	2/25/98	404.24	54.26	349.98
AIR-PZ-01	3/10/98	404.24	54.22	350.02
AIR-PZ-02	12/9/97	405.08	54.92	350.16
AIR-PZ-02	2/25/98	405.08	55.18	349.90
AIR-PZ-02	3/10/98	405.08	55.20	349.88
AIR-RW-01	12/9/97	404.96	59.37	345.59
AIR-RW-01	2/25/98	404.96	59.86	345.10
AIR-RW-01	3/10/98	404.96	59.82	345.14
CHA-MW-01	3/10/98	396.01	37.12	358.89
MEN-MW-01	12/9/97	397.33	48.03	349.3
MEN-MW-01	2/25/98	397.33	48.00	349.33
MEN-MW-01	3/10/98	397.33	47.97	349.36
MEN-MW-02	12/9/97	394.51	45.48	349.03
MEN-MW-02	2/25/98	394.51	45.58	348.93
MEN-MW-02	3/10/98	394.51	45.50	349.01
MEN-MW-03	12/9/97	385.33	40.49	344.84
MEN-MW-03	2/25/98	385.33	39.52	345.81
MEN-MW-03	3/10/98	385.33	39.58	345.75
MEN-MW-04	12/9/97	392.59	53.42	339.17
MEN-MW-04	2/25/98	392.59	53.38	339.21
MEN-MW-04	3/10/98	392.59	53.10	339.49
MEN-MW-05	12/9/97	394.17	41.99	352.18
MEN-MW-05	2/25/98	394.17	42.31	351.86
MEN-MW-05	3/10/98	394.17	42.29	351.88
MEN-MW-06	12/9/97	386.51	NM	
MEN-MW-06	2/25/98	386.51	35.76	350.75
MEN-MW-06	3/10/98	386.51	35.74	350.77
MEN-MW-07	12/9/97	398.59	47.97	350.62
MEN-MW-07	2/25/98	398.59	48.30	350.29
MEN-MW-07	3/10/98	398.59	48.30	350.29
MEN-MW-10	12/9/97	390.97	37.82	353.15
MEN-MW-10	2/25/98	390.97	38.19	352.78
MEN-MW-10	3/10/98	390.97	38.23	352.74

Measurements Based on Mean Sea Level

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Table 4. Groundwater Elevations for December 1997, February 1998, and March 1998 at the Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Site ID	Date	Measuring Point Elevation	Depth to Water	Water Elevation
MEN-MW-11	12/9/97	389.23	36.35	352.88
MEN-MW-11	2/25/98	389.23	36.75	352.48
MEN-MW-12	12/9/97	391.76	41.22	350.54
MEN-MW-12	2/25/98	391.76	41.62	350.14
MEN-MW-13	12/9/97	399.95	49.42	350.53
MEN-MW-13	2/25/98	399.95	49.76	350.19
MEN-MW-14	12/9/97	401.13	50.63	350.5
MEN-MW-14	2/25/98	401.13	50.94	350.19
MEN-MW-15	12/9/97	398.94	48.05	350.89
MEN-MW-15	2/25/98	398.94	48.04	350.90
MEN-MW-16	12/9/97	383.36	NM	
MEN-MW-16	2/25/98	383.36	38.38	344.98
MEN-MW-17	12/9/97	393.89	56.95	336.94
MEN-MW-17	2/25/98	393.89	56.99	336.90
MEN-MW-305A	12/9/97	391.83	NM	
MEN-MW-305A	2/25/98	391.83	39.27	352.56
MEN-MW-306A	12/9/97	392.44	39.93	352.51
MEN-MW-306A	2/25/98	392.44	40.29	352.15
USGS-01	12/9/97	400.64	50.2	350.44
USGS-01	2/25/98	400.64	50.50	350.14
USGS-01	3/10/98	400.64	50.50	350.14
USGS-02	12/9/97	401.05	44.39	356.66
USGS-02	2/25/98	401.05	45.00	356.05
USGS-02	3/10/98	401.05	44.93	356.12
USGS-03	12/9/97	396.29	35.07	361.22
USGS-03	2/25/98	396.29	35.20	361.09
USGS-03	3/10/98	396.29	35.13	361.16

Measurements Based on Mean Sea Level

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1
SAMPLE ID:	B201 2-4	B201 12-14	B202 0-2	B202 8-10	B203 0-2	B203 8-10
CONSTITUENT: DATE:	9/15/97	9/15/97	9/15/97	9/15/97	9/15/97	9/15/97
(Units in ug/kg) DEPTH (ft bls):	2-4	12-14	0-2	8-10	0-2	8-10
Acetone	< 1300	< 1200	< 1200	< 1100	< 1400	< 1000
Benzene	< 660	< 640	< 620	< 560	< 750	< 530
Bromodichloromethane	< 660	< 640	< 620	< 560	< 750	< 530
Bromoform	< 660	< 640	< 620	< 560	< 750	< 530
Bromomethane	< 1300	< 1200	< 1200	< 1100	< 1400	< 1000
2-Butanone	< 1300	< 1200	< 1200	< 1100	< 1400	< 1000
Carbon disulfide	< 660	< 640	< 620	< 560	< 750	< 530
Carbon tetrachloride	< 660	< 640	< 620	< 560	< 750	< 530
Chlorobenzene	< 660	< 640	< 620	< 560	< 750	< 530
Chlorodibromomethane	< 660	< 640	< 620	< 560	< 750	< 530
Chloroethane	< 1300	< 1200	< 1200	< 1100	< 1400	< 1000
Chloroform	< 660	< 640	< 620	< 560	< 750	< 530
Chloromethane	< 1300	< 1200	< 1200	< 1100	< 1400	< 1000
1,1-Dichloroethane	< 660	< 640	< 620	< 560	< 750	< 530
1,2-Dichloroethane	< 660	< 640	< 620	< 560	< 750	< 530
1,1-Dichloroethene	< 660	< 640	< 620	< 560	< 750	< 530
cis-1,2-Dichloroethene	< 660	< 640	< 620	< 560	< 750	< 530
trans-1,2-Dichloroethene	< 660	< 640	< 620	< 560	< 750	< 530
1,2-Dichloropropane	< 660	< 640	< 620	< 560	< 750	< 530
cis-1,3-Dichloropropene	< 660	< 640	< 620	< 560	< 750	< 530
trans-1,3-Dichloropropene	< 660	< 640	< 620	< 560	< 750	< 530
Ethylbenzene	< 660	< 640	< 620	< 560	< 750	< 530
2-Hexanone	< 1300	< 1200	< 1200	< 1100	< 1400	< 1000
4-Methyl-2-pentanone	< 1300	< 1200	< 1200	< 1100	< 1400	< 1000
Methylene chloride	< 660	< 640	< 620	< 560	< 750	< 530
Styrene	< 660	< 640	< 620	< 560	< 750	< 530
1,1,2,2-Tetrachloroethane	< 660	< 640	< 620	< 560	< 750	< 530
Tetrachloroethene	< 660	< 640	3900	< 560	490 J	< 530
Toluene	< 660	< 640	< 620	< 560	< 750	< 530
1,1,1-Trichloroethane	< 660	< 640	< 620	< 560	< 750	< 530
1,1,2-Trichloroethane	< 660	< 640	< 620	< 560	< 750	< 530
Trichloroethylene	< 660	< 640	< 620	< 560	< 750	< 530
Vinyl chloride	< 1300	< 1200	< 1200	< 1100	< 1400	< 1000
Xylenes (total)	< 660	< 640	< 620	< 560	< 750	< 530

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1
SAMPLE ID:	B204 0-2	B204 8-10	B205 0-2	B205 6-8	B205 22-24	B206 0-2
CONSTITUENT: DATE:	9/16/97	9/16/97	9/16/97	9/16/97	9/16/97	9/17/97
(Units in ug/kg) DEPTH (ft bls):	0-2	8-10	0-2	6-8	22-24	0-2
Acetone	< 1200	< 1200	< 1200	< 1200	3600	< 1200
Benzene	< 620	< 650	< 630	< 640	< 600	< 620
Bromodichloromethane	< 620	< 650	< 630	< 640	< 600	< 620
Bromoform	< 620	< 650	< 630	< 640	< 600	< 620
Bromomethane	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
2-Butanone	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Carbon disulfide	< 620	< 650	< 630	< 640	< 600	< 620
Carbon tetrachloride	< 620	< 650	< 630	< 640	< 600	< 620
Chlorobenzene	< 620	< 650	< 630	< 640	< 600	< 620
Chlorodibromomethane	< 620	< 650	< 630	< 640	< 600	< 620
Chloroethane	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Chloroform	< 620	< 650	< 630	< 640	< 600	< 620
Chloromethane	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
1,1-Dichloroethane	< 620	< 650	< 630	< 640	< 600	< 620
1,2-Dichloroethane	< 620	< 650	< 630	< 640	< 600	< 620
1,1-Dichloroethene	< 620	< 650	< 630	< 640	< 600	< 620
cis-1,2-Dichloroethene	< 620	< 650	< 630	8200	640	< 620
trans-1,2-Dichloroethene	< 620	< 650	< 630	< 640	< 600	< 620
1,2-Dichloropropane	< 620	< 650	< 630	< 640	< 600	< 620
cis-1,3-Dichloropropene	< 620	< 650	< 630	< 640	< 600	< 620
trans-1,3-Dichloropropene	< 620	< 650	< 630	< 640	< 600	< 620
Ethylbenzene	< 620	< 650	< 630	< 640	< 600	< 620
2-Hexanone	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
4-Methyl-2-pentanone	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Methylene chloride	< 620	< 650	< 630	< 640	< 600	< 620
Styrene	< 620	< 650	< 630	< 640	< 600	< 620
1,1,2,2-Tetrachloroethane	< 620	< 650	< 630	< 640	< 600	< 620
Tetrachloroethene	< 620	< 650	< 630	2600	1400	< 620
Toluene	< 620	< 650	< 630	< 640	< 600	< 620
1,1,1-Trichloroethane	< 620	< 650	< 630	< 640	< 600	< 620
1,1,2-Trichloroethane	< 620	< 650	< 630	< 640	< 600	< 620
Trichloroethylene	< 620	< 650	< 630	39000 DJ	570 J	< 620
Vinyl chloride	< 1200	< 1200	< 1200	< 1200	< 1200	< 1200
Xylenes (total)	< 620	< 650	< 630	< 640	< 600	< 620

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1
SAMPLE ID:	B206 8-10	B207 0-2	B207 4-6	B207 10-12	B234 0.5-2	B234 4-6
CONSTITUENT: DATE:	9/17/97	9/16/97	9/16/97	9/16/97	9/25/97	9/25/97
(Units in ug/kg) DEPTH (ft bls):	8-10	0-2	4-6	10-12	0.5-2	4-6
Acetone	< 1200	< 1300	< 1200	< 1200	< 1300	< 1200
Benzene	< 630	< 660	< 650	< 630	< 690	< 610
Bromodichloromethane	< 630	< 660	< 650	< 630	< 690	< 610
Bromoform	< 630	< 660	< 650	< 630	< 690	< 610
Bromomethane	< 1200	< 1300	< 1200	< 1200	< 1300	< 1200
2-Butanone	< 1200	< 1300	< 1200	< 1200	< 1300	< 1200
Carbon disulfide	< 630	< 660	< 650	< 630	< 690	< 610
Carbon tetrachloride	< 630	< 660	< 650	< 630	< 690	< 610
Chlorobenzene	< 630	< 660	< 650	< 630	< 690	< 610
Chlorodibromomethane	< 630	< 660	< 650	< 630	< 690	< 610
Chloroethane	< 1200	< 1300	< 1200	< 1200	< 1300	< 1200
Chloroform	< 630	< 660	< 650	< 630	< 690	< 610
Chloromethane	< 1200	< 1300	< 1200	< 1200	< 1300	< 1200
1,1-Dichloroethane	< 630	< 660	< 650	< 630	< 690	< 610
1,2-Dichloroethane	< 630	< 660	< 650	< 630	< 690	< 610
1,1-Dichloroethene	< 630	< 660	< 650	< 630	< 690	< 610
cis-1,2-Dichloroethene	< 630	< 660	< 650	< 630	2400	< 610
trans-1,2-Dichloroethene	< 630	< 660	< 650	< 630	< 690	< 610
1,2-Dichloropropane	< 630	< 660	< 650	< 630	< 690	< 610
cis-1,3-Dichloropropene	< 630	< 660	< 650	< 630	< 690	< 610
trans-1,3-Dichloropropene	< 630	< 660	< 650	< 630	< 690	< 610
Ethylbenzene	< 630	< 660	< 650	< 630	800	< 610
2-Hexanone	< 1200	< 1300	< 1200	< 1200	< 1300	< 1200
4-Methyl-2-pentanone	< 1200	< 1300	< 1200	< 1200	< 1300	< 1200
Methylene chloride	< 630	< 660	< 650	< 630	< 690	< 610
Styrene	< 630	< 660	< 650	< 630	< 690	< 610
1,1,2,2-Tetrachloroethane	< 630	< 660	< 650	< 630	< 690	< 610
Tetrachloroethene	330 J	< 660	< 650	< 630	470000 D	78000 D
Toluene	< 630	< 660	< 650	< 630	2900	< 610
1,1,1-Trichloroethane	< 630	< 660	< 650	< 630	< 690	< 610
1,1,2-Trichloroethane	< 630	< 660	< 650	< 630	< 690	< 610
Trichloroethylene	< 630	< 660	< 650	< 630	1700	< 610
Vinyl chloride	< 1200	< 1300	< 1200	< 1200	< 1300	< 1200
Xylenes (total)	< 630	< 660	< 650	< 630	9700	< 610

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-2
SAMPLE ID:	B234 16-18	B235 2-4	B235 12-14	B253 6-8	B253 10-12	B208 2-4
CONSTITUENT: DATE:	9/25/97	9/25/97	9/25/97	1/26/98	1/26/98	9/17/97
(Units in ug/kg) DEPTH (ft bls):	16-18	2-4	12-14	6-8	10-12	2-4
Acetone	< 1100	< 1100	< 1200	< 1300 J	< 1300 J	< 1200
Benzene	< 580	< 570	< 640	< 660 J	< 660 J	< 640
Bromodichloromethane	< 580	< 570	< 640	< 660 J	< 660 J	< 640
Bromoform	< 580	< 570	< 640	< 660 J	< 660 J	< 640
Bromomethane	< 1100	< 1100	< 1200	< 1300 J	< 1300 J	< 1200
2-Butanone	< 1100	< 1100	< 1200	< 1300 J	< 1300 J	< 1200
Carbon disulfide	< 580	< 570	< 640	< 660 J	< 660 J	< 640
Carbon tetrachloride	< 580	< 570	< 640	< 660 J	< 660 J	< 640
Chlorobenzene	< 580	< 570	< 640	< 660 J	< 660 J	< 640
Chlorodibromomethane	< 580	< 570	< 640	< 660 J	< 660 J	< 640
Chloroethane	< 1100	< 1100	< 1200	< 1300 J	< 1300 J	< 1200
Chloroform	< 580	< 570	< 640	< 660 J	< 660 J	< 640
Chloromethane	< 1100	< 1100	< 1200	< 1300 J	< 1300 J	< 1200
1,1-Dichloroethane	< 580	< 570	< 640	< 660 J	< 660 J	< 640
1,2-Dichloroethane	< 580	< 570	< 640	< 660 J	< 660 J	< 640
1,1-Dichloroethene	< 580	< 570	< 640	< 660 J	< 660 J	< 640
cis-1,2-Dichloroethene	< 580	< 570	610 J	< 660 J	< 660 J	< 640
trans-1,2-Dichloroethene	< 580	< 570	< 640	< 660 J	< 660 J	< 640
1,2-Dichloropropane	< 580	< 570	< 640	< 660 J	< 660 J	< 640
cis-1,3-Dichloropropene	< 580	< 570	< 640	< 660 J	< 660 J	< 640
trans-1,3-Dichloropropene	< 580	< 570	< 640	< 660 J	< 660 J	< 640
Ethylbenzene	< 580	< 570	< 640	< 660 J	< 660 J	< 640
2-Hexanone	< 1100	< 1100	< 1200	< 1300 J	< 1300 J	< 1200
4-Methyl-2-pentanone	< 1100	< 1100	< 1200	< 1300 J	< 1300 J	< 1200
Methylene chloride	< 580	< 570	< 640	< 660 J	< 660 J	< 640
Styrene	< 580	< 570	< 640	< 660 J	< 660 J	< 640
1,1,2,2-Tetrachloroethane	< 580	< 570	< 640	< 660 J	< 660 J	< 640
Tetrachloroethene	< 580	< 570	560 J	< 660 J	< 660 J	13000
Toluene	< 580	< 570	< 640	< 660 J	< 660 J	< 640
1,1,1-Trichloroethane	< 580	< 570	< 640	< 660 J	< 660 J	< 640
1,1,2-Trichloroethane	< 580	< 570	< 640	< 660 J	< 660 J	< 640
Trichloroethylene	< 580	< 570	< 640	< 660 J	< 660 J	< 640
Vinyl chloride	< 1100	< 1100	< 1200	< 1300 J	< 1300 J	< 1200
Xylenes (total)	< 580	< 570	< 640	< 660 J	< 660 J	< 640

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2
SAMPLE ID:	B208 22-24	B209 2-4	B209 22-24	B210 2-4	B210 10-12	B210 29-31
CONSTITUENT: DATE:	9/17/97	9/17/97	9/18/97	9/18/97	9/19/97	9/19/97
(Units in ug/kg) DEPTH (ft bls):	22-24	2-4	22-24	2-4	10-12	29-31
Acetone	< 1200	< 1200	< 1200	< 1200	< 1200 J	< 1200
Benzene	< 640	< 640	< 620	< 650	< 620 J	< 640
Bromodichloromethane	< 640	< 640	< 620	< 650	< 620 J	< 640
Bromoform	< 640	< 640	< 620	< 650	< 620 J	< 640
Bromomethane	< 1200	< 1200	< 1200	< 1200	< 1200 J	< 1200
2-Butanone	< 1200	< 1200	< 1200	< 1200	< 1200 J	< 1200
Carbon disulfide	< 640	< 640	< 620	< 650	< 620 J	< 640
Carbon tetrachloride	< 640	< 640	< 620	< 650	< 620 J	< 640
Chlorobenzene	< 640	< 640	< 620	< 650	< 620 J	< 640
Chlorodibromomethane	< 640	< 640	< 620	< 650	< 620 J	< 640
Chloroethane	< 1200	< 1200	< 1200	< 1200	< 1200 J	< 1200
Chloroform	< 640	< 640	< 620	< 650	< 620 J	< 640
Chloromethane	< 1200	< 1200	< 1200	< 1200	< 1200 J	< 1200
1,1-Dichloroethane	< 640	< 640	< 620	< 650	< 620 J	< 640
1,2-Dichloroethane	< 640	< 640	< 620	< 650	< 620 J	< 640
1,1-Dichloroethene	< 640	< 640	< 620	< 650	< 620 J	< 640
cis-1,2-Dichloroethene	< 640	< 640	< 620	< 650	< 620 J	< 640
trans-1,2-Dichloroethene	< 640	< 640	< 620	< 650	< 620 J	< 640
1,2-Dichloropropane	< 640	< 640	< 620	< 650	< 620 J	< 640
cis-1,3-Dichloropropene	< 640	< 640	< 620	< 650	< 620 J	< 640
trans-1,3-Dichloropropene	< 640	< 640	< 620	< 650	< 620 J	< 640
Ethylbenzene	< 640	< 640	< 620	< 650	< 620 J	< 640
2-Hexanone	< 1200	< 1200	< 1200	< 1200	< 1200 J	< 1200
4-Methyl-2-pentanone	< 1200	< 1200	< 1200	< 1200	< 1200 J	< 1200
Methylene chloride	< 640	< 640	< 620	< 650	< 620 J	< 640
Styrene	< 640	< 640	< 620	< 650	< 620 J	< 640
1,1,2,2-Tetrachloroethane	< 640	< 640	< 620	< 650	< 620 J	< 640
Tetrachloroethene	1800	< 640	1600	16000	9100000 DJ	< 640
Toluene	< 640	< 640	< 620	< 650	< 620 J	< 640
1,1,1-Trichloroethane	< 640	< 640	< 620	< 650	< 620 J	< 640
1,1,2-Trichloroethane	< 640	< 640	< 620	< 650	< 620 J	< 640
Trichloroethylene	< 640	< 640	< 620	< 650	< 620 J	< 640
Vinyl chloride	< 1200	< 1200	< 1200	< 1200	< 1200 J	< 1200
Xylenes (total)	< 640	< 640	< 620	< 650	< 620 J	< 640

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2
SAMPLE ID:	B211 0-2	B211 10-12	B212 14-16	B213 15-17	B238 0.5-2	B238 8-10
CONSTITUENT: DATE:	9/19/97	9/19/97	9/19/97	9/22/97	9/25/97	9/25/97
(Units in ug/kg) DEPTH (ft bls):	0-2	10-12	14-16	15-17	0.5-2	8-10
Acetone	< 1400	< 1400	< 1400	< 1300	< 1200	< 1200
Benzene	< 720	< 740	< 750	< 680	< 610	< 640
Bromodichloromethane	< 720	< 740	< 750	< 680	< 610	< 640
Bromoform	< 720	< 740	< 750	< 680	< 610	< 640
Bromomethane	< 1400	< 1400	< 1400	< 1300	< 1200	< 1200
2-Butanone	< 1400	< 1400	< 1400	< 1300	< 1200	< 1200
Carbon disulfide	< 720	< 740	< 750	< 680	< 610	< 640
Carbon tetrachloride	< 720	< 740	< 750	< 680	< 610	< 640
Chlorobenzene	< 720	< 740	< 750	< 680	< 610	< 640
Chlorodibromomethane	< 720	< 740	< 750	< 680	< 610	< 640
Chloroethane	< 1400	< 1400	< 1400	< 1300	< 1200	< 1200
Chloroform	< 720	< 740	< 750	< 680	< 610	< 640
Chloromethane	< 1400	< 1400	< 1400	< 1300	< 1200	< 1200
1,1-Dichloroethane	< 720	< 740	< 750	< 680	< 610	< 640
1,2-Dichloroethane	< 720	< 740	< 750	< 680	< 610	< 640
1,1-Dichloroethene	< 720	< 740	< 750	< 680	< 610	< 640
cis-1,2-Dichloroethene	< 720	< 740	< 750	< 680	< 610	< 640
trans-1,2-Dichloroethene	< 720	< 740	< 750	< 680	< 610	< 640
1,2-Dichloropropane	< 720	< 740	< 750	< 680	< 610	< 640
cis-1,3-Dichloropropene	< 720	< 740	< 750	< 680	< 610	< 640
trans-1,3-Dichloropropene	< 720	< 740	< 750	< 680	< 610	< 640
Ethylbenzene	< 720	< 740	< 750	< 680	< 610	< 640
2-Hexanone	< 1400	< 1400	< 1400	< 1300	< 1200	< 1200
4-Methyl-2-pentanone	< 1400	< 1400	< 1400	< 1300	< 1200	< 1200
Methylene chloride	< 720	< 740	< 750	< 680	< 610	1500 BJ
Styrene	< 720	< 740	< 750	< 680	< 610	< 640
1,1,2,2-Tetrachloroethane	< 720	< 740	< 750	< 680	< 610	< 640
Tetrachloroethene	< 720	< 740	1500	2500	710	< 640
Toluene	< 720	< 740	< 750	< 680	4200	< 640
1,1,1-Trichloroethane	< 720	< 740	< 750	< 680	< 610	< 640
1,1,2-Trichloroethane	< 720	< 740	< 750	< 680	< 610	< 640
Trichloroethylene	< 720	< 740	< 750	< 680	< 610	< 640
Vinyl chloride	< 1400	< 1400	< 1400	< 1300	< 1200	< 1200
Xylenes (total)	< 720	< 740	< 750	< 680	< 610	< 640

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2
SAMPLE ID:	B239 0.5-2	B239 8-10	B254 16-18	B254 22-24	B255 2-4	B255 10-12
CONSTITUENT: DATE:	9/25/97	9/25/97	1/20/98	1/20/98	1/19/98	1/19/98
(Units in ug/kg) DEPTH (ft bls):	0.5-2	8-10	16-18	22-24	2-4	10-12
Acetone	< 1200	< 1100	< 1200 J	< 1200 J	< 1400	< 1300
Benzene	< 620	< 580	< 620 J	< 650 J	< 730	< 690
Bromodichloromethane	< 620	< 580	< 620 J	< 650 J	< 730	< 690
Bromoform	< 620	< 580	< 620 J	< 650 J	< 730	< 690
Bromomethane	< 1200	< 1100	< 1200 J	< 1200 J	< 1400	< 1300
2-Butanone	< 1200	< 1100	< 1200 J	< 1200 J	< 1400	< 1300
Carbon disulfide	< 620	< 580	< 620 J	< 650 J	< 730	< 690
Carbon tetrachloride	< 620	< 580	< 620 J	< 650 J	< 730	< 690
Chlorobenzene	< 620	< 580	< 620 J	< 650 J	< 730	< 690
Chlorodibromomethane	< 620	< 580	< 620 J	< 650 J	< 730	< 690
Chloroethane	< 1200	< 1100	< 1200 J	< 1200 J	< 1400	< 1300
Chloroform	< 620	< 580	< 620 J	< 650 J	< 730	< 690
Chloromethane	< 1200	< 1100	< 1200 J	< 1200 J	< 1400	< 1300
1,1-Dichloroethane	< 620	< 580	< 620 J	< 650 J	< 730	< 690
1,2-Dichloroethane	< 620	< 580	< 620 J	< 650 J	< 730	< 690
1,1-Dichloroethene	< 620	< 580	< 620 J	< 650 J	< 730	< 690
cis-1,2-Dichloroethene	< 620	< 580	< 620 J	< 650 J	< 730	< 690
trans-1,2-Dichloroethene	< 620	< 580	< 620 J	< 650 J	< 730	< 690
1,2-Dichloropropane	< 620	< 580	< 620 J	< 650 J	< 730	< 690
cis-1,3-Dichloropropene	< 620	< 580	< 620 J	< 650 J	< 730	< 690
trans-1,3-Dichloropropene	< 620	< 580	< 620 J	< 650 J	< 730	< 690
Ethylbenzene	< 620	< 580	< 620 J	< 650 J	< 730	< 690
2-Hexanone	< 1200	< 1100	< 1200 J	< 1200 J	< 1400	< 1300
4-Methyl-2-pentanone	< 1200	< 1100	< 1200 J	< 1200 J	< 1400	< 1300
Methylene chloride	< 620	< 580	< 620 J	< 650 J	< 730	< 690
Styrene	< 620	< 580	< 620 J	< 650 J	< 730	< 690
1,1,2,2-Tetrachloroethane	< 620	< 580	< 620 J	< 650 J	< 730	< 690
Tetrachloroethene	< 620	< 580	410 J	3200 J	< 730	< 690
Toluene	< 620	< 580	< 620 J	< 650 J	< 730	< 690
1,1,1-Trichloroethane	< 620	< 580	< 620 J	< 650 J	< 730	< 690
1,1,2-Trichloroethane	< 620	< 580	< 620 J	< 650 J	< 730	< 690
Trichloroethylene	< 620	< 580	< 620 J	< 650 J	< 730	< 690
Vinyl chloride	< 1200	< 1100	< 1200 J	< 1200 J	< 1400	< 1300
Xylenes (total)	< 620	< 580	< 620 J	< 650 J	< 730	< 690

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-2	AOC-2	AOC-2	AOC-2	AOC-3	AOC-3	AOC-3
SAMPLE ID:	B256 2-4	B256 10-12	B257 2-4	B257 10-12	B221 2-4	B221 10-12	B222 2-4
CONSTITUENT: DATE:	1/19/98	1/19/98	1/19/98	1/19/98	9/24/97	9/24/97	9/24/97
(Units in ug/kg) DEPTH (ft bls):	2-4	10-12	2-4	10-12	2-4	10-12	2-4
Acetone	< 1300	< 1200 J	< 1200	< 1200 J	1300 J	< 1200	< 1800
Benzene	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
Bromodichloromethane	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
Bromoform	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
Bromomethane	< 1300	< 1200 J	< 1200	< 1200 J	< 1800 J	< 1200	< 1800
2-Butanone	< 1300	< 1200 J	< 1200	< 1200 J	< 1800 J	< 1200	< 1800
Carbon disulfide	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
Carbon tetrachloride	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
Chlorobenzene	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
Chlorodibromomethane	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
Chloroethane	< 1300	< 1200 J	< 1200	< 1200 J	< 1800 J	< 1200	< 1800
Chloroform	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
Chloromethane	< 1300	< 1200 J	< 1200	< 1200 J	< 1800 J	< 1200	< 1800
1,1-Dichloroethane	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
1,2-Dichloroethane	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
1,1-Dichloroethene	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
cis-1,2-Dichloroethene	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
trans-1,2-Dichloroethene	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
1,2-Dichloropropane	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
cis-1,3-Dichloropropene	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
trans-1,3-Dichloropropene	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
Ethylbenzene	< 660	< 650 J	< 610	< 610 J	120 J	< 640	510 J
2-Hexanone	< 1300	< 1200 J	< 1200	< 1200 J	< 1800 J	< 1200	< 1800
4-Methyl-2-pentanone	< 1300	< 1200 J	< 1200	< 1200 J	< 1800 J	< 1200	< 1800
Methylene chloride	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
Styrene	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
1,1,2,2-Tetrachloroethane	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
Tetrachloroethene	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	400 J
Toluene	< 660	< 650 J	< 610	< 610 J	1400 J	680	< 900
1,1,1-Trichloroethane	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
1,1,2-Trichloroethane	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
Trichloroethylene	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	< 900
Vinyl chloride	< 1300	< 1200 J	< 1200	< 1200 J	< 1800 J	< 1200	< 1800
Xylenes (total)	< 660	< 650 J	< 610	< 610 J	< 950 J	< 640	1200

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
SAMPLE ID:	B222 8-10	B223 2-4	B223 8-10	B224 2-4	B224 14-16	B225 3-5
CONSTITUENT: DATE:	9/24/97	9/24/97	9/24/97	9/24/97	9/24/97	9/24/97
(Units in ug/kg) DEPTH (ft bls):	8-10	2-4	8-10	2-4	14-16	3-5
Acetone	< 1200	< 1600	< 1400	< 1300	< 1200	4400
Benzene	< 640	< 820	< 710	< 690	< 650	< 910
Bromodichloromethane	< 640	< 820	< 710	< 690	< 650	< 910
Bromoform	< 640	< 820	< 710	< 690	< 650	< 910
Bromomethane	< 1200	< 1600	< 1400	< 1300	< 1200	< 1800
2-Butanone	< 1200	< 1600	< 1400	< 1300	< 1200	< 1800
Carbon disulfide	< 640	< 820	< 710	< 690	< 650	< 910
Carbon tetrachloride	< 640	< 820	< 710	< 690	< 650	< 910
Chlorobenzene	< 640	< 820	< 710	< 690	< 650	< 910
Chlorodibromomethane	< 640	< 820	< 710	< 690	< 650	< 910
Chloroethane	< 1200	< 1600	< 1400	< 1300	< 1200	< 1800
Chloroform	< 640	< 820	< 710	< 690	< 650	< 910
Chloromethane	< 1200	< 1600	< 1400	< 1300	< 1200	< 1800
1,1-Dichloroethane	< 640	< 820	< 710	< 690	< 650	< 910
1,2-Dichloroethane	< 640	< 820	< 710	< 690	< 650	< 910
1,1-Dichloroethene	< 640	< 820	< 710	< 690	< 650	< 910
cis-1,2-Dichloroethene	< 640	130000 D	< 710	< 690	< 650	< 910
trans-1,2-Dichloroethene	< 640	< 820	< 710	< 690	< 650	< 910
1,2-Dichloropropane	< 640	< 820	< 710	< 690	< 650	< 910
cis-1,3-Dichloropropene	< 640	< 820	< 710	< 690	< 650	< 910
trans-1,3-Dichloropropene	< 640	< 820	< 710	< 690	< 650	< 910
Ethylbenzene	98 J	410000 D	250 J	< 690	< 650	3800
2-Hexanone	< 1200	< 1600	< 1400	< 1300	< 1200	< 1800
4-Methyl-2-pentanone	< 1200	< 1600	< 1400	< 1300	< 1200	< 1800
Methylene chloride	< 640	< 820	< 710	< 690	< 650	< 910
Styrene	< 640	< 820	< 710	< 690	< 650	< 910
1,1,2,2-Tetrachloroethane	< 640	< 820	< 710	< 690	< 650	< 910
Tetrachloroethene	< 640	1700000 D	< 710	160000 D	< 650	< 910
Toluene	< 640	520000 D	< 710	< 690	< 650	1300
1,1,1-Trichloroethane	< 640	< 820	< 710	< 690	< 650	< 910
1,1,2-Trichloroethane	< 640	< 820	< 710	< 690	< 650	< 910
Trichloroethylene	< 640	390000 D	< 710	< 690	< 650	< 910
Vinyl chloride	< 1200	1000 J	< 1400	< 1300	< 1200	< 1800
Xylenes (total)	220 J	1300000 D	580 J	< 690	< 650	19000

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
SAMPLE ID:	B225 9-11	B240 0.5-2	B240 8-10	B241 2-4	B241 10-12	B242 2-4
CONSTITUENT: DATE:	9/24/97	9/25/97	9/25/97	9/25/97	9/25/97	9/25/97
(Units in ug/kg) DEPTH (ft bls):	9-11	0.5-2	8-10	2-4	10-12	2-4
Acetone	4000	< 1000	< 1200	< 1400	< 1200	< 1200
Benzene	< 690	< 540	< 630	< 710	< 610	< 610
Bromodichloromethane	< 690	< 540	< 630	< 710	< 610	< 610
Bromoform	< 690	< 540	< 630	< 710	< 610	< 610
Bromomethane	< 1300	< 1000	< 1200	< 1400	< 1200	< 1200
2-Butanone	< 1300	< 1000	< 1200	< 1400	< 1200	< 1200
Carbon disulfide	< 690	< 540	< 630	< 710	< 610	< 610
Carbon tetrachloride	< 690	< 540	< 630	< 710	< 610	< 610
Chlorobenzene	< 690	< 540	< 630	< 710	< 610	< 610
Chlorodibromomethane	< 690	< 540	< 630	< 710	< 610	< 610
Chloroethane	< 1300	< 1000	< 1200	< 1400	< 1200	< 1200
Chloroform	< 690	< 540	< 630	< 710	< 610	< 610
Chloromethane	< 1300	< 1000	< 1200	< 1400	< 1200	< 1200
1,1-Dichloroethane	< 690	< 540	< 630	< 710	< 610	< 610
1,2-Dichloroethane	< 690	< 540	< 630	< 710	< 610	< 610
1,1-Dichloroethene	< 690	< 540	< 630	< 710	< 610	< 610
cis-1,2-Dichloroethene	< 690	< 540	< 630	9200	2000	< 610
trans-1,2-Dichloroethene	< 690	< 540	< 630	< 710	< 610	< 610
1,2-Dichloropropane	< 690	< 540	< 630	< 710	< 610	< 610
cis-1,3-Dichloropropene	< 690	< 540	< 630	< 710	< 610	< 610
trans-1,3-Dichloropropene	< 690	< 540	< 630	< 710	< 610	< 610
Ethylbenzene	200 J	< 540	< 630	< 710	< 610	160 J
2-Hexanone	< 1300	< 1000	< 1200	< 1400	< 1200	< 1200
4-Methyl-2-pentanone	< 1300	< 1000	< 1200	< 1400	< 1200	< 1200
Methylene chloride	< 690	< 540	< 630	< 710	< 610	< 610
Styrene	< 690	< 540	< 630	< 710	< 610	< 610
1,1,2,2-Tetrachloroethane	< 690	< 540	< 630	< 710	< 610	< 610
Tetrachloroethene	< 690	< 540	< 630	1700	59000 D	< 610
Toluene	2900	< 540	300 J	< 710	< 610	< 610
1,1,1-Trichloroethane	< 690	< 540	< 630	< 710	< 610	< 610
1,1,2-Trichloroethane	< 690	< 540	< 630	< 710	< 610	< 610
Trichloroethylene	< 690	< 540	< 630	< 710	760	< 610
Vinyl chloride	< 1300	< 1000	< 1200	< 1400	< 1200	< 1200
Xylenes (total)	780	< 540	< 630	< 710	540 J	< 610

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
SAMPLE ID:	B242 10-12	B242 22-24	B243 7-9	244 2-4	B244 12-14	B245 2-4
CONSTITUENT: DATE:	9/25/97	9/25/97	9/25/97	9/26/97	9/26/97	9/26/97
(Units in ug/kg) DEPTH (ft bls):	10-12	22-24	7-9	2-4	12-14	2-4
Acetone	< 1400	< 1000	< 1300	< 1600	< 1300	< 1300
Benzene	< 730	< 540	< 690	< 830	< 650	< 680
Bromodichloromethane	< 730	< 540	< 690	< 830	< 650	< 680
Bromoform	< 730	< 540	< 690	< 830	< 650	< 680
Bromomethane	< 1400	< 1000	< 1300	< 1600	< 1300	< 1300
2-Butanone	< 1400	< 1000	< 1300	< 1600	< 1300	< 1300
Carbon disulfide	< 730	< 540	< 690	< 830	< 650	< 680
Carbon tetrachloride	< 730	< 540	< 690	< 830	< 650	< 680
Chlorobenzene	< 730	< 540	< 690	< 830	< 650	< 680
Chlorodibromomethane	< 730	< 540	< 690	< 830	< 650	< 680
Chloroethane	< 1400	< 1000	< 1300	< 1600	< 1300	< 1300
Chloroform	< 730	< 540	< 690	< 830	< 650	< 680
Chloromethane	< 1400	< 1000	< 1300	< 1600	< 1300	< 1300
1,1-Dichloroethane	< 730	< 540	< 690	< 830	< 650	< 680
1,2-Dichloroethane	< 730	< 540	< 690	< 830	< 650	< 680
1,1-Dichloroethene	< 730	< 540	< 690	< 830	< 650	< 680
cis-1,2-Dichloroethene	< 730	< 540	< 690	< 830	< 650	< 680
trans-1,2-Dichloroethene	< 730	< 540	< 690	< 830	< 650	< 680
1,2-Dichloropropane	< 730	< 540	< 690	< 830	< 650	< 680
cis-1,3-Dichloropropene	< 730	< 540	< 690	< 830	< 650	< 680
trans-1,3-Dichloropropene	< 730	< 540	< 690	< 830	< 650	< 680
Ethylbenzene	230 J	< 540	< 690	< 830	< 650	< 680
2-Hexanone	< 1400	< 1000	< 1300	< 1600	< 1300	< 1300
4-Methyl-2-pentanone	< 1400	< 1000	< 1300	< 1600	< 1300	< 1300
Methylene chloride	< 730	1600 BJ	< 690	< 830	< 650	< 680
Styrene	< 730	< 540	< 690	< 830	< 650	< 680
1,1,2,2-Tetrachloroethane	< 730	< 540	< 690	< 830	< 650	< 680
Tetrachloroethene	< 730	850	< 690	< 830	4100	< 680
Toluene	< 730	320 J	< 690	< 830	< 650	< 680
1,1,1-Trichloroethane	< 730	< 540	< 690	< 830	< 650	< 680
1,1,2-Trichloroethane	< 730	< 540	< 690	< 830	< 650	< 680
Trichloroethylene	< 730	< 540	< 690	< 830	< 650	< 680
Vinyl chloride	< 1400	< 1000	< 1300	< 1600	< 1300	< 1300
Xylenes (total)	< 730	< 540	< 690	< 830	< 650	< 680

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
SAMPLE ID:	B245 10-12	B245 14-16	246 0-2	246 16-18	B247 10-12	B247 2-4
CONSTITUENT: DATE:	9/26/97	9/26/97	9/26/97	9/26/97	9/25/97	9/26/97
(Units in ug/kg) DEPTH (ft bls):	10-12	14-16	0-2	16-18	10-12	2-4
Acetone	< 1400	< 1200	< 1400	< 1300	< 1200	< 1200
Benzene	< 700	< 640	< 700	< 650	< 620	< 630
Bromodichloromethane	< 700	< 640	< 700	< 650	< 620	< 630
Bromoform	< 700	< 640	< 700	< 650	< 620	< 630
Bromomethane	< 1400	< 1200	< 1400	< 1300	< 1200	< 1200
2-Butanone	< 1400	< 1200	< 1400	< 1300	< 1200	< 1200
Carbon disulfide	< 700	< 640	< 700	< 650	< 620	< 630
Carbon tetrachloride	< 700	< 640	< 700	< 650	< 620	< 630
Chlorobenzene	< 700	< 640	< 700	< 650	< 620	< 630
Chlorodibromomethane	< 700	< 640	< 700	< 650	< 620	< 630
Chloroethane	< 1400	< 1200	< 1400	< 1300	< 1200	< 1200
Chloroform	< 700	< 640	< 700	< 650	< 620	< 630
Chloromethane	< 1400	< 1200	< 1400	< 1300	< 1200	< 1200
1,1-Dichloroethane	< 700	< 640	< 700	< 650	< 620	< 630
1,2-Dichloroethane	< 700	< 640	< 700	< 650	< 620	< 630
1,1-Dichloroethene	< 700	< 640	< 700	< 650	< 620	< 630
cis-1,2-Dichloroethene	< 700	< 640	1300	1300	< 620	< 630
trans-1,2-Dichloroethene	< 700	< 640	< 700	< 650	< 620	< 630
1,2-Dichloropropane	< 700	< 640	< 700	< 650	< 620	< 630
cis-1,3-Dichloropropene	< 700	< 640	< 700	< 650	< 620	< 630
trans-1,3-Dichloropropene	< 700	< 640	< 700	< 650	< 620	< 630
Ethylbenzene	< 700	< 640	< 700	< 650	< 620	< 630
2-Hexanone	< 1400	< 1200	< 1400	< 1300	< 1200	< 1200
4-Methyl-2-pentanone	< 1400	< 1200	< 1400	< 1300	< 1200	< 1200
Methylene chloride	< 700	< 640	< 700	< 650	< 620	< 630
Styrene	< 700	< 640	< 700	< 650	< 620	< 630
1,1,2,2-Tetrachloroethane	< 700	< 640	< 700	< 650	< 620	< 630
Tetrachloroethene	< 700	< 640	28000	26000	< 620	< 630
Toluene	< 700	< 640	< 700	< 650	< 620	< 630
1,1,1-Trichloroethane	< 700	< 640	< 700	< 650	< 620	< 630
1,1,2-Trichloroethane	< 700	< 640	< 700	< 650	< 620	< 630
Trichloroethylene	< 700	< 640	390 J	400 J	< 620	< 630
Vinyl chloride	< 1400	< 1200	< 1400	< 1300	< 1200	< 1200
Xylenes (total)	< 700	< 640	< 700	< 650	< 620	< 630

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
SAMPLE ID:	B248 0-2	B248 8-10	249 8-10	249 0-2	B-250 8-10	250 2-4
CONSTITUENT: DATE:	9/26/97	9/26/97	9/25/97	9/26/97	9/25/97	9/26/97
(Units in ug/kg) DEPTH (ft bls):	0-2	8-10	8-10	0-2	8-10	2-4
Acetone	< 1500	< 1300	< 1300	< 1300	< 1200	< 1300
Benzene	< 780	< 660	< 650	< 670	< 640	< 690
Bromodichloromethane	< 780	< 660	< 650	< 670	< 640	< 690
Bromoform	< 780	< 660	< 650	< 670	< 640	< 690
Bromomethane	< 1500	< 1300	< 1300	< 1300	< 1200	< 1300
2-Butanone	< 1500	< 1300	< 1300	< 1300	< 1200	< 1300
Carbon disulfide	< 780	< 660	< 650	< 670	< 640	< 690
Carbon tetrachloride	< 780	< 660	< 650	< 670	< 640	< 690
Chlorobenzene	< 780	< 660	< 650	< 670	< 640	< 690
Chlorodibromomethane	< 780	< 660	< 650	< 670	< 640	< 690
Chloroethane	< 1500	< 1300	< 1300	< 1300	< 1200	< 1300
Chloroform	< 780	< 660	< 650	< 670	< 640	< 690
Chloromethane	< 1500	< 1300	< 1300	< 1300	< 1200	< 1300
1,1-Dichloroethane	< 780	< 660	< 650	< 670	< 640	< 690
1,2-Dichloroethane	< 780	< 660	< 650	< 670	< 640	< 690
1,1-Dichloroethene	< 780	< 660	< 650	< 670	< 640	< 690
cis-1,2-Dichloroethene	< 780	1500	< 650	< 670	< 640	< 690
trans-1,2-Dichloroethene	< 780	< 660	< 650	< 670	< 640	< 690
1,2-Dichloropropane	< 780	< 660	< 650	< 670	< 640	< 690
cis-1,3-Dichloropropene	< 780	< 660	< 650	< 670	< 640	< 690
trans-1,3-Dichloropropene	< 780	< 660	< 650	< 670	< 640	< 690
Ethylbenzene	< 780	< 660	< 650	< 670	< 640	< 690
2-Hexanone	< 1500	< 1300	< 1300	< 1300	< 1200	< 1300
4-Methyl-2-pentanone	< 1500	< 1300	< 1300	< 1300	< 1200	< 1300
Methylene chloride	< 780	< 660	< 650	< 670	< 640	< 690
Styrene	< 780	< 660	< 650	< 670	< 640	< 690
1,1,2,2-Tetrachloroethane	< 780	< 660	< 650	< 670	< 640	< 690
Tetrachloroethene	< 780	2000	< 650	600 J	7400	860
Toluene	< 780	1000	< 650	< 670	< 640	< 690
1,1,1-Trichloroethane	< 780	< 660	< 650	< 670	< 640	< 690
1,1,2-Trichloroethane	< 780	< 660	< 650	< 670	< 640	< 690
Trichloroethylene	< 780	370 J	< 650	< 670	< 640	< 690
Vinyl chloride	< 1500	< 1300	< 1300	< 1300	< 1200	< 1300
Xylenes (total)	< 780	< 660	< 650	< 670	< 640	< 690

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
SAMPLE ID:	B251 0-2	B251 12-14	B251 22-24	B252 2-4	B252 10-12	B258 6-8
CONSTITUENT: DATE:	9/26/97	9/26/97	9/26/97	9/26/97	9/26/97	1/20/98
(Units in ug/kg) DEPTH (ft bls):	0-2	12-14	22-24	2-4	10-12	6-8
Acetone	< 1300	< 1100	< 1200	< 1400	< 1300	< 1200 J
Benzene	< 670	< 590	< 610	< 720	< 660	< 620 J
Bromodichloromethane	< 670	< 590	< 610	< 720	< 660	< 620 J
Bromoform	< 670	< 590	< 610	< 720	< 660	< 620 J
Bromomethane	< 1300	< 1100	< 1200	< 1400	< 1300	< 1200 J
2-Butanone	< 1300	< 1100	< 1200	< 1400	< 1300	< 1200 J
Carbon disulfide	< 670	< 590	< 610	< 720	< 660	< 620 J
Carbon tetrachloride	< 670	< 590	< 610	< 720	< 660	< 620 J
Chlorobenzene	< 670	< 590	< 610	< 720	< 660	< 620 J
Chlorodibromomethane	< 670	< 590	< 610	< 720	< 660	< 620 J
Chloroethane	< 1300	< 1100	< 1200	< 1400	< 1300	< 1200 J
Chloroform	< 670	< 590	< 610	< 720	< 660	< 620 J
Chloromethane	< 1300	< 1100	< 1200	< 1400	< 1300	< 1200 J
1,1-Dichloroethane	< 670	< 590	< 610	< 720	< 660	< 620 J
1,2-Dichloroethane	< 670	< 590	< 610	< 720	< 660	< 620 J
1,1-Dichloroethene	< 670	< 590	< 610	< 720	< 660	< 620 J
cis-1,2-Dichloroethene	< 670	< 590	< 610	3100	420 J	< 620 J
trans-1,2-Dichloroethene	< 670	< 590	< 610	< 720	< 660	< 620 J
1,2-Dichloropropane	< 670	< 590	< 610	< 720	< 660	< 620 J
cis-1,3-Dichloropropene	< 670	< 590	< 610	< 720	< 660	< 620 J
trans-1,3-Dichloropropene	< 670	< 590	< 610	< 720	< 660	< 620 J
Ethylbenzene	< 670	< 590	< 610	< 720	< 660	< 620 J
2-Hexanone	< 1300	< 1100	< 1200	< 1400	< 1300	< 1200 J
4-Methyl-2-pentanone	< 1300	< 1100	< 1200	< 1400	< 1300	< 1200 J
Methylene chloride	< 670	< 590	< 610	< 720	< 660	< 620 J
Styrene	< 670	< 590	< 610	< 720	< 660	< 620 J
1,1,2,2-Tetrachloroethane	< 670	< 590	< 610	< 720	< 660	< 620 J
Tetrachloroethene	< 670	670	1400	3300	2800	< 620 J
Toluene	< 670	< 590	< 610	< 720	< 660	< 620 J
1,1,1-Trichloroethane	< 670	< 590	< 610	< 720	< 660	< 620 J
1,1,2-Trichloroethane	< 670	< 590	< 610	< 720	< 660	< 620 J
Trichloroethylene	< 670	10000	1500	450 J	< 660	< 620 J
Vinyl chloride	< 1300	< 1100	< 1200	< 1400	< 1300	< 1200 J
Xylenes (total)	< 670	< 590	< 610	< 720	< 660	< 620 J

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
SAMPLE ID:	B258 20-22	B259 16-18	B259 22-24	B260 12-14	B260 32-34	B261 12-14
CONSTITUENT: DATE:	1/20/98	1/21/98	1/21/98	1/22/98	1/22/98	1/29/98
(Units in ug/kg) DEPTH (ft bls):	20-22	16-18	20-22	12-14	32-34	12-14
Acetone	< 1200 J	< 1300 J	< 1100 J	< 1200 J	< 1200 J	< 1300
Benzene	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
Bromodichloromethane	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
Bromoform	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
Bromomethane	< 1200 J	< 1300 J	< 1100 J	< 1200 J	< 1200 J	< 1300
2-Butanone	< 1200 J	< 1300 J	< 1100 J	< 1200 J	< 1200 J	< 1300
Carbon disulfide	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
Carbon tetrachloride	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
Chlorobenzene	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
Chlorodibromomethane	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
Chloroethane	< 1200 J	< 1300 J	< 1100 J	< 1200 J	< 1200 J	< 1300
Chloroform	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
Chloromethane	< 1200 J	< 1300 J	< 1100 J	< 1200 J	< 1200 J	< 1300
1,1-Dichloroethane	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
1,2-Dichloroethane	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
1,1-Dichloroethene	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
cis-1,2-Dichloroethene	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
trans-1,2-Dichloroethene	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
1,2-Dichloropropane	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
cis-1,3-Dichloropropene	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
trans-1,3-Dichloropropene	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
Ethylbenzene	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
2-Hexanone	< 1200 J	< 1300 J	< 1100 J	< 1200 J	< 1200 J	< 1300
4-Methyl-2-pentanone	< 1200 J	< 1300 J	< 1100 J	< 1200 J	< 1200 J	< 1300
Methylene chloride	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
Styrene	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
1,1,2,2-Tetrachloroethane	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
Tetrachloroethene	770 J	4500 J	2100 J	640 J	< 630 J	< 690
Toluene	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
1,1,1-Trichloroethane	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
1,1,2-Trichloroethane	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690
Trichloroethylene	< 650 J	< 700 J	540 J	740 J	< 630 J	< 690
Vinyl chloride	< 1200 J	< 1300 J	< 1100 J	< 1200 J	< 1200 J	< 1300
Xylenes (total)	< 650 J	< 700 J	< 560 J	< 630 J	< 630 J	< 690

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
SAMPLE ID:	B261 16-18	B262 12-14	B262 16-18	B263 22-24	B263 34-36	B264 12-14
CONSTITUENT: DATE:	1/29/98	1/30/98	1/30/98	1/21/98	1/21/98	1/22/98
(Units in ug/kg) DEPTH (ft bls):	16-18	12-14	16-18	22-24	34-36	12-14
Acetone	< 1600	< 1400	< 1400	< 1200 J	< 1200 J	< 1300 J
Benzene	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
Bromodichloromethane	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
Bromoform	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
Bromomethane	< 1600	< 1400	< 1400	< 1200 J	< 1200 J	< 1300 J
2-Butanone	< 1600	< 1400	< 1400	< 1200 J	< 1200 J	< 1300 J
Carbon disulfide	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
Carbon tetrachloride	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
Chlorobenzene	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
Chlorodibromomethane	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
Chloroethane	< 1600	< 1400	< 1400	< 1200 J	< 1200 J	< 1300 J
Chloroform	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
Chloromethane	< 1600	< 1400	< 1400	< 1200 J	< 1200 J	< 1300 J
1,1-Dichloroethane	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
1,2-Dichloroethane	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
1,1-Dichloroethene	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
cis-1,2-Dichloroethene	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
trans-1,2-Dichloroethene	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
1,2-Dichloropropane	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
cis-1,3-Dichloropropene	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
trans-1,3-Dichloropropene	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
Ethylbenzene	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
2-Hexanone	< 1600	< 1400	< 1400	< 1200 J	< 1200 J	< 1300 J
4-Methyl-2-pentanone	< 1600	< 1400	< 1400	< 1200 J	< 1200 J	< 1300 J
Methylene chloride	< 810	< 800	< 720	< 620 J	< 620 J	< 660 J
Styrene	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
1,1,2,2-Tetrachloroethane	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
Tetrachloroethene	< 810	< 750	890	3300 J	1800 J	14000 J
Toluene	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
1,1,1-Trichloroethane	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
1,1,2-Trichloroethane	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
Trichloroethylene	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J
Vinyl chloride	< 1600	< 1400	< 1400	< 1200 J	< 1200 J	< 1300 J
Xylenes (total)	< 810	< 750	< 720	< 620 J	< 620 J	< 660 J

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
SAMPLE ID:	B264 18-20	B264 36-38	B265 2-4	B265 14-16	B266 2-4	B266 8-10
CONSTITUENT: DATE:	1/22/98	1/22/98	1/30/98	1/30/98	1/30/98	1/30/98
(Units in ug/kg) DEPTH (ft bls):	18-20	36-38	2-4	14-16	2-4	8-10
Acetone	440 J	< 1200 J	1600	< 1600	< 1400	4800
Benzene	< 590 J	< 610 J	< 750	< 810	< 720	< 800
Bromodichloromethane	< 590 J	< 610 J	< 750	< 810	< 720	< 800
Bromoform	< 590 J	< 610 J	< 750	< 810	< 720	< 800
Bromomethane	< 1100 J	< 1200 J	< 1400	< 1600	< 1400	< 1500
2-Butanone	< 1100 J	< 1200 J	< 1400	< 1600	< 1400	< 1500
Carbon disulfide	< 590 J	< 610 J	< 750	< 810	< 720	< 800
Carbon tetrachloride	< 590 J	< 610 J	< 750	< 810	< 720	< 800
Chlorobenzene	< 590 J	< 610 J	< 750	< 810	< 720	< 800
Chlorodibromomethane	< 590 J	< 610 J	< 750	< 810	< 720	< 800
Chloroethane	< 1100 J	< 1200 J	< 1400	< 1600	< 1400	< 1500
Chloroform	< 590 J	< 610 J	< 750	< 810	< 720	< 800
Chloromethane	< 1100 J	< 1200 J	< 1400	< 1600	< 1400	< 1500
1,1-Dichloroethane	< 590 J	< 610 J	< 750	< 810	< 720	< 800
1,2-Dichloroethane	< 590 J	< 610 J	< 750	< 810	< 720	< 800
1,1-Dichloroethene	< 590 J	< 610 J	< 750	< 810	< 720	< 800
cis-1,2-Dichloroethene	< 590 J	< 610 J	< 750	< 810	< 720	< 800
trans-1,2-Dichloroethene	< 590 J	< 610 J	< 750	< 810	< 720	< 800
1,2-Dichloropropane	< 590 J	< 610 J	< 750	< 810	< 720	< 800
cis-1,3-Dichloropropene	< 590 J	< 610 J	< 750	< 810	< 720	< 800
trans-1,3-Dichloropropene	< 590 J	< 610 J	< 750	< 810	< 720	< 800
Ethylbenzene	< 590 J	< 610 J	< 750	< 810	< 720	< 800
2-Hexanone	< 1100 J	< 1200 J	< 1400	< 1600	< 1400	< 1500
4-Methyl-2-pentanone	< 1100 J	< 1200 J	< 1400	< 1600	< 1400	< 1500
Methylene chloride	< 590 J	< 610 J	< 750	560 J	< 720	800
Styrene	< 590 J	< 610 J	< 750	< 810	< 720	< 800
1,1,2,2-Tetrachloroethane	< 590 J	< 610 J	< 750	< 810	< 720	< 800
Tetrachloroethene	4100 J	1900 J	< 750	1000	< 720	< 800
Toluene	< 590 J	< 610 J	< 750	< 810	< 720	< 800
1,1,1-Trichloroethane	< 590 J	< 610 J	< 750	< 810	< 720	< 800
1,1,2-Trichloroethane	< 590 J	< 610 J	< 750	< 810	< 720	< 800
Trichloroethylene	480 J	< 610 J	< 750	< 810	< 720	< 800
Vinyl chloride	< 1100 J	< 1200 J	< 1400	< 1600	< 1400	< 1500
Xylenes (total)	< 590 J	< 610 J	< 750	< 810	< 720	< 800

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
SAMPLE ID:	B266 16-18	B267 2-4	B267 16-18	B267 30-32	B268 8-10	B268 18-20
CONSTITUENT: DATE:	1/30/98	1/26/98	1/26/98	1/26/98	1/30/98	1/30/98
(Units in ug/kg) DEPTH (ft bls):	16-18	2-4	16-18	30-32	8-10	18-20
Acetone	6900	< 1500	< 1200	< 1300 J	< 1300	< 1400
Benzene	< 700	< 780	< 650	< 690 J	< 690	< 740
Bromodichloromethane	< 700	< 780	< 650	< 690 J	< 690	< 740
Bromoform	< 700	< 780	< 650	< 690 J	< 690	< 740
Bromomethane	< 1400	< 1500	< 1200	< 1300 J	< 1300	< 1400
2-Butanone	< 1400	< 1500	< 1200	< 1300 J	< 1300	< 1400
Carbon disulfide	< 700	< 780	< 650	< 690 J	< 690	< 740
Carbon tetrachloride	< 700	< 780	< 650	< 690 J	< 690	< 740
Chlorobenzene	< 700	< 780	< 650	< 690 J	< 690	< 740
Chlorodibromomethane	< 700	< 780	< 650	< 690 J	< 690	< 740
Chloroethane	< 1400	< 1500	< 1200	< 1300 J	< 1300	< 1400
Chloroform	< 700	< 780	< 650	< 690 J	< 690	< 740
Chloromethane	< 1400	< 1500	< 1200	< 1300 J	< 1300	< 1400
1,1-Dichloroethane	< 700	< 780	< 650	< 690 J	< 690	< 740
1,2-Dichloroethane	< 700	< 780	< 650	< 690 J	< 690	< 740
1,1-Dichloroethene	< 700	< 780	< 650	< 690 J	< 690	< 740
cis-1,2-Dichloroethene	< 700	380000 E	1700	< 690 J	< 690	< 740
trans-1,2-Dichloroethene	< 700	4300	< 650	< 690 J	< 690	< 740
1,2-Dichloropropane	< 700	< 780	< 650	< 690 J	< 690	< 740
cis-1,3-Dichloropropene	< 700	< 780	< 650	< 690 J	< 690	< 740
trans-1,3-Dichloropropene	< 700	< 780	< 650	< 690 J	< 690	< 740
Ethylbenzene	< 700	< 780	< 650	< 690 J	< 690	< 740
2-Hexanone	< 1400	< 1500	< 1200	< 1300 J	< 1300	< 1400
4-Methyl-2-pentanone	< 1400	< 1500	< 1200	< 1300 J	< 1300	< 1400
Methylene chloride	< 700	< 780	< 650	< 690 J	< 690	< 1100
Styrene	< 700	< 780	< 650	< 690 J	< 690	< 740
1,1,2,2-Tetrachloroethane	< 700	< 780	< 650	< 690 J	< 690	< 740
Tetrachloroethene	3000	24000000 DJ	5600000 DJ	1500 J	< 690	1600
Toluene	< 700	< 780	< 650	< 690 J	< 690	< 740
1,1,1-Trichloroethane	< 700	< 780	< 650	< 690 J	< 690	< 740
1,1,2-Trichloroethane	< 700	< 780	< 650	< 690 J	< 690	< 740
Trichloroethylene	430 J	320000 E	4500	< 690 J	< 690	< 740
Vinyl chloride	< 1400	3100	< 1200	< 1300 J	< 1300	< 1400
Xylenes (total)	< 700	< 780	< 650	< 690 J	< 690	< 740

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
SAMPLE ID:	B269 2-4	B269 10-12	B269 20-22	B270 2-4	B270 16-18	B271 2-4
CONSTITUENT: DATE:	1/20/98	1/20/98	1/20/98	2/3/98	2/3/98	2/2/98
(Units in ug/kg) DEPTH (ft bls):	2-4	10-12	20-22	2-4	16-18	2-4
Acetone	< 1300 J	< 1400 J	< 1300 J	< 1600	< 1300	< 1500 J
Benzene	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
Bromodichloromethane	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
Bromoform	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
Bromomethane	< 1300 J	< 1400 J	< 1300 J	< 1600	< 1300	< 1500 J
2-Butanone	< 1300 J	< 1400 J	< 1300 J	< 1600	< 1300	< 1500 J
Carbon disulfide	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
Carbon tetrachloride	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
Chlorobenzene	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
Chlorodibromomethane	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
Chloroethane	< 1300 J	< 1400 J	< 1300 J	< 1600	< 1300	< 1500 J
Chloroform	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
Chloromethane	< 1300 J	< 1400 J	< 1300 J	< 1600	< 1300	< 1500 J
1,1-Dichloroethane	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
1,2-Dichloroethane	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
1,1-Dichloroethene	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
cis-1,2-Dichloroethene	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
trans-1,2-Dichloroethene	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
1,2-Dichloropropane	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
cis-1,3-Dichloropropene	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
trans-1,3-Dichloropropene	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
Ethylbenzene	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
2-Hexanone	< 1300 J	< 1400 J	< 1300 J	< 1600	< 1300	< 1500 J
4-Methyl-2-pentanone	< 1300 J	< 1400 J	< 1300 J	< 1600	< 1300	< 1500 J
Methylene chloride	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
Styrene	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
1,1,2,2-Tetrachloroethane	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
Tetrachloroethene	< 690 J	< 720 J	< 660 J	< 840	< 660	1700 J
Toluene	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
1,1,1-Trichloroethane	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
1,1,2-Trichloroethane	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
Trichloroethylene	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J
Vinyl chloride	< 1300 J	< 1400 J	< 1300 J	< 1600	< 1300	< 1500 J
Xylenes (total)	< 690 J	< 720 J	< 660 J	< 840	< 660	< 800 J

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
SAMPLE ID:	B271 8-10	B271 16-18	B271 22-24	B271 32-34	B272 14-16	B272 18-20
CONSTITUENT: DATE:	2/2/98	2/2/98	2/2/98	2/2/98	2/2/98	2/2/98
(Units in ug/kg) DEPTH (ft bls):	8-10	16-18	22-24	32-34	14-16	18-20
Acetone	< 1400 J	< 1400 J	< 1600 J	< 1600 J	3000 J	< 1100 J
Benzene	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
Bromodichloromethane	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
Bromoform	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
Bromomethane	< 1400 J	< 1400 J	< 1600 J	< 1600 J	< 1300 J	< 1100 J
2-Butanone	< 1400 J	< 1400 J	< 1600 J	< 1600 J	< 1300 J	< 1100 J
Carbon disulfide	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
Carbon tetrachloride	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
Chlorobenzene	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
Chlorodibromomethane	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
Chloroethane	< 1400 J	< 1400 J	< 1600 J	< 1600 J	< 1300 J	< 1100 J
Chloroform	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
Chloromethane	< 1400 J	< 1400 J	< 1600 J	< 1600 J	< 1300 J	< 1100 J
1,1-Dichloroethane	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
1,2-Dichloroethane	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
1,1-Dichloroethene	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
cis-1,2-Dichloroethene	2000 J	1200 J	5400 J	1600 J	< 670 J	< 590 J
trans-1,2-Dichloroethene	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
1,2-Dichloropropane	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
cis-1,3-Dichloropropene	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
trans-1,3-Dichloropropene	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
Ethylbenzene	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
2-Hexanone	< 1400 J	< 1400 J	< 1600 J	< 1600 J	< 1300 J	< 1100 J
4-Methyl-2-pentanone	< 1400 J	< 1400 J	< 1600 J	< 1600 J	< 1300 J	< 1100 J
Methylene chloride	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
Styrene	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
1,1,2,2-Tetrachloroethane	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
Tetrachloroethene	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	1100 J
Toluene	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
1,1,1-Trichloroethane	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
1,1,2-Trichloroethane	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J
Trichloroethylene	< 730 J	1000 J	< 840 J	< 820 J	< 670 J	1000 J
Vinyl chloride	2600 J	1200 J	2700 J	700 J	< 1300 J	< 1100 J
Xylenes (total)	< 730 J	< 730 J	< 840 J	< 820 J	< 670 J	< 590 J

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-3	AOC-3	AOC-4	AOC-4	AOC-5	AOC-5	AOC-5
SAMPLE ID:	B273 8-10	B273 12-14	B219 6-8	B219 16-18	B214 10-12	B214 20-22	B215 12-14
CONSTITUENT: DATE:	2/2/98	2/2/98	9/23/97	9/23/97	9/22/97	9/22/97	9/22/97
(Units in ug/kg) DEPTH (ft bls):	8-10	12-14	6-8	16-18	10-12	20-22	12-14
Acetone	< 1200 J	1400 J	< 1400	< 1300	< 1200	< 1300	< 1200
Benzene	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
Bromodichloromethane	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
Bromoform	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
Bromomethane	< 1200 J	< 1400 J	< 1400	< 1300	< 1200	< 1300	< 1200
2-Butanone	< 1200 J	< 1400 J	< 1400	< 1300	< 1200	< 1300	< 1200
Carbon disulfide	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
Carbon tetrachloride	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
Chlorobenzene	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
Chlorodibromomethane	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
Chloroethane	< 1200 J	< 1400 J	< 1400	< 1300	< 1200	< 1300	< 1200
Chloroform	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
Chloromethane	< 1200 J	< 1400 J	< 1400	< 1300	< 1200	< 1300	< 1200
1,1-Dichloroethane	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
1,2-Dichloroethane	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
1,1-Dichloroethene	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
cis-1,2-Dichloroethene	< 630 J	< 720 J	< 730	2500	< 630	< 660	< 650
trans-1,2-Dichloroethene	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
1,2-Dichloropropane	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
cis-1,3-Dichloropropene	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
trans-1,3-Dichloropropene	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
Ethylbenzene	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
2-Hexanone	< 1200 J	< 1400 J	< 1400	< 1300	< 1200	< 1300	< 1200
4-Methyl-2-pentanone	< 1200 J	< 1400 J	< 1400	< 1300	< 1200	< 1300	< 1200
Methylene chloride	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
Styrene	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
1,1,2,2-Tetrachloroethane	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
Tetrachloroethene	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
Toluene	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
1,1,1-Trichloroethane	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
1,1,2-Trichloroethane	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650
Trichloroethylene	< 630 J	< 720 J	< 730	15000	< 630	< 660	< 650
Vinyl chloride	< 1200 J	< 1400 J	< 1400	< 1300	< 1200	< 1300	< 1200
Xylenes (total)	< 630 J	< 720 J	< 730	< 700	< 630	< 660	< 650

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-5	AOC-5	AOC-5	AOC-5	AOC-5	AOC-7
SAMPLE ID:	B215 20-22	B216 4-6	B216 14-16	B217 4-6	B217 14-16	B232 6-8
CONSTITUENT: DATE:	9/22/97	9/22/97	9/22/97	9/23/97	9/23/97	9/25/97
(Units in ug/kg) DEPTH (ft bls):	20-2	4-6	14-16	4-6	14-16	6-8
Acetone	< 1200	< 1300	< 1200	< 1300	< 1200	< 1200
Benzene	< 620	< 690	< 650	< 650	< 600	< 610
Bromodichloromethane	< 620	< 690	< 650	< 650	< 600	< 610
Bromoform	< 620	< 690	< 650	< 650	< 600	< 610
Bromomethane	< 1200	< 1300	< 1200	< 1300	< 1200	< 1200
2-Butanone	< 1200	< 1300	< 1200	< 1300	< 1200	< 1200
Carbon disulfide	< 620	< 690	< 650	< 650	< 600	< 610
Carbon tetrachloride	< 620	< 690	< 650	< 650	< 600	< 610
Chlorobenzene	< 620	< 690	< 650	< 650	< 600	< 610
Chlorodibromomethane	< 620	< 690	< 650	< 650	< 600	< 610
Chloroethane	< 1200	< 1300	< 1200	< 1300	< 1200	< 1200
Chloroform	< 620	< 690	< 650	< 650	< 600	< 610
Chloromethane	< 1200	< 1300	< 1200	< 1300	< 1200	< 1200
1,1-Dichloroethane	< 620	< 690	< 650	< 650	< 600	< 610
1,2-Dichloroethane	< 620	< 690	< 650	< 650	< 600	< 610
1,1-Dichloroethene	< 620	< 690	< 650	< 650	< 600	< 610
cis-1,2-Dichloroethene	< 620	< 690	< 650	< 650	< 600	< 610
trans-1,2-Dichloroethene	< 620	< 690	< 650	< 650	< 600	< 610
1,2-Dichloropropane	< 620	< 690	< 650	< 650	< 600	< 610
cis-1,3-Dichloropropene	< 620	< 690	< 650	< 650	< 600	< 610
trans-1,3-Dichloropropene	< 620	< 690	< 650	< 650	< 600	< 610
Ethylbenzene	< 620	< 690	< 650	< 650	< 600	< 610
2-Hexanone	< 1200	< 1300	< 1200	< 1300	< 1200	< 1200
4-Methyl-2-pentanone	< 1200	< 1300	< 1200	< 1300	< 1200	< 1200
Methylene chloride	< 620	< 690	< 650	< 650	< 600	< 610
Styrene	< 620	< 690	< 650	< 650	< 600	< 610
1,1,2,2-Tetrachloroethane	< 620	< 690	< 650	< 650	< 600	< 610
Tetrachloroethene	< 620	< 690	< 650	790	< 600	< 610
Toluene	< 620	< 690	< 650	< 650	< 600	< 610
1,1,1-Trichloroethane	< 620	< 690	< 650	< 650	< 600	< 610
1,1,2-Trichloroethane	< 620	< 690	< 650	< 650	< 600	< 610
Trichloroethylene	< 620	< 690	< 650	< 650	< 600	< 610
Vinyl chloride	< 1200	< 1300	< 1200	< 1300	< 1200	< 1200
Xylenes (total)	< 620	< 690	< 650	< 650	< 600	< 610

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-7	AOC-9	AOC-9	AOC-9	AOC-9	AOC-9
SAMPLE ID:	B232 16-18	B231 5-7	B231 17-19	B233 2-4	B233 10-12	B236 0-2
CONSTITUENT: DATE:	9/25/97	9/25/97	9/25/97	9/25/97	9/25/97	9/25/97
(Units in ug/kg) DEPTH (ft bls):	16-18	5-7	17-19	2-4	10-12	0-2
Acetone	< 1200	< 1100	< 1200	< 1200	< 1100	< 1100
Benzene	< 600	< 580	< 650	< 640	< 580	< 570
Bromodichloromethane	< 600	< 580	< 650	< 640	< 580	< 570
Bromoform	< 600	< 580	< 650	< 640	< 580	< 570
Bromomethane	< 1200	< 1100	< 1200	< 1200	< 1100	< 1100
2-Butanone	< 1200	< 1100	< 1200	< 1200	< 1100	< 1100
Carbon disulfide	< 600	< 580	< 650	< 640	< 580	< 570
Carbon tetrachloride	< 600	< 580	< 650	< 640	< 580	< 570
Chlorobenzene	< 600	< 580	< 650	< 640	< 580	< 570
Chlorodibromomethane	< 600	< 580	< 650	< 640	< 580	< 570
Chloroethane	< 1200	< 1100	< 1200	< 1200	< 1100	< 1100
Chloroform	< 600	< 580	< 650	< 640	< 580	< 570
Chloromethane	< 1200	< 1100	< 1200	< 1200	< 1100	< 1100
1,1-Dichloroethane	< 600	< 580	< 650	< 640	< 580	< 570
1,2-Dichloroethane	< 600	< 580	< 650	< 640	< 580	< 570
1,1-Dichloroethene	< 600	< 580	< 650	< 640	< 580	< 570
cis-1,2-Dichloroethene	< 600	< 580	< 650	< 640	< 580	< 570
trans-1,2-Dichloroethene	< 600	< 580	< 650	< 640	< 580	< 570
1,2-Dichloropropane	< 600	< 580	< 650	< 640	< 580	< 570
cis-1,3-Dichloropropene	< 600	< 580	< 650	< 640	< 580	< 570
trans-1,3-Dichloropropene	< 600	< 580	< 650	< 640	< 580	< 570
Ethylbenzene	< 600	< 580	< 650	< 640	< 580	< 570
2-Hexanone	< 1200	< 1100	< 1200	< 1200	< 1100	< 1100
4-Methyl-2-pentanone	< 1200	< 1100	< 1200	< 1200	< 1100	< 1100
Methylene chloride	< 600	< 580	< 650	< 640	< 580	1000 BJ
Styrene	< 600	< 580	< 650	< 640	< 580	< 570
1,1,2,2-Tetrachloroethane	< 600	< 580	< 650	< 640	< 580	< 570
Tetrachloroethene	< 600	< 580	< 650	< 640	1300	< 570
Toluene	< 600	< 580	< 650	< 640	< 580	< 570
1,1,1-Trichloroethane	< 600	< 580	< 650	< 640	< 580	< 570
1,1,2-Trichloroethane	< 600	< 580	< 650	< 640	< 580	< 570
Trichloroethylene	< 600	< 580	< 650	< 640	< 580	< 570
Vinyl chloride	< 1200	< 1100	< 1200	< 1200	< 1100	< 1100
Xylenes (total)	< 600	< 580	< 650	< 640	< 580	< 570

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	AOC-9	AOC-9	AOC-9	TRIP BLANK	TRIP BLANK	TRIP BLANK
SAMPLE ID:	B236 9-11	B237 2-4	B237 8-10	8260TB	TB 11998	TB 12198
CONSTITUENT: DATE:	9/25/97	9/25/97	9/25/97	9/25/97	1/19/98	1/21/98
(Units in ug/kg) DEPTH (ft bls):	9-11	2-4	8-10	0-2	0-2	0-2
Acetone	< 1300	< 1200	< 1200	< 1200	< 1200	< 1200 J
Benzene	< 660	< 600	< 600	< 620	< 620 J	< 620 J
Bromodichloromethane	< 660	< 600	< 600	< 620	< 620 J	< 620 J
Bromoform	< 660	< 600	< 600	< 620	< 620 J	< 620 J
Bromomethane	< 1300	< 1200	< 1200	< 1200	< 1200	< 1200 J
2-Butanone	< 1300	< 1200	< 1200	< 1200	< 1200	< 1200 J
Carbon disulfide	< 660	< 600	< 600	< 620	< 620	< 620 J
Carbon tetrachloride	< 660	< 600	< 600	< 620	< 620 J	< 620 J
Chlorobenzene	< 660	< 600	< 600	< 620	< 620	< 620 J
Chlorodibromomethane	< 660	< 600	< 600	< 620	< 620 J	< 620 J
Chloroethane	< 1300	< 1200	< 1200	< 1200	< 1200	< 1200 J
Chloroform	< 660	< 600	< 600	< 620	< 620	< 620 J
Chloromethane	< 1300	< 1200	< 1200	< 1200	< 1200	< 1200 J
1,1-Dichloroethane	< 660	< 600	< 600	< 620	< 620	< 620 J
1,2-Dichloroethane	< 660	< 600	< 600	< 620	< 620	< 620 J
1,1-Dichloroethene	< 660	< 600	< 600	< 620	< 620	< 620 J
cis-1,2-Dichloroethene	< 660	< 600	< 600	< 620	< 620	< 620 J
trans-1,2-Dichloroethene	< 660	< 600	< 600	< 620	< 620	< 620 J
1,2-Dichloropropane	< 660	< 600	< 600	< 620	< 620 J	< 620 J
cis-1,3-Dichloropropene	< 660	< 600	< 600	< 620	< 620 J	< 620 J
trans-1,3-Dichloropropene	< 660	< 600	< 600	< 620	< 620 J	< 620 J
Ethylbenzene	< 660	< 600	< 600	< 620	< 620	< 620 J
2-Hexanone	< 1300	< 1200	< 1200	< 1200	< 1200	< 1200 J
4-Methyl-2-pentanone	< 1300	< 1200	< 1200	< 1200	< 1200	< 1200 J
Methylene chloride	< 660	< 600	< 600	< 620	< 620	< 620 J
Styrene	< 660	< 600	< 600	< 620	< 620	< 620 J
1,1,2,2-Tetrachloroethane	< 660	< 600	< 600	< 620	< 620	< 620 J
Tetrachloroethene	< 660	< 600	< 600	< 620	< 620	< 620 J
Toluene	< 660	< 600	< 600	< 620	< 620	< 620 J
1,1,1-Trichloroethane	< 660	< 600	< 600	< 620	< 620 J	< 620 J
1,1,2-Trichloroethane	< 660	< 600	< 600	< 620	< 620 J	< 620 J
Trichloroethylene	< 660	< 600	< 600	< 620	< 620 J	< 620 J
Vinyl chloride	< 1300	< 1200	< 1200	< 1200	< 1200	< 1200 J
Xylenes (total)	< 660	< 600	< 600	< 620	< 620	< 620 J

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

AREA OF CONCERN:	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK
SAMPLE ID:	TB12298	TB12698	TB12998	TB 2/2/98	TB 2/3/98
CONSTITUENT: DATE:	1/22/98	1/26/98	1/29/98	2/2/98	2/3/98
(Units in ug/kg) DEPTH (ft bls):	0-2	0-2	0-2	0-2	0-2
Acetone	< 1200 J	< 1200 J	< 1200	< 1200 J	< 1200
Benzene	< 620 J	< 620 J	< 620	< 620 J	< 620
Bromodichloromethane	< 620 J	< 620 J	< 620	< 620 J	< 620
Bromoform	< 620 J	< 620 J	< 620	< 620 J	< 620
Bromomethane	< 1200 J	< 1200 J	< 1200	< 1200 J	< 1200
2-Butanone	< 1200 J	< 1200 J	< 1200	< 1200 J	< 1200
Carbon disulfide	< 620 J	< 620 J	< 620	< 620 J	< 620
Carbon tetrachloride	< 620 J	< 620 J	< 620	< 620 J	< 620
Chlorobenzene	< 620 J	< 620 J	< 620	< 620 J	< 620
Chlorodibromomethane	< 620 J	< 620 J	< 620	< 620 J	< 620
Chloroethane	< 1200 J	< 1200 J	< 1200	< 1200 J	< 1200
Chloroform	< 620 J	< 620 J	< 620	< 620 J	< 620
Chloromethane	< 1200 J	< 1200 J	< 1200	< 1200 J	< 1200
1,1-Dichloroethane	< 620 J	< 620 J	< 620	< 620 J	< 620
1,2-Dichloroethane	< 620 J	< 620 J	< 620	< 620 J	< 620
1,1-Dichloroethene	< 620 J	< 620 J	< 620	< 620 J	< 620
cis-1,2-Dichloroethene	< 620 J	< 620 J	< 620	< 620 J	< 620
trans-1,2-Dichloroethene	< 620 J	< 620 J	< 620	< 620 J	< 620
1,2-Dichloropropane	< 620 J	< 620 J	< 620	< 620 J	< 620
cis-1,3-Dichloropropene	< 620 J	< 620 J	< 620	< 620 J	< 620
trans-1,3-Dichloropropene	< 620 J	< 620 J	< 620	< 620 J	< 620
Ethylbenzene	< 620 J	< 620 J	< 620	< 620 J	< 620
2-Hexanone	< 1200 J	< 1200 J	< 1200	< 1200 J	< 1200
4-Methyl-2-pentanone	< 1200 J	< 1200 J	< 1200	< 1200 J	< 1200
Methylene chloride	< 620 J	< 620 J	< 620	< 620 J	< 620
Styrene	< 620 J	< 620 J	< 620	< 620 J	< 620
1,1,2,2-Tetrachloroethane	< 620 J	< 620 J	< 620	< 620 J	< 620
Tetrachloroethene	< 620 J	< 620 J	< 620	< 620 J	< 620
Toluene	< 620 J	< 620 J	< 620	< 620 J	< 620
1,1,1-Trichloroethane	< 620 J	< 620 J	< 620	< 620 J	< 620
1,1,2-Trichloroethane	< 620 J	< 620 J	< 620	< 620 J	< 620
Trichloroethylene	< 620 J	< 620 J	< 620	< 620 J	< 620
Vinyl chloride	< 1200 J	< 1200 J	< 1200	< 1200 J	< 1200
Xylenes (total)	< 620 J	< 620 J	< 620	< 620 J	< 620

See last page for footnotes.

Table 5. Concentration of Volatile Organic Compounds in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

ug/kg	Micrograms per kilogram.
J	Estimated value.
D	Detected at secondary dilution.
B	Detected in associated blank.
E	Detected above calibration.
--	Not analyzed.
ft bls	Feet below land surface.
AOC-1	Haz. Mat. Storage Building
AOC-2	Drum Storage Area # 1
AOC-3	Drum Storage Area # 2
AOC-4	Sludge Lagoon # 5
AOC-5	Sludge Lagoon # 1-4
AOC-7	Paint Stripping Area/Former 10K-Gal UST
AOC-9	Former 15K-Gal UST

Table 6. Concentration of Petroleum Hydrocarbon in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Site	Date	Depth (ft bls)	Petroleum Hydrocarbons (units mg/kg) Diesel Range Organics	Gasoline Range Organics
AOC-1 Haz. Mat. Storage Building				
B-201	9/15/97	2-4	< 20	--
B-202	9/15/97	0-2	< 19	--
B-203	9/15/97	0-2	< 200	--
B-204	9/16/97	0-2	< 20	--
B-204	9/16/97	8-10	< 19	--
B-205	9/16/97	0-2	< 19	--
B-205	9/16/97	6-8	370	--
B-205	9/16/97	22-24	< 19	--
B-206	9/25/97	0-2	< 19	--
B-207	9/16/97	0-2	< 20	--
B-207	9/16/97	4-6	< 19	--
B-207	9/16/97	10-12	< 19	--
B-234	9/25/97	0.5-2	340	1270
B-234	9/25/97	4-6	36	--
B-234	9/25/97	16-18	< 19	--
B-235	9/25/97	2-4	< 19	< 2.1
B-235	9/25/97	12-14	< 19	--
AOC-2 Drum Storage Area # 1				
B-208	9/17/97	22-24	< 19	--
B-208	9/26/97	2-4	< 19	--
B-209	9/17/97	2-4	< 20	--
B-209	9/18/97	22-24	< 19	--
B-210	9/18/97	2-4	< 19	--
B-210	9/19/97	10-12	< 19 J	--
B-210	9/19/97	29-31	< 19	--
B-211	9/19/97	0-2	< 19	--
B-212	9/19/97	0-2	< 20	--
B-212	9/19/97	14-16	< 19	--
B-213	9/22/97	15-17	< 20	--
B-238	9/25/97	0.5-2	< 19	--
B-239	9/25/97	0.5-2	< 19	--
AOC-3 Drum Storage Area # 2				
B-221	9/24/97	2-4	< 25	< 2.9
B-222	9/24/97	2-4	< 20	11.2
B-223	9/24/97	2-4	< 20	7960
B-223	9/24/97	8-10	< 20	6.3
B-224	9/24/97	2-4	< 20	< 2.2
B-224	9/24/97	14-16	< 18	< 2.1
B-225	9/24/97	3-5	< 42	28.4
B-240	9/25/97	0.5-2	< 19	< 2.1

See next page for footnotes.

Table 6. Concentration of Petroleum Hydrocarbon in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Site	Date	Depth (ft bls)	Petroleum Hydrocarbons (units mg/kg) Diesel Range Organics	Gasoline Range Organics
B-241	9/25/97	2-4	< 20	< 2.2
B-242	9/25/97	2-4	180	132
B-242	9/25/97	10-12	250	218
B-243	9/25/97	0-2	< 20	< 2.2
B-244	9/26/97	2-4	< 23	< 2.6
B-245	9/26/97	2-4	< 19	< 2.1
B-245	9/26/97	10-12	390	5.7
B-245	9/26/97	14-16	< 19	< 2.1
B-246	9/26/97	0-2	< 21	< 2.4
B-246	9/26/97	16-18	< 18	< 2
B-247	9/26/97	2-4	< 20	< 2.2
B-248	9/26/97	0-2	< 19	< 2
B-249	9/26/97	0-2	< 18	< 2
B-250	9/26/97	2-4	< 20	< 2.3
B-251	9/26/97	0-2	< 20	< 2.2
B-251	9/26/97	12-14	< 19	< 2
B-251	9/26/97	22-24	< 18	< 2
B-252	9/26/97	2-4	< 20	< 2.3
AOC-4 Sludge Lagoon # 5				
B-219	9/23/97	6-8	< 20	< 2.2
AOC-5 Sludge Lagoon # 1-4				
B-214	9/22/97	10-12	< 20	< 2.2
B-214	9/22/97	20-22	< 19	< 2.1
B-215	9/22/97	12-14	< 19	< 2.1
B-215	9/22/97	20-22	< 19	< 2.2
B-216	9/22/97	4-6	< 20	< 2.1
B-217	9/23/97	4-6	< 19	< 2.2
AOC-7 Paint Stripping Area/Former 10K-Gal UST				
B-232	9/25/97	6-8	< 19	< 2
B-232	9/25/97	16-18	< 19	--
AOC-9 Former 15K-Gal UST				
B-231	9/25/97	5-7	320	28
B-231	9/25/97	17-19	< 19	< 2.2
B-233	9/25/97	2-4	< 19	< 2
B-236	9/25/97	0-2	< 18	< 2
B-237	9/25/97	2-4	< 19	< 2.1

mg/kg	Milligrams per kilogram.
J	Estimated value.
--	Not analyzed.
ft bls	Feet below land surface.

For RCL GC

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Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	AREA OF CONCERN: / SAMPLE ID: / DATE: / DEPTH (ft bls):	AOC-1 B201 2-4 9/15/97 2-4	AOC-1 B202 0-2 9/15/97 0-2	AOC-1 B203 0-2 9/15/97 0-2	AOC-1 B204 0-2 9/16/97 0-2	AOC-1 B204 8-10 9/16/97 8-10
	NJDEP Residential Direct Contact Soil Cleanup Criteria					
Antimony	14	< 1.9	< 1.8	9 B	< 1.8	< 1.8
Arsenic	20	4.4	2.4	2.5	3.7	1.8 B
Beryllium	1	0.65 B	0.64 B	0.87 B	0.8 B	0.8 B
Cadmium	1	< 0.24	< 0.23	< 0.22	< 0.23	< 0.22
Chromium	NA	25.6	32.2	16.3	15.1	12.8
Copper	600	14.7 J	18.6 J	16.1 J	18.6 J	19.6 J
Cyanide	1100	< 0.61	< 0.57	< 0.54	< 0.54	< 0.57
Lead	400	7.2 J	8.1 J	83.8 J	13.8 J	6.3 J
Mercury	14	< 0.089	< 0.09	< 0.086	< 0.095	< 0.077
Nickel	250	78	11.3	17.4	11.2	11
Selenium	63	2	< 0.68	1.2	1.1 B	0.82 B
Silver	110	< 0.24	< 0.23	0.67 B	0.66 B	3.5
Thallium	2	1.1 B	< 0.68	< 0.67	< 0.68	< 0.67
Zinc	1500	41.7 J	43.2 J	62.1 J	132 J	43.3 J

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
AOC-3 Drum Storage Area # 2
AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
Bold type indicates an exceedance of NJDEP's Residential Direct Contact Soil Cleanup Criteria.
NJDEP New Jersey Department of Environmental Protection.
For RCL MET

Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	AREA OF CONCERN: / SAMPLE ID: / DATE: / DEPTH (ft bls):	AOC-1 B205 0-2 9/16/97 0-2	AOC-1 B205 6-8 9/16/97 6-8	AOC-1 B205 22-24 9/16/97 22-24	AOC-1 B206 0-2 9/25/97 0-2	AOC-1 B207 0-2 9/16/97 0-2
	NJDEP Residential Direct Contact Soil Cleanup Criteria					
Antimony	14	< 1.8	< 1.8	< 1.8	< 1.7	< 1.8
Arsenic	20	4.2	2.3	1.2 B	3.4	4.2
Beryllium	1	0.66 B	0.83 B	0.45 B	0.73 B	0.62 B
Cadmium	1	< 0.22	< 0.22	< 0.22	0.47 B	< 0.23
Chromium	NA	27.4	18.4	8.2	36.5	22.2
Copper	600	45.3 J	19.3 J	9.5 J	43.3	13.8 J
Cyanide	1100	< 0.57	< 0.54	< 0.54	< 0.53	< 0.54
Lead	400	18.6 J	3.6 J	3 J	21.1 J	7.5 J
Mercury	14	< 0.092	< 0.077	< 0.1	< 0.094	< 0.091
Nickel	250	15.1	11.1	7.8 B	13.6 J	9.5
Selenium	63	1.4	1.3	0.96 B	1.9	1.4
Silver	110	3.5	< 0.22	< 0.22	2.1 B	< 0.23
Thallium	2	0.76 B	< 0.67	< 0.66	< 0.65	0.8 B
Zinc	1500	72.2 J	40.6 J	25 J	61.3	33 J

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
AOC-3 Drum Storage Area # 2
AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
Bold type indicates an exceedance of NJDEP's Residential Direct Contact Soil Cleanup Criteria.
NJDEP New Jersey Department of Environmental Protection.
For RCL MET

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Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	AREA OF CONCERN: / SAMPLE ID: / DATE: / DEPTH (ft bls):	AOC-1 B207 4-6 9/16/97 4-6		AOC-1 B207 10-12 9/16/97 10-12		AOC-1 B234 0.5-2 9/25/97 0.5-2		AOC-1 B234 4-6 9/25/97 4-6		AOC-1 B234 16-18 9/25/97 16-18	
	NJDEP Residential Direct Contact Soil Cleanup Criteria										
Antimony	14	< 1.8		< 1.8		< 1.9		< 1.8		< 1.8	
Arsenic	20	2.4		2	B	3.3		1.6	B	1.4	B
Beryllium	1	0.77	B	0.72	B	0.64	B	0.72	B	0.56	B
Cadmium	1	< 0.22		< 0.22		< 0.24		< 0.22		< 0.22	
Chromium	NA	16.8		16.8		30.2		12.2		12.9	
Copper	600	17.7	J	18.7	J	25.1		15.4		16.3	
Cyanide	1100	< 0.55		< 0.56		< 0.57		< 0.53		< 0.57	
Lead	400	3.7	J	4.2	J	27.2	J	3.2	J	3.3	J
Mercury	14	< 0.098		< 0.098		< 0.094		< 0.1		< 0.081	
Nickel	250	10.5		12.2		12.6	J	9.7	J	9.8	J
Selenium	63	1	B	1.4		2.3		1.5		1.4	
Silver	110	< 0.22		< 0.22		330		8.3		< 0.22	
Thallium	2	0.98	B	< 0.68		< 0.71		< 0.67		< 0.66	
Zinc	1500	36.4	J	40	J	60.2		39.6		35.4	

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
AOC-3 Drum Storage Area # 2
AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
Bold type indicates an exceedance of NJDEP's Residential Direct Contact Soil Cleanup Criteria.
NJDEP New Jersey Department of Environmental Protection.
For RCL MET

Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	AREA OF CONCERN: / SAMPLE ID: / DATE: / DEPTH (ft bls):	AOC-1 B235 2-4 9/25/97 2-4	AOC-1 B235 12-14 9/25/97 12-14	AOC-2 B208 22-24 9/17/97 22-24	AOC-2 B208 2-4 9/26/97 2-4	AOC-2 B209 2-4 9/17/97 2-4
	NJDEP Residential Direct Contact Soil Cleanup Criteria					
Antimony	14	< 1.8	< 1.8	< 1.8	< 1.8 J	< 1.8
Arsenic	20	2 B	2 B	2.4	1.4 B	3.1
Beryllium	1	0.85 B	0.88 B	0.56 B	0.69 B	0.67 B
Cadmium	1	< 0.22	< 0.22	< 0.22	< 0.23 J	< 0.23
Chromium	NA	17.7	16.7	10.7	16.9	17.8
Copper	600	21.5	21.2	16.4 J	17.3	14.7 J
Cyanide	1100	< 0.57	< 0.55	< 0.59	< 0.57	< 0.6
Lead	400	4.8 J	7.8 J	4.8 J	4 J	6.1 J
Mercury	14	< 0.085	< 0.11	< 0.087	--	< 0.11
Nickel	250	10.7 J	11.5 J	12.2	9.3 J	10
Selenium	63	1.5	1.4	< 0.68	1.6 J	1.6
Silver	110	< 0.22	< 0.22	< 0.22	< 0.23	< 0.23
Thallium	2	< 0.66	< 0.67	< 0.68	< 0.68	0.75 B
Zinc	1500	40.8	45.6	39.1 J	24.3 J	37.8 J

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
AOC-3 Drum Storage Area # 2
AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
Bold type indicates an exceedance of NJDEP's Residential Direct Contact Soil Cleanup Criteria.
NJDEP New Jersey Department of Environmental Protection.
For RCL MET

Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	NJDEP Residential Direct Contact Soil Cleanup Criteria	AREA OF CONCERN:	AOC-2		AOC-2		AOC-2		AOC-2		AOC-2	
		SAMPLE ID:	B209 22-24		B210 2-4		B210 10-12		B210 29-31		B211 0-2	
		DATE:	9/18/97		9/18/97		9/19/97		9/19/97		9/19/97	
		DEPTH (ft bls):	22-24		2-4		10-12		29-31		0-2	
Antimony	14		< 2.4	J	< 2.4	J	< 1.8	J	< 1.8	J	< 1.7	J
Arsenic	20		2.7	B	3.2		1.2	J	1.8	B	2.2	B
Beryllium	1		0.7	B	0.97	B	0.4	J	< 0.23		0.99	B
Cadmium	1		< 0.3		< 0.3		< 0.23	J	< 0.23		< 0.22	
Chromium	NA		19.8		20.4		10.5	J	8.2		15.6	
Copper	600		26.5		30.7		14.6	J	13.5		20.1	
Cyanide	1100		< 0.73		< 0.72		< 0.58	J	< 0.56		< 0.53	
Lead	400		4.8		5.6		2.9	J	2.9		4	
Mercury	14		< 0.1		< 0.13		< 0.11	J	< 0.1		< 0.091	
Nickel	250		13.4		16.2		7.7	J	7.1	B	9.1	
Selenium	63		< 0.89		< 0.9		< 0.68	J	< 0.68		< 0.65	
Silver	110		< 0.3		< 0.3		< 0.23	J	< 0.23		< 0.22	
Thallium	2		< 0.89		< 0.9		< 0.68	J	< 0.68		< 0.65	
Zinc	1500		45.6	J	49.4	J	27.4	J	29	J	33.3	J

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
AOC-3 Drum Storage Area # 2
AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
Bold type indicates an exceedance of NJDEP's Residential Direct Contact Soil Cleanup Criteria.
NJDEP New Jersey Department of Environmental Protection.
For RCL MET

Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	AREA OF CONCERN: / SAMPLE ID: / DATE: / DEPTH (ft bls):	AOC-2 B212 0-2 9/19/97 0-2		AOC-2 B212 14-16 9/19/97 14-16		AOC-2 B213 15-17 9/22/97 15-17		AOC-2 B238 0.5-2 9/25/97 0.5-2		AOC-2 B239 0.5-2 9/25/97 0.5-2	
	NJDEP Residential Direct Contact Soil Cleanup Criteria										
Antimony	14	< 1.8	J	< 2.4	J	< 1.8	J	< 1.7		< 1.8	
Arsenic	20	3.1		4		2	B	2.5		1.7	B
Beryllium	1	0.67	B	0.57	B	0.64	B	0.83	B	0.81	B
Cadmium	1	< 0.23		< 0.3		< 0.23		< 0.22		< 0.22	
Chromium	NA	21.9		31.1		16.2		16.5		20.6	
Copper	600	19.4	J	29.2		14.6	J	16.2		22.6	
Cyanide	1100	< 0.59		< 0.73		< 0.58		< 0.54		< 0.58	
Lead	400	5.2	J	7.1		2.6	J	3.6	J	6.5	J
Mercury	14	< 0.086		< 0.11		< 0.095		< 0.091		< 0.078	
Nickel	250	11.7		16.1		8.6	B	9.6	J	12.5	J
Selenium	63	2.1	J	< 0.89		1.4	J	1.5		2.6	
Silver	110	< 0.23		< 0.3		< 0.23		< 0.22		< 0.22	
Thallium	2	1.7	B	< 0.89		< 0.69		< 0.65		< 0.68	
Zinc	1500	75.3	J	41.9	J	31.6	J	31.9		42	

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
AOC-3 Drum Storage Area # 2
AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
Bold type indicates an exceedance of NJDEP's Residential Direct Contact Soil Cleanup Criteria.
NJDEP New Jersey Department of Environmental Protection.
For RCL MET

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Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	AREA OF CONCERN: / SAMPLE ID: / DATE: / DEPTH (ft bls):	AOC-3 B221 2-4 9/24/97 2-4		AOC-3 B222 2-4 9/24/97 2-4		AOC-3 B223 2-4 9/24/97 2-4		AOC-3 B223 8-10 9/24/97 8-10		AOC-3 B224 2-4 9/24/97 2-4	
	NJDEP Residential Direct Contact Soil Cleanup Criteria										
Antimony	14	< 2.4	J	< 2	J	< 2	J	< 2.6	J	< 1.8	J
Arsenic	20	2.8	B	2.8		4.4		2	B	3.1	
Beryllium	1	1.1	B	0.67	B	0.73	B	1.8		0.7	B
Cadmium	1	< 0.3		< 0.24		1.3	J	< 0.32		< 0.23	
Chromium	NA	13.2		13	J	320		41.2		20.3	
Copper	600	16	J	13.3	J	113	J	56.2	J	19.3	J
Cyanide	1100	< 0.79		< 0.62		< 2.5		< 0.8		< 0.59	
Lead	400	17.8	J	7.2		43.4	J	11.9	J	5.1	J
Mercury	14	< 0.11		< 0.1		< 0.11		< 0.15		< 0.11	
Nickel	250	7.5	B	8.6	B	12.5		18.4		9.6	
Selenium	63	1.8	J	1.6	J	1.8	J	1.9	J	1.3	J
Silver	110	< 0.3		< 0.24		1.5	B	< 0.32		< 0.23	
Thallium	2	< 0.9		< 0.73		< 0.75		< 0.97		< 0.69	
Zinc	1500	36.4	J	41	J	89.4	J	100	J	35.4	J

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
AOC-3 Drum Storage Area # 2
AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
Bold type indicates an exceedance of NJDEP's Residential Direct Contact Soil Cleanup Criteria.
NJDEP New Jersey Department of Environmental Protection.
For RCL MET

Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	AREA OF CONCERN: / SAMPLE ID: / DATE: / DEPTH (ft bls):	AOC-3 B224 14-16 9/24/97 14-16	AOC-3 B225 3-5 9/24/97 3-5	AOC-3 B240 0.5-2 9/25/97 0.5-2	AOC-3 B241 2-4 9/25/97 2-4	AOC-3 B242 2-4 9/25/97 2-4
	NJDEP Residential Direct Contact Soil Cleanup Criteria					
Antimony	14	< 1.7 J	2 BJ	< 1.8	< 1.9	< 1.8
Arsenic	20	1.3 B	12	3.8	5.1	4
Beryllium	1	0.52 B	0.74 B	0.86 B	0.66 B	1.1 B
Cadmium	1	< 0.22	92.8 J	< 0.23	< 0.24	< 0.23
Chromium	NA	9.8	87.3	24.5	20.7	24.8
Copper	600	14.8 J	1150 J	26.1	15.1	28.3
Cyanide	1100	< 0.54	< 0.63	< 0.57	< 0.58	< 0.56
Lead	400	2.7 J	208 J	6.3 J	8.5 J	5.1 J
Mercury	14	< 0.094	< 0.11	< 0.08	< 0.11	< 0.081
Nickel	250	10.5	75.9	13.6 J	10.8 J	14 J
Selenium	63	0.68 BJ	3 J	2.2	3.1	1.5
Silver	110	< 0.22	10.2	< 0.23	< 0.24	< 0.23
Thallium	2	< 0.65	3.5	1.8 B	1.1 B	< 0.68
Zinc	1500	34.5 J	816 J	41.8	38.7	50.8

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
AOC-3 Drum Storage Area # 2
AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
Bold type indicates an exceedance of NJDEP's Residential Direct Contact Soil Cleanup Criteria.
NJDEP New Jersey Department of Environmental Protection.
For RCL MET

Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	AREA OF CONCERN:	AOC-3		AOC-3		AOC-3		AOC-3		AOC-3	
	SAMPLE ID:	B242 10-12		B243 0-2		244 2-4		B245 2-4		B245 10-12	
	DATE:	9/25/97		9/25/97		9/26/97		9/26/97		9/26/97	
	DEPTH (ft bls):	10-12		0-2		2-4		2-4		10-12	
	NJDEP Residential Direct Contact Soil Cleanup Criteria										
Antimony	14	< 1.8		< 1.9	J	< 2	J	< 1.8	J	< 1.8	J
Arsenic	20	1.5	B	11.4		3.4		1.5	B	1	B
Beryllium	1	0.88	B	0.84	B	0.73	B	1	B	0.77	B
Cadmium	1	< 0.22		1	BJ	< 0.25	J	< 0.22	J	< 0.23	J
Chromium	NA	20.2		55.7		21.1		14.6		14.3	
Copper	600	22.1		47.5	J	27.6		19.2		18.7	
Cyanide	1100	< 0.56		< 0.59		< 0.62		< 0.57		< 0.58	
Lead	400	3.4	J	153	J	30.8	J	4.5	J	3.2	J
Mercury	14	< 0.088		< 0.11		< 0.12		< 0.1		< 0.11	
Nickel	250	13.4	J	40.7		10	BJ	6.4	BJ	10.3	J
Selenium	63	1.5		2.6	J	1.8	J	1.1	BJ	1.3	J
Silver	110	< 0.22		2.5		1.6	B	< 0.22		< 0.23	
Thallium	2	< 0.66		0.76	B	< 0.75		< 0.66		< 0.69	
Zinc	1500	46		128	J	68.4	J	33.5	J	39.3	J

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
AOC-3 Drum Storage Area # 2
AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
Bold type indicates an exceedance of NJDEP's Residential Direct Contact Soil Cleanup Criteria.
NJDEP New Jersey Department of Environmental Protection.
For RCL MET

Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	AREA OF CONCERN: / SAMPLE ID: / DATE: / DEPTH (ft bls):	AOC-3 B245 14-16 9/26/97 14-16	AOC-3 246 0-2 9/26/97 0-2	AOC-3 246 16-18 9/26/97 16-1	AOC-3 B247 2-4 9/26/97 2-4	AOC-3 B248 0-2 9/26/97 0-2
	NJDEP Residential Direct Contact Soil Cleanup Criteria					
Antimony	14	< 1.8 J	< 2 J	< 1.8 J	< 1.8 J	< 1.9 J
Arsenic	20	2 B	3.7	0.98 B	3.4	2 B
Beryllium	1	0.88 B	0.94 B	0.7 B	0.7 B	0.68 B
Cadmium	1	< 0.22 J	< 0.26 J	< 0.22 J	< 0.23 J	< 0.23 J
Chromium	NA	14.9	17	10.1	13.8	16.7
Copper	600	24.1	13.8	16.1	14.7	12.8
Cyanide	1100	< 0.56	< 0.63	< 0.55	< 0.59	< 0.58
Lead	400	4.3 J	24.7 J	3 J	5.9 J	5.9 J
Mercury	14	< 0.11	< 0.13	< 0.076	< 0.11	< 0.12
Nickel	250	12 J	8.8 BJ	8.3 BJ	9.9 J	9.6 J
Selenium	63	1.3 J	2.6 J	< 0.67	1 BJ	2 J
Silver	110	< 0.22	< 0.26	< 0.22	< 0.23	< 0.23
Thallium	2	< 0.68	< 0.77	< 0.67	< 0.68	< 0.7
Zinc	1500	42.9 J	46.3 J	28.3 J	34.8 J	31.9 J

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
AOC-3 Drum Storage Area # 2
AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
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For RCL MET

Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	AREA OF CONCERN: / SAMPLE ID: / DATE: / DEPTH (ft bls):	AOC-3 249 0-2 9/26/97 0-2		AOC-3 250 2-4 9/26/97 2-4		AOC-3 B251 0-2 9/26/97 0-2		AOC-3 B251 12-14 9/26/97 12-14		AOC-3 B251 22-24 9/26/97 22-24	
	NJDEP Residential Direct Contact Soil Cleanup Criteria										
Antimony	14	< 1.9	J	< 1.9	J	< 1.8		< 1.8	J	< 1.7	
Arsenic	20	3.1		5.7		2.6		1.3	B	1	B
Beryllium	1	0.82	B	0.65	B	0.81	B	0.75	B	0.34	B
Cadmium	1	34.2	J	< 0.24	J	< 0.22		< 0.23	J	< 0.21	
Chromium	NA	37.6		30.4		18.2		11.5		9.8	
Copper	600	9540		28.2		16.6		18		15.3	
Cyanide	1100	< 0.55		< 0.62		< 0.54		< 0.56		< 0.51	
Lead	400	25.1	J	13.7	J	8.8		3.9	J	3.3	
Mercury	14	< 0.11		< 0.11		< 0.11		< 0.11		< 0.11	
Nickel	250	12.6	J	15.3	J	10.5		11.3	J	9.4	
Selenium	63	2.1	J	1.6	J	1.1	B	0.94	BJ	0.79	B
Silver	110	321		1.8	B	< 0.22		< 0.23		< 0.21	
Thallium	2	< 0.72		< 0.71		< 0.67		< 0.69		< 0.64	
Zinc	1500	108	J	75.4	J	36.1	E	38	J	40.5	E

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
AOC-3 Drum Storage Area # 2
AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
Bold type indicates an exceedance of NJDEP's Residential Direct Contact Soil Cleanup Criteria.
NJDEP New Jersey Department of Environmental Protection.
For RCL MET

Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	AREA OF CONCERN: / SAMPLE ID: / DATE: / DEPTH (ft bls):	AOC-3 B252 2-4 9/26/97 2-4	AOC-3 B265 2-4 1/30/98 2-4	AOC-3 B265 14-16 1/30/98 14-16	AOC-3 B266 2-4 1/30/98 2-4	AOC-3 B266 8-10 1/30/98 8-10
	NJDEP Residential Direct Contact Soil Cleanup Criteria					
Antimony	14	< 1.8 J	< 0.209	< 0.228	< 0.218	< 0.237
Arsenic	20	2.3	1.46	1.51	0.865 B	1.78
Beryllium	1	0.59 B	0.703 CJ	0.435 BCJ	0.487 CJ	0.701 CJ
Cadmium	1	< 0.23 J	< 0.0432	< 0.047	< 0.0451	< 0.049
Chromium	NA	15.2	14 CJ	9.58 CJ	18.6 CJ	19.5 CJ
Copper	600	18.1	16.8	13.2	11.5	19.8
Cyanide	1100	< 0.6	--	--	--	--
Lead	400	8.3 J	3.77	2.82	3.35	6.24
Mercury	14	< 0.11	< 0.0369	< 0.0402	< 0.0385	< 0.0419
Nickel	250	11.7 J	8.19	7.57	7.6	14
Selenium	63	1.4 J	0.471 B	< 0.347	< 0.333	< 0.362
Silver	110	< 0.23	< 0.052	< 0.0566	< 0.0543	< 0.059
Thallium	2	< 0.7	0.842 B	0.62 B	0.492 B	1.03 B
Zinc	1500	36.1 J	28.9	23.9	28	40.6

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
AOC-3 Drum Storage Area # 2
AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
Bold type indicates an exceedance of NJDEP's Residential Direct Contact Soil Cleanup Criteria.
NJDEP New Jersey Department of Environmental Protection.
For RCL MET

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Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	AREA OF CONCERN: / SAMPLE ID: / DATE: / DEPTH (ft bls):	AOC-3 B266 16-18 1/30/98 16-18	AOC-3 B267 2-4 1/26/98 2-4	AOC-3 B267 16-18 1/26/98 16-18	AOC-3 B267 30-32 1/26/98 30-32	AOC-3 B268 8-10 1/30/98 8-10
	NJDEP Residential Direct Contact Soil Cleanup Criteria					
Antimony	14	< 0.216	0.403 BJ	R	R	< 0.212
Arsenic	20	2.17	6.83	1.04	1.65	2.04
Beryllium	1	0.535 CJ	0.828	0.72	0.439 B	0.714 CJ
Cadmium	1	< 0.0445	5.96 J	< 0.043 J	< 0.0448 J	< 0.0439
Chromium	NA	13.5 CJ	38.7	16.6	15.5	16 CJ
Copper	600	14.9	83.7	17	14.1	15.4
Cyanide	1100	--	--	--	--	--
Lead	400	4.15	88.4 J	4.84 J	3.15 J	3.81
Mercury	14	< 0.038	0.105	< 0.0367	< 0.0383	< 0.0375
Nickel	250	10.4	22.8	7.55	7.67	9.91
Selenium	63	< 0.329	< 0.384	< 0.317	< 0.331	< 0.324
Silver	110	< 0.0536	3.43 J	< 0.0518 J	< 0.054 J	< 0.0529
Thallium	2	0.784 B	0.869 B	1.05 B	0.769 B	1.26
Zinc	1500	32	243 J	29.8 J	24.3 J	29.9

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
AOC-3 Drum Storage Area # 2
AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
Bold type indicates an exceedance of NJDEP's Residential Direct Contact Soil Cleanup Criteria.
NJDEP New Jersey Department of Environmental Protection.
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Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	AREA OF CONCERN: / SAMPLE ID: / DATE: / DEPTH (ft bls):	AOC-3 B268 18-20 1/30/98 18-20	AOC-3 B269 2-4 1/20/98 2-4	AOC-3 B269 10-12 1/20/98 10-12	AOC-3 B269 20-22 1/20/98 20-22	AOC-3 B270 2-4 2/3/98 2-4
	NJDEP Residential Direct Contact Soil Cleanup Criteria					
Antimony	14	< 0.208	R	R	R	< 0.231
Arsenic	20	1.55	2.56	2.26	1.56	1.96
Beryllium	1	0.38 BCJ	0.846	0.699	0.559	0.368 B
Cadmium	1	< 0.043	< 0.045 J	< 0.0454 J	< 0.0432 J	< 0.0477
Chromium	NA	12.4 CJ	15	15.1	13.2	19.1
Copper	600	16.2	16	22.5	14.4	6.95
Cyanide	1100	--	--	--	--	--
Lead	400	2.65	2.94 J	3.42 J	2.76 J	6.73
Mercury	14	< 0.0368	< 0.0385	0.192	< 0.037	< 0.0407
Nickel	250	9.01	9.55	11.3	7.85	8.13
Selenium	63	< 0.318	< 0.332	< 0.336	< 0.319	< 0.352
Silver	110	< 0.0518	< 0.0543 J	< 0.0548 J	< 0.0521 J	< 0.0574
Thallium	2	0.455 B	1.07 B	1.4	0.718 B	< 1.61
Zinc	1500	29.4	24.2 J	28.6 J	23.4 J	25

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
AOC-3 Drum Storage Area # 2
AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
Bold type indicates an exceedance of NJDEP's Residential Direct Contact Soil Cleanup Criteria.
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Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	NJDEP Residential Direct Contact Soil Cleanup Criteria	AREA OF CONCERN:	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
		SAMPLE ID:	B270 16-18	B271 2-4	B271 8-10	B271 16-18	B271 22-24
		DATE:	2/3/98	2/3/98	2/2/98	2/2/98	2/2/98
		DEPTH (ft bls):	16-18	2-4	8-10	16-18	22-24
Antimony	14		< 0.211	< 0.249	< 0.214	< 0.219	< 0.235
Arsenic	20		2.35	3.09	1.14	1.4	4.09
Beryllium	1		0.53	0.748	0.431 BCJ	0.794 CJ	0.514 CJ
Cadmium	1		< 0.0435	7.98	< 0.0443	< 0.0452	< 0.0484
Chromium	NA		11.7	24	17.5 CJ	18.7 CJ	13.9 CJ
Copper	600		13.3	72.6	18.7	19.4	13.9
Cyanide	1100		--	--	--	--	--
Lead	400		3.96	49.2	4.35	4.68	4.39
Mercury	14		< 0.0372	< 0.0439	< 0.0378	< 0.0386	< 0.0414
Nickel	250		10.9	21.6	8.57	12.6	46.5
Selenium	63		< 0.321	0.867	0.404 B	< 0.334	< 0.358
Silver	110		< 0.0524	1.04 B	< 0.0533	< 0.0545	< 0.0584
Thallium	2		< 1.19	< 1.37	1.27	0.805 B	< 0.445
Zinc	1500		29.8	106	35.3	35.7	32.7

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
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AOC-7 Paint Stripping Area/Former 10K-Gal UST
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Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	AREA OF CONCERN: / SAMPLE ID: / DATE: / DEPTH (ft bls):	AOC-3 B271 32-34 2/2/98 32-34		AOC-4 B219 6-8 9/23/97 6-8		AOC-5 B214 10-12 9/22/97 10-12		AOC-5 B214 20-22 9/22/97 20-22		AOC-5 B215 12-14 9/22/97 12-12	
	NJDEP Residential Direct Contact Soil Cleanup Criteria										
Antimony	14	< 0.211		< 1.8	J	< 1.8		< 1.8	J	< 1.8	J
Arsenic	20	1.12		8.1		2	BJ	2.1	B	2.6	
Beryllium	1	0.508	CJ	0.94	B	0.42	B	0.63	B	0.73	B
Cadmium	1	< 0.0435		2.8	J	5.3		< 0.22		< 0.23	
Chromium	NA	13.2	CJ	78.2		9.9		14.1		15.7	
Copper	600	15.8		130	J	64.4		16.2	J	17	
Cyanide	1100	--		< 1.39		< 0.55		< 0.58		< 0.57	
Lead	400	3.23		49.9	J	3		3.4	J	3.7	
Mercury	14	< 0.0372		< 0.1		< 0.096		< 0.077		< 0.084	
Nickel	250	7.65		16.6		9.6		10.2		11	
Selenium	63	< 0.321		1.6	J	1.3		1.1	BJ	1.2	
Silver	110	< 0.0524		8.7		1.1	B	< 0.22		< 0.23	
Thallium	2	0.488	B	< 0.7		< 0.7		< 0.67		< 1	
Zinc	1500	24.2		105	J	23.7	J	40.5	J	47.6	J

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
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AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
Bold type indicates an exceedance of NJDEP's Residential Direct Contact Soil Cleanup Criteria.
NJDEP New Jersey Department of Environmental Protection.
For RCL MET

Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	AREA OF CONCERN: / SAMPLE ID: / DATE: / DEPTH (ft bls):	AOC-5 B215 20-22 9/22/97 20-22	AOC-5 B216 4-6 9/22/97 4-6	AOC-5 B217 4-6 9/23/97 4-6	AOC-7 B232 6-8 9/25/97 6-8	AOC-7 B232 16-18 9/25/97 16-18
	NJDEP Residential Direct Contact Soil Cleanup Criteria					
Antimony	14	< 2.4 J	< 1.8 J	< 1.8 J	< 1.8	< 1.8
Arsenic	20	2.4 B	1.6 B	2.5	1.9 B	1.2 B
Beryllium	1	0.76 B	0.48 B	0.71 B	0.65 B	0.64 B
Cadmium	1	< 0.3	1.3	< 0.23	< 0.22	< 0.22
Chromium	NA	14.2	12	17.8	13.9	9.7
Copper	600	21.1 J	27.8	18.4	16.8	14.1
Cyanide	1100	< 0.76	< 0.57	< 0.58	< 0.54	< 0.57
Lead	400	5.5 J	3.3	4.2	6.2 J	3.2 J
Mercury	14	< 0.13	< 0.084	< 0.099	< 0.085	< 0.1
Nickel	250	31.7	10.4	13.1	10.3 J	7.3 BJ
Selenium	63	1.5 BJ	1.8	1.8	0.88 B	1.5
Silver	110	< 0.3	< 0.23	< 0.23	< 0.22	< 0.22
Thallium	2	< 0.91	< 0.68	< 0.68	< 0.66	< 0.68
Zinc	1500	75 J	33 J	39.2 J	33.6	29.6

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
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ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
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AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
Bold type indicates an exceedance of NJDEP's Residential Direct Contact Soil Cleanup Criteria.
NJDEP New Jersey Department of Environmental Protection.
For RCL MET

Table 7. Concentration of Metals and Cyanide in Soil Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	AREA OF CONCERN: / SAMPLE ID: / DATE: / DEPTH (ft bls):	AOC-9 B231 5-7 9/25/97 5-7		AOC-9 B231 17-19 9/25/97 17-19		AOC-9 B233 2-4 9/25/97 2-4		AOC-9 B236 0-2 9/25/97 0-2		AOC-9 B237 2-4 9/25/97 2-4	
	NJDEP Residential Direct Contact Soil Cleanup Criteria										
Antimony	14	< 1.8		< 2.4		< 1.8		< 1.8		< 1.7	
Arsenic	20	1.5	B	2	B	1.8	B	1.7	B	1.4	B
Beryllium	1	0.7	B	0.86	B	0.89	B	0.7	B	0.58	B
Cadmium	1	< 0.22		< 0.3		< 0.22		< 0.22		< 0.22	
Chromium	NA	12.3		15		17.3		12.9		9.3	
Copper	600	17.5		17.5		20.8		17.6		13.9	
Cyanide	1100	< 0.55		< 0.77		< 0.52		< 0.54		< 0.56	
Lead	400	3.8	J	4.4	J	4.1	J	3.6	J	3	J
Mercury	14	< 0.089		< 0.12		< 0.081		< 0.1		< 0.075	
Nickel	250	10.1	J	10.6	BJ	12	J	11.1	J	8.6	BJ
Selenium	63	1.6		1.3	B	1.1		0.99	B	0.86	B
Silver	110	< 0.22		< 0.3		0.26	B	< 0.22		< 0.22	
Thallium	2	< 0.67		< 0.91		< 0.66		< 0.66		< 0.65	
Zinc	1500	32.2		40.4		41.7		46.3		27.8	

mg/kg Milligrams per kilogram.
J Estimated value.
C Detected in associated blank.
E Estimated due to interference.
R Unusable value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.
NA Not available.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
AOC-3 Drum Storage Area # 2
AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
Bold type indicates an exceedance of NJDEP's Residential Direct Contact Soil Cleanup Criteria.
NJDEP New Jersey Department of Environmental Protection.
For RCL MET

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Table 8. Concentration of Semivolatile Organic Compounds in Soil Samples, Aritron Division of Litton Industries, Morris Plains, New Jersey.

Parameter (units in ug/kg)	AREA OF CONCERN:	AOC-1	AOC-1	AOC-2	AOC-3	AOC-3	AOC-4 *
	SAMPLE ID:	B205 6-8	B207 4-6	B210 10-12	B223 2-4	B265 2-4	B219 4-6
	DATE:	9/16/97	9/16/97	9/26/97	9/24/97	1/30/98	9/23/97
	DEPTH (ft bls):	6-8	4-6	10-12	2-4	2-4	4-6
bis(2-Chloroethyl)ether		< 370	< 370	< 380 J	< 780	< 110	< 3900
N-Nitrosodiphenylamine (1)		< 370	< 370	< 380 J	< 780	< 110	< 3900
1,3-Dichlorobenzene		< 370	< 370	< 380 J	< 780	< 110	< 3900
1,4-Dichlorobenzene		< 370	< 370	< 380 J	< 780	< 110	< 3900
Benzyl alcohol		< 370	< 370	< 380 J	< 780	–	< 3900
1,2-Dichlorobenzene		< 370	< 370	< 380 J	< 780	< 110	< 3900
bis(2-Chloroisopropyl)ether		< 370	< 370	< 380 J	< 780	–	< 3900
N-Nitroso-di-n-propylamine		< 370	< 370	< 380 J	< 780	< 110	< 3900
Hexachloroethane		< 370	< 370	< 380 J	< 780	< 110	< 3900
Nitrobenzene		< 370	< 370	< 380 J	< 780	< 110	< 3900
Isophorone		< 370	< 370	< 380 J	< 780	< 110	< 3900
bis(2-Chloroethoxy)methane		< 370	< 370	< 380 J	< 780	< 110	< 3900
1,2,4-Trichlorobenzene		< 370	< 370	< 380 J	< 780	< 110	< 3900
Naphthalene		**7** J	< 370	< 380 J	< 780	< 110	< 3900
4-Chloroaniline		< 370	< 370	< 380 J	< 780	< 110	< 3900
Hexachlorobutadiene		< 370	< 370	< 380 J	< 780	< 110	< 3900
2-Methylnaphthalene		< 370	< 370	**13** J	**160** J	< 110	**110** J
Hexachlorocyclopentadiene		< 370	< 370	< 380 J	< 780	< 110	< 3900
2-Chloronaphthalene		< 370	< 370	< 380 J	< 780	< 110	< 3900
2-Nitroaniline		< 1800	< 1800	< 1900 J	< 3800	< 1900	< 19000
Dimethylphthalate		< 370	< 370	< 380 J	< 780	< 110	< 3900
Acenaphthylene		< 370	< 370	< 380 J	< 780	< 110	< 3900
2,6-Dinitrotoluene		< 370	< 370	< 380 J	< 780	< 110	< 3900
3-Nitroaniline		< 1800	< 1800	< 1900 J	< 3800	< 1900	< 19000
Acenaphthene		< 370	< 370	< 380 J	< 780	< 110	**180** J
Dibenzofuran		< 370	< 370	< 380 J	**20** J	< 110	**72** J
2,4-Dinitrotoluene		< 370	< 370	< 380 J	< 780	< 110	< 3900
Diethylphthalate		< 370	< 370	< 380 J	**23** JB	< 110	**87** JB
4-Chlorophenyl-phenylether		< 370	< 370	< 380 J	< 780	< 110	< 3900
Fluorene		< 370	< 370	< 380 J	< 780	< 110	**130** J
4-Nitroaniline		< 1800	< 1800	< 1900 J	< 3800	< 1900	< 19000
4-Bromophenyl-phenylether		< 370	< 370	< 380 J	< 780	< 110	< 3900
Hexachlorobenzene		< 370	< 370	< 380 J	< 780	< 110	< 3900
Phenanthrene		**70** J	< 370	< 380 J	< 780	< 110	< 3900

See next page for footnotes.

Table 8. Concentration of Semivolatile Organic Compounds in Soil Samples, Aritron Division of Litton Industries, Morris Plains, New Jersey.

Parameter (units in ug/kg)	AREA OF CONCERN:	AOC-1	AOC-1	AOC-2	AOC-3	AOC-3	AOC-4
	SAMPLE ID:	B205 6-8	B207 4-6	B210 10-12	B223 2-4	B265 2-4	B219 4-6
	DATE:	9/16/97	9/16/97	9/26/97	9/24/97	1/30/98	9/23/97
	DEPTH (ft bls):	6-8	4-6	10-12	2-6	2-6	4-6
Anthracene		**6 J**	< 370	< 380 J	< 780	< 110	< 3900
Di-n-butylphthalate		< 370	< 370	< 380 J	< 780	< 110	< 3900
Fluoranthene		< 370	< 370	< 380 J	**140 J**	< 110	**870 J**
Pyrene		**10 J**	< 370	< 380 J	**92 J**	< 110	**630 J**
Butylbenzylphthalate		< 370	< 370	< 380 J	< 780	< 110	**180 J**
3,3'-Dichlorobenzidine		< 730	< 740	< 770 J	< 1600	< 110	< 7800
Benzo(a)anthracene		< 370	< 370	< 380 J	**48 J**	< 110	**400 J**
Chrysene		< 370	< 370	< 380 J	**61 J**	< 110	**420 J**
bis(2-Ethylhexyl)phthalate		**120 JB**	**74 JB**	**450 J**	**3400 B**	**1500**	**27000 B**
Di-n-octylphthalate		< 370	< 370	< 380 J	< 780	< 110	< 3900
Benzo(b)fluoranthene		< 370	< 370	< 380 J	**34 J**	< 110	**360 J**
Benzo(k)fluoranthene		< 370	< 370	< 380 J	**31 J**	< 110	**290 J**
Benzo(a)pyrene		< 370	< 370	< 380 J	**21 J**	< 110	**350 J**
Indeno(1,2,3-cd)pyrene		< 370	< 370	< 380 J	**25 J**	< 110	**330 J**
Dibenzo(a,h)anthracene		< 370	< 370	< 380 J	< 780	< 110	< 3900
Benzo(g,h,i)perylene		< 370	< 370	< 380 J	**29 J**	< 110	**370 J**

ug/kg Micrograms per kilogram.
J Estimated value.
B Detected in associated blank.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
AOC-3 Drum Storage Area # 2
AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
* Analytical Method Detection limits above New Jersey Department of Environmental Protection Soil Cleanup Criteria due to matrix interference.

Table 8. Concentration of Semivolatile Organic Compounds in Soil Samples, Aritron Division of Litton Industries, Morris Plains, New Jersey.

Parameter (units in ug/kg)	AREA OF CONCERN:	AOC-5	AOC-5	AOC-5	AOC-5	AOC-7	AOC-9
	SAMPLE ID:	B214 10-12	B215 12-14	B216 4-6	B217 4-6	B232 6-8	B231 5-7
	DATE:	9/22/97	9/22/97	9/22/97	9/23/97	9/25/97	9/25/97
	DEPTH (ft bls):	10-12	12-14	4-6	4-6	6-8	5-7
bis(2-Chloroethyl)ether		< 390	< 370	< 380	< 380	< 360	< 1600
N-Nitrosodiphenylamine (1)		< 390	< 370	< 380	< 380	< 360	< 1600
1,3-Dichlorobenzene		< 390	< 370	< 380	< 380	< 360	< 1600
1,4-Dichlorobenzene		< 390	< 370	< 380	< 380	< 360	< 1600
Benzyl alcohol		< 390	< 370	< 380	< 380	< 360	< 1600
1,2-Dichlorobenzene		< 390	< 370	< 380	< 380	< 360	< 1600
bis(2-Chloroisopropyl)ether		< 390	< 370	< 380	< 380	< 360	< 1600
N-Nitroso-di-n-propylamine		< 390	< 370	< 380	< 380	< 360	< 1600
Hexachloroethane		< 390	< 370	< 380	< 380	< 360	< 1600
Nitrobenzene		< 390	< 370	< 380	< 380	< 360	< 1600
Isophorone		< 390	< 370	< 380	< 380	< 360	< 1600
bis(2-Chloroethoxy)methane		< 390	< 370	< 380	< 380	< 360	< 1600
1,2,4-Trichlorobenzene		< 390	< 370	< 380	< 380	< 360	< 1600
Naphthalene		< 390	< 370	< 380	< 380	< 360	< 1600
4-Chloroaniline		< 390	< 370	< 380	< 380	< 360	< 1600
Hexachlorobutadiene		< 390	< 370	< 380	< 380	< 360	< 1600
2-Methylnaphthalene		< 390	< 370	< 380	< 380	< 360	**280 J**
Hexachlorocyclopentadiene		< 390	< 370	< 380	< 380	< 360	< 1600
2-Chloronaphthalene		< 390	< 370	< 380	< 380	< 360	< 1600
2-Nitroaniline		< 1900	< 1800	< 1900	< 1800	< 1800	< 7600
Dimethylphthalate		< 390	< 370	< 380	< 380	< 360	< 1600
Acenaphthylene		< 390	< 370	< 380	< 380	< 360	< 1600
2,6-Dinitrotoluene		< 390	< 370	< 380	< 380	< 360	< 1600
3-Nitroaniline		< 1900	< 1800	< 1900	< 1800	< 1800	< 7600
Acenaphthene		< 390	< 370	< 380	< 380	< 360	< 1600
Dibenzofuran		< 390	< 370	< 380	< 380	< 360	< 1600
2,4-Dinitrotoluene		< 390	< 370	< 380	< 380	< 360	< 1600
Diethylphthalate		< 390	< 370	< 380	< 380	< 360	< 1600
4-Chlorophenyl-phenylether		< 390	< 370	< 380	< 380	< 360	< 1600
Fluorene		< 390	< 370	< 380	< 380	< 360	**360 J**
4-Nitroaniline		< 1900	< 1800	< 1900	< 1800	< 1800	< 7600
4-Bromophenyl-phenylether		< 390	< 370	< 380	< 380	< 360	< 1600
Hexachlorobenzene		< 390	< 370	< 380	< 380	< 360	< 1600
Phenanthrene		< 390	< 370	< 380	< 380	< 360	< 1600

See next page for footnotes.

Table 8. Concentration of Semivolatile Organic Compounds in Soil Samples, Aritron Division of Litton Industries, Morris Plains, New Jersey.

Parameter (units in ug/kg)	AREA OF CONCERN:	AOC-5	AOC-5	AOC-5	AOC-5	AOC-7	AOC-9 *
	SAMPLE ID:	B214 10-12	B215 12-14	B216 4-6	B217 4-6	B232 6-8	B231 5-7
	DATE:	9/22/97	9/22/97	9/22/97	9/23/97	9/25/97	9/25/97
	DEPTH (ft bls):	10-12	12-14	4-6	4-6	6-8	5-7
Anthracene		< 390	< 370	< 380	< 380	< 360	< 1600
Di-n-butylphthalate		< 390	< 370	< 380	< 380	< 360	< 1600
Fluoranthene		< 390	< 370	< 380	< 380	< 360	< 1600
Pyrene		< 390	< 370	< 380	< 380	< 360	**350** J
Butylbenzylphthalate		< 390	< 370	< 380	< 380	< 360	< 1600
3,3'-Dichlorobenzidine		< 780	< 740	< 770	< 750	< 720	< 3100
Benzo(a)anthracene		< 390	< 370	< 380	< 380	< 360	**170** J
Chrysene		< 390	< 370	< 380	< 380	< 360	**370** J
bis(2-Ethylhexyl)phthalate		**280** JB	**380** B	**240** JB	**100** JB	**250** JB	**250** JB
Di-n-octylphthalate		< 390	< 370	< 380	< 380	< 360	< 1600
Benzo(b)fluoranthene		< 390	< 370	< 380	< 380	< 360	< 1600
Benzo(k)fluoranthene		< 390	< 370	< 380	< 380	< 360	< 1600
Benzo(a)pyrene		< 390	< 370	< 380	< 380	< 360	**100** J
Indeno(1,2,3-cd)pyrene		< 390	< 370	< 380	< 380	< 360	< 1600
Dibenzo(a,h)anthracene		< 390	< 370	< 380	< 380	< 360	< 1600
Benzo(g,h,i)perylene		< 390	< 370	< 380	< 380	< 360	< 1600

ug/kg Micrograms per kilogram.
J Estimated value.
B Detected in associated blank.
-- Not analyzed.
ft bls Feet below land surface.
AOC-1 Haz. Mat. Storage Building
AOC-2 Drum Storage Area # 1
AOC-3 Drum Storage Area # 2
AOC-4 Sludge Lagoon # 5
AOC-5 Sludge Lagoon # 1-4
AOC-7 Paint Stripping Area/Former 10K-Gal UST
AOC-9 Former 15K-Gal UST
* Analytical Method Detection limits above New Jersey Department of Environmental Protection Soil Cleanup Criteria due to matrix interference.

Table 9. Inorganic Analytes and TOC Detected in Sediment Samples Compared to Ontario and NOAA Sediment Criteria, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

					Upgradient		
				SITE:	US-100	US-50	US-PB
				SAMPLE ID:	US 100	US 50	US PB
				DATE:	9/30/97	9/30/97	9/30/97
CONSTITUENT: (units in mg/kg)	Ontario Effects Criteria		NOAA Effects Range				
	Low	Severe	Low	High			
Antimony	NA	NA	2	25	< 2.1 J	< 2.4 J	< 2.6 J
Arsenic	6	33	33	85	2.2 B	5.4	**11.1**
Beryllium	NA	NA	NA	NA	< 0.26	0.34 B	0.46 B
Cadmium	0.6	10	5	9	< 0.26	< 0.3 J	< 0.33 J
Chromium	26	110	80	145	6.2	11.1	8.9
Copper	16	110	70	390	4.8 B	6.7 B	9.8
Lead	31	250	35	110	17.6 J	**48.6** J	**110** J
Mercury	0.2	2	0.15	1.3	< 0.091	< 0.11	< 0.12
Nickel	16	75	30	50	3.8 BJ	6.5 BJ	7 BJ
Selenium	NA	NA	NA	NA	0.88 BJ	1.9 J	2.7 J
Silver	NA	NA	1	2.2	< 0.26	< 0.3	< 0.33
Thallium	NA	NA	NA	NA	< 0.79	< 0.89	< 0.98 J
Zinc	120	820	120	270	17 J	< 29.7 J	35.3 J
Total organic carbon (TOC)					3040	24600	18400

mg/kg milligrams per kilogram.
J Estimated value.
B Analyte detected between the instrument detection limit and contract required detection limit.
Values in bold are above the lower effects range.

Table 9. Inorganic Analytes and TOC Detected in Sediment Samples Compared to Ontario and NOAA Sediment Criteria, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (units in mg/kg)	Ontario Effects Criteria		NOAA Effects Range		Downgradient				
ITE:					DS-OF	DS-075	DS-150	DS-225	DS-300
SAMPLE ID:					DS OF	DS 75	DS 150	DS 225	DS 300
DATE:					9/30/97	9/30/97	9/30/97	9/30/97	9/30/97
	Low	Severe	Low	High					
Antimony	NA	NA	2	25	< 2 J	< 3.5 J	< 2.1 J	< 2.6 J	< 2.1 J
Arsenic	6	33	33	85	**97.4** J	**30.3** J	**54.6** J	**68.8** J	**73.6** J
Beryllium	NA	NA	NA	NA	1.5	0.86 B	0.78 B	0.94 B	0.9 B
Cadmium	0.6	10	5	9	**1** B	**2** B	**1.3** B	**0.77** B	**1.3**
Chromium	26	110	80	145	**65.7**	**155**	**63**	**83.4**	**70.7**
Copper	16	110	70	390	**54.5**	**80.6**	**52.2**	**51.8**	**47.9**
Lead	31	250	35	110	**82.6** J	**87.6** J	**80.5** J	**77.9** J	**56.5** J
Mercury	0.2	2	0.15	1.3	< 0.1	< 0.2	< 0.1	< 0.13	< 0.13
Nickel	16	75	30	50	12.3	**20.6**	11.1	**20.2**	15.7
Selenium	NA	NA	NA	NA	2.4 J	2.2 J	0.89 BJ	2.2 J	2 J
Silver	NA	NA	1	2.2	**33.1**	**4.8**	**5.6**	**6.5**	**4**
Thallium	NA	NA	NA	NA	1.1 B	< 1.3	< 0.78	< 0.96	0.8 B
Zinc	120	820	120	270	**197**	**147**	**143**	**167**	**186**
Total organic carbon					6140	70500	4640	13200	8420

mg/kg milligrams per kilogram.
J Estimated value.
B Analyte detected between the instrument detection limit and contract required detection limit.
Values in bold are above the lower effects range.

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Table 10. Summary of Surface Water Sampling Results, Site Investigation/Remedial Investigation Report, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in ug/L)	SITE: / SAMPLE ID: / DATE: / ANALYSIS:	US-01 / US 1 / 9/30/97 / Total	US-01 / US 1 / 9/30/97 / Dissolved	DS SW-01 / DS SW 1 / 9/30/97 / Total	DS SW-01 / DS SW 1 / 9/30/97 / Dissolved
Antimony		< 8.0	< 8.0	< 8.0	< 8.0
Arsenic		3.2 B	3.3 B	9.8 B	10.0
Beryllium		< 1.0	< 1.0	< 1.0	< 1.0
Cadmium		< 1.0	< 1.0	< 1.0	< 1.0
Chromium		< 1.8	1.6 B	< 5.7	4.8 B
Copper		7.9 B	6.6 B	18.2 B	18.8 B
Lead		10.2 J	8.0 J	< 3.0	< 2.7
Mercury		< 0.20	< 0.20	< 0.20	< 0.20
Nickel		< 3.7	3.8 B	< 8.7	9.4 B
Selenium		< 3.0	< 3.0	< 3.0	< 3.0
Silver		< 1.0	< 1.0	1.0 B	< 1.0
Thallium		< 3.0	< 3.0	< 3.0	< 3.0
Zinc		< 67.6	70.8	< 44.4	59.7
Hardness		24.4*	--	134*	--
Dissolved oxygen		8.58*	--	7.35*	--
Temperature (°C)		16.38	--	19.58	--
pH (units)		6.04	--	5.85	--

ug/L Micrograms per liter.
* Units in milligrams per liter.
-- Not analyzed.
(°C) Degrees Celsius.
J Estimated value.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract required detection limit.

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Table 11. Concentrations of Volatile Organic Compounds in Groundwater Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Parameter (units in ug/L)	Well Designation: Date Sampled:	MW-204 12/11/97	MW-206* 12/11/97	MW-03* 12/10/97	MW-301 12/10/97
Chloromethane		< 7.7	< 7.7	< 7.7	19
Bromomethane		< 2.3	< 2.3	< 2.3	< 2.3
Vinyl chloride		< 1.2	< 1.2	< 1.2	4400 D
Chloroethane		< 1.3	< 1.3	< 1.3	< 1.3
Methylene chloride		< 1.2	< 1.2	< 1.2	< 1.2
Acetone		< 7.1	< 7.1	< 7.1	< 8.4
Carbon disulfide		< 2.4	< 2.4	< 2.4	< 2.4
1,1-Dichloroethene		< 1.1	< 1.1	< 1.1	< 1.1
1,1-Dichloroethane		< 0.60	< 0.60	< 0.60	11
Chloroform		< 0.80	< 0.80	< 0.80	< 0.80
1,2-Dichloroethane		< 1.3	< 1.3	< 1.3	< 1.3
2-Butanone		< 2.5	< 2.5	< 2.5	< 2.5
1,1,1-Trichloroethane		< 0.5	1.8	1.4	< 0.5
Carbon tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane		< 0.80	< 0.80	< 0.80	< 0.80
1,2-Dichloropropane		< 0.50	< 0.50	< 0.50	< 0.50
cis-1,3-Dichloropropene		< 0.70	< 0.70	< 0.70	< 0.70
Trichloroethene		< 0.6	1000 D	940 D	140
Dibromochloromethane		< 1.7	< 1.7	< 1.7	< 1.7
1,1,2-Trichloroethane		< 1.9	< 1.9	< 1.9	< 1.9
Benzene		< 0.70	< 0.70	< 0.70	< 0.70
trans-1,3-Dichloropropene		< 1.5	< 1.5	< 1.5	< 1.5
Bromoform		< 2.5	< 2.5	< 2.5	< 2.5
4-Methyl-2-pentanone		< 2.7	< 2.7	< 2.7	< 2.7
2-Hexanone		< 3.0	< 3.0	< 3.0	< 3.0
Tetrachloroethene		< 0.8	920 D	700 D	390 D
Toluene		< 0.80	< 0.80	< 0.80	< 0.80
1,1,2,2-Tetrachloroethane		< 0.90	< 0.90	< 0.90	< 0.90
Chlorobenzene		< 1.1	< 1.1	< 1.1	< 1.1
Ethylbenzene		< 2.2	< 2.2	< 2.2	< 2.2
Styrene		< 1.8	< 1.8	< 1.8	< 1.8
Xylene (total)		< 1.3	< 1.3	< 1.3	< 1.3
cis-1,2-Dichloroethene		< 0.8	190	120	2600 D
trans-1,2-Dichloroethene		< 0.70	< 0.70	< 0.70	6.2

ug/L Micrograms per liter.
VOC Volatile organic compounds.
J Estimated value.
D Detected at secondary dilution.
* Sampled as part of IRM program at the Airtron facility.
IRM Interim Remedial Measure.

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Table 11. Concentrations of Volatile Organic Compounds in Groundwater Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Parameter (units in ug/L)	Well Designation: Date Sampled:	MW-301 2/25/98	MW-302* 12/11/97	MW-401 12/09/97	MW-401 2/25/98
Chloromethane		< 7.7 J	< 7.7	< 7.7	< 7.7 J
Bromomethane		< 2.3 J	< 2.3	< 2.3	< 2.3 J
Vinyl chloride		**1700 DJ**	< 1.2	< 1.2	< 1.2 J
Chloroethane		< 1.3 J	< 1.3	< 1.3	< 1.3 J
Methylene chloride		**11 J**	< 1.2	< 1.2	**8.7 J**
Acetone		< 7.1 J	< 7.1	< 7.1	< 7.1 J
Carbon disulfide		< 2.4 J	< 2.4	< 2.4	< 2.4 J
1,1-Dichloroethene		**2.3 J**	< 1.1	< 1.1	< 1.1 J
1,1-Dichloroethane		**7.8 J**	< 0.60	< 0.60	< 0.60 J
Chloroform		< 0.80 J	< 0.80	< 0.80	< 0.80 J
1,2-Dichloroethane		< 1.3 J	< 1.3	< 1.3	< 1.3 J
2-Butanone		< 2.5 J	< 2.5	< 2.5	< 2.5 J
1,1,1-Trichloroethane		< 0.5 J	< 0.50	< 0.5	< 0.5 J
Carbon tetrachloride		< 1.0 J	< 1.0	< 1.0	< 1.0 J
Bromodichloromethane		< 0.80 J	< 0.80	< 0.80	< 0.80 J
1,2-Dichloropropane		< 0.50 J	< 0.50	< 0.50	< 0.50 J
cis-1,3-Dichloropropene		< 0.70 J	< 0.70	< 0.70	< 0.70 J
Trichloroethene		**150 J**	**170**	**2.2**	< 0.6 J
Dibromochloromethane		< 1.7 J	< 1.7	< 1.7	< 1.7 J
1,1,2-Trichloroethane		< 1.9 J	< 1.9	< 1.9	< 1.9 J
Benzene		< 0.70 J	< 0.70	< 0.70	< 0.70 J
trans-1,3-Dichloropropene		< 1.5 J	< 1.5	< 1.5	< 1.5 J
Bromoform		< 2.5 J	< 2.5	< 2.5	< 2.5 J
4-Methyl-2-pentanone		< 2.7 J	< 2.7	< 2.7	< 2.7 J
2-Hexanone		< 3.0 J	< 3.0	< 3.0	< 3.0 J
Tetrachloroethene		**610 DJ**	**1600 D**	**2.4**	**1.9 J**
Toluene		**1.6 J**	< 0.80	< 0.80	< 0.80 J
1,1,2,2-Tetrachloroethane		< 0.90 J	< 0.90	< 0.90	< 0.90 J
Chlorobenzene		< 1.1 J	< 1.1	< 1.1	< 1.1 J
Ethylbenzene		< 2.2 J	< 2.2	< 2.2	< 2.2 J
Styrene		< 1.8 J	< 1.8	< 1.8	< 1.8 J
Xylene (total)		< 1.3 J	< 1.3	< 1.3	< 1.3 J
cis-1,2-Dichloroethene		**1100 DJ**	**140**	**24**	**10 J**
trans-1,2-Dichloroethene		**2.3 J**	< 0.70	< 0.70	< 0.70 J

ug/L Micrograms per liter.
VOC Volatile organic compounds.
J Estimated value.
D Detected at secondary dilution.
* Sampled as part of IRM program at the Airtron fa
IRM Interim Remedial Measure.

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Table 11. Concentrations of Volatile Organic Compounds in Groundwater Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Parameter (units in ug/L)	Well Designation: Date Sampled:	MW-402 12/09/97	MW-402 2/25/98	MW-403 12/09/97	MW-403 2/25/98
Chloromethane		< 7.7	< 7.7 J	< 7.7	< 7.7 J
Bromomethane		< 2.3	< 2.3 J	< 2.3	< 2.3 J
Vinyl chloride		< 1.2	< 1.2 J	< 1.2	< 1.2 J
Chloroethane		< 1.3	< 1.3 J	< 1.3	< 1.3 J
Methylene chloride		< 1.2	**11 J**	< 1.2	**9.8 J**
Acetone		< 7.1	< 7.1 J	< 7.1	< 7.1 J
Carbon disulfide		< 2.4	< 2.4 J	< 2.4	< 2.4 J
1,1-Dichloroethene		< 1.1	< 1.1 J	< 1.1	< 1.1 J
1,1-Dichloroethane		< 0.60	< 0.60 J	< 0.60	< 0.60 J
Chloroform		< 0.80	< 0.80 J	< 0.80	< 0.80 J
1,2-Dichloroethane		< 1.3	< 1.3 J	< 1.3	< 1.3 J
2-Butanone		< 2.5	< 2.5 J	< 2.5	< 2.5 J
1,1,1-Trichloroethane		< 0.5	< 0.5 J	< 0.5	< 0.5 J
Carbon tetrachloride		< 1.0	< 1.0 J	< 1.0	< 1.0 J
Bromodichloromethane		< 0.80	< 0.80 J	< 0.80	< 0.80 J
1,2-Dichloropropane		< 0.50	< 0.50 J	< 0.50	< 0.50 J
cis-1,3-Dichloropropene		< 0.70	< 0.70 J	< 0.70	< 0.70 J
Trichloroethene		**35**	**36 J**	**160**	**64 J**
Dibromochloromethane		< 1.7	< 1.7 J	< 1.7	< 1.7 J
1,1,2-Trichloroethane		< 1.9	< 1.9 J	< 1.9	< 1.9 J
Benzene		< 0.70	< 0.70 J	< 0.70	< 0.70 J
trans-1,3-Dichloropropene		< 1.5	< 1.5 J	< 1.5	< 1.5 J
Bromoform		< 2.5	< 2.5 J	< 2.5	< 2.5 J
4-Methyl-2-pentanone		< 2.7	< 2.7 J	< 2.7	< 2.7 J
2-Hexanone		< 3.0	< 3.0 J	< 3.0	< 3.0 J
Tetrachloroethene		**91**	**130 J**	**34**	**12 J**
Toluene		< 0.80	< 0.80 J	< 0.80	< 0.80 J
1,1,2,2-Tetrachloroethane		< 0.90	< 0.90 J	< 0.90	< 0.90 J
Chlorobenzene		< 1.1	< 1.1 J	< 1.1	< 1.1 J
Ethylbenzene		< 2.2	< 2.2 J	< 2.2	< 2.2 J
Styrene		< 1.8	< 1.8 J	< 1.8	< 1.8 J
Xylene (total)		< 1.3	< 1.3 J	< 1.3	< 1.3 J
cis-1,2-Dichloroethene		**210 D**	**96 J**	**150**	**48 J**
trans-1,2-Dichloroethene		< 0.70	< 0.70 J	< 0.70	< 0.70 J

ug/L Micrograms per liter.
VOC Volatile organic compounds.
J Estimated value.
D Detected at secondary dilution.
* Sampled as part of IRM program at the Airtron fa
IRM *Interim Remedial Measure.*

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Table 11. Concentrations of Volatile Organic Compounds in Groundwater Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Parameter (units in ug/L)	Well Designation: Date Sampled:	MW-404S 2/25/98	MW-404D 2/25/98	MW-405 2/25/98	MW-406 2/25/98
Chloromethane		< 15 J	< 7.7 J	< 7.7 J	< 7.7 J
Bromomethane		< 4.6 J	< 2.3 J	< 2.3 J	< 2.3 J
Vinyl chloride		< 2.4 J	12 J	< 1.2 J	< 1.2 J
Chloroethane		< 2.6 J	6.0 J	< 1.3 J	< 1.3 J
Methylene chloride		< 6.1 J	11 J	12 J	< 1.2 J
Acetone		< 11.0 J	< 7.1 J	< 7.1 J	< 7.1 J
Carbon disulfide		< 4.8 J	< 2.4 J	< 2.4 J	< 2.4 J
1,1-Dichloroethene		< 2.2 J	< 1.1 J	< 1.1 J	1.7 J
1,1-Dichloroethane		< 1.2 J	< 0.60 J	< 0.60 J	< 0.60 J
Chloroform		< 1.6 J	< 0.80 J	< 0.80 J	< 0.80 J
1,2-Dichloroethane		< 2.6 J	< 1.3 J	< 1.3 J	< 1.3 J
2-Butanone		< 5.0 J	< 2.5 J	< 2.5 J	< 2.5 J
1,1,1-Trichloroethane		< 1.0 J	< 0.50 J	< 0.50 J	< 0.50 J
Carbon tetrachloride		< 2.0 J	< 1.0 J	< 1.0 J	< 1.0 J
Bromodichloromethane		< 1.6 J	< 0.80 J	< 0.80 J	< 0.80 J
1,2-Dichloropropane		< 1.0 J	< 0.50 J	< 0.50 J	< 0.50 J
cis-1,3-Dichloropropene		< 1.4 J	< 0.70 J	< 0.70 J	< 0.70 J
Trichloroethene		36 J	600 DJ	< 0.6 J	16000 DJ
Dibromochloromethane		< 3.4 J	< 1.7 J	< 1.7 J	< 1.7 J
1,1,2-Trichloroethane		< 3.8 J	< 1.9 J	< 1.9 J	< 1.9 J
Benzene		< 1.4 J	< 0.70 J	< 0.70 J	< 0.70 J
trans-1,3-Dichloropropene		< 3.0 J	< 1.5 J	< 1.5 J	< 1.5 J
Bromoform		< 5.0 J	< 2.5 J	< 2.5 J	< 2.5 J
4-Methyl-2-pentanone		< 5.4 J	< 2.7 J	< 2.7 J	< 2.7 J
2-Hexanone		< 6.0 J	< 3.0 J	< 3.0 J	< 3.0 J
Tetrachloroethene		130 J	4700 DJ	< 0.8 J	2300 DJ
Toluene		< 1.6 J	< 0.80 J	< 0.80 J	< 0.80 J
1,1,2,2-Tetrachloroethane		< 1.8 J	< 0.90 J	< 0.90 J	< 0.90 J
Chlorobenzene		< 2.2 J	< 1.1 J	< 1.1 J	< 1.1 J
Ethylbenzene		< 4.4 J	< 2.2 J	< 2.2 J	< 2.2 J
Styrene		< 3.6 J	< 1.8 J	< 1.8 J	< 1.8 J
Xylene (total)		< 2.6 J	< 1.3 J	< 1.3 J	< 1.3 J
cis-1,2-Dichloroethene		250 J	1000 DJ	< 0.8 J	930 DJ
trans-1,2-Dichloroethene		< 1.4 J	5.2 J	< 0.70 J	4.5 J

ug/L Micrograms per liter.
VOC Volatile organic compounds.
J Estimated value.
D Detected at secondary dilution.
* Sampled as part of IRM program at the Airtron fa
IRM Interim Remedial Measure.

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Table 11. Concentrations of Volatile Organic Compounds in Groundwater Samples, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Parameter (units in ug/L)	Well Designation: Date Sampled:	MEN-MW-12* 12/10/97	MEN-MW-13* 12/10/97	USGS-01* 12/10/97	RW-01* 12/9/97
Chloromethane		< 7.7	< 7.7	< 7.7	< 7.7
Bromomethane		< 2.3	< 2.3	< 2.3	< 2.3
Vinyl chloride		7.6	< 1.2	9.9	< 1.2
Chloroethane		< 1.3	< 1.3	< 1.3	< 1.3
Methylene chloride		< 1.2	< 1.2	< 1.2	< 1.2
Acetone		< 7.3	< 7.1	< 7.1	< 7.1
Carbon disulfide		< 2.4	< 2.4	< 2.4	< 2.4
1,1-Dichloroethene		< 1.1	< 1.1	3.4	< 1.1
1,1-Dichloroethane		< 0.60	< 0.60	< 0.60	< 0.60
Chloroform		< 0.80	1.7	3.1	1.8
1,2-Dichloroethane		< 1.3	< 1.3	< 1.3	< 1.3
2-Butanone		< 2.5	< 2.5	< 2.5	< 2.5
1,1,1-Trichloroethane		< 0.50	< 0.50	3.0	1.6
Carbon tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane		< 0.80	< 0.80	< 0.80	< 0.80
1,2-Dichloropropane		< 0.50	< 0.50	< 0.50	< 0.50
cis-1,3-Dichloropropene		< 0.70	< 0.70	< 0.70	< 0.70
Trichloroethene		20	300 D	3100 D	1500 D
Dibromochloromethane		< 1.7	< 1.7	< 1.7	< 1.7
1,1,2-Trichloroethane		< 1.9	< 1.9	< 1.9	< 1.9
Benzene		< 0.70	< 0.70	< 0.70	< 0.70
trans-1,3-Dichloropropene		< 1.5	< 1.5	< 1.5	< 1.5
Bromoform		< 2.5	< 2.5	< 2.5	< 2.5
4-Methyl-2-pentanone		< 2.7	< 2.7	< 2.7	< 2.7
2-Hexanone		< 3.0	< 3.0	< 3.0	< 3.0
Tetrachloroethene		3.4	38	840 D	920 D
Toluene		< 0.80	< 0.80	< 0.80	< 0.80
1,1,2,2-Tetrachloroethane		< 0.90	< 0.90	< 0.90	< 0.90
Chlorobenzene		< 1.1	< 1.1	< 1.1	< 1.1
Ethylbenzene		< 2.2	< 2.2	< 2.2	< 2.2
Styrene		< 1.8	< 1.8	< 1.8	< 1.8
Xylene (total)		1.3 J	< 1.3	< 1.3	< 1.3
cis-1,2-Dichloroethene		230 D	7.1	160	110
trans-1,2-Dichloroethene		< 0.70	< 0.70	1.7	< 0.70

ug/L Micrograms per liter.
VOC Volatile organic compounds.
J Estimated value.
D Detected at secondary dilution.
* Sampled as part of IRM program at the Airtron fa
IRM Interim Remedial Measure.

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Table 12. Summary of VOC Concentrations Exceeding NJDEP Soil Cleanup Criteria, September 1997 Through February 1998 Soil Sampling Program Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Parameters (units in mg/kg)	NJDEP Residential Direct Contact Soil Cleanup Criteria	NJDEP Non Residential Direct Contact Soil Cleanup Criteria	NJDEP Impact to Groundwater Soil Cleanup Criteria	AOC-1(Haz.Mat. Storage Bldg. Area)				
Boring ID:				B202	B205	B205	B234	B234
Depth (ft bls):				0-2	6-8	22-24	0.5-2	4-6
Tetrachloroethene	4	6	1	3.9	2.6	1.4	470 D	78 D
Trichloroethene	23	54	1		39 DJ		1.7	
1,2-Dichloroethene (cis)	79	1,000	1		8.2		2.4	
Vinyl Chloride	2	7	10					
Xylenes (total)	410	1,000	10					
Ethylbenzene	1,000	1,000	100					
Toluene	1,000	1,000	500					

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
J Estimated value.
D Detected at secondary dilution.
E Exceeded calibration range and value is considered estimated.

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Table 12. Summary of VOC Concentrations Exceeding NJDEP Soil Cleanup Criteria, September 1997 Through February 1998 Soil Sampling Program
Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Parameters (units in mg/kg)	NJDEP Residential Direct Contact Soil Cleanup Criteria	NJDEP Non Residential Direct Contact Soil Cleanup Criteria	NJDEP Impact to Groundwater Soil Cleanup Criteria	AOC-2 (Drum Storage Area #1)							
Boring ID:				B208	B208	B209	B210	B210	B212	B213	B254
Depth (ft bls):				2-4	22-24	22-24	2-4	10-12	14-16	15-17	22-24
Tetrachloroethene	4	6	1	13	1.8	1.6	16	9100 DJ	1.5	2.5	3.2 J
Trichloroethene	23	54	1								
1,2-Dichloroethene (cis)	79	1,000	1								
Vinyl Chloride	2	7	10								
Xylenes (total)	410	1,000	10								
Ethylbenzene	1,000	1,000	100								
Toluene	1,000	1,000	500								

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
J Estimated value.
D Detected at secondary dilution.
E Exceeded calibration range and value is considered estimated.

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Table 12. Summary of VOC Concentrations Exceeding NJDEP Soil Cleanup Criteria, September 1997 Through February 1998 Soil Sampling Program Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Parameters (units in mg/kg)	NJDEP Residential Direct Contact Soil Cleanup Criteria	NJDEP Non Residential Direct Contact Soil Cleanup Criteria	NJDEP Impact to Groundwater Soil Cleanup Criteria	AOC-3 (Drum Storage Area #2)						
Boring ID:				B223	B224	B225	B241	B241	B244	B246
Depth (ft bls):				2-4	2-4	3-5	2-4	10-12	12-14	0-2
Tetrachloroethene	4	6	1	1700 D	160 D		1.7	59	4.1	28
Trichloroethene	23	54	1	390 D						
1,2-Dichloroethene (cis)	79	1,000	1	130 D			9.2	2		1.3
Vinyl Chloride	2	7	10							
Xylenes (total)	410	1,000	10	1300 D		19				
Ethylbenzene	1,000	1,000	100	410 D						
Toluene	1,000	1,000	500	520 D						

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
J Estimated value.
D Detected at secondary dilution.
E Exceeded calibration range and value is considered estimated.

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Table 12. Summary of VOC Concentrations Exceeding NJDEP Soil Cleanup Criteria, September 1997 Through February 1998 Soil Sampling Program
Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Parameters (units in mg/kg)	NJDEP Residential Direct Contact Soil Cleanup Criteria	NJDEP Non Residential Direct Contact Soil Cleanup Criteria	NJDEP Impact to Groundwater Soil Cleanup Criteria	AOC-3 cont'd (Drum Storage Area #2)						
Boring ID:				B246	B248	B250	B251	B251	B252	B252
Depth (ft bls):				16-18	8-10	8-10	12-14	22-24	2-4	10-12
Tetrachloroethene	4	6	1	26	2	7.4		1.4	3.3	2.8
Trichloroethene	23	54	1				10	1.5		
1,2-Dichloroethene (cis)	79	1,000	1	1.3	1.5				3.1	
Vinyl Chloride	2	7	10							
Xylenes (total)	410	1,000	10							
Ethylbenzene	1,000	1,000	100							
Toluene	1,000	1,000	500							

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
J Estimated value.
D Detected at secondary dilution.
E Exceeded calibration range and value is considered estimated.

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Table 12. Summary of VOC Concentrations Exceeding NJDEP Soil Cleanup Criteria, September 1997 Through February 1998 Soil Sampling Program
Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Parameters (units in mg/kg)	NJDEP Residential Direct Contact Soil Cleanup Criteria	NJDEP Non Residential Direct Contact Soil Cleanup Criteria	NJDEP Impact to Groundwater Soil Cleanup Criteria	AOC-3 cont'd (Drum Storage Area #2)						
Boring ID:				B259	B259	B263	B263	B264	B264	B264
Depth (ft bls):				16-18	22-24	22-24	34-36	12-14	18-20	36-38
Tetrachloroethene	4	6	1	4.5 J	2.1 J	3.3 J	1.8 J	14 J	4.1 J	1.9 J
Trichloroethene	23	54	1							
1,2-Dichloroethene (cis)	79	1,000	1							
Vinyl Chloride	2	7	10							
Xylenes (total)	410	1,000	10							
Ethylbenzene	1,000	1,000	100							
Toluene	1,000	1,000	500							

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
J Estimated value.
D Detected at secondary dilution.
E Exceeded calibration range and value is considered estimated.

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Table 12. Summary of VOC Concentrations Exceeding NJDEP Soil Cleanup Criteria, September 1997 Through February 1998 Soil Sampling Program
Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Parameters (units in mg/kg)	NJDEP Residential Direct Contact Soil Cleanup Criteria	NJDEP Non Residential Direct Contact Soil Cleanup Criteria	NJDEP Impact to Groundwater Soil Cleanup Criteria	AOC-3 cont'd (Drum Storage Area #2)						
Boring ID:				B265	B266	B267	B267	B267	B268	B271
Depth (ft bls):				14-16	16-18	2-4	16-18	30-32	18-20	2-4
Tetrachloroethene	4	6	1	1.0	3	24000 DJ	5600 DJ	1.5 J	1.6	1.7 J
Trichloroethene	23	54	1			320 E	4.5			
1,2-Dichloroethene (cis)	79	1,000	1			380 E	1.7			
Vinyl Chloride	2	7	10			3.1				
Xylenes (total)	410	1,000	10							
Ethylbenzene	1,000	1,000	100							
Toluene	1,000	1,000	500							

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
J Estimated value.
D Detected at secondary dilution.
E Exceeded calibration range and value is considered estimated.

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Table 12. Summary of VOC Concentrations Exceeding NJDEP Soil Cleanup Criteria, September 1997 Through February 1998 Soil Sampling Program Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Parameters (units in mg/kg)	NJDEP Residential Direct Contact Soil Cleanup Criteria	NJDEP Non Residential Direct Contact Soil Cleanup Criteria	NJDEP Impact to Groundwater Soil Cleanup Criteria	AOC-3 cont'd (Drum Storage Area #2)			
Boring ID:				B271	B271	B271	B272
Depth (ft bls):				16-18	22-24	32-34	18-20
Tetrachloroethene	4	6	1				1.1 J
Trichloroethene	23	54	1	1.0 J			1.0 J
1,2-Dichloroethene (cis)	79	1,000	1	1.2 J	5.4	1.6 J	
Vinyl Chloride	2	7	10				
Xylenes (total)	410	1,000	10				
Ethylbenzene	1,000	1,000	100				
Toluene	1,000	1,000	500				

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
J Estimated value.
D Detected at secondary dilution.
E Exceeded calibration range and value is considered estimated.

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Table 12. Summary of VOC Concentrations Exceeding NJDEP Soil Cleanup Criteria, September 1997 Through February 1998 Soil Sampling Program
Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

Parameters (units in mg/kg)				AOC-4 (Sludge Lagoon #5)	AOC-9 (Fmr. 15k-gal UST)
			Boring ID:	B219	B233
			Depth (ft bls):	16-18	10-12
	NJDEP Residential Direct Contact Soil Cleanup Criteria	NJDEP Non Residential Direct Contact Soil Cleanup Criteria	NJDEP Impact to Groundwater Soil Cleanup Criteria		
Tetrachloroethene	4	6	1		1.3
Trichloroethene	23	54	1	15	
1,2-Dichloroethene (cis)	79	1,000	1	2.5	
Vinyl Chloride	2	7	10		
Xylenes (total)	410	1,000	10		
Ethylbenzene	1,000	1,000	100		
Toluene	1,000	1,000	500		

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
J Estimated value.
D Detected at secondary dilution.
E Exceeded calibration range and value is considered estimated.

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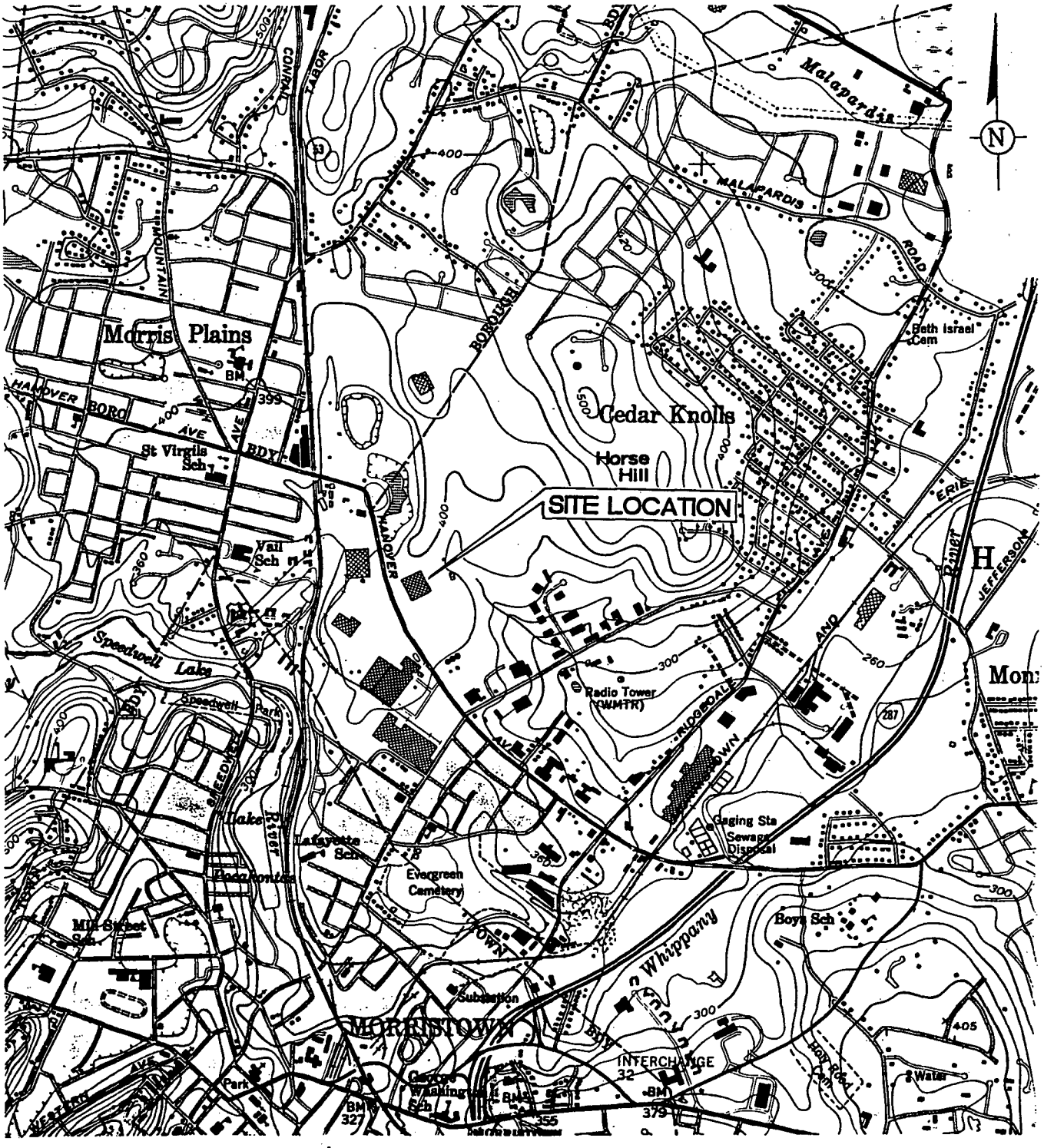

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

QUADRANGLE LOCATION

SOURCE: USGS 7.5 MINUTE MORRISTOWN, NEW JERSEY QUADRANGLE

ARCADIS GERAGHTY & MILLER

88 DURYEA ROAD
MELVILLE, NY 11747
Tel: 516/249-7600 Fax: 516/249-7610

SITE LOCATION MAP

AIRTRON DIVISION OF LITTON SYSTEMS, INC.
MORRIS PLAINS, NEW JERSEY

PROJECT NUMBER
NY001034.0004.004

FIGURE NUMBER
1

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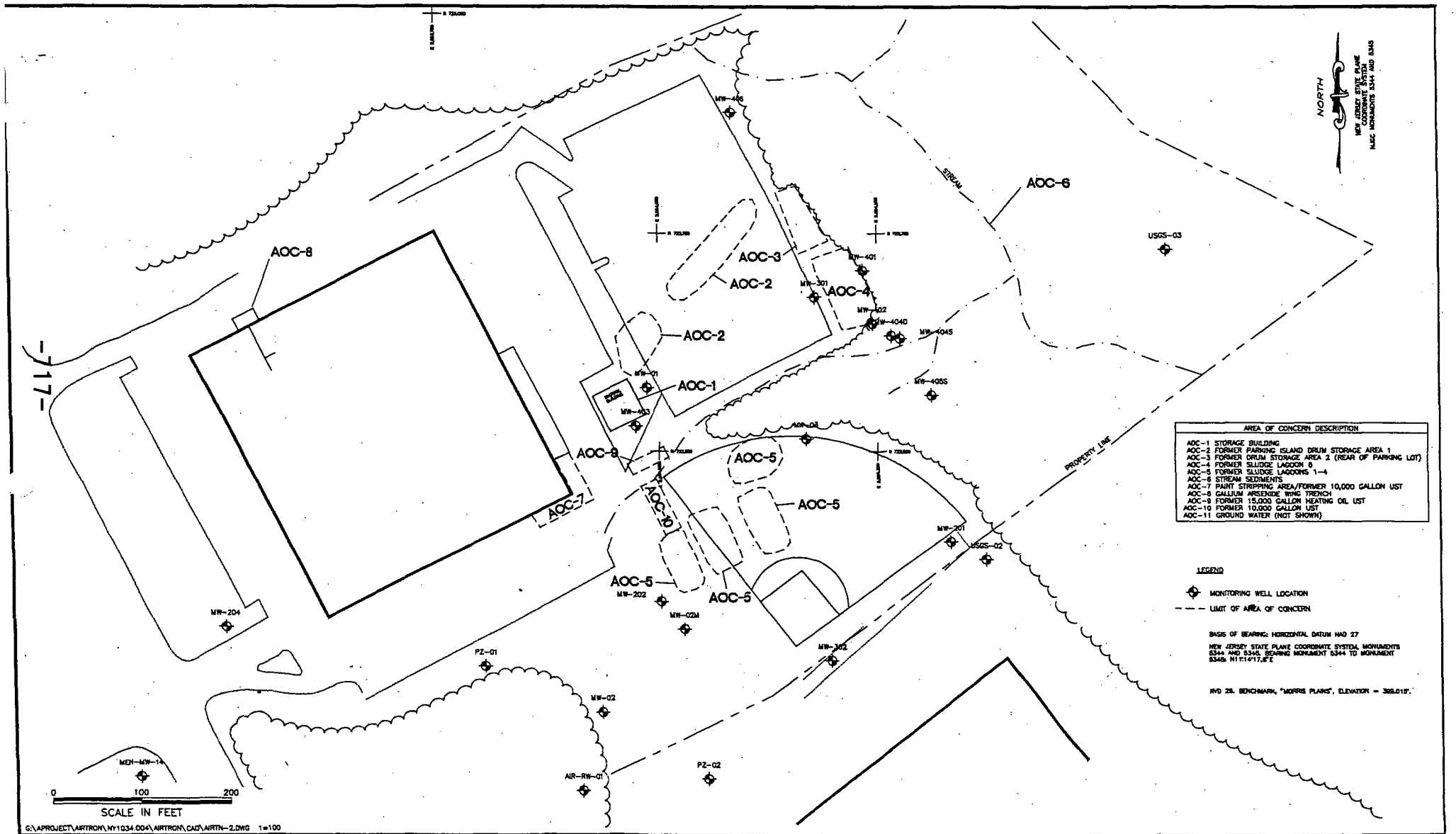

AREA OF CONCERN DESCRIPTION
AOC-1 STORAGE BUILDING
AOC-2 FORMER PARKING ISLAND DRUM STORAGE AREA 1
AOC-3 FORMER DRUM STORAGE AREA 2 (REAR OF PARKING LOT)
AOC-4 FORMER SLUDGE LAGOON 8
AOC-5 FORMER SLUDGE LAGOONS 1-4
AOC-6 STREAM SEDIMENTS
AOC-7 PAINT STRIPPING AREA/FORMER 10,000 GALLON UST
AOC-8 GALLIUM ARSENIDE WING TRENCH
AOC-9 FORMER 15,000 GALLON HEATING OIL UST
AOC-10 FORMER 10,000 GALLON UST
AOC-11 GROUND WATER (NOT SHOWN)

LEGEND

MONITORING WELL LOCATION

LIMIT OF AREA OF CONCERN

BASIS OF BEARING: HORIZONTAL DATUM NAD 27

NEW JERSEY STATE PLANE COORDINATE SYSTEM, MONUMENTS 5344 AND 5345. BEARING MONUMENT 5344 TO MONUMENT 5345: N11°14'17.8"E

NVD 29. BENCHMARK, "MORRIS PLAINS", ELEVATION = 399.015'.

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NO.	DATE	REVISION DESCRIPTION	BY	CKD

ARCADIS GERAGHTY&MILLER

AIRTRON DIVISION OF
LITTON SYSTEMS, INC.

200 EAST HANOVER AVENUE
MORRIS PLAINS, NEW JERSEY

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
A. GIAMBATTISTA	5/21/98		
SITE PLAN		LEAD DESIGN PROF.	CHECKED G. ERNST
		PROJECT NUMBER NY001034.004	DRAWING NUMBER 2

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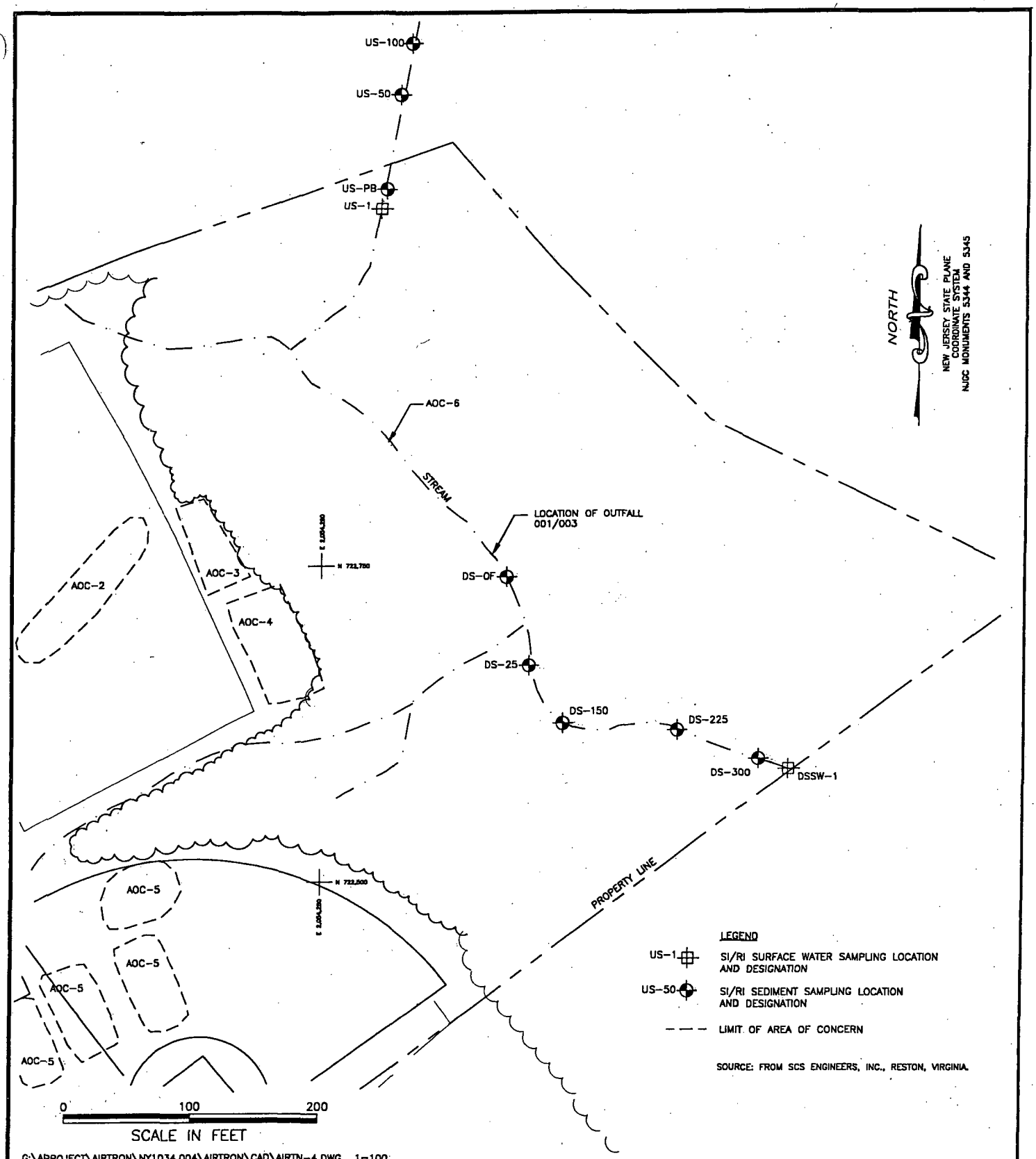

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DRAWN A. GIAMBATTISTA	DATE 5/20/98	PROJECT MANAGER	DEPARTMENT MANAGER		
SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS		LEAD DESIGN PROF.	CHECKED G. ERNST		
AIRTRON DIVISION OF LITTON SYSTEMS, INC. MORRIS PLAINS, NEW JERSEY		PROJECT NUMBER NY001034.004	DRAWING NUMBER 4		

NO.	DATE	REVISION DESCRIPTION	BY / CKD

ARCADIS GERAGHTY & MILLER

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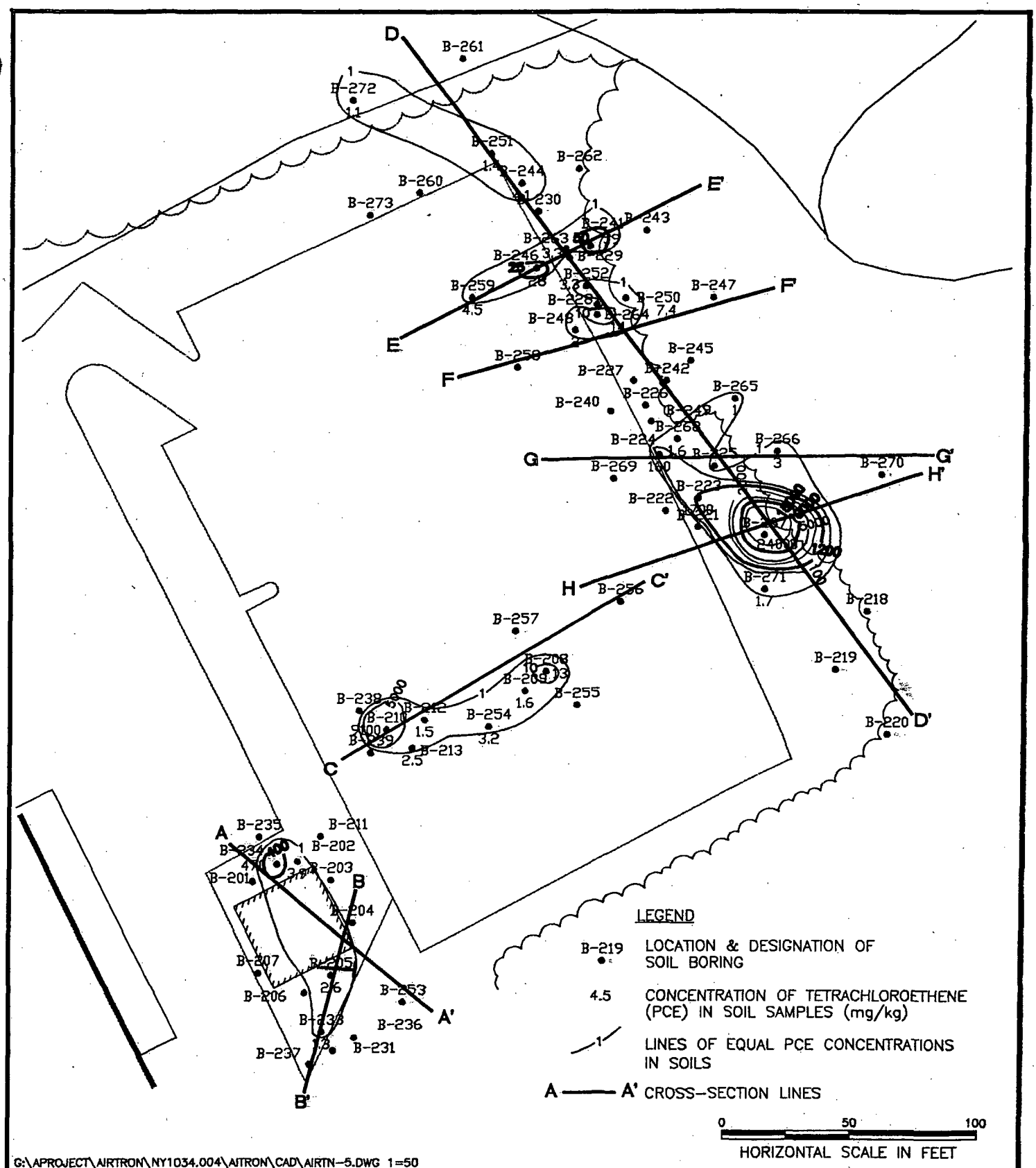

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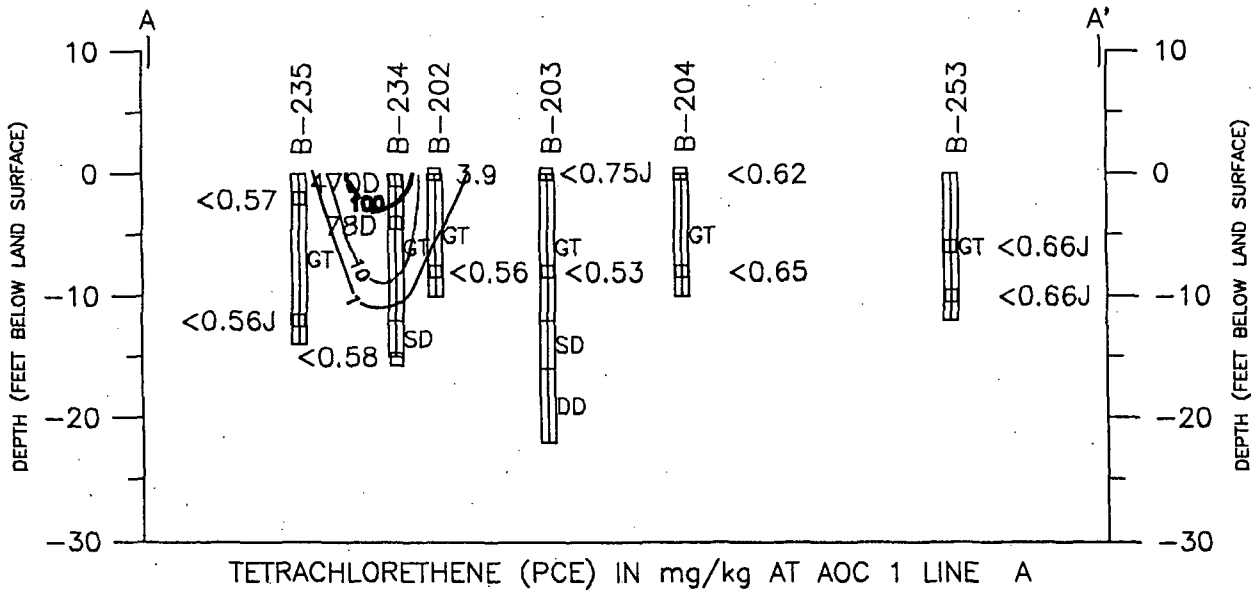
copyright © 19 98	NO. / DATE / REVISION DESCRIPTION / BY / CKD	ARCADIS GERAGHTY&MILLER	DRAWN A. GIAMBATTISTA / DATE 5/20/98	PROJECT MANAGER	DEPARTMENT MANAGER
			CONCENTRATIONS OF PCE IN SOIL ABOVE NJDEP CLEAN-UP CRITERIA	LEAD DESIGN PROF.	CHECKED G. ERNST
			AIRTRON DIVISION OF LITTON SYSTEMS, INC. MORRIS PLAINS, NEW JERSEY	PROJECT NUMBER NY001034.004	DRAWING NUMBER 5



GEOLOGICAL FORMATIONS:

GT	GLACIAL TILL
SD	SILTY DRIFT
DD	SAND DRIFT

LEGEND:

- □ SAMPLE LOCATION
- 3.9 CONCENTRATION OF PCE IN SOIL SAMPLES (mg/kg)
- —1— LINES OF EQUAL PCE CONCENTRATIONS IN SOIL

0 10 20 30 60
HORIZONTAL SCALE IN FEET

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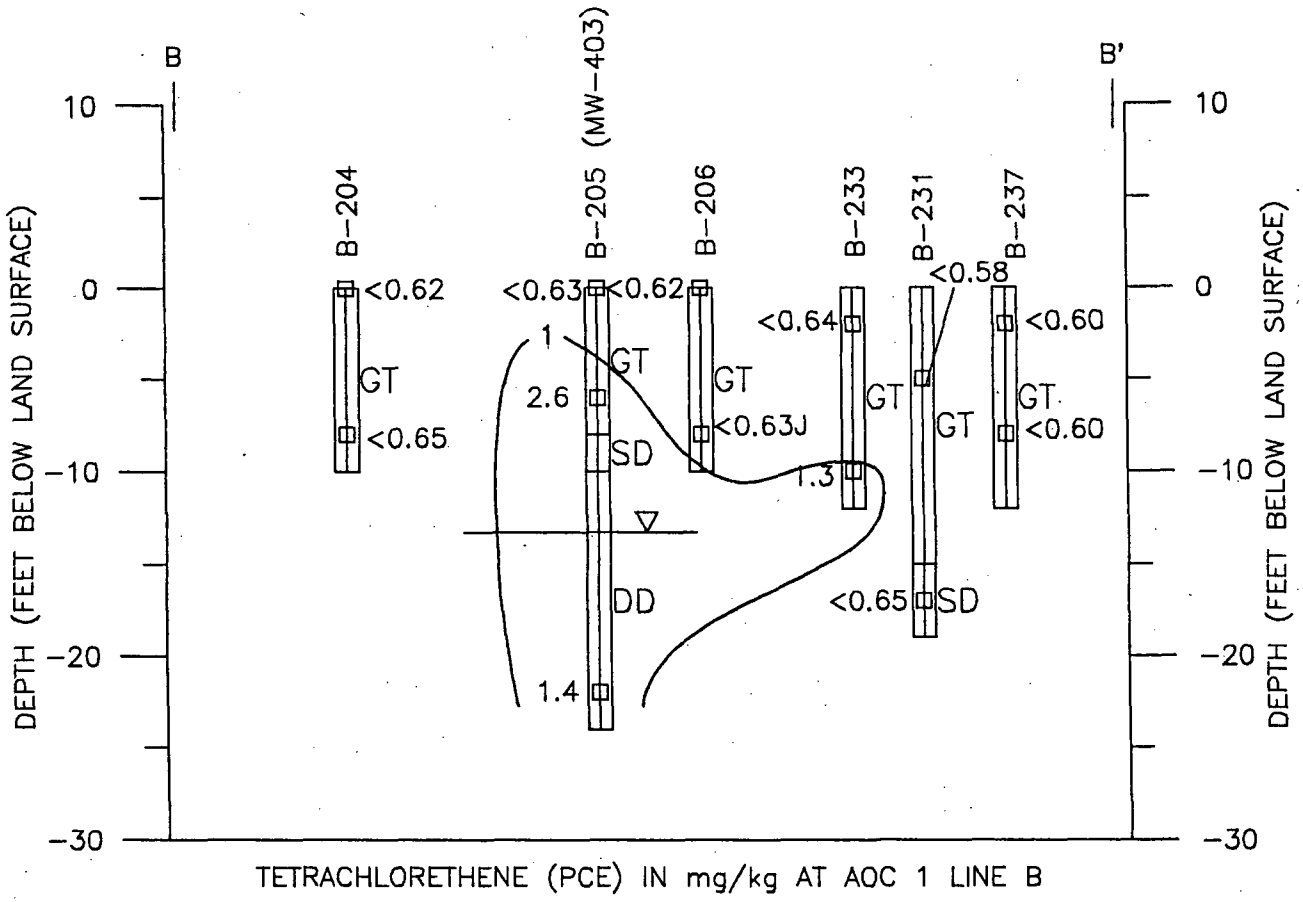
NO.	DATE	REVISION DESCRIPTION	BY / CKD

ARCADIS GERAGHTY & MILLER

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
M. WASILEWSKI	5/20/98		
CROSS SECTION A-A' CONCENTRATION OF PCE ABOVE NJDEP CLEANUP CRITERIA IN SOIL AIRTRON DIVISION OF LITTON SYSTEMS, INC. MORRIS PLAINS, NEW JERSEY		LEAD DESIGN PROF.	CHECKED G. ERNST
		PROJECT NUMBER NY001034.004	DRAWING NUMBER 6



LEGEND:

- □ SAMPLE LOCATION
- 1.4 CONCENTRATION OF PCE IN SOIL SAMPLES (mg/kg)
- —1— LINES OF EQUAL PCE CONCENTRATIONS IN SOIL
- ▽ APPROXIMATE DEPTH OF PERCHED GROUNDWATER

GEOLOGICAL FORMATIONS:	
GT	GLACIAL TILL
SD	SILTY DRIFT
DD	SAND DRIFT

0 10 20 40
HORIZONTAL SCALE IN FEET

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NO.	DATE	REVISION DESCRIPTION	BY / CKD

ARCADIS GERAGHTY&MILLER

DRAWN M. WASILEWSKI	DATE 5/20/98	PROJECT MANAGER	DEPARTMENT MANAGER
CROSS SECTION B-B' CONCENTRATION OF PCE ABOVE NJDEP CLEANUP CRITERIA IN SOIL AIRTRON DIVISION OF LITTON SYSTEMS, INC. MORRIS PLAINS, NEW JERSEY		LEAD DESIGN PROF.	CHECKED G. ERNST
		PROJECT NUMBER NY001034.004	DRAWING NUMBER 7

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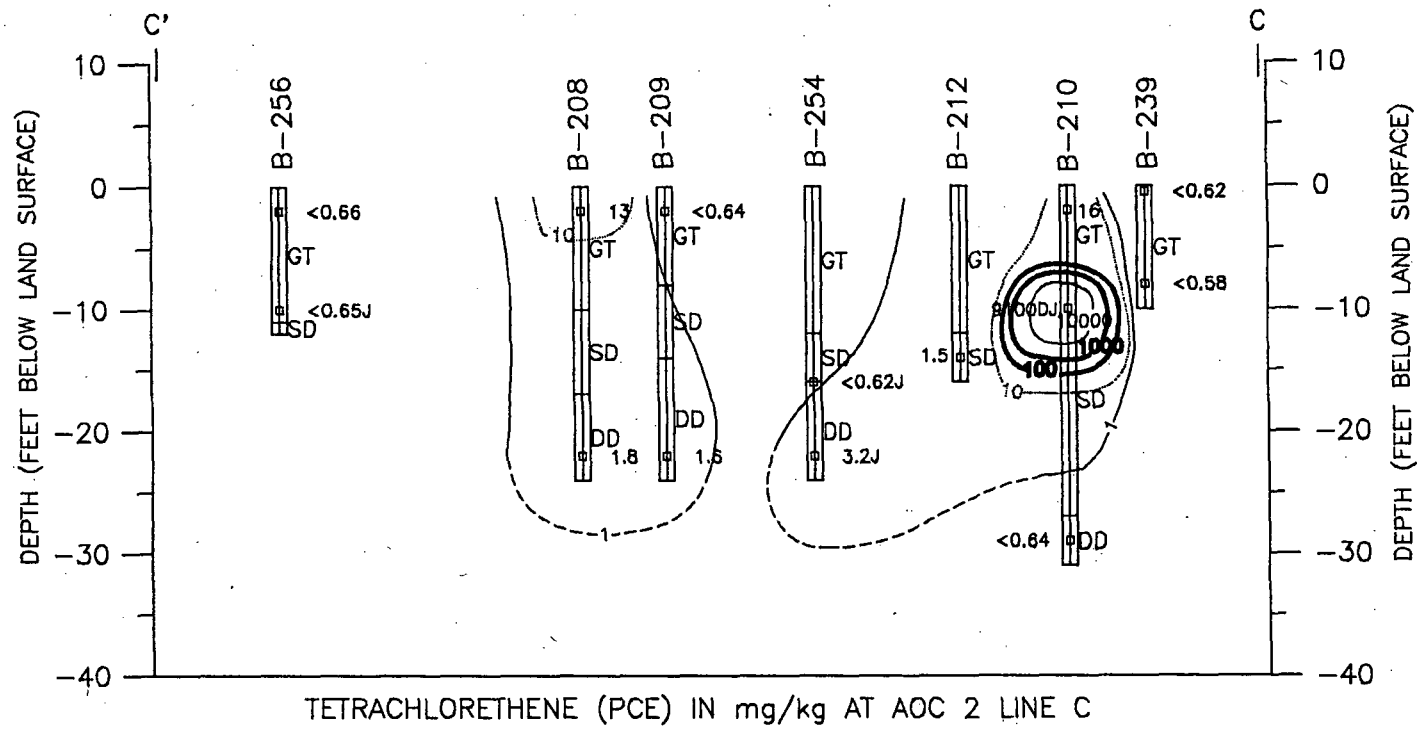

LEGEND:

- □ SAMPLE LOCATION
- 1.8 CONCENTRATION OF PCE IN SOIL SAMPLES (mg/kg)
- —1— LINES OF EQUAL PCE CONCENTRATIONS IN SOILS (DASHED WHERE INFERRED)

GEOLOGICAL FORMATIONS:	
GT	GLACIAL TILL
SD	SILTY DRIFT
DD	SAND DRIFT

0 10 20 30 60
HORIZONTAL SCALE IN FEET

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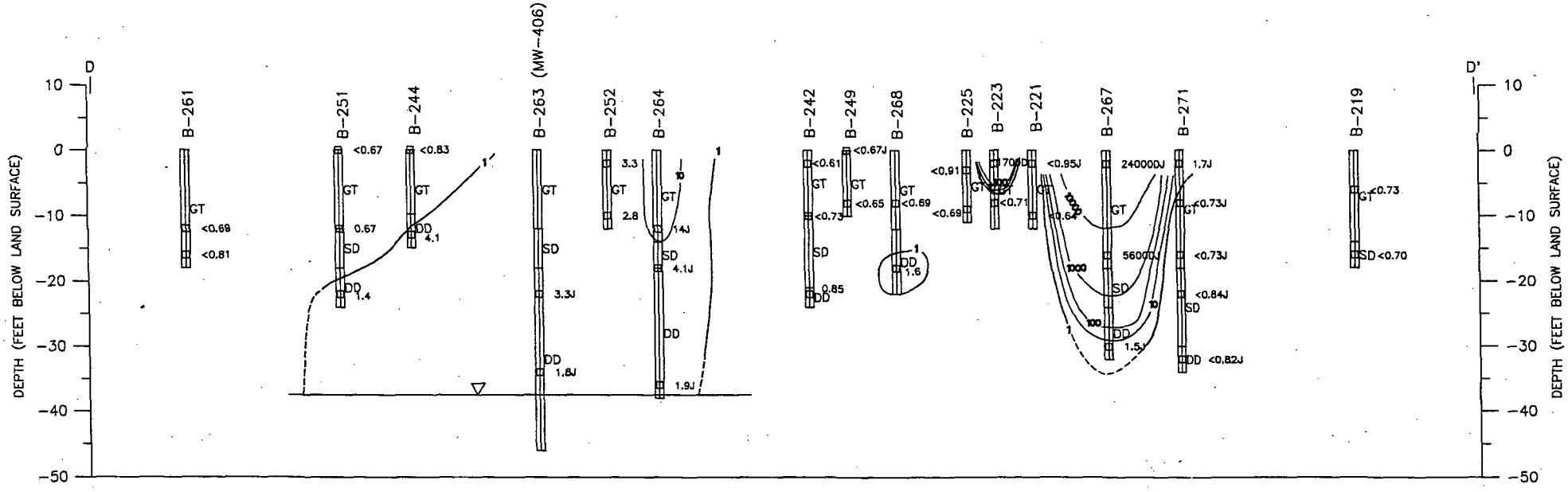
ARCADIS GERAGHTY & MILLER

DRAWN M. WASILEWSKI	DATE 5/20/98	PROJECT MANAGER	DEPARTMENT MANAGER
CROSS SECTION C-C' CONCENTRATION OF PCE ABOVE NJDEP CLEANUP CRITERIA IN SOIL AIRTRON DIVISION OF LITTON SYSTEMS, INC. MORRIS PLAINS, NEW JERSEY		LEAD DESIGN PROF.	CHECKED G. ERNST
		PROJECT NUMBER NY001034.004	DRAWING NUMBER 8



TETRACHLORETHENE (PCE) IN mg/kg AT AOC 3 LINE D

LEGEND:

- □ SAMPLE LOCATION
- 0.67 CONCENTRATION OF PCE IN SOIL SAMPLES (mg/kg)
- —1— LINES OF EQUAL PCE CONCENTRATIONS IN SOIL (DASHED WHERE INFERRED)
- ▽ APPROXIMATE DEPTH OF UPPER UNCONFINED AQUIFER (WATER TABLE)

GEOLOGICAL FORMATIONS:	
GT	GLACIAL TILL
SD	SILTY DRIFT
DD	SAND DRIFT

0 10 20 30 60
HORIZONTAL SCALE IN FEET

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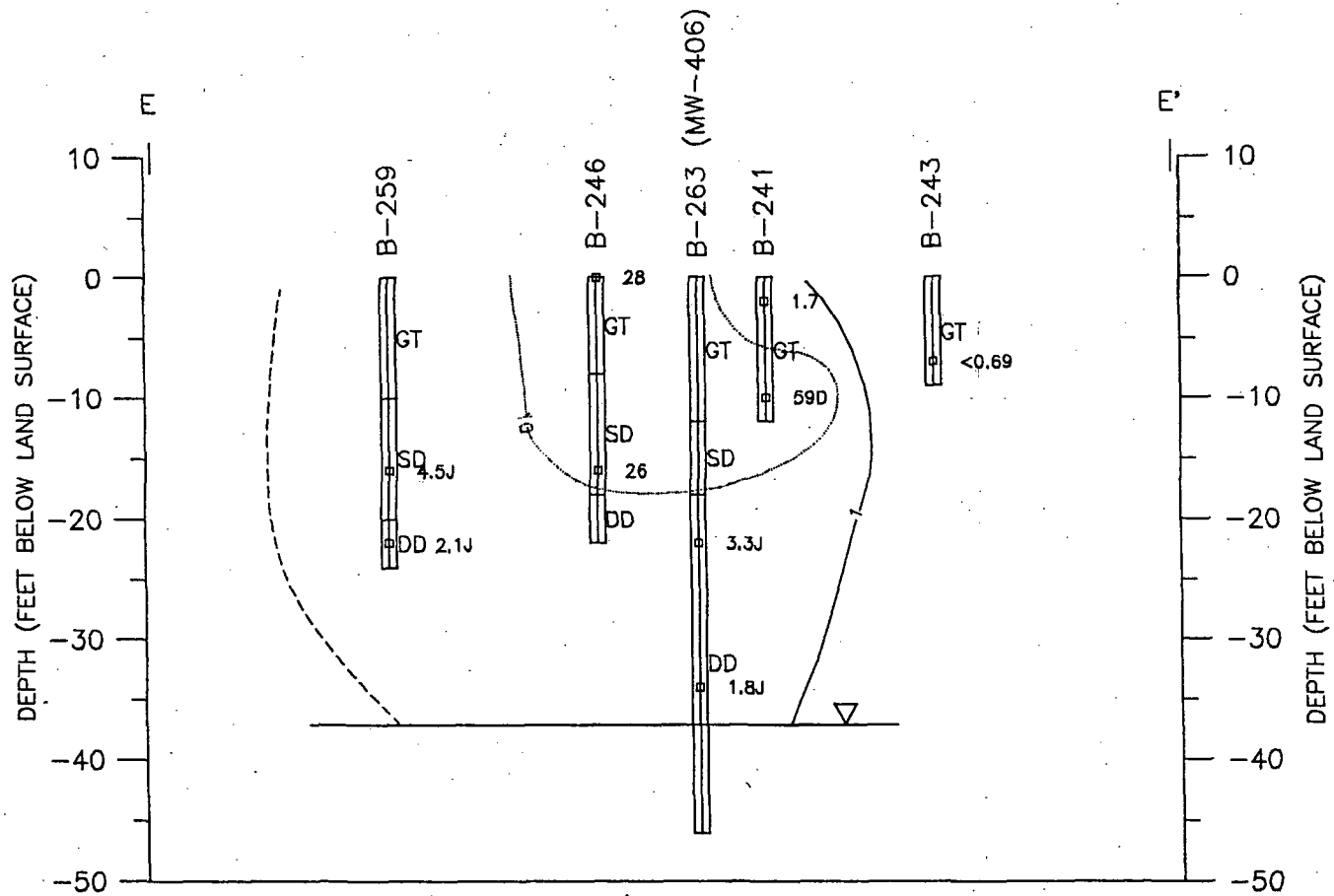
ARCADIS GERAGHTY&MILLER

AIRTRON DIVISION OF
LITTON SYSTEMS, INC.
200 EAST HANOVER AVENUE
MORRIS PLAINS, NEW JERSEY

DRAWN M. WASILEWSKI	DATE 5/20/98	PROJECT MANAGER	DEPARTMENT MANAGER
CROSS SECTION D-D' CONCENTRATION OF PCE ABOVE NJDEP CLEANUP CRITERIA IN SOIL		LEAD DESIGN PROF.	CHECKED C. ERNST
		PROJECT NUMBER NY001034.004	DRAWING NUMBER 9



TETRACHLORETHENE (PCE) IN mg/kg AT AOC 3 LINE E

GEOLOGICAL FORMATIONS:	
GT	GLACIAL TILL
SD	SILTY DRIFT
DD	SAND DRIFT

LEGEND:

□ SAMPLE LOCATION

0.67 CONCENTRATION OF PCE IN SOIL SAMPLES (mg/kg)

—1— LINES OF EQUAL PCE CONCENTRATIONS IN SOIL (DASHED WHERE INFERRED)

▽ APPROXIMATE DEPTH OF UPPER UNCONFINED AQUIFER (WATER TABLE)

0 10 20 30 60
HORIZONTAL SCALE IN FEET

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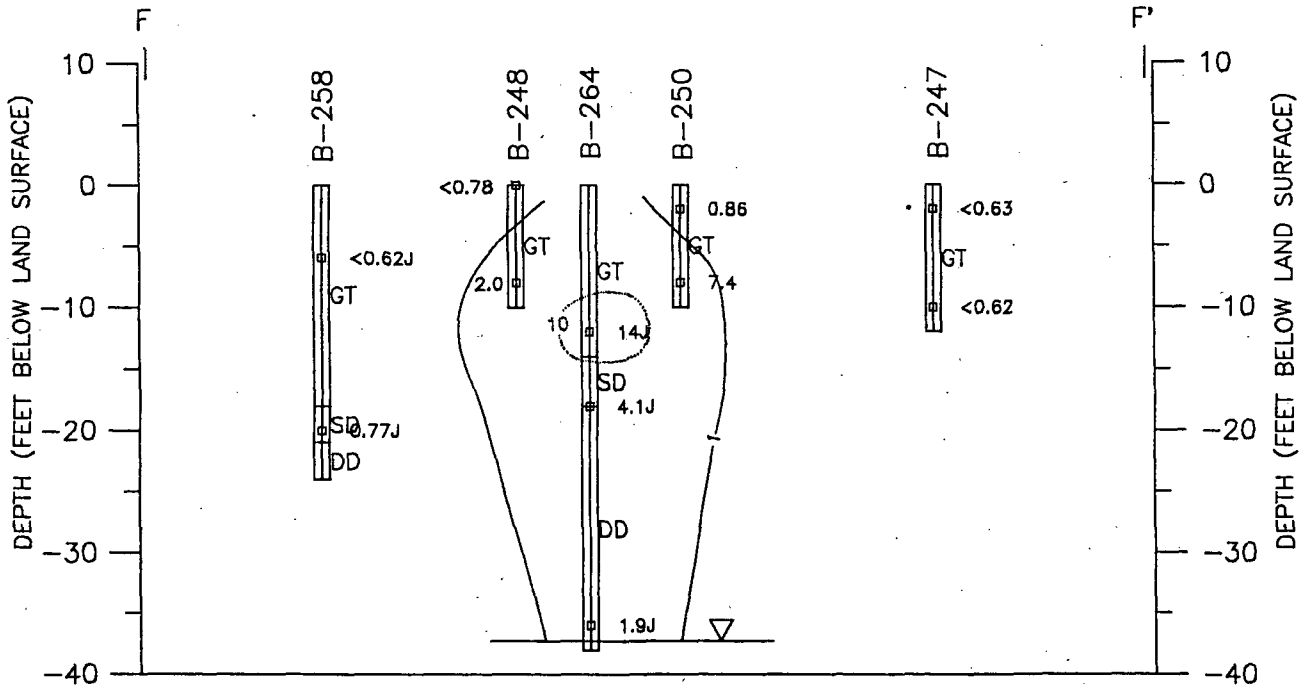
NO.	DATE	REVISION DESCRIPTION	BY / CKD

ARCADIS GERAGHTY & MILLER

DRAWN M. WASILEWSKI	DATE 5/20/98	PROJECT MANAGER	DEPARTMENT MANAGER
CROSS SECTION E-E' CONCENTRATION OF PCE ABOVE NJDEP CLEANUP CRITERIA IN SOIL		LEAD DESIGN PROF.	CHECKED G. ERNST
AIRTRON DIVISION OF LITTON SYSTEMS, INC. MORRIS PLAINS, NEW JERSEY		PROJECT NUMBER NY001034.004	DRAWING NUMBER 10



TETRACHLORETHENE (PCE) IN mg/kg AT AOC 3 LINE F

GEOLOGICAL FORMATIONS:	
GT	GLACIAL TILL
SD	SILTY DRIFT
DD	SAND DRIFT

LEGEND:

- □ SAMPLE LOCATION
- 7.4 CONCENTRATION OF PCE IN SOIL SAMPLES (mg/kg)
- —1— LINES OF EQUAL PCE CONCENTRATIONS IN SOIL (DASHED WHERE INFERRED)
- ▽ APPROXIMATE DEPTH OF UPPER UNCONFINED AQUIFER (WATER TABLE)

0 10 20 30 60
HORIZONTAL SCALE IN FEET

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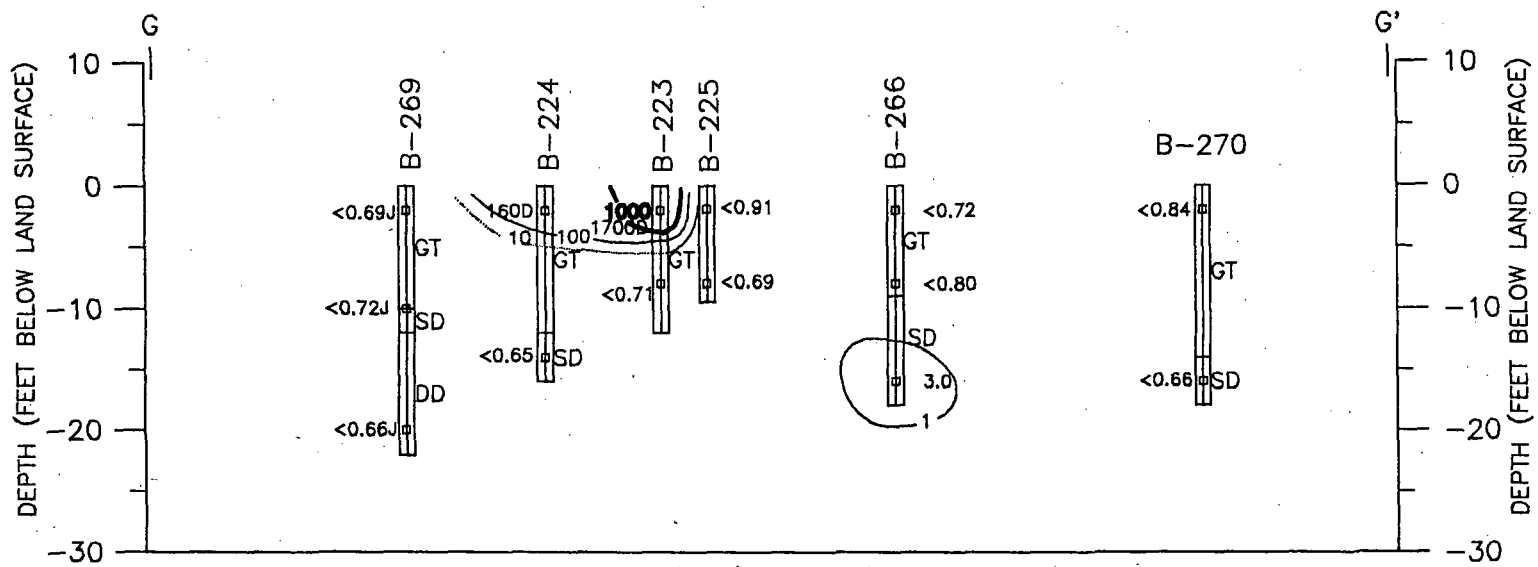
ARCADIS GERAGHTY & MILLER

DRAWN M. WASILEWSKI	DATE 5/20/98	PROJECT MANAGER	DEPARTMENT MANAGER
CROSS SECTION F-F' CONCENTRATION OF PCE ABOVE NJDEP CLEANUP CRITERIA IN SOIL AIRTRON DIVISION OF LITTON SYSTEMS, INC. MORRIS PLAINS, NEW JERSEY		LEAD DESIGN PROF.	CHECKED G. ERNST
		PROJECT NUMBER NY001034.004	DRAWING NUMBER 11



GEOLOGICAL FORMATIONS:

GT	GLACIAL TILL
SD	SILTY DRIFT
DD	SAND DRIFT

LEGEND:

□ SAMPLE LOCATION

3.0 CONCENTRATION OF PCE IN SOIL SAMPLES (mg/kg)

—1— LINES OF EQUAL PCE CONCENTRATIONS IN SOIL

0 10 20 30 60

HORIZONTAL SCALE IN FEET

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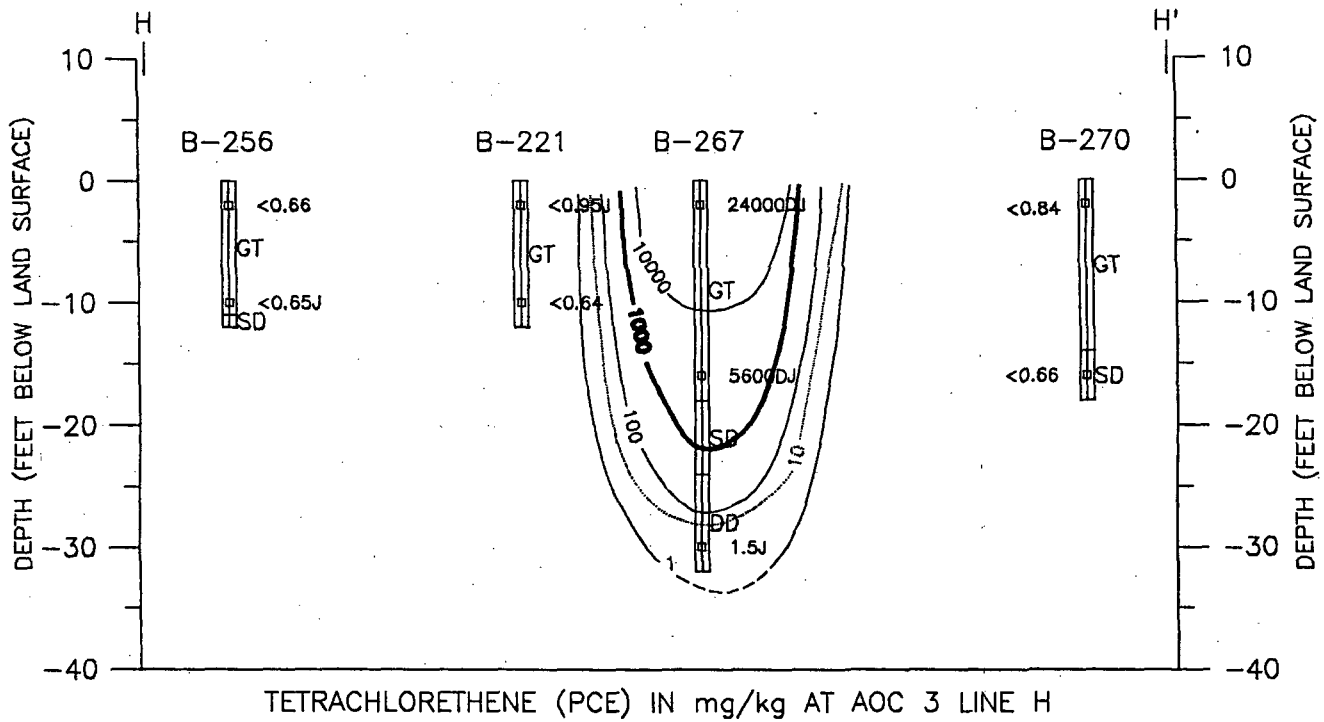
ARCADIS GERAGHTY & MILLER

DRAWN M. WASILEWSKI	DATE 5/20/98	PROJECT MANAGER	DEPARTMENT MANAGER
CROSS SECTION G-G' CONCENTRATION OF PCE ABOVE NJDEP CLEANUP CRITERIA IN SOIL AIRTRON DIVISION OF LITTON SYSTEMS, INC. MORRIS PLAINS, NEW JERSEY		LEAD DESIGN PROF.	CHECKED G. ERNST
		PROJECT NUMBER NY001034.004	DRAWING NUMBER 12



GEOLOGICAL FORMATIONS:

GT	GLACIAL TILL
SD	SILTY DRIFT
DD	SAND DRIFT

LEGEND:

- □ SAMPLE LOCATION
- 1.5J CONCENTRATION OF PCE IN SOIL SAMPLES (mg/kg)
- —1— LINES OF EQUAL PCE CONCENTRATIONS IN SOIL (DASHED WHERE INFERRED)

0 10 20 30 60
HORIZONTAL SCALE IN FEET

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ARCADIS GERAGHTY & MILLER

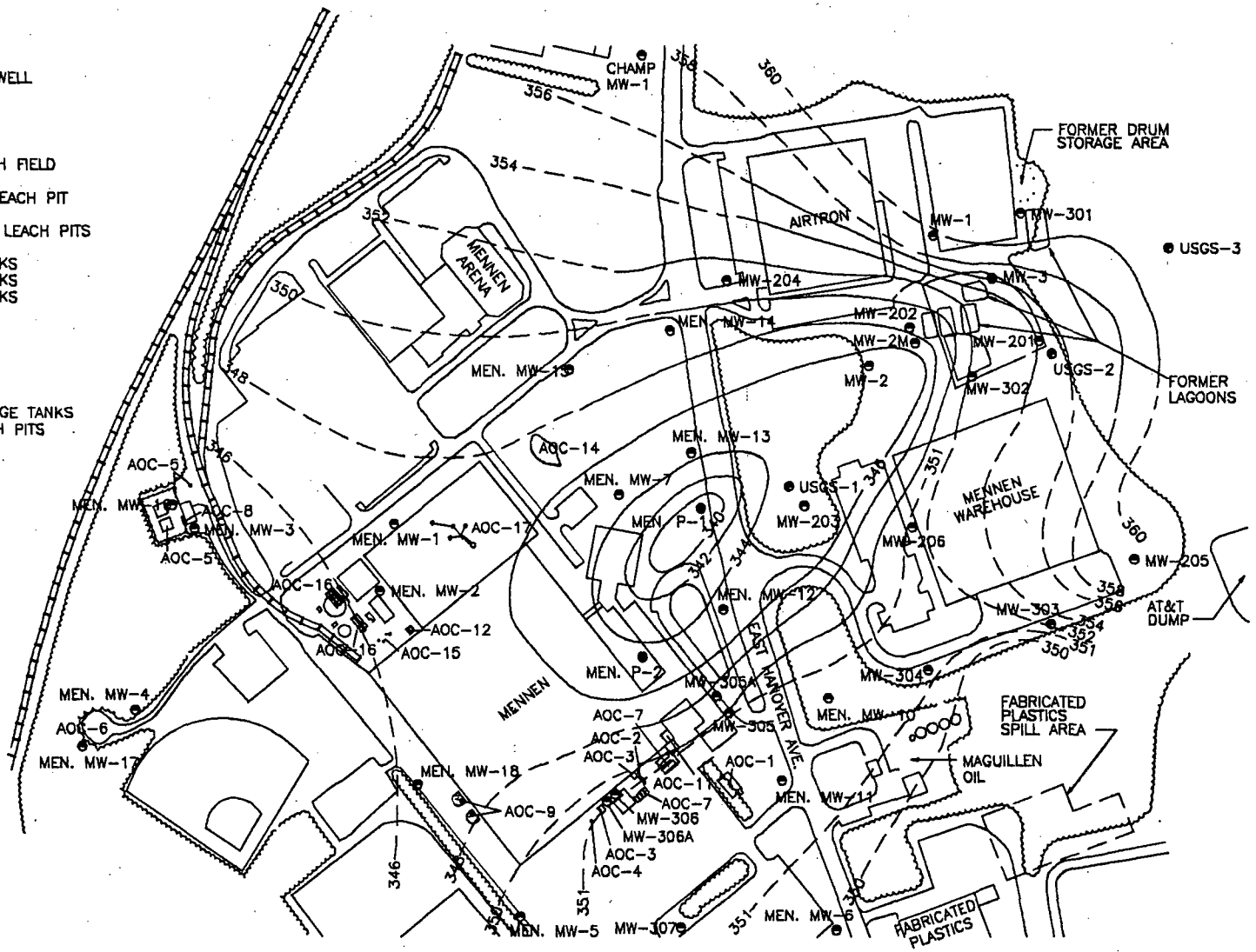
DRAWN M. WASILEWSKI	DATE 5/20/98	PROJECT MANAGER	DEPARTMENT MANAGER
CROSS SECTION H-H' CONCENTRATION OF PCE ABOVE NJDEP CLEANUP CRITERIA IN SOIL AIRTRON DIVISION OF LITTON SYSTEMS, INC. MORRIS PLAINS, NEW JERSEY		LEAD DESIGN PROF.	CHECKED G. ERNST
		PROJECT NUMBER NY001034.004	DRAWING NUMBER 13

LEGEND

- MONITORING WELL
- WATER PRODUCTION WELL
- LARGE DIAMETER MONITORING WELL
- U.S.G.S. TEST WELL

MENNEN AREAS OF CONCERN

AOC-1	DISTRIBUTION BOX AND LEACH FIELD
AOC-2	GREASE TRAPS
AOC-3	SEPARATION CHAMBER AND LEACH PIT
AOC-4	ACCUMULATION PIT
AOC-5	WASTE WATER LAGOONS AND LEACH PITS
AOC-6	AEROSOL CAN DISPOSAL
AOC-7	UNDERGROUND STORAGE TANKS
AOC-8	UNDERGROUND STORAGE TANKS
AOC-9	UNDERGROUND STORAGE TANKS
AOC-10	STORM WATER OUTFALL 001
AOC-11	TRANSORMER ROOM
AOC-12	TRANSFORMER PAD
AOC-13	DETENTION BASIN-1
AOC-14	DETENTION BASIN-2
AOC-15	SANITARY SEPTIC SYSTEM
AOC-16	FREON ABOVEGROUND STORAGE TANKS
AOC-17	CONCRETE TANKS AND LEACH PITS



NOTES

1. SOURCE: 1994, SCS ENGINEERS REMOVAL INVESTIGATION REPORT FIGURE 3-20.

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NO.	DATE	REVISION DESCRIPTION	BY / CKD

ARCADIS GERAGHTY & MILLER

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
M. WASILEWSKI	5/20/98		
GROUNDWATER CONTOURS DURING MENNEN P-1 OPERATION (FEBRUARY 1990)		LEAD DESIGN PROF.	CHECKED G. ERNST
AIRTRON DIVISION OF LITTON SYSTEMS, INC. MORRIS PLAINS, NEW JERSEY		PROJECT NUMBER NY001034.004	DRAWING NUMBER 14

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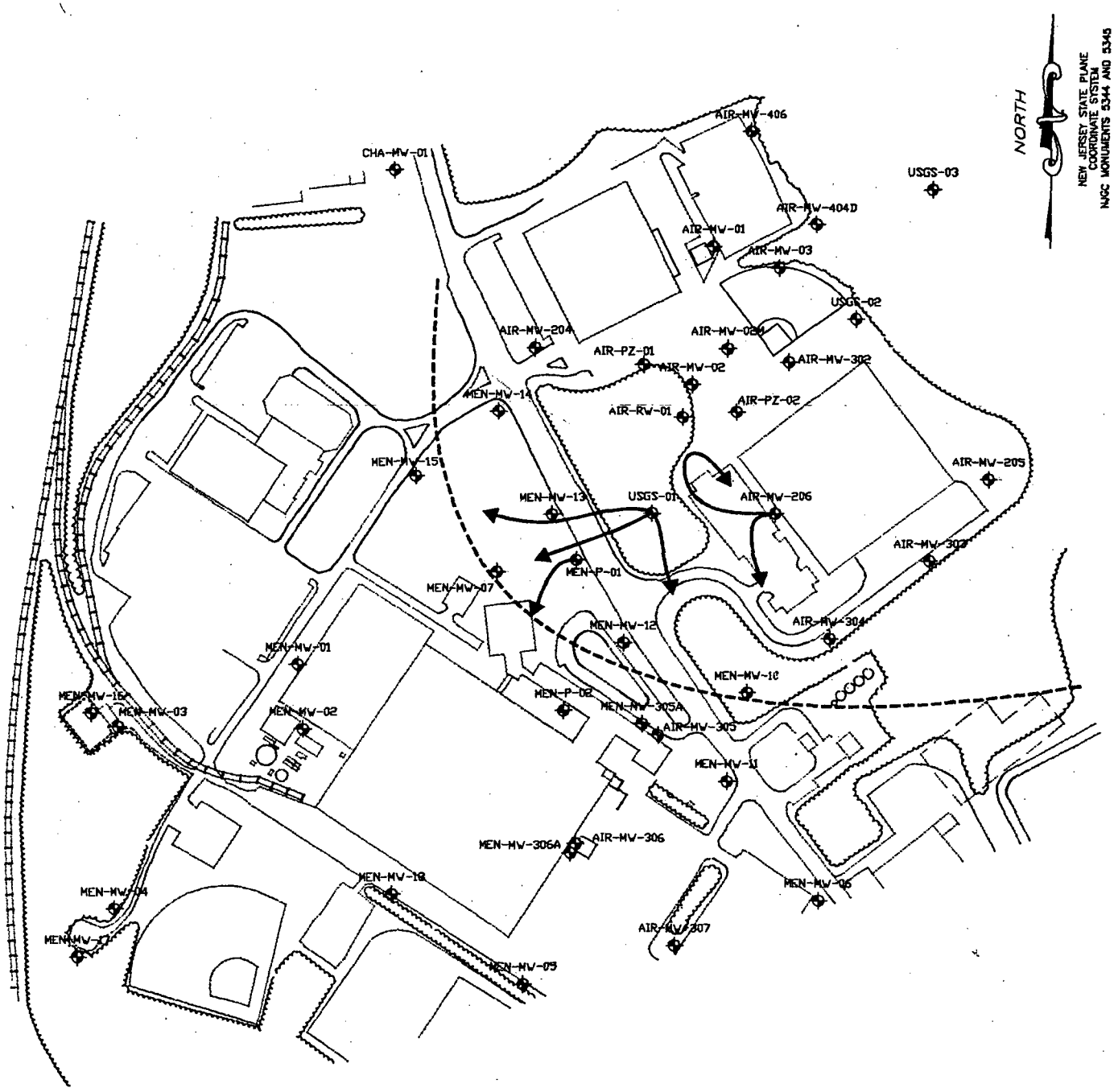

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CONTOUR INTERVAL = 2 FEET (EXCEPT AS SHOWN)

NO.	DATE	REVISION DESCRIPTION	BY / CKD

ARCADIS GERAGHTY & MILLER

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
M. WASILEWSKI	6/1/98		
INTERIM (NON PUMPING PERIOD) FLOW ANALYSIS RESULTS		LEAD DESIGN PROF.	CHECKED G. ERNST
AIRTRON DIVISION OF LITTON SYSTEMS, INC. MORRIS PLAINS, NEW JERSEY		PROJECT NUMBER NY001034.004	DRAWING NUMBER 15

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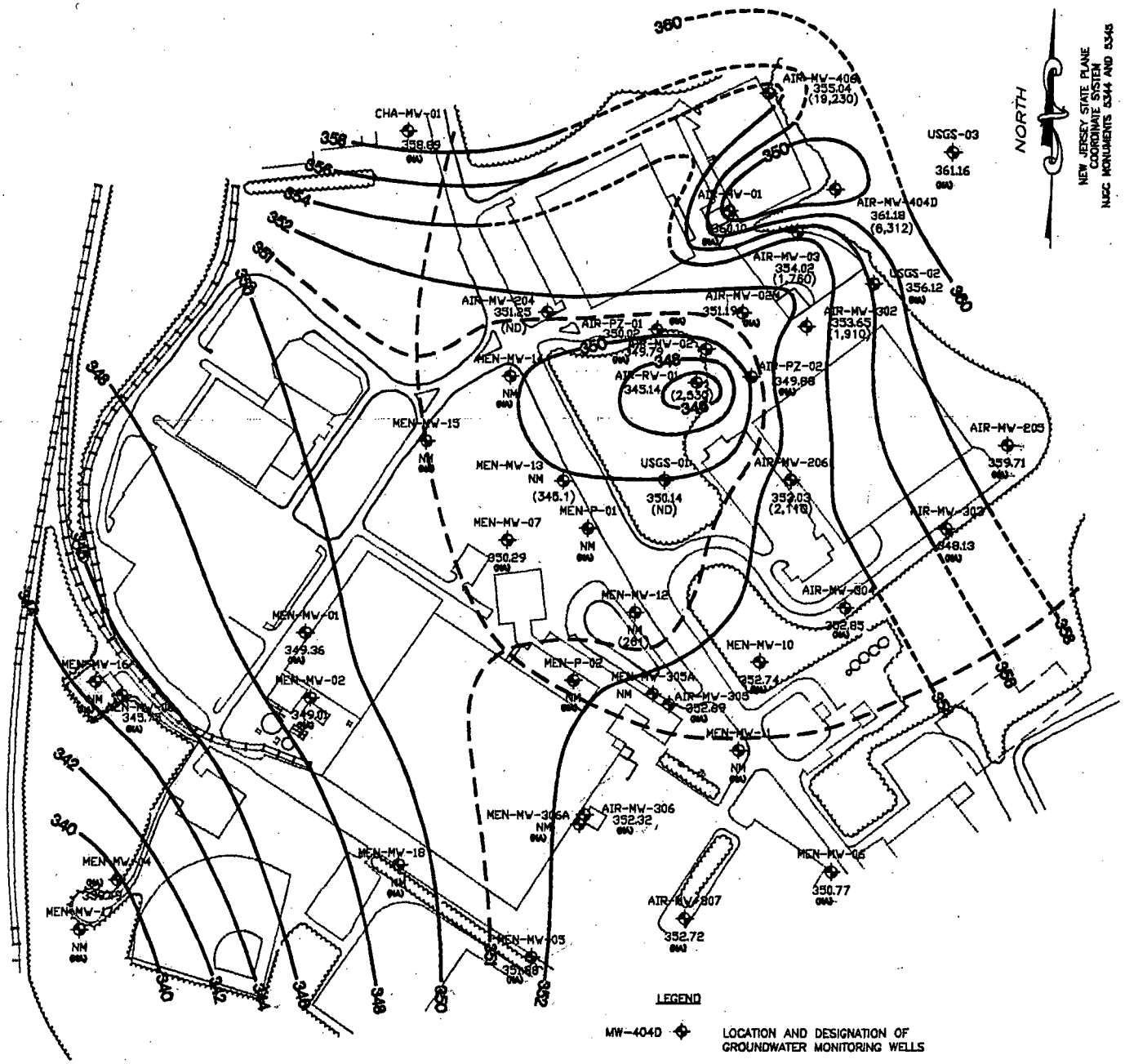

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CONTOUR INTERVAL = 2 FEET (EXCEPT AS SHOWN)

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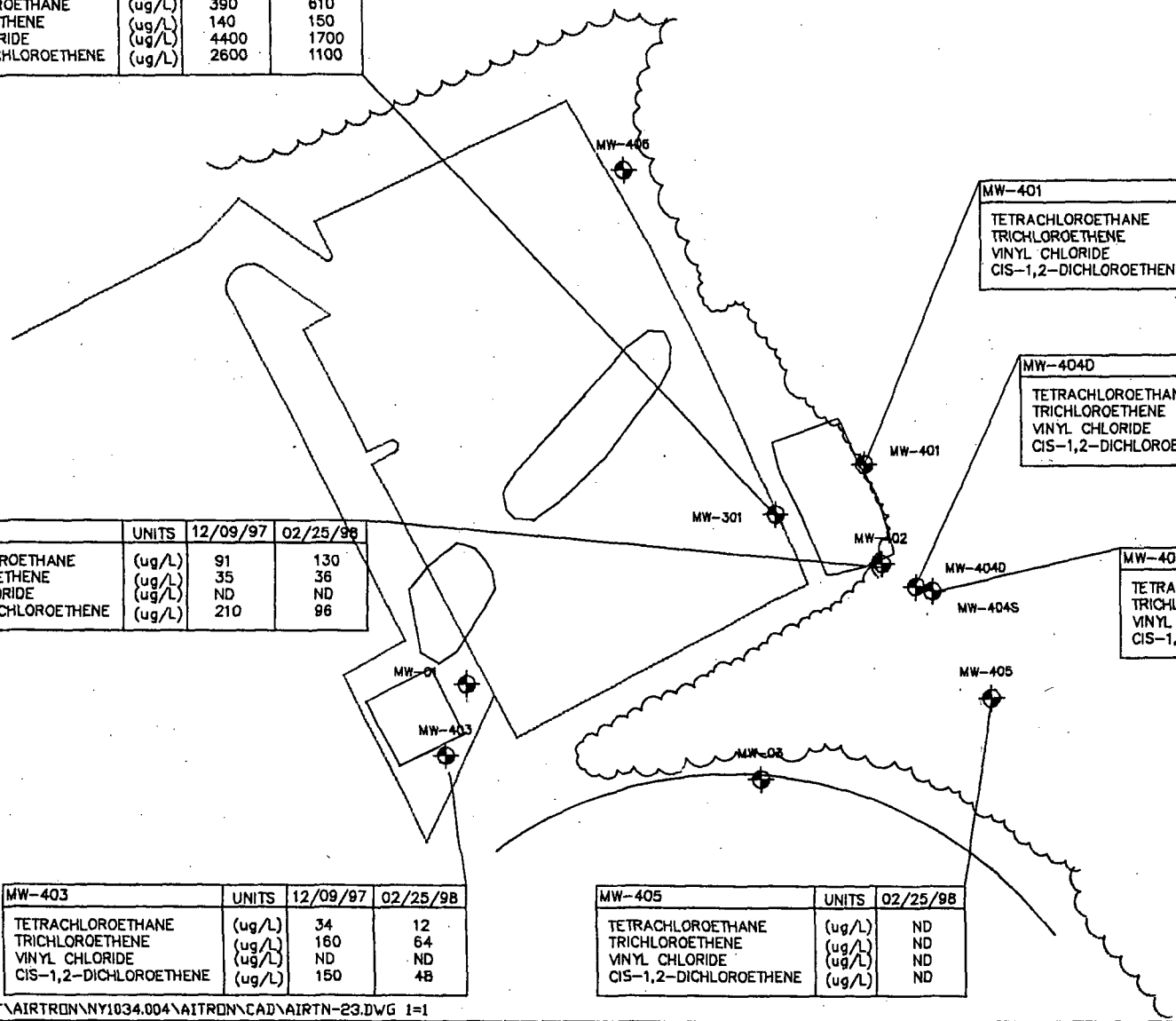
NO. / DATE / REVISION DESCRIPTION / BY / CKD	ARCADIS GERAGHTY&MILLER	UPPER UNCONFINED AQUIFER GROUNDWATER CONTOURS MARCH 10, 1998 AIRTRON DIVISION OF LITTON SYSTEMS, INC. MORRIS PLAINS, NEW JERSEY		LEAD DESIGN PROF.	CHECKED G. ERNST
				PROJECT NUMBER NY001034.004	DRAWING NUMBER 16

MW-301	UNITS	12/09/97	02/25/98
TETRACHLOROETHANE	(ug/L)	390	610
TRICHLOROETHENE	(ug/L)	140	150
VINYL CHLORIDE	(ug/L)	4400	1700
CIS-1,2-DICHLOROETHENE	(ug/L)	2600	1100



MW-401	UNITS	02/25/98	02/25/98
TETRACHLOROETHANE	(ug/L)	2.4	1.9
TRICHLOROETHENE	(ug/L)	2.2	ND
VINYL CHLORIDE	(ug/L)	ND	ND
CIS-1,2-DICHLOROETHENE	(ug/L)	24	10

MW-404D	UNITS	02/25/98
TETRACHLOROETHANE	(ug/L)	4700
TRICHLOROETHENE	(ug/L)	600
VINYL CHLORIDE	(ug/L)	12
CIS-1,2-DICHLOROETHENE	(ug/L)	1000

MW-402	UNITS	12/09/97	02/25/98
TETRACHLOROETHANE	(ug/L)	91	130
TRICHLOROETHENE	(ug/L)	35	36
VINYL CHLORIDE	(ug/L)	ND	ND
CIS-1,2-DICHLOROETHENE	(ug/L)	210	96

MW-404S	UNITS	02/25/98
TETRACHLOROETHANE	(ug/L)	130
TRICHLOROETHENE	(ug/L)	36
VINYL CHLORIDE	(ug/L)	ND
CIS-1,2-DICHLOROETHENE	(ug/L)	250

MW-403	UNITS	12/09/97	02/25/98
TETRACHLOROETHANE	(ug/L)	34	12
TRICHLOROETHENE	(ug/L)	160	64
VINYL CHLORIDE	(ug/L)	ND	ND
CIS-1,2-DICHLOROETHENE	(ug/L)	150	48

MW-405	UNITS	02/25/98
TETRACHLOROETHANE	(ug/L)	ND
TRICHLOROETHENE	(ug/L)	ND
VINYL CHLORIDE	(ug/L)	ND
CIS-1,2-DICHLOROETHENE	(ug/L)	ND

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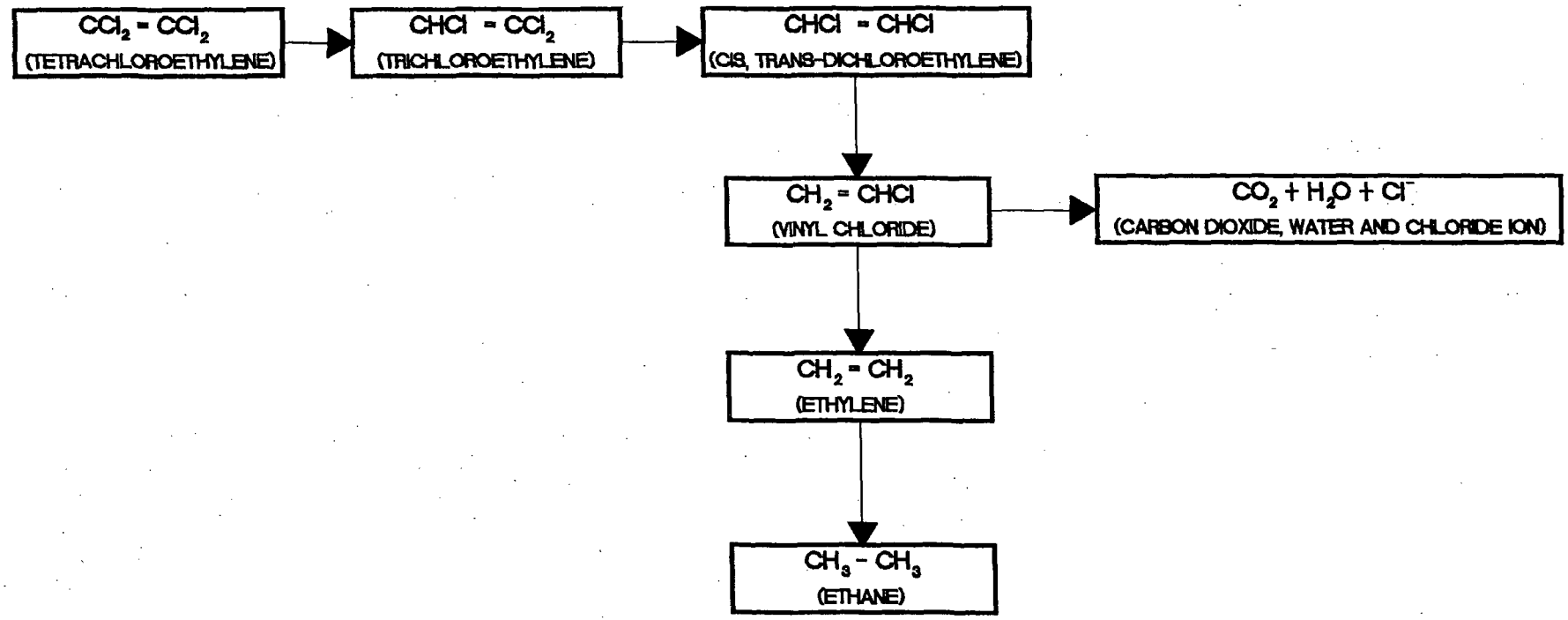
NO.	DATE	REVISION DESCRIPTION	BY / CKD

ARCADIS GERAGHTY & MILLER

DRAWN A. GIAMBATTISTA	DATE 5/20/98	PROJECT MANAGER	DEPARTMENT MANAGER
VOC CONCENTRATIONS IN PERCHED GROUNDWATER		LEAD DESIGN PROF.	CHECKED G. ERNST
AIRTRON DIVISION OF LITTON SYSTEMS, INC. MORRIS PLAINS, NEW JERSEY		PROJECT NUMBER NY001034.004	DRAWING NUMBER 17



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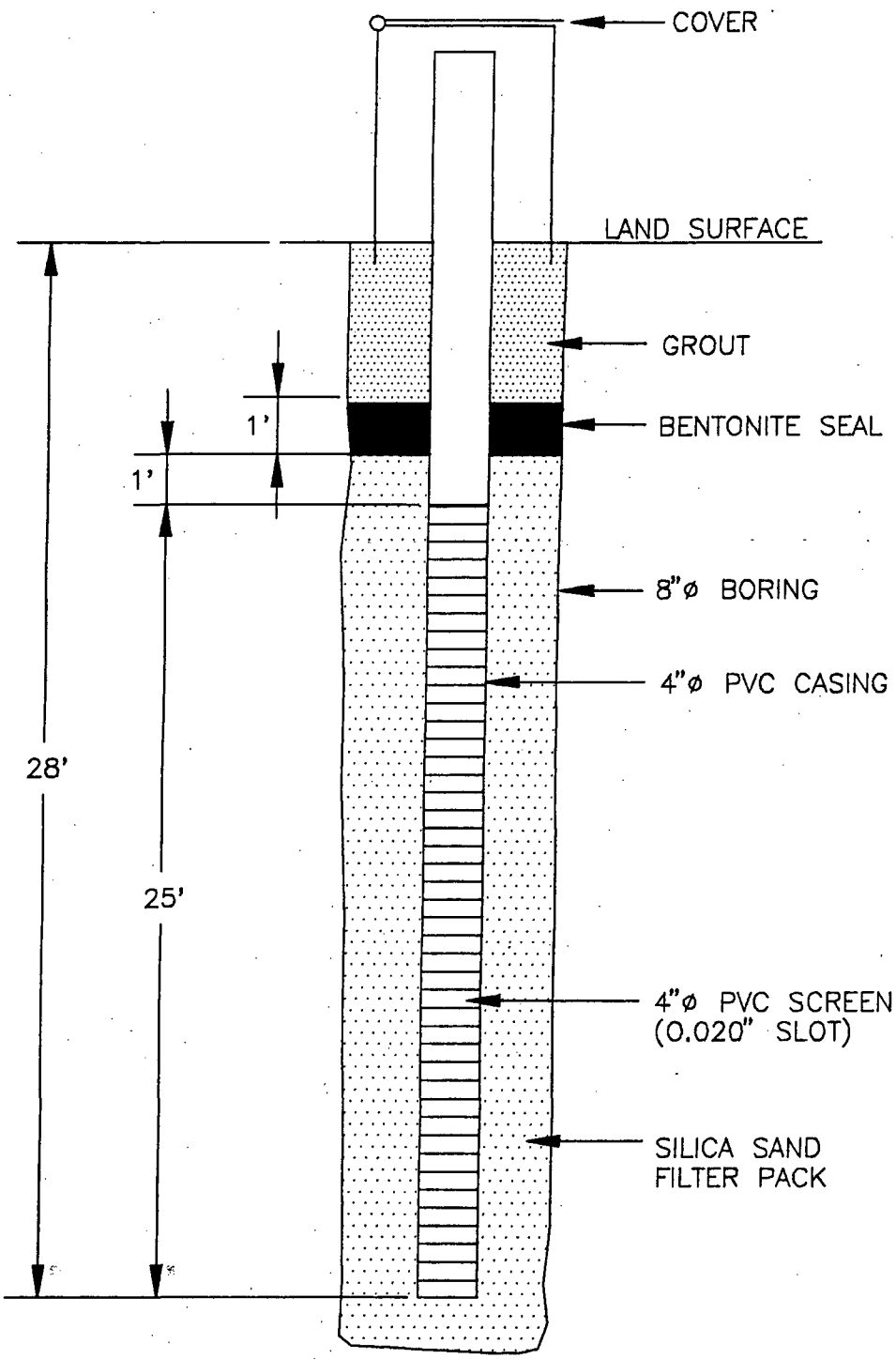
ARCADIS GERAGHTY & MILLER

DRAWN M. WASILEWSKI	DATE 5/20/98	PROJECT MANAGER	DEPARTMENT MANAGER
ANAEROBIC CHEMICAL AND BIOLOGICAL TRANSFORMATION PATHWAYS FOR CHLORINATED SOLVENTS AIRTRON DIVISION OF LITTON SYSTEMS, INC. MORRIS PLAINS, NEW JERSEY		LEAD DESIGN PROF.	CHECKED G. ERNST
		PROJECT NUMBER NY001034.004	DRAWING NUMBER 18



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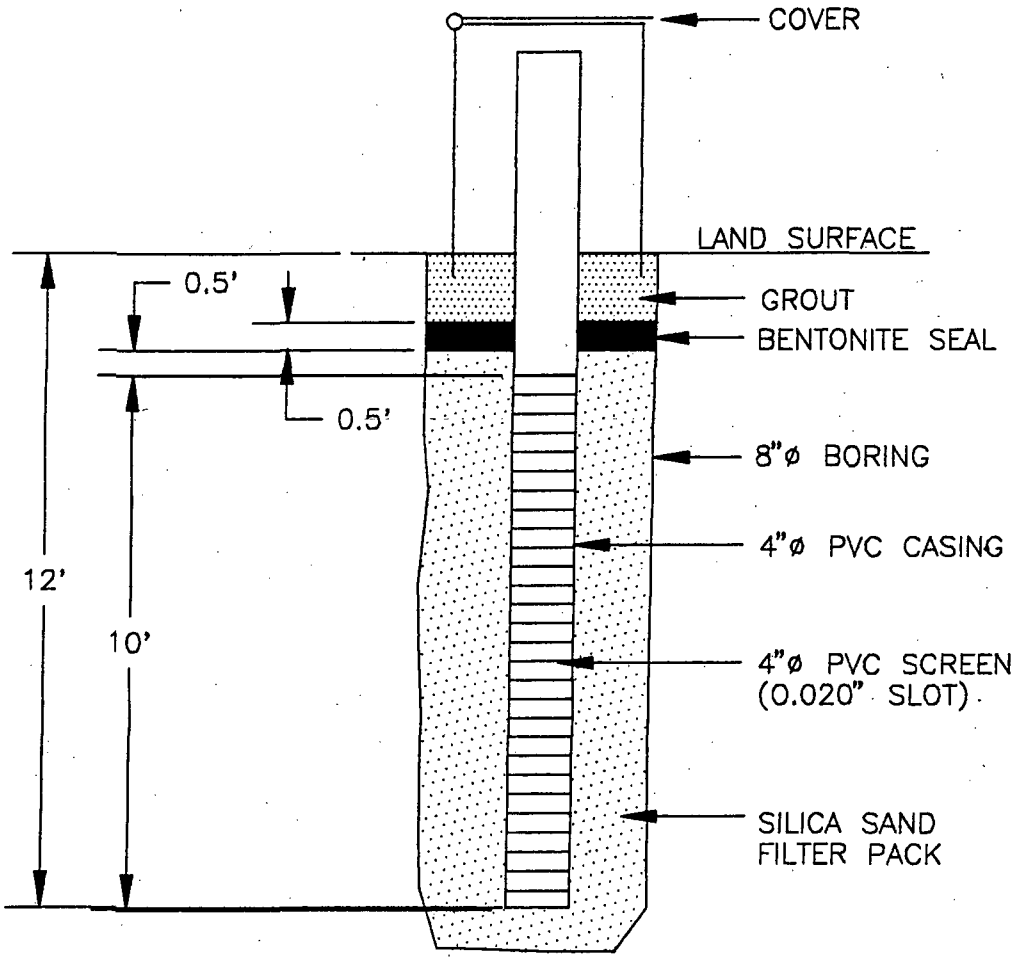
ARCADIS GERAGHTY&MILLER

DRAWN A. GIAMBATTISTA	DATE 5/20/98	PROJECT MANAGER	DEPARTMENT MANAGER
PROPOSED INJECTION WELL IW-1		LEAD DESIGN PROF.	CHECKED G. ERNST
AIRTRON DIVISION OF LITTON SYSTEMS, INC. MORRIS PLAINS, NEW JERSEY		PROJECT NUMBER NY001034.004	DRAWING NUMBER 19



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PROPOSED INJECTION WELL IW-2		LEAD DESIGN PROF.	CHECKED G. ERNST
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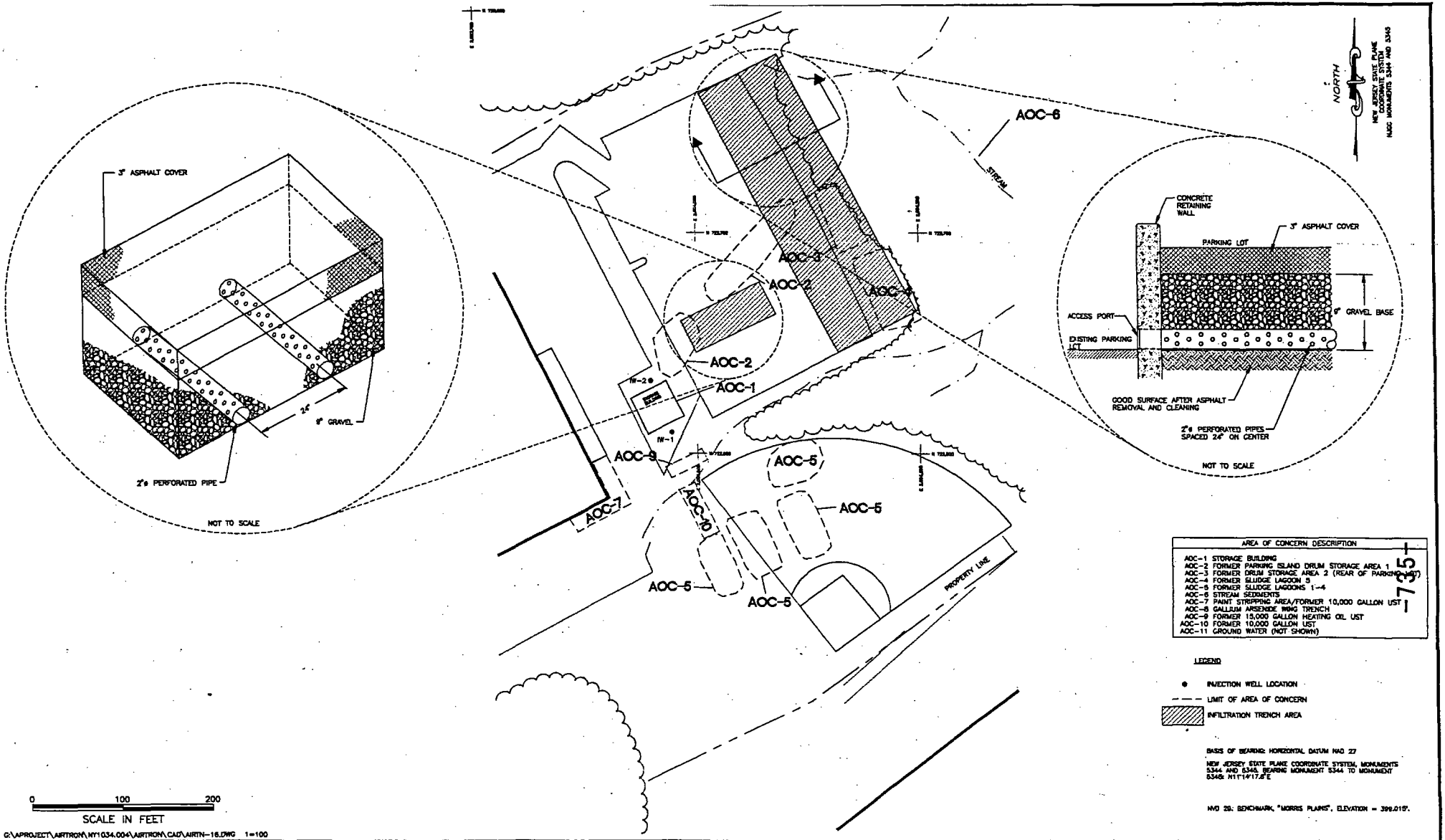

AREA OF CONCERN DESCRIPTION
AOC-1 STORAGE BUILDING
AOC-2 FORMER PARKING ISLAND DRUM STORAGE AREA 1
AOC-3 FORMER DRUM STORAGE AREA 2 (REAR OF PARKING LOT)
AOC-4 FORMER SLUDGE LAGOON 5
AOC-5 FORMER SLUDGE LAGOONS 1-4
AOC-6 STREAM SEDIMENTS
AOC-7 PAINT STRIPPING AREA/FORMER 10,000 GALLON UST
AOC-8 GALLIUM ARSENIDE WING TRENCH
AOC-9 FORMER 15,000 GALLON HEATING OIL UST
AOC-10 FORMER 10,000 GALLON UST
AOC-11 GROUND WATER (NOT SHOWN)

-735-

LEGEND

- ● INJECTION WELL LOCATION
- — — — LIMIT OF AREA OF CONCERN
- INFILTRATION TRENCH AREA

BASIS OF BEARING: HORIZONTAL DATUM NAD 27

NEW JERSEY STATE PLANE COORDINATE SYSTEM, MONUMENTS 5344 AND 5345, BEARING MONUMENT 5344 TO MONUMENT 5345: N11°14'17.8"E

NVD 29: BENCHMARK, "MORRIS PLAINS", ELEVATION = 399.015'.

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ARCADIS GERAGHTY&MILLER

AIRTRON DIVISION OF
LITTON SYSTEMS, INC.

200 EAST HANOVER AVENUE
MORRIS PLAINS, NEW JERSEY

PROPOSED INFILTRATION TRENCH SCHEMATIC

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
A. GIAMBATTISTA	5/21/98		
		LEAD DESIGN PROF.	CHECKED G. ERNST
		PROJECT NUMBER NY001034.004	DRAWING NUMBER 21

ATTACHMENT J

REVISED REMEDIAL ACTION WORK PLAN ADDENDUM

AIRTRON DIVISION OF LITTON SYSTEMS, INC.
MORRIS PLAINS, NEW JERSEY

February 10, 2003

Prepared for:

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CERTIFICATIONS

"I certify under penalty of law that the information provided in this document is true, accurate, and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate, or incomplete information and the I am committing a crime of the fourth degree if I make a written false statement, which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties."

Name: Frank G Brandenberg Signature: Title: Vice President, Litton Systems, Inc.

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate, or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe or authorize the violation of any statute, I am personally liable for the penalties."

Name: Frank G Brandenberg Signature: Title: Vice President, Litton Systems, Inc.

EXECUTIVE SUMMARY

On behalf of Airtron Division of Litton Systems, Inc. (Airtron), **Panther Technologies, Inc., (Panther)** has prepared this Revised Remedial Action Work Plan (RAWP) Addendum to describe the preferred remedial approach for site soils at the former Airtron facility located in Hanover Township, Morris County, New Jersey (Site). This Revised RAWP Addendum is provided to address the New Jersey Department of Environmental Protection's (Department's) March 28, 2002 comments on the previous RAWP Addendum dated February 5, 2001. Specifically, this Revised RAWP Addendum presents an alternative remedial approach (soil excavation, ex-situ treatment and re-use) that became feasible due to cessation of manufacturing operations. Prior to becoming inactive in 2001, the Site was used for the manufacture of wave guide/microwave components and ingots/wafers used in the semiconductor industry.

This RAWP addresses four soil areas of concern (AOCs) (AOCs 1 through 4) that remain open. These AOCs have been impacted with chlorinated volatile organic compounds (VOCs) including tetrachloroethene (PCE), trichloroethene (TCE), and various intermediate degradation products of these VOCs (daughter products). These compounds exceed the Department's most stringent Impact to Groundwater Soil Cleanup Criteria (IGSCC). All other AOCs at the site have either been closed or are currently the subject of ongoing remedial investigation including AOC 11 (Groundwater) and AOC 6 (Stream Sediments).

Subsequent to the Department's approval of soil delineation in AOCs 1-4, Airtron developed and submitted a RAWP for soils dated September 14, 1999 and issued a RAWP Addendum dated February 5, 2001. The original remedial approach was proposed under the assumption that the manufacturing facility was still operating. At that time, the selected alternative was a less intrusive, in-situ approach based on enhanced reductive dechlorination of contaminants in soils. Since that time, the facility ceased operations, opening up the possibility of more aggressive and intrusive remedial approaches. In recognition of this fact, the Department noted in its March 28, 2002 comment letter that it would be receptive to alternative approaches, which may be more feasible at an inactive facility. Airtron initiated the reevaluation of remedial action alternatives in response to

the Departments suggestion. Specifically, by letter dated June 17, 2002 Airtron identified several remedial alternatives and subsequently discussed the revised Remedial Approach outlined herein during a meeting with the Department on July 18, 2002. As agreed upon during the meeting, Airtron developed and implemented a Pre-Design Investigation (PDI) in the fall of 2002 with the following objectives:

- Fill RI data gaps in the delineation raised by the Department in its March 19, 2002 correspondence on the SI/RI/Remedial Action Selection Report (RASR);
- Define affected soil volumes which represent significant source areas to groundwater;
- Provide supplemental sidewall and floor soil analytical data which can be used as post-remediation equivalent data; and,
- Provide treatability study information for selection and design of the optimum on-site treatment option.

This Revised RAWP Addendum presents the PDI findings and outlines the revised strategy to remedy affected soils that present an ongoing source to on-site groundwater contamination. Specifically, the remedial approach presented in this document is designed to remove over 95% of the defined VOC soil contaminant mass. This revised remedial approach incorporates the following key elements:

1. **Excavation of Source Area Soils**

   Approximately 20,000 cubic yards (cy) of affected source area soils will be excavated and treated on-site using a combined thermal and chemical oxidation approach. Physical limits of the excavation as well as the extent of VOC contaminants dictate a planned excavation depth of 20 feet bgs. However, in some areas, limited excavation to 25 feet bgs may occur if necessary to remove additional contaminants.

2. Post-Excavation Soil Sampling

Following excavation of targeted soils, select post-excavation soil samples will be taken where needed to augment existing post-excavation data. Based on these post-excavation data, one of the following actions will be taken:

a. If results are greater than 5 mg/kg for targeted VOCs or if significantly high field screening results are observed, one of the following actions will be implemented based on a cost benefit analysis:

   i. Conduct additional excavation and on-site treatment of this limited area of soil.

   ii. Implement a supplemental in-situ treatment program of the localized area using direct chemical oxidation, or enhanced reductive dehalogenation.

   iii. Document the horizontal and vertical location of any soil exceedance for use in a deed notice to be prepared, if necessary, at a later date.

b. If results are less than 5 mg/kg for targeted VOCs, no further action will be taken and either a Deed Notice will be established or a No Further Action (NFA) determination will be requested from the Department.

3. Residual VOCs in Soils

Residual VOCs in soil that exist at depths greater than 20' and in less impacted secondary areas (shallower than 20') represent less than 5% of the total mass of known VOCs at the site. These VOCs will not be removed but handled via engineering or institutional controls, as necessary.

4. Site Restoration

Site restoration will include analytical testing, backfilling and compaction of treated soils in accordance with an approved Soil Reuse Plan. Affected wetlands will be restored and mitigated in accordance with an approved Wetlands Restoration Plan.

5. **Post-Remedial Groundwater Monitoring**

   A groundwater-monitoring program will be implemented (as part of the ongoing groundwater Supplemental RI) to monitor expected groundwater quality improvements following soil remediation.

6. **Engineering & Institutional Controls**

   Engineering/institutional controls may be incorporated as part of this remedy to address residual contamination in non-source treatment areas at the site that are not believed to be significantly impacting groundwater.

In summary, this RAWP is specifically focused on the remediation of source area soils only. It is anticipated that by removing over 95% of the VOC mass in soils at the site, a resultant improvement in groundwater quality will be realized. The ongoing groundwater RI and any associated supplemental remediation are not part of this soil-only RAWP, but will be addressed under separate cover at a later date, as planned and approved by the Department. Additionally, Airtron plans to continue operation of the interim hydraulic control groundwater extraction and treatment system; as well as continuing with the ongoing supplemental RI of AOC 6 (Stream Sediments) and AOC 11 (Groundwater).

1.0 INTRODUCTION

On behalf of Airtron Division of Litton Systems, Inc. (Airtron), **Panther Technologies, Inc. (Panther)**, has prepared this Revised Remedial Action Work plan (RAWP) Addendum to describe the selected remedial approach for site soils at the former manufacturing facility located in Hanover Township, Morris County, New Jersey (Site, see Figure 1). This Revised RAWP Addendum addresses the New Jersey Department of Environmental Protection's (Department's) March 28, 2002 comment letter and thus supersedes the previous RAWP Addendum prepared by ARCADIS Geraghty & Miller, Inc. (ARCADIS) dated February 5, 2001.

A series of remedial investigations have been performed at the site in accordance with the *Technical Requirements for Site Remediation* New Jersey Administrative Code 7:26E (Technical Regulations), the original site Administrative Consent Order (ACO) dated December 14, 1979 and the current ACO dated December 16, 1992, amended March 21, 2001 and October 26, 2001. The formal Technical Regulation-Compliant Site Investigation/Remedial Investigation (SI/RI) of the Site was initiated in 1994 and completed for soils in 1998. The scope and findings of the multiple RI phases were submitted to the Department in the SI/RI and Remedial Action Selection Report (RASR), prepared by ARCADIS, dated July 1, 1998.

Airtron has completed investigations and/or delineation in all nine previously identified (soil) areas of concern (AOCs) 1, 2, 3, 4, 5, 7, 8, 9 and 10. The remaining two AOCs, 6 and 11, address for surface water/sediments and groundwater, respectively, and do not involve soil media. In addition to completing soil investigations, Airtron implemented closure activities (including underground storage tank removal and lagoon closure) as appropriate. Based upon these completed activities, the Department has approved "No Further Action" in connection with soil conditions in five of these nine AOCs (5, 7, 8, 9 and 10) (Appendix A). The RI for site groundwater, surface water and sediments are presently ongoing and separate RAWP documents will be prepared for these media and submitted to the Department at a later date.

AOCs 1-4 remain open and are the subject of this revised RAWP Addendum. Historical Remedial Investigations (RIs) for all identified soil AOCs indicate that a significant volume of shallow soils is impacted with chlorinated volatile organic compounds (VOCs). These soils are primarily located within 20 feet below ground surface (ft, bgs) at four defined Areas of Concern (AOCs 1-4) and present an ongoing source of contamination to on-site groundwater.

1.1 Purpose and Scope

This Revised RAWP Addendum has been prepared in response to the Department's March 28, 2002 letter (Appendix A) to Airtron regarding comments on the earlier RAWP submission and presents an alternative approach to remediating source soils. The Department letter specifically requested that Airtron evaluate alternative and more aggressive remedial approaches due to the cessation of operations at the facility in 2001. Although the Department approved the soil delineation in the RI phase, Airtron initiated and completed a focused Pre-Design Investigation (PDI) in the fall of 2002 to provide supplemental data for the further evaluation of alternative approaches. The PDI data was utilized to formulate a revised remedial action approach for source area soils, consistent with discussions with the Department.

This revised RAWP Addendum presents a revised strategy to remediate source soils via ex-situ, on-site heat-catalyzed chemical oxidation as the primary approach for targeted soils. Supplemental in-situ chemical oxidation or enhanced anaerobic bioremediation will be used where applicable for subsurface soils below 20 feet where excavation is not feasible or practicable, and VOC concentrations necessitate active remediation. This approach is designed to address over 95% of the defined VOC mass identified in soils at the site. Although the groundwater remedy is not addressed in this soil-only RAWP, Airtron expects that its proposed soil remediation will provide significant improvement and significantly reduce further degradation of groundwater quality. Airtron will also continue to operate the interim groundwater extraction and treatment system previously installed during implementation of this remedy.

1.2 Background

Eleven AOCs were identified and investigated at the Airtron facility based on historical materials storage, handling, and disposal practices, as well as previous RI activities. A site plan of the Airtron facility showing the locations of all eleven AOCs and a generalized geologic transect is provided in Figure 2. A summary of AOC descriptions and their current status is presented in Table 1. The compounds detected at the highest concentrations in both soils and groundwater include: tetrachloroethene (PCE); trichloroethene (TCE); cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride (VC).

1.3 Summary of Regulatory Status

A series of RIs have been performed at the site since the late 1980's in accordance with the *Technical Requirements for Site Remediation* New Jersey Administrative Code 7:26E (Technical Regulations), the original site Administrative Consent Order (ACO) dated December 14, 1979 and the current ACO dated December 16, 1992 and amended March 21, 2001 and October 26, 2001. A comprehensive summary of previous soil and groundwater investigations conducted at each AOC was presented in ARCADIS' "*Site Investigation/Remedial Investigation and Remedial Action Selection Report (SI/RI/RASR)*", dated July 1, 1998. A list of major reports previously submitted to the Department is provided in Table 2.

1.4 Organization

This RAWP is submitted in accordance with the Technical Regulations N.J.A.C. 7:26E-6.2, which addresses the requirements for a Remedial Action Work plan. A directory of RAWP requirements is included as Table 3 as well as the associated location of each required element.

The RAWP is divided into eight sections with supporting tables, figures, and appendices. Section 2.0 discusses the environmental setting of the site. Previous remedial investigations at the site are described in Section 3.0. Section 4.0 summarizes our proposed remedial approach and Section 5.0 addresses engineering/institutional controls, a potential component of the overall remedy. Section 6.0 discusses quality assurance and health and safety. Section 7.0 describes the implementation schedule, cost estimate and Section 8.0 includes associated references.

2.0 ENVIRONMENTAL SETTING

The environmental setting presented herein includes a brief description of the former site operations and surrounding land use; local topography and drainage; soils and wetlands; regional geology; regional water supply; site geology; and site hydrogeology based on the results of all RI activities performed to date.

2.1 Site Operations and Surrounding Land Use

The Airtron facility is located at 200 Hanover Avenue, Hanover Township, Morris County, New Jersey. A site location map and site plan is presented as Figures 1 and 2, respectively. The site is designated as Block 0601, Lot 1, and is located in a mixed commercial, industrial and residential area. Land use within a 1,000-foot radius of the site consists predominantly of commercial and industrial lots. A warehouse, former dump, and bulk petroleum storage facilities are located to the southeast of the facility. A sports arena and two manufacturing facilities are located to the west of the facility across Hanover Avenue. A former sand and gravel quarry is located to the north and undeveloped woodland to the east. Some residential development exists greater than 1,000 feet to the west.

The site was developed as a manufacturing facility in 1952 by Monroe Calculating Machine Company (Monroe). Litton Business Systems purchased the property in 1958 and moved the Airtron Division into the facility that year. Airtron manufactured wave guide/microwave components and ingots/wafers used in the semiconductor industry until the cessation of operations in 2001. A full description of the historic manufacturing operations and product use was provided in the SI/RI/RASR previously submitted to the Department in July 1998. The site is also currently undergoing post-closure ISRA investigations with regard to building interiors as a separate activity under the direction of the Department.

The site is approximately 19 acres in size. There is a single-story building approximately 105,000 ft^2 in size. A small storage shed is located in the rear parking lot. A majority of the property immediately adjacent to the main building (approximately 160,000 ft^2) is asphalt paved.

Some grassed areas exist along the edges of the property including a ball field on the southeast property line. The property to the east is wooded.

2.2 Local Topography and Drainage

The property is topographically level, at an average elevation of approximately 400 feet above mean sea level (MSL). Surrounding land topography generally slopes downward towards Whippany River, approximately 2,500 feet to the southwest and southeast of the property. The Whippany River flows generally from northwest to southeast through this region.

Site drainage occurs by overland flow across paved areas and/or via storm sewer network to Outfall 002 located in the northeast edge of the parking lot. This outfall discharges to a drainage ditch located within the wooded area along the eastern property boundary. The normally dry drainage ditch leaves the site along the southern property line, and becomes an unnamed tributary of the Whippany River.

Surface water is also present in the northern end of the former sand and gravel quarry north of the site. Based on field observations, this water body appears to be perennial and represents either a reflection of the water table or accumulated precipitation.

2.3 Soils and Wetlands

The site drains via an unnamed tributary and discharges to the Whippany River that is located in the Passaic River Drainage Basin. The Water Quality Classification of this section of Whippany River is freshwater non-trout FW2-NT.

Existing published information was studied to determine the approximate extent of wetlands on the site and adjacent properties. Amy S. Greene Environmental, Inc. (ASGECI) completed a wetlands delineation at the site in April 2002. Vegetation, soils, and hydrology were examined for evidence of wetland characteristics according to methodology outlined in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (Federal Interagency Committee on Wetland Delineation, 1989). In order to be identified as wetlands, an area must have hydrophytic

vegetation, hydric soils, and be saturated by groundwater or inundated by surface water for two weeks or more during the growing season.

Forested wetlands associated with an unnamed tributary of the Whippany River were identified in the eastern portion of the site during the field investigation. Two wetland lines (A1 to A59 and B1 to B17) were used to identify the wetland/upland boundaries. Points A23 to A34 also identified a forested wetland swale. Wetlands delineation has been completed and is pending Department review of a Letter of Interpretation submitted under separate cover.

Hydric soils characterized by low chroma matrix and mottling were identified in the wetland areas delineated within the site. These characteristics were not observed in upland areas of the site. Hydric soil mapped at the site included Ridgebury extremely stony loam 3-8% slopes. The soil within the uplands exhibited a high (bright) chroma matrix indicative of a non-hydric soil. Upland soils present on the site include Pits, sand and gravel, Boonton gravelly loam, 3-8% slopes; Hibernia stony loam, 3-11% slopes; and Urban land (New Jersey Department of Environmental Protection [NJDEP] GIS Soil Map, 1996; Figure 4).

2.4 Regional Geology

The site is situated within the western boundary of the Piedmont Physiographic Province (Triassic Lowland Subsection). The Piedmont is an elongated down-faulted basin also referred to as the Newark basin. The Triassic strata dip west-northwest at about 8 to 10 degrees (Nichols 1968). Immediately west of the facility is a major fault that forms the boundary between the Triassic Lowland and the New Jersey Highlands. The New Jersey Highlands are located on an upthrown portion of the fault and consist of Paleozoic and Precambrian gneisses, granites and schists.

The geology of the Morris Plains area consists of a series of glacial units overlying interbedded sedimentary and igneous rock of the Jurassic age (Lyttle and Epstein, 1987). These rocks form part of the Newark Super group and are (from top to bottom) the Boonton Formation, Hook Mountain Basalt, Towaco Formation, Preakness Basalt, Feltville Formation, and Orange

Mountain basalt. Combined, these rocks were formerly referred to as the Brunswick Formation. Periods of glaciation occurred during the Pleistocene Epoch, sometime referred to as the Great Ice Age or Glacial Epoch, which began about 2.5 million years ago.

During the Pleistocene period, glaciers advanced and retreated several times. As the sheets of ice retreated, the glaciers dropped debris, creating deposits of sediments consisting of clay and crushed rock of all sizes. This material is typically called till. The thickness of till deposits varies depending upon the degree of ice movement, the amount of materials caught up in the bottom of the ice, and the bedrock topography (Gill and Vecchioli 1965). Till deposits blanket a large portion of Morris County.

2.5 Regional Water Supply

Public water supply in the area is predominantly from groundwater wells that penetrate the glacial valley-fill sediments. Reported specific capacities of production wells in the area range from approximately 10 to 120 gpm per foot of draw down with yields ranging from 150 to 450 gpm (Converse 1981).

2.6 Site Geology

Bedrock at the Airtron site occurs at depth greater than approximately 140 feet and consists of interbedded sandstones and shales associated with the Boonton Formation. The site-specific lithology is interpreted to include four unconsolidated lithological units as described below. The discussion below represents a generalized overview of the lithology. More detailed discussions of the lithology and associated hydrogeology are provided in the SI/RI/RASR (ARCADIS, 1998). A site plan depicting a geologic transect and a generalized geologic cross-section showing subsurface relationships are provided as Figures 2 and 3, respectively. Generally, the lithological units observed at the site include the following:

Glacial Till (Unit 1)

The uppermost unit is classified as till and the thickness of deposits varies. Several discontinuous lenses of clays, silts, sands and gravelly sands are encountered within this unit.

Perched groundwater conditions within this unit have been identified sporadically across the site. Where present, the perched groundwater is observed at depths ranging from 5 feet to 20 feet below ground surface. Overall, the unit is very heterogeneous due to these discontinuous lenses. This heterogeneity is one of the primary reasons that an ex-situ remedial approach for treatment of contaminated soils is being proposed.

Outwash Sands and Gravels (Unit 2)

This unit is located below the till and is comprised of outwash sands and gravels. The upper unconfined aquifer is present within this unit with depth to water ranging from approximately 30 feet to 40 feet bgs.

Aquitard (Unit 3)

This unit consists of fine-grained till and dense-stratified silts and is approximately 30 feet thick and is located beneath the outwash sands and gravels as depicted on Figure 3.

Lower Outwash Sands and Gravels (Unit 4)

This unit is located approximately 70 feet to 90 feet bgs and is directly beneath the aquitard unit. The lower aquifer is present in this unit and occurs under confined conditions.

2.7 Site Hydrogeology

As briefly noted above, the three hydrogeologic units identified at the Airtron facility are:

- perched groundwater within the glacial till;
- upper unconfined aquifer within the shallow outwash deposits;
- lower confined aquifer located below the aquitard.

Perched groundwater generally occurs as a result of isolated clay lenses or highly compacted till zones that impede the vertical infiltration of water. The perched groundwater is found in isolated areas around the site, with the primary area along the southeastern edge of the parking lot. This area is also affected by significant recharge due to surface water runoff. Run-off also provides

the bulk of the water, which appears to sustain local wetlands in conjunction with the subsurface low permeability lithologic units.

The upper unconfined aquifer has a saturated thickness of approximately 40 to 50 feet and is encountered at approximately 30 to 40 feet bgs across the site. This upper aquifer has a gradient of approximately 0.0057 feet per foot with a general flow direction to the southwest toward the Whippany River that serves as a discharge boundary.

The lower confined aquifer is located at approximately 70 to 90 feet bgs and has a horizontal gradient of approximately 0.0125 ft/ft. Relative groundwater elevation data between monitoring wells in the unconfined aquifer and those in the confined aquifer indicate a vertically upward head gradient. Regional flow direction in the confined aquifer is toward the southeast.

3.0 SUMMARY OF REMEDIAL INVESTIGATIVE ACTIVITIES

This section provides a brief overview of previously conducted remedial investigations at the site. A list of previously submitted reports including the SI/RI activities is provided in Table 2.

3.1 Previous Investigations

Previous investigations conducted at the Airtron facility were performed in 1981 (Converse Ward Davis Dixon, August 1981), 1987 (Converse Environmental East, November 1987), 1990 (Converse Environmental East, April 1990), 1991 (SCS Engineers, March 1991), 1994 (SCS Engineers, August 15, 1994), and 1996 (SCS Engineers, June 1996). A brief summary of the results of each investigation in chronological order is provided below to satisfy remedial action work plan reporting requirements as outlined in the Technical Regulations. Table 4 includes a summary of soil analytical results collected during the 1997/1998 SI/RI, by AOC for AOCs pertaining to this RAWP Addendum.

- *1981 Preliminary Investigation.* Five monitoring wells (MW-1, MW-IM, MW-2, MW-2M, and MW-3) were installed by Converse Ward Davis Dixon to investigate groundwater quality in conjunction with the closure of the five lagoons at the Airtron facility as directed in an Administrative Order from the Department dated December 14, 1979. On January 13, 1981, the newly installed wells along with three previously existing wells (USGS-1, USGS-2, and USGS-3) were sampled and analyzed for VOCs. The results of this investigation indicated that VOCs were present in the upper unconfined aquifer above Department groundwater quality criteria (GWQC).

- *1987 Phase I Soil and Groundwater Remedial Investigation.* Twenty five soil borings (B-101 to B-122, B-201, B-202, and B-203) and six monitoring wells (MW-201 through MW-206) were drilled at the Airtron facility by Converse Environmental East to assess the impact from two former drum storage areas (AOCs 2 and 3) and the five lagoons. Laboratory analytical results detected VOCs in a number of soil samples with the highest VOC concentrations observed in soil boring B-117 located in AOC-3. VOCs were also detected in the groundwater samples collected from the newly installed monitoring wells in the upper unconfined aquifer. However, no VOC impacts were observed in the wells completed in the deeper confined aquifer (MW-201, MW-202, and MW-203).

- *1990 Phase II Soil and Groundwater Investigation.* Seven monitoring wells (MW-301 through MW-307) were installed by Converse Environmental East to further assess and delineate VOC impacts in groundwater. The investigation primarily focused on the southeastern boundary of the plume in the upper unconfined aquifer.

- *1991 Soil Vapor Extraction Test Program.* A soil vapor extraction (SVE) pilot study was performed by SCS Engineers on one extraction well, EW-1, located in AOC-3. Based on this pilot test, a SVE system was installed in AOC-3, AOC-4, AOC-5, and AOC-7 in July 1992 by Empire Soils. This system included nine extraction wells (E-1 through E-9) and 19 air injection wells (A-1 through A-19). The SVE system was started in February 1993 and operated for approximately 11 months. The system operated only sporadically during that time due to flooding problems caused by perched groundwater.

- *1994 Phase I Remedial Investigation.* In 1994, SCS Engineers conducted a soil gas survey and soil sampling program in AOC-2, sediment sampling in the intermittent drainage feature (AOC-6), and an electromagnetic (EM) terrain conductivity survey in AOC-3 and AOC-4. The soil gas results indicated the presence of PCE. Drainage feature sediment sample results detected arsenic at elevated concentrations. The EM survey indicated a potential "earth feature" (thought to be a clay layer) encompassing the area surrounding MW-301.

- *1996 Phase II Remedial Investigation.* A supplementary soil gas survey was conducted by SCS Engineers in AOC-2 to assess the lateral extent of VOCs identified during the Phase I Remedial Investigation in 1994. The results indicated VOC impacts surrounding the area; however, the proposed soil gas sampling activities could not be completed due to interference caused by soil moisture.

- *1998 Site Investigation/Remedial Investigation and Remedial Action Selection Report.* In September 1997 ARCADIS Geraghty & Miller (ARCADIS) conducted phase I of an SI/RI and in January and February of 1998 ARCADIS completed phase II of the SI/RI activities, which were focused on the characterization and delineation of contaminants in soil and groundwater at AOCs 1 through 7, 9 and 11 at the former Airtron facility. This document also presents a Remedial Action Selection Report (RASR), focused on enhanced reductive dechlorination (ERD).

The following sections summarize findings of these previous investigations by media.

3.1.1 Soil Investigations

Airtron has completed soil investigations and delineation in all nine previously identified (soil) areas of concern (AOCs 1, 2, 3, 4, 5, 7, 8, 9 and 10). In addition, Airtron implemented closure

activities (including underground storage tank removal and lagoon closure) for select AOCs. Based upon these completed activities, the Department has approved "No Further Action" in connection with soil conditions in five of these nine AOCs (AOCs 5, 7, 8, 9 and 10).

The remaining 4 soil AOCs, AOCs 1-4, have been impacted with VOCs including TCE, PCE and various intermediate degradation products of these VOCs (daughter products). These compounds exceed the Department's most stringent Soil Cleanup Criteria (SCC). The Department indicated in its March 19, 2002 comment letter that the soils within AOCs 1-4 were delineated to the SCC except for Borings B-226, B-227, B-228, B-229 and B-230, all of which exhibited high PID readings, but were not submitted for laboratory analyses. These data gaps were resolved during the PDI as described in Section 3.2.2 below.

Although the primary contaminants of concern are VOCs, other isolated metals were identified in excess of their respective SCC within AOC 3. These included cadmium, copper, thallium and silver. These metals, which were detected in earlier RI efforts, have been delineated, are limited in extent and do not represent a widespread contamination problem.

3.1.2 Groundwater Investigations

Extensive groundwater investigations have been performed in the perched zone, the upper unconfined aquifer and the lower confined aquifer. The results of these investigations are summarized below.

- Groundwater in the perched zone is isolated and movement is very slow. Depth to perched groundwater (where present) ranges from approximately 5 to 20 feet below ground surface (bgs).

- Groundwater in the upper unconfined flows to the west/southwest toward the Whippany River. Depth to the upper unconfined aquifer ranges from 30 to 40 ft bgs.

- Groundwater in the lower confined aquifer flows to the southeast. Depth to the lower confined aquifer ranges from 70 to 90 feet bgs.

- The compounds historically detected at the highest concentrations in groundwater are TCE, PCE, cis-1,2-DCE and VC. Perched groundwater and the upper unconfined aquifer have the highest VOC impact. The lower unconfined aquifer has only trace levels of VOCs.

- The highest groundwater VOC concentrations are found in monitoring wells installed proximate to AOC 3, which has been identified as the area having the highest concentrations of VOCs in soils.

- The vertical extent of impacted groundwater has been defined. The lateral extent of impacted groundwater is still being investigated in accordance with the approved Supplemental Remedial Investigation Work plan Addendum (SRIW) dated February 5, 2001.

A complete summary of historical groundwater analytical data was provided in the SI/RI/RASR.

3.1.3 Surface Water/Sediment Investigations

Airtron has initiated investigations of the drainage feature in the wooded area east of the rear parking lot (AOC 6, Surface Water/Sediments). Eight sediment and two surface water samples were collected in 1998 as part of the Supplemental SI/RI. On June 27, 2002 an additional surface water and sediment sampling event was conducted. The results of this recent effort are documented in a report entitled *AOC-6 Stream Sediment Sampling Summary* dated October 11, 2002. Based on the findings of the investigation, this AOC has been delineated and no additional assessment activities are proposed.

3.2 Ongoing Investigations

Ongoing investigations that are currently underway or recently completed are addressed below. In general, ARCADIS is leading the ongoing Supplemental Groundwater Remedial Investigation program. **Panther's** responsibilities include the pre-design investigation associated with implementation of the source area removal program outlined herein. Following submission of this RAWP, **Panther** will also serve as the implementation contractor for the soil remedy outlined herein; ARCADIS will support the data collection effort.

3.2.1 Supplemental Groundwater Remedial Investigation

Airtron is continuing the investigation of groundwater in a phased approach in accordance with the approved SRIW Addendum dated February 5, 2001. Airtron has provided recent June 2002 off-site sampling results to the Department. Following completion of investigative activities, Airtron will present recommendations for remedial actions, if warranted, under separate cover.

3.2.2 ISRA Facility Closure Site Investigation

Airtron has initiated a Site Investigation (SI) in accordance with N.J.A.C. 7:26E related to potential areas of concern (AOCs) identified inside the facility building. This work is being conducted to satisfy Airtron's ISRA obligations and is related to facility closure following cessation of operations. Following completion of investigative activities, Airtron will present recommendations for remedial actions, if warranted, under separate cover.

3.2.3 Pre-Design Investigation

Airtron initiated the reevaluation of soil remedial action alternatives as identified in its June 17, 2002 correspondence and as discussed in the project review meeting with the Department on July 18, 2002. As agreed upon during the meeting, Airtron developed and implemented a focused PDI in the fall of 2002. The objectives of the PDI were as follows:

- Fill RI data gaps related to the delineation of VOCs in soils, identified by the Department in its March 19, 2002 correspondence on the SI/RI/RASR;
- Define affected soil volumes which represent source areas;
- Provide supplemental sidewall and floor soil analytical data which can be used as post-remediation equivalent data; and,
- Provide treatability study information for selection of the optimum on-site soil treatment option.

As stated, Airtron retained **Panther** to develop and implement the PDI and associated soil remedy. ARCADIS supported **Panther** with field assistance during the PDI and remains the lead

investigative group for the ongoing RI in AOCs 6 and 11 to maintain continuity and consistency of data collection methods and quality assurance objectives.

In developing the PDI scope, historic data were reviewed in light of NJDEP Soil Cleanup Criteria, the Technical Regulations and remedial objectives. Data generated prior to the PDI were used to assess residual source areas and VOC mass in each area. Subsequently, AOCs 1-4 were divided into sub-areas based on this data interpretation and estimated VOC mass in each area. Primary and secondary areas of soil contamination were identified within these sub-areas. Based on historical RI data, the primary areas were anticipated to require aggressive remediation. Secondary areas required additional characterization data to evaluate VOC mass and to determine the most effective remedial option. The purpose of the PDI was to confirm VOC mass estimates in the primary areas and better characterize the secondary areas to determine the most appropriate remedial option for each AOC.

As shown on Figure 4, AOCs 1-4 were subdivided for the PDI as follows:

- AOC 1 was subdivided into three areas 1A, 1B and 1C. Based on historical data, Area 1A and 1B were presumed as primary source areas, while Area 1C was presumed to be a secondary area.
- AOC 2 was subdivided into three areas 2A, 2B and 2C. Areas 2A and 2B were presumed to be primary source areas, while Area 2C was presumed to be a secondary area.
- AOC 3 was subdivided into four areas 3A, 3B, 3C and 3D. Areas 3A and 3B were presumed to be primary source areas, while Areas 3C and 3D were presumed to be secondary areas.
- AOC 4 was not subdivided based on its small size. Due to low calculated residual VOC mass, it was presumed to be a secondary area.

3.2.3.1 Sampling Rationale

PDI soil sampling was performed to satisfy two specific objectives: 1) refine limits/volumes of primary source areas that would be excavated and treated on-site; and 2) provide data for defining

secondary source areas that would be handled via engineering/institutional controls or an in-situ approach. As discussed in the Department meeting on July 18, 2002, a large percentage of samples were also taken to "predefine" required excavation limits and volumes, and to serve as post-excavation samples.

- For each of the defined primary source sub-areas to be excavated (1A, 1B, 2A, 2B, 3A and 3B), soil samples were collected in accordance with N.J.A.C. 7:26E-6.4. The target sample frequency was one sample from the top of each sidewall (surficial spill) and one bottom sample for each 900 square feet of excavation area.

- For each of the defined secondary source areas (1C, 2C, 3C and 4), soil samples in order to respond to a previous Department comment or address a data gap. In these areas, continuous core sampling and field screening was performed to assist in selecting appropriate sampling intervals as per the approved SRIW dated September 14, 1999.

During the month of September 2002, soil borings were advanced using direct-push methods (i.e., Geoprobe) to depths ranging between 1 and 31 feet below land surface (ft bls). Soil cores were retrieved from each borehole using a 2-inch diameter, 4-foot long, stainless steel sampling tube fitted with an acetate liner of similar dimension. Upon retrieval of the soil core, the acetate liner was cut open using a specialized utility knife and scanned for VOCs using a photo-ionization detector (PID) of 11.7 eV lamp energy. PID measurements were recorded onto a sample/core log and were used to aid in determination of the appropriate sampling interval. The lithology encountered and any other relevant observations (e.g., visual) were recorded onto a sample/core log for each soil boring.

Sample/core logs are provided in Appendix B. Soil cuttings generated during the advancement of soil borings or retrieval of soil cores were containerized in 55-gallon drums. The drums were labeled and stored within the Hazardous Materials Storage Building consistent with the NJDEP-approved *Area of Contamination Waiver*, dated September 5, 2002 (see Appendix A). In accordance with the *Area of Contamination Waiver*, these soils will be held within the Area of Contamination (designated as the entire site) and treated together with the materials excavated during implementation RAWP for soils.

Dedicated sampling equipment was used for retrieval and sampling of the soil cores, thus minimizing the potential for cross-contamination between soil samples. The direct-push cutting shoe and stainless steel core barrel were decontaminated between each sampling location using a phosphate free detergent mixed with potable water, followed by a de-ionized water rinse. Sampling tools were then allowed to air dry prior to reuse.

3.2.3.2 Laboratory Analysis

Soil samples were submitted to Integrated Analytical Labs (IAL) of Randolph, New Jersey (NJ Cert. #14751) and analyzed for VOCs using United States Environmental Protection Agency (USEPA) Method 8260b plus a library search for the first 15 tentatively identified compounds (TICs). Appendix C includes electronic Analytical Laboratory Reports and Electronic Data Deliverables. Soil samples submitted for laboratory analysis were collected in accordance with the *NJDEP Field Sampling Procedure Manual (FSPM) (May 1992)* and the *NJDEP Methodology* for Field Extraction/Preservation of Soil Samples with Methanol for Volatile Organic Compounds Guidance Document (February 1997). Samples were immediately placed into a laboratory-provided insulated cooler containing ice upon collection. The samples were delivered in person or via laboratory courier under strict chain-of-custody protocols to IAL at the end of each day.

Quality assurance/quality control (QA/QC) samples were collected in accordance with the FSPM and the aforementioned methanol preservation guidance document and included 11 field replicates (aka duplicates), 10 trip blanks, and one field rinseate blank for VOC analysis by USEPA Method 8260b. Replicate samples were collected at a rate of 1 sample per 20 and a trip blank accompanied each sample cooler containing samples for VOC analysis. Each trip blank was comprised of a laboratory supplied methanol preservative-filled soil jar submitted back to the laboratory unused and unopened. The rinseate blank was performed on the acetate liners at a rate of 1 blank per package of acetate liners. Laboratory-supplied, demonstrated analyte-free water was used for the rinseate blank. All field QA/QC samples were submitted for laboratory analysis together with the associated soil sample shipments to IAL.

3.2.3.3 Sample Designations

Sample designations used in the PDI include the sub-area, the two-digit sequential sample number, and the depth. Where field screening indicated that the sample should be offset from its original planned location to complete its intended purpose, an additional alpha designation was added to the sample number. For example, Sample 2A02-20 indicates a soil sample collected from AOC 2, sub-area 2A, location number 02, at a depth of 20 feet bgs.

3.2.3.4 Test-Pitting Activities

As part of the PDI, test pits were completed in two areas. One test pit was completed in Area 3B, which based on previous RI data, exhibited the highest VOC concentrations, and thus would be the controlling area from a treatment application perspective. The second test pit was installed in Area 3C in order to further evaluate potential sources of VOCs identified in MW-406. Both test pits were completed to a depth of approximately 12 feet and were immediately backfilled upon completion. **Panther** personnel collected one composite sample from each soil type encountered (two total from each test pit) for use in a bench-scale treatability study later discussed in Section 4.3.

The test pits also provided qualitative information that is being incorporated into the construction requirements for the full-scale excavation (e.g. handling requirements for oversized materials, defining potential dewatering requirements in perched groundwater locations, and providing a basis for incorporating or not incorporating sheet piling) as later described in Section 4.0.

3.2.3.5 Results of PDI Investigation

The following findings by AOC have been derived from the recent SI/RI and PDI investigation activities discussed above. Table 4 includes a summary of historical soil analytical results by AOC. Table 5 includes PDI sampling rationale. Table 6 includes a summary of PDI soil analytical results and exceedances by AOC. Figure 4 presents the location of soil borings in each AOC and the proposed excavation limits, which will be discussed in further detail in Section 4.0. Figures 5 and 6 show concentration isopleths of PCE and TCE, respectively, in soils. Figures 7, 8 and 9 show cross-sections of the distribution of PCE in AOCs 1,2 and 3, respectively, and

Figures 10 and 11 show cross-sections of the distribution of TCE in AOCs 1 and 3, respectively. An overall characterization of each AOC and the associated remedial approach is presented below.

AOC-1: Hazardous Materials Storage Building Area

Previous RI data indicated that concentrations of VOCs including PCE, TCE and associated breakdown product, cis-1,2-DCE were detected at three locations within AOC-1 (Borings B-202, B-205 and B-234) above the most stringent Impact to Groundwater Soil Cleanup Criteria (IGSCC). No other parameters analyzed in the soil samples were detected at concentrations above the most stringent SCC.

Three of the nine PDI borings installed in sub-area 1A had concentrations of VOCs slightly above the 1 mg/kg IGSCC (PCE at locations 1A02, 1A05A and 1A05B). The maximum PDI detected PCE concentration was 3.27 mg/kg in area 1A soils. No VOC exceedances were identified in any of the six PDI borings installed in sub-area 1B. Only one of the 12 samples collected from four PDI borings installed in sub-area 1C had concentrations of VOCs above the IGWCC (PCE was detected at 1.62 mg/kg at location 1C03).

Based on these data, Airtron will consider soils within the defined limits of 1A (to a depth of 20 ft bgs) and 1B (to a depth of 10 ft bgs) as primary source areas to be excavated and treated on-site as shown on Figure 4. Additionally, since six sidewall and six floor samples were collected for sub-area 1A, and four sidewall and six floor samples were collected for sub-area 1B, no additional post-remedial samples are needed in these areas.

AOC-2: Former Parking Island Drum Storage Area #1

Previous RI data indicated that concentrations of VOCs (primarily PCE) were detected above the IGSCC. The highest concentrations of PCE in AOC-2 were observed at Borings B-210 and B-208. The RI also indicated that VOCs in the vicinity of boring B-210 are associated with a residual sludge layer measuring approximately 20 feet long, and approximately one foot in

diameter, based on a test pit completed in 1998. No other parameters analyzed in the soil samples were detected at concentrations above the most stringent SCC.

Four of the seven PDI borings installed in sub-area 2A had concentrations of VOCs slightly above the 1 mg/kg IGSCC (PCE at locations 2A01, 2A02, 2A06 and 2A06A). The maximum PDI detected PCE concentration was 2.87 mg/kg in area 2A. Two VOC exceedances were identified in the six PDI borings installed in sub-area 2B (cis-1,2-DCE in 2B03 at 3.82 mg/kg and PCE in 2B04 at 2.74 mg/kg). Three of the PDI borings installed in sub-area 2C had concentrations of VOCs above the IGWCC (PCE was detected at location 2C03 at a maximum concentration of 6.92 mg/kg, at location 2C04 at 1.23 mg/kg, and at 2C05 at 2.41 mg/kg, respectively).

Based on these data, Airtron will consider soils within the defined limits of 2A (to a depth of 20 ft bgs) and 2B (to a depth of 15 ft bgs) as primary source areas to be excavated and treated on-site as shown on Figure 4. Note that the extent of sub-areas 2A and 2B was expanded to incorporate exceedances identified in sub-area 2C.

Additionally, as four sidewall and six floor samples were collected for sub-area 2A, no additional post-remedial samples are needed in this area. A minimum of two additional sidewall and floor samples (at 15 ft bgs) are proposed for sub-area 2B.

AOC-3: Former Drum Storage Area #2

Concentrations of VOCs including PCE, TCE, cis-1,2-DCE and VC, were detected at a number of locations throughout AOC-3 above the IGSCC. These VOCs were observed to extend along the eastern edge of the parking lot to the north of the original AOC-3 boundary. The highest VOC concentrations were observed in the vicinity of B-263 and B-267.

Concentrations of certain metals (cadmium, copper, silver, and thallium) were also detected above the most stringent Residential Direct Contact Soil Cleanup Criteria (RDCSCC) in two soil samples, B-225 and B-249. Further delineation of the metals concentrations in soil detected no

additional concentrations of metals beyond the two samples listed above. No other parameters analyzed in the soil samples were detected at concentrations above the most stringent SCC.

Eight of the 13 PDI soil borings installed in sub-area 3A had exceedances of VOC IGSCC including PCE (at locations 3A01, 3A02, 3A03, 3A04, 3A05, 3A07, 3A09 and 3A10) and cis-1,2-DCE (at location 3A09). The maximum observed PCE concentration was 414 mg/kg at 6.5 ft bgs; all other PCE exceedances were below 2.76 mg/kg. The single cis-1, 2-DCE exceedance in 3A09 was at a concentration of 3.33 mg/kg. Ten of the 17 PDI soil borings installed in sub-area 3B had exceedances of VOCs IGSCC including PCE, TCE, cis-1, 2-DCE and VC. The maximum observed VC concentration was 4.81 mg/kg in 3B02, which does not exceed the non-residential direct contact soil cleanup criteria (NRDCSCC) of 7mg/kg or the IGSCC of 10 mg/kg.

Six of the 8 soil borings from area 3C had exceedances of the IGSCC for PCE and TCE. The maximum PCE concentration of 23.9 mg/kg was detected in 3C09, while the maximum TCE concentration of 2,480 mg/kg was detected in boring 3C11. Five of the 8 soil borings from area 3D had exceedances of PCE and TCE IGSCC. The maximum PCE and TCE detections were 522 and 4.4 mg/kg, respectively in 3D06. Soil boring samples 3D01 and 3D02 also exhibited detections of toluene, ethylbenzene, xylenes, but concentrations were below the most stringent SCC.

Based on these data, Airtron will consider soils within the defined limits of AOC 3 as a primary source area as follows: Soils within AOC 3A and AOC 3B will be excavated to 20 ft. bgs for treatment. Soils within AOC 3C were found to be below the most stringent SCC from the surface to a depth of 10 ft. bgs. These surface soils will be screened for re-use on site. Soils from 10 ft. bgs to 25 ft bgs in AOC 3C will be excavated and treated on site. AOC 3D soils from surface to 20 ft. bgs will be excavated and treated on site. Figure 4 shows the delineation of each AOC and sub-area as well as the extent of planned soil excavation and volumes for each.

Supplemental post-excavation samples are proposed for areas 3A and 3C, and will be collected during the source removal. These will include a minimum of two sidewall samples east of

3B06A, two floor samples at 20 ft bgs in the vicinity of 3B01 and 3B06A, three sidewalls along western edge of 3C, and three floor samples at 25 ft bgs biased to highest field screening.

AOC-4: Former Sludge Lagoon 5

Previous RI data indicated that VOCs including TCE and total DCE were detected at one location within AOC-4 (Boring B-219 at concentrations of 15 and 2.5 mg/kg, respectively) above the 1 mg/kg IGSCC for each constituent. The depth of the exceedances was in the 16-18 ft interval bgs. No other parameters analyzed in the soil samples were detected at concentrations above the most stringent SCC.

Six PDI soil borings were installed to delineate this exceedance. Boring 4X01 was installed at the original B-219 location and results indicate that there are no IGSCC exceedances at a depth of 20 ft bgs. The analytical results for samples from borings 4X02, 4X03 and 4X05 indicated there are no IGSCC exceedances at the same 16-18 ft interval bgs to the east, south and north directions. However, borings 4X04 and 4X04A installed west of B-219 showed TCE concentrations of 5.29 and 3.71 mg/kg, respectively, at the 16-18 ft interval bgs.

Based on these data, Airtron will consider soils within the defined limits of AOC 4 (within the depth interval of 15 to 20 ft bgs) as primary source areas to be excavated and treated on-site as shown on Figure 4. Note that the shallower soils (0 to 15 ft bgs) were previously remedied as part of the former Lagoon No. 5 closure. These shallow soils consist of clean fill but will be field screened and reused for backfill in accordance with the soil reuse plan provided in Section 4.4.7.

Additionally, a minimum of two additional sidewall and one floor sample (at 20 ft bgs) are proposed for AOC 4 post-remediation.

3.2.3.6 Quality Assurance/Quality Control

PDI soil samples collected at the Airtron facility were reviewed for completeness and technical compliance with the previously approved 1997 SI/RI Work Plan (SCS Engineers, 1997). If any data were determined not to be complete and/or technically compliant, the data reviewer referred

to the NJDEP data validation documents for assistance. Organic results were reviewed using the criteria specified in NJDEP Standard Operating Procedure (SOP) 5.A.13. The review of the data packages included checking the following:

- review of laboratory narrative summary
- chain-of-custody forms
- holding times
- internal standards
- laboratory control samples.
- blank contamination
- spike recoveries
- surrogate recoveries
- precision of duplicate analyses

The quality of the analytical results reviewed was acceptable. All project data quality objectives were met.

3.3 Evaluation of Exposure Pathways and Potential Receptors

Potential receptors evaluated include human, ecological and groundwater. Exposure pathways evaluated include direct contact, inhalation and ingestion and environmental transport from the identified VOCs in source soils. Impact to groundwater via potential leaching of VOCs from source soils is a known pathway. The purpose of the proposed remedial action is to eliminate exposure pathways by addressing the contaminants in the soil.

The primary potential pathway of concern is exposure to the defined source soils containing VOCs via direct contact. The Department's SCC are calculated values based upon inhalation or incidental ingestion or adsorption. Different exposure conditions are used depending, in part, on future site use scenarios. Typically restricted (non-residential) site use allows for SCC at higher concentrations due to lower exposure duration in a typical workplace. Unrestricted (residential) site use requires SCC at lower concentrations due to the potential for prolonged exposure. The objectives of the proposed remedial action are to meet the Restricted Use Soil Cleanup Criteria, and if appropriate, file a Deed Notice to document the presence of any contaminants in soils at concentrations above the most stringent SCC after the remedial action is complete.

The planned source soil remediation will result in removal of known VOC contamination to 5 mg/kg in all soils within 20 ft bgs. This will effectively remove the direct contact and inhalation exposure pathways for the contaminants of concern at the site. Non-residential direct contact criteria for PCE, TCE, cis-1,2-DCE and VC are 6 mg/kg, 54 mg/kg, 1,000 mg/kg and 7 mg/kg, respectively. The need to implement supplemental engineering/institutional controls for future restricted site use will be evaluated after completion of the remedy and performance of supplemental post-remediation soil sampling.

The remedial objective of 5 mg/kg for individual VOCs will also have a significant, positive impact on on-site groundwater quality by removing the source of on-site groundwater contamination. Current on-site groundwater quality has been degraded by VOCs, which exist in the upper unconfined aquifer at concentrations up to 19,000 µg/l (in a February 1998 sample from MW-406). By removing over 95% of the VOCs in soils above 20 feet bgs, these sources of groundwater contamination and their associated pathways will be eliminated. In addition, there are on going efforts to address the groundwater contamination. These include the continued operation of the groundwater extraction and treatment system, and continuing remedial investigation of the groundwater. By removing 95% of the VOC mass in soils, the pathway to groundwater will be virtually eliminated. Ongoing groundwater remediation and investigations are designed to address the dissolved phase VOCs present in groundwater on-site.

3.4 Nature and Extent of Contamination

Compounds of concern in source soils include TCE, PCE, DCE and VC. Tables 4 and 6 summarize historical and PDI soil sampling analytical results with concentrations exceeding the most stringent SCC. Additionally, Figures 5 and 6 present iso-concentration maps for PCE and TCE concentrations in soils, respectively. All AOC 1 – 4 soils have been fully delineated in accordance with N.J.A.C. 7:26E-4.1(b) 2.

Using average concentration estimates for each of the sub-areas depicted as shown on Figure 4, an estimated 12,000 pounds of total VOC mass resides in the source area soils (at depths less

than 20 ft bgs) associated with designated AOCs 1-4. The volume of soil in these areas to be treated on-site total approximately 20,000 cubic yards. Airtron's proposed soil remedy addresses all source area soils less than 20 feet bgs and is expected to remove over 95% of the VOC mass in soils at the site.

3.5 Interim Remedial Measures for Groundwater (Ongoing)

Airtron installed a groundwater extraction and treatment system in 1995 as an interim remedial measure for impacted groundwater. Downgradient recovery well, RW-1, is continuously operated at a flow rate of approximately 30 gallons per minute (gpm). Collected groundwater is treated on-site via a shallow tray air stripper and discharged through permitted Outfall 003. Vapor phase carbon is used to treat the air stream, which is recirculated into the system. The aqueous discharge is monitored in accordance with NJPDES Permit NJ 0025739.

This interim groundwater remedial measure will continue to be operated during the course of the proposed removal action. In addition, the groundwater treatment system will likely be used to treat perched groundwater that will be collected and contained during the course of remediation efforts. While extensive dewatering is not anticipated, the existence of this system and its hydraulic capability will either complement additional on-site management/treatment of this water or replace the need to install additional on-site treatment equipment.

4.0 SUMMARY OF PROPOSED SOURCE AREA REMEDIAL ACTION FOR SOIL

The goal of the proposed soil remedial action is to achieve substantial contaminant mass removal from soils with known elevated VOC concentrations. The distribution of VOCs in soils has been well characterized during recent and historical investigations. Based on the distribution of VOCs in soils, over 95% of the contaminant mass in soils can be removed by focusing on the source areas within the AOCs identified. By focusing on these soils and conducting ex-situ chemical oxidation coupled with thermal treatment, over 95% of the known contaminant mass at the site will be destroyed. This action will have a significant, positive impact on soils as well as on-site groundwater quality and is designed to be protective of both human health and the environment. The contaminant mass in soils remaining at depths greater than 20 feet BGS and in outlying areas represent less than 5% of the total VOCs known to be present in soils and will be adequately addressed through complementary institutional and engineering controls. This approach will ensure that the remedial efforts are effective, cost-efficient and capable of achieving cleanup objectives. This section further describes the proposed remedial approach for source soils identified within AOCs 1-4.

4.1 Applicable Remediation Standards for Soil

The goal of the proposed soil remedy is mass removal of VOCs from the soil, not necessarily to remediate all soils to the most stringent, Impact to Groundwater Soil Cleanup Criteria (IGSCC). In order to achieve a cost-efficient mass removal that meets the objectives of being protective of human health and the environment, a cleanup objective of 5 mg/kg for individual VOCs is proposed for soils. Meeting this objective will achieve the goal of remediation to the NRDCSCC. Meeting this remedial objective will also have a positive impact on on-site groundwater quality by eliminating the source of VOCs that originally impacted groundwater quality on-site. By removing all VOCs in soils up to 20 ft bgs to a target level of 5 mg/kg, more than 95% of all VOCs at the site will be removed. Other scenarios were evaluated where cleanup to a lower concentration were considered. However, in order to achieve cleanup objectives of less than 5 mg/kg, the proposed remedial approach would essentially be cost-prohibitive and technically impracticable. In fact, the cost differential of remediation to an objective below 5

mg/kg would result in the remediation costs that far exceed two times the proposed approach. In accordance with the Technical Regulations, a non-permanent remedial action with engineering controls is acceptable when the costs to implement a permanent remedy are two times (or more) the cost of a non-permanent remedy.

The most stringent NJDEP SCC, based upon IGWSCC, for each of the three predominant VOCs identified in site soils (PCE, TCE and cis-1, 2-DCE), is 1 mg/kg. The most stringent SCC for VC, based upon residential direct contact (RDC), also identified in site soils, is 2 mg/kg, while the NRDCSCC for VC is 7 mg/kg and the IGWSCC for VC is 10 mg/kg. The soil cleanup objectives proposed herein are based on achieving the appropriate NRDCSCC to protect human health and achieving a remediation goal of 5mg/kg for individual VOCs to protect groundwater by eliminating the source of VOCs in soil.

The Department considers the SCC as guidance for cleanup; however, other site-specific factors such as: the potential for sensitive receptors; acceptance of restricted use scenarios; cost-benefit analysis and planned implementation of engineering/institutional controls must also be considered in the selection of site-specific cleanup goals. With all of these factors considered, and based on results obtained during bench testing of the proposed remedy, site-specific soil cleanup goals of 5 mg/kg for PCE, TCE and cis-1,2 DCE. are proposed with 7 mg/kg proposed for VC. The rationale for these goals is as follows:

- Airtron evaluated the affected volumes of soils that exceed 5 mg/kg versus the estimated volume of soils that exceed 1 mg/kg. The results indicated that nearly twice the volume of soils would need to be excavated up to depths in excess of 30 ft bgs, and select areas would require further supplemental treatment using alternative applications, at significant additional cost for relatively small amount of VOC mass. The significant additional costs of excavating materials below 20 ft bgs, added soil handling/dewatering issues, and added treatment costs would result in remedial action costs greater than two times the cost of treating to 5 mg/kg as proposed herein.

- Given the existing VOC groundwater concentrations in source areas, reducing the VOC mass (residual VOC concentrations up to 24,000 mg/kg in soil have been documented) to

below 5 mg/kg is expected to protect human health and the environment as well as result in significant improvement of on-site groundwater quality.

- Further, Airtron plans on continuing the operation of the interim groundwater extraction and treatment system, and will continue the remedial investigation of groundwater (AOC 11) and subsequently evaluate the need for supplemental groundwater remedial measures.

4.2 Comparison of Remedial Alternatives for Soil

In short, four alternate approaches were considered preferable to the original approach of enhanced, reductive dechlorination (ERD). All four alternate approaches are considered much more aggressive approaches with a higher potential for success and considerable mass removal than previously proposed in-situ approach involving ERD. These four approaches are all active treatment alternatives that comply with presumptive remedies established by USEPA whereby contaminants are destroyed in their entirety. The four selected options for source area soils include in-situ chemical oxidation, ex-situ chemical oxidation, on-site thermal treatment, and off-site treatment. Each of these technologies and their associated advantages and disadvantages is briefly described below.

In-Situ Chemical Oxidation

In-situ chemical oxidation, while a viable technology for the contaminants present, is problematic due to the heterogeneity of the soils and lithological factors at the site. This technology would require saturation of the entire source area using well points, or by creating a temporary sheet pile containment structure or bathtub effect to completely destroy contaminants in the unsaturated zone. In either case, the source area would be saturated with a chemical oxidant, which would effectively oxidize VOCs on contact versus other technologies that could take months or years to remove the VOCs. The benefits of this approach are that chemical oxidation is a proven method of destroying the contaminants of concern. Unfortunately, the site geology is very heterogeneous and would limit the uniform distribution of oxidant in the subsurface, making this a difficult method of delivery to implement. This approach was retained, however, for potential applicability at the base of open excavations, where the direct application

of chemical oxidants to the subsurface soils could be achieved to lower residual VOC mass prior to backfilling as a contingency. This method will be considered for select areas depending upon base of excavation sampling and field screening.

In-situ mixing could also be performed, but due to equipment limitations, would be limited to shallow soils. Deep soil mixing equipment would be cost-prohibitive and due to subsurface heterogeneities, would be problematic at this site. Therefore in-situ mixing was not retained for further evaluation.

Ex-Situ Chemical Oxidation

Ex-situ chemical oxidation eliminates the possibility of diffusion-limited flow of oxidizing reagent through the subsurface. This approach would involve removal of approximately 20,000 yards of impacted soil down to a depth of 20 feet bgs in AOCs 1 through 4. This material would be excavated and batch treated on grade whereby VOCs would be destroyed using a specific chemical oxidant determined by bench testing (such as potassium permanganate, sodium permanganate, or sodium persulfate). The correct molar balance of oxidant to contaminant mass would be determined as part of the bench-scale testing. The oxidant would be blended with the soils using heavy equipment to ensure physical contact between the sorbed VOCs in soils and the oxidant.

Heat can be applied as an added element, concurrent with specialty mixing equipment designed for this purpose, within an enclosed hood to create a vacuum and further enhance the effectiveness of the oxidant and assist in desorption of VOC mass. Soils would be tested and confirmed to meet cleanup objectives prior to replacing into the ground. In advance of backfill, the bed of the excavation floor could be treated with additional oxidant, or an agent that would stimulate and enhance anaerobic dehalogenation as a polishing step to address trace dissolved phase or sorbed organics not removed by excavation and treatment.

The benefits of this approach are that the ex-situ mixing would eliminate the diffusion limitations of an in-situ approach and ensure that the oxidant comes in contact with the contaminants. Heat

would not only catalyze the reaction of the persulfate, but also free up the VOCs from the soils. Any vapor phase VOCs that are generated would be absorbed by vapor phase carbon.

On-Site Thermal Treatment

On-site thermal treatment requires costly mobilization of thermal equipment, expensive fuel consumption to maintain an auto-ignition temperature greater than 1000 degrees F, time consuming air permitting, moisture conditioning and other elements which drive the cost and duration of this option beyond those obtained by chemical oxidation. Further, it requires a stationary location to be set up with additional soil handling at much lower treatment rates than can be realized with other approaches.

While thermal treatment is a viable approach for treating soils with VOC contamination, performing this method of treatment on site is problematic due to the extensive costs and time required to mobilize, permit, test and run a full-scale thermal treatment unit.

Off-Site Treatment and Disposal

Off-site treatment and disposal at a permitted facility would require impacted soils to be excavated, loaded out and shipped to a select facility for treatment and disposal or treatment and shipment back to the site as backfill. This option was deemed cost-prohibitive due to the high mass of chlorinated VOCs present, and the relatively low number of facilities that can effectively treat this level of VOC contaminated soil.

After careful consideration of the remedial objectives and a thorough review of feasible remedial alternatives, Panther and Airtron believe that the remedial alternative that will most effectively meet the desired remediation goals is ex-situ thermal enhanced chemical oxidation. While select in-situ approaches may be more cost effective in some geologic conditions, they do not provide the ability to control and eliminate as many variables as the ex-situ option and therefore are not considered the most desirable technologies for this site. As such, source removal and ex-situ treatment has been selected to address the bulk (over 95%) of soil contaminants. In-situ methods including chemical oxidation or enhanced aerobic degradation may, however, be used as a

polishing step for the minor quantity of VOC mass not directly treated (less than 5%) by the ex-situ approach. In addition to implementation of an ex-situ chemical oxidation approach, Airtron has elected to utilize ex-situ mixing equipment capable of raising the soil temperature during this process, thus providing a thermal component to the selected approach.

4.3 Bench-Scale Treatability Study

In order to determine which chemical oxidation technology would be best suited to address the specific soil types and contaminant mixtures present at the site, composite soil samples were collected from select test pits at the site and used to complete a bench-scale study. The bench-scale study evaluated a variety of chemical oxidizing compounds at several concentrations to determine the most effective technology or combination of oxidants to remedy the affected soils. **Panther** subcontracted Xpert Design and Diagnostics, LLC (XDD) to support the bench-scale phase of the project. XDD was selected because of their extensive experience and national reputation working with chemical oxidants, as well as a strong previous working relationship with **Panther**, the proposed implementation contractor for this work.

The bench study included the performance of a number of tests including a baseline soil analysis; field capacity (soil moisture) tests; volatilization tests and treatability tests using several chemical oxidants at various concentrations. The chemical oxidants tested were selected based on past performance treating TCE and PCE and on oxidation chemistry principles. Oxidants included oxidative persulfate system (OPS), which is a buffered sodium persulfate treatment; potassium permanganate; DUOX, a patented application of sodium persulfate and potassium permanganate and heat-catalyzed sodium persulfate (HCP). In addition, the effects of volatilization, aggressive mixing, as well as overall mass reduction were evaluated to design the final remedial approach for the soil to be treated. The detailed findings of the bench-scale study are summarized in a stand-alone report in Appendix D. A brief overview of select results is presented below.

In general, HCP was found to be the most effective of the oxidants tested. At the lowest dosing tested (1g persulfate/kg soil), HCP was able to reduce the concentration of total VOCs in the sample submitted from 65 mg/kg to below 5 mg/kg. At the medium (5g persulfate/kg soil) and

high (10g persulfate/kg soil) dosing rates tested, HCP was able to reduce soil VOC concentrations to approximately 2 mg/kg and less than 1 mg/kg, respectively. The ratio of oxidant demand to VOC mass is basically linear and the dosage volumes defined in the bench testing phase of the project would be used to determine the average oxidant needs for the overall project based on historical and recent VOC data collected in proposed soil treatment areas.

While other oxidants were able to reduce the concentrations of the submitted samples to varying degrees, no other approach was as successful, particularly when heat activated persulfate tests were conducted at the anticipated soil temperature that will be reached during treatment with the thermal enhanced option. Coupled with enhanced desorption, this oxidant was ultimately able to destroy 97% of the VOC mass present in the control sample within 7 days, reducing soil concentrations of total VOCs from 65 mg/kg in the bench scale baseline soil sample to below 5 mg/kg at the targeted dosing rate of 1g of HCP per kg of soil, and less than 2 mg/kg at the medium dosing rate. This reduction was also achieved with only one dosing, as opposed to field implementation, which may utilize multiple applications for higher concentrated soils in select areas of the site.

Actual dosing will be evaluated in the field based upon soil type, pre-treatment representative moisture content, and VOC concentrations. It is likely that some batches of soil staged for treatment will be dosed with persulfate at higher rates than others, based on field chemical oxidant demand. XDD will continue to assist **Panther** during implementation of the remedy on an as-needed basis in the field to ensure implementation effectiveness. Post remedial treatment samples will document compliance with the remedial objective prior to returning the treated soils to the excavation as later described herein.

It is important to point out that while the Bench Scale Study showed that some limited volatilization of VOCs can occur from aggressive soil mixing and heating under ideal laboratory conditions, actual field procedures will minimize the generation of fugitive emissions through vacuum containment and on-site treatment with carbon. The approach proposed has been used on a number of Comprehensive Environmental Response, Compensation and Liability Act

(CERCLA) sites nationwide, and the equipment proposed for use has obtained equipment specific air permits in New Jersey for similar applications. Conditions encountered during ex-situ treatment in the field are likely to limit mass transfer, minimizing the amount of volatilization that can occur under the anticipated treatment conditions as opposed to laboratory conditions, i.e., less volatilization will likely occur in stockpiled soils due to limitations of air flow through the soils. Further, no more emissions are expected than would be with a conventional excavation and off-site disposal alternative. Soils will be treated with oxidant immediately after excavating, prior to heating and mixing, to further minimize this mass transfer mechanism and fugitive emissions. Preventive measures in the field for potential odor during excavation may include the use of temporary sprung structures in select areas, as well as vapor suppressing foam in highly concentrated areas.

4.4 Source Area Soil Remediation (Ex-Situ Soil Treatment)

As already discussed herein and based on a review of proven technologies, taking into consideration the volume of soils, the source area concentrations, remediation goals for soil reuse, Airtron has selected ex-situ chemical oxidation enhanced with thermal treatment as the most appropriate and cost-effective remedial technology for soils on-site. The approach was further confirmed to be viable following extensive bench-scale testing conducted during the PDI. Additional details regarding the proposed approach are provided below.

4.4.1 Description of Primary Remedial Approach

The defined AOC 1-4 source soil areas and depths delineated on Figures 7 through 11 will be remediated using excavation and combined on-site chemical oxidation and thermal treatment. As previously discussed, these source volumes are based upon removal of individual VOCs greater than 5 mg/kg, with minor vertical exceptions. These soils represent a potential ongoing source of contamination to on-site groundwater. They also represent approximately 12,000 pounds of VOC mass or 95% of the total mass known to be present in soils at the entire site, using conservative assumptions and average mass concentrations.

In general, the remedial approach entails the removal of contaminated soils from several areas throughout the site as depicted on Figure 4. Upon removal, the soils will be transported to an on-site treatment area to be created in the rear of the facility where three treatment cells will be constructed for application of the oxidant and subsequent thermal treatment. As soil is excavated and sent over to the treatment cells, it will be stockpiled to an approximate height of 3 feet, plus a buffer of clean soils of approximately 6 inches at the base of the treatment cell. This buffer is designed to minimize contact of the equipment with the underlying asphalt. The equipment that will be used to blend the oxidant and homogenize the soil (under vacuum with the application of heat) is designed to mix a three-foot deep soil matrix. The cells will be constructed long and narrow with travel paths between each for application of the oxidant. Following application of oxidant, thorough mixing and heating, the unit will move in a sequence to the next cell while the first cell "cooks" and is monitored. Steam is given off as the oxidant catalyzes the contaminant present. This process will continue until all three piles are mixed. Following a 3 to 5-day "cook" cycle, the piles will be sampled for compliance as later described in Section 4.4.5 before being removed and staged in a clean backfill stockpile for use as site backfill. All areas will be contained, lined and protected by soil erosion and runoff control measures. A conceptual site layout showing this setup is provided as Figure 12. The treatment flow outlined above is presented in Figure 13.

4.4.2 Support Facilities and Temporary Controls

During the course of the work, construction support facilities will be installed as part of the remedy include the soil handling and treatment areas, temporary containment or sprung structures (if needed), project trailer, first aid station, sanitary facilities, temporary site fencing to restrict access, utility connections for power and water, construction access roads, temporary dewatering storage tanks, and the decontamination area. These facilities will be installed during mobilization. In addition, several utilities and existing monitoring wells are located within planned excavation areas that will need to be addressed as described below:

- A water main (12-inch diameter, ductile iron pipe owned by Southeastern Morris County Municipal Utility Authority) crosses area 3C offsite. If excavation is confirmed to be

necessary in the area, this water main will be temporary supported or relocated during excavation activities in this area. Contact has already been made with the Municipal Utility Authority (MUA) and the plan for how this pipeline will be handled is being finalized.

- Approximately 100 lf of storm sewer associated with Outfall 002 (24-inch diameter RCP) also crosses area 3C. This section of the pipe will be temporarily removed for excavation and restored during backfilling. During excavation, temporary measures for diversion of storm water including pumps and temporary piping will be used. Appropriate engineering controls will be implemented to ensure that diverted storm water does not contact impacted soils prior to discharge. Details regarding these controls are included in the Soil Erosion and Sediment Control Plan that will be submitted under separate cover to the County (Appendix E).

- A portion of the existing groundwater treatment system discharge pipe (8-inch diameter polyvinyl chloride [PVC]) leading toward Outfall 003 crosses area 1B. During the excavation of this area, the discharge pipe will be cut and temporarily rerouted around the disturbed area. Appropriate measures will be implemented to minimize any down time during the temporary rerouting of the discharge. The discharge line will be restored during backfilling operations.

- Several existing monitoring wells are located within excavation areas and will be properly abandoned and reinstalled in accordance with N.J.A.C. 7:26E, N.J.A.C. 7:9D, and previously approved work plans post-backfilling. These include: MW-403S, MW-406 and potentially MW-301S, MW-401S and MW-402S.

- Electrical lines providing power to the four parking lot area lights will also likely be encountered in areas 1B and 3C. These lines will be de-energized prior to initiating intrusive activities and may or may not be restored.

- Portions of the defunct soil vapor extraction (SVE) system will be destroyed and removed during excavation in some of the areas. As the system is no longer needed, no restoration is planned.

4.4.3 Water Management (Perched Area Dewatering)

As outlined in the site hydrogeology section of this document (Section 2.7), perched groundwater will likely be encountered during the excavation of areas 3B and 4 in advance of the final excavation depth as previously discussed in Section 2.7. Encountered perched groundwater will be removed from the excavation via temporary sumps or well points and will be transferred to temporary storage tanks (20,000 gallon frac tanks) to facilitate the removal of contaminated soils

to the design depth. All collected water from dewatering or decontamination will be treated on-site prior to discharge through existing Outfall 003 in accordance with effluent criteria provided in the NJPDES-DSW permit. Sheet piling will be installed to below excavation depths where necessary in select areas.

Collected water will be sampled and supplemental pretreatment (including filtering and possibly granular activated carbon to pre-treat VOCs) will be used as necessary to provide a treatable water stream for the existing groundwater treatment system (shallow tray air stripper with vapor phase carbon treatment of off-gasses). The existing system will be used as a final polishing step for the collected groundwater.

Based upon hydrogeologic and other field data, extensive recharge is not expected and a water allocation permit will not be required (threshold for permit is diversion >100,000 gallons per day) due to the low permeability of soil in these areas. Sheet piling will be installed to provide shoring of the excavation sidewalls and will also assist in limiting recharge from the eastern edge of the excavation along the wetlands.

4.4.4 Perimeter Air Monitoring

Perimeter air monitoring program will be implemented to provide early warning in the unlikely event that VOC emissions above acceptable levels have the potential to leave the site. Data will be collected real-time and procedures will be put in place to indicate the need, if any, for modifying work practices and/or engineering controls as necessary for the purposes of reducing emissions. Engineering controls that may be used include: covering of material, dust suppression using water, and foam.

Approximately four monitoring stations will be established at the perimeter of the site each day. At a minimum, one upwind and two downwind locations will be monitored each workday. Actual locations will be determined in the field based on site conditions, weather, and anticipated work areas. In the event that these conditions change during the workday, monitoring locations

will be adjusted accordingly. This monitoring is in addition to normal health and safety monitoring that will be performed.

Based upon the extensive investigations at the site, VOCs and fugitive dust will be the constituents of concern for perimeter air monitoring. VOCs will be monitored and logged using a photo ionization detector/flame ionization detector (PID/FID). Dusts will be monitored using a dust meter capable of measuring mass concentrations of airborne particulates. All instruments will be calibrated and operated in accordance with the manufacturer's recommendations.

All calibration and sampling field data will be recorded on air monitoring forms. Data collected during the remediation will be logged and downloaded to a personal computer. Both hard copies and digital copies will be maintained for the project files.

4.4.5 Soil Treatment Performance Monitoring

As the overall goal is to remediate soils for on-site reuse, the goal of the soil treatment performance monitoring is to demonstrate both treatment effectiveness and acceptability for soil reuse as described below. The treatment goal is to use heat-catalyzed sodium persulfate to bring site wide VOC concentrations (currently as high as 24,000 mg/kg) to a final treated concentration of 5 mg/kg. In general, the following monitoring plan is developed in accordance with the Department's "*Guidance Document for the Remediation of Contaminated Soils*", dated January 1998 and is visually depicted on Figure 14.

The excavated soils to be treated will be placed directly in the designated cell areas in batches as previously described. Due to the comprehensive soil characterization and delineation performed to date, no additional pre-treatment field screening is proposed for soils from areas designated 1A, 1B, 2A, 2B, 3A and 3D. All soils from 1A, 1B, 2A, 2B, 3A and 3D within the limits shown on Figure 4, will be placed directly into treatment cells, as these soils are known to require treatment. However, additional pre-treatment field screening will be used for soils excavated from the eastern portion of 3B (near 3B06A), 3C (the majority of the area) and 4 (the upper soil zone 0-15 ft bgs). These soils are believed to be "clean" based on past sampling and site history,

but their quality will be confirmed prior to reuse. Under no circumstances will soils be returned to the excavation solely on the basis of field screening. If field screening indicates the possible presence of VOCs, the soils will be considered as "requiring on-site treatment". If field screening indicates that soils do not contain VOCs, the soils will be sampled for reuse as described below. All field screening and soil sampling will be performed in accordance with the Department's Field Sampling Procedures Manual.

Soils within the process area will be subdivided into ~100 cy lots. Prior to treatment, baseline sampling will be performed by collecting soil samples at a rate of ~1 sample per 20 cy lot. Pre-treatment soil samples will be collected by hand augering through the depth of the pile in a grid manner as shown on Figure 14 and composited. The composite samples will be analyzed for total VOCs by EPA Method 8260 and results will be used to determine batch oxidant dosing. After processing, the treated soils will be re-sampled using the methods described above, at a frequency of ~ 1 per 20 cy lot; however, samples will not be composited. Samples will be field screened using a PID/FID and individual samples will be collected from the boring exhibiting the highest readings. Post-treatment soil samples will be analyzed (at a frequency of ~1 sample per 100 cy) for VOCs by EPA Method 8260. If the treated soil samples indicate that remedial goals (5 mg/kg for targeted VOCs) have been achieved, soils will be designated as acceptable for on-site reuse and no additional sampling will be performed. If individual lot samples indicate that remedial goals have not yet been achieved, these lots will be retreated and re-sampled until the remedial goal is met. When highly concentrated soil areas are treated, multiple treatments may be performed even prior to initial compliance sampling to assure acceptable results will be achieved as efficiently as possible. Laboratory analytical results will be obtained on a priority turnaround basis.

4.4.6 Post-Excavation Confirmatory Sampling

During implementation of the source removal, a minor number of additional samples may also be collected from select sidewall locations to close out regulatory requirements. Most areas have been fully delineated horizontally during the course of the PDI. However additional samples would be collected from those areas requiring post-excavation sampling in accordance with

Department post-remedial action sampling requirements (N.J.A.C. 7:26E 6.4). In addition to these select sidewall samples, post-excavation bottom samples will be collected in select locations where residual VOCs may be encountered or elevated concentrations of VOCs were historically encountered.

Based upon the comprehensive post-excavation equivalent samples collected during the PDI, only limited additional confirmatory sampling will be performed. As presented, sufficient sampling exists in areas 1A, 1B, 2A, 3A and 3D. Additional floor and sidewall sampling will be performed in areas 2B, 3B, 3C and 4 to meet the Department requirements (one per 900 sf of excavation and one per 30 lf of perimeter sidewall). The minimum number of additional samples needed is shown in Table 7. Post-excavation soil samples will be analyzed for VOCs by EPA Method 8260. Data will be evaluated and further remediation decisions will be made as discussed below.

Following excavation to 20 feet, Airtron will implement the focused post-excavation base soil-sampling program described to augment existing post-excavation data. The data will be used to determine which one of the following alternatives will be implemented:

1. If significantly high field screening results (FID/PID) are observed from excavation floor samples, samples will be sent to the laboratory to confirm the VOC concentrations. If analytical results are greater than 5 mg/kg for targeted VOCs, one of the following options will be implemented based on a cost benefit analysis:

    a. Conduct limited additional excavation (to a maximum of 25 ft bgs) and on-site treatment of this local area of soil.

    b. Implement supplemental in-situ treatment of the area using direct chemical oxidation or enhanced reductive dehalogenation as a contingency.

    c. Document the horizontal and vertical location of any soil exceedance for use in a deed notice to be filed at a later date.

2. If results are less than 5 mg/kg for targeted VOCs, no further action will be implemented and engineering/institutional controls will be used as necessary for any residual

concentrations observed during previous excavations that are outside the areas of excavation and exceed the most stringent SCC.

4.4.7 Soil Reuse Plan

The ultimate goal of the on-site remediation is to treat defined source area soils to acceptable levels and utilize 100% of treated soils as backfill (no off-site disposal or off-site reuse is proposed). Section 4.4.5 describes the confirmatory soil sampling that will be implemented prior to reuse as backfill in accordance with N.J.A.C. 7:26E 6.4(d).

The treated soils will be non-hazardous (i.e., source soils are not listed hazardous and treatment will effectively remove hazardous characteristics, if any, in the source soils). No odorous or visibly objectionable materials (e.g. debris, etc.), if any are encountered, will be used for backfilling purposes. Additionally, excavated soils will be treated, tested and backfilled within 6 months in accordance with N.J.A.C. 7:26-1.1; 1.4.

4.5 Permitting

This section presents an overview of the identified permitting issues associated with the implementation of this remedial action. Airtron has conducted a thorough review of all applicable permits required for implementation of the remedial action proposed herein. Table 8 presents the list of applicable permits/approvals to be obtained for this remedial project. Prior to implementation, Airtron will ensure that all applicable permits will be obtained. Due to lead-time in obtaining certain permits, Airtron has initiated preparation and submission of numerous permit applications as described below.

4.5.1 Stream Encroachment/Waterfront Development

Given the proximity of the woodland area drainage features to the proposed limits of excavation, **Panther** contacted the Land Use Regulation Program (LURP) regarding a Jurisdictional Determination of the potential permit applicability under the Flood Hazard Area Control Act (Stream Encroachment). After reviewing United States Geological Survey (USGS) Topographic

Quadrangle Maps, Federal Emergency Management Agency (FEMA) Flood Maps and the Soil Conservation Service (SCS) Soil Survey Maps for the local area, **Panther** submitted supporting documentation showing that the contributory drainage area was below the threshold used by LURP to determine applicability. As such, the Department agreed that neither a Stream Encroachment nor a Waterfront Development Permit was required. A copy of the LURP written jurisdictional determination is provided in Appendix F.

4.5.2 Wetlands/GP-4 Permitting

Airtron recently submitted a Letter of Interpretation (LOI) to the Department's Land Use Regulation Program and is awaiting final determination of the wetlands delineation and quality assessment, as well as applicable transition area encroachment to determine mitigation requirements. The planned remedial activities will temporarily disrupt a small portion of wetlands and transition area. In order to address the wetlands disruption and planned restoration, a NJDEP General Permit #4 (GP4) permit has been applied for as part of the RAWP process. ASGECI are performing this work, under contract to **Panther**. Once approved, all necessary activities related to wetlands disruption and restoration will be implemented according to the permit.

4.5.3 Air Permitting

Based on previously completed projects of a similar nature, an air permit will be necessary as there is a potential to emit VOCs during the soil mixing process. Although the remedial approach is based on chemical oxidation or destruction of the VOCs and not mass transfer, there is a potential to emit VOCs; consequently, an air pollution control permit will be applied for. The equipment proposed to be used for this work includes a hood atop the mixing heads, which operates under vacuum and discharges to vapor phase carbon. This equipment has been used for a number of other projects in the State of New Jersey and has received appropriate equipment control apparatus permits. ·As an alternative, Panther has also researched the possibility of using existing air permits associated with the previously operated SVE system to cover potential emissions during the soil remediation process. If this scenario is followed, a permit modification may be applied for. In any case, a permit will be obtained as applicable.

4.5.4 NJPDES Permitting (DSW)

The existing NJPDES Permit is being renewed and will be used to discharge any and all treated water generated from the site, including both groundwater pumped from the existing extraction well as well as perched water collected during excavation which represented the same contaminants of concern. All precautions will be taken to ensure that the effluent is within permit limitations. As described above, pretreatment including filtering of particulates and VOC removal (if necessary) will be implemented as part of the RAWP.

4.5.5 Soil Erosion and Sediment Control Plan

As the remediation project will involve intrusive land disturbance, excavation and soil handling activities, a Soil Erosion and Sediment Control Plan is being submitted for approval to county officials as provided as Appendix E. The objective of the Soil Erosion & Sediment Control Plan (SESCP) is to develop a site-specific management plan that minimizes the potential for soils to be mobilized and transported offsite. Controls include grading for run-on diversion and erosion mitigation, and installation of sediment barriers such as silt fence, straw bale and/or rock check dams. In addition, construction activities will be sequenced to minimize erosion potential. All measures will be implemented in accordance with the State of New Jersey Standards.

As shown in this Figure 3 of Appendix E, silt fence will be installed along the down gradient perimeter of the excavated areas to protect the drainage features to the south and east. Additional measures including berms will be installed around the soil staging and treatment stockpiles. As the excavation of Area 3C will involve removal/replacement of the approximately 100 linear feet of storm sewer and Outfall 003, a temporary diversion will be installed as shown. The controls will be maintained and upgraded as necessary throughout the construction project.

4.5.6 Local Construction Permits

A building/plumbing permit is typically required for construction activities in Hanover Township. **Panther** will obtain the appropriate permits as required. It is anticipated that a

building permit for installation of a site trailer and an electrical sub code for electrical service will be necessary.

4.6 Site Restoration

All areas disturbed by remediation activities will be graded, reseeded and mulched as specified in the SESCP. Areas that are designated as wetland or transitional areas will be restored in accordance with a Wetland Restoration Plan being prepared under separate cover, depending upon LURP's concurrence with our wetland identification. In addition, any pre-existing monitoring wells that will be lost during the excavation activities will be reinstalled as part of the site restoration.

4.6.1 Grading and Seeding

As discussed, grading will occur in multiple phases of the remediation project. Initial grading will be performed to implement measures outlined in the SESCP. Once on-site soil treatment is completed, excavated areas will be backfilled and graded to match pre-remediation conditions to the extent practical. All non-wetlands designated areas will be seeded in accordance with the recommended seed mixtures for Morris County. With regard to other areas in the rear of the property, Airtron has elected to remove the asphalt parking area as part of the work and regrade and reseed the area until an intended future use is known.

Every effort will be made to reseed before the end of the growing season. If reseeding cannot be achieved before the end of the growing season, then a quick growing temporary seed mix will be used to stabilize the area and permanent reseeding would be performed in the following Spring. The seeded areas will be monitored until successful re-vegetation is achieved.

4.6.2 Wetlands Restoration Plan

A wetlands restoration plan is included in the GP4 Permit Application being submitted to LURP under separate cover. The plan is designed to mitigate for the loss of wetlands, wetland transition areas, and adjacent upland habitats resulting from the remediation of contaminated soil, as authorized by the GP4. All mitigation-restoration activities will be performed within the

same location as the GP4 authorized disturbances. The mitigation plan is designed to restore disturbed areas to their former natural condition. The species and relative covers in the restoration plan were based on vegetation information obtained from the NJDEP Regulatory Line Verification Letter of Interpretation for this site.

Following restoration of the topsoil, trees, shrubs, herbaceous species, along with seed mixes will be planted throughout the disturbed areas in order to restore the disturbed wetland, transition area, and adjacent uplands. Seed mixes, designed both to meet the requirements of each habitat to be restored, and to comply with NJ Standards for Soil Erosion and Sediment Control, will be used as needed throughout the restoration area.

4.7 Post-Remedial Monitoring and Reporting

Post-remedial monitoring and reporting activities, including groundwater monitoring and wetlands restoration performance monitoring is described below.

4.7.1 Post-Source Removal Groundwater Monitoring

This section outlines the proposed post-remedial groundwater-monitoring program to further evaluate the effectiveness of soil source removal activities associated with AOC-1 through AOC-4. The proposed groundwater-monitoring program is focused on evaluating the beneficial impact that source removal activities are expected to have on on-site groundwater over time in the immediate vicinity of AOCs 1 through 4. The proposed groundwater-monitoring program will be supplemented with additional groundwater monitoring related to the supplemental remedial investigation (SRI) associated with AOC-11 (groundwater) and performed by ARCADIS.

The integration of this post-remedial groundwater-monitoring program with the results of recently completed on-site SRI AOC-11 activities will be reported separately as part of the ongoing SRI efforts for AOC-11. In general, monitoring well locations proposed for use in this program have been selected based on the following rationale:

- At least one monitoring well per AOC biased within the footprint of the higher concentration portions of delineated TCE and/or PCE soil impacts.

- Screened intervals located within native material beneath or adjacent to proposed limits of excavated soil volumes.

- Monitor groundwater quality within identified perched groundwater horizons and the upper portion of the upper unconfined aquifer (i.e., in the vicinity of the water table) that have been impacted by VOCs in the immediate vicinity of AOCs 1 through 4.

- Bias toward recently abandoned monitoring well locations and/or recently-completed SRI vertical profile boring (VPB) locations to provide some degree of historical/baseline context for continued evaluation of groundwater monitoring results following remediation.

Based on the rationale presented above, a total of 10 monitoring wells will comprise the post-remedial groundwater-monitoring program for AOCs 1 through 4. Proposed well designations and associated well construction details for individual wells are provided in Table 9. Proposed well locations are shown on Figure 15; existing on-site monitoring wells, piezometers, and the groundwater recovery well, together with locations of recently completed SRI VPBs, are also shown on Figure 15 for general reference. As indicated in Table 9 and on Figure 15, the proposed well locations consist of five new monitoring wells (to be installed following soil remediation), three replacement monitoring wells (to replace existing monitoring wells that are expected to be abandoned/destroyed as part of source removal activities), and two existing monitoring wells (that are expected to be left intact during source removal/soil reuse activities).

The eight new and replacement monitoring wells will be installed, developed, and surveyed consistent with NJDEP requirements and guidance, and in accordance with N.J.A.C. 7:26E and previously approved work plans, as applicable (Supplemental Remedial Investigation Work plan [SRIW], ARCADIS Geraghty & Miller, 1999; SRIW Addendum, ARCADIS, 2001). The groundwater monitoring wells will be installed using hollow-stem auger, mud-rotary, or air rotary drilling methods as field conditions dictate. All newly constructed monitoring wells will be constructed of 2-inch or 4-inch diameter, schedule 40 PVC with ASTM F-480 pipe threading and appropriate diameter, 0.010-inch (10 slot) PVC well screen (screen lengths/intervals specified on Table 9). Because these monitoring wells will be installed within five feet of previously completed and logged soil borings, lithologic soil sampling is not proposed. Drill cuttings from

the well installation will be containerized for proper non-hazardous disposal. Collected development water will be treated and disposed of in the on-site groundwater treatment system.

Groundwater samples will be collected from the proposed post-source removal groundwater monitoring well network according to the procedures provided in the May 1992 *NJDEP Field Sampling Procedures Manual.* Groundwater samples will be submitted to a New Jersey certified analytical laboratory for analysis for VOCs by USEPA Method 8260b plus a forward library search for the first 15 TICs. Groundwater sampling activities will be conducted on a semi-annual frequency until such time as data evaluation can support a reduction in frequency contingent upon NJDEP approval. As such, the sampling of the proposed post-source removal groundwater monitoring well network is expected to be coordinated with the semi-annual sampling activities conducted for the Interim Remedial Measures (IRM) Groundwater Remediation Effectiveness Monitoring Program (i.e., in April and October).

4.7.2 Wetlands Restoration Performance Monitoring

The wetlands restoration will be monitored annually as described in a Wetland Restoration Plan, which is being submitted under separate cover to LURP. Generally, the monitoring will include fall site inspections of the planted species survivability and overall coverage. At end of the fifth year, a comprehensive review will be conducted in accordance with the final GP-4 permit.

4.8 Source Area Remedial Action Report

Final reporting that will be associated with this source removal action will consist of Remedial Action Progress Report(s) (RAPR), as necessary, and a certified Remedial Action Report (RAR) for soils. A monthly RAPR will be submitted, as the expected duration of the project is over three months. The progress report will provide a brief summary of remediation progress, identify any issues, provide a schedule update, and outline recommendations for any field modifications to the work plan. Following demobilization, the RAR will be prepared in accordance with N.J.A.C. 7:26E 6.6.

5.0 ENGINEERING/INSTITUTIONAL CONTROLS

For the purposes of this remedial action, it is anticipated that engineering and institutional controls may be required for select areas of the site where residual concentrations do not meet the most stringent SCC applicable. This will address outlying exceedances of individual VOCs at depths greater than 20 feet bgs, as well as treated soils that do not meet the most stringent SCC. In general, the following engineering and institutional controls are included in the site wide strategy for soil remediation currently proposed.

Engineering controls will include a clean site wide soil vegetative cap at least two feet thick atop the excavated areas using treated soils with analytical results less than the most stringent SCC. Approximately 1.5 feet of this cap will be treated soil, and the overlying six inches will be imported topsoil from a certified clean source to enable vegetation to thrive and the site become stabilized in a timely manner. The area to be capped will include the excavated areas, and will likely extend over portions of the rear parking area east of the building.

Institutional controls for soil will involve a Deed Notice. For the purposes of this RAWP, a Deed Notice would be prepared upon completion of the work as part of the RAR for outlying exceedances of select VOCs that are documented via one of three mechanisms:

1. Historical outliers that are not removed or addressed by the proposed remedial action;

2. Post-excavation bottom samples at the base of the excavation which exceed the most stringent SCC; and

3. Post-treatment samples, which meet our treatment effectiveness goals but still remain slightly higher than an individual SCC.

Upon completion of the remedial action, Panther will review all data and determine whether it is necessary to file a Deed Notice. If a Deed Notice is required, the document will include all required elements, including surveyed locations of each exceedance. The Deed Notice will not

apply to the overall site, but merely that portion of the site where exceedances are found (e.g. eastern portion of the facility).

6.0 QUALITY ASSURANCE AND HEALTH AND SAFETY

During the course of work at the site, quality assurance objectives will be maintained as with the collection of previous data at the site through a variety of mechanisms including use of the same field crews and laboratory for all sampling and analytical work. This section presents a brief overview of quality assurance and health and safety issues related to the RAWP implementation as required in the Technical Regulations.

6.1 Quality Assurance

Analytical data will be collected to assess the performance of the on-site treatment (soil sampling for reuse) and the overall effectiveness of the source removal on groundwater quality (source area groundwater monitoring). All data received will be reported according to accepted practices of quality assurance (QA) and will be independently reviewed. Any inconsistencies found with the laboratory data packages and the Department's "Reduced Data Deliverable" package requirements will be addressed with the laboratory. NJDEP data validation guidelines and reporting values may be used, if necessary, during data review of the laboratory reports. During each sampling event, an equipment field blank and trip blank will also be collected and analyzed for QA and quality control over sampling procedures.

6.2 Health and Safety

All intrusive excavation and on-site treatment activities at the Airtron site will be performed by personnel who have received 40-hours of initial training and 8-hours of annual refresher training in accordance with the Occupational Safety and Health Administration's (OSHA's) Hazardous Waste Operation and Emergency Response (HAZWOPER) Standard, 29 CFR 1910.120 (e). Technical personnel will also participate in a medical monitoring program for all hazardous waste workers as specified by 29 CFR 1910.120 (f). Technical personnel must be medically fit for duty, as evidence by a physician's written release stating the worker has undergone annual medical monitoring and has passed the medical surveillance examination prior to any site work.

Panther will prepare a site-specific Health and Safety Plan (HASP) that governs field activities at hazardous waste investigation and remedial action sites prior to their mobilization. Each HASP is prepared in accordance with the HAZWOPER Standard, OSHA's *Guidance Manual for Hazardous Waste Site Activities*, and other appropriate health and safety standards and procedures. **Panther Technologies, Inc.'s** Outline for a Site-Specific HASP is included in Appendix G.

7.0 PROPOSED IMPLEMENTATION SCHEDULE AND COST ESTIMATE

Airton has provided an aggressive schedule for implementation of this remedy as outlined in the proposed implementation schedule previously discussed, as well as further documented below. In order to meet the project schedule, a timely review by the Department is respectfully requested as well as coordination with other Department units involved with permit reviews (Air Pollution Control, LURP). In general, the approach proposed will be most successful during the dry period of the year, as such; preliminary constructive activities are scheduled to commence as soon as the second Quarter of 2003. A remedial cost estimated has also been provided as required by N.J.A.C. 7:26E 6.1.

7.1 Proposed Implementation Schedule

In general, components of the proposed remedial approach will be implemented within 30 days following Department approval of this RAWP. As shown in the proposed remedial implementation approach schedule included as Figure 16, initial tasks include notification to local governing bodies and affected parties, final securing of permits, and installation of temporary controls. At the current time, based on the volume of soils to be treated, the overall project duration is anticipated to be roughly six months including well installation and final restoration elements, with four months of heavy intrusive activities.

7.2 Cost Estimate

As required in N.J.A.C. 7:26E 6.1, the anticipated remedial contracting costs associated with implementation of the proposed remedial approach are provided herein. Remedial action costs are estimated to be in the range of $3.1 to $3.5 million for implementation of this plan. Further costs to be incurred by Airtron on an annualized basis that are not included are items involving long-term groundwater monitoring, wetlands monitoring, maintenance of the vegetated areas, etc.

8.0 REFERENCES

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SCS Engineers. 1994. Remedial Investigation Report (Draft) for the Airtron Division of Litton Systems, Inc. Prepared for Airtron Division of Litton Systems, Inc., August 15, 1994

SCS Engineers. 1997. Site Investigation/Remedial Investigation Work Plan for Litton - Airtron, March 31, 1997 (reyised July 30, 1997).

Table 1. Summary of AOCs and Current Status. Airtron, Division of Litton Systems, Inc., Morris Plains, NJ.

AOC DESIGNATION	AOC DESCRIPTION AND INVESTIGATION SUMMARY	AOC REGULATORY STATUS
AOC 1	Hazardous Materials Storage Building Area - The Hazardous Materials Storage Building Area is located off the southeast corner of the Airtron facility main building. The hazardous materials storage building, constructed in 1992, was formerly used to store hazardous raw materials and waste for periods under 90 days in duration. The existing hazardous materials storage building area is a covered and fenced enclosure modification to a fenced concrete pad that was constructed about 1973.	Remediation Proposed in this RAWP
AOC-2	Former Parking Island Drum Storage Area #1 - The Former Parking Island Drum Storage Area #1 was located in the rear parking lot northeast of the Airtron vicinity main building. This area formerly consisted of two grass islands that bisected the parking lot. Facility personnel reported that drums were stored on the grass islands during the 1950s and 1960s while both Monroe and Airtron operated the facility. The former grass islands have since been graded and paved with asphalt.	Remediation Proposed in this RAWP
AOC-3	Former Drum Storage Area #2 (Rear of Parking Lot) - The Former Drum Storage Area #2 located along the northeastern side of the rear parking lot. This area currently consists of a grass and tree covered area bordering the rear parking lot. Facility personnel reported that drums were stored in this area over an unspecified time period more than 25 years ago. The original limits of AOC 3 were extended to the north after the 1997/1998 SI/RI.	Remediation Proposed in this RAWP
AOC-4	Former Sludge Lagoon 5 - The Former Sludge Lagoon 5 located along the southeastern side of the rear parking lot and immediately south of the Former Drum Storage Area #2 (AOC-3). This settling basin was installed in 1963 and received rinse water from the Airtron plant during operations. An Administrative Order from NJDEP dated December 14, 1979 required the cessation of discharge into the settling pond. As a result the settling pond was excavated and removed under NJDEP supervision in 1980. A February 9, 1981 letter from the NJDEP acknowledges the proper and complete closure of this settling pond. This area is currently covered by grass and trees.	Remediation Proposed in this RAWP
AOC-5	Former Sludge Lagoons #1-#4 - The Former Sludge Lagoons #1 through #4 located off the southeast comer of the Airtron facility main building. Lagoons #1 and #2 were installed in 1963 and Lagoons #3 and #4 installed in 1972 in order to provide increased capacity. These four sludge lagoons received precipitated solids from the plant settling tanks and/or the batch waste/water treatment systems to be dewatered and dried prior to their disposal. An Administrative Order from NJDEP dated December 14, 1979 required the cessation of discharge into the sludge lagoons. As a result, the sludge lagoons were excavated and removed under NJDEP supervision in 1980. A February 9, 1981 letter from the NJDEP acknowledges the proper and complete closure of these sludge lagoons. The area is currently a maintained softball field.	NO FURTHER ACTION
AOC-6	Stream Sediments - An intermittent drainage feature is present in the wooded area to the northeast of the Airtron facility main building and parking area. This drainage feature enters the Airtron property from the north and flows south until discharging into the Whippany River approximately one mile from the site. The drainage feature bed is generally dry with constant flow occurring only during precipitation events. In addition, the Airtron facility contributes water to the feature through two outfalls located approximately 300 and 600 feet, respectively, upstream of the Airtron property boundary. The stormwater outfall discharges stormwater from roof drains and the on-site catch basins. Outfall 003, a NJPDES permitted outfall, discharges from the Airtron interim remedial groundwater extraction and treatment system which has been operating since 1995.	Ongoing Remedial Investigation
AOC-7	Former Paint Stripping Area/Former 10,000-Gallon UST - The former Paint Stripping Area/Former 10,000-Gallon UST located at the southeast comer of the Airtron facility main building. The 10,000-gallon UST (NJDEP registration #0166980) was installed in 1966 for No.4 fuel oil storage for two boilers in the plant building. After conversion of these boilers to natural gas in 1990, Airtron removed this UST. The UST closure activities were performed by Environmental Services, Inc. (ENSI) under NJDEP Bureau of Underground Storage Tanks (BUST) spill number C90-0412. During the removal of the UST, approximately 151 tons of petroleum-impacted soil were removed and recycled at Riverside Brick and Supply in Richmond, Virginia. This area is currently covered with grass, asphalt, and concrete	NO FURTHER ACTION

AOC-8	Gallium Arsenide Wing Trench - The Gallium Arsenide Wing Trench is located on the north side of the Airtron facility main building. Constructed in 1982, the trench is a subsurface concrete vault which was formally used to contain two 55-gallon drums which received methanol waste from the gallium arsenide crystal manufacturing process. The associated drainage piping for this system consisted of cast iron piping installed in a sub-grade concrete trench under the facility main building floor. The vault was used for approximately six months around 1984 or 1985, and there are no records of any releases from this system. On July 1, 1993, the vault was inspected and screened with a PID which indicated that no hazardous substances were present. Based on this inspection, the NJDEP issued a letter to Airtron, dated December 11, 1996, stating that "the vault has been inspected and is no longer considered an AOC." The vault remains inactive and is covered with steel plate doors and locked to prevent precipitation and unauthorized access.	NO FURTHER ACTION
AOC-9	Former 15,000-Gallon Heating Oil UST – The Former 15,000-Gallon Heating Oil UST is located off the southeast comer of the Airtron facility main building just south of the Hazardous Materials Storage Building (AOC-1). In July 1992, the 15,000-gallon UST was discovered abandoned during the installation of the SVE system at the site. Fingerprint analysis of the UST contents indicated that the tank contained "Bunker C" heating oil. The UST was removed by ENSI under NJDEP Hotline Case numbers 92-7-10-1150-13 and 92-7-16-1442-24. During the removal of the UST, an undetermined volume of petroleum-impacted soil and several crushed drums were removed and disposed. During excavation of the tank, several crushed drums were discovered along the northern side of the UST. This area is currently grass covered.	NO FURTHER ACTION
AOC-10	Former 20,000-Gallon UST - The Former 20,000-Gallon UST is located to the south of the Airtron facility main building just north of the former Sludge Lagoons 1-4 (AOC-5). A file review by Airtron located a drawing from 1952 depicting a 20,000-gallon fuel oil UST. The tank was located and removed in 1994. Petroleum impacts were not observed in the surrounding soils and no offsite disposal of soils was required. End point soil samples indicated no soil contamination was detected above the NJDEP Residential Direct Contact Soil Cleanup Criteria and Impact to Groundwater Soil Cleanup Criteria. Based on these results, the NJDEP issued a letter to Airtron, dated December 11, 1996, stating that "the Department has determined that no further action for soils is required at this AOC."	NO FURTHER ACTION
AOC-11	Ground Water – Numerous subsurface investigations have been completed to assess VOC impacts to groundwater on and in the vicinity of the Airtron and proximate off-site properties (see Table 2 for a list of previously submitted reports).	Ongoing Remedial Investigation

Table 2. List of Previously Submitted Reports. Airtron, Division of Litton Systems, Inc., Morris Plains, New Jersey.

DATE	DOCUMENT TITLE	AUTHOR
August 1981	Final Report of Groundwater Monitoring Program	Converse, Ward, Davis, Dixon, Inc.
1987	Soil and Groundwater Remedial Investigation, Phase I Results, Litton Industries, Inc., Airtron Division, Hanover Township, New Jersey	Converse Environmental East
April 1990	Report on Phase II Soil and Groundwater Investigation. Prepared for Litton Industries - Airtron Division	Converse Environmental East
March 5, 1991	Soil Vapor Extraction Test Program at Litton-Airtron Facility, Hanover, New Jersey	SCS Engineers
December 9, 1993	Interim Remedial Measures Work Plan for Airtron Division of Litton Systems, Inc.	SCS Engineers
August 15, 1994	Remedial Investigation Report (Draft) for the Airtron Division of Litton Systems, Inc. Prepared for Airtron Division of Litton Systems, Inc.	SCS Engineers
March 31, 1997 (revised July 30, 1997)	Site Investigation/Remedial Investigation Work Plan for Litton - Airtron	SCS Engineers
July 1, 1998	Site Investigation/Remedial Investigation and Remedial Action Selection Report, Airtron Division of Litton Systems, Inc.	ARCADIS Geraghty & Miller, Inc.
February 3, 1999	Site Investigation/Remedial Investigation Report Addendum, Airtron Division of Litton Systems, Inc.	ARCADIS Geraghty & Miller, Inc.
September 14, 1999	Supplemental Site Investigation/Remedial Investigation Report Addendum, Airtron Division of Litton Systems, Inc.	ARCADIS Geraghty & Miller, Inc.
September 14, 1999	Remedial Action Workplan, Airtron Division of Litton Systems, Inc.	ARCADIS Geraghty & Miller, Inc.
February 5, 2001	Remedial Action Workplan Addendum, Airtron Division of Litton Systems, Inc.	ARCADIS Geraghty & Miller, Inc.
October 11, 2002	AOC-6 Stream Sediment Sampling Summary, Airtron Division of Litton Systems, Inc.	ARCADIS Geraghty & Miller, Inc.

Table 3. Directory of RAWP Requirements. Airtron, Division of Litton Systems, Inc., Morris Plains New Jersey.

N.J.A.C. RAWP Requirements	Location in RAWP
1. Summary of the remedial investigation report, pursuant to N.J.A.C. 7:26E-4.9	Section 3.0
2. Post-Remedial sampling summary table pursuant to N.J.A.C. 7:26E-4.2	Table 7
3. Proposal to complete all requirements in N.J.A.C. 7:26E-6	Section 1.0
4. Identification of all applicable remediation standards	Section 4.1
5. Detailed description of the remedial action that will be conducted	Section 4.0
6. List of all required permits	Section 4.5, Table 8
7. Description of soil and sediment erosion control and monitoring, and dust and odor control and monitoring procedures to be implemented during remedial activities, if applicable	Section 4.4, 4.5 Also Appendix E
8. Health and Safety Plan pursuant to N.J.A.C. 7:26E-1.9	Section 6 and Appendix I
9. Detailed description of site restoration plans to comply with N.J.A.C. 7:26E-6.4 (post-remediation action requirements)	Section 4.6
10. Description of procedures for dismantling and removal of remedial structures and equipment from the site, if applicable	Section 4.4, 4.6
11. Cost estimate of the remedial action pursuant to N.J.A.C. 7:26E-5.2	Section 7.0 and Table 10
12. Schedule and progress report requirements pursuant to N.J.A.C. 7:26E-6.5	Sections 7.1, 4.8 also Figure 16

Table 4. Summary of Historic Soil Analytical Results by AOC, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC								
Area of Concern:				AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1
Site ID:				B-201	B-201	B-202	B-202	B-203	B-203	B-204	B-204
Sample ID:				B201 2-4	B201 12-14	B202 0-2	B202 8-10	B203 0-2	B203 8-10	B204 0-2	B204 8-10
Date:				09/15/97	09/15/97	09/15/97	09/15/97	09/15/97	09/15/97	09/16/97	09/16/97
Starting Depth ft bls				2.00	12.00	0.00	8.00	0.00	8.00	0.00	8.00
Ending Depth ft bls				4.00	14.00	2.00	10.00	2.00	10.00	2.00	10.00
Ethylbenzene	1000 (a)	1000 (a)	100	<0.66	<0.64	<0.62	<0.56	<0.75	<0.53	<0.62	<0.65
Tetrachloroethene	4 (b)	6 (b)	1	<0.66	<0.64	**3.9**	<0.56	**0.49 J**	<0.53	<0.62	<0.65
Toluene	1000 (a)	1000 (a)	500	<0.66	<0.64	<0.62	<0.56	<0.75	<0.53	<0.62	<0.65
Trichloroethylene	23	54 (b)	1	<0.66	<0.64	<0.62	<0.56	<0.75	<0.53	<0.62	<0.65
Vinyl chloride	2	7	10	<1.3	<1.2	<1.2	<1.1	<1.4	<1	<1.2	<1.2
Xylene (total)	410	1000 (a)	67	<0.66	<0.64	<0.62	<0.56	<0.75	<0.53	<0.62	<0.65
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	<0.66	<0.64	<0.62	<0.56	<0.75	<0.53	<0.62	<0.65
cis-1,2-Dichloroethene	79	1000 (a)	1	---	---	---	---	---	---	---	---

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
AOC-1 Hazardous Materials Storage Building Area
AOC-2 Former Parking Island Drum Storage Area # 1
AOC-3 Former Drum Storage Area # 2
AOC-4 Former Sludge Lagoon # 5
AOC-9 Former 15,000-Gallon Underground Storage Tank (NOTE: 1997/1998 results for borings in this area used to evaluate AOC-1 soil quality distribution)
RDCSCC Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC Impact to Ground water Soil Cleanup Criteria (g)(NJDEP, last revised 5/12/99)
(a) Health based criterion exceeds the 1000 mg/kg maximum for volatile organic contaminants.
(b) Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c) Insufficient information available to calculate impact to ground water criteria.
(d) Most stringent of cis or trans criteria.
(e) Criteria for sum of cis and trans.
(f) Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g) Criteria are subject to change based on site specific factors(e.g., aquifer classification,soil type, natural background, environmental impacts, etc.).
J Estimated value.
D Detected at secondary dilution.
--- Not analyzed or no standard applicable.
Bolded results were detected.
[ ] Results which exceed the most stringent of the NJDEP soil cleanup criteria are boxed.

Table 4. Summary of Historic Soil Analytical Results by AOC, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC								
Area of Concern:				AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1
Site ID:				B-205	B-205	B-205	B-206	B-206	B-207	B-207	B-207
Sample ID:				B205 0-2	B205 6-8	B205 22-24	B206 0-2	B206 8-10	B207 0-2	B207 4-6	B207 10-12
Date:				09/16/97	09/16/97	09/16/97	09/17/97	09/17/97	09/16/97	09/16/97	09/16/97
Starting Depth ft bls				0.00	6.00	22.00	0.00	8.00	0.00	4.00	10.00
Ending Depth ft bls				2.00	8.00	24.00	2.00	10.00	2.00	6.00	12.00
Ethylbenzene	1000 (a)	1000 (a)	100	<0.63	<0.64	<0.6	<0.62	<0.63	<0.66	<0.65	<0.63
Tetrachloroethene	4 (b)	6 (b)	1	<0.63	**2.6**	**1.4**	<0.62	**0.33 J**	<0.66	<0.65	<0.63
Toluene	1000 (a)	1000 (a)	500	<0.63	<0.64	<0.6	<0.62	<0.63	<0.66	<0.65	<0.63
Trichloroethylene	23	54 (b)	1	<0.63	**39 DJ**	**0.57 J**	<0.62	<0.63	<0.66	<0.65	<0.63
Vinyl chloride	2	7	10	<1.2	<1.2	<1.2	<1.2	<1.2	<1.3	<1.2	<1.2
Xylene (total)	410	1000 (a)	67	<0.63	<0.64	<0.6	<0.62	<0.63	<0.66	<0.65	<0.63
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	<0.63	**8.2**	**0.64**	<0.62	<0.63	<0.66	<0.65	<0.63
cis-1,2-Dichloroethene	79	1000 (a)	1	---	---	---	---	---	---	---	---

mg/kg	Milligrams per kilogram.
ft bls	Feet below land surface.
AOC-1	Hazardous Materials Storage Building Area
AOC-2	Former Parking Island Drum Storage Area # 1
AOC-3	Former Drum Storage Area # 2
AOC-4	Former Sludge Lagoon # 5
AOC-9	Former 15,000-Gallon Underground Storage Tank (NOTE: 1997/1998 results for borings in this area used to evaluate AOC-1 soil quality distribution)
RDCSCC	Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC	Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC	Impact to Ground water Soil Cleanup Criteria (g)(NJDEP, last revised 5/12/99)
(a)	Health based criterion exceeds the 1000 mg/kg maximum for volatile organic contaminants.
(b)	Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c)	Insufficient information available to calculate impact to ground water criteria.
(d)	Most stringent of cis or trans criteria.
(e)	Criteria for sum of cis and trans.
(f)	Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g)	Criteria are subject to change based on site specific factors(e.g., aquifer classification,soil type, natural background, environmental impacts, etc.).
J	Estimated value.
D	Detected at secondary dilution.
---	Not analyzed or no standard applicable.

Bolded results were detected.

Results which exceed the most stringent of the NJDEP soil cleanup criteria are boxed.

Table 4. Summary of Historic Soil Analytical Results by AOC, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC								
Area of Concern:				AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-2
Site ID:				B-234	B-234	B-234	B-235	B-235	B-253	B-253	B-208
Sample ID:				B234 0.5-2	B234 4-6	B234 16-18	B235 2-4	B235 12-14	B253 6-8	B253 10-12	B208 2-4
Date:				09/25/97	09/25/97	09/25/97	09/25/97	09/25/97	01/26/98	01/26/98	09/17/97
Starting Depth ft bls				0.50	4.00	16.00	2.00	12.00	6.00	10.00	2.00
Ending Depth ft bls				2.00	6.00	18.00	4.00	14.00	8.00	12.00	4.00
Ethylbenzene	1000 (a)	1000 (a)	100	**0.8**	<0.61	<0.58	<0.57	<0.64	<0.66 J	<0.66 J	<0.64
Tetrachloroethene	4 (b)	6 (b)	1	**470 D**	**78 D**	<0.58	<0.57	**0.56 J**	<0.66 J	<0.66 J	**13**
Toluene	1000 (a)	1000 (a)	500	**2.9**	<0.61	<0.58	<0.57	<0.64	<0.66 J	<0.66 J	<0.64
Trichloroethylene	23	54 (b)	1	**1.7**	<0.61	<0.58	<0.57	<0.64	<0.66 J	<0.66 J	<0.64
Vinyl chloride	2	7	10	<1.3	<1.2	<1.1	<1.1	<1.2	<1.3 J	<1.3 J	<1.2
Xylene (total)	410	1000 (a)	67	**10**	<0.61	<0.58	<0.57	<0.64	<0.66 J	<0.66 J	<0.64
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	**2.4**	<0.61	<0.58	<0.57	**0.61 J**	---	---	<0.64
cis-1,2-Dichloroethene	79	1000 (a)	1	---	---	---	---	---	<0.66 J	<0.66 J	---

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
AOC-1 Hazardous Materials Storage Building Area
AOC-2 Former Parking Island Drum Storage Area # 1
AOC-3 Former Drum Storage Area # 2
AOC-4 Former Sludge Lagoon # 5
AOC-9 Former 15,000-Gallon Underground Storage Tank (NOTE: 1997/1998 results for borings in this area used to evaluate AOC-1 soil quality distribution)
RDCSCC Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC Impact to Ground water Soil Cleanup Criteria (g)(NJDEP, last revised 5/12/99)
(a) Health based criterion exceeds the 1000 mg/kg maximum for volatile organic contaminants.
(b) Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c) Insufficient information available to calculate impact to ground water criteria.
(d) Most stringent of cis or trans criteria.
(e) Criteria for sum of cis and trans.
(f) Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g) Criteria are subject to change based on site specific factors(e.g., aquifer classification,soil type, natural background, environmental impacts, etc.).
J Estimated value.
D Detected at secondary dilution.
--- Not analyzed or no standard applicable.
Bolded results were detected.
[ ] Results which exceed the most stringent of the NJDEP soil cleanup criteria are boxed.

Table 4. Summary of Historic Soil Analytical Results by AOC, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC								
Area of Concern:				AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2
Site ID:				B-208	B-209	B-209	B-210	B-210	B-210	B-211	B-211
Sample ID:				B208 22-24	B209 2-4	B209 22-24	B210 2-4	B210 10-12	B210 29-31	B211 0-2	B211 10-12
Date:				09/17/97	09/17/97	09/18/97	09/18/97	09/19/97	09/19/97	09/19/97	09/19/97
Starting Depth ft bls				22.00	2.00	22.00	2.00	10.00	29.00	0.00	10.00
Ending Depth ft bls				24.00	4.00	24.00	4.00	12.00	31.00	2.00	12.00
Ethylbenzene	1000 (a)	1000 (a)	100	<0.64	<0.64	<0.62	<0.65	<0.62 J	<0.64	<0.72	<0.74
Tetrachloroethene	4 (b)	6 (b)	1	**1.8**	<0.64	**1.6**	**16**	**9100 DJ**	<0.64	<0.72	<0.74
Toluene	1000 (a)	1000 (a)	500	<0.64	<0.64	<0.62	<0.65	<0.62 J	<0.64	<0.72	<0.74
Trichloroethylene	23	54 (b)	1	<0.64	<0.64	<0.62	<0.65	<0.62 J	<0.64	<0.72	<0.74
Vinyl chloride	2	7	10	<1.2	<1.2	<1.2	<1.2	<1.2 J	<1.2	<1.4	<1.4
Xylene (total)	410	1000 (a)	67	<0.64	<0.64	<0.62	<0.65	<0.62 J	<0.64	<0.72	<0.74
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	<0.64	<0.64	<0.62	<0.65	<0.62 J	<0.64	<0.72	<0.74
cis-1,2-Dichloroethene	79	1000 (a)	1	—	—	—	—	—	—	—	—

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
AOC-1 Hazardous Materials Storage Building Area
AOC-2 Former Parking Island Drum Storage Area # 1
AOC-3 Former Drum Storage Area # 2
AOC-4 Former Sludge Lagoon # 5
AOC-9 Former 15,000-Gallon Underground Storage Tank (NOTE: 1997/1998 results for borings in this area used to evaluate AOC-1 soil quality distribution)
RDCSCC Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC Impact to Ground water Soil Cleanup Criteria (g)(NJDEP, last revised 5/12/99)
(a) Health based criterion exceeds the 1000 mg/kg maximum for volatile organic contaminants.
(b) Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c) Insufficient information available to calculate impact to ground water criteria.
(d) Most stringent of cis or trans criteria.
(e) Criteria for sum of cis and trans.
(f) Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g) Criteria are subject to change based on site specific factors(e.g., aquifer classification,soil type, natural background, environmental impacts, etc.).
J Estimated value.
D Detected at secondary dilution.
— Not analyzed or no standard applicable.
Bolded results were detected.
[ ] Results which exceed the most stringent of the NJDEP soil cleanup criteria are boxed.

Table 4. Summary of Historic Soil Analytical Results by AOC, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC								
Area of Concern:				AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2
Site ID:				B-212	B-213	B-238	B-238	B-239	B-239	B-254	B-254
Sample ID:				B212 14-16	B213 15-17	B238 0.5-2	B238 8-10	B239 0.5-2	B239 8-10	B254 16-18	B254 22-24
Date:				09/19/97	09/22/97	09/25/97	09/25/97	09/25/97	09/25/97	01/20/98	01/20/98
Starting Depth ft bls				14.00	15.00	0.50	8.00	0.50	8.00	16.00	22.00
Ending Depth ft bls				16.00	17.00	2.00	10.00	2.00	10.00	18.00	24.00
Ethylbenzene	1000 (a)	1000 (a)	100	<0.75	<0.68	<0.61	<0.64	<0.62	<0.58	<0.62 J	<0.65 J
Tetrachloroethene	4 (b)	6 (b)	1	**1.5**	**2.5**	**0.71**	<0.64	<0.62	<0.58	**0.41 J**	**3.2 J**
Toluene	1000 (a)	1000 (a)	500	<0.75	<0.68	**4.2**	<0.64	<0.62	<0.58	<0.62 J	<0.65 J
Trichloroethylene	23	54 (b)	1	<0.75	<0.68	<0.61	<0.64	<0.62	<0.58	<0.62 J	<0.65 J
Vinyl chloride	2	7	10	<1.4	<1.3	<1.2	<1.2	<1.2	<1.1	<1.2 J	<1.2 J
Xylene (total)	410	1000 (a)	67	<0.75	<0.68	<0.61	<0.64	<0.62	<0.58	<0.62 J	<0.65 J
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	<0.75	<0.68	<0.61	<0.64	<0.62	<0.58	---	---
cis-1,2-Dichloroethene	79	1000 (a)	1	---	---	---	---	---	---	<0.62 J	<0.65 J

mg/kg	Milligrams per kilogram.
ft bls	Feet below land surface.
AOC-1	Hazardous Materials Storage Building Area
AOC-2	Former Parking Island Drum Storage Area # 1
AOC-3	Former Drum Storage Area # 2
AOC-4	Former Sludge Lagoon # 5
AOC-9	Former 15,000-Gallon Underground Storage Tank (NOTE: 1997/1998 results for borings in this area used to evaluate AOC-1 soil quality distribution)
RDCSCC	Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC	Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC	Impact to Ground water Soil Cleanup Criteria (g)(NJDEP, last revised 5/12/99)
(a)	Health based criterion exceeds the 1000 mg/kg maximum for volatile organic contaminants.
(b)	Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c)	Insufficient information available to calculate impact to ground water criteria.
(d)	Most stringent of cis or trans criteria.
(e)	Criteria for sum of cis and trans.
(f)	Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g)	Criteria are subject to change based on site specific factors(e.g., aquifer classification,soil type, natural background, environmental impacts, etc.).
J	Estimated value.
D	Detected at secondary dilution.
---	Not analyzed or no standard applicable.

Bolded results were detected.

Results which exceed the most stringent of the NJDEP soil cleanup criteria are boxed.

Table 4. Summary of Historic Soil Analytical Results by AOC, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC								
Area of Concern:				AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-3	AOC-3
Site ID:				B-255	B-255	B-256	B-256	B-257	B-257	B-221	B-221
Sample ID:				B255 2-4	B255 10-12	B256 2-4	B256 10-12	B257 2-4	B257 10-12	B221 2-4	B221 10-12
Date:				01/19/98	01/19/98	01/19/98	01/19/98	01/19/98	01/19/98	09/24/97	09/24/97
Starting Depth ft bls				2.00	10.00	2.00	10.00	2.00	10.00	2.00	10.00
Ending Depth ft bls				4.00	12.00	4.00	12.00	4.00	12.00	4.00	12.00
Ethylbenzene	1000 (a)	1000 (a)	100	<0.73	<0.69	<0.66	<0.65 J	<0.61	<0.61 J	**0.12 J**	<0.64
Tetrachloroethene	4 (b)	6 (b)	1	<0.73	<0.69	<0.66	<0.65 J	<0.61	<0.61 J	<0.95 J	<0.64
Toluene	1000 (a)	1000 (a)	500	<0.73	<0.69	<0.66	<0.65 J	<0.61	<0.61 J	**1.4 J**	**0.68**
Trichloroethylene	23	54 (b)	1	<0.73	<0.69	<0.66	<0.65 J	<0.61	<0.61 J	<0.95 J	<0.64
Vinyl chloride	2	7	10	<1.4	<1.3	<1.3	<1.2 J	<1.2	<1.2 J	<1.8 J	<1.2
Xylene (total)	410	1000 (a)	67	<0.73	<0.69	<0.66	<0.65 J	<0.61	<0.61 J	<0.95 J	<0.64
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	<0.95 J	<0.64
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.73	<0.69	<0.66	<0.65 J	<0.61	<0.61 J	---	---

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
AOC-1 Hazardous Materials Storage Building Area
AOC-2 Former Parking Island Drum Storage Area # 1
AOC-3 Former Drum Storage Area # 2
AOC-4 Former Sludge Lagoon # 5
AOC-9 Former 15,000-Gallon Underground Storage Tank (NOTE: 1997/1998 results for borings in this area used to evaluate AOC-1 soil quality distribution)
RDCSCC Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC Impact to Ground water Soil Cleanup Criteria (g)(NJDEP, last revised 5/12/99)
(a) Health based criterion exceeds the 1000 mg/kg maximum for volatile organic contaminants.
(b) Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c) Insufficient information available to calculate impact to ground water criteria.
(d) Most stringent of cis or trans criteria.
(e) Criteria for sum of cis and trans.
(f) Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g) Criteria are subject to change based on site specific factors(e.g., aquifer classification,soil type, natural background, environmental impacts, etc.).
J Estimated value.
D Detected at secondary dilution.
--- Not analyzed or no standard applicable.
Bolded results were detected.
[ ] Results which exceed the most stringent of the NJDEP soil cleanup criteria are boxed.

Table 4. Summary of Historic Soil Analytical Results by AOC, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC								
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				B-222	B-222	B-223	B-223	B-224	B-224	B-225	B-225
Sample ID:				B222 2-4	B222 8-10	B223 2-4	B223 8-10	B224 2-4	B224 14-16	B225 3-5	B225 9-11
Date:				09/24/97	09/24/97	09/24/97	09/24/97	09/24/97	09/24/97	09/24/97	09/24/97
Starting Depth ft bls				2.00	8.00	2.00	8.00	2.00	14.00	3.00	9.00
Ending Depth ft bls				4.00	10.00	4.00	10.00	4.00	16.00	5.00	11.00
Ethylbenzene	1000 (a)	1000 (a)	100	**0.51 J**	**0.098 J**	**410 D**	**0.25 J**	<0.69	<0.65	**3.8**	**0.2 J**
Tetrachloroethene	4 (b)	6 (b)	1	**0.4 J**	<0.64	**1700 D**	<0.71	**160 D**	<0.65	<0.91	<0.69
Toluene	1000 (a)	1000 (a)	500	<0.9	<0.64	**520 D**	<0.71	<0.69	<0.65	**1.3**	**2.9**
Trichloroethylene	23	54 (b)	1	<0.9	<0.64	**390 D**	<0.71	<0.69	<0.65	<0.91	<0.69
Vinyl chloride	2	7	10	<1.8	<1.2	**1 J**	<1.4	<1.3	<1.2	<1.8	<1.3
Xylene (total)	410	1000 (a)	67	**1.2**	**0.22 J**	**1300 D**	**0.58 J**	<0.69	<0.65	**19**	**0.78**
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	<0.9	<0.64	**130 D**	<0.71	<0.69	<0.65	<0.91	<0.69
cis-1,2-Dichloroethene	79	1000 (a)	1	---	---	---	---	---	---	---	---

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
AOC-1 Hazardous Materials Storage Building Area
AOC-2 Former Parking Island Drum Storage Area # 1
AOC-3 Former Drum Storage Area # 2
AOC-4 Former Sludge Lagoon # 5
AOC-9 Former 15,000-Gallon Underground Storage Tank (NOTE: 1997/1998 results for borings in this area used to evaluate AOC-1 soil quality distribution)
RDCSCC Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC Impact to Ground water Soil Cleanup Criteria (g)(NJDEP, last revised 5/12/99)
(a) Health based criterion exceeds the 1000 mg/kg maximum for volatile organic contaminants.
(b) Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c) Insufficient information available to calculate impact to ground water criteria.
(d) Most stringent of cis or trans criteria.
(e) Criteria for sum of cis and trans.
(f) Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g) Criteria are subject to change based on site specific factors(e.g., aquifer classification,soil type, natural background, environmental impacts, etc.).
J Estimated value.
D Detected at secondary dilution.
--- Not analyzed or no standard applicable.
Bolded results were detected.
[ ] Results which exceed the most stringent of the NJDEP soil cleanup criteria are boxed.

Table 4. Summary of Historic Soil Analytical Results by AOC, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC								
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				B-240	B-240	B-241	B-241	B-242	B-242	B-242	B-243
Sample ID:				B240 0.5-2	B240 8-10	B241 2-4	B241 10-12	B242 2-4	B242 10-12	B242 22-24	B243 7-9
Date:				09/25/97	09/25/97	09/25/97	09/25/97	09/25/97	09/25/97	09/25/97	09/25/97
Starting Depth ft bls				0.50	8.00	2.00	10.00	2.00	10.00	22.00	7.00
Ending Depth ft bls				2.00	10.00	4.00	12.00	4.00	12.00	24.00	9.00
Ethylbenzene	1000 (a)	1000 (a)	100	<0.54	<0.63	<0.71	<0.61	**0.16 J**	**0.23 J**	<0.54	<0.69
Tetrachloroethene	4 (b)	6 (b)	1	<0.54	<0.63	**1.7**	**59 D**	<0.61	<0.73	**0.85**	<0.69
Toluene	1000 (a)	1000 (a)	500	<0.54	**0.3 J**	<0.71	<0.61	<0.61	<0.73	**0.32 J**	<0.69
Trichloroethylene	23	54 (b)	1	<0.54	<0.63	<0.71	**0.76**	<0.61	<0.73	<0.54	<0.69
Vinyl chloride	2	7	10	<1	<1.2	<1.4	<1.2	<1.2	<1.4	<1	<1.3
Xylene (total)	410	1000 (a)	67	<0.54	<0.63	<0.71	**0.54 J**	<0.61	<0.73	<0.54	<0.69
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	<0.54	<0.63	**9.2**	**2**	<0.61	<0.73	<0.54	<0.69
cis-1,2-Dichloroethene	79	1000 (a)	1	---	---	---	---	---	---	---	---

mg/kg	Milligrams per kilogram.
ft bls	Feet below land surface.
AOC-1	Hazardous Materials Storage Building Area
AOC-2	Former Parking Island Drum Storage Area # 1
AOC-3	Former Drum Storage Area # 2
AOC-4	Former Sludge Lagoon # 5
AOC-9	Former 15,000-Gallon Underground Storage Tank (NOTE: 1997/1998 results for borings in this area used to evaluate AOC-1 soil quality distribution)
RDCSCC	Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC	Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC	Impact to Ground water Soil Cleanup Criteria (g)(NJDEP, last revised 5/12/99)
(a)	Health based criterion exceeds the 1000 mg/kg maximum for volatile organic contaminants.
(b)	Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c)	Insufficient information available to calculate impact to ground water criteria.
(d)	Most stringent of cis or trans criteria.
(e)	Criteria for sum of cis and trans.
(f)	Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g)	Criteria are subject to change based on site specific factors(e.g., aquifer classification,soil type, natural background, environmental impacts, etc.).
J	Estimated value.
D	Detected at secondary dilution.
---	Not analyzed or no standard applicable.

Bolded results were detected.

Results which exceed the most stringent of the NJDEP soil cleanup criteria are boxed.

Table 4. Summary of Historic Soil Analytical Results by AOC, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC								
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				B-244	B-244	B-245	B-245	B-245	B-246	B-246	B-247
Sample ID:				244 2-4	B214 12-14	B245 2-4	B245 10-12	B245 14-16	246 0-2	246 16-18	B247 2-4
Date:				09/26/97	09/26/97	09/26/97	09/26/97	09/26/97	09/26/97	09/26/97	09/26/97
Starting Depth ft bls				2.00	12.00	2.00	10.00	14.00	0.00	16.00	2.00
Ending Depth ft bls				4.00	14.00	4.00	12.00	16.00	2.00	18.00	4.00
Ethylbenzene	1000 (a)	1000 (a)	100	<0.83	<0.65	<0.68	<0.7	<0.64	<0.7	<0.65	<0.63
Tetrachloroethene	4 (b)	6 (b)	1	<0.83	**4.1**	<0.68	<0.7	<0.64	**28**	**26**	<0.63
Toluene	1000 (a)	1000 (a)	500	<0.83	<0.65	<0.68	<0.7	<0.64	<0.7	<0.65	<0.63
Trichloroethylene	23	54 (b)	1	<0.83	<0.65	<0.68	<0.7	<0.64	**0.39 J**	**0.4 J**	<0.63
Vinyl chloride	2	7	10	<1.6	<1.3	<1.3	<1.4	<1.2	<1.4	<1.3	<1.2
Xylene (total)	410	1000 (a)	67	<0.83	<0.65	<0.68	<0.7	<0.64	<0.7	<0.65	<0.63
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	<0.83	<0.65	<0.68	<0.7	<0.64	**1.3**	**1.3**	<0.63
cis-1,2-Dichloroethene	79	1000 (a)	1	---	---	---	---	---	---	---	---

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
AOC-1 Hazardous Materials Storage Building Area
AOC-2 Former Parking Island Drum Storage Area # 1
AOC-3 Former Drum Storage Area # 2
AOC-4 Former Sludge Lagoon # 5
AOC-9 Former 15,000-Gallon Underground Storage Tank (NOTE: 1997/1998 results for borings in this area used to evaluate AOC-1 soil quality distribution)
RDCSCC Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC Impact to Ground water Soil Cleanup Criteria (g)(NJDEP, last revised 5/12/99)
(a) Health based criterion exceeds the 1000 mg/kg maximum for volatile organic contaminants.
(b) Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c) Insufficient information available to calculate impact to ground water criteria.
(d) Most stringent of cis or trans criteria.
(e) Criteria for sum of cis and trans.
(f) Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g) Criteria are subject to change based on site specific factors(e.g., aquifer classification,soil type, natural background, environmental impacts, etc.).
J Estimated value.
D Detected at secondary dilution.
--- Not analyzed or no standard applicable.
Bolded results were detected.
[ ] Results which exceed the most stringent of the NJDEP soil cleanup criteria are boxed.

Table 4. Summary of Historic Soil Analytical Results by AOC, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC								
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				B-247	B-248	B-248	B-249	B-249	B-250	B-250	B-251
Sample ID:				B247 10-12	B248 0-2	B248 8-10	249 0-2	249 8-10	250 2-4	B-250 8-10	B251 0-2
Date:				09/25/97	09/26/97	09/26/97	09/26/97	09/25/97	09/26/97	09/25/97	09/26/97
Starting Depth ft bls				10.00	0.00	8.00	2.00	8.00	2.00	8.00	0.00
Ending Depth ft bls				12.00	2.00	10.00	4.00	10.00	4.00	10.00	2.00
Ethylbenzene	1000 (a)	1000 (a)	100	<0.62	<0.78	<0.66	<0.67	<0.65	<0.69	<0.64	<0.67
Tetrachloroethene	4 (b)	6 (b)	1	<0.62	<0.78	**2**	**0.6 J**	<0.65	**0.86**	**7.4**	<0.67
Toluene	1000 (a)	1000 (a)	500	<0.62	<0.78	**1**	<0.67	<0.65	<0.69	<0.64	<0.67
Trichloroethylene	23	54 (b)	1	<0.62	<0.78	**0.37 J**	<0.67	<0.65	<0.69	<0.64	<0.67
Vinyl chloride	2	7	10	<1.2	<1.5	<1.3	<1.3	<1.3	<1.3	<1.2	<1.3
Xylene (total)	410	1000 (a)	67	<0.62	<0.78	<0.66	<0.67	<0.65	<0.69	<0.64	<0.67
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	<0.62	<0.78	**1.5**	<0.67	<0.65	<0.69	<0.64	<0.67
cis-1,2-Dichloroethene	79	1000 (a)	1	---	---	---	---	---	---	---	---

mg/kg	Milligrams per kilogram.
ft bls	Feet below land surface.
AOC-1	Hazardous Materials Storage Building Area
AOC-2	Former Parking Island Drum Storage Area # 1
AOC-3	Former Drum Storage Area # 2
AOC-4	Former Sludge Lagoon # 5
AOC-9	Former 15,000-Gallon Underground Storage Tank (NOTE: 1997/1998 results for borings in this area used to evaluate AOC-1 soil quality distribution)
RDCSCC	Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC	Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC	Impact to Ground water Soil Cleanup Criteria (g)(NJDEP, last revised 5/12/99)
(a)	Health based criterion exceeds the 1000 mg/kg maximum for volatile organic contaminants.
(b)	Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c)	Insufficient information available to calculate impact to ground water criteria.
(d)	Most stringent of cis or trans criteria.
(e)	Criteria for sum of cis and trans.
(f)	Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g)	Criteria are subject to change based on site specific factors(e.g., aquifer classification,soil type, natural background, environmental impacts, etc.).
J	Estimated value.
D	Detected at secondary dilution.
---	Not analyzed or no standard applicable.
Bolded results were detected.	
[ ]	Results which exceed the most stringent of the NJDEP soil cleanup criteria are boxed.

Table 4. Summary of Historic Soil Analytical Results by AOC, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC								
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				B-251	B-251	B-252	B-252	B-258	B-258	B-259	B-259
Sample ID:				B251 12-14	B251 22-24	B252 2-4	B252 10-12	B258 6-8	B258 20-22	B259 16-18	B259 22-24
Date:				09/26/97	09/26/97	09/26/97	09/26/97	01/20/98	01/20/98	01/21/98	01/21/98
Starting Depth ft bls				12.00	22.00	2.00	10.00	6.00	20.00	16.00	22.00
Ending Depth ft bls				14.00	24.00	4.00	12.00	8.00	22.00	18.00	24.00
Ethylbenzene	1000 (a)	1000 (a)	100	<0.59	<0.61	<0.72	<0.66	<0.62 J	<0.65 J	<0.7 J	<0.56 J
Tetrachloroethene	4 (b)	6 (b)	1	**0.67**	**1.4**	**3.3**	**2.8**	<0.62 J	**0.77 J**	**4.5 J**	**2.1 J**
Toluene	1000 (a)	1000 (a)	500	<0.59	<0.61	<0.72	<0.66	<0.62 J	<0.65 J	<0.7 J	<0.56 J
Trichloroethylene	23	54 (b)	1	**10**	**1.5**	**0.45 J**	<0.66	<0.62 J	<0.65 J	<0.7 J	**0.54 J**
Vinyl chloride	2	7	10	<1.1	<1.2	<1.4	<1.3	<1.2 J	<1.2 J	<1.3 J	<1.1 J
Xylene (total)	410	1000 (a)	67	<0.59	<0.61	<0.72	<0.66	<0.62 J	<0.65 J	<0.7 J	<0.56 J
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	<0.59	<0.61	**3.1**	**0.42 J**	---	---	---	---
cis-1,2-Dichloroethene	79	1000 (a)	1	---	---	---	---	<0.62 J	<0.65 J	<0.7 J	<0.56 J

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
AOC-1 Hazardous Materials Storage Building Area
AOC-2 Former Parking Island Drum Storage Area # 1
AOC-3 Former Drum Storage Area # 2
AOC-4 Former Sludge Lagoon # 5
AOC-9 Former 15,000-Gallon Underground Storage Tank (NOTE: 1997/1998 results for borings in this area used to evaluate AOC-1 soil quality distribution)
RDCSCC Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC Impact to Ground water Soil Cleanup Criteria (g)(NJDEP, last revised 5/12/99)
(a) Health based criterion exceeds the 1000 mg/kg maximum for volatile organic contaminants.
(b) Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c) Insufficient information available to calculate impact to ground water criteria.
(d) Most stringent of cis or trans criteria.
(e) Criteria for sum of cis and trans.
(f) Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g) Criteria are subject to change based on site specific factors(e.g., aquifer classification,soil type, natural background, environmental impacts, etc.).
J Estimated value.
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Table 4. Summary of Historic Soil Analytical Results by AOC, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC								
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				B-260	B-260	B-261	B-261	B-262	B-262	B-263	B-263
Sample ID:				B260 12-14	B260 32-34	B261 12-14	B261 16-18	B262 12-14	B262 16-18	B263 22-24	B263 34-36
Date:				01/22/98	01/22/98	01/29/98	01/29/98	01/30/98	01/30/98	01/21/98	01/21/98
Starting Depth ft bls				12.00	32.00	12.00	16.00	12.00	16.00	22.00	34.00
Ending Depth ft bls				14.00	34.00	14.00	18.00	14.00	18.00	24.00	36.00
Ethylbenzene	1000 (a)	1000 (a)	100	<0.63 J	<0.63 J	<0.69	<0.81	<0.75	<0.72	<0.62 J	<0.62 J
Tetrachloroethene	4 (b)	6 (b)	1	**0.64 J**	<0.63 J	<0.69	<0.81	<0.75	**0.89**	**3.3 J**	**1.8 J**
Toluene	1000 (a)	1000 (a)	500	<0.63 J	<0.63 J	<0.69	<0.81	<0.75	<0.72	<0.62 J	<0.62 J
Trichloroethylene	23	54 (b)	1	**0.74 J**	<0.63 J	<0.69	<0.81	<0.75	<0.72	<0.62 J	<0.62 J
Vinyl chloride	2	7	10	<1.2 J	<1.2 J	<1.3	<1.6	<1.4	<1.4	<1.2 J	<1.2 J
Xylene (total)	410	1000 (a)	67	<0.63 J	<0.63 J	<0.69	<0.81	<0.75	<0.72	<0.62 J	<0.62 J
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.63 J	<0.63 J	<0.69	<0.81	<0.75	<0.72	<0.62 J	<0.62 J

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
AOC-1 Hazardous Materials Storage Building Area
AOC-2 Former Parking Island Drum Storage Area # 1
AOC-3 Former Drum Storage Area # 2
AOC-4 Former Sludge Lagoon # 5
AOC-9 Former 15,000-Gallon Underground Storage Tank (NOTE: 1997/1998 results for borings in this area used to evaluate AOC-1 soil quality distribution)
RDCSCC Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC Impact to Ground water Soil Cleanup Criteria (g)(NJDEP, last revised 5/12/99)
(a) Health based criterion exceeds the 1000 mg/kg maximum for volatile organic contaminants.
(b) Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c) Insufficient information available to calculate impact to ground water criteria.
(d) Most stringent of cis or trans criteria.
(e) Criteria for sum of cis and trans.
(f) Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g) Criteria are subject to change based on site specific factors(e.g., aquifer classification,soil type, natural background, environmental impacts, etc.).
J Estimated value.
D Detected at secondary dilution.
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Table 4. Summary of Historic Soil Analytical Results by AOC, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC								
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				B-264	B-264	B-264	B-265	B-265	B-266	B-266	B-266
Sample ID:				B264 12-14	B264 18-20	B264 36-38	B265 2-4	B265 14-16	B266 2-4	B266 8-10	B266 16-18
Date:				01/22/98	01/22/98	01/22/98	01/30/98	01/30/98	01/30/98	01/30/98	01/30/98
Starting Depth ft bls				12.00	18.00	36.00	2.00	14.00	2.00	8.00	16.00
Ending Depth ft bls				14.00	20.00	38.00	4.00	16.00	4.00	10.00	18.00
Ethylbenzene	1000 (a)	1000 (a)	100	<0.66 J	<0.59 J	<0.61 J	<0.75	<0.81	<0.72	<0.8	<0.7
Tetrachloroethene	4 (b)	6 (b)	1	**14 J**	**4.1 J**	**1.9 J**	<0.75	1	<0.72	<0.8	**3**
Toluene	1000 (a)	1000 (a)	500	<0.66 J	<0.59 J	<0.61 J	<0.75	<0.81	<0.72	<0.8	<0.7
Trichloroethylene	23	54 (b)	1	<0.66 J	**0.48 J**	<0.61 J	<0.75	<0.81	<0.72	<0.8	**0.43 J**
Vinyl chloride	2	7	10	<1.3 J	<1.1 J	<1.2 J	<1.4	<1.6	<1.4	<1.5	<1.4
Xylene (total)	410	1000 (a)	67	<0.66 J	<0.59 J	<0.61 J	<0.75	<0.81	<0.72	<0.8	<0.7
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.66 J	<0.59 J	<0.61 J	<0.75	<0.81	<0.72	<0.8	<0.7

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
AOC-1 Hazardous Materials Storage Building Area
AOC-2 Former Parking Island Drum Storage Area # 1
AOC-3 Former Drum Storage Area # 2
AOC-4 Former Sludge Lagoon # 5
AOC-9 Former 15,000-Gallon Underground Storage Tank (NOTE: 1997/1998 results for borings in this area used to evaluate AOC-1 soil quality distribution)
RDCSCC Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC Impact to Ground water Soil Cleanup Criteria (g)(NJDEP, last revised 5/12/99)
(a) Health based criterion exceeds the 1000 mg/kg maximum for volatile organic contaminants.
(b) Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c) Insufficient information available to calculate impact to ground water criteria.
(d) Most stringent of cis or trans criteria.
(e) Criteria for sum of cis and trans.
(f) Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g) Criteria are subject to change based on site specific factors(e.g., aquifer classification,soil type, natural background, environmental impacts, etc.).
J Estimated value.
D Detected at secondary dilution.
--- Not analyzed or no standard applicable.
Bolded results were detected.
[ ] Results which exceed the most stringent of the NJDEP soil cleanup criteria are boxed.

Table 4. Summary of Historic Soil Analytical Results by AOC, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC								
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				B-267	B-267	B-267	B-268	B-268	B-269	B-269	B-269
Sample ID:				B267 2-4	B267 16-18	B267 30-32	B268 8-10	B268 18-20	B269 2-4	B269 10-12	B269 20-22
Date:				01/26/98	01/26/98	01/26/98	01/30/98	01/30/98	01/20/98	01/20/98	01/20/98
Starting Depth ft bls				2.00	16.00	30.00	8.00	18.00	2.00	10.00	20.00
Ending Depth ft bls				4.00	18.00	32.00	10.00	20.00	4.00	12.00	22.00
Ethylbenzene	1000 (a)	1000 (a)	100	<0.78	<0.65	<0.69 J	<0.69	<0.74	<0.69 J	<0.72 J	<0.66 J
Tetrachloroethene	4 (b)	6 (b)	1	**24000 DJ**	**5600 DJ**	**1.5 J**	<0.69	**1.6**	<0.69 J	<0.72 J	<0.66 J
Toluene	1000 (a)	1000 (a)	500	<0.78	<0.65	<0.69 J	<0.69	<0.74	<0.69 J	<0.72 J	<0.66 J
Trichloroethylene	23	54 (b)	1	**320 E**	**4.5**	<0.69 J	<0.69	<0.74	<0.69 J	<0.72 J	<0.66 J
Vinyl chloride	2	7	10	**3.1**	<1.2	<1.3 J	<1.3	<1.4	<1.3 J	<1.4 J	<1.3 J
Xylene (total)	410	1000 (a)	67	<0.78	<0.65	<0.69 J	<0.69	<0.74	<0.69 J	<0.72 J	<0.66 J
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---
cis-1,2-Dichloroethene	79	1000 (a)	1	**380 E**	**1.7**	<0.69 J	<0.69	<0.74	<0.69 J	<0.72 J	<0.66 J

mg/kg	Milligrams per kilogram.
ft bls	Feet below land surface.
AOC-1	Hazardous Materials Storage Building Area
AOC-2	Former Parking Island Drum Storage Area # 1
AOC-3	Former Drum Storage Area # 2
AOC-4	Former Sludge Lagoon # 5
AOC-9	Former 15,000-Gallon Underground Storage Tank (NOTE: 1997/1998 results for borings in this area used to evaluate AOC-1 soil quality distribution)
RDCSCC	Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC	Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC	Impact to Ground water Soil Cleanup Criteria (g)(NJDEP, last revised 5/12/99)
(a)	Health based criterion exceeds the 1000 mg/kg maximum for volatile organic contaminants.
(b)	Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c)	Insufficient information available to calculate impact to ground water criteria.
(d)	Most stringent of cis or trans criteria.
(e)	Criteria for sum of cis and trans.
(f)	Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g)	Criteria are subject to change based on site specific factors(e.g., aquifer classification,soil type, natural background, environmental impacts, etc.).
J	Estimated value.
D	Detected at secondary dilution.
---	Not analyzed or no standard applicable.

Bolded results were detected.

[ ] Results which exceed the most stringent of the NJDEP soil cleanup criteria are boxed.

Table 4. Summary of Historic Soil Analytical Results by AOC, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC								
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				B-270	B-270	B-271	B-271	B-271	B-271	B-271	B-272
Sample ID:				B210 2-4	B270 16-18	B271 2-4	B271 8-10	B271 16-18	B271 22-24	B271 32-34	B272 14-16
Date:				02/03/98	02/03/98	02/02/98	02/02/98	02/02/98	02/02/98	02/02/98	02/02/98
Starting Depth ft bls				2.00	16.00	2.00	8.00	16.00	22.00	32.00	14.00
Ending Depth ft bls				4.00	18.00	4.00	10.00	18.00	24.00	34.00	16.00
Ethylbenzene	1000 (a)	1000 (a)	100	<0.84	<0.66	<0.8 J	<0.73 J	<0.73 J	<0.84 J	<0.82 J	<0.67 J
Tetrachloroethene	4 (b)	6 (b)	1	<0.84	<0.66	**1.7 J**	<0.73 J	<0.73 J	<0.84 J	<0.82 J	<0.67 J
Toluene	1000 (a)	1000 (a)	500	<0.84	<0.66	<0.8 J	<0.73 J	<0.73 J	<0.84 J	<0.82 J	<0.67 J
Trichloroethylene	23	54 (b)	1	<0.84	<0.66	<0.8 J	<0.73 J	**1 J**	<0.84 J	<0.82 J	<0.67 J
Vinyl chloride	2	7	10	<1.6	<1.3	<1.5 J	**2.6 J**	**1.2 J**	**2.7 J**	**0.7 J**	<1.3 J
Xylene (total)	410	1000 (a)	67	<0.84	<0.66	<0.8 J	<0.73 J	<0.73 J	<0.84 J	<0.82 J	<0.67 J
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.84	<0.66	<0.8 J	**2 J**	**1.2 J**	**5.4 J**	**1.6 J**	<0.67 J

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
AOC-1 Hazardous Materials Storage Building Area
AOC-2 Former Parking Island Drum Storage Area # 1
AOC-3 Former Drum Storage Area # 2
AOC-4 Former Sludge Lagoon # 5
AOC-9 Former 15,000-Gallon Underground Storage Tank (NOTE: 1997/1998 results for borings in this area used to evaluate AOC-1 soil quality distribution)
RDCSCC Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC Impact to Ground water Soil Cleanup Criteria (g)(NJDEP, last revised 5/12/99)
(a) Health based criterion exceeds the 1000 mg/kg maximum for volatile organic contaminants.
(b) Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c) Insufficient information available to calculate impact to ground water criteria.
(d) Most stringent of cis or trans criteria.
(e) Criteria for sum of cis and trans.
(f) Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g) Criteria are subject to change based on site specific factors(e.g., aquifer classification,soil type, natural background, environmental impacts, etc.).
J Estimated value.
D Detected at secondary dilution.
--- Not analyzed or no standard applicable.
Bolded results were detected.
[ ] Results which exceed the most stringent of the NJDEP soil cleanup criteria are boxed.

Table 4. Summary of Historic Soil Analytical Results by AOC, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC								
Area of Concern:				AOC-3	AOC-3	AOC-3	A0C-4	A0C-4	AOC-9	AOC-9	AOC-9
Site ID:				B-272	B-273	B-273	B-219	B-219	B-231	B-231	B-233
Sample ID:				B272 18-20	B273 8-10	B273 12-14	B219 6-8	B219 16-18	B231 5-7	B231 17-19	B233 2-4
Date:				02/02/98	02/02/98	02/02/98	09/23/97	09/23/97	09/25/97	09/25/97	09/25/97
Starting Depth ft bls				18.00	8.00	12.00	6.00	16.00	5.00	17.00	2.00
Ending Depth ft bls				20.00	10.00	14.00	8.00	18.00	7.00	19.00	4.00
Ethylbenzene	1000 (a)	1000 (a)	100	<0.59 J	<0.63 J	<0.72 J	<0.73	<0.7	<0.58	<0.65	<0.64
Tetrachloroethene	4 (b)	6 (b)	1	**1.1 J**	<0.63 J	<0.72 J	<0.73	<0.7	<0.58	<0.65	<0.64
Toluene	1000 (a)	1000 (a)	500	<0.59 J	<0.63 J	<0.72 J	<0.73	<0.7	<0.58	<0.65	<0.64
Trichloroethylene	23	54 (b)	1	**1 J**	<0.63 J	<0.72 J	<0.73	**15**	<0.58	<0.65	<0.64
Vinyl chloride	2	7	10	<1.1 J	<1.2 J	<1.4 J	<1.4	<1.3	<1.1	<1.2	<1.2
Xylene (total)	410	1000 (a)	67	<0.59 J	<0.63 J	<0.72 J	<0.73	<0.7	<0.58	<0.65	<0.64
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	<0.73	**2.5**	<0.58	<0.65	<0.64
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.59 J	<0.63 J	<0.72 J	---	---	---	---	---

mg/kg Milligrams per kilogram.
ft bls Feet below land surface.
AOC-1 Hazardous Materials Storage Building Area
AOC-2 Former Parking Island Drum Storage Area # 1
AOC-3 Former Drum Storage Area # 2
AOC-4 Former Sludge Lagoon # 5
AOC-9 Former 15,000-Gallon Underground Storage Tank (NOTE: 1997/1998 results for borings in this area used to evaluate AOC-1 soil quality distribution)
RDCSCC Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC Impact to Ground water Soil Cleanup Criteria (g)(NJDEP, last revised 5/12/99)
(a) Health based criterion exceeds the 1000 mg/kg maximum for volatile organic contaminants.
(b) Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c) Insufficient information available to calculate impact to ground water criteria.
(d) Most stringent of cis or trans criteria.
(e) Criteria for sum of cis and trans.
(f) Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g) Criteria are subject to change based on site specific factors(e.g., aquifer classification,soil type, natural background, environmental impacts, etc.).
J Estimated value.
D Detected at secondary dilution.
--- Not analyzed or no standard applicable.
Bolded results were detected.
[ ] Results which exceed the most stringent of the NJDEP soil cleanup criteria are boxed.

Table 4. Summary of Historic Soil Analytical Results by AOC, Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey.

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC					
Area of Concern:				AOC-9	AOC-9	AOC-9	AOC-9	AOC-9
Site ID:				B-233	B-236	B-236	B-237	B-237
Sample ID:				B233 10-12	B236 0-2	B236 9-11	B237 2-4	B237 8-10
Date:				09/25/97	09/25/97	09/25/97	09/25/97	09/25/97
Starting Depth ft bls				10.00	0.00	9.00	2.00	8.00
Ending Depth ft bls				12.00	2.00	11.00	4.00	10.00
Ethylbenzene	1000 (a)	1000 (a)	100	<0.58	<0.57	<0.66	<0.6	<0.6
Tetrachloroethene	4 (b)	6 (b)	1	**1.3**	<0.57	<0.66	<0.6	<0.6
Toluene	1000 (a)	1000 (a)	500	<0.58	<0.57	<0.66	<0.6	<0.6
Trichloroethylene	23	54 (b)	1	<0.58	<0.57	<0.66	<0.6	<0.6
Vinyl chloride	2	7	10	<1.1	<1.1	<1.3	<1.2	<1.2
Xylene (total)	410	1000 (a)	67	<0.58	<0.57	<0.66	<0.6	<0.6
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	<0.58	<0.57	<0.66	<0.6	<0.6
cis-1,2-Dichloroethene	79	1000 (a)	1	---	---	---	---	---

mg/kg	Milligrams per kilogram.
ft bls	Feet below land surface.
AOC-1	Hazardous Materials Storage Building Area
AOC-2	Former Parking Island Drum Storage Area # 1
AOC-3	Former Drum Storage Area # 2
AOC-4	Former Sludge Lagoon # 5
AOC-9	Former 15,000-Gallon Underground Storage Tank (NOTE: 1997/1998 results for borings in this area used to evaluate AOC-1 soil quality distribution)
RDCSCC	Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC	Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC	Impact to Ground water Soil Cleanup Criteria (g)(NJDEP, last revised 5/12/99)
(a)	Health based criterion exceeds the 1000 mg/kg maximum for volatile organic contaminants.
(b)	Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c)	Insufficient information available to calculate impact to ground water criteria.
(d)	Most stringent of cis or trans criteria.
(e)	Criteria for sum of cis and trans.
(f)	Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g)	Criteria are subject to change based on site specific factors(e.g., aquifer classification,soil type, natural background, environmental impacts, etc.).
J	Estimated value.
D	Detected at secondary dilution.
---	Not analyzed or no standard applicable.

Bolded results were detected.

Results which exceed the most stringent of the NJDEP soil cleanup criteria are boxed.

Table 5. PDI Sampling Rationale and Designation Summary. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

AOC Subarea Designation	Approximate Area (sf)	Approximate Perimeter (lf)	Targeted Sampling Depth (ft)	No. of Soil Borings	No. of Sidewall Samples	No. of Floor Samples	Planned PDI Sampling Rationale	Sample Designations
1A	1250	150	0-2, 20-22	10	7	6	Equivalency/Variance for Post-Ex Sampling Confirm Limits/Volume for Excavation	1A-01 through 1A-08
1B	1250	150	0-2, 10-12	6	4	6	Equivalency/Variance for Post-Ex Sampling Confirm Limits/Volume for Excavation	1B-01 through 1B-06
1C	--	--	0-10	4	--	--	Confirm SubArea is Secondary Source Area	1C-01 through 1C-04
2A	1350	140	0-2, 20-22	7	4	6	Equivalency/Variance for Post-Ex Sampling Confirm Limits/Volume for Excavation	2A-01 through 2A-06
2B	1200	150	0-2, 10-12	6	4	0 (will be excavating to 15 ft)	Equivalency/Variance for Post-Ex Sampling Confirm Limits/Volume for Excavation	2B-01 through 2B-05
2C	--	--	0-10	5	--	--	Confirm SubArea is Secondary Source Area	2C-01 through 2C-05
3A	4500	275	0-2, 20-22	13	6	10	Equivalency/Variance for Post-Ex Sampling Confirm Limits/Volume for Excavation	3A-01 through 3A-13
3B	8000	375	0-2, 20-22 continuous 20-40	22	8	15	Equivalency/Variance for Post-Ex Sampling Confirm Depth of Primary Source Area Excavation	3B-01 through 3B-16
3C	9700	425	0-20	9	3	0 (will be excavating to 25 ft)	Confirm If SubArea is Secondary Source Area Respond to NJDEP Comment on B-230, MW-406 Source	3C-01 through 3C-11 (3C04, 3C05 and 3C06 not installed)
3D	4500	275	0-10	8	0	8	Respond to NJDEP Comment on B-226/227 Confirm SubArea is Secondary Source Area	3D-01 through 3D-08
4	1250	140	16-20	6	3	1	Respond to NJDEP Comment on B-219 Confirm SubArea is Secondary Source Area	4X-01 through 4X-05

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1
Site ID:				1A01	1A02	1A03	1A03	1A03	1A04	1A04	1A05A	1A05A	1A05B
Sample ID:				1A01(20)	1A02 20	1A03(1)	REP-3	1A03(20)	1A04(1.2)	1A04(20)	1A05A(1.3)	1A05A(20)	1A05B (1.3)
Date:				09/18/02	09/16/02	09/18/02	09/18/02	09/18/02	09/19/02	09/19/02	09/18/02	09/18/02	09/27/02
Starting Depth ft bls				20.00	20.00	1.00	1.10	20.00	1.20	20.00	1.30	20.00	1.30
Ending Depth ft bls				20.50	20.50	1.50	1.60	20.50	1.70	20.50	1.80	20.50	1.80
Acetone	1000(a)	1000(a)	100	<1.32	<1.34	<1.37	<1.46	<1.23	<1.54	<1.27	<1.87	<1.23	<1.25
Benzene	3	13	1	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
Bromodichloromethane	11	46	1	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
Bromoform	86	370	1	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
Bromomethane	79	1000 (a)	1	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
2-Butanone	1000 (a)	1000 (a)	50	<1.32	<1.34	<1.37	<1.46	<1.23	<1.54	<1.27	<1.87	<1.23	<1.25
Carbon disulfide	---	---	---	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
Carbon tetrachloride	2 (b)	4 (b)	1	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
Chlorobenzene	37	680	1	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
Chlorodibromomethane	110	1000 (a)	1	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
Chloroethane	---	---	---	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
Chloroform	19 (b)	28 (b)	1	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
Chloromethane	520	1000 (a)	10	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
1,1-Dichloroethane	570	1000 (a)	10	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
1,2-Dichloroethane	6	24	1	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
1,1-Dichloroethene	8	150	10	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
Ethylbenzene	1000 (a)	1000 (a)	100	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
2-Hexanone	---	---	---	<1.32	<1.34	<1.37	<1.46	<1.23	<1.54	<1.27	<1.87	<1.23	<1.25
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.32	<1.34	<1.37	<1.46	<1.23	<1.54	<1.27	<1.87	<1.23	<1.25
Methylene chloride	49	210	1	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
Styrene	23	97	100	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
Tetrachloroethene	4 (b)	6 (b)	1	**0.72**	**1.46**	<0.687	<0.731	**0.26 J**	**0.681 J**	<0.633	**3.27**	**1.84**	**1.45**
Toluene	1000 (a)	1000 (a)	500	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
1,1,1-Trichloroethane	210	1000 (a)	50	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
1,1,2-Trichloroethane	22	420	1	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
Trichloroethylene	23	54 (b)	1	<0.659	<0.668	<0.687	<0.731	**0.128 J**	<0.771	<0.633	<0.935	<0.614	<0.624
Vinyl chloride	2	7	10	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
Xylene (total)	410	1000 (a)	67	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.659	**0.252 J**	<0.687	<0.731	**0.643**	<0.771	<0.633	<0.935	<0.614	<0.624
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.659	<0.668	<0.687	<0.731	<0.616	<0.771	<0.633	<0.935	<0.614	<0.624
Dibromomethane	---	---	---	---	---	---	---	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1
Site ID:				1A06	1A06	1A07	1A08	1A08	1B01	1B02	1B03	1B03	1B04
Sample ID:				1A06(1.3)	1A06(20)	1A07 (1.0)	1A08 (1.0)	DUP 10	1B01 10	1B02 10	1B03(1)	1B03(10)	1B04(1)
Date:				09/18/02	09/18/02	09/27/02	09/27/02	09/27/02	09/16/02	09/16/02	09/18/02	09/18/02	09/18/02
Starting Depth ft bls				1.30	20.00	1.00	1.00	1.10	10.00	10.00	1.00	10.00	1.00
Ending Depth ft bls				1.80	20.50	1.50	1.50	1.60	10.50	10.50	1.50	10.50	1.50
Acetone	1000(a)	1000(a)	100	<1.47	<1.26	<1.34	<1.59	<1.33	<1.25	<1.24	<1.35	<1.28	<1.23
Benzene	3	13	1	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
Bromodichloromethane	11	46	1	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
Bromoform	86	370	1	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
Bromomethane	79	1000 (a)	1	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
2-Butanone	1000 (a)	1000 (a)	50	<1.47	<1.26	<1.34	<1.59	<1.33	<1.25	<1.24	<1.35	<1.28	<1.23
Carbon disulfide	---	---	---	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
Carbon tetrachloride	2 (b)	4 (b)	1	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
Chlorobenzene	37	680	1	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
Chlorodibromomethane	110	1000 (a)	1	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
Chloroethane	---	---	---	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
Chloroform	19 (b)	28 (b)	1	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
Chloromethane	520	1000 (a)	10	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
1,1-Dichloroethane	570	1000 (a)	10	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
1,2-Dichloroethane	6	24	1	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
1,1-Dichloroethene	8	150	10	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
Ethylbenzene	1000 (a)	1000 (a)	100	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
2-Hexanone	---	---	---	<1.47	<1.26	<1.34	<1.59	<1.33	<1.25	<1.24	<1.35	<1.28	<1.23
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.47	<1.26	<1.34	<1.59	<1.33	<1.25	<1.24	<1.35	<1.28	<1.23
Methylene chloride	49	210	1	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
Styrene	23	97	100	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
Tetrachloroethene	4 (b)	6 (b)	1	**0.953**	**0.779**	**0.321 J**	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
Toluene	1000 (a)	1000 (a)	500	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
1,1,1-Trichloroethane	210	1000 (a)	50	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
1,1,2-Trichloroethane	22	420	1	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
Trichloroethylene	23	54 (b)	1	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
Vinyl chloride	2	7	10	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
Xylene (total)	410	1000 (a)	67	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.737	<0.631	<0.671	<0.795	<0.667	<0.627	<0.619	<0.676	<0.638	<0.616
Dibromomethane	---	---	---	---	---	---	---	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1
Site ID:				1B04	1B05	1B05	1B06	1B06	1C01	1C01	1C01	1C02	1C02
Sample ID:				1B04(10)	1B05(1)	1B05(10)	1B06(2)	1B06(10)	1C01(1.75)	1C01(7.5)	1C01(9)	1C02(1.75)	1C02(9)
Date:				09/18/02	09/18/02	09/18/02	09/18/02	09/18/02	09/17/02	09/17/02	09/17/02	09/16/02	09/16/02
Starting Depth ft bls				10.00	1.00	10.00	2.00	10.00	1.75	7.50	9.00	1.75	9.00
Ending Depth ft bls				10.50	1.50	10.50	2.50	10.50	2.25	8.00	9.50	2.25	9.50
Acetone	1000(a)	1000(a)	100	<1.23	<1.32	<1.3	<1.33	<1.41	<1.3	<1.42	<1.53	<1.62	<1.47
Benzene	3	13	1	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
Bromodichloromethane	11	46	1	<0.613	<0.661	<0.65	<0.664	<0.703	---	---	---	---	---
Bromoform	86	370	1	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
Bromomethane	79	1000 (a)	1	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
2-Butanone	1000 (a)	1000 (a)	50	<1.23	<1.32	<1.3	<1.33	<1.41	<1.3	<1.42	<1.53	<1.62	<1.47
Carbon disulfide	---	---	---	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
Carbon tetrachloride	2 (b)	4 (b)	1	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
Chlorobenzene	37	680	1	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
Chlorodibromomethane	110	1000 (a)	1	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
Chloroethane	---	---	---	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
Chloroform	19 (b)	28 (b)	1	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
Chloromethane	520	1000 (a)	10	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
1,1-Dichloroethane	570	1000 (a)	10	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
1,2-Dichloroethane	6	24	1	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
1,1-Dichloroethene	8	150	10	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
1,1-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
Ethylbenzene	1000 (a)	1000 (a)	100	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
2-Hexanone	---	---	---	<1.23	<1.32	<1.3	<1.33	<1.41	<1.3	<1.42	<1.53	<1.62	<1.47
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.23	<1.32	<1.3	<1.33	<1.41	<1.3	<1.42	<1.53	<1.62	<1.47
Methylene chloride	49	210	1	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
Styrene	23	97	100	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
Tetrachloroethene	4 (b)	6 (b)	1	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
Toluene	1000 (a)	1000 (a)	500	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
1,1,1-Trichloroethane	210	1000 (a)	50	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
1,1,2-Trichloroethane	22	420	1	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
Trichloroethylene	23	54 (b)	1	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
Vinyl chloride	2	7	10	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
Xylene (total)	410	1000 (a)	67	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.613	<0.661	<0.65	<0.664	<0.703	<0.651	<0.709	<0.767	<0.811	<0.733
Dibromomethane	---	---	---	---	---	---	---	---	<0.651	<0.709	<0.767	<0.811	<0.733
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-1	AOC-2	AOC-2	AOC-2	AOC-2
Site ID:				1C03	1C03	1C03	1C04	1C04	1C04	2A01	2A02	2A03	2A03
Sample ID:				1C03(1.75)	1C03(5.1)	1CO3(9)	1C04(1.75)	1C04(5.9)	1C04(9)	2A01 20	2A02 20	2A03(1)	2A03(20)
Date:				09/17/02	09/17/02	09/17/02	09/17/02	09/17/02	09/17/02	09/16/02	09/16/02	09/24/02	09/24/02
Starting Depth ft bls				1.75	5.10	9.00	1.75	5.90	9.00	20.00	20.00	1.00	20.00.
Ending Depth ft bls				2.25	5.60	9.50	2.25	6.40	9.50	20.50	20.50	1.50	20.50
Acetone	1000(a)	1000(a)	100	<1.29	<1.24	<1.56	<1.54	<1.17	<1.53	<1.41	<1.33	<1.51	<1.4
Benzene	3	13	1	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
Bromodichloromethane	11	46	1	---	---	---	---	---	---	<0.703	<0.666	<0.754	<0.7
Bromoform	86	370	1	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
Bromomethane	79	1000 (a)	1	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
2-Butanone	1000 (a)	1000 (a)	50	<1.29	<1.24	<1.56	<1.54	<1.17	<1.53	<1.41	<1.33	<1.51	<1.4
Carbon disulfide	---	---	---	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
Carbon tetrachloride	2 (b)	4 (b)	1	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
Chlorobenzene	37	680	1	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
Chlorodibromomethane	110	1000 (a)	1	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
Chloroethane	---	---	---	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
Chloroform	19 (b)	28 (b)	1	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
Chloromethane	520	1000 (a)	10	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
1,1-Dichloroethane	570	1000 (a)	10	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
1,2-Dichloroethane	6	24	1	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
1,1-Dichloroethene	8	150	10	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
Ethylbenzene	1000 (a)	1000 (a)	100	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
2-Hexanone	---	---	---	<1.29	<1.24	<1.56	<1.54	<1.17	<1.53	<1.41	<1.33	<1.51	<1.4
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.29	<1.24	<1.56	<1.54	<1.17	<1.53	<1.41	<1.33	<1.51	<1.4
Methylene chloride	49	210	1	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
Styrene	23	97	100	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
Tetrachloroethene	4 (b)	6 (b)	1	**1.62**	<0.619	<0.78	<0.769	<0.587	<0.767	**2.65**	**1.49**	**0.197 J**	**0.702**
Toluene	1000 (a)	1000 (a)	500	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
1,1,1-Trichloroethane	210	1000 (a)	50	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
1,1,2-Trichloroethane	22	420	1	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
Trichloroethylene	23	54 (b)	1	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
Vinyl chloride	2	7	10	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
Xylene (total)	410	1000 (a)	67	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	<0.703	<0.666	<0.754	<0.7
Dibromomethane	---	---	---	<0.643	<0.619	<0.78	<0.769	<0.587	<0.767	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2
Site ID:				2A04	2A04	2A05	2A05	2A06	2A06	2A06A	2B01	2B01	2B02
Sample ID:				2A04(1)	2A04(20)	2A05(1)	2A05(20)	2A06(1)	2A06(20)	2A06A (20)	2B01 10	REP-1	SB02(1)
Date:				09/24/02	09/24/02	09/24/02	09/24/02	09/24/02	09/24/02	09/27/02	09/16/02	09/16/02	09/23/02
Starting Depth ft bls				1.00	20.00	1.00	20.00	1.00	20.00	20.00	10.00	10.10	1.00
Ending Depth ft bls				1.50	20.50	1.50	20.50	1.50	20.50	20.50	10.50	10.60	1.50
Acetone	1000(a)	1000(a)	100	<1.38	<1.37	<1.21	<1.38	<1.62	<1.27	<1.31	<1.18	<1.39	<1.43
Benzene	3	13	1	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
Bromodichloromethane	11	46	1	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
Bromoform	86	370	1	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
Bromomethane	79	1000 (a)	1	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
2-Butanone	1000 (a)	1000 (a)	50	<1.38	<1.37	<1.21	<1.38	<1.62	<1.27	<1.31	<1.18	<1.39	<1.43
Carbon disulfide	---	---	---	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
Carbon tetrachloride	2 (b)	4 (b)	1	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
Chlorobenzene	37	680	1	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
Chlorodibromomethane	110	1000 (a)	1	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
Chloroethane	---	---	---	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
Chloroform	19 (b)	28 (b)	1	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
Chloromethane	520	1000 (a)	10	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
1,1-Dichloroethane	570	1000 (a)	10	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
1,2-Dichloroethane	6	24	1	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
1,1-Dichloroethene	8	150	10	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
Ethylbenzene	1000 (a)	1000 (a)	100	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
2-Hexanone	---	---	---	<1.38	<1.37	<1.21	<1.38	<1.62	<1.27	<1.31	<1.18	<1.39	<1.43
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.38	<1.37	<1.21	<1.38	<1.62	<1.27	<1.31	<1.18	<1.39	<1.43
Methylene chloride	49	210	1	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
Styrene	23	97	100	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
Tetrachloroethene	4 (b)	6 (b)	1	<0.69	**0.16 J**	<0.607	**0.579 J**	**0.209 J**	**2.87**	**1.07**	**0.775**	**0.604 J**	<0.713
Toluene	1000 (a)	1000 (a)	500	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
1,1,1-Trichloroethane	210	1000 (a)	50	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
1,1,2-Trichloroethane	22	420	1	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
Trichloroethylene	23	54 (b)	1	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
Vinyl chloride	2	7	10	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
Xylene (total)	410	1000 (a)	67	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.69	<0.686	<0.607	<0.691	<0.811	<0.634	<0.656	<0.592	<0.694	<0.713
Dibromomethane	---	---	---	---	---	---	---	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2
Site ID:				2B02	2B02	2B03	2B03	2B03A	2B04	2B04	2B05	2B05	2C01
Sample ID:				SB02(10)	DUP05	2B03(1)	2B03(10)	2B03A (10)	2B04(1)	2B04(10)	2B05(1)	2B05(10)	2C01(1.75)
Date:				09/23/02	09/23/02	09/24/02	09/24/02	09/27/02	09/24/02	09/24/02	09/24/02	09/24/02	09/18/02
Starting Depth ft bls				10.00	10.10	1.00	10.00	10.00	1.00	10.00	1.00	10.00	1.75
Ending Depth ft bls				10.50	10.60	1.50	10.50	10.50	1.50	10.50	1.50	10.50	2.25
Acetone	1000(a)	1000(a)	100	<1.24	<1.39	<1.32	<1.29	<1.43	<1.5	<1.51	<1.4	<1.48	<1.33
Benzene	3	13	1	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
Bromodichloromethane	11	46	1	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
Bromoform	86	370	1	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
Bromomethane	79	1000 (a)	1	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
2-Butanone	1000 (a)	1000 (a)	50	<1.24	<1.39	<1.32	<1.29	<1.43	<1.5	<1.51	<1.4	<1.48	<1.33
Carbon disulfide	---	---	---	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
Carbon tetrachloride	2 (b)	4 (b)	1	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
Chlorobenzene	37	680	1	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
Chlorodibromomethane	110	1000 (a)	1	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
Chloroethane	---	---	---	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
Chloroform	19 (b)	28 (b)	1	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
Chloromethane	520	1000 (a)	10	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
1,1-Dichloroethane	570	1000 (a)	10	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
1,2-Dichloroethane	6	24	1	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
1,1-Dichloroethene	8	150	10	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
Ethylbenzene	1000 (a)	1000 (a)	100	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
2-Hexanone	---	---	---	<1.24	<1.39	<1.32	<1.29	<1.43	<1.5	<1.51	<1.4	<1.48	<1.33
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.24	<1.39	<1.32	<1.29	<1.43	<1.5	<1.51	<1.4	<1.48	<1.33
Methylene chloride	49	210	1	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
Styrene	23	97	100	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
Tetrachloroethene	4 (b)	6 (b)	1	**0.199 J**	<0.695	<0.662	**0.475 J**	<0.717	<0.75	**2.74**	<0.702	**0.345 J**	**0.256 J**
Toluene	1000 (a)	1000 (a)	500	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
1,1,1-Trichloroethane	210	1000 (a)	50	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
1,1,2-Trichloroethane	22	420	1	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
Trichloroethylene	23	54 (b)	1	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
Vinyl chloride	2	7	10	<0.62	<0.695	**0.269 J**	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
Xylene (total)	410	1000 (a)	67	<0.62	<0.695	<0.662	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.62	<0.695	**3.82**	<0.645	<0.717	<0.75	**0.208 J**	<0.702	<0.738	<0.665
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.62	<0.695	**0.239 J**	<0.645	<0.717	<0.75	<0.753	<0.702	<0.738	<0.665
Dibromomethane	---	---	---	---	---	---	---	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2	AOC-2
Site ID:				2C01	2C02	2C02	2C02	2C03	2C03	2C04	2C04	2C05	2C05
Sample ID:				2C01(10)	2C02(1.75)	2C02(10)	2C02(12)	2C03(1.75)	2C03(10.5)	2C04(1.75)	2C04(10)	2C05 (1.75)	2C05 (12)
Date:				09/18/02	09/18/02	09/18/02	09/18/02	09/18/02	09/18/02	09/18/02	09/18/02	09/27/02	09/27/02
Starting Depth ft bls				10.00	1.75	10.00	12.00	1.75	10.50	1.75	10.00	1.75	12.00
Ending Depth ft bls				10.50	2.25	10.50	12.50	2.25	11.00	2.25	10.50	2.25	12.50
Acetone	1000(a)	1000(a)	100	<1.43	<1.55	<1.39	<1.4	<1.4	<1.4	<1.5	<1.21	<1.75	<1.33
Benzene	3	13	1	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
Bromodichloromethane	11	46	1	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
Bromoform	86	370	1	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
Bromomethane	79	1000 (a)	1	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
2-Butanone	1000 (a)	1000 (a)	50	<1.43	<1.55	<1.39	<1.4	<1.4	<1.4	<1.5	<1.21	<1.75	<1.33
Carbon disulfide	---	---	---	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
Carbon tetrachloride	2 (b)	4 (b)	1	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
Chlorobenzene	37	680	1	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
Chlorodibromomethane	110	1000 (a)	1	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
Chloroethane	---	---	---	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
Chloroform	19 (b)	28 (b)	1	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
Chloromethane	520	1000 (a)	10	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
1,1-Dichloroethane	570	1000 (a)	10	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
1,2-Dichloroethane	6	24	1	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
1,1-Dichloroethene	8	150	10	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
Ethylbenzene	1000 (a)	1000 (a)	100	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
2-Hexanone	---	---	---	<1.43	<1.55	<1.39	<1.4	<1.4	<1.4	<1.5	<1.21	<1.75	<1.33
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.43	<1.55	<1.39	<1.4	<1.4	<1.4	<1.5	<1.21	<1.75	<1.33
Methylene chloride	49	210	1	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
Styrene	23	97	100	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
Tetrachloroethene	4 (b)	6 (b)	1	**0.414 J**	**4.95**	**3.44**	**6.92**	<0.7	<0.701	<0.749	**1.23**	<0.875	**2.41**
Toluene	1000 (a)	1000 (a)	500	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
1,1,1-Trichloroethane	210	1000 (a)	50	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
1,1,2-Trichloroethane	22	420	1	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
Trichloroethylene	23	54 (b)	1	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
Vinyl chloride	2	7	10	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
Xylene (total)	410	1000 (a)	67	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.716	<0.774	<0.696	<0.701	<0.7	<0.701	<0.749	<0.606	<0.875	<0.666
Dibromomethane	---	---	---	---	---	---	---	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-2	AOC-2	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				2C05	2C05	3A01	3A02	3A03	3A03	3A04	3A04	3A04	3A05
Sample ID:				2C05 (16)	2C05 (20)	3A01(20)	3A02(20)	3A03(20)	REP-5	3A04(6.5)	3A04(20.3)	3A04(24)	3A05(20)
Date:				09/27/02	09/27/02	09/20/02	09/20/02	09/20/02	09/20/02	09/20/02	09/20/02	09/20/02	09/20/02
Starting Depth ft bls				16.00	20.00	20.00	20.00	20.00	20.10	6.50	20.30	24.00	20.00
Ending Depth ft bls				16.50	20.50	20.50	20.50	20.50	20.60	7.00	20.80	24.50	20.50
Acetone	1000(a)	1000(a)	100	<1.4	<1.18	<1.28	<1.2	<1.28	<1.27	<1.34	<1.31	<1.33	<1.18
Benzene	3	13	1	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
Bromodichloromethane	11	46	1	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
Bromoform	86	370	1	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
Bromomethane	79	1000 (a)	1	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
2-Butanone	1000 (a)	1000 (a)	50	<1.4	<1.18	<1.28	<1.2	<1.28	<1.27	<1.34	<1.31	<1.33	<1.18
Carbon disulfide	---	---	---	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
Carbon tetrachloride	2 (b)	4 (b)	1	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
Chlorobenzene	37	680	1	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
Chlorodibromomethane	110	1000 (a)	1	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
Chloroethane	---	---	---	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
Chloroform	19 (b)	28 (b)	1	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
Chloromethane	520	1000 (a)	10	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
1,1-Dichloroethane	570	1000 (a)	10	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
1,2-Dichloroethane	6	24	1	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
1,1-Dichloroethene	8	150	10	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
Ethylbenzene	1000 (a)	1000 (a)	100	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
2-Hexanone	---	---	---	<1.4	<1.18	<1.28	<1.2	<1.28	<1.27	<1.34	<1.31	<1.33	<1.18
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.4	<1.18	<1.28	<1.2	<1.28	<1.27	<1.34	<1.31	<1.33	<1.18
Methylene chloride	49	210	1	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
Styrene	23	97	100	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
Tetrachloroethene	4 (b)	6 (b)	1	**1.99**	**0.815**	**1.62**	**1.34**	**1.33**	**1.62**	**414 D**	**1.74**	**2.76**	**1.48**
Toluene	1000 (a)	1000 (a)	500	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
1,1,1-Trichloroethane	210	1000 (a)	50	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
1,1,2-Trichloroethane	22	420	1	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
Trichloroethylene	23	54 (b)	1	<0.701	<0.59	**0.184 J**	**0.699**	**0.289 J**	**0.369 J**	<0.668	**0.439 J**	**0.394 J**	**0.379 J**
Vinyl chloride	2	7	10	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
Xylene (total)	410	1000 (a)	67	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	**0.378 J**	<0.656	<0.664	<0.59
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.701	<0.59	<0.641	<0.602	<0.639	<0.634	<0.668	<0.656	<0.664	<0.59
Dibromomethane	---	---	---	---	---	---	---	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	**30.44**	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				3A06	3A06	3A06	3A07	3A07	3A07	3A07	3A08	3A08	3A08
Sample ID:				3A06(1.0)	3A06(20.0)	3A06(23.3)	3A07(1.0)	DUP07	3A07(20)	3A07(23.5)	3A08(1)	3A08(20)	3A08(23.5)
Date:				09/26/02	09/26/02	09/26/02	09/25/02	09/25/02	09/25/02	09/25/02	09/25/02	09/25/02	09/25/02
Starting Depth ft bls				1.00	20.00	23.30	1.00	1.10	20.00	23.50	1.00	20.00	23.50
Ending Depth ft bls				1.50	20.50	23.80	1.50	1.60	20.50	24.00	1.50	20.50	24.00
Acetone	1000(a)	1000(a)	100	<1.52	<1.13	<1.25	<1.32	<1.41	<1.21	<1.3	<1.61	<1.13	<1.27
Benzene	3	13	1	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
Bromodichloromethane	11	46	1	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
Bromoform	86	370	1	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
Bromomethane	79	1000 (a)	1	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
2-Butanone	1000 (a)	1000 (a)	50	<1.52	<1.13	<1.25	<1.32	<1.41	<1.21	<1.3	<1.61	<1.13	<1.27
Carbon disulfide	---	---	---	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
Carbon tetrachloride	2 (b)	4 (b)	1	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
Chlorobenzene	37	680	1	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
Chlorodibromomethane	110	1000 (a)	1	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
Chloroethane	---	---	---	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
Chloroform	19 (b)	28 (b)	1	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
Chloromethane	520	1000 (a)	10	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
1,1-Dichloroethane	570	1000 (a)	10	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
1,2-Dichloroethane	6	24	1	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
1,1-Dichloroethene	8	150	10	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
Ethylbenzene	1000 (a)	1000 (a)	100	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
2-Hexanone	---	---	---	<1.52	<1.13	<1.25	<1.32	<1.41	<1.21	<1.3	<1.61	<1.13	<1.27
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.52	<1.13	<1.25	<1.32	<1.41	<1.21	<1.3	<1.61	<1.13	<1.27
Methylene chloride	49	210	1	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
Styrene	23	97	100	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
Tetrachloroethene	4 (b)	6 (b)	1	<0.76	**0.824**	**0.81**	<0.658	<0.705	**1.26**	**3.59**	<0.805	**0.651**	**0.748**
Toluene	1000 (a)	1000 (a)	500	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
1,1,1-Trichloroethane	210	1000 (a)	50	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
1,1,2-Trichloroethane	22	420	1	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
Trichloroethylene	23	54 (b)	1	<0.76	**0.115 J**	**0.198 J**	<0.658	<0.705	**0.123 J**	**0.339 J**	<0.805	**0.206 J**	**0.182 J**
Vinyl chloride	2	7	10	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
Xylene (total)	410	1000 (a)	67	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	**0.696 J**	<0.564	<0.637
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.76	<0.567	<0.623	<0.658	<0.705	<0.603	<0.651	<0.805	<0.564	<0.637
Dibromomethane	---	---	---	---	---	---	---	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				3A09	3A09	3A09	3A10	3A10	3A10	3A10	3A11	3A11	3A12
Sample ID:				3A09(1.0)	3A09(20.0)	3A09(23.5)	3A10(1.75)	3A10(11.0)	3A10(20.0)	DUP 08	3A11(1.0)	DUP 09	3A12(1.0)
Date:				09/25/02	09/25/02	09/25/02	09/26/02	09/26/02	09/26/02	09/26/02	09/26/02	09/26/02	09/26/02
Starting Depth ft bls				1.00	20.00	23.50	1.75	11.00	20.00	20.10	1.00	1.10	1.00
Ending Depth ft bls				1.50	20.50	24.00	2.25	11.50	20.50	20.60	1.50	1.60	1.50
Acetone	1000(a)	1000(a)	100	<1.29	<1.25	<1.23	<1.32	<1.44	<1.17	<1.39	<1.31	<1.38	<1.19
Benzene	3	13	1	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
Bromodichloromethane	11	46	1	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
Bromoform	86	370	1	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
Bromomethane	79	1000 (a)	1	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
2-Butanone	1000 (a)	1000 (a)	50	<1.29	<1.25	<1.23	<1.32	<1.44	<1.17	<1.39	<1.31	<1.38	<1.19
Carbon disulfide	---	---	---	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
Carbon tetrachloride	2 (b)	4 (b)	1	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
Chlorobenzene	37	680	1	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
Chlorodibromomethane	110	1000 (a)	1	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
Chloroethane	---	---	---	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
Chloroform	19 (b)	28 (b)	1	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
Chloromethane	520	1000 (a)	10	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
1,1-Dichloroethane	570	1000 (a)	10	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
1,2-Dichloroethane	6	24	1	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
1,1-Dichloroethene	8	150	10	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
Ethylbenzene	1000 (a)	1000 (a)	100	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
2-Hexanone	---	---	---	<1.29	<1.25	<1.23	<1.32	<1.44	<1.17	<1.39	<1.31	<1.38	<1.19
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.29	<1.25	<1.23	<1.32	<1.44	<1.17	<1.39	<1.31	<1.38	<1.19
Methylene chloride	49	210	1	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
Styrene	23	97	100	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
Tetrachloroethene	4 (b)	6 (b)	1	<0.643	**1.38**	**2.36**	**0.358 J**	**0.254 J**	**0.846**	**1.17**	<0.655	<0.691	<0.595
Toluene	1000 (a)	1000 (a)	500	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
1,1,1-Trichloroethane	210	1000 (a)	50	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
1,1,2-Trichloroethane	22	420	1	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
Trichloroethylene	23	54 (b)	1	<0.643	**0.341 J**	**0.738**	<0.659	<0.719	<0.583	**0.14 J**	<0.655	<0.691	<0.595
Vinyl chloride	2	7	10	**1.21**	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
Xylene (total)	410	1000 (a)	67	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
cis-1,2-Dichloroethene	79	1000 (a)	1	**3.33**	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.643	<0.627	<0.614	<0.659	<0.719	<0.583	<0.694	<0.655	<0.691	<0.595
Dibromomethane	---	---	---	---	---	---	---	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				3A13	3B01	3B01	3B01	3B02	3B02	3B03	3B03	3B03	3B03
Sample ID:				3A13(1.0)	3B01(20)	3B01(24)	3B01(26.5)	3B02(20)	3B02(26.5)	3B03(20)	3B03(24)	3B03(26.5)	REP-4
Date:				09/26/02	09/17/02	09/17/02	09/17/02	09/19/02	09/19/02	09/19/02	09/19/02	09/19/02	09/19/02
Starting Depth ft bls				1.00	20.00	24.00	26.50	20.00	26.50	20.00	24.00	26.50	26.60
Ending Depth ft bls				1.50	20.50	24.50	27.00	20.50	27.00	20.50	24.50	27.00	27.10
Acetone	1000(a)	1000(a)	100	<1.31	<1.5	<1.52	<1.29	<1.49	<1.36	<1.21	<1.35	<1.29	<1.28
Benzene	3	13	1	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
Bromodichloromethane	11	46	1	<0.655	---	---	---	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
Bromoform	86	370	1	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
Bromomethane	79	1000 (a)	1	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
2-Butanone	1000 (a)	1000 (a)	50	<1.31	<1.5	<1.52	<1.29	<1.49	<1.36	<1.21	<1.35	<1.29	<1.28
Carbon disulfide	---	---	---	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
Carbon tetrachloride	2 (b)	4 (b)	1	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
Chlorobenzene	37	680	1	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
Chlorodibromomethane	110	1000 (a)	1	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
Chloroethane	---	---	---	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
Chloroform	19 (b)	28 (b)	1	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
Chloromethane	520	1000 (a)	10	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
1,1-Dichloroethane	570	1000 (a)	10	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
1,2-Dichloroethane	6	24	1	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
1,1-Dichloroethene	8	150	10	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
Ethylbenzene	1000 (a)	1000 (a)	100	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
2-Hexanone	---	---	---	<1.31	<1.5	<1.52	<1.29	<1.49	<1.36	<1.21	<1.35	<1.29	<1.28
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.31	<1.5	<1.52	<1.29	<1.49	<1.36	<1.21	<1.35	<1.29	<1.28
Methylene chloride	49	210	1	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
Styrene	23	97	100	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
Tetrachloroethene	4 (b)	6 (b)	1	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
Toluene	1000 (a)	1000 (a)	500	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	**0.26 J**	**0.679**	<0.643	<0.638
1,1,1-Trichloroethane	210	1000 (a)	50	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
1,1,2-Trichloroethane	22	420	1	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
Trichloroethylene	23	54 (b)	1	<0.655	<0.751	<0.761	**1.62**	<0.745	<0.68	<0.603	<0.675	<0.643	<0.638
Vinyl chloride	2	7	10	<0.655	**0.62 J**	**3.18**	**1.29**	**4.81**	<0.68	**1.14**	<0.675	<0.643	<0.638
Xylene (total)	410	1000 (a)	67	<0.655	<0.751	<0.761	<0.645	<0.745	<0.68	<0.603	**0.147 J**	<0.643	<0.638
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.655	**14.1**	**37.3**	**8.04**	**27**	<0.68	**3.37**	<0.675	<0.643	<0.638
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.655	<0.751	<0.761	<0.645	**0.224 J**	<0.68	<0.603	<0.675	<0.643	<0.638
Dibromomethane	---	---	---	---	<0.751	<0.761	<0.645	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				3B04	3B04	3B04	3B05	3B05	3B06A	3B06A	3B06A	3B06A	3B07
Sample ID:				3B04(20)	3B04(24)	3B04(26.5)	3B05(20)	3B05(26.5)	3B06A(1.0)	3B06A(20)	3B06A(26.5)	3B06A(31)	3B07(1.0)
Date:				09/19/02	09/19/02	09/19/02	09/20/02	09/20/02	09/20/02	09/20/02	09/20/02	09/20/02	09/19/02
Starting Depth ft bls				20.00	24.00	26.50	20.00	26.50	1.00	20.00	26.50	31.00	1.00
Ending Depth ft bls				20.50	24.50	27.00	20.50	27.00	1.50	20.50	27.00	31.50	1.50
Acetone	1000(a)	1000(a)	100	<1.28	<1.5	<1.26	<1.3	<1.24	<1.78	<1.68	<1.21	<1.56	<1.33
Benzene	3	13	1	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
Bromodichloromethane	11	46	1	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
Bromoform	86	370	1	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
Bromomethane	79	1000 (a)	1	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
2-Butanone	1000 (a)	1000 (a)	50	<1.28	<1.5	<1.26	<1.3	<1.24	<1.78	<1.68	<1.21	<1.56	<1.33
Carbon disulfide	---	---	---	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
Carbon tetrachloride	2 (b)	4 (b)	1	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
Chlorobenzene	37	680	1	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
Chlorodibromomethane	110	1000 (a)	1	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
Chloroethane	---	---	---	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
Chloroform	19 (b)	28 (b)	1	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
Chloromethane	520	1000 (a)	10	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
1,1-Dichloroethane	570	1000 (a)	10	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
1,2-Dichloroethane	6	24	1	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
1,1-Dichloroethene	8	150	10	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
Ethylbenzene	1000 (a)	1000 (a)	100	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
2-Hexanone	---	---	---	<1.28	<1.5	<1.26	<1.3	<1.24	<1.78	<1.68	<1.21	<1.56	<1.33
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.28	<1.5	<1.26	<1.3	<1.24	<1.78	<1.68	<1.21	<1.56	<1.33
Methylene chloride	49	210	1	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
Styrene	23	97	100	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
Tetrachloroethene	4 (b)	6 (b)	1	**3.48**	**4.36**	**1.32**	**0.884**	**0.506 J**	**1.83**	<0.838	<0.605	<0.781	<0.665
Toluene	1000 (a)	1000 (a)	500	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
1,1,1-Trichloroethane	210	1000 (a)	50	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
1,1,2-Trichloroethane	22	420	1	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
Trichloroethylene	23	54 (b)	1	**0.349 J**	**0.38 J**	<0.629	<0.651	<0.619	**1.35**	<0.838	<0.605	**1.56**	<0.665
Vinyl chloride	2	7	10	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	**2.06**	**3.67**	<0.665
Xylene (total)	410	1000 (a)	67	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
cis-1,2-Dichloroethene	79	1000 (a)	1	**1.07**	**1.19**	<0.629	<0.651	<0.619	**1.24**	**59**	**5.51**	**9.16**	<0.665
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.64	<0.751	<0.629	<0.651	<0.619	<0.89	<0.838	<0.605	<0.781	<0.665
Dibromomethane	---	---	---	---	---	---	---	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				3B07	3B08	3B08	3B09	3B09	3B09	3B10	3B11C	3B11C	3B12
Sample ID:				3B07(20)	3B08(1.0)	3B08(20.0)	3B09(1.0)	3B09(20)	3B09(24)	3B10 1	3B11C(1.0)	3B11C(20)	3B12 2
Date:				09/19/02	09/19/02	09/19/02	09/20/02	09/20/02	09/20/02	09/16/02	09/19/02	09/19/02	09/16/02
Starting Depth ft bls				20.00	1.00	20.00	1.00	20.00	24.00	1.00	1.00	20.00	2.00
Ending Depth ft bls				20.50	1.50	20.50	1.50	20.50	24.50	1.50	1.50	20.50	2.50
Acetone	1000(a)	1000(a)	100	<1.35	<1.43	<1.47	<1.25	<1.18	<1.16	<1.28	<1.79	<1.47	<1.42
Benzene	3	13	1	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
Bromodichloromethane	11	46	1	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
Bromoform	86	370	1	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
Bromomethane	79	1000 (a)	1	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
2-Butanone	1000 (a)	1000 (a)	50	<1.35	<1.43	<1.47	<1.25	<1.18	<1.16	<1.28	<1.79	<1.47	<1.42
Carbon disulfide	---	---	---	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
Carbon tetrachloride	2 (b)	4 (b)	1	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
Chlorobenzene	37	680	1	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
Chlorodibromomethane	110	1000 (a)	1	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
Chloroethane	---	---	---	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
Chloroform	19 (b)	28 (b)	1	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
Chloromethane	520	1000 (a)	10	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
1,1-Dichloroethane	570	1000 (a)	10	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
1,2-Dichloroethane	6	24	1	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
1,1-Dichloroethene	8	150	10	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
Ethylbenzene	1000 (a)	1000 (a)	100	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
2-Hexanone	---	---	---	<1.35	<1.43	<1.47	<1.25	<1.18	<1.16	<1.28	<1.79	<1.47	<1.42
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.35	<1.43	<1.47	<1.25	<1.18	<1.16	<1.28	<1.79	<1.47	<1.42
Methylene chloride	49	210	1	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
Styrene	23	97	100	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
Tetrachloroethene	4 (b)	6 (b)	1	<0.675	<0.716	<0.734	<0.624	**1.2**	**1.09**	<0.641	6.41	<0.734	**1.77**
Toluene	1000 (a)	1000 (a)	500	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
1,1,1-Trichloroethane	210	1000 (a)	50	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
1,1,2-Trichloroethane	22	420	1	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
Trichloroethylene	23	54 (b)	1	<0.675	<0.716	<0.734	<0.624	**0.213 J**	**0.121 J**	<0.641	**0.283 J**	**0.166 J**	**0.144 J**
Vinyl chloride	2	7	10	**0.514 J**	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	6.01
Xylene (total)	410	1000 (a)	67	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
cis-1,2-Dichloroethene	79	1000 (a)	1	**2.08**	<0.716	<0.734	<0.624	**0.148 J**	<0.58	<0.641	**0.491 J**	**0.235 J**	**1.61**
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.675	<0.716	<0.734	<0.624	<0.591	<0.58	<0.641	<0.896	<0.734	<0.711
Dibromomethane	---	---	---	---	---	---	---	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				3B12B	3B12B	3B13	3B13	3B14	3B14	3B15	3B15	3B16	3B16
Sample ID:				3B12B(1.0)	3B12B(20)	3B13(1.5)	3B13(20)	3B14(1.0)	3B14(20)	3B15(20)	3B15(1.0)	3B16(1.0)	3B16(20)
Date:				09/19/02	09/19/02	09/19/02	09/19/02	09/19/02	09/19/02	09/19/02	09/20/02	09/19/02	09/19/02
Starting Depth ft bls				1.00	20.00	1.50	20.00	1.00	20.00	20.00	1.00	1.00	20.00
Ending Depth ft bls				1.50	20.50	2.00	20.50	1.50	20.50	20.50	1.50	1.50	20.50
Acetone	1000(a)	1000(a)	100	<1.19	<1.35	<1.89	<1.43	<1.29	<1.3	<1.33	<1.19	<1.67	<1.2
Benzene	3	13	1	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
Bromodichloromethane	11	46	1	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
Bromoform	86	370	1	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
Bromomethane	79	1000 (a)	1	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
2-Butanone	1000 (a)	1000 (a)	50	<1.19	<1.35	<1.89	<1.43	<1.29	<1.3	<1.33	<1.19	<1.67	<1.2
Carbon disulfide	—	—	—	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
Carbon tetrachloride	2 (b)	4 (b)	1	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
Chlorobenzene	37	680	1	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
Chlorodibromomethane	110	1000 (a)	1	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
Chloroethane	—	—	—	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
Chloroform	19 (b)	28 (b)	1	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
Chloromethane	520	1000 (a)	10	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
1,1-Dichloroethane	570	1000 (a)	10	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
1,2-Dichloroethane	6	24	1	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
1,1-Dichloroethene	8	150	10	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	—	—	—	—	—	—	—	—	—	—
1,2-Dichloropropane	10	43	(c)	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
Ethylbenzene	1000 (a)	1000 (a)	100	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
2-Hexanone	—	—	—	<1.19	<1.35	<1.89	<1.43	<1.29	<1.3	<1.33	<1.19	<1.67	<1.2
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.19	<1.35	<1.89	<1.43	<1.29	<1.3	<1.33	<1.19	<1.67	<1.2
Methylene chloride	49	210	1	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
Styrene	23	97	100	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
Tetrachloroethene	4 (b)	6 (b)	1	<0.596	<0.676	<0.945	<0.716	<0.645	**0.88**	**0.214 J**	**0.168 J**	<0.833	<0.601
Toluene	1000 (a)	1000 (a)	500	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
1,1,1-Trichloroethane	210	1000 (a)	50	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
1,1,2-Trichloroethane	22	420	1	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
Trichloroethylene	23	54 (b)	1	<0.596	**0.15 J**	<0.945	<0.716	<0.645	<0.648	**0.358 J**	**0.124 J**	<0.833	<0.601
Vinyl chloride	2	7	10	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	**1.06**
Xylene (total)	410	1000 (a)	67	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.596	**0.199 J**	<0.945	<0.716	<0.645	<0.648	**0.722**	**0.9**	<0.833	**1.24**
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.596	<0.676	<0.945	<0.716	<0.645	<0.648	<0.664	<0.593	<0.833	<0.601
Dibromomethane	—	—	—	—	—	—	—	—	—	—	—	—	—
Sum of TICs	—	—	—	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				3C01	3C01	3C01	3C01	3C02	3C02	3C02	3C03	3C03	3C03
Sample ID:				3C01(1.75)	3C01(7.50)	3C01(20.0)	3C01(23.5)	3C02(1.75)	3C02(11)	3C02(23.5)	3C03(1.75)	3C03(11.0)	3C03(23.0)
Date:				09/25/02	09/25/02	09/25/02	09/25/02	09/25/02	09/25/02	09/25/02	09/25/02	09/25/02	09/25/02
Starting Depth ft bls				1.75	7.50	20.00	23.50	1.75	11.00	23.50	1.75	11.00	23.00
Ending Depth ft bls				2.25	8.00	20.50	24.00	2.25	11.50	24.00	2.25	11.50	23.50
Acetone	1000(a)	1000(a)	100	<1.25	<1.3	<1.19	<1.26	<1.33	<1.42	<1.08	<1.3	<1.31	<1.32
Benzene	3	13	1	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
Bromodichloromethane	11	46	1	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
Bromoform	86	370	1	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
Bromomethane	79	1000 (a)	1	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
2-Butanone	1000 (a)	1000 (a)	50	<1.25	<1.3	<1.19	<1.26	<1.33	<1.42	<1.08	<1.3	<1.31	<1.32
Carbon disulfide	---	---	---	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
Carbon tetrachloride	2 (b)	4 (b)	1	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
Chlorobenzene	37	680	1	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
Chlorodibromomethane	110	1000 (a)	1	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
Chloroethane	---	---	---	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
Chloroform	19 (b)	28 (b)	1	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
Chloromethane	520	1000 (a)	10	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
1,1-Dichloroethane	570	1000 (a)	10	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
1,2-Dichloroethane	6	24	1	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
1,1-Dichloroethene	8	150	10	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
Ethylbenzene	1000 (a)	1000 (a)	100	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
2-Hexanone	---	---	---	<1.25	<1.3	<1.19	<1.26	<1.33	<1.42	<1.08	<1.3	<1.31	<1.32
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.25	<1.3	<1.19	<1.26	<1.33	<1.42	<1.08	<1.3	<1.31	<1.32
Methylene chloride	49	210	1	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
Styrene	23	97	100	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
Tetrachloroethene	4 (b)	6 (b)	1	<0.625	**0.788**	**1.18**	**3.67**	<0.666	**2.91**	**0.567**	**0.451 J**	**0.882**	**0.692**
Toluene	1000 (a)	1000 (a)	500	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
1,1,1-Trichloroethane	210	1000 (a)	50	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
1,1,2-Trichloroethane	22	420	1	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
Trichloroethylene	23	54 (b)	1	<0.625	<0.652	**0.332 J**	**1.14**	<0.666	**0.17 J**	**0.647**	<0.65	<0.655	**0.512 J**
Vinyl chloride	2	7	10	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
Xylene (total)	410	1000 (a)	67	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
cis-1,2-Dichloroethene	79	1000 (a)	1	**0.326 J**	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.625	<0.652	<0.593	<0.63	<0.666	<0.708	<0.54	<0.65	<0.655	<0.658
Dibromomethane	---	---	---	---	---	---	---	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				3C07	3C07	3C07	3C08	3C08	3C08	3C08	3C08A	3C09	3C09
Sample ID:				3C07(1.75)	3C07(15)	3C07(20)	3C08(1.75)	3C08(14.0)	3C08(22.5)	3C08(27.5)	3C08A (27.5)	3C09(1.75)	3C09(11)
Date:				09/24/02	09/24/02	09/24/02	09/25/02	09/25/02	09/25/02	09/25/02	09/27/02	09/24/02	09/24/02
Starting Depth ft bls				1.75	15.00	20.00	1.75	14.00	22.50	27.50	27.50	1.75	11.00
Ending Depth ft bls				2.25	15.50	20.50	2.25	14.50	23.00	28.00	28.00	2.25	11.50
Acetone	1000(a)	1000(a)	100	<1.45	<1.13	<1.24	<1.36	<1.34	<1.35	<1.36	<1.25	<1.45	<1.42
Benzene	3	13	1	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
Bromodichloromethane	11	46	1	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
Bromoform	86	370	1	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
Bromomethane	79	1000 (a)	1	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
2-Butanone	1000 (a)	1000 (a)	50	<1.45	<1.13	<1.24	<1.36	<1.34	<1.35	<1.36	<1.25	<1.45	<1.42
Carbon disulfide	---	---	---	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
Carbon tetrachloride	2 (b)	4 (b)	1	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
Chlorobenzene	37	680	1	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
Chlorodibromomethane	110	1000 (a)	1	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
Chloroethane	---	---	---	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
Chloroform	19 (b)	28 (b)	1	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
Chloromethane	520	1000 (a)	10	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
1,1-Dichloroethane	570	1000 (a)	10	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
1,2-Dichloroethane	6	24	1	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
1,1-Dichloroethene	8	150	10	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
Ethylbenzene	1000 (a)	1000 (a)	100	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
2-Hexanone	---	---	---	<1.45	<1.13	<1.24	<1.36	<1.34	<1.35	<1.36	<1.25	<1.45	<1.42
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.45	<1.13	<1.24	<1.36	<1.34	<1.35	<1.36	<1.25	<1.45	<1.42
Methylene chloride	49	210	1	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
Styrene	23	97	100	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
Tetrachloroethene	4 (b)	6 (b)	1	**0.357 J**	**0.182 J**	**0.577 J**	<0.679	<0.669	<0.673	**1.48**	**0.471 J**	<0.727	<0.711
Toluene	1000 (a)	1000 (a)	500	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
1,1,1-Trichloroethane	210	1000 (a)	50	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
1,1,2-Trichloroethane	22	420	1	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
Trichloroethylene	23	54 (b)	1	**1.22**	**0.245 J**	**1.12**	<0.679	**0.946**	**11.7**	**1.73**	**0.263 J**	<0.727	**0.508 J**
Vinyl chloride	2	7	10	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
Xylene (total)	410	1000 (a)	67	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
cis-1,2-Dichloroethene	79	1000 (a)	1	**0.563 J**	<0.565	**0.472 J**	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.724	<0.565	<0.618	<0.679	<0.669	<0.673	<0.68	<0.624	<0.727	<0.711
Dibromomethane	---	---	---	---	---	---	---	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				3C09	3C09	3C09	3C09	3C09	3C10	3C10	3C10	3C11	3C11
Sample ID:				DUP06	3C09(15.5)	3C09(22)	3C09(25.5)	3C09(27.5)	3C10(1.75)	3C10(11.0)	3C10(22.0)	3C11(11.5)	3C11(15.5)
Date:				09/24/02	09/24/02	09/24/02	09/24/02	09/24/02	09/24/02	09/24/02	09/24/02	09/20/02	09/20/02
Starting Depth ft bls				11.10	15.50	22.00	25.50	27.50	1.75	11.00	22.00	11.50	15.50
Ending Depth ft bls				11.60	16.00	22.50	26.00	28.00	2.25	11.50	22.50	12.00	16.00
Acetone	1000(a)	1000(a)	100	<1.45	<1.18	<6.42	<1.38	<1.18	<1.58	<1.32	<1.28	<15.6	<69.4
Benzene	3	13	1	<0.726	<0.59	<1.28	<0.688	<0.592	<0.788	<0.662	<0.642	<3.12	<13.9
Bromodichloromethane	11	46	1	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
Bromoform	86	370	1	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
Bromomethane	79	1000 (a)	1	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
2-Butanone	1000 (a)	1000 (a)	50	<1.45	<1.18	<2.57	<1.38	<1.18	<1.58	<1.32	<1.28	<6.24	<27.7
Carbon disulfide	---	---	---	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
Carbon tetrachloride	2 (b)	4 (b)	1	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
Chlorobenzene	37	680	1	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
Chlorodibromomethane	110	1000 (a)	1	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
Chloroethane	---	---	---	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
Chloroform	19 (b)	28 (b)	1	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
Chloromethane	520	1000 (a)	10	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
1,1-Dichloroethane	570	1000 (a)	10	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
1,2-Dichloroethane	6	24	1	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
1,1-Dichloroethene	8	150	10	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
Ethylbenzene	1000 (a)	1000 (a)	100	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
2-Hexanone	---	---	---	<1.45	<1.18	<5.14	<1.38	<1.18	<1.58	<1.32	<1.28	<12.5	<55.5
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.45	<1.18	<2.57	<1.38	<1.18	<1.58	<1.32	<1.28	<6.24	<27.7
Methylene chloride	49	210	1	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
Styrene	23	97	100	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
Tetrachloroethene	4 (b)	6 (b)	1	<0.726	**0.735**	**239**	**1.51**	**0.594**	<0.788	**0.46 J**	**1.74**	<6.24	<27.7
Toluene	1000 (a)	1000 (a)	500	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
1,1,1-Trichloroethane	210	1000 (a)	50	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
1,1,2-Trichloroethane	22	420	1	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
Trichloroethylene	23	54 (b)	1	**0.88**	**7.33**	**202**	**245**	**1.88**	<0.788	**0.505 J**	**0.783**	**554**	**2480**
Vinyl chloride	2	7	10	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
Xylene (total)	410	1000 (a)	67	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.726	<0.59	<2.57	**0.178 J**	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.726	<0.59	<2.57	<0.688	<0.592	<0.788	<0.662	<0.642	<6.24	<27.7
Dibromomethane	---	---	---	---	---	---	---	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
Area of Concern:				AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
Site ID:				3C11	3C11	3D01	3D01	3D01	3D01	3D01	3D02	3D02	3D02
Sample ID:				3C11(20.0)	3C11(24)	3D01(1.75)	3D01(2.5)	3D01(10)	3D01(12)	3D01(20)	3D02(1.75)	3D02(5)	3D02(11)
Date:				09/20/02	09/20/02	09/23/02	09/23/02	09/23/02	09/23/02	09/23/02	09/23/02	09/23/02	09/23/02
Starting Depth ft bls				20.00	24.00	1.75	2.50	10.00	12.00	20.00	1.75	5.00	11.00
Ending Depth ft bls				20.50	24.50	2.25	3.00	10.50	12.50	20.50	2.25	5.50	11.50
Acetone	1000(a)	1000(a)	100	<1.53	<1.14	<1.38	<1.31	<1.58	<1.21	<1.24	<1.56	<1.25	<1.4
Benzene	3	13	1	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
Bromodichloromethane	11	46	1	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
Bromoform	86	370	1	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
Bromomethane	79	1000 (a)	1	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
2-Butanone	1000 (a)	1000 (a)	50	<1.53	<1.14	<1.38	<1.31	<1.58	<1.21	<1.24	<1.56	<1.25	<1.4
Carbon disulfide	---	---	---	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
Carbon tetrachloride	2 (b)	4 (b)	1	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
Chlorobenzene	37	680	1	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
Chlorodibromomethane	110	1000 (a)	1	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
Chloroethane	---	---	---	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
Chloroform	19 (b)	28 (b)	1	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
Chloromethane	520	1000 (a)	10	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
1,1-Dichloroethane	570	1000 (a)	10	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
1,2-Dichloroethane	6	24	1	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
1,1-Dichloroethene	8	150	10	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
Ethylbenzene	1000 (a)	1000 (a)	100	<0.766	<0.568	<0.692	**1.65**	**4.18**	**0.125 J**	<0.621	<0.782	**3.64**	**6.39**
2-Hexanone	---	---	---	<1.53	<1.14	<1.38	<1.31	<1.58	<1.21	<1.24	<1.56	<1.25	<1.4
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.53	<1.14	<1.38	<1.31	<1.58	<1.21	<1.24	<1.56	<1.25	<1.4
Methylene chloride	49	210	1	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
Styrene	23	97	100	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
Tetrachloroethene	4 (b)	6 (b)	1	<0.766	**0.522 J**	<0.692	<0.657	<0.79	<0.603	**0.715**	<0.782	<0.627	<0.698
Toluene	1000 (a)	1000 (a)	500	<0.766	<0.568	<0.692	**10.7**	**33**	**0.231 J**	<0.621	<0.782	<0.627	<0.698
1,1,1-Trichloroethane	210	1000 (a)	50	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
1,1,2-Trichloroethane	22	420	1	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
Trichloroethylene	23	54 (b)	1	**29.4**	**2.61**	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
Vinyl chloride	2	7	10	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
Xylene (total)	410	1000 (a)	67	<0.766	<0.568	**1.06**	**39.3**	**16**	<0.603	<0.621	<0.782	**4.57**	**2.69**
cis-1,2-Dichloroethene	79	1000 (a)	1	**0.36 J**	<0.568	<0.692	<0.657	**0.483 J**	**0.792**	<0.621	<0.782	<0.627	<0.698
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.766	<0.568	<0.692	<0.657	<0.79	<0.603	<0.621	<0.782	<0.627	<0.698
Dibromomethane	---	---	---	---	---	---	---	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	**414.3**	**307.2**	**82.08**	ND	ND	ND	**99.9**	**493.3**

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
			Area of Concern:	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
			Site ID:	3D02	3D03	3D03	3D03	3D04	3D04	3D04	3D05	3D05	3D05
			Sample ID:	3D02(20)	3D03(1.75)	3D03(9.5)	3D03(20)	3D04(1.75)	3D04(10)	3D04(20.0)	3D05(1.75)	3D05(4)	3D05(9)
			Date:	09/23/02	09/23/02	09/23/02	09/23/02	09/23/02	09/23/02	09/26/02	09/23/02	09/23/02	09/23/02
			Starting Depth ft bls	20.00	1.75	9.50	20.00	1.75	10.00	20.00	1.75	4.00	9.00
			Ending Depth ft bls	20.50	2.25	10.00	20.50	2.25	10.50	20.50	2.25	4.50	9.50
Acetone	1000(a)	1000(a)	100	<1.54	<1.28	<1.38	<1.35	<1.68	<1.15	<1.32	<1.26	<1.27	<1.28
Benzene	3	13	1	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
Bromodichloromethane	11	46	1	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
Bromoform	86	370	1	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
Bromomethane	79	1000 (a)	1	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
2-Butanone	1000 (a)	1000 (a)	50	<1.54	<1.28	<1.38	<1.35	<1.68	<1.15	<1.32	<1.26	<1.27	<1.28
Carbon disulfide	---	---	---	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
Carbon tetrachloride	2 (b)	4 (b)	1	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
Chlorobenzene	37	680	1	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
Chlorodibromomethane	110	1000 (a)	1	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
Chloroethane	---	---	---	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
Chloroform	19 (b)	28 (b)	1	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
Chloromethane	520	1000 (a)	10	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
1,1-Dichloroethane	570	1000 (a)	10	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
1,2-Dichloroethane	6	24	1	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
1,1-Dichloroethene	8	150	10	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
Ethylbenzene	1000 (a)	1000 (a)	100	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
2-Hexanone	---	---	---	<1.54	<1.28	<1.38	<1.35	<1.68	<1.15	<1.32	<1.26	<1.27	<1.28
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.54	<1.28	<1.38	<1.35	<1.68	<1.15	<1.32	<1.26	<1.27	<1.28
Methylene chloride	49	210	1	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
Styrene	23	97	100	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
Tetrachloroethene	4 (b)	6 (b)	1	**1.29**	**0.421 J**	**0.308 J**	**0.718**	**0.284 J**	**0.159 J**	**0.527 J**	**474D**	**529**	**23**
Toluene	1000 (a)	1000 (a)	500	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
1,1,1-Trichloroethane	210	1000 (a)	50	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
1,1,2-Trichloroethane	22	420	1	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
Trichloroethylene	23	54 (b)	1	**0.166 J**	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
Vinyl chloride	2	7	10	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
Xylene (total)	410	1000 (a)	67	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.768	<0.639	<0.688	<0.674	<0.841	<0.573	<0.661	<0.628	<0.635	<0.642
Dibromomethane	---	---	---	---	---	---	---	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC										
			Area of Concern:	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3	AOC-3
			Site ID:	3D05	3D06	3D06	3D06	3D06	3D07	3D07	3D07	3D07	3D08
			Sample ID:	3D05(20.0)	3D06(1.75)	3D06(6.5)	3D06(11.5)	3D06(20)	3D07(1.75)	3D07(10.5)	3D07(17.0)	3D07(20.0)	3D08(1.75)
			Date:	09/23/02	09/23/02	09/23/02	09/23/02	09/23/02	09/26/02	09/26/02	09/26/02	09/26/02	09/26/02
			Starting Depth ft bls	20.00	1.75	6.50	11.50	20.00	1.75	10.50	17.00	20.00	1.75
			Ending Depth ft bls	20.50	2.25	7.00	12.00	20.50	2.25	11.00	17.50	20.50	2.25
Acetone	1000(a)	1000(a)	100	<1.27	<1.36	<1.3	<1.23	<1.19	<1.44	<1.27	<1.17	<1.14	<1.26
Benzene	3	13	1	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
Bromodichloromethane	11	46	1	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
Bromoform	86	370	1	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
Bromomethane	79	1000 (a)	1	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
2-Butanone	1000 (a)	1000 (a)	50	<1.27	<1.36	<1.3	<1.23	<1.19	<1.44	<1.27	<1.17	<1.14	<1.26
Carbon disulfide	---	---	---	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
Carbon tetrachloride	2 (b)	4 (b)	1	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
Chlorobenzene	37	680	1	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
Chlorodibromomethane	110	1000 (a)	1	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
Chloroethane	---	---	---	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
Chloroform	19 (b)	28 (b)	1	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
Chloromethane	520	1000 (a)	10	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
1,1-Dichloroethane	570	1000 (a)	10	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
1,2-Dichloroethane	6	24	1	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
1,1-Dichloroethene	8	150	10	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
Ethylbenzene	1000 (a)	1000 (a)	100	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
2-Hexanone	---	---	---	<1.27	<1.36	<1.3	<1.23	<1.19	<1.44	<1.27	<1.17	<1.14	<1.26
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.27	<1.36	<1.3	<1.23	<1.19	<1.44	<1.27	<1.17	<1.14	<1.26
Methylene chloride	49	210	1	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
Styrene	23	97	100	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
Tetrachloroethene	4 (b)	6 (b)	1	**0.69**	**237 D**	**495 D**	**522 D**	**2.91**	**0.84**	**133**	**4.99**	**1.07**	**4.96**
Toluene	1000 (a)	1000 (a)	500	<0.636	<0.68	**0.205 J**	**0.232 J**	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
1,1,1-Trichloroethane	210	1000 (a)	50	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
1,1,2-Trichloroethane	22	420	1	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
Trichloroethylene	23	54 (b)	1	<0.636	**1.13**	**4.47**	**4.24**	**0.216 J**	<0.718	**0.817**	**0.277 J**	**0.177 J**	<0.631
Vinyl chloride	2	7	10	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
Xylene (total)	410	1000 (a)	67	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.636	**0.332 J**	**0.331 J**	**0.578 J**	<0.594	<0.718	**0.429 J**	**0.19 J**	<0.572	<0.631
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.636	<0.68	<0.648	<0.613	<0.594	<0.718	<0.633	<0.587	<0.572	<0.631
Dibromomethane	---	---	---	---	---	---	---	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	**97.18**	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC									
Area of Concern:				AOC-3	AOC-3	AOC-4	AOC-4	AOC-4	AOC-4	AOC-4	AOC-4	AOC-4
Site ID:				3D08	3D08	4X01	4X02	4X03	4X04	4X04	4X04A	4X05
Sample ID:				3D08(9.0)	3D08(20.0)	4X01 20	4X02(18)	4X03(18)	4X04(18)	REP-2	4X04A (18)	4X05(18)
Date:				09/26/02	09/26/02	09/16/02	09/17/02	09/17/02	09/17/02	09/17/02	09/27/02	09/17/02
Starting Depth ft bls				9.00	20.00	20.00	18.00	18.00	18.00	18.10	18.00	18.00
Ending Depth ft bls				9.50	20.50	20.50	18.50	18.50	18.50	18.60	18.50	18.50
Acetone	1000(a)	1000(a)	100	<1.34	<1.2	<1.2	<1.58	<1.25	<1.39	<1.64	<1.5	<1.28
Benzene	3	13	1	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
Bromodichloromethane	11	46	1	<0.67	<0.599	<0.601	---	---	---	---	<0.75	---
Bromoform	86	370	1	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
Bromomethane	79	1000 (a)	1	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
2-Butanone	1000 (a)	1000 (a)	50	<1.34	<1.2	<1.2	<1.58	<1.25	<1.39	<1.64	<1.5	<1.28
Carbon disulfide	---	---	---	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
Carbon tetrachloride	2 (b)	4 (b)	1	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
Chlorobenzene	37	680	1	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
Chlorodibromomethane	110	1000 (a)	1	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
Chloroethane	---	---	---	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
Chloroform	19 (b)	28 (b)	1	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
Chloromethane	520	1000 (a)	10	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
1,1-Dichloroethane	570	1000 (a)	10	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
1,2-Dichloroethane	6	24	1	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
1,1-Dichloroethene	8	150	10	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
Ethylbenzene	1000 (a)	1000 (a)	100	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
2-Hexanone	---	---	---	<1.34	<1.2	<1.2	<1.58	<1.25	<1.39	<1.64	<1.5	<1.28
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.34	<1.2	<1.2	<1.58	<1.25	<1.39	<1.64	<1.5	<1.28
Methylene chloride	49	210	1	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
Styrene	23	97	100	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
Tetrachloroethene	4 (b)	6 (b)	1	6.09	**3.14**	<0.601	<0.789	**0.62 J**	<0.696	<0.821	**0.245 J**	**0.381 J**
Toluene	1000 (a)	1000 (a)	500	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
1,1,1-Trichloroethane	210	1000 (a)	50	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
1,1,2-Trichloroethane	22	420	1	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
Trichloroethylene	23	54 (b)	1	<0.67	**0.197 J**	**0.858**	<0.789	<0.626	5.29 J	11.3 J	**3.71**	<0.64
Vinyl chloride	2	7	10	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
Xylene (total)	410	1000 (a)	67	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.67	**0.259 J**	<0.601	<0.789	<0.626	**0.293 J**	**0.767 J**	**0.342 J**	<0.64
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.67	<0.599	<0.601	<0.789	<0.626	<0.696	<0.821	<0.75	<0.64
Dibromomethane	---	---	---	---	---	---	<0.789	<0.626	<0.696	<0.821	---	<0.64
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC						
Area of Concern:									
Site ID:				TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK
Sample ID:				TRIPBLANKPDI	TRIPBLANKPDI	TRIPBLANKPDI	TRIPBLANKPDI	TRIPBLANKPDI	TRIPBLANKPDI
Date:				09/16/02	09/17/02	09/18/02	09/19/02	09/20/02	09/23/02
Starting Depth ft bls				0.00	0.00	0.00	0.00	0.00	0.00
Ending Depth ft bls				0.00	0.00	0.00	0.00	0.00	0.00
Acetone	1000(a)	1000(a)	100	<1.25	<1.25	<1.25	<1.25	<1.25	<1.25
Benzene	3	13	1	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
Bromodichloromethane	11	46	1	<0.625	---	<0.625	<0.625	<0.625	<0.625
Bromoform	86	370	1	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
Bromomethane	79	1000 (a)	1	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
2-Butanone	1000 (a)	1000 (a)	50	<1.25	<1.25	<1.25	<1.25	<1.25	<1.25
Carbon disulfide	---	---	---	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
Carbon tetrachloride	2 (b)	4 (b)	1	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
Chlorobenzene	37	680	1	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
Chlorodibromomethane	110	1000 (a)	1	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
Chloroethane	---	---	---	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
Chloroform	19 (b)	28 (b)	1	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
Chloromethane	520	1000 (a)	10	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
1,1-Dichloroethane	570	1000 (a)	10	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
1,2-Dichloroethane	6	24	1	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
1,1-Dichloroethene	8	150	10	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
Ethylbenzene	1000 (a)	1000 (a)	100	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
2-Hexanone	---	---	---	<1.25	<1.25	<1.25	<1.25	<1.25	<1.25
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.25	<1.25	<1.25	<1.25	<1.25	<1.25
Methylene chloride	49	210	1	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
Styrene	23	97	100	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
Tetrachloroethene	4 (b)	6 (b)	1	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
Toluene	1000 (a)	1000 (a)	500	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
1,1,1-Trichloroethane	210	1000 (a)	50	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
1,1,2-Trichloroethane	22	420	1	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
Trichloroethylene	23	54 (b)	1	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
Vinyl chloride	2	7	10	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
Xylene (total)	410	1000 (a)	67	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.625	<0.625	<0.625	<0.625	<0.625	<0.625
Dibromomethane	---	---	---	---	<0.625	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND	ND

Table 6. Summary of PDI Soil Analytical Results by AOC. Airtron Division of Litton Systems, Inc., Morris Plains, New Jersey

CONSTITUENT: (Units in mg/kg)	RDCSCC	NRDCSCC	IGWSCC	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	FIELD BLANK*
Area of Concern:								
Site ID:				TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	FIELD BLANK*
Sample ID:				TRIPBLANKPDI	TRIPBLANKPDI	TRIPBLANKPDI	TRIPBLANKPDI	FB PDI
Date:				09/24/02	09/25/02	09/26/02	09/27/02	09/17/02
Starting Depth ft bls				0.00	0.00	0.00	0.00	0.00
Ending Depth ft bls				0.00	0.00	0.00	0.00	0.00
Acetone	1000(a)	1000(a)	100	<1.25	<1.25	<1.25	<1.25	<10
Benzene	3	13	1	<0.625	<0.625	<0.625	<0.625	<5
Bromodichloromethane	11	46	1	<0.625	<0.625	<0.625	<0.625	---
Bromoform	86	370	1	<0.625	<0.625	<0.625	<0.625	<5
Bromomethane	79	1000 (a)	1	<0.625	<0.625	<0.625	<0.625	<5
2-Butanone	1000 (a)	1000 (a)	50	<1.25	<1.25	<1.25	<1.25	<10
Carbon disulfide	---	---	---	<0.625	<0.625	<0.625	<0.625	<5
Carbon tetrachloride	2 (b)	4 (b)	1	<0.625	<0.625	<0.625	<0.625	<5
Chlorobenzene	37	680	1	<0.625	<0.625	<0.625	<0.625	<5
Chlorodibromomethane	110	1000 (a)	1	<0.625	<0.625	<0.625	<0.625	<5
Chloroethane	---	---	---	<0.625	<0.625	<0.625	<0.625	<5
Chloroform	19 (b)	28 (b)	1	<0.625	<0.625	<0.625	<0.625	<5
Chloromethane	520	1000 (a)	10	<0.625	<0.625	<0.625	<0.625	<5
1,1-Dichloroethane	570	1000 (a)	10	<0.625	<0.625	<0.625	<0.625	<5
1,2-Dichloroethane	6	24	1	<0.625	<0.625	<0.625	<0.625	<5
1,1-Dichloroethene	8	150	10	<0.625	<0.625	<0.625	<0.625	<5
1,2-Dichloroethene(total)	79(d)	1000(a&d)	1(d)	---	---	---	---	---
1,2-Dichloropropane	10	43	(c)	<0.625	<0.625	<0.625	<0.625	<5
cis-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.625	<0.625	<0.625	<0.625	<5
trans-1,3-Dichloropropene	4(e)	5 (b&e)	1(e)	<0.625	<0.625	<0.625	<0.625	<5
Ethylbenzene	1000 (a)	1000 (a)	100	<0.625	<0.625	<0.625	<0.625	<5
2-Hexanone	---	---	---	<1.25	<1.25	<1.25	<1.25	<10
4-Methyl-2-pentanone	1000 (a)	1000 (a)	50	<1.25	<1.25	<1.25	<1.25	<10
Methylene chloride	49	210	1	<0.625	<0.625	<0.625	<0.625	<5
Styrene	23	97	100	<0.625	<0.625	<0.625	<0.625	<5
1,1,2,2-Tetrachloroethane	34	70 (b)	1	<0.625	<0.625	<0.625	<0.625	<5
Tetrachloroethene	4 (b)	6 (b)	1	<0.625	<0.625	<0.625	<0.625	<5
Toluene	1000 (a)	1000 (a)	500	<0.625	<0.625	<0.625	<0.625	<5
1,1,1-Trichloroethane	210	1000 (a)	50	<0.625	<0.625	<0.625	<0.625	<5
1,1,2-Trichloroethane	22	420	1	<0.625	<0.625	<0.625	<0.625	<5
Trichloroethylene	23	54 (b)	1	<0.625	<0.625	<0.625	<0.625	<5
Vinyl chloride	2	7	10	<0.625	<0.625	<0.625	<0.625	<5
Xylene (total)	410	1000 (a)	67	<0.625	<0.625	<0.625	<0.625	<5
cis-1,2-Dichloroethene	79	1000 (a)	1	<0.625	<0.625	<0.625	<0.625	<5
trans-1,2-Dichloroethene	1000 (a)	1000 (a)	50	<0.625	<0.625	<0.625	<0.625	<5
Dibromomethane	---	---	---	---	---	---	---	---
Sum of TICs	---	---	---	ND	ND	ND	ND	ND

mg/kg	Milligrams per kilogram.
ft bls	Feet below land surface.
AOC-1	Hazardous Materials Storage Building
AOC-2	Former Drum Storage Area # 1
AOC-3	Former Drum Storage Area # 2
AOC-4	Former Sludge Lagoon # 5
RDCSCC	Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
NRDCSCC	Non- Residential Direct Contact Soil Cleanup Criteria (f&g) (NJDEP, last revised 5/12/99)
IGWSCC	Impact to Ground water Soil Cleanup Criteria (g) (NJDEP, last revised 5/12/99)
TICs	Tentatively Identified Compounds.
(a)	Health based criterion exceeds the 1000 mg/kg maximum for total volatile organic contaminants.
(b)	Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(c)	Insufficient information available to calculate impact to ground water criteria.
(d)	Most stringent of cis or trans criteria.
(e)	Criteria for sum of cis and trans.
(f)	Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(g)	Criteria are subject to change based on site specific factors (e.g., aquifer classification, soil type, natural background, environmental impacts, etc.).
J	Estimated value.
D	Detected at secondary dilution.
ND	Not detected.
—	Not analyzed or no standard applicable.

Bolded results were detected.

Results which exceed the most stringent of the NJDEP soil cleanup criteria are boxed.

Results exceeding the site-specific remediation criteria of 5 mg/kg are shaded

Table 7. Summary of Post-Remedial Soil Sampling. Airtron, Division of Litton Systems, Inc., Morris Plains, New Jersey.

AOC	Approximate Area (sf)	Approximate Perimeter (lf)	Excavation Depth (ft)	No. of PDI Sidewall Samples	No. of PDI Floor Samples	Planned Post-Remedial Soil Sampling Rationale	Post-Remedial Soil Sample Designations
1A	1250	150	20	7	6	No Additional Samples Needed.	Not Applicable
1B	1250	150	10	4	6	Use former B-233 as 5th Sidewall Sample, No Additional Samples Needed.	Not Applicable
2A	1350	140	20	4	6	Use 2C04 as 5th Sidewall Sample, No Additional Samples Needed.	Not Applicable
2B	1200	150	15	5	0	Plan 2 Additional Floor Samples at 15 ft bgs	2A07 and 2A08
3A, 3B, 3C AND 3D Combined	26700	875	20	17	23	Plan 4 Additional Sidewall Samples (2 East of 3B06A, and 2 West Area of 3C) at 1 ft bgs and 4 Floor Samples (2 in proximity of 3B01 and 3B06 and 2 biased high in 3C) at 20 ft bgs	3B17, 3B18, 3B19, 3B20, 3C12, 3C13, 3C14, 3C15
4	1250	140	16-20	3	1	Plan 2 Additional Sidewall Samples at 16 ft bgs and 1 Floor Sample at 20 ft bgs	4X06, 4X07 and 4X08

Table 8. Results of Permit Applicability and Status. Airtron, Division of Litton Systems, Inc., Morris Plains, New Jersey.

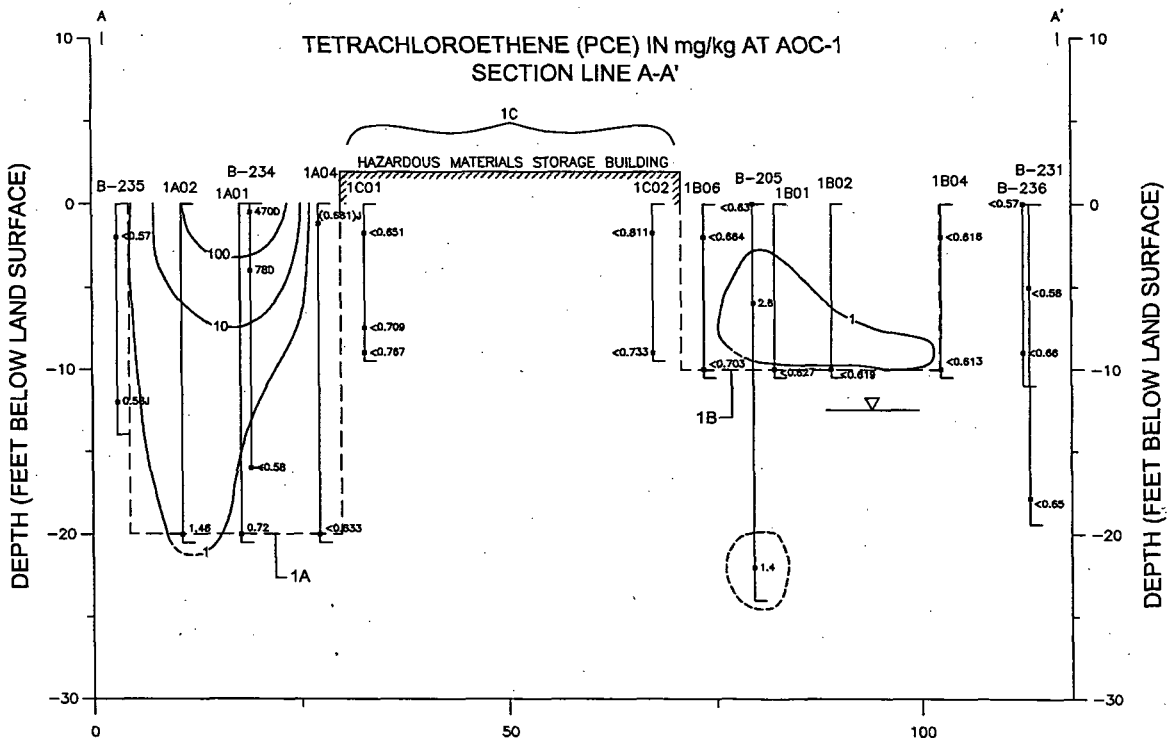
Permit	Statute Number	Applicability	Status
Soil Erosion and Sediment Control Plan Certification for Land Disturbance Control	N.J.S.A. 4:24-39, N.J.A.C. 2:90	**Applicable**	**Submitted**
Coastal Area Facility Review Act (CAFRA) Permit	N.J.S.A. 13:19-1, N.J.A.C. 7:7 AND 7:13	Not Applicable	--
Waterfront Development/Upland Waterfront Permit	N.J.S.A. 12:5-1, N.J.A.C. 7:7 AND 7:13	Not Applicable	--
Freshwater Wetlands Permit	N.J.A.C. 13:9B-1 *et seq*, N.J.A.C. 7:7A	**Applicable**	**Submitted**
Stream Encroachment Permit (Construction within a Flood Plain)	N.J.A.C. 58:16A-50 *et seq.;* N.J.A.C. 7:13	Not Applicable	**Received**
State Water Quality Certificate	N.J.S.A. 58:10A-1 to 13; 33 U.S.C. 1251, §401	Not Applicable	--
Dewatering Permit and/or Water Diversion Permit	N.J.S.A. 58:1B-1, N.J.A.C. 7:19 *et seq.*	Not Applicable	--
Hackensack Meadowlands Development Commission-Zoning Certificate	N.J.S.A. 13:19-1, N.J.A.C. 7:7 AND 7:13	Not Applicable	--
NJPDES-Discharge to Surface Water (DSW) - Industrial	N.J.S.A. 58: 10A-1 *et seq.;* N.J.A.C. 7:14A	**Applicable**	**Received**
NJPDES-Significant Indirect User (SIU)	N.J.S.A. 58: 10A-1 *et seq.;* N.J.A.C. 7:14A	Not Applicable	--
NJPDES-Discharge to Ground Water (DGW)	N.J.S.A. 58:10A-1 *et seq.;* N.J.A.C. 7:14A	Not Applicable	--
Treatment Works Approval (TWA)	N.J.S.A. 58:10A-1 *et seq.;* N.J.A.C. 7:14A	Not Applicable	--
Sewer Connection Permit	N.J.S.A. 58: 10A-1 *et seq.;* N.J.A.C. 7:14A	Not Applicable	--
Well Drilling Permits	N.J.S.A. 58:4A-14; N.J.A.C. 7:8	**Applicable**	**Pendinig**
Certificate of Clean Fill	Contractual Requirement	**Applicable**	**Pending**
Building Permit (Electrical Subcode)	New Jersey Uniform Construction Code	**Applicable**	**Pending**
Storm Water Discharge Permit	N.J.S.A. 58: 10A-1 *et seq.;* N.J.A.C. 7:14A	Not Applicable	--
Water Allocation Permit	N.J.S.A. 58:1B-1, N.J.A.C. 7:19 *et seq.*	Not Applicable	--
Permit to Construct, Install or Alter Air Control Apparatus or Equipment and Certificate to Operate Control Apparatus or Equipment	N.J.A.C. 7:27, 33 CFR 330.6 including Appendix A	**Applicable**	**Pending**

Table 9. Post-Remedial Groundwater Monitoring Wells, Airtron, Division of Litton Systems, Inc., Morris Plains, New Jersey.

Area of Concern	Sub-Area Designation	Well Designation	Well Type	Hydrogeologic Zone	Screened Interval (ft, bls)	Screen Length (ft)	Notes
AOC-1	1A	AIR-MW-419	New	Upper Unconfined	35 - 45	10	Within 5-ft of SRI VPB-419 in vicinity of SI/RI Soil Boring B-234.
	1B	AIR-MW-403S-R	Replacement	Perched	15 - 20	5	Within 5-ft of existing well AIR-MW-403S.
AOC-2	2A	AIR-MW-417	New	Upper Unconfined	35 - 45	10	Within 5-ft of SRI VPB-417 in vicinity of SI/RI Soil Boring B-210.
AOC-3	3A	AIR-MW-406-R	Replacement	Upper Unconfined	34 - 49	15	Within 5-ft of existing well AIR-MW-406.
	3B	AIR-MW-411	New	Upper Unconfined	35 - 45	10	Within 5-ft of SRI VPB-411 in vicinity of SI/RI Soil Boring B-267.
	3C	AIR-MW-408	New	Upper Unconfined	32 - 42	10	Within 5-ft of SRI VPB-408 in vicinity of PDI Soil Boring 3C11.
	3D	AIR-MW-412	New	Upper Unconfined	35 - 45	10	Within 5-ft of SRI VPB-412 in vicinity of PDI Soil Boring 3D06.
AOC-3/ AOC-4	--	AIR-MW-301S -R	Replacement	Perched	5 - 20	15	Within 5-ft of existing well AIR-MW-301S for continued monitoring of perched water VOC impacts associated with AOC-3/ AOC-4 source areas.
	--	AIR-MW-401S	Existing	Perched	7 - 22	15	For continued monitoring of perched water VOC impacts associated with AOC-3/ AOC-4 source areas.
	--	AIR-MW-402S	Existing	Perched	7 - 22	15	For continued monitoring of perched water VOC impacts associated with AOC-3/ AOC-4 source areas.

Notes and Abbreviations

ft	feet
bls	below land surface
SI/RI	Site Investigation/Remedial Investigation (1997/1998)
SRI	Supplemental Remedial Investigation (2002 - on-site)
PDI	Pre-Design Investigation (2002)



LEGEND:

- • SAMPLE LOCATION
- 0.72 CONCENTRATION OF PCE IN SOIL SAMPLE (mg/kg)
- —10— LINES OF EQUAL PCE CONCENTRATIONS IN SOIL (mg/kg)
- ▽ APPROXIMATE DEPTH OF PERCHED GROUNDWATER
- 1A— — — PLANNED EXCAVATION AREA DESIGNATION AND APPROXIMATE LIMITS

NOTE:

1. CONTOUR INTERVAL AS SHOWN.

0 15 30
HORIZONTAL SCALE IN FEET
VERTICAL EXAGGERATION = 2X

NO.	DATE	REVISION DESCRIPTION	BY
			OKD

ARCADIS
88 Duryea Road
Melville, New York 11747
Tel: 516/249-7600 Fax: 516/249-7610

REVISED RAWP ADDENDUM
AIRTRON DIVISION OF LITTON SYSTEMS, INC.
HANOVER, NEW JERSEY

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
T.G.	12/30/02	A.Z.	
CROSS SECTION A-A' SHOWING DISTRIBUTION OF PCE IN SOIL		LEAD DESIGN PROF.	CHECKED A.Z.
		PROJECT NUMBER NY001363.0002	DRAWING NUMBER 7

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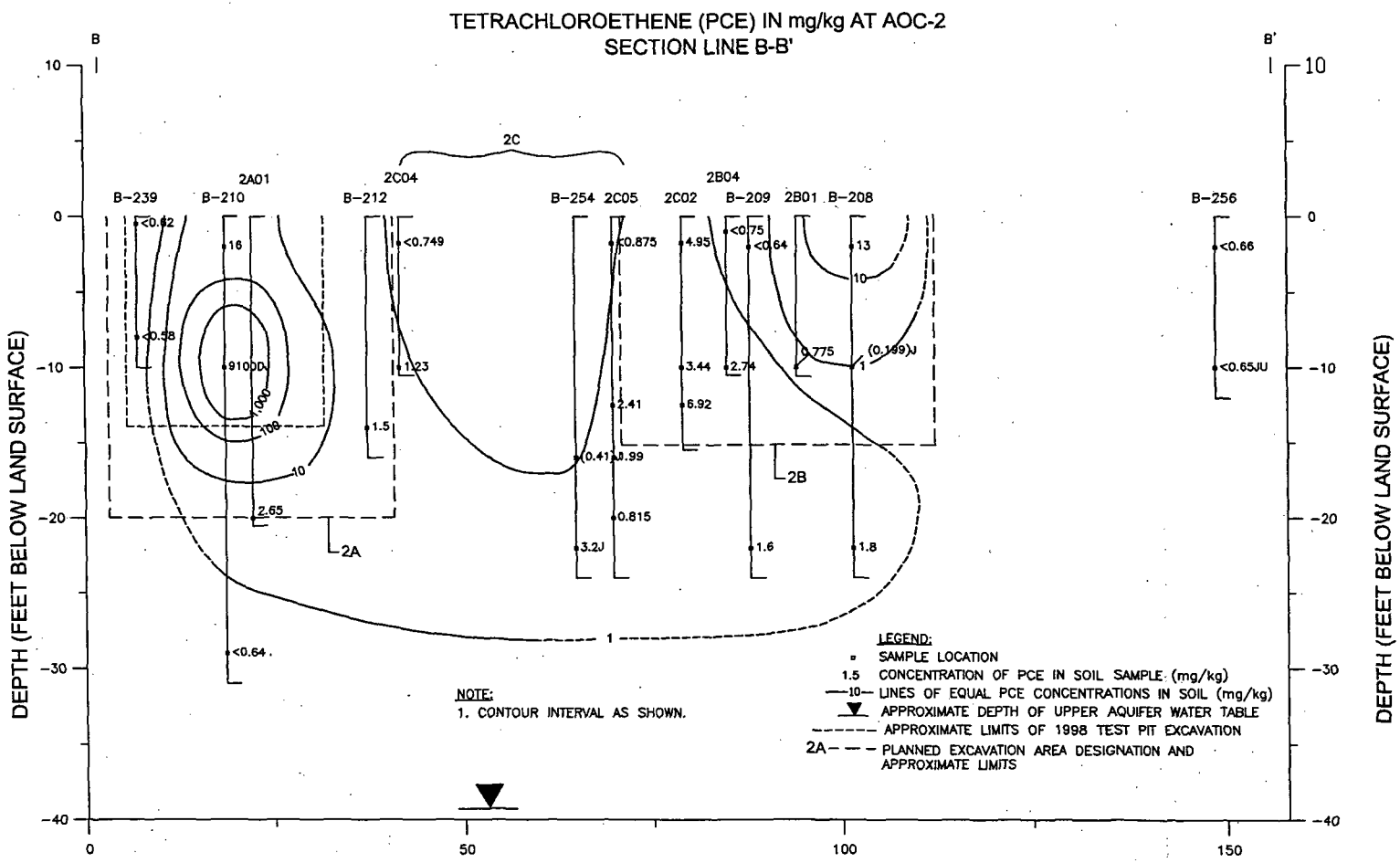

0 15 30
HORIZONTAL SCALE IN FEET
VERTICAL EXAGGERATION = 2X

-848-

NO.	DATE	REVISION DESCRIPTION	BY	CKD

ARCADIS
88 Duryea Road
Melville, New York 11747
Tel: 516/249-7600 Fax: 516/249-7610

REVISED RAWP ADDENDUM
AIRTRON DIVISION OF LITTON SYSTEMS, INC.

HANOVER, NEW JERSEY

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
T.G.	12/30/02	A.Z.	
CROSS SECTION B-B' SHOWING DISTRIBUTION OF PCE IN SOIL		LEAD DESIGN PROF.	CHECKED A.Z.
		PROJECT NUMBER NY001363.0002	DRAWING NUMBER 8

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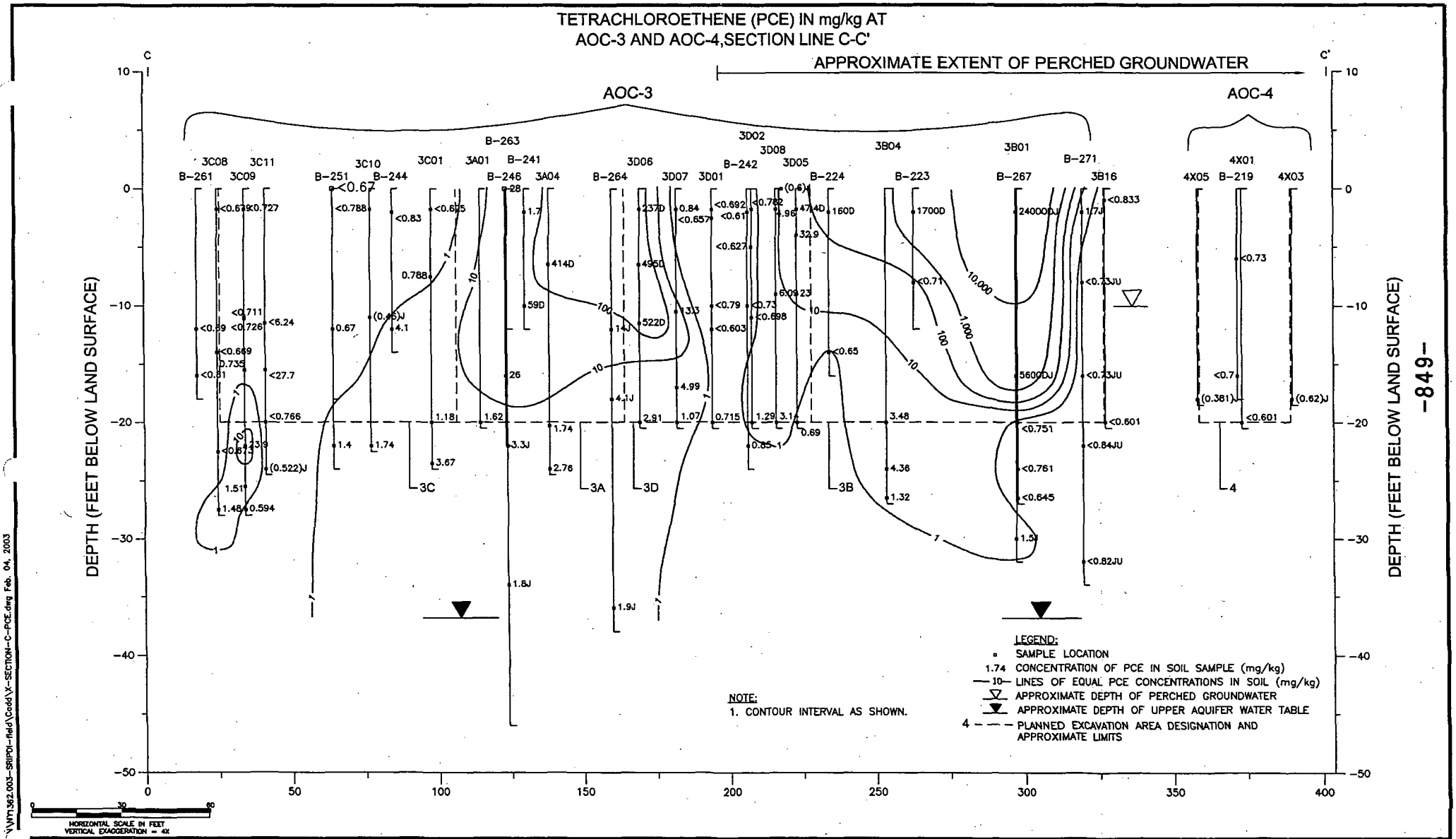

-849-

NO.	DATE	REVISION DESCRIPTION	BY	CKD

ARCADIS
88 Duryea Road
Melville, New York 11747
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REVISED RAWP ADDENDUM
AIRTRON DIVISION OF LITTON SYSTEMS, INC.
HANOVER, NEW JERSEY

DRAWN T.G. | DATE 12/30/02
CROSS SECTION C-C'
SHOWING
DISTRIBUTION OF PCE IN SOIL

PROJECT MANAGER A.Z. | DEPARTMENT MANAGER
LEAD DESIGN PROF. | CHECKED A.Z.
PROJECT NUMBER NY001363.0002 | DRAWING NUMBER 9

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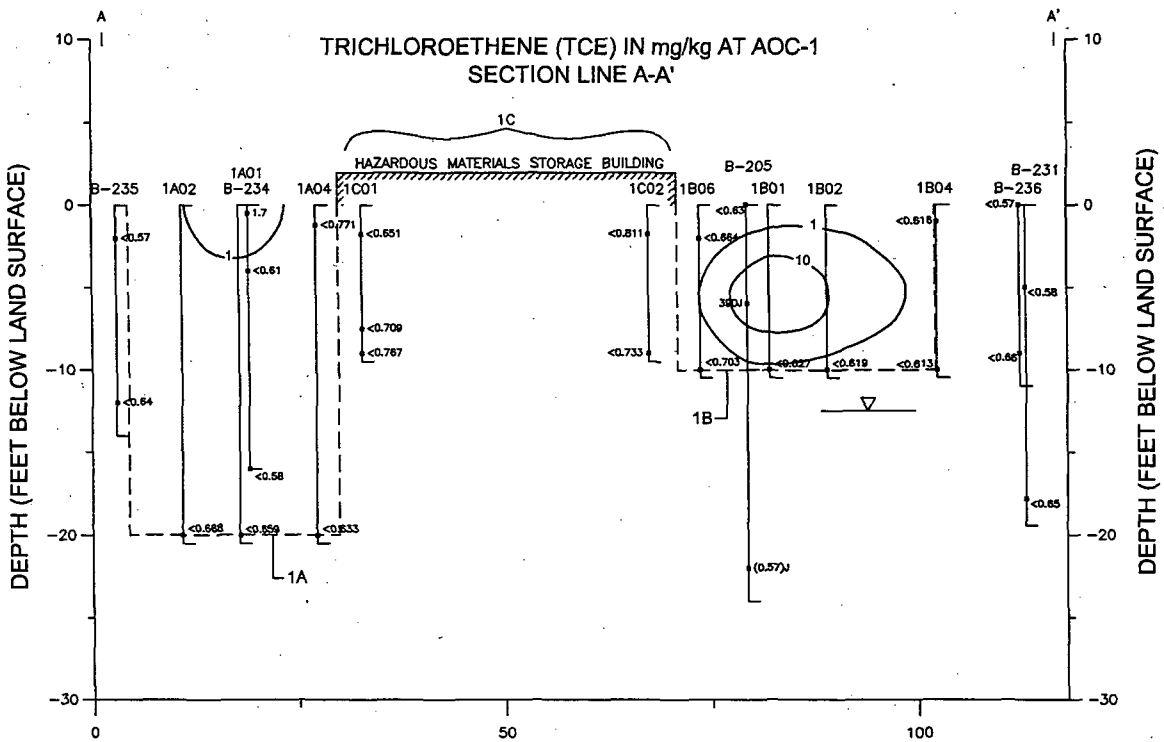

LEGEND:

- ▪ SAMPLE LOCATION
- <0.58 CONCENTRATION OF TCE IN SOIL SAMPLE (mg/kg)
- —10— LINES OF EQUAL TCE CONCENTRATIONS IN SOIL (mg/kg)
- ▽ APPROXIMATE DEPTH OF PERCHED GROUNDWATER
- 1A— — — PLANNED EXCAVATION AREA DESIGNATION AND APPROXIMATE LIMITS

NOTE:

1. CONTOUR INTERVAL AS SHOWN.

0 15 30
HORIZONTAL SCALE IN FEET
VERTICAL EXAGGERATION = 2X

-850-

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NO.	DATE	REVISION DESCRIPTION	BY

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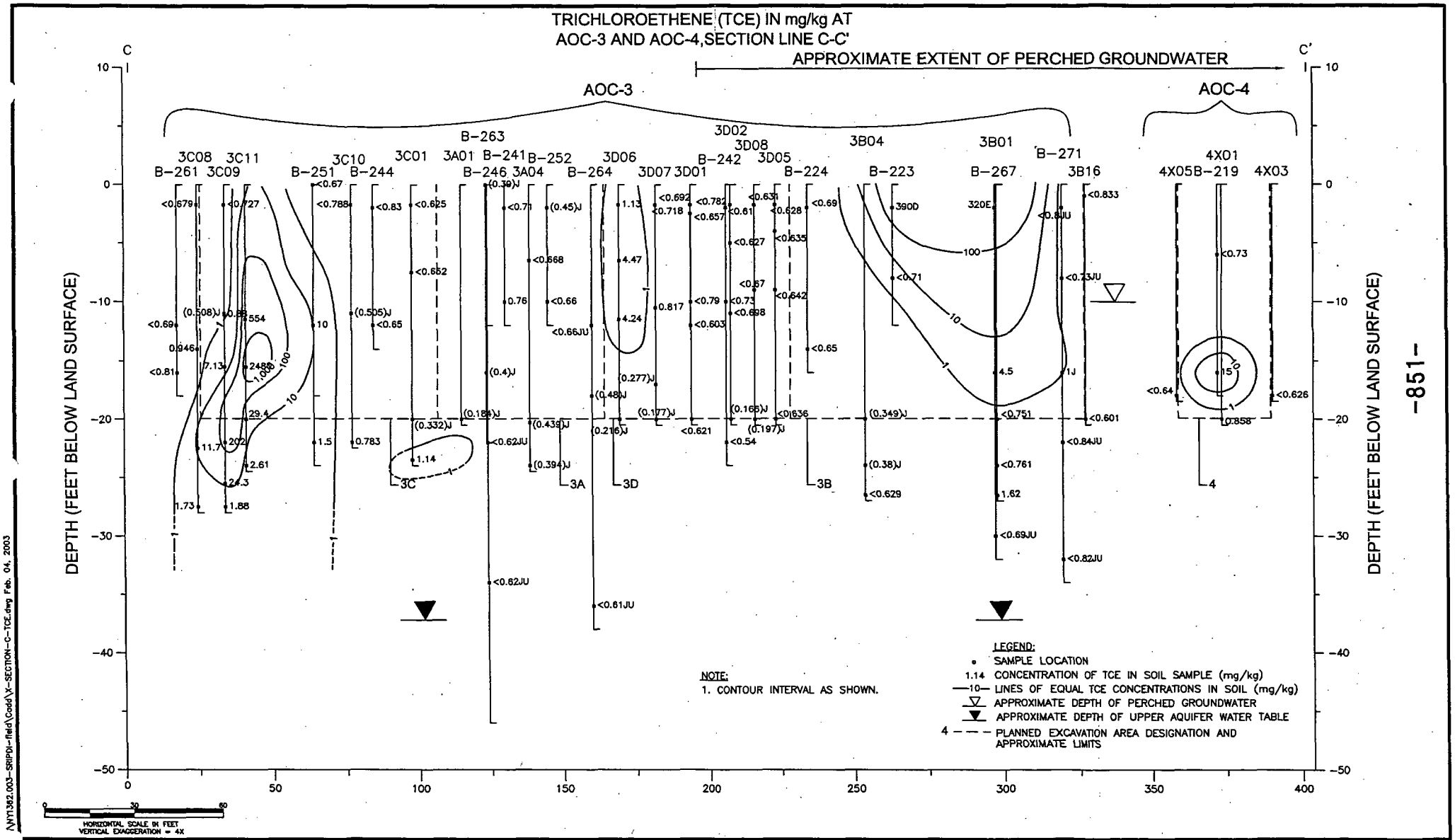
88 Duryea Road
Melville, New York 11747
Tel: 516/249-7600 Fax: 516/249-7610

REVISED RAWP ADDENDUM
AIRTRON DIVISION OF LITTON SYSTEMS, INC.

HANOVER, NEW JERSEY

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
T.G.	12/30/02	A.Z.	
CROSS SECTION A-A' SHOWING DISTRIBUTION OF TCE IN SOIL		LEAD DESIGN PROF.	CHECKED A.Z.
		PROJECT NUMBER NY001363.0002	DRAWING NUMBER 10



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NO.	DATE	REVISION DESCRIPTION	BY	CKD

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REVISED RAWP ADDENDUM
AIRTRON DIVISION OF LITTON SYSTEMS, INC.

HANOVER, NEW JERSEY

DRAWN T.G.	DATE 12/30/02	PROJECT MANAGER A.Z.	DEPARTMENT MANAGER
CROSS SECTION C-C' SHOWING DISTRIBUTION OF TCE IN SOIL		LEAD DESIGN PROF.	CHECKED A.Z.
		PROJECT NUMBER NY001363.0002	DRAWING NUMBER 11