

**SYSTEM OPERATION REPORT
FOR
AIR SPARGING/SOIL VAPOR EXTRACTION
SECOND QUARTER OF OPERATION
JULY THROUGH OCTOBER 2001**

**OPERABLE UNIT No. 3: SITE 26
NAVAL WEAPONS STATION - EARLE
COLTS NECK, NEW JERSEY**

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**NWS-EARLE: SITE 26
AIR SPARGE/SOIL VAPOR EXTRACTION SYSTEM OPERATION REPORT
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1.0 INTRODUCTION

Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) was contracted by the Engineering Field Activity, Northeast (EFANE) to design, construct, and operate an air sparging/soil vapor extraction (AS/SVE) system for Operable Unit No. 3 (OU-3), Site 26, at the Naval Weapons Station (NWS) Earle located in Colts Neck, NJ. This System Operation Report is being submitted to satisfy the post-construction submittal requirements included in paragraph 1.2.1, Pre- and Post-Construction Documentation of the Statement of Services for Contract Task Order No. 0049 under Remedial Action Contract No. N62472-99-D-0032.

In accordance with the approved Proposed Plan for OU-3 (B&R, 1997a), the objective for the AS/SVE system is to remediate groundwater in the shallow aquifer that has been impacted by chlorinated hydrocarbons (primarily trichloroethene and cis-1,2 dichloroethene). Remediation is being accomplished by sparged (injected) air volatilizing VOCs in the saturated zone, and capture of volatilized VOCs using soil vapor extraction. Details of the air sparging / soil vapor extraction (AS/SVE) remediation technology being utilized at this site are included in Section 4.0. In addition, although chlorinated compounds are not readily biodegraded, natural biodegradation will be enhanced by increasing the dissolved oxygen content within the shallow aquifer. This report discusses the operation of the system for the second full quarter from July 20 to October 31 2001.

2.0 SITE LOCATION

NWS-Earle is located in the east-central area of Monmouth County in the town of Colts Neck, New Jersey (Figure 1). Site 26 (OU-3) is located immediately southwest of Building GB-1, which is located within the Ordnance Area on the Mainside portion of the NWS-Earle facility, at the intersection of Macassar and Midway Roads. Two railway lines run from the southwest to the northeast adjacent to the southern side of Building GB-1 (Figure 2). The site is fenced and topography is relatively flat, approximately 150 feet above mean sea level (MSL).

3.0 SITE HISTORY

Building GB-1 was reportedly used for the reconditioning of munition casings and shells. Solvents were used in the reconditioning process. Spent solvents and wash waters were discarded into an unknown receptacle, possibly a collection tray at a former paint spray booth, which drained to the process leaching (septic) system. The GB-1 process leaching system was apparently used for disposal of trichloroethene (TCE), 1,2-dichloroethene (DCE), and/or related compounds. GB-1 is no longer used for processing activities and the facility is currently being used for housing the AS/SVE equipment, warehousing, and storage.

Several studies have been conducted at the site, dating back to the Initial Assessment Study in 1982. Site inspections and a Remedial Investigation/Feasibility Study (RI/FS) were conducted in the early 1990's after NWS-Earle was placed on the National Priorities List (NPL). A Phase II RI was completed in 1996, and included: a soil gas survey at 68 locations; installation and sampling of groundwater monitoring wells; soil sampling; "direct push" groundwater sampling with on-site laboratory analysis; and cone penetrometer studies to delineate subsurface soil stratigraphy.

Groundwater samples collected from the direct-push samplers revealed an elongated plume of chlorinated compounds in shallow groundwater immediately southwest of Building GB-1. A contaminant plume of approximately 420 feet long by 150 feet wide that is confined to an upper sand aquifer which extends to a depth of approximately 25 feet below ground surface (bgs) was reported. This upper sand aquifer is underlain by approximately 15 feet of low permeability silts and clays.

The leaching system and associated sludge immediately northwest of Building GB-1 were removed/remediated in 1998, as described in the Site 26 Close-Out Report (FWENC, 1998).

Additional groundwater investigation work was completed by Foster Wheeler Environmental in March 2000. This work consisted of sampling the groundwater from three of the existing monitoring wells and the completion and groundwater sampling of sixteen direct-push locations to confirm the magnitude and extent of the TCE/DCE groundwater plume as well as to determine the presence and magnitude of any vinyl chloride. During the investigation activities, however, unanticipated low-level concentrations of PCE were detected in the groundwater. Upon notification, the Navy provided FWENC with authorization to continue the groundwater investigation to determine the aerial extent and magnitude of the PCE groundwater plume. The additional work completed by Foster Wheeler Environmental included:

- The collection of groundwater samples from an additional fifty-six direct-push locations
- The collection of surface water samples from four locations along a tributary to Mingamahone Brook, which is located downgradient of the investigation area.
- The collection of two downstream sediment samples from the tributary to Mingamahone Brook.

The concentrations of PCE detected during the investigation of the PCE plume ranged from 0.39 to 77.0 ug/L. Since the TCE/DCE plume is located upgradient of the PCE plume, it is unlikely that the two plumes are related. The AS/SVE remediation of the TCE/DCE plume proceeded as described in the Final Remedial Action Plan for Site 26 (FWENC, 2000). Any additional TCE/DCE groundwater will be addressed with the PCE groundwater plume since they are all chlorinated hydrocarbons and the same treatment methodology can potentially be employed for remediation. In April of 2001 sentinel monitoring wells were installed to monitor the PCE groundwater plume.

Based on groundwater sampling conducted as part of the RI/FS, the groundwater immediately southwest of Building GB-1 had been contaminated with chlorinated hydrocarbons (most significantly TCE and 1,2-DCE). The probable source for the TCE/DCE groundwater contamination is believed to have been a former process leaching (septic) system located adjacent to Building GB-1. A septic leach tank that was part of the process leaching system was believed to be the source of groundwater contamination at Site 26 and was subsequently remediated in 1998. The results of this remediation action have been detailed in the Site 26 Close-Out Report (FWENC, 1998). The probable source for the PCE groundwater contamination has not been determined at this time.

An AS/SVE system was designed and constructed and is being operated to remediate the TCE/DCE plume in accordance with the approved Final Remedial Action Plan for Air Sparging/Soil Vapor Extraction (FWENC, 2000). Remediation is accomplished via volatilization of VOCs in the saturated zone by air sparging with the capture of the volatilized VOCs via soil vapor extraction. Construction of the AS/SVE was completed in December 2000 and the system began remediation operation in early January 2001. A summary of the AS/SVE system is included in Section 4.0 of this report.

4.0 SUMMARY OF AS/SVE SYSTEM

An AS/SVE pilot test was conducted at the site on May 18-19, 1999 by Foster Wheeler Environmental. The pilot test consisted of a vertical and a horizontal SVE well and the results were fully documented by Foster Wheeler Environmental in the, Air Sparge/Soil Vapor Extraction Pilot Test Report (FWENC, 1999). The AS/SVE pilot test indicated the technology was viable for remediating groundwater contaminated with volatile organic compounds at Site 26.

Based upon the pilot study (May 1999), a full-scale AS/SVE system was designed and installed at Site 26 by Foster Wheeler Environmental. An As-Built plan has been provided as Figure 2-1 in Attachment 1 and construction details are provided in the Final Remedial Action Plan for Air Sparging/Soil Vapor Extraction (FWENC, 2000)

The AS/SVE system consists of 72 sparge wells, 8 horizontal SVE wells, and 4 vertical SVE wells connected in an aboveground piping network. The well types and locations were determined based on results from the May 1999 pilot test. The eight horizontal SVE wells and four vertical SVE wells have been divided equally into two groups, north and south. Each group contains four horizontal SVE wells and two vertical SVE wells that are manifolded together and piped back to the treatment building. Both manifolds are combined to form a single stream prior to being split again before being connected to each SVE blower unit.

The seventy-two vertical AS wells have been divided equally into four groups, north, south, east and west categories. Each group contains eighteen vertical AS wells that are manifolded together and directed back to the treatment building. All four sparge manifolds are combined to form a single stream prior to being split again before connection to each sparge blower unit.

Each SVE well (horizontal and vertical) consists of a gate valve, vacuum gauge, air flow meter, temperature gauge and sampling port. The gate valve provides flow adjustment capability for system balancing. The vacuum gauge has a scale range of 0 to 50 inches of H₂O. The temperature gauge provides a means to determine if the vapor stream is being short-circuited to the ground surface. The sampling port provides a means to optimize system recovery by focusing on the wells, which contain higher vapor concentrations.

The AS system consists of two rotary lobe blowers. The system is capable of operating the blower units individually or in parallel. Both blowers are connected to the AS piping manifold network to facilitate operational flexibility. Ambient air from outside the building passes through an inlet filter/silencer, the blower, outlet silencer and then on to the AS piping manifold network. The compressed air stream from each blower is then combined before proceeding to the AS piping manifold network.

The SVE system also consists of two rotary lobe blowers. The system is capable of operating the blower units individually or in parallel. Both blowers are connected to the SVE piping manifold network to facilitate operational flexibility. The extracted soil vapors are directed from the SVE piping manifold network, and divided into two streams. Each stream passes through a moisture separator, inlet filter/silencer, blower, outlet silencer, and then on to the off-gas control system. The processed vapor stream is then recombined after the outlet of the two blowers before proceeding to the off-gas control system.

The off-gas from the SVE system is treated by two vapor-phase granular activated carbon (VGAC) prior to discharge to the atmosphere. An NJDEP Air Discharge Permit Application has been submitted for the off-gas discharge and is included as Attachment 2. The NJDEP had responded to the permit application and all substantive requirements have been met under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The VGAC units are simply operated by passing the extracted vapor stream through the VGAC containers, which absorb the hydrocarbons. Periodic monitoring (weekly PID readings and monthly analytical analysis) is used to determine air emissions compliance and when the VGAC containers require replacement with new media. Details of the AS/SVE system operation and monitoring will be included in the forthcoming submittal of an Operation and Maintenance (O&M) Manual.

5.0 ADDITIONAL MONITORING WELLS

In 2000, seven (7) additional permanent monitoring wells (26MW- 07 through 26MW-13) were installed to monitor site groundwater elevation and the contaminant concentration distribution during the AS/SVE remedial action. The locations of these seven monitoring wells and other existing monitoring wells are shown on Figure 3. The primary use for these wells is for the monitoring of groundwater condition (i.e. – groundwater levels, water quality data, and contaminant concentration) in the center and around the periphery of the existing TCE/DCE plume.

Quarterly groundwater samples are collected from the additional monitoring wells (26MW-7 through 26MW-13), three of the previously existing on-site monitoring wells (26MW-01, 26MW-05 and 26MW-06) and two of the air sparging wells (26AS-1 and 26AS-35) for analysis of volatile organic compounds (VOCs).

The first quarterly groundwater sampling was completed in March 2001. The second quarterly groundwater sampling was completed in October 2001. These quarterly groundwater sampling quarters are based upon full-quarters of system operation. Since the AS/SVE system was shut down for a period of time, the quarters of operation may not reflect calendar quarters. The analytical results from the quarterly sampling episodes provide the necessary data to evaluate the effectiveness of the remedial operations and identify the onset of any plume expansion and/or downgradient migration during remedial operations. A sampling and analysis plan has previously been provided in the Final Remedial Action Plan for Air Sparging/Soil Vapor Extraction (February 2000).

Monitoring well 26MW-08 has been located near the center of the southwestern (downgradient) half of the plume to assist in evaluating the progress of the AS/SVE remedial system. Each of the additional monitoring wells are screened from 8-23 feet bgs, to allow monitoring across the entire thickness of the shallow water-table aquifer.

6.0 SUMMARY OF GROUNDWATER REMEDIATION

The New Jersey Ground Water Quality Standards (NJ-GWQS) for trichloroethene (TCE) and 1,2-dichloroethene (1,2 DCE) are 1 ug/L and 100 ug/L, respectively. The cleanup goal for the Site 26 AS/SVE remediation will be to reduce the TCE/DCE concentrations to NJ-GWQS's. Using AS/SVE technology, extracted contaminant concentrations typically peak during the first few weeks of operation, then decline exponentially for the next several weeks-to-months, before reaching asymptotic levels within 12-24 months of operation (U of W-M, 1997).

Contaminant concentrations in groundwater are being monitored and reported quarterly during active operation of the AS/SVE system. As extracted VOCs reach asymptotic levels, the AS/SVE system will be operated more intermittently, while FWENC/Navy evaluate the plume conditions for "rebound". "Rebound" refers to situations where contaminant concentrations in groundwater (and/or the extracted vapors) increase after the remedial system has been inactive (shutdown) for an extended period of time. Rebound occurs due to diffusion-limited reactions, and the presence of residual (immobile) contaminant and stagnation zones. Operating intermittently, and/or at varying flow rates will minimize the magnitude and duration of any rebound affects (Heron et al, 2000).

The Site 26 AS/SVE system will continue to operate (at least intermittently) until extracted VOCs reach asymptotic levels with no significant rebound affects and groundwater concentrations are below NJ-GWGS criteria. If concentrations in groundwater are still above State criteria at that time, and it is no longer cost-effective to

operate the AS/SVE system, fate and transport modeling will be conducted to evaluate the potential for the remainder of the contaminant plume to naturally attenuate before reaching any downgradient receptors. In this case, the Navy would propose a revised Record of Decision for monitored natural attenuation of the residual compounds.

7.0 BASELINE GROUNDWATER MONITORING

On August 14, 15, and 16, 2000 baseline groundwater samples were collected from ten (10) monitoring wells (26MW-01, -05, -06, and -07 through -13) and two (2) air sparging wells (26AS01 and 26AS35) for analysis of organic compounds by EPA SW846 Method 8260B. The groundwater samples were collected in order to evaluate the volatile organic compounds (VOCs) concentrations in the groundwater prior to starting the AS/SVE system. Groundwater samples were collected following the purging of each well utilizing low-flow methodology (EPA Region II – 1998) until stable aquifer conditions were met. The results of this sampling event provide a baseline for volatile organic compounds (VOC) concentrations in groundwater in the vicinity of the AS/SVE system. Table 1 contains the analytical results of the baseline groundwater sampling as well as the quarterly results.

8.0 SYSTEM OPERATION

System operation began on January 4, 2001 utilizing AS Blower #2 and SVE Blower # 2 with all of the four influence zones open. Normal system operation is scheduled for eight (8) hours a day Monday through Friday for a total forty (40) hours per week. Groundwater measurements obtained in January 2001 revealed that a significant amount of groundwater mounding was occurring within the area of the AS influence. Measures taken to reduce the groundwater mounding included opening of the AS blower bleed valve and the closing of individual AS well valves to lower the air flow to the AS wells. The belts, sheaves, and pulley for the air sparge blower were also replaced to decrease the air flow and minimize the groundwater mounding effect. During January 2001, the groundwater mounding continued and SVE wells began to extract groundwater. This extracted groundwater was collected in the air-water separator and then pumped through two liquid-phase granular activated carbon adsorber units before discharge to the ground surface outside of Building GB-1.

On January 25, 2001 operation of the AS/SVE system ceased as directed by the Navy. The system was shut down while more information was provided to the NJDEP on the air discharge permit application. System operation resumed on February 6, 2001 as directed by the Navy. The system operated satisfactorily with minor flow rate adjustments being made at individual AS wells to lower airflow in an attempt to minimize groundwater mounding.

On February 20, 2001 airflow to the sparge wells was further reduced in order to continue to minimize the mounding of groundwater. The airflow to the wells was decreased by opening a 1-inch diameter air bleed valve on the air sparging line.

Since groundwater mounding continued to be problematic, a second attempt to reduce sparging air-flow was made on March 7, 2001. The proposed remedy for the situation was to replace the one inch (1") sparge blower bleed valve with a two inch (2") bleed valve. This allowed for the injection of a lower volume of sparged air to the subsurface and for more of the air volume produced by the blower to be "bled" off. Bleeding off additional air through the 2-inch diameter air bleed valve was successful in eliminating the groundwater mounding problem.

Normal operation of the AS/SVE system continued via remote start-up and shutdown through October 31, 2001. During this operation period, no water was discharged from the air-water separator unit indicating that groundwater extracted by the SVE wells and piping was successfully minimized during this operational period. An operation summary log documenting the hours and operation of the AS/SVE system is provided as Table 2.

9.0 SECOND QUARTER GROUNDWATER MONITORING

On October 25, 26 and 29, 2001 groundwater samples were collected from fifteen (15) monitoring wells (26MW-01, -05, -06, -07, -08, -09, -10, -11, -12, -13, -14, -15, -16, -17 and -18) and two (2) air sparging wells (26AS-01 and 26AS-35) for analysis of organic compounds by EPA SW846 Method 8260B. Groundwater samples were collected following the purging of each well utilizing low-flow methodology until stable aquifer conditions were met. Aquifer water quality data is provided on Table 3. The results of the second quarterly sampling event, as well as the first quarter and baseline results, are summarized in Table 1. The laboratory analytical data has been included as Appendix A. Figures 4 through 6 depict the monitoring wells and concentration of TCE, PCE, and cis, 1, 2-DCE respectively.

During the October 2001 sampling event, depths to groundwater were measured in each well to determine groundwater flow direction and to assess the thickness of the vadose zone in the area of the AS/SVE system. Depths to groundwater ranged from 2 to 17 feet bgs and indicate that groundwater flows to the southeast. This groundwater flow direction is consistent with the previous sampling event. A groundwater contour map showing the locations of the monitoring wells and their corresponding groundwater elevation has been provided as Figure 7.

The historical isoconcentration maps developed prior to and during the operation of the AS/SVE system can be referenced as Figures 8 through 11.

10.0 EFFLUENT WATER MONITORING

No effluent water samples were collected during the October, 2001 sampling event as no water had been discharged from the air/water separator after the February 27, 2001 sampling event. Since the groundwater mounding problem was alleviated, there has been no groundwater withdrawn through the soil vapor extraction system.

11.0 EFFLUENT AIR MONITORING

Pre- and post-effluent air samples were collected on July 31, 2001, August 28, 2001, September 28, 2001 and October 31 2001 for laboratory analysis of VOC concentrations. The analytical results for the AS/SVE system air sampling events have been summarized and are presented in Table 4. The laboratory analytical data has been provided as Appendix B.

During the operation of the AS/SVE (2nd Quarter, 2001), influent and effluent air samples were collected and analyzed for VOCs to evaluate the extraction of TCE and DCE from the groundwater and the loading of VOCs on the vapor-phase granular activated carbon (VGAC) units. Samples were collected on July 31, 2001 (beginning of 2nd Quarter), August 28, 2001 and September 28, 2001 (during normal system operation) and on October 31 2001 (end of 2nd Quarter) to represent initial, intermediate, and final 2nd Quarter 2001 extraction rates. Average TCE and DCE extraction rates for the 2nd Quarter 2001 were calculated to be 0.00123 and 0.000574lb/hr, respectively (See Calculation Sheet in Appendix C). These quantities assume that the flow rate into the VGAC units was constant at 464 scfm.

A Calculation sheets in Appendix C converts the results of the post-carbon unit air concentration for the August 28, 2001 sampling event (Table 4) from mg/m³ to lbs./hour, as presented in the NJDEP Air Discharge Permit Application (Appendix C). The August 28, 2001 sampling event results represented the highest total VOC air effluent concentrations detected and have been used to evaluate if the maximum VOC discharge to air is within NJDEP limits. The August 28, 2001 analytical VOC data reported a total concentration of 4.3 mg/m³ which was comprised of Benzene, Ethylbenzene, 1,3,5-Trimethyl Benzene, 1,2,4-Trimethyl Benzene, o-Xylene and m,p-Xylene, compounds that are not associated with the groundwater plume. The maximum total VOC air emission of 0.00722 lbs./hr (using August 28, 2001 sampling results) from the AS/SVE unit is well below the NJDEP permitted limit of 0.03 lbs./hr.

A total of 417 hours out of a possible 520 hours (8 hours a day for 13 weeks) were reported for the operation of the AS/SVE system during the 2nd Quarter 2001. Note that from January 25 to February 6, 2001, the system was not operated while NJDEP was evaluating additional information regarding the air discharge. The time period accounted for a deduction in possible operational hours by 56 hours. The approximate total pounds extracted from the groundwater were calculated to be 0.51lbs of TCE and 0.24lbs of DCE for the 2nd Quarter 2001 (See Calculation Sheet in Appendix C). Note that for the July 31, 2001 and August 28, 2001 sampling events, several additional VOCs were detected in

the pre- and post-carbon unit samples. These compounds were not detected within the groundwater plume and their presence in the air samples may be attributable to sample contamination. Sample contamination has not been confirmed, however, all concentrations are within the NJDEP air discharge permit limits.

12.0 CONCLUSION

The AS/SVE remediation of the TCE and DCE plume in the area adjacent to Building GB-1 started in January, 2001. The AS/SVE system is intended to remediate the detected TCE and DCE groundwater contamination within the area of the AS/SVE system. Groundwater monitoring will be performed on a quarterly basis as stated in the approved Final Remedial Action Plan for Air Sparging/Soil Vapor Extraction (FWENC, 2000). The groundwater monitoring program results and the AS/SVE operational data will be used to evaluate system effectiveness.

Comparison of the results of the October 2001 (2nd Quarter) sampling event with those of the March 2001 (1st Quarter) sampling event indicate that the high concentrations of TCE and DCE in monitoring well 26MW-01 (located immediately downgradient of the remediated source area) continue to decrease. There was a total TCE concentration reduction of 81% in groundwater samples collected after operating the AS/SVE system between the first and second quarter. There was also a total reduction of 1,2-DCE by 73% in groundwater samples collected after the first and second quarter of operation. Several of the monitoring wells indicated detections of TCE and DCE (range = <1.0 to 5 ug/L) from the April 2001 sampling event that had previously exhibited non-detections of these compounds during the August 2000 sampling event. The change in concentrations of the monitoring wells may be attributable to the mixing of groundwater during the initial start-up activities of the AS/SVE system. The increased concentration of contaminants within the groundwater plume are expected as the "hot-spot" areas are sparged and the groundwater from those areas move to adjacent areas. All of the wells, which revealed increases in contaminant concentration, are within the capture zone of the AS/SVE system.

Efforts to reduce the air sparging flow and the amount of groundwater mounding successfully limited the quantity of groundwater that was being extracted via the SVE wells. The reduction of groundwater mounding within the areas of SVE influence optimized the collection of vapor-phase contamination.

The groundwater analytical results (October 2001) provide further data to evaluate the effectiveness of the AS/SVE system to successfully remediate the contaminated groundwater. Subsequent groundwater analytical results will provide additional data sets to further evaluate/monitor remediation and to enable accurate prediction of the duration of remedial activities by means of the AS/SVE system.

13.0 REFERENCES

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TABLES

TABLE 1
 NWS-Earle, Site 26
 2nd Quarter, 2001 - AS/SVE Operation Report
 Groundwater Analytical Data
 Volatile Organic Compounds

SAMPLE ID LABORATORY ID DATE COLLECTED LOCATION MATRIX UNITS COMMENTS	NJDEP Groundwater Quality Criteria ug/L	26MW-01	26MW-01-02	26MW-01-03	26MW-05	26MW-05-02	26MW-05-03	26MW-06
		O32547	O06	O01	O32545	O04	O01	O32550
		08/14/00	04/02/01	10/30/01	08/14/00	04/02/01	10/26/01	08/15/00
		SITE 26, MW-01	SITE 26, MW-01	SITE 26, MW-01	SITE 26, MW-05	SITE 26, MW-05	SITE 26, MW-05	SITE 26, MW-06
		AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Baseline GW	After 1st Qtr of AS/SVE	After 2nd Qtr of AS/SVE	Baseline GW	After 1st Qtr of AS/SVE	After 2nd Qtr of AS/SVE	Baseline GW	
Chloromethane	30	5 U	1 U	1.1 U	5 U	1 U	1.1 U	5 U
Bromomethane	10	5 UJ	1 U	0.6 U	5 UJ	1 U	0.6 U	5 UJ
Vinyl Chloride	5	5 U	1 U	1 U	5 U	1 U	1 U	5 U
Chloroethane	NA	5 U	1 U	0.7 U	5 U	1 U	0.7 U	5 U
Methylene Chloride	2	5 U	1 U	0.4 U	5 U	1 U	0.4 U	5 U
Acetone	700	5 R	5 U	2.4 U	5 R	5 U	2.4 U	5 R
Carbon Disulfide	NA	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
1,1-Dichloroethene	1	5 U	1 U	0.4 U	5 U	1 U	0.4 U	5 U
1,1-Dichloroethane	70	5 U	1 U	0.2 U	5 U	1 U	0.2 U	5 U
cis - 1,2-Dichloroethene	10	1800 D	830 D	16	5 U	1 U	1.9	5 U
trans - 1,2-Dichloroethene	100	5 U	6.8 U	0.4 U	5 U	1 U	0.4 U	5 U
Chloroform	6	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
1,2-Dichloroethane	2	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
2-Butanone	300	5 U	5 U	2.8 U	5 U	5 U	2.8 U	5 U
1,1,1-Trichloroethane	30	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
Carbon Tetrachloride	2	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
Bromodichloromethane	1	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
1,2-Dichloropropane	1	5 U	1 U	0.4 U	5 U	1 U	0.4 U	5 U
cis-1,3-Dichloropropene	NA	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
Trichloroethene	1	3700 D	370 D	10	5 U	1.3	1.2	5 U
Dibromochloromethane	10	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
1,1,2-Trichloroethane	3	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
Benzene	1	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
trans-1,3-Dichloropropene	NA	5 U	1 U	0.2 U	5 U	1 U	0.2 U	5 U
Bromoform	4	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
4-Methyl-2-pentanone	400	5 U	5 U	1.4 U	5 U	5 U	1.4 U	5 U
2-Hexanone	NA	5 UJ	5 U	1 U	5 UJ	5 U	1 U	5 UJ
Tetrachloroethene	1	5 UJ	1 U	0.3 U	5 UJ	1 U	0.3 U	5 UJ
Toluene	1000	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
1,1,2,2-Tetrachloroethane	2	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
Chlorobenzene	4	5 U	1 U	0.2 U	5 U	1 U	0.2 U	5 U
Ethylbenzene	700	5 U	1 U	0.4 U	5 U	1 U	0.4 U	5 U
Styrene	100	5 U	1 U	0.2 U	5 U	1 U	0.2 U	5 U
Xylenes (total)	40	5 U	1 U	0.9 U	5 U	1 U	0.9 U	5 U

Notes:
 U - Not detected above quantitation limit
 NA - No applicable standard
 D - Diluted
 J - Estimated
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TABLE 1
NWS-Earle, Site 26
2nd Quarter, 2001 - AS/SVE Operation Report
Groundwater Analytical Data
Volatile Organic Compounds

SAMPLE ID LABORATORY ID DATE COLLECTED LOCATION MATRIX UNITS COMMENTS	NJDEP Groundwater Quality Criteria ug/L	26MW-06-02	26MW-06-03
		O01	O02
		04/02/01	10/30/01
		SITE 26, MW-06	SITE 26, MW-06
		AQUEOUS	AQUEOUS
		ug/L	ug/L
		After 1st Qtr of AS/SVE	After 2nd Qtr of AS/SVE
Chloromethane	30	1 U	1.1 U
Bromomethane	10	1 U	0.6 U
Vinyl Chloride	5	1 U	1 U
Chloroethane	NA	1 U	0.7 U
Methylene Chloride	2	1 U	0.4 U
Acetone	700	5 U	2.4 U
Carbon Disulfide	NA	1 U	0.3 U
1,1-Dichlorethene	1	1 U	0.4 U
1,1-Dichlorethene	70	1 U	0.2 U
cis - 1,2 -Dichloroethene	10	0.8 J	1.6
trans - 1,2-Dichloroethene	100	1 U	0.4 U
Chloroform	6	1 U	0.3 U
1,2-Dichloroethane	2	1 U	0.3 U
2-Butanone	300	5 U	2.8 U
1,1,1-Trichloroethane	30	1 U	0.3 U
Carbon Tetrachloride	2	1 U	0.3 U
Bromodichloromethane	1	1 U	0.3 U
1,2-Dichloropropane	1	1 U	0.4 U
cis-1,3-Dichloropropene	NA	1 U	0.3 U
Trichloroethene	1	3	4.7
Dibromochloromethane	10	1 U	0.3 U
1,1,2-Trichloroethane	3	1 U	0.3 U
Benzene	1	1 U	0.3 U
trans-1,3-Dichloropropene	NA	1 U	0.2 U
Bromoform	4	1 U	0.3 U
4-Methyl-2-pentanone	400	5 U	1.4 U
2-Hexanone	NA	5 U	1 U
Tetrachloroethene	1	1 U	0.3 U
Toluene	1000	1 U	0.3 U
1,1,2,2-Tetrachloroethane	2	1 U	0.3 U
Chlorobenzene	4	1 U	0.2 U
Ethylbenzene	700	1 U	0.4 U
Styrene	100	1 U	0.2 U
Xylenes (total)	40	1 U	0.9 U

Notes:

- U - Not detected above quantitation limit
- NA - No applicable standard
- D - Diluted
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TABLE 1
NWS-Earle, Site 26
2nd Quarter, 2001 - AS/SVE Operation Report
Groundwater Analytical Data
Volatile Organic Compounds

SAMPLE ID LABORATORY ID DATE COLLECTED LOCATION MATRIX UNITS COMMENTS	NJDEP Groundwater Quality Criteria ug/L	26MW-07	26MW-07-02	26MW-07-03	26MW-08	26MW-08-02	26MW-08-03	26MW-09
		O32546	O05	O11	O32549	O03	O09	O32548
		08/14/00	04/02/01	10/26/01	08/15/00	04/02/01	10/26/01	08/15/00
		SITE 26, MW-07	SITE 26, MW-07	SITE 26, MW-07	SITE 26, MW-08	SITE 26, MW-08	SITE 26, MW-08	SITE 26, MW-09
		AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
		Baseline GW	After 1st Qtr of AS/SVE	After 2nd Qtr of AS/SVE	Baseline GW	After 1st Qtr of AS/SVE	After 2nd Qtr of AS/SVE	Baseline GW
Chloromethane	30	5 U	1 U	1.1 U	5 U	1 U	1.1 U	5 U
Bromomethane	10	5 UJ	1 U	0.6 U	5 UJ	1 U	0.6 U	5 UJ
Vinyl Chloride	5	5 U	1 U	1 U	5 U	1 U	1 U	5 U
Chloroethane	NA	5 U	1 U	0.7 U	5 U	1 U	0.7 U	5 U
Methylene Chloride	2	5 U	1 U	0.4 U	5 U	1 U	0.4 U	5 U
Acetone	700	5 R	5 U	2.4 U	5 R	5 U	2.4 U	5 R
Carbon Disulfide	NA	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
1,1-Dichloroethene	1	5 U	1 U	0.4 U	5 U	1 U	0.4 U	5 U
1,1-Dichloroethane	70	5 U	1 U	0.2 U	5 U	1 U	0.2 U	5 U
cis - 1,2 -Dichloroethene	10	5 U	1 U	0.3 U	28	540 D	310 E	5 U
trans - 1,2-Dichloroethene	100	5 U	1 U	0.4 U	5 U	3	2.9	5 U
Chloroform	6	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
1,2-Dichloroethane	2	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
2-Butanone	300	5 U	5 U	2.8 U	5 U	5 U	2.8 U	5 U
1,1,1-Trichloroethane	30	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
Carbon Tetrachloride	2	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
Bromodichloromethane	1	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
1,2-Dichloropropane	1	5 U	1 U	0.4 U	5 U	1 U	0.4 U	5 U
cis-1,3-Dichloropropene	NA	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
Trichloroethene	1	5 U	3	3.5	42	440 D	97	5 U
Dibromochloromethane	10	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
1,1,2-Trichloroethane	3	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
Benzene	1	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
trans-1,3-Dichloropropene	NA	5 U	1 U	0.2 U	5 U	1 U	0.2 U	5 U
Bromoform	4	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
4-Methyl-2-pentanone	400	5 U	5 U	1.4 U	5 U	5 U	1.4 U	5 U
2-Hexanone	NA	5 UJ	5 U	1 U	5 UJ	5 U	1 U	5 UJ
Tetrachloroethene	1	5 UJ	1 U	0.3 U	5 UJ	1 U	0.3 U	5 UJ
Toluene	1000	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
1,1,2,2-Tetrachloroethane	2	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
Chlorobenzene	4	5 U	1 U	0.2 U	5 U	1 U	0.2 U	5 U
Ethylbenzene	700	5 U	1 U	0.4 U	5 U	1 U	0.4 U	5 U
Styrene	100	5 U	1 U	0.2 U	5 U	1 U	0.2 U	5 U
Xylenes (total)	40	5 U	1 U	0.9 U	5 U	1 U	0.9 U	5 U

Notes:
U - Not detected above quantitation limit
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TABLE 1
NWS-Earle, Site 26
2nd Quarter, 2001 - AS/SVE Operation Report
Groundwater Analytical Data
Volatile Organic Compounds

SAMPLE ID LABORATORY ID DATE COLLECTED LOCATION MATRIX UNITS COMMENTS	NJDEP Groundwater Quality Criteria ug/L	26MW-09-02	26MW-09-03
		O02 04/02/01 SITE 26, MW-09 AQUEOUS ug/L After 1st Qtr of AS/SVE	O08 10/26/01 SITE 26, MW-09 AQUEOUS ug/L After 2nd Qtr of AS/SVE
Chloromethane	30	1 U	1.1 U
Bromomethane	10	1 U	0.6 U
Vinyl Chloride	5	1 U	1 U
Chloroethane	NA	1 U	0.7 U
Methylene Chloride	2	1 U	0.4 U
Acetone	700	3.2 J	2.4 U
Carbon Disulfide	NA	1 U	0.3 U
1,1-Dichloroethene	1	1 U	0.4 U
1,1-Dichloroethane	70	1 U	0.2 U
cis - 1,2 -Dichloroethene	10	1 U	0.3 U
trans - 1,2-Dichloroethene	100	1 U	0.4 U
Chloroform	6	1 U	0.3 U
1,2-Dichloroethane	2	1 U	0.3 U
2-Butanone	300	5 U	2.8 U
1,1,1-Trichloroethane	30	1 U	0.3 U
Carbon Tetrachloride	2	1 U	0.3 U
Bromodichloromethane	1	1 U	0.3 U
1,2-Dichloropropane	1	1 U	0.4 U
cis-1,3-Dichloropropene	NA	1 U	0.3 U
Trichloroethene	1	1.1	0.4 U
Dibromochloromethane	10	1 U	0.3 U
1,1,2-Trichloroethane	3	1 U	0.3 U
Benzene	1	1 U	0.3 U
trans-1,3-Dichloropropene	NA	1 U	0.2 U
Bromoform	4	1 U	0.3 U
4-Methyl-2-pentanone	400	5 U	1.4 U
2-Hexanone	NA	5 U	1 U
Tetrachloroethene	1	1 U	0.3 U
Toluene	1000	1 U	0.3 U
1,1,2,2-Tetrachloroethane	2	1 U	0.3 U
Chlorobenzene	4	1 U	0.2 U
Ethylbenzene	700	1 U	0.4 U
Styrene	100	1 U	0.2 U
Xylenes (total)	40	1 U	0.9 U

Notes:

- U - Not detected above quantitation limit
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TABLE 1
NWS-Earle, Site 26
2nd Quarter, 2001 - AS/SVE Operation Report
Groundwater Analytical Data
Volatile Organic Compounds

SAMPLE ID LABORATORY ID DATE COLLECTED LOCATION MATRIX UNITS COMMENTS	NJDEP Groundwater Quality Criteria ug/L	26MW-10	26MW-10-02	26MW-10-03	26MW-11	26MW-11-02	26MW-11-03
		O32553	O08	O07	O32601	O09	O12
		08/15/00	04/02/01	10/26/01	08/15/00	04/02/01	10/26/01
		SITE 26, MW-10	SITE 26, MW-10	SITE 26, MW-10	SITE 26, MW-11	SITE 26, MW-11	SITE 26, MW-11
		AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
		Baseline GW	After 1st Qtr of AS/SVE	After 2nd Qtr of AS/SVE	Baseline GW	After 1st Qtr of AS/SVE	After 2nd Qtr of AS/SVE
Chloromethane	30	5 U	1 U	1.1 U	5 U	1 U	1.1 U
Bromomethane	10	5 UJ	1 U	0.6 U	5 UJ	1 U	0.6 U
Vinyl Chloride	5	5 U	1 U	1 U	5 U	1 U	1 U
Chloroethane	NA	5 U	1 U	0.7 U	5 U	1 U	0.7 U
Methylene Chloride	2	5 U	1 U	0.4 U	5 U	1 U	0.4 U
Acetone	700	5 R	5 U	2.4 U	5 R	5 U	2.4 U
Carbon Disulfide	NA	5 U	1 U	0.3 U	5 U	1 U	0.3 U
1,1-Dichlorethene	1	5 U	1 U	0.4 U	5 U	1 U	0.4 U
1,1-Dichlorethene	70	5 U	1 U	0.2 U	5 U	1 U	0.2 U
cis - 1,2-Dichloroethene	10	10	1 U	3.8	5 U	1 U	0.3 U
trans - 1,2-Dichloroethene	100	5 U	1 U	0.4 U	5 U	1 U	0.4 U
Chloroform	6	5 U	2.5	0.3 U	5 U	12	2
1,2-Dichlorethene	2	5 U	1 U	0.3 U	5 U	1 U	0.3 U
2-Butanone	300	5 U	5 U	2.8 U	5 R	5 U	2.8 U
1,1,1-Trichloroethane	30	5 U	1 U	0.3 U	5 U	1 U	0.3 U
Carbon Tetrachloride	2	5 U	1 U	0.3 U	5 U	1 U	0.3 U
Bromodichloromethane	1	5 U	1 U	0.3 U	5 U	1 U	0.3 U
1,2-Dichloropropane	1	5 U	1 U	0.4 U	5 U	1 U	0.4 U
cis-1,3-Dichloropropene	NA	5 U	1 U	0.3 U	5 U	1 U	0.3 U
Trichloroethene	1	10	1.7	2.9	5 U	1.4	0.4 U
Dibromochloromethane	10	5 U	1 U	0.3 U	5 U	1 U	0.3 U
1,1,2-Trichloroethane	3	5 U	1 U	0.3 U	5 U	1 U	0.3 U
Benzene	1	5 U	1 U	0.3 U	5 U	1 U	0.3 U
trans-1,3-Dichloropropene	NA	5 U	1 U	0.2 U	5 U	1 U	0.2 U
Bromoform	4	5 U	1 U	0.3 U	5 U	1 U	0.3 U
4-Methyl-2-pentanone	400	5 U	5 U	1.4 U	5 U	5 U	1.4 U
2-Hexanone	NA	5 UJ	5 U	1 U	5 UJ	5 U	1 U
Tetrachloroethene	1	6.2 J	1 U	1.1	5 UJ	1 U	0.3 U
Toluene	1000	5 U	1 U	0.3 U	5 U	1 U	0.3 U
1,1,2,2-Tetrachloroethane	2	5 U	1 U	0.3 U	5 U	1 U	0.3 U
Chlorobenzene	4	5 U	1 U	0.2 U	5 U	1 U	0.2 U
Ethylbenzene	700	5 U	1 U	0.4 U	5 U	1 U	0.4 U
Styrene	100	5 U	1 U	0.2 U	5 U	1 U	0.2 U
Xylenes (total)	40	5 U	1 U	0.9 U	5 U	1 U	0.9 U

Notes:

- U - Not detected above quantitation limit
- NA - No applicable standard
- D - Diluted
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TABLE 1
NWS-Earle, Site 26
2nd Quarter, 2001 - AS/SVE Operation Report
Groundwater Analytical Data
Volatile Organic Compounds

SAMPLE ID LABORATORY ID DATE COLLECTED LOCATION MATRIX UNITS COMMENTS	NJDEP Groundwater Quality Criteria ug/L	26MW-12	26MW-12-02	26MW-12-03	26MW-13	26MW-13-02	26MW-13-03	26AS-1
		O32600	O07	O05	O32599	O07	O04	O32602
		08/15/00	04/02/01	10/30/01	08/15/00	04/03/01	10/30/01	08/16/00
		SITE 26, MW-12	SITE 26, MW-12	SITE 26, MW-12	SITE 26, MW-13	SITE 26, MW-13	SITE 26, MW-13	SITE 26, AS-1
		AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Baseline GW	After 1st Qtr of AS/SVE	After 2nd Qtr of AS/SVE	Baseline GW	After 1st Qtr of AS/SVE	After 2nd Qtr of AS/SVE	Baseline GW	
Chloromethane	30	5 U	1 U	1.1 U	5 U	1 U	1.1 U	5 U
Bromomethane	10	5 UJ	1 U	0.6 U	5 UJ	1 U	0.6 U	5 UJ
Vinyl Chloride	5	5 U	1 U	1 U	5 U	1 U	1 U	5 U
Chloroethane	NA	5 U	1 U	0.7 U	5 U	1 U	0.7 U	5 U
Methylene Chloride	2	5 U	1 U	0.4 U	5 U	1 U	0.4 U	5 U
Acetone	700	5 R	5 U	2.4 U	5 R	5 U	2.4 U	5 R
Carbon Disulfide	NA	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
1,1-Dichloroethene	1	5 U	1 U	0.4 U	5 U	1 U	0.4 U	5 U
1,1-Dichloroethane	70	5 U	1 U	0.2 U	5 U	1 U	0.2 U	5 U
cis - 1,2-Dichloroethene	10	5 U	1 U	0.3 U	5 U	1 U	4	6.3
trans - 1,2-Dichloroethene	100	5 U	1 U	0.4 U	5 U	1 U	0.4 U	5 U
Chloroform	6	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
1,2-Dichloroethane	2	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
2-Butanone	300	5 R	5 U	2.8 U	5 R	5 U	2.8 U	5 R
1,1,1-Trichloroethane	30	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
Carbon Tetrachloride	2	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
Bromodichloromethane	1	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
1,2-Dichloropropane	1	5 U	1 U	0.4 U	5 U	1 U	0.4 U	5 U
cis-1,3-Dichloropropene	NA	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
Trichloroethene	1	5 U	1 U	0.4 U	5 U	2.3	8.7	7.9
Dibromochloromethane	10	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
1,1,2-Trichloroethane	3	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
Benzene	1	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
trans-1,3-Dichloropropene	NA	5 U	1 U	0.2 U	5 U	1 U	0.2 U	5 U
Bromoform	4	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
4-Methyl-2-pentanone	400	5 U	5 U	1.4 U	5 U	5 U	1.4 U	5 U
2-Hexanone	NA	5 UJ	5 U	1 U	5 UJ	5 U	1 U	5 UJ
Tetrachloroethene	1	5 UJ	1 U	0.3 U	5 UJ	1 U	0.3 U	5 UJ
Toluene	1000	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
1,1,2,2-Tetrachloroethane	2	5 U	1 U	0.3 U	5 U	1 U	0.3 U	5 U
Chlorobenzene	4	5 U	1 U	0.2 U	5 U	1 U	0.2 U	5 U
Ethylbenzene	700	5 U	1 U	0.4 U	5 U	1 U	0.4 U	5 U
Styrene	100	5 U	1 U	0.2 U	5 U	1 U	0.2 U	5 U
Xylenes (total)	40	5 U	1 U	0.9 U	5 U	1 U	0.9 U	5 U

Notes:

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- D - Diluted
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TABLE 1
NWS-Earle, Site 26
2nd Quarter, 2001 - AS/SVE Operation Report
Groundwater Analytical Data
Volatile Organic Compounds

SAMPLE ID LABORATORY ID DATE COLLECTED LOCATION MATRIX UNITS COMMENTS	NJDEP Groundwater Quality Criteria ug/L	26AS-1-02	26AS-1-03
		O12	O03
		03/29/01	10/30/01
		SITE 26, AS-1	SITE 26, AS-1
		AQUEOUS	AQUEOUS
		ug/L	ug/L
		After 1st Qtr of AS/SVE	After 2nd Qtr of AS/SVE
Chloromethane	30	1 U	1.1 U
Bromomethane	10	1 U	0.6 U
Vinyl Chloride	5	1 U	1 U
Chloroethane	NA	1 U	0.7 U
Methylene Chloride	2	1 U	0.4 U
Acetone	700	5 U	2.4 U
Carbon Disulfide	NA	1 U	0.3 U
1,1-Dichloroethene	1	1 U	0.4 U
1,1-Dichloroethane	70	1 U	0.2 U
cis - 1,2 -Dichloroethene	10	38	45
trans - 1,2-Dichloroethene	100	1 U	0.4 U
Chloroform	6	1 U	0.3 U
1,2-Dichloroethane	2	1 U	0.3 U
2-Butanone	300	5 U	2.8 U
1,1,1-Trichloroethane	30	1 U	0.3 U
Carbon Tetrachloride	2	1 U	0.3 U
Bromodichloromethane	1	1 U	0.3 U
1,2-Dichloropropane	1	1 U	0.4 U
cis-1,3-Dichloropropene	NA	1 U	0.3 U
Trichloroethene	1	120	43
Dibromochloromethane	10	1 U	0.3 U
1,1,2-Trichloroethane	3	1 U	0.3 U
Benzene	1	1 U	0.3 U
trans-1,3-Dichloropropene	NA	1 U	0.2 U
Bromoform	4	1 U	0.3 U
4-Methyl-2-pentanone	400	5 U	1.4 U
2-Hexanone	NA	5 U	1 U
Tetrachloroethene	1	1 U	0.3 U
Toluene	1000	1 U	0.3 U
1,1,2,2-Tetrachloroethane	2	1 U	0.3 U
Chlorobenzene	4	1 U	0.2 U
Ethylbenzene	700	1 U	0.4 U
Styrene	100	1 U	0.2 U
Xylenes (total)	40	1 U	0.9 U

Notes:

- U - Not detected above quantitation limit
- NA - No applicable standard
- D - Diluted
- J - Estimated
- UJ - Not detected, quantitation limit is approximate
- R - Result rejected (see data validation report)
- Shaded/Bolded - Exceeds NJDEP GQS
- ug/L - microgram per liter

TABLE 1
NWS-Earle, Site 26
2nd Quarter, 2001 - AS/SVE Operation Report
Groundwater Analytical Data
Volatile Organic Compounds

SAMPLE ID LABORATORY ID DATE COLLECTED LOCATION MATRIX UNITS COMMENTS	NJDEP Groundwater Quality Criteria ug/L	26AS-35	26AS-35-02	26AS-35-03	26MW-14-02	26MW-14-03	26MW-15-02	26MW-15-03
		O32603	O12	O06	O01	O03	O02	O01
		08/16/00	04/03/01	10/30/2001	5/16/2001	10/26/2001	5/16/2001	10/26/2001
		SITE 26, AS-35	SITE 26, AS-35	SITE 26, AS-35	SITE 26, MW-14	SITE 26, MW-14	SITE 26, MW-15	SITE 26, MW-15
		AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	Baseline GW	After 1st Qtr of AS/SVE	After 2nd Qtr of AS/SVE	After 1st Qtr of AS/SVE	After 2nd Qtr of AS/SVE	After 1st Qtr of AS/SVE	After 2nd Qtr of AS/SVE	
Chloromethane	30	5 UJ	1 U	1.1 U	1 U	1.1 U	1 U	1.1 U
Bromomethane	10	5 UJ	1 U	0.6 U	1 U	0.6 U	1 U	0.6 U
Vinyl Chloride	5	5 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	NA	5 U	1 U	0.7 U	1 U	0.7 U	1 U	0.7 U
Methylene Chloride	2	5 U	1 U	0.4 U	1 U	0.4 U	1 U	0.4 U
Acetone	700	5 R	5 U	2.4 U	5 U	2.4 U	5 U	2.4 U
Carbon Disulfide	NA	5 U	1 U	0.3 U	NA	0.3 U	NA	0.3 U
1,1-Dichlorethene	1	5 U	1 U	0.4 U	1 U	0.4 U	1 U	0.4 U
1,1-Dichlorethene	70	5 U	1 U	0.2 U	1 U	0.2 U	1 U	0.2 U
cis - 1,2-Dichloroethene	10	5 U	5.5	1.2	1 U	0.3 U	1 U	0.3 U
trans - 1,2-Dichloroethene	100	5 U	1 U	0.4 U	NA	0.4 U	NA	0.4 U
Chloroform	6	5 U	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
1,2-Dichloroethane	2	5 U	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
2-Butanone	300	5 U	5 U	2.8 U	5 U	2.8 U	5 U	2.8 U
1,1,1-Trichloroethane	30	5 U	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
Carbon Tetrachloride	2	5 UJ	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
Bromodichloromethane	1	5 U	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
1,2-Dichloropropane	1	5 U	1 U	0.4 U	1 U	0.4 U	1 U	0.4 U
cis-1,3-Dichloropropene	NA	5 U	1 U	0.3 U	NA	0.3 U	NA	0.3 U
Trichloroethene	1	5.6	6.1	0.4 U	1 U	0.4 U	1 U	0.4 U
Dibromochloromethane	10	5 U	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
1,1,2-Trichloroethane	3	5 U	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
Benzene	1	5 U	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
trans-1,3-Dichloropropene	NA	5 U	1 U	0.2 U	U	0.2 U	U	0.2 U
Bromoform	4	5 U	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
4-Methyl-2-pentanone	400	5 U	5 U	1.4 U	NA	1.4 U	NA	1.4 U
2-Hexanone	NA	5 UJ	5 U	1 U	NA	1 U	NA	1 U
Tetrachloroethene	1	5 UJ	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
Toluene	1000	5 U	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
1,1,2,2-Tetrachloroethane	2	5 U	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
Chlorobenzene	4	5 U	1 U	0.2 U	1 U	0.2 U	1 U	0.2 U
Ethylbenzene	700	5 U	1 U	0.4 U	1 U	0.4 U	1 U	0.4 U
Styrene	100	5 U	1 U	0.2 U	1 U	0.2 U	1 U	0.2 U
Xylenes (total)	40	5 U	1 U	0.9 U	1 U	0.9 U	1 U	0.9 U

Notes:
U - Not detected above quantitation limit
NA - No applicable standard
D - Diluted
J - Estimated
UJ - Not detected, quantitation limit is approximate
R - Result rejected (see data validation report)
Shaded/Bolded - Exceeds NJDEP GQS
ug/L - microgram per liter

TABLE 1
NWS-Earle, Site 26
2nd Quarter, 2001 - AS/SVE Operation Report
Groundwater Analytical Data
Volatile Organic Compounds

SAMPLE ID LABORATORY ID DATE COLLECTED LOCATION MATRIX UNITS COMMENTS	NJDEP Groundwater Quality Criteria ug/L	26MW-16-02	26MW-16-03	26MW-17-02	26MW-17-03	26MW-18-02	26MW-18-03
		O03	O02	O04	O05	O05	O04
		5/16/2001	10/26/2001	5/16/2001	10/26/2001	5/16/2001	10/26/2001
		SITE 26, MW-16	SITE 26, MW-16	SITE 26, MW-17	SITE 26, MW-17	SITE 26, MW-18	SITE 26, MW-18
		AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
After 1st Qtr of AS/SVE	After 2nd Qtr of AS/SVE	After 1st Qtr of AS/SVE	After 2nd Qtr of AS/SVE	After 1st Qtr of AS/SVE	After 2nd Qtr of AS/SVE		
Chloromethane	30	1 U	1.1 U	1 U	1.1 U	1 U	1.1 U
Bromomethane	10	1 U	0.6 U	1 U	0.6 U	1 U	0.6 U
Vinyl Chloride	5	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	NA	1 U	0.7 U	1 U	0.7 U	1 U	0.7 U
Methylene Chloride	2	1 U	0.4 U	1 U	0.4 U	1 U	0.4 U
Acetone	700	5 U	16	5 U	2.4 U	5 U	2.4 U
Carbon Disulfide	NA	NA	0.3 U	NA	0.3 U	NA	0.3 U
1,1-Dichloroethene	1	1 U	0.4 U	1 U	0.4 U	1 U	0.4 U
1,1-Dichloroethane	70	1 U	0.2 U	1 U	0.2 U	1 U	0.2 U
cis - 1,2 -Dichloroethene	10	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
trans - 1,2-Dichloroethene	100	NA	0.4 U	NA	0.4 U	NA	0.4 U
Chloroform	6	1 U	0.3 U	1 U	0.3 U	1 U	11
1,2-Dichloroethane	2	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
2-Butanone	300	5 U	2.8 U	5 U	2.8 U	5 U	2.8 U
1,1,1-Trichloroethane	30	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
Carbon Tetrachloride	2	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
Bromodichloromethane	1	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
1,2-Dichloropropane	1	1 U	0.4 U	1 U	0.4 U	1 U	0.4 U
cis-1,3-Dichloropropene	NA	NA	0.3 U	NA	0.3 U	NA	0.3 U
Trichloroethene	1	1 U	0.4 U	1 U	0.4 U	1 U	0.4 U
Dibromochloromethane	10	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
1,1,2-Trichloroethane	3	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
Benzene	1	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
trans-1,3-Dichloropropene	NA	U	0.2 U	U	0.2 U	U	0.2 U
Bromoform	4	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
4-Methyl-2-pentanone	400	NA	1.4 U	NA	1.4 U	NA	1.4 U
2-Hexanone	NA	NA	1 U	NA	1 U	NA	1 U
Tetrachloroethene	1	1 U	0.3 U	1 U	0.3 U	1 U	4.6
Toluene	1000	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
1,1,2,2-Tetrachloroethane	2	1 U	0.3 U	1 U	0.3 U	1 U	0.3 U
Chlorobenzene	4	1 U	0.2 U	1 U	0.2 U	1 U	0.2 U
Ethylbenzene	700	1 U	0.4 U	1 U	0.4 U	1 U	0.4 U
Styrene	100	1 U	0.2 U	1 U	0.2 U	1 U	0.2 U
Xylenes (total)	40	1 U	0.9 U	1 U	0.9 U	1 U	0.9 U

Notes:
U - Not detected above quantitation limit
NA - No applicable standard
D - Diluted
J - Estimated
UJ - Not detected, quantitation limit is approximate
R - Result rejected (see data validation report)
Shaded/Bolded - Exceeds NJDEP GQS
ug/L - microgram per liter

TABLE 2
NWS-Earle, Site 26
2nd Quarter, 2001 - AS/SVE Operation Report
Operation Log Summary

Date	Operation Activity	Hours of Operation	Air Sparging Zones Opened	Soil Vapor Extration Zones Opened	Total Discharge Water from A/W Seperator #2 (gal)	Comments
07/20/01	AS-2/SVE-2	3	A,B,C,D	North and South	9980	System start-up and shakedown (system off since March 2001 prior to start-up).
07/23/01	AS-2/SVE-2	1.5	A,B,C,D	North and South	9980	Worked on remote telemetry system
07/24/01	AS-2/SVE-2	6.5	A,B,C,D	North and South	9980	Operated via remote
07/25/01	AS-2/SVE-2	9	A,B,C,D	North and South	9980	Operated via remote
07/26/01	AS-2/SVE-2	4	A,B,C,D	North and South	9980	Operated via remote
07/27/01	AS-2/SVE-2	5	A,B,C,D	North and South	9980	Operated via remote
07/30/01	AS-2/SVE-2	10	A,B,C,D	North and South	9980	Operated via remote
07/31/01	AS-2/SVE-2	8	A,B,C,D	North and South	9980	Normal system operation-Obtained air samples 26AS07 and 26AS08
08/01/01	AS-2/SVE-2	9	A,B,C,D	North and South	9980	Operated via remote
08/02/01	AS-2/SVE-2	10	A,B,C,D	North and South	9980	Operated via remote
08/03/01	AS-2/SVE-2	7	A,B,C,D	North and South	9980	Operated via remote
08/06/01	AS-2/SVE-2	9	A,B,C,D	North and South	9980	Operated via remote
08/07/01	AS-2/SVE-2	9	A,B,C,D	North and South	9980	Operated via remote
08/08/01	AS-2/SVE-2	9	A,B,C,D	North and South	9980	Operated via remote
08/10/01	AS-2/SVE-2	9	A,B,C,D	North and South	9980	Operated via remote
08/14/01	AS-2/SVE-2	7.5	A,B,C,D	North and South	9980	Normal system operation. Obtained groundwater elevation data from wells.
08/15/01	AS-2/SVE-2	7.5	A,B,C,D	North and South	9980	Operated via remote
08/17/01	AS-2/SVE-2	8	A,B,C,D	North and South	9980	Operated via remote
08/20/01	AS-2/SVE-2	9	A,B,C,D	North and South	9980	Operated via remote
08/21/01	AS-2/SVE-2	7.5	A,B,C,D	North and South	9980	Operated via remote
08/23/01	AS-2/SVE-2	8.5	A,B,C,D	North and South	9980	Operated via remote
08/24/01	AS-2/SVE-2	9	A,B,C,D	North and South	9980	Operated via remote
08/27/01	AS-2/SVE-2	9	A,B,C,D	North and South	9980	Operated via remote
08/28/01	AS-2/SVE-2	8	A,B,C,D	North and South	9980	Normal system operation. Obtained air samples 26AS09 and 26AS10.
08/29/01	AS-2/SVE-2	4	A,B,C,D	North and South	9980	Collect water levels and D.O. readings in wells, Adjustment of AS well flow rates
09/04/01	AS-2/SVE-2	8	A,B,C,D	North and South	9980	Operated via remote
09/05/01	AS-2/SVE-2	9	A,B,C,D	North and South	9980	Operated via remote
09/06/01	AS-2/SVE-2	9	A,B,C,D	North and South	9980	Operated via remote
09/07/01	AS-2/SVE-2	9	A,B,C,D	North and South	9980	Operated via remote
09/10/01	AS-2/SVE-2	8.5	A,B,C,D	North and South	9980	See Operations Log
09/11/01	AS-2/SVE-2	12	A,B,C,D	North and South	9980	Operated via remote
09/12/01	AS-2/SVE-2	12	A,B,C,D	North and South	9980	Operated via remote
09/13/01	AS-2/SVE-2	9	A,B,C,D	North and South	9980	Operated via remote
09/14/01	AS-2/SVE-2	12	A,B,C,D	North and South	9980	Operated via remote
09/15/01	AS-2/SVE-2	12	A,B,C,D	North and South	9980	Operated via remote
09/16/01	AS-2/SVE-2	12	A,B,C,D	North and South	9980	Operated via remote
09/17/01	AS-2/SVE-2	12	A,B,C,D	North and South	9980	Operated via remote
09/18/01	AS-2/SVE-2	12	A,B,C,D	North and South	9980	Operated via remote
09/19/01	AS-2/SVE-2	12	A,B,C,D	North and South	9980	Operated via remote
09/25/01	AS-2/SVE-2	5	A,B,C,D	North and South	9980	Operated via remote
09/28/01	AS-2/SVE-2	?	A,B,C,D	North and South	9980	Normal system operation-Obtained air samples 26AS09 and 26AS10
10/01/01	AS-2/SVE-2	7.5	A,B,C,D	North and South	9980	Operated via remote
10/02/01	AS-2/SVE-2	8	A,B,C,D	North and South	9980	Operated via remote

* - Water discharge to date as a result of testing and calibration completed prior system start-up.

TABLE 2
 NWS-Earle, Site 26
 2nd Quarter, 2001 - AS/SVE Operation Report
 Operation Log Summary

Date	Operation Activity	Hours of Operation	Air Sparging Zones Opened	Soil Vapor Extration Zones Opened	Total Discharge Water from A/W Seperator #2 (gal)	Comments
10/03/01	AS-2/SVE-2	?	A,B,C,D	North and South	9980	O&M
10/04/01	AS-2/SVE-2	5	A,B,C,D	North and South	9980	Operated via remote
10/09/01	AS-2/SVE-2	8	A,B,C,D	North and South	9980	Operated via remote
10/15/01	AS-2/SVE-2	0	A,B,C,D	North and South	9980	System off-Obtained groundwater measurements and baseline dissolved oxygen measurements
10/16/01	AS-2/SVE-2	10	A,B,C,D	North and South	9980	System optimization efforts. Adjusted airflow and vacuum rates.
10/17/01	AS-2/SVE-2	9	A,B,C,D	North and South	9980	Operated via remote
10/19/01	AS-2/SVE-2	6	A,B,C,D	North and South	9980	Operated via remote
10/22/01	AS-2/SVE-2	10.5	A,B,C,D	North and South	9980	Operated via remote
10/31/01	AS-2/SVE-2	2	A,B,C,D	North and South	9980	Normal system operation. Obtained air samples 26AS11 and 26AS12.

* - Water discharge to date as a result of testing and calibration completed prior system start-up.

TABLE 3

NWS Earle, Site 26
 2nd Quarter, 2001 - AS/SVE Operation Report
 Groundwater Field Parameters
 10/25/01 to 10/29/01

Well #	Time	Rate mL/min	Temp °C	pH	Turbidity NTU	Conductivity uS/cm	ORP mV	DO mg/L	DTW	Total Drawdown feet
26MW-01 DTW (initial): 13.71' DTW (final): 14.40' DTB: 24.67'	9:30	350	13.73	5.01	110.0	12	274	10.35	13.71	0
	9:35	350	13.85	5.86	28.0	10	242	10.65	14.25	0.54
	9:40	350	13.74	5.97	34.1	10	238	11.2	14.15	0.44
	9:45	350	13.82	5.99	35.2	10	238	11.45	14.15	0.44
	9:50	350	14.10	6.12	57.6	10	241	11.31	14.56	0.85
	9:55	350	14.01	6.01	52.3	10	239	11.01	14.40	0.69
26MW-05 ⁽¹⁾ DTW (initial): 14.98' DTW (final): 14.98' DTB: 20.74'	13:25	200	17.9	4.41	72.2	9	369	10.73*	14.89	0
	13:30	200	17.54	4.34	55.1	8	395	10.28*	N/A	N/A
	13:35	200	17.49	4.34	16.4	8	400	10.36*	N/A	N/A
	13:40	200	17.56	4.35	4.1	8	401	10.34*	N/A	N/A
	13:45	200	17.47	4.34	2.3	8	403	10.38*	N/A	N/A
26MW-06 ⁽¹⁾ DTW (initial): N/A DTW (final): N/A DTB: 16.71'	10:15	400	16.58	5.46	894	5	262	10.98*	N/A	N/A
	10:20	400	16.59	5.49	264	5	263	10.73*	N/A	N/A
	10:25	400	16.56	5.55	174	5	258	10.75*	N/A	N/A
	10:30	400	16.33	5.53	90.9	5	254	10.55*	N/A	N/A
	10:35	350	16.51	5.52	41.5	5	258	10.51*	N/A	N/A
	10:40	350	16.53	5.52	35.9	5	259	10.55*	N/A	N/A
26MW-07 DTW (initial): 15.01' DTW (final): 15.95' DTB: 24.71'	14:00	350	14.94	4.74	23.6	6	327	7.68	15.01	0
	14:05	400	15.04	4.68	14.8	6	345	3.77	15.64	0.63
	14:10	400	14.76	4.68	15.3	5	335	2.59	15.90	0.89
	14:15	400	14.58	4.66	4.0	5	314	1.25	15.95	0.94
	14:20	400	14.52	4.67	4.2	5	310	1.10	15.95	0.94
26MW-08 DTW (initial): 13.55' DTW (final): 14.28' DTB: 26.94'	12:45	350	16.67	7.38	344	12	247	11.17*	13.55	0
	12:50	350	16.30	4.61	80.8	12	350	10.93*	13.95	0.40
	12:55	350	16.25	4.57	34.2	12	370	11.29*	14.00	0.45
	13:00	350	16.23	4.58	134	12	377	11.02*	14.28	0.73
26MW-09 ⁽¹⁾ DTW (initial): 13.80' DTW (final): 0.00' DTB: 20.66'	11:15	400	17.64	10.31	53.9	42	-53	9.16*	13.8	0
	11:20	350	16.85	10.45	79.1	44	-63	8.36*	N/A	N/A
	11:25	350	16.71	10.39	105	39	-56	8.83*	N/A	N/A
	11:30	350	16.66	10.34	97.5	35	-50	8.68*	N/A	N/A
	11:35	350	16.66	10.34	66.9	32	-46	8.89*	N/A	N/A
26MW-10 DTW (initial): 14.06' DTW (final): 14.49' DTB: 24.65'	9:50	450	13.48	5.67	999	27	204	9.51	14.06	0
	9:55	500	13.49	5.33	620	27	233	9.54	14.41	0.35
	10:00	500	13.44	5.34	318	27	239	9.7	14.46	0.40
	10:05	450	13.34	5.34	148	27	246	9.52	14.47	0.41
	10:10	N/A	13.35	5.37	69.6	27	250	9.43	14.49	0.43
26MW-11 DTW (initial): 17.01' DTW (final): 19.00' DTB: 24.57'	10:30	350	13.22	5.18	255	25	255	4.3	17.01	0
	10:35	350	13.37	5.17	115	29	230	0.81	18.21	1.20
	10:40	350	13.18	5.16	999	23	225	1.94	19.00	1.99
	10:45	350	13.08	5.12	326	21	237	1.46	19.00	1.99
	10:50	350	13.10	5.11	172	20	239	2.07	19.00	1.99
26MW-12 DTW (initial): 10.48' DTW (final): 11.07' DTB: 20.87'	12:00	300	14.98	5.27	-0.3	6	257	7.03	10.48	0
	12:05	300	14.95	4.89	0.1	5	296	3.49	10.78	0.30
	12:10	300	14.85	4.93	2.4	5	275	3.8	10.90	0.42
	12:15	300	14.82	4.92	1.5	5	262	3.31	11.00	0.52
	12:20	300	14.78	4.95	0.4	5	248	3.16	11.07	0.59
26MW-13 DTW (initial): 9.96' DTW (final): 10.30' DTB: 21.04'	11:10	300	17.92	6.04	16.2	18	202	4.71*	9.96	0
	11:15	300	18.38	6.02	19.0	17	195	2.88*	10.11	0.15
	11:20	300	18.38	6.00	20.3	17	197	2.66*	10.17	0.21
	11:25	300	18.38	5.94	14.7	18	194	2.13*	10.20	0.24
	11:30	300	18.34	5.98	14.6	18	193	1.84*	10.17	0.21
	11:35	N/A	18.47	5.91	11.2	17	190	1.72*	10.3	0.34

Notes:

- (1) - Depth to water reading not available.
 (2) - Hand bailed (purged) / water quality data was not available.

N/A - Not Available

mS/cm - millisiemens per centimeter

°C - degrees Centigrade

NTU - nephelometric turbidity units

DTW - Depth to water below top of casing

mV - millivolts

DO - Dissolved Oxygen

mg/L - milligrams per liter

ORP - Oxidation/Reduction Potential

mL/min - milliliter per minute

* - DO exceeds 120% saturation for referenced temperature.

TABLE 3

NWS Earle, Site 26
 2nd Quarter, 2001 - AS/SVE Operation Report
 Groundwater Field Parameters
 10/25/01 to 10/29/01

Well #	Time	Rate mL/min	Temp °C	pH	Turbidity NTU	Conductivity uS/cm	ORP mV	DO mg/L	DTW	Total Drawdown feet
26MW-14 DTW (initial): 16.58' DTW (final): 16.90' DTB: 0.00'	11:30	350	13.76	4.53	999	6	250	9.69	16.58	0
	11:35	350	13.57	4.34	999	8	328	7.19	16.90	0.32
	11:45	350	13.31	4.48	348	7	355	6.61	16.90	0.32
	11:55	350	13.65	4.35	369	7	372	5.42	16.90	0.32
	12:05	350	13.89	4.36	431	7	377	5.02	16.90	0.32
26MW-15 DTW (initial): 6.82' DTW (final): 10.38' DTB: 0.00'	8:45	2000	13.75	5.2	999	12	64	4.43	6.82	0
	9:05	1000	14.22	5.25	999	11	9	1.44	10.61	3.79
	9:15	1000	14.17	5.37	999	11	4	2.36	8.98	2.16
	9:25	1000	14.16	5.16	999	9	6	4.23	10.11	3.29
	9:35	1000	14.2	5.21	999	9	2	4.49	10.80	3.98
9:45	N/A	14.38	5.21	999	9	5	5.03	10.38	3.56	
26MW-16 ⁽¹⁾ DTW (initial): 6.30' DTW (final): N/A DTB: 0.00'	10:05	450	14.49	4.45	999	8	67	2.82	6.30	0
	10:15	450	14.74	4.92	999	8	8	1.87	9.70	3.40
	10:25	200	15.12	4.92	999	8	7	2.27	10.90	4.60
	10:35	450	14.51	4.92	999	9	4	2.23	N/A	N/A
	10:45	250	15.24	5.05	999	9	12	3.09	N/A	N/A
26MW-17 ⁽¹⁾ DTW (initial): 2.21' DTW (final): N/A DTB: 0.00'	14:00	600	14.83	4.34	99.6	6	300	3.35	2.21	0
	14:10	500	14.89	4.33	67.2	7	265	1.71	N/A	N/A
	14:20	500	14.7	4.46	81.9	6	289	0.51	N/A	N/A
	14:25	500	14.56	4.26	43	6	320	0.44	N/A	N/A
	14:30	500	14.53	4.53	39	6	288	0.61	N/A	N/A
26MW-18 DTW (initial): 9.90' DTW (final): 10.58' DTB: 0.00'	13:05	400	13.67	4.34	999	9	327	8.7	9.90	0
	13:15	400	13.51	4.44	688	8	391	7.87	10.52	0.62
	13:25	350	13.46	4.31	865	8	403	7.83	10.54	0.64
	13:35	350	13.56	4.32	847	8	404	7.94	10.39	0.49
	13:45	350	13.41	4.32	532	8	414	7.91	10.58	0.68
26AS-1 ⁽²⁾ DTW (initial): 0.00' DTW (final): 0.00' DTB: 25.55'										
26AS-35 ⁽²⁾ DTW (initial): 0.00' DTW (final): 0.00' DTB: 25.10'										

Notes:

(1) - Depth to water reading not available.

(2) - Hand bailed (purged) / water quality data was not available.

N/A - Not Available

mS/cm - millisiemens per centimeter

°C - degrees Centigrade

NTU - nephelometric turbidity units

DTW - Depth to water below top of casing

mV - millivolts

DO - Dissolved Oxygen

mg/L - milligrams per liter

ORP - Oxidation/Reduction Potential

mL/min - milliliter per minute

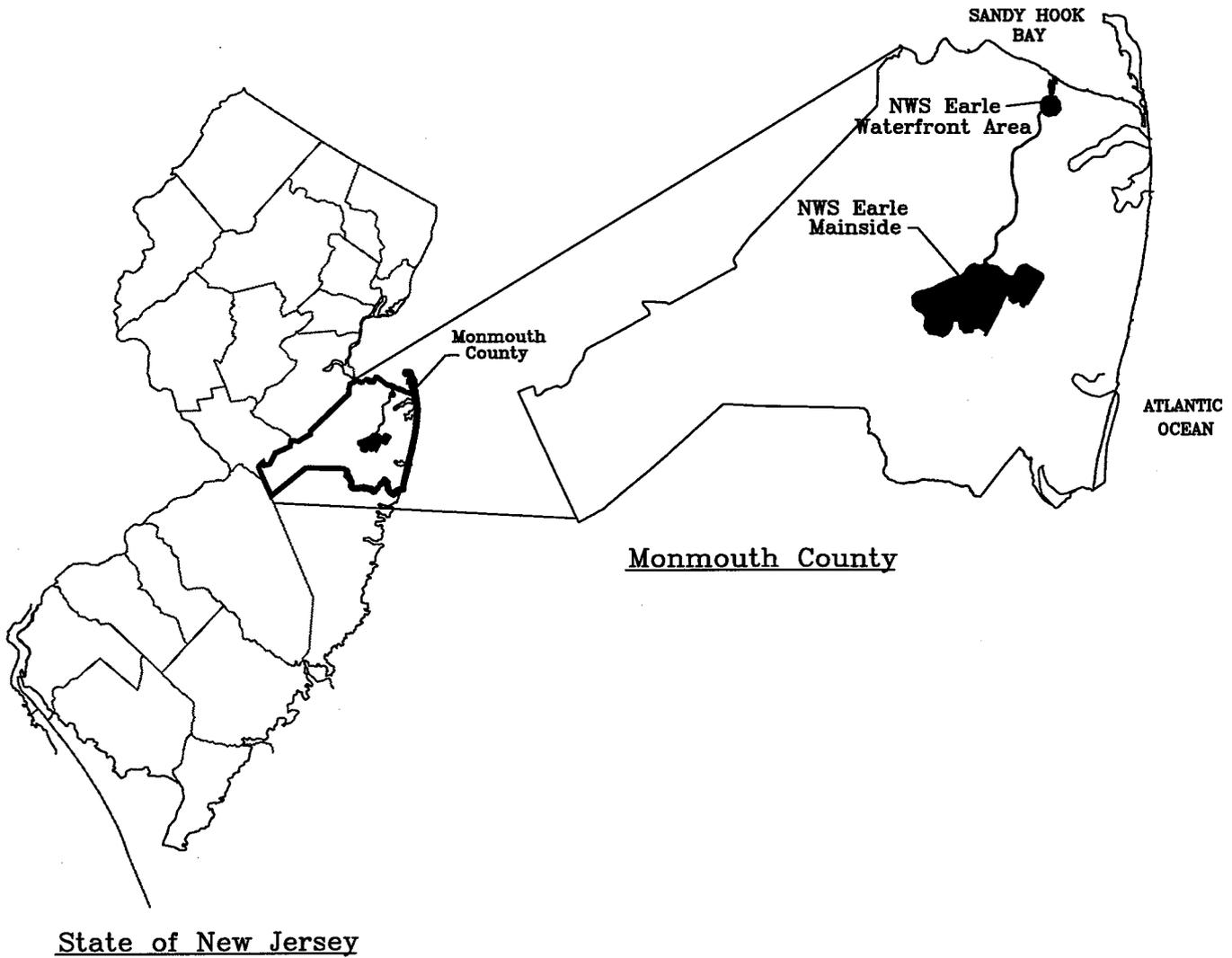
* - DO exceeds 120% saturation for referenced temperature.

TABLE 4
NWS-Earle, Site 26
2nd Quarter, 2001 - AS/SVE Operation Report
Effluent Air Analytical Data
Volatile Organic Compounds

SAMPLE ID	26AS07	26AS08	26AS09	26AS10	26AS11	26AS12	26AS13	26AS14
	LABORATORY ID 0121303-003	0121303-004	0124102-004	0124102-003	0127401-001	0127401-002	0130603-004	0130603-005
DATE COLLECTED	07/31/01	07/31/01	08/28/01	08/28/01	09/28/01	09/28/01	10/31/01	10/31/01
MATRIX	AIR	AIR	AIR	AIR	AIR	AIR	AIR	AIR
UNITS	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³
COMMENTS	Pre-Carbon Units	Post-Carbon Units	Pre-Carbon Units	Post-Carbon Units	Pre-Carbon Units	Post-Carbon Units	Pre-Carbon Units	Post-Carbon Units
Chloromethane	0.056 U	0.064 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
Bromomethane	0.056 U	0.064 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
Vinyl Chloride	0.056 U	0.064 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
Chloroethane	0.056 U	0.064 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
Acetone	0.056 U	0.064 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
2-Butanone	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
Freon 11	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
Freon 113	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
Methylene Chloride	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
1,1-Dichloroethene	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
1,1-Dichloroethane	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
cis - 1,2 -Dichloroethene	0.6	0.063 U	0.72	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
trans - 1,2-Dichloroethene	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
Chloroform	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
1,2-Dichloroethane	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
1,1,1-Trichloroethane	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
Carbon Tetrachloride	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
1,2-Dichloropropane	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
cis-1,3-Dichloropropene	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
Trichloroethene	1.5	0.063 U	1.1	0.060 U	0.063 U	0.062 U	0.22	0.062 U
1,1,2-Trichloroethane	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
Benzene	0.14	0.084	0.20	0.51	0.063 U	0.062 U	0.057 U	0.062 U
Ethylene Dibromide	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
trans-1,3-Dichloropropene	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
Tetrachloroethene	0.33	0.063 U	0.31	0.060 U	0.063 U	0.062 U	0.11	0.062 U
Toluene	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
Chlorotoluene	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
1,3,5-Trimethyl Benzene	0.088	0.095	0.19	0.40	0.063 U	0.062 U	0.057 U	0.062 U
1,2,4-Trimethyl Benzene	0.20	0.19	0.66	1.4	0.063 U	0.062 U	0.057 U	0.062 U
1,3-Dichlorobenzene	0.056 U	0.075	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
1,4-Dichlorobenzene	0.056 U	0.093	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
1,1,2,2-Tetrachloroethane	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
Chlorobenzene	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
1,2-Dichlorobenzene	0.056 U	0.064	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
4-methyl-2-pentanone	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
2-Hexanone	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
Ethylbenzene	0.099	0.078	0.20	0.48	0.063 U	0.062 U	0.057 U	0.062 U
Styrene	0.056 U	0.063 U	0.060 U	0.060 U	0.063 U	0.062 U	0.057 U	0.062 U
m,p-Xylene	0.28	0.24	0.72	1.6	0.063 U	0.062 U	0.057 U	0.062 U
O-Xylene	0.069	0.063 U	0.20	0.44	0.063 U	0.062 U	0.057 U	0.062 U

Notes:
U - Not detected above quantitation limit
Bolded/Shaded- reported detection of compound of interest
Bolded - reported detection of compound
mg/m³ - milligrams per cubic meter

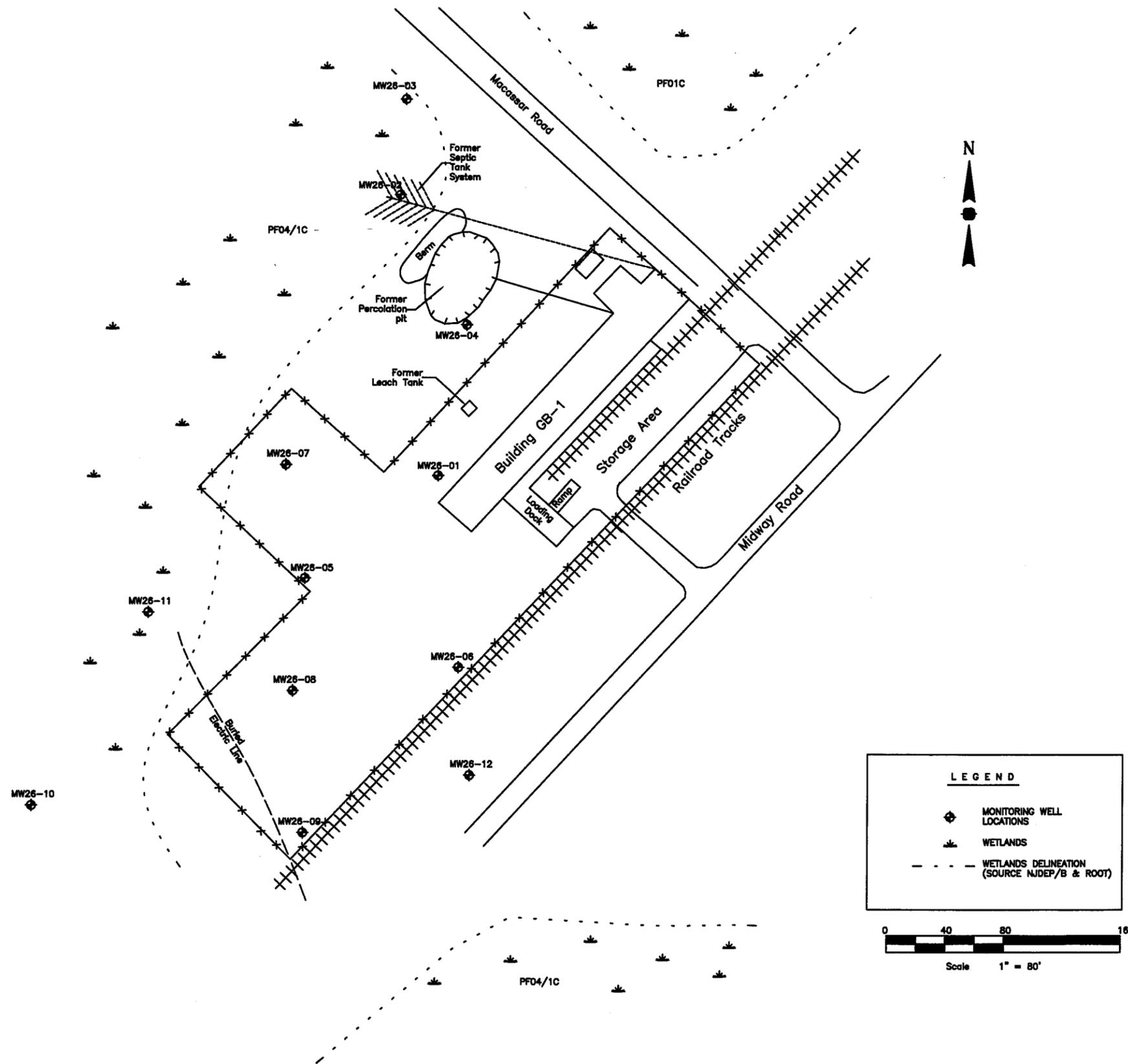
FIGURES



NOT TO SCALE

U.S. Navy RAC
NWS-Earle, Colts Neck, N.J.

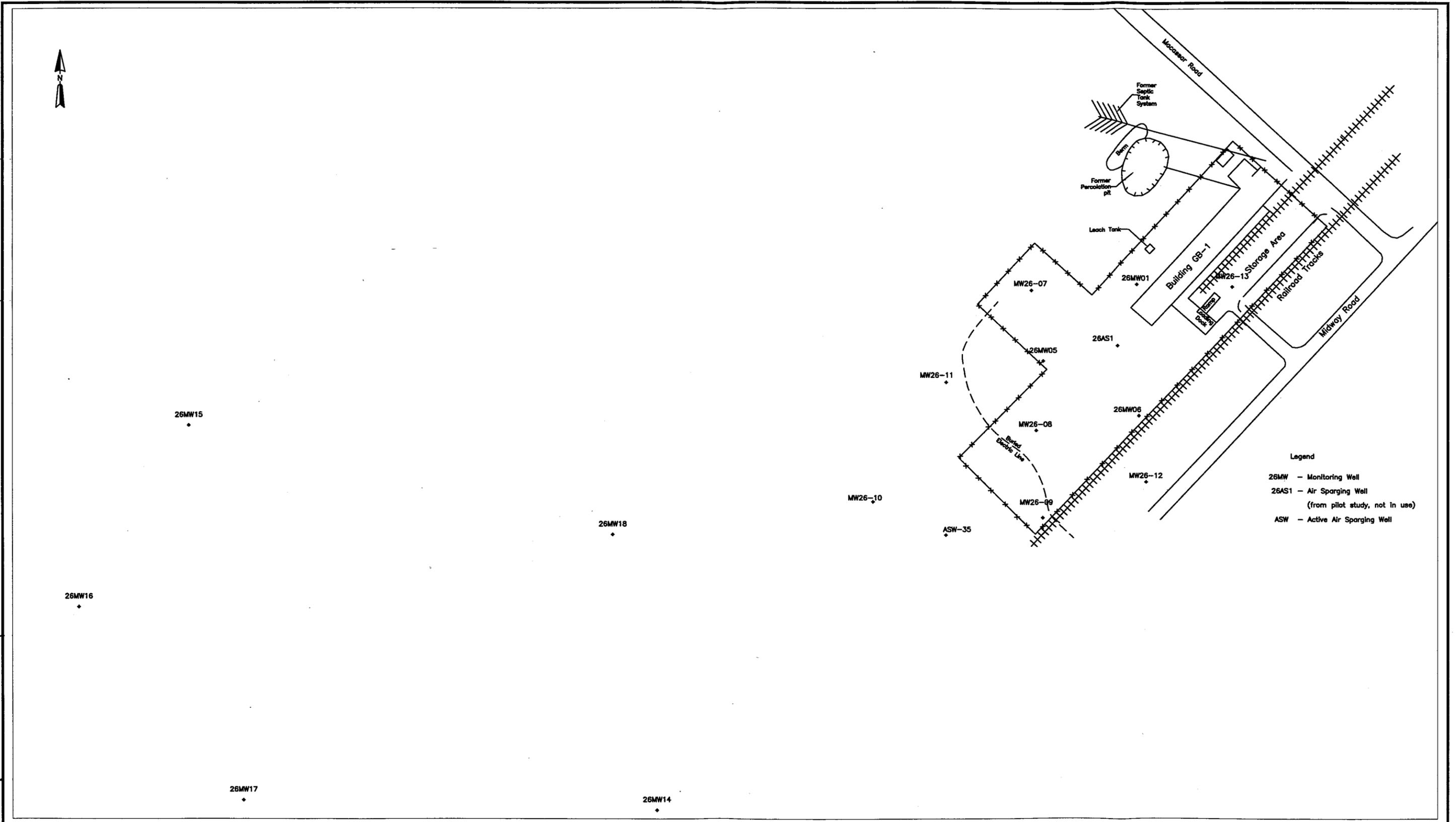
FIGURE 1
SITE LOCATION MAP



navyrac\earle\site26\fig2

DATE CREATED
LATEST CHANGE
CHANGED BY:

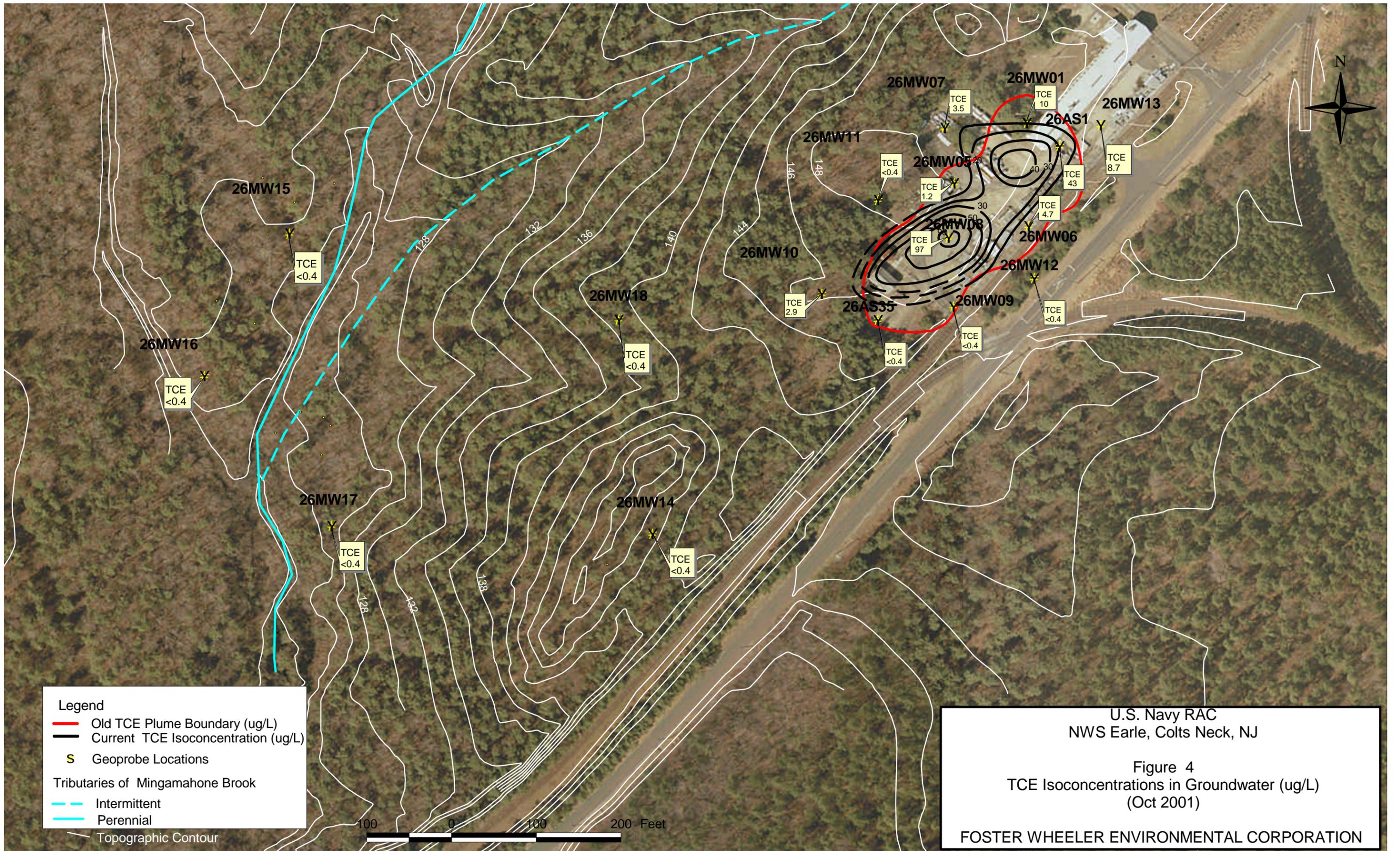
FOSTER WHEELER ENVIRONMENTAL	
DESK: _____ SUPV: _____ SUBMITTED BY: _____ DRAWN BY: _____ CHECKED BY: _____ DATE: _____	DATE: _____ (TITLE) _____ DATE: _____ DATE: _____ DATE: _____
NAVY FACILITIES ENGINEERING COMMAND NORTHERN DIVISION PENNSYLVANIA	
Figure 2 NWS Earle, Colts Neck, NJ Site 26 Site Base Map	
DEPARTMENT OF THE NAVY LESTER	APPROVED DATE _____ NORTON FOR COMMANDER, NAVFAC
SEAL AREA 	
SAT TO	DATE
CODE I.D. NO.	80091
SCALE :	N.T.S.
SPEC. NO.	04-
CONSTRN. CONTR. NO.	
NAVFAC DRAWING NO.	
SHEET	OF
SIZE:	DIS. SH. NO.
B	

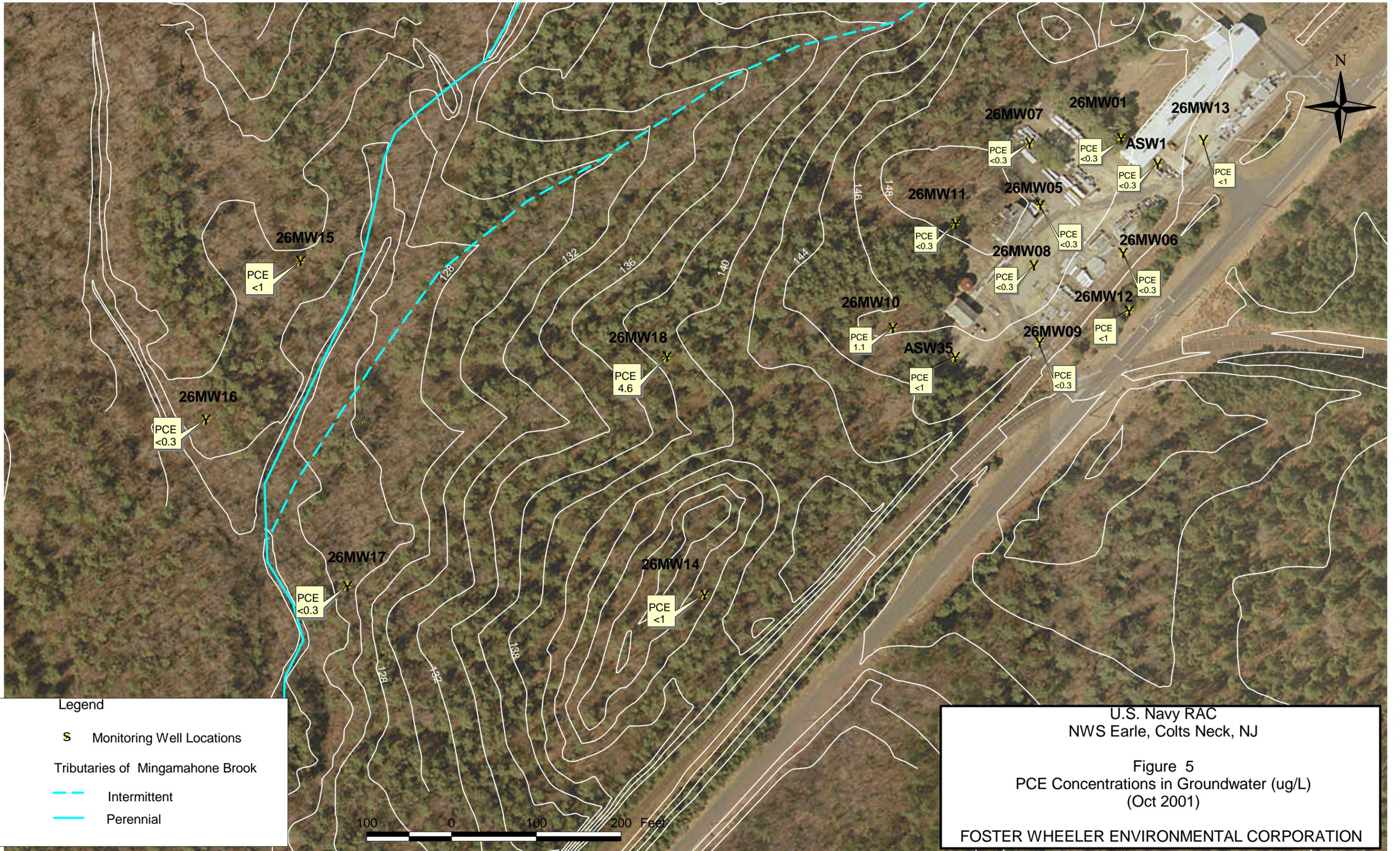


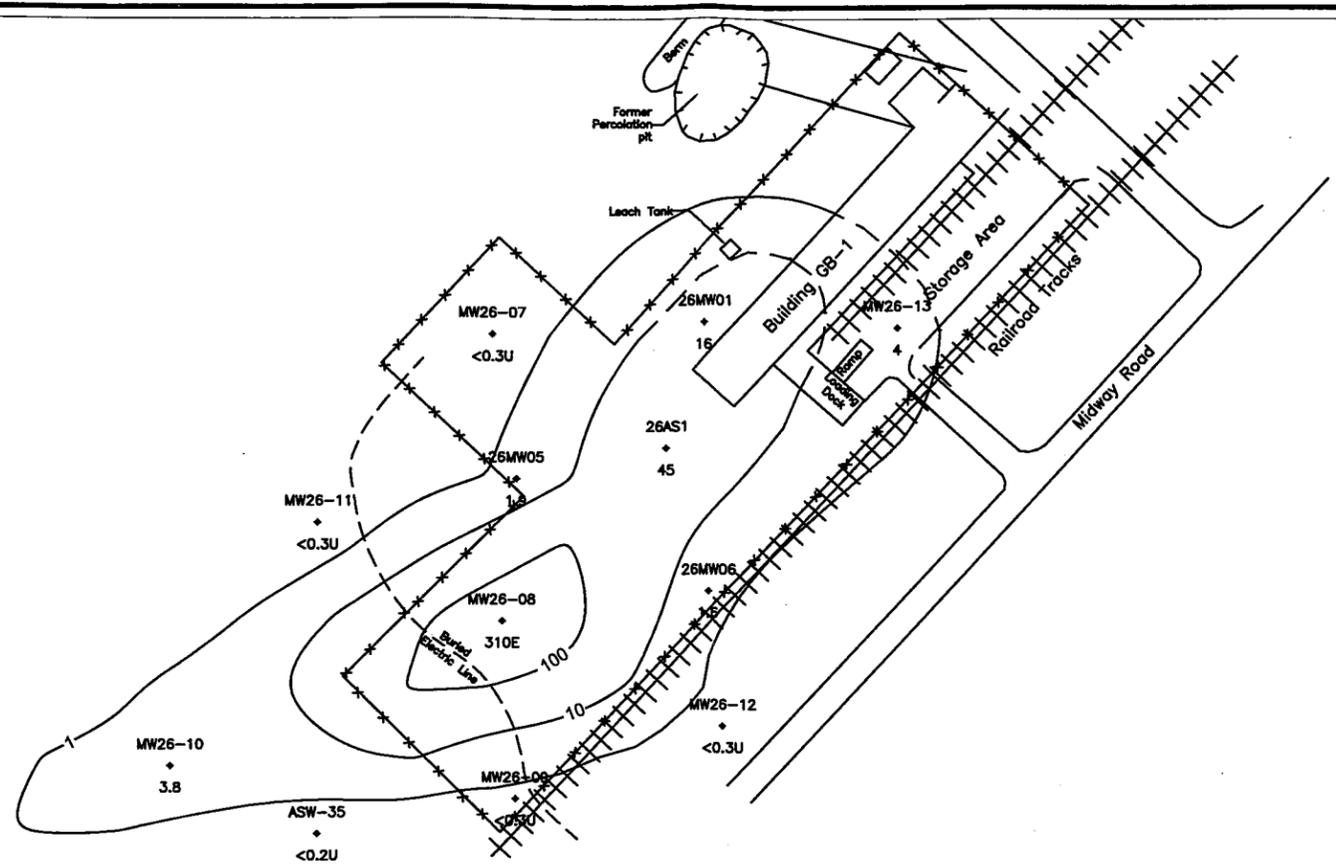
U.S. Navy RAC
NWS Earle, Colts Neck, NJ

Figure 3
Well Location Map

 FOSTER WHEELER ENVIRONMENTAL CORPORATION







26MW15
♦
<0.2U

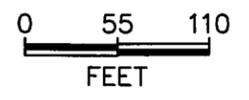
26MW18
♦
<0.3U

26MW16
♦
<0.3U

26MW17
♦
<0.3U

26MW14
♦
<0.2U

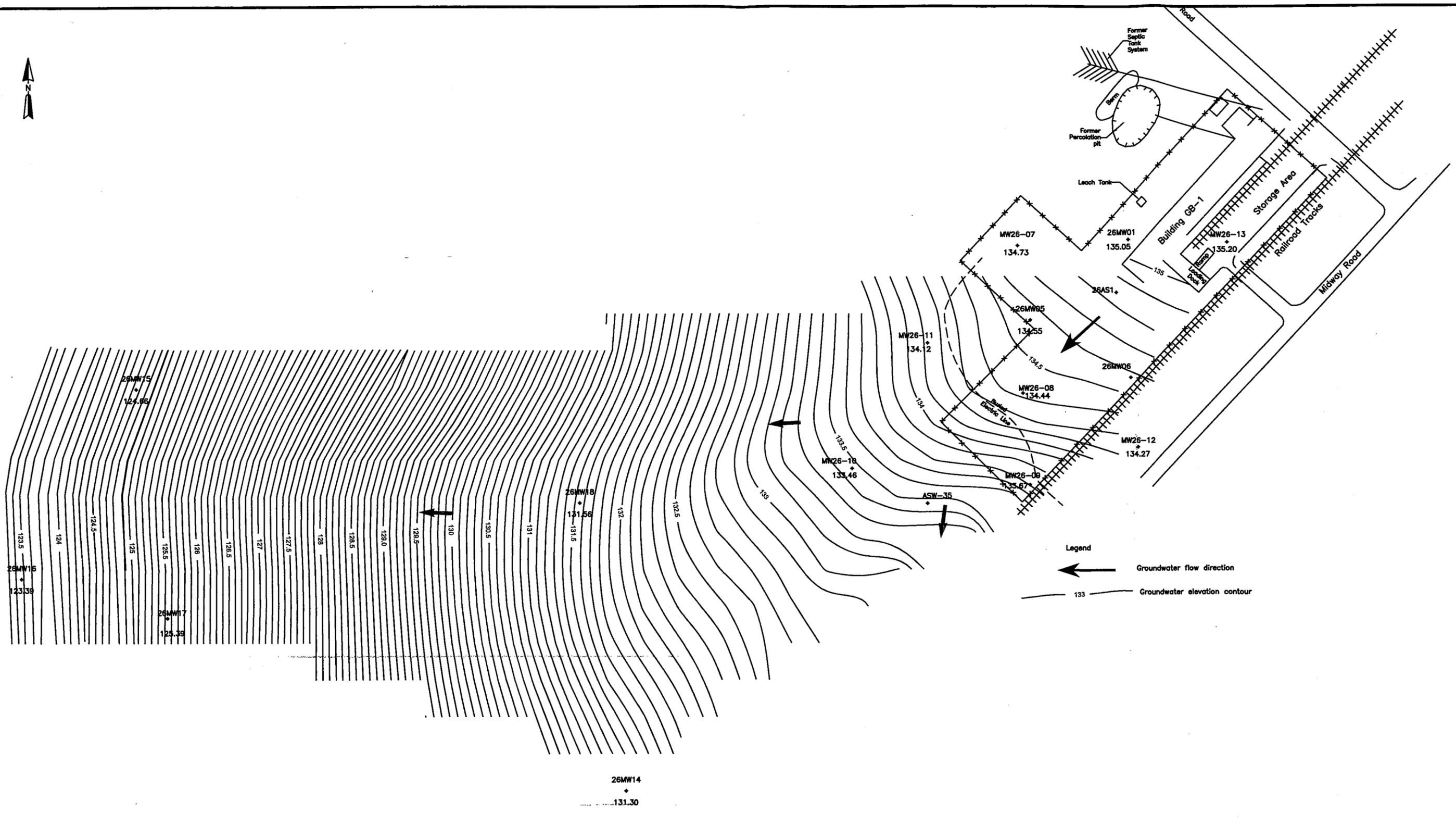
Legend
— 1 — Isoconcentration Contour



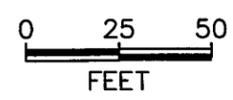
U.S. Navy RAC
NWS Earle, Colts Neck, NJ

Figure 6
cis 1,2-DCE Isoconcentration Map
(10/26/2001)

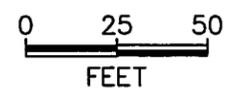
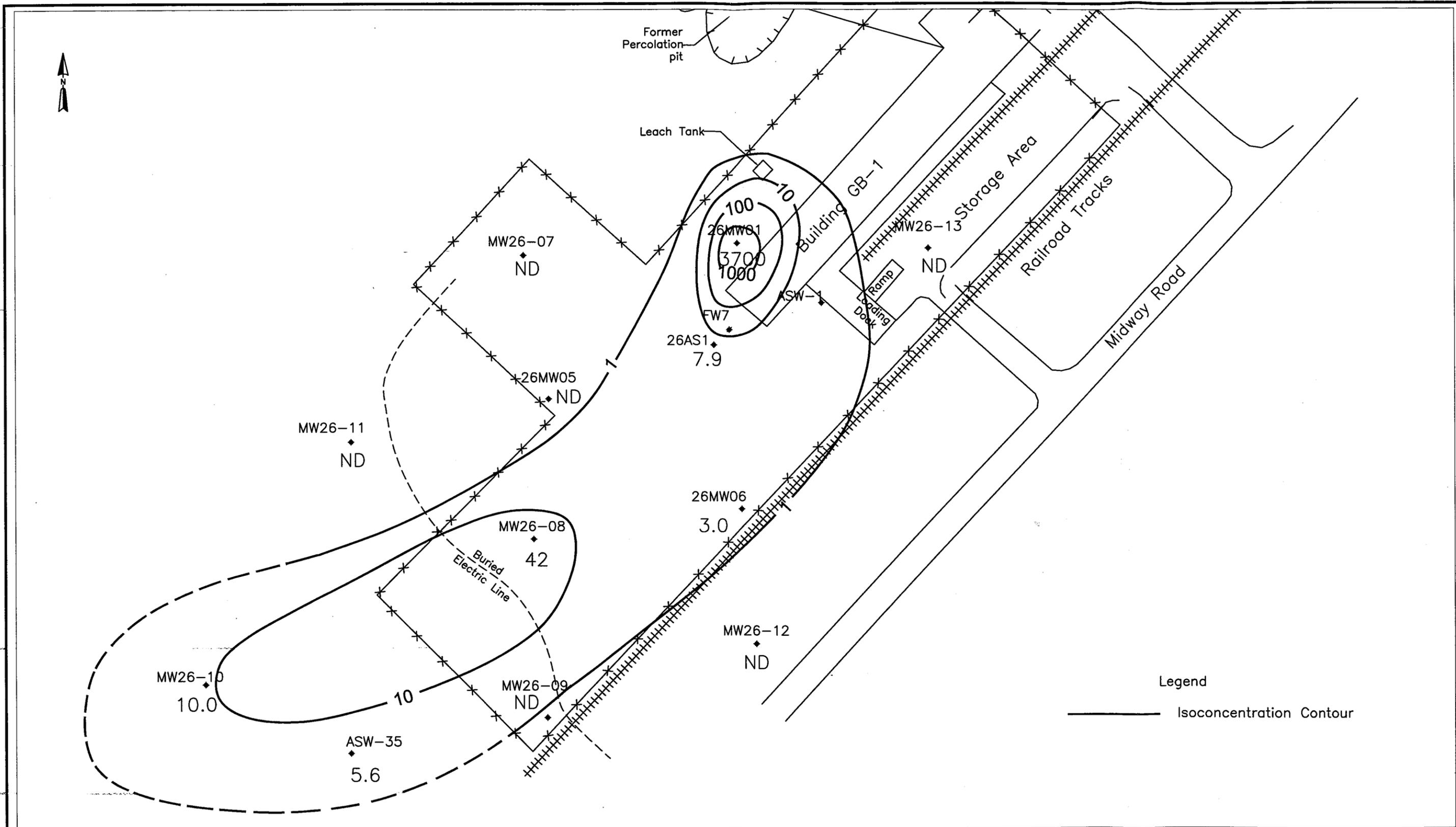
FOSTER WHEELER ENVIRONMENTAL CORPORATION



Legend
← Groundwater flow direction
— 133 — Groundwater elevation contour

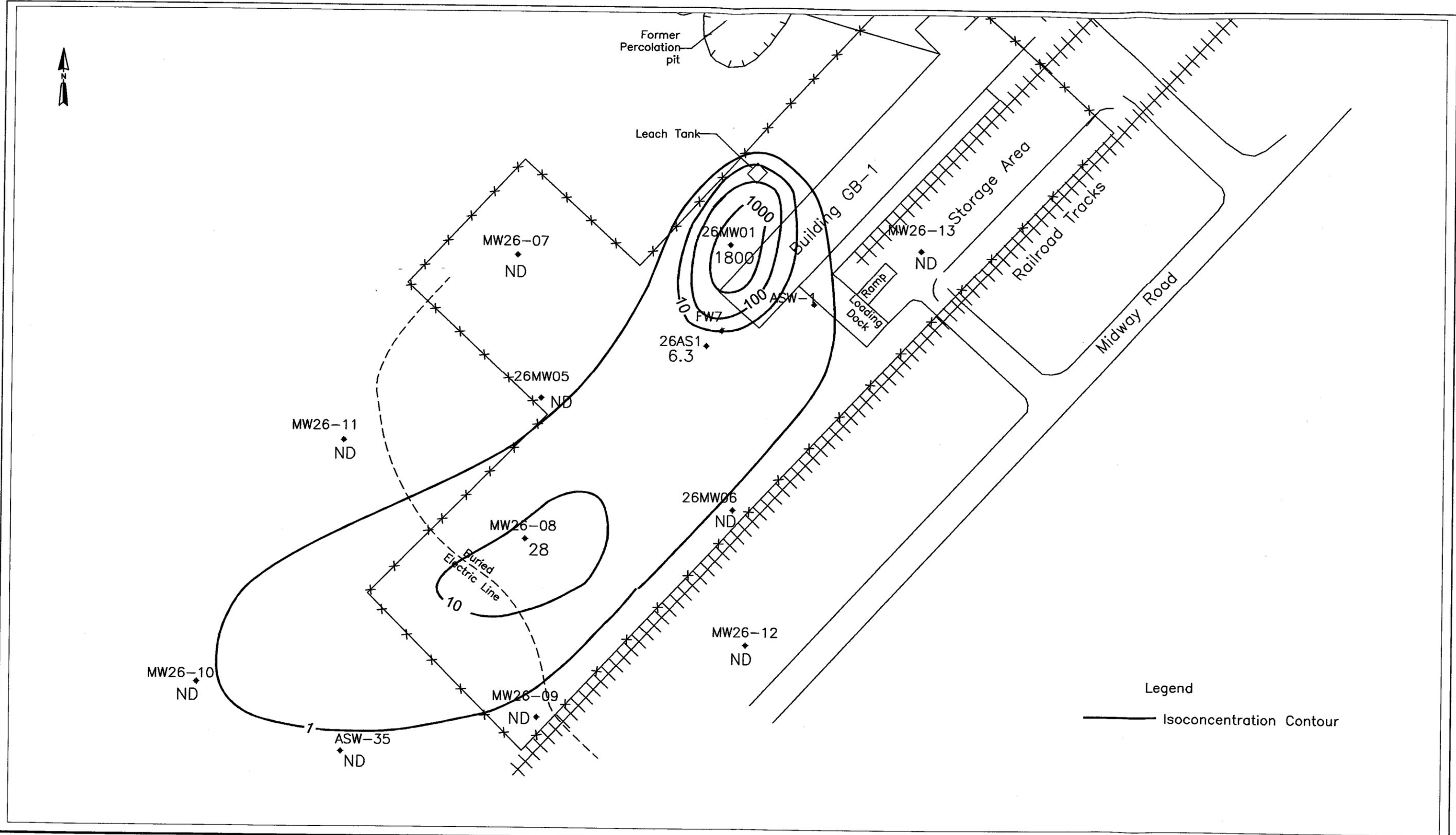


U.S. Navy RAC
NWS Earle, Colts Neck, NJ
Figure 7
Groundwater Contour Elevations (10/25/01-10/29/01)
FW FOSTER WHEELER ENVIRONMENTAL CORPORATION

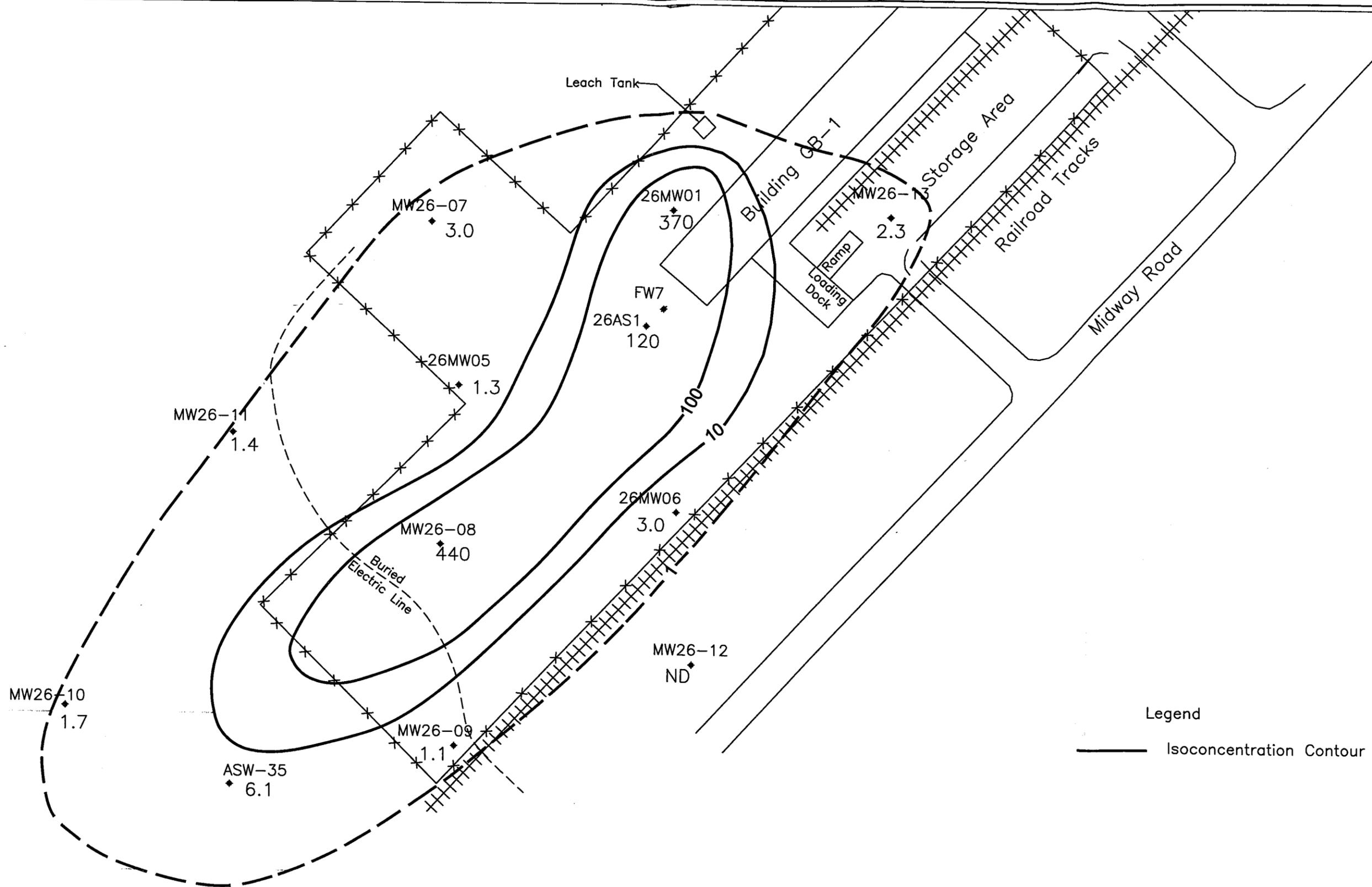


U.S. Navy RAC
 NWS Earle, Colts Neck, NJ
 Figure 8
 TCE Isoconcentration Map
 (8/14 & 15/2000)

FW FOSTER WHEELER ENVIRONMENTAL CORPORATION



Legend
 — Isoconcentration Contour



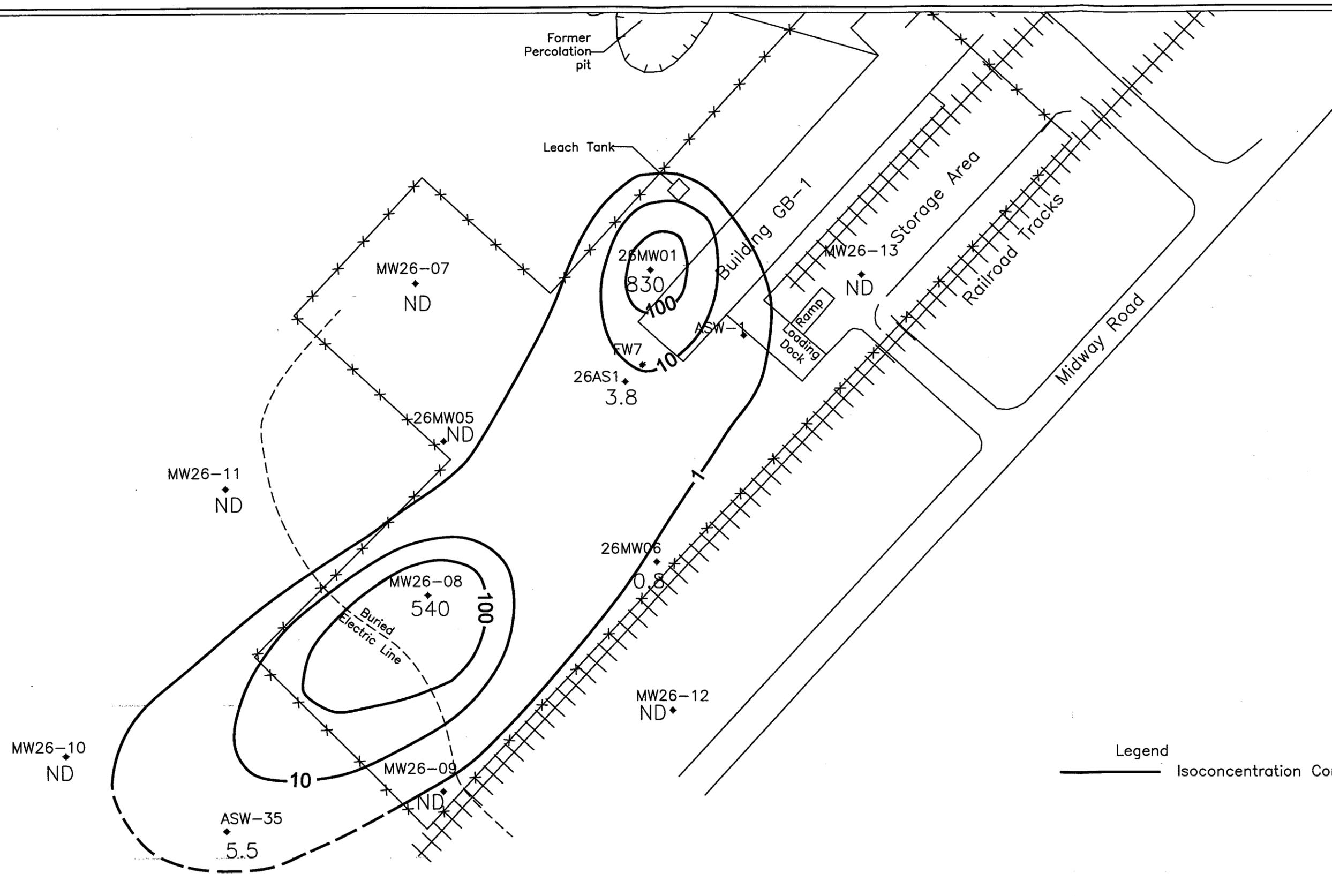
Legend
— Isoconcentration Contour



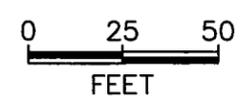
U.S. Navy RAC
NWS Earle, Colts Neck, NJ

Figure 10
TCE Isoconcentration Map
(4/2/2001)

FOSTER WHEELER ENVIRONMENTAL CORPORATION



Legend
 — Isoconcentration Contour



U.S. Navy RAC
 NWS Earle, Colts Neck, NJ

Figure 11
 cis 1,2-DCE Isoconcentration Map
 (4/2/2001)

FOSTER WHEELER ENVIRONMENTAL CORPORATION

**APPENDIX A:
GROUNDWATER ANALYTICAL DATA-10/25/01 TO 10/29/01**

**DATA PACKAGE FOR
VOLATILE ORGANICS****PROJECT NAME: NWS EARLE
PROJECT # SITE 26 GW****FOSTER WHEELER
ONE OXFORD VALLEY, SUITE 200
2300 LINCOLN HIGHWAY EAST
LANGHORNE, PA 19047
215-702-4015****CHEMTECH PROJECT#: N6506
ATTENTION: MIKE HEFFRON**

DATA VALIDATION REPORT

**Foster Wheeler Environmental Corporation
Data Validation Report**

Project: NWS - Earle

Laboratory: Chemtech

Project No.: N6506

<u>Client Sample ID.</u>	<u>Lab ID</u>
26MW-01-03	N6506-01
26MW-06-03	N6506-02
26AS-01-03	N6506-03
26MW-13-03	N6506-04
26MW-12-03	N6506-05
26AS-35-03	N6506-06
26FB-01-03	N6506-07

Seven aqueous samples were analyzed by Chemtech for the volatile organics using Method 624. A screening data validation was performed using USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 and best professional judgement. Data qualifier definitions are as follows:

- U** The analyte was analyzed for, but not detected above the reported sample quantitation limit.
- R** The sample results are rejected (unusable) due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
- J** The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ** The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Validation consisted of checking and verifying that the criteria listed below were within acceptable QC limits.

- Holding Time
- Blank Contamination
- Surrogate Recoveries
- Blank Spikes
- Calibrations
- Internal Standards

Holding Times

All samples were prepped and analyzed within specified holding times.

Blank Contamination

No qualifications were required.

Surrogates

All recoveries were within specified limits.

Blank Spike

The blank spike was acceptable.

Calibrations

All criteria were met.

Internal Standards

All areas were within specified limits

Reviewed by: Cecelia N. Minch
Cecelia N. Minch

Date: 1/9/02

873 Chivas Drive
Toms River, NJ 08753
Voice: (732) 270 - 0988
Fax: (732) 270 - 1902

Foster Wheeler Environmental Corporation

To: M. Reyes

From: Cecelia Minch

Phone: 908-789-8900

Date: 1/7/02

RE: N6506

Large unreported peaks were observed in file VG110723 (26MW04-04) at RT 10.35, 16.49, 21.64, and 25.08. The TIC identifications in the summary report selected target compounds, but the RT are not consistent with the expected RT. Please re-evaluate the peak identifications and report on Form 1E, if necessary.

1/9/02

Peaks are non-reportable target compounds which are most likely due to contamination.

CHEMTECH

284 Sheffield Street Mountainside NJ 07092
Tel. 908-789-8900

COVER PAGE

COVER PAGE

ProjectID: NWS EARLE

Order N6506

CustomerName Foster Wheeler Environmental Corp.

LAB SAMPLE NO.

CLIENT SAMPLE NO

N6506-01

26MW-01-03

N6506-02

26MW-06-03

N6506-04

26MW-13-03

N6506-05

26MW-12-03

N6506-06

26AS-35-03

N6506-07

26FB-01-03

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.

Signature: Mildred U. Reyes Name: Mildred U. Reyes
Date: 11/14/01 Title: QA/QC

CHEMTECH

QA/QC DELIVERABLES CHECKLIST

Project Number: N16506

THIS FORM HAS BEEN COMPLETED BY CHEMTECH LABORATORY AND ACCOMPANIES ALL DATA DELIVERABLES PACKAGES.

The following laboratory deliverables are included in this analytical report. Any deviations from the accepted methodology and procedures, or performance values outside acceptable ranges are summarized in the Non-Conformance Summary.

	Yes	NA
I. Report Cover Page, Laboratory Certification and Field Sample to Lab Sample ID Cross Reference	<input checked="" type="checkbox"/>	<input type="checkbox"/>
II. Table of Contents	<input checked="" type="checkbox"/>	<input type="checkbox"/>
III. Chain of Custody Documents	<input checked="" type="checkbox"/>	<input type="checkbox"/>
IV. Methodology Summaries	<input checked="" type="checkbox"/>	<input type="checkbox"/>
V. Laboratory Chronicle and Hold Time Checks	<input checked="" type="checkbox"/>	<input type="checkbox"/>
VI. Non-Conformance Summary	<input checked="" type="checkbox"/>	<input type="checkbox"/>
VII. Tabulated Analytical Results	<input checked="" type="checkbox"/>	<input type="checkbox"/>
VIII. Initial and Continuing Calibration Information	<input checked="" type="checkbox"/>	<input type="checkbox"/>
IX. Tune and Internal Standard Area Summaries (GC/MS)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
X. Quality Control Summary Reports	<input checked="" type="checkbox"/>	<input type="checkbox"/>
XI. Surrogate Recovery Summary	<input checked="" type="checkbox"/>	<input type="checkbox"/>
XII. Raw Data Chromatogram, Blank, Samples and QC when applicable	<input checked="" type="checkbox"/>	<input type="checkbox"/>
XIII. Subcontract Data	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Mildred V. Reyes
QA/QC Data Reviewer

11/14/01
Date

110 Route 4
Englewood, NJ 07631
Phone: 201.568.7400 Fax: 201.567.3231

284 Sheffield Street
Mountainside, NJ 07092
Tel 908.789.8900 Fax: 908.789.8922

TABLE OF CONTENTS
PROJECT NUMBER: N6506NJ

	<u>PAGE #</u>
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CHEMTECH

234 Sheffield Street Mountainside NJ 07092
Tel. 908-789-8900

**CHAIN OF
CUSTODY
RECORD**



CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax (908) 789-8922
www.chemtech.net

CHEMTECH JOB NO.:

CHEMTECH QUOTE NO.:

1650615

CLIENT INFORMATION

PROJECT INFORMATION

BILLING INFORMATION

REPORT TO BE SENT TO:

COMPANY: Foster Wheeler Env.
2300 Lincoln Hwy East
ADDRESS: One Oxford Valley, Suite 200
CITY: Langhorne STATE: PA ZIP: 19047
ATTENTION: Mike Heffron
PHONE: 215-702-4015 FAX: 215-702-4045

PROJECT NAME: NWS Earle
PROJECT NO.: Site 26 GW
PROJECT MANAGER: Mike Heffron
LOCATION: Colts Neck, NJ
PHONE: FAX:

BILL TO: FWENC PO #:
ADDRESS:
CITY: STATE: ZIP:
ATTENTION: PHONE:

ANALYSIS

DATA TURNAROUND INFORMATION

DATA DELIVERABLE INFORMATION

FAX: Std DAYS *
HARD COPY: DAYS *
EDD: Std DAYS *
* TO BE APPROVED BY CHEMTECH
** NORMAL TURNAROUND TIME - 14 DAYS

RESULTS ONLY NY STATE CATEGORY A
RESULTS PLUS QC NY STATE CATEGORY B
REGULATORY FORMAT, STATE:
NEW JERSEY REDUCED DELIVERABLES
CLP
EDD FORMAT: NJDEP

VOCs box
1 2 3 4 5 6 7 8 9

Table with columns: CHEMTECH SAMPLE ID, PROJECT SAMPLE IDENTIFICATION, SAMPLE MATRIX, SAMPLE TYPE, SAMPLE COLLECTION DATE/TIME, # OF BOTTLES, PRESERVATIVES, COMMENTS. Includes handwritten entries for samples 1-7.

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

Handwritten custody log with columns for Relinquished By, Date/Time, Received By, and Conditions of bottles or coolers at receipt.

DATA REPORTING QUALIFIERS- ORGANIC

For reporting results, the following " Results Qualifiers" are used:

Value	If the result is a value greater than or equal to the detection limit, report the value
U	Indicates the compound was analyzed for but was not detected. Report the minimum detection limit for the sample with the U, i.e. "10 U". This is not necessarily the instrument detection limit attainable for this particular sample based on any concentration or dilution that may have been required.
J	Indicates an estimated value. This flag is used: <ol style="list-style-type: none">(1) When estimating a concentration for a tentatively identified compound (library search hits, where a 1:1 response is assumed.)(2) When the mass spectral data indicated the identification, however the result was less than the specified detection limit greater than zero. If the detection limit was 10ug/L and a concentration of 3 ug/L was calculated report as 3 J. This flag is used when similar situation arise on any organic parameter i.e. Pest, PCB and others.
B	Indicates the analyte was found in the blank as well as the sample report as "12 B".
E	Indicates the analyte 's concentration exceeds the calibrated range of the instrument for that specific analysis.
D	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
P	This flag is used for Pesticide/PCB target analyte when there is >25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on Form 1 and flagged with a "P".
N	This flag indicates presumptive evidence of a compound. This is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It applies to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the flag is not used.

CHEMTECH

284 Sheffield Street Mountainside NJ 07092
Tel. 908-789-8900

METHODOLOGY REVIEW

METHODOLOGY

Volatiles Organics

*40 Code of Federal Regulations

** Method 624

CHEMTECH

234 Sheffield Street Mountainside NJ 07092
Tel. 908-739-8900

LABORATORY CHRONICLE

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092

LABORATORY CHRONICLE

CLIENT: FOSTER WHEELER
CLIENT PROJECT: NWS EARLE
DATE RECEIVED: 10/30/01
LABORATORY PROJECT: N6506

<u>SAMPLE</u> <u>DATE</u>	<u>ANALYSIS</u> <u>DATES</u>	<u>ANALYSIS</u>
10/29/01	11/07&11/08/01	VOLATILE ORGANICS

CHEMTECH

234 Sheffield Street Mountainside NJ 07092
Tel. 908-789-8900

**CONFORMANCE/
NON-
CONFORMANCE
SUMMARY**

CHEMTECH 284 Sheffield Street, Mountainside New Jersey 07092
 NEW JERSEY LAB ID#: 12013 : NEW YORK LAB ID#: 11376

GC/MS VOA CONFORMANCE/NON-CONFORMANCE SUMMARY

CHEMTECH PROJECT NUMBER: N6506 MATRIX: WATER

METHOD: 624

	<u>NA</u>	<u>NO</u>	<u>YES</u>
1. Chromatograms Labeled/Compounds Identified. (Field samples and Method Blanks)	___	___	✓
2. GC/MS Tuning Specifications BFB Meet Criteria (NOTE THAT THERE ARE DIFFERENT CRITERIA FOR NY ASP CLP, CLP AND NJ)	___	___	✓
3. GC/MS Tuning Frequency - Performed every 24 hours for 600 series and 12 hours for 8000 Series	___	___	✓
4. GC/MS Calibration - Initial Calibration performed before sample analysis and continuing calibration performed within 24 hours of sample analysis for 600 series and 12 hours for 8000 series.	___	___	✓
5. GC/MS Calibration Requirements			
a. Calibration Check Compounds for 8260 and CLP	___	___	✓
b. System Performance Check Compounds for 8260 and CLP	___	___	✓

8260-CALIBRATION CRITERIA

<u>SPCC Compounds</u>	<u>MIN RF</u>	<u>CCC Compounds</u>
Chloromethane	0.1	1,1-Dichloroethene
1,1-Dichloroethane	0.1	Chloroform
Bromoform	0.1	1,2-Dichloropropane
Chlorobenzene	0.3	Toluene
1,1,2,2-Tetrachloroethane	0.3	Ethylbenzene
		Vinyl chloride

For CCC compounds Initial Calibration Criteria - RSD less than or equal to 30%
 For CCC compounds Continuing Calibration Criteria - %D less than or equal to 20%

6. Blank Contamination - If yes, list compounds and concentrations in each blank: _____ ✓
VG110709.D MeCl₂ 1.40 ug/L

7. Surrogate Recoveries Meet Criteria _____ ✓

If not met, list those compounds and their recoveries which fall outside the acceptable ranges.

CHEMTECH 284 Sheffield Street, Mountainside New Jersey 07092

NEW JERSEY LAB ID#: 12013 : NEW YORK LAB ID#: 11376

GC/MS VOA CONFORMANCE/NON-CONFORMANCE SUMMARY(CONTINUED)

NA NO YES

8. Matrix Spike/Matrix Spike Duplicate Recoveries Meet Criteria

___ ___

If not met, list those compounds and their recoveries which fall outside the acceptable range.

9. Internal Standard Area/Retention Time Shift Meet Criteria

___ ___

Comments: _____

10. Analysis Holding Time Met

___ ___

If not met, list number of days exceeded for each sample:

ADDITIONAL COMMENTS: _____

Ankit
Analyst

11/12/01
Date

Mildred V. Reyes
QA REVIEW

11/14/01
Date

CHEMTECH

VOLATILES
ORGANIC
DATA

CHEMTECH

A

ANALYTICAL

RESULTS

SUMMARY

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26MW-01-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO

Project No.: N6506 Site: NWS EARL Location: LB17652 Group: 5971-VOA

Matrix: (soil/water) WATER Lab Sample ID: 001

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110713.D

Level: (low/med) _____ Date Received: 10/30/01

% Moisture: not dec. 100 Date Analyzed: 11/7/01

GC Column: RTX624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/L	Q
74-87-3	Chloromethane		1.1	U
75-01-4	Vinyl Chloride		1	U
74-83-9	Bromomethane		0.6	U
75-00-3	Chloroethane		0.7	U
75-35-4	1,1-Dichloroethene		0.4	U
67-64-1	Acetone		2.4	U
75-15-0	Carbon Disulfide		0.3	U
75-09-2	Methylene Chloride		0.4	U
156-60-5	trans-1,2-Dichloroethene		0.4	U
75-34-3	1,1-Dichloroethane		0.2	U
67-66-3	Chloroform		0.3	U
71-55-6	1,1,1-Trichloroethane		0.3	U
56-23-5	Carbon Tetrachloride		0.3	U
71-43-2	Benzene		0.3	U
107-06-2	1,2-Dichloroethane		0.3	U
79-01-6	Trichloroethene		10	
78-87-5	1,2-Dichloropropane		0.4	U
75-27-4	Bromodichloromethane		0.3	U
10061-02-6	t-1,3-Dichloropropene		0.2	U
108-88-3	Toluene		0.3	U
10061-01-5	cis-1,3-Dichloropropene		0.3	U
79-00-5	1,1,2-Trichloroethane		0.3	U
127-18-4	Tetrachloroethene		0.3	U
124-48-1	Dibromochloromethane		0.3	U
108-90-7	Chlorobenzene		0.2	U
100-41-4	Ethyl Benzene		0.4	U
95-47-6	o-Xylene		0.5	U
136777-61-2	m/p-Xylenes		0.4	U
100-42-5	Styrene		0.2	U
75-25-2	Bromoform		0.3	U
79-34-5	1,1,2,2-Tetrachloroethane		0.3	U
156-59-2	cis-1,2-Dichloroethene		16	
78-93-3	2-Butanone		2.8	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

26MW-01-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6506 Site: NWS EAR Location: LB17652 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: 001
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110713.D
 Level: (low/med) _____ Date Received: 10/30/01
 % Moisture: not dec. 100 Date Analyzed: 11/7/01
 GC Column: RTX624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

Number TICs found: 0 (ug/L or ug/Kg) ug/L

CAS Number	Compound Name	RT	Est. Conc.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26MW-06-03 ✓

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO

Project No.: N6506 Site: NWS EARL Location: LB17652 Group: 5971-VOA

Matrix: (soil/water) WATER Lab Sample ID: 002

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110714.D

Level: (low/med) _____ Date Received: 10/30/01

% Moisture: not dec. 100 Date Analyzed: 11/7/01

GC Column: RTX624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/L	Q
74-87-3	Chloromethane		1.1	U
75-01-4	Vinyl Chloride		1	U
74-83-9	Bromomethane		0.6	U
75-00-3	Chloroethane		0.7	U
75-35-4	1,1-Dichloroethene		0.4	U
67-64-1	Acetone		2.4	U
75-15-0	Carbon Disulfide		0.3	U
75-09-2	Methylene Chloride		0.4	U
156-60-5	trans-1,2-Dichloroethene		0.4	U
75-34-3	1,1-Dichloroethane		0.2	U
67-66-3	Chloroform		0.3	U
71-55-6	1,1,1-Trichloroethane		0.3	U
56-23-5	Carbon Tetrachloride		0.3	U
71-43-2	Benzene		0.3	U
107-06-2	1,2-Dichloroethane		0.3	U
79-01-6	Trichloroethene		4.7	
78-87-5	1,2-Dichloropropane		0.4	U
75-27-4	Bromodichloromethane		0.3	U
10061-02-6	t-1,3-Dichloropropene		0.2	U
108-88-3	Toluene		0.3	U
10061-01-5	cis-1,3-Dichloropropene		0.3	U
79-00-5	1,1,2-Trichloroethane		0.3	U
127-18-4	Tetrachloroethene		0.3	U
124-48-1	Dibromochloromethane		0.3	U
108-90-7	Chlorobenzene		0.2	U
100-41-4	Ethyl Benzene		0.4	U
95-47-6	o-Xylene		0.5	U
136777-61-2	m/p-Xylenes		0.4	U
100-42-5	Styrene		0.2	U
75-25-2	Bromoform		0.3	U
79-34-5	1,1,2,2-Tetrachloroethane		0.3	U
156-59-2	cis-1,2-Dichloroethene		1.6	
78-93-3	2-Butanone		2.8	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

26MW-06-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6506 Site: NWS EAR Location: LB17652 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: 002
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110714.D
 Level: (low/med) _____ Date Received: 10/30/01
 % Moisture: not dec. 100 Date Analyzed: 11/7/01
 GC Column: RTX624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:
(ug/L or ug/Kg) ug/L

Number TICs found: 0

CAS Number	Compound Name	RT	Est. Conc.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26AS-01-03

Lab Name: CHEMTECH

Contract: FOSTER WHEELER ENVIRO

Project No.: N6506

Site: NWS EARL Location: LB17652

Group: 5971-VOA

Matrix: (soil/water) WATER

Lab Sample ID: O03

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: VG110715.D

Level: (low/med) _____

Date Received: 10/30/01

% Moisture: not dec. 100

Date Analyzed: 11/8/01

GC Column: RTX624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/L	Q
74-87-3	Chloromethane		1.1	U
75-01-4	Vinyl Chloride		1	U
74-83-9	Bromomethane		0.6	U
75-00-3	Chloroethane		0.7	U
75-35-4	1,1-Dichloroethene		0.4	U
67-64-1	Acetone		2.4	U
75-15-0	Carbon Disulfide		0.3	U
75-09-2	Methylene Chloride		0.4	U
156-60-5	trans-1,2-Dichloroethene		0.4	U
75-34-3	1,1-Dichloroethane		0.2	U
67-66-3	Chloroform		0.3	U
71-55-6	1,1,1-Trichloroethane		0.3	U
56-23-5	Carbon Tetrachloride		0.3	U
71-43-2	Benzene		0.3	U
107-06-2	1,2-Dichloroethane		0.3	U
79-01-6	Trichloroethene		43	
78-87-5	1,2-Dichloropropane		0.4	U
75-27-4	Bromodichloromethane		0.3	U
10061-02-6	t-1,3-Dichloropropene		0.2	U
108-88-3	Toluene		0.3	U
10061-01-5	cis-1,3-Dichloropropene		0.3	U
79-00-5	1,1,2-Trichloroethane		0.3	U
127-18-4	Tetrachloroethene		0.3	U
124-48-1	Dibromochloromethane		0.3	U
108-90-7	Chlorobenzene		0.2	U
100-41-4	Ethyl Benzene		0.4	U
95-47-6	o-Xylene		0.5	U
136777-61-2	m/p-Xylenes		0.4	U
100-42-5	Styrene		0.2	U
75-25-2	Bromoform		0.3	U
79-34-5	1,1,2,2-Tetrachloroethane		0.3	U
156-59-2	cis-1,2-Dichloroethene		45	
78-93-3	2-Butanone		2.8	U

IE
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

26AS-01-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6506 Site: NWS EAR Location: LB17652 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: O03
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110715.D
 Level: (low/med) _____ Date Received: 10/30/01
 % Moisture: not dec. 100 Date Analyzed: 11/8/01
 GC Column: RTX624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

Number TICs found: 0 (ug/L or ug/Kg) ug/L

CAS Number	Compound Name	RT	Est. Conc.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26MW-13-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No.: N6506 Site: NWS EARL Location: LB17652 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: O04
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110723.D
 Level: (low/med) _____ Date Received: 10/30/01
 % Moisture: not dec. 100 Date Analyzed: 11/8/01
 GC Column: RTX624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/L	Q
74-87-3	Chloromethane		1.1	U
75-01-4	Vinyl Chloride		1	U
74-83-9	Bromomethane		0.6	U
75-00-3	Chloroethane		0.7	U
75-35-4	1,1-Dichloroethene		0.4	U
67-64-1	Acetone		2.4	U
75-15-0	Carbon Disulfide		0.3	U
75-09-2	Methylene Chloride		0.4	U
156-60-5	trans-1,2-Dichloroethene		0.4	U
75-34-3	1,1-Dichloroethane		0.2	U
67-66-3	Chloroform		0.3	U
71-55-6	1,1,1-Trichloroethane		0.3	U
56-23-5	Carbon Tetrachloride		0.3	U
71-43-2	Benzene		0.3	U
107-06-2	1,2-Dichloroethane		0.3	U
79-01-6	Trichloroethene		8.7	
78-87-5	1,2-Dichloropropane		0.4	U
75-27-4	Bromodichloromethane		0.3	U
10061-02-6	t-1,3-Dichloropropene		0.2	U
108-88-3	Toluene		0.3	U
10061-01-5	cis-1,3-Dichloropropene		0.3	U
79-00-5	1,1,2-Trichloroethane		0.3	U
127-18-4	Tetrachloroethene		0.3	U
124-48-1	Dibromochloromethane		0.3	U
108-90-7	Chlorobenzene		0.2	U
100-41-4	Ethyl Benzene		0.4	U
95-47-6	o-Xylene		0.5	U
136777-61-2	m/p-Xylenes		0.4	U
100-42-5	Styrene		0.2	U
75-25-2	Bromoform		0.3	U
79-34-5	1,1,2,2-Tetrachloroethane		0.3	U
156-59-2	cis-1,2-Dichloroethene		4	
78-93-3	2-Butanone		2.8	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

26MW-13-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6506 Site: NWS EAR Location: LB17652 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: 004
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110723.D
 Level: (low/med) _____ Date Received: 10/30/01
 % Moisture: not dec. 100 Date Analyzed: 11/8/01
 GC Column: RTX624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1 Concentration Units: (ug/L or ug/Kg) ug/L

CAS Number	Compound Name	RT	Est. Conc.	Q
1. 372-18-9	Benzene, 1,3-difluoro-	8.11	51	JH
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26MW-12-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO

Project No.: N6506 Site: NWS EARL Location: LB17652 Group: 5971-VOA

Matrix: (soil/water) WATER Lab Sample ID: O05

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110716.D

Level: (low/med) _____ Date Received: 10/30/01

% Moisture: not dec. 100 Date Analyzed: 11/8/01

GC Column: RTX624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/L	Q
74-87-3	Chloromethane		1.1	U
75-01-4	Vinyl Chloride		1	U
74-83-9	Bromomethane		0.6	U
75-00-3	Chloroethane		0.7	U
75-35-4	1,1-Dichloroethene		0.4	U
67-64-1	Acetone		2.4	U
75-15-0	Carbon Disulfide		0.3	U
75-09-2	Methylene Chloride		0.4	U
156-60-5	trans-1,2-Dichloroethene		0.4	U
75-34-3	1,1-Dichloroethane		0.2	U
67-66-3	Chloroform		0.3	U
71-55-6	1,1,1-Trichloroethane		0.3	U
56-23-5	Carbon Tetrachloride		0.3	U
71-43-2	Benzene		0.3	U
107-06-2	1,2-Dichloroethane		0.3	U
79-01-6	Trichloroethene		0.4	U
78-87-5	1,2-Dichloropropane		0.4	U
75-27-4	Bromodichloromethane		0.3	U
10061-02-6	t-1,3-Dichloropropene		0.2	U
108-88-3	Toluene		0.3	U
10061-01-5	cis-1,3-Dichloropropene		0.3	U
79-00-5	1,1,2-Trichloroethane		0.3	U
127-18-4	Tetrachloroethene		0.3	U
124-48-1	Dibromochloromethane		0.3	U
108-90-7	Chlorobenzene		0.2	U
100-41-4	Ethyl Benzene		0.4	U
95-47-6	o-Xylene		0.5	U
136777-61-2	m/p-Xylenes		0.4	U
100-42-5	Styrene		0.2	U
75-25-2	Bromoform		0.3	U
79-34-5	1,1,2,2-Tetrachloroethane		0.3	U
156-59-2	cis-1,2-Dichloroethene		0.3	U
78-93-3	2-Butanone		2.8	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

26MW-12-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6506 Site: NWS EAR Location: LB17652 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: 005
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110716.D
 Level: (low/med) _____ Date Received: 10/30/01
 % Moisture: not dec. 100 Date Analyzed: 11/8/01
 GC Column: RTX624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0 Concentration Units: (ug/L or ug/Kg) ug/L

CAS Number	Compound Name	RT	Est. Conc.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26AS-35-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No.: N6506 Site: NWS EARL Location: LB17652 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: 006
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110717.D
 Level: (low/med) _____ Date Received: 10/30/01
 % Moisture: not dec. 100 Date Analyzed: 11/8/01
 GC Column: RTX624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/L	Q
74-87-3	Chloromethane		1.1	U
75-01-4	Vinyl Chloride		1	U
74-83-9	Bromomethane		0.6	U
75-00-3	Chloroethane		0.7	U
75-35-4	1,1-Dichloroethene		0.4	U
67-64-1	Acetone		2.4	U
75-15-0	Carbon Disulfide		0.3	U
75-09-2	Methylene Chloride		0.4	U
156-60-5	trans-1,2-Dichloroethene		0.4	U
75-34-3	1,1-Dichloroethane		0.2	U
67-66-3	Chloroform		0.3	U
71-55-6	1,1,1-Trichloroethane		0.3	U
56-23-5	Carbon Tetrachloride		0.3	U
71-43-2	Benzene		0.3	U
107-06-2	1,2-Dichloroethane		0.3	U
79-01-6	Trichloroethene		0.4	U
78-87-5	1,2-Dichloropropane		0.4	U
75-27-4	Bromodichloromethane		0.3	U
10061-02-6	t-1,3-Dichloropropene		0.2	U
108-88-3	Toluene		0.3	U
10061-01-5	cis-1,3-Dichloropropene		0.3	U
79-00-5	1,1,2-Trichloroethane		0.3	U
127-18-4	Tetrachloroethene		0.3	U
124-48-1	Dibromochloromethane		0.3	U
108-90-7	Chlorobenzene		0.2	U
100-41-4	Ethyl Benzene		0.4	U
95-47-6	o-Xylene		0.5	U
136777-61-2	m/p-Xylenes		0.4	U
100-42-5	Styrene		0.2	U
75-25-2	Bromoform		0.3	U
79-34-5	1,1,1,2-Tetrachloroethane		0.3	U
156-59-2	cis-1,2-Dichloroethene		1.2	
78-93-3	2-Butanone		2.8	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

26AS-35-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6506 Site: NWS EAR Location: LB17652 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: O06
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110717.D
 Level: (low/med) _____ Date Received: 10/30/01
 % Moisture: not dec. 100 Date Analyzed: 11/8/01
 GC Column: RTX624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:
(ug/L or ug/Kg) ug/L

Number TICs found: 0

CAS Number	Compound Name	RT	Est. Conc.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26FB-01-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO

Project No.: N6506 Site: NWS EARL Location: LB17652 Group: 5971-VOA

Matrix: (soil/water) WATER Lab Sample ID: 007

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110712.D

Level: (low/med) _____ Date Received: 10/30/01

% Moisture: not dec. 100 Date Analyzed: 11/7/01

GC Column: RTX624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/L	Q
74-87-3	Chloromethane		1.1	U
75-01-4	Vinyl Chloride		1	U
74-83-9	Bromomethane		0.6	U
75-00-3	Chloroethane		0.7	U
75-35-4	1,1-Dichloroethene		0.4	U
67-64-1	Acetone		2.4	U
75-15-0	Carbon Disulfide		0.3	U
75-09-2	Methylene Chloride		0.4	U
156-60-5	trans-1,2-Dichloroethene		0.4	U
75-34-3	1,1-Dichloroethane		0.2	U
67-66-3	Chloroform		0.3	U
71-55-6	1,1,1-Trichloroethane		0.3	U
56-23-5	Carbon Tetrachloride		0.3	U
71-43-2	Benzene		0.3	U
107-06-2	1,2-Dichloroethane		0.3	U
79-01-6	Trichloroethene		0.4	U
78-87-5	1,2-Dichloropropane		0.4	U
75-27-4	Bromodichloromethane		0.3	U
10061-02-6	t-1,3-Dichloropropene		0.2	U
108-88-3	Toluene		0.3	U
10061-01-5	cis-1,3-Dichloropropene		0.3	U
79-00-5	1,1,2-Trichloroethane		0.3	U
127-18-4	Tetrachloroethene		0.3	U
124-48-1	Dibromochloromethane		0.3	U
108-90-7	Chlorobenzene		0.2	U
100-41-4	Ethyl Benzene		0.4	U
95-47-6	o-Xylene		0.5	U
136777-61-2	m/p-Xylenes		0.4	U
100-42-5	Styrene		0.2	U
75-25-2	Bromoform		0.3	U
79-34-5	1,1,2,2-Tetrachloroethane		0.3	U
156-59-2	cis-1,2-Dichloroethene		0.3	U
78-93-3	2-Butanone		2.8	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

26FB-01-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6506 Site: NWS EAR Location: LB17652 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: O07
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110712.D
 Level: (low/med) _____ Date Received: 10/30/01
 % Moisture: not dec. 100 Date Analyzed: 11/7/01
 GC Column: RTX624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0 Concentration Units: (ug/L or ug/Kg) ug/L

CAS Number	Compound Name	RT	Est. Conc.	Q
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ANALYTICAL RESULTS SUMMARY

PROJECT NAME: NWS EARLE

**FOSTER WHEELER ENV.
2300 LINCOLN HIGHWAY EAST
ONE OXFORD VALLEY, SUITE 200
LANGHORNE, PA 19047
215-702-4015**

**CHEMTECH PROJECT # N6465
ATTENTION : MIKE HEFFRON**

DATA VALIDATION REPORT

**Foster Wheeler Environmental Corporation
Data Validation Report**

Project: NWS - Earle

Laboratory: Chemtech

Project No.: N6465

<u>Client Sample ID.</u>	<u>Lab ID</u>
26MW-15-03	N6465-01
26MW-16-03	N6465-02
26MW-14-03	N6465-03
26MW-18-03	N6465-04
26MW-17-03	N6465-05
26MW-17D-03	N6465-06
26MW-10-03	N6465-07
26MW-09-03	N6465-08
26MW-08-03	N6465-09
26MW-05-03	N6465-10
26MW-07-03	N6465-11
26MW-11-03	N6465-12

Twelve aqueous samples were analyzed by Chemtech for the volatile organics using Method 624. A screening data validation was performed using USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 and best professional judgement. Data qualifier definitions are as follows:

- U** The analyte was analyzed for, but not detected above the reported sample quantitation limit.
- R** The sample results are rejected (unusable) due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
- J** The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ** The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Validation consisted of checking and verifying that the criteria listed below were within acceptable QC limits.

- Holding Time
- Blank Contamination
- Surrogate Recoveries
- Matrix Spike
- Blank Spikes
- Calibrations
- Internal Standards
- Field Duplicates

Holding Times

All samples were prepped and analyzed within specified holding times.

Blank Contamination

The TIC reported at retention time 11.13 was qualified as unusable (R) in several samples due to similar contamination in the method blank.

Surrogates

All recoveries were within specified limits.

Matrix Spike

Three compounds exceeded recovery criteria in the spike analyses performed on a sample from another sample batch, but no action was required.

Blank Spike

The blank spike was acceptable.

Calibrations

All criteria were met.

Internal Standards

All areas were within specified limits

Field Duplicates

The field duplicate pair, 26MW-17-03 and 26MW-17D-03, was analyzed with satisfactory results.

Reviewed by:

Cecelia N. Minch
Cecelia N. Minch

Date: 1/8/02

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26MW-15-03

Lab Name: CHEMTECH

Contract: FOSTER WHEELER ENVIRO

Project No.: N6465

Site: NWS EARL Location: LB17617

Group: 5971-VOA

Matrix: (soil/water) WATER

Lab Sample ID: 001

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: VG110615.D

Level: (low/med) _____

Date Received: 10/26/01

% Moisture: not dec. 100

Date Analyzed: 11/6/01

GC Column: DB624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/L	Q
74-87-3	Chloromethane		1.1	U
75-01-4	Vinyl Chloride		1	U
74-83-9	Bromomethane		0.6	U
75-00-3	Chloroethane		0.7	U
75-35-4	1,1-Dichloroethene		0.4	U
67-64-1	Acetone		2.4	U
75-15-0	Carbon Disulfide		0.3	U
75-09-2	Methylene Chloride		0.4	U
156-60-5	trans-1,2-Dichloroethene		0.4	U
75-34-3	1,1-Dichloroethane		0.2	U
67-66-3	Chloroform		0.3	U
71-55-6	1,1,1-Trichloroethane		0.3	U
56-23-5	Carbon Tetrachloride		0.3	U
71-43-2	Benzene		0.3	U
107-06-2	1,2-Dichloroethane		0.3	U
79-01-6	Trichloroethene		0.4	U
78-87-5	1,2-Dichloropropane		0.4	U
75-27-4	Bromodichloromethane		0.3	U
10061-02-6	t-1,3-Dichloropropene		0.2	U
108-88-3	Toluene		0.3	U
10061-01-5	cis-1,3-Dichloropropene		0.3	U
79-00-5	1,1,2-Trichloroethane		0.3	U
127-18-4	Tetrachloroethene		0.3	U
124-48-1	Dibromochloromethane		0.3	U
108-90-7	Chlorobenzene		0.2	U
100-41-4	Ethyl Benzene		0.4	U
95-47-6	o-Xylene		0.5	U
136777-61-2	m/p-Xylenes		0.4	U
100-42-5	Styrene		0.2	U
75-25-2	Bromoform		0.3	U
79-34-5	1,1,2,2-Tetrachloroethane		0.3	U
156-59-2	cis-1,2-Dichloroethene		0.3	U
78-93-3	2-Butanone		2.8	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.
26MW-15-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6465 Site: NWS EAR Location: LB17617 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: O01
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110615.D
 Level: (low/med) _____ Date Received: 10/26/01
 % Moisture: not dec. 100 Date Analyzed: 11/6/01
 GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:
(ug/L or ug/Kg) ug/L

Number TICs found: 1

CAS Number	Compound Name	RT	Est. Conc.	Q
1.	Column Bleed	11.13	12	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26MW-16-03

Lab Name: CHEMTECH

Contract: FOSTER WHEELER ENVIRO

Project No.: N6465

Site: NWS EARL Location: LB17617

Group: 5971-VOA

Matrix: (soil/water) WATER

Lab Sample ID: O02

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: VG110616.D

Level: (low/med) _____

Date Received: 10/26/01

% Moisture: not dec. 100

Date Analyzed: 11/7/01

GC Column: DB624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/L	Q
74-87-3	Chloromethane		1.1	U
75-01-4	Vinyl Chloride		1	U
74-83-9	Bromomethane		0.6	U
75-00-3	Chloroethane		0.7	U
75-35-4	1,1-Dichloroethene		0.4	U
67-64-1	Acetone		16	
75-15-0	Carbon Disulfide		0.3	U
75-09-2	Methylene Chloride		0.4	U
156-60-5	trans-1,2-Dichloroethene		0.4	U
75-34-3	1,1-Dichloroethane		0.2	U
67-66-3	Chloroform		0.3	U
71-55-6	1,1,1-Trichloroethane		0.3	U
56-23-5	Carbon Tetrachloride		0.3	U
71-43-2	Benzene		0.3	U
107-06-2	1,2-Dichloroethane		0.3	U
79-01-6	Trichloroethene		0.4	U
78-87-5	1,2-Dichloropropane		0.4	U
75-27-4	Bromodichloromethane		0.3	U
10061-02-6	t-1,3-Dichloropropene		0.2	U
108-88-3	Toluene		0.3	U
10061-01-5	cis-1,3-Dichloropropene		0.3	U
79-00-5	1,1,2-Trichloroethane		0.3	U
127-18-4	Tetrachloroethene		0.3	U
124-48-1	Dibromochloromethane		0.3	U
108-90-7	Chlorobenzene		0.2	U
100-41-4	Ethyl Benzene		0.4	U
95-47-6	o-Xylene		0.5	U
136777-61-2	m/p-Xylenes		0.4	U
100-42-5	Styrene		0.2	U
75-25-2	Bromoform		0.3	U
79-34-5	1,1,2,2-Tetrachloroethane		0.3	U
156-59-2	cis-1,2-Dichloroethene		0.3	U
78-93-3	2-Butanone		2.8	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.
26MW-16-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6465 Site: NWS EAR Location: LB17617 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: 002
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110616.D
 Level: (low/med) _____ Date Received: 10/26/01
 % Moisture: not dec. 100 Date Analyzed: 11/7/01
 GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:
(ug/L or ug/Kg) ug/L

Number TICs found: 1

CAS Number	Compound Name	RT	Est. Conc.	Q
1.	Column Bleed	11.14	21	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26MW-14-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No.: N6465 Site: NWS EARL Location: LB17617 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: 003
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110617.D
 Level: (low/med) _____ Date Received: 10/26/01
 % Moisture: not dec. 100 Date Analyzed: 11/7/01
 GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS No.	Compound	Concentration Units:		Q
		(ug/L or ug/Kg)	ug/L	
74-87-3	Chloromethane	1.1		U
75-01-4	Vinyl Chloride	1		U
74-83-9	Bromomethane	0.6		U
75-00-3	Chloroethane	0.7		U
75-35-4	1,1-Dichloroethene	0.4		U
67-64-1	Acetone	2.4		U
75-15-0	Carbon Disulfide	0.3		U
75-09-2	Methylene Chloride	0.4		U
156-60-5	trans-1,2-Dichloroethene	0.4		U
75-34-3	1,1-Dichloroethane	0.2		U
67-66-3	Chloroform	0.3		U
71-55-6	1,1,1-Trichloroethane	0.3		U
56-23-5	Carbon Tetrachloride	0.3		U
71-43-2	Benzene	0.3		U
107-06-2	1,2-Dichloroethane	0.3		U
79-01-6	Trichloroethene	0.4		U
78-87-5	1,2-Dichloropropane	0.4		U
75-27-4	Bromodichloromethane	0.3		U
10061-02-6	t-1,3-Dichloropropene	0.2		U
108-88-3	Toluene	0.3		U
10061-01-5	cis-1,3-Dichloropropene	0.3		U
79-00-5	1,1,2-Trichloroethane	0.3		U
127-18-4	Tetrachloroethene	0.3		U
124-48-1	Dibromochloromethane	0.3		U
108-90-7	Chlorobenzene	0.2		U
100-41-4	Ethyl Benzene	0.4		U
95-47-6	o-Xylene	0.5		U
136777-61-2	m/p-Xylenes	0.4		U
100-42-5	Styrene	0.2		U
75-25-2	Bromoform	0.3		U
79-34-5	1,1,2,2-Tetrachloroethane	0.3		U
156-59-2	cis-1,2-Dichloroethene	0.3		U
78-93-3	2-Butanone	2.8		U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

26MW-14-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6465 Site: NWS EAR Location: LB17617 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: O03
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110617.D
 Level: (low/med) _____ Date Received: 10/26/01
 % Moisture: not dec. 100 Date Analyzed: 11/7/01
 GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:
(ug/L or ug/Kg) ug/L

Number TICs found: 0

CAS Number	Compound Name	RT	Est. Conc.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26MW-18-03

Lab Name: CHEMTECH

Contract: FOSTER WHEELER ENVIRO

Project No.: N6465

Site: NWS EARL Location: LB17617

Group: 5971-VOA

Matrix: (soil/water) WATER

Lab Sample ID: 004

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: VG110618.D

Level: (low/med) _____

Date Received: 10/26/01

% Moisture: not dec. 100

Date Analyzed: 11/7/01

GC Column: DB624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/L	Q
74-87-3	Chloromethane		1.1	U
75-01-4	Vinyl Chloride		1	U
74-83-9	Bromomethane		0.6	U
75-00-3	Chloroethane		0.7	U
75-35-4	1,1-Dichloroethene		0.4	U
67-64-1	Acetone		2.4	U
75-15-0	Carbon Disulfide		0.3	U
75-09-2	Methylene Chloride		0.4	U
156-60-5	trans-1,2-Dichloroethene		0.4	U
75-34-3	1,1-Dichloroethane		0.2	U
67-66-3	Chloroform		11	
71-55-6	1,1,1-Trichloroethane		0.3	U
56-23-5	Carbon Tetrachloride		0.3	U
71-43-2	Benzene		0.3	U
107-06-2	1,2-Dichloroethane		0.3	U
79-01-6	Trichloroethene		0.4	U
78-87-5	1,2-Dichloropropane		0.4	U
75-27-4	Bromodichloromethane		0.3	U
10061-02-6	t-1,3-Dichloropropene		0.2	U
108-88-3	Toluene		0.3	U
10061-01-5	cis-1,3-Dichloropropene		0.3	U
79-00-5	1,1,2-Trichloroethane		0.3	U
127-18-4	Tetrachloroethene		4.6	
124-48-1	Dibromochloromethane		0.3	U
108-90-7	Chlorobenzene		0.2	U
100-41-4	Ethyl Benzene		0.4	U
95-47-6	o-Xylene		0.5	U
136777-61-2	m/p-Xylenes		0.4	U
100-42-5	Styrene		0.2	U
75-25-2	Bromoform		0.3	U
79-34-5	1,1,2,2-Tetrachloroethane		0.3	U
156-59-2	cis-1,2-Dichloroethene		0.3	U
78-93-3	2-Butanone		2.8	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

26MW-18-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6465 Site: NWS EAR Location: LB17617 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: 004
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110618.D
 Level: (low/med) _____ Date Received: 10/26/01
 % Moisture: not dec. 100 Date Analyzed: 11/7/01
 GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

Number TICs found: 0 (ug/L or ug/Kg) ug/L

CAS Number	Compound Name	RT	Est. Conc.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26MW-17-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No.: N6465 Site: NWS EARL Location: LB17617 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: O05
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110619.D
 Level: (low/med) _____ Date Received: 10/26/01
 % Moisture: not dec. 100 Date Analyzed: 11/7/01
 GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS No.	Compound	Concentration Units:	
		(ug/L or ug/Kg)	ug/L
74-87-3	Chloromethane	1.1	U
75-01-4	Vinyl Chloride	1	U
74-83-9	Bromomethane	0.6	U
75-00-3	Chloroethane	0.7	U
75-35-4	1,1-Dichloroethene	0.4	U
67-64-1	Acetone	2.4	U
75-15-0	Carbon Disulfide	0.3	U
75-09-2	Methylene Chloride	0.4	U
156-60-5	trans-1,2-Dichloroethene	0.4	U
75-34-3	1,1-Dichloroethane	0.2	U
67-66-3	Chloroform	0.3	U
71-55-6	1,1,1-Trichloroethane	0.3	U
56-23-5	Carbon Tetrachloride	0.3	U
71-43-2	Benzene	0.3	U
107-06-2	1,2-Dichloroethane	0.3	U
79-01-6	Trichloroethene	0.4	U
78-87-5	1,2-Dichloropropane	0.4	U
75-27-4	Bromodichloromethane	0.3	U
10061-02-6	t-1,3-Dichloropropene	0.2	U
108-88-3	Toluene	0.3	U
10061-01-5	cis-1,3-Dichloropropene	0.3	U
79-00-5	1,1,2-Trichloroethane	0.3	U
127-18-4	Tetrachloroethene	0.3	U
124-48-1	Dibromochloromethane	0.3	U
108-90-7	Chlorobenzene	0.2	U
100-41-4	Ethyl Benzene	0.4	U
95-47-6	o-Xylene	0.5	U
136777-61-2	m/p-Xylenes	0.4	U
100-42-5	Styrene	0.2	U
75-25-2	Bromoform	0.3	U
79-34-5	1,1,2,2-Tetrachloroethane	0.3	U
156-59-2	cis-1,2-Dichloroethene	0.3	U
78-93-3	2-Butanone	2.8	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

26MW-17-03

Lab Name: CHEMTECH

Contract: FOSTER WHEELER ENVIRO

Project No. N6465

Site: NWS EAR Location: LB17617

Group: 5971-VOA

Matrix: (soil/water) WATER

Lab Sample ID: O05

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: VG110619.D

Level: (low/med) _____

Date Received: 10/26/01

% Moisture: not dec. 100

Date Analyzed: 11/7/01

GC Column: DB624

ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Concentration Units:

Number TICs found: 0

(ug/L or ug/Kg) ug/L

CAS Number	Compound Name	RT	Est. Conc.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26MW-17D-03

Lab Name: CHEMTECH

Contract: FOSTER WHEELER ENVIRO

Project No.: N6465

Site: NWS EARL Location: LB17617

Group: 5971-VOA

Matrix: (soil/water) WATER

Lab Sample ID: O06

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: VG110620.D

Level: (low/med) _____

Date Received: 10/26/01

% Moisture: not dec. 100

Date Analyzed: 11/7/01

GC Column: DB624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS No.	Compound	Concentration Units:		Q
		(ug/L or ug/Kg)	ug/L	
74-87-3	Chloromethane		1.1	U
75-01-4	Vinyl Chloride		1	U
74-83-9	Bromomethane		0.6	U
75-00-3	Chloroethane		0.7	U
75-35-4	1,1-Dichloroethene		0.4	U
67-64-1	Acetone		2.4	U
75-15-0	Carbon Disulfide		0.3	U
75-09-2	Methylene Chloride		0.4	U
156-60-5	trans-1,2-Dichloroethene		0.4	U
75-34-3	1,1-Dichloroethane		0.2	U
67-66-3	Chloroform		0.3	U
71-55-6	1,1,1-Trichloroethane		0.3	U
56-23-5	Carbon Tetrachloride		0.3	U
71-43-2	Benzene		0.3	U
107-06-2	1,2-Dichloroethane		0.3	U
79-01-6	Trichloroethene		0.4	U
78-87-5	1,2-Dichloropropane		0.4	U
75-27-4	Bromodichloromethane		0.3	U
10061-02-6	t-1,3-Dichloropropene		0.2	U
108-88-3	Toluene		0.3	U
10061-01-5	cis-1,3-Dichloropropene		0.3	U
79-00-5	1,1,2-Trichloroethane		0.3	U
127-18-4	Tetrachloroethene		0.3	U
124-48-1	Dibromochloromethane		0.3	U
108-90-7	Chlorobenzene		0.2	U
100-41-4	Ethyl Benzene		0.4	U
95-47-6	o-Xylene		0.5	U
136777-61-2	m/p-Xylenes		0.4	U
100-42-5	Styrene		0.2	U
75-25-2	Bromoform		0.3	U
79-34-5	1,1,2,2-Tetrachloroethane		0.3	U
156-59-2	cis-1,2-Dichloroethene		0.3	U
78-93-3	2-Butanone		2.8	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

26MW-17D-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6465 Site: NWS EAR Location: LB17617 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: O06
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110620.D
 Level: (low/med) _____ Date Received: 10/26/01
 % Moisture: not dec. 100 Date Analyzed: 11/7/01
 GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1 Concentration Units: (ug/L or ug/Kg) ug/L

CAS Number	Compound Name	RT	Est. Conc.	Q
1. 1634-04-4	Methyl tert-Butyl ether	11.28	7	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26MW-10-03

Lab Name: CHEMTECH

Contract: FOSTER WHEELER ENVIRO

Project No.: N6465

Site: NWS EARL Location: LB17617

Group: 5971-VOA

Matrix: (soil/water) WATER

Lab Sample ID: O07

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: VG110621.D

Level: (low/med) _____

Date Received: 10/26/01

% Moisture: not dec. 100

Date Analyzed: 11/7/01

GC Column: DB624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/L	Q
74-87-3	Chloromethane		1.1	U
75-01-4	Vinyl Chloride		1	U
74-83-9	Bromomethane		0.6	U
75-00-3	Chloroethane		0.7	U
75-35-4	1,1-Dichloroethene		0.4	U
67-64-1	Acetone		2.4	U
75-15-0	Carbon Disulfide		0.3	U
75-09-2	Methylene Chloride		0.4	U
156-60-5	trans-1,2-Dichloroethene		0.4	U
75-34-3	1,1-Dichloroethane		0.2	U
67-66-3	Chloroform		0.3	U
71-55-6	1,1,1-Trichloroethane		0.3	U
56-23-5	Carbon Tetrachloride		0.3	U
71-43-2	Benzene		0.3	U
107-06-2	1,2-Dichloroethane		0.3	U
79-01-6	Trichloroethene		2.9	
78-87-5	1,2-Dichloropropane		0.4	U
75-27-4	Bromodichloromethane		0.3	U
10061-02-6	t-1,3-Dichloropropene		0.2	U
108-88-3	Toluene		0.3	U
10061-01-5	cis-1,3-Dichloropropene		0.3	U
79-00-5	1,1,2-Trichloroethane		0.3	U
127-18-4	Tetrachloroethene		1.1	
124-48-1	Dibromochloromethane		0.3	U
108-90-7	Chlorobenzene		0.2	U
100-41-4	Ethyl Benzene		0.4	U
95-47-6	o-Xylene		0.5	U
136777-61-2	m/p-Xylenes		0.4	U
100-42-5	Styrene		0.2	U
75-25-2	Bromoform		0.3	U
79-34-5	1,1,2,2-Tetrachloroethane		0.3	U
156-59-2	cis-1,2-Dichloroethene		3.8	
78-93-3	2-Butanone		2.8	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

26MW-10-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6465 Site: NWS EAR Location: LB17617 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: O07
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110621.D
 Level: (low/med) _____ Date Received: 10/26/01
 % Moisture: not dec. 100 Date Analyzed: 11/7/01
 GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

Number TICs found: 0 (ug/L or ug/Kg) ug/L

CAS Number	Compound Name	RT	Est. Conc.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26MW-09-03

Lab Name: CHEMTECH

Contract: FOSTER WHEELER ENVIRO

Project No.: N6465

Site: NWS EARL Location: LB17617

Group: 5971-VOA

Matrix: (soil/water) WATER

Lab Sample ID: O08

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: VG110626.D

Level: (low/med) _____

Date Received: 10/26/01

% Moisture: not dec. 100

Date Analyzed: 11/7/01

GC Column: DB624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/L	Q
74-87-3	Chloromethane		1.1	U
75-01-4	Vinyl Chloride		1	U
74-83-9	Bromomethane		0.6	U
75-00-3	Chloroethane		0.7	U
75-35-4	1,1-Dichloroethene		0.4	U
67-64-1	Acetone		2.4	U
75-15-0	Carbon Disulfide		0.3	U
75-09-2	Methylene Chloride		0.4	U
156-60-5	trans-1,2-Dichloroethene		0.4	U
75-34-3	1,1-Dichloroethane		0.2	U
67-66-3	Chloroform		0.3	U
71-55-6	1,1,1-Trichloroethane		0.3	U
56-23-5	Carbon Tetrachloride		0.3	U
71-43-2	Benzene		0.3	U
107-06-2	1,2-Dichloroethane		0.3	U
79-01-6	Trichloroethene		0.4	U
78-87-5	1,2-Dichloropropane		0.4	U
75-27-4	Bromodichloromethane		0.3	U
10061-02-6	t-1,3-Dichloropropene		0.2	U
108-88-3	Toluene		0.3	U
10061-01-5	cis-1,3-Dichloropropene		0.3	U
79-00-5	1,1,2-Trichloroethane		0.3	U
127-18-4	Tetrachloroethene		0.3	U
124-48-1	Dibromochloromethane		0.3	U
108-90-7	Chlorobenzene		0.2	U
100-41-4	Ethyl Benzene		0.4	U
95-47-6	o-Xylene		0.5	U
136777-61-2	m/p-Xylenes		0.4	U
100-42-5	Styrene		0.2	U
75-25-2	Bromoform		0.3	U
79-34-5	1,1,2,2-Tetrachloroethane		0.3	U
156-59-2	cis-1,2-Dichloroethene		0.3	U
78-93-3	2-Butanone		2.8	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

26MW-09-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6465 Site: NWS EAR Location: LB17617 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: O08
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110626.D
 Level: (low/med) _____ Date Received: 10/26/01
 % Moisture: not dec. 100 Date Analyzed: 11/7/01
 GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

Number TICs found: 2 (ug/L or ug/Kg) ug/L

CAS Number	Compound Name	RT	Est. Conc.	Q
1.	Column Bleed	11.13	5.5	J
2. 1634-04-4	Methyl tert-Butyl ether	11.24	9.5	J
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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26MW-08-03

Lab Name: CHEMTECH

Contract: FOSTER WHEELER ENVIRO

Project No.: N6465

Site: NWS EARL Location: LB17617

Group: 5971-VOA

Matrix: (soil/water) WATER

Lab Sample ID: 009

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: VG110622.D

Level: (low/med) _____

Date Received: 10/26/01

% Moisture: not dec. 100

Date Analyzed: 11/7/01

GC Column: DB624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/L	Q
74-87-3	Chloromethane	1.1		U
75-01-4	Vinyl Chloride	1		U
74-83-9	Bromomethane	0.6		U
75-00-3	Chloroethane	0.7		U
75-35-4	1,1-Dichloroethene	0.4		U
67-64-1	Acetone	2.4		U
75-15-0	Carbon Disulfide	0.3		U
75-09-2	Methylene Chloride	0.4		U
156-60-5	trans-1,2-Dichloroethene	2.9		
75-34-3	1,1-Dichloroethane	0.2		U
67-66-3	Chloroform	0.3		U
71-55-6	1,1,1-Trichloroethane	0.3		U
56-23-5	Carbon Tetrachloride	0.3		U
71-43-2	Benzene	0.3		U
107-06-2	1,2-Dichloroethane	0.3		U
79-01-6	Trichloroethene	97		
78-87-5	1,2-Dichloropropane	0.4		U
75-27-4	Bromodichloromethane	0.3		U
10061-02-6	t-1,3-Dichloropropene	0.2		U
108-88-3	Toluene	0.3		U
10061-01-5	cis-1,3-Dichloropropene	0.3		U
79-00-5	1,1,2-Trichloroethane	0.3		U
127-18-4	Tetrachloroethene	0.3		U
124-48-1	Dibromochloromethane	0.3		U
108-90-7	Chlorobenzene	0.2		U
100-41-4	Ethyl Benzene	0.4		U
95-47-6	o-Xylene	0.5		U
136777-61-2	m/p-Xylenes	0.4		U
100-42-5	Styrene	0.2		U
75-25-2	Bromoform	0.3		U
79-34-5	1,1,2,2-Tetrachloroethane	0.3		U
156-59-2	cis-1,2-Dichloroethene	3.0		E
78-93-3	2-Butanone	2.8		U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

26MW-08-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6465 Site: NWS EAR Location: LB17617 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: O09
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110622.D
 Level: (low/med) _____ Date Received: 10/26/01
 % Moisture: not dec. 100 Date Analyzed: 11/7/01
 GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

Number TICs found: 0 (ug/L or ug/Kg) ug/L

CAS Number	Compound Name	RT	Est. Conc.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26MW-08-03DL

Lab Name: CHEMTECH

Contract: FOSTER WHEELER ENVIRO

Project No.: N6465

Site: NWS EARL Location: LB17617

Group: 5971-VOA

Matrix: (soil/water) WATER

Lab Sample ID: O09DL

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: VG110627.D

Level: (low/med) _____

Date Received: 10/26/01

% Moisture: not dec. 100

Date Analyzed: 11/7/01

GC Column: DB624 ID: 0.53 (mm)

Dilution Factor: 10.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No. Compound (ug/L or ug/Kg) ug/L Q

74-87-3	Chloromethane	11	UD
75-01-4	Vinyl Chloride	10	UD
74-83-9	Bromomethane	6.1	UD
75-00-3	Chloroethane	7.4	UD
75-35-4	1,1-Dichloroethene	4.2	UD
67-64-1	Acetone	24	UD
75-15-0	Carbon Disulfide	3.2	UD
75-09-2	Methylene Chloride	51	D
156-60-5	trans-1,2-Dichloroethene	4.5	UD
75-34-3	1,1-Dichloroethane	2.2	UD
67-66-3	Chloroform	2.6	UD
71-55-6	1,1,1-Trichloroethane	3.2	UD
56-23-5	Carbon Tetrachloride	3	UD
71-43-2	Benzene	2.7	UD
107-06-2	1,2-Dichloroethane	3.2	UD
79-01-6	Trichloroethene	150	D
78-87-5	1,2-Dichloropropane	4	UD
75-27-4	Bromodichloromethane	2.9	UD
10061-02-6	t-1,3-Dichloropropene	2.3	UD
108-88-3	Toluene	2.6	UD
10061-01-5	cis-1,3-Dichloropropene	3	UD
79-00-5	1,1,2-Trichloroethane	3.4	UD
127-18-4	Tetrachloroethene	2.8	UD
124-48-1	Dibromochloromethane	2.8	UD
108-90-7	Chlorobenzene	2.5	UD
100-41-4	Ethyl Benzene	4.2	UD
95-47-6	o-Xylene	4.6	UD
136777-61-2	m/p-Xylenes	3.9	UD
100-42-5	Styrene	1.5	UD
75-25-2	Bromoform	3.5	UD
79-34-5	1,1,2,2-Tetrachloroethane	2.6	UD
156-59-2	cis-1,2-Dichloroethene	440	D
78-93-3	2-Butanone	28	UD

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26MW-05-03

Lab Name: CHEMTECH

Contract: FOSTER WHEELER ENVIRO

Project No.: N6465

Site: NWS EARL Location: LB17617

Group: 5971-VOA

Matrix: (soil/water) WATER

Lab Sample ID: O10

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: VG110623.D

Level: (low/med) _____

Date Received: 10/26/01

% Moisture: not dec. 100

Date Analyzed: 11/7/01

GC Column: DB624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/L	Q
74-87-3	Chloromethane		1.1	U
75-01-4	Vinyl Chloride		1	U
74-83-9	Bromomethane		0.6	U
75-00-3	Chloroethane		0.7	U
75-35-4	1,1-Dichloroethene		0.4	U
67-64-1	Acetone		2.4	U
75-15-0	Carbon Disulfide		0.3	U
75-09-2	Methylene Chloride		0.4	U
156-60-5	trans-1,2-Dichloroethene		0.4	U
75-34-3	1,1-Dichloroethane		0.2	U
67-66-3	Chloroform		0.3	U
71-55-6	1,1,1-Trichloroethane		0.3	U
56-23-5	Carbon Tetrachloride		0.3	U
71-43-2	Benzene		0.3	U
107-06-2	1,2-Dichloroethane		0.3	U
79-01-6	Trichloroethene		1.2	
78-87-5	1,2-Dichloropropane		0.4	U
75-27-4	Bromodichloromethane		0.3	U
10061-02-6	t-1,3-Dichloropropene		0.2	U
108-88-3	Toluene		0.3	U
10061-01-5	cis-1,3-Dichloropropene		0.3	U
79-00-5	1,1,2-Trichloroethane		0.3	U
127-18-4	Tetrachloroethene		0.3	U
124-48-1	Dibromochloromethane		0.3	U
108-90-7	Chlorobenzene		0.2	U
100-41-4	Ethyl Benzene		0.4	U
95-47-6	o-Xylene		0.5	U
136777-61-2	m/p-Xylenes		0.4	U
100-42-5	Styrene		0.2	U
75-25-2	Bromoform		0.3	U
79-34-5	1,1,2,2-Tetrachloroethane		0.3	U
156-59-2	cis-1,2-Dichloroethene		1.9	
78-93-3	2-Butanone		2.8	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

26MW-05-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6465 Site: NWS EAR Location: LB17617 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: O10
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110623.D
 Level: (low/med) _____ Date Received: 10/26/01
 % Moisture: not dec. 100 Date Analyzed: 11/7/01
 GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0 Concentration Units: (ug/L or ug/Kg) ug/L

CAS Number	Compound Name	RT	Est. Conc.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26MW-07-03

Lab Name: CHEMTECH

Contract: FOSTER WHEELER ENVIRO

Project No.: N6465

Site: NWS EARL Location: LB17617

Group: 5971-VOA

Matrix: (soil/water) WATER

Lab Sample ID: O11

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: VG110624.D

Level: (low/med) _____

Date Received: 10/26/01

% Moisture: not dec. 100

Date Analyzed: 11/7/01

GC Column: DB624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/L	Q
74-87-3	Chloromethane		1.1	U
75-01-4	Vinyl Chloride		1	U
74-83-9	Bromomethane		0.6	U
75-00-3	Chloroethane		0.7	U
75-35-4	1,1-Dichloroethene		0.4	U
67-64-1	Acetone		2.4	U
75-15-0	Carbon Disulfide		0.3	U
75-09-2	Methylene Chloride		0.4	U
156-60-5	trans-1,2-Dichloroethene		0.4	U
75-34-3	1,1-Dichloroethane		0.2	U
67-66-3	Chloroform		0.3	U
71-55-6	1,1,1-Trichloroethane		0.3	U
56-23-5	Carbon Tetrachloride		0.3	U
71-43-2	Benzene		0.3	U
107-06-2	1,2-Dichloroethane		0.3	U
79-01-6	Trichloroethene		3.5	
78-87-5	1,2-Dichloropropane		0.4	U
75-27-4	Bromodichloromethane		0.3	U
10061-02-6	t-1,3-Dichloropropene		0.2	U
108-88-3	Toluene		0.3	U
10061-01-5	cis-1,3-Dichloropropene		0.3	U
79-00-5	1,1,2-Trichloroethane		0.3	U
127-18-4	Tetrachloroethene		0.3	U
124-48-1	Dibromochloromethane		0.3	U
108-90-7	Chlorobenzene		0.2	U
100-41-4	Ethyl Benzene		0.4	U
95-47-6	o-Xylene		0.5	U
136777-61-2	m/p-Xylenes		0.4	U
100-42-5	Styrene		0.2	U
75-25-2	Bromoform		0.3	U
79-34-5	1,1,2,2-Tetrachloroethane		0.3	U
156-59-2	cis-1,2-Dichloroethene		0.3	U
78-93-3	2-Butanone		2.8	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

26MW-07-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6465 Site: NWS EAR Location: LB17617 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: O11
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110624.D
 Level: (low/med) _____ Date Received: 10/26/01
 % Moisture: not dec. 100 Date Analyzed: 11/7/01
 GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

Number TICs found: 0 (ug/L or ug/Kg) ug/L

CAS Number	Compound Name	RT	Est. Conc.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

26MW-11-03

Lab Name: CHEMTECH

Contract: FOSTER WHEELER ENVIRO

Project No.: N6465

Site: NWS EARL Location: LB17617

Group: 5971-VOA

Matrix: (soil/water) WATER

Lab Sample ID: O12

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: VG110625.D

Level: (low/med) _____

Date Received: 10/26/01

% Moisture: not dec. 100

Date Analyzed: 11/7/01

GC Column: DB624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS No.	Compound	Concentration Units:	
		(ug/L or ug/Kg)	ug/L
74-87-3	Chloromethane	1.1	U
75-01-4	Vinyl Chloride	1	U
74-83-9	Bromomethane	0.6	U
75-00-3	Chloroethane	0.7	U
75-35-4	1,1-Dichloroethene	0.4	U
67-64-1	Acetone	2.4	U
75-15-0	Carbon Disulfide	0.3	U
75-09-2	Methylene Chloride	0.4	U
156-60-5	trans-1,2-Dichloroethene	0.4	U
75-34-3	1,1-Dichloroethane	0.2	U
67-66-3	Chloroform	2	U
71-55-6	1,1,1-Trichloroethane	0.3	U
56-23-5	Carbon Tetrachloride	0.3	U
71-43-2	Benzene	0.3	U
107-06-2	1,2-Dichloroethane	0.3	U
79-01-6	Trichloroethene	0.4	U
78-87-5	1,2-Dichloropropane	0.4	U
75-27-4	Bromodichloromethane	0.3	U
10061-02-6	t-1,3-Dichloropropene	0.2	U
108-88-3	Toluene	0.3	U
10061-01-5	cis-1,3-Dichloropropene	0.3	U
79-00-5	1,1,2-Trichloroethane	0.3	U
127-18-4	Tetrachloroethene	0.3	U
124-48-1	Dibromochloromethane	0.3	U
108-90-7	Chlorobenzene	0.2	U
100-41-4	Ethyl Benzene	0.4	U
95-47-6	o-Xylene	0.5	U
136777-61-2	m/p-Xylenes	0.4	U
100-42-5	Styrene	0.2	U
75-25-2	Bromoform	0.3	U
79-34-5	1,1,2,2-Tetrachloroethane	0.3	U
156-59-2	cis-1,2-Dichloroethene	0.3	U
78-93-3	2-Butanone	2.8	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

26MW-11-03

Lab Name: CHEMTECH Contract: FOSTER WHEELER ENVIRO
 Project No. N6465 Site: NWS EAR Location: LB17617 Group: 5971-VOA
 Matrix: (soil/water) WATER Lab Sample ID: O12
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VG110625.D
 Level: (low/med) _____ Date Received: 10/26/01
 % Moisture: not dec. 100 Date Analyzed: 11/7/01
 GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0 Concentration Units: _____
 (ug/L or ug/Kg) ug/L

CAS Number	Compound Name	RT	Est. Conc.	Q
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**APPENDIX B:
LABORATORY ANALYTICAL DATA
AIR DISCHARGE**

VOLATILE ORGANIC ANALYSIS

CLIENT NAME: Foster Wheeler Company
PROJECT #: —
PROJECT NAME: NWS-Earle
MATRIX: Air/Canister
SAMPLE VOLUME: 0.1 Liter
INITIAL PRESSURE: 15.70 psia
FINAL PRESSURE: 17.70 psia
PRES. DILUTION : 1.13
DILUTION FACTOR: 1

CLIENT SAMPLE ID: 26 AS07
AAI RFS# 0121303
AAI ID#: 0121303-003

DATE SAMPLED: 7/31/2001
DATE RECEIVED: 7/31/2001
DATE ANALYZED: 8/2-8/3/2001

ANALYTICAL METHOD: EPA TO14 (GC/MS)

CAS NUMBER	COMPOUND	CONCENTRATION			
		mg/m3	PQL	ppm(v)	PQL
74-87-3	Chloromethane	ND<	0.056	ND<	0.027
74-83-9	Bromomethane	ND<	0.056	ND<	0.015
75-01-04	Vinyl Chloride	ND<	0.056	ND<	0.022
75-00-3	Chloroethane	ND<	0.056	ND<	0.021
75-69-4	Freon 11	ND<	0.056	ND<	0.010
75-35-4	1,1-Dichloroethene	ND<	0.056	ND<	0.014
76-13-1	Freon 113	ND<	0.056	ND<	0.007
75-09-2	Methylene Chloride	ND<	0.056	ND<	0.016
75-35-3	1,1-Dichloroethane	ND<	0.056	ND<	0.014
156-60-5	trans-1,2-Dichloroethene	ND<	0.056	ND<	0.014
156-59-2	cis-1,2-Dichloroethene	0.60	0.056	0.15	0.014
67-66-3	Chloroform	ND<	0.056	ND<	0.012
71-55-6	1,1,1-Trichloroethane	ND<	0.056	ND<	0.010
56-23-5	Carbon Tetrachloride	ND<	0.056	ND<	0.009
71-43-2	Benzene	0.14	0.056	0.042	0.018
107-06-2	1,2-Dichloroethane	ND<	0.056	ND<	0.014
79-01-6	Trichloroethene	1.5	0.056	0.28	0.010
78-87-5	1,2-Dichloropropane	ND<	0.056	ND<	0.012
10061-02-6	trans-1,3-Dichloropropene	ND<	0.056	ND<	0.012
108-88-3	Toluene	ND<	0.056	ND<	0.015
10061-01-5	cis-1,3-Dichloropropene	ND<	0.056	ND<	0.012
79-00-5	1,1-2-Trichloroethane	ND<	0.056	ND<	0.010
127-18-4	Tetrachloroethene	0.33	0.056	0.048	0.008
106-93-4	Ethylene Dibromide	ND<	0.056	ND<	0.007
108-90-7	Chlorobenzene	ND<	0.056	ND<	0.012
100-41-4	Ethylbenzene	0.099	0.056	0.023	0.013
1330-20-7	m,p-Xylene	0.28	0.056	0.065	0.013
95-47-6	o-Xylene	0.069	0.056	0.016	0.013
100-42-5	Styrene	ND<	0.056	ND<	0.013
79-34-5	1,1,2,2-Tetrachloroethane	ND<	0.056	ND<	0.008
108-67-8	1,3,5-Trimethyl Benzene	0.088	0.056	0.018	0.011
95-63-6	1,2,4-Trimethyl Benzene	0.20	0.056	0.041	0.011
541-73-1	1,3-Dichlorobenzene	ND<	0.056	ND<	0.009
106-46-7	1,4-Dichlorobenzene	ND<	0.056	ND<	0.009
100-44-7	Chlorotoluene	ND<	0.056	ND<	0.011
95-50-1	1,2-Dichlorobenzene	ND<	0.056	ND<	0.009
67-64-1	Acetone	ND<	0.056	ND<	0.024
78-93-3	2-Butanone	ND<	0.056	ND<	0.019
108-10-1	4-methyl-2-pentanone	ND<	0.056	ND<	0.014
591-78-6	2-Hexanone	ND<	0.056	ND<	0.014
Surrogate Recovery		% Recovery			
1,2-Dichloroethane-d4 (SS1)		112		70-130	
Toluene-d8 (SS2)		102		70-130	
4- Bromofluorobenzene (SS3)		112		70-130	

ND- Not detected

*Value outside QC limits due to matrix interference.

TR - Trace

Approved by: _____

Date: 8/10/01

VOLATILE ORGANIC ANALYSIS

CLIENT NAME: Foster Wheeler Company
 PROJECT #: ---
 PROJECT NAME: NWS-Earle
 MATRIX: Air/Canister
 SAMPLE VOLUME: 0.1 Liter
 INITIAL PRESSURE: 13.60 psia
 FINAL PRESSURE: 18.20 psia
 PRES. DILUTION : 1.34
 DILUTION FACTOR: 1

CLIENT SAMPLE ID: 26 AS10
 AAI RFS# 0124102
 AAI ID#: 0124102-003

DATE SAMPLED: 8/28/2001
 DATE RECEIVED: 8/29/2001
 DATE ANALYZED: 9/3/2001

ANALYTICAL METHOD: EPA TO14 (GC/MS)

CAS NUMBER	COMPOUND	CONCENTRATION			
		mg/m3	PQL	ppm(v)	PQL
74-87-3	Chloromethane	ND<	0.067	ND<	0.032
74-83-9	Bromomethane	ND<	0.067	ND<	0.017
75-01-04	Vinyl Chloride	ND<	0.067	ND<	0.026
75-00-3	Chloroethane	ND<	0.067	ND<	0.025
75-69-4	Freon 11	ND<	0.067	ND<	0.012
75-35-4	1,1-Dichloroethene	ND<	0.067	ND<	0.017
76-13-1	Freon 113	ND<	0.067	ND<	0.009
75-09-2	Methylene Chloride	ND<	0.067	ND<	0.019
75-35-3	1,1-Dichloroethane	ND<	0.067	ND<	0.017
156-60-5	trans-1,2-Dichloroethene	ND<	0.067	ND<	0.017
158-59-2	cis-1,2-Dichloroethene	ND<	0.067	ND<	0.017
67-88-3	Chloroform	ND<	0.067	ND<	0.014
71-55-6	1,1,1-Trichloroethane	ND<	0.067	ND<	0.012
56-23-5	Carbon Tetrachloride	ND<	0.067	ND<	0.011
71-43-2	Benzene	0.51	0.067	0.16	0.021
107-06-2	1,2-Dichloroethane	ND<	0.067	ND<	0.017
79-01-6	Trichloroethene	ND<	0.067	ND<	0.012
78-87-5	1,2-Dichloropropane	ND<	0.067	ND<	0.014
10081-02-6	trans-1,3-Dichloropropene	ND<	0.067	ND<	0.015
108-88-3	Toluene	ND<	0.067	ND<	0.018
10061-01-5	cis-1,3-Dichloropropene	ND<	0.067	ND<	0.015
79-00-5	1,1-2-Trichloroethane	ND<	0.067	ND<	0.012
127-18-4	Tetrachloroethene	ND<	0.067	ND<	0.010
108-93-4	Ethylene Dibromide	ND<	0.067	ND<	0.009
108-90-7	Chlorobenzene	ND<	0.067	ND<	0.015
100-41-4	Ethylbenzene	0.48	0.067	0.11	0.015
1330-20-7	m,p-Xylene	1.8	0.067	0.38	0.015
95-47-8	o-Xylene	0.44	0.067	0.10	0.015
100-42-5	Styrene	ND<	0.067	ND<	0.016
79-34-5	1,1,2,2-Tetrachloroethane	ND<	0.067	ND<	0.010
108-67-8	1,3,5-Trimethyl Benzene	0.40	0.067	0.082	0.014
95-83-8	1,2,4-Trimethyl Benzene	1.4	0.067	0.28	0.014
541-73-1	1,3-Dichlorobenzene	ND<	0.067	ND<	0.011
108-46-7	1,4-Dichlorobenzene	ND<	0.067	ND<	0.011
100-44-7	Chlorotoluene	ND<	0.067	ND<	0.013
96-50-1	1,2-Dichlorobenzene	ND<	0.067	ND<	0.011
67-54-1	Acetone	ND<	0.067	ND<	0.028
78-93-3	2-Butanone	ND<	0.067	ND<	0.023
108-10-1	4-methyl-2-pentanone	ND<	0.067	ND<	0.016
581-78-8	2-Hexanone	ND<	0.067	ND<	0.016
Surrogate Recovery		% Recovery			
1,2-Dichloroethane-D4 (SS1)		110	70-130		
Toluene-d8 (SS2)		99	70-130		
4-Bromofluorobenzene (SS3)		108	70-130		

ND- Not detected

*Value outside QC limits due to matrix interference.

TR - Trace

Approved by: _____ Date: _____

VOLATILE ORGANIC ANALYSIS

CLIENT NAME: Foster Wheeler Company
 PROJECT #: ---
 PROJECT NAME: NWS-Earle
 MATRX: Air/Canister
 SAMPLE VOLUME: 0.1 Liter
 INITIAL PRESSURE: 15.40 psia
 FINAL PRESSURE: 18.50 psia
 PRES. DILUTION : 1.20
 DILUTION FACTOR: 1

CLIENT SAMPLE ID: 26 AS9
 AAI RFS# 0124102
 AAI ID#: 0124102-004

DATE SAMPLED: 8/28/2001
 DATE RECEIVED: 8/29/2001
 DATE ANALYZED: 9/3/2001

ANALYTICAL METHOD: EPA TO14 (GC/MS)

CAS NUMBER	COMPOUND	CONCENTRATION			
		mg/m3	PQL	ppm(v)	PQL
74-87-3	Chloromethane	ND<	0.060	ND<	0.029
74-83-9	Bromomethane	ND<	0.060	ND<	0.015
75-01-04	Vinyl Chloride	ND<	0.060	ND<	0.024
75-00-3	Chloroethane	ND<	0.080	ND<	0.023
75-69-4	Freon 11	ND<	0.060	ND<	0.011
75-35-4	1,1-Dichloroethene	ND<	0.060	ND<	0.015
76-13-1	Freon 113	ND<	0.080	ND<	0.008
75-09-2	Methylene Chloride	ND<	0.060	ND<	0.017
75-35-3	1,1-Dichloroethane	ND<	0.060	ND<	0.015
158-80-5	trans-1,2-Dichloroethene	ND<	0.060	ND<	0.015
156-59-2	cis-1,2-Dichloroethene	0.72	0.060	0.18	0.015
67-66-3	Chloroform	ND<	0.080	ND<	0.012
71-55-6	1,1,1-Trichloroethane	ND<	0.060	ND<	0.011
56-23-5	Carbon Tetrachloride	ND<	0.060	ND<	0.010
71-43-2	Benzene	0.20	0.060	0.064	0.019
107-08-2	1,2-Dichloroethane	ND<	0.060	ND<	0.015
79-01-6	Trichloroethene	1.1	0.060	0.21	0.011
78-87-5	1,2-Dichloropropane	ND<	0.060	ND<	0.013
10061-02-6	trans-1,3-Dichloropropene	ND<	0.060	ND<	0.013
108-88-3	Toluene	ND<	0.060	ND<	0.016
10061-01-5	cis-1,3-Dichloropropene	ND<	0.080	ND<	0.013
79-00-5	1,1,2-Trichloroethane	ND<	0.060	ND<	0.011
127-18-4	Tetrachloroethene	0.31	0.060	0.046	0.009
106-93-4	Ethylene Dibromide	ND<	0.060	ND<	0.008
108-90-7	Chlorobenzene	ND<	0.080	ND<	0.013
100-41-4	Ethylbenzene	0.20	0.060	0.047	0.014
1330-20-7	m,p-Xylene	0.72	0.060	0.17	0.014
95-47-8	o-Xylene	0.20	0.060	0.047	0.014
100-42-5	Styrene	ND<	0.060	ND<	0.014
79-34-5	1,1,2,2-Tetrachloroethane	ND<	0.080	ND<	0.009
108-87-8	1,3,5-Trimethyl Benzene	0.19	0.060	0.039	0.012
95-83-8	1,2,4-Trimethyl Benzene	0.66	0.060	0.13	0.012
541-73-1	1,3-Dichlorobenzene	ND<	0.060	ND<	0.010
106-46-7	1,4-Dichlorobenzene	ND<	0.060	ND<	0.010
100-44-7	Chlorotoluene	ND<	0.080	ND<	0.012
95-50-1	1,2-Dichlorobenzene	ND<	0.060	ND<	0.010
87-64-1	Acetone	ND<	0.060	ND<	0.025
78-93-3	2-Butanone	ND<	0.060	ND<	0.020
108-10-1	4-methyl-2-pentanone	ND<	0.060	ND<	0.015
591-78-6	2-Hexanone	ND<	0.060	ND<	0.015
Surrogate Recovery		% Recovery			
1,2-Dichloroethane-D4 (SS1)		119		70-130	
Toluene-d8 (SS2)		99		70-130	
4-Bromofluorobenzene (SS3)		111		70-130	

ND- Not detected

TR - Trace

*Value outside QC limits due to matrix interference.

Approved by: _____

Date: _____

VOLATILE ORGANIC ANALYSIS

CLIENT NAME: Foster Wheeler Company
PROJECT #: ---
PROJECT NAME: NWS-Earle
MATRIX: Air/Canister
SAMPLE VOLUME: 0.1 Liter
INITIAL PRESSURE: 14.30 psia
FINAL PRESSURE: 17.90 psia
PRES. DILUTION : 1.25
DILUTION FACTOR: 1

CLIENT SAMPLE ID: 26 AS11
AAI RFS# 0127401
AAI ID#: 0127401-001

DATE SAMPLED: 9/28/2001
DATE RECEIVED: 10/1/2001
DATE ANALYZED: 10/3/2001

ANALYTICAL METHOD: EPA TO14 (GC/MS)

CAS NUMBER	COMPOUND	CONCENTRATION			
		mg/m3	PQL	ppm(v)	PQL
74-87-3	Chloromethane	ND<	0.063	ND<	0.030
74-83-9	Bromomethane	ND<	0.063	ND<	0.016
75-01-04	Vinyl Chloride	ND<	0.063	ND<	0.024
75-00-3	Chloroethane	ND<	0.063	ND<	0.024
75-69-4	Freon 11	ND<	0.063	ND<	0.011
75-35-4	1,1-Dichloroethene	ND<	0.063	ND<	0.016
76-13-1	Freon 113	ND<	0.063	ND<	0.008
75-09-2	Methylene Chloride	ND<	0.063	ND<	0.018
75-35-3	1,1-Dichloroethane	ND<	0.063	ND<	0.015
156-60-5	trans-1,2-Dichloroethene	ND<	0.063	ND<	0.016
156-59-2	cis-1,2-Dichloroethene	ND<	0.063	ND<	0.016
67-66-3	Chloroform	ND<	0.063	ND<	0.013
71-55-6	1,1,1-Trichloroethane	ND<	0.063	ND<	0.011
56-23-5	Carbon Tetrachloride	ND<	0.063	ND<	0.010
71-43-2	Benzene	ND<	0.063	ND<	0.020
107-06-2	1,2-Dichloroethane	ND<	0.063	ND<	0.015
79-01-6	Trichloroethene	ND<	0.063	ND<	0.012
78-87-5	1,2-Dichloropropane	ND<	0.063	ND<	0.014
10061-02-6	trans-1,3-Dichloropropene	ND<	0.063	ND<	0.014
108-88-3	Toluene	ND<	0.063	ND<	0.017
10061-01-5	cis-1,3-Dichloropropene	ND<	0.063	ND<	0.014
79-00-5	1,1-2-Trichloroethane	ND<	0.063	ND<	0.011
127-18-4	Tetrachloroethene	ND<	0.063	ND<	0.009
106-93-4	Ethylene Dibromide	ND<	0.063	ND<	0.008
108-90-7	Chlorobenzene	ND<	0.063	ND<	0.014
100-41-4	Ethylbenzene	ND<	0.063	ND<	0.014
1330-20-7	m,p-Xylene	ND<	0.063	ND<	0.014
95-47-6	o-Xylene	ND<	0.063	ND<	0.014
100-42-5	Styrene	ND<	0.063	ND<	0.015
79-34-5	1,1,2,2-Tetrachlorethane	ND<	0.063	ND<	0.009
108-67-8	1,3,5-Trimethyl Benzene	ND<	0.063	ND<	0.013
95-63-6	1,2,4-Trimethyl Benzene	ND<	0.063	ND<	0.013
541-73-1	1,3-Dichlorobenzene	ND<	0.063	ND<	0.010
106-46-7	1,4-Dichlorobenzene	ND<	0.063	ND<	0.010
100-44-7	Chlorotoluene	ND<	0.063	ND<	0.012
95-50-1	1,2-Dichlorobenzene	ND<	0.063	ND<	0.010
67-64-1	Acetone	ND<	0.063	ND<	0.026
78-93-3	2-Butanone	ND<	0.063	ND<	0.021
108-10-1	4-methyl-2-pentanone	ND<	0.063	ND<	0.015
591-78-6	2-Hexanone	ND<	0.063	ND<	0.015
Surrogate Recovery		% Recovery			
1,2-Dichloroethane-D4 (SS1)		113		70-130	
Toluene-d8 (SS2)		99		70-130	
4- Bromofluorobenzene (SS3)		101		70-130	

ND- Not detected

*Value outside QC limits due to matrix interference.

TR - Trace

Approved by: _____

3

Date: _____

10/5/01

VOLATILE ORGANIC ANALYSIS

CLIENT NAME: Foster Wheeler Company
PROJECT #: ---
PROJECT NAME: NWS-Earle
MATRIX: Air/Canister
SAMPLE VOLUME: 0.1 Liter
INITIAL PRESSURE: 14.90 psia
FINAL PRESSURE: 18.40 psia
PRES. DILUTION : 1.23
DILUTION FACTOR: 1

CLIENT SAMPLE ID: 26AS14
AAI RFS# 0130603
AAI ID#: 0130603-005

DATE SAMPLED: 10/31/2001
DATE RECEIVED: 11/2/2001
DATE ANALYZED: 11/7/2001

ANALYTICAL METHOD: EPA TO14 (GC/MS)

CAS NUMBER	COMPOUND	CONCENTRATION			
		mg/m3	PQL	ppm(v)	PQL
74-87-3	Chloromethane	ND<	0.062	ND<	0.030
74-83-9	Bromomethane	ND<	0.062	ND<	0.016
75-01-04	Vinyl Chloride	ND<	0.062	ND<	0.024
75-00-3	Chloroethane	ND<	0.062	ND<	0.023
75-69-4	Freon 11	ND<	0.062	ND<	0.011
75-35-4	1,1-Dichloroethene	ND<	0.062	ND<	0.016
76-13-1	Freon 113	ND<	0.062	ND<	0.008
75-09-2	Methylene Chloride	ND<	0.062	ND<	0.018
75-35-3	1,1-Dichloroethane	ND<	0.062	ND<	0.015
156-60-5	trans-1,2-Dichloroethene	ND<	0.062	ND<	0.016
156-59-2	cis-1,2-Dichloroethene	ND<	0.062	ND<	0.016
67-66-3	Chloroform	ND<	0.062	ND<	0.013
71-55-6	1,1,1-Trichloroethane	ND<	0.062	ND<	0.011
56-23-5	Carbon Tetrachloride	ND<	0.062	ND<	0.010
71-43-2	Benzene	ND<	0.062	ND<	0.019
107-06-2	1,2-Dichloroethane	ND<	0.062	ND<	0.015
79-01-6	Trichloroethene	ND<	0.062	ND<	0.011
78-87-5	1,2-Dichloropropane	ND<	0.062	ND<	0.013
10061-02-6	trans-1,3-Dichloropropene	ND<	0.062	ND<	0.014
108-88-3	Toluene	ND<	0.062	ND<	0.016
10061-01-5	cis-1,3-Dichloropropene	ND<	0.062	ND<	0.014
79-00-5	1,1-2-Trichloroethane	ND<	0.062	ND<	0.011
127-18-4	Tetrachloroethene	ND<	0.062	ND<	0.009
106-93-4	Ethylene Dibromide	ND<	0.062	ND<	0.008
108-90-7	Chlorobenzene	ND<	0.062	ND<	0.013
100-41-4	Ethylbenzene	ND<	0.062	ND<	0.014
1330-20-7	m,p-Xylene	ND<	0.062	ND<	0.014
95-47-6	o-Xylene	ND<	0.062	ND<	0.014
100-42-5	Styrene	ND<	0.062	ND<	0.015
79-34-5	1,1,2,2-Tetrachlorethane	ND<	0.062	ND<	0.009
108-67-8	1,3,5-Trimethyl Benzene	ND<	0.062	ND<	0.013
95-63-6	1,2,4-Trimethyl Benzene	ND<	0.062	ND<	0.013
541-73-1	1,3-Dichlorobenzene	ND<	0.062	ND<	0.010
106-46-7	1,4-Dichlorobenzene	ND<	0.062	ND<	0.010
100-44-7	Chlorotoluene	ND<	0.062	ND<	0.012
95-50-1	1,2-Dichlorobenzene	ND<	0.062	ND<	0.010
67-64-1	Acetone	ND<	0.062	ND<	0.026
78-93-3	2-Butanone	ND<	0.062	ND<	0.021
108-10-1	4-methyl-2-pentanone	ND<	0.062	ND<	0.015
591-78-6	2-Hexanone	ND<	0.062	ND<	0.015
Surrogate Recovery		% Recovery			
1,2-Dichloroethane-D4 (SS1)		111		70-130	
Toluene-d8 (SS2)		105		70-130	
4- Bromofluorobenzene (SS3)		100		70-130	

ND- Not detected

*Value outside QC limits due to matrix interference.

TR - Trace

Approved by: _____ ³ _____ Date: 11/2/01

**APPENDIX C:
CALCULATION SHEETS**

**ATTACHMENT 2
STANDARD CALCULATION SHEET**

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PROJECT NWS Earle Site 26			SUBJECT SUE air emissions		
REV # 0					SHEET
BY & DATE	JF 1/2/02				PROJ NO. 1284.1055
CHKD & DATE	MA 2/26/02				CALC NO. 005

Post Carbon Absorber Units - sample collected 8/23/01

Effluent conc. = 4.3 mg/m³ (Total VOCs)

Conversions:

m³ = 35.3147 ft³

hr = 60 min

mg = 2.205 x 10⁻⁶ lbs

Effluent Flow Rate = 448 scfm
measured using electronic flow meter

$\frac{4.3 \text{ mg}}{\text{m}^3}$	$\frac{2.205 \times 10^{-6} \text{ lbs}}{\text{mg}}$	$\frac{\text{m}^3}{35.3147 \text{ ft}^3}$	$\frac{448 \text{ ft}^3}{\cancel{448} \text{ scf}}$	$\frac{60 \text{ min}}{\text{hr}}$
-------------------------------------	--	---	---	------------------------------------

= 0.00722 lb/hr (total effluent discharge rate)

Permitted Total VOC Emission Rate with controls

= 0.0316 lb/hr

**ATTACHMENT 2
STANDARD CALCULATION SHEET**

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PROJECT NWS Earle, Site 26				SUBJECT TCE/DCE Extraction			
REV#	0					SHEET	2
BY & DATE	/F	1/2/02				PROJ NO.	1284.1055
CHKD & DATE	MA	2/26/02				CALC NO.	004

Pre - Carbon Unit Samples

7/31/01 TCE = 1.5 mg/m³ DCE = 0.6 mg/m³
 8/28/01 TCE = 1.1 mg/m³ DCE = 0.72 mg/m³
 9/28/01 TCE = Non Detect DCE = Non Detect
 10/31/01 TCE = 0.22 mg/m³ DCE = Non Detect

Average TCE conc. 2nd Qtr 2001

$$= \frac{1.5 \text{ mg/m}^3 + 1.1 \text{ mg/m}^3 + 0.0 \text{ mg/m}^3 + 0.22 \text{ mg/m}^3}{4}$$

$$= 0.705 \text{ mg/m}^3$$

Average DCE conc. 2nd Qtr 2001

$$= \frac{0.6 \text{ mg/m}^3 + 0.72 \text{ mg/m}^3 + 0.0 \text{ mg/m}^3 + 0.0 \text{ mg/m}^3}{4}$$

$$= 0.33 \text{ mg/m}^3$$

TCE extraction rate - Average 2nd Q 2001

$$\frac{0.705 \text{ mg}}{\text{m}^3} \times \frac{2.205 \times 10^{-6} \text{ lb}}{\text{mg}} \times \frac{\text{m}^3}{35.3147 \text{ ft}^3} \times \frac{464 \text{ ft}^3}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}}$$

$$= 0.00123 \text{ lbs/hr} *$$

**ATTACHMENT 2
STANDARD CALCULATION SHEET**

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PROJECT NWS Earle, Site 26		SUBJECT TCE/DCE Extraction	
REV # 0			SHEET 2
BY & DATE	JF 1/2/01		PROJ NO. 1284.1055
CHKD & DATE	WR 1/2/01		CALC NO.

DCE Extraction rate - Average 2nd Qtr 2001

$$= \frac{0.33 \text{ mg}}{\text{m}^3} \left| \frac{2.205 \times 10^{-4} \text{ lb}}{\text{m}^3} \right| \frac{464 \text{ JCF}^3}{\text{min}} \left| \frac{60 \text{ min}}{\text{hr}} \right|$$

$$= \frac{0.00122 \text{ lb/hr}}{\text{m}^3} \times \text{JCF} = 0.000574$$

TCE extraction mass - 2nd Qtr 2001

$$0.00123 \text{ lb/hr} \times 417 \text{ hr} = 0.51 \text{ lb}$$

DCE extraction mass - 2nd Qtr 2001

~~$$0.00122 \text{ lb/hr} \times 417 \text{ hr} = 0.51 \text{ lb} \text{ JCF}$$~~

$$0.000574 \text{ lb/hr} \times 417 \text{ hr} = 0.24 \text{ lb}$$

* Extraction masses calculated using average compound extraction rates for 2nd Quarter 2001 and a total operation time of 417 hours and an average flow rate of 464 ft³/min

ATTACHMENT 1

**Figure 2-1 – Air Sparge & Soil Vapor Extraction System – Site 26
Piping & Well Configuration**

ATTACHMENT 2

NJDEP Air Discharge Permit Application



State of New Jersey
Department of Environmental Protection

DONALD T. DiFRANCESCO
Acting Governor

Robert C. Shin
Commissioner

FAX

October 31, 2001

Gregory Goepfert
US Navy
201 HWY 34 South
Colts Neck, NJ 0772-5001

RE: Permit Equivalency for SVE/AS System: ID No.: 21328/PCP 010001

Dear Mr. Goepfert:

Attached is a pre-draft permit conditions for the operation of the referenced air permit equivalency application. Please note that your application is still under technical review.

Please submit your response within 21 days of receipt of this letter. If you have any questions, please call me at (609) 633-8224 or e mail at sshah1@dep.state.nj.us.

Sincerely,

Subhash N.
Subhash Shah
Principal Environmental Engineer
Bureau of Air Quality Engineering



SUBHASH SHAH, P.E.
BUREAU OF AIR QUALITY ENGINEERING

STATE OF NEW JERSEY
DEPT. OF ENVIRONMENTAL PROTECTION
AIR QUALITY REGULATION PROGRAM
E-MAIL: sshah1@dep.state.nj.us

401 E. STATE STREET
P.O. BOX 027
TRENTON, N.J. 08626-0027
TEL: (609) 633-8224
FAX: (609) 634-4300

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*Mike -
Comments, please!
Aug.*

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL	# of pages 9
To: MIKE HEFFRON	From: GREG GOEPFERT
Dept./Agency: FWENC	Phone #: 732-866-2515
702-4045	Fax #: 732-866-1166
NSN 7540-01-317-1368	GENERAL SERVICES ADMINISTRATION

*5099-109
4284*

NAVAL WEAPONS STATION EARLE (21328)

PCP010003

Date: 10/31/2001

New Jersey Department of Environmental Protection
Facility Specific Requirements

Subject Item: CD10201 Carbon Adsorber #1

DRAFT

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submission/Action Requirement
1	Operating VOC Control Efficiency \geq 99%. At all times while operating, the permittee shall meet either the maximum specified VOC stack exhaust gas concentration of 25 parts per million by volume (ppmv) as equivalent methane or the specified control device operating VOC control efficiency. [N.J.A.C. 7:27- 8.13(a)]	Operating VOC Control Efficiency: Monitored by periodic emission monitoring (portable instrument) at the approved frequency, based on the averaging period as per approved sampling protocol. VOCs shall be monitored prior to the primary carbon unit and at the stack while operating under typical conditions. If the typical conditions are a range, the monitoring data shall be taken at worst case (max emissions) conditions. The frequency of monitoring shall be as follows: conducted on a monthly basis Breakthrough shall be defined as per Reference 3. [N.J.A.C. 7:27- 8.13(d)2]	Operating VOC Control Efficiency: Recordkeeping by manual logging of parameter upon occurrence of event. All monitoring and sampling results shall be kept in table form with the following headings where applicable: Date, Standard Cubic Feet Per Minute, Monitor Reading, Response Factor, VOC Parts Per Million (before and after control), VOC Pounds Per Hour (before and after control), VOC Control Efficiency and Permit Limit VOC Control Efficiency. All monitoring and sampling records shall be kept on-site for a minimum of 5 years and made available to representatives of the Department upon request. [N.J.A.C. 7:27- 8.13(d)3]	
2	When breakthrough occurs the primary unit (CD1) shall be taken offline and replaced with the secondary unit (CD2). A new carbon unit with fresh unused or newly regenerated carbon shall replace the secondary carbon unit (CD 2). [N.J.A.C. 7:27-22]		Recordkeeping by manual logging of parameter upon occurrence of event. Records of the date and time when the carbon units are changed or regenerated and the breakthrough concentration shall be kept on-site for a minimum of 5 years after collection and shall be made available to representatives of the Department upon request. [N.J.A.C. 7:27-22]	

NAVAL WEAPONS STATION EARLE (21328)
PCP010003

Date: 10/31/2001

New Jersey Department of Environmental Protection
Facility Specific Requirements

Subject Item: CD10201 Carbon Adsorber #1

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
3	When the concentration after the primary carbon unit (CD1) and before the secondary carbon unit (CD2) is equal to or greater than 25 ppm as equivalent methane, the primary carbon unit (CD1) shall be removed and sent off-site. The secondary carbon unit (CD2) shall become the new primary carbon unit (CD1). The secondary carbon unit shall be replaced with a fresh, unused, or newly regenerated carbon unit. [N.J.A.C. 7:27-8.13(a)]	Monitored by periodic emission monitoring (portable instrument) at the approved frequency, based on the averaging period as per approved sampling protocol. VOCs shall be monitored after the primary carbon unit and before the secondary carbon unit while operating under typical conditions. If the typical conditions are a range, the monitoring data shall be taken at worst case (max emissions) conditions. The frequency of monitoring upon initial startup, startup after a 30 day or longer shutdown and after a violation of a stack emission limitation shall be as follows: Daily for the first five days, twice a week for the next two weeks, and weekly for weeks 4-12. After week 12 sampling may be conducted on a monthly basis. Breakthrough shall be defined as per Reference 3. [N.J.A.C. 7:27- 8.13(d)2]	Recordkeeping by manual logging of parameter upon occurrence of event. All monitoring and sampling results shall be kept in table form with the following headings where applicable: Date, Standard Cubic Feet Per Minute, Monitor Reading, Response Factor, VOC Parts Per Million, and VOC Pounds Per Hour. All monitoring and sampling records shall be kept on-site for a minimum of 5 years and made available to representatives of the Department upon request. [N.J.A.C. 7:27-8.13(d)3]	

NAVAL WEAPONS STATION EARLE (21328)
PCP010003

Date: 10/31/2001

New Jersey Department of Environmental Protection
Facility Specific Requirements

Subject Item: CD10202 Carbon Adsorber #2

The requirements for this item are identical to those for: CD10201.

NAVAL WEAPONS STATION EARLE (21328)
PCP010003

Date: 10/31/2001

New Jersey Department of Environmental Protection
Facility Specific Requirements

Subject Item: E10201 SVE/AS System

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submit/A Action Requirement
1	Maximum No. of Billable Compliance Inspections <= 10 inspections. The equipment covered by this permit will be subject to inspection fees for the maximum periodic compliance inspections (as defined in N.J.A.C. 7:27-8.1) over the life of the Certificate, after it receives final approval for a five year duration. The permittee will be invoiced for a \$200 service fee per inspection pursuant to N.J.A.C. 7:27-8.6 after the periodic compliance inspection is conducted. [N.J.A.C. 7:27- 8]			
2	There shall be no visible emissions, exclusive of condensed water vapor [N.J.A.C. 7:27- 8.13(a)]			
3	Hours of Operation <= 18 hours. Over any calendar day, the SVE/AS equipment shall not operate for more than 18 operating hours. An operating hour shall be any hour or any part of an hour that the SVE/AS equipment operates. [N.J.A.C. 7:27- 8.13(h)]	Hours of Operation: Monitored by hour/time monitor each hour during operation, based on one calendar day. The SVE/AS equipment shall be controlled using a timer according to manufacturers specifications. The timer will be set so that the SVE/AS equipment will cycle on and off not exceeding 18 hours of operation within one calendar day. [N.J.A.C. 7:27- 8.13(d)2]	Hours of Operation: Recordkeeping by manual logging of parameter at the approved frequency. The recordkeeping frequency shall follow the Department approved monitoring frequency as outlined in CD1 Reference 1, "Monitoring Requirement". Each time a VOC sampling event is conducted the hours shall be recorded. During each recordkeeping event the daily hours of operation shall be recorded based on the timer setting. [N.J.A.C. 7:27- 8.13(d)3]	

NAVAL WEAPONS STATION EARLE (21328)
PCP010003

Date: 10/31/2001

New Jersey Department of Environmental Protection
Facility Specific Requirements

Subject Item: E10201 SVE/AS System

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
4	Blower Extraction Rate $\leq 2,160 \text{ A}^3/\text{min}$, total flow for two blowers. [N.J.A.C. 7:27-8.13(h)]	Blower Extraction Rate: Monitored by material feed/flow monitoring continuously, based on 1 minute intervals. The permittee shall install, calibrate and maintain the monitor(s) in accordance with the manufacturer's specifications. The monitor(s) shall be ranged such that the allowable value is approximately mid-scale of the full range current/voltage output. [N.J.A.C. 7:27-8.13(d)2]	Blower Extraction Rate: Recordkeeping by manual logging of parameter at the approved frequency. The recordkeeping frequency shall follow the Department approved monitoring frequency as outlined in CDI Reference 3, "Monitoring Requirement". Each time a VOC sampling event is conducted this rate shall be recorded. During each record keeping event the blower extraction rate shall be recorded. At this time, it shall also be recorded that the blower's settings were not modified from the last time a reading was taken. [N.J.A.C. 7:27-8.13(d)1]	
5	The maximum air sparging rate for the entire system shall not exceed 660 actual cubic feet per minute. [N.J.A.C. 7:27-8.13(h)]	Monitored by calculations at the approved frequency, based on 1 minute intervals. The permittee shall determine the air injection rate using pitot tubes and pressure differential transmitters and gauges. [N.J.A.C. 7:27-8.13(d)2]	Recordkeeping by manual logging of parameter at the approved frequency. The recordkeeping frequency shall follow the Department approved monitoring frequency as outlined in CDI Reference 3, "Monitoring Requirement". Each time a VOC sampling event is conducted the sparging rate shall be recorded. During each record keeping event the sparging rate shall be recorded. [N.J.A.C. 7:27-8.13(d)1]	
6	The ratio of the vapor extraction rate to the air sparging rate shall be at least two to one (2:1) at all times during operation. [N.J.A.C. 7:27-8.13(a)]	Monitored by calculations at the approved frequency, based on 1 minute intervals. The ratio of the extraction rate to the air sparging rate shall be calculated based on the results of monitoring the E 10201 SVE/AS system. [N.J.A.C. 7:27-8.13(a)]	Recordkeeping by manual logging of parameter at the approved frequency. The recordkeeping frequency shall follow the Department approved VOC monitoring requirement as outlined in subject item CDI under "Monitoring Requirement" as applicable. [N.J.A.C. 7:27-8.13(d)3]	

NAVAL WEAPONS STATION EARLE (21328)
PCP010003

Date: 10/31/2001

New Jersey Department of Environmental Protection
Facility Specific Requirements

Subject Item: PT102 SVE/AS System

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submit/Action Requirement
1	Distance from Stack to Nearest Property Line \geq 10,000 ft. [N.J.A.C. 7:27-8.13(d)2ii]			
2	Stack Height Above Ground \geq 15 ft. [N.J.A.C. 7:27-8.13(d)2ii]			
3	Inside Flue Diameter at Stack Exit \leq 12 inches. [N.J.A.C. 7:27-8.13(d)2ii]			
4	Stack Gas Discharge Temperature \leq 140 degrees F. [N.J.A.C. 7:27-8.13(d)2ii]			
5	Volume of Gas Discharged at Stack Conditions \leq 3,000 ACFM. [N.J.A.C. 7:27-8.13(d)2ii]			
6	Emissions from the source shall be vented to the atmosphere upward through the approved stack. [N.J.A.C. 7:27-8.13(d)2ii]			

NAVAL WEAPONS STATION EARLE (21328)
PCP010003

Date: 10/31/2001

New Jersey Department of Environmental Protection
Facility Specific Requirements

Subject Item: U10201 SVE/AS System
Operating Scenario: OS Summary

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
1	VOC (Total) \leq 0.09 tons/yr. [N.J.A.C. 7:27- 8.13(a)]	VOC (Total): Monitored by calculations annually, based on one calendar year. The annual VOC emission rate shall be calculated, using the average of the VOC measurements taken at the stack over any calendar year and the maximum stack flow rate, with the following equation: tons/yr = (PPMV/10 ⁶) * (FLOW ft ³ /min) * (lbmol / 387 ft ³) * (100) * (60 min / hr) * (RESPONSE FACTOR) * (8760 hrs/year) * (1 ton / 2000 lb). [N.J.A.C. 7:27- 8.13(d)2]	VOC (Total): Recordkeeping by manual logging of parameter annually. [N.J.A.C. 7:27- 8.13(d)3]	
2	Trichloroethylene \leq 0.096 tons/yr. The tons per year of TCE shall be based on portable monitoring of emissions, exhaust flow rate and hours of operation. [N.J.A.C. 7:27-22]			
3	The soil vapor extraction system shall be operated only in conjunction with the approved air pollution control device system specified in the control device inventory of this permit. [N.J.A.C. 7:27-22]			
4	The permittee shall post the name of the contact person, together with the address and phone number, on a permanent, legible sign in a conspicuous location on the work site prior to beginning the work to be performed in accordance with the permit. [N.J.A.C. 7:27-22]			

NAVAL WEAPONS STATION EARLE (21328)
PCP010003

Date: 10/31/2001

New Jersey Department of Environmental Protection
Facility Specific Requirements

DRAFT

Subject Item: U10201 SVE/AS System
Operating Scenario: OS1 Emissions from the SVE/AS System which will be installed to remediate a groundwater contamination plume.

** TOTAL PAGE: 09 **

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submital/Action Requirement
1	VOC (Total) <= 0.03 lb/hr. The total VOC mass emission rate shall be determined using the results of the portable monitoring. [N.J.A.C. 7:27-22]	VOC (Total): Monitored by periodic emission monitoring (portable instrument) at the approved frequency, based on an instantaneous determination. The frequency of monitoring upon initial startup, startup after a 30 day or longer shutdown and after a violation of a stack emission limitation shall be as follows: once a month thereafter the stack emissions shall be sampled with a portable monitor. The lb/hr VOC emission rate shall be calculated using the measurements taken at the stack and the maximum stack flow rate, with the following equation: $lb/hr = (PPMV/10^6) * (2160 ft^3/min) * (lbmol / 387 ft^3) * (Calibration\ gas\ molecular\ weight\ lb / lbmol) * (60\ min / hr)$. The calculation method shall be submitted to BTS for a review. [N.J.A.C. 7:27- 8.22]	VOC (Total): Recordkeeping by manual logging of parameter upon occurrence of event. All monitoring and sampling results shall be kept in table form with the following headings where applicable: Date, Standard Cubic Feet Per Minute, Monitor Reading, Response Factor, VOC Parts Per Million, VOC Pounds Per Hour, and VOC Permit Limit Pounds Per Hour. All monitoring and sampling records shall be kept on-site for a minimum of 5 years and made available to representatives of the Department upon request. This also includes recording the results of the Summa canister or equivalent analysis. [N.J.A.C. 7:27- 8.13(d)2]	
2	Trichloroethylene <= 0.02 lb/hr. The TCE mass emission rate shall be determined using the results of the portable monitoring. [N.J.A.C. 7:27- 8.13(a)]	Trichloroethylene: Monitored by periodic emission monitoring (portable instrument) at the approved frequency, based on an instantaneous determination. The frequency of monitoring TCE shall be as per Reference 1, OS1. The calculation method shall be submitted to BTS for a review. [N.J.A.C. 7:27- 8.22]	Trichloroethylene: Recordkeeping by manual logging of parameter upon occurrence of event. All monitoring and sampling results shall be kept in table form with the following headings where applicable: Date, Standard Cubic Feet Per Minute, Monitor Reading, Response Factor, TCE Parts Per Million, TCE Pounds Per Hour, and TCE Permit Limit Pounds Per Hour. All monitoring and sampling records shall be kept on-site for a minimum of 5 years and made available to representatives of the Department upon request. This also includes recording the results of the Summa canister or equivalent analysis. [N.J.A.C. 7:27- 8.13(d)3]	



FOSTER WHEELER ENVIRONMENTAL CORPORATION

June 2, 2000

Naval Weapons Station-Earle
201 Highway 34 South
Building C-2
Colts Neck, New Jersey 07722
Attn: Gregory Goepfert

Subject: US NAVY CONTRACT NO. 62472-94-D-0398
DELIVERY ORDER NO. 0055
NWS-EARLE, NJ
SITE 26 AIR SPARGING/SOIL VAPOR EXTRACTION
NJDEP AIR PERMIT APPLICATION

Dear Mr. Goepfert:

Enclosed is the NJDEP Air Permit Application for the air discharge associated with the air sparging/soil vapor extraction (AS/SVE) system at Site 26 of Naval Weapons Station Earle. The application is complete and only requires your signature and submittal to NJDEP. We have enclosed a cover/submittal letter to the NJDEP, the risk screening and emission calculations and an electronic copy of the Radius permit file to submit to the NJDEP. I will send you an electronic copy of the cover letter to NJDEP via e-mail so you can put it on the Navy letterhead for submission to the NJDEP.

As per previous requests, there was no check for the fee submitted to the NJDEP. Per our calculations, the fee would be \$1,350.00. You mentioned previously that no fee should be paid since NWS-Earle is a Federal facility. Please let me know if a check for the fee is going to be required so I can make the proper arrangements.

I submitted copies of the application, minus the electronic Radius permit file, to Bill Faustman at Northern Division and Dan Zari.



CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
 NORTHNAVFACENGCOM 4335/3 (Rev. 6/80)

Prepare in quintuplicate (original and 4 copies)
 CONTROL NO. 8

CONTRACT NO. N62472-94-D-0398	DELIVERY ORDER 0055	ACTIVITY LOCATION Naval Weapons Station Earle, Colts Neck, NJ
PROJECT TITLE: AIR SPARGING/SOIL VAPOR EXTRACTION OPERABLE UNIT #3 - SITE 26		
FROM: Foster Wheeler Environmental Corp. - Program QCM: Mark Miller		DATE June 2, 2000
TO: W FAUSTMAN (3 COPIES)		DATE June 2, 2000

- THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
 (a) APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
 (b) RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.
- THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____
- _____

Mark Miller JUNE 2, 2000

COPY TO:

ROICC D. Zari (1 copy) ENVIR. COORD G. Goepfert (2 copies)

FROM:	DESIGNER	SIGNATURE AND DATE
TO:	ROICC	DATE

- THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.
- _____

COPY TO:

ROICC DESIGNER

FROM:	ROICC	SIGNATURE AND DATE
TO:	CONTRACTOR	DATE

- THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

COPY TO:

ROICC OTHER

FOR COMMANDING OFFICER, NORTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND _____ DATE _____

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
8	AS/SVE Air Permit Application to NJDEP	M. Miller			

June 2, 2000

Dr. Negib Hartfouche, Ph.D
New Jersey Department of Environmental Protection
Bureau of Air Quality Engineering
P.O. Box 027
Trenton, NJ 08625

RE: Soil Vapor Extraction / Air Sparging System
Naval Weapons Station Earle
Facility ID - 20006

Dear Dr. Hartfouche:

Please find enclosed the preconstruction permit for the soil vapor extraction/air sparging (SVE/AS) system for Site 26 at Naval Weapons Station Earle in Colts Neck, New Jersey. The SVE/AS system will be used to remediate the chlorinated solvent plume in the groundwater. Chlorinated solvents had been historically used to recondition munition casings and shells.

The AS blower injects ambient air into the soil at an approximate depth of 25 feet. The injected air volatilizes the chlorinated solvents in the groundwater. The SVE System collects the vapors created by the air injection. These vapors are passed through a moisture separator where the water is removed. A vacuum blower pushes the vapor stream through two vapor-phase carbon absorbers in series. The carbon units discharge to the atmosphere through a single stack.

The permit application package includes a RADIUS permit, a risk analysis, emission calculations, process flow diagram and vendor specifications. The risk screening worksheet shows an incremental risk of 6.3×10^{-7} , which is below the risk limit of 1×10^{-6} .

The only chlorinated solvents found in the groundwater are trichloroethylene, tetrachloroethylene and 1,2 dichloroethylene. Therefore, the quantitative sum of these contaminants represents the entire quantity of both total VOC and HAPs present in the groundwater. The emission rates for total VOC/HAPS and the three individual HAPs are provided in the emission calculations.

The total VOC emission rates are reported as de minimis in the Potential to Emit (PTE) Section of the RADIUS permit application, since the hourly VOC emission rate is below the reporting threshold limit of 0.05 lb/hr pursuant to N.J.A.C. 7:27-8, Appendix I, Table A.

The emission rates for tetrachloroethylene and 1,2 dichloroethylene are also reported as de minimis in the PTE Section of the RADIUS permit application, since their hourly emission rates are also below their reporting threshold limit of 0.01 lb/hr pursuant to N.J.A.C. 7:27-8, Appendix I, Table B.

May 31, 2000

Please note that the hourly and annual emission rates for trichloroethylene are listed in the PTE Section of the RADIUS permit application, since 0.02 lb/hr of trichloroethylene is above below their reporting threshold limit of 0.01 lb/hr pursuant to N.J.A.C. 7:27-8, Appendix I, Table B. The total HAPs emission rates are also listed in the PTE Section.

An application processing fee of \$1,350 has not been enclosed, since the Naval Weapons Station Earle is a Federal facility.

If you have any questions or require further information, feel free to contact me at (732) 866-2515.

Sincerely,

Gregory Goepfert
Project Manager

Cc: Mike Heffron (Foster Wheeler)

Attachment A

SVE/AS System Preconstruction Permit Application

Permit Application Forms

Facility Profile (General)

Facility Profile (Permitting)

Equipment Inventory

Control Device Inventory

Emission Point Inventory

Emission Unit/Batch Process Inventory

Subject Item Group Inventory

Potential to Emit

Compliance Plan

**New Jersey Department of Environmental Protection
Facility Profile (General)**

Facility Name (AIMS): Naval Weapons Station Earle

Facility ID (AIMS): 20006

Street Address: NAVAL WEAPONS STA EARLE
BLDG GB-01
MIDWAY RD
COLTS NECK, NJ 07722-5014

Mailing Address: NAVAL WEAPONS STA EARLE
BLDG GB-01
MIDWAY RD
COLTS NECK, NJ 07722-5014

County: Monmouth
Location Description: Naval Weapons Stations Earle is located on Route 34 North in Colts Neck, NJ.

State Plane Coordinates:

X-Coordinate: 590,106

Y-Coordinate: 516,746

Units: Feet

Datum:

Source Org.: Other/Unknown

Source Type: Hard Copy Map

Industry:

Primary SIC: 9711

Secondary SIC:

**New Jersey Department of Environmental Protection
Facility Profile (General)**

Contact Type: BAQE - Evaluation

Organization: United States Navy

Name: Greg Goepfert

Title: Environmental Officer

Phone: (732) 866-2515 x

Fax: () - x

Other: () - x

Type:

Email:

Org. Type: Federal

NJ EIN:

Mailing Address: Naval Weapons Station Earle
Bldg GB-01
Midway Rd.
Colts Neck, NJ 07722-5014

Contact Type: BNSR - New Source Review

Organization: United States Navy

Name: Greg Goepfert

Title: Environmental Officer

Phone: (732) 866-2515 x

Fax: () - x

Other: () - x

Type:

Email:

Org. Type: Federal

NJ EIN:

Mailing Address: Naval Weapons Station Earle
Bldg GB-01
Midway Rd.
Colts Neck, NJ 07722-5014

Contact Type: Environmental Officer

Organization: United States Navy

Name: Greg Goepfert

Title: Environmental Officer

Phone: (732) 866-2515 x

Fax: () - x

Other: () - x

Type:

Email:

Org. Type: Federal

NJ EIN:

Mailing Address: Naval Weapons Station Earle
Bldg GB-01
Midway Rd.
Colts Neck, NJ 07722-5014

**New Jersey Department of Environmental Protection
Facility Profile (Permitting)**

- | | |
|---|-----|
| 1. Is this facility classified as a small business by the USEPA? | No |
| 2. Is this facility subject to N.J.A.C. 7:27-22? | Yes |
| 3. Are you voluntarily subjecting this facility to the requirements of Subchapter 22? | No |
| 4. Has a copy of this application been sent to the USEPA? | No |
| 5. If not, has the EPA waived the requirement? | No |
| 6. Are you claiming any portion of this application to be confidential? | No |
| 7. Have you provided, or are you planning to provide air contaminant modeling? | No |

**New Jersey Department of Environmental Protection
Equipment Inventory**

Equip. NJID	Facility's Designation	Equipment Description	Equipment Type	Certificate Number	Install Date	Grand-Fathered	Last Mod. (Since 1968)	Equip. Set ID
E10201	SVE System	SVE/AS System	Soil Vapor Extraction Equipment - Pilot Test		7/10/2000	No		

E10201 (Soil Vapor Extraction Equipment - Pilot Test)

Make:

Manufacturer:

Model:

Equipment Type:

Have you attached a diagram showing the location and/or configuration of this equipment?

Have you attached any manufacturer's data or specifications which may aid in the review of this application?

Comments:

**New Jersey Department of Environmental Protection
Control Device Inventory**

CD NJID	Facility's Designation	Description	CD Type	Install Date	Grand-Fathered	Last Mod. (Since 1968)	CD Set ID
CD10201	SVE System	Carbon Adsorber #1	Adsorber	7/10/2000	No		
CD10202	SVE System	Carbon Adsorber #2	Adsorber	7/10/2000	No		

CD10201 (Adsorber)

Make:	Project VX Series
Manufacturer:	Waterline Bamebey Sutcliffe
Model:	VX1500
Adsorber Type:	Carbon Adsorber
Description:	Modular vapor phase
Maximum Gas Flow Rate to Adsorber (acfm):	700
Maximum Temperature of Vapor Stream to Adsorber (deg F):	140
Minimum Temperature of Vapor Stream to Adsorber (deg F):	32
Minimum Moisture Content of Vapor Stream to Adsorber (%):	1
Type of Adsorbant:	Carbon
Bed Height:	86
Bed Length:	72
Bed Width:	48
Units:	inches
Other Bed Dimension:	
Value:	
Units:	
Minimum Pressure Drop Across Adsorber (In H2O):	3
Maximum Pressure Drop Across Adsorber (In H2O):	10
Total Weight of Adsorbant (lbs):	1500
Total Weight of Adsorbant When Saturated (lbs):	2000
Maximum Adsorbant Capacity (lbs Adsorbate/lbs Adsorbant):	20 lbs of adsorbate per 100 lbs of adsorbant
Minimum Adsorbant Capacity (lbs Adsorbate/lbs Adsorbant):	10 lbs of adsorbate per 100 lbs of adsorbant
Set-up Type:	Series

Method of Determining Breakthrough:

Continuous Emissions Monitor (CEM)

Replacement By Weight

Periodic Testing

Sampling Frequency

Sampling Device

Other

Description:

Minimum Concentration at Breakthrough (ppmvd):

Handling Method of Saturated Adsorbant:

Method of Regeneration:

Maximum Number of Sources Using this Apparatus as a Control Device (Include Permitted and Non-permitted Sources):

Alternative Method to Demonstrate Control Apparatus is Operating Properly:

Have you attached data from recent performance testing?

Have you attached any manufacturer's data or specifications in support of the feasibility and/or effectiveness of this control apparatus?

Have you attached a diagram showing the location and/or configuration of this control apparatus?

Comments:

CD10202 (Adsorber)

Make:	Project VX Series
Manufacturer:	Waterline Barnebey Sutcliffe
Model:	VX1500
Adsorber Type:	Carbon Adsorber
Description:	Modular vapor phase
Maximum Gas Flow Rate to Adsorber (acfm):	700
Maximum Temperature of Vapor Stream to Adsorber (deg F):	140
Minimum Temperature of Vapor Stream to Adsorber (deg F):	32
Minimum Moisture Content of Vapor Stream to Adsorber (%):	1
Type of Adsorbant:	Carbon
Bed Height:	86
Bed Length:	72
Bed Width:	48
Units:	inches
Other Bed Dimension:	
Value:	
Units:	
Minimum Pressure Drop Across Adsorber (in H2O):	3
Maximum Pressure Drop Across Adsorber (in H2O):	10
Total Weight of Adsorbant (lbs):	1500
Total Weight of Adsorbant When Saturated (lbs):	2000
Maximum Adsorbant Capacity (lbs Adsorbate/lbs Adsorbant):	20 lbs of adsorbate per 100 lbs of adsorbant
Minimum Adsorbant Capacity (lbs Adsorbate/lbs Adsorbant):	10 lbs of adsorbate per 100 lbs of adsorbant
Set-up Type:	Series

Naval Weapons Station Earle (20006)

Date: 5/26/2000

New Jersey Department of Environmental Protection
Emission Points Inventory

PT NJID	Facility's Designation	Description	Config.	Equiv. Diam. (in.)	Height (ft.)	Dist. to Prop. Line (ft)	Exhaust Temp. (deg. F)			Exhaust Vol. (acfm)			Discharge Direction	PT Set ID
							Avg.	Min.	Max.	Avg.	Min.	Max.		
PT102	SVE System	SVE/AS System	Rectangle	12	15	10.000	86.0	32.0	140.0	2,000.0	1,000.0	3,000.0	Up	

Naval Weapons Station Earle (20006)

Date: 05/26/2000

New Jersey Department of Environmental Protection
Emission Unit/Batch Process Inventory

U 10201 SVE System SVE/AS System

UOS NJID	Facility's Designation	UOS Description	Operation Type	Signif. Equip.	Control Device(s)	Emission Point(s)	SCC(s)	Annual Oper. Hours		VOC Range	Flow (acfm)		Temp. (deg F)	
								Min.	Max.		Min.	Max.	Min.	Max.
051	SVE System	Emissions from the SVE/AS System which will be installed to remediate a groundwater contamination plume.	Normal - Steady State	F10201	CD10201 (P) CD10202 (S)	PT102	5-04-103-14	0.0	6,240.0		1,000.0	3,000.0	32.0	140.0

U10201 Soil Vapor Extraction

Remediation Site Name:	Naval Weapons Station Earle
Location of Remediation on Site:	Site 25
Applicants Designation of Pilot Test:	N/A
Reason for Pilot Test:	Pilot Test Complete
Estimated Pilot Test Start Date:	N/A
Estimated Length of Full Clean-Up:	2
Units:	Years
Is this Pilot Test on Existing SVE Equipment?	No
Explain:	Not a Pilot Test. New SVE/AS System
Type of Contamination:	Chlorinated Solvents
Source of Contamination:	Historic Solvent Use to Recondition Munition Casings and Shells
Minimum Depth of contamination below the surface (ft.):	8
Maximum Depth of contamination below the surface (ft.):	25
Maximum Volume of Gas Discharged (acfm):	3000
Maximum Operating hours per day:	8
Maximum Operating hours for the Pilot Test:	N/A
Reason for Length of Pilot Test:	N/A
Will Air Injection be Performed?	Yes
Air Injection Type:	Ambient
Maximum Injection Rate (acfm):	10
Minimum Vapor Extraction / Air Injection Ratio:	3

U10201 Soil Vapor Extraction

Will Air Injection occur without simultaneous Vapor Extraction?	No
Hours of Air Injection per Day:	8
Depth below the surface where Air Injection will take place (ft.):	23-25
Length of Air Injection Project:	2 years
Purpose of Air Injection:	Groundwater Remediation
Methods of Monitoring Emissions:	PID Monitoring
Comments:	

New Jersey Department of Environmental Protection
Potential to Emit

Subject Item: U10201 SVE System

Operating Scenario: OS0 Summary

Step:

Air Contaminant Category (HAPS)	Fugitive Emissions	Emissions Before Controls	Emissions After Controls	Total Emissions	Units	Alt. Em. Limit
Dichloroethylene (cis-1,2)		2.70000000	D	0.00000000	tons/yr	No
HAPs (Total)		9.60000000	0.09000000	0.09000000	tons/yr	No
Trichloroethylene		6.80000000	0.06000000	0.06000000	tons/yr	No
Tetrachloroethylene		0.09000000	D	0.00000000	tons/yr	No
VOC (Total)		9.60000000	D	0.00000000	tons/yr	No

Subject Item: U10201 SVE System

Operating Scenario: OS1

Step:

Air Contaminant Category (HAPS)	Fugitive Emissions	Emissions Before Controls	Emissions After Controls	Total Emissions	Units	Alt. Em. Limit
Dichloroethylene (cis-1,2)		0.90000000	D	0.00000000	lb/hr	No
HAPs (Total)		3.06000000	0.03000000	0.03000000	lb/hr	No
Trichloroethylene		2.20000000	0.02000000	0.02000000	lb/hr	No
Tetrachloroethylene		0.03000000	D	0.00000000	lb/hr	No
VOC (Total)		3.06000000	D	0.00000000	lb/hr	No

Attachment B
Risk Screening Worksheet

**RISK SCREENING WORKSHEET FOR NEW AND MODIFIED SOURCES
-CARCINOGENS**

New Jersey Department of Environmental Protection
Air Quality Permitting Program

January 1997

Note: This worksheet should not be used for sources without stacks, such as dry cleaners, some degreasers, storage tanks, and gasoline stations.

EVALUATOR: Suzanne May

DATE: May 23, 2000

Part A: Source Information

1. NSR Log No.	<u>20006</u>
2. Facility Name	<u>Naval Weapons Station Earle</u>
3. Facility Location	<u>Site 26 Bldg GB-01 Midway Rd. Colts Neck, NJ</u>
4. Nature of Business	<u>Remediation of Soil</u>
5. Source Category	<u>2</u>
6. Type of Control Apparatus on Source	<u>Activated Carbon</u> (N/A if none)
7. Control Efficiency	<u>99%</u>
8. Operating Hours	<u>8 hours per day</u> per year <u>6240 hours per year</u>
9. Discharge Direction	<u>Up</u>
10. Stack Diameter	<u>12 inches</u>
11. Temperature	<u>140F</u>
12. ACFM	<u>3000</u>
13. Distance to Property Line	<u>100.00 feet</u>
14. Stack Height	<u>15 feet</u>

To determine [C'] for item 15 below:

If stack height is between 10 and 34 feet, use Nomograph Table A.

If stack height is greater than or equal to 35 feet, use Nomograph Table B.

15. Normalized Annual Concentration [C'] 0.45 (ug/m³)/(ton/yr)

RISK SCREENING WORKSHEET FOR NEW AND MODIFIED SOURCES-CARCINOGENS

Facility Name Allied Signal Teterboro Facility

NSR Log No. 960015

[C] 0.45 (ug/m³)/(ton/yr)

Part B: Contaminant Information

SUBSTANCE	CAS Number	Emissions [Q] (ton/yr)	Concentration [C] = C x Q (ug/m ³)	Unit Risk Factor [URF] (ug/m ³) ⁻¹	Incremental Risk [IR] = C x URF
ACETALDEHYDE	75-07-0			2.20E-06	
ACRYLAMIDE	79-06-1			1.30E-03	
ACRYLONTRILE	107-13-1			6.80E-05	
ALLYL CHLORIDE	107-05-1			5.50E-08	
ARSENIC	--			4.30E-03	
ASBESTOS	1332-21-4			6.90E+00	
BENZENE	71-43-2			8.30E-06	
BENZIDINE	92-87-5			6.70E-02	
BENZO(A)PYRENE	50-32-8			1.70E-03	
BENZYL CHLORIDE	100-44-7			1.20E-05	
BERYLIUM	--			2.40E-03	
BIS(2-CHLOROETHYL) ETHER	111-44-4			3.30E-04	
BIS(CHLOROETHYL) ETHER	542-88-1			6.20E-02	
1,3-BUTADIENE	109-99-0			2.80E-04	
CADMIUM	--			3.50E-03	
CARBON TETRACHLORIDE	56-23-5			1.50E-05	
CHLORDANE	57-74-9			3.70E-04	
CHLOROFORM	67-66-3			2.30E-05	
CHROMIUM (VI)	--			1.20E-02	
1,2-DICHLOROPROPANE	78-87-5			7.20E-07	
1,4 DIOXANE	123-91-1			3.10E-06	
1,2 DIPHENYLHYDRAZINE	122-66-7			2.20E-04	
EPICHLOROHYDRIN	106-89-8			1.20E-06	
ETHYL ACRYLATE	140-88-5			5.00E-07	
ETHYLENE DIBROMIDE	106-93-4			2.20E-04	
ETHYLENE DICHLORIDE	107-06-2	0.0300	0.0135	2.60E-05	3.51E-07
ETHYLENE OXIDE	75-21-8			1.00E-04	
FORMALDEHYDE	50-00-0			1.30E-05	
HEPTACHLOR	76-44-8			1.30E-03	

TOTAL INCREMENTAL RISK PAGE 1= **3.5E-07**

RISK SCREENING WORKSHEET FOR NEW AND MODIFIED SOURCES-CARCINOGENS

Facility Name Allied Signal Teterboro Facility

NSR Log No. 960015

[C] 0.45 (ug/m³)/(ton/yr)

Part B: Contaminant Information

SUBSTANCE	CAS Number	Emissions [Q] (ton/yr)	Concentration [C] = C' x Q (ug/m ³)	Unit Risk Factor [URF] (ug/m ³) ⁻¹	Incremental Risk [IR] = C x URF
HEXACHLOROENZENE	118-74-1			4.60E-04	
HEXACHLOROETHANE	67-72-1			4.00E-04	
HYDRAZINE	302-01-2			4.90E-03	
LINDANE	58-89-9			3.80E-04	
METHYL CHLORIDE	74-87-3			1.80E-06	
METHYLENE CHLORIDE	75-09-2			4.70E-07	
4,4 METHYLENEDIANILINE	101-77-9			2.10E-05	
NICKEL (other than nickel subsulfide)	—			2.40E-04	
NICKEL SUBSULFIDE	—			4.80E-04	
NITROBENZENE	98-95-3			1.20E-07	
2-NITROPROPANE	79-46-9			2.70E-03	
N-NITROSODIMETHYLAMINE	62-75-9			1.40E-02	
N-NITRO-n-METHYLUREA	684-93-5			8.60E-02	
N-NITROSOMORPHOLINE	59-89-2			2.50E-05	
PENTACHLOROPHENOL	87-86-5			3.90E-07	
POLYCHLORINATED BIPHENYLS	1336-36-3			5.70E-04	
PROPLENE OXIDE	75-56-9			3.70E-06	
STYRENE	100-42-5			5.70E-07	
2,3,7,8-TCDD (Dioxin)	1746-01-6			3.30E+01	
1,1,2,2-TETRACHLOROETHANE	79-34-5			5.80E-05	
TETRACHLOROETHYLENE	127-18-4	9.00E-04	0.000405	1.40E-05	5.67E-09
TOXAPHENE	8001-35-2			3.20E-04	
1,1,2-TRICHLOROETHANE	79-00-5			1.60E-05	
TRICHLOROETHYLENE	78-01-6	6.00E-02	0.027	1.00E-05	2.7E-07
2,4,6-TRICHLOROPHENOL	88-06-2			3.10E-06	
VINYL CHLORIDE	75-01-4			8.40E-05	
VINYLDENE CHLORIDE	75-35-4			5.00E-05	

TOTAL INCREMENTAL RISK PAGE 2= **2.8E-07**

Part C:

TOTAL INCREMENTAL RISK BOTH PAGES= **6.3E-07**

Attachment C
Emission Calculations

Emission Calculations

Process Description

The Soil Vapor Extraction / Air Sparging System (SVE/AS) will be used over a two year period to remediate the chlorinated solvent plume in the groundwater of Site 26. Chlorinated solvents had been historically used to recondition munition casings and shells. These chlorinated solvents include trichloroethylene, tetrachloroethylene and 1,2 dichloroethylene.

The AS blower injects 720 scfm of ambient air into the soil at an approximate depth of 25 feet. The injected air volatilizes the chlorinated solvents in the groundwater. The SVE System collects the vapors created by the air injection. These vapors are passed through a moisture separator where the water is removed. A vacuum blower at 2240 scfm pushes the vapor stream through two vapor-phase carbon adsorbers in series. The carbon units discharge to the atmosphere through a single stack.

Emission Calculation Assumptions

1. Assume the flow rate of the SVE unit to be 2,240 scfm.
2. Assume the flow rate of the AS unit to be 720 scfm.
3. Assume the maximum flow rate (SVE Q_{MAX}) for the SVE/AS System to be 3,000 scfm.
4. Assume that the SVE contaminant concentration is one-third the AS contaminant, since the AS flow rate is three times the SVE flow rate.
5. Assume the control efficiency of the carbon absorbers to be 99%.
6. Assume a soil porosity of 0.30.
7. Assume the density of water to be 62.4 lb/ft³.
8. Assume the sparge point to be conical-shaped.
9. Assume an Air to Water Ratio of 10 used in the air sparging.
10. Assume the air injection rate of 10 cfm for air sparging.
11. Assume the gas molar volume at 20°C to be 24.05 l/g mole.
12. Assume the VGAC adsorptive capacity for the chlorinated solvents to be approximately 20% or 20 lb Solvent/100 lb VGAC.

Operational Parameter Calculations

Hours of Operation

The Soil Vapor Extraction System operates 8 hours/day, 5 days/week, 52 weeks/year, 12 month /year.

Annual Hours of Operation = (8 hr/day) x (5 day/wk) x (52 wk/yr) = 2080 hr/yr

Maximum Annual Hours of Operation = (24 hr/day) x (5 day/wk) x (52 wk/yr) = 6240 hr/yr

Monthly Hours of Operation = (2080 hr/yr) / (12 month/yr) = 173 hr/month

Overall Plume Volume

Plume Dimensions: Length = 450 ft, Width = 250 ft, Average Thickness = 13 ft

Overall Plume Volume = 450' x 250' x 13' = 1,462,000 ft³

Water Volume per Sparge Point

The Sparge Point is conical-shaped. Volume of Cone = $1/3 \times \pi \times R^2 \times h$

Sparge Point Dimensions: Radius = 5 ft, Height = 16 ft

Sparge Point Volume = $1/3 \times \pi \times R^2 \times h = (1/3) \times \pi \times (5\text{ft})^2 \times (16\text{ft}) = 418.9 \text{ ft}^3$

Porosity of Soil = 0.3.

Volume of Water per Sparge Point = SP Volume x Porosity = $(418.9 \text{ ft}^3) \times (0.3) = 125.7 \text{ ft}^3 = 940 \text{ gallons}$

Air Volume Required per Sparge Point

Air to Water Ratio = 10, Water Volume per Sparge Point = 125.7 ft^3

Air Volume per Sparge Point = (Air/Water Ratio) x (Water Volume) = $(125.7 \text{ ft}^3) \times (10) = 1,257 \text{ ft}^3$

Air Sparge Time

Air Injection Rate = $10 \text{ ft}^3/\text{min}$, Air Volume per Sparge Point = $1,257 \text{ ft}^3$

Air Sparge Time = Air Volume/Air Injection Rate = $(1,257 \text{ ft}^3) \times (\text{min}/10 \text{ ft}^3) = 125.7 \text{ minutes (2 hrs, 5.7 min)}$

Emission Calculations

Analytical Results and Molecular Weights

In March 2000, samples were collected to measure the concentration of the chlorinated solvents present in the groundwater of Site 26. The following table lists the chlorinated solvents found in the groundwater, their concentrations and molecular weights:

<u>Groundwater Contaminant</u>	<u>Concentration in Groundwater (ug/l or ppb)</u>	<u>Molecular Weight</u>
Trichloroethylene (TCE)	5,800	131.3889
Tetrachloroethylene (PCE)	77	165.834
Dichloroethylene (DCE)	2,300	98.9596

Overall Groundwater Contaminant Mass in Plume

Density of Water = $62.4 \text{ lb}/\text{ft}^3$, Overall Plume Volume = $1,462,000 \text{ ft}^3$

Overall Contaminant Mass (lb) = Groundwater Concentration x Plume Volume x Water Density

Mass (lb)_{TCE} = $(5,800 \text{ parts TCE}/10^9 \text{ parts H}_2\text{O}) \times (1,462,500 \text{ ft}^3) \times (62.4 \text{ lb}/\text{ft}^3) = 529.3 \text{ lbs TCE}$

Mass (lb)_{PCE} = $(77 \text{ parts PCE}/10^9 \text{ parts H}_2\text{O}) \times (1,462,500 \text{ ft}^3) \times (62.4 \text{ lb}/\text{ft}^3) = 7.0 \text{ lbs PCE}$

Mass (lb)_{DCE} = $(2,300 \text{ parts DCE}/10^9 \text{ parts H}_2\text{O}) \times (1,462,500 \text{ ft}^3) \times (62.4 \text{ lb}/\text{ft}^3) = 209.9 \text{ lbs DCE}$

Mass of Contaminant per Sparge Point

Density of Water = $62.4 \text{ lb}/\text{ft}^3$, Volume of Water per Sparge Point = 125.7 ft^3

Mass of Contaminant per Sparge Point = Groundwater Concentration x Water Volume x Water Density

TCE Mass per Sparge Point = $(5,800 \text{ parts TCE}/10^9 \text{ parts H}_2\text{O}) \times (125.7 \text{ ft}^3) \times (62.4 \text{ lb}/\text{ft}^3) = 0.0455 \text{ lbs}$

PCE Mass per Sparge Point = $(77 \text{ parts PCE}/10^9 \text{ parts H}_2\text{O}) \times (125.7 \text{ ft}^3) \times (62.4 \text{ lb}/\text{ft}^3) = 0.00603 \text{ lbs}$

DCE Mass per Sparge Point = $(2,300 \text{ parts DCE}/10^9 \text{ parts H}_2\text{O}) \times (125.7 \text{ ft}^3) \times (62.4 \text{ lb}/\text{ft}^3) = 0.0180 \text{ lbs}$

Average Mass Removal Rate

Air Sparge Time = 125.7 minutes, 1 hour = 60 minutes

Average Mass Removal Rate = Mass of Contaminant per Sparge Point / Air Sparge Time

Average TCE Mass Removal Rate = (0.0455 lbs) x (60 min/hr) / (125.7 min) = 0.0217 lb/hr

Average PCE Mass Removal Rate = (0.00603 lbs) x (60 min/hr) / (125.7 min) = 0.000288 lb/hr

Average DCE Mass Removal Rate = (0.0180 lbs) x (60 min/hr) / (125.7 min) = 0.00859 lb/hr

Sparging Vapor Concentration

Air Injection Rate = 10 ft³/min. Gas Molar Volume @20°C = 24.05 l/g mole,

Conversion Factor = 266,944 ft³ mg hr/ m³ lb min

Vapor Concentration = $\frac{(\text{Removal Rate} \times \text{Gas Molar Volume} \times \text{Conversion Factor})}{(\text{Air Rate} \times \text{Molecular Weight})}$

TCE Vapor Concentration = $\frac{(0.0217 \text{ lb/hr}) \times (24.05 \text{ l/g mole}) \times (266,944 \text{ ft}^3 \text{ mg hr/ m}^3 \text{ lb min})}{(10 \text{ ft}^3/\text{min}) \times (131.3889 \text{ g/gmole})}$ = 106 ppmv

PCE Vapor Concentration = $\frac{(2.88 \times 10^{-4} \text{ lb/hr}) \times (24.05 \text{ l/g mole}) \times (266,944 \text{ ft}^3 \text{ mg hr/ m}^3 \text{ lb min})}{(10 \text{ ft}^3/\text{min}) \times (165.834 \text{ g/gmole})}$ = 1.11 ppmv

DCE Vapor Concentration = $\frac{(8.59 \times 10^{-3} \text{ lb/hr}) \times (24.05 \text{ l/gmole}) \times (266,944 \text{ ft}^3 \text{ mg hr/ m}^3 \text{ lb min})}{(10 \text{ ft}^3/\text{min}) \times (98.9596 \text{ g/gmole})}$ = 55.73 ppmv

SVE Contaminant Concentration

SVE Contaminant Concentration = 1/3 x AS Contaminant Concentration

TCE SVE Contaminant Concentration = (1/3) x (106 ppmv) = 35.3 ppmv

PCE SVE Contaminant Concentration = (1/3) x (1.11 ppmv) = 0.37 ppmv

DCE SVE Contaminant Concentration = (1/3) x (55.73 ppmv) = 18.6 ppmv

SVE/AS Mass Rate

SVE Q_{MAX} = 3,000 scfm, Gas Molar Volume @20°C = 24.05 l/g mole,

Conversion Factor = 266,944 ft³ mg hr/ m³ lb min

SVE Mass Rate = $\frac{(\text{SVE Concentration} \times \text{SVE Q}_{\text{MAX}} \times \text{Molecular Weight})}{(\text{Gas Molar Volume} \times \text{Conversion Factor})}$

TCE SVE Mass Rate = $\frac{(35.3 \text{ ppmv}) \times (3000 \text{ ft}^3/\text{min}) \times (131.3889 \text{ g/gmole})}{(24.05 \text{ l/g mole}) \times (266,944 \text{ ft}^3 \text{ mg hr/ m}^3 \text{ lb min})}$ = 2.17 lb/hr

PCE SVE Mass Rate = $\frac{(0.37 \text{ ppmv}) \times (3000 \text{ ft}^3/\text{min}) \times (165.834 \text{ g/gmole})}{(24.05 \text{ l/g mole}) \times (266,944 \text{ ft}^3 \text{ mg hr/ m}^3 \text{ lb min})}$ = 0.029 lb/hr

DCE SVE Mass Rate = $\frac{(18.6 \text{ ppmv}) \times (3000 \text{ ft}^3/\text{min}) \times (98.9596 \text{ g/gmole})}{(24.05 \text{ l/g mole}) \times (266,944 \text{ ft}^3 \text{ mg hr/ m}^3 \text{ lb min})}$ = 0.86 lb/hr

Maximum VGAC Usage

VGAC adsorptive capacity = 20 lb Solvent/100 lb VGAC

Hourly VGAC Usage (lb/hr) = SVE Mass Rate / VGAC adsorptive capacity

Daily VGAC Usage (lb/day) = Hourly VGAC Usage (lb/hr) x 24 hr/day

Monthly VGAC Usage (lb/month) = Daily VGAC Usage (lb/day) x 30 days/ month

<u>Groundwater Contaminant</u>	<u>SVE Emission Rate Hourly (lb/hr)</u>	<u>Hourly (lb/hr)</u>	<u>Maximum VGAC Usage</u>	
			<u>Daily (lb/day)</u>	<u>Monthly (lb/month)</u>
TCE	2.17	10.9	260	7,812
PCE	0.029	0.15	3.6	108
DCE	0.86	4.3	103.2	3,096
TOTAL	3.06	15.4	367	11,016

Actual Total GVAC Usage

Daily Hours of Operation = 8 hr/day, Monthly Hours of Operation = 173 hr/month

Total Hourly VGAC Usage = 15.4 lb/hr

Actual Total Daily VGAC Usage = (15.4 lb/hr) x (8 hr/daily) = 123.2 lb GVAC/day

Actual Total Monthly VGAC Usage = (15.4 lb/hr) x (173 hr/month) = 2664 lb GVAC/month

Maximum Emission Rates

Maximum Annual Hours of Operation = 6240 hr/yr, 1 ton = 2,000 lb, Control Efficiency = 99%

Annual Emission Rate = Hourly Emission Rate x Annual Hours of Operation

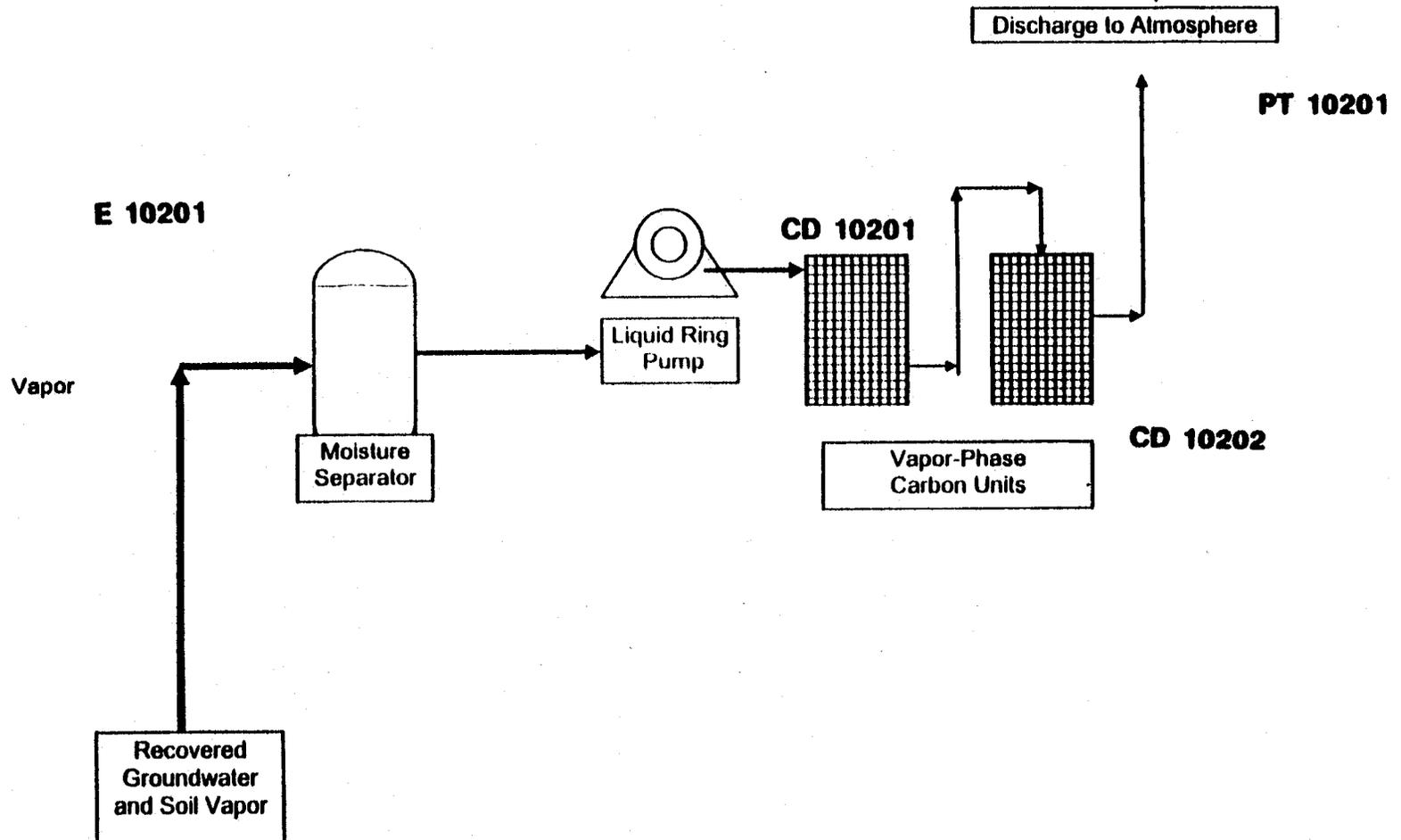
<u>Groundwater Contaminant</u>	<u>Emission Rates w/o Control</u>		<u>Emission Rate w/ Control</u>	
	<u>Hourly (lb/hr)</u>	<u>Annual (tpy)</u>	<u>Hourly (lb/hr)</u>	<u>Annual (tpy)</u>
TCE	2.2	6.8	0.02	0.06
PCE	0.03	0.09	0.0003	0.001
DCE	0.90	2.7	0.009	0.03
TOTAL VOC/HAP	3.06	9.6	0.03	0.09

Attachment D
Process Flow Diagram

PROCESS FLOW DIAGRAM

Soil Vapor Extraction System

Naval Weapons Station Earle – SVE/AS System
Colts Neck, New Jersey



Attachment E
Vendor Specifications



J. E. GASHO & ASSOCIATES, INC.

Authorized Manufacturer's Representative
Air / Gas Moving Equipment
460 W. GAY STREET
WEST CHESTER, PA 19380
PHONE: 610-692-5650 FAX: 610-692-5837

Foster Wheeler Environmental Corp.
Naval Weapons Station-Earle
P. O. No. 025491

J. E. Gasho & Assoc., Inc.
Quotation 3T9766-A

Vapor Phase Carbon Absorber

Product Information Bulletin

Bulletin No.: VX1, Rev. 10/99

WATERLINK[®]

Barnebey Sutcliffe

PROTECT™ VX SERIES Modular Vapor Adsorbers

Barnebey Sutcliffe Corporation offers a complete line of economical modular vapor phase adsorbers. The **PROTECT™ VX Series** is designed as a low cost, portable adsorber that can easily be put into service.

The **PROTECT™ VX Series** adsorbers are designed for low pressure operation of 3-psi, a maximum operating temperature of 150°F, and media capacity up to 1,800-lbs. of activated carbon

Model #	GAC ft ³ /lbs	Recommended Maximum Flow Rate	Estimated Weight (Empty/Shipping)
VX-750	25/750	700-cfm	665/1,415
VX-1000	33/1,000	700-cfm	665/1,655
VX-1500	50/1,500	700-cfm	725/2,225
VX-1800	60/1,800	700-cfm	725/2,525

Important Features

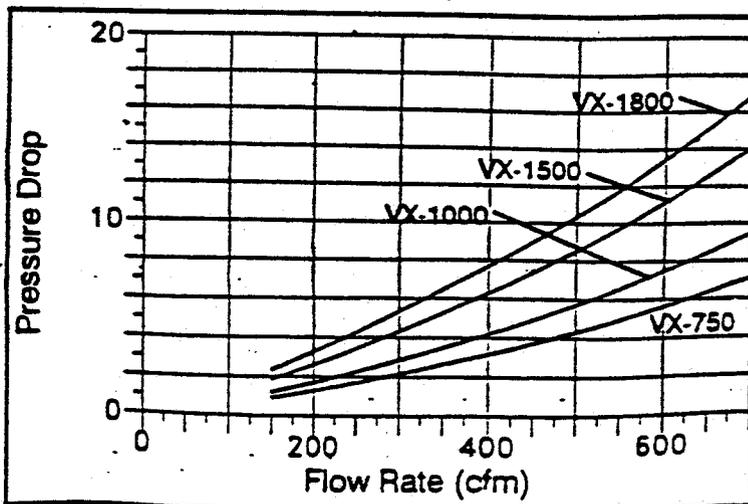
- Durable carbon steel construction.
- Upper and lower open-air plenum area designed for maximum carbon utilization.
- Plenum design offers the lowest possible pressure drop.
- UN31A1 rated and approved for shipping.
- Heavy duty steel step for top access.
- Large 22" drum opening in top for easy access.
- Lifting lugs and 4 way forklift guides.
- Stackable for easy storage.
- VOC indicator fitting.
- 6" threaded opening in top and side for upflow or downflow operation.
- Condensate drain.
- Baked on Polymeric coating.
- Can be filled with any of Barnebey's virgin or reactivated granular or extruded activated carbons.
- Shipped with carbon and ready for service.

For More Information and Pricing Call
1-800-886-2272
and Talk to One of Our Knowledgeable
Technical Support Personnel
or Visit Our Web Site at
<http://www.bscarbons.com>

Volume and weight based on liquid phase bituminous carbon @ 28-lbs/ft³.

Estimated pressure drop based on virgin 8x30 carbon.

Design and specifications subject to change without notice.

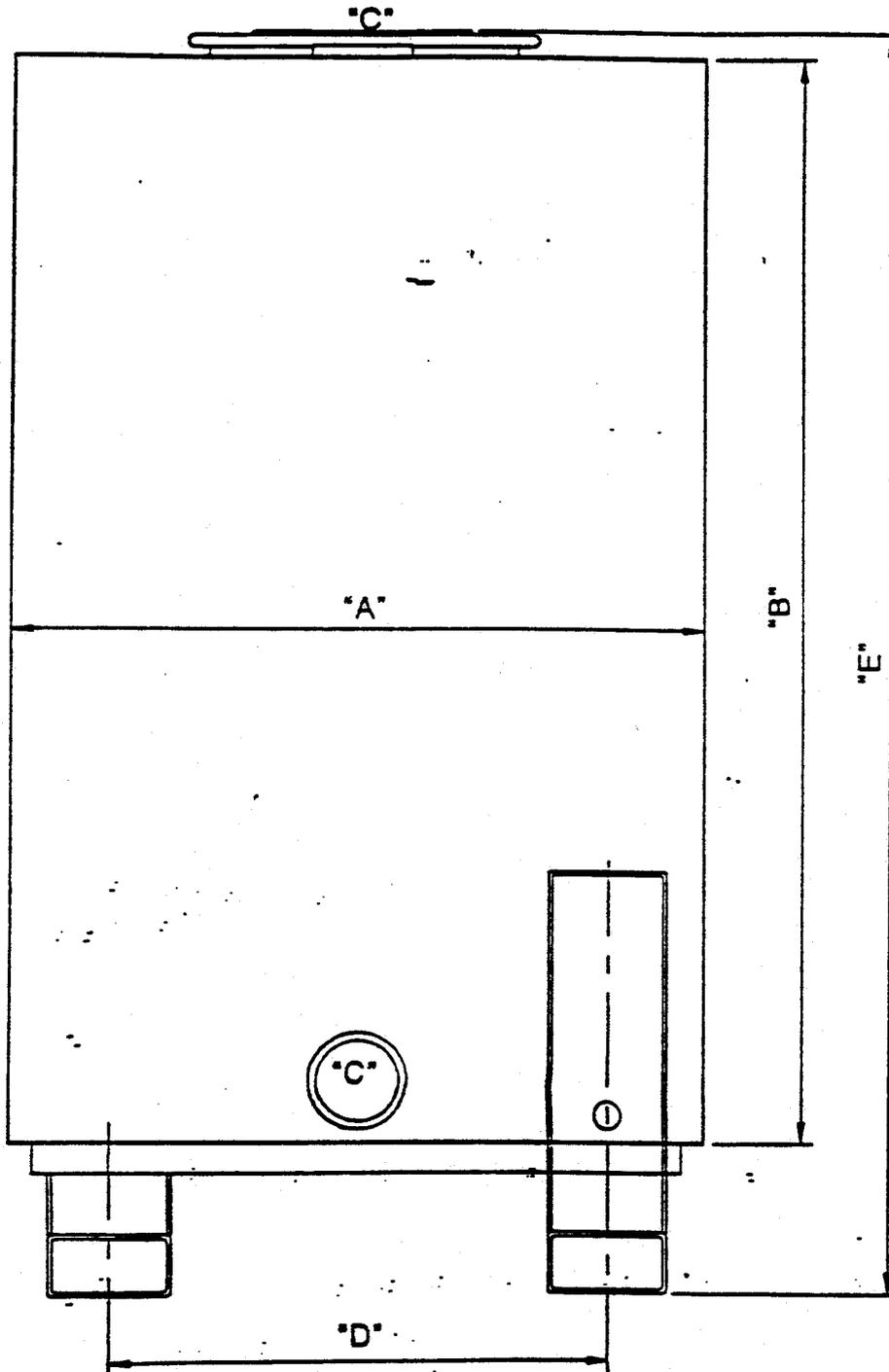


Product Information Bulletin (PROTECT™ VX Series)

Bulletin No.: VX1, Rev. 10/99

WATERLINK®

Barnebey Sutcliffe



Available Options:

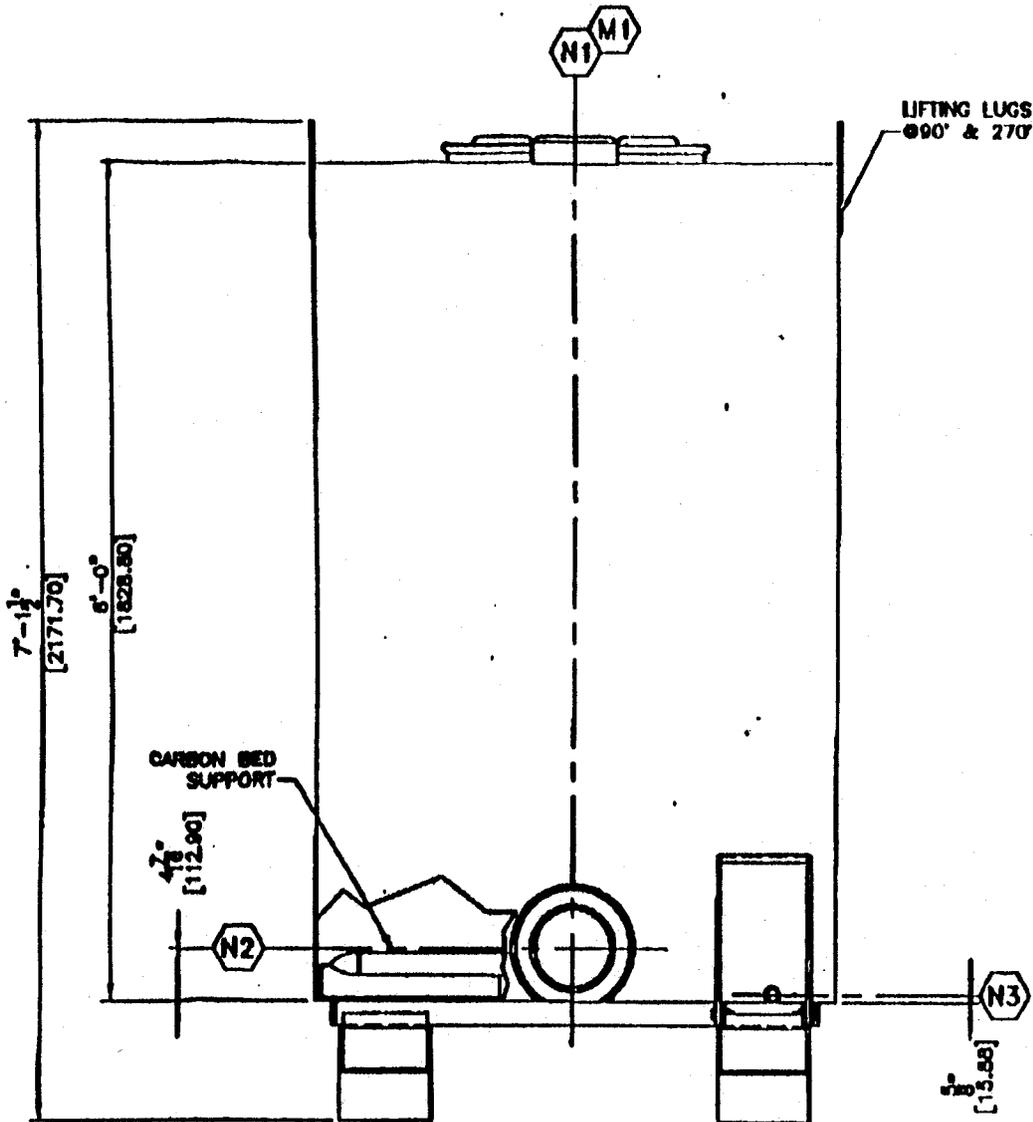
- ◊ Stainless Steel Construction
- ◊ Stainless Steel Internals
- ◊ Internal Liner
- ◊ Flanged Inlet/Outlet
- ◊ PRV
- ◊ Higher Operating Pressures/Vacuums
- ◊ Isolation Butterfly Valves
- ◊ Camloc Quick Connects
- ◊ Skid Mounted SVE Systems
- ◊ Carbon Saturation Indicators
- ◊ Call for Your Custom Configuration

**Barnebey
Sutcliffe Corp.**
1-800-886-2272

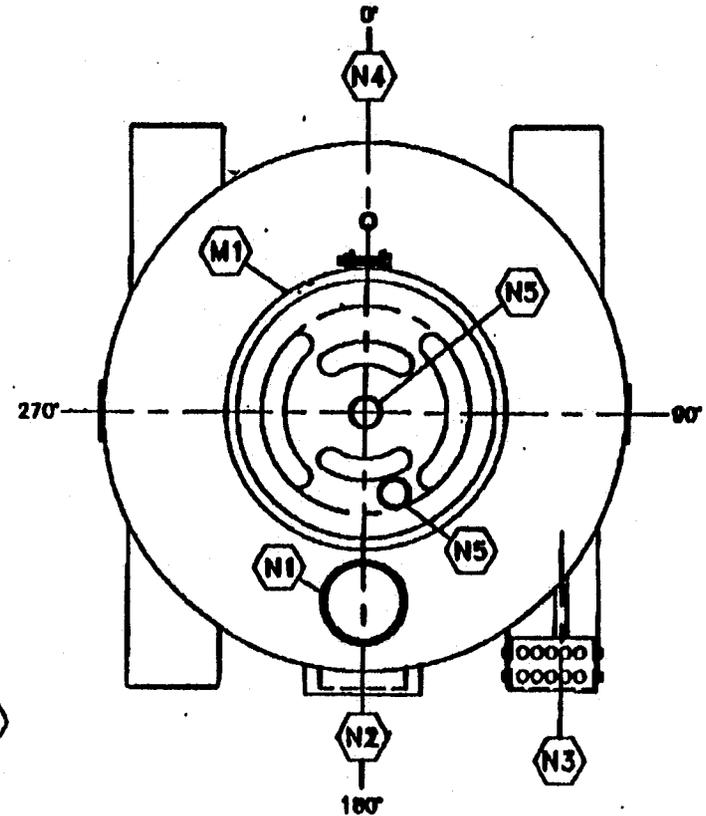
Drawings not to scale.
Design and specifications subject to
change without notice.

Model #	Diameter "A"	Can Length "B"	Inlet/Outlet "C"	Forklift Guides "D"	Overall Hgt. "E"	Overall Width
VX-750	45½"	56"	6" fpt	33"	70" ±	48" ±
VX-1000	45½"	56"	6" fpt	33"	70" ±	48" ±
VX-1500	45½"	72"	6" fpt	33"	86" ±	48" ±
VX-1800	45½"	72"	6" fpt	33"	86" ±	48" ±

NOZZLE	SERVICE	SIZE
N1	INLET	6" NPT 150#
N2	OUTLET	6" NPT 150#
N3	DRAIN	3/4" NPT 150#
N4	VENT	3/4" NPT 150#
N5	ACCESSORY	2" BUNG
M1	MANWAY	22 5/16" MANWAY



ELEVATION VIEW
3/4" = 1'-0"



PLAN VIEW
3/4" = 1'-0"

WATERLINK
Barneby Sutcliffe

VX-1800
VAPOR PHASE ADSORBER

3/4" = 1'-0"

Design & specifications subject to change

ACTIVATED CARBON

TYPE BT

COCONUT SHELL CARBON

STANDARD SPECIFICATION

CCl, Activity Level, ASTM D-3467	55% Minimum
Moisture Content, ASTM D-2867	5% Maximum
Particle Size, ASTM D-2862	4x10 US mesh

TYPICAL PROPERTIES

Hardness, ASTM D-3802	98
Bulk Density, ASTM D-2854	.47 g/cm ³
Ash Content, ASTM D-2866	5%

PACKAGING

50 pound bags	15 gallon drums
55 gallon drums	1,000 pound bulk sacks
Bulk tanker	

NOTES

Unless otherwise specified, particle size distribution will be 5% maximum on the top screen and 5% maximum through the bottom screen.

An MSDS is available for all Barnebey & Sutcliffe activated carbons.

In the event the moisture exceeds our 5% maximum, Barnebey & Sutcliffe will weight adjust to the 5% limit.

BT
4-2-96

P.O. Box 2526 • Columbus, OH 43216 • 1-800-886-2272 • 614-258-9501 • Fax: 614-258-3464 • E-Mail: activated_carbon@msn.com

This data and information is presented to assist a technically knowledgeable customer in the evaluation of carbons produced by Barnebey & Sutcliffe Corporation. However, due to variations in the content of specific gas or liquid streams, and the fact that the use of the carbon is beyond the control of Barnebey & Sutcliffe, no guarantee or warranty, expressed or implied, is made as to such use, any effects incidental to such use, or the results to be obtained. Barnebey & Sutcliffe expressly disclaims responsibility therefore and the user accepts full responsibility for performance of systems using carbon based on this data. Please contact Barnebey & Sutcliffe for a more detailed review of your application, before proceeding.

Attachment F

Certification Form for RADIUS Submittal

AIMS-001T

CERTIFICATION

Facility ID: 20006
Facility Name: Naval Weapons Station Earle

Responsible Official:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attached documents and, 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 and criminal penalties, including the possibility of fine or imprisonment or both, for submitting false, inaccurate or incomplete information.

Name: _____ Signature: _____ Date: / /

Individuals with Direct Knowledge:

I certify under penalty of law that I believe the information provided in this document is true, accurate and complete. I am aware that there are significant civil and criminal penalties, including the possibility of fine or imprisonment or both, for submitting false, inaccurate or incomplete information.

Name: _____ Signature: _____ Date: / /

Section Being Certified: _____

Name: _____ Signature: _____ Date: / /

Section Being Certified: _____

Name: _____ Signature: _____ Date: / /

Section Being Certified: _____

Name: _____ Signature: _____ Date: / /

Section Being Certified: _____



DEPARTMENT OF THE NAVY

NAVAL WEAPONS STATION EARLE
201 HWY 34 SOUTH
COLTS NECK, NEW JERSEY 07722-5001

IN REPLY REFER TO

5090
Ser 043/007
12 Feb 01

Mr. Brian Leary, Environmental Engineer
Bureau of Air Quality Engineering
New Jersey Department of Environmental Protection
CN 027
Trenton, New Jersey 08625

Re: SITE 26 AIR SPARGING/SOIL VAPOR EXTRACTION SYSTEM AIR
POLLUTION CONTROL (APC) PERMIT APPLICATION, TRACKING
NUMBERS: BOP 00-0004, PLANT IDENTIFICATION NUMBER: 21138

Dear Mr. Leary:

In response to your letter of January 16, 2001 the following technical information is provided:

a. Please provide the distance below ground at which the air will be injected along with the depth of clean soil to the point of contamination.

Response: The air shall be injected 20 to 23 feet below grade. The shallow groundwater aquifer is contaminated from a depth of approximately 8 feet below grade to 23-feet below grade (confining clay unit).

b. Please provide the maximum flow rate for the Soil Vapor Extraction blower and the Air Sparging compressor. Also please specify the minimum soil vapor extraction to air sparging ratio and how the flow rates will be verified during normal operations.

Response: The maximum flow rate for each air sparging blower is approximately 330 cubic feet per minute (CFM). The maximum flow rate for each soil vapor extraction blower is 1,080 CFM. Only one-half of the capacity of the entire system is currently being employed since equipment "flooding" conditions have been experienced under maximum flow/extraction operation. The flow rates are verified with pitot tubes, pressure differential transmitters and gauges.

c. Please provide a map showing the locations of the sparging and monitoring wells.

Response: A drawing depicting the locations of the air sparging wells, soil vapor extraction, and monitoring wells is enclosed.

A diskette and certification form was forwarded to the Bureau of New Source Review on August 15, 2000. Please note that the Comprehensive Environmental Cleanup and Liability Act (CERCLA, 42 U.S.C. 9621 Sec. 121(e)) exempts any response action conducted entirely on site from having to obtain a Federal, State or local permit. Remediation is being conducted under CERCLA at this site and the previous information submitted qualifies as meeting the substantive requirements of a permit application.

Mr. Robert Marcolina of the Bureau of Case Management has been advised of the operational status of this equipment. The soil vapor extraction/air sparging remediation system was completely installed on November 21, 2000. Equipment prove out operations were conducted during intermittent operations during the period November 21 through December 28, 2000 and, since December 28, 2000, the system has operated for approximately six hours per day.

Should you require any further information, please contact Mr. Gregory Goepfert, Environmental Engineer at (732) 866-2515.

Sincerely,



C. B. SHAW
Captain, U.S. Navy
Commanding Officer

Encl.: Location of Sparging, Extraction and Monitoring Wells at Site 26

cc: Mr. Robert Marcolina, NJDEP, Bureau of Case Management (w/o encl.)
Ms. Jessica Mollin, U.S. EPA Region II, Remedial Project Manager (w/o encl.)
Mr. John Kolicus, NORTHNAVFACENCOM, Code 18 (w/o encl.)
Mr. Michael Heffron, Foster Wheeler Environmental Corporation (w/o encl.)