ANNUAL REPORT
SEPTEMBER 2001 THROUGH JULY 2002

OFF-SITE GROUNDWATER MONITORING
AND ASSESSMENT PROGRAM

NEW CASSEL INDUSTRIAL AREA
(SITE NO. 1-30-043)
NEW CASSEL, NEW YORK

Prepared for

NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

By

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ANNUAL REPORT
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NEW CASSEL INDUSTRIAL AREA

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Section 1

1.0 INTRODUCTION

As part of New York State's program to investigate and remediate hazardous waste sites, the New York State Department of Environmental Conservation (NYSDEC) issued a work assignment to Dvirka and Bartilucci Consulting Engineers (D&B) of Woodbury, New York. The work assignment was issued under the Superfund Standby Contract between D&B and the NYSDEC, and involves conducting off-site groundwater monitoring and assessment for the New Cassel Industrial Area (NCIA) located in the Town of North Hempstead, Nassau County, New York. The off-site groundwater investigation is being conducted with funds allocated under the New York State Superfund Program.

The approach for this investigation was to construct monitoring wells at locations off-site and downgradient of the NCIA, and collect groundwater samples from the newly installed wells and previously existing early warning wells for the nearby Bowling Green Estates Water District supply wells.

The objectives of this investigation are to:

- Characterize and evaluate off-site groundwater quality downgradient of the NCIA;
- Determine to what extent the Bowling Green Estates Water District supply wells have been impacted; and
- Determine whether the existing treatment system for the Bowling Green Estates Water District supply wells will continue to provide protection of human health.

This annual report provides the results of the quarterly monitoring events conducted in September/November 2001 and January, April and July 2002. Note that for the first sampling event, the existing early warning wells were sampled in September 2001, and the off-site monitoring wells, which were constructed in October 2001, were not sampled until November 2001.

This report provides a description of the study area location, a summary of the site history and previous investigations at the NCIA, and activities conducted as part of this off-site groundwater monitoring and assessment program. These program activities comprised drilling, well construction, groundwater sampling, data validation and reporting. This report also includes an evaluation of the groundwater analytical results obtained during the first year of this program and a comparison of the results to New York State groundwater quality standards and guidance values. In addition, an evaluation of the nature and extent of groundwater contamination and a groundwater quality assessment are provided. Based on the findings of the groundwater monitoring and assessment program, recommendations regarding future monitoring activities are presented.

Section 2

2.0 SITE LOCATION AND BACKGROUND

2.1 Site Location and Description

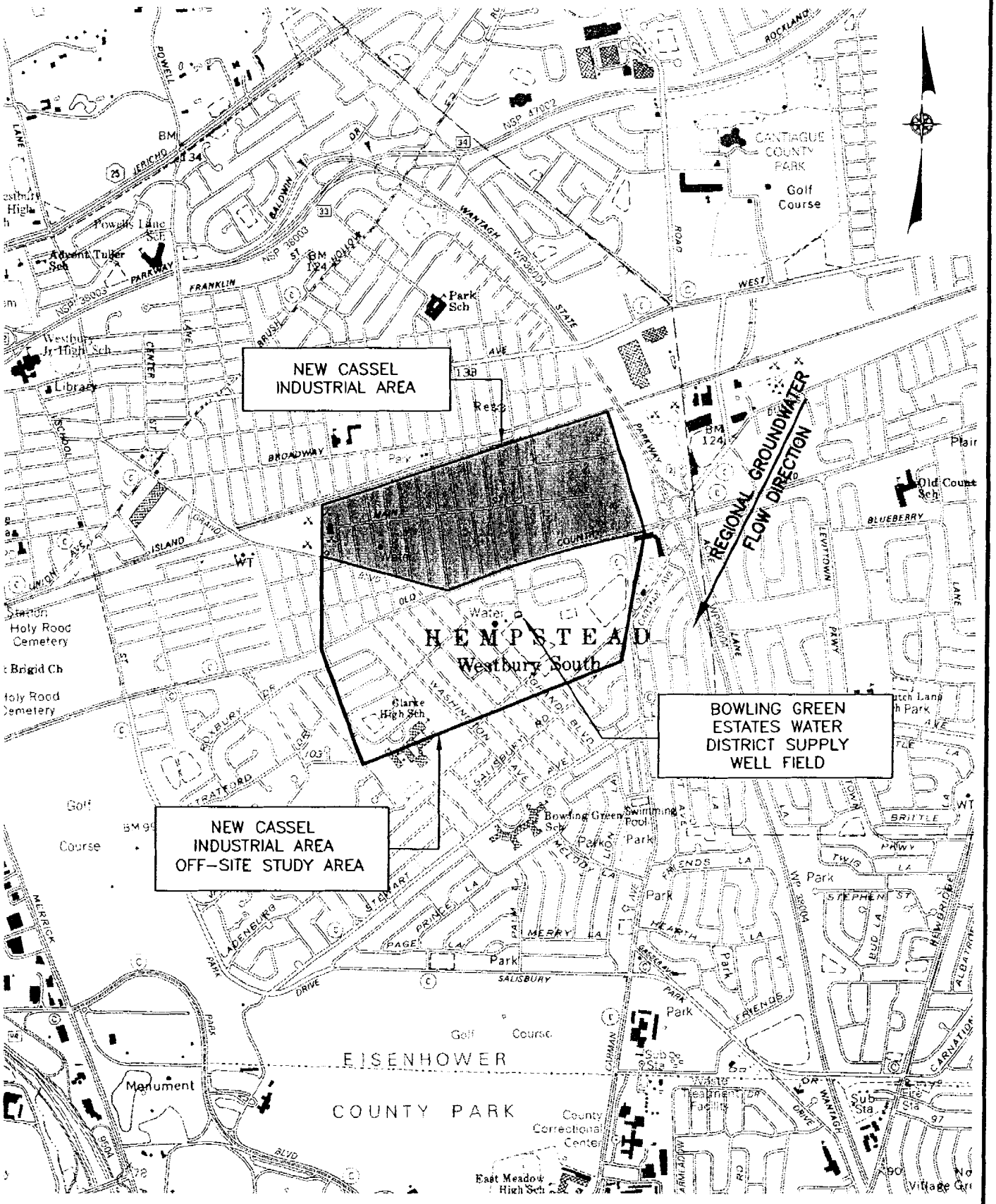
The New Cassel Industrial Area (NCIA) is located in the Town of Hempstead, Nassau County, New York (see Figure 2-1). The NCIA is approximately 170 acres in size and is bounded by Long Island Rail Road tracks on the north, Old Country Road on the south, Frost Street on the east and Grand Boulevard on the west. Regional groundwater flow is reported to be toward the southwest, although the flow direction may vary locally due to the pumping of the nearby Bowling Green Estates Water District supply wells.

According to information provided by the NYSDEC, the NCIA was developed in the early 1950s. There are approximately 200 properties in the NCIA which are used for industrial and commercial purposes.

The Bowling Green Estates Water District well field, which is owned and operated by the Town of Hempstead, is located approximately 1/4 mile south of the NCIA (see Figure 2-1). The well field is comprised of two public water supply wells, BGE-1 and BGE-2. BGE-1 is screened from 478 feet to 528 feet below ground surface and BGE-2 is screened from 524 feet to 584 feet below ground surface. Each well is permitted to pump at a rate of 1,400 gallons per minute. Extracted water is treated for removal of volatile organic compounds (VOCs) using air stripping and carbon filtration prior to distribution. The drawdown near the well head during pumping is reported to be approximately 50 feet.

2.2 Previous Investigations

In 1986, the NCIA was identified by the Nassau County Department of Health as an area with widespread contamination of groundwater by VOCs. As a result, the entire NCIA was listed as a Class 2 site on the Registry of Inactive Hazardous Waste Disposal Sites (Registry) by the NYSDEC in 1988. A Class 2 site is one that poses a significant threat to public health and/or the environment, and for which remedial action is required.



NEW CASTLE INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM

SITE LOCATION MAP

0 2000
SCALE IN FEET

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FIGURE 2-1

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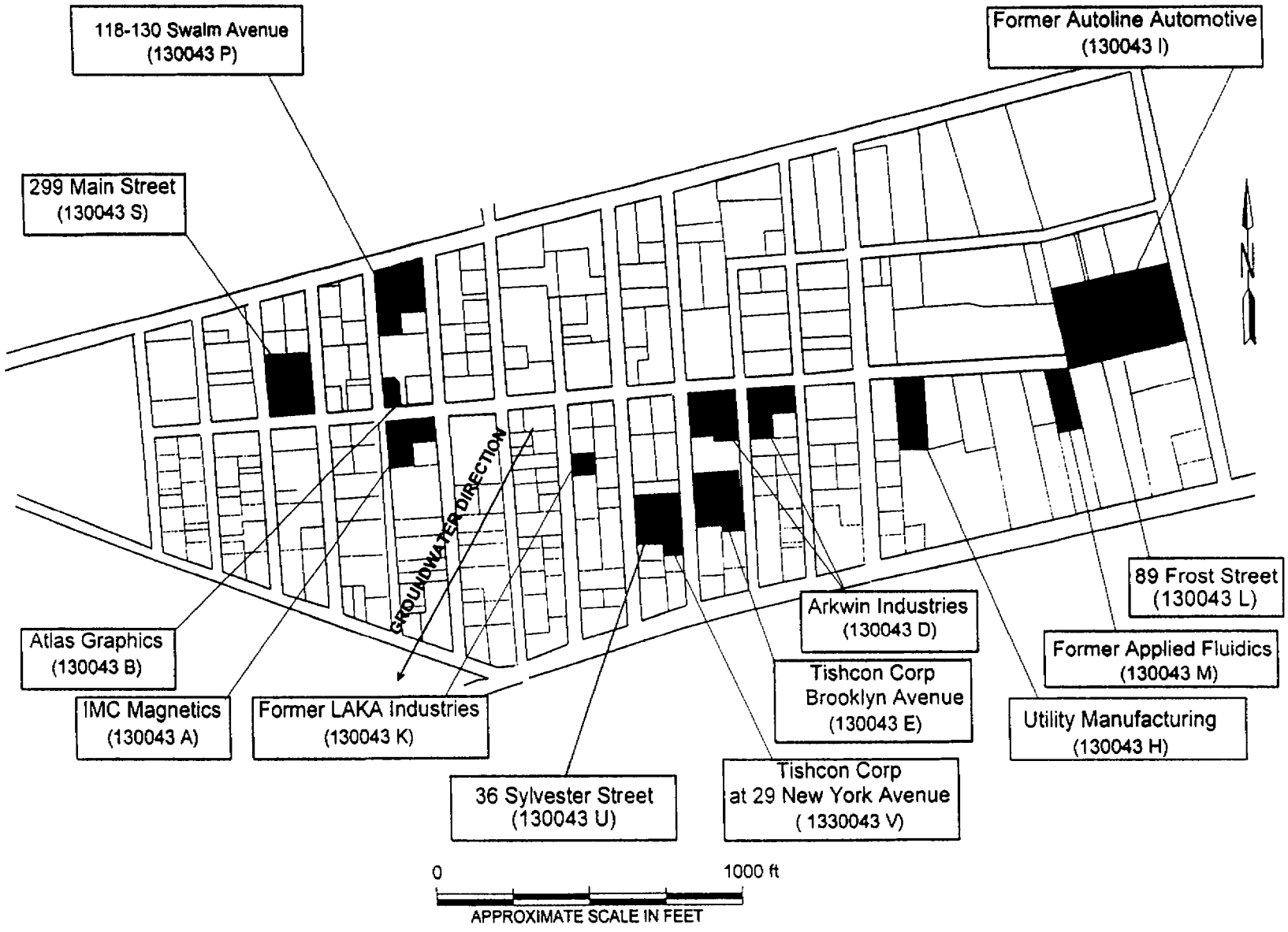
In order to identify specific contaminant sources within the NCIA, preliminary site assessments were conducted by NYSDEC consultants between 1994 and 1996. Soil and groundwater samples were also collected at several properties in 1998 and 1999. Based on the site assessments and sampling activities, 17 individual properties within the NCIA were listed on the Registry as Class 2 sites between 1995 and 1999. To date, three of these sites have been delisted from the Registry and one has been reclassified as a Class 4 site (on-going monitoring required), leaving 13 Class 2 sites remaining within the NCIA (see Figure 2-2).

Sampling of monitoring wells in and around the NCIA was conducted on behalf of the NYSDEC in April 1999, August 1999 and January 2000. Additional Hydropunch groundwater samples were collected at four locations south of the NCIA in January and February 2000 to evaluate the vertical distribution of contamination downgradient of the NCIA. The results of these activities were described in the September 2000 Remedial Investigation/Feasibility Study (RI/FS) Report. The RI/FS Report identified three separate VOC plumes in groundwater beneath the NCIA.

The eastern plume is the smallest and is comprised primarily of tetrachloroethene (PCE) and its breakdown products, trichloroethene (TCE) and 1,2-dichloroethene (1,2-DCE). The concentrations of total VOCs (TVOCs) within this plume increase with depth to approximately 100 feet below ground surface, then decrease from 100 feet to the deepest horizon sampled (200 feet below ground surface).

The central plume is the most areally extensive of the identified plumes and is comprised primarily of PCE, TCE, 1,1,1-trichloroethane (TCA) and the TCA breakdown product 1,1-dichloroethane (1,1-DCA). Data collected during the RI/FS show that TVOC concentrations above 1,000 micrograms per liter (ug/l) associated with the central plume are present at depth of 100 to 200 feet below ground surface. This plume extends from the NCIA toward the Bowling Green Estates Water District well field. According to the RI/FS Report, data collected during the construction of early warning wells upgradient of the Bowling Green Estates Water District well



SOURCE: NYSDEC

RLA/DWGS/NEWCASSELIND1898(04/24/03)

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NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM

LOCATIONS OF CLASS 2 SITES IN THE NEW CASSEL INDUSTRIAL AREA

FIGURE 2-2

field indicate that the VOC concentrations tend to decrease significantly below a depth of 150 feet.

According to the RI/FS Report, the western plume is located in the western section of the industrial area and extends from the Long Island Rail Road to just south of Old Country Road. The primary contaminants in the western plume are TCE, PCE and TCA. Total VOC concentrations in shallow groundwater in this area exceeded 1,000 ug/l. The western plume area reaches its maximum apparent extent in the shallow groundwater with lesser concentrations detected in deeper wells.

In 1992, VOC contamination was detected in the Bowling Green Estates Water District supply wells. The identified contamination in both wells was primarily TCE, with lower concentrations of PCE, 1,2-DCE, 1,1-dichloroethene (1,1-DCE), TCA and carbon tetrachloride. The TVOC concentrations in BGE-1 are generally greater than those detected in BGE-2, and for both wells, the total VOC concentrations have been generally increasing since 1988. A treatment system for these wells, designed and constructed to address the detected VOCs, has been in operation since 1996. Extracted water is treated by air stripping followed by activated carbon filtration, if necessary, prior to distribution.

Public concerns regarding the migration of contaminated groundwater from the NCIA resulted in the construction of four early warning wells between the Bowling Green Estates Water District well field and the NCIA in 1997. The early warning wells were constructed as two 2-well clusters. The first well cluster consisted of wells EW-1B (screened 154 to 164 feet below ground surface) and EW-1C (screened 506 to 516 feet below ground surface). The second well cluster consisted of wells EW-2B (screened 132 to 142 feet below ground surface) and EW-2C (screened 504 to 514 feet below ground surface). These wells have been periodically sampled since 1997.

Section 3

3.0 SCOPE OF THE MONITORING AND ASSESSMENT PROGRAM

The approach for this program was to construct and sample monitoring wells in order to characterize off-site groundwater quality downgradient of the NCIA. This was accomplished by construction of nine new monitoring wells and collection of quarterly groundwater samples from the new wells and the four existing early warning wells. The activities related to construction of the new wells, groundwater sampling, data validation and reporting are provided below.

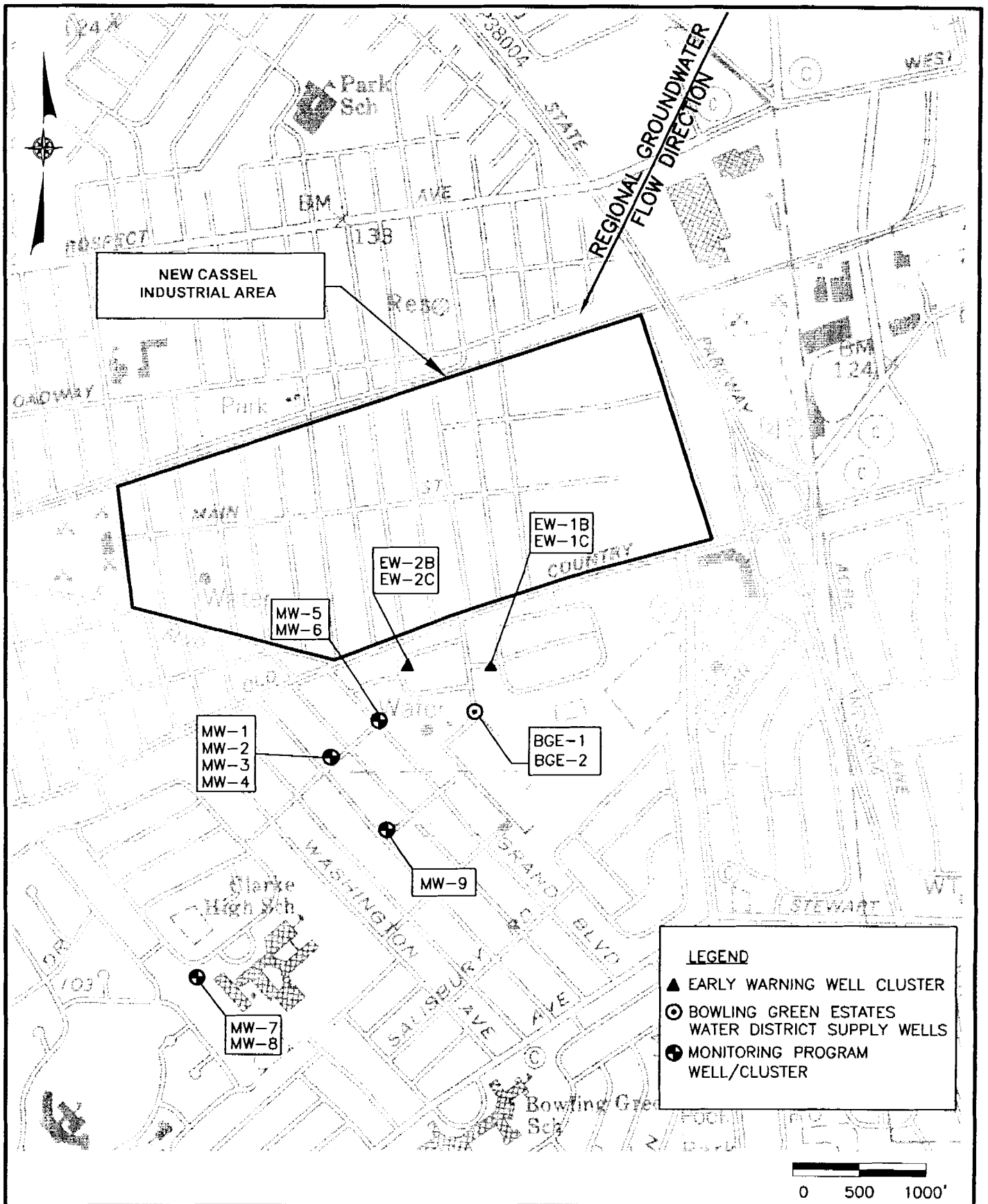
3.1 Groundwater Monitoring Well Construction

The initial scope of work for this program included the installation, development and surveying of eight monitoring wells (MW-1 through MW-8). These wells were constructed in a residential area downgradient of the NCIA. The well locations and depths of the wells were selected by the NYSDEC to supplement the existing NCIA monitoring well and off-site early warning well network. The eight monitoring wells were constructed as two 2-well clusters and one 4-well cluster. The locations of the eight monitoring wells and four existing early warning wells (EW-1B, EW-1C, EW-2B and EW-2C), as well as the Bowling Green Estates Water District supply wells (BGE-1 and BGE-2), are illustrated on Figure 3-1.

Table 3-1 summarizes the well construction details for the off-site monitoring wells. Seven of the eight boreholes (MW-1 through MW-3 and MW-5 through MW-8) were drilled using the hollow stem auger drilling method. MW-4 was drilled using the mud rotary method.

Specific activities related to the eight monitoring wells, including drilling, logging, well construction, well development, and cuttings disposal are contained in the monitoring well construction letter report, dated December 17, 2001.

Based on the analytical results from the initial sampling event (November 2001), the work assignment was modified. At the request of the NYSDEC, an additional monitoring well



NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM

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WELL LOCATION MAP

FIGURE 3-1

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Table 3-1

NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
SUMMARY OF MONITORING WELL CONSTRUCTION DETAILS

Well ID	Diameter and Material	Outer Casing Length*	Screen Zone*	Sand Pack*	Bentonite Seal*	Top of PVC Elevation**	Ground Elevation**
MW-1	2-inch PVC	--	90-110	87-110	84-87	115.11	115.44
MW-2	2-inch PVC	--	110-130	107-130	104-107	115.14	115.40
MW-3	2-inch PVC	--	130-150	127-150	51-127	115.13	115.35
MW-4	4-inch PVC	--	180-200	175-200	30-175	115.24	115.49
MW-5	2-inch PVC	--	90-110	87-110	84-87	117.11	117.38
MW-6	2-inch PVC	--	110-130	107-130	75-107	117.14	117.37
MW-7	2-inch PVC	--	90-110	86-110	83-86	107.05	107.34
MW-8	2-inch PVC	--	119-139	116-139	55-116	106.98	107.22
MW-9	4-inch PVC[1]	0-280	305-315	295-315	265-295	111.29	111.63

*Feet below ground surface.

**Feet above mean sea level.

[1]Outer casing is 8-inch diameter carbon steel with welded joints.

(MW-9) was installed in the residential area, southeast of the existing four-well cluster (MW-1 through MW-4). The location for MW-9 (see Figure 3-1) was selected by the NYSDEC to supplement the existing off-site monitoring well network.

The borehole for MW-9 was drilled using the mud rotary method. The initial scope of work for MW-9 included drilling, geophysical logging and Hydropunch groundwater sampling to a depth of 300 feet below ground surface. However, due to significant clay layers encountered between 200 feet and 300 feet, the borehole was extended to 320 feet below ground surface with concurrence from the NYSDEC.

Hydropunch groundwater samples were collected from the MW-9 borehole to aid in selection of an appropriate screen zone. Samples were collected at depths of 80 feet, 100 feet, 120 feet, 140 feet, 180 feet, 200 feet and 260 feet below ground surface. The Hydropunch samples were analyzed for VOCs. Only two VOCs, acetone and chloroform, were detected in the Hydropunch samples, at concentrations ranging from nondetect to 33 ug/l. These compounds are typical laboratory contaminants.

Because the screen zone for MW-9 was to be installed in the zone with the highest TVOC concentration below 200 feet and no worst-case horizon was identified, it was determined by the NYSDEC that MW-9 would be screened from 305 feet to 315 feet below ground surface.

Well MW-9 was constructed as a double-cased well. The outer casing is comprised of 8-inch diameter carbon steel with welded joints and the well is constructed of 4-inch diameter PVC casing and screen. The well construction details for MW-9 are included in Table 3-1.

Specific activities related to MW-9, including drilling, logging, well construction, Hydropunch sampling, well development, containment and disposal of drill cuttings, and well surveying are contained in the Drilling Report for MW-9 dated September 16, 2002.

3.2 Groundwater Sampling

During the first three quarterly groundwater sampling events (September/November 2001, January and April 2002), the four early warning wells and eight off-site monitoring wells (MW-1 through MW-8) were sampled. The fourth quarter sampling event (July 2002) comprised these same wells, and MW-9 after it was installed.

Groundwater sampling for the four early warning wells and nine off-site monitoring wells was conducted in accordance with the NYSDEC approved work plan, dated May 2001. Specific groundwater sampling procedures, field parameter measurements collected during purging of the wells, quality assurance/quality control (QA/QC) and decontamination of equipment have been provided in the four quarterly sampling reports submitted to the NYSDEC.

The analytical and field parameter results for the four quarterly sampling events (September 2001 through July 2002) are discussed in Section 4.0.

3.3 Data Validation and Reporting

For each of the four quarterly reports, the data packages submitted by the laboratories (CompuChem and Southwest Laboratories of Oklahoma, Inc.) were validated in accordance with NYSDEC ASP requirements and a data usability summary report (DUSR) was prepared. The DUSR for each sampling event was included in the sampling report for that event. The results (VOCs and natural attenuation monitoring parameters) provided in the data tables in Appendices B and D of this report reflect the findings of the data validation.

Section 4

4.0 GROUNDWATER MONITORING RESULTS

This section presents the water level data and analytical results for groundwater samples collected from September 2001 through July 2002 as part of the Off-site Groundwater Monitoring and Assessment Program, and describes the location, nature and significance of contamination found off-site and downgradient of the New Cassel Industrial Area.

For review and interpretation, the analytical results are compared to NYSDEC Technical and Operational Guidance Series (TOGS) (1.1.1), Ambient Water Quality Standards and Guidance Values (1998). The water quality standards and guidance values provide ambient contaminant concentrations developed to protect New York State groundwater based on its best classified usage. Analytical results obtained for groundwater samples are compared to Class GA standards for which the best use is potable water supply. The Class GA standards and guidance values are also included in the data tables.

4.1 Groundwater Levels

As part of the four quarterly sampling events, groundwater level measurements were obtained from off-site monitoring wells MW-1 through MW-9. Groundwater contour maps were not prepared as part of the Off-site Groundwater Monitoring and Assessment Program due to the linear orientation of the monitoring wells. The depth to water measurements and hydraulic head elevations for the off-site monitoring wells are presented in Table 4-1.

The average depth to groundwater measured in the off-site wells during the period, November 2001 through July 2002, is approximately 60 feet below ground surface. For each of the monitoring periods, the water levels were highest in the northernmost wells (MW-5 and 6) and lowest in the southernmost wells (MW-7 and 8), which is consistent with the reported regional southwestern groundwater flow direction.

Table 4-1

NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
SUMMARY OF WATER LEVEL DATA

Well	Measuring Point Elevation*	1st Quarter November 2001		2nd Quarter January 2002		3rd Quarter April 2002		4th Quarter July 2002	
		DTW	Hydraulic Head	DTW	Hydraulic Head	DTW	Hydraulic Head	DTW	Hydraulic Head
MW-1	115.11	50.69	64.42	51.81	63.30	53.11	62.00	54.13	60.98
MW-2	115.14	50.81	64.33	51.99	63.15	53.18	61.96	54.21	60.93
MW-3	115.13	50.79	64.34	51.85	63.28	53.20	61.93	54.27	60.86
MW-4	115.24	51.12	64.12	52.10	63.14	53.51	61.73	54.66	60.58
MW-5	117.11	52.37	64.74	53.41	63.70	54.71	62.40	55.77	61.34
MW-6	117.14	52.43	64.71	53.46	63.68	54.71	62.43	55.84	61.30
MW-7	107.05	45.00	62.05	46.10	60.95	47.30	59.75	48.18	58.87
MW-8	106.98	45.16	61.82	46.18	60.80	47.47	59.51	48.45	58.53
MW-9	111.29	NI	--	NI	--	NI	--	52.25	60.04

Notes:

* - Relative to mean sea level
DTW - Depth to water in feet below Measuring Point
NI - Well not installed
-- - Not established

In general, the groundwater levels measured during the four quarters fluctuated approximately 3 feet. Water levels were highest during November 2001 (First Quarter) and lowest during July 2002 (Fourth Quarter). Data collected from wells MW-1 through MW-8 show that groundwater flow generally has a downward component. The relative July 2002 hydraulic head elevations are typical for the 2001/2002 monitoring period for the well clusters, and from north to south, ranged from 61.34 feet (MW-5) to 61.30 feet (MW-6), 60.98 feet (MW-1) to 60.58 feet (MW-4) and 58.87 (MW-7) to 58.53 feet (MW-8), see Table 4-1.

4.2 Groundwater Quality Results

The groundwater samples from the early warning wells and the off-site monitoring wells were analyzed for VOCs, total iron, total organic carbon (TOC), alkalinity, chloride, nitrate, sulfate, carbon dioxide and methane. In addition, groundwater samples were monitored in the field for pH, temperature, specific conductance, dissolved oxygen, Eh and turbidity.

Historic VOC results for the early warning wells from June 1997 to March 2001 are incorporated into the following discussion. In addition, historic VOC results for the Bowling Green Estates Water District supply wells from 1988 through 2002 are discussed. The VOC results for the supply wells were provided by the Town of Hempstead Department of Water.

4.2.1 Field Parameters

A summary of the sample field parameter values measured at the time of sample collection for the sampling events from September/November 2001 through July 2002 is provided in Appendix A. Ranges for the field parameter values for the early warning wells and monitoring wells are provided below.

Levels of pH ranged from 4.73 in well MW-1 to 6.09 in well MW-8. An elevated pH level of 10.00 was detected at well MW-9 (July 2002). Temperatures ranged from 12.2°C in well EW-1C to 18.7°C in well MW-1. Specific conductance values ranged from 0.061 millisiemens per centimeter (ms/cm) in well EW-2C to 0.548 ms/cm in well MW-6. Turbidity levels ranged

from 0 Nephelometric Turbidity Units (NTUs) in well EW-2B to 26 NTUs in well EW-2C. Dissolved oxygen levels ranged from 1.16 milligrams per liter (mg/l) in well MW-6 to 12.32 mg/l in well MW-5. An anomalous high dissolved oxygen reading of 16.06 mg/l was recorded in well EW-2C (July 2002). Eh levels ranged from 8 millivolts (mv) in well MW-8 to 413 mv in well MW-7. For each well, the values were generally consistent between sampling events.

4.2.2 Early Warning Wells

The locations of the four early warning wells are shown on Figure 3-1. These wells constitute two clusters, each containing a shallow and deep well screened in the Magothy aquifer.

Volatile Organic Compounds

The results of the individual VOC analyses and comparison to NYSDEC Class GA groundwater standards and guidance values are presented in Appendix B. Graphs illustrating historic TVOC concentrations for the early warning wells are presented in Appendix C. Table 4-2 presents the four quarterly 2001/2002 sample results for TVOCs, the trends of these results and historic TVOC concentration trends.

The sample results show that wells EW-1B and EW-2B (screened in the shallow Magothy aquifer) contained elevated concentrations of VOCs in excess of the Class GA groundwater standards. TVOCs for well EW-1B (screened 154 to 164 feet below ground surface) ranged from 839.2 micrograms per liter (ug/l) to 1,337 ug/l. The results show several individual compounds exceeding the NYSDEC Class GA groundwater standards, including PCE, TCE, cis-1,2-DCE, 1,1-DCE, TCA, 1,1-DCA and methylene chloride (Appendix B). Among these compounds, PCE exhibited the highest concentrations, ranging from 630 ug/l to 1,000 ug/l.

Table 4-2

NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
EARLY WARNING WELL AND OFF-SITE MONITORING WELL
TOTAL VOLATILE ORGANIC COMPOUNDS RESULTS

Well No.	Screen Zone (feet below ground surface)	1st Quarter (Sept./ Nov. 2001)[1]	2nd Quarter (Jan. 2002)	3rd Quarter (Apr. 2002)	4th Quarter (July 2002)	Trend (Sept. 2001 to July 2002)	Historic Trend (June 1997 to July 2002)
Early Warning Wells							
EW-1B	154-164	839.2	1,337	1,037.1	840.7	Little Change	Slight Decrease
EW-1C	506-516	12	13.6	20	13	Consistent	Slight Increase
EW-2B	132-142	532.2	261	209.5	181	Decrease	Fairly Consistent
EW-2C	504-514	ND	ND	ND	1	Consistent	Consistent
Off-site Monitoring Wells							
MW-1	90-110	53.3	34	105	106	Slight Increase	**
MW-2	110-130	1,597.8	1,393	1,382	552	Decrease	**
MW-3	130-150	2,822.2	2,490	1,273	2,190	Slight Decrease	**
MW-4	180-200	3,015.4	2,301	1,576	1,498	Decrease	**
MW-5	90-110	33.7	45.5	36.1	31	Consistent	**
MW-6	110-130	761.2	301	351	330	Decrease	**
MW-7	90-110	30.9	29	24.3	40	Consistent	**
MW-8	120-140	5.9	9.1	6.7	5.1	Consistent	**
MW-9	305-315	NI	NI	NI	19.8	*	**

Notes: All results reported in ug/l
ND - Not detected
NI - Not installed
* - Insufficient data to establish a trend
** - No historic data
Historic VOC graphs are presented in Appendix C
[1]Early warning wells were sampled in September 2001 and the off-site monitoring wells were sampled in November 2001

TVOCs in well EW-2B (screened from 132 to 142 feet below ground surface) ranged from 181 ug/l to 532.2 ug/l. Well EW-2B contained several individual compounds with concentrations exceeding the NYSDEC Class GA groundwater standards. These compounds were the same as identified in EW-1B, with the addition of 1,2-DCA, vinyl chloride (VC), chloroethane and 1,2,3-trichloropropane. Among these compounds, TCE and 1,1-DCA exhibited the highest concentrations, ranging from 84 ug/l to 140 ug/l and from 5 ug/l to 150 ug/l, respectively.

During the four quarters, TVOC concentrations in well EW-1B showed little overall change and TVOC concentrations in well EW-2B showed a decreasing trend (see Appendix C and Table 4-2). With regard to historic TVOC trends (June 1997 to July 2002), well EW-1B showed a slight decreasing trend. Well EW-2B has showed a fairly consistent trend; however, from March 2001, a steadily decreasing trend in TVOC concentrations is apparent in this well (refer to Appendix C).

A comparison of the four quarterly sample results for early warning wells EW-1C and EW-2C (screened in the deep Magothy aquifer) show little change (10 ug/l or less) in concentrations of TVOCs. TVOCs for well EW-1C (screened 506 to 516 feet below ground surface) ranged from 12 ug/l to 20 ug/l. For well EW-1C, TCE was the only compound that exceeded the NYSDEC Class GA groundwater standard at concentrations ranging from 12 ug/l to 15 ug/l. TVOCs for well EW-2C (screened 504 to 514 feet below ground surface) ranged from nondetect to 1 ug/l. TVOC concentrations for wells EW-1C and EW-2C remained consistent during the September 2001 through July 2002 period.

With regard to historic TVOC trends (June 1997 to July 2002), well EW-1C showed a slight increase. However, during this period, TVOCs have not exceeded 20 ug/l in any sample from EW-1C. For well EW-2C, historical TVOCs remained consistent and TVOCs did not exceed 2 ug/l.

Natural Attenuation Monitoring Parameters

The concentrations of natural attenuation monitoring parameters for the four 2001/2002 sampling quarters, and groundwater standards and guidance values are presented in Appendix D.

Table 4-3 presents concentration ranges for the natural attenuation monitoring parameters for the four quarterly sample results. The four early warning wells showed concentrations of TOC, alkalinity, chloride, nitrate, sulfate, carbon dioxide and methane to have remained fairly consistent in each well. Total iron concentrations varied in wells EW-1B, EW-1C and EW-2C and remained nondetect in EW-2B. Total iron was the only parameter detected above the groundwater standard of 0.3 mg/l in wells EW-1B, EW-1C and EW-2C on one or more occasions.

4.2.3 Off-site Monitoring Wells

The topography in the area of the off-site wells is relatively flat and the ground surface elevations at the nine well locations do not vary by more than 10 feet. Based on geologic information obtained during this investigation and existing geologic information provided by the NYSDEC, wells MW-1 through MW-9 are all screened within the Magothy aquifer.

Figure 4-1 shows the location of cross section A-A'. The screen zones for selected off-site wells in addition to selected monitoring wells from the RI/FS are illustrated in cross section on Figure 4-2. The cross section is oriented northeast to southwest, approximately parallel to the regional groundwater flow direction.

TVOC concentrations are presented on the cross section in Figure 4-2. TVOC concentrations for the selected wells are from data collected during the RI/FS (April 1999 through January 2000) and represent the maximum TVOC concentrations detected in the wells. For the early warning wells and the off-site monitoring program wells, TVOC concentrations are representative of the July 2002 contaminant levels.

Table 4-3

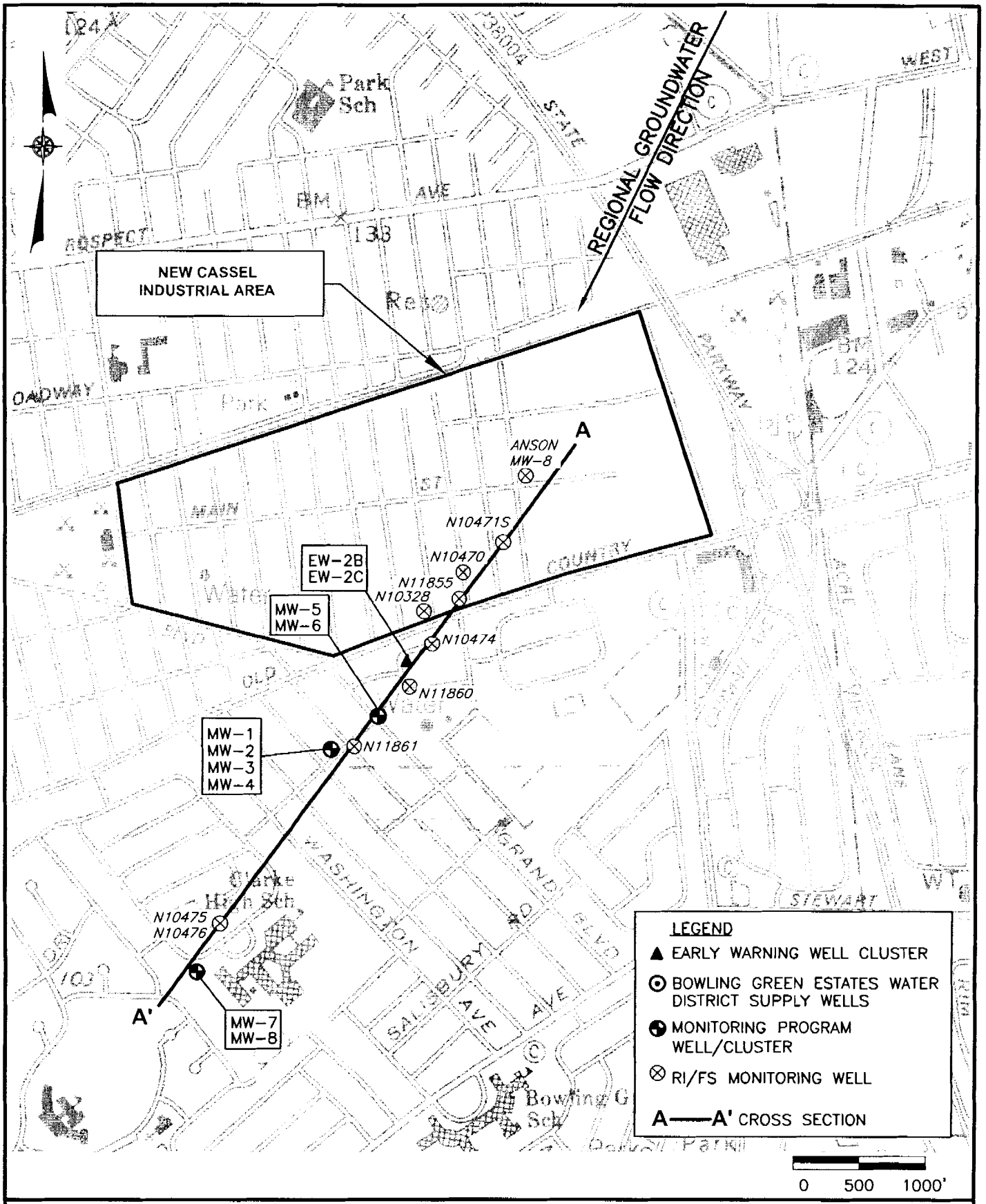
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
CONCENTRATION RANGES FOR NATURAL ATTENUATION MONITORING PARAMETERS

	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9
Iron (Total)	U	U - 0.474	U - 7.58	U - 0.5	U - 0.618	U - 0.04	U - 0.07	U - 18.2	0.027
TOC	U - 4.1	U - 3.5	2.3 - 6.3	2.4 - 6.3	U - 4.1	U - 4.4	U - 3.4	2.2 - 12.2	1.9
Alkalinity	U - 11	22 - 27	15 – 27	19 - 22	13 - 18	24 - 32	U	14 - 53	24
Chloride	38.8 - 59.7	33.5 - 37.5	35.7 - 39.9	45.7 - 47.4	43.6 - 66.7	99 - 117	18.8 - 22.7	22.9 - 26.1	101
Nitrate	4.1 - 5.3	5.1 - 7	4.4 - 6.5	8.1 - 9.2	3.7 - 4.9	4.7 - 5.2	5.6 - 6.3	1.7 - 5.0	5.2
Sulfate	24.4 - 29.4	18.9 - 22.8	12.4 - 21.1	U - 4.4	20.5 - 29.2	21.3 - 30.9	28.4 - 33.8	19.6 - 32.7	21.3
Carbon Dioxide	U - 78	62 - 408	71 - 369	71 - 466	31 - 53.1	53 - 392	U - 158	U - 56.2	62
Methane	U - 0.004	U - 0.13	0.097 - 1.2	U - 0.013	U - 0.009	U - 0.007	U - 0.007	U - 0.22	U

	EW-1B	EW-1C	EW-2B	EW-2C
Iron (Total)	U - 0.445	U - 0.316	U	U - 0.858
TOC	U - 2.7	U - 1.4	U - 2	U - 1.4
Alkalinity	18 - 20.6	10 - 12	13 - 15	10 - 10.6
Chloride	26.9 - 33.5	9.8 - 13.7	30.3 - 36.8	4.1 - 7
Nitrate	6 - 6.4	5.6 - 6.3	2.1 - 2.3	1.7 - 1.9
Sulfate	21.9 - 23.5	U - 2.3	9.5 - 17.1	U - 2.7
Carbon Dioxide	U - 79.8	13 - 72.9	56 - 67	10 - 17.4
Methane	U - 0.005	U - 0.009	0.004 - 0.11	U - 0.074

Notes:

Concentrations in mg/l
U: Undetected
Ranges are for 9/01-11/01, 1/02, 4/02 and 7/02 quarterly sampling events



NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM

Dvirka and Bartilucci CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

LOCATION OF CROSS SECTION A-A'

FIGURE 4-1

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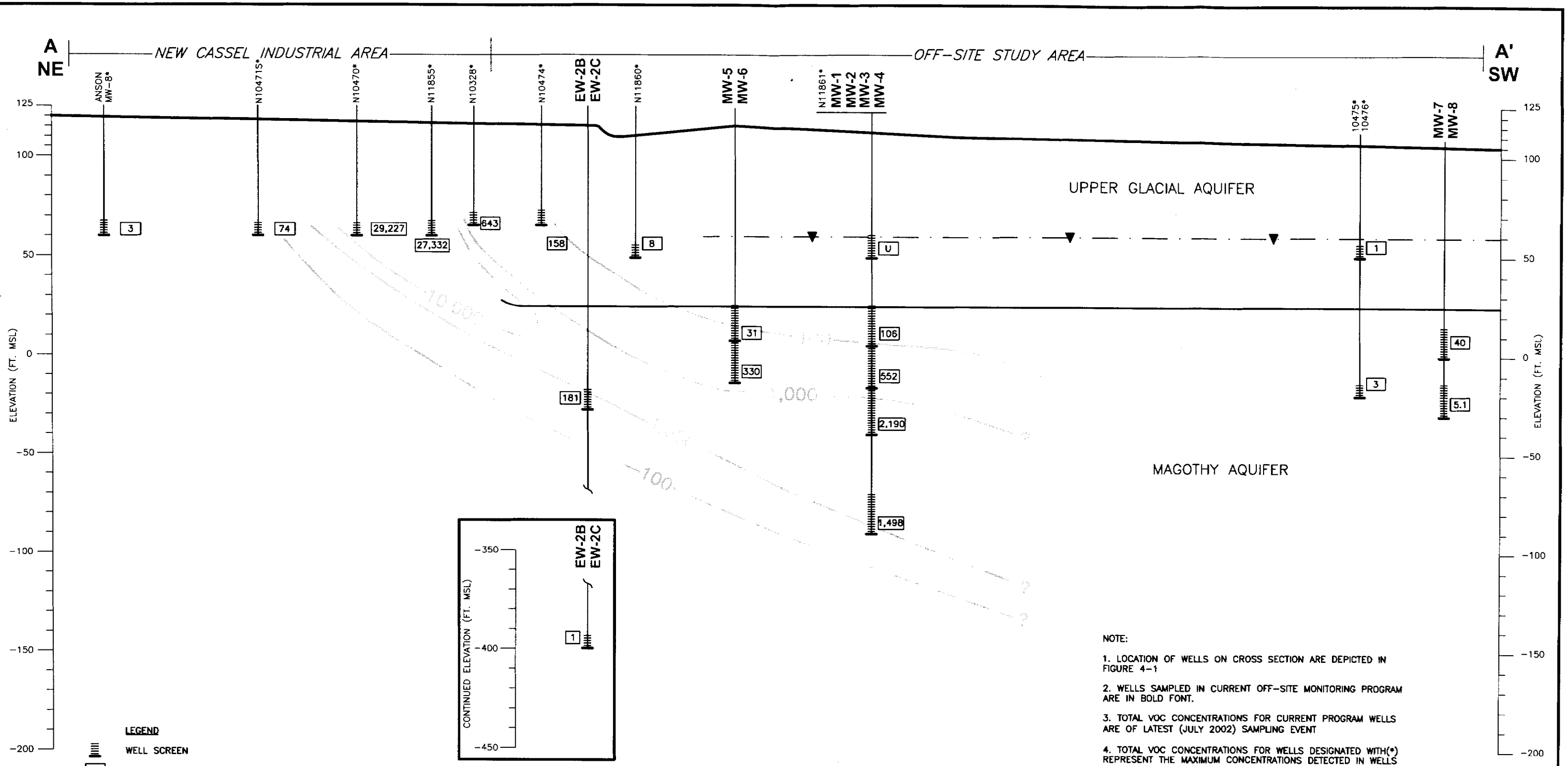

NOTE:

1. LOCATION OF WELLS ON CROSS SECTION ARE DEPICTED IN FIGURE 4-1

2. WELLS SAMPLED IN CURRENT OFF-SITE MONITORING PROGRAM ARE IN BOLD FONT.

3. TOTAL VOC CONCENTRATIONS FOR CURRENT PROGRAM WELLS ARE OF LATEST (JULY 2002) SAMPLING EVENT

4. TOTAL VOC CONCENTRATIONS FOR WELLS DESIGNATED WITH(*) REPRESENT THE MAXIMUM CONCENTRATIONS DETECTED IN WELLS DURING THE RI/FS (APRIL 1999 THROUGH JANUARY 2000)

HORIZONTAL SCALE: 1"=400'
VERTICAL SCALE: 1"=50'

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NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM

CROSS SECTION A-A' SHOWING TOTAL VOC CONCENTRATIONS

FIGURE 4-2

Volatile Organic Compounds

The following discussion presents the four quarterly sample results for TVOCs for the off-site monitoring wells and the trends of these results. The VOC results and NYSDEC Class GA groundwater standards and guidance values are presented in Appendix B. Graphs illustrating TVOC concentrations for the monitoring wells for the November 2001 through July 2002 monitoring period are presented in Appendix C.

A comparison of sample results from the three well clusters shows that the shallower wells in each cluster (MW-1, MW-5 and MW-7) exhibited low TVOC concentrations. TVOCs in well MW-1 ranged from 34 ug/l to 106 ug/l, TVOCs in MW-5 ranged from 31 ug/l to 45.5 ug/l, and TVOCs in MW-7 ranged from 24.3 ug/l to 40 ug/l. MW-1 contained several individual VOCs at concentrations exceeding NYSDEC Class GA standards, which comprised PCE, TCE, 1,1-DCE and TCA. Among these compounds, TCE exhibited the highest concentrations ranging from 16 ug/l to 55 ug/l. Class GA standards for PCE, cis-1,2-DCE, 1,1-DCE and TCA were exceeded in MW-5, and MW-7 contained PCE, TCE and cis-1,2-DCE at concentrations exceeding NYSDEC Class GA standards. For MW-5, PCE exhibited the highest concentrations, ranging from 3.7 ug/l to 25 ug/l, and for MW-7, cis-1,2-DCE exhibited the highest concentrations, ranging from 15 ug/l to 23 ug/l.

Deeper wells MW-2, MW-3, MW-4 and MW-6 show elevated TVOC concentrations. The maximum TVOC concentration for each of these wells was 1,597.8 ug/l, 2,822.2 ug/l, 3,015.4 ug/l and 761.2 ug/l, respectively. In each of these wells, PCE, TCE, cis-1,2-DCE, 1,1-DCE, TCA, 1,2-DCA, 1,1-DCA and 1,1,2-trichloroethane were detected at concentrations exceeding Class GA standards. Methylene chloride was also detected in wells MW-3 and MW-4 at concentrations exceeding Class GA standards. In MW-2, MW-3 and MW-4, the compounds detected at the highest concentrations were TCE and 1,1-DCE. In MW-2 the maximum detected concentration was 580 ug/l for TCE and 540 ug/l for 1,1-DCE, in MW-3 the maximum detected concentration was 1,200 ug/l for TCE and 900 ug/l for 1,1-DCE, and in MW-4 the maximum detected concentration was 1,000 ug/l for TCE and 1,100 ug/l for 1,1-DCE. In MW-6, 1,1-DCE and TCA were detected at the highest concentrations, at concentrations up to 270 ug/l and

240 ug/l, respectively. The deeper well in the southwesternmost cluster (MW-8) contained only trace levels of VOCs, with TVOCs ranging from 5.1 ug/l to 9.1 ug/l and no individual VOCs detected at a concentration exceeding Class GA standards.

As shown in Table 4-2, wells MW-1 showed a slightly increasing trend, and wells MW-2, MW-3, MW-4 and MW-6 showed slightly decreasing or decreasing trends. The remaining three wells (MW-5, MW-7 and MW-8) showed consistent trends.

During the period covered by this report, MW-9 was sampled only once, in July 2002. At that time, the TVOC concentration in MW-9 was 19.8 ug/l and TCE was detected at a concentration exceeding the Class GA standard.

Natural Attenuation Monitoring Parameters

The following presents the natural attenuation monitoring parameter results for off-site monitoring wells between November 2001 through July 2002. The concentrations of the individual monitoring parameters and Class GA groundwater standards are presented in Appendix D. The ranges of concentrations for the wells are provided in Table 4-3.

In general, a comparison of the four quarterly sample results for wells MW-1 through MW-8 showed concentrations of TOC, alkalinity, chloride, nitrate, sulfate, carbon dioxide and methane to have remained fairly consistent. Total iron was the only parameter detected above the groundwater standard of 0.3 ug/l. The exceedances were sporadic and occurred in most of the wells. Well MW-9, sampled in July 2002, generally showed low concentrations of these parameters.

4.2.4 Bowling Green Estates Water District Supply Wells

Table 4-4 presents the historic TVOC concentrations from 1988 through 2002 for BGE-1 and BGE-2. A graph showing the historic TVOC concentrations during this period for the supply wells is included in Appendix E. In addition, Table 4-5 presents the concentration of the most

Table 4-4

NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
BOWLING GREEN ESTATES WATER DISTRICT SUPPLY WELLS
HISTORIC TOTAL VOLATILE ORGANIC COMPOUND RESULTS

DATE	BGE-1	BGE-2
Feb-88	3	1
May-88	3	0
Aug-88	1	0
Nov-88	2	0
Feb-89	3.2	3
May-89	3	2
Aug-89	13.5	2
Nov-89	1	1
Feb-90	1	0
May-90	1	1
Aug-90	2.5	1
Nov-90	0	0
Feb-91	2	2
May-91	4	2
Aug-91	5	4
Nov-91	3	2
Feb-92	2.5	6.5
May-92	20	0.5
Aug-92	3	9
Nov-92	4	1
Feb-93	1	11.5
May-93	6.5	10.5
Aug-93	3	9
Feb-94	10.5	8.5
May-94	15	4
Aug-94	11	14.5
Nov-94	26.5	7
Feb-95	35.5	9
May-95	44	9
Aug-95	20.5	23
Nov-95	1	18.5
Feb-96	9	4
May-96	44.5	15

Table 4-4 (continued)

NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
BOWLING GREEN ESTATES WATER DISTRICT SUPPLY WELLS
HISTORIC TOTAL VOLATILE ORGANIC COMPOUND RESULTS

DATE	BGE-1	BGE-2
Aug-96	52	25.5
Nov-96	46	10
Feb-97	27	28
May-97	39	23
Aug-97	54	24.5
Nov-97	61	5
Feb-98	32	27
May-98	49	26.5
Aug-98	66	33
Nov-98	58	47.5
Feb-99	65	14.5
May-99	77	34
Aug-99	86	40
Nov-99	22.5	39
Feb-00	76	11.5
May-00	63	39
Aug-00	88	38
Nov-00	69	32
Feb-01	85	50
May-01	86	14
Aug-01	84	45
Nov-01	88	56
Feb-02	91	56
May-02	98	61
Sep-02	88	58

Source: Town of Hempstead Department of Water

Notes:

Results reported in ug/l
BGE-1 – screened 478 to 528 feet bgs
BGE-2 – screened 524 to 584 feet bgs

Table 4-5

NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
BOWLING GREEN ESTATES WATER DISTRICT SUPPLY WELLS
SUMMARY OF SELECTED VOLATILE ORGANIC COMPOUNDS RESULTS –
1999 THROUGH 2002

DATE	BGE-1 (screened from 478 to 528 feet below ground surface)						BGE-2 (screened from 524 to 584 feet below ground surface)					
	PCE	TCE	1,2-DCE	1,1-DCE	TCA	1,1-DCA	PCE	TCE	1,2-DCE	1,1-DCE	TCA	1,1-DCA
Feb. 1999	7	30	1	6	8	2	1	13	U	U	0.5	U
May 1999	6	46	1	6	7	2	3	27	1	1	2	U
Aug. 1999	7	51	2	6	7	2	4	31	1	1	2	U
Nov. 1999	3	5	0.5	3	4	1	4	33	U	1	1	U
Feb. 2000	9	43	1	6	6	2	0.5	11	U	U	U	U
May 2000	7	37	1	4	5	1	3	34	U	1	1	U
Aug. 2000	14	40	1	8	7	2	5	29	1	1	2	U
Nov. 2000	10	38	1	4	5	2	4	26	U	1	1	U
Feb. 2001	13	45	1	6	6	2	5	41	1	1	2	U
May 2001	15	48	1	6	5	2	1	13	U	U	U	U
Sept. 2001	15	47	1	5	4	2	5	35	U	2	2	1
Nov. 2001	17	45	1	5	5	2	7	45	U	1	2	1
Feb. 2002	18	46	1	5	5	2	7	44	1	2	2	U
May 2002	24	47	1	5	5	2	9	47	1	2	2	U
Sept. 2002	24	44	1	4	4	0.5	9	44	1	2	2	U

Source: Data provided by Town of Hempstead Department of Water.

Note: All results are reported in ug/l.

Abbreviations:

PCE: Tetrachloroethene
TCE: Trichloroethene
1,2-DCE: 1,2 Dichloroethene
1,1-DCE: 1,1-Dichloroethene
TCA: 1,1,1-Trichloroethane
1,1-DCA: 1,1-Dichloroethane
U: Undetected

predominant VOCs detected in wells BGE-1 and BGE-2 from February 1999 through September 2002. This period and selected VOC concentrations are presented to provide additional evaluation of the contamination in the supply wells.

During the period between February 1988 and September 2002, TVOCs in well BGE-1 ranged from nondetect to 98 ug/l and TVOCs in well BGE-2 ranged from nondetect to 61 ug/l. The maximum concentration in both wells was detected in May 2002. The predominant compounds detected in both wells are PCE and TCE, with lower concentrations of 1,2-DCE, 1,1-DCE, TCA and 1,1-DCA. Between February 1999 and September 2002, well BGE-1 showed concentrations of PCE and TCE ranging from 3 ug/l to 24 ug/l and 5 ug/l to 48 ug/l, respectively. During the same time period, similar concentrations of PCE ranging from 0.5 ug/l to 9 ug/l, and TCE ranging from 11 ug/l to 47 ug/l, were detected in well BGE-2.

In general, historic TVOC trends in wells BGE-1 and BGE-2 exhibit a generally increasing trend in total VOC concentrations (refer to Appendix E for historical graph).

Section 5

5.0 EVALUATION OF NATURAL ATTENUATION OF THE VOLATILE ORGANIC COMPOUND PLUME

An evaluation was conducted to determine if natural attenuation was occurring in the chlorinated VOC plume migrating from the New Cassel Industrial Area (NCIA). This task included an evaluation of the breakdown or transformation of the chlorinated VOCs, as well as the occurrence and changes in natural attenuation monitoring parameters within the plume.

5.1 Breakdown of Ethanes and Ethenes

A review of the chlorinated VOCs detected at and downgradient of the NCIA reveals that the compounds comprise two general suites of parent and degradation (daughter) products, ethanes and ethenes. These suites showing the general degradation pathways for these are as follows:

1. TCA → 1,1-DCA and/or 1,2-DCA
2. PCE → TCE → cis-1,2-DCE and/or trans-1,2-DCE and/or 1,1-DCE → VC

TCA: 1,1,1-Trichloroethane
1,1-DCA: 1,1-Dichloroethane
1,2-DCA: 1,2-Dichloroethane

PCE: Tetrachloroethene
TCE: Trichloroethene
cis-1,2-DCE: cis-1,2-Dichloroethene
trans-1,2-DCE: trans-1,2-Dichloroethene
1,1-DCE: 1,1- Dichloroethene
VC: Vinyl Chloride

Table 5-1 shows the chlorinated VOCs organized into these ethane and ethene suites. This table also provides the total VOC (TVOC) concentrations and relative percentages for the ethanes and ethenes for the four groundwater monitoring events discussed in this report.

Evaluation of the degradation of the ethane and ethene suite compounds is provided below. The percentages of ethane and ethene compounds relative to the TVOC concentrations for the July 2002 sampling event for each of the degradation suites are provided in cross section

Table 5-1

NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
OFF-SITE VOC CONSTITUENT PERCENTAGES IN GROUNDWATER

	MW-1								MW-2							
	November 2001		January 2002		April 2002		July 2002		November 2001		January 2002		April 2002		July 2002	
Constituent	Concen-tration	% of TVOC	Concen-tration	% of TVOC	Concen-tration	% of TVOC	Concen-tration	% of TVOC	Concen.	% of TVOC	Concen-tration	% of TVOC	Concen-tration	% of TVOC	Concen-tration	% of TVOC
Ethene Suite																
PCE	4.1	9.7	3	10.7	9	10.0	1	1.2	49	4.0	53	5.2	52	5.1	26	6.1
TCE	21	49.8	16	57.1	52	57.8	55	66.3	580	47.7	500	48.6	450	43.9	190	44.9
c-DCE	1.1	2.6	1	3.6	3	3.3	3	3.6	48	3.9	35	3.4	42	4.1	17	4.0
t-DCE	--		--		--		--		--		--		--		--	
1,1-DCE	16	37.9	8	28.6	26	28.9	24	28.9	540	44.4	440	42.8	480	46.9	190	44.9
VC	--		--		--		--		--		--		--		--	
TOTAL	42.2	100	28	100	90	32	83	100	1217	100	1028	100	1024	100	423	100
Ethane Suite																
TCA	7.8	73.6	4	66.7	10	66.7	10	71.4	230	61.5	220	60.8	210	59.7	75	59.1
1,1-DCA	2.8	26.4	2	33.3	5	33.3	4	28.6	140	37.5	140	38.7	140	39.8	52	40.9
1,2-DCA	--		--		--		--		2.2	0.6	--		2	0.6	--	
1,1,2-TCA	--		--		--		--		1.5	0.4	2	0.6	--		--	
TOTAL	10.6	100	6	100	15	100	14	100	373.7	100	362	100	352	100	127	100

	MW-3								MW-4							
	November 2001		January 2002		April 2002		July 2002		November 2001		January 2002		April 2002		July 2002	
Constituent	Concen-tration	% of TVOC	Concen-tration	% of TVOC	Concen-tration	% of TVOC	Concen-tration	% of TVOC	Concen-tration	% of TVOC	Concen-tration	% of TVOC	Concen-tration	% of TVOC	Concen-tration	% of TVOC
Ethene Suite																
PCE	67	3.0	74	3.9	28	3.0	70	4.1	150	6.4	130	7.5	38	3.3	77	6.9
TCE	1200	54.0	1000	53.1	490	52.5	920	54.1	1000	42.9	790	45.6	550	47.4	480	43.0
c-DCE	54	2.4	40	2.1	25	2.7	40	2.4	82	3.5	64	3.7	43	3.7	38	3.4
t-DCE	0.5	0.0	--		--		--		0.8	0.0	--		--		--	
1,1-DCE	900	40.5	770	40.9	390	41.8	670	39.4	1100	47.2	750	43.3	530	45.7	520	46.6
VC	--		--		--		--		--		--		--		--	
TOTAL	2221.5	100	1884	100	933	100	1700	100	2332.8	100	1734	100	1161	100	1115	100
Ethane Suite																
TCA	350	59.6	350	58.1	160	55.2	270	56.0	350	52.2	280	49.7	180	50.0	170	49.4
1,1-DCA	230	39.2	250	41.5	130	44.8	210	43.6	310	46.2	280	49.7	180	50.0	170	49.4
1,2-DCA	5.1	0.9	--		--		--		7	1.0	--		--		--	
1,1,2-TCA	2.1	0.4	2	0.3	--		2	0.4	3.6	0.5	3	0.5	--		4	1.2
TOTAL	587.2	100	602	100	290	100	482	100	670.6	100	563	100	360	100	344	100

NOTES
1. Units are in micrograms per liter
2. Total VOC concentrations are for chlorinated VOCs listed
--: Not detected

ABBREVIATIONS
PCE: Tetrachloroethene
TCE: Trichloroethene
c-DCE: cis-1,2-Dichloroethene
t-DCE: trans-1,2-Dichloroethene
1,1-DCE: 1,1-Drichloroethene
VC: Vinyl Chloride
TCA: 1,1,1-Trichloroethane
1,1-DCA: 1,1-Dichloroethane
1,2-DCA: 1,2-Dichloroethane
1,1,2-TCA: 1,1,2-Trichloroethane

Table 5-1

NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
OFF-SITE VOC CONSTITUENT PERCENTAGES IN GROUNDWATER

	MW-5								MW-6							
	November 2001		January 2002		April 2002		July 2002		November 2001		January 2002		April 2002		July 2002	
Constituent	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC
Ethene Suite																
PCE	3.7	21.5	16	56.1	25	80.6	19	67.9	80	17.2	37	21.0	68	30.9	47	22.8
TCE	2.5	14.5	2	7.0	2	6.5	1	3.6	93	20.0	54	30.7	43	19.5	51	24.8
c-DCE	--		0.5	1.8	1	3.2	6	21.4	22	4.7	13	7.4	9	4.1	9	4.4
t-DCE	--		--		--		--		--		--		--		--	
1,1-DCE	11	64.0	10	35.1	3	9.7	2	7.1	270	58.1	72	40.9	100	45.5	99	48.1
VC	--		--		--		--		--		--		--		--	
TOTAL	17.2	100	28.5	100	31.0	100	28.0	100	465.0	100	176.0	100	220.0	100	206.0	100
Ethane Suite																
TCA	15	90.9	15	88.2	4	83.3	3	100.0	240	82.0	89	71.2	96	74.4	90	75.6
1,1-DCA	1.5	9.1	2	11.8	0.8	16.7	--		52	17.8	36	28.8	33	25.6	29	24.4
1,2-DCA	--		--		--		--		0.8	0.3	--		--		--	
1,1,2-TCA	--		--		--		--		--		--		--		--	
TOTAL	16.5	100	17	100	4.8	100	3	100	292.8	100	125	100	129	100	119	100

	MW-7								MW-8							
	November 2001		January 2002		April 2002		July 2002		November 2001		January 2002		April 2002		July 2002	
Constituent	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC
Ethene Suite																
PCE	5.2	17.2	6	21.8	4	17.6	6	17.6	1.1	28.2	1	17.2	1	25.6	0.8	19.5
TCE	2	6.6	3	10.9	3	13.2	8	23.5	1.1	28.2	2	34.5	0	0.0	0.8	19.5
c-DCE	23	76.2	18	65.5	15	66.1	18	52.9	1.7	43.6	2	34.5	2	51.3	2	48.8
t-DCE	--		--		--		--		--		--		0.9	23.1	--	
1,1-DCE	--		0.5	1.8	0.7	3.1	2	5.9	--		0.8	13.8	--		0.5	12.2
VC	--		--		--		--		--		--		--		--	
TOTAL	30.2	100	27.5	100	22.7	100	34	100	3.9	100	5.8	100	3.9	100	4.1	100
Ethane Suite																
TCA	--		0.5	33.3	0.6	37.5	2	50.0	0.7	35.0	0.7	25.9	0.8	28.6	--	
1,1-DCA	0.7	100.0	1	66.7	1	62.5	2	50.0	1.3	65.0	2	74.1	2	71.4	1	100.0
1,2-DCA	--		--		--		--		--		--		--		--	
1,1,2-TCA	--		--		--		--		--		--		--		--	
TOTAL	0.7	100	1.5	100	1.6	100	4	100	2	100	2.7	100	2.8	100	1	100

NOTES

1. Units are in micrograms per liter
2. Total VOC concentrations are for chlorinated VOCs listed

--: Not detected

ABBREVIATIONS

PCE: Tetrachloroethene
TCE: Trichloroethene
c-DCE: cis-1,2-Dichloroethene
t-DCE: trans-1,2-Dichloroethene
1,1-DCE: 1,1-Dichloroethene
VC: Vinyl Chloride
TCA: 1,1,1-Trichloroethane
1,1-DCA: 1,1-Dichloroethane
1,2-DCA: 1,2-Dichloroethane
1,1,2-TCA: 1,1,2-Trichloroethane

Table 5-1

NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
OFF-SITE VOC CONSTITUENT PERCENTAGES IN GROUNDWATER

	MW-9								EW-1B							
	November 2001		January 2002		April 2002		July 2002		November 2001		January 2002		April 2002		July 2002	
Constituent	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC
Ethene Suite																
PCE							1	5.6	630	79.4	1000	79.9	780	80.1	640	81.0
TCE							15	84.3	66	8.3	120	9.6	91	9.3	67	8.5
c-DCE							0.8	4.5	58	7.3	87	6.9	64	6.6	44	5.6
t-DCE	NOT	SAMPLED	NOT	SAMPLED	NOT	SAMPLED	--		0.6	0.1	--		--		0.8	0.1
1,1-DCE							1	5.6	39	4.9	45	3.6	39	4.0	38	4.8
VC							--		--		--		--		--	
TOTAL							17.8	100	793.6	100	1252	100	974	100	789.8	100
Ethane Suite																
TCA							2	100.0	40	91.3	59	100.0	52	83.9	41	85.4
1,1-DCA							--		3.8	8.7	--		10	16.1	7	14.6
1,2-DCA							--		--		--		--		--	
1,1,2-TCA							--		--		--		--		--	
TOTAL							2	100	43.8	100	59	100	62	100	48	100

	EW-1C								EW-2B							
	November 2001		January 2002		April 2002		July 2002		November 2001		January 2002		April 2002		July 2002	
Constituent	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC
Ethene Suite																
PCE	--		0.6	4.4	5	25.0	--		20	6.9	21	9.6	17	10.1	21	13.8
TCE	12	100.0	13	95.6	15	75.0	13	100.0	140	48.3	130	59.6	100	59.5	84	55.3
c-DCE	--		--		--		--		36	12.4	25	11.5	19	11.3	18	11.8
t-DCE	--		--		--		--		--		--		--		--	
1,1-DCE	--		--		--		--		43	14.8	10	4.6	8	4.8	--	
VC	--		--		--		--		51	17.6	32	14.7	24	14.3	29	19.1
TOTAL	12	100	13.6	100	20	100	13	100	290	100	218	100	168	100	152	100
Ethane Suite																
TCA	--		--		--		--		85	36.1	16	40.0	8	45.7	5	50.0
1,1-DCA	--		--		--		--		150	63.6	24	60.0	9	51.4	5	50.0
1,2-DCA	--		--		--		--		0.7	0.3	--		0.5	2.9	--	
1,1,2-DCA	--		--		--		--		--		--		--		--	
TOTAL	--	--	--		--		--		235.7	100	40	100	17.5	100	10	100

NOTES

1. Units are in micrograms per liter
2. Total VOC concentrations are for chlorinated VOCs listed

--: Not detected

ABBREVIATIONS

PCE: Tetrachloroethene
TCE: Trichloroethene
c-DCE: cis-1,2-Dichloroethene
t-DCE: trans-1,2-Dichloroethene
1,1-DCE: 1,1-Drichloroethene
VC: Vinyl Chloride
TCA: 1,1,1-Trichloroethane
1,1-DCA: 1,1-Dichloroethane
1,2-DCA: 1,2-Dichloroethane
1,1,2-TCA: 1,1,2-Trichloroethane

Table 5-1

NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
OFF-SITE VOC CONSTITUENT PERCENTAGES IN GROUNDWATER

	EW-2C								BGE-1							
	November 2001		January 2002		April 2002		July 2002		November 2001		January 2002		April 2002		July 2002	
Constituent	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC
Ethene Suite																
PCE	--		--		--		1	100.0	17	25.0	18	25.7	24	31.2	24	32.9
TCE	--		--		--		--		45	66.2	46	65.7	47	61.0	44	60.3
c-DCE	--		--		--		--		1	1.5	1	1.4	1	1.3	1	1.4
t-DCE	--		--		--		--		--		--		--		--	
1,1-DCE	--		--		--		--		5	7.4	5	7.1	5	6.5	4	5.5
VC	--		--		--		--		--		--		--		--	
TOTAL	--		--		--		1	100	68	100	70	100	77	100	73	100
Ethane Suite																
TCA	--		--		--		--		5	62.5	5	62.5	5	62.5	4	80.0
1,1-DCA	--		--		--		--		2	25.0	2	25.0	2	25.0	0.5	10.0
1,2-DCA	--		--		--		--		1	12.5	1	12.5	1	12.5	0.5	10.0
1,1,2-DCA	--		--		--		--		--		--		--		--	
TOTAL	--		--		--		--		8	100	8	100	8	100	5	100

	BGE-2							
	November 2001		January 2002		April 2002		July 2002	
Constituent	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC	Concentration	% of TVOC
Ethene Suite								
PCE	7	13.0	7	13.0	9	15.3	9	16.1
TCE	45	83.3	44	81.5	47	79.7	44	78.6
c-DCE	1	1.9	1	1.9	1	1.7	1	1.8
t-DCE	--		--		--		--	
1,1-DCE	1	1.9	2	3.7	2	3.4	2	3.6
VC	--		--		--		--	
TOTAL	54	100	54	100	59	100	56	100
Ethane Suite								
TCA	2	66.7	2	100.0	2	100.0	2	100.0
1,1-DCA	1	33.3	--		--		--	
1,2-DCA	--		--		--		--	
1,1,2-DCA	--		--		--		--	
TOTAL	3	100	2	100	2	100	2	100

NOTES

1. Units are in micrograms per liter
2. Total VOC concentrations are for chlorinated VOCs listed in the table

--: Not detected

ABBREVIATIONS

PCE: Tetrachloroethene
TCE: Trichloroethene
c-DCE: cis-1,2-Dichloroethene
t-DCE: trans-1,2-Dichloroethene
1,1-DCE: 1,1-Drichloroethene
VC: Vinyl Chloride
TCA: 1,1,1-Trichloroethane
1,1-DCA: 1,1-Dichloroethane
1,2-DCA: 1,2-Dichloroethane
1,1,2-TCA: 1,1,2-Trichloroethane

on Figures 5-1 and 5-2, respectively. The cross sections also include the TVOC concentration contours for the July 2002 sampling event.

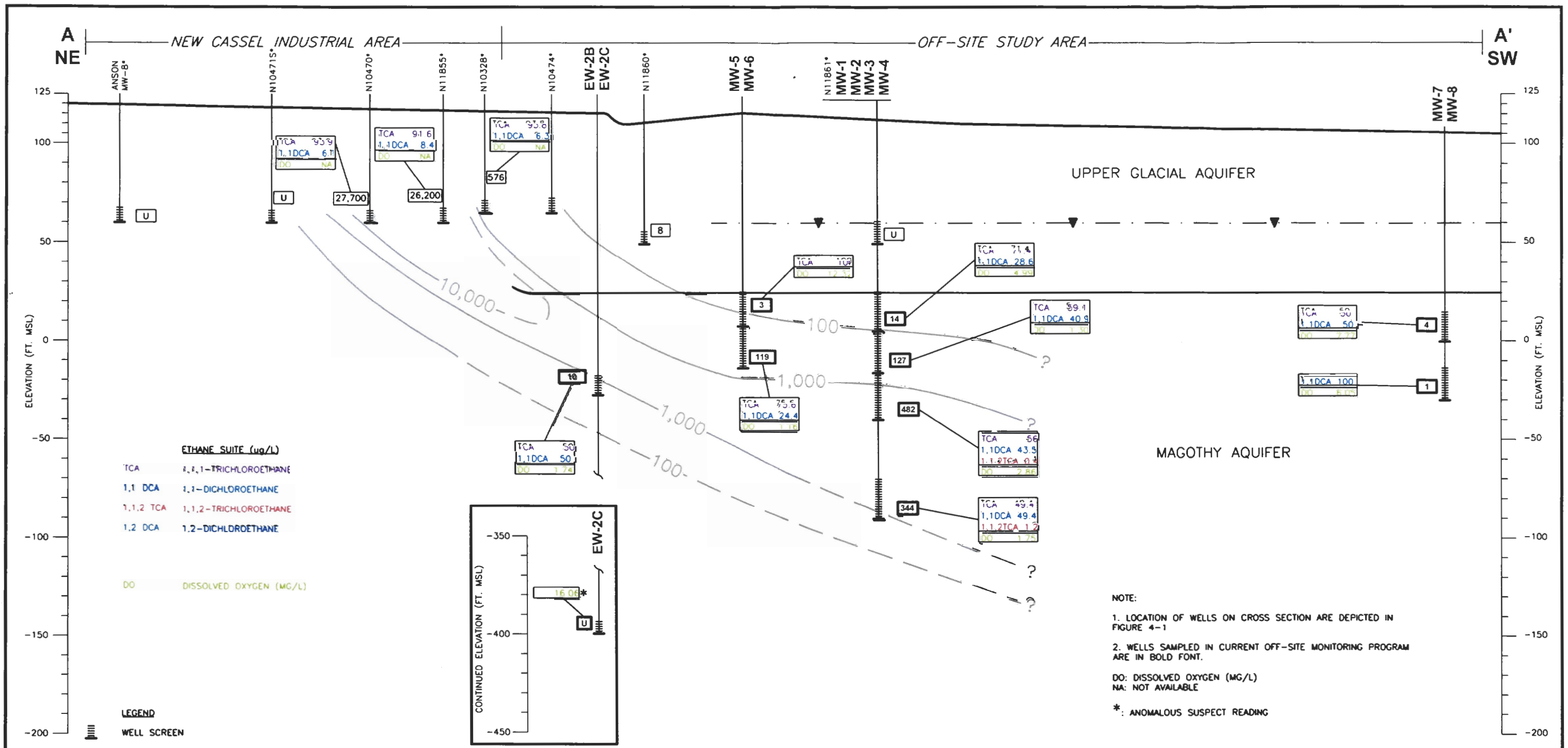
To provide data on the VOCs detected in groundwater upgradient of the study area, groundwater quality results from the eight most-impacted monitoring wells within the NCIA, as reported in the September 2000 NCIA RI/FS Report were evaluated. These data are the most recent results in the 2000 RI/FS Report (from April 1999, August, 1999 and January, 2000). The data for three of these wells are present on the cross section in Figures 5-1 and 5-2, and summarized in Table 5-2. The locations of the RI/FS wells within the NCIA are shown on Figure 5-3. On-site groundwater quality data were summarized on figures from the RI/FS Report, which are included in Appendix F.

Ethane Compound Suite

The occurrence and distribution of ethane compounds in the VOC plume indicate that degradation is occurring. The parent compound TCA is the primary ethane species constituent detected in on-site wells, accounting for between 91.6 percent and 98.5 percent of the total ethane concentrations in the three wells with highest TVOC concentrations (N11855, N10328 and N10470), as shown on Table 5-2 and Figure 5-1. Breakdown daughter product 1,1-DCA accounted for between approximately 1.5 percent and 8.4 percent of the total ethane concentrations in these wells within the NCIA. In off-site groundwater, the relative percentage of TCA and the relative percentage of 1,1-DCA generally increase relative to the on-site wells, indicating the degradation of TCA to 1,1-DCA. This is shown on Figure 5-1 which presents the results from the July 2002 sampling event for the off-site wells.

Ethene Compound Suite

Degradation of the ethene compounds within the plume is not as apparent as with the ethanes. The predominant ethene compounds detected in on-site wells are breakdown products 1,1-DCE and 1,2-DCE at relative concentrations up to 98.6 percent to 94 percent, respectively



NOTE:

1. LOCATION OF WELLS ON CROSS SECTION ARE DEPICTED IN FIGURE 4-1

2. WELLS SAMPLED IN CURRENT OFF-SITE MONITORING PROGRAM ARE IN BOLD FONT.

DO: DISSOLVED OXYGEN (MG/L)
NA: NOT AVAILABLE

*: ANOMALOUS SUSPECT READING

HORIZONTAL SCALE: 1"=400'
VERTICAL SCALE: 1"=50'

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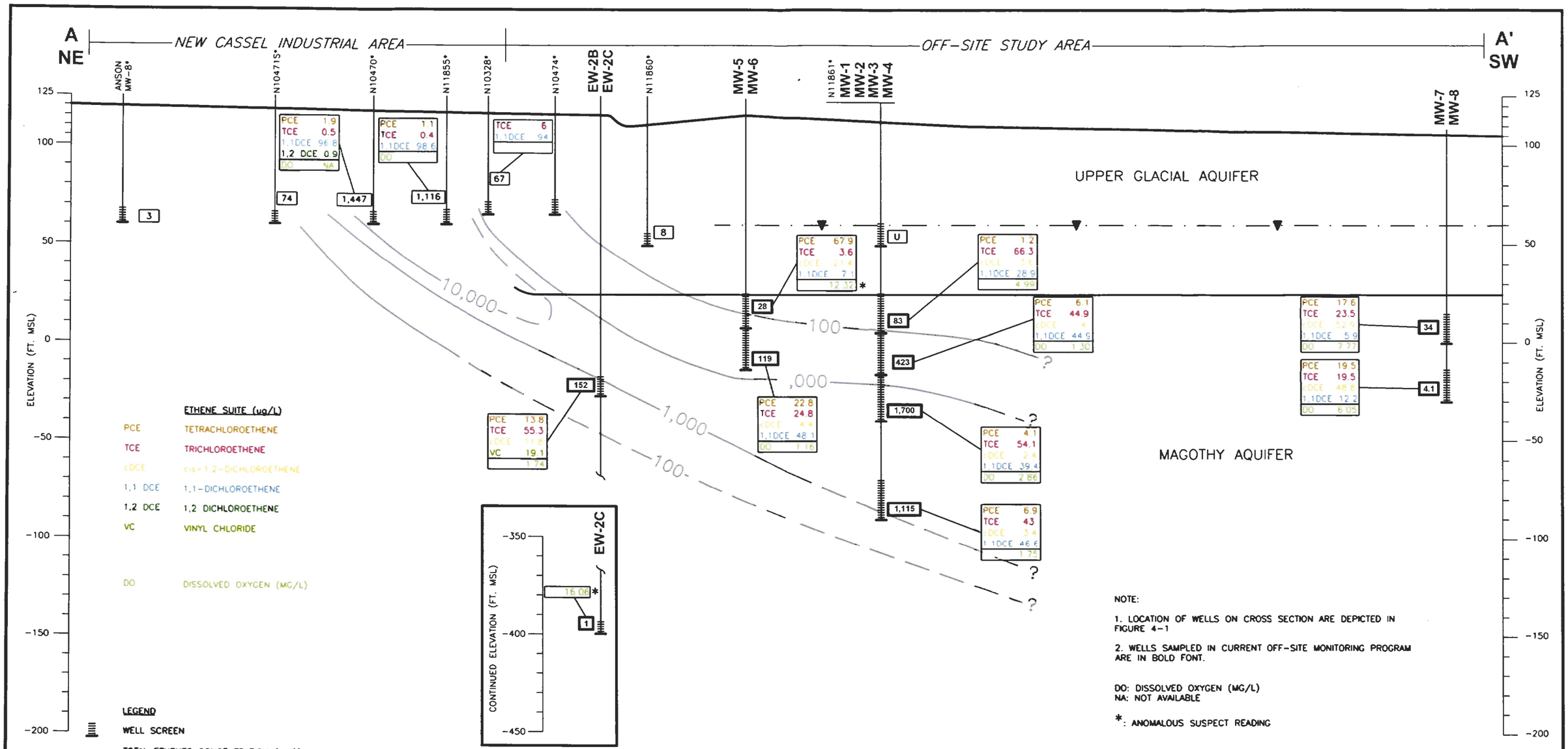
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM

PERCENTAGES OF ETHANE CONSTITUENTS IN GROUNDWATER

FIGURE 5-1



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NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM

PERCENTAGES OF ETHENE CONSTITUENTS IN GROUNDWATER

FIGURE 5-2

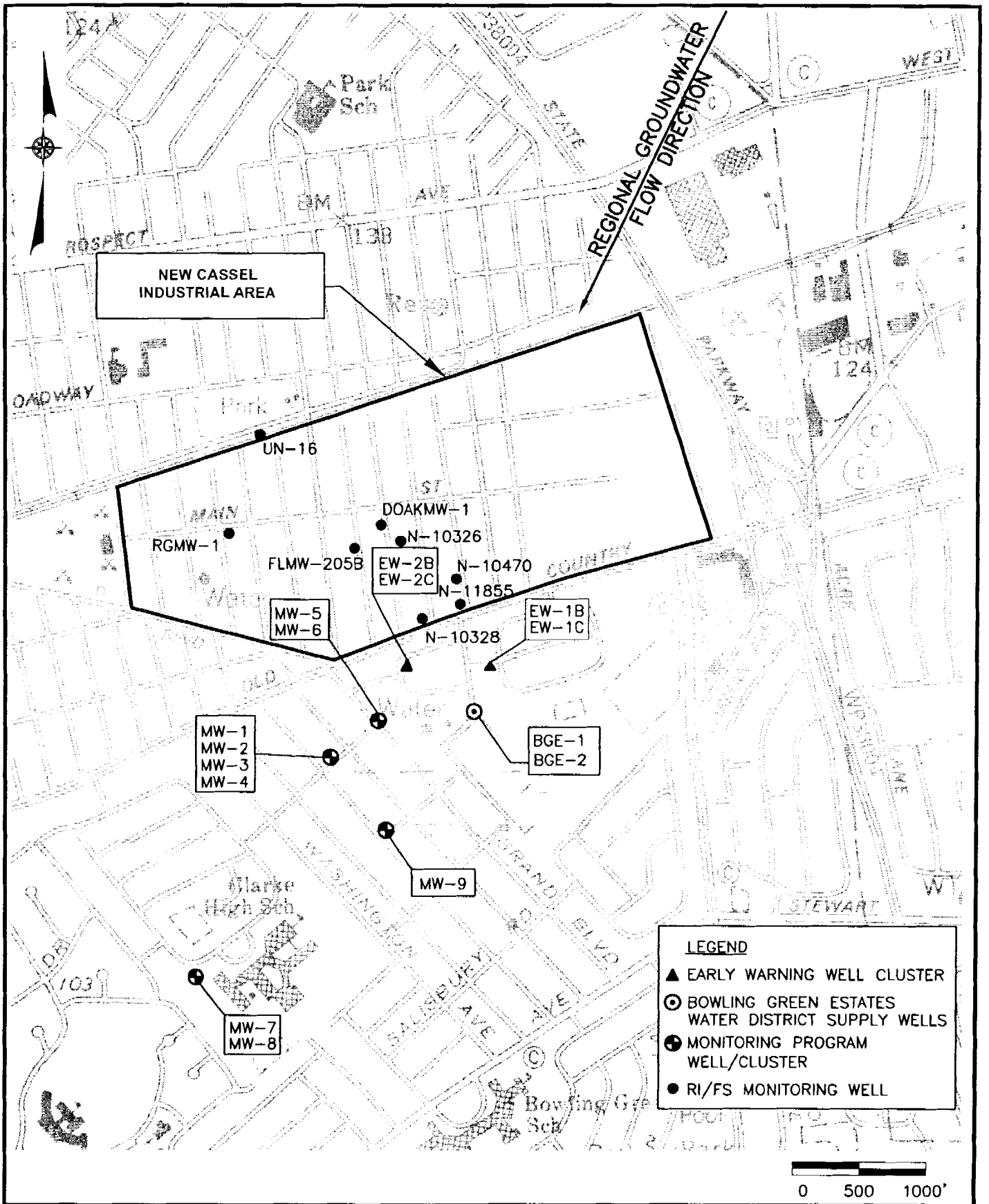
Table 5-2

NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
ON-SITE VOC CONSTITUENT PERCENTAGES IN GROUNDWATER

	N-10328						N-10470						N-11855					
	Apr-99		Aug-99		Jan-00		Apr-99		Aug-99		Jan-00		Apr-99		Aug-99		Jan-00	
Constituent	Concen-tration	% of TVOC	Concen-tration	% of TVOC	Concen-tration	% of TVOC	Concen-tration	% of TVOC	Concen-tration	% of TVOC	Concen-tration	% of TVOC	Concen-tration	% of TVOC	Concen-tration	% of TVOC	Concen-tration	% of TVOC
Ethene Suite																		
PCE		0.0	2	3.2		3.2	51	10.3	27	1.9	29	15.3	--		--		12	1.1
TCE	4	6.0	2	3.2	2	3.2	8	1.6	7	0.5	10	5.3	--		2	9.1	4	0.4
1,1-DCE			58	93.5	60	93.5	420	84.5	1400	96.8	150	79.4	13	100.0	20	90.9	1100	98.6
1,2-DCE	63	94.0	--		--		18	3.6	13	0.9	--		--		--		--	
VC	--		--		--		--		--		--		--		--		--	
TOTAL	67	100	62	100	62	100	497	100	1447	100	189	100	13	100	22	100	1116	100
Ethane Suite																		
TCA	540	93.8	320	92.0	290	92.0	9600	95.4	26000	93.9	1500	94.1	190	97.9	320	98.5	24000	91.6
1,1-DCA	36	6.3	28	8.0	27	8.0	460	4.6	1700	6.1	94	5.9	4	2.1	5	1.5	2200	8.4
TOTAL	576	100	348	100	317	100	10060	100	27700	100	1594	100	194	100	325	100	26200	100

NOTES
1. Units are in ug/l
2. Total VOC concentrations are for chlorinated VOCs listed
--: Not detected

ABBREVIATIONS
PCE: Tetrachloroethene
TCE: Trichloroethene
1,1-DCE: 1,1-Dichloroethene
1,2-DCE: 1,2-Dichloroethene (comprised of cis and trans isomers)
VC: Vinyl Chloride



NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM

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LOCATIONS OF ON-SITE GROUNDWATER MONITORING WELLS

FIGURE 5-3

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(see Table 5-2 and Figure 5-2). Parent products PCE and TCE were present at maximum percentages of 15.3 percent and 9.1 percent, respectively.

In the offsite downgradient wells (Table 5-1), PCE and TCE are the predominant ethene compounds detected with relative percentages up to 80.6 percent and 84.3 percent, respectively. Relative to the on-site wells, percentages of 1,1-DCE are lower in the offsite downgradient wells varying between 1.8 percent and 64 percent.

An indication of the degradation of ethene suite compounds is the presence of breakdown products cis-1,2-DCE and VC. Breakdown product cis-1,2-DCE is present in the downgradient off-site wells at percentages ranging from 1.8 percent to 76.2 percent. Breakdown product VC is present only in early warning monitoring well EW-2B at percentages between 14.3 and 19.1 of the total ethene concentration.

The varying occurrence and distribution of the parent and breakdown ethene compounds between the NCIA and the downgradient wells may be the result of the many contaminant sources in the NCIA, different periods and amounts of contaminant releases and/or overlapping plumes.

5.2 Natural Attenuation Parameters

A list of parameters to be monitored to evaluate natural attenuation (NA) was presented in the RI/FS Report. These parameters were analyzed during the 2001/2002 monitoring program and included laboratory analysis of iron, total organic carbon (TOC), alkalinity, chloride, nitrate, sulfate, carbon dioxide and methane, and field measurement of pH, dissolved oxygen and Eh.

Due to the limited historic data available for the natural attenuation parameters in the on-site wells, the relative variation for these parameters was evaluated for the off-site monitoring wells only. Table 5-3 presents the values of the NA monitoring parameters for the July 2002 sampling event for the early warning wells and off-site monitoring wells. This table also includes the TVOC concentrations in the wells for the same sampling period.

Table 5-3

NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
NATURAL ATTENUATION PARAMETER MONITORING RESULTS - JULY 2002

Sample Identification	EW-1B	EW-1C	EW-2B	EW-2C
Sample Depth, ft	154-164	506-516	132-142	504-514
Date of Collection	07/19/02	07/19/02	07/19/02	07/19/02
Laboratory Results				
Total Iron	0.038	0.316	U	U
Total Organic Carbon	2.7	1.4	2	U
Alkalinity	18	11	13	10
Chloride	31.2	13.7	36.8	6.8
Nitrate	6.4	6.3	2.3	1.9
Sulfate	21.9	U	9.5	U
Carbon Dioxide	64	17	67	14
Methane	U	U	0.056	U
pH	5.59	5.98	5.49	5.88
Dissolved Oxygen	1.42	11.07	1.74	16.06
Eh	305	263	330	267
TVOC	837.8	13	162	1

Sample Identification	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9
Sample Depth, ft	130-150	110-130	130-150	180-200	90-110	110-130	90-110	120-140	305-315
Date of Collection	07/16/02	07/16/02	07/16/02	07/16/02	07/17/02	07/17/02	07/16/02	07/17/02	07/17/02
Laboratory Results									
Total Iron	U	0.254	3.95	U	U	0.061	U	**13.2**	0.027
Total Organic Carbon	2.1	2.6	2.3	2.4	1.8	1.9	1.4	2.2	1.9
Alkalinity	U	27	15	19	17	24	U	42	24
Chloride	59.7	36.6	37.6	46.9	66.7	**101**	22.7	24.7	**101**
Nitrate	5.3	5.1	5.1	9.2	4.9	5.2	6.3	1.7	5.2
Sulfate	29.4	18.9	18.9	4.4	20.5	21.3	31.1	19.6	21.3
Carbon Dioxide	U	83	83	71	49	62	U	52	62
Methane	U	0.042	**0.14**	0.002	U	U	U	**0.16**	U
Field Measurements									
pH	4.73	5.47	5.09	5.41	5.68	5.87	5.05	5.99	10.00
Dissolved Oxygen	4.99	1.3	2.86	1.75	12.32	1.16	7.77	6.05	6.81
Eh	358	231	146	233	370	280	413	51	207
TVOC	105	550	2182	1459	31	325	38	5.1	19.8

NOTES:
1. Units are mg/l for laboratory results and dissolved oxygen, millivolts for pH, and ug/l for TVOC

ABBREVIATIONS:
U: Compound analyzed for but not detected
TVOC: Total volatile organic compounds
101: Value varies at least one order-of-magnitude from average value of well sample results

Unlike the relationships between parent and daughter compounds, the distribution and relative variation of NA parameters within the off-site VOC plume do not indicate that significant NA was occurring during 2001/2002. However, some relationships between parameters that were identified are described below and shown in Table 5-3.

NA parameters which were detected at an order-of-magnitude above the average concentration for all wells included chloride, iron, methane and dissolved oxygen. Values for these parameters for the July 2002 sampling event are shown in bold font in Table 5-3, and are discussed below.

Chloride values were elevated (101 mg/l) in wells MW-6 and MW-9 which had relatively low TVOC concentrations of 325 ug/l and 19.8 ug/l, respectively. Chloride is an end product of chlorinated VOC degradation. In wells MW-3 and MW-8, iron was elevated (3.95 mg/l and 13.2 mg/l, respectively) and methane concentrations in these wells were elevated 0.14 mg/l and 0.16 mg/l, respectively. The average concentrations for these parameters in the off-site wells were 45 mg/l, 1.3 mg/l and 0.03 mg/l, respectively. TVOC concentrations in these wells were highly varied with concentrations of 2,182 ug/l and 5.1 ug/l, respectively.

Of the natural attenuation parameters, the concentrations and distribution of dissolved oxygen provide the most definitive pattern in the groundwater. The dissolved oxygen results for the July 2002 sampling event are shown on Figures 5-1 and 5-2. Lower dissolved oxygen concentrations (between 1.16 mg/l and 2.86 mg/l) were associated with wells where TVOC concentrations were above 500 ug/l.

The United States Environmental Protection Agency (USEPA) 1998 document entitled, Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water, was used to aid in determining whether conditions that could support NA processes are present within the off-site plume. Based on information in this document, it appears that significant biodegradation of chlorinated VOCs is not occurring in the off-site plume for the following reasons:

- The groundwater downgradient of the NCIA is aerobic as defined by the USEPA (dissolved oxygen greater than 0.5 mg/l) and reductive dechlorination is most likely to occur in anaerobic environments;

- The NCIA chlorinated VOC plume exhibits Type 3 plume behavior, which is defined by the USEPA as a plume where the most significant natural attenuation mechanisms for PCE, TCE, 1,1-DCE and 1,2-DCE are advection, dispersion and sorption rather than biodegradation; and

- Detected chloride concentrations are not consistent with the TVOC concentrations, since elevated chloride concentrations are typically associated with reductive dechlorination of ethenes and ethanes, yet elevated chloride concentrations were detected in wells with relatively low TVOC concentrations.

Section 6

6.0 CONCLUSIONS

The conclusions resulting from the September 2001 through July 2002 Off-site Groundwater Monitoring and Assessment Program for the New Cassel Industrial Area (NCIA) are provided below.

Groundwater Quality

- Groundwater south of the NCIA continues to be impacted by VOCs, primarily chlorinated VOCs migrating from the NCIA.
- Plume depth increases with distance from the NCIA due to downward flow gradients and influences of pumping of the Bowling Green Estates Water District supply wells, as well as the densities of the VOCs of concern which are greater than water.
- The most highly contaminated portion of the plume (depth of 110 to 200 feet below ground surface and approximately 700 feet downgradient of the NCIA) is showing improvement in groundwater quality.
- The downgradient extent of the plume has not been delineated.
- The Bowling Green Estates Water District supply wells have historically been and continue to be impacted by VOCs from the NCIA. Both supply wells show generally increasing trends in TVOCs. However, concentrations during September 2001 through July 2002 remained stable.
- The TVOC concentrations currently detected in the Bowling Green Estates Water District supply wells (less than 100 ug/l in each well) are significantly less than the maximum influent concentration for the treatment system of 1,200 ug/l.

Degradation of the VOC Plume

- Several plumes with multiple sources complicate the evaluation of natural attenuation.

Ethane Compound Suite

- The lower concentrations of TCA and increased concentrations of degradation product 1,1-DCA in the off-site downgradient wells as compared to on-site concentrations indicate that TCA is being degraded.

Ethene Compound Suite

- The presence of breakdown products cis-1,2-DCE and vinyl chloride indicate that breakdown of PCE and TCE is likely occurring in off-site groundwater, at least locally.

Section 7

7.0 RECOMMENDATIONS

Based on an assessment of the groundwater sampling results from the four early warning wells and the nine off-site monitoring wells for the period of September 2001 through July 2002, the following recommendations are made for future monitoring and evaluation of groundwater quality downgradient of the New Cassel Industrial Area (NCIA).

- The existing four early warning wells (EW-1B, EW-1C, EW-2B and EW-2C) and the existing off-site monitoring wells (MW-1 through MW-9) should continue to be sampled on a quarterly basis to provide early detection of VOC contamination upgradient of the Bowling Green Estates Water District supply wells and provide groundwater quality and assessment of VOC contamination downgradient of the NCIA. The wells should continue to be analyzed for VOCs and natural attenuation monitoring parameters as defined in the current Off-site Groundwater Monitoring and Assessment Program.

- After another year of monitoring, the natural attenuation list of parameters should be evaluated for reduction.

- Construction and sampling of vertical profile temporary and/or permanent wells should be considered to delineate the off-site downgradient extent of VOC contamination present in the deeper wells of the central off-site well cluster (MW-1 through MW-4).

Appendix A

APPENDIX A

SUMMARY OF SAMPLE FIELD PARAMETER VALUES

APPENDIX A

NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
SUMMARY OF SAMPLE FIELD PARAMETER VALUES

Well Number	Dates	pH (standard units)	Temperature C°	Specific Conductance (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/l)	Eh (mv)
EW-1B	9/01	5.36	17.0	0.253	2.5	1.38	283
	1/02	5.19	14.2	0.253	5	4.43	274
	4/02	5.30	15.3	0.267	6	3.01	220
	7/02	5.59	17.4	0.252	3.9	1.42	305
EW-1C	9/01	5.35	12.6	0.120	2	7.22	286
	1/02	5.54	12.2	0.123	2	9.71	252
	4/02	5.61	12.5	0.127	2.5	7.80	194
	7/02	5.98	14.0	0.126	13.2	11.07	263
EW-2B	9/01	5.42	17.1	0.209	2.2	3.50	250
	1/02	5.10	15.0	0.196	9	4.52	258
	4/02	5.19	14.8	0.204	0	2.95	240
	7/02	5.49	16.8	0.205	3.4	1.74	330
EW-2C	9/01	5.61	13.0	0.061	10	5.71	240
	1/02	5.67	12.9	0.061	2	9.40	208
	4/02	5.71	12.7	0.063	7	7.11	169
	7/02	5.88	14.3	0.064	26	16.06	267
MW-1	11/01	4.99	16.7	0.272	2	4.93	346
	1/02	4.82	15.3	0.275	5.8	6.17	298
	4/02	5.24	16.8	0.298	9.6	4.69	268
	7/02	4.73	18.7	0.339	1	4.99	358
MW-2	11/01	5.35	17.2	0.296	4.7	2.68	203
	1/02	5.28	15.8	0.281	3	3.65	179
	4/02	5.53	16.7	0.294	5	3.70	135
	7/02	5.47	17.1	0.288	2	1.30	231
MW-3	11/01	5.16	17.2	0.270	3	3.31	63
	1/02	5.26	15.9	0.246	5	3.41	86
	4/02	5.08	16.7	0.230	10.5	3.45	100
	7/02	5.09	17.5	0.246	17.5	2.86	146
MW-4	11/01	5.37	16.8	0.298	2.3	3.33	252
	1/02	5.17	15.1	0.284	1	3.58	216
	4/02	4.85	16.3	0.294	4.9	3.12	304
	7/02	5.41	18.0	0.293	1	1.75	233

APPENDIX A (continued)

NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
SUMMARY OF SAMPLE FIELD PARAMETER VALUES

Well Number	Dates	pH (standard units)	Temperature C°	Specific Conductance (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/l)	Eh (mv)
MW-5	11/01	5.07	16.0	0.290	6.7	6.58	385
	1/02	5.20	15.0	0.304	5	7.53	366
	4/02	5.28	15.0	0.350	1	7.59	260
	7/02	5.68	17.6	0.328	7	12.32	370
MW-6	11/01	5.64	16.4	0.548	6.8	2.52	263
	1/02	5.42	15.3	0.496	8	3.99	232
	4/02	5.38	15.1	0.495	1.3	2.91	244
	7/02	5.87	17.5	0.489	6.5	1.16	280
MW-7	11/01	4.88	14.4	0.226	10.6	5.04	323
	1/02	4.74	13.8	0.207	9	6.24	328
	4/02	5.10	14.5	0.207	6.9	6.10	321
	7/02	5.05	15.3	0.216	3.1	7.77	413
MW-8	11/01	5.08	14.5	0.248	19.2	6.05	51
	1/02	5.64	13.0	0.259	1	5.23	70
	4/02	6.09	14.6	0.289	23.8	4.08	8
	7/02	5.99	15.7	0.260	19	6.05	51
MW-9	7/02	10.00	15.0	0.233	7.5	6.81	207

Notes:

C° - Celsius
ms/cm - millisiemens/centimeter
NTU - Nephelometric Turbidity Unit
mv - millivolt
mg/l - milligrams per liter

Appendix B

APPENDIX B

EARLY WARNING WELL AND OFF-SITE MONITORING WELL VOLATILE ORGANIC COMPOUND RESULTS

APPENDIX B
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
MONITORING WELL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

Sample Identification	EW-1B	EW-1B	EW-1B	EW-1B	Contract	NYSDEC Class GA
Sample Depth, ft	154-164	154-164	154-164	154-164	Required	Groundwater
Date of Collection	09/25/01	01/28/02	04/25/02	07/18/02	Detection	Standard or
Dilution Factor	1.0	50.0	50.0	60.2	Limit	Guidance Value
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	0.5	5 ST
Chloromethane	U	U	U	U	0.5	5 ST
Vinyl Chloride	U	U	U	U	0.5	2 ST
Bromomethane	U	U	U	U	0.5	5 ST
Chloroethane	U	U	U	U	0.5	5 ST
Fluorotrichloromethane	U	U	U	U	0.5	5 ST
1,1-Dichloroethene	39	45	39	38	0.5	5 ST
Methylene Chloride	U	26	U	U	0.5	5 ST
trans-1,2-Dichloroethene	0.6	U	U	0.8	0.5	5 ST
1,1-Dichloroethane	3.8	U	10	7	0.5	5 ST
2,2-Dichloropropane	**	U	U	U	0.5	5 ST
cis-1,2-Dichloroethene	58 **D	87	64 D	44 D	0.5	5 ST
Chloroform	U	U	0.3 J	U	0.5	7 ST
Bromochloromethane	U	U	U	U	0.5	5 ST
1,1,1-Trichloroethane	40	59	52 D	41 D	0.5	5 ST
1,1-Dichlorpropene	U	U	U	U	0.5	5 ST
Carbon Tetrachloride	U	U	U	U	0.5	5 ST
1,2-Dichloroethane	U	U	U	U	0.5	0.6 ST
Trichloroethene	66 D	120	91 D	67 D	0.5	5 ST
1,2-Dichloropropane	U	U	U	U	0.5	1 ST
Bromodichloromethane	U	U	U	U	0.5	50GV
Dibromomethane	U	U	U	U	0.5	5 ST
cis-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
trans-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
1,1,2-Trichloroethane	U	U	U	U	0.5	1 ST
1,3-Dichloropropane	U	U	U	U	0.5	5 ST
Tetrachloroethene	630 D	1000	780 D	640 D	0.5	5 ST
Dibromochloromethane	U	U	U	U	0.5	50GV
Chlorobenzene	U	U	U	U	0.5	5 ST
1,1,1,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
Bromoform	U	U	U	U	0.5	50GV
1,1,2,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
1,2,3-Trichloropropane	U	U	U	U	0.5	0.04 ST
Bromobenzene	U	U	U	U	0.5	5 ST
1,3-Dichlorobenzene	1.1	U	U	2	0.5	3 ST
1,4-Dichlorobenzene	0.7	U	0.8	0.9	0.5	3 ST
1,2-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2,4-Trichlorobenzene	U	U	U	U	0.5	5 ST
Hexchlorobutadiene	U	U	U	U	0.5	0.5 ST
1,2,3-Trichlorobenzene	U	U	U	U	0.5	5 ST
Methyl-tert-butyl ether	U	U	U	U	0.5	----
Benzene	U	U	U	U	0.5	1 ST
Toluene	U	U	U	U	0.5	5 ST
Ethylbenzene	U	U	U	U	0.5	5 ST
m-Xylene	U	U	U	U	0.5	5 ST
p-Xylene	U	U	U	U	0.5	5 ST
o-Xylene	U	U	U	U	0.5	5 ST
Styrene	U	U	U	U	0.5	5 ST
Isopropylbenzene (Cumene)	U	U	U	U	0.5	5 ST
n-Propylbenzene	U	U	U	U	0.5	5 ST
1,3,5-Trimethylbenzene	U	U	U	U	0.5	5 ST
2-Chlorotoluene	U	U	U	U	0.5	5 ST
4-Chlorotoluene	U	U	U	U	0.5	5 ST
tert-Butylbenzene	U	U	U	U	0.5	5 ST
1,2,4-Trimethylbenzene	U	U	U	U	0.5	5 ST
sec-Butylbenzene	U	U	U	U	0.5	5 ST
p-Isopropyltoluene(p-Cymene)	U	U	U	U	0.5	5 ST
n-Butylbenzene	U	U	U	U	0.5	5 ST
Total VOCs	839.2	1337	1037.1	840.7		----

QUALIFIERS:
U: Compound analyzed for but not detected
J: Compound found at a concentration below the CRDL, value estimated
**: Result reported as a sum of 2,2 -dichloropropane and cis-1,2-dichloroethene
E: Compound concentration exceeds instrument calibration range, value estimated
D: Result taken from reanalysis at a secondary dilution

NOTES:
*: Value pertains to the sum of the isomers
ST: Standard
GV: Guidance Value
----: Not established
Indicates value exceeds NYSDEC Class GA groundwater standard or guidance value

APPENDIX B
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
MONITORING WELL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

Sample Identification	EW-1C	EW-1C	EW-1C	EW-1C	Contract	NYSDEC Class GA
Sample Depth, ft	506-516	506-516	506-516	506-516	Required	Groundwater
Date of Collection	09/25/01	01/28/02	04/25/02	07/18/02	Detection	Standard or
Dilution Factor	1.0	1.0	1.0	1.0	Limit	Guidance Value
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	0.5	5 ST
Chloromethane	U	U	U	U	0.5	5 ST
Vinyl Chloride	U	U	U	U	0.5	2 ST
Bromomethane	U	U	U	U	0.5	5 ST
Chloroethane	U	U	U	U	0.5	5 ST
Fluorotrichloromethane	U	U	U	U	0.5	5 ST
1,1-Dichloroethene	U	U	U	U	0.5	5 ST
Methylene Chloride	U	U	U	U	0.5	5 ST
trans-1,2-Dichloroethene	U	U	U	U	0.5	5 ST
1,1-Dichloroethane	U	U	U	U	0.5	5 ST
2,2-Dichloropropane	U	U	U	U	0.5	5 ST
cis-1,2-Dichloroethene	U	U	U	U	0.5	5 ST
Chloroform	U	U	U	U	0.5	7 ST
Bromochloromethane	U	U	U	U	0.5	5 ST
1,1,1-Trichloroethane	U	U	U	U	0.5	5 ST
1,1-Dichloropropene	U	U	U	U	0.5	5 ST
Carbon Tetrachloride	U	U	U	U	0.5	5 ST
1,2-Dichloroethane	U	U	U	U	0.5	0.6 ST
Trichloroethene	12	13	15	13	0.5	5 ST
1,2-Dichloropropane	U	U	U	U	0.5	1 ST
Bromodichloromethane	U	U	U	U	0.5	50GV
Dibromomethane	U	U	U	U	0.5	5 ST
cis-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
trans-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
1,1,2-Trichloroethane	U	U	U	U	0.5	1 ST
1,3-Dichloropropane	U	U	U	U	0.5	5 ST
Tetrachloroethene	U	0.6	5	U	0.5	5 ST
Dibromochloromethane	U	U	U	U	0.5	50GV
Chlorobenzene	U	U	U	U	0.5	5 ST
1,1,1,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
Bromoform	U	U	U	U	0.5	50GV
1,1,2,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
1,2,3-Trichloropropane	U	U	U	U	0.5	0.04 ST
Bromobenzene	U	U	U	U	0.5	5 ST
1,3-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,4-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2,4-Trichlorobenzene	U	U	U	U	0.5	5 ST
Hexchlorobutadiene	U	U	U	U	0.5	0.5 ST
1,2,3-Trichlorobenzene	U	U	U	U	0.5	5 ST
Methyl-tert-butyl ether	U	U	U	U	0.5	----
Benzene	U	U	U	U	0.5	1 ST
Toluene	U	U	U	U	0.5	5 ST
Ethylbenzene	U	U	U	U	0.5	5 ST
m-Xylene	U	U	U	U	0.5	5 ST
p-Xylene	U	U	U	U	0.5	5 ST
o-Xylene	U	U	U	U	0.5	5 ST
Styrene	U	U	U	U	0.5	5 ST
Isopropylbenzene (Cumene)	U	U	U	U	0.5	5 ST
n-Propylbenzene	U	U	U	U	0.5	5 ST
1,3,5-Trimethylbenzene	U	U	U	U	0.5	5 ST
2-Chlorotoluene	U	U	U	U	0.5	5 ST
4-Chlorotoluene	U	U	U	U	0.5	5 ST
tert-Butylbenzene	U	U	U	U	0.5	5 ST
1,2,4-Trimethylbenzene	U	U	U	U	0.5	5 ST
sec-Butylbenzene	U	U	U	U	0.5	5 ST
p-Isopropyltoluene(p-Cymene)	U	U	U	U	0.5	5 ST
n-Butylbenzene	U	U	U	U	0.5	5 ST
Total VOCs	12	13.6	20	13		----

QUALIFIERS:
U: Compound analyzed for but not detected
J: Compound found at a concentration below the CRDL, value estimated
**: Result reported as a sum of 2,2- dichloropropane and cis-1,2-dichloroethene
E: Compound concentration exceeds instrument calibration range, value estimated
D: Result taken from reanalysis at a secondary dilution
B: Compound found in the method blank as well as the sample

NOTES:
*: Value pertains to the sum of the isomers
ST: Standard
GV: Guidance Value
----: Not established
Indicates value exceeds NYSDEC Class GA groundwater standard or guidance value

APPENDIX B
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
MONITORING WELL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

Sample Identification	EW-2B	EW-2B	EW-2B	EW-2B	Contract	NYSDEC Class GA
Sample Depth, ft	132-142	132-142	132-142	132-142	Required	Groundwater
Date of Collection	09/25/01	01/28/02	04/25/02	07/19/02	Detection	Standard or
Dilution Factor	1.0	5.0	5.0	5.0	Limit	Guidance Value
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	0.5	5 ST
Chloromethane	U	U	U	U	0.5	5 ST
Vinyl Chloride	51 D	32	24	29	0.5	2 ST
Bromomethane	U	U	U	U	0.5	5 ST
Chloroethane	2.6	U	24	19	0.5	5 ST
Fluorotrichloromethane	0.6	U	U	U	0.5	5 ST
1,1-Dichloroethene	43 D	10	8	U	0.5	5 ST
Methylene Chloride	1.5	3 J	U	U	0.5	5 ST
trans-1,2-Dichloroethene	U	U	U	U	0.5	5 ST
1,1-Dichloroethane	150 D	24	9	5	0.5	5 ST
2,2-Dichloropropane	**	U		U	0.5	5 ST
cis-1,2-Dichloroethene	36 **	25	19	18	0.5	5 ST
Chloroform	U	U	U	U	0.5	7 ST
Bromochloromethane	U	U	U	U	0.5	5 ST
1,1,1-Trichloroethane	85 D	16	8	5	0.5	5 ST
1,1-Dichlorpropene	U	U	U	U	0.5	5 ST
Carbon Tetrachloride	U	U	U	U	0.5	5 ST
1,2-Dichloroethane	0.7	U	0.5	U	0.5	0.6 ST
Trichloroethene	140 D	130	100 D	84 D	0.5	5 ST
1,2-Dichloropropane	U	U	U	U	0.5	1 ST
Bromodichloromethane	U	U	U	U	0.5	50GV
Dibromomethane	U	U	U	U	0.5	5 ST
cis-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
trans-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
1,1,2-Trichloroethane	U	U	U	U	0.5	1 ST
1,3-Dichloropropane	U	U	U	U	0.5	5 ST
Tetrachloroethene	20	21	17	21	0.5	5 ST
Dibromochloromethane	U	U	U	U	0.5	50GV
Chlorobenzene	1.3	U	U	U	0.5	5 ST
1,1,1,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
Bromoform	U	U	U	U	0.5	50GV
1,1,2,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
1,2,3-Trichloropropane	0.5	U	U	U	0.5	0.04 ST
Bromobenzene	U	U	U	U	0.5	5 ST
1,3-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,4-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2,4-Trichlorobenzene	U	U	U	U	0.5	5 ST
Hexchlorobutadiene	U	U	U	U	0.5	0.5 ST
1,2,3-Trichlorobenzene	U	U	U	U	0.5	5 ST
Methyl-tert-butyl ether	U	U	U	U	0.5	----
Benzene	U	U	U	U	0.5	1 ST
Toluene	U	U	U	U	0.5	5 ST
Ethylbenzene	U	U	U	U	0.5	5 ST
m-Xylene	U	U	U	U	0.5	5 ST
p-Xylene	U	U	U	U	0.5	5 ST
o-Xylene	U	U	U	U	0.5	5 ST
Styrene	U	U	U	U	0.5	5 ST
Isopropylbenzene (Cumene)	U	U	U	U	0.5	5 ST
n-Propylbenzene	U	U	U	U	0.5	5 ST
1,3,5-Trimethylbenzene	U	U	U	U	0.5	5 ST
2-Chlorotoluene	U	U	U	U	0.5	5 ST
4-Chlorotoluene	U	U	U	U	0.5	5 ST
tert-Butylbenzene	U	U	U	U	0.5	5 ST
1,2,4-Trimethylbenzene	U	U	U	U	0.5	5 ST
sec-Butylbenzene	U	U	U	U	0.5	5 ST
p-Isopropyltoluene(p-Cymene)	U	U	U	U	0.5	5 ST
n-Butylbenzene	U	U	U	U	0.5	5 ST
Total VOCs	532.2	261	209.5	181		----

QUALIFIERS:
U: Compound analyzed for but not detected
J: Compound found at a concentration below the CRDL, value estimated
**: Result reported as a sum of 2,2 -dichloropropane and cis-1,2-dichloroethene
E: Compound concentration exceeds instrument calibration range, value estimated
D: Result taken from reanalysis at a secondary dilution

NOTES:
*: Value pertains to the sum of the isomers
ST: Standard
GV: Guidance Value
----: Not established
Indicates value exceeds NYSDEC Class GA groundwater standard or guidance value

APPENDIX B
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
MONITORING WELL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

Sample Identification	EW-2C	EW-2C	EW-2C	EW-2C	Contract	NYSDEC Class GA
Sample Depth, ft	504-514	504-514	504-514	504-514	Required	Groundwater
Date of Collection	09/25/01	01/28/02	04/25/02	07/19/02	Detection	Standard or
Dilution Factor	1.0	1.0	1.0	1.0	Limit	Guidance Value
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	0.5	5 ST
Chloromethane	U	U	U	U	0.5	5 ST
Vinyl Chloride	U	U	U	U	0.5	2 ST
Bromomethane	U	U	U	U	0.5	5 ST
Chloroethane	U	U	U	U	0.5	5 ST
Fluorotrichloromethane	U	U	U	U	0.5	5 ST
1,1-Dichloroethene	U	U	U	U	0.5	5 ST
Methylene Chloride	U	U	U	U	0.5	5 ST
trans-1,2-Dichloroethene	U	U	U	U	0.5	5 ST
1,1-Dichloroethane	U	U	U	U	0.5	5 ST
2,2-Dichloropropane	U	U	U	U	0.5	5 ST
cis-1,2-Dichloroethene	U	U	U	U	0.5	5 ST
Chloroform	U	U	U	U	0.5	7 ST
Bromochloromethane	U	U	U	U	0.5	5 ST
1,1,1-Trichloroethane	U	U	U	U	0.5	5 ST
1,1-Dichlorpropene	U	U	U	U	0.5	5 ST
Carbon Tetrachloride	U	U	U	U	0.5	5 ST
1,2-Dichloroethane	U	U	U	U	0.5	0.6 ST
Trichloroethene	U	U	U	U	0.5	5 ST
1,2-Dichloropropane	U	U	U	U	0.5	1 ST
Bromodichloromethane	U	U	U	U	0.5	50GV
Dibromomethane	U	U	U	U	0.5	5 ST
cis-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
trans-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
1,1,2-Trichloroethane	U	U	U	U	0.5	1 ST
1,3-Dichloropropane	U	U	U	U	0.5	5 ST
Tetrachloroethene	U	U	U	1	0.5	5 ST
Dibromochloromethane	U	U	U	U	0.5	50GV
Chlorobenzene	U	U	U	U	0.5	5 ST
1,1,1,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
Bromoform	U	U	U	U	0.5	50GV
1,1,2,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
1,2,3-Trichloropropane	U	U	U	U	0.5	0.04 ST
Bromobenzene	U	U	U	U	0.5	5 ST
1,3-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,4-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2,4-Trichlorobenzene	U	U	U	U	0.5	5 ST
Hexchlorobutadiene	U	U	U	U	0.5	0.5 ST
1,2,3-Trichlorobenzene	U	U	U	U	0.5	5 ST
Methyl-tert-butyl ether	U	U	U	U	0.5	---
Benzene	U	U	U	U	0.5	1 ST
Toluene	U	U	U	U	0.5	5 ST
Ethylbenzene	U	U	U	U	0.5	5 ST
m-Xylene	U	U	U	U	0.5	5 ST
p-Xylene	U	U	U	U	0.5	5 ST
o-Xylene	U	U	U	U	0.5	5 ST
Styrene	U	U	U	U	0.5	5 ST
Isopropylbenzene (Cumene)	U	U	U	U	0.5	5 ST
n-Propylbenzene	U	U	U	U	0.5	5 ST
1,3,5-Trimethylbenzene	U	U	U	U	0.5	5 ST
2-Chlorotoluene	U	U	U	U	0.5	5 ST
4-Chlorotoluene	U	U	U	U	0.5	5 ST
tert-Butylbenzene	U	U	U	U	0.5	5 ST
1,2,4-Trimethylbenzene	U	U	U	U	0.5	5 ST
sec-Butylbenzene	U	U	U	U	0.5	5 ST
p-Isopropyltoluene(p-Cymene)	U	U	U	U	0.5	5 ST
n-Butylbenzene	U	U	U	U	0.5	5 ST
Total VOCs	0	0	0	1		---

QUALIFIERS
U: Compound analyzed for but not detected
J: Compound found at a concentration below the CRDL, value estimated
**: Result reported as a sum of 2,2- dichloropropane and cis-1,2-dichloroethene
E: Compound concentration exceeds instrument calibration range, value estimated
D: Result taken from reanalysis at a secondary dilution
B: Compound found in the method blank as well as the sample

NOTES:
*: Value pertains to the sum of the isomers
ST: Standard
GV: Guidance Value
---: Not established
Indicates value exceeds NYSDEC Class GA groundwater standard or guidance value

APPENDIX B
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
MONITORING WELL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-1	MW-1	MW-1	MW-1	Contract	NYSDEC Class GA
Sample Depth, ft	90-110	90-110	90-110	90-110	Required	Groundwater
Date of Collection	11/02/01	01/24/02	04/25/02	07/16/02	Detection	Standard or
Dilution Factor	1.0	1.0	2.0	1.0	Limit	Guidance Value
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	0.5	5 ST
Chloromethane	U	U	U	U	0.5	5 ST
Vinyl Chloride	U	U	U	U	0.5	2 ST
Bromomethane	U	U	U	U	0.5	5 ST
Chloroethane	U	U	U	U	0.5	5 ST
Fluorotrichloromethane	U	U	U	U	0.5	5 ST
1,1-Dichloroethene	16	8	26	24	0.5	5 ST
Methylene Chloride	U	U	U	U	0.5	5 ST
trans-1,2-Dichloroethene	U	U	U	U	0.5	5 ST
1,1-Dichloroethane	2.8	2	5	4	0.5	5 ST
2,2-Dichloropropane	**	U		U	0.5	5 ST
cis-1,2-Dichloroethene	1.1 **	1	3	3	0.5	5 ST
Chloroform	0.5	U	U	1	0.5	7 ST
Bromochloromethane	U	U	U	U	0.5	5 ST
1,1,1-Trichloroethane	7.8	4	10 J	10	0.5	5 ST
1,1-Dichlorpropene	U	U	U	U	0.5	5 ST
Carbon Tetrachloride	U	U	U	U	0.5	5 ST
1,2-Dichloroethane	U	U	U	U	0.5	0.6 ST
Trichloroethene	21	16	52 DJ	55 E	0.5	5 ST
1,2-Dichloropropane	U	U	U	U	0.5	1 ST
Bromodichloromethane	U	U	U	U	0.5	50GV
Dibromomethane	U	U	U	U	0.5	5 ST
cis-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
trans-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
1,1,2-Trichloroethane	U	U	U	U	0.5	1 ST
1,3-Dichloropropane	U	U	U	U	0.5	5 ST
Tetrachloroethene	4.1	3	9	9	0.5	5 ST
Dibromochloromethane	U	U	U	U	0.5	50GV
Chlorobenzene	U	U	U	U	0.5	5 ST
1,1,1,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
Bromoform	U	U	U	U	0.5	50GV
1,1,2,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
1,2,3-Trichloropropane	U	U	U	U	0.5	0.04 ST
Bromobenzene	U	U	U	U	0.5	5 ST
1,3-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,4-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2,4-Trichlorobenzene	U	U	U	U	0.5	5 ST
Hexchlorobutadiene	U	U	U	U	0.5	0.5 ST
1,2,3-Trichlorobenzene	U	U	U	U	0.5	5 ST
Methyl-tert-butyl ether	U	U	U	U	0.5	----
Benzene	U	U	U	U	0.5	1 ST
Toluene	U	U	U	U	0.5	5 ST
Ethylbenzene	U	U	U	U	0.5	5 ST
m-Xylene	U	U	U	U	0.5	5 ST
p-Xylene	U	U	U	U	0.5	5 ST
o-Xylene	U	U	U	U	0.5	5 ST
Styrene	U	U	U	U	0.5	5 ST
Isopropylbenzene (Cumene)	U	U	U	U	0.5	5 ST
n-Propylbenzene	U	U	U	U	0.5	5 ST
1,3,5-Trimethylbenzene	U	U	U	U	0.5	5 ST
2-Chlorotoluene	U	U	U	U	0.5	5 ST
4-Chlorotoluene	U	U	U	U	0.5	5 ST
tert-Butylbenzene	U	U	U	U	0.5	5 ST
1,2,4-Trimethylbenzene	U	U	U	U	0.5	5 ST
sec-Butylbenzene	U	U	U	U	0.5	5 ST
p-Isopropyltoluene(p-Cymene)	U	U	U	U	0.5	5 ST
n-Butylbenzene	U	U	U	U	0.5	5 ST
Total VOCs	53.3	34	105	106		----

QUALIFIERS:
U: Compound analyzed for but not detected
J: Compound found at a concentration below the CRDL, value estimated
**: Result reported as a sum of 2,2 -dichloropropane and cis-1,2-dichloroethene
E: Compound concentration exceeds instrument calibration range, value estimated
D: Result taken from reanalysis at a secondary dilution

NOTES:
*: Value pertains to the sum of the isomers
ST: Standard
GV: Guidance Value
—: Not established
Indicates value exceeds NYSDEC Class GA groundwater standard or guidance value

APPENDIX B
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
MONITORING WELL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-2	MW-2	MW-2	MW-2	Contract	NYSDEC Class GA
Sample Depth, ft	110-130	110-130	110-130	110-130	Required	Groundwater
Date of Collection	11/02/01	01/24/02	04/24/02	07/16/02	Detection	Standard or
Dilution Factor	1.0	1.0	25.0	1.0	Limit	Guidance Value
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	0.5	5 ST
Chloromethane	U	U	U	U	0.5	5 ST
Vinyl Chloride	U	U	U	U	0.5	2 ST
Bromomethane	U	U	U	U	0.5	5 ST
Chloroethane	U	1	2	U	0.5	5 ST
Fluorotnchloromethane	U	U	U	U	0.5	5 ST
1,1-Dichloroethene	540 D	440 D	480 D	190 E	0.5	5 ST
Methylene Chloride	1.9		U	U	0.5	5 ST
trans-1,2-Dichloroethene	U		U	U	0.5	5 ST
1,1-Dichloroethane	140 D	140 D	140 D	52 E	0.5	5 ST
2,2-Dichloropropane	**	U		U	0.5	5 ST
cis-1,2-Dichloroethene	48 **E	35	42 D	17	0.5	5 ST
Chloroform	5.2	2	4	2 B	0.5	7 ST
Bromochloromethane	U	U	U	U	0.5	5 ST
1,1,1-Trichloroethane	230 D	220 D	210 D	75 E	0.5	5 ST
1,1-Dichlorpropene	U	U	U	U	0.5	5 ST
Carbon Tetrachloride	U	U	U	U	0.5	5 ST
1,2-Dichloroethane	2.2	U	2	U	0.5	0.6 ST
Trichloroethene	580 D	500 D	450 D	190 E	0.5	5 ST
1,2-Dichloropropane	U	U	U	U	0.5	1 ST
Bromodichloromethane	U	U	U	U	0.5	50GV
Dibromomethane	U	U	U	U	0.5	5 ST
cis-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
trans-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
1,1,2-Trichloroethane	1.5	2	U	U	0.5	1 ST
1,3-Dichloropropane	U	U	U	U	0.5	5 ST
Tetrachloroethene	49 JD	53 D	52 D	26	0.5	5 ST
Dibromochloromethane	U	U	U	U	0.5	50GV
Chlorobenzene	U	U	U	U	0.5	5 ST
1,1,1,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
Bromoform	U	U	U	U	0.5	50GV
1,1,2,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
1,2,3-Trichloropropane	U	U	U	U	0.5	0.04 ST
Bromobenzene	U	U	U	U	0.5	5 ST
1,3-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,4-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2,4-Trichlorobenzene	U	U	U	U	0.5	5 ST
Hexchlorobutadiene	U	U	U	U	0.5	0.5 ST
1,2,3-Trichlorobenzene	U	U	U	U	0.5	5 ST
Methyl-tert-butyl ether	U	U	U	U	0.5	---
Benzene	U	U	U	U	0.5	1 ST
Toluene	U	U	U	U	0.5	5 ST
Ethylbenzene	U	U	U	U	0.5	5 ST
m-Xylene	U	U	U	U	0.5	5 ST
p-Xylene	U	U	U	U	0.5	5 ST
o-Xylene	U	U	U	U	0.5	5 ST
Styrene	U	U	U	U	0.5	5 ST
Isopropylbenzene (Cumene)	U	U	U	U	0.5	5 ST
n-Propylbenzene	U	U	U	U	0.5	5 ST
1,3,5-Trimethylbenzene	U	U	U	U	0.5	5 ST
2-Chlorotoluene	U	U	U	U	0.5	5 ST
4-Chlorotoluene	U	U	U	U	0.5	5 ST
tert-Butylbenzene	U	U	U	U	0.5	5 ST
1,2,4-Tnmethylbenzene	U	U	U	U	0.5	5 ST
sec-Butylbenzene	U	U	U	U	0.5	5 ST
p-Isopropyltoluene(p-Cymene)	U	U	U	U	0.5	5 ST
n-Butylbenzene	U	U	U	U	0.5	5 ST
Total VOCs	1597.8	1393	1382	552		---

QUALIFIERS:
U: Compound analyzed for but not detected
J: Compound found at a concentration below the CRDL, value estimated
**: Result reported as a sum of 2,2- dichloropropane and cis-1,2-dichloroethene
E: Compound concentration exceeds instrument calibration range, value estimated
D: Result taken from reanalysis at a secondary dilution
B: Compound found in the method blank as well as the sample
*: Sample result highly estimated, based on validation criteria

NOTES:
*: Value pertains to the sum of the isomers
ST: Standard
GV: Guidance Value
---: Not established
Indicates value exceeds NYSDEC Class GA groundwater standard or guidance value

APPENDIX B
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
MONITORING WELL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-3	MW-3	MW-3	MW-3	Contract	NYSDEC Class GA
Sample Depth, ft	130-150	130-150	130-150	130-150	Required	Groundwater
Date of Collection	11/02/01	01/24/02	04/24/02	07/16/02	Detection	Standard or
Dilution Factor	1.0	1.0	50.0	1.0	Limit	Guidance Value
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	0.5	5 ST
Chloromethane	U	U	U	U	0.5	5 ST
Vinyl Chloride	U	U	U	U	0.5	2 ST
Bromomethane	U	U	U	U	0.5	5 ST
Chloroethane	0.7	1	U	1	0.5	5 ST
Fluorotrichloromethane	U	U	U	U	0.5	5 ST
1,1-Dichloroethene	**900 D**	**770 D**	**390 D**	**670 E**	0.5	5 ST
Methylene Chloride	**7.1**	U	**50 D**	3	0.5	5 ST
trans-1,2-Dichloroethene	0.5	U	U	U	0.5	5 ST
1,1-Dichloroethane	**230 D**	**250 D**	**130 D**	**210 E**	0.5	5 ST
2,2-Dichloropropane	**	U	**	U	0.5	5 ST
cis-1,2-Dichloroethene	**54 **E**	**40**	**25 **D**	**40 E**	0.5	5 ST
Chloroform	5.7	3	U	U	0.5	7 ST
Bromochloromethane	U	U	U	4 B	0.5	5 ST
1,1,1-Trichloroethane	**350 D**	**350 D**	**160 D**	**270 E**	0.5	5 ST
1,1-Dichlorpropene	U	U	U	U	0.5	5 ST
Carbon Tetrachloride	U	U	U	U	0.5	5 ST
1,2-Dichloroethane	**5.1**	U	U	U	0.5	0.6 ST
Trichloroethene	**1200 D**	**1000 D**	**490 D**	**920 E**	0.5	5 ST
1,2-Dichloropropane	U	U	U	U	0.5	1 ST
Bromodichloromethane	U	U	U	U	0.5	50GV
Dibromomethane	U	U	U	U	0.5	5 ST
cis-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
trans-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
1,1,2-Trichloroethane	**2.1**	**2**	U	**2**	0.5	1 ST
1,3-Dichloropropane	U	U	U	U	0.5	5 ST
Tetrachloroethene	**67 E**	**74 D**	**28 D**	**70 E**	0.5	5 ST
Dibromochloromethane	U	U	U	U	0.5	50GV
Chlorobenzene	U	U	U	U	0.5	5 ST
1,1,1,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
Bromoform	U	U	U	U	0.5	50GV
1,1,2,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
1,2,3-Trichloropropane	U	U	U	U	0.5	0.04 ST
Bromobenzene	U	U	U	U	0.5	5 ST
1,3-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,4-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2,4-Trichlorobenzene	U	U	U	U	0.5	5 ST
Hexchlorobutadiene	U	U	U	U	0.5	0.5 ST
1,2,3-Trichlorobenzene	U	U	U	U	0.5	5 ST
Methyl-tert-butyl ether	U	U	U	U	0.5	----
Benzene	U	U	U	U	0.5	1 ST
Toluene	U	U	U	U	0.5	5 ST
Ethylbenzene	U	U	U	U	0.5	5 ST
m-Xylene	U	U	U	U	0.5	5 ST
p-Xylene	U	U	U	U	0.5	5 ST
o-Xylene	U	U	U	U	0.5	5 ST
Styrene	U	U	U	U	0.5	5 ST
Isopropylbenzene (Cumene)	U	U	U	U	0.5	5 ST
n-Propylbenzene	U	U	U	U	0.5	5 ST
1,3,5-Trimethylbenzene	U	U	U	U	0.5	5 ST
2-Chlorotoluene	U	U	U	U	0.5	5 ST
4-Chlorotoluene	U	U	U	U	0.5	5 ST
tert-Butylbenzene	U	U	U	U	0.5	5 ST
1,2,4-Trimethylbenzene	U	U	U	U	0.5	5 ST
sec-Butylbenzene	U	U	U	U	0.5	5 ST
p-Isopropyltoluene(p-Cymene)	U	U	U	U	0.5	5 ST
n-Butylbenzene	U	U	U	U	0.5	5 ST
Total VOCs	2822.2	2490	1273	2190		----

QUALIFIERS:
U: Compound analyzed for but not detected
J: Compound found at a concentration below the CRDL, value estimated
**: Result reported as a sum of 2,2- dichloropropane and cis-1,2-dichloroethene
E: Compound concentration exceeds instrument calibration range, value estimated
D: Result taken from reanalysis at a secondary dilution
B: Compound found in the method blank as well as the sample

NOTES:
*: Value pertains to the sum of the isomers
ST: Standard
GV: Guidance Value
----: Not established
Bold Indicates value exceeds NYSDEC Class GA groundwater standard or guidance value

APPENDIX B
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
MONITORING WELL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-4	MW-4	MW-4	MW-4	Contract	NYSDEC Class GA
Sample Depth, ft	180-200	180-200	180-200	180-200	Required	Groundwater
Date of Collection	11/02/01	01/24/02	04/24/02	07/16/02	Detection	Standard or
Dilution Factor	1.0	1.0	50.0	1/50	Limit	Guidance Value
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	0.5	5 ST
Chloromethane	U	U	U	U	0.5	5 ST
Vinyl Chloride	U	U	U	U	0.5	2 ST
Bromomethane	U	U	U	U	0.5	5 ST
Chloroethane	0.7	1	U	2	0.5	5 ST
Fluorotrichloromethane	U	U	U	U	0.5	5 ST
1,1-Dichloroethene	**1100 D**	**750 D**	**530 D**	**520 D**	0.5	5 ST
Methylene Chloride	**8.9**	U	**55 D**	U	0.5	5 ST
trans-1,2-Dichloroethene	0.8	U	U	U	0.5	5 ST
1,1-Dichloroethane	**310 D**	**280 D**	**180 D**	**170 D**	0.5	5 ST
2,2-Dichloropropane	**	U	**	U	0.5	5 ST
cis-1,2-Dichloroethene	**82 **E**	**64 D**	**43 **D**	**38 D**	0.5	5 ST
Chloroform	2.4	3	U	**37 BD**	0.5	7 ST
Bromochloromethane	U	U	U	U	0.5	5 ST
1,1,1-Trichloroethane	**350 D**	**280 D**	**180 D**	**170 D**	0.5	5 ST
1,1-Dichlorpropene	U	U	U	U	0.5	5 ST
Carbon Tetrachloride	U	U	U	U	0.5	5 ST
1,2-Dichloroethane	7	U	U	U	0.5	0.6 ST
Trichloroethene	**1000 D**	**790 D**	**550 D**	**480 D**	0.5	5 ST
1,2-Dichloropropane	U	U	U	U	0.5	1 ST
Bromodichloromethane	U	U	U	U	0.5	50GV
Dibromomethane	U	U	U	U	0.5	5 ST
cis-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
trans-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
1,1,2-Trichloroethane	**3.6**	**3**	U	**4**	0.5	1 ST
1,3-Dichloropropane	U	U	U	U	0.5	5 ST
Tetrachloroethene	**150 D**	**130 D**	**38 D***	**77 D**	0.5	5 ST
Dibromochloromethane	U	U	U	U	0.5	50GV
Chlorobenzene	U	U	U	U	0.5	5 ST
1,1,1,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
Bromoform	U	U	U	U	0.5	50GV
1,1,2,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
1,2,3-Trichloropropane	U	U	U	U	0.5	0.04 ST
Bromobenzene	U	U	U	U	0.5	5 ST
1,3-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,4-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2,4-Trichlorobenzene	U	U	U	U	0.5	5 ST
Hexchlorobutadiene	U	U	U	U	0.5	0.5 ST
1,2,3-Trichlorobenzene	U	U	U	U	0.5	5 ST
Methyl-tert-butyl ether	U	U	U	U	0.5	---
Benzene	U	U	U	U	0.5	1 ST
Toluene	U	U	U	U	0.5	5 ST
Ethylbenzene	U	U	U	U	0.5	5 ST
m-Xylene	U	U	U	U	0.5	5 ST
p-Xylene	U	U	U	U	0.5	5 ST
o-Xylene	U	U	U	U	0.5	5 ST
Styrene	U	U	U	U	0.5	5 ST
Isopropylbenzene (Cumene)	U	U	U	U	0.5	5 ST
n-Propylbenzene	U	U	U	U	0.5	5 ST
1,3,5-Trimethylbenzene	U	U	U	U	0.5	5 ST
2-Chlorotoluene	U	U	U	U	0.5	5 ST
4-Chlorotoluene	U	U	U	U	0.5	5 ST
tert-Butylbenzene	U	U	U	U	0.5	5 ST
1,2,4-Trimethylbenzene	U	U	U	U	0.5	5 ST
sec-Butylbenzene	U	U	U	U	0.5	5 ST
p-Isopropyltoluene(p-Cymene)	U	U	U	U	0.5	5 ST
n-Butylbenzene	U	U	U	U	0.5	5 ST
Total VOCs	3015.4	2301	1576	1498		----

QUALIFIERS:
U: Compound analyzed for but not detected
J: Compound found at a concentration below the CRDL, value estimated
**: Result reported as a sum of 2,2- dichloropropane and cis-1,2-dichloroethene
E: Compound concentration exceeds instrument calibration range, value estimated
D: Result taken from reanalysis at a secondary dilution
B: Compound found in the method blank as well as the sample
U*: Result qualified as non-detect based on validation critena

NOTES:
*: Value pertains to the sum of the isomers
ST: Standard
GV: Guidance Value
----: Not established
Indicates value exceeds NYSDEC Class GA groundwater standard or guidance value

APPENDIX B
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
MONITORING WELL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-5	MW-5	MW-5	MW-5	Contract	NYSDEC Class GA
Sample Depth, ft	90-110	90-110	90-110	90-110	Required	Groundwater
Date of Collection	11/05/01	01/24/02	04/25/02	07/17/02	Detection	Standard or
Dilution Factor	1.0	1.0	1.0	1.0	Limit	Guidance Value
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	0.5	5 ST
Chloromethane	U	U	U	U	0.5	5 ST
Vinyl Chloride	U	U	U	U	0.5	2 ST
Bromomethane	U	U	U	U	0.5	5 ST
Chloroethane	U	U	U	U	0.5	5 ST
Fluorotrichloromethane	U	U	U	U	0.5	5 ST
1,1-Dichloroethene	11	10	3	2	0.5	5 ST
Methylene Chloride	U	U	U	U	0.5	5 ST
trans-1,2-Dichloroethene	U	U	U	U	0.5	5 ST
1,1-Dichloroethane	1.5	2	0.8	U	0.5	5 ST
2,2-Dichloropropane	U	U	U	U	0.5	5 ST
cis-1,2-Dichloroethene	U	0.5	1	6	0.5	5 ST
Chloroform	U	U	0.3 J	U	0.5	7 ST
Bromochloromethane	U	U	U	U	0.5	5 ST
1,1,1-Trichloroethane	13	15	4	3	0.5	5 ST
1,1-Dichlorpropene	U	U	U	U	0.5	5 ST
Carbon Tetrachloride	U	U	U	U	0.5	5 ST
1,2-Dichloroethane	U	U	U	U	0.5	0.6 ST
Trichloroethene	2.5	2	2	1	0.5	5 ST
1,2-Dichloropropane	U	U	U	U	0.5	1 ST
Bromodichloromethane	U	U	U	U	0.5	50GV
Dibromomethane	U	U	U	U	0.5	5 ST
cis-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
trans-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
1,1,2-Trichloroethane	U	U	U	U	0.5	1 ST
1,3-Dichloropropane	U	U	U	U	0.5	5 ST
Tetrachloroethene	3.7	16	25	19	0.5	5 ST
Dibromochloromethane	U	U	U	U	0.5	50GV
Chlorobenzene	U	U	U	U	0.5	5 ST
1,1,1,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
Bromoform	U	U	U	U	0.5	50GV
1,1,2,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
1,2,3-Trichloropropane	U	U	U	U	0.5	0.04 ST
Bromobenzene	U	U	U	U	0.5	5 ST
1,3-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,4-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2,4-Trichlorobenzene	U	U	U	U	0.5	5 ST
Hexchlorobutadiene	U	U	U	U	0.5	0.5 ST
1,2,3-Trichlorobenzene	U	U	U	U	0.5	5 ST
Methyl-tert-butyl ether	U	U	U	U	0.5	----
Benzene	U	U	U	U	0.5	1 ST
Toluene	U	U	U	U	0.5	5 ST
Ethylbenzene	U	U	U	U	0.5	5 ST
m-Xylene	U	U	U	U	0.5	5 ST
p-Xylene	U	U	U	U	0.5	5 ST
o-Xylene	U	U	U	U	0.5	5 ST
Styrene	U	U	U	U	0.5	5 ST
Isopropylbenzene (Cumene)	U	U	U	U	0.5	5 ST
n-Propylbenzene	U	U	U	U	0.5	5 ST
1,3,5-Trimethylbenzene	U	U	U	U	0.5	5 ST
2-Chlorotoluene	U	U	U	U	0.5	5 ST
4-Chlorotoluene	U	U	U	U	0.5	5 ST
tert-Butylbenzene	U	U	U	U	0.5	5 ST
1,2,4-Trimethylbenzene	U	U	U	U	0.5	5 ST
sec-Butylbenzene	U	U	U	U	0.5	5 ST
p-Isopropyltoluene(p-Cymene)	U	U	U	U	0.5	5 ST
n-Butylbenzene	U	U	U	U	0.5	5 ST
Total VOCs	33.7	45.5	36.1	31		----

QUALIFIERS:
U: Compound analyzed for but not detected
J: Compound found at a concentration below the CRDL, value estimated
**: Result reported as a sum of 2,2- dichloropropane and cis-1,2-dichloroethene
E: Compound concentration exceeds instrument calibration range, value estimated
D: Result taken from reanalysis at a secondary dilution
B: Compound found in the method blank as well as the sample

NOTES:
*: Value pertains to the sum of the isomers
ST: Standard
GV: Guidance Value
----: Not established
Indicates value exceeds NYSDEC Class GA groundwater standard or guidance value

APPENDIX B
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
MONITORING WELL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-6	MW-6	MW-6	MW-6	Contract	NYSDEC Class GA
Sample Depth, ft	110-130	110-130	110-130	110-130	Required	Groundwater
Date of Collection	11/05/01	01/25/02	04/25/02	07/17/02	Detection	Standard or
Dilution Factor	1.0	1.0	10.0	1/5	Limit	Guidance Value
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	0.5	5 ST
Chloromethane	U	U	U	U	0.5	5 ST
Vinyl Chloride	U	U	U	U	0.5	2 ST
Bromomethane	U	U	U	U	0.5	5 ST
Chloroethane	U	U	U	U	0.5	5 ST
Fluorotrichloromethane	U	U	1 J	U	0.5	5 ST
1,1-Dichloroethene	270 D	72 D	100 D	99 D	0.5	5 ST
Methylene Chloride	1.3	U	U	5 D	0.5	5 ST
trans-1,2-Dichloroethene	U	U	U	U	0.5	5 ST
1,1-Dichloroethane	52 D	36	33	29	0.5	5 ST
2,2-Dichloropropane	**	U	**	U	0.5	5 ST
cis-1,2-Dichloroethene	22 **	13	9 **	9	0.5	5 ST
Chloroform	1.1	U	1	U	0.5	7 ST
Bromochloromethane	U	U	U	U	0.5	5 ST
1,1,1-Trichloroethane	240 D	89 D	96 D	90 D	0.5	5 ST
1,1-Dichlorpropene	U	U	U	U	0.5	5 ST
Carbon Tetrachloride	U	U	U	U	0.5	5 ST
1,2-Dichloroethane	0.8	U	U	U	0.5	0.6 ST
Trichloroethene	93 D	54 D	43	51 D	0.5	5 ST
1,2-Dichloropropane	U	U	U	U	0.5	1 ST
Bromodichloromethane	U	U	U	U	0.5	50GV
Dibromomethane	U	U	U	U	0.5	5 ST
cis-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
trans-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
1,1,2-Trichloroethane	U	U	U	U	0.5	1 ST
1,3-Dichloropropane	U	U	U	U	0.5	5 ST
Tetrachloroethene	80 D	37 D	68 E	47 D	0.5	5 ST
Dibromochloromethane	U	U	U	U	0.5	50GV
Chlorobenzene	U	U	U	U	0.5	5 ST
1,1,1,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
Bromoform	U	U	U	U	0.5	50GV
1,1,2,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
1,2,3-Trichloropropane	U	U	U	U	0.5	0.04 ST
Bromobenzene	U	U	U	U	0.5	5 ST
1,3-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,4-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2,4-Trichlorobenzene	U	U	U	U	0.5	5 ST
Hexchlorobutadiene	U	U	U	U	0.5	0.5 ST
1,2,3-Trichlorobenzene	1 B	U	U	U	0.5	5 ST
Methyl-tert-butyl ether	U	U	U	U	0.5	----
Benzene	U	U	U	U	0.5	1 ST
Toluene	U	U	U	U	0.5	5 ST
Ethylbenzene	U	U	U	U	0.5	5 ST
m-Xylene	U	U	U	U	0.5	5 ST
p-Xylene	U	U	U	U	0.5	5 ST
o-Xylene	U	U	U	U	0.5	5 ST
Styrene	U	U	U	U	0.5	5 ST
Isopropylbenzene (Cumene)	U	U	U	U	0.5	5 ST
n-Propylbenzene	U	U	U	U	0.5	5 ST
1,3,5-Trimethylbenzene	U	U	U	U	0.5	5 ST
2-Chlorotoluene	U	U	U	U	0.5	5 ST
4-Chlorotoluene	U	U	U	U	0.5	5 ST
tert-Butylbenzene	U	U	U	U	0.5	5 ST
1,2,4-Trimethylbenzene	U	U	U	U	0.5	5 ST
sec-Butylbenzene	U	U	U	U	0.5	5 ST
p-Isopropyltoluene(p-Cymene)	U	U	U	U	0.5	5 ST
n-Butylbenzene	U	U	U	U	0.5	5 ST
Total VOCs	761.2	301	351	330		----

QUALIFIERS:
U: Compound analyzed for but not detected
J: Compound found at a concentration below the CRDL, value estimated
**: Result reported as a sum of 2,2- dichloropropane and cis-1,2-dichloroethene
E: Compound concentration exceeds instrument calibration range, value estimated
D: Result taken from reanalysis at a secondary dilution
B: Compound found in the method blank as well as the sample

NOTES:
*: Value pertains to the sum of the isomers
ST: Standard
GV: Guidance Value
----: Not established
Indicates value exceeds NYSDEC Class GA groundwater standard or guidance value

APPENDIX B
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
MONITORING WELL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-7	MW-7	MW-7	MW-7	Contract	NYSDEC Class GA
Sample Depth, ft	90-110	90-110	90-110	90-110	Required	Groundwater
Date of Collection	11/05/01	01/25/02	04/24/02	07/16/02	Detection	Standard or
Dilution Factor	1.0	1.0	1.0	1.0	Limit	Guidance Value
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	0.5	5 ST
Chloromethane	U	U	U	U	0.5	5 ST
Vinyl Chloride	U	U	U	U	0.5	2 ST
Bromomethane	U	U	U	U	0.5	5 ST
Chloroethane	U	U	U	U	0.5	5 ST
Fluorotrichloromethane	U	U	U	U	0.5	5 ST
1,1-Dichloroethene	U	0.5	0.7	2	0.5	5 ST
Methylene Chloride	U	U	U	U	0.5	5 ST
trans-1,2-Dichloroethene	U	U	U	U	0.5	5 ST
1,1-Dichloroethane	0.7	1	1	2	0.5	5 ST
2,2-Dichloropropane	**	U	**	U	0.5	5 ST
cis-1,2-Dichloroethene	23 **	18	15 **	18	0.5	5 ST
Chloroform	U	U	U	U	0.5	7 ST
Bromochloromethane	U	U	U	U	0.5	5 ST
1,1,1-Trichloroethane	U	0.5	0.6	2	0.5	5 ST
1,1-Dichlorpropene	U	U	U	U	0.5	5 ST
Carbon Tetrachloride	U	U	U	U	0.5	5 ST
1,2-Dichloroethane	U	U	U	U	0.5	0.6 ST
Trichloroethene	2	3	3	8	0.5	5 ST
1,2-Dichloropropane	U	U	U	U	0.5	1 ST
Bromodichloromethane	U	U	U	U	0.5	50GV
Dibromomethane	U	U	U	U	0.5	5 ST
cis-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
trans-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
1,1,2-Trichloroethane	U	U	U	U	0.5	1 ST
1,3-Dichloropropane	U	U	U	U	0.5	5 ST
Tetrachloroethene	5.2	6	4	6	0.5	5 ST
Dibromochloromethane	U	U	U	U	0.5	50GV
Chlorobenzene	U	U	U	U	0.5	5 ST
1,1,1,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
Bromoform	U	U	U	U	0.5	50GV
1,1,2,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
1,2,3-Trichloropropane	U	U	U	U	0.5	0.04 ST
Bromobenzene	U	U	U	U	0.5	5 ST
1,3-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,4-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2,4-Trichlorobenzene	U	U	U	U	0.5	5 ST
Hexchlorobutadiene	U	U	U	U	0.5	0.5 ST
1,2,3-Trichlorobenzene	U	U	U	U	0.5	5 ST
Methyl-tert-butyl ether	U	U	U	2	0.5	---
Benzene	U	U	U	U	0.5	1 ST
Toluene	U	U	U	U	0.5	5 ST
Ethylbenzene	U	U	U	U	0.5	5 ST
m-Xylene	U	U	U	U	0.5	5 ST
p-Xylene	U	U	U	U	0.5	5 ST
o-Xylene	U	U	U	U	0.5	5 ST
Styrene	U	U	U	U	0.5	5 ST
Isopropylbenzene (Cumene)	U	U	U	U	0.5	5 ST
n-Propylbenzene	U	U	U	U	0.5	5 ST
1,3,5-Trimethylbenzene	U	U	U	U	0.5	5 ST
2-Chlorotoluene	U	U	U	U	0.5	5 ST
4-Chlorotoluene	U	U	U	U	0.5	5 ST
tert-Butylbenzene	U	U	U	U	0.5	5 ST
1,2,4-Trimethylbenzene	U	U	U	U	0.5	5 ST
sec-Butylbenzene	U	U	U	U	0.5	5 ST
p-Isopropyltoluene(p-Cymene)	U	U	U	U	0.5	5 ST
n-Butylbenzene	U	U	U	U	0.5	5 ST
Total VOCs	30.9	29	24.3	40		---

QUALIFIERS:
U: Compound analyzed for but not detected
J: Compound found at a concentration below the CRDL, value estimated
**: Result reported as a sum of 2,2- dichloropropane and cis-1,2-dichloroethene
E: Compound concentration exceeds instrument calibration range, value estimated
D: Result taken from reanalysis at a secondary dilution
B: Compound found in the method blank as well as the sample

NOTES:
*: Value pertains to the sum of the isomers
ST: Standard
GV: Guidance Value
----: Not established
Indicates value exceeds NYSDEC Class GA groundwater standard or guidance value

APPENDIX B
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
MONITORING WELL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-8	MW-8	MW-8	MW-8	Contract	NYSDEC Class GA
Sample Depth, ft	120-140	120-140	120-140	120-140	Required	Groundwater
Date of Collection	11/05/01	01/25/02	04/24/02	07/17/02	Detection	Standard or
Dilution Factor	1.0	1.0	1.0	1.0	Limit	Guidance Value
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	0.5	5 ST
Chloromethane	U	U	U	U	0.5	5 ST
Vinyl Chloride	U	U	U	U	0.5	2 ST
Bromomethane	U	U	U	U	0.5	5 ST
Chloroethane	U	U	U	U	0.5	5 ST
Fluorotrichloromethane	U	U	U	U	0.5	5 ST
1,1-Dichloroethene	U	0.8	U	0.5	0.5	5 ST
Methylene Chloride	U	0.6	U	U	0.5	5 ST
trans-1,2-Dichloroethene	U	U	0.9	U	0.5	5 ST
1,1-Dichloroethane	1.3	2	2	1	0.5	5 ST
2,2-Dichloropropane	**	U	**	U	0.5	5 ST
cis-1,2-Dichloroethene	1.7 **	2	2 **	2	0.5	5 ST
Chloroform	U	U	U	U	0.5	7 ST
Bromochloromethane	U	U	U	U	0.5	5 ST
1,1,1-Trichloroethane	0.7	0.7	0.8	D	0.5	5 ST
1,1-Dichlorpropene	U	U	U	U	0.5	5 ST
Carbon Tetrachloride	U	U	U	U	0.5	5 ST
1,2-Dichloroethane	U	U	U	U	0.5	0.6 ST
Trichloroethene	1.1	2	U*	0.8	0.5	5 ST
1,2-Dichloropropane	U	U	U	U	0.5	1 ST
Bromodichloromethane	U	U	U	U	0.5	50GV
Dibromomethane	U	U	U	U	0.5	5 ST
cis-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
trans-1,3-Dichloropropene	U	U	U	U	0.5	0.4 ST *
1,1,2-Trichloroethane	U	U	U	U	0.5	1 ST
1,3-Dichloropropane	U	U	U	U	0.5	5 ST
Tetrachloroethene	1.1	1	1	0.8	0.5	5 ST
Dibromochloromethane	U	U	U	U	0.5	50GV
Chlorobenzene	U	U	U	U	0.5	5 ST
1,1,1,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
Bromoform	U	U	U	U	0.5	50GV
1,1,2,2-Tetrachloroethane	U	U	U	U	0.5	5 ST
1,2,3-Trichloropropane	U	U	U	U	0.5	0.04 ST
Bromobenzene	U	U	U	U	0.5	5 ST
1,3-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,4-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2-Dichlorobenzene	U	U	U	U	0.5	3 ST
1,2,4-Trichlorobenzene	U	U	U	U	0.5	5 ST
Hexchlorobutadiene	U	U	U	U	0.5	0.5 ST
1,2,3-Trichlorobenzene	U	U	U	U	0.5	5 ST
Methyl-tert-butyl ether	U	U	U	U	0.5	----
Benzene	U	U	U	U	0.5	1 ST
Toluene	U	U	U	U	0.5	5 ST
Ethylbenzene	U	U	U	U	0.5	5 ST
m-Xylene	U	U	U	U	0.5	5 ST
p-Xylene	U	U	U	U	0.5	5 ST
o-Xylene	U	U	U	U	0.5	5 ST
Styrene	U	U	U	U	0.5	5 ST
Isopropylbenzene (Cumene)	U	U	U	U	0.5	5 ST
n-Propylbenzene	U	U	U	U	0.5	5 ST
1,3,5-Trimethylbenzene	U	U	U	U	0.5	5 ST
2-Chlorotoluene	U	U	U	U	0.5	5 ST
4-Chlorotoluene	U	U	U	U	0.5	5 ST
tert-Butylbenzene	U	U	U	U	0.5	5 ST
1,2,4-Trimethylbenzene	U	U	U	U	0.5	5 ST
sec-Butylbenzene	U	U	U	U	0.5	5 ST
p-Isopropyltoluene(p-Cymene)	U	U	U	U	0.5	5 ST
n-Butylbenzene	U	U	U	U	0.5	5 ST
Total VOCs	5.9	9.1	6.7	5.1		---

QUALIFIERS:
U: Compound analyzed for but not detected
J: Compound found at a concentration below the CRDL, value estimated
**: Result reported as a sum of 2,2- dichloropropane and cis-1,2-dichloroethene
E: Compound concentration exceeds instrument calibration range, value estimated
D: Result taken from reanalysis at a secondary dilution
B: Compound found in the method blank as well as the sample

NOTES:
*: Value pertains to the sum of the isomers
ST: Standard
GV: Guidance Value
----: Not established
Indicates value exceeds NYSDEC Class GA groundwater standard or guidance value

APPENDIX B
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
MONITORING WELL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-9				Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Sample Depth, ft	305-315					
Date of Collection	07/17/02					
Dilution Factor	1.0					
Units	(ug/l)				(ug/l)	(ug/l)
Dichlorodifluoromethane	U				0.5	5 ST
Chloromethane	U				0.5	5 ST
Vinyl Chloride	U				0.5	2 ST
Bromomethane	U				0.5	5 ST
Chloroethane	U				0.5	5 ST
Fluorotrichloromethane	U				0.5	5 ST
1,1-Dichloroethene	1				0.5	5 ST
Methylene Chloride	U				0.5	5 ST
trans-1,2-Dichloroethene	U				0.5	5 ST
1,1-Dichloroethane	U				0.5	5 ST
2,2-Dichloropropane	**				0.5	5 ST
cis-1,2-Dichloroethene	0.8 **				0.5	5 ST
Chloroform	U				0.5	7 ST
Bromochloromethane	U				0.5	5 ST
1,1,1-Trichloroethane	2				0.5	5 ST
1,1-Dichlorpropene	U				0.5	5 ST
Carbon Tetrachloride	U				0.5	5 ST
1,2-Dichloroethane	U				0.5	0.6 ST
Trichloroethene	15				0.5	5 ST
1,2-Dichloropropane	U				0.5	1 ST
Bromodichloromethane	U				0.5	50GV
Dibromomethane	U				0.5	5 ST
cis-1,3-Dichloropropene	U				0.5	0.4 ST *
trans-1,3-Dichloropropene	U				0.5	0.4 ST *
1,1,2-Trichloroethane	U				0.5	1 ST
1,3-Dichloropropane	U				0.5	5 ST
Tetrachloroethene	1				0.5	5 ST
Dibromochloromethane	U				0.5	50GV
Chlorobenzene	U				0.5	5 ST
1,1,1,2-Tetrachloroethane	U				0.5	5 ST
Bromoform	U				0.5	50GV
1,1,2,2-Tetrachloroethane	U				0.5	5 ST
1,2,3-Trichloropropane	U				0.5	0.04 ST
Bromobenzene	U				0.5	5 ST
1,3-Dichlorobenzene	U				0.5	3 ST
1,4-Dichlorobenzene	U				0.5	3 ST
1,2-Dichlorobenzene	U				0.5	3 ST
1,2,4-Trichlorobenzene	U				0.5	5 ST
Hexchlorobutadiene	U				0.5	0.5 ST
1,2,3-Trichlorobenzene	U				0.5	5 ST
Methyl-tert-butyl ether	U				0.5	----
Benzene	U				0.5	1 ST
Toluene	U				0.5	5 ST
Ethylbenzene	U				0.5	5 ST
m-Xylene	U				0.5	5 ST
p-Xylene	U				0.5	5 ST
o-Xylene	U				0.5	5 ST
Styrene	U				0.5	5 ST
Isopropylbenzene (Cumene)	U				0.5	5 ST
n-Propylbenzene	U				0.5	5 ST
1,3,5-Trimethylbenzene	U				0.5	5 ST
2-Chlorotoluene	U				0.5	5 ST
4-Chlorotoluene	U				0.5	5 ST
tert-Butylbenzene	U				0.5	5 ST
1,2,4-Trimethylbenzene	U				0.5	5 ST
sec-Butylbenzene	U				0.5	5 ST
p-Isopropyltoluene(p-Cymene)	U				0.5	5 ST
n-Butylbenzene	U				0.5	5 ST
Total VOCs	19.8					----

QUALIFIERS:
U: Compound analyzed for but not detected
J: Compound found at a concentration below the CRDL, value estimated
**: Result reported as a sum of 2,2- dichloropropane and cis-1,2-dichloroethene
E: Compound concentration exceeds instrument calibration range, value estimated
D: Result taken from reanalysis at a secondary dilution
B: Compound found in the method blank as well as the sample

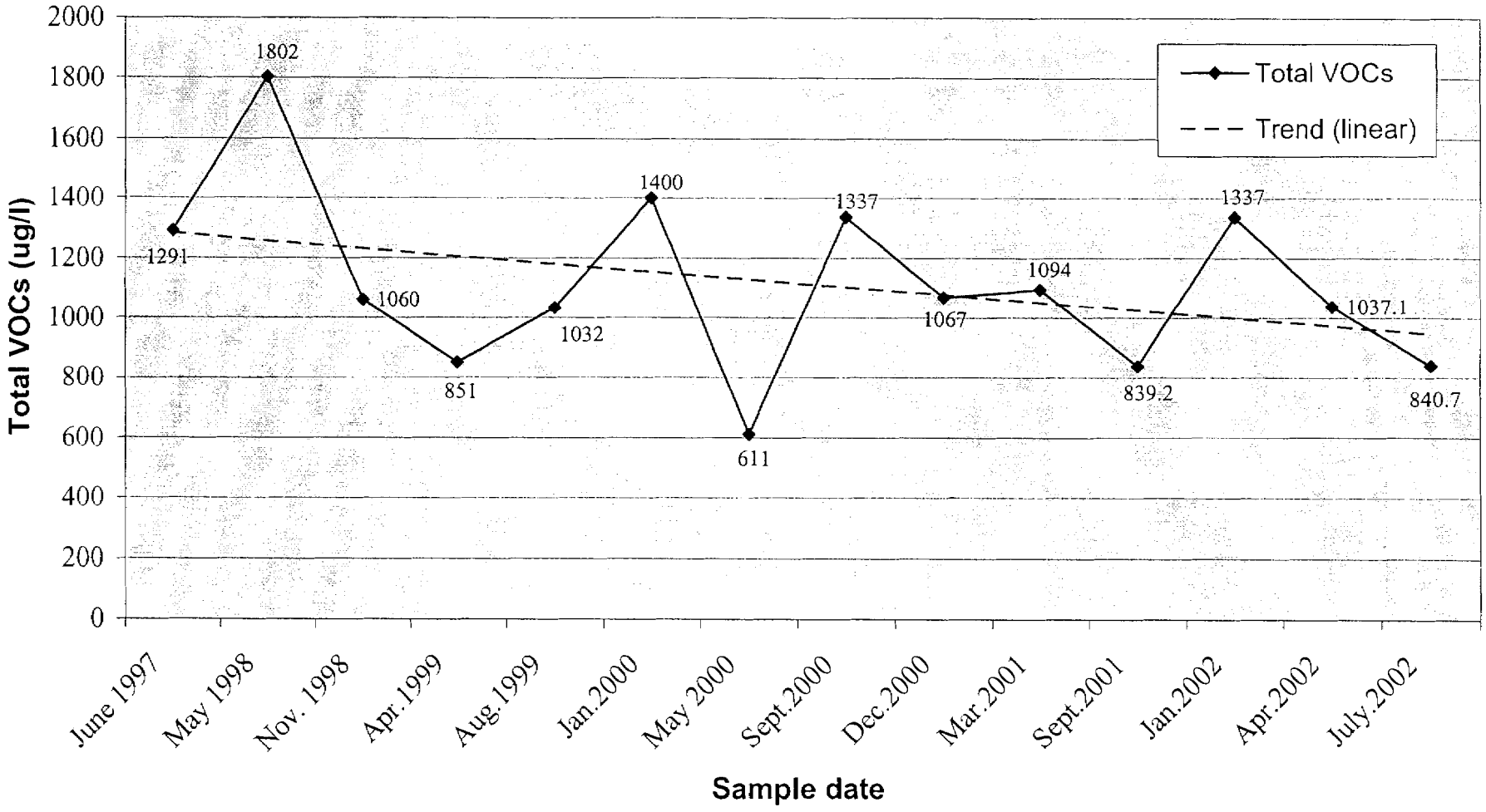
NOTES:
*: Value pertains to the sum of the isomers
ST: Standard
GV: Guidance Value
---: Not established
Indicates value exceeds NYSDEC Class GA groundwater standard or guidance value

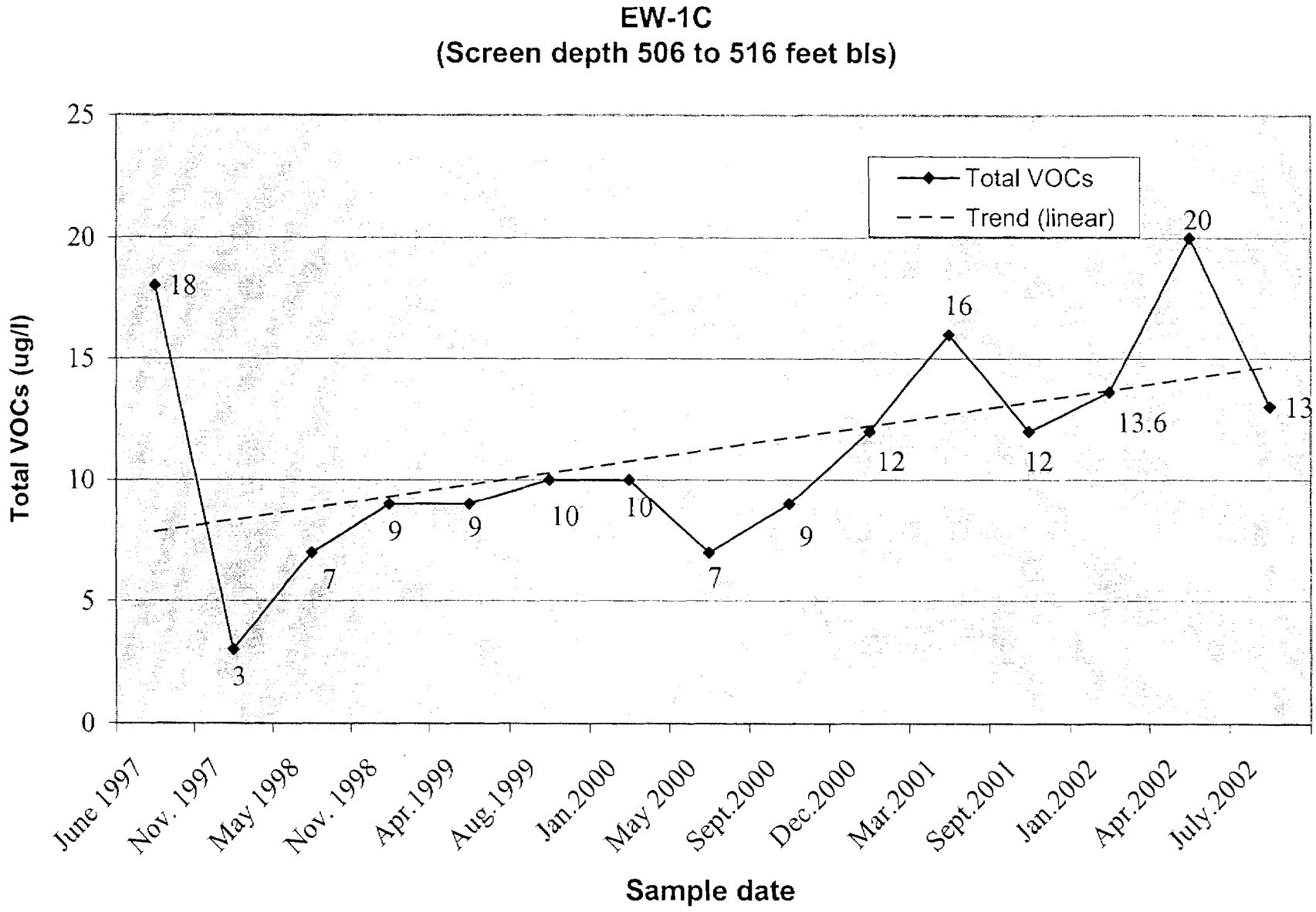
Appendix C

APPENDIX C

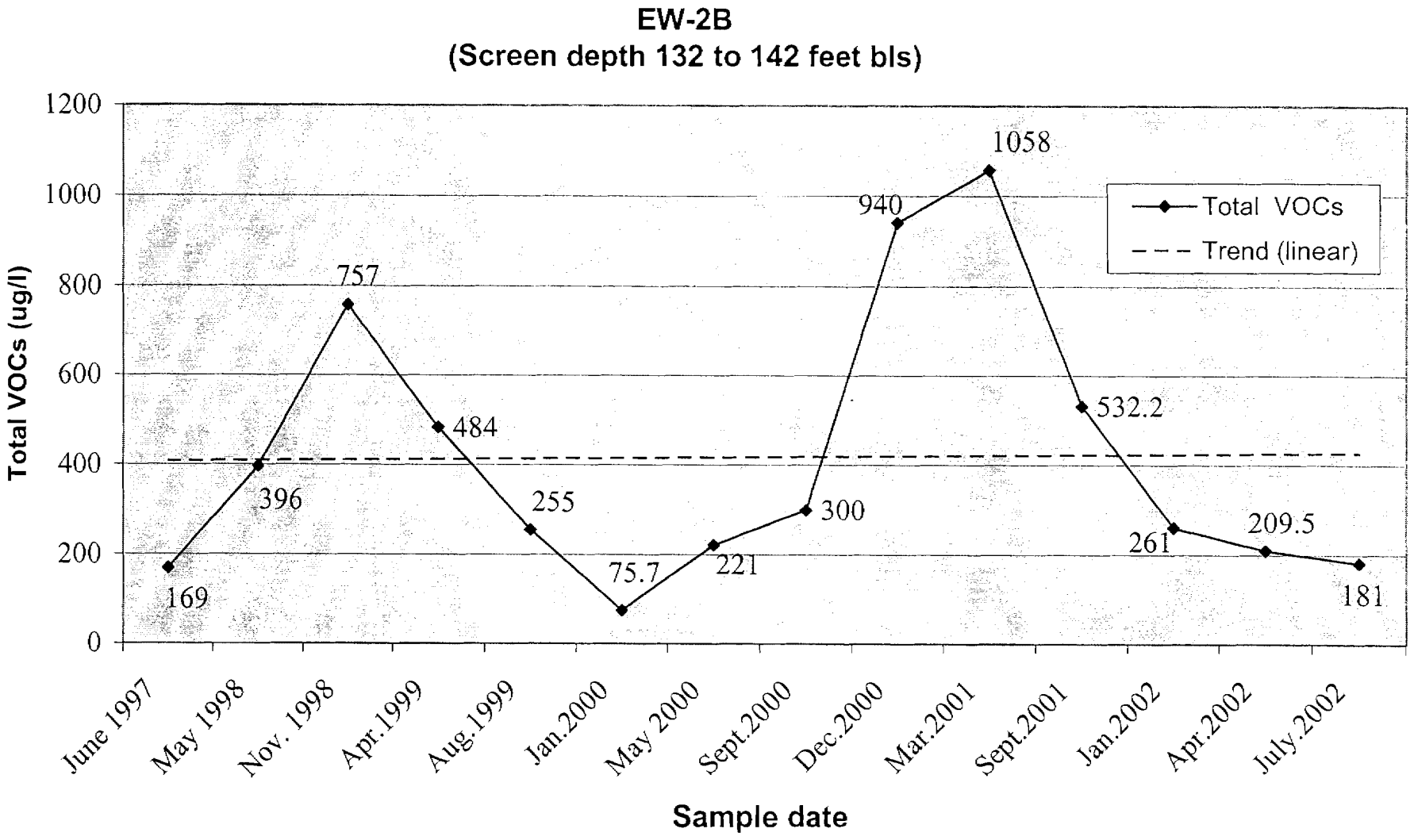
HISTORIC CONCENTRATION GRAPHS FOR EARLY WARNING WELLS AND OFF-SITE MONITORING WELLS - TOTAL VOLATILE ORGANIC COMPOUNDS

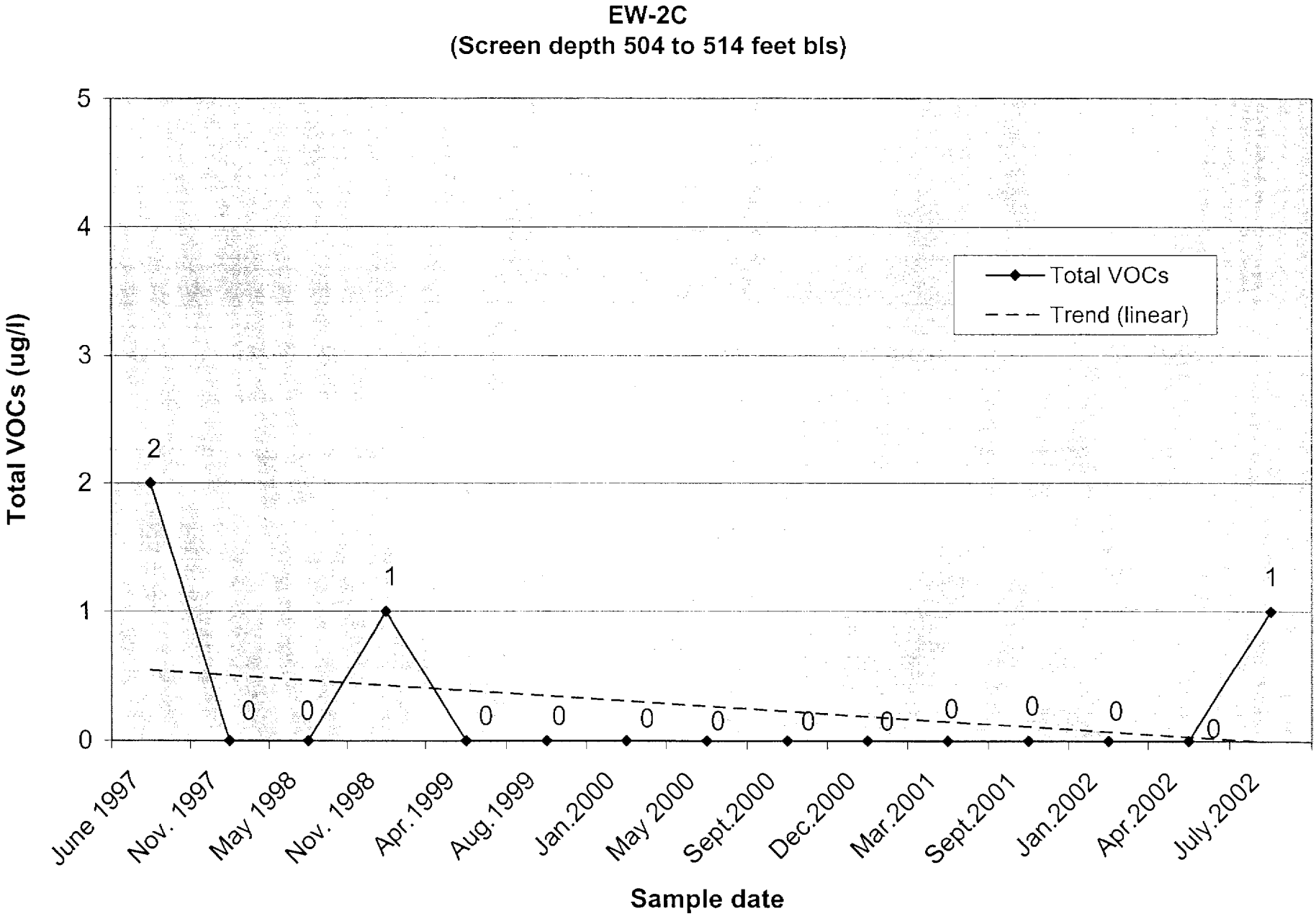
EW-1B
(Screen depth 154 to164 feet bls)





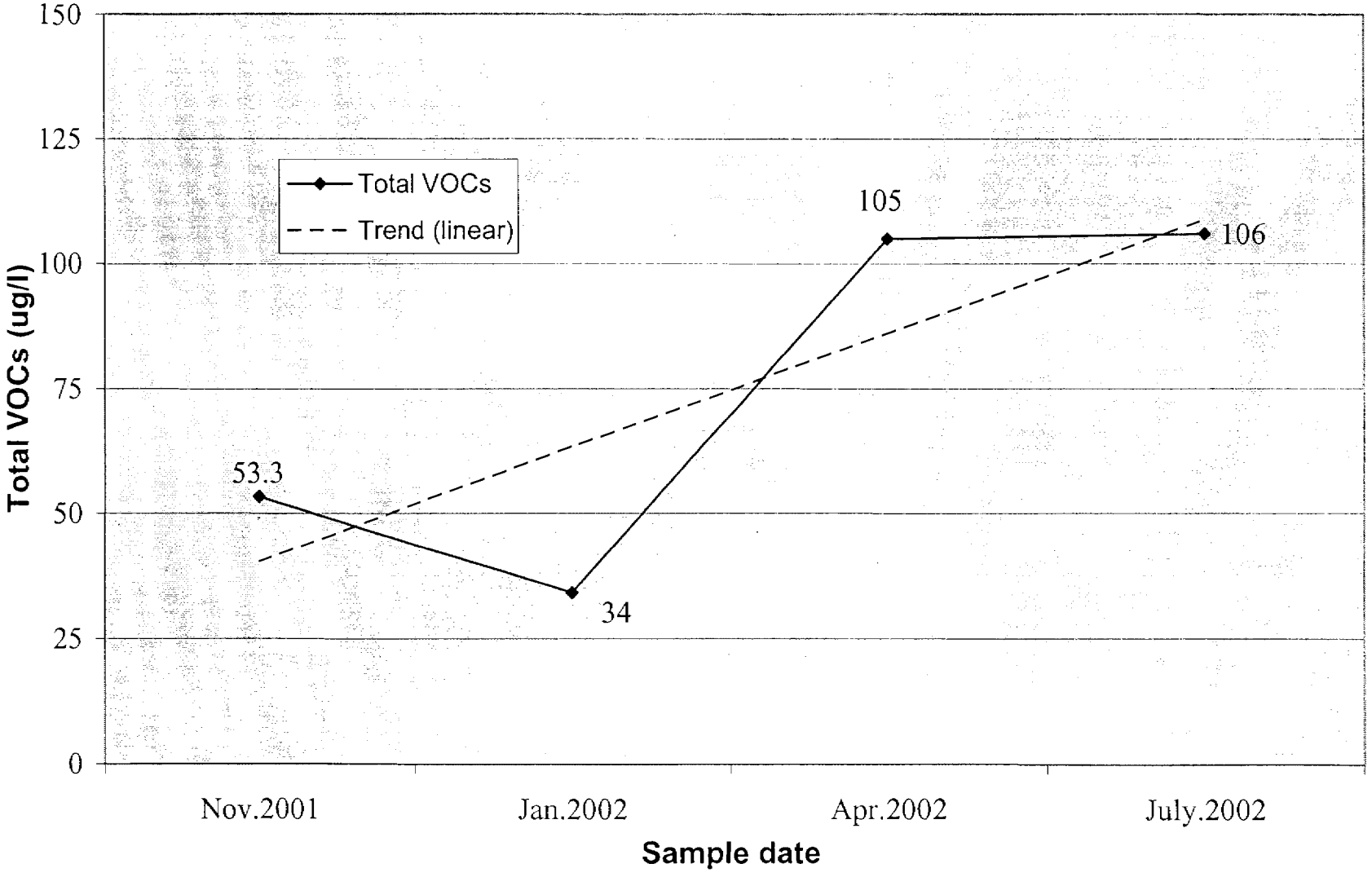
kr/1898/Total VOCs Qtr 1-4.xls: EW-1C


EW-2B
(Screen depth 132 to 142 feet bls)
Total VOCs (ug/l)
1200
1000
800
600
400
200
0
169
396
757
484
255
75.7
221
300
940
1058
532.2
261
209.5
181
Total VOCs
Trend (linear)
June 1997
May 1998
Nov. 1998
Apr.1999
Aug.1999
Jan.2000
May 2000
Sept.2000
Dec.2000
Mar.2001
Sept.2001
Jan.2002
Apr.2002
July.2002
Sample date

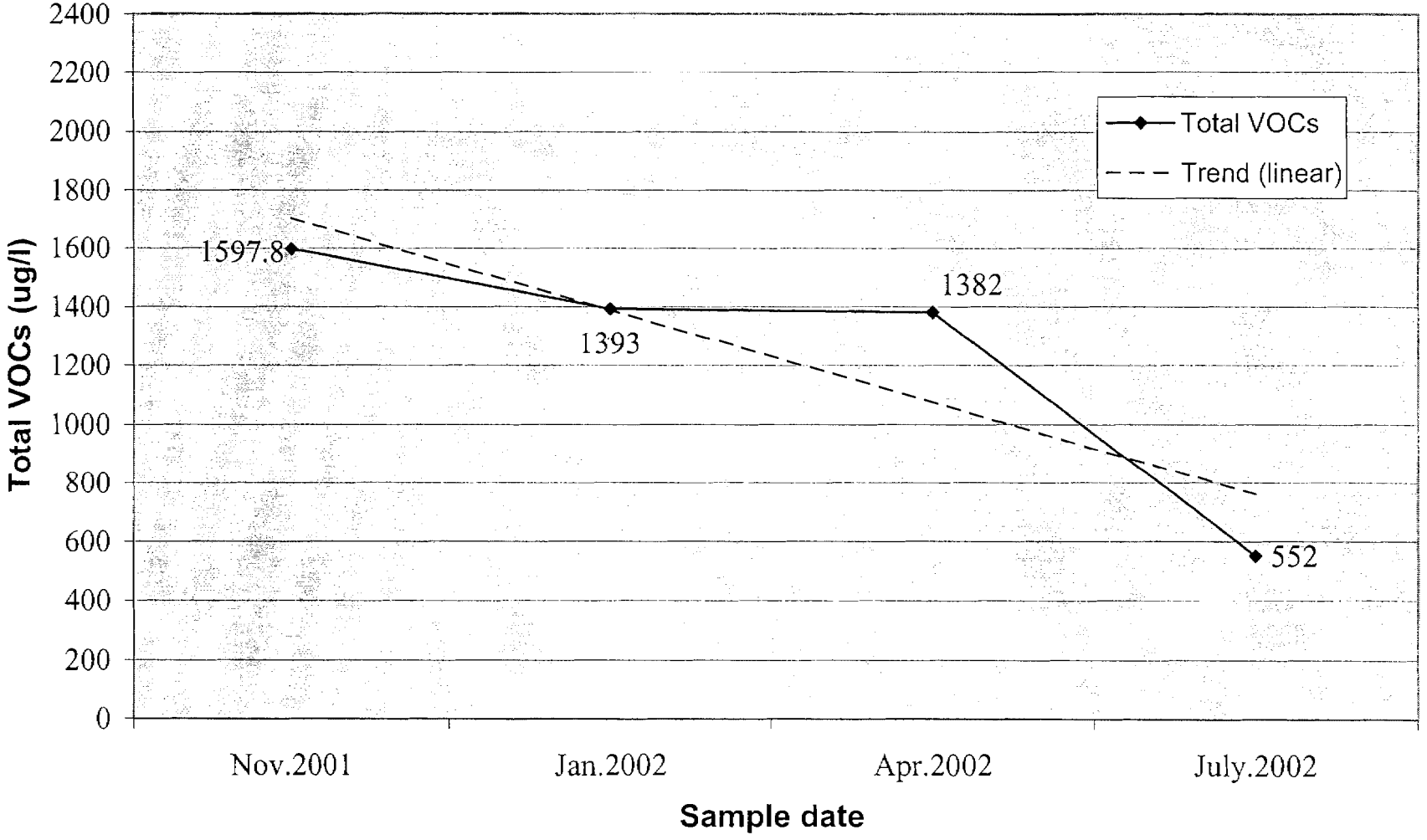


kr/1898/Total VOCs Qtr 1-4.xls: EW-2C

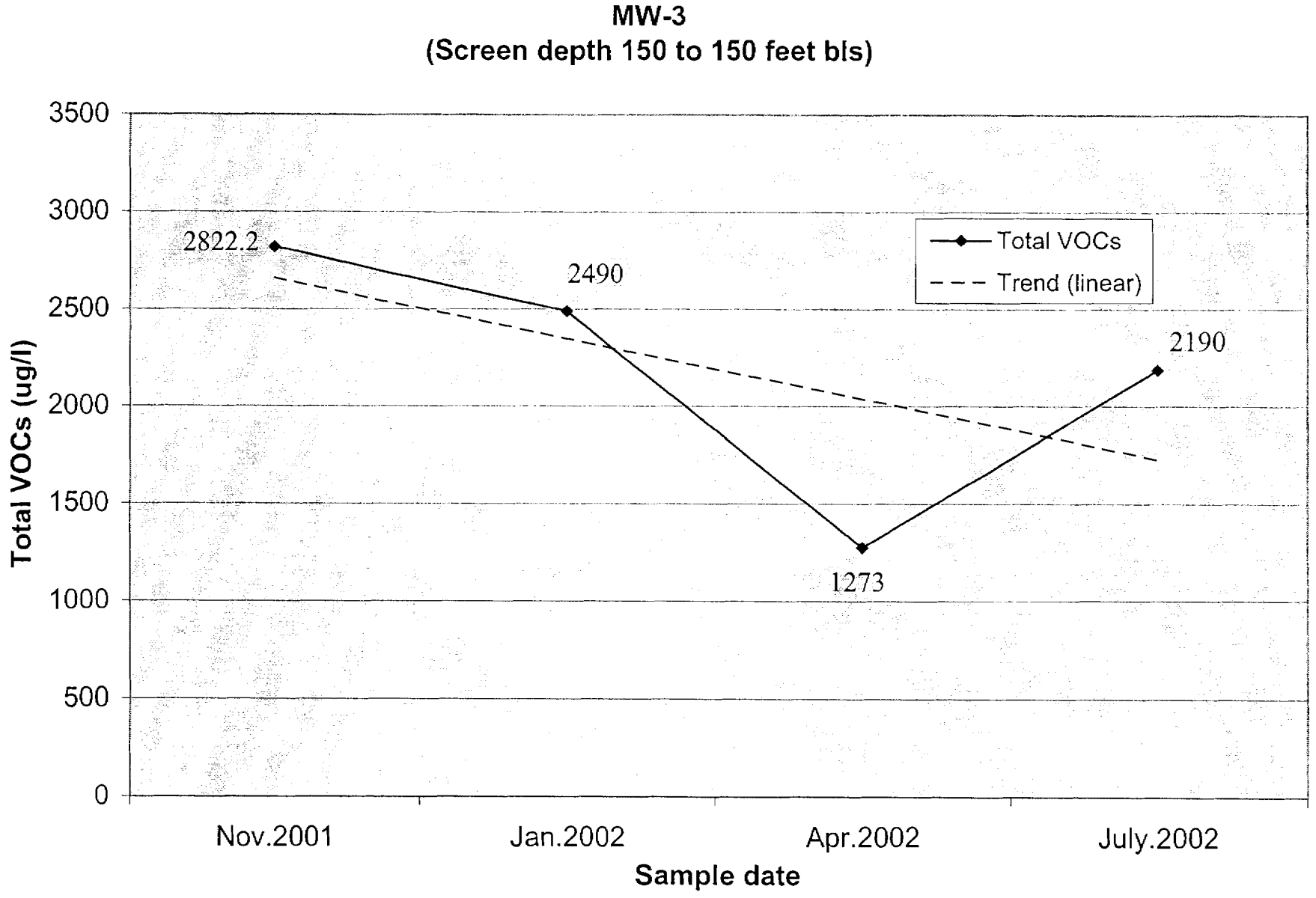
MW-1
(Screen depth 90 to 110 feet bls)



MW-2
(Screen depth 110 to 130 feet bls)

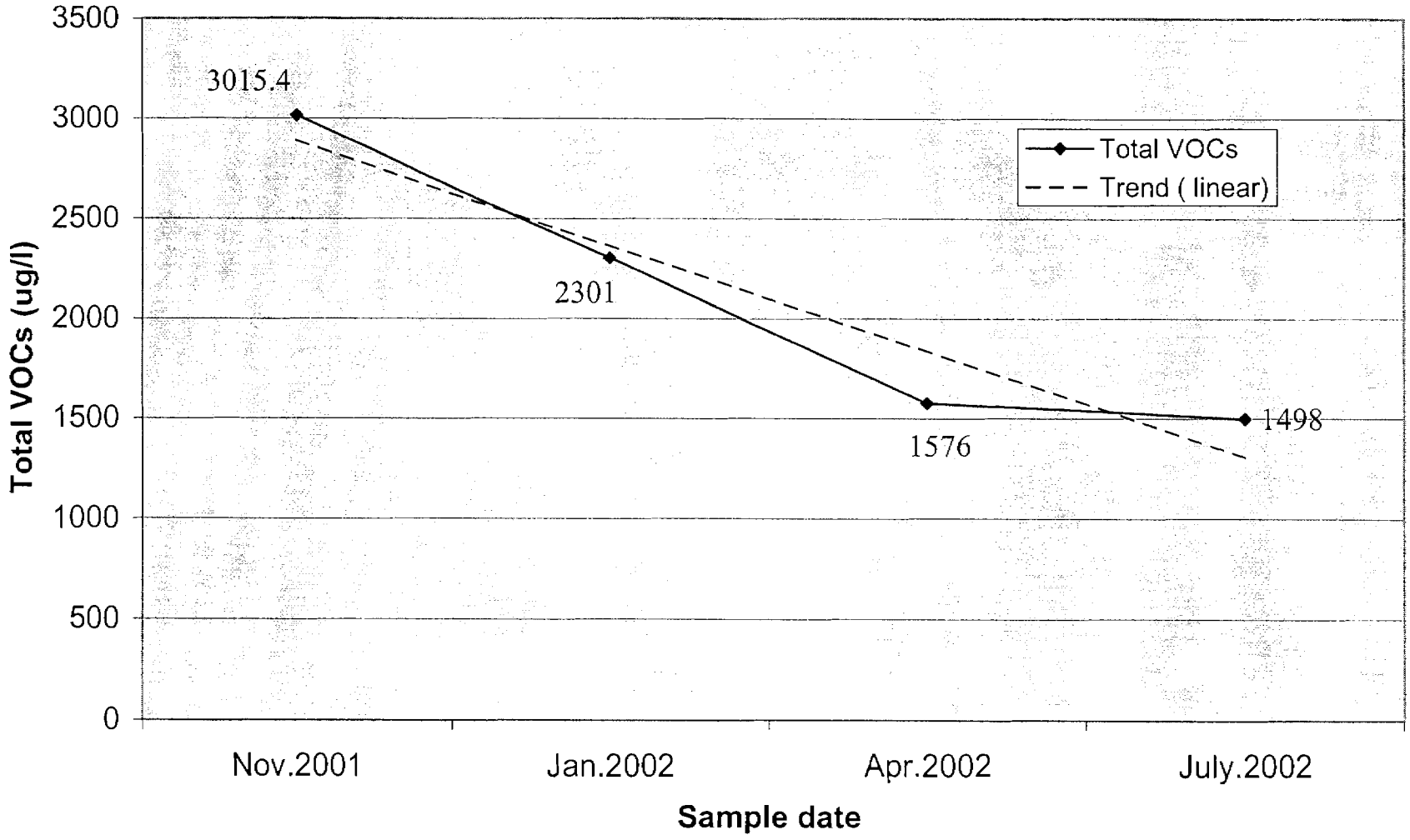


kr/1898/Total VOCs Qtr 1-4.xls: MW-2



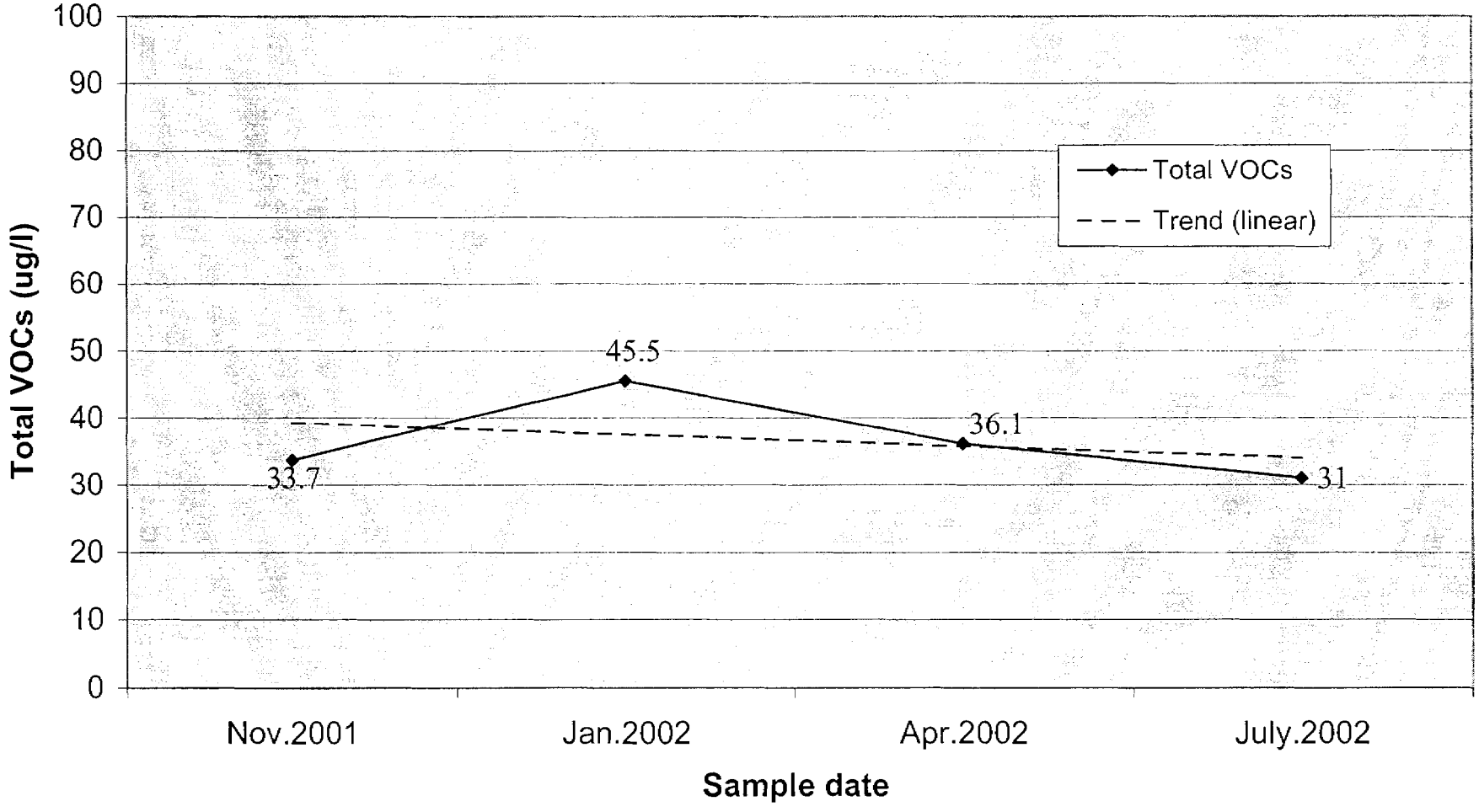
kr/1898/Total VOCs Qtr 1-4.xls: MW-3

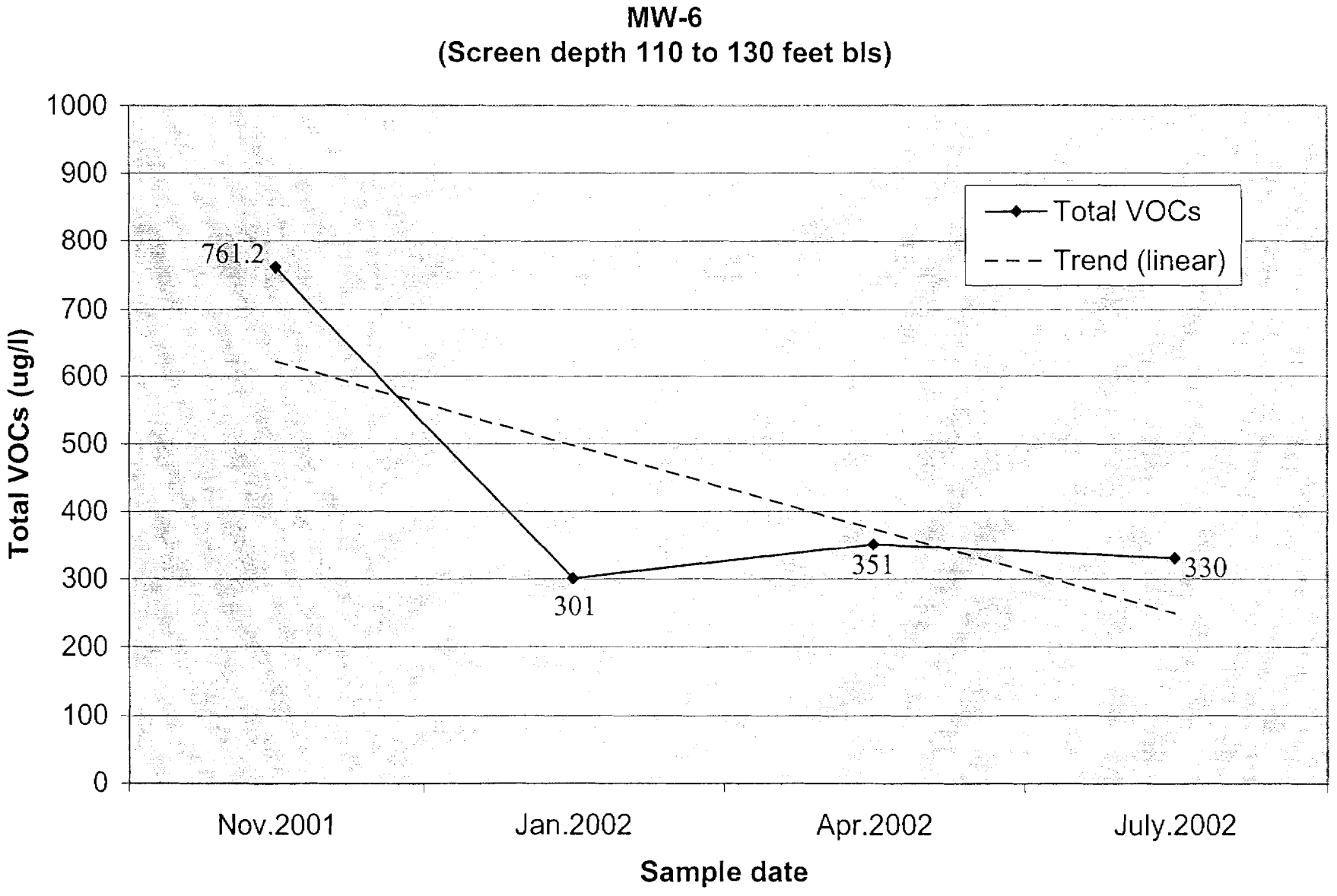
MW-4
(Screen depth 180 to 200 feet bls)



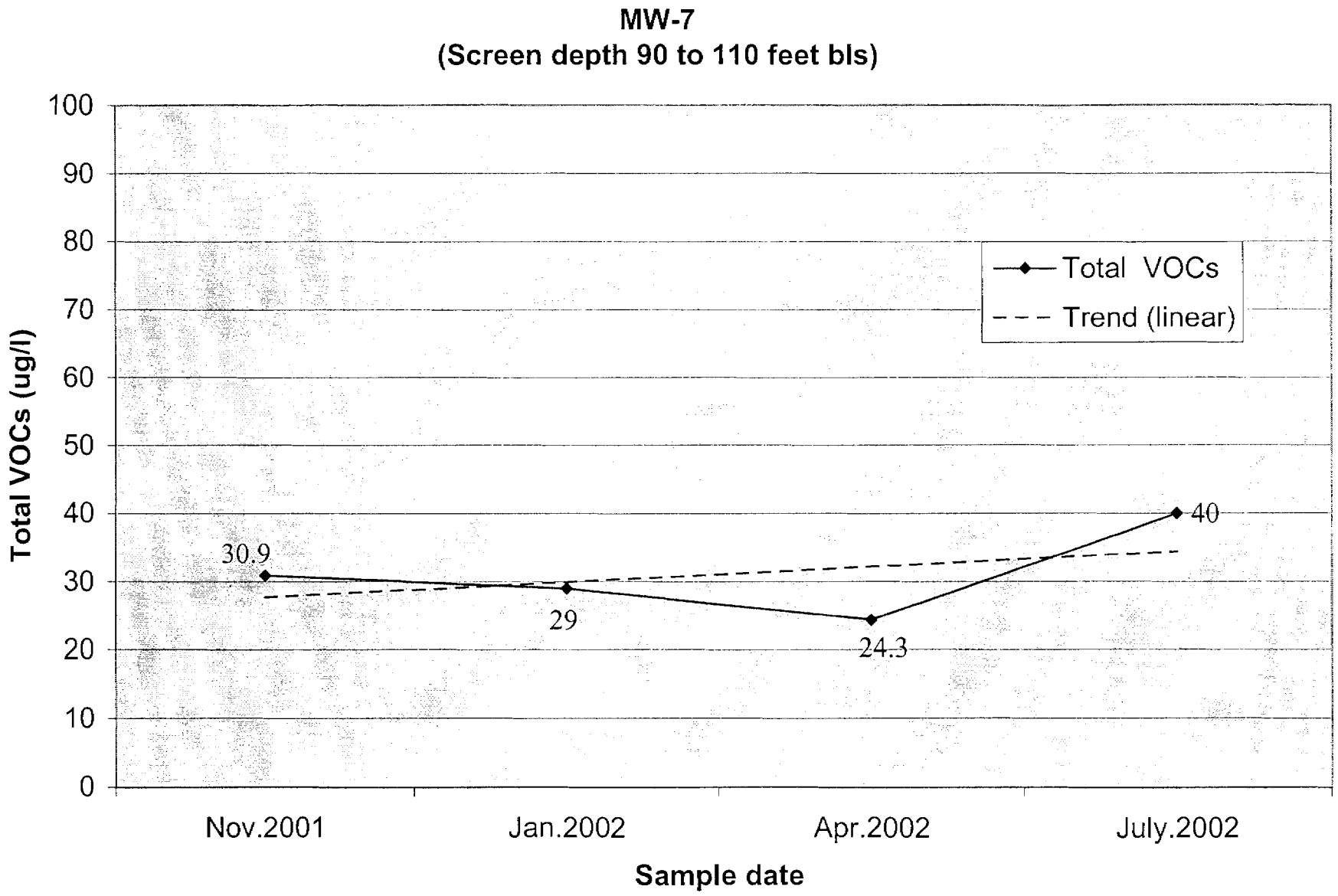
kr/1898/Total VOCs Qtr 1-4.xls: MW-4

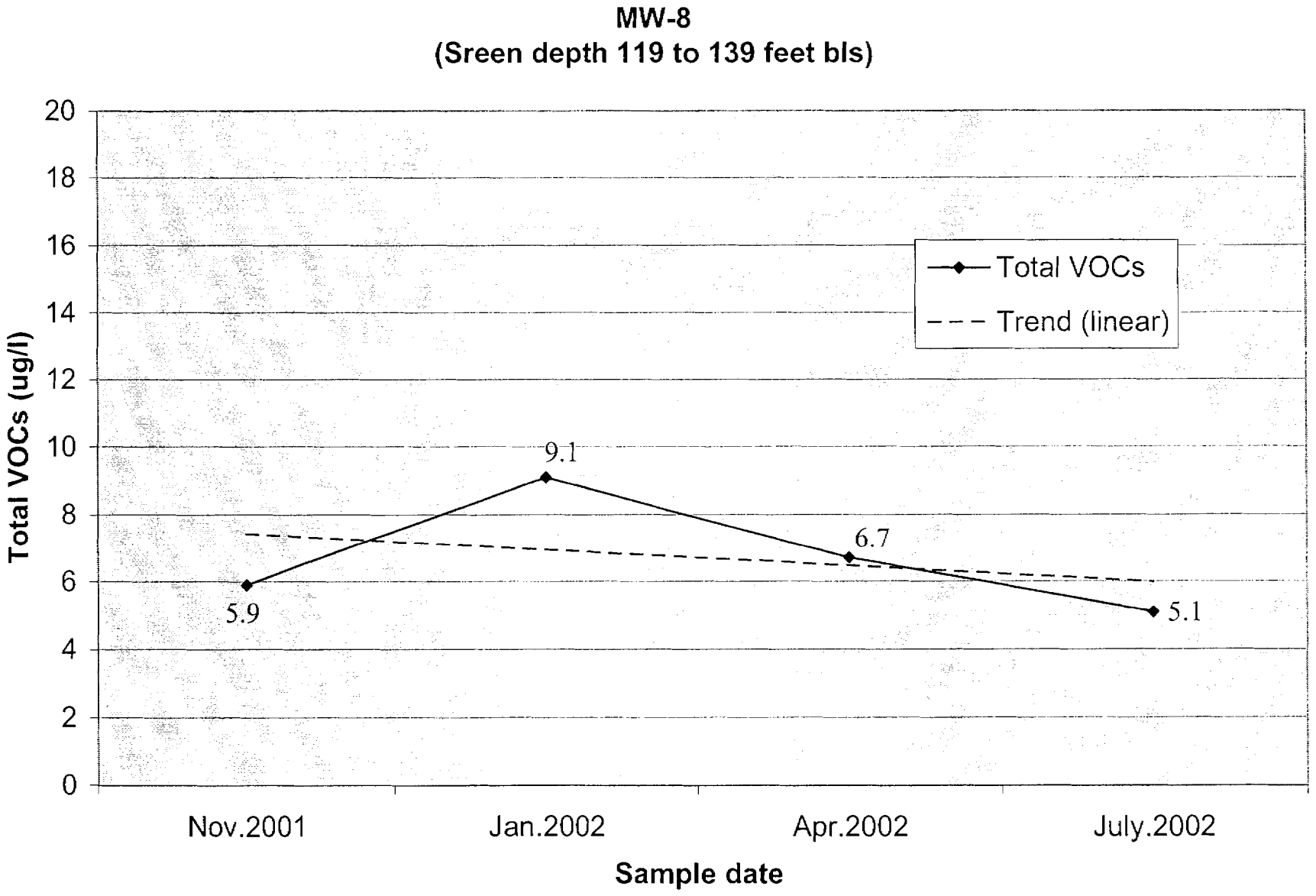
MW-5
(Screen depth 90 to 110 feet bls)





kr/1898/Total VOCs Qtr 1-4.xls: MW-6


MW-7
(Screen depth 90 to 110 feet bls)
Total VOCs (ug/l)
100
90
80
70
60
50
40
30
20
10
0
Total VOCs
Trend (linear)
30.9
29
24.3
40
Nov.2001
Jan.2002
Apr.2002
July.2002
Sample date


MW-8
(Sreen depth 119 to 139 feet bls)
Total VOCs (ug/l)
20
18
16
14
12
10
8
6
4
2
0
Total VOCs
Trend (linear)
9.1
6.7
5.9
5.1
Nov.2001
Jan.2002
Apr.2002
July.2002
Sample date

Appendix D

APPENDIX D

EARLY WARNING WELL AND OFF-SITE MONITORING WELL NATURAL ATTENUATION MONITORING PARAMETER RESULTS

APPENDIX D
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
MONITORING WELL SAMPLE RESULTS
ATTENUATION MONITORING PARAMETERS

Sample Identification	EW-1B	EW-1B	EW-1B	EW-1B	EW-1C	EW-1C	EW-1C	EW-1C		Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Sample Depth, ft	154-164	154-164	154-164	154-164	506-516	506-516	506-516	506-516			
Date of Collection	09/25/01	01/28/02	04/25/02	07/19/02	09/25/01	01/28/02	04/25/02	07/19/02			
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			
Units	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)		(mg/l)	(mg/l)
Total Iron	U	**0.445**	U	0.038 B	0.157	U	0.248	**0.316**		0.05	0.3 ST**
Total Organic Carbon	U	1.1	2	2.7	U	U	U	1.400		5	---
Alkalinity	20.6	18	20	18	10.2	10	12	11.0		10	---
Chloride	26.9	31.9	33.5	31.2	9.81	13.3	13.6	13.7		3	250 ST
Nitrate	6.071	6.3	6	6.4	5.591	6	6	6.3		0.05	10 ST
Sulfate	21.9	23.5	23.1	21.9	U	2.3	1.4	U		5	250 ST
Carbon Dioxide	79.8	60	U	64	72.9	13	14	17		NA	---
Methane	0.005	U	U	U	0.009	U	U	U		0.002	---

Sample Identification	EW-2B	EW-2B	EW-2B	EW-2B	EW-2C	EW-2C	EW-2C	EW-2C		Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Sample Depth, ft	132-142	132-142	132-142	132-142	504-514	504-514	504-514	504-514			
Date of Collection	09/25/01	01/28/02	04/25/02	07/19/02	09/25/01	01/28/02	04/25/02	07/19/02			
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			
Units	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)		(mg/l)	(mg/l)
Total Iron	U	U	U	U	**0.339**	**0.858**	**0.551**	U		0.05	0.3 ST**
Total Organic Carbon	U	1	1.2	2	U	1.4	U	U		5	---
Alkalinity	15	14	14	13	10.6	10	10	10		10	---
Chloride	30.3	35.8	35.9	36.8	4.11	7	6.8	6.8		3	250 ST
Nitrate	2.194	2.2	2.1	2.3	1.773	1.9	1.9	1.9		0.05	10 ST
Sulfate	17.1	12.4	9.7	9.5	U	2.7	1.5	U		5	250 ST
Carbon Dioxide	60.6	60	56	67	17.4	13	10	14		NA	---
Methane	0.11	0.048	0.004 J	0.056	0.007	U	0.074	U		0.002	---

QUALIFIERS:
U: Compound analyzed for but not detected
NA: Not Available
B: Concentration was above IDL but less than CRDL

NOTES:
ST: Standard
---: Not established
**: Standard applies to Total Iron
Bold: Indicates value exceeds NYSDEC Class GA Groundwater Standard or Guidance Value

APPENDIX D
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
MONITORING WELL SAMPLE RESULTS
ATTENUATION MONITORING PARAMETERS

Sample Identification	MW-1	MW-1	MW-1	MW-1	MW-2	MW-2	MW-2	MW-2		Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Sample Depth, ft	90-110	90-110	90-110	130-150	110-130	110-130	110-130	110-130			
Date of Collection	11/02/01	01/24/02	04/24/02	07/16/02	11/02/01	01/24/02	04/24/02	07/16/02			
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			
Units	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)		(mg/l)	(mg/l)
Total Iron	U	U	U	U	U	0.474	0.265	0.254		0.05	0.3 ST**
Total Organic Carbon	U	4.1	1.9	2.1	U	3.5	2.7	2.6		5	---
Alkalinity	10	U	11	U	22	25	27	27		10	---
Chloride	38.8	48.9	50	59.7	33.5	37.5	37	36.6		3	250 ST
Nitrate	5.553	4.1	4.5	5.3	6.813	6.7	7	5.1		0.05	10 ST
Sulfate	24.2	26	27.3	29.4	20.9	22.8	22.5	18.9		5	250 ST
Carbon Dioxide	66.3	78	66	U	408	62	62	83		NA	---
Methane	0.004	U	U	U	0.013	U	U	0.042		0.002	---

Sample Identification	MW-3	MW-3	MW-3	MW-3	MW-4	MW-4	MW-4	MW-4		Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Sample Depth, ft	130-150	130-150	130-150	130-150	180-200	180-200	180-200	180-200			
Date of Collection	11/02/01	01/24/02	04/24/02	07/16/02	11/02/01	01/24/02	04/24/02	07/16/02			
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			
Units	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)		(mg/l)	(mg/l)
Total Iron	U	7.58	5.03	3.95	U	0.5	U	U		0.05	0.3 ST**
Total Organic Carbon	5.505	4.3	2.7	2.3	6.309	2.8	2.9	2.4		5	---
Alkalinity	18	27	18	15	22.0	20	22	19		10	---
Chloride	36	39.9	35.7	37.6	45.7	47.4	46.8	46.9		3	250 ST
Nitrate	6.505	4.4	4.9	5.1	8.177	9.1	8.9	9.2		0.05	10 ST
Sulfate	21.1	12.4	17.2	18.9	U	2	2.3	4.4		5	250 ST
Carbon Dioxide	369	71	72	83	466	68	73	71		NA	---
Methane	1.2	0.097	0.11	0.14	0.013	U	U	0.002		0.002	---

QUALIFIERS:
U: Compound analyzed for but not detected
NA: Not Available
B: Concentration was above IDL but less than CRDL

NOTES:
ST: Standard
---: Not established
**: Standard applies to Total Iron
: Indicates Value exceeds NYSDEC Class GA Groundwater Standard or Guidance Value

APPENDIX D
NEW CASSEL INDUSTRIAL AREA
OFF-SITE GROUNDWATER MONITORING AND ASSESSMENT PROGRAM
MONITORING WELL SAMPLE RESULTS
ATTENUATION MONITORING PARAMETERS

Sample Identification	MW-5	MW-5	MW-5	MW-5	MW-6	MW-6	MW-6	MW-6		Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Sample Depth, ft	90-110	90-110	90-110	90-110	110-130	110-130	110-130	110-130			
Date of Collection	11/05/01	01/25/02	04/26/02	07/17/02	11/05/01	01/25/02	04/26/02	07/17/02			
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			
Units	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)		(mg/l)	(mg/l)
Total Iron	U	0.618	U	U	U	U	0.0457 B	0.0609 B		0.05	0.3 ST**
Total Organic Carbon	U	4.1	1	1.8	U	4.4	2	1.9		5	---
Alkalinity	16	13	15	17	32	27	27	24		10	---
Chloride	43.6	53.1	62.7	66.7	117	102	99	101		3	250 ST
Nitrate	3.744	3.7	3.9	4.9	4.885	5.1	4.7	5.2		0.05	10 ST
Sulfate	29.2	25.7	26.6	20.5	29.1	30.9	26.4	21.3		5	250 ST
Carbon Dioxide	53.1	44	31	49	392	57	53	62		NA	---
Methane	0.009	U	U	U	0.007	U	U	U		0.002	---

Sample Identification	MW-7	MW-7	MW-7	MW-7	MW-8	MW-8	MW-8	MW-8	MW-9	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Sample Depth, ft	90-110	90-110	90-110	90-110	120-140	120-140	120-140	120-140	305-315		
Date of Collection	11/05/01	01/25/02	04/24/02	07/16/02	11/05/01	01/25/02	04/24/02	07/17/02	07/17/02		
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
Units	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
Total Iron	U	0.0693 B	U	U	U	10.7	18.2	13.2	0.027 B	0.05	0.3 ST**
Total Organic Carbon	U	3.4	1.1	1.4	12.2	6.9	4.4	2.2	1.9	5	---
Alkalinity	U	U	U	U	14	38	53	42	24	10	---
Chloride	18.8	21.8	21.5	22.7	22.9	26.1	25.9	24.7	101	3	250 ST
Nitrate	5.913	6	5.6	6.3	5.049	2.8	3.4	1.7	5.2	0.05	10 ST
Sulfate	31	33.8	28.4	31.1	32.7	27.9	22.8	19.6	21.3	5	250 ST
Carbon Dioxide	158	81	U	U	56.2	U	48	52	62	NA	---
Methane	0.007	U	U	U	0.007	U	0.22	0.16	U	0.002	---

QUALIFIERS:
U: Compound analyzed for but not detected
NA: Not Available
B: Concentration was above IDL but less than CRDL

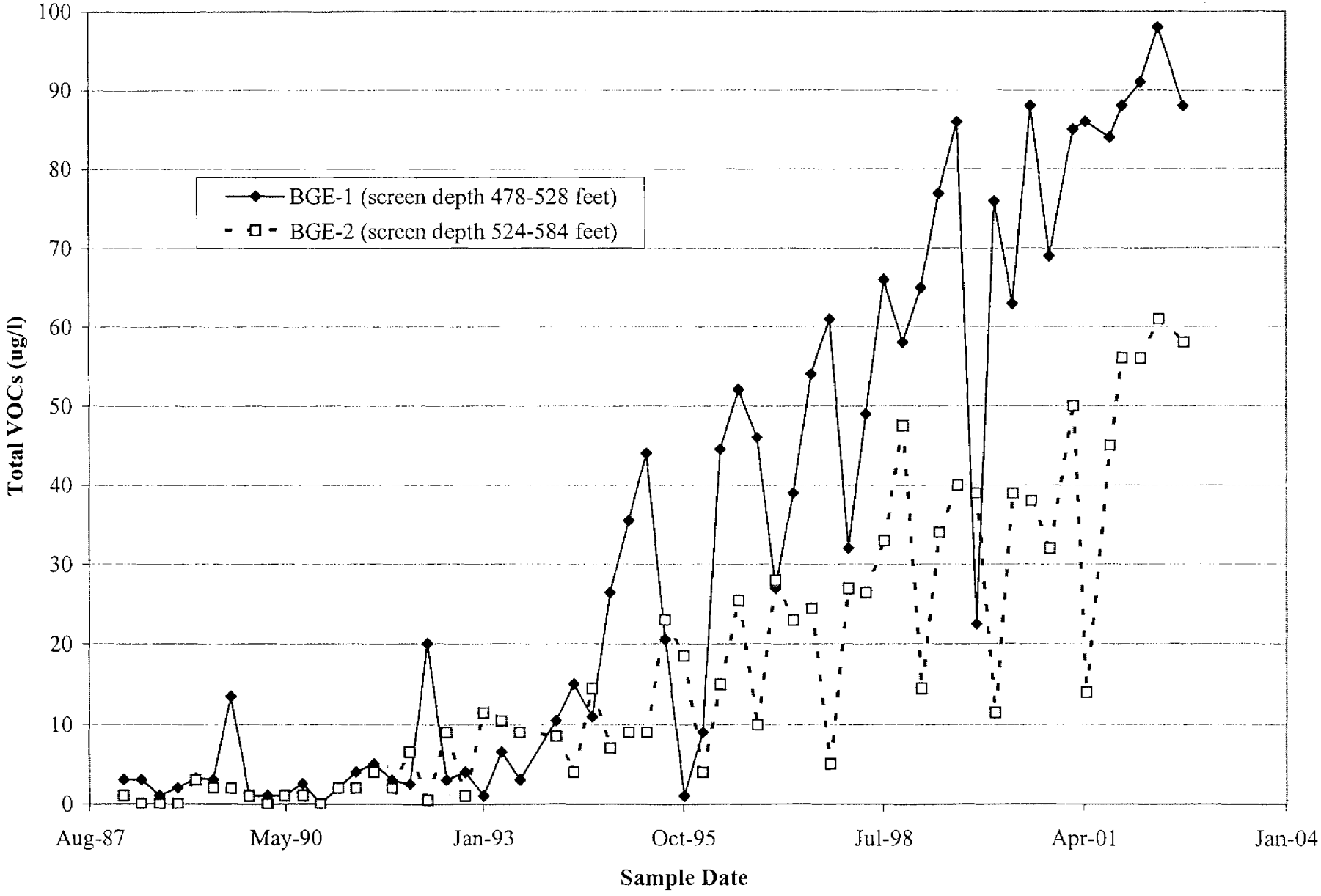
NOTES:
ST: Standard
---: Not established
**: Standard applies to Total Iron
: Indicates Value exceeds NYSDEC Class GA Groundwater Standard or Guidance Value

Appendix E

APPENDIX E

HISTORIC CONCENTRATION GRAPH FOR BOWLING GREEN ESTATES WATER DISTRICT SUPPLY WELLS (1988-2002) - TOTAL VOLATILE ORGANIC COMPOUNDS

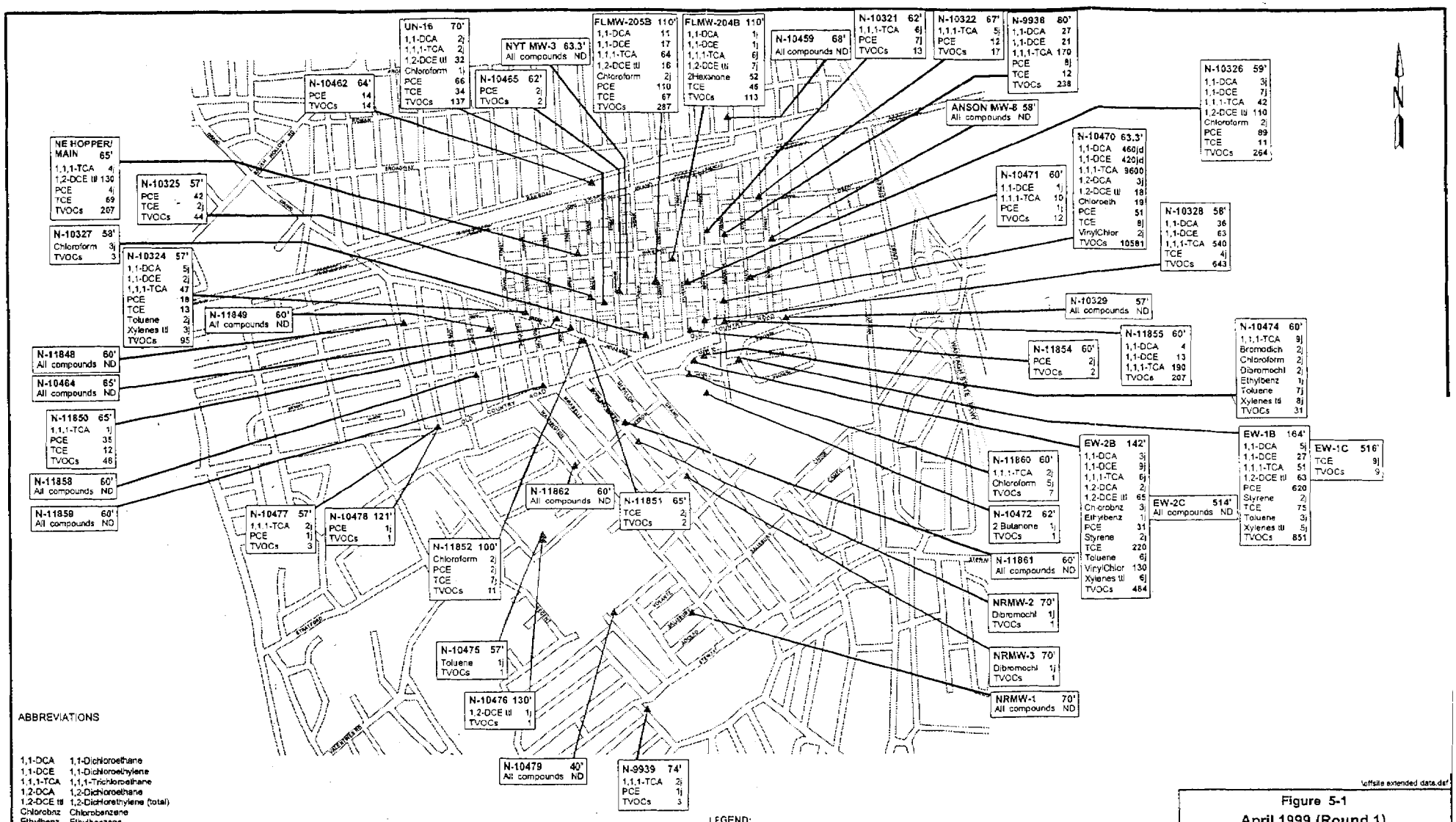
TOTAL VOCS IN BOWLING GREEN ESTATES WATER SUPPLY WELLS (1988-2002)

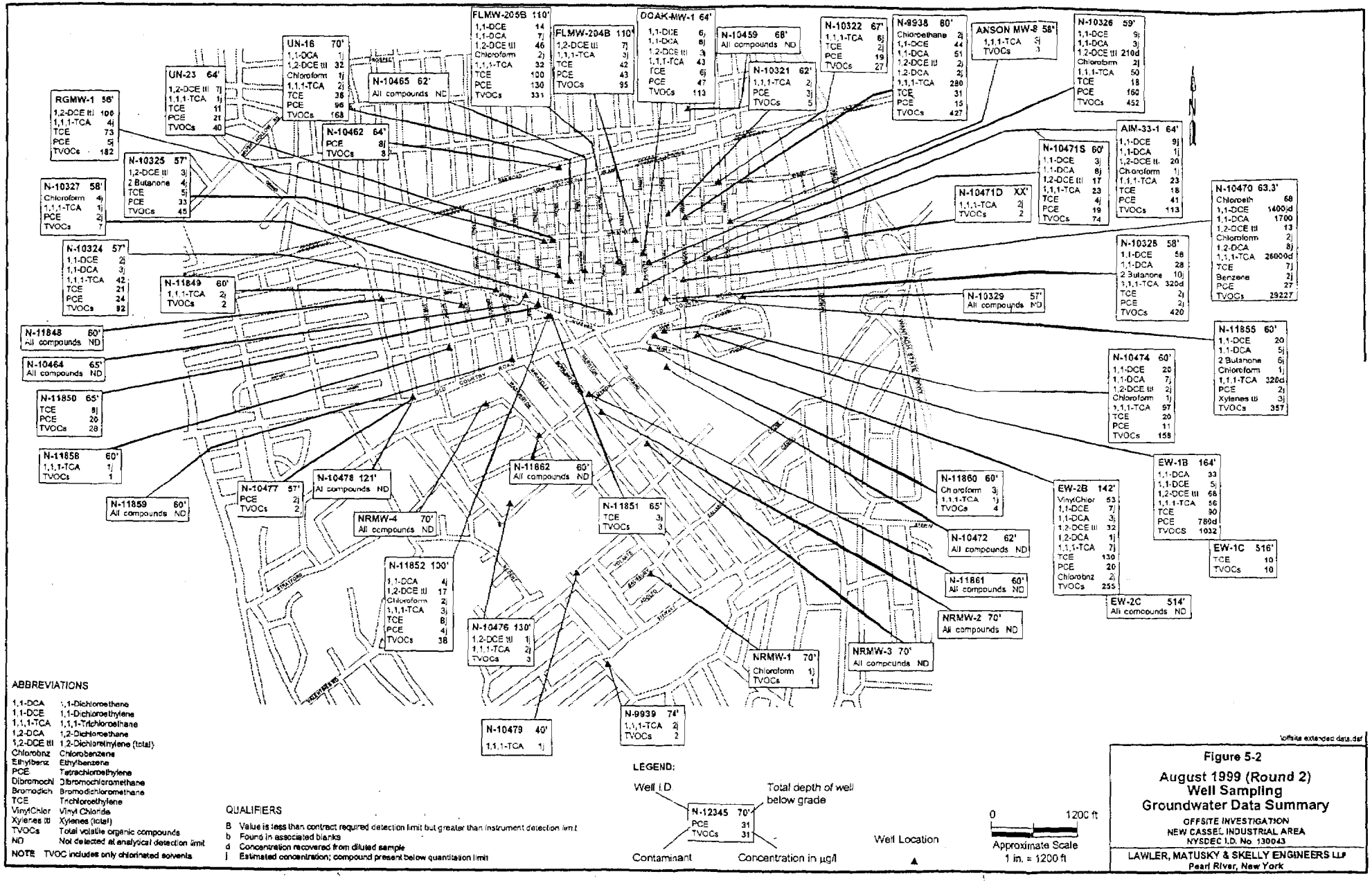


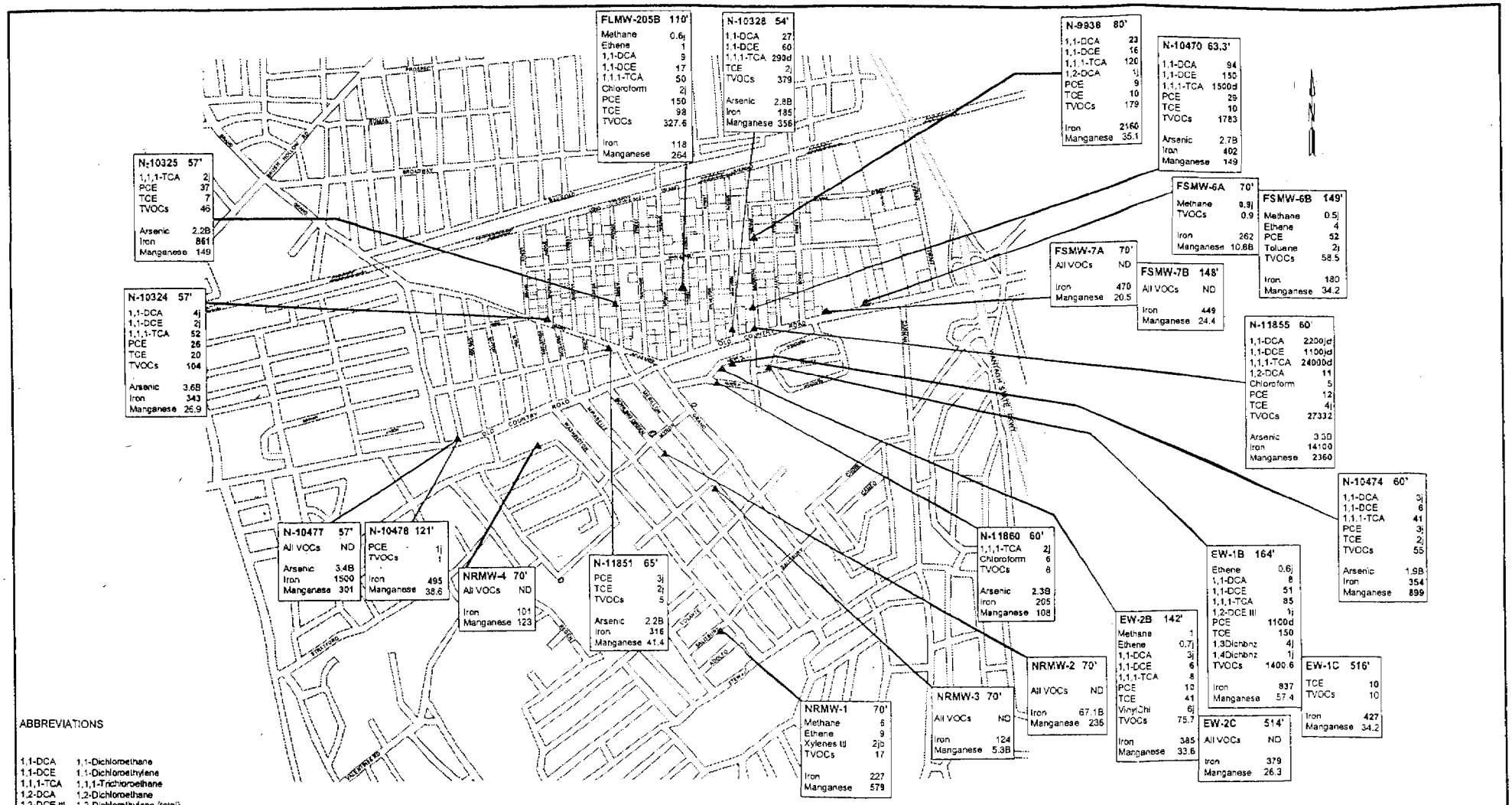
Appendix F

APPENDIX F

RI/FS WELL SAMPLING GROUNDWATER DATA SUMMARY FIGURES OF THE 2000 RI/FS REPORT


UN-16 70'
1,1-DCA 2j
1,1,1-TCA 2j
1,2-DCE tl 32
Chloroform 1j
PCE 66
TCE 34
TVOCs 137
NYT MW-3 63.3'
All compounds ND
FLMW-205B 110'
1,1-DCA 11
1,1-DCE 17
1,1,1-TCA 64
1,2-DCE tl 16
Chloroform 2j
PCE 110
TCE 67
TVOCs 287
FLMW-204B 110'
1,1-DCA 1j
1,1-DCE 1j
1,1,1-TCA 6j
1,2-DCE tl 7j
2Hexanone 52
TCE 46
TVOCs 113
N-10459 68'
All compounds ND
N-10321 62'
1,1,1-TCA 6j
PCE 7j
TVOCs 13
N-10322 67'
1,1,1-TCA 5j
PCE 12
TVOCs 17
N-9938 80'
1,1-DCA 27
1,1-DCE 21
1,1,1-TCA 170
PCE 8j
TCE 12
TVOCs 238
N-10462 64'
PCE 14
TVOCs 14
N-10465 62'
PCE 2j
TVOCs 2
ANSON MW-8 58'
All compounds ND
N-10326 59'
1,1-DCA 3j
1,1-DCE 7j
1,1,1-TCA 42
1,2-DCE tl 110
Chloroform 2j
PCE 89
TCE 11
TVOCs 264
NE HOPPER/ MAIN 65'
1,1,1-TCA 4j
1,2-DCE tl 136
PCE 4j
TCE 69
TVOCs 207
N-10325 57'
PCE 42
TCE 2j
TVOCs 44
N-10470 63.3'
1,1-DCA 460jd
1,1-DCE 420jd
1,1,1-TCA 9600
1,2-DCA 3j
1,2-DCE tl 18
Chloroeth 19
PCE 51
TCE 8j
VinylChlor 2j
TVOCs 10581
N-10471 60'
1,1-DCE 1j
1,1,1-TCA 10
PCE 1j
TVOCs 12
N-10328 58'
1,1-DCA 36
1,1-DCE 63
1,1,1-TCA 540
TCE 4j
TVOCs 643
N-10327 58'
Chloroform 3j
TVOCs 3
N-10324 57'
1,1-DCA 5j
1,1-DCE 2j
1,1,1-TCA 47
PCE 18
TCE 13
Toluene 2j
Xylenes tl 3j
TVOCs 95
N-11849 60'
All compounds ND
N-10329 57'
All compounds ND
N-11855 60'
1,1-DCA 4
1,1-DCE 13
1,1,1-TCA 190
TVOCs 207
N-10474 60'
1,1,1-TCA 9j
Bromodich 2j
Chloroform 2j
Dibromochl 2j
Ethylbenz 1j
Toluene 7j
Xylenes tl 8j
TVOCs 31
N-11854 60'
PCE 2j
TVOCs 2
N-11848 60'
All compounds ND
N-10464 65'
All compounds ND
N-11850 65'
1,1,1-TCA 1j
PCE 35
TCE 12
TVOCs 48
N-11858 60'
All compounds ND
N-11859 60'
All compounds ND
EW-2B 142'
1,1-DCA 3j
1,1-DCE 9j
1,1,1-TCA 6j
1,2-DCA 2j
1,2-DCE tl 65
Chlorobnz 3j
Ethylbenz 1j
PCE 31
Styrene 2j
TCE 220
Toluene 6j
VinylChlor 130
Xylenes tl 6j
TVOCs 484
EW-1B 164'
1,1-DCA 5j
1,1-DCE 27
1,1,1-TCA 51
1,2-DCE tl 63
PCE 620
Styrene 2j
TCE 75
Toluene 3j
Xylenes tl 5j
TVOCs 851
EW-1C 516'
TCE 9j
TVOCs 9
EW-2C 514'
All compounds ND
N-11860 60'
1,1,1-TCA 2j
Chloroform 5j
TVOCs 7
N-10472 62'
2 Butanone 1j
TVOCs 1
N-11861 60'
All compounds ND
N-11862 60'
All compounds ND
N-11851 65'
TCE 2j
TVOCs 2
N-10477 57'
1,1,1-TCA 2j
PCE 1j
TVOCs 3
N-10478 121'
PCE 1j
TVOCs 1
N-11852 100'
Chloroform 2j
PCE 2j
TCE 7j
TVOCs 11
NRMW-2 70'
Dibromochl 1j
TVOCs 1
NRMW-3 70'
Dibromochl 1j
TVOCs 1
NRMW-1 70'
All compounds ND
N-10475 57'
Toluene 1j
TVOCs 1
N-10476 130'
1,2-DCE tl 1j
TVOCs 1
N-10479 40'
All compounds ND
N-9939 74'
1,1,1-TCA 2j
PCE 1j
TVOCs 3
N
ABBREVIATIONS
1,1-DCA 1,1-Dichloroethane
1,1-DCE 1,1-Dichloroethylene
1,1,1-TCA 1,1,1-Trichloroethane
1,2-DCA 1,2-Dichloroethane
1,2-DCE tl 1,2-Dichloroethylene (total)
Chlorobnz Chlorobenzene
Ethylbenz Ethylbenzene
PCE Tetrachloroethylene
Dibromochl Dibromochloromethane
Bromodich Bromodichloromethane
TCE Trichloroethylene
VinylChlor Vinyl Chloride
Xylenes tl Xylenes (total)
TVOCs Total volatile organic compounds
ND Not detected at analytical detection limit
NOTE TVOC includes only chlorinated solvents
QUALIFIERS
B Value is less than contract required detection limit but greater than instrument detection limit
b Found in associated blanks
d Concentration recovered from diluted sample
j Estimated concentration; compound present below quantitation limit
LEGEND:
Well I.D.
N-12345 70'
PCE 31
TVOCs 31
Total depth of well below grade
Contaminant
Concentration in µg/l
Well Location
0
1200 ft
Approximate Scale
1 in. = 1200 ft
\offsite extended data.dat
Figure 5-1
April 1999 (Round 1)
Well Sampling
Groundwater Data Summary
OFFSITE INVESTIGATION
NEW CASSEL INDUSTRIAL AREA
NYSDEC I.D. No. 130043
LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Pearl River, New York


RGMW-1 56'
1,2-DCE tll 106
1,1,1-TCA 4j
TCE 73
PCE 5j
TVOCs 182
UN-23 64'
1,2-DCE tll 7j
1,1,1-TCA 1j
TCE 11
PCE 21
TVOCs 40
UN-16 70'
1,1-DCA 1j
1,2-DCE tll 32
Chloroform 1j
1,1,1-TCA 2j
TCE 36
PCE 96
TVOCs 168
N-10465 62'
All compounds ND
FLMW-205B 110'
1,1-DCE 14
1,1-DCA 7j
1,2-DCE tll 46
Chloroform 2j
1,1,1-TCA 32
TCE 100
PCE 130
TVOCs 331
FLMW-204B 110'
1,2-DCE tll 7j
1,1,1-TCA 3j
TCE 42
PCE 43
TVOCs 95
DOAK-MW-1 64'
1,1-DCE 6j
1,1-DCA 8j
1,2-DCE tll 3j
1,1,1-TCA 43
TCE 6j
PCE 47
TVOCs 113
N-10459 68'
All compounds ND
N-10321 62'
1,1,1-TCA 2j
PCE 3j
TVOCs 5
N-10322 67'
1,1,1-TCA 6j
TCE 2j
PCE 19
TVOCs 27
N-9938 80'
Chloroethane 2j
1,1-DCE 44
1,1-DCA 51
1,2-DCE tll 2j
1,2-DCA 2j
1,1,1-TCA 280
TCE 31
PCE 15
TVOCs 427
ANSON MW-8 58'
1,1,1-TCA 5j
TVOCs 5
N-10326 59'
1,1-DCE 9j
1,1-DCA 9j
1,2-DCE tll 210d
Chloroform 2j
1,1,1-TCA 50
TCE 18
PCE 160
TVOCs 452
AIM-33-1 64'
1,1-DCE 9j
1,1-DCA 1j
1,2-DCE tll 20
Chloroform 1j
1,1,1-TCA 23
TCE 18
PCE 41
TVOCs 113
N-10471S 60'
1,1-DCE 3j
1,1-DCA 8j
1,2-DCE tll 17
1,1,1-TCA 23
TCE 4j
PCE 19
TVOCs 74
N-10471D XX'
1,1,1-TCA 2j
TVOCs 2
N-10470 63.3'
Chloreth 68
1,1-DCE 1400d
1,1-DCA 1700
1,2-DCE tll 13
Chloroform 2j
1,2-DCA 8j
1,1,1-TCA 26000d
TCE 7j
Benzene 2j
PCE 27
TVOCs 29227
N-10328 58'
1,1-DCE 58
1,1-DCA 28
2 Butanone 10j
1,1,1-TCA 320d
TCE 2j
PCE 2j
TVOCs 420
N-10329 57'
All compounds ND
N-10855 60'
1,1-DCE 20
1,1-DCA 5j
2 Butanone 6j
Chloroform 1j
1,1,1-TCA 320d
PCE 2j
Xylenes tll 3j
TVOCs 357
N-10474 60'
1,1-DCE 20
1,1-DCA 7j
1,2-DCE tll 2j
Chloroform 1j
1,1,1-TCA 97
TCE 20
PCE 11
TVOCs 158
EW-1B 164'
1,1-DCA 33
1,1-DCE 5j
1,2-DCE tll 68
1,1,1-TCA 56
TCE 90
PCE 780d
TVOCS 1032
EW-1C 516'
TCE 10
TVOCs 10
EW-2B 142'
VinylChlor 53
1,1-DCE 7j
1,1-DCA 3j
1,2-DCE tll 32
1,2-DCA 1j
1,1,1-TCA 7j
TCE 130
PCE 20
Chlorobnz 2j
TVOCs 255
EW-2C 514'
All compounds ND
N-10860 60'
Chloroform 3j
1,1,1-TCA 1j
TVOCs 4
N-10472 62'
All compounds ND
N-11861 60'
All compounds ND
NRMW-2 70'
All compounds ND
NRMW-3 70'
All compounds ND
NRMW-1 70'
Chloroform 1j
TVOCs 1
N-11862 60'
All compounds ND
N-11851 65'
TCE 3j
TVOCs 3
N-10478 121'
All compounds ND
N-10477 57'
PCE 2j
TVOCs 2
NRMW-4 70'
All compounds ND
N-11852 130'
1,1-DCA 4j
1,2-DCE tll 17
Chloroform 2j
1,1,1-TCA 3j
TCE 8j
PCE 4j
TVOCs 38
N-10476 130'
1,2-DCE tll 1j
1,1,1-TCA 2j
TVOCs 3
N-10479 40'
1,1,1-TCA 1j
N-9939 74'
1,1,1-TCA 2j
TVOCs 2
N-11848 60'
All compounds ND
N-10464 65'
All compounds ND
N-11850 65'
TCE 8j
PCE 20
TVOCs 28
N-11858 60'
1,1,1-TCA 1j
TVOCs 1
N-11859 60'
All compounds ND
N-10324 57'
1,1-DCE 2j
1,1-DCA 3j
1,1,1-TCA 42
TCE 21
PCE 24
TVOCs 92
N-11849 60'
1,1,1-TCA 2j
TVOCs 2
N-10325 57'
1,2-DCE tll 3j
2 Butanone 4j
TCE 5j
PCE 33
TVOCs 45
N-10327 58'
Chloroform 4j
1,1,1-TCA 1j
PCE 2j
TVOCs 7
N-10462 64'
PCE 8j
TVOCs 8
N
LEGEND:
Well I.D
Total depth of well below grade
N-12345 70'
PCE 31
TVOCs 31
Contaminant
Concentration in µg/l
Well Location
0
1200 ft
Approximate Scale
1 in. = 1200 ft
ABBREVIATIONS
1,1-DCA 1,1-Dichloroethane
1,1-DCE 1,1-Dichloroethylene
1,1,1-TCA 1,1,1-Trichloroethane
1,2-DCA 1,2-Dichloroethane
1,2-DCE tll 1,2-Dichloroethylene (total)
Chlorobnz Chlorobenzene
Ethylbenz Ethylbenzene
PCE Tetrachloroethylene
Dibromochl Dibromochloromethane
Bromodich Bromodichloromethane
TCE Trichloroethylene
VinylChlor Vinyl Chloride
Xylenes tll Xylenes (total)
TVOCs Total volatile organic compounds
ND Not detected at analytical detection limit
NOTE TVOC includes only chlorinated solvents
QUALIFIERS
B Value is less than contract required detection limit but greater than instrument detection limit
b Found in associated blanks
d Concentration recovered from diluted sample
j Estimated concentration; compound present below quantitation limit
'offsite extended data.def'
Figure 5-2
August 1999 (Round 2)
Well Sampling
Groundwater Data Summary
OFFSITE INVESTIGATION
NEW CASSEL INDUSTRIAL AREA
NYSDEC I.D. No. 130043
LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Pearl River, New York



ABBREVIATIONS

1,1-DCA	1,1-Dichloroethane
1,1-DCE	1,1-Dichloroethylene
1,1,1-TCA	1,1,1-Trichloroethane
1,2-DCA	1,2-Dichloroethane
1,2-DCE tl	1,2-Dichloroethylene (total)
1,3Dichlbnz	1,3-Dichlorobenzene
1,4Dichlbnz	1,4-Dichlorobenzene
Chlorobnz	Chlorobenzene
Ethylbenz	Ethylbenzene
PCE	Tetrachloroethylene
Dibromochl	Dibromochloromethane
Bromodich	Bromodichloromethane
TCE	Trichloroethylene
VinylChlor	Vinyl Chloride
Xylenes tl	Xylenes (total)
TVOCs	Total volatile organic compounds
ND	Not detected at analytical detection limit

NOTE TVOC includes only chlorinated solvents

QUALIFIERS

- B Value is less than contract required detection limit but greater than instrument detection limit
- b Found in associated blanks
- d Concentration recovered from diluted sample
- j Estimated concentration; compound present below quantitation limit

LEGEND:

Well I.D. — Total depth of well below grade

N-12345 70'
PCE 31
TVOCs 31

Contaminant — Concentration in µg/l

Well Location ▲

'offsite extended data.def'

Figure 5-3

January 2000 (Round 3)
Well Sampling
Groundwater Data Summary

OFFSITE INVESTIGATION
NEW CASSEL INDUSTRIAL AREA
NYSDEC I.D. No. 130043

LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Pearl River, New York