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FINAL SEMI-ANNUAL CORRECTIVE ACTION ASSESSMENT REPORT FOR SITE 11

OCTOBER 2001 - MARCH 2002

4/30/2002

J A JONES MANAGEMENT SERVICES

NSB Kings Bay Administrative Record
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Semi – Annual Corrective Action Assessment Report

October 2001 – March 2002
Final

for
Naval Submarine Base
Kings Bay, Georgia

Prepared for:
Naval Submarine Base
Kings Bay, Georgia
Facilities and Environmental Directorate

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SEMI – ANNUAL CORRECTIVE ACTION ASSESSMENT REPORT
OCTOBER 2001 – MARCH 2002
FINAL

SITE 11, OLD CAMDEN COUNTY LANDFILL
NAVAL SUBMARINE BASE KINGS BAY, GEORGIA

Prepared for:

NAVAL SUBMARINE BASE
KINGS BAY, GEORGIA
FACILITIES AND ENVIRONMENTAL DIRECTORATE

Prepared by:

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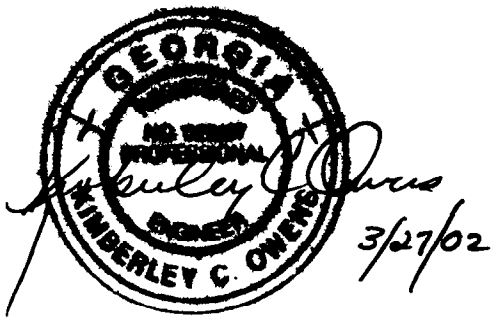
The work described and professional opinions rendered in this document, *Semi-Annual Corrective Action Assessment Report, October 2001 – March 2002, Site 11, Old Camden County Landfill, Naval Submarine Base Kings Bay, Georgia* were conducted and developed using commonly accepted procedures consistent with applicable standards of practice. The scope of services and activities described in this document were developed under the supervision of a professional engineer registered in the State of Georgia.



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ACRONYMS

JAJMS	J.A. Jones Management Services
Bechtel	Bechtel Environmental, Inc.
FID	flame ionization detector
NSB	Naval Submarine Base
PID	photoionization detector

UNITS OF MEASURE

Ft	Foot
Gal	Gallon
ID	inner diameter
In.	Inch
MSL	mean sea level
OD	outer diameter
Ug/L	micrograms per liter
Ppm	parts per million

1.0 INTRODUCTION

J.A. Jones Management Services (JAJMS) has been contracted by the Department of the Navy, Submarine Base Kings Bay to provide ground water monitoring at Site 11, Old Camden County Landfill at the Naval Submarine Base (NSB) Kings Bay.

This Semi-Annual Corrective Action Assessment Report summarizes the semi-annual monitoring activities and remediation progress from October 2001 to March 2002. The report presents a summary of 1) the quarterly groundwater monitoring; 2) overall status of remediation; and 3) projected work for the next six months. The report also serves as the January to March 2002 Quarterly Groundwater Monitoring Report.

2.0 SUMMARY OF ACTIVITIES

2.1 Remediation Progress

CH2M Hill Constructors, Inc (CCI) with J.A Jones Environmental Services Company (J.A Jones) performed the Phase IV chemical oxidation treatment from September 24, 2001 to December 11, 2001. From December 12, 2001 to January 22, 2002, soybean oil and water were injected into the treatment area. A more detailed description of the remediation activities is detailed in the status report in Appendix C (CCI 2002).

2.2 Quarterly Groundwater Monitoring

Quarterly groundwater sampling was conducted by JAJMS on February 5-6, 2002. Activities included well inspections, well measurements, and groundwater sampling and analysis. The November sampling and analysis results are detailed in the *Quarterly Groundwater Monitoring Report, October – December 2001, Site 11, Old Camden County Landfill, Naval Submarine Base Kings Bay, Georgia* (JJMS 2001).

Weather conditions during the sampling event February 5-6, 2002 were cool and partly cloudy with temperatures from the middle 50's in the morning to the middle 60's in the afternoon. There was no significant rainfall in the week preceding the February 5-6, 2002 sampling event. For the month of January 2002 preceding the February sampling event, a total of 4.0 inches of rainfall occurred. A site map is provided as Figure 1.

Well Inspections – All wells were inspected for aboveground damage or well deterioration. Generally, all wells were structurally sound with no aboveground damage. KBA-11-02 should be redeveloped because the measured depth of the well has been slowly decreasing.

Well Measurements – Well measurements included headspace readings, depth to water, and the total depth measurements. Headspace readings were collected using a Photovac model 2020 PID organic vapor meter.

Water levels and well depth measurements were collected during the sampling event using an electronic water level indicator. Measurements were made from a surveyed reference point located at the top of the well casing. Measurements are to 0.01 feet. Measurement readings were collected two to three times over an eight-hour period on February 5, 2002. Stabilization of static water level was when two consecutive readings were within 0.01 feet of the previous reading. Barometric pressure, relative humidity and ambient air temperatures were collected during each static water level measurement. All water level measurements were obtained prior to sampling the first well thus avoiding interference problems.

Groundwater Sampling and Analysis – Groundwater samples were generally collected from wells in order of least contaminated to most contaminated. Groundwater samples were collected using the low-flow (minimal draw down) method. Prior to purging, the intake of a dedicated piece of Teflon™ tubing (3/16-in. OD by ¼-in. ID) was positioned near the center of the well screen. Groundwater was then purged through the tube using a peristaltic pump, Geotech Model Geopump 2. Water quality parameters measured while purging included temperature, pH, conductivity, oxygen-reduction potential, turbidity, and dissolved oxygen. Once these parameters stabilized within 10 percent, a sample was collected and containerized for chemical analysis. Samples for Groundwater Protection Standard analyses were collected by stopping the pump, removing the tubing from the well, reversing the flow of the pump, and gently filling the container.

3.0 DATA PRESENTATION

This section provides a summation and tabulation of all field measurements and analytical results associated with the groundwater monitoring program. Field measurements include headspace readings, monitoring well measurements, and well purge data. All samples were analyzed by Columbia Analytical Laboratory. There were no sampling and analysis efforts associated with the remediation efforts.

3.1 Headspace Readings

Headspace readings were measured using a photovac model 2020 PID Organic vapor meter. The Photovac is calibrated before use. PID measurements ranged from 0 ppm to 72,000 ppm. The highest reading of 72,000 ppm was observed at well KBA-11-17B. Table 1 presents a summary of headspace readings.

3.2 Well Measurements

Depth to water ranged from 2.18 feet below the top of the well casing (20.89 feet MSL) to 12.80 feet below the top of the casing (22.06 feet MSL). Barometric pressure ranged from 30.30 inches in the morning to 30.42 inches in the late afternoon. Ambient temperature ranged from 49.1°F at the start of well measurements to 63.5°F at the conclusion of well measurements. Ground water flow continues to the northwest. Table 2 provides a summary of data collected during the well measurement evolution. Figure 2 shows the general direction of the groundwater flow.

Recovery wells RW-6, RW-7, RW-8 were abandoned and closed during the week of October 24 to November 2, 2001.

3.3 Well Purging Parameters

Water quality parameters temperature, pH, conductivity, dissolved oxygen, turbidity and oxygen reduction potential were measured using Horiba U-22. Each instrument is calibrated daily per manufacturer's instructions. These parameters generally stabilized after 6 to 8 gallons of ground water was purged from the well. Table 3 provides a summary of the stabilized parameters at the time of sample collection.

A summary of the well purging and sampling records for the February 2002 sampling event is included in Appendix A.

3.4 Analytical Results

Six (6) wells were sampled and analyzed for Groundwater Protection Standard constituents EPA method 8260B on February 6, 2002. All samples were submitted to Columbia Analytical Laboratories. Table 4 shows a summary of the results for the Groundwater Protection Standards.

Naphthalene was added to the Groundwater Protection Standard list this quarter. The proposed standard criteria is 20 ug/L. Table 2-5 of the Groundwater Monitoring Plan will be modified.

The complete analytical report for this quarterly sampling is provided in Appendix B. The complete set of subdivision sampling and analysis data is not included in this report.

Groundwater Protection Standard Analysis - Five (5) (KBA-11-13A, KBA-11-16, KBA-11-34, KBA-11-37 and PS-2) of the six (6) wells sampled and submitted for Groundwater Protection Standard analysis exceeded one or more of the constituent standards.
The following exceedances were observed:

- Trichloroethene (21 ug/L), Chlorobenzene (3.1 ug/L) and Naphthalene (38 ug/L) were exceeded in KBA-11-13A.
- 1,1-Dichloroethane (31 ug/L) was exceeded in KBA-11-16.
- Tetrachloroethene (61 ug/L) was exceeded in KBA-11-34.
- Chlorobenzene (4.6 ug/L) was exceeded in KBA-11-37.
- Vinyl Chloride (2.7 ug/L), 1,1-Dichloroethane (3.4 ug/L), Chlorobenzene (1.6 ug/L) and Cis-1, 2 – Dichlorethene (110 ug/L) were exceeded in PS-2.

Chlorinated hydrocarbons Tetrachloroethene and its degradation constituents Trichloroethene, Cis-1, 2 – Dichlorethane and Vinyl Chloride continue to exceed the Groundwater Protection Standards at Site 11.

Tetrachloroethene (61 ug/L) continues to exceed the Groundwater Protection Standard at source area well KBA-11-34 although the concentration has decreased from the previous quarter. This may be due to Phase IV chemical oxidation, which occurred December 2001 to January 2002.

Immediately downgradient to the source area at well KBA-11-13A, Trichloroethene (21 ug/L) and Chlorobenzene (3.1ug/L) remain above the Standards (Figures 3 and 4). Naphthalene (38 ug/L) was detected above the standard. There was insignificant change in these concentrations from the previous quarter.

Piezometer PS-2 continues to show detectable levels of chlorinated and volatile compounds and exceeds the standard for 1,1-Dichloroethane, Vinyl Chloride, Chlorobenzene and Cis-1, 2-Dichloroethene.

Offsite well KBA-11-37 continues to show detectable levels of both chlorinated and volatile compounds with only Chlorobenzene exceeding the standards. The Chlorobenzene concentration showed little change from the previous quarter. However, total chlorinated ethene concentrations have decreased from previous quarters.

Offsite well KBA-11-16 shows 1,1-Dichloroethane as still exceeding the standard with little change from the previous quarter.

Subdivision Irrigation Wells – Three irrigation wells are sampled each month in the Crooked River Plantation subdivision. The irrigation wells sampled are at 102 Plantation Ct, 122 Plantation Ct, and 108 Cottage Ct. 102 Plantation Ct. was not sampled in January and February 2002 due to well secured for freeze protection The analytical data from September 2001 to February 2002 is summarized in Table 5.

Trichloroethene was the only constituent detected at 102 Plantation Court in the October and November 2001 samples, but at concentrations below detection levels.

Vinyl Chloride (6.9 ug/L, February 2002 and 7.4 ug/L, January 2002) continues to be detected above the standards at 122 Plantation Ct.

There were no chemicals detected at 108 Cottage Ct in January or February 2002. Even Cis-1, 2-dichloroethene, which had been previously detected at 108 Cottage Ct. was not detected in January or February 2002.

3.5 QUANTITY OF CHLORINATED HYDROCARBONS REMOVED

The groundwater recovery and treatment system has been removed, therefore the quantity of hydrocarbons removed was not calculated.

4.0 DATA ASSESSMENT

4.1 Observations

(1) With the exception of KBA-11-02, which may require redevelopment, the wells are in good condition and are functioning adequately for evaluating the hydrologic conditions and groundwater quality at Site 11 and the Crooked River Plantation Subdivision downgradient of the site.

(2) Well measurements were collected over an eight-hour period to minimize effects of barometric pressure changes.

(3) Source area well KBA-11-34 continues to show high concentrations of Tetrachlorethene which is the only constituent exceeding the Groundwater Protection Standards at this well. Downgradient well KBA-11-13A has three constituents which exceed the standards. Downgradient and offsite well KBA-11-37 has one constituents which exceeds the Standards. Downgradient and off site well KBA-11-16 has one constituent which exceeds the Standards.

(4) Piezometer PS-2 has the highest concentration of dissolved VOCs with four constituents exceeding the Standards

(5) Naphthalene was recently added to the Groundwater Protection Standards List. Naphthalene was detected above the Standard of 20 ug/L at well KBA-11-13A.

(6) The irrigation well at 122 Plantation Court continues to show detectable levels of Vinyl Chloride at concentrations greater than the Standards.

(7) Total chlorinated ethane concentrations for the six wells sampled in November 2001 and February 2002 are presented in Figures 5 and 6. The TCLE concentrations for wells KBA-11-37, KBA –11-13A, KBA –11-02, and PS-2 remained unchanged from November to February 2002. However, the TCLE concentration of KBA-11-34 decreased due to the decrease in the Tetrachlorethene concentration and the TCLE concentration of KBA-11-16 increased due to an increase in the Cis-1, 2 – Dichlorethane concentration. The TCLE changes were most likely affected by the Phase IV Chemical Oxidation in December 2001.

4.2 Recommendations

Continue quarterly groundwater monitoring as scheduled in the Groundwater Monitoring Plan with the exception of KBA-11-02 which will be changed to annual monitoring.

5.0 PROJECTED WORK FOR THE NEXT REPORTING PERIOD

JAJMS will continue quarterly monitoring in accordance with the RCRA Permit. The next quarterly monitoring period is scheduled for May 2002.

CCI / J.A Jones will complete the site survey of the delineation sampling, 20 new chemical

oxidation injectors, and 39 soybean oil injection locations in March 2002. The completion report detailing the delineation sampling, Phase IV chemical oxidation treatment and soybean oil injection is scheduled to be submitted in May 2002.

6.0 REFERENCES

Quarterly Groundwater Monitoring Report, October – December 2001. Site 11, Old Camden County Landfill, Naval Submarine Base Kings Bay, Georgia (J.A Jones, 2001).

Status Report, Groundwater Remediation at Site 11, Old Camden County Landfill, Naval Submarine Base Kings Bay, Georgia (CCI, 2002)

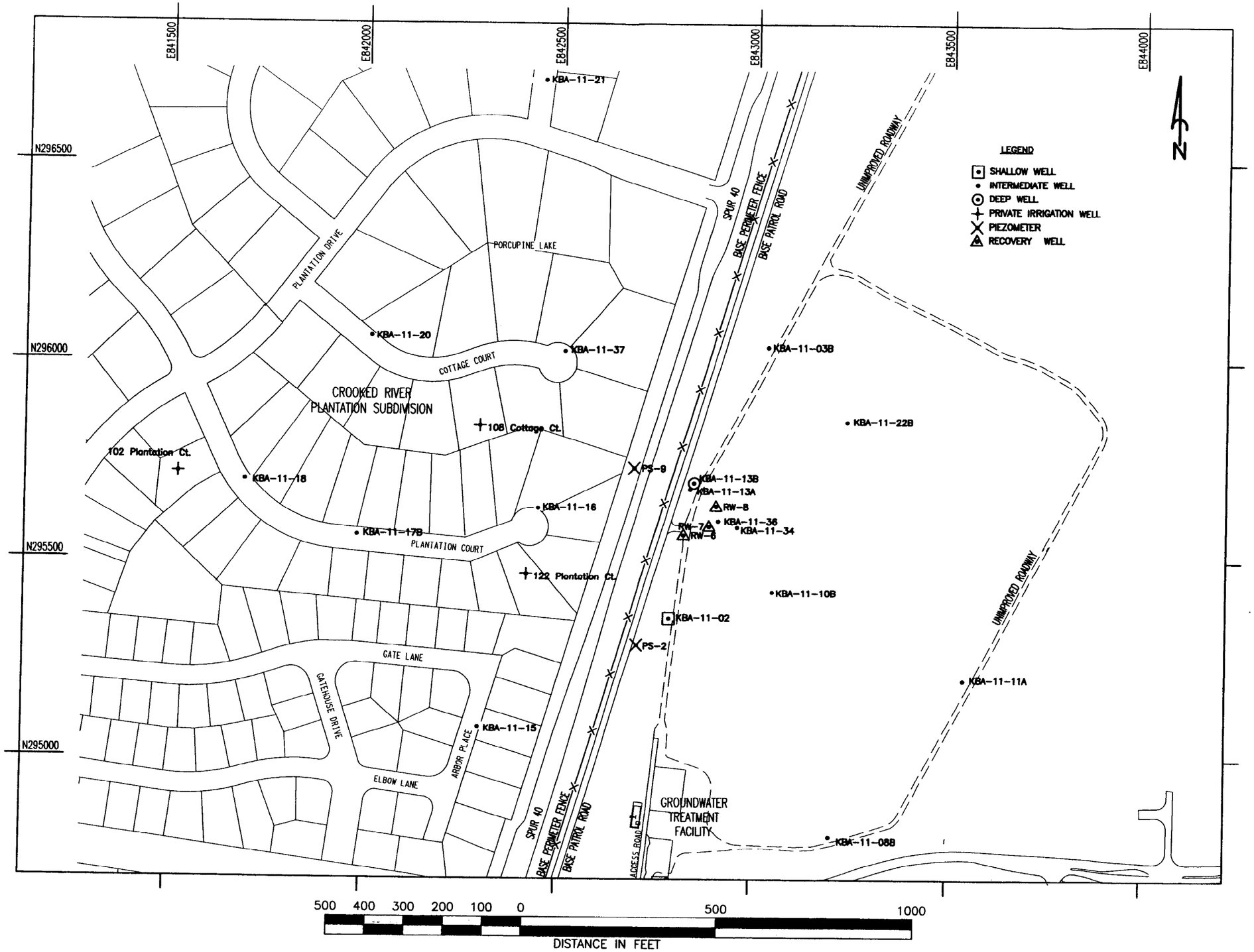
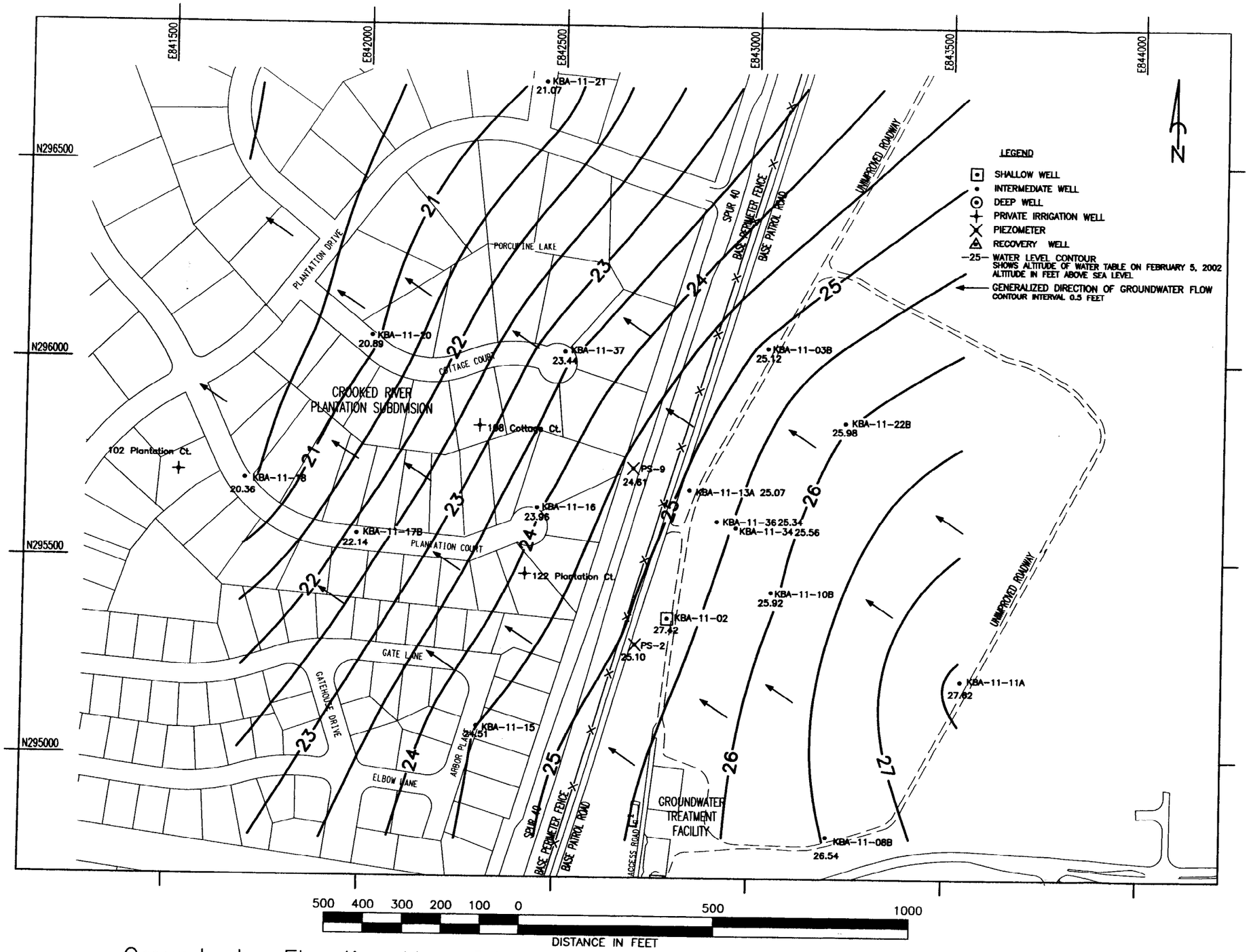


FIGURE 1: Site 11, Site Map



Groundwater Elevation Map–February 2002 Contour Interval=0.5 ft

FIGURE 2: Site 11, Groundwater Elevation Map–February 2002

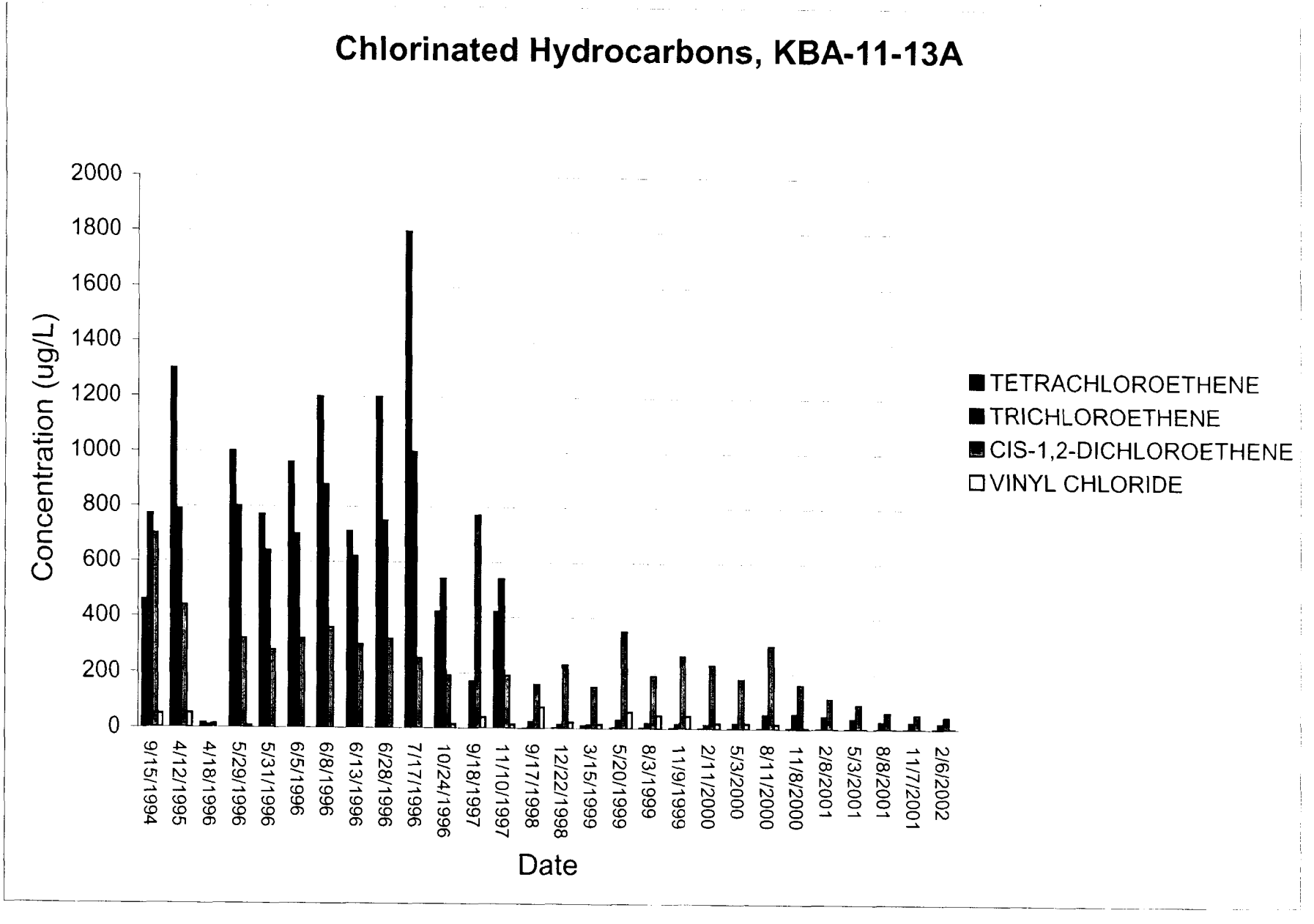
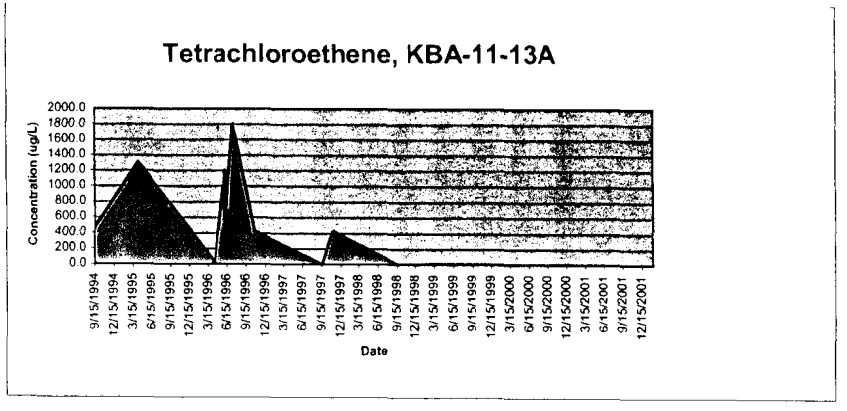
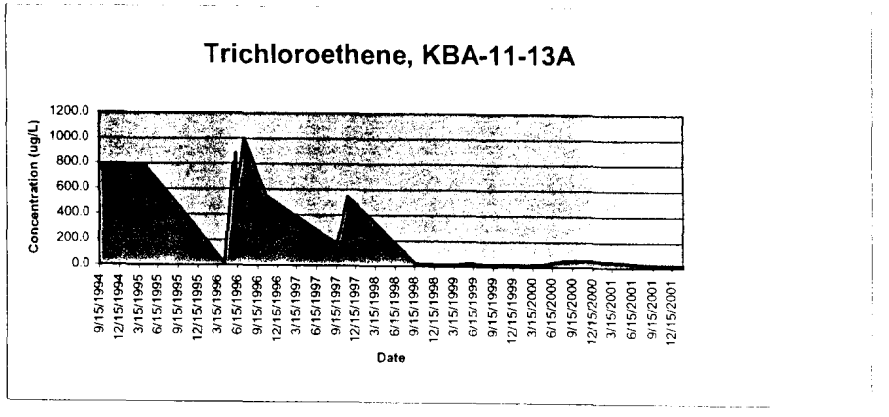
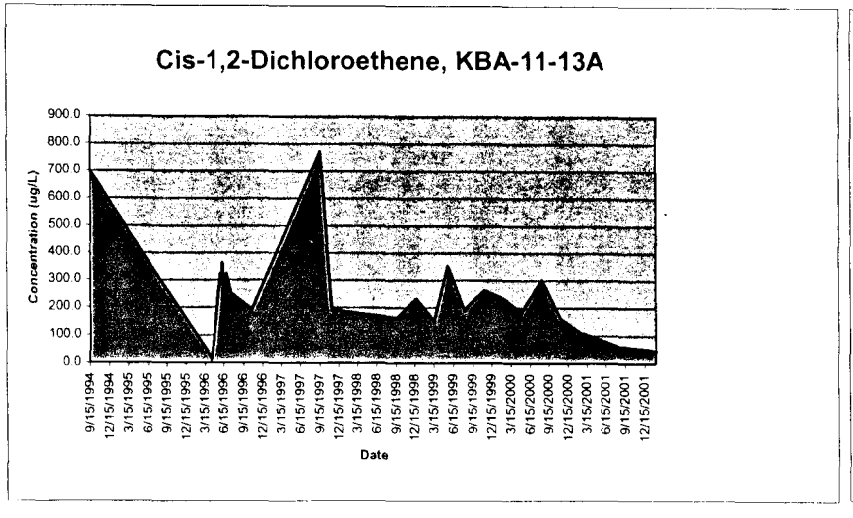


FIGURE 3 - CHLORINATED HYDROCARBONS, KBA-11-13A







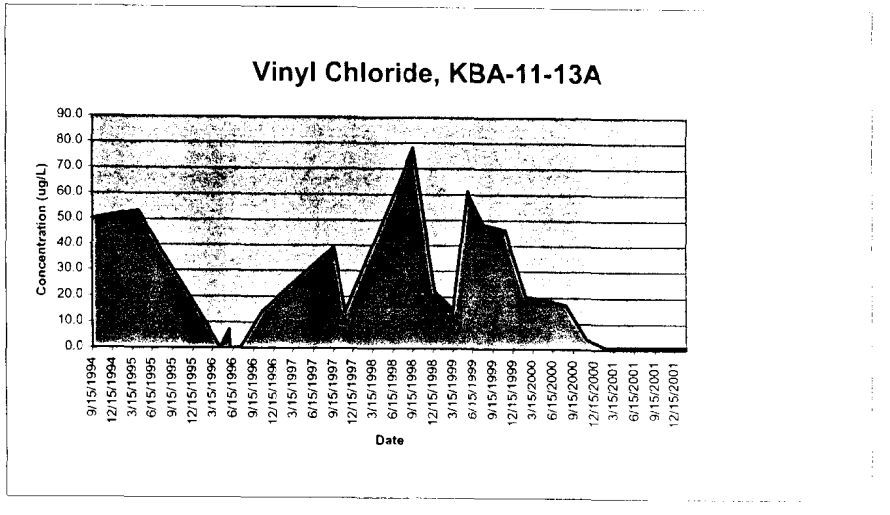


FIGURE 4 - CHLORINATED HYDROCARBON TRENDS, WELL KBA-11-13A

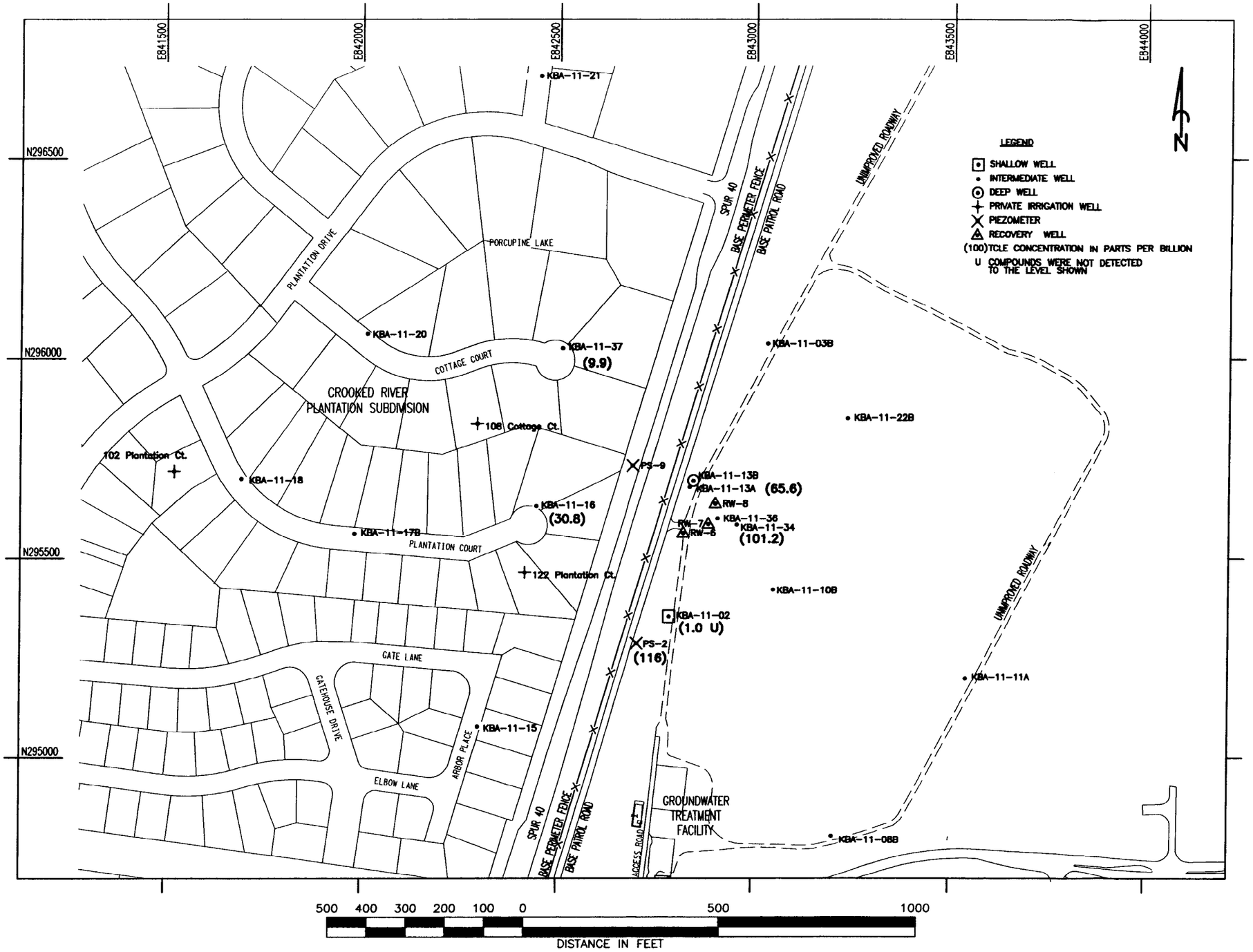


FIGURE 5: Site 11, Groundwater Monitoring Program,
Total Chlorinated Ethenes Concentrations (TCLE) November 7, 2001

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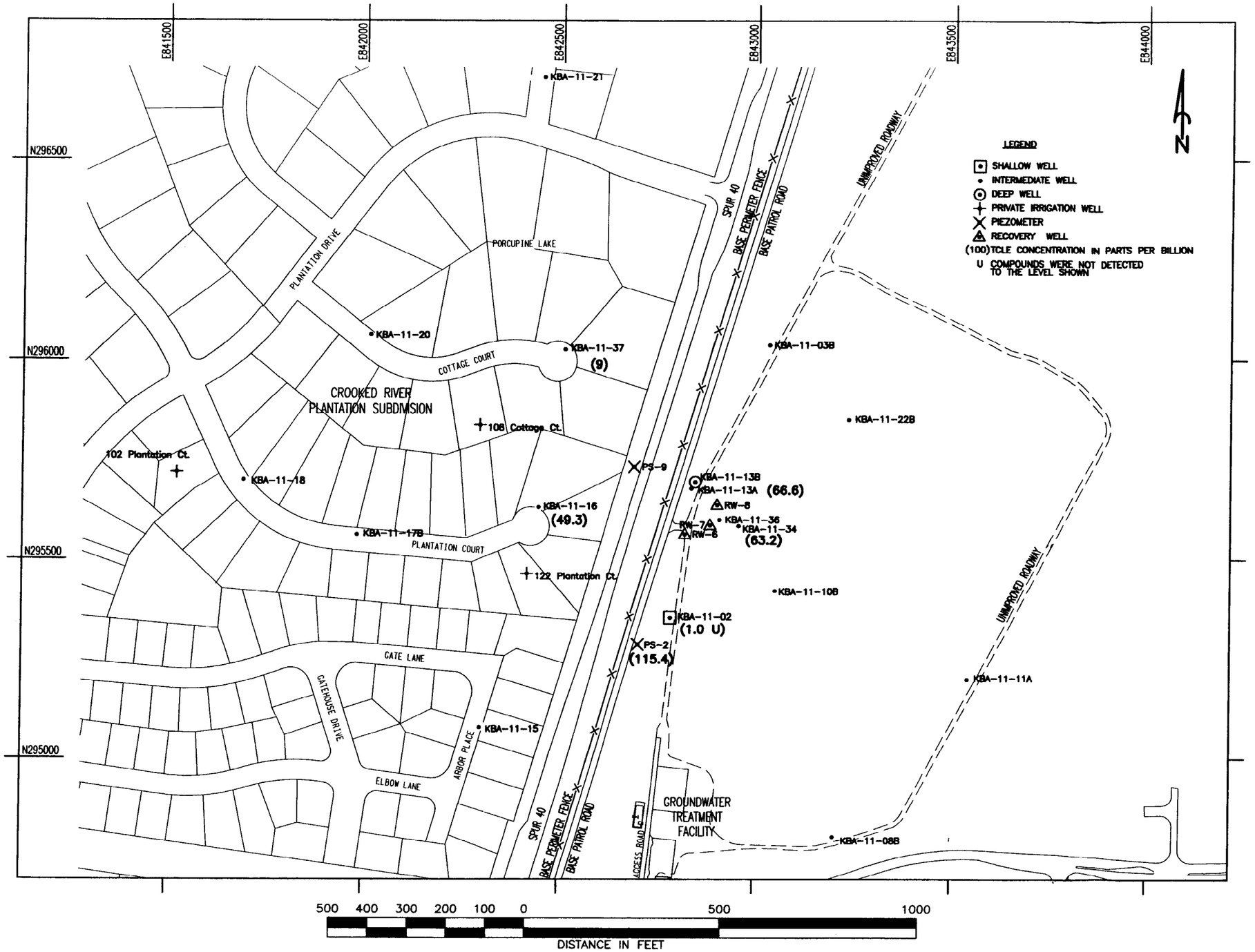

FIGURE 6: Site 11, Groundwater Monitoring Program,
Total Chlorinated Ethenes Concentrations (TCLE) February 6, 2002

Table 1
Headspace Readings

Well Identification (coordinates)	Date	PID Measurement (ppm)	Barometer Pressure (Inches of Hg)	Temperature (F°)
KBA-11-02	2-5-02	0.0	30.33	63.5
(N295339.68)	11-6-01	0.0	30.15	70.7
(E842781.27)	8-7-01	19.1	30.12	79.7
	5-1-01	0		
	2-6-01	0		
	11-8-00	0		
	8-8-00	0		
	5-2-00	0		
	2-1-00	0.1		
	11-8-99	0.7		
	8-3-99	NM		
KBA-11-03B	2-5-02	0.0	30.30	55.4
(N296023.77)	11-6-01	0.0	30.12	72.5
(E843026.64)	8-7-01	2.4	30.12	94.6
	5-1-01	NM		
	2-5-01	0		
	11-8-00	0		
	8-1-00	NM		
	5-2-00	0		
	2-1-00	NM		
	11-8-99	2.0		
	8-3-99	0.2		
KBA-11-08B	2-5-02	0.9	30.30	51.8
(N294792.40)	11-6-01	0.0	30.12	73.4
(E843215.42)	8-7-01	0.0	30.12	96.4
	5-1-01	NM		
	2-5-01	0		
	11-8-00	0		
	8-1-00	NM		
	5-2-00	0		
	2-1-00	NM		
	11-8-99	1.5		
	8-3-99	0.0		
KBA-11-10B	2-5-02	0.0	30.33	57.2
(N295407.32)	11-6-01	0.0	30.15	68.0
(E843044.79)	8-7-01	0.0	30.12	94.7
	5-1-01	NM		
	2-5-01	0		
	11-8-00	0		
	8-8-00	0		
	2-1-00	NM		
	11-8-99	5		
	8-2-99	1.9		

NM = not measured PID = photo ionization detector

Table 1 continued on following page

Table 1 continued
Headspace Readings

Well Identification (coordinates)	Date	PID Measurement (ppm)	Barometer Pressure (Inches)	Temperature (F°)
KBA-11-11A	2-5-02	0.0	30.30	56.3
(N295185.73)	11-6-01	0.0	30.12	74.3
(E843535.58)	8-7-01	0.0	30.12	92.4
	5-1-01	NM		
	2-5-01	0		
	11-8-00	0		
	8-10-00	0		
	5-2-00	0		
	2-1-00	NM		
	11-8-99	4.5		
	8-3-99	0.3		
KBA-11-13A	2-5-02	0.0	30.33	55.4
(N295665.45)	11-6-01	0.0	30.15	70.7
(E842831.00)	8-7-01	2.8	30.12	88.7
	5-3-01	0		
	2-9-01	3.5		
	11-8-00	0		
	8-10-00	0		
	5-2-00	0		
	2-4-00	0		
	11-8-99	2		
	8-3-99	13		
KBA-11-13B	2-5-02	0.0	30.33	55.4
(N295694.10)	11-6-01	0.0	30.12	70.2
(E842848.12)	8-7-01	0.0	30.12	92.6
	5-4-01	0.1		
	2-9-01	0		
	11-8-00	0		
	8-8-00	0		
	5-2-00	0		
	2-1-00	NM		
	11-8-99	2		
	8-3-99	0		
KBA-11-15	2-5-02	0.0	30.39	51.8
(N295065.19)	11-6-01	0.0	30.09	74.3
(E842294.15)	8-7-01	0.0	30.06	91.2
	5-4-01	6.1		
	2-13-01	0		
	11-8-00	0		
	8-9-00	0		
	5-2-00	0		
	2-7-00	0		
	11-9-99	2.5		
	8-17-99	2,200		

NM = not measured PID = photo ionization detector

Table 1 continued on following page

Table 1 continued
Headspace Readings

Well Identification (coordinates)	Date	PID Measurement (ppm)	Barometer Pressure (Inches)	Temperature (F°)
KBA-11-16	2-5-02	0.0	30.39	53.6
(N295617.50)	11-6-01	3.2	30.12	77.0
(E842440.32)	8-7-01	0.0	30.06	94.2
	5-2-01	10.5		
	2-6-01	4.2		
	11-8-00	0		
	8-9-00	0		
	5-2-00	0		
	2-7-00	0		
	11-9-99	1		
	8-17-99	3,500		
KBA-11-17B	2-5-02	72,000	30.39	54.5
(N295549.12)	11-6-01	7.5	30.12	77.9
(E841977.77)	8-7-01	0.0	30.06	92.9
	5-4-01	0		
	2-13-01	0		
	11-8-00	0		
	8-9-00	0		
	5-3-00	0		
	2-7-00	0		
	11-9-99	5		
	8-17-99	2,700		
KBA-11-18	2-5-02	150	30.39	55.4
(N295686.28)	11-6-01	8.5	30.12	77.9
(E8421688.80)	8-7-01	0.0	30.09	93.2
	5-4-01	0		
	2-16-01	0		
	11-8-00	0		
	8-1-00	NM		
	5-3-00	0		
	2-1-00	NM		
	11-9-99	11		
	8-17-99	3,600		
KBA-11-20	2-5-02	0.0	30.39	53.6
	11-6-01	0.5	30.09	75.2
(N296049.30)	8-7-01	0.0	30.09	91.3
(E842007.67)	5-4-01	0		
	2-13-01	0		
	11-8-00	0		
	8-1-00	NM		
	5-2-00	0		
	2-1-00	NM		

NM = not measured PID = photo ionization detector

Table 1 continued on following page

Table 1 continued
Headspace Readings

Well Identification (coordinates)	Date	PID Measurement (ppm)	Barometer Pressure (Inches)	Temperature (F°)
KBA-11-21	2-5-02	0.0	30.39	53.6
(N296691.67)	11-6-01	0.0	30.09	73.4
(E842443.34)	8-7-01	0.0	30.06	93.9
	5-4-01	0		
	2-13-01	0		
	11-8-00	0		
	8-1-00	NM		
	5-2-00	0		
	2-1-00	NM		
	11-9-99	7.5		
	8-3-99	3		
KBA-11-22B	2-5-02	0.0	30.33	58.1
(N295837.13)	11-6-01	0.0	30.12	73.4
(E843229.11)	8-7-01	14.7	30.12	91
	5-4-01	0		
	2-12-01	0		
	11-8-00	0		
	8-1-00	NM		
	5-2-00	0		
	2-1-00	NM		
	11-8-99	0.6		
	8-3-99	7		
KBA-11-34	2-5-02	0.0	30.33	55.4
(N295584.23)	11-6-01	0.0	30.15	70.7
(E842959.34)	8-7-01	0.0	30.12	92.7
	5-3-01	28.6		
	2-8-01	25.6		
	11-8-00	0		
	8-8-00	0		
	5-2-00	0		
	2-7-00	0.4		
	11-8-99	2		
	8-3-99	1,400		
KBA-11-36	2-5-02	0.0	30.33	57.2
(N295599.75)	11-6-01	0.0	30.15	70.7
(E842909.65)	8-7-01	0.0	30.12	92.8
	5-4-01	0		
	2-12-01	0		
	11-8-00	0		
	8-1-00	NM		
	5-2-00	0		
	2-1-00	NM		
	11-8-99	0.6		
	8-3-99	10		

NM = not measured PID = photo ionization detector

Table 1 continued on following page

Table 1 continued
Headspace Readings

Well Identification (coordinates)	Date	PID Measurement (ppm)	Barometer Pressure (Inches)	Temperature (F°)
KBA-11-37	2-5-02	0.0	30.39	53.6
(N295994.01)	11-6-01	2.8	30.09	75.2
(E842501.99)	8-7-01	0.0	30.09	93.1
	5-2-01	102.5		
	2-7-01	27		
	11-8-00	0		
	8-9-00	0		
	5-4-00	>2000		
	2-8-00	0		
	11-9-99	3		
	8-16-99	400		
PS-2	2-5-02	19.9	30.33	55.4
(N295286.12)	11-6-01	0.0	30.15	70.7
(E842704.24)	8-7-01	0.0	30.12	91.4
	5-2-01	0.08		
	2-7-01	0		
	11-8-00	0		
	8-8-00	>2000		
	5-3-00	>2000		
	2-7-00	0		
	11-8-99	0.5		
	8-16-99	NM		
PS-9	2-5-02	0.0	30.42	49.1
(N295732.70)	11-6-01	0.03	30.09	68.9
(E842689.44)	8-7-01	0.0	30.06	91.2
	5-4-01	0		
	2-13-01	0		
	11-8-00	0		
	8-1-00	NM		
	5-2-00	0		
	2-1-00	NM		
	11-8-99	NM		
	8-16-99	NM		
RW-6 *	8-7-01	NM	30.06	91.3
(N295563.58)				
(E841821.59)				
RW-7 *	8-7-01	NM	30.06	91.1
(N295583.80)				
(E842885.61)				
RW-8 *	8-7-01	NM	30.06	91.3
(N295635.94)				
(E842903.57)				

* Recovery wells are not enclosed, so a headspace reading was not measured. Recovery wells closed week of October 24 – November 2, 2001

NM = not measured PID = photo ionization detector

Table 2
Well Measurements

Well Identification	Date	Top of Casing Elevation (ft MSL)	Depth to Water (ft btoc)	Water Elevation (ft MSL)	Constructed Depth (ft btoc)	Measured Depth (ft btoc)
KBA-11-02	2-5-02	36.02	8.60	27.42	15.00	11.00
	11-6-01		8.07	27.95		10.88
	8-7-01		8.13	27.89		10.87
	5-1-01		9.53	26.49		10.65
	2-6-01		10.18	25.84		10.18
	11-8-00		8.65	27.37		10.60
	8-8-00		No water	no water		10.80
	5-2-00		10.1	25.9		14.00
	2-4-00		11.5	24.52		15.30
	11-8-99		9.61	26.41		15.19
	8-2-99		11.37	24.65		15.42
KBA-11-03B	2-5-02	33.49	8.37	25.12	47.00	47.51
	11-6-01		7.39	26.10		47.50
	8-7-01		6.78	26.71		47.56
	5-1-01		8.43	25.06		47.50
	2-5-01		8.67	24.82		47.50
	11-6-00		7.78	25.71		47.50
	8-15-00		10.4	23.09		47.50
	5-2-00		8.7	24.79		47.10
	2-24-00		9.5	23.99		49.10
	11-8-99		8.54	24.95		47.77
	8-2-99		10.01	23.48		47.82
KBA-11-08B	2-5-02	38.20	11.66	26.54	43.00	43.48
	11-6-01		10.78	27.42		43.47
	8-7-01		10.02	28.18		43.49
	5-1-01		11.85	26.35		43.59
	2-5-01		12.04	26.16		43.51
	11-20-00		11.54	26.66		43.46
	8-15-00		14.0	24.20		43.50
	5-2-00		12.1	26.1		43.80
	2-24-00		13.40	24.80		44.90
	11-8-99		12.04	26.16		43.75
	8-2-99		13.74	24.46		43.77
KBA-11-10B	2-5-02	38.03	12.11	25.92	51.50	51.37
	11-6-01		10.96	27.07		51.37
	8-7-01		10.48	27.55		51.38
	5-1-01		12.06	25.97		51.35
	2-5-01		12.48	25.55		51.35
	11-6-00		14.03	24.00		54.34
	8-8-00		14.9	23.13		52.20
	5-2-00		12.8	25.23		53.40
	2-24-00		13.50	24.53		53.00
	11-8-99		12.31	25.72		51.62
	8-2-99		13.90	24.13		51.67

ft = feet MSL – mean sea level btoc – below top of casing

Table 2 continued on following page

Table 2 - Continued
Well Measurements

Well Identification	Date	Top of Casing Elevation (ft MSL)	Depth to Water (ft btoc)	Water Elevation (ft MSL)	Constructed Depth (ft btoc)	Measured Depth (ft btoc)
KBA-11-11A	2-5-02	35.85	8.23	27.62	37.00	36.85
	11-6-01		8.16	27.69		36.83
	8-7-01		7.64	28.21		36.86
	5-1-01		9.31	26.54		36.83
	2-5-01		9.60	26.25		36.84
	11-13-00		8.85	27.00		36.86
	8-10-00		11.7	24.15		37.40
	5-2-00		9.4	26.45		37.00
	2-24-00		11.10	24.75		37.20
	11-8-99		9.61	24.42		37.12
	8-2-99		11.40	24.45		37.12
KBA-11-13A	2-5-02	34.20	9.13	25.07	42.50	42.26
	11-6-01		8.17	26.03		42.27
	8-7-01		7.51	26.69		42.31
	5-3-01		9.21	24.99		42.25
	2-9-01		9.53	24.67		42.26
	11-8-00		6.52	27.68		42.30
	8-10-00		11.2	23.00		42.90
	5-2-00		9.3	24.90		42.00
	2-4-00		10.2	24.00		42.40
	11-8-99		9.25	24.95		42.75
	8-2-99		10.77	23.43		42.52
KBA-11-13B	2-5-02	34.86	12.80	22.06	90.70	90.60
	11-6-01		12.33	22.53		90.50
	8-7-01		11.37	23.49		91.98
	5-4-01		13.09	21.77		90.49
	2-9-01		13.05	21.81		90.53
	11-6-00		12.50	22.36		91.60
	8-8-00		14.6	20.26		91.80
	5-2-00		12.8	22.06		91.00
	2-24-00		13.60	21.26		91.40
	11-8-99		12.88	21.98		90.72
	8-2-99		14.27	20.59		90.77

ft = feet MSL – mean sea level btoc – below top of casing

Table 2 continued on following page

Table 2 - Continued
Well Measurements

Well Identification	Date	Top of Casing Elevation (ft MSL)	Depth to Water (ft btoc)	Water Elevation (ft MSL)	Constructed Depth (ft btoc)	Measured Depth (ft btoc)
KBA-11-15	2-5-02	28.49	3.98	24.51	39.00	38.90
	11-6-01		3.20	25.29		38.90
	8-7-01		2.22	26.27		38.94
	5-4-01		4.12	24.37		38.90
	2-13-01		4.45	24.04		38.89
	11-7-00		3.69	24.80		38.70
	8-9-00		5.7	22.29		39.30
	5-2-00		3.9	24.59		38.00
	2-7-00		4.8	23.69		39.00
	11-9-99		4.07	24.42		39.17
	8-2-99		5.60	22.89		39.22
KBA-11-16	2-5-02	28.66	4.70	23.96	44.90	44.47
	11-6-01		3.99	24.67		44.46
	8-7-01		2.59	26.07		43.48
	5-2-01		4.48	24.18		44.46
	2-6-01		4.98	23.68		44.47
	11-8-00		4.39	24.27		44.45
	8-9-00		6.4	22.26		45.10
	5-3-00		3.9	24.76		44.00
	2-7-00		5.3	23.36		45.30
	11-9-99		4.73	23.93		44.72
	8-2-99		6.17	22.49		44.77
KBA-11-17B	2-5-02	25.41	3.27	22.14	44.80	44.44
	11-6-01		2.81	22.60		44.41
	8-7-01		1.29	24.12		44.48
	5-4-01		3.33	22.08		44.41
	2-13-01		3.65	21.71		44.41
	11-7-00		3.07	22.34		45.30
	8-9-00		4.6	20.81		45.00
	5-3-00		2.7	22.71		42.30
	2-7-00		3.6	21.81		44.40
	11-9-99		3.03	22.38		44.67
	8-2-99		4.61	20.80		44.72
KBA-11-18	2-5-02	22.81	2.45	20.36	45.80	45.53
	11-6-01		2.18	20.63		45.51
	8-7-01		0.38	22.43		45.59
	5-4-01		2.57	20.24		45.51
	2-16-01		2.77	20.04		45.50
	11-8-00		2.24	20.57		47.51
	8-15-00		3.7	19.11		45.40
	5-3-00		1.5	21.31		45.50
	2-25-00		2.70	20.11		46.80
	11-9-99		2.05	20.76		45.77
	8-2-99		3.67	19.14		45.82

ft = feet MSL – mean sea level btoc – below top of casing

Table 2 continued on following page

Table 2 - Continued
Well Measurements

Well Identification	Date	Top of Casing Elevation (ft MSL)	Depth to Water (ft btoc)	Water Elevation (ft MSL)	Constructed Depth (ft btoc)	Measured Depth (ft btoc)
KBA-11-20	2-5-02	23.07	2.18	20.89	40.00	39.86
	11-6-01		2.04	21.03		39.84
	8-7-01		0.58	22.49		39.87
	5-4-01		2.48	20.59		39.86
	2-13-01		2.39	20.68		39.86
	11-8-00		2.18	20.89		39.84
	8-15-00		3.6	19.47		40.20
	5-2-00		1.60	21.47		40.90
	2-25-00		2.60	20.47		40.90
	11-9-99		1.94	21.13		40.12
	8-2-99		3.22	19.85		40.12
KBA-11-21	2-5-02	23.56	2.49	21.07	40.40	40.30
	11-6-01		2.25	21.31		40.29
	8-7-01		0.94	22.62		40.30
	5-4-01		2.83	20.73		40.30
	2-13-01		2.69	20.87		40.30
	11-6-00		2.40	21.16		40.20
	8-15-00		3.6	19.96		40.20
	5-2-00		2.1	21.46		40.80
	2-25-00		2.90	20.66		41.80
	11-9-99		2.4	21.16		40.57
	8-2-99		3.75	19.81		40.57
KBA-11-22B	2-5-02	36.13	10.15	25.98	52.60	52.29
	11-6-01		8.81	27.32		52.28
	8-7-01		8.54	27.59		52.38
	5-4-01		10.18	25.95		52.33
	2-5-01		10.48	25.65		52.29
	11-8-00		9.21	26.92		52.30
	8-15-00		11.4	24.73		52.30
	5-2-00		10.8	25.33		52.20
	2-25-00		11.6	24.53		53.60
	11-8-99		10.34	25.79		52.59
	8-2-99		11.92	24.21		52.62
KBA-11-34	2-5-02	37.51	11.95	25.56	40 est	40.76
	11-6-01		10.96	26.53		40.78
	8-7-01		10.35	27.16		40.78
	5-3-01		12.01	25.50		40.45
	2-8-01		12.40	25.11		40.76
	11-8-00		11.31	26.20		40.76
	8-8-00		14.3	23.21		41.60
	5-2-00		12.3	25.21		41.40
	2-7-00		13.2	24.31		41.04
	11-8-99		12.18	25.33		41.07
	8-2-99		13.75	23.76		41.07

ft = feet MSL – mean sea level btoc – below top of casing

Table 2 continued on following page

Table 2 - Continued
Well Measurements

Well Identification	Date	Top of Casing Elevation (ft MSL)	Depth to Water (ft btoc)	Water Elevation (ft MSL)	Constructed Depth (ft btoc)	Measured Depth (ft btoc)
KBA-11-36	2-5-02	37.91	12.57	25.34	40 est	41.36
	11-6-01		11.56	26.35		41.38
	8-7-01		10.95	26.96		41.39
	5-4-01		12.67	25.24		41.39
	2-12-01		13.07	24.84		41.39
	11-8-00		12.02	25.89		41.62
	8-15-00		14.6	23.31		41.40
	5-4-00		12.9	25.01		41.40
	2-24-00		14.02	23.91		42.50
	11-8-99		12.84	25.07		41.65
	8-2-99		14.34	23.57		41.67
KBA-11-37	2-5-02	26.26	2.82	23.44	38.50	38.18
	11-6-01		2.43	23.83		38.19
	8-7-01		1.37	24.89		38.21
	5-2-01		3.00	23.26		38.20
	2-7-01		2.96	23.30		38.18
	11-8-00		2.76	23.50		30.20
	8-9-00		4.1	22.16		38.60
	5-4-00		2.4	23.86		38.20
	2-8-00		3.2	23.06		38.40
	11-9-99		2.86	23.4		38.46
	8-16-99		4.15	22.11		38.57
PS-2	2-5-02	32.71	7.61	25.10	40.67	37.22
	11-6-01		6.68	26.03		37.24
	8-7-01		5.97	26.74		37.24
	5-2-01		7.72	24.99		37.19
	2-7-01		8.06	24.65		37.24
	11-8-00		8.85	23.86		36.86
	8-8-00		9.9	22.81		37.50
	5-4-00		7.2	25.51		36.80
	2-7-00		8.8	23.91		36.80
	11-8-99		7.80	24.91		37.47
	8-17-99		9.6	23.11		39.60 est
PS-9	2-5-02	28.72	4.11	24.61	35.45	34.12
	11-6-01		3.31	25.41		34.12
	8-7-01		2.54	26.18		34.13
	5-4-01		4.29	24.43		34.13
	2-13-01		4.56	24.16		34.15
	11-8-00		3.97	24.81		34.14
	8-15-00		5.8	22.92		34.10
	5-4-00		3.20	25.52		34.10
	2-25-00		6.20	22.52		34.50
	8-20-99		5.89	22.83		34.82

ft = feet MSL – mean sea level btoc – below top of casing

Table 2 continued on following page

Table 2 - Continued
Well Measurements

Well Identification	Date	Top of Casing Elevation (ft MSL)	Depth to Water (ft btoc)	Water Elevation (ft MSL)	Constructed Depth (ft btoc)	Measured Depth (ft btoc)
RW-6*	8-7-01	33.74	7.10	26.64	75	78.11
	5-4-01		8.83	24.91		77.55
	2-12-01		9.17	24.57		72.43
	11-13-00		10.01	23.73		73.01
	8-15-00		9.80	23.94		78.10
	5-4-00		7.80	25.94		78.00
	2-24-00		9.90	23.84		84.90
RW-7*	8-7-01	34.99	8.11	26.88	45.59	47.27
	5-4-01		9.79	25.20		44.93
	2-12-01		10.18	24.81		44.95
	11-8-00		9.91	25.08		46.52
	8-15-00		11.70	23.29		47.00
	5-4-00		10.00	24.99		47.00
	2-25-00		11.20	23.79		51.00
RW-8*	8-7-01	35.35	8.47	26.88	46.15	36.96
	5-4-01		10.16	25.19		45.00
	2-12-01		10.55	24.80		44.98
	11-13-00		9.62	25.73		36.08
	8-15-00		11.90	23.44		47.10
	5-4-00		10.00	25.35		44.20
	2-24-00		11.40	23.95		51.10

* Recovery wells were closed week of October 24 to November 2, 2001.
ft = feet MSL – mean sea level btoc – below top of casing

Table 3
Well Purge Parameters

Well Identification	Date	Volume Purged (gal)	Temper-ature (°C)	PH	Oxygen Reduction Potential (mv)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)
KBA-11-02	2-6-02	6	20.96	6.51	-85	0.206	0.4	0.97
	11-7-01	8	22.7	6.69	-59	0.317	0.7	3.59
	8-8-01	6	26.9	7.09	-242.2	0.248	10	9.65
	5-1-01	6	22.0	6.10	-84	0.276	6	8.55
	2-6-01	6	18.9	6.35	-255	0.343	11	0.07
	11-8-00	6	23.7	6.62	-189	0.325	7	0.67
	8-8-00	no water – well was not purged						
	5-3-00	6	22.5	6.8	NM	0.440	10	2.30
	2-4-00	3	22.7	5.00	-258	0.604	12	1.70
	11-9-99	6	23.4	5.94	-160	0.527	3	0.51
	8-3-99	7	25.2	5.63	-199	0.713	0	NM
KBA-11-10B	8-9-01	6	24.1	6.16	-222.6	0.317	5	9.99
	8-8-00	6	25.0	6.3	-65	0.295	12	0.04
	8-2-99	6	25.6	5.14	-221	0.304	2	NM
KBA-11-11A	8-8-01	8	22.8	5.64	-216.6	0.079	10	8.60
	8-10-00	6	22.9	6.0	-18	0.071	4	0.01
KBA-11-13A	2-6-02	8	24.10	4.85	-42	1.80	5.8	5.88
	11-7-01	6	23.3	4.97	-10	1.75	0.6	3.53
	8-8-01	8	25.2	4.98	-166.8	2.38	9	9.05
	5-3-01	6	22.8	4.75	-76	2.16	1.9	8.50
	2-8-01	6	23.8	4.8	-277	1.80	8	0.31
	11-8-00	6	24.3	5.40	-81	1.30	4	0.40
	8-10-00	6	23.7	6.2	-48	1.35	1	0.11
	5-3-00	6	24.5	6.4	-113	0.561	10	1.10
	2-4-00	8	22.3	6.68	-217	0.503	10	1.17
	11-9-99	8	23	5.54	-142	0.467	2	0.78
	8-3-99	6	24.3	5.50	-210	0.463	17	NM
KBA-11-13B	8-8-01	6	24.5	8.11	-243.3	0.290	0.85	10.21
	8-8-00	6	24.3	7.5	-37	0.241	2	0.07
	8-3-99	8	24.9	7.15	-43	0.267	0	NM
KBA-11-15	8-9-01	6	22.7	5.90	-204.8	0.97	10	8.83
	8-9-00	6	24.2	5.7	-91	0.694	3	0.13
	2-7-00	7	20.8	5.04	-313	0.536	5	1.43
	8-3-99	6	25	4.90	-182	0.677	9	NM

Table 3 continued on following page

°C = degrees centigrade
mv = millivolts
mS/cm = microseimens per centimeter
NTU = nephelometric turbidity units
mg/L = milligrams per liter
NM = not measured

Table 3 Continued
Well Purge Parameters

Well Identification	Date	Volume Purged (gal)	Temper-ature (°C)	PH	Oxygen Reduction Potential (mv)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)
KBA-11-16	2-6-02	6	24.64	4.94	-140	0.280	0.7	2.30
	11-7-01	8	23.6	4.79	-54	0.387	4.8	0.80
	8-9-01	8	24.4	5.58	-248.1	0.394	4	8.68
	5-2-01	6	23.1	4.17	-123	0.411	7	7.30
	2-6-01	6	23.4	4.92	-111	0.345	2	0.03
	11-8-00	6	25.02	5.02	-102	0.302	4	0.15
	8-9-00	6	24.6	5.6	-67.7	0.331	1	0.06
	5-4-00	6	23.6	6.1	NM	0.146	10	3.70
	2-7-00	7	22.8	5.40	-275	0.364	8	1.09
	11-9-99	8	24	4.89	-104	0.263	20	0.57
	8-3-99	7	26.8	4.76	-111	0.171	35	NM
KBA-11-17B	8-9-01	6	23.6	5.46	-178.4	0.118	10	8.70
	8-9-00	6	24.3	6.8	-101	0.073	2	0.01
	2-7-00	7	21.9	5.40	-287	0.135	3	1.08
	8-3-99	8	24.7	4.48	-112	0.118	6	NM
KBA-11-34	2-6-02	6	28.08	3.45	-322	1.28	0.5	8.45
	11-7-01	6	25.3	3.70	-404	0.652	4.7	19.99
	8-9-01	6	27.5	4.35	-152.5	1.07	12	8.77
	5-3-01	8	25.2	3.88	-113	1.48	3	6.96
	2-8-01	6	26.9	3.8	-249	1.69	4	.06
	11-8-00	6	26.03	3.51	-189	1.73	44	1.73
	8-8-00	6	27.8	3.7	-315	1.78	38	0.02
	5-4-00	6	25.8	3.9	-119	1.36	10	5.85
	2-7-00	8	24.9	2.81	-184	2.19	9	2.43
	11-9-99	8	27.2	3.58	-134	2.26	9	0.44
	8-3-99	6	30.5	3.20	-300	2.36	13	NM

Table 3 continued on following page

°C = degrees centigrade
mv = millivolts
mS/cm = microseimens per centimeter
NTU = nephelometric turbidity units
mg/L = milligrams per liter
NM = not measured

Table 3 Continued
Well Purge Parameters

Well Identification	Date	Volume Purged (gal)	Temper-ature (°C)	PH	Oxygen Reduction Potential (mv)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)
KBA-11-37	2-5-02	6	24.68	5.56	-147	0.395	0.7	1.27
	11-7-01	8	23.7	5.57	-72	0.618	0.5	1.75
	8-9-01	6	25.5	6.28	-248.8	0.587	10	9.61
	5-2-01	8	24.2	5.41	-139	0.595	30	8.55
	2-7-01	6	22.5	5.5	-73	0.559	9	0.1
	11-8-00	6	26.2	5.67	-73	0.533	4.3	0.86
	8-9-00	6	24.6	6.2	-119	0.551	3	0.03
	5-4-00	6	24.0	6.3	NM	0.517	10	1.75
	2-8-00	8	21.3	6.1	-323	0.562	6	1.45
	11-9-99	8	24.2	5.37	-200	0.573	12	0.46
	8-16-99	9	25.5	5.52	-227	0.517	15	NM
PS-2	2-6-02	6	22.85	5.24	-120	0.286	0.7	0.80
	11-7-01	8	21.2	5.06	-33	0.334	0.2	1.64
	8-9-01	6	23.1	5.80	-223.5	0.318	5	9.84
	5-2-01	8	21.7	5.42	-123	0.327	1	7.80
	2-7-01	6	17.7	5.24	-90	0.290	3	0.03
	11-8-00	6	24.2	5.40	-92	0.298	4	0.48
	8-8-00	6	23.0	5.0	-108	0.300	2	0.04
	5-3-00	6	21.6	5.7	NM	0.317	10	1.30
	2-7-00	8	19.5	4.93	-387	0.355	10	1.43
	11-9-99	8	22	4.87	-144	0.363	2	0.35
	8-18-99	7	23.2	4.95	-213	0.381	10	NM

°C = degrees centigrade
mv = millivolts
mS/cm = microseimens per centimeter
NTU = nephelometric turbidity units
mg/L = milligrams per liter
NM = not measured

Table 4
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	Criteria (µg/L)	KBA-11-02										
Date		2-6-02	11-7-01	8-8-01	5-2-01	2-6-01	11-8-00	8-8-00	5-3-00	2-4-00	11-9-99	8-3-99
Tetrachloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	Unable to sample – no water	1.0U	1.0U	3.0U	3.0U
Trichloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NS	1.0U	1.0U	1.0U	1.0U
Cis -1,2-dichloroethene	70	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NS	1.0U	1.0U	1.0U	1.0U
Trans-1,2 dichloroethene	100	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NS	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethene	7.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NS	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NS	1.0U	1.0U	1.0U	1.0U
1,2-dichloroethane	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NS	1.0U	1.0U	1.0U	1.0U
Vinyl Chloride	2.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NS	1.0U	1.0U	1.0U	1.0U
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NS	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NS	1.0U	1.0U	1.0U	1.0U
Ethylbenzene	700	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NS	1.0U	1.0U	1.0U	1.0U
Toluene	1,000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NS	1.0U	1.0U	1.0U	1.0U
Total xylenes	10,000	3.0U	3.0U	3.0U	0.1	3.0U	3.0U	NS	3.0U	3.0U	3.0U	3.0U
Chlorobenzene	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NS	1.0U	1.0U	1.0U	1.0U
1,4-dichlorobenzene	75	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NS	1.0U	1.0U	1.0U	1.0U
Naphthalene	20	1.0U	4.8JB	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.

Table 4 Continued
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	Criteria (µg/L)	KBA-11-10B			KBA-11-11A		
Date		8-9-01	8-8-00	8-2-99	8-8-01	8-10-00	8-2-99
Tetrachloroethene	5.0	1.0U	1.0U	3.0U	1.0U	1.0U	3.0U
Trichloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Cis -1,2-dichloroethene	70	1.0	1.0	1.6I	1.0U	1.0U	1.0U
Trans-1,2 dichloroethene	100	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethene	7.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,2-dichloroethane	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Vinyl Chloride	2.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	0.57J	1.0	1.6	1.0U	1.0	1.0U
Ethylbenzene	700	2.50	5.0	10	1.0U	5.0	1.0U
Toluene	1,000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Total xylenes	10,000	3.0U	3.0U	3.0U	3.0U	1.0U	3.0U
Chlorobenzene	1.0	**1.2**	1.0	**2.5**	1.0U	1.0	1.0U
1,4-dichlorobenzene	75	0.76J	1.0	1.5	1.0U	1.0	1.0U

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.

Table 4 Continued
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	Criteria (µg/L)	KBA -11-13A									
Date		2-6-02	2-6-02 Duplicate	11-7-01 Duplicate	11-7-01	8-8-01 Duplicate	8-8-01	5-3-01	2-8-01	11-8-00	8-10-00
Tetrachloroethene	5.0	1.6	1.6	0.86J	0.66J	1.6	0.77J	0.59J	0.8	3.0U	1.0U
Trichloroethene	5.0	**21.0**	**20.0**	**24**	**20**	**32**	**26**	**37.0**	**45.0**	**54.0**	**51.0**
Cis -1,2-dichloroethene	70	43.0	42.0	52	44	**71**	59	**88**	**110**	**160**	**300 E**
Trans-1,2 dichloroethene	100	4.1	4.2	4.7	4.0	6.4	5.4	6.6	8.0	7.0	9.0
1,1-dichloroethene	7.0	1.0U	1.0U	1.0U	1.0U	0.44J	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,2-dichloroethane	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Vinyl Chloride	2.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	0.9	0.9	**4.0**	**17.0**
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	1.0U	1.0U	0.36J	0.34J	0.43J	0.31J	0.33J	1.0	1.0	1.0
Ethylbenzene	700	9.0	8.5	16	14	22	14	20	34	57	71
Toluene	1,000	1.0U	1.0U	0.28J	0.24J	0.43J	0.30J	0.46J	1.0U	1.0U	0.9
Total xylenes	10,000	3.0U	3.0U	3.0U	3.0U	0.56J	0.37J	0.33J	3.0U	2.0U	0.7
Chlorobenzene	1.0	**3.1**	**3.0**	**2.6**	**2.3**	**3.1**	**2.1**	**2.4**	**3.0**	**5.0**	**5.0**
1,4-dichlorobenzene	75	2.0B	1.9B	2.1B	1.7B	1.4	1.4	1.4	1.0U	3.0	3.0
Naphthalene	20	**38B**	**37B**	**30**	**29B**	NA	NA	NA	NA	NA	NA

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.

Table 4 Continued
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	Criteria (µg/L)	KBA-11-13A continued					
Date		8-10-00 (Duplicate)	5-3-00	2-4-00	11-9-99	11-9-99 Duplicate	8-3-99
Tetrachloroethene	5.0	1.0U	1.0U	1.0U	30U	3.0U	3.0U
Trichloroethene	5.0	**40.0**	**20.0**	**14.0**	**15I**	**17**	**19**
Cis -1,2-dichloroethene	70	**190**	**180**	**230**	**260**	**210**	**190**
Trans-1,2 dichloroethene	100	7.0	6.0	6.0	1.0U	6.6	7.4
1,1-dichloroethene	7.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,2-dichloroethane	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Vinyl Chloride	2.0	**11.0**	**19.0**	**20.0**	**46**	**42**	**48**
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	1.0	2.0	2.0	1.0U	1.3I	1.1I
Ethylbenzene	700	51.0	67	64.0	65	92	66
Toluene	1,000	0.7	2.0	2.0	1.0U	4.2	2.7
Total xylenes	10,000	3.0	4.0	23.0	24I	49	14.4
Chlorobenzene	1.0	**4.0**	**5.0**	**6.0**	1.0U	**8.2**	**6.2**
1,4-dichlorobenzene	75	2.0	3.0	4.0	1.0U	5.2	4.0
Naphthalene	20	NA	NA	NA	NA	NA	NA

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.

Table 4 Continued
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	Criteria (µg/L)	KBA-11-13B			KBA-11-15				
Date		8-8-01	8-8-00	8-3-99	8-9-01	8-9-00	2-7-00	2-7-00 Duplicate	8-3-99
Tetrachloroethene	5.0	1.0U	1.0U	3.0U	1.0U	1.0U	1.0	1.0	3.0U
Trichloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Cis -1,2-dichloroethene	70	1.0U	1.0U	1.0U	1.0U	1.0U	0.9I	1.0	1.0U
Trans-1,2 dichloroethene	100	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethene	7.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,2-dichloroethane	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Vinyl Chloride	2.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Ethylbenzene	700	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Toluene	1,000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Total xylenes	10,000	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Chlorobenzene	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,4-dichlorobenzene	75	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.

Table 4 Continued
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	Criteria (µg/L)	KBA-11-16										
Date		2-6-02	11-7-01	8-9-01	5-2-01	2-6-01	11-8-00	8-9-00	5-4-00	5-4-00 Duplicate	2-7-00	11-9-99
Tetrachloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	2.0	1.0U	1.0U	1.0U	1.0U	3.0U
Trichloroethene	5.0	1.3	0.72J	0.42J	0.31J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Cis -1,2-dichloroethene	70	46.0	28	30	32	34.0	8.0	2.0	2.0	2.0	14.0	3.6
Trans-1,2 dichloroethene	100	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethene	7.0	1.0U	1.7	1.8	1.3	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	**31.0**	**32**	**26**	**15**	**11.0**	**2.0**	**2.0**	1.0U	0.6U	**5.0**	1.6I
1,2-dichloroethane	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Vinyl Chloride	2.0	1.0U	1.1	1.1	**3.4**	**4.0**	1.0U	1.0U	1.0U	1.0U	1.0	1.4I
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	1.1	1.2	1.2	0.96J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Ethylbenzene	700	3.2	2.4	1.8	0.99J	1.0U	1.0U	0.8J	1.0U	1.0U	1.0U	1.0U
Toluene	1,000	28.0	26	15	5.4	1.0U	3.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Total xylenes	10,000	5.3	3.1	1.7J	0.86J	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Chlorobenzene	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,4-dichlorobenzene	75	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Naphthalene	20	1.0U	1.0U	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.

Table 4 Continued
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	Criteria (µg/L)	KBA-11-17B					
Date		8-3-99	8-9-01	8-9-00	2-7-00	8-3-99	8-3-99
Tetrachloroethene	5.0	3.0U	1.0U	1.0U	1.0U	3.0U	**17**
Trichloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Cis -1,2-dichloroethene	70	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Trans-1,2 dichloroethene	100	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethene	7.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,2-dichloroethane	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Vinyl Chloride	2.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Ethylbenzene	700	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Toluene	1,000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Total xylenes	10,000	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Chlorobenzene	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,4-dichlorobenzene	75	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.

Table 4 Continued
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	Criteria (µg/L)	KBA-11-34										
Date		2-6-02	11-7-01	8-9-01	5-3-01	2-8-01	11-8-00	8-9-00	5-4-00	2-7-00	11-9-99	8-3-99
Tetrachloroethene	5.0	**61.0**	**97**	**35**	**62.0**	**73.0**	**79.0**	**63.0**	**89.0**	**83.0**	**22**	**17**
Trichloroethene	5.0	0.63J	1.7	3.0	2.6	2.0	1.0U	0.6J	1.0	2.0	1.0U	1.0U
Cis -1,2-dichloroethene	70	0.54J	1.5	2.8	0.27J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Trans-1,2 dichloroethene	100	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethene	7.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,2-dichloroethane	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Vinyl Chloride	2.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Ethylbenzene	700	1.0U	1.0U	1.0U	0.13J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Toluene	1,000	1.0U	1.0U	1.0U	0.24J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Total xylenes	10,000	3.0U	3.0U	3.0U	0.17J	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Chlorobenzene	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,4-dichlorobenzene	75	0.34JB	0.47JB	0.56J	0.41J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Naphthalene	20	1.0U	4. JB	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.

Table 4 Continued
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	Criteria (µg/L)	KBA-11-37											
Date		2-6-02	11-7-01	8-8-01	5-2-01	2-7-01	11-8-00	11-8-00 Duplicate	8-9-00	5-4-00	2-8-00	11-9-99	8-16-99
Tetrachloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	3.0U
Trichloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Cis -1,2-dichloroethene	70	6.0	6.9	12.0	13.0	13.0	11.0	11.0	14.0	17.0	16.0	17	24
Trans-1,2 dichloroethene	100	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethene	7.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,2-dichloroethane	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Vinyl Chloride	2.0	1.0U	1.0U	1.0U	0.6J	0.6J	1.0U	1.0U	1.0U	1.0U	1.0U	1.4I	**2.5I**
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	0.85J	1.1	1.3	1.3	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
Ethylbenzene	700	6.4	8.2	13	10.0	13.0	10.0	11.0	7.0	1.0U	9.0	14	15
Toluene	1,000	1.0U	1.0U	0.22J	0.41J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0	1.0U	1.0U
Total xylenes	10,000	3.0U	3.0U	3.0U	0.18J	3.0U	2.0U	2.0U	3.0	12.0	3.0U	3.0U	3.0U
Chlorobenzene	1.0	**4.6**	**3.8**	**2.8**	**2.1**	**2.0**	**3.0**	**3.0**	**2.0**	**3.0**	**2.0**	**3.1**	**2.9**
1,4-dichlorobenzene	75	2.4B	2.4B	3.1	2.6	1.0U	4.0	3.0	3.0	3.0	3.0	4.7	3.6
Naphthalene	20	17B	**25**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.

Table 4 Continued
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	Criteria (µg/L)	PS-2										
Date		2-6-02	11-7-01	8-9-01	5-2-01	2-7-01	11-8-00	8-8-00	5-3-00	2-7-00	11-9-99	8-18-99
Tetrachloroethene	5.0	1.0U	1.0U	1.0U	0.14J	1.0U	3.0U	1.0U	1.0U	1.0U	3.0U	3.0U
Trichloroethene	5.0	1.7	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	1.4I	1.3I
Cis -1,2-dichloroethene	70	**110**	**110**	**99**	**79.0**	**71.0**	**61.0**	**58.0**	57.0	52.0	40	41
Trans-1,2 dichloroethene	100	0.73J	0.84J	0.80J	0.60J	0.6J	1.0U	1.0U	0.5	1.0U	1.0U	1.0U
1,1-dichloroethene	7.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	**3.4**	**4.1**	**4.2**	**4.1**	**4.0**	**4.0**	**4.0**	**5.0**	**5.0**	**5.1**	**5.6**
1,2-dichloroethane	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Vinyl Chloride	2.0	**2.7**	**3.0**	**2.4**	**2.4**	**3.0**	**3.0**	**2.0**	1.0U	**2.0**	**2.9**	3.2I
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	2.1	2.7	3.4	3.7	4.0	**5.0**	**6.0**	**8.0**	**8.0**	**9.4**	**9.1**
Ethylbenzene	700	14.0	20.0	22.0	22.0	18.0	18.0	14.0	16.0	14.0	16	10
Toluene	1,000	1.5	1.9	2.7	2.9	3.0	5.0	8.0	19.0	37.0	57	43
Total xylenes	10,000	1.9J	2.4J	3.5	3.6	4.0	7.0	19.0	41.0	40.0	47	29
Chlorobenzene	1.0	**1.6**	**1.2**	0.92J	0.59J	0.5J	1.0	0.5	0.7	1.0U	1.0U	1.0U
1,4-dichlorobenzene	75	1.0U	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Naphthalene	20	1.0U	3.7JB	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.

Table 5
Analytical Summary for Subdivision Irrigation Wells

Groundwater Protection Standard	Criteria (µg/L)	KBA-102-PLANTATION CT. Year 2001 / 2002									
Date		2-02	1-02	12-01	11-01	10-01	9-01	8-01	7-01	6-01	5-01
Tetrachloroethene	5.0	NS	NS	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Trichloroethene	5.0	NS	NS	1.0U	0.53J	0.027J	1.0U	**9.9**	1.0U	1.0U	1.0U
Cis -1,2-dichloroethene	70	NS	NS	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Trans-1,2 dichloroethene	100	NS	NS	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethene	7.0	NS	NS	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	NS	NS	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,2-dichloroethane	5.0	NS	NS	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	0.10J
Vinyl Chloride	2.0	NS	NS	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Chloroethane	1.0	NS	NS	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	NS	NS	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Ethylbenzene	700	NS	NS	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Toluene	1,000	NS	NS	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Total xylenes	10,000	NS	NS	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Chlorobenzene	1.0	NS	NS	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,4-dichlorobenzene	75	NS	NS	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Naphthalene	20	NS	NS	10	3.3J	NA	NA	NA	NA	NA	NA

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.

Table 5 Continued
Analytical Summary for Subdivision Irrigation Wells

Groundwater Protection Standard	**Criteria (µg/L)**	**KBA-102-PLANTATION CT. Year 2001**							
Date		4-01	3-01	2-01	1-01	4-01	3-01	2-01	1-01
Tetrachloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Trichloroethene	5.0	1.0U	1.0U	1.0U	**86**	1.0U	1.0U	1.0U	**86**
Cis -1,2-dichloroethene	70	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Trans-1,2 dichloroethene	100	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethene	7.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,2-dichloroethane	5.0	0.10J	1.0U	1.0U	1.0U	0.10J	1.0U	1.0U	1.0U
Vinyl Chloride	2.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Ethylbenzene	700	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Toluene	1,000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Total xylenes	10,000	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Chlorobenzene	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,4-dichlorobenzene	75	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Naphthalene	20	NA	NA	NA	NA	NA	NA	NA	NA

Table 5 Continued
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	Criteria (µg/L)	KBA-102-PLANTATION CT. Year 2000											
Date		12-00	11-00	10-00	9-00	8-00	7-00	6-00	5-00	4-00	3-00	2-00	1-00
Tetrachloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Trichloroethene	5.0	**17**	**8.0**	**4.0**	**150**	**37**	**8.0**	1.OU	1.0U	1.0U	1.0U	1.0U	**28.0**
Cis -1,2-dichloroethene	70	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Trans-1,2 dichloroethene	100	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethene	7.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,2-dichloroethane	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Vinyl Chloride	2.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Ethylbenzene	700	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Toluene	1,000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Total xylenes	10,000	3.0U	1.0U	3.0U	3.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Chlorobenzene	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,4-dichlorobenzene	75	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.

Table 5 Continued
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	**Criteria (µg/L)**	**KBA-122-PLANTATION CT. Year 2001 / 2002**					
Date		2-6-02	2-6-02 Duplicate	1-02	1-02 Duplicate	12-01	12-01 Duplicate
Tetrachloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Trichloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Cis -1,2-dichloroethene	70	1.1	1.1	1.1	1.1	1.2	1.2
Trans-1,2 dichloroethene	100	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethene	7.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,2-dichloroethane	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Vinyl Chloride	2.0	**6.9**	**6.8**	**7.4**	**7.0**	**5.8**	**5.8**
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Ethylbenzene	700	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Toluene	1,000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Total xylenes	10,000	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Chlorobenzene	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,4-dichlorobenzene	75	0.34J	0.34JB	0.60	0.46	1.0U	0.38J
Naphthalene	20	10U	10U	10U	10U	10	10

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.

Table 5 Continued
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	**Criteria (µg/L)**	**KBA-122-PLANTATION CT. Year 2001**					
Date		11-01	11-01 Duplicate	10-01	10-01 Duplicate	9-01	9-01 Duplicate
Tetrachloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Trichloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Cis -1,2-dichloroethene	70	1.0	1.0	1.0	1.1	1.2	1.2
Trans-1,2 dichloroethene	100	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethene	7.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,2-dichloroethane	5.0	1.0U	1.0U	1.0U	1.0U	0.32J	1.0U
Vinyl Chloride	2.0	**6.4**	**6.4**	**5.6**	**5.9**	**5.1**	**5.1**
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Ethylbenzene	700	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Toluene	1,000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Total xylenes	10,000	3.0U	3.0U	3.0U	3.0U	0.24J	0.21J
Chlorobenzene	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,4-dichlorobenzene	75	0.29J	0.26J	0.26J	0.27J	0.31J	0.30J
Naphthalene	20	1.0U	1.0U	NA	NA	NA	NA

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.

Table 5 Continued
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	Criteria (µg/L)	KBA-122-PLANTATION CT. Year 2001														
Date		8-01 duplicate	8-01	7-01 duplicate	7-01	6--01 duplicate	6-01	5-01 duplicate	5-01	4-01	4-01	3-01 duplicate	3-01	2-01 duplicate	2-01	1-01
Tetrachloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Trichloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Cis -1,2-dichloroethene	70	1.1	1.2	1.0	1.0	1.2	0.95	0.1	0.94J	1.0	1.0	1.0	1.0	1.0	2.0	2.0
Trans-1,2 dichloroethene	100	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethene	7.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,2-dichloroethane	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Vinyl Chloride	2.0	**4.7**	**4.7**	**4.6**	**4.6**	**4.8**	**4.8**	**4.5**	**3.4**	**5.0**	**5.0**	**4.0E**	**4.0E**	**4.0**	**6.0**	**7.0**
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Ethylbenzene	700	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Toluene	1,000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Total xylenes	10,000	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Chlorobenzene	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,4-dichlorobenzene	75	0.22	0.24	0.26J	0.27J	0.23J	0.21J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.

Table 5 Continued
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	Criteria (µg/L)	KBA-122-PLANTATION CT. Year 2000											
Date		12-00	11-00	10-00	9-00	8-00	7-00	6-00	5-00	4-00	3-00	2-00	1-00
Tetrachloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Trichloroethene	5.0	2.0	0.93	0.9J	1.0U	2.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Cis -1,2-dichloroethene	70	1.0	2.0	2.0	3.0	2.0	1.0U	2.0	3.0	2.0	2.0	2.0	2.0
Trans-1,2 dichloroethene	100	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethene	7.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,2-dichloroethane	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Vinyl Chloride	2.0	**4.0**	**5.0**	**5.0**	**5.0**	**5.0**	1.0U	**7.0**	**8.0**	**6.0**	**8.0**	**8.0**	**5.0**
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Ethylbenzene	700	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Toluene	1,000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Total xylenes	10,000	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Chlorobenzene	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
1,4-dichlorobenzene	75	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.

Table 5 Continued
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	Criteria (µg/L)	KBA-108-COTTAGE CT. Year 2001 / 2002										
Date		2-02	1-02	12-01	11-01	10-01	9-01	8-01	7-01	6-01	5-01	4-01
Tetrachloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	1.0U	1.0U	1.0U	1.0U
Trichloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	1.0U	1.0U	1.0U	1.0U
Cis -1,2-dichloroethene	70	1.0U	1.0U	0.37	1.3	2.2	1.0U	NM	10	3.8	6.8	3.1
Trans-1,2 dichloroethene	100	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethene	7.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	1.0U	1.0U	1.0U	1.0U
1,1-dichloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	1.0U	1.0U	1.0U	1.0U
1,2-dichloroethane	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	0.32J	1.0U	1.0U	1.0U
Vinyl Chloride	2.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	1.0U	1.0U	1.0U	1.0U
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	1.0U	1.0U	1.0U	1.0U
Benzene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	1.0U	1.0U	1.0U	1.0U
Ethylbenzene	700	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	1.0U	1.0U	1.0U	1.0U
Toluene	1,000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	1.0U	1.0U	1.0U	1.0U
Total xylenes	10,000	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	NM	3.0U	3.0U	3.0U	7.0U
Chlorobenzene	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	1.0U	1.0U	1.0U	1.0U
1,4-dichlorobenzene	75	1.0U	1.0U	0.34	1.0U	1.0U	1.0U	NM	1.0U	1.0U	1.0U	1.0U
Naphthalene	20	10U	10U	3.1	1.0U	NA	NA	NA	NA	NA	NA	NA

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.
NM – Not measured. Irrigation well was closed for the winter or owner was on vacation.

Table 5 Continued
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	Criteria (µg/L)	KBA-108-COTTAGE CT. Year 2001										
Date		3-01	2-01	1-01	8-01	7-01	6-01	5-01	4-01	3-01	2-01	1-01
Tetrachloroethene	5.0	NM	NM	NM	NM	1.0U	1.0U	1.0U	1.0U	NM	NM	NM
Trichloroethene	5.0	NM	NM	NM	NM	1.0U	1.0U	1.0U	1.0U	NM	NM	NM
Cis -1,2-dichloroethene	70	NM	NM	NM	NM	10	3.8	6.8	3.1	NM	NM	NM
Trans-1,2 dichloroethene	100	NM	NM	NM	NM	1.0U	1.0U	1.0U	1.0U	NM	NM	NM
1,1-dichloroethene	7.0	NM	NM	NM	NM	1.0U	1.0U	1.0U	1.0U	NM	NM	NM
1,1-dichloroethane	1.0	NM	NM	NM	NM	1.0U	1.0U	1.0U	1.0U	NM	NM	NM
1,2-dichloroethane	5.0	NM	NM	NM	NM	0.32J	1.0U	1.0U	1.0U	NM	NM	NM
Vinyl Chloride	2.0	NM	NM	NM	NM	1.0U	1.0U	1.0U	1.0U	NM	NM	NM
Chloroethane	1.0	NM	NM	NM	NM	1.0U	1.0U	1.0U	1.0U	NM	NM	NM
Benzene	5.0	NM	NM	NM	NM	1.0U	1.0U	1.0U	1.0U	NM	NM	NM
Ethylbenzene	700	NM	NM	NM	NM	1.0U	1.0U	1.0U	1.0U	NM	NM	NM
Toluene	1,000	NM	NM	NM	NM	1.0U	1.0U	1.0U	1.0U	NM	NM	NM
Total xylenes	10,000	NM	NM	NM	NM	3.0U	3.0U	3.0U	7.0U	NM	NM	NM
Chlorobenzene	1.0	NM	NM	NM	NM	1.0U	1.0U	1.0U	1.0U	NM	NM	NM
1,4-dichlorobenzene	75	NM	NM	NM	NM	1.0U	1.0U	1.0U	1.0U	NM	NM	NM
Naphthalene	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.
NM – Not measured. Irrigation well was closed for the winter or owner was on vacation.

Table 5 Continued
Analytical Summary, Groundwater Protection Standard

Groundwater Protection Standard	Criteria (µg/L)	KBA-108-COTTAGE CT. Year 2000											
Date		12-00	11-00	10-00	9-00	8-00	7-00	6-00	5-00	4-00	3-00	2-00	1-00
Tetrachloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	NM
Trichloroethene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	NM
Cis -1,2-dichloroethene	70	0.7J	1.0U	2.0	1.0U	1.0U	4.0	4.0	5.0	5.0	7.0	NM	NM
Trans-1,2 dichloroethene	100	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	NM
1,1-dichloroethene	7.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	NM
1,1-dichloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	NM
1,2-dichloroethane	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	NM
Vinyl Chloride	2.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	NM
Chloroethane	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	NM
Benzene	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	NM
Ethylbenzene	700	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	NM
Toluene	1,000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	NM
Total xylenes	10,000	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	NM	NM
Chlorobenzene	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	NM
1,4-dichlorobenzene	75	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	NM	NM

Notes: I = interference.
J = estimated value; analyte detected; value is between the method detection level (MDL) and the practical quantitation level (PQL).
U = compound was analyzed for but not detected to the level shown.
BOLD indicates result exceeds the groundwater protection standard.
NA – Naphthalene was added to the GPS list in November 2001 and was not previously analyzed.
NM – Not measured. Irrigation well is closed for the winter.

APPENDIX A

WELL PURGING AND SAMPLING RECORDS
SITE 11 GROUNDWATER MONITORING PROGRAM
FEBRUARY 2002

SAMPLING STATION

Well # KBA-11-02 | Station Type MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By
KBA-11-02-FEB-06-02			GRAB	2-6-02	0810	TB/MC

Weather Conditions: PARTLY CLOUDY: TIME 1301: HUMIDITY 34%: P.B. 30.33: TEMP. 63.5 DATE
PARTLY CLOUDY: TIME 1416: HUMIDITY 39%: P.B. 30.33: TEMP. 55.4: 2/5/02

Instruments	Manufacturer/Mode	Serial No.	Fune. Ck.	Calib.Due	Reference
pH/Eh	HORIBA U22	063313	CAL. 2-1-02	CAL. DAILY	
Conductivity/Temp	HORIBA U22				
Dissolved Oxygen					
Turbidity					

GROUND LEVEL DATA (before pujrging)

REDOX: -76
REDOX: -82
REDOX: -85

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

de diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT: | S/N: | Purge method: | Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ()		D.O. ()	VolPrdg (gal)	Purge rate (gpm)
2 GAL.	2-6-02	0814	20.94c	6.56			.199	mS/cm	.4	NTU	5.52	mg/L	
4 GAL.	2-6-02	0819	21.00c	6.53			.203	mS/cm	.4	NTU	1.60	mg/L	
6 GAL.	2-6-02	0825	20.96c	6.51			.206	mS/cm	.4	NTU	.97	mg/L	

Well purged to dryness: [ ] Yes [X] No

Recorded by: Tommy Bryant | Date: 2-6-02 | Reviewed by: | Date:

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-02	2-5-02	1301	8.59'	11.0'	0.0
	2-5-02	1416	8.60'		
PhotoVAC Cal.	2-1-02				

SAMPLING STATION

ell # KBA-11-3B	Station Type MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By

Weather Conditions: PARTLY CLOUDY: TIME 1118: HUMIDITY 38%: B.P. 30.39: TEMP. 55.4°
PARTLY CLOUDY: TIME 1352: HUMIDITY 39%: B.P. 30.30: TEMP. 55.4°

Instruments	Manufacturer/Mode	Serial No.	Fune. Ck.	Calib.Due	Reference
pH/Eh					
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					

GROUND LEVEL DATA (before pujrging)

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

de diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT:	S/N:	Purge method:	Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ( )	D.O. ( )	VolPrdg (gal)	Purge rate (gpm)

Well purged to dryness: [ ] Yes [ ] No

F rded by: Tommy Bryant	Date: 2-5-02	Reviewed by:	Date:

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-3B	2-5-02	1119	8.38'	47.51'	0.0
	2-5-02	1352	8.37'		
PHOTOVAC CAL.	2-1-02				

SAMPLING STATION

II #	Station Type
KBA-11-8B	MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By
				2-5-02	1055	TB/MC

Weather Conditions:
CLOUDY: TIME 1055 : HUMIDITY 41%: B.P. 30.39 : TEMP. 51.8°
PARTLY CLOUDY: TIME 1341 : HUMIDITY 36°: B.P. 30.30 : TEMP. 58.1

Instruments	Manufacturer/Mode	Serial No.	Fune. Ck.	Calib.Due	Reference
pH/Eh					
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					

GROUND LEVEL DATA (before pujrging)

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

I. ue diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT:	S/N:	Purge method:	Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ( )	D.O. ( )	VolPrdg (gal)	Purge rate (gpm)

Well purged to dryness: [ ] Yes [ ] No

R ded by: Tommy Bryant	Date: 2-5-02	Reviewed by:	Date:

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-8B	2-5-02	1056	11.66'	43.48	0.9 ppm
	2-5-02	1341	11.66'		
PHOTOVAC CAL.	2-1-02				

SAMPLING STATION

ll # KBA-11-10B	Station Type MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By

Weather Conditions: CLOUDY: TIME 1143: HUMIDITY 38%: P.B. 30.39: TEMP 55.4°
PARTLY CLOUDY: TIME 1406: HUMIDITY 37%: P.B. 30.33: TEMP. 57.2

Instruments	Manufacturer/Mode	Serial No.	Fune. Ck.	Calib.Due	Reference
pH/Eh					
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					

GROUND LEVEL DATA (before pujrging)

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

Inside diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT:	S/N:	Purge method:	Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ( )	D.O. ( )	VolPrdg (gal)	Purge rate (gpm)

Well purged to dryness: [ ] Yes [ ] No

F rded by: Tommy Bryant	Date: 2-5-02	Reviewed by:	Date:

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-10B	2-5-02	1144	12.11'	51.37'	0.0
	2-5-02	1406	12.11'		
PHOTOVAC CAL.	2-1-02				

SAMPLING STATION

Well #	Station Type
KBA-11-11A	MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By

Weather Conditions:
CLOUDY: TIME 1104: HUMIDITY 39%: B.P. 30.39: TEMP 52.7°
PARTLY CLOUDY: TIME 1346: HUMIDITY 37%: B.P. 30.30: TEMP. 56.3°

Instruments	Manufacturer/Mode	Serial No.	Func. Ck.	Calib.Due	Reference
pH/Eh					
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					

GROUND LEVEL DATA (before pujrging)

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

Inside diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT:	S/N:	Purge method:	Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ( )	D.O. ( )	VolPrdg (gal)	Purge rate (gpm)

Well purged to dryness: [ ] Yes [ ] No

Recorded by: Tommy Bryant	Date: 2-5-02	Reviewed by:	Date:

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-11B	2-5-02	11:05	8.23'	36.85'	0.0
	2.5.02	1346	8.23'		
PhotoVac Cal.	2-1-02				

SAMPLING STATION

Station #	Station Type
KBA-11-13A	MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By
KBA11-13A FEB-02-06	WATER		GRAB	2-6-02	1315	TB/MC

Weather Conditions:
PARTLY CLOUDY: TIME 1315 : HUMIDITY 37% : P.B. 30.33 : TEMP. 59.0 °
PARTLY CLOUDY: TIME 1422 : HUMIDITY 39% : P.B. 30.33 : TEMP. 55.4 °

Instruments	Manufacturer/Mode	Serial No.	Fune. Ck.	Calib.Due	Reference
pH/Eh	HORIBA U22	~~063313~~ ~~06733~~	CAL. 2-1-02	CAL. DAILY	
Conductivity/Temp	HORIBA U22	063313		CAL. DAILY	
Dissolved Oxygen	HORIBA U22			CAL. DAILY	
Turbidity	HORIBA U22			CAL. DAILY	
REDOX	HORIBA U22			CAL. DAILY	

GROUND LEVEL DATA (before pujrging)

REDOX : -5
REDOX : -5
REDOX : 18
REDOX : 42

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

Inside diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT:	S/N:	Purge method:	Pump Type:

Prog Cyc	Date	Time	~~Temp~~ PH(C)	TEMP ~~BH~~	Eh	Units	Cond.	Units	Turg ( )		D.O. ( )	VolPrdg (gal)	Purge rate .(gpm)
2 GAL	2-6-02	1351	4.90	24.40			1.58	mS/cm	.5	NTU	3.48	mg/L	
4 GAL	2-6-02	1409	4.86	24.38			1.65	mS/cm	.5	NTU	3.17	mg/L	
6-GAL	2-6-02	1418	4.87	24.12			1.73	mS/cm	5.7	NTU	3.64	mg/L	
8-GAL	2-6-02	1426	4.85	24.10			1.80	mS/cm	5.8	NTU	5.88	mg/L	

Well purged to dryness: [ ] Yes [✓] No

orded by:	Date:	Reviewed by:	Date:
Tommy Bryant	2-6-02		

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-13A	2-5-02	1315	9.13'	42.26	0.0
	2-5-02	1422	9.13'		
Photovac Cal.	2-1-02				

SAMPLING STATION

..l # KBA-11-13B	Station Type MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By

Weather Conditions: PARTLY CLOUDY: TIME 1308: HUMIDITY 35%: P.B. 30.33: TEMP. 60.8
PARTLY CLOUDY: TIME 1421: HUMIDITY 39%: P.B. 30.33: TEMP. 55.4

Instruments	Manufacturer/Mode	Serial No.	Fune. Ck.	Calib.Due	Reference
pH/Eh					
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					

GROUND LEVEL DATA (before pujrging)

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

Inside diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT:	S/N:	Purge method:	Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ( )	D.O. ( )	VolPrdg (gal)	Purge rate (gpm)

Well purged to dryness: [ ] Yes [ ] No

F rded by: Tommy Bryant	Date: 2-5-02	Reviewed by:	Date:

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-13B	2-5-02	1308	12.80'	90.60'	0.0
	2-5-02	1421	12.81'		
PHOTOVAC CAL.	2-1-02				

SAMPLING STATION

..ll # KBA-11-15	Station Type MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By
				2-5-02	0756	TB/MC

Weather Conditions: TIME-0756 - Humidity - 35% : B.P. 30.36 - TEMP. 42.8
PARTLY CLOUDY: Clear: TIME 1005: HUMIDITY 41%: B.P. 30.39: TEMP 51.8°

Instruments	Manufacturer/Mode	Serial No.	Fune. Ck.	Calib.Due	Reference
pH/Eh					
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					

GROUND LEVEL DATA (before pujrging)

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

Inside diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT:	S/N:	Purge method:	Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ( )	D.O. ( )	VolPrdg (gal)	Purge rate (gpm)

Well purged to dryness: [ ] Yes [ ] No

..orded by: Tommy Bryant	Date: 2-5-02	Reviewed by:	Date:

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-15	2-5-02	0800	3.99'	38.90'	0.0
	2-5-02	1005	3.98'		
PHOTOVAC CAL.	2-1-02				

SAMPLING STATION

ll #	Station Type
KBA-11-16	MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By
KBA11-16-FEB-06-02	WATER		GRAB	2-6-02	0919	TB/mc

Weather Conditions:
PARTLY CLOUDY: TIME 0919 : HUMIDITY 40% : B.P. 30.39 : TEMP 49.1
PARTLY CLOUDY: TIME 1026 : HUMIDITY 39% : B.P. 30.39 : TEMP 53.6°

Instruments	Manufacturer/Mode	Serial No.	Fune. Ck.	Calib.Due	Reference
pH/Eh	HORIBA U22	063313	CAL. 2-1-02	CAL. DAILY	
Conductivity/Temp	HORIBA-U22			CAL. DAILY	
Dissolved Oxygen	HORIBA. U22			CAL. DAILY	
Turbidity	HORIBA U22			CAL. DAILY	
REDOX	HORIBA U22			CAL. DAILY	

GROUND LEVEL DATA (before pujrging)

REDOX: -97
REDOX: -127
REDOX: -140

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

Inside diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT:	S/N:	Purge method:	Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ( )		D.O. ( )	VolPrdg (gal)	Purge rate (gpm)
2 GAL.	2-6-02	1005	24.41c	5.25			.205	mg/cm	.8	NTU	2.64	mg/L	
4 GAL.	2-6-02	1016	24.38c	5.16			.256	mg/cm	1.1	NTU	3.10	mg/L	
6 GAL.	2-6-02	1025	24.64c	4.94			.280	mg/cm	.7	NTU	2.30	mg/L	

Well purged to dryness: [ ] Yes [X] No

F ·ded by:	Date:	Reviewed by:	Date:
Tommy Bryant	2-6-02		

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-16	2-5-02	0918	4.69'	44.47'	0.0
	2-5-02	1026	4.70'		
Photovac Cal.	2-1-02				

SAMPLING STATION

ll #	Station Type
KBA-11-17B	MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By
				2-5-02	0925	TB/MC

Weather Conditions: PARTLY CLOUDY: TIME - 0926 : HUMIDITY 40% : BP. 30.39 : TEMP 50.0° DATE
PARTLY CLOUDY: TIME 1029 : HUMIDITY 39% : BP 30.39 : TEMP 54.5° : 2-5-02

Instruments	Manufacturer/Mode	Serial No.	Fune. Ck.	Calib.Due	Reference
pH/Eh					
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					

GROUND LEVEL DATA (before pujrging)

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

.de diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT:	S/N:	Purge method:	Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ( )	D.O. ( )	VolPrdg (gal)	Purge rate .(gpm)

Well purged to dryness: [ ] Yes [ ] No

F rded by: Tommy Bryant	Date: 2-5-02	Reviewed by:	Date:

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-17B	2-5-02	0930	3.27'	44.44'	>2000
	2-5-02	1029	3.27'		
PHOTOVAC CAL.	2-1-02				

SAMPLING STATION

Well # KBA-11-18	Station Type MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By
				2-5-02	0944	TR/MC

Weather Conditions: PARTLY CLOUDY: TIME 0944; HUMIDITY 41: B.P. 30.39: TEMP 48.2 DATE
PARTLY CLOUDY: TIME 1032: HUMIDITY 39%: B.P. 30.39: TEMP 55.4°: 2-5-02

Instruments	Manufacturer/Mode	Serial No.	Fune. Ck.	Calib.Due	Reference
pH/Eh					
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					

GROUND LEVEL DATA (before pujrging)

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

Inside diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT:	S/N:	Purge method:	Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ( )	D.O. ( )	VolPrdg (gal)	Purge rate .(gpm)

Well purged to dryness: [ ] Yes [ ] No

Recorded by: Tommy Bryant	Date:	Reviewed by:	Date:

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-18	2-5-02	0945	2.45'	45.53	150 ppm
	2-5-02	1032	2.45'		
PhotoVAC Cal.	2-1-02				

SAMPLING STATION

ll # KBA-11-20	Station Type MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By
				2-5-02	0855	TB/MC

Weather Conditions:
CLEAR: TIME 0855: HUMIDITY 42%: B.P. 30.39: TEMP 45.5
PARTLY CLOUDY: TIME 1018: HUMIDITY 39%: B.P. 30.39: TEMP 53.6°

Instruments	Manufacturer/Mode	Serial No.	Fune. Ck.	Calib.Due	Reference
pH/Eh					
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					

GROUND LEVEL DATA (before pujrging)

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

..ide diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT:	S/N:	Purge method:	Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ( )	D.O. ( )	VolPrdg (gal)	Purge rate (gpm)

Well purged to dryness: [ ] Yes [ ] No

..orded by: Tommy Bryant	Date: 2-5-02	Reviewed by:	Date:

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-20	2-5-02	0855	2.17'	39.86	0.0
	2-5-02	1017	2.18'		
PhotoVac CAL. 2-1-02					

SAMPLING STATION

II # KBA-11-21	Station Type MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By
				2-5-02	0845	TD/MC

Weather Conditions:
CLEAR TIME 0845 : HUMIDITY 42% : B.P. 30.39 TEMP 43.7
PARTLY CLOUDY : TIME 1011 : HUMIDITY 39% : B.P. 30.39 : TEMP 53.6°

Instruments	Manufacturer/Mode	Serial No.	Fune. Ck.	Calib.Due	Reference
pH/Eh					
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					

GROUND LEVEL DATA (before pujrging)

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

Je diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT:	S/N:	Purge method:	Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ( )	D.O. ( )	VolPrdg (gal)	Purge rate (gpm)

Well purged to dryness: [ ] Yes [ ] No

F rded by: Tommy Bryant	Date: 2-5-02	Reviewed by:	Date:

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-21	2-5-02	0845	2.48'	40.30	0.0
	2-5-02	1011	2.49'		
PHOTOVAC CAL.	2-1-02				

SAMPLING STATION

ell # KBA-11-22B	Station Type MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By

Weather Conditions:
CLOUDY : TIME 1135 : HUMIDITY 37% : P.B 30.39 : TEMP 57.2°
PARTLY CLOUDY : TIME 1359 : HUMIDITY 37% : P.B. 30.33 : TEMP. 58.1°

Instruments	Manufacturer/Mode	Serial No.	Fune. Ck.	Calib.Due	Reference
pH/Eh					
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					

GROUND LEVEL DATA (before pujrging)

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

Inside diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT:	S/N:	Purge method:	Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ( )	D.O. ( )	VolPrdg (gal)	Purge rate .(gpm)

Well purged to dryness: [ ] Yes [ ] No

orded by: Tommy Bryant	Date: 2-5-02	Reviewed by:	Date:

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-22B	2-5-02	1136	10.15'	52.29'	0.0
	2-5-02	1359	10.15'		
PhotoVAC Cal	2-1-02				

SAMPLING STATION

Well #	Station Type
KBA-11-34	MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By
KBA11-34-FEB-06-02	WATER		GRAB	2-6-02	1245	TB/MC

Weather Conditions:
PARTLY CLOUDY: TIME 1252: HUMIDITY 34%: P.B. 30.33: TEMP. 63.5
PARTLY CLOUDY: TIME 1412: HUMIDITY 38%: P.B. 30.33: TEMP. 55.4

Instruments	Manufacturer/Mode	Serial No.	Fune. Ck.	Calib.Due	Reference
pH/Eh	HORIBA U22	063313	CAL. 2-1-02	CAL. DAILY	
Conductivity/Temp	HORIBA U22			CAL. DAILY	
Dissolved Oxygen	HORIBA U22			CAL. DAILY	
Turbidity	HORIBA U22			CAL. DAILY	
	HORIBA U22			CAL. DAILY	

GROUND LEVEL DATA (before pujrging)

REDOX: 475
REDOX: 419
REDOX: 322

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

Inside diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT:	S/N:	Purge method:	Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ( )		D.O. ( )	VolPrdg (gal)	Purge rate (gpm)
	~~1300~~	~~PB~~											
2 GAL	2-6-02	1300	27.45c	3.19			1.08 ms/cm		.6	NTU	8.92 mg/L		
4 GAL	2-6-02	1310	27.85c	3.25			1.12 ms/cm		.6	NTU	9.40 mg/L		
6 GAL.	2-6-02	1320	28.08c	3.45			1.28 ms/cm		.5	NTU	8.45 mg/L		

Well purged to dryness: [ ] Yes [X] No

Recorded by:	Date:	Reviewed by:	Date:
Tommy Bryant	2-6-02		

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-34	2-5-02	1252	11.94'	40.76'	0.0
	2-5-02	1412	11.95'		
PHOTOVAC CAL	2-1-02				

SAMPLING STATION

...l # KBA-11-36	Station Type MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By

Weather Conditions:
PARTLY CLOUDY; TIME 1244: HUMIDITY 40%: P.B. 30.36: TEMP. 60°
PARTLY CLOUDY: TIME 1409: HUMIDITY 37%: P.B. 30.33: TEMP. 57.2°

Instruments	Manufacturer/Mode	Serial No.	Func. Ck.	Calib.Due	Reference
pH/Eh					
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					

GROUND LEVEL DATA (before pujrging)

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

Inside diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT:	S/N:	Purge method:	Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ( )	D.O. ( )	VolPrdg (gal)	Purge rate (gpm)

Well purged to dryness: [ ] Yes [ ] No

...rded by: Tommy Bryant	Date: 2-5-02	Reviewed by:	Date:

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-36	2-5-02	1245	12.57'	41.36'	0.0
	2-5-02	1409	12.57'		
PHOTOVAC CAL.	2-1-02				

SAMPLING STATION

Well # KBA-11-37 | Station Type MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By
KBA11-37-FEB-06-02	WATER			2-6-01	1050	TB/MC

Weather Conditions: CLEAR: TIME 0805: HUMIDITY 40%: B.B. 30.39: TEMP 50°
PARTLY CLOUDY: TIME 1021: HUMIDITY 39%: B.P. 30.39: TEMP 53.6°

Instruments	Manufacturer/Mode	Serial No.	Func. Ck.	Calib.Due	Reference
pH/Eh	HORIBA U22	063313	CAL. 2-1-02	CAL. DAILY	
Conductivity/Temp	HORIBA U22		CAL. 2-1-02	CAL. DAILY	
Dissolved Oxygen	HORIBA U22		CAL. 2-1-02	CAL. DAILY	
Turbidity	HORIBA U22		CAL. 2-1-02	CAL. DAILY	
REDOX	HORIBA U22		CAL. 2-1-02	CAL. DAILY	

GROUND LEVEL DATA (before pujrging)

REDOX: -131
REDOX: -143
REDOX: -147

Well Variables

D th of water = (TD - H) = h (ft) [H = depth to top of water]

Inside diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT: | S/N: | Purge method: | Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ( )		D.O. ( )	VolPrdg (gal)	Purge rate .(gpm)
2 GAL	2-6-02	1100	24.61c	5.34			.311	mS/cm	.4	NTU	1.51	mg/L	
4 GAL	2-6-02	1108	24.59c	5.43			.334	mS/cm	.5	NTU	1.29	mg/L	
6 GAL	2-6-02	1118	24.68c	5.56			.395	mS/cm	.7	NTU	1.27	mg/L	

Well purged to dryness: [ ] Yes [✓] No

R rded by: Tommy Bryant | Date: 2-6-02 | Reviewed by: | Date:

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-37	2-5-02	0905	2.83'	38.18'	0.0
	2-5-02	1022	2.82'		
PhotoVAC CAL.	2-1-02				

SAMPLING STATION

I#	Station Type
KBA-11-PS 2	MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By
KBA11-PS2-FEB-06-02	WATER		GRAB	2-6-02		TB/MC

Weather Conditions:
CLOUDY : TIME 1330 : HUMIDITY 37% : P.B. 30.33 : TEMP. 59.9°
PARTLY CLOUDY: TIME 1426 : HUMIDITY 40% : P.B. 30.33 : TEMP. 55.4°

Instruments	Manufacturer/Mode	Serial No.	Fune. Ck.	Calib.Due	Reference
pH/Eh	HORIBA U22	D63313	CAL. DAILY	NEXT USE	CAL. 2-1-0
Conductivity/Temp	HORIBA U22		CAL. DAILY	NEXT USE	
Dissolved Oxygen	HORIBA U22		CAL. DAILY	NEXT USE	
Turbidity	HORIBA U22		CAL. DAILY	NEXT USE	
REDOX	HORIBA U22		CAL. DAILY	NEXT USE	

GROUND LEVEL DATA (before pujrging)

REDOX: -84
REDOX: -103
REDOX: -120

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

In... ...e diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT:	S/N:	Purge method:	Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ( )		D.O. ( )	VolPrdg (gal)	Purge rate .(gpm)
2 GAL	2-6-02	0900	22.58c	5.25			.252 ms/cm		.5	NTU	1.53 mg/L		
4 GAL.	2-6-02	0907	22.79c	5.24			.276 ms/cm		.8	NTU	1.25 mg/L		
6 GAL.	2-6-02	0914	22.85c	5.24			.286 ms/cm		.7	NTU	.80 mg/L		

Well purged to dryness: [ ] Yes [✓] No

R ...ded by:	Date:	Reviewed by:	Date:
Tommy Bryant	2-6-02		

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-PS 2	2-5-02	1330	7.61'	37.22'	19.9 ppm
	2-5-02	1427	7.62'		
PHOTOVAC CAL.	2-1-02				

SAMPLING STATION

ll # KBA-11 PS-9	Station Type MONITORING WELL

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By

Weather Conditions: CLEAR TIME 0835: HUMIDITY 43%: BP 30.39: TEMP: 42.8
PARTLY CLOUDY: TIME 0959: HUMIDITY 41%: B.P. 30.42: TEMP 49.1°

Instruments	Manufacturer/Mode	Serial No.	Fune. Ck.	Calib.Due	Reference
pH/Eh					
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					

GROUND LEVEL DATA (before pujrging)

Well Variables

Depth of water = (TD - H) = h (ft) [H = depth to top of water]

de diam. Of casing = d(in.); 1/2(d) = r(in.)

$\frac{r(in.)}{12(in.)}$ = R (ft); [7.48 gal/ft 3 constant}

WELL PURGE INFORMATION

PURGE EQUIPMENT:	S/N:	Purge method:	Pump Type:

Prog Cyc	Date	Time	Temp (C)	pH	Eh	Units	Cond.	Units	Turg ( )	D.O. ( )	VolPrdg (gal)	Purge rate (gpm)

Well purged to dryness: [ ] Yes [ ] No

R rded by: Tommy Bryant	Date: 2-5-02	Reviewed by:	Date:

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA!! PS-9	2-5-02	0838	4.11'	34.12'	0.0
	2-5-02	0959	~~3.48'~~ 4.11'		
PHOTOVAC CAL. 2-1-02					

APPENDIX B

ANALYTICAL REPORTS
FEBRUARY 2002

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-02

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-001

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-32

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane (P)	1.0	U
75-01-4	Vinyl Chloride (C)	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	100	U
75-35-4	1,1-Dichloroethene (C)	1.0	U
67-64-1	Acetone	50	U
75-15-0	Carbon Disulfide	10	U
75-09-2	Methylene Chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
107-13-1	Acrylonitrile	5.0	U
75-34-3	1,1-Dichloroethane (P)	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone (MEK)	25	U
67-66-3	Chloroform (C)	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane (C)	1.0	U
75-27-4	Bromodichloromethane	1.0	U
110-75-8	2-Chloroethyl Vinyl Ether	5.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	25	U
108-88-3	Toluene (C)	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	25	U
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene (P)	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4	Ethylbenzene (C)	1.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-02

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-001

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-32

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
136777-61-2	m,p-Xylenes	2.0	U
1330-20-7	Total Xylenes	3.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform (P)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane (P	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
91-20-3	Naphthalene	10	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-PS2

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-002

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-33

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane (P)	1.0	U
75-01-4	Vinyl Chloride (C)	2.7	
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	100	U
75-35-4	1,1-Dichloroethene (C)	1.0	U
67-64-1	Acetone	50	U
75-15-0	Carbon Disulfide	10	U
75-09-2	Methylene Chloride	0.64	J
156-60-5	trans-1,2-Dichloroethene	0.73	J
107-13-1	Acrylonitrile	5.0	U
75-34-3	1,1-Dichloroethane (P)	3.4	
156-59-2	cis-1,2-Dichloroethene	110	
78-93-3	2-Butanone (MEK)	25	U
67-66-3	Chloroform (C)	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	2.1	
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.7	
78-87-5	1,2-Dichloropropane (C)	1.0	U
75-27-4	Bromodichloromethane	1.0	U
110-75-8	2-Chloroethyl Vinyl Ether	5.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	25	U
108-88-3	Toluene (C)	1.5	
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	25	U
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene (P)	1.6	
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4	Ethylbenzene (C)	14	

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-PS2

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-002

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-33

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
136777-61-2	m,p-Xylenes	0.94	J
1330-20-7	Total Xylenes	1.9	J
95-47-6	o-Xylene	0.99	J
100-42-5	Styrene	1.0	U
75-25-2	Bromoform (P)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane (P	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
91-20-3	Naphthalene	10	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-16

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-003

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-34

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane (P)	1.0	U
75-01-4	Vinyl Chloride (C)	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	100	U
75-35-4	1,1-Dichloroethene (C)	1.0	U
67-64-1	Acetone	110	
75-15-0	Carbon Disulfide	10	U
75-09-2	Methylene Chloride	3.0	J
156-60-5	trans-1,2-Dichloroethene	1.0	U
107-13-1	Acrylonitrile	5.0	U
75-34-3	1,1-Dichloroethane (P)	31	
156-59-2	cis-1,2-Dichloroethene	46	
78-93-3	2-Butanone (MEK)	78	
67-66-3	Chloroform (C)	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	1.1	
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.3	
78-87-5	1,2-Dichloropropane (C)	1.0	U
75-27-4	Bromodichloromethane	1.0	U
110-75-8	2-Chloroethyl Vinyl Ether	5.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	130	
108-88-3	Toluene (C)	28	
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	25	U
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene (P)	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4	Ethylbenzene (C)	3.2	

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-16

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-003

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-34

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
136777-61-2	m,p-Xylenes	3.4	
1330-20-7	Total Xylenes	5.3	
95-47-6	o-Xylene	2.0	
100-42-5	Styrene	1.0	U
75-25-2	Bromoform (P)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane (P	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
91-20-3	Naphthalene	10	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-37

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-004

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-35

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane (P)	1.0	U
75-01-4	Vinyl Chloride (C)	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	100	U
75-35-4	1,1-Dichloroethene (C)	1.0	U
67-64-1	Acetone	50	U
75-15-0	Carbon Disulfide	10	U
75-09-2	Methylene Chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
107-13-1	Acrylonitrile	5.0	U
75-34-3	1,1-Dichloroethane (P)	1.0	U
156-59-2	cis-1,2-Dichloroethene	6.0	
78-93-3	2-Butanone (MEK)	25	U
67-66-3	Chloroform (C)	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	0.85	J
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane (C)	1.0	U
75-27-4	Bromodichloromethane	1.0	U
110-75-8	2-Chloroethyl Vinyl Ether	5.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	25	U
108-88-3	Toluene (C)	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	25	U
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene (P)	4.6	
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4	Ethylbenzene (C)	6.4	

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-37

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-004

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-35

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
136777-61-2	m,p-Xylenes	2.0	U
1330-20-7	Total Xylenes	3.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform (P)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane (P	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	2.4	B
95-50-1	1,2-Dichlorobenzene	1.0	U
91-20-3	Naphthalene	17	B

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-34

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-005

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-36

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane (P)	1.0	U
75-01-4	Vinyl Chloride (C)	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	100	U
75-35-4	1,1-Dichloroethene (C)	1.0	U
67-64-1	Acetone	100	
75-15-0	Carbon Disulfide	5.5	J
75-09-2	Methylene Chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
107-13-1	Acrylonitrile	5.0	U
75-34-3	1,1-Dichloroethane (P)	1.0	U
156-59-2	cis-1,2-Dichloroethene	0.54	J
78-93-3	2-Butanone (MEK)	25	U
67-66-3	Chloroform (C)	1.4	
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	0.63	J
78-87-5	1,2-Dichloropropane (C)	1.0	U
75-27-4	Bromodichloromethane	0.31	J
110-75-8	2-Chloroethyl Vinyl Ether	5.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	25	U
108-88-3	Toluene (C)	1.0	U
127-18-4	Tetrachloroethene	61	
591-78-6	2-Hexanone	25	U
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene (P)	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4	Ethylbenzene (C)	1.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-34

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-005

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-36

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
136777-61-2	m,p-Xylenes	2.0	U
1330-20-7	Total Xylenes	3.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform (P)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane (P	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	0.34	JB
95-50-1	1,2-Dichlorobenzene	1.0	U
91-20-3	Naphthalene	10	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-13A DUP

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-006

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-37

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane (P)	1.0	U
75-01-4	Vinyl Chloride (C)	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	100	U
75-35-4	1,1-Dichloroethene (C)	1.0	U
67-64-1	Acetone	50	U
75-15-0	Carbon Disulfide	10	U
75-09-2	Methylene Chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	4.2	
107-13-1	Acrylonitrile	5.0	U
75-34-3	1,1-Dichloroethane (P)	1.0	U
156-59-2	cis-1,2-Dichloroethene	42	
78-93-3	2-Butanone (MEK)	25	U
67-66-3	Chloroform (C)	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	20	
78-87-5	1,2-Dichloropropane (C)	1.0	U
75-27-4	Bromodichloromethane	1.0	U
110-75-8	2-Chloroethyl Vinyl Ether	5.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	25	U
108-88-3	Toluene (C)	1.0	U
127-18-4	Tetrachloroethene	1.6	
591-78-6	2-Hexanone	25	U
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene (P)	3.0	
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4	Ethylbenzene (C)	8.5	

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-13A DUP

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-006

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-37

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
136777-61-2	m,p-Xylenes	2.0	U
1330-20-7	Total Xylenes	3.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform (P)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane (P	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.9	B
95-50-1	1,2-Dichlorobenzene	1.0	U
91-20-3	Naphthalene	37	B

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-13A

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-007

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-38

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane (P)	1.0	U
75-01-4	Vinyl Chloride (C)	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	100	U
75-35-4	1,1-Dichloroethene (C)	1.0	U
67-64-1	Acetone	50	U
75-15-0	Carbon Disulfide	10	U
75-09-2	Methylene Chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	4.1	
107-13-1	Acrylonitrile	5.0	U
75-34-3	1,1-Dichloroethane (P)	1.0	U
156-59-2	cis-1,2-Dichloroethene	43	
78-93-3	2-Butanone (MEK)	25	U
67-66-3	Chloroform (C)	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	21	
78-87-5	1,2-Dichloropropane (C)	1.0	U
75-27-4	Bromodichloromethane	1.0	U
110-75-8	2-Chloroethyl Vinyl Ether	5.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	25	U
108-88-3	Toluene (C)	1.0	U
127-18-4	Tetrachloroethene	1.6	
591-78-6	2-Hexanone	25	U
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene (P)	3.1	
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4	Ethylbenzene (C)	9.0	

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-13A

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-007

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-38

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
136777-61-2	m,p-Xylenes	2.0	U
1330-20-7	Total Xylenes	3.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform (P)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane (P	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	2.0	B
95-50-1	1,2-Dichlorobenzene	1.0	U
91-20-3	Naphthalene	38	B

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-13AMS

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-007MS

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-29

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	24	
74-87-3	Chloromethane (P)	22	
75-01-4	Vinyl Chloride (C)	22	
74-83-9	Bromomethane	21	
75-00-3	Chloroethane	22	
75-69-4	Trichlorofluoromethane	21	
107-02-8	Acrolein	100	U
75-35-4	1,1-Dichloroethene (C)	18	
67-64-1	Acetone	93	
75-15-0	Carbon Disulfide	100	
75-09-2	Methylene Chloride	18	
156-60-5	trans-1,2-Dichloroethene	23	
107-13-1	Acrylonitrile	92	
75-34-3	1,1-Dichloroethane (P)	20	
156-59-2	cis-1,2-Dichloroethene	65	
78-93-3	2-Butanone (MEK)	84	
67-66-3	Chloroform (C)	20	
71-55-6	1,1,1-Trichloroethane	20	
56-23-5	Carbon Tetrachloride	22	
71-43-2	Benzene	20	
107-06-2	1,2-Dichloroethane	19	
79-01-6	Trichloroethene	42	
78-87-5	1,2-Dichloropropane (C)	20	
75-27-4	Bromodichloromethane	21	
110-75-8	2-Chloroethyl Vinyl Ether	5.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	90	
108-88-3	Toluene (C)	19	
127-18-4	Tetrachloroethene	21	
591-78-6	2-Hexanone	90	
124-48-1	Dibromochloromethane	19	
108-90-7	Chlorobenzene (P)	23	
630-20-6	1,1,1,2-Tetrachloroethane	20	
100-41-4	Ethylbenzene (C)	30	

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-13AMS

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-007MS

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-29

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
136777-61-2	m,p-Xylenes	41	
1330-20-7	Total Xylenes	60	
95-47-6	o-Xylene	19	
100-42-5	Styrene	20	
75-25-2	Bromoform (P)	22	
79-34-5	1,1,2,2-Tetrachloroethane (P	20	
96-18-4	1,2,3-Trichloropropane	18	
541-73-1	1,3-Dichlorobenzene	21	B
106-46-7	1,4-Dichlorobenzene	21	B
95-50-1	1,2-Dichlorobenzene	19	B
91-20-3	Naphthalene	58	B

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-13AMSD

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-007MSD

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-30

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	21	
74-87-3	Chloromethane (P)	21	
75-01-4	Vinyl Chloride (C)	20	
74-83-9	Bromomethane	19	
75-00-3	Chloroethane	20	
75-69-4	Trichlorofluoromethane	20	
107-02-8	Acrolein	100	U
75-35-4	1,1-Dichloroethene (C)	17	
67-64-1	Acetone	87	
75-15-0	Carbon Disulfide	96	
75-09-2	Methylene Chloride	17	
156-60-5	trans-1,2-Dichloroethene	22	
107-13-1	Acrylonitrile	86	
75-34-3	1,1-Dichloroethane (P)	18	
156-59-2	cis-1,2-Dichloroethene	64	
78-93-3	2-Butanone (MEK)	81	
67-66-3	Chloroform (C)	18	
71-55-6	1,1,1-Trichloroethane	18	
56-23-5	Carbon Tetrachloride	20	
71-43-2	Benzene	19	
107-06-2	1,2-Dichloroethane	17	
79-01-6	Trichloroethene	41	
78-87-5	1,2-Dichloropropane (C)	18	
75-27-4	Bromodichloromethane	20	
110-75-8	2-Chloroethyl Vinyl Ether	5.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	85	
108-88-3	Toluene (C)	18	
127-18-4	Tetrachloroethene	20	
591-78-6	2-Hexanone	83	
124-48-1	Dibromochloromethane	18	
108-90-7	Chlorobenzene (P)	21	
630-20-6	1,1,1,2-Tetrachloroethane	18	
100-41-4	Ethylbenzene (C)	27	

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-13AMSD

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-007MSD

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-30

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
136777-61-2	m,p-Xylenes	37	
1330-20-7	Total Xylenes	54	
95-47-6	o-Xylene	17	
100-42-5	Styrene	18	
75-25-2	Bromoform (P)	20	
79-34-5	1,1,2,2-Tetrachloroethane (P	18	
96-18-4	1,2,3-Trichloropropane	17	
541-73-1	1,3-Dichlorobenzene	19	B
106-46-7	1,4-Dichlorobenzene	20	B
95-50-1	1,2-Dichlorobenzene	17	B
91-20-3	Naphthalene	58	B

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-13A
RINS BLK

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-008

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-39

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane (P)	1.0	U
75-01-4	Vinyl Chloride (C)	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	100	U
75-35-4	1,1-Dichloroethene (C)	1.0	U
67-64-1	Acetone	11	J
75-15-0	Carbon Disulfide	10	U
75-09-2	Methylene Chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
107-13-1	Acrylonitrile	5.0	U
75-34-3	1,1-Dichloroethane (P)	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone (MEK)	25	U
67-66-3	Chloroform (C)	0.76	J
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane (C)	1.0	U
75-27-4	Bromodichloromethane	1.3	
110-75-8	2-Chloroethyl Vinyl Ether	5.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	25	U
108-88-3	Toluene (C)	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	25	U
124-48-1	Dibromochloromethane	0.78	J
108-90-7	Chlorobenzene (P)	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4	Ethylbenzene (C)	1.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

KBA11-13A
RINS BLK

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-008

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-39

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
136777-61-2	m,p-Xylenes	2.0	U
1330-20-7	Total Xylenes	3.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform (P)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane (P	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
91-20-3	Naphthalene	2.2	JB

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

FIELD BLANK

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-009

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-40

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane (P)	1.0	U
75-01-4	Vinyl Chloride (C)	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	100	U
75-35-4	1,1-Dichloroethene (C)	1.0	U
67-64-1	Acetone	20	J
75-15-0	Carbon Disulfide	10	U
75-09-2	Methylene Chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
107-13-1	Acrylonitrile	5.0	U
75-34-3	1,1-Dichloroethane (P)	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone (MEK)	25	U
67-66-3	Chloroform (C)	0.91	J
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane (C)	1.0	U
75-27-4	Bromodichloromethane	1.6	
110-75-8	2-Chloroethyl Vinyl Ether	5.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	25	U
108-88-3	Toluene (C)	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	25	U
124-48-1	Dibromochloromethane	0.90	J
108-90-7	Chlorobenzene (P)	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4	Ethylbenzene (C)	1.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

FIELD BLANK

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-009

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-40

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
136777-61-2	m,p-Xylenes	2.0	U
1330-20-7	Total Xylenes	3.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform (P)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane (P	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
91-20-3	Naphthalene	10	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TRIP BLAN
K(6/27/01)

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-010

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-41

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane (P)	1.0	U
75-01-4	Vinyl Chloride (C)	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	100	U
75-35-4	1,1-Dichloroethene (C)	1.0	U
67-64-1	Acetone	50	U
75-15-0	Carbon Disulfide	10	U
75-09-2	Methylene Chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
107-13-1	Acrylonitrile	5.0	U
75-34-3	1,1-Dichloroethane (P)	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone (MEK)	25	U
67-66-3	Chloroform (C)	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane (C)	1.0	U
75-27-4	Bromodichloromethane	1.0	U
110-75-8	2-Chloroethyl Vinyl Ether	5.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	25	U
108-88-3	Toluene (C)	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	25	U
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene (P)	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4	Ethylbenzene (C)	1.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TRIP BLAN
K(6/27/01)

Lab Name: COLUMBIA ANALATICAL SERVI Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: J2200408-010

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213-41

Level: (low/med) LOW Date Received: 02/07/02

% Moisture: not dec. _____ Date Analyzed: 02/14/02

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
136777-61-2	m,p-Xylenes	2.0	U
1330-20-7	Total Xylenes	3.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform (P)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane (P	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
91-20-3	Naphthalene	10	U

FORM I VOA

APPENDIX C

REMEDIATION STATUS REPORT

Status Report
Groundwater Remediation at Site 11
Old Camden County Landfill

Naval Submarine Base Kings Bay
Kings Bay, Georgia

Revision No. 00

Contract No. N62467-98-D-0995
Contract Task Order No. 0047

Submitted to:

U.S. Naval Facilities
Engineering Command
Southern Division

Prepared by:

CH2MHILL
Constructors, Inc.
115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA 30346

March 2002

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Acronym List

%	percent
BEI	Bechtel Environmental, Inc.
bls	below land surface
CCI	CH2M HILL Constructors, Inc.
DCE	Dichloroethene
DPT	direct-push technology
GC	gas chromatography
GCI	Geo-Cleanse International, Inc.
J.A. Jones	J.A. Jones Environmental Services Company
MIP	membrane interface probe
NSB	Naval Submarine Base
PCE	Tetrachloroethene
TCE	Trichloroethene
USEPA	United States Environmental Protection Agency
VC	Vinyl chloride
VOC	volatile organic compound

1.0 Introduction

CH2M HILL Constructors, Inc. (CCI) with J.A. Jones Environmental Services Company (J.A. Jones) have been contracted by the Department of the Navy, Southern Division Naval Facilities Engineering Command to perform source area delineation and groundwater remediation using Fenton's Reagent chemical oxidation injections followed by soybean oil injection at Site 11, Old Camden County Landfill, Naval Submarine Base (NSB) Kings Bay, Georgia, under the Remedial Action Contract No. N62467-98-D-0995, Contract Task Order No. 0047. The purpose of this Status Report is to provide a summary of remediation activities performed to date at the site.

1.1 Site History

NSB Kings Bay occupies approximately 16,168 acres in Camden County, Georgia. Site 11 is identified as the Old Camden County Landfill, which is now incorporated in NSB Kings Bay. The Old Camden County Landfill was used for municipal solid waste disposal in the 1960s and 1970s. Waste was disposed of by digging trenches, filling the trenches with waste, and then backfilling the trenches with fill. Tetrachloroethene (PCE) was disposed in the landfill at some point during waste disposal activities, which resulted in groundwater contamination at the site. The contaminants of concern at Site 11 include chlorinated volatile organic compounds (VOCs), specifically PCE, and its degradation constituents trichloroethene (TCE), cis-1,2-dichloroethene (DCE), and vinyl chloride (VC) (Bechtel Environmental, Inc. [BEI], 2000).

BEI, with Geo-Cleanse International, Inc. (GCI), performed three phases of chemical oxidation treatment from August 1998 through April 2000. During the entire treatment program, a total of 54 injectors were installed and an approximate total of 34,850 gallons of 50 percent (%) hydrogen peroxide and an equivalent amount of ferrous iron catalyst were delivered to the subsurface (BEI, 2000).

Phase I chemical oxidation treatment was performed from August 1998 through February 1999. Because of a concentration increase in three piezometers and Injector I-14 following Phase I treatment, BEI conducted a cone penetration testing program in April 1999 to confirm and delineate the horizontal extent of dissolved groundwater contamination (BEI, 2000).

Phase II chemical oxidation treatment was performed from May 1999 to July 1999 on areas east and west of the Phase I area of concern. Because of a concentration rebound in Injector I-14 following the Phase II treatment, BEI conducted a Geoprobe investigation in August 1999 to investigate and locate the potential new source of PCE at Injector I-14. Excavation of the suspected source area near Injector I-14 was conducted in September 1999. The excavation yielded several 5-gallon containers, one containing a gray-colored, paint looking waste, and one approximate 20-gallon container containing a black sludge type waste. Analysis of the black waste showed PCE with the highest concentration of all compounds tested (BEI, 2000).

Phase III chemical oxidation treatment was performed from January 2000 to April 2000 on the delineated source area southeast of Injector I-14. Based on the analytical results from the post-Phase III sampling event conducted on May 30, 2000, a source area of PCE contamination appeared to remain beneath the Phase III injectors (BEI, 2000). The analytical results from the post-Phase III sampling event conducted on May 30, 2000 are provided in the Completion Report for Interim Measures at Site 11, Old Camden County Landfill (BEI, 2000).

2.0 Summary of Remediation Activities

2.1 Source Area Delineation

A source area delineation effort was conducted by CCI/J.A. Jones from November 6, 2000 through January 12, 2001 to delineate the horizontal and vertical extent of the potential source area of PCE contamination beneath the Phase III chemical oxidation treatment injectors.

2.1.1 November 6 - 21, 2000 Source Area Delineation

From November 6 - 21, 2000, the source area delineation effort was completed utilizing a membrane interface probe (MIP)/direct-push technology (DPT) rig with an onsite mobile laboratory. The MIP technology was utilized to provide a vertical profile of the subsurface on a horizontal 10-foot grid from Injector I-60. The MIP is pushed into the ground using the DPT rig at a rate of one-foot per minute. A soil conductivity sensor on the probe continuously logs the changes in the subsurface conductivity. A thermister on the probe heats the surrounding soil and water, which volatilizes the contaminants causing them to migrate across a permeable membrane and into the probe. A carrier gas transports the volatilized gases to a lab-grade gas chromatograph (GC) at the surface. The GC results log continuously into a computer and display real time. The MIP data was used to determine the groundwater sample collection locations and intervals. The groundwater sample collection locations, MIP data, groundwater sample collection intervals, and onsite mobile laboratory analytical results are provided in the Work Plan No. 02 for Groundwater Remediation at Site 11, Old Camden County Landfill (CCI, 2001).

Initially, groundwater samples were collected on a horizontal 10-foot grid from Injector I-60, but based on the initial groundwater sample analytical results, the spacing was increased to a 50-foot grid to locate a "clean" boundary. Groundwater samples were collected from each boring using the Geoprobe rig with peristaltic sampling pump and analyzed by the onsite mobile laboratory for U. S. Environmental Protection Agency (USEPA) SW-846 Method 8021B. Each boring was abandoned immediately following MIP boring or groundwater sample collection by sealing the boring with grout from the bottom of the boring to the ground surface using a tremie pipe (CCI, 2001).

Based on the groundwater sample analytical results collected during this initial effort, the vertical interval of contamination in the source area was determined to be from 44 to 48 feet below land surface (bls); however, additional groundwater collection sampling and analysis was determined to be necessary to delineate the horizontal extent of contamination (CCI, 2001).

2.1.2 January 8 - 12, 2001 Source Area Delineation

From January 8 through 12, 2001, the source area delineation effort was completed utilizing a DPT rig with an offsite laboratory. Groundwater samples were collected on a

25-foot grid centered 5 feet to the west of Injector I-60, with samples collected from each of nine borings at depths of 36 to 40 feet bls, 40 to 44 feet bls, 44 to 48 feet bls, and 48 to 52 feet bls and analyzed by an offsite laboratory for USEPA SW-846 Method 8021B.

The groundwater sample collection locations, groundwater sample collection intervals, and offsite laboratory analytical results are provided in the Work Plan No. 02 for Groundwater Remediation at Site 11, Old Camden County Landfill (CCI, 2001). Each boring was abandoned immediately following groundwater sample collection by sealing the boring with grout from the bottom of the boring to the ground surface using a tremie pipe.

In addition to the above delineation effort, Injector I-60 was sampled on February 7, 2001, and analyzed by an offsite laboratory for USEPA SW-846 Method 8021B. The offsite laboratory analytical results for this event are provided in the Work Plan No. 02 for Groundwater Remediation at Site 11, Old Camden County Landfill (CCI, 2001).

This delineation effort, along with the initial effort, provided sufficient data to determine the horizontal extent of contamination and the area requiring remediation. The data collected during the delineation efforts is consistent with a small amount of contaminate mass remaining in the subsurface. Based on the site studies to date, natural attenuation processes are working faster than the groundwater contaminates are migrating, however, the development of a chemical oxidation/soybean oil injection strategy through the use of the source area delineation analytical results is an aggressive action to quickly achieve the groundwater remedial goals.

The groundwater contaminant plume isopleths based on the source area delineation efforts is provided in the Work Plan No. 02 for Groundwater Remediation at Site 11, Old Camden County Landfill (CCI, 2001).

2.2 Chemical Oxidation Injections

The chemical oxidation process utilized at the site is an aggressive, pressurized injection of concentrated hydrogen peroxide and ferrous iron catalyst, which together are known as Fenton's reagent and generate a hydroxyl free radical that acts as the active oxidizing agent. The hydroxyl free radical is a powerful, non-selective oxidant. Fenton's reagent oxidizes chlorinated VOCs, such as PCE, to carbon dioxide, water, and chloride. Residual hydrogen peroxide not consumed by oxidation of the chlorinated VOCs naturally decomposes to oxygen and water. Soluble ferrous iron catalyst amendments will naturally precipitate as ferric iron compounds.

CCI/J.A. Jones, with GCI, performed Phase IV chemical oxidation treatment from September 24, 2001 to December 11, 2001. Phase IV treatment included:

- The installation by DPT of 20 new chemical oxidation injectors, labeled as IP-70 to IP-89, from September 24, 2001 to October 2, 2001 to total depths of 48 feet bls.
- The injection into the 20 new chemical oxidation injectors of approximately 9,359 gallons of 50% hydrogen peroxide and 9,783 gallons ferrous iron catalyst from October 23, 2001 to November 1, 2001.

- The injection into the 20 new chemical oxidation injectors of approximately 2,006 gallons of 50% hydrogen peroxide and 2,437 gallons ferrous iron catalyst from November 12-14, 2001.
- The injection of 45% technical grade potassium hydroxide diluted in water into the 20 new chemical oxidation injectors from December 10-11, 2001. This was used as a post-treatment polishing phase to adjust pH of the groundwater back to a near-neutral range.

The chemical oxidation treatment area with injector locations is provided in Figure 2-1.

2.3 Soybean Oil Injection

Chlorinated solvents may undergo biodegradation through three different pathways: as an electron acceptor, as an electron donor, or co-metabolism. Under anaerobic conditions, biodegradation of chlorinated solvents usually proceeds through a process called reductive dehalogenation. In general, reductive dehalogenation occurs by sequential dechlorination. For the chlorinated ethenes, dechlorination progresses from PCE to TCE to DCE to VC and ethene. PCE and TCE are the most susceptible of these compounds to reductive dehalogenation because they are the most oxidized. Because these compounds are used as electron acceptors, there must be an appropriate source of carbon for microbial growth and reductive dehalogenation to occur.

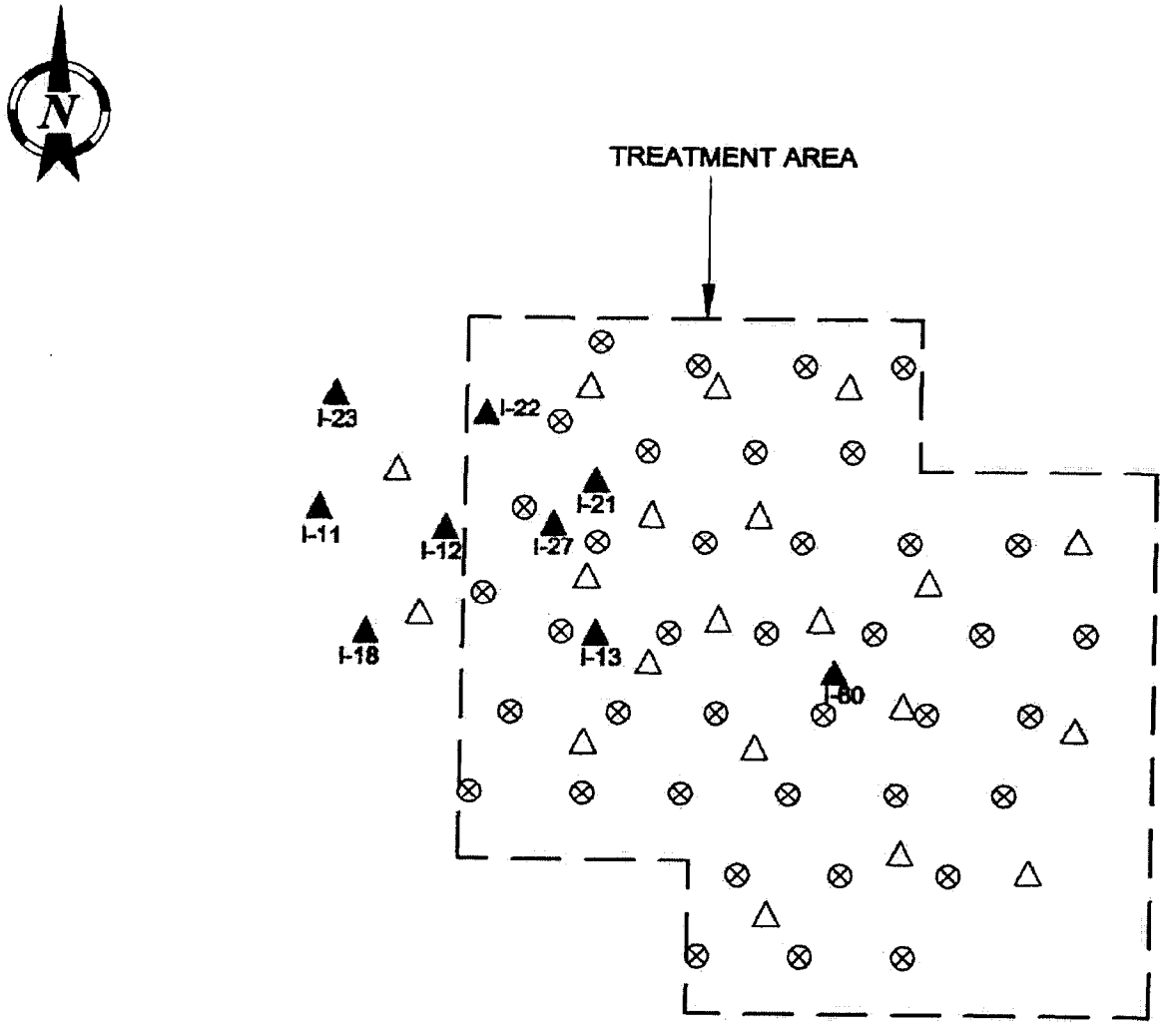
The most common approach utilized to stimulate reductive dehalogenation has been the addition of a carbon source dissolved in groundwater. Food-grade soybean oil is a potential carbon source for microbial growth and the reductive dehalogenation process. The separate phase nature of soybean oil allows for slow dissolution into groundwater thus making it a slow release carbon source. Soybean oil is an inexpensive, innocuous carbon source that is not regulated as a contaminant by the USEPA.

Previous natural attenuation studies at Site 11 have shown reductive dechlorination processes are naturally occurring with the existing anaerobic conditions, therefore the approach to enhance biodegradation of the remaining chlorinated ethenes following chemical oxidation was to inject soybean oil as a carbon source for microbial growth and stimulation of the reductive dehalogenation process.

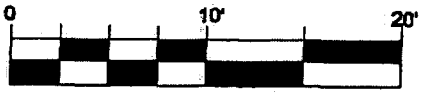
From December 12, 2001 to January 22, 2002, approximately 8,839 gallons of food-grade soybean oil (7.5% lecithin by weight) and 16,369 gallons of water were injected into 39 DPT injection points and three chemical oxidation injectors. Sodium bromide was added as a tracer dye to the water in a 100 milligram per liter concentration. The soybean oil was mixed inline with the water in an approximate 35%/65% ratio. The soybean oil and water was injected into the 39 DPT locations in four-foot intervals from 28 to 48 feet bls.

Each DPT soybean oil injection boring was abandoned immediately following injection by sealing the boring with grout from the bottom of the boring to the ground surface using a tremie pipe.

The soybean oil treatment area with the injection locations is provided in Figure 2-1.



SCALE 1" = 20'



LEGEND	
I-18 ▲	INJECTION WELL LOCATION
⊗	VEGETABLE OIL INJECTION LOCATION
△	PROPOSED INJECTOR LOCATION

FIGURE 3-1	TARGET INJECTOR LOCATION MAP
NSB KINGS BAY, GEORGIA	DATE: 08/20/01
	DESIGNED: AP
Geo-Cleanse® INTERNATIONAL, INC.	CHECKED: DB
	APPROVED: DB
	DRAWN:AP
SOURCE: CH2MHILL	

3.0 References

Bechtel Environmental, Inc. July 2000. Completion Report for Interim Measures at Site 11, Old Camden County Landfill, Naval Submarine Base Kings Bay, Georgia; July 1998-July 2000.

CH2M HILL Constructors, Inc. September 2001. Work Plan No. 02, Groundwater Remediation at Site 11, Old Camden County Landfill, Naval Submarine Base Kings Bay, Georgia; Revision No. 01.