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QUARTERLY GROUNDWATER MONITORING REPORT FOR SITE 11 OCTOBER - DECEMBER 2006 WITH TRANSMITTAL LETTER NSB KINGS BAY GA
1/1/2007
VT GROUP

DEPARTMENT OF THE NAVY
NAVAL SUBMARINE BASE
1063 US TENNESSEE AVENUE
KINGS BAY, GEORGIA 31547-2606

IN REPLY REFER TO:
5090
Ser N45/ 0120

JAN 22 2007

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Ms. Amy Potter
Georgia Department of Natural Resources
Environmental Protection Division
DOD Remediation Unit
Floyd Towers East, Suite 1470
2 Martin Luther King, Jr. Drive, SE
Atlanta, GA 30334-9000

Dear Ms. Potter:

Per Naval Submarine Base (SUBASE) Kings Bay's Hazardous Waste Permit HW-014 (S&T)-3, the October - December 2006 Quarterly Groundwater Monitoring Report for Site 11, Old Camden County Landfill, enclosures (1) and (2) are submitted for your review.

Provided as enclosure (3) is a Portable Document Format (PDF) copy of this submittal on compact disk (CD) as requested.

I certify under penalty of law that this document and all attachments were prepared under my direct supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

5090
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JAN 22 2007

The SUBASE Kings Bay point of contact for this submittal is Ms. Melinda NesSmith-Picard, (912) 573-9671. Please address all correspondence to "Commanding Officer (Attn: N45), Naval Submarine Base, Kings Bay, 1063 USS TENNESSEE Avenue, Kings Bay, GA 31547-2606."

Sincerely,

Wayne H. McKenzie

WAYNE H. MCKENZIE
Installation Environmental
Program Director
By direction of the
Commanding Officer

Enclosures:
1. October - December 2006 Quarterly Corrective Action Report
2. Natural Attentuation Monitoring at the Old Camden County Landfill, Kings Bay Naval Submarine Base, Georgia, January 2005 to October 2005, report revised March 2006
3. Compact Disk (CD), January 2007 Submittal of Quarterly Corrective Action Report for Site 11, Old Camden County Landfill, October - December 2006 (includes U.S. Geological Survey Report, Monitoring the Effectiveness of Natural Attenuation at the Old Camden County Landfill, Kings Bay Naval Submarine Base, Georgia, 2005, Revised March 2006)

Copy to: GAEPD (Mr. Mohamad Ghazi)

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SOUTHNAVENGCOM (Anthony Robinson)
COMNAVREG SE (Mike Davenport)
BOSC Envir. Mgr. (Sam Ross)
USGS (Dr. Frank Chapelle)

S:Kings Bay/SUBASE/PW4/Melinda/IR/Quarterly Corrective Action Report Sep-Dec 06.doc—mnp—1-18-06

QUARTERLY GROUNDWATER MONITORING REPORT
OCTOBER – DECEMBER 2006

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

Contract No. N69272-00-D-3170

Prepared for:

NAVAL SUBMARINE BASE
KINGS BAY, GEORGIA

Prepared by:

VT Griffin

P.O. Box 47248
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JANUARY 2007

The work described and professional opinions rendered in this document, *Quarterly Groundwater Monitoring Report, October – December 2006, 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.

Samuel M. Ross
1/18/07

Samuel M. Ross
Professional Engineer
State of Georgia License No. 024706
Expires December 31, 2008

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ACRONYMS

ABB-ES	ABB Environmental Services, Inc.
Bechtel	Bechtel Environmental, Inc.
CCI	CH2MHill Constructors, Inc
DCA	dichloroethane
DCE	dichloroethene
DO	dissolved oxygen
EPA	United States Environmental Protection Agency
GADNR	Georgia Department of Natural Resources
GCI	Geo-Cleanse International, Inc.
GWMP	Groundwater Monitoring Plan
GWPS	Groundwater Protection Standard
ID	inner diameter
IM	Interim Measures
MCL	maximum contaminant level
MDL	method detection limit
MEK	2-butanone
MLW	Mean Low Water
NELAC	National Environmental Laboratory Accreditation Conference
OD	outer diameter
ORP	oxygen reduction potential
PCE	tetrachloroethene
PID	photoionization detector
PQL	practical quantitation limit
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SUBASE	Naval Submarine Base
TCE	trichloroethene
TCLE	total chlorinated ethenes
USGS	United States Geological Survey
VC	vinyl chloride
VOC	volatile organic compound
VT Griffin	VT Griffin Services

UNITS OF MEASURE

°C	degrees Centigrade
ft bgs	feet below ground surface
ft btoc	feet below top of casing
ft msl	ft above mean sea level
gal	gallon
in	inch
mg/l	milligrams per liter
mS/cm	microsiemens per centimeter
mV	millivolts
ntu	nephelometric turbidity units
ppm	parts per million
ug/l	micrograms per liter

1.0 INTRODUCTION

VT Griffin Services (VT Griffin) has been contracted by the Department of the Navy, Engineering Field Activity Southeast, Resident Officer in Charge of Construction, Kings Bay, Georgia to provide operating support services as the Base Operating Support Contractor. Under the Prime Contract N69272-00-D-3170, VT Griffin has been contracted to provide groundwater monitoring services at Site 11, Old Camden County Landfill at the Naval Submarine Base (SUBASE) Kings Bay in accordance with the approved Groundwater Monitoring Plan (GWMP; Bechtel, 1999a). This Quarterly Groundwater Monitoring Report provides:

- A historical summary of site activities
- A summary of the quarterly monitoring activities that were performed from October to December 2006;
- A presentation of the data from the activities performed;
- An assessment of the current and historical data;
- A summary of the activities planned for the period of January to March 2007.

1.1 SITE DESCRIPTION AND HISTORY OF LANDFILL ACTIVITIES

SUBASE Kings Bay is located in the southeast corner of Georgia, approximately 8 miles north of the Georgia-Florida state line. The SUBASE includes approximately 16,168 acres and is located in Camden County, Georgia. Currently, the base supports submarines, crew training, weapons handling and storage, submarine maintenance and associated personnel (Bechtel, 1999a).

Site 11, Old Camden County Landfill, is located along the northwest boundary of SUBASE Kings Bay. Immediately west of the site is the Crooked River Plantation residential subdivision. Landfill dimensions are approximately 1,400 feet long, 600 feet wide at the south end and 800 feet wide at the north end. The landfill was operated by Camden County from 1974 to 1981. During operation, trench and fill techniques were used for disposal of municipal waste. The landfill reportedly accepted 100 cubic yards of fire-fighting pit sludge from a dredge spoils disposal area. The landfill ceased operations in October 1981 and was covered with 2 feet of fill. The site is currently vegetated with grass, weeds and pine saplings (Bechtel, 1999A). A site map is provided as Figure 1.

1.2 NATURE AND EXTENT OF CONTAMINATION

The original extent of contamination is difficult to determine, because throughout the monitoring events associated with various remediation efforts, new data has continued to reveal previously unknown information concerning the extent of contamination at the site. The effect of the remediation efforts are difficult to estimate with respect to areas of contamination that had not been discovered prior to remediation, therefore it is also difficult to estimate the extent of these areas in their original state (prior to any remediation).

1.2.1 Prior to Remediation Activity (Original Nature and Extent)

The horizontal extent of the plume prior to installation of the pump and treat system was reported in the RCRA Facility Investigation (RFI) Interim Report (ABB-ES, 1993) as shown in Figure 2 for the 32 to 42 feet below ground surface (5 ft to -5 ft mean low water) interval. This plume was defined by the ABB Environmental Services (ABB-ES) using hydrocone sampling, monitoring well sampling and both on-site and off-site analysis of groundwater samples. No data was provided from within the boundaries of the former landfill.

The cross section representing the vertical extent of the plume according to the RFI Interim Report is shown as A-A' on Figure 3 and the vertical extent of contamination is shown on Figure 4. This plume was interpreted by ABB-ES based on hydrocone samples and both on-site and off-site analysis of groundwater samples. This cross section contains no points within the boundaries of the former landfill.

Targeted compounds during the RFI included vinyl chloride, trans-1,2-dichloroethene (DCE), cis-1,2-DCE, trichloroethene (TCE), tetrachloroethene (PCE), benzene, toluene, ethylbenzene, m/p-xylene, and o-xylene (ABB-ES, 1993).

1.2.2 Subsequent to Remediation Activity (Current Nature and Extent)

The most current groundwater concentration data is provided in Tables 3 and 4 based upon the most recent groundwater sampling events performed in accordance with the GWMP. Outside the boundary of the landfill, the plume appears to have reduced in magnitude but has yet to show significant reductions in extent at the one microgram per liter (ug/l) contour. GWPS compounds detected during the monitoring period above the laboratory method reporting limit included PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, vinyl chloride,1,1-dichloroethane (DCA), ethylbenzene, chlorobenzene, and 1,4-dichlorobenzene.

Within the boundaries of the horizontal plume, only monitoring well KBA-11-13B is screened below the intermediate zone that extends from 30 to 45 feet below ground surface (ft bgs). Monitoring well KBA-11-13B, which is located downgradient from the landfill and is screened from 77 to 87 ft bgs, exhibited no detectable concentrations of Groundwater Protection Standard (GWPS) constituents during five consecutive annual sampling events from 1999 to 2003. The most current data concerning the vertical extent of contamination within the landfill boundary is found in the *Construction Completion Report, Groundwater Remediation at Site 11 Old Camden County Landfill, Revision No. 02* (CCI, 2004). The data collected during the groundwater sampling events performed in accordance with the GWMP is limited in the source area to 37 ft bgs. For this reason, please refer to the referenced Construction Completion Report for comprehensive data with respect to the vertical dimension.

1.3 SUMMARY OF PREVIOUS REMEDIATION EFFORTS

1.3.1 Pump and Treat Activities

A groundwater extraction and treatment system was designed and installed as an interim measure (IM) to hydraulically control further migration of contaminated groundwater. Initial construction of the IM began in September 1993 with start-up activities occurring in March 1994. The first phase of the IM included the installation of five groundwater recovery wells and their associated conveyance system, a diffused aeration tank for groundwater treatment, and vapor-phase carbon drums for off-gas air treatment. The recovery wells were positioned in the areas with the highest known concentrations of contaminants along the western side of the landfill and right-of-way of Spur 40. The second phase of the IM included the addition of a new recovery well which was centrally located within the existing recovery well network (Bechtel, 1998). The third phase of the IM included the shut down of all previously installed recovery wells and the installation and activation of two new recovery wells located within the boundaries of the former landfill. These were activated in February 1999 but were shut down in March 1999 due to repeated fouling of the wells, pumps and effluent piping (Bechtel, 1999).

1.3.2 In-Situ Chemical Oxidation Activities

Bechtel Environmental, Inc. (Bechtel), with Geo-Cleanse International, Inc. (GCI), performed three phases of in-situ chemical oxidation treatment during the period of August 1998 to April 2000. During the three phases of the 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 volume of ferrous iron catalyst were delivered to the subsurface. During the post-injection sampling events following the third phase of

injections, it was discovered that Injector 60 had rebounded from a low PCE concentration of 69 ug/l to a PCE concentration of 10,000 ug/l, indicating that a PCE source was still present (CCI, 2002).

CH2MHill Constructors, Inc. (CCI) performed additional source delineation during the period of November 2000 to January 2001, collecting groundwater samples using a membrane interface probe/direct-push technology rig. The most concentrated source area was determined to be in the vicinity of Injector 60 at the 44 to 48 ft bgs depth interval, which exhibited a PCE concentration of 54,078 ug/l. Based upon these results, CCI installed 20 additional injectors and performed a fourth phase of in-situ chemical oxidation treatment during the period of September to November 2001, in which an approximate total of 11,365 gallons of 50 percent hydrogen peroxide and 12,220 gallons of ferrous iron catalyst were injected into the subsurface. No post-injection sampling was performed (CCI, 2002).

1.3.3 pH Adjustment/Soybean Oil Injection Activities

Subsequent to the fourth phase of in-situ chemical oxidation, during the period of December 2001 to January 2002, the pH of the groundwater was adjusted and soybean oil was injected into the subsurface to enhance natural degradation of residual contaminants. A total of 5,500 gallons of potassium hydroxide solution (pH of 9 standard units) was injected to accomplish the desired pH adjustment from 5 to 7.5 standard units. Following the pH adjustment, a total of 8,839 gallons of emulsified soybean oil mixed with 16,369 gallons of water was injected at 39 temporary injection points in the source area, typically at depths of 28 to 48 ft bgs (CCI, 2002).

1.4 SUMMARY OF CORRECTIVE ACTION PLAN OBJECTIVES

The objectives for remediation at Site 11 are stated in the Corrective Action Plan as follows:

"Concentrations of total chlorinated ethenes (summation of PCE, TCE, DCE, and VC) must be reduced to less than 100 ug/l at each monitoring well associated with this site. This criterion is based upon the information provided in the report, Selecting Remediation Goals by Assessing the Natural Attenuation Capacity of Ground-Water Systems (USGS, 1998)." (SUBASE Kings Bay, 2001)

1.5 SUMMARY OF ONGOING USGS STUDY OF NATURAL ATTENUATION

A natural attenuation study has been conducted at Site 11 by the United States Geological Survey (USGS) since 1998. The most recent available update on this study is found in the report, *Monitoring the Effectiveness of Natural Attenuation at the Old Camden County Landfill, Kings Bay Naval Submarine Base, Georgia* (USGS, 2006). The chlorinated ethene concentration results are summarized below:

- A total of 18 wells are being sampled in conjunction with the USGS study.
- All data associated with the study is based upon samples from monitoring wells that are installed at least 60 ft downgradient from the Injector 60 source area.
- From August 1998 to October 2005, significant decreases in total chlorinated ethene concentrations (up to 99.5 percent) have been observed in most of the monitoring wells associated with the study.
- The most currently reported total chlorinated ethenes concentrations (October 2005) in the downgradient portion of the plume range from 1.5 ug/l (USGS 13) to 816.8 ug/l (USGS 4).
- Downgradient monitoring well USGS 4 is exhibiting an upward trend in total chlorinated ethene concentrations, though PCE concentrations have remained undetected in USGS 4.
- PCE, in relatively low concentrations, has migrated into some of the downgradient locations (USGS 1, USGS 2, USGS 3 and USGS 15) monitored in conjunction with the USGS study. Please see Section 4.1 of this report for a further discussion of the PCE plume at Site 11.

2.0 SUMMARY OF GROUNDWATER MONITORING ACTIVITIES

Currently, monitoring wells KBA-11-13A, KBA-11-16, KBA-11-34, and KBA-11-37 are being sampled on a quarterly basis and monitoring wells PS-2, KBA-11-10B, KBA-11-11A (background; Appendix IX), KBA-11-13A (Appendix IX) and the irrigation well located at 122 Plantation Court are being sampled on an annual basis.

One groundwater monitoring event was performed by VT Griffin during the period, from November 14 to 16, 2006. Activities performed during the monitoring events included well inspections, well measurements, and quarterly groundwater sampling and analysis.

Weather conditions during the November groundwater sampling event were clear and sunny with temperatures from the low 50's in the morning to the mid 80's in the afternoon. There was 0.07 inches of rainfall during the week preceding the groundwater sampling event. For the month of October 2006, a total of 2.01 inches of rainfall occurred.

2.1 WELL INSPECTIONS

All wells were inspected for aboveground damage or well deterioration. Generally, all wells were structurally sound with no aboveground damage.

As previously reported, monitoring well PS-2 contains an unknown obstruction in the bottom of the well. It was previously recommended that this well continue to be used for monitoring purposes as most of its 5 foot screen appears to have remained intact and unobstructed (VT Griffin, 2006). It is noted that PS-2 is reported to have been originally screened from 33 to 38 ft btoc (Bechtel, 1999a).

Per the direction of the Navy, with approval by the Georgia Department of Natural Resources (GADNR), recovery wells RW-6, RW-7, and RW-8 were abandoned on October 30, 2001. The work was performed under Delivery Order 640 of JAJMS Prime Contract N69272-00-D-3170, by a licensed driller in accordance with the Georgia Water Well Standards Act.

Per the direction of the Navy, with approval by the GADNR, the shallow (screened from about 16 to 20 ft bgs) irrigation well located at 122 Plantation Court was abandoned on March 21, 2003. A deeper irrigation well (open-hole from 132 to 260 ft bgs) was installed at this location from March 20-21, 2003. The work was performed by Woodrow Sapp Water Well Contractor, Inc under Prime Contract N69272-02-M-3015 (contracted directly with the Navy).

2.2 WELL MEASUREMENTS

Depth to water and total well depth were recorded on November 14, 2006, at a total of 19 monitoring wells. Water levels and well depth measurements were performed during the sampling event using an electronic water level indicator, accurate to 0.01 feet. All water level measurements were recorded with respect to a surveyed reference point located at the top of the well casing. Measurements were recorded two to three times over an eight-hour period and stabilization of static water level was assumed when two consecutive readings recorded at least one hour apart were within 0.01 feet. The total well depth was measured using the electronic water level indicator by lowering the probe until the bottom of the well was reached. Total depth measurements were made with respect to a surveyed reference point located at the

top of the well casing. All monitoring well measurements were obtained prior to sampling to avoid interference by purging activities.

2.3 GROUNDWATER SAMPLING AND ANALYSES

2.3.1 Monitoring Well Sampling

One quarterly groundwater monitoring event was performed by VT Griffin during the period, from November 14 to 16, 2006. During the sampling event, groundwater samples were generally collected from the monitoring wells in order of least contaminated to most contaminated, based upon historical data. Prior to sampling, all monitoring wells were purged 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 monitoring well screen. Groundwater was then purged through the tube using a peristaltic pump, Geotech Model Geopump 2. Water quality parameters, including temperature, pH, conductivity, oxygen-reduction potential, turbidity, and dissolved oxygen were measured every two gallons while purging. After parameters stabilized within 10 percent, a sample was collected and containerized for chemical analysis. Samples for volatile constituents were collected by stopping the pump, removing the tubing from the monitoring well, reversing the flow of the pump, and gently filling the container. Samples for non-volatile analyses were taken directly from the effluent of the peristaltic pump. All samples were submitted to Columbia Analytical Services (State of Florida NELAC accreditation #E82502) for analyses using standard chain-of-custody procedures as specified in the GWMP. All purge water was containerized in drums and properly disposed.

In letter dated August 16, 2006, the GADNR approved the recommendation to reduce the frequency of sampling at monitoring well PS-2 from quarterly to annual, on the basis that it had met the criteria specified in the GWMP (Bechtel, 1999a) by not exhibiting any concentrations that exceeded the GWPS for four consecutive quarters. Monitoring well PS-2 was inadvertently sampled out of sequence during the quarter, but results remained below GWMP criteria.

2.3.2 Monitoring Well Analyses

Groundwater samples collected from monitoring wells, PS-2, KBA-11-13A, KBA-11-16, KBA-11-34, KBA-11-37 during November 2006 were analyzed by Columbia Analytical Services for GWPS compounds by EPA Method 8260B.

2.3.3 Irrigation Well Sampling and Analyses

A total of three irrigation wells in the Crooked River Plantation subdivision, located across the highway from the Kings Bay Naval Submarine Base, were initially included in the groundwater sampling program. These locations were not included in the GWMP and were selected for sampling based upon the results from a comprehensive irrigation well survey that was performed in 1998. The selected locations included irrigation wells located at 102 Plantation Court, 122 Plantation Court, and 108 Cottage Court.

In letter dated February 27, 2004, the GADNR approved the recommendation to delete the irrigation well located at 108 Cottage Court from the sampling program, on the basis that contaminant detections had not exceeded the GWPS for three consecutive years. In letter dated December 23, 2005, the GADNR approved the recommendation to delete the irrigation well located at 102 Plantation Court from the sampling program, on the basis that contaminant detections had not exceeded the GWPS for two consecutive annual sampling events. In the same (December 23) letter, the GADNR approved reducing the sampling frequency at 122 Plantation Court from quarterly to annually on the basis that except for one anomaly, contaminant detections have not exceeded the GWPS in 2½ years. The next annual sampling event for GWPS constituents will be performed at the irrigation well located at 122 Plantation Court during May 2007.

3.0 DATA PRESENTATION

This section provides a summation and tabulation of all field measurements and analytical results associated with the groundwater monitoring program.

3.1 MONITORING WELL MEASUREMENTS

Depth to water and depth to monitoring well bottom were measured at 19 monitoring wells as described in Section 2.2, using an electronic water level indicator. Based upon the data, ground water flow in the intermediate zone appears to be generally west to northwest. A summary of the data recorded during the monitoring well measurement evolution is provided in Table 1.

3.2 GROUNDWATER MONITORING WELL PURGING PARAMETERS

Water quality parameters including temperature, conductivity, dissolved oxygen, turbidity and oxygen reduction potential were measured at each sampling location every two gallons during purging activities using a Horiba U-22 water quality meter, which was calibrated in accordance with manufacturer's specifications prior to use. Parameters generally stabilized within ten percent after eight gallons of groundwater were purged from each monitoring well. Table 2 provides a summary of the stabilized parameters (last data set recorded) at the time of sample collection.

A summary of the monitoring well purging and sampling records for the November 2006 sampling event is included in Appendix A.

3.3 ANALYTICAL RESULTS

A total of five monitoring wells were sampled during November 2006. All samples were analyzed as described in Section 2.3. A summary of the analytical laboratory results is provided in Tables 3 and 4. Analytical laboratory reports are provided in Appendix B.

3.3.1 Groundwater Protection Standard Analytical Results

Four of the five monitoring wells that were sampled for GWPS compounds, KBA-11-13A, KBA-11-16, KBA-11-34, and KBA-11-37, exhibited concentrations that exceeded one or more of the GWPS constituent standards. The results from the November 2006 sampling event are summarized below:

- Monitoring well KBA-11-13A, located approximately 150 ft downgradient from the source area, exhibited elevated concentrations of PCE at 6.8 and 7.8 ug/l (sample and duplicate, respectively), TCE at 8.8 ug/l and 9.6 ug/l (sample and duplicate, respectively), and chlorobenzene at 1.3 and 1.2 ug/l (sample and duplicate, respectively).
- Monitoring well KBA-11-16, located approximately 500 ft downgradient from the source area, exhibited an elevated concentration of 1,1-DCA at 1.2 ug/l.
- Monitoring well KBA-11-34, located within the source area, exhibited an elevated concentration of PCE at 5.1 ug/l.
- Monitoring well KBA-11-37, located approximately 600 ft downgradient from the source area, exhibited an elevated concentration of chlorobenzene at 3.1 ug/l.
- Monitoring well PS-2, located approximately 400 ft crossgradient from the source area, exhibited no concentrations above GWPS standards.

The analytical results are summarized in Table 3. Laboratory analytical reports are provided in Appendix B.

3.3.2 Subdivision Irrigation Wells Analytical Results

As described in Section 2.3.3, only the irrigation well located at 122 Plantation Court remains in the groundwater monitoring program at Site 11. This well is being sampled on an annual basis, with the next sampling event scheduled for May 2007. Historical analytical results for irrigation well sampling are presented in Table 4.

3.4 QUANTITY OF HYDROCARBONS REMOVED

Per the direction of the Navy, with approval by the GADNR, the pump-and-treat remediation system at Site 11 was dismantled during November 2001 under Delivery Order 651 of JAJMS Prime Contract 69272-00-D-3170. For this reason, the quantity of hydrocarbons removed calculation no longer applies.

4.0 DATA ASSESSMENT

4.1 OBSERVATIONS

- With the possible exception of monitoring well PS-2, which appears to contain an unknown obstruction as stated in Section 2.1, all of the monitoring wells were in good condition and are functioning adequately for evaluating the hydrologic conditions and groundwater quality.
- None of the five monitoring wells sampled during November 2006 exhibited total chlorinated ethene concentrations above the Corrective Action Plan objective of 100 ug/l stated in Section 1.4.
- Monitoring well KBA-11-16 has shown a decline in 1,1-DCA concentration since 2002. During that period, the 1,1-DCA concentration has decreased from 50 ug/l to 1.2 ug/l. The only constituent that is still exhibiting concentrations above GWPS standards at KBA-11-16 is 1,1-DCA, and it is steadily approaching the GWPS standard of 1.0 ug/l.
- Source area monitoring well KBA-11-34 has shown a steady decline in PCE and TCE concentrations since 2002. During that period, PCE has dropped from 110 ug/l to 5.1 ug/l and TCE has dropped from 15 ug/l to below the laboratory method detection limit, with the GWPS standard being 5 ug/l for both compounds.
- Monitoring well KBA-11-37 exhibited a slight increase in chlorobenzene concentration from 2.2 ug/l (August 2006) to 3.1 ug/l (November 2006). KBA-11-37 also exhibited a slight increase in vinyl chloride concentration, from below 1.0 ug/l (May 2006) to 1.3 ug/l (August 2006) to 1.9 ug/l (November 2006), but was still just below the GWPS standard of 2.0 ug/l.
- All concentrations at PS-2 were below the GWPS standards for the sixth consecutive quarterly sampling event. Based upon GADNR approval letter, PS-2 will be sampled annually from henceforth.
- During the period of 1999 to 2004, PCE began to appear in monitoring wells USGS 1, USGS 2, USGS 3 and USGS 15, all of which are in the line of USGS wells closest to the source area, about 100 ft downgradient from the source area and 50 ft upgradient from KBA-11-13A.
- A possible explanation for the extended PCE plume is that the subsurface reactions that occurred during the chemical oxidation treatments that began in 1998 have relocated and agitated the groundwater within the PCE plume, thereby extending the horizontal dimensions of the detectable PCE concentrations. It is noted that there is no evidence that any source level PCE concentrations have been pushed downgradient. Without having current source area data, conclusive determinations cannot be made, but it is possible that the PCE plume has changed from being characterized by a concentrated source with limited migration due to natural

attenuation, to being characterized by having almost no distinct source area but slightly more widespread due to the aggressive treatment activity.

4.2 RECOMMENDATIONS

With the exception of KBA-11-37, all monitoring locations continue to show decreasing GWPS concentrations, and are close to being below GADNR drinking water standards for all GWPS constituents. In particular, monitoring wells KBA-11-34 and KBA-11-16, based on the observed trends, could possibly be below all GWPS standards during the next monitoring event scheduled for February 2007. The increase in the concentration of vinyl chloride at KBA-11-37 is notable but no action other than continued monitoring is recommended at this time.

5.0 PROJECTED WORK FOR THE NEXT REPORTING PERIOD

VT Griffin will continue quarterly/annual monitoring in accordance with the GWMP and all approved modifications. The next quarterly/annual monitoring event is scheduled for February 2007.

6.0 REFERENCES

ABB Environmental Services, Inc. (ABB-ES), December 1993. *RFI Interim Report for Site 11, Naval Installation Restoration Program, Naval Submarine Base, Kings Bay, Georgia.*

Bechtel Environmental, Inc. (Bechtel), July 1998. *Corrective Action Plan, Site 11,Old Camden County Landfill, U.S. Naval Submarine Base, Kings Bay, Georgia, Revision 1.*

Bechtel, May 1999. *Interim Measures Progress Report, February 1 1999- April 30, 1999, Site 11,Old Camden County Landfill, U.S. Naval Submarine Base, Kings Bay, Georgia.*

Bechtel, June 1999a. *Groundwater Monitoring Plan for Site 11,Old Camden County Landfill, U.S. Naval Submarine Base, Kings Bay, Georgia.*

CH2MHill Constructors, Inc. (CCI), January 2004. *Construction Completion Report, Groundwater Remediation at Site 1, Old Camden County Landfill, Naval Submarine Base Kings Bay, Kings Bay, Georgia, Revision No. 01.*

SUBASE Kings Bay, 2001. *Corrective Action Plan, Site 11,Old Camden County Landfill, U.S. Naval Submarine Base, Kings Bay, Georgia, Revision 2.*

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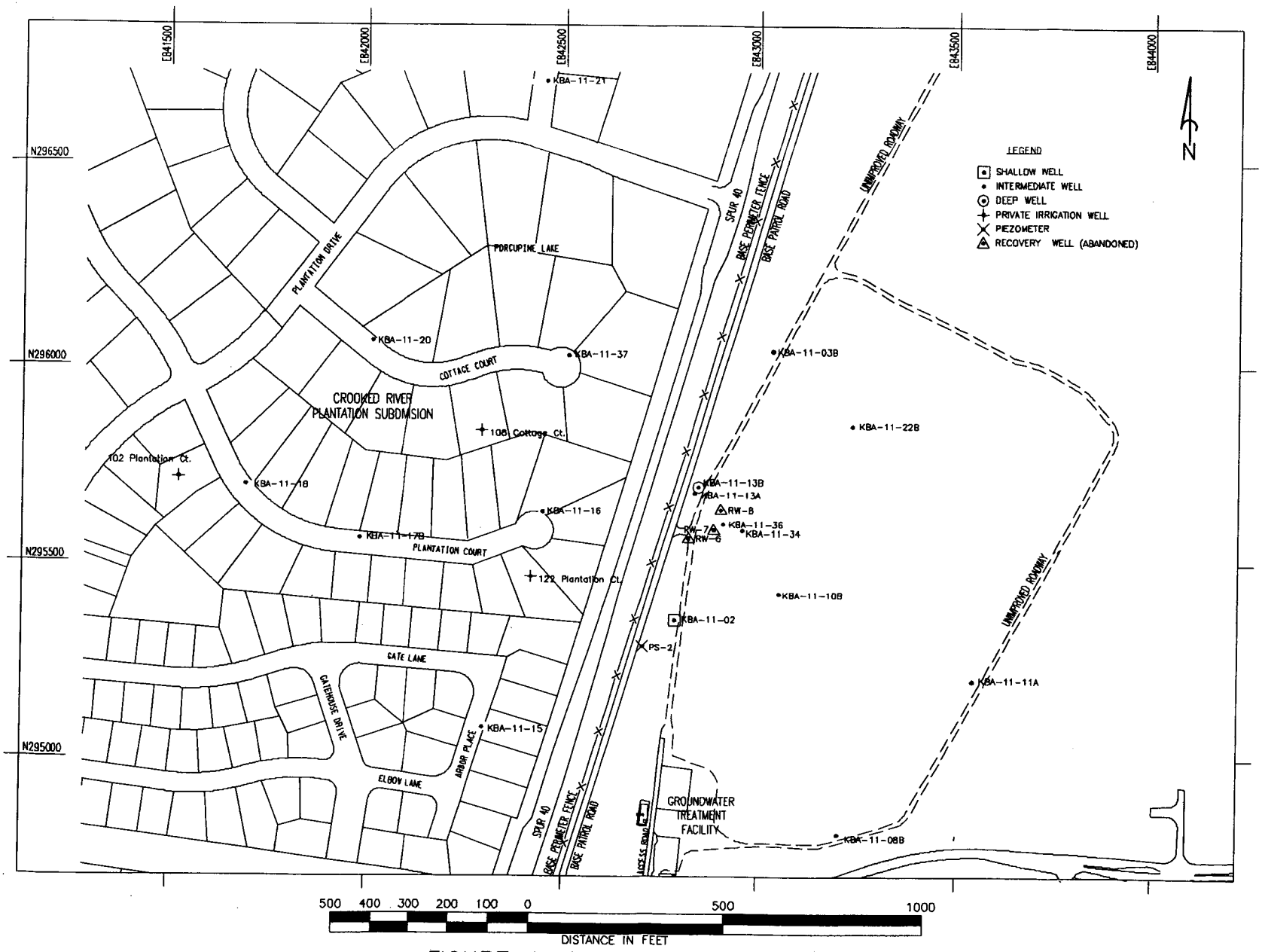

FIGURE 1: Site 11, Site Map

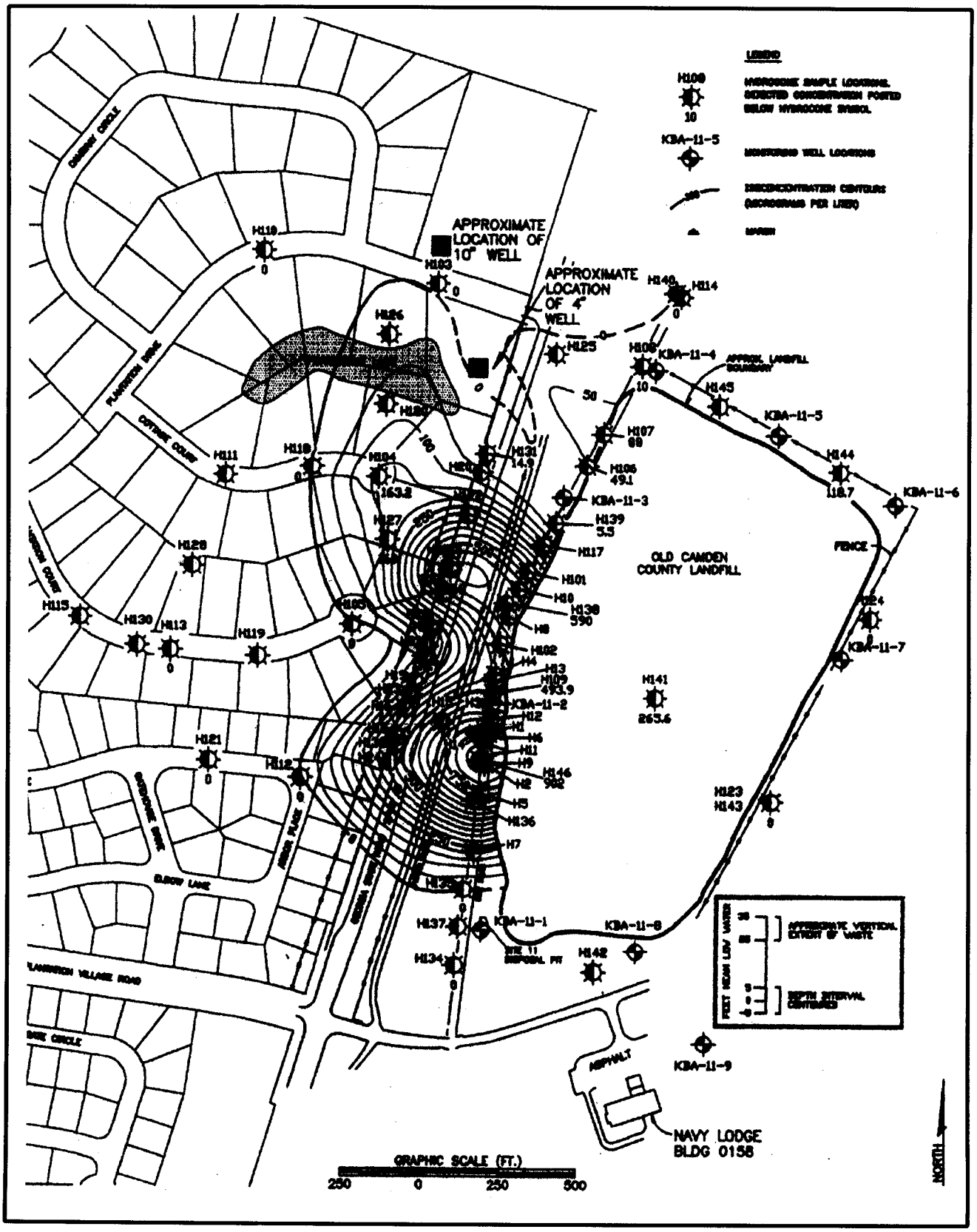

Figure 2: Site 11, RFI Interim Report, Interpreted Plume Plan View
5 ft. To -5 ft. Mean Low Water - Total Target VOCs March 31, 1993

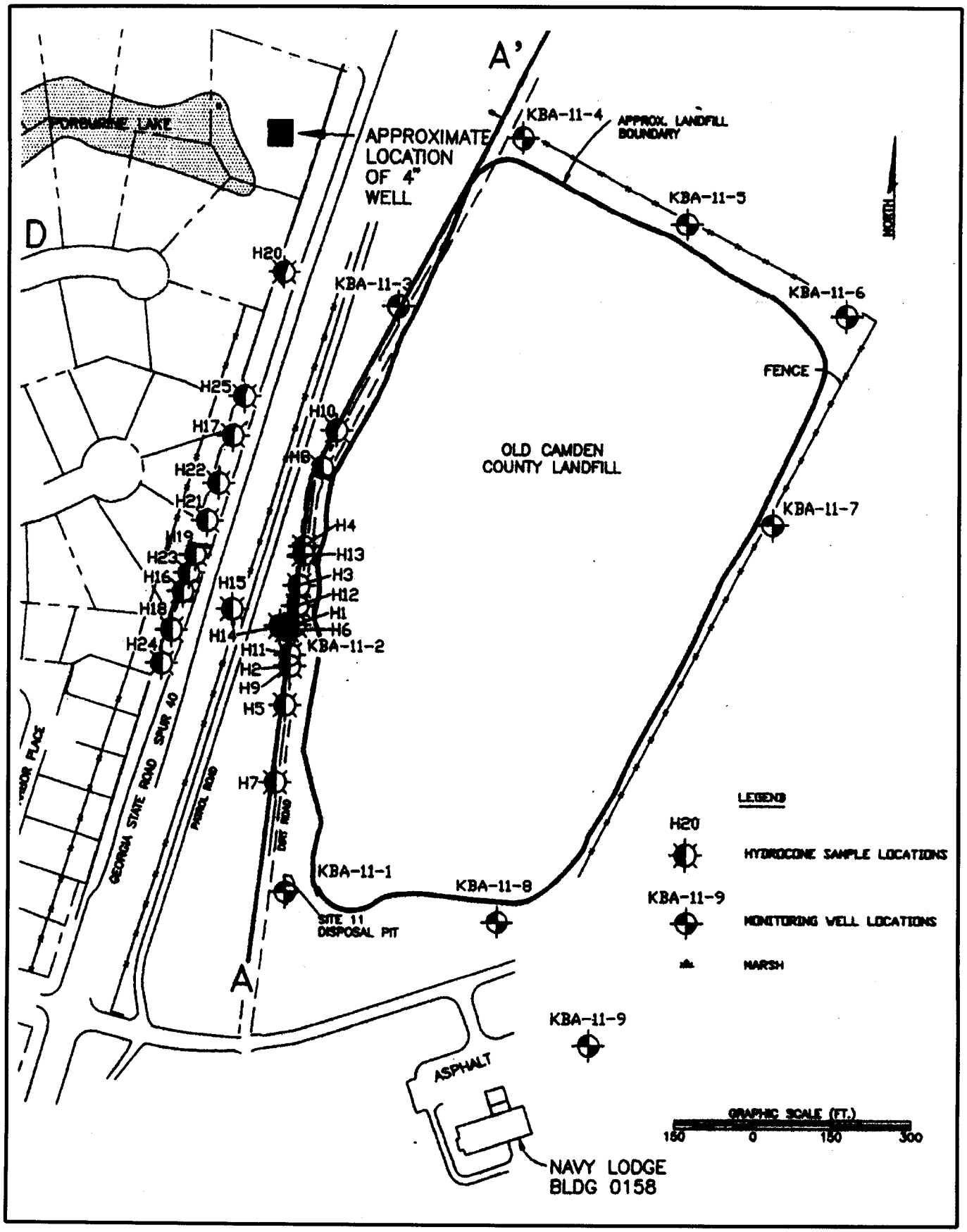

FIGURE 3: Site 11, RFI Interim Report, Hydrocone Sample Locations March 31, 1993

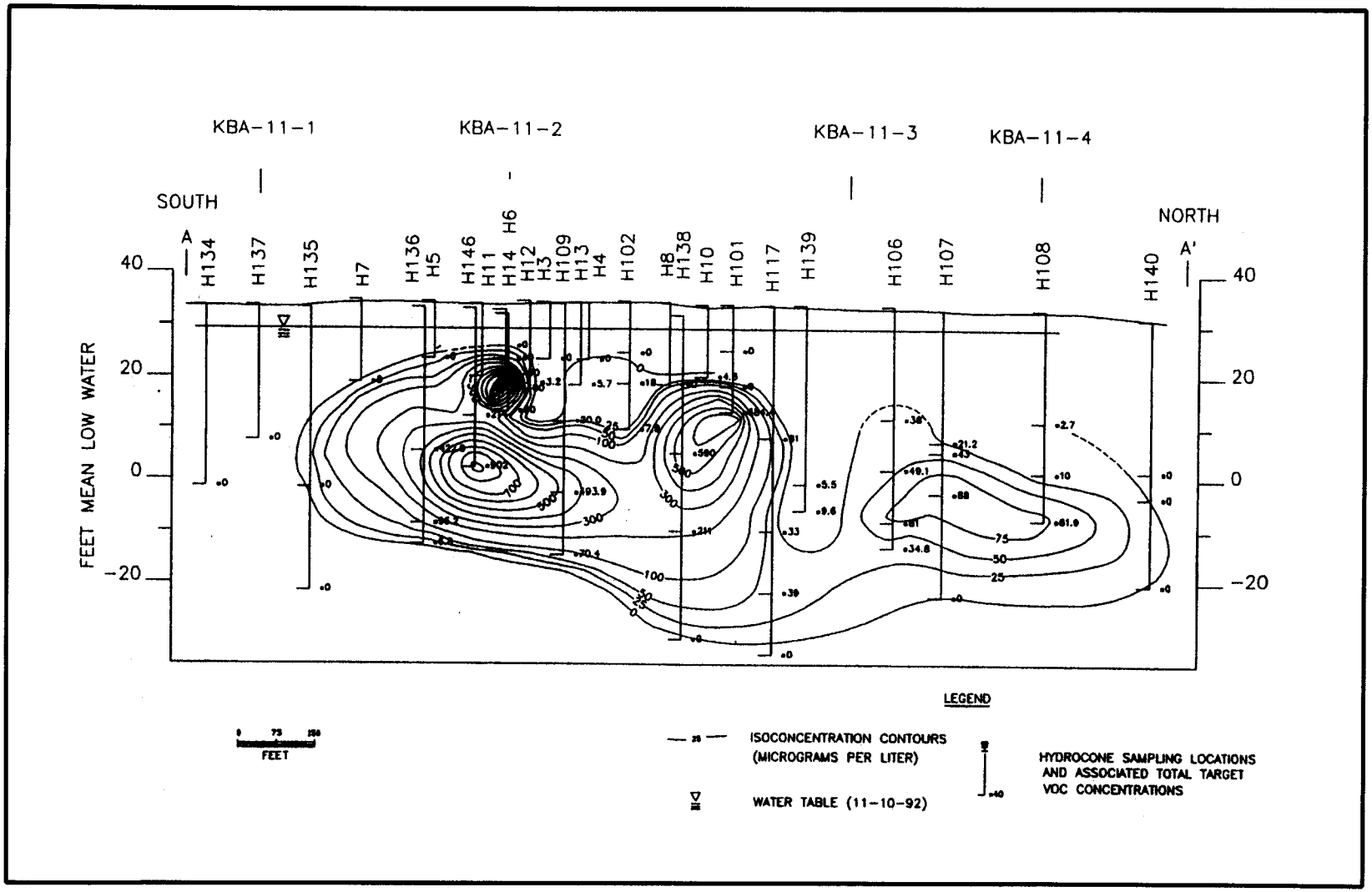

FIGURE 4: Site 11, RFI Interim Report, Cross Section
Total Target VOCs On-site Analytical Data, January 17, 1993

Table 1
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	8/2/1999	36.02	11.37	24.65	13.90	15.42
	11/8/1999		9.61	26.41		15.19
	2/4/2000		11.50	24.52		15.30
	5/2/2000		10.10	25.92		14.00
	8/8/2000		No water	No water		10.80
	11/8/2000		8.65	27.37		10.60
	2/6/2001		10.18	25.84		10.18
	5/1/2001		9.53	26.49		10.65
	8/7/2001		8.13	27.89		10.87
	11/6/2001		8.07	27.95		10.88
	2/5/2002		8.60	27.42		11.00
	5/6/2002		9.71	26.31		10.90
	8/5/2002		10.11	25.91		10.88
	11/4/2002		6.85	29.17		10.97
	2/4/2003		7.65	28.37		10.90
	5/5/2003		7.55	28.47		11.00
	8/4/2003		8.47	27.55		11.01
	11/3/2003		9.98	26.04		11.30
	2/3/2004		11.44	24.58		14.95
	5/3/2004		11.37	24.65		11.46
	8/3/2004		10.80	25.22		14.95
	11/1/2004		7.60	28.42		11.35
	2/7/2005		9.35	26.67		10.70
	5/2/2005		7.47	28.55		11.09
	8/1/2005		8.40	27.62		11.10
	10/31/2005		5.48	30.54		10.87
	1/30/2006		6.01	30.01		15.70
	5/1/2006		7.81	28.21		15.66
	7/31/2006		10.06	25.96		15.68
	11/14/2006		12.01	24.01		15.73
KBA-11-03B	8/2/1999	33.49	10.01	23.48	47.00	47.82
	11/8/1999		8.54	24.95		47.77
	2/24/2000		9.50	23.99		49.10
	5/2/2000		8.70	24.79		47.10
	8/15/2000		10.40	23.09		47.50
	11/6/2000		7.78	25.71		47.50
	2/5/2001		8.67	24.82		47.50
	5/1/2001		8.43	25.06		47.50
	8/7/2001		6.78	26.71		47.56
	11/6/2001		7.39	26.10		47.50
	2/5/2002		8.37	25.12		47.51
	5/6/2002		8.75	24.74		47.44
	8/5/2002		8.69	24.80		47.51
	11/4/2002		7.65	25.84		47.52
	2/4/2003		7.48	26.01		47.51
	5/5/2003		7.00	26.49		47.50
	8/4/2003		7.26	26.23		47.53
	11/3/2003		8.63	24.86		47.52
	2/3/2004		9.71	23.78		47.50
	5/3/2004		9.73	23.76		47.50
	8/3/2004		9.60	23.89		47.50
	11/1/2004		6.97	26.52		47.50
	2/7/2005		8.11	25.38		47.55
	5/2/2005		6.48	27.01		47.54
	8/1/2005		7.53	25.96		47.54
	10/31/2005		5.18	28.31		47.55
	1/30/2006		5.52	27.97		47.55
	5/1/2006		7.26	26.23		47.52
	7/31/2006		8.98	24.51		47.51
	11/14/2006		10.53	22.96		47.59

ft = feet
msl = above mean sea level
btoc = below top of casing

Table 1
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-11-08B	8/2/1999	38.20	13.74	24.46	43.00	43.77
	11/8/1999		12.04	26.16		43.75
	2/24/2000		13.40	24.80		44.90
	5/2/2000		12.10	26.10		43.80
	8/15/2000		14.00	24.20		43.50
	11/20/2000		11.54	26.66		43.46
	2/5/2001		12.04	26.16		43.51
	5/1/2001		11.85	26.35		43.59
	8/7/2001		10.02	28.18		43.49
	11/6/2001		10.78	27.42		43.47
	2/5/2002		11.66	26.54		43.48
	5/6/2002		12.25	25.95		43.48
	8/5/2002		11.84	26.36		43.47
	11/4/2002		10.82	27.38		43.50
	2/4/2003		10.81	27.39		43.50
	5/5/2003		10.37	27.83		43.50
	8/4/2003		10.41	27.79		43.55
	11/3/2003		11.91	26.29		43.48
	2/3/2004		13.27	24.93		43.50
	5/3/2004		13.35	24.85		43.49
	8/3/2004		12.73	25.47		43.50
	11/1/2004		10.23	27.97		43.50
	2/7/2005		11.30	26.90		43.50
	5/2/2005		9.70	28.50		43.53
	8/1/2005		10.65	27.55		43.53
	10/31/2005		8.78	29.42		43.51
	1/30/2006		9.03	29.17		43.51
	5/1/2006		10.81	27.39		43.51
	7/31/2006		12.58	25.62		43.51
	11/14/2006		14.44	23.76		43.58
KBA-11-10B	8/2/1999	38.03	13.90	24.13	51.50	51.67
	11/8/1999		12.31	25.72		51.62
	2/24/2000		13.50	24.53		53.00
	5/2/2000		12.80	25.23		53.40
	8/8/2000		14.90	23.13		52.20
	11/6/2000		14.03	24.00		54.34
	2/5/2001		12.48	25.55		51.35
	5/1/2001		12.06	25.97		51.35
	8/7/2001		10.48	27.55		51.38
	11/6/2001		10.96	27.07		51.37
	2/5/2002		12.11	25.92		51.37
	5/6/2002		12.40	25.63		51.36
	8/5/2002		12.53	25.50		51.36
	11/4/2002		11.07	26.96		51.36
	2/4/2003		10.90	27.13		51.34
	5/5/2003		10.46	27.57		51.35
	8/4/2003		10.98	27.05		51.37
	11/3/2003		12.41	25.62		51.36
	2/3/2004		13.68	24.35		51.36
	5/3/2004		13.70	24.33		51.35
	8/3/2004		13.26	24.77		51.37
	11/1/2004		10.46	27.57		51.36
	2/7/2005		11.80	26.23		51.40
	5/2/2005		10.11	27.92		51.40
	8/1/2005		11.05	26.98		51.43
	10/31/2005		8.59	29.44		51.41
	1/30/2006		9.04	28.99		51.39
	5/1/2006		10.78	27.25		51.37
	7/31/2006		12.74	25.29		51.38
	11/14/2006		14.54	23.49		51.54

ft = feet
msl = above mean sea level
btoc = below top of casing

Table 1
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	8/2/2003	35.85	11.40	24.45	37.00	37.12
	11/8/1999		9.61	26.24		37.12
	2/24/2000		11.10	24.75		37.20
	5/2/2000		9.40	26.45		37.00
	8/10/2000		11.70	24.15		37.40
	11/13/2000		8.85	27.00		36.86
	2/5/2001		9.60	26.25		36.84
	5/1/2001		9.31	26.54		36.83
	8/7/2001		7.64	28.21		36.86
	11/6/2001		8.16	27.69		36.83
	2/5/2002		8.23	27.62		36.85
	5/6/2002		9.69	26.16		36.81
	8/5/2002		9.43	26.42		36.82
	11/4/2002		8.30	27.55		36.86
	2/4/2003		8.25	27.60		36.85
	5/5/2003		7.76	28.09		36.84
	8/4/2003		7.92	27.93		36.86
	11/3/2003		9.41	26.44		36.85
	2/3/2004		10.79	25.06		36.85
	5/3/2004		10.90	24.95		36.85
	8/3/2004		10.35	25.50		36.82
	11/1/2004		7.65	28.20		36.85
	2/7/2005		8.87	26.98		36.85
	5/2/2005		7.28	28.57		36.88
	8/1/2005		8.10	27.75		36.87
	10/31/2005		5.98	29.87		36.97
	1/30/2006		6.46	29.39		36.87
	5/1/2006		8.12	27.73		36.83
	7/31/2006		9.98	25.87		36.82
	11/14/2006		11.96	23.89		36.91
KBA-11-13A	8/2/1999	34.20	10.77	23.43	42.50	42.52
	11/8/1999		9.25	24.95		42.75
	2/4/2000		10.20	24.00		42.40
	5/2/2000		9.30	24.90		42.00
	8/10/2000		11.20	23.00		42.90
	11/8/2000		6.52	27.68		42.30
	2/9/2001		9.53	24.67		42.26
	5/3/2001		9.21	24.99		42.25
	8/7/2001		7.51	26.69		42.31
	11/6/2001		8.17	26.03		42.27
	2/5/2002		9.13	25.07		42.26
	5/6/2002		9.46	24.74		42.29
	8/5/2002		9.47	24.73		42.25
	11/4/2002		8.20	26.00		42.29
	2/4/2003		8.05	26.15		42.24
	5/5/2003		7.66	26.54		42.26
	8/4/2003		8.06	26.14		42.28
	11/3/2003		9.43	24.77		42.28
	2/3/2004		10.54	23.66		42.27
	5/3/2004		10.50	23.70		42.28
	8/3/2004		10.25	23.95		42.29
	11/1/2004		7.64	26.56		42.30
	2/7/2005		8.85	25.35		42.30
	5/2/2005		7.16	27.04		42.29
	8/1/2005		8.23	25.97		42.29
	10/31/2005		5.89	28.31		42.32
	1/30/2006		6.20	28.00		42.30
	5/1/2006		7.99	26.21		42.28
	7/31/2006		9.74	24.46		42.27
	11/14/2006		11.32	22.88		42.35

ft = feet
msl = above mean sea level
btoc = below top of casing

Table 1
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-11-13B	8/2/1999	34.86	14.27	20.59	90.70	90.77
	11/8/1999		12.88	21.98		90.72
	2/24/2000		13.60	21.26		91.40
	5/2/2000		12.80	22.06		91.00
	8/8/2000		14.60	20.26		91.80
	11/6/2000		12.50	22.36		91.60
	2/9/2001		13.05	21.81		90.53
	5/4/2001		13.09	21.77		90.49
	8/7/2001		11.37	23.49		91.98
	11/6/2001		12.33	22.53		90.50
	2/5/2002		12.80	22.06		90.60
	5/6/2002		13.38	21.48		90.52
	8/5/2002		13.07	21.79		90.46
	11/4/2002		12.20	22.66		90.51
	2/4/2003		12.24	22.62		90.47
	5/5/2003		11.91	22.95		90.50
	8/4/2003		11.86	23.00		90.46
	11/3/2003		13.00	21.86		90.51
	2/3/2004		13.90	20.96		90.61
	5/3/2004		13.88	20.98		90.48
	8/3/2004		13.74	21.12		90.50
	11/1/2004		11.85	23.01		90.90
	2/7/2005		12.50	22.36		90.50
	5/2/2005		11.18	23.68		90.51
	8/1/2005		12.24	22.62		90.45
	10/31/2005		10.67	24.19		90.46
	1/30/2006		10.81	24.05		90.51
	5/1/2006		12.37	22.49		90.49
	7/31/2006		13.71	21.15		91.90
	11/14/2006		14.92	19.94		90.57
KBA-11-15	8/2/1999	28.49	5.60	22.89	39.00	39.22
	11/9/1999		4.07	24.42		39.17
	2/7/2000		4.80	23.69		39.00
	5/2/2000		3.90	24.59		38.00
	8/9/2000		5.70	22.79		39.30
	11/7/2000		3.69	24.80		38.70
	2/13/2001		4.45	24.04		38.89
	5/4/2001		4.12	24.37		38.90
	8/7/2001		2.22	26.27		38.94
	11/6/2001		3.20	25.29		38.90
	2/5/2002		3.98	24.51		38.90
	5/6/2002		4.43	24.06		38.90
	8/5/2002		4.32	24.17		38.92
	11/4/2002		3.38	25.11		37.91
	2/4/2003		3.24	25.25		38.92
	5/5/2003		2.69	25.80		38.90
	8/4/2003		2.75	25.74		38.87
	11/3/2003		4.31	24.18		38.90
	2/3/2004		5.51	22.98		38.90
	5/3/2004		5.43	23.06		38.92
	8/3/2004		4.99	23.50		38.90
	11/1/2004		2.65	25.84		38.95
	2/7/2005		3.61	24.88		38.90
	5/2/2005		1.80	26.69		38.93
	8/1/2005		3.11	25.38		38.97
	10/31/2005		1.33	27.16		38.98
	1/30/2006		1.19	27.30		38.91
	5/1/2006		3.18	25.31		38.91
	7/31/2006		4.73	23.76		38.88
	11/14/2006		6.46	22.03		38.97

ft = feet
msl = above mean sea level
btoc = below top of casing

Table 1
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-11-16	8/2/1999	28.66	6.17	22.49	44.90	44.77
	11/9/1999		4.73	23.93		44.72
	2/7/2000		5.30	23.36		45.30
	5/3/2000		3.90	24.76		44.00
	8/9/2000		6.40	22.26		45.10
	11/8/2000		4.39	24.27		44.45
	2/6/2001		4.98	23.68		44.47
	5/2/2001		4.48	24.18		44.46
	8/7/2001		2.59	26.07		43.48
	11/6/2001		3.99	24.67		44.46
	2/5/2002		4.70	23.96		44.47
	5/6/2002		5.09	23.57		44.45
	8/5/2002		4.95	23.71		44.47
	11/4/2002		4.00	24.66		44.47
	2/4/2003		3.83	24.83		44.48
	5/5/2003		3.45	25.21		44.48
	8/4/2003		3.63	25.03		44.46
	11/3/2003		5.00	23.66		44.48
	2/3/2004		5.98	22.68		44.48
	5/3/2004		5.86	22.80		44.48
	8/3/2004		5.65	23.01		44.48
	11/1/2004		3.45	25.21		44.50
	2/7/2005		4.40	24.26		44.59
	5/2/2005		2.63	26.03		44.48
	8/1/2005		3.93	24.73		44.47
	10/31/2005		2.06	26.60		44.48
	1/30/2006		2.07	26.59		44.50
	5/1/2006		3.91	24.75		44.48
	7/31/2006		5.36	23.30		44.47
	11/14/2006		6.80	21.86		44.52
KBA-11-17B	8/2/1999	25.41	4.61	20.80	44.80	44.72
	11/9/1999		3.03	22.38		44.67
	2/7/2000		3.60	21.81		44.40
	5/3/2000		2.70	22.71		42.30
	8/9/2000		4.60	20.81		45.00
	11/7/2000		3.07	22.34		45.30
	2/13/2001		3.65	21.76		44.41
	5/4/2001		3.33	22.08		44.41
	8/7/2001		1.29	24.12		44.48
	11/6/2001		2.81	22.60		44.41
	2/5/2002		3.27	22.14		44.44
	5/6/2002		3.74	21.67		44.44
	8/5/2002		3.35	22.06		44.43
	11/4/2002		2.66	22.75		44.45
	2/4/2003		2.64	22.77		44.42
	5/5/2003		2.20	23.21		44.41
	8/4/2003		2.09	23.32		44.41
	11/3/2003		3.65	21.76		44.41
	2/3/2004		4.50	20.91		44.41
	5/3/2004		4.22	21.19		44.46
	8/3/2004		3.94	21.47		44.41
	11/1/2004		2.24	23.17		44.45
	2/7/2005		2.94	22.47		44.50
	5/2/2005		1.15	24.26		44.44
	8/1/2005		2.65	22.76		44.45
	10/31/2005		1.09	24.32		44.41
	1/30/2006		0.96	24.45		44.43
	5/1/2006		2.84	22.57		44.45
	7/31/2006		4.67	20.74		44.42
	11/14/2006		5.40	20.01		44.51

ft = feet
msl = above mean sea level
btoc = below top of casing

Table 1
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-11-18	8/2/1999	22.81	3.67	19.14	45.80	45.82
	11/9/1999		2.05	20.76		45.77
	2/25/2000		2.70	20.11		46.80
	5/3/2000		1.50	21.31		45.50
	8/15/2000		3.70	19.11		45.40
	11/8/2000		2.24	20.57		47.51
	2/16/2001		2.77	20.04		45.50
	5/4/2001		2.57	20.24		45.51
	8/7/2001		0.38	22.43		45.59
	11/6/2001		2.18	20.63		45.51
	2/5/2002		2.45	20.36		45.53
	5/6/2002		2.96	19.85		45.43
	8/5/2002		2.48	20.33		45.51
	11/4/2002		1.82	20.99		45.51
	2/4/2003		1.90	20.91		45.54
	5/5/2003		1.55	21.26		45.50
	8/4/2003		1.34	21.47		45.46
	11/3/2003		2.89	19.92		45.52
	2/3/2004		3.55	19.26		45.49
	5/3/2004		3.22	19.59		45.50
	8/3/2004		2.93	19.88		48.51
	11/1/2004		1.55	21.26		45.55
	2/7/2005		2.15	20.66		45.55
	5/2/2005		0.49	22.32		45.55
	8/1/2005		1.95	20.86		45.52
	10/31/2005		0.50	22.31		45.51
	1/30/2006		0.46	22.35		45.53
	5/1/2006		2.23	20.58		45.54
	7/31/2006		3.93	18.88		45.54
	11/14/2006		4.43	18.38		45.62
KBA-11-20	8/2/1999	23.07	3.00	20.07	40.00	40.12
	11/9/1999		1.94	21.13		40.12
	2/25/2000		2.60	20.47		40.90
	5/2/2000		1.60	21.47		40.90
	8/15/2000		3.60	19.47		40.20
	11/8/2000		2.18	20.89		39.84
	2/13/2001		2.39	20.68		39.86
	5/4/2001		2.48	20.59		39.86
	8/7/2001		0.58	22.49		39.87
	11/6/2001		2.04	21.03		39.84
	2/5/2002		2.18	20.89		39.86
	5/6/2002		2.73	20.34		39.84
	8/5/2002		1.95	21.12		39.85
	11/4/2002		1.67	21.40		39.85
	2/4/2003		1.77	21.30		39.86
	5/5/2003		1.16	21.91		39.86
	8/4/2003		1.29	21.78		39.80
	11/3/2003		2.30	20.77		39.87
	2/3/2004		2.71	20.36		39.84
	5/3/2004		2.48	20.59		39.86
	8/3/2004		2.83	20.24		39.85
	11/1/2004		1.51	21.56		39.90
	2/7/2005		1.80	21.27		39.85
	5/2/2005		0.44	22.63		39.88
	8/1/2005		1.80	21.27		39.87
	10/31/2005		0.64	22.43		39.86
	1/30/2006		0.40	22.67		39.86
	5/1/2006		2.68	20.39		39.88
	7/31/2006		3.33	19.74		39.85
	11/14/2006		3.63	19.44		39.92

ft = feet
msl = above mean sea level
btoc = below top of casing

Table 1
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-11-21	8/2/1999	23.56	3.75	19.81	40.40	40.57
	11/9/1999		2.40	21.16		40.57
	2/25/2000		2.90	20.66		41.80
	5/2/2000		2.10	21.46		40.80
	8/15/2000		3.60	19.96		40.20
	11/6/2000		2.40	21.16		40.20
	2/13/2001		2.69	20.87		40.30
	5/4/2001		2.83	20.73		40.30
	8/7/2001		0.94	22.62		40.30
	11/6/2001		2.25	21.31		40.29
	2/5/2002		2.49	21.07		40.30
	5/6/2002		3.04	20.52		40.27
	8/5/2002		2.36	21.20		40.29
	11/4/2002		2.00	21.56		40.31
	2/4/2003		2.12	21.44		40.29
	5/5/2003		1.94	21.62		40.29
	8/4/2003		1.52	22.04		40.25
	11/3/2003		2.60	20.96		40.29
	2/3/2004		3.06	20.50		40.27
	5/3/2004		3.00	20.56		40.25
	8/3/2004		3.39	20.17		40.28
	11/1/2004		1.84	21.72		40.30
	2/7/2005		2.15	21.41		40.30
	5/2/2005		0.94	22.62		40.31
	8/1/2005		2.21	21.35		40.30
	10/31/2005		0.84	22.72		40.32
	1/30/2006		0.74	22.82		40.31
	5/1/2006		2.40	21.16		40.32
	7/31/2006		3.67	19.89		40.28
	11/14/2006		4.00	19.56		40.35
KBA-11-22B	8/2/1999	36.13	11.92	24.21	52.60	52.62
	11/8/1999		10.34	25.79		52.59
	2/25/2000		11.60	24.53		53.60
	5/2/2000		10.80	25.33		52.20
	8/15/2000		11.40	24.73		52.30
	11/8/2000		9.21	26.92		52.30
	2/5/2001		10.48	25.65		52.29
	5/4/2001		10.18	25.95		52.33
	8/7/2001		8.54	27.59		52.38
	11/6/2001		8.81	27.32		52.28
	2/5/2002		10.15	25.98		52.29
	5/6/2002		10.40	25.73		52.28
	8/5/2002		10.59	25.54		52.28
	11/4/2002		9.26	26.87		52.29
	2/4/2003		9.01	27.12		52.29
	5/5/2003		8.45	27.68		52.28
	8/4/2003		8.98	27.15		52.29
	11/3/2003		10.41	25.72		52.29
	2/3/2004		11.68	24.45		52.29
	5/3/2004		11.73	24.40		52.28
	8/3/2004		11.41	24.72		52.35
	11/1/2004		8.42	27.71		52.30
	2/7/2005		9.85	26.28		52.30
	5/2/2005		8.17	27.96		52.32
	8/1/2005		9.05	27.08		52.32
	10/31/2005		6.39	29.74		52.31
	1/30/2006		6.95	29.18		52.32
	5/1/2006		8.64	27.49		52.30
	7/31/2006		10.70	25.43		52.30
	11/14/2006		12.47	23.66		52.40

ft = feet
msl = above mean sea level
btoc = below top of casing

Table 1
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-11-34	8/2/1999	37.51	13.75	23.76	40.00	41.07
	11/8/1999		12.18	25.33		41.07
	2/7/2000		13.20	24.31		41.04
	5/2/2000		12.30	25.21		41.40
	8/8/2000		14.30	23.21		41.60
	11/8/2000		11.31	26.20		40.76
	2/8/2001		12.40	25.11		40.76
	5/3/2001		12.01	25.50		40.45
	8/7/2001		10.35	27.16		40.78
	11/6/2001		10.96	26.55		40.78
	2/5/2002		11.95	25.56		40.76
	5/6/2002		12.26	25.25		40.77
	8/5/2002		12.42	25.09		40.76
	11/4/2002		10.95	26.56		40.78
	2/4/2003		10.79	26.72		40.74
	5/5/2003		10.37	27.14		40.75
	8/4/2003		10.91	26.60		40.77
	11/3/2003		12.30	25.21		40.75
	2/3/2004		13.53	23.98		40.77
	5/3/2004		13.51	24.00		40.78
	8/3/2004		13.14	24.37		40.76
	11/1/2004		10.35	27.16		40.75
	2/7/2005		11.72	25.79		40.75
	5/2/2005		9.99	27.52		41.78
	8/1/2005		10.98	26.53		40.78
	10/31/2005		8.45	29.06		40.78
	1/30/2006		8.90	28.61		40.78
	5/1/2006		10.66	26.85		40.76
	7/31/2006		12.60	24.91		40.76
	11/14/2006		14.30	23.21		40.82
KBA-11-36	8/2/1999	37.91	14.34	23.57	40.00	41.67
	11/8/1999		12.84	25.07		41.65
	2/24/2000		14.02	23.89		42.50
	5/4/2000		12.90	25.01		41.40
	8/15/2000		14.60	23.31		41.40
	11/8/2000		12.02	25.89		41.62
	2/12/2001		13.07	24.84		41.39
	5/4/2001		12.67	25.24		41.39
	8/7/2001		10.95	26.96		41.39
	11/6/2001		11.56	26.35		41.38
	2/5/2002		12.57	25.34		41.36
	5/6/2002		12.85	25.06		41.35
	8/5/2002		12.97	24.94		41.36
	11/4/2002		11.57	26.34		41.38
	2/4/2003		11.41	26.50		41.34
	5/5/2003		11.00	26.91		41.36
	8/4/2003		11.48	26.43		41.38
	11/3/2003		12.87	25.04		41.37
	2/3/2004		14.08	23.83		41.36
	5/3/2004		14.03	23.88		41.38
	8/3/2004		13.70	24.21		41.38
	11/1/2004		10.98	26.93		41.40
	2/7/2005		12.30	25.61		41.40
	5/2/2005		10.57	27.34		41.41
	8/1/2005		11.60	26.31		41.39
	10/31/2005		9.10	28.81		41.39
	1/30/2006		9.51	28.40		41.39
	5/1/2006		11.31	26.60		41.38
	7/31/2006		13.18	24.73		41.38
	11/14/2006		14.83	23.08		41.44

ft = feet
msl = above mean sea level
btoc = below top of casing

Table 1
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-11-37	8/16/1999	26.26	4.15	22.11	38.50	38.57
	11/9/1999		2.86	23.40		38.46
	2/8/2000		3.20	23.06		38.40
	5/4/2000		2.40	23.86		38.20
	8/9/2000		4.10	22.16		38.60
	11/8/2000		2.76	23.50		30.20
	2/7/2001		2.96	23.30		38.18
	5/2/2001		3.00	23.26		38.20
	8/7/2001		1.37	24.89		38.21
	11/6/2001		2.43	23.83		38.19
	2/5/2002		2.82	23.44		38.18
	5/6/2002		3.28	22.98		38.19
	8/5/2002		2.84	23.42		38.19
	11/4/2002		2.29	23.97		38.20
	2/4/2003		2.23	24.03		38.22
	5/5/2003		1.95	24.31		38.20
	8/4/2003		2.03	24.23		38.21
	11/3/2003		2.89	23.37		38.20
	2/3/2004		3.43	22.83		38.19
	5/3/2004		3.44	22.82		38.22
	8/3/2004		3.80	22.46		38.20
	11/1/2004		1.96	24.30		38.20
	2/7/2005		2.44	23.82		38.20
	5/2/2005		1.16	25.10		38.21
	8/1/2005		2.28	23.98		38.22
	10/31/2005		0.79	25.47		38.22
	1/30/2006		0.71	25.55		38.22
	5/1/2006		2.32	23.94		38.21
	7/31/2006		3.15	23.11		38.21
	11/14/2006		4.28	21.98		38.25
PS-2	8/17/1999	32.71	9.60	23.11	39.47	39.60
	11/8/1999		7.80	24.91		37.47
	2/7/2000		8.80	23.91		36.80
	5/4/2000		7.20	25.51		36.80
	8/8/2000		9.90	22.81		37.50
	11/8/2000		8.85	23.86		36.86
	2/7/2001		8.06	24.65		37.24
	5/2/2001		7.72	24.99		37.19
	8/7/2001		5.97	26.74		37.24
	11/6/2001		6.68	26.03		37.24
	2/5/2002		7.61	25.10		37.22
	5/6/2002		8.00	24.71		37.20
	8/5/2002		8.01	24.70		37.21
	11/4/2002		6.76	25.95		37.20
	2/4/2003		6.65	26.06		37.23
	5/5/2003		6.22	26.49		37.15
	8/4/2003		6.50	26.21		37.25
	11/3/2003		7.63	25.08		37.24
	2/3/2004		9.20	23.51		37.24
	5/3/2004		9.18	23.53		37.20
	8/3/2004		8.70	24.01		37.21
	11/1/2004		6.20	26.51		37.25
	2/7/2005		7.30	25.41		37.25
	5/2/2005		5.67	27.04		37.26
	8/1/2005		6.72	25.99		37.17
	10/31/2005		0.79	31.92		38.22
	1/30/2006		4.79	27.92		37.71
	5/1/2006		6.61	26.10		37.69
	7/31/2006		8.99	23.72		37.69
	11/14/2006		10.06	22.65		37.75

ft = feet
msl = above mean sea level
btoc = below top of casing

Table 2
Well Purge Parmeters

Well Identification	Date	Volume Purged (gal)	Temperature (°C)	pH	ORP (mV)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)
KBA-11-02	11/9/1999	6	23.4	5.94	-160	0.527	3	0.51
	2/4/2000	3	22.7	5	-258	0.604	12	1.7
	5/3/2000	6	22.5	6.8	NM	0.44	10	2.3
	8/8/2000			no water – well was not purged				
	11/8/2000	6	23.7	6.62	-189	0.325	7	0.67
	2/6/2001	6	18.9	6.35	-255	0.343	11	0.07
	5/1/2001	6	22	6.1	-84	0.276	6	8.55
	8/8/2001	6	26.9	7.09	-242.2	0.248	10	9.65
	11/7/2001	8	22.7	6.69	-59	0.317	0.7	3.59
	2/6/2002	6	20.96	6.51	-85	0.206	0.4	0.97
	5/7/2002	8	22.1	6.42	-105	0.167	5.31	0
	8/6/2002	6	27.97	8.52	-39	0.35	5.1	3.88
	11/5/2002	8	24.58	6.14	-47	0.808	-1.9	5.17
	8/2/1999	6	25.6	5.14	-221	0.304	2	NM
	11/4/2003	8	24.22	6.62	-56	0.357	-6.7	5.41
	11/2/2004	8	24	6.82	-128	0.264	5.5	6.65
KBA-11-10B	8/8/2000	6	25	6.3	-65	0.295	12	0.04
	8/9/2001	6	24.1	6.16	-222.6	0.317	5	9.99
	8/7/2002	8	25.82	8.37	-23	0.328	6.8	3.96
	8/5/2003	8	24	5.6	-60	0.252	0.9	2.03
	5/4/2004	8	21.29	5.53	-120	0.293	14.7	4.83
	5/3/2005	8	22.06	5.86	-73	0.188	5.4	4.69
	5/4/2006	8	22.50	6.13	-26	0.383	-1.9	10.62
KBA-11-11A	8/10/2000	6	22.9	6	-18	0.071	4	0.01
	8/8/2001	8	22.8	5.64	-216.6	0.079	10	8.6
	8/6/2002	8	24.02	7.45	3	0.074	0.4	3.67
	5/6/2003	8	21.8	5.56	-39	0.06	13.1	3.59
	5/5/2004	8	20.76	5.44	-23	0.059	-10	6.61
	5/4/2005	8	21.24	5.46	9	0.034	5.2	5.78
	5/3/2006	8	21.61	6.05	86	0.049	-4.1	7.6

ft = feet
msl = above mean sea level
btoc = below top of casing

Table 2
Well Purge Parmeters

Well Identification	Date	Volume Purged (gal)	Temperature (°C)	pH	ORP (mV)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)
KBA-11-13A	8/3/1999	6	24.3	5.5	-210	0.463	17	NM
	11/9/1999	8	23	5.54	-142	0.467	2	0.78
	2/4/2000	8	22.3	6.68	-217	0.503	10	1.17
	5/3/2000	6	24.5	6.4	-113	0.561	10	1.1
	8/10/2000	6	23.7	6.2	-48	1.35	1	0.11
	11/8/2000	6	24.3	5.4	-81	1.3	4	0.4
	2/8/2001	6	23.8	4.8	-277	1.8	8	0.31
	5/3/2001	6	22.8	4.75	-76	2.16	1.9	8.5
	8/8/2001	8	25.2	4.98	-166.8	2.38	9	9.05
	11/7/2001	6	23.3	4.97	-10	1.75	0.6	3.53
	2/6/2002	8	24.1	4.85	-42	1.8	5.8	5.88
	5/8/2002	8	23.89	4.46	-16	1.66	8.3	0
	8/6/2002	8	26.67	6.7	69	1.82	32.7	2.51
	11/6/2002	8	23.8	5.84	-2	1.72	16.8	3.57
	2/5/2003	8	22.2	4.34	-62	1.21	7.33	3.41
	5/6/2003	8	23.3	4.27	57	1.24	113	2.63
	8/6/2003	8	24.3	4.25	102	0.928	11.4	3.36
	11/5/2003	8	24.3	4.23	18	1.02	136	3.37
	2/4/2004	8	24.08	4.2	0	1.06	10	6.59
	5/5/2004	8	22.64	4.2	60	1.07	6.98	4.52
	8/4/2004	8	25.20	4.2	132	0.940	43.4	2.59
	11/3/2004	8	24.11	4.19	19	0.645	48.6	11.64
	2/9/2005	8	21.73	4.34	96	0.516	-6	7.7
	5/4/2005	8	22.57	4.22	34	0.454	65.8	4.19
	8/3/2005	8	24.02	7.15*	-5	0.491	1.7	6.93
	9/7/2005	4	23.45	4.31	13	0.307	1.3	6.40
	11/2/2005	8	23.47	4.24	15	0.522	53.4	3.02
	2/1/2006	8	20.81	4.31	39	0.272	-10	6.69
	5/3/2006	8	24.19	4.51	61	0.567	53.9	6.9
	8/3/2006	8	23.68	4.47	-10	0.530	12.4	3.25
	11/16/2006	8	22.48	4.44	-32	0.536	0.0	3.89
KBA-11-13B	8/3/1999	8	24.9	7.15	-43	0.267	0	NM
	8/8/2000	6	24.3	7.5	-37	0.241	2	0.07
	8/8/2001	6	24.5	8.11	-243.3	0.29	0.85	10.21
	8/7/2002	8	26.3	8.76	-41	0.341	3.1	3.53
	8/5/2003	8	23.90	8	-143	0.255	1.9	4.77
KBA-11-15	8/3/1999	6	25	4.9	-182	0.677	9	NM
	2/7/2000	7	20.8	5.04	-313	0.536	5	1.43
	8/9/2000	6	24.2	5.7	-91	0.694	3	0.13
	8/9/2001	6	22.7	5.9	-204.8	0.97	10	8.83
	8/7/2002	8	24.57	7.62	24	0.775	2.7	5.54
	8/5/2003	8	23.40	5.6	-40	0.468	0.5	5.6

ft = feet
msl = above mean sea level
btoc = below top of casing

Table 2
Well Purge Parmeters

Well Identification	Date	Volume Purged (gal)	Temperature (°C)	pH	ORP (mV)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)
KBA-11-16	8/3/1999	7	26.8	4.76	-111	0.171	35	NM
	11/9/1999	8	24	4.89	-104	0.263	20	0.57
	2/7/2000	7	22.8	5.4	-275	0.364	8	1.09
	5/4/2000	6	23.6	6.1	NM	0.146	10	3.7
	8/9/2000	6	24.6	5.6	-67.7	0.331	1	0.06
	11/8/2000	6	25.02	5.02	-102	0.302	4	0.15
	2/6/2001	6	23.4	4.92	-111	0.345	2	0.03
	5/2/2001	6	23.1	4.17	-123	0.411	7	7.3
	8/9/2001	8	24.4	5.58	-248.1	0.394	4	8.68
	11/7/2001	8	23.6	4.79	-54	0.387	4.8	0.8
	2/6/2002	6	24.64	4.94	-140	0.28	0.7	2.3
	5/7/2002	6	24.41	4.81	-170	0.188	6.5	0
	8/7/2002	8	27.44	8.36	-45	0.449	1.1	10.45
	11/5/2002	8	25.29	5.82	-147	0.339	-0.3	4.3
	2/5/2003	8	20.80	5.22	-199	0.326	4.5	4.92
	5/5/2003	8	23.5	5.2	-170	0.369	60.8	2.38
	8/6/2003	8	24.60	5.26	-150	0.299	1.7	3.28
	11/4/2003	8	25.50	5.25	-148	0.277	2.4	8.67
	2/4/2004	8	19.11	5.26	-190	0.306	2.4	16.19
	5/4/2004	8	23.30	5.11	-194	0.332	8.64	2.91
	8/4/2004	8	26.30	5.19	-177	0.403	4.2	3.36
	11/2/2004	8	25.97	5.16	-156	0.219	22.9	3.08
	2/8/2005	8	23.64	5.25	-187	0.202	12.2	9.24
	5/3/2005	8	25.26	5.36	-106	0.22	20.4	3.26
	8/2/2005	8	24.66	9.48*	-147	0.266	0.5	4.3
	9/7/2005	4	24.82	5.61	-65	0.100	3.6	6.16
	11/1/2005	8	25.56	4.51	-161	0.326	29.2	3.27
	1/31/2006	8	21.89	5.34	-146	0.180	13.6	5.66
	5/4/2006	8	24.36	5.87	-88	0.355	19.3	16.3
	8/2/2006	8	25.22	5.05	-70	0.378	15.7	2.76
	11/15/2006	8	24.78	5.04	-110	0.380	35.8	2.94
KBA-11-17B	8/3/1999	8	24.7	4.48	-112	0.118	6	NM
	2/7/2000	7	21.9	5.4	-287	0.135	3	1.08
	8/9/2000	6	24.3	6.8	-101	0.073	2	0.01
	8/9/2001	6	23.6	5.46	-178.4	0.118	10	8.7
	8/7/2002	8	25.88	7.14	58	0.583	2	3.35
	8/5/2003	8	24.90	4.91	-1	0.331	0.5	3.98

ft = feet
msl = above mean sea level
btoc = below top of casing

Table 2
Well Purge Parmeters

Well Identification	Date	Volume Purged (gal)	Temperature (°C)	pH	ORP (mV)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)
KBA-11-34	8/3/1999	6	30.5	3.2	-300	2.36	13	NM
	11/9/1999	8	27.2	3.58	-134	2.26	9	0.44
	2/7/2000	8	24.9	2.81	-184	2.19	9	2.43
	5/4/2000	6	25.8	3.9	-119	1.36	10	5.85
	8/8/2000	6	27.8	3.7	-315	1.78	38	0.02
	11/8/2000	6	26.03	3.51	-189	1.73	44	1.73
	2/8/2001	6	26.9	3.8	-249	1.69	4	0.06
	5/3/2001	8	25.2	3.88	-113	1.48	3	6.96
	8/9/2001	6	27.5	4.35	-152.5	1.07	12	8.77
	11/7/2001	6	25.3	3.7	-404	0.652	4.7	19.99
	2/6/2002	6	28.08	3.45	-322	1.28	0.5	8.45
	5/8/2002	8	27.12	3.65	-260	1.1	4.5	0
	8/8/2002	8	27.89	5.05	112	1.02	5.3	3.32
	11/5/2002	8	26.83	4.85	97	0.913	0.3	4.95
	2/5/2003	8	24.3	3.94	-161	0.783	42.4	2.64
	5/5/2003	8	26.3	3.97	210	0.898	36.3	0.7
	8/6/2003	8	25.2	4.51	37	0.603	8.6	3.01
	11/4/2003	8	26.02	4.25	37	0.47	47.7	3.6
	2/4/2004	8	18.02	4.49	-26	0.504	2.3	16.37
	5/4/2004	8	23.91	4.51	-34	0.509	47.1	4.98
	8/4/2004	8	24.40	4.71	-52	0.777	141	4.52
	11/2/2004	8	25.15	4.71	-67	0.35	99	8.71
	2/8/2005	8	23.90	4.97	-91	0.29	9.3	8.27
	5/4/2005	8	23.43	5.1	-61	0.28	26.9	4.72
	8/2/2005	8	24.21	8.89*	-88	0.354	14.8	4.23
	9/7/2005	4	24.41	5.19	-85	0.241	74.3	8.76
	11/2/2005	8	23.54	4.76	-80	0.379	41.2	2.59
	1/31/2006	8	22.78	5.34	-40	0.172	0	6.57
	5/4/2006	8	24.41	5.6	-28	0.345	17.0	**
	8/2/2006	8	24.70	5.31	-33	0.342	30.5	3.59
	11/15/2006	8	24.14	5.27	-65	0.356	8.1	3.25

ft = feet
msl = above mean sea level
btoc = below top of casing

Table 2
Well Purge Parmeters

Well Identification	Date	Volume Purged (gal)	Temperature (°C)	pH	ORP (mV)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)
KBA-11-37	8/16/1999	9	25.5	5.52	-227	0.517	15	NM
	11/9/1999	8	24.2	5.37	-200	0.573	12	0.46
	2/8/2000	8	21.3	6.1	-323	0.562	6	1.45
	5/4/2000	6	24	6.3	NM	0.517	10	1.75
	8/9/2000	6	24.6	6.2	-119	0.551	3	0.03
	11/8/2000	6	26.2	5.67	-73	0.533	4.3	0.86
	2/7/2001	6	22.5	5.5	-73	0.559	9	0.1
	5/2/2001	8	24.2	5.41	-139	0.595	30	8.55
	8/9/2001	6	25.5	6.28	-248.8	0.587	10	9.61
	11/7/2001	8	23.7	5.57	-72	0.618	0.5	1.75
	2/5/2002	6	24.68	5.56	-147	0.395	0.7	1.27
	5/7/2002	6	24.15	5.47	-155	0.231	6.01	0
	11/5/2002	8	24.95	5.96	-120	0.365	2.2	3.20
	2/5/2003	8	21.1	5.94	-148	0.310	2.5	5.09
	8/6/2003	8	24.7	5.83	-114	0.3	7.3	2.92
	11/4/2003	8	24.64	5.69	-125	0.312	4.4	2.48
	2/4/2004	8	18.08	5.72	-166	0.332	18.9	10.66
	5/4/2004	8	24.18	5.83	-125	0.388	6.0	4.82
	8/4/2004	8	25.30	5.80	-86	0.491	26.9	4.93
	11/2/2004	8	24.69	5.64	-123	0.282	4.1	4.15
	2/8/2005	8	22.34	5.89	-113	0.247	12.8	7.52
	5/3/2005	8	23.40	6.04	-90	0.249	2.3	4.97
	8/2/2005	8	24.81	9.19*	-114	0.328	1.5	3.98
	9/7/2005	4	24.41	5.83	-103	0.236	3.6	6.17
	11/1/2005	8	24.52	4.67	-114	0.379	9.3	2.71
	1/31/2006	8	20.91	5.84	-96	0.204	2.2	4.65
	5/4/2006	8	24.16	6.48	-85	0.401	6.2	**
	8/2/2006	8	24.74	5.74	-45	0.413	3.6	2.97
	11/15/2006	8	24.10	5.66	-117	0.431	2.5	1.75

ft = feet
msl = above mean sea level
btoc = below top of casing

Table 2
Well Purge Parmeters

Well Identification	Date	Volume Purged (gal)	Temperature (°C)	pH	ORP (mV)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)
PS-2	8/18/1999	7	23.2	4.95	-213	0.381	10	NM
	11/9/1999	8	22	4.87	-144	0.363	2	0.35
	2/7/2000	8	19.5	4.93	-387	0.355	10	1.43
	5/3/2000	6	21.6	5.7	NM	0.317	10	1.3
	8/8/2000	6	23	5	-108	0.3	2	0.04
	11/8/2000	6	24.2	5.4	-92	0.298	4	0.48
	2/7/2001	6	17.7	5.24	-90	0.29	3	0.03
	5/2/2001	8	21.7	5.42	-123	0.327	1	7.8
	8/9/2001	6	23.1	5.8	-223.5	0.318	5	9.84
	11/7/2001	8	21.2	5.06	-33	0.334	0.2	1.64
	2/6/2002	6	22.85	5.24	-120	0.286	0.7	0.8
	5/6/2002	6	22.1	4.98	-105	0.163	9.9	0
	11/5/2002	8	22.55	5.61	2	0.312	7.3	4.62
	2/5/2003	8	20.40	5.48	-160	0.325	3.9	2.10
	5/5/2003	8	23.6	5.52	-150	0.372	46.2	1.5
	8/5/2003	8	22.90	5.55	-115	0.293	29.9	3.44
	11/4/2003	8	22.71	5.45	-100	0.274	13.8	3.64
	2/4/2004	8	14.92	5.46	-13	0.344	9.2	5.44
	5/4/2004	8	24.18	5.83	-125	0.388	6.06	4.82
	8/4/2004	8	22.40	5.46	-128	0.549	125	3.78
	11/2/2004	8	22.46	5.15	-123	0.252	24.4	8.85
	2/8/2005	8	20.55	5.52	-133	0.239	14.9	7.96
	5/3/2005	8	20.52	5.53	-47	0.239	1.3	5.51
	8/2/2005	8	22.59	9.40*	-131	0.298	6.5	2.55
	9/7/2005	4	22.19	5.40	-78	0.245	3.8	6.35
	11/1/2005	8	22.01	4.82	-92	0.352	13.6	3.64
	1/31/2006	8	19.31	5.64	-85	0.215	13.6	5.37
	5/3/2006	8	23.32	5.55	-13	0.437	25.3	7.88
	8/2/2006	8	22.37	5.56	-28	0.426	12.5	4.08
	11/15/2006	8	21.69	5.41	-95	0.428	14.2	3.30

* pH data in August 2005 is suspect due to malfunctioning pH meter.
** DO reading not reported due to malfunctioning DO meter

ft = feet
msl = above mean sea level
btoc = below top of casing

Table 3
Analytical Summary, Groundwater Protection Standard Compounds

KBA-11-02																					
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Total Chorinated Ethenes	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene	Nickel (mg/L)	Cobalt (mg/L)
8/3/1999	3.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	7.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	NA	NA	NA	NA	NA
11/9/1999	3.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	7.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	20U	50U	NA	NA	NA
2/4/2000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5U	5U	NA	NA	NA
5/3/2000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5U	5U	NA	NA	NA
11/8/2000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA	NA	NA
2/6/2001	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA	NA	NA
5/2/2001	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	0.1	1.0U	1.0U	5.0U	5.0U	NA	NA	NA
8/8/2001	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA	NA	NA
11/7/2001	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	10U	4.8JB	NA	NA
2/6/2002	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	1.0U	NA	NA
5/7/2002	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	1.0U	0.00137	0.00137
8/6/2002	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	1.0U	0.0012	0.000036
11/5/2002	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U	NA	NA
11/4/2003	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U	NA	NA
Criteria	5.0	5.0	70	100	7.0	1.0	5.0	2.0	1.0	100.0	5.0	700	1,000	10,000	1.0	75	---	---	---	0.1	---

Notes:
unless otherwise noted, units are expressed in milligrams per liter
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 and highlight indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Not analyzed
Total Chlorinated Ethenes = summation of tetrachloroethene, trichloroethene, cis-1,2 dichlorethene, trans-1,2 dichloroethene, and vinyl chloride
In calculating Total Chlorinated Ethenes concentrations (where some detectable concentartions are present), non-detectable conecntrations were assumed to be zero
This monitoring well has met the exit criteria stated in the GADNR approved *Groundwater Monitoring Plan* (Bechtel, 1999) and is no longer being sampled.

Table 3
Analytical Summary, Groundwater Protection Standard Compounds

KBA-11-10B																					
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Total Chlorinated Ethenes	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene	Nickel (mg/L)	Cobalt (mg/L)
8/2/1999	3.0U	1.0U	1.6I	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.6	1.6	10	1.0U	3.0U	**2.5**	1.5	20U	50U	NA	NA	NA
8/8/2000	1.0U	1.0U	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0	1.0	5.0	1.0U	3.0U	1.0	1.0	10U	50U	NA	NA	NA
8/9/2001	1.0U	1.0U	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0	0.57J	2.5	1.0U	3.0U	**1.2**	0.76J	25U	50U	NA	NA	NA
8/7/2002	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.1	1.0U	3.0U	1.0U	75	10U	50U	1.0U	0.00065B	0.00003
8/5/2003	1.0U	1.0U	0.49J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	0.49	0.32J	0.91J	1.0U	3.0U	0.90J	1.1J	10U	50U	10U	NA	NA
5/4/2004	1.0U	1.0U	0.73J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	0.42J	1.3	1.0U	3.0U	**1.2**	1.5	10U	2.1J	1.3	NA	NA
5/3/2005	1.0U	1.0U	0.80J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	0.80J	0.54J	1.4	0.21J	3.0U	**1.2**	1.3	10U	2.6J	0.34J	NA	NA
5/4/2006	1.0U	1.0U	0.42J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	0.42J	0.32J	0.47J	1.0U	3.0U	0.87J	1.5	10U	16J	1.3J	NA	NA
Criteria	5.0	5.0	70	100	7.0	1.0	5.0	2.0	1.0	100.0	5.0	700	1,000	10,000	1.0	75	---	---	---	0.1	---

Notes:
unless otherwise noted, units are expressed in milligrams per liter
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 and highlight indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Not analyzed
Total Chlorinated Ethenes = summation of tetrachloroethene, trichloroethene, cis-1,2 dichlorethene, trans-1,2 dichloroethene, and vinyl chloride
In calculating Total Chlorinated Ethenes concentrations (where some detectable concentartions are present), non-detectable conecntrations were assumed to be zero
This monitoring well is being sampled annually for GWPS constituents as required by the GADNR approved *Groundwater Monitoring Plan* (Bechtel, 1999).

Table 3
Analytical Summary, Groundwater Protection Standard Compounds

KBA-11-11A (Background Monitoring Well)

Date	Tetrachloroethene	Trichloroethene	Cis-1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Total Chlorinated Ethenes	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene	Nickel (mg/L)	Cobalt (mg/L)
8/2/1999	3.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	7.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	20U	50U	NA	NA	NA
8/10/2000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0	5.0	1.0U	1.0U	1.0	1.0	20U	50U	NA	NA	NA
8/8/2001	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA	NA	NA
8/6/2002	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	1.0U	0.001B	0.00035B
5/6/2003	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	5.2U	0.000295B	0.030U
5/5/2004	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	5.0U	0.000130U	0.000039U
5/5/2004	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U	NA	NA
5/4/2005	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	4.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	5.2U	0.000114B	0.000047U
5/3/2006	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	4.0U	1.0U	1.0U	1.0U	0.21J	1.0U	1.0U	10U	50U	5.2U	0.000690U	0.000041U
Criteria	5.0	5.0	70	100	7.0	1.0	5.0	2.0	1.0	100.0	5.0	700	1,000	10,000	1.0	75	---	---	---	0.1	---

Notes:
unless otherwise noted, units are expressed in milligrams per liter
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 and highlight indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Not analyzed
Total Chlorinated Ethenes = summation of tetrachloroethene, trichloroethene, cis-1,2 dichlorethene, trans-1,2 dichloroethene, and vinyl chloride
In calculating Total Chlorinated Ethenes concentrations (where some detectable concentartions are present), non-detectable conecntrations were assumed to be zero
This monitoring well is being sampled annually as a background reference point for GWPS and Appendix IX constituents as required by the GADNR approved *Groundwater Monitoring Plan* (Bechtel, 1999).

Table 3
Analytical Summary, Groundwater Protection Standard Compounds

KBA-11-13A																					
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Total Chlorinated Ethenes	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene	Nickel (mg/L)	Cobalt (mg/L)
8/3/1999	3.0U	**19**	**190**	7.4	1.0U	1.0U	1.0U	**48**	1.0U	**264.4**	1.1I	66	2.7	14.4	**6.2**	4.0	20U	50U	NA	NA	NA
11/9/1999	30U	15I	**260**	1.0U	1.0U	1.0U	1.0U	**46**	1.0U	**321**	1.0U	65	1.0U	24I	1.0U	1.0U	200U	500U	NA	NA	NA
11/9/1999 (dup)	3.0U	**17**	**210**	6.6	1.0U	1.0U	1.0U	**42**	1.0U	**275.6**	1.3I	92	4.2	49	**8.2**	5.2	20U	50U	NA	NA	NA
2/4/2000	1.0U	**14**	**230**	6.0	1.0U	1.0U	1.0U	**20**	1.0U	**270**	2.0	64	2.0	23	**6.0**	4.0	5U	4.0J	NA	NA	NA
5/3/2000	1.0U	**20**	**180**	6.0	1.0U	1.0U	1.0U	**19**	1.0U	**225**	2.0	67	2.0	4.0	**5.0**	3.0	5U	5U	NA	NA	NA
8/10/2000	1.0U	**51**	300E	9.0	1.0U	1.0U	1.0U	**17**	1.0U	**377**	1.0	71	0.9	0.7	**5.0**	3.0	20U	50U	NA	NA	NA
8/10/2000 (dup)	1.0U	**40**	**190**	7.0	1.0U	1.0U	1.0U	**11**	1.0U	**248**	1.0	51	0.7	3.0	**4.0**	2.0	10U	50U	NA	NA	NA
11/8/2000	3.0U	**54**	**160**	7.0	1.0U	1.0U	1.0U	**4.0**	1.0U	**225**	1.0	57	1.0U	2.0U	**5.0**	3.0	10U	33J	NA	NA	NA
2/8/2001	0.8	**45**	**110**	8.0	1.0U	1.0U	1.0U	0.9	1.0U	**164.7**	1.0	34	1.0U	3.0U	**3.0**	1.0U	25U	47J	NA	NA	NA
5/3/2001	0.59J	**37**	**88**	6.6	1.0U	1.0U	1.0U	0.9	1.0U	**133.09**	0.33J	20	0.46J	0.33J	**2.4**	1.4	5.0U	52	NA	NA	NA
8/8/2001	1.6	**32**	**71**	6.4	0.44J	1.0U	1.0U	1.0U	1.0U	**111**	0.43J	22	0.43J	0.56J	**3.1**	1.4	25U	50U	NA	NA	NA
8/8/2001 (dup)	0.77J	**26**	59	5.4	1.0U	1.0U	1.0U	1.0U	1.0U	91.17	0.31J	14	0.30J	0.37J	**2.1**	1.4	25U	50U	NA	NA	NA
11/7/2001	0.86J	**24**	52	4.7	1.0U	1.0U	1.0U	1.0U	1.0U	81.56	0.36J	16	0.28J	3.0U	**2.6**	2.1B	5.0U	10U	30	NA	NA
11/7/2001 (dup)	0.66J	**20**	44	4.0	1.0U	1.0U	1.0U	1.0U	1.0U	68.66	0.34J	14	0.24J	3.0U	**2.3**	1.7B	5.0U	10U	29B	NA	NA
2/6/2002	1.6	**21**	43	4.1	1.0U	1.0U	1.0U	1.0U	1.0U	69.7	1.0U	9.0	1.0U	3.0U	**3.1**	2.0B	25U	50U	38B	NA	NA
2/6/2002 (dup)	1.6	**20**	42	4.2	1.0U	1.0U	1.0U	1.0U	1.0U	67.8	1.0U	8.5	1.0U	3.0U	**3.0**	1.9B	25U	50U	37B	NA	NA
5/8/2002	5.0	**17**	28	3.1	1.0U	1.0U	1.0U	1.0U	1.0U	53.1	1.0U	6	0.37J	3.0U	**2.2**	1.8	25U	50U	29	**0.58**	0.4
5/2/2002 (dup)	3.8	**16**	26	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	45.8	1.0U	5.8	0.34J	3.0U	**1.9**	1.7	25U	50U	25	**0.55**	0.38
8/6/2002	**14**	**16**	25	2.5	1.0U	1.0U	1.0U	1.0U	1.0U	57.5	1.0U	5.4	1.0U	3.0U	**1.8**	1.7	10U	50U	NA	**0.49**	0.36
8/6/2002 (dup)	**13**	**15**	23	2.5	1.0U	1.0U	1.0U	1.0U	1.0U	53.5	1.0U	5.1	1.0U	3.0U	**1.6**	1.6	10U	50U	22	**0.45**	0.33
11/6/2002	**20**	**10**	13	1.1	1.0U	1.0U	1.0U	1.0U	1.0U	44.1	1.0U	5.1	1.0U	3.0U	**1.4**	1.5	10U	50U	31	NA	NA
11/6/2002 (dup)	**26**	**9.6**	12	1.1	1.0U	1.0U	1.0U	1.0U	1.0U	48.7	1.0U	5.2	1.0U	3.0U	**1.5**	1.5	10U	50U	37	NA	NA
2/5/2003	**23**	**8.8**	12	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	43.8	1.0U	3.7	1.0U	3.0U	**1.2**	1.0	10U	50U	11	NA	NA

Table 3
Analytical Summary, Groundwater Protection Standard Compounds

KBA-11-13A																					
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Total Chlorinated Ethenes	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene	Nickel (mg/L)	Cobalt (mg/L)
2/5/2003 (dup)	1.2	1.1	1.4	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.7	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	1.0U	NA	NA
5/6/2003	**44**	**22**	60	1.7	1.0U	1.0U	1.0U	1.0U	1.0U	**127.7**	1.0U	2.9	0.36J	3.0U	1.0	0.99J	10U	50U	5.6	0.0822	0.0291
5/6/2003 (dup)	**45**	**22**	60	1.8	1.0U	1.0U	1.0U	1.0U	1.0U	**128.8**	1.0U	2.9	0.40J	3.0U	0.98J	1.4	10U	50U	9.4J	NA	NA
8/6/2003	**13**	**6.1**	7.0	0.63	1.0U	1.0U	1.0U	1.0U	1.0U	26.73	1.0U	3.0	0.36J	3.0U	**1.3**	1.3	10U	50U	19	NA	NA
8/6/2003 (dup)	**20**	**8.4**	7.8	0.69J	1.0U	1.0U	1.0U	1.0U	1.0U	36.89	1.0U	3.0	0.39J	3.0U	**1.1**	1.1	10U	50U	14	NA	NA
11/5/2003	**26**	**7.8**	5.6	0.53	1.0U	1.0U	1.0U	1.0U	1.0U	39.93	1.0U	2.4	0.40J	3.0U	1.0J	1.1	10U	4.0J	6.4	NA	NA
11/5/2003 (dup)	**27**	**8.1**	5.7	0.59	1.0U	1.0U	1.0U	1.0U	1.0U	41.39	1.0U	3.0U	0.44J	3.0U	1.0J	0.98J	10U	3.6J	5.6J	NA	NA
2/4/2004	**16**	**7.4**	6.7	0.54J	1.0U	1.0U	1.0U	1.0U	1.0U	30.64	1.0U	1.8	0.37J	3.0U	0.81J	0.90J	10U	50U	10	NA	NA
2/4/2004 (dup)	**15**	**7.3**	6.9	0.57J	1.0U	1.0U	1.0U	1.0U	1.0U	29.77	1.0U	1.8	0.38J	3.0U	0.80J	0.93J	10U	50U	11	NA	NA
5/5/2004	**17**	**9.6**	12	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	39.60	1.0U	1.5	0.39J	0.42J	0.81J	0.80J	10U	50U	7.1	0.0262	0.00771
5/5/2004 (dup 1)	**17**	**8.3**	10	0.90J	1.0U	1.0U	1.0U	1.0U	1.0U	36.20	1.0U	1.5	0.43J	0.50J	0.77J	0.80J	10U	2.8J	7.3J	NA	NA
5/5/2004 (dup 2)	**17**	**8.4**	11	0.87J	1.0U	1.0U	1.0U	1.0U	1.0U	37.27	1.0U	1.5	0.42J	0.44J	0.79J	0.77J	10U	2.2J	6.8J	NA	NA
8/4/2004	**18**	**8.7**	20	1.2	1.0U	1.0U	1.0U	1.0U	1.0U	47.90	1.0U	1.6	0.38J	0.41J	0.83J	0.71J	10U	50U	7.4J	NA	NA
8/4/2004 (dup)	**19**	**8.4**	20	1.2	1.0U	1.0U	1.0U	1.0U	1.0U	48.60	1.0U	1.6	0.39J	0.43J	0.83J	0.70J	10U	50U	8.2J	NA	NA
11/3/2004	**34**	**9.7**	17	1.1	0.32J	1.0U	1.0U	1.0U	1.0U	61.80	1.0U	1.4	0.46J	0.491J	0.84J	0.79J	10U	6.0J	6.4J	NA	NA
11/3/2004 (dup)	**35**	**10**	17	1.1	0.31J	1.0U	1.0U	1.0U	1.0U	63.10	1.0U	1.4	0.45J	0.32J	0.82J	0.74J	10U	50U	6.9J	NA	NA
2/9/2005	**43**	**11**	20	0.96J	0.30J	1.0U	1.0U	1.0U	1.0U	74.96	1.0U	1.3	0.47J	0.49J	0.87J	0.69J	10U	4.2J	6.7J	NA	NA
2/9/2005 (dup)	**54**	**11**	20	0.95J	0.29J	1.0U	1.0U	1.0U	1.0U	85.95	1.0U	1.4	0.46J	0.53J	0.90J	0.80J	10U	3.0J	7.6J	NA	NA
5/4/2005	**61**	**11**	36	0.95J	1.0U	1.0U	1.0U	1.0U	1.0U	**108.95**	1.0U	0.99J	0.47J	0.28J	0.71J	0.55J	10U	2.5J	3.4J	0.0129	0.00306
5/4/2005 (dup)	**74**	**12**	37	1.1	1.0U	1.0U	1.0U	1.0U	1.0U	**124.10**	1.0U	1.2	0.44J	1.49	0.79J	0.68J	10U	50U	1.7J	NA	NA
8/3/2005	**22**	**9.3**	15	0.56J	1.0U	1.0U	1.0U	1.0U	1.0U	46.86	1.0U	1.1	0.36J	3.0U	0.96J	0.85J	10U	50U	8.7J	NA	NA
8/3/2005 (dup)	**18**	**8.2**	15	0.52J	1.0U	1.0U	1.0U	1.0U	1.0U	41.72	1.0U	1.1	0.39J	1.44	0.93J	0.84J	10U	3.4J	9.3J	NA	NA
11/2/2005	**26**	**8.6**	21	0.56J	1.0U	1.0U	1.0U	1.0U	1.0U	56.16	1.0U	1.3	0.50J	3.0U	**1.2**	0.92J	10U	5.3J	19	NA	NA

Table 3
Analytical Summary, Groundwater Protection Standard Compounds

KBA-11-13A

Date	Tetrachloroethene	Trichloroethene	Cis-1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Total Chlorinated Ethenes	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene	Nickel (mg/L)	Cobalt (mg/L)
11/2/2005 (dup)	**29**	**8.9**	23	0.53J	1.0U	1.0U	1.0U	1.0U	1.0U	61.43	1.0U	1.2	0.49J	3.0U	**1.1**	0.91J	10U	50U	18	NA	NA
2/1/2006	**15**	**8.8**	21	0.80J	0.34J	1.0U	1.0U	1.0U	1.0U	45.60	1.0U	1.3	0.40J	0.34J	**1.1**	1.2	10U	50U	13	NA	NA
2/1/2006 (dup)	**15**	**8.9**	23	0.87J	0.30J	1.0U	1.0U	1.0U	1.0U	47.77	1.0U	1.2	0.41J	0.56J	**1.2**	1.3	10U	50U	13	NA	NA
5/3/2006	**11**	**6.7**	33	1.1	1.0U	1.0U	1.0U	1.0U	1.0U	50.70	1.0U	0.59J	0.33J	0.20J	0.76J	1.0U	10U	4.6J	4.1J	NA	NA
5/3/06 (dup 1)	**13**	**8.5**	33	1.2	0.30J	1.0U	1.0U	1.0U	1.0U	54.50	1.0U	0.74J	0.37J	0.508J	0.85J	0.83J	10U	9.1J	4.8J	NA	NA
5/3/06 (dup 2)	**14**	**8.5**	36	1.3	0.35J	1.0U	1.0U	1.0U	1.0U	58.50	1.0U	0.77J	0.37J	0.38J	0.84J	0.82J	10U	7.6J	7.7J	NA	NA
8/3/2006	**6.6**	**6.9**	24	0.90J	0.43J	1.0U	1.0U	1.0U	1.0U	38.4	1.0U	0.80J	0.29J	0.22J	0.77J	1.0U	10U	50U	8.7J	NA	NA
8/3/06 (dup)	**7.4**	**7.3**	24	0.84J	0.47J	1.0U	1.0U	1.0U	1.0U	39.54	1.0U	0.76J	0.32J	0.25J	0.79J	0.75J	10U	3.1J	9.3J	NA	NA
11/16/2006	**6.8**	**8.8**	32	1.2	0.48J	1.0U	1.0U	1.0U	1.0U	48.8	1.0U	1.1	0.40J	0.29J	**1.3**	1.3	10U	50U	8.4J	NA	NA
11/16/2006 (dup)	**7.8**	**9.6**	36	1.4	0.47J	1.0U	1.0U	0.16J	1.0U	54.96	1.0U	1.0	0.40J	0.27J	**1.2**	1.2	10U	50U	8.5J	NA	NA
Criteria	5.0	5.0	70	100	7.0	1.0	5.0	2.0	1.0	100.0	5.0	700	1,000	10,000	1.0	75	---	---	---	0.1	---

Notes:
unless otherwise noted, units are expressed in milligrams per liter
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 and highlight indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA - Not analyzed
Total Chlorinated Ethenes = summation of tetrachloroethene, trichloroethene, cis-1,2 dichlorethene, trans-1,2 dichloroethene, and vinyl chloride
In calculating Total Chlorinated Ethenes concentrations (where some detectable concentartions are present), non-detectable conecntrations were assumed to be zero
This monitoring well is being sampled quarterly for GWPS and annually for Appendix IX constituents as required by the GADNR approved *Groundwater Monitoring Plan* (Bechtel, 1999).

Table 3
Analytical Summary, Groundwater Protection Standard Compounds

KBA-11-13B																					
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Total Chlorinated Ethenes	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Napthalene	Nickel (mg/L)	Cobalt (mg/L)
8/3/1999	3.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	7.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	20U	50U	NA	NA	NA
8/8/2000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA	NA	NA
8/8/2001	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA	NA	NA
8/7/2002	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	1.0U	0.016	0.00037B
8/5/2003	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U	NA	NA
Criteria	5.0	5.0	70	100	7.0	1.0	5.0	2.0	1.0	100.0	5.0	700	1,000	10,000	1.0	75	---	---	---	0.1	---

Notes:
unless otherwise noted, units are expressed in milligrams per liter
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 and highlight indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA - Not analyzed
Total Chlorinated Ethenes = summation of tetrachloroethene, trichloroethene, cis-1,2 dichlorethene, trans-1,2 dichloroethene, and vinyl chloride
In calculating Total Chlorinated Ethenes concentrations (where some detectable concentartions are present), non-detectable conecntrations were assumed to be zero
This monitoring well has met the exit criteria stated in the GADNR approved *Groundwater Monitoring Plan* (Bechtel, 1999) and is no longer being sampled.

Table 3
Analytical Summary, Groundwater Protection Standard Compounds

KBA-11-15																					
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Total Chlorinated Ethenes	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Napthalene	Nickel (mg/L)	Cobalt (mg/L)
8/3/1999	3.0U	3.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	9.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	20U	50U	1.0U	NA	NA
2/7/2000	1.0	1.0	1.0U	0.9I	1.0U	1.0U	1.0U	1.0U	1.0U	2.9	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	5U	5U	1.0U	NA	NA
2/7/2000 (dup)	1.0	1.0	1.0U	1.0	1.0U	1.0U	1.0U	1.0U	1.0U	3.0	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	5U	5U	1.0U	NA	NA
8/9/2000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	10U	50U	1.0U	NA	NA
8/9/2001	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	25U	50U	1.0U	NA	NA
8/7/2002	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	10U	50U	1.0U	0.000092B	1.0U
8/5/2003	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	10U	50U	1.0U	NA	NA
Criteria	5.0	5.0	70	100	7.0	1.0	5.0	2.0	1.0	100.0	5.0	700	1,000	10,000	1.0	75	---	---	---	0.1	---

Notes:
unless otherwise noted, units are expressed in milligrams per liter
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 and highlight indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Not analyzed
Total Chlorinated Ethenes = summation of tetrachloroethene, trichloroethene, cis-1,2 dichlorethene, trans-1,2 dichloroethene, and vinyl chloride
In calculating Total Chlorinated Ethenes concentrations (where some detectable concentartions are present), non-detectable conecntrations were assumed to be zero
This monitoring well has met the exit criteria stated in the GADNR approved *Groundwater Monitoring Plan* (Bechtel, 1999) and is no longer being sampled.

Table 3
Analytical Summary, Groundwater Protection Standard Compounds

KBA-11-16																					
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Total Chlorinated Ethenes	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene	Nickel (mg/L)	Cobalt (mg/L)
8/3/1999	3.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	6.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	20U	50U	NA	NA	NA
11/9/1999	3.0U	1.0U	3.6	1.0U	1.0U	1.6I	1.0U	1.4I	1.0U	5.0	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	20U	50U	NA	NA	NA
2/7/2000	1.0U	1.0U	14	1.0U	1.0U	**5.0**	1.0U	1.0	1.0U	15.0	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5U	5U	NA	NA	NA
5/4/2000	1.0U	1.0U	2.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	2.0	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5U	5U	NA	NA	NA
5/4/2000 (dup)	1.0U	1.0U	2.0	1.0U	1.0U	0.6U	1.0U	1.0U	1.0U	2.0	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5U	5U	NA	NA	NA
8/9/2000	1.0U	1.0U	2.0	1.0U	1.0U	**2.0**	1.0U	1.0U	1.0U	2.0	1.0U	0.8J	1.0U	3.0U	1.0U	1.0U	10U	50U	NA	NA	NA
11/8/2000	2.0	1.0U	8.0	1.0U	1.0U	**2.0**	1.0U	1.0U	1.0U	10.0	1.0U	1.0U	3.0U	3.0U	1.0U	1.0U	4J	4J	NA	NA	NA
2/6/2001	1.0U	1.0U	34	1.0U	1.0U	**11**	1.0U	**4.0**	1.0U	38.0	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	9J	12J	NA	NA	NA
5/2/2001	1.0U	0.31J	32	1.0U	1.3	**15**	1.0U	**3.4**	1.0U	35.71	0.96J	0.99J	5.4	0.86J	1.0U	1.0U	31	22	NA	NA	NA
8/9/2001	1.0U	0.42J	30	1.0U	1.8	**26**	1.0U	1.1	1.0U	31.52	1.2	1.8	15	1.7J	1.0U	1.0U	29	22J	NA	NA	NA
11/7/2001	1.0U	0.72J	28	1.0U	1.7	**32**	1.0U	1.1	1.0U	29.82	1.2	2.4	26	3.1	1.0U	1.0U	39	44	1.0U	NA	NA
2/6/2002	1.0U	1.3	46	1.0U	1.0U	**31**	1.0U	1.0U	1.0U	47.3	1.1	3.2	28	5.3	1.0U	1.0U	78	110	1.0U	NA	NA
5/7/2002	0.38J	1.4	32	1.0U	2.3	**37**	1.0U	1.0U	1.0U	33.78	0.92J	4.2	25	6.4	1.0U	1.0U	55	92	1.0U	0.0014J	0.001U
8/7/2002	1.0U	1.0U	24	1.1	1.6	**27**	1.0U	1.0U	1.0U	25.1	1.0	2.9	15	5.2	1.0U	1.0U	83	98	0.9	0.0027	0.000034B
11/5/2002	1.0U	1.3	33	1.0U	2.5	**50**	1.0U	1.0U	1.0U	34.3	1.0U	5.7	29	10.5	1.0U	1.0U	65	110	10U	NA	NA
2/5/2003	1.0U	1.0U	28	1.0U	2.5	**46**	1.0U	1.0U	1.0U	28.0	1.0U	5.0	25	9.7	1.0U	1.0U	65	94	1.0U	NA	NA
5/7/2003	0.74J	0.88J	39	1.0U	3.0	**37**	1.0U	1.0U	1.0U	40.6	0.90J	4.3	28	13.2	1.0U	1.0U	61	100	10U	NA	NA
8/6/2003	0.53J	0.48J	27	1.0U	2.4	**23**	1.0U	1.0U	1.0U	28.0	0.67J	3.6	21	7.4	1.0U	1.0U	33	78	10U	NA	NA
11/4/2003	0.61J	0.54J	26	1.0U	2.3	**21**	1.0U	1.0U	1.0U	27.15	0.83J	4.2	21	8.2	1.0U	1.0U	28	51	10U	NA	NA
2/4/2004	0.45J	0.36J	15	1.0U	1.9	**14**	1.0U	1.0U	1.0U	15.81	0.81J	3.5	13	5.5	1.0U	1.0U	11	22J	10U	NA	NA
5/4/2004	0.62J	0.40J	13	1.0U	1.4	**11**	1.0U	1.0U	1.0U	14.02	0.82J	4.9	13	7.2	1.0U	1.0U	7.5J	16J	10U	NA	NA
8/4/2004	0.43J	1.0U	7.5	1.0U	0.80J	**5.6**	1.0U	1.0U	1.0U	7.93	0.54J	3.2	5.5	5.0	1.0U	1.0U	2.5J	9.1J	0.51J	NA	NA
11/2/2004	0.40J	0.33J	13	1.0U	1.3	**8.2**	1.0U	1.0U	1.0U	13.73	0.79J	3.9	11	6.8	0.13J	1.0U	10U	15J	0.19J	NA	NA

Table 3
Analytical Summary, Groundwater Protection Standard Compounds

KBA-11-16																					
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Total Chlorinated Ethenes	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene	Nickel (mg/L)	Cobalt (mg/L)
2/8/2005	0.82J	0.37J	10	1.0U	0.98J	**4.8**	1.0U	1.0U	1.0U	11.19	0.71J	6.3	8.0	12.0	0.23J	1.0U	1.8J	6.3J	0.24J	NA	NA
5/3/2005	0.51J	0.37J	8.5	1.0U	0.86J	**4.1**	1.0U	1.0U	1.0U	9.38	0.80J	5.4	4.9	9.2	0.25J	1.0U	1.3J	7.0J	10U	NA	NA
8/2/2005	0.56J	1.0U	6.3	1.0U	0.61J	**3.3**	1.0U	1.0U	1.0U	6.86	0.58J	4.3	2.3	6.9	1.0U	1.0U	10U	5.8J	2.1J	NA	NA
11/1/2005	1.0U	1.0U	8.1	1.0U	0.52J	**4.2**	1.0U	1.0U	1.0U	8.62	0.54J	3.4	2.8	4.3	1.0U	1.0U	10U	4.6J	10U	NA	NA
1/31/2006	0.52J	0.25J	8.4	1.0U	0.65J	**4.6**	1.0U	1.0U	1.0U	9.17	0.64J	5.0	2.0	5.4	0.35J	1.0U	10U	4.5J	0.21J	NA	NA
5/4/2006	0.43J	0.26J	8.0	1.0U	0.58J	**4.4**	1.0U	1.0U	1.0U	8.69	0.57J	4.0	0.96J	4.2	0.30J	1.0U	10U	9.6J	0.83J	NA	NA
8/2/2006	0.29J	1.0U	5.3	1.0U	0.49J	**2.6**	1.0U	1.0U	1.0U	5.59	0.48J	3.2	0.19J	1.1J	0.31J	1.0U	10U	4.4J	10U	NA	NA
11/15/2006	0.31J	1.0U	3.4	1.0U	0.33J	**1.2**	1.0U	1.0U	1.0U	3.71	0.38J	3.5	1.0U	0.55J	0.27J	1.0U	10U	50U	0.85J	NA	NA
Criteria	5.0	5.0	70	100	7.0	1.0	5.0	2.0	1.0	100.0	5.0	700	1,000	10,000	1.0	75	---	---	---	0.1	---

Notes:
unless otherwise noted, units are expressed in milligrams per liter
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 and highlight indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Not analyzed
Total Chlorinated Ethenes = summation of tetrachloroethene, trichloroethene, cis-1,2 dichlorethene, trans-1,2 dichloroethene, and vinyl chloride
In calculating Total Chlorinated Ethenes concentrations (where some detectable concentartions are present), non-detectable conecntrations were assumed to be zero
This monitoring well is being sampled quarterly for GWPS constituents as required by the GADNR approved *Groundwater Monitoring Plan* (Bechtel, 1999).

Table 3
Analytical Summary, Groundwater Protection Standard Compounds

KBA-11-17B

Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Total Chlorinated Ethenes	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene	Nickel (mg/L)	Cobalt (mg/L)
8/3/1999	3.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	7.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	20U	50U	NA	NA	NA
8/3/1999	3.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	7.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	NA	NA	NA	NA	NA
8/3/1999	17	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	17	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	NA	NA	NA	NA	NA
2/7/2000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5U	5U	NA	NA	NA
8/9/2000	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA	NA	NA
8/9/2001	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA	NA	NA
8/7/2002	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10.0U	0.00086B	0.000034
8/5/2003	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U	NA	NA
Criteria	5.0	5.0	70	100	7.0	1.0	5.0	2.0	1.0	100.0	5.0	700	1,000	10,000	1.0	75			---	0.1	---

Notes:
unless otherwise noted, units are expressed in milligrams per liter
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 and highlight indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Not analyzed
Total Chlorinated Ethenes = summation of tetrachloroethene, trichloroethene, cis-1,2 dichlorethene, trans-1,2 dichloroethene, and vinyl chloride
In calculating Total Chlorinated Ethenes concentrations (where some detectable concentartions are present), non-detectable conecntrations were assumed to be zero
This monitoring well has met the exit criteria stated in the GADNR approved *Groundwater Monitoring Plan* (Bechtel, 1999) and is no longer being sampled.

Table 3
Analytical Summary, Groundwater Protection Standard Compounds

KBA-11-34																					
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Total Chlorinated Ethenes	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene	Nickel (mg/L)	Cobalt (mg/L)
8/3/1999	**17**	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	17	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	20U	93	NA	NA	NA
11/9/1999	**22**	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	22	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	20U	190	NA	NA	NA
2/7/2000	**83**	2	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	85	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5U	4J	NA	NA	NA
5/4/2000	**89**	1	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	90	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5U	5U	NA	NA	NA
8/9/2000	**63**	0.6J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	63.6	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA	NA	NA
11/8/2000	**79**	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	79	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA	NA	NA
2/8/2001	**73**	2	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	75	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA	NA	NA
5/3/2001	**62**	2.6	0.27J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	64.87	1.0U	0.13J	0.24J	0.17J	1.0U	0.41J	20	300	NA	NA	NA
8/9/2001	**35**	3	2.8	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	40.8	1.0U	1.0U	1.0U	3.0U	1.0U	0.56J	18J	350	NA	NA	NA
11/7/2001	**97**	1.7	1.5	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	**100.2**	1.0U	1.0U	1.0U	3.0U	1.0U	0.47JB	6.4	130	4.0 JB	NA	NA
2/6/2002	**61**	0.63J	0.54J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	62.17	1.0U	1.0U	1.0U	3.0U	1.0U	0.34JB	25U	100	1.0U	NA	NA
5/8/2002	**75**	2.2	5	0.37J	1.0U	1.0U	1.0U	1.0U	1.0U	82.57	1.0U	1.0U	1.0U	3.0U	1.0U	0.39J	25U	50U	0.094J	**0.15**	0.28
8/8/2002	**100**	**15**	7.9	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	**122.9**	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	1.0U	0.073	0.077
11/5/2002	**110**	**7.6**	3.1	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	**120.7**	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U	NA	NA
2/5/2003	**69**	**5.2**	1.5	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	75.7	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U	NA	NA
5/6/2003	**58**	**6.2**	1.8	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	66	1.0U	1.0U	1.0U	3.0U	1.0U	0.74J	10U	50U	10U	NA	NA
8/6/2003	**50**	**5.3**	14	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	69.3	1.0U	1.0U	1.0U	3.0U	0.37J	0.72J	10U	50U	10U	NA	NA
11/4/2003	**38**	4.1	42	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	84.1	1.0U	1.0U	1.0U	3.0U	0.36J	0.96J	5.6J	6.6J	10U	NA	NA
2/4/2004	**38**	3.9	55	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	96.9	1.0U	1.0U	1.0U	3.0U	0.49J	1.5	3.2J	5.6J	10U	NA	NA
5/4/2004	**35**	3.2	33	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	71.2	1.0U	1.0U	1.0U	3.0U	0.45J	1.7	10U	3.3J	10U	NA	NA
8/4/2004	**34**	3.3	37	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	74.3	1.0U	1.0U	1.0U	3.0U	0.37J	1.5	10U	50U	0.37J	NA	NA
11/2/2004	**30**	2.9	**150**	0.29J	0.30J	1.0U	1.0U	1.0U	1.0U	**183.19**	1.0U	1.0U	0.16J	3.0U	0.30J	1.7	1.2J	5.6J	10U	NA	NA

Table 3
Analytical Summary, Groundwater Protection Standard Compounds

KBA-11-34																					
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Total Chlorinated Ethenes	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene	Nickel (mg/L)	Cobalt (mg/L)
2/8/2005	**28**	2.1	**230**	0.50J	0.46J	1.0U	1.0U	0.34J	1.0U	**260.94**	1.0U	1.0U	0.22J	0.26J	0.40J	1.9	10U	6.9J	10U	NA	NA
5/4/2005	**18**	1.5	**160**	0.52J	1.0U	1.0U	1.0U	0.29J	1.0U	**180.31**	1.0U	1.0U	0.22J	3.0U	0.31J	1.9	10U	6.3J	10U	NA	NA
8/2/2005	**21**	2.1	**180**	0.46J	0.36J	1.0U	1.0U	1.0U	1.0U	**203.56**	1.0U	1.0U	1.0U	3.0U	1.0U	1.6	10U	7.5J	10U	NA	NA
11/2/2005	**18**	1.8	**170**	0.42J	1.0U	1.0U	1.0U	1.0U	1.0U	**190.22**	1.0U	1.0U	1.0U	3.0U	1.0U	2.0	10U	50U	10U	NA	NA
1/31/2006	**12**	0.94J	42	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	54.94	1.0U	1.0U	1.0U	3.0U	0.20J	2.2	10U	50U	10U	NA	NA
5/4/2006	**7.8**	0.61J	13	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	21.41	1.0U	1.0U	1.0U	3.0U	0.21J	1.9	10U	3.7J	1.3J	NA	NA
8/2/2006	**5.9**	0.71J	11	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	17.61	1.0U	1.0U	1.0U	3.0U	0.19J	1.7	10U	2.0J	10U	NA	NA
11/15/2006	**5.1**	0.60J	2.7	1.0U	1.0U	1.0U	1.0U	0.21J	1.0U	8.61	1.0U	1.0U	1.0U	3.0U	0.21J	2.5	10U	6.2J	0.16J	NA	NA
Criteria	5.0	5.0	70	100	7.0	1.0	5.0	2.0	1.0	100	5.0	700	1,000	10,000	1.0	75	---	---	---	0.1	---

Notes:
unless otherwise noted, units are expressed in milligrams per liter
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 and highlight indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA - Not analyzed
Total Chlorinated Ethenes = summation of tetrachloroethene, trichloroethene, cis-1,2 dichlorethene, trans-1,2 dichloroethene, and vinyl chloride
In calculating Total Chlorinated Ethenes concentrations (where some detectable concentartions are present), non-detectable conecntrations were assumed to be zero
This monitoring well is being sampled quarterly for GWPS constituents as required by the GADNR approved *Groundwater Monitoring Plan* (Bechtel, 1999).

Table 3
Analytical Summary, Groundwater Protection Standard Compounds

KBA-11-37																					
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Total Chlorinated Ethenes	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene	Nickel (mg/L)	Cobalt (mg/L)
8/17/1999	3.0U	1.0U	24	1.0U	1.0U	1.0U	1.0U	2.5I	1.0U	26.5	2.1	15	1.0U	3.0U	**2.9**	3.6	20U	50U	NA	NA	NA
11/9/1999	3.0U	1.0U	17	1.0U	1.0U	1.0U	1.0U	1.4I	1.0U	18.4	2.0	14	1.0U	3.0U	**3.1**	4.7	20U	50U	NA	NA	NA
2/8/2000	1.0U	1.0U	16	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	16	2.0	9.0	1.0	3.0U	**2.0**	3.0	5U	5U	NA	NA	NA
5/4/2000	1.0U	1.0U	17	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	17	2.0	1.0U	1.0U	12	**3.0**	3.0	5U	5U	NA	NA	NA
8/9/2000	1.0U	1.0U	14	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	14	2.0	7.0	1.0U	3.0	**2.0**	3.0	10U	50U	NA	NA	NA
11/8/2000	1.0U	1.0U	11	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	11	2.0	10	1.0U	2.0U	**3.0**	4.0	10U	50U	NA	NA	NA
11/8/2000 (dup)	1.0U	1.0U	11	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	11	2.0	11	1.0U	2.0U	**3.0**	3.0	10U	50U	NA	NA	NA
2/7/2001	1.0U	1.0U	13	1.0U	1.0U	1.0U	1.0U	0.6J	1.0U	13.6	2.0	13	1.0U	3.0U	**2.0**	1.0U	25U	50U	NA	NA	NA
5/2/2001	1.0U	1.0U	13	1.0U	1.0U	1.0U	1.0U	0.6J	1.0U	13.6	1.3	10	0.41J	0.18J	**2.1**	2.6	5.0U	3.6J	NA	NA	NA
8/8/2001	1.0U	1.0U	12	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	12	1.3	13	0.22J	3.0U	**2.8**	3.1	25U	50U	NA	NA	NA
11/7/2001	1.0U	1.0U	6.9	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	6.9	1.1	8.2	1.0U	3.0U	**3.8**	2.4B	5.0U	10U	25	NA	NA
2/6/2002	1.0U	1.0U	6.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	6.0	0.85J	6.4	1.0U	3.0U	**4.6**	2.4B	25U	50U	17B	NA	NA
5/7/2002	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	9.0U	0.79J	5.4	1.0U	3.0U	**5.6**	2.4	25U	50U	12	0.0014	0.001U
8/8/2002	1.0U	1.0U	4.6	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	4.6	1.0U	4.2	1.0U	3.0U	**5.5**	2.4	10U	50U	13	0.0021	0.00003U
11/5/2002	1.0U	1.0U	4.4	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	4.4	1.0U	4.4	1.0U	3.0U	**6.4**	3.3	10U	50U	30	NA	NA
2/5/2003	1.0U	1.0U	2.4	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	2.4	1.0U	2.3	1.0U	3.0U	**5.5**	4.3	10U	50U	25	NA	NA
5/7/2003	1.0U	1.0U	7.2	1.0U	1.0U	1.0U	1.0U	1.2	1.0U	8.4	0.72J	3.3	1.0U	3.0U	**6.2**	3.6	10U	50U	14	NA	NA
8/6/2003	1.0U	1.0U	8	1.0U	1.0U	1.0U	1.0U	0.95J	1.0U	8.95	0.67J	3.9	1.0U	3.0U	**4.6**	4.1	10U	50U	14	NA	NA
11/4/2003	1.0U	0.37J	8.5	1.0U	1.0U	1.0U	1.0U	0.94J	1.0U	9.81	0.82J	4.2	1.0U	3.0U	**4.6**	3.9	10U	3.9J	4.2J	NA	NA
2/4/2004	1.0U	0.34J	5.7	1.0U	1.0U	1.0U	1.0U	0.60J	1.0U	7.01	0.71J	3.0	1.0U	3.0U	**4.9**	4.7	10U	50U	13	NA	NA
5/4/2004	1.0U	1.0U	4.3	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	4.3	0.66J	2.1	1.0U	3.0U	**5.3**	4.8	10U	2.8J	12	NA	NA
8/4/2004	1.0U	1.0U	3.8	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.8	0.76J	1.0	1.0U	3.0U	**5.1**	4.0	10U	50U	9.1J	NA	NA
11/2/2004	1.0U	1.0U	4.5	1.0U	1.0U	0.21J	1.0U	1.0U	1.0U	4.5	0.67J	2.1	0.22J	3.0U	**4.2**	4.2	10U	5.5J	6.5J	NA	NA

Table 3
Analytical Summary, Groundwater Protection Standard Compounds

KBA-11-37																					
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Total Chlorinated Ethenes	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene	Nickel (mg/L)	Cobalt (mg/L)
2/8/2005	0.24J	0.26J	5.5	1.0U	1.0U	1.0U	1.0U	0.38J	1.0U	6.38	0.68J	2.3	0.30J	0.35J	**4.5**	4.6	10U	6.4J	7.0J	NA	NA
5/3/2005	0.25J	0.29J	6.9	1.0U	1.0U	0.27J	1.0U	0.66J	1.0U	8.1	0.86J	2.3	0.43J	3.0U	**3.6**	4.5	10U	3.5J	2.7J	NA	NA
8/2/2005	1.0U	0.31J	7.2	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	7.51	0.72J	2.4	1.0U	3.0U	**3.1**	3.9	10U	3.6J	7.4J	NA	NA
11/1/2005	1.0U	1.0U	7.1	1.0U	1.0U	1.0U	1.0U	0.88J	1.0U	7.98	0.64J	3.1	0.42J	3.0U	**2.9**	4.0	10U	6.5J	16	NA	NA
1/31/2006	1.0U	0.23J	6.3	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	6.53	0.60J	2.6	0.22J	3.0U	**2.9**	2.9	10U	50U	6.5J	NA	NA
5/4/2006	1.0U	0.21J	5.4	0.24J	1.0U	0.20J	1.0U	1.0U	1.0U	5.85	0.60J	2.0	0.26J	0.098J	**3.1**	2.4	10U	3.6J	4.2J	NA	NA
8/2/2006	1.0U	0.26J	5.5	1.0U	1.0U	1.0U	1.0U	1.3	1.0U	7.06	0.54J	1.3	0.19J	0.090J	**2.2**	2.1	10U	50U	8.3J	NA	NA
11/15/2006	0.17J	1.0U	4.7	1.0U	1.0U	0.26J	1.0U	1.9	1.0U	6.77	0.56J	1.7	0.29J	0.12J	**3.1**	3.5	10U	7.6J	3.2J	NA	NA
Criteria	5.0	5.0	70	100	7.0	1.0	5.0	2.0	1.0	100.0	5.0	700	1,000	10,000	1.0	75	---	---	---	0.1	---

Notes:
unless otherwise noted, units are expressed in milligrams per liter
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 and highlight indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Not analyzed
Total Chlorinated Ethenes = summation of tetrachloroethene, trichloroethene, cis-1,2 dichlorethene, trans-1,2 dichloroethene, and vinyl chloride
In calculating Total Chlorinated Ethenes concentrations (where some detectable concentartions are present), non-detectable conecntrations were assumed to be zero
This monitoring well is being sampled quarterly for GWPS constituents as required by the GADNR approved *Groundwater Monitoring Plan* (Bechtel, 1999).

Table 3
Analytical Summary, Groundwater Protection Standard Compounds

PS-2																					
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Total Chlorinated Ethenes	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene	Nickel (mg/L)	Cobalt (mg/L)
8/18/1999	3.0U	1.3I	41	1.0U	1.0U	**5.6**	1.0U	3.2I	1.0U	45.5	**9.1**	10	43	29	1.0U	1.0U	NA	NA	NA	NA	NA
11/9/1999	3.0U	1.4I	40	1.0U	1.0U	**5.1**	1.0U	**2.9**	1.0U	44.3	**9.4**	16	57	47	1.0U	1.0U	20U	50U	NA	NA	NA
2/7/2000	1.0U	2.0	52	1.0U	1.0U	**5.0**	1.0U	2.0	1.0U	56	**8.0**	14	37	40	1.0U	1.0U	5U	5U	NA	NA	NA
5/3/2000	1.0U	2.0	57	0.5	1.0U	**5.0**	1.0U	1.0U	1.0U	59.5	**8.0**	16	19	41	0.7	1.0U	5U	5U	NA	NA	NA
8/8/2000	1.0U	2.0	58	1.0U	1.0U	**4.0**	1.0U	2.0	1.0U	62	**6.0**	14	8.0	19	0.5	1.0U	10U	50U	NA	NA	NA
11/8/2000	3.0U	2.0	61	1.0U	1.0U	**4.0**	1.0U	**3.0**	1.0U	66	5.0	18	5.0	7.0	1.0	1.0U	10U	50U	NA	NA	NA
2/7/2001	1.0U	2.0	**71**	0.6J	1.0U	**4.0**	1.0U	**3.0**	1.0U	76.6	4.0	18	3.0	4.0	0.5J	1.0U	25U	50U	NA	NA	NA
5/2/2001	0.14J	1.9	**79**	0.60J	1.0U	**4.1**	1.0U	**2.4**	1.0U	84.04	3.7	22	2.9	3.6	0.59J	1.0U	5.0U	5.0U	NA	NA	NA
8/9/2001	1.0U	2.0	**99**	0.80J	1.0U	**4.2**	1.0U	**2.4**	1.0U	**104.2**	3.4	22	2.7	3.5	0.92J	1.0U	25U	50U	NA	NA	NA
11/7/2001	1.0U	2.0	**110**	0.84J	1.0U	**4.1**	1.0U	**3.0**	1.0U	**115.8**	2.7	20	1.9	2.4J	**1.2**	1.0	5.0U	10U	3.7JB	NA	NA
2/6/2002	1.0U	1.7	**110**	0.73J	1.0U	**3.4**	1.0U	**2.7**	1.0U	**115.13**	2.1	14	1.5	1.9J	**1.6**	1.0U	25U	50U	1.0U	NA	NA
5/6/2002	1.0U	1.6	**120**	0.80J	1.0U	**3.6**	0.85J	**3.0**	**2.3**	**125.4**	2.0	13	1.7	1.4J	**1.8**	1.0U	25U	50U	0.061J	0.00043	0.001U
8/6/2002	1.0U	1.5	**110**	1.0U	1.0U	**2.8**	1.0U	**2.3**	1.0U	**113.8**	1.7	12	1.3	3.0U	**2.2**	1.0U	10U	50U	1.0U	0.00053B	0.00003
11/5/2002	1.0U	1.3	**120**	1.0U	1.0U	**2.9**	1.0U	**3.2**	1.0U	**124.5**	1.6	11	1.2	3.0U	**1.6**	1.0U	10U	50U	10U	NA	NA
2/5/2003	1.0U	1.3	**100**	1.0U	1.0U	**2.3**	1.0U	**2.9**	1.0U	**104.2**	1.4	9.1	1.0U	3.0U	**1.5**	1.0U	10U	50U	10U	NA	NA
5/6/2003	1.0U	1.6	**140**	1.1	1.0U	**2.5**	1.0U	**4.3**	1.0U	**147**	1.6	9.7	1.2	3.0U	**1.6**	1.0U	10U	50U	10U	NA	NA
8/5/2003	1.0U	1.2	**100**	1	1.0U	**2.0**	1.0U	**3.3**	1.0U	**105.5**	1.3	7.7	0.89J	3.0U	**1.1**	1.0U	10U	50U	10U	NA	NA
11/4/2003	1.0U	1.6	**120**	1.2	1.0U	**2.0**	1.0U	**4.2**	1.0U	**127.0**	1.6	9.3	1.2	3.0U	**1.1**	1.0U	10U	50U	10U	NA	NA
2/4/2004	1.0U	1.4	**93**	1.0	1.0U	**1.5**	1.0U	**3.3**	1.0U	98.7	1.4	9.9	1.1	0.48J	**1.1**	1.0U	10U	50U	0.45J	NA	NA
5/4/2004	1.0U	1.3	**82**	1.0	1.0U	**1.3**	1.0U	1.5	1.0U	85.8	1.2	9.7	1.1	0.83J	0.98J	1.0U	10U	50U	10U	NA	NA
8/4/2004	1.0U	1.5	**83**	0.99J	1.0U	**1.3**	1.0U	**2.7**	1.0U	87.2	1.4	9.0	0.94J	0.75J	0.80J	1.0U	10U	50U	10U	NA	NA
11/2/2004	0.16J	1.3	**75**	0.98J	1.0U	**1.1**	1.0U	**2.4**	1.0U	79.8	1.2	9.8	1.0	0.63J	0.77J	1.0U	10U	50U	10U	NA	NA

Table 3
Analytical Summary, Groundwater Protection Standard Compounds

PS-2																					
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Total Chlorinated Ethenes	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene	Nickel (mg/L)	Cobalt (mg/L)
2/8/2005	0.26J	1.4	66	0.94J	1.0U	0.95J	1.0U	1.7	1.0U	70.3	1.1	10	0.90J	1.07J	0.79J	1.0U	10U	4.4J	0.52J	NA	NA
5/3/2005	0.24J	1.5	68	1.0	1.0U	1.1	1.0U	1.9	1.0U	72.6	1.3	10	0.92J	0.98J	0.77J	1.0U	10U	3.4J	10U	NA	NA
8/2/2005	1.0U	1.4	56	0.86J	1.0U	0.85J	1.0U	1.0U	1.0U	58.3	1.1	10	0.80J	0.37J	0.72J	1.0U	10U	2.9J	2.1J	NA	NA
11/1/2005	1.0U	1.1	51	0.79J	1.0U	0.72J	1.0U	1.3	1.0U	54.2	0.87J	11	0.84J	3.0U	0.69J	1.0U	10U	50U	10U	NA	NA
1/31/2006	1.0U	1.1	35	0.83J	1.0U	0.68J	1.0U	1.0U	1.0U	36.93	0.73J	8.9	0.69J	0.51J	0.67J	1.0U	10U	2.5J	10U	NA	NA
5/3/2006	1.0U	1.2	28	0.70J	1.0U	0.57J	1.0U	1.0U	1.0U	29.9	0.79J	8.3	0.52J	0.51J	0.79J	0.15J	10U	4.9J	2.0J	NA	NA
8/2/2006	1.0U	1.2	28	0.66J	1.0U	0.56J	1.0U	0.73J	1.0U	30.59	0.76J	8.5	0.40J	0.43J	0.77J	1.0U	10U	50U	10U	NA	NA
11/15/2006	1.0U	1.2	27	0.63J	1.0U	0.52J	1.0U	0.64J	1.0U	29.47	0.68J	9.0	0.49J	0.49J	0.94J	0.18J	10U	50U	10U	NA	NA
Criteria	5.0	5.0	70	100	7.0	1.0	5.0	2.0	1.0	100	5.0	700	1,000	10,000	1.0	75	---	---	---	0.1	---

Notes:
unless otherwise noted, units are expressed in milligrams per liter
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 and highlight indicates result exceeds the groundwater protection standard.
B = possible blank contamination
E = estimated value
NA – Not analyzed
Total Chlorinated Ethenes = summation of tetrachloroethene, trichloroethene, cis-1,2 dichlorethene, trans-1,2 dichloroethene, and vinyl chloride
In calculating Total Chlorinated Ethenes concentrations (where some detectable concentartions are present), non-detectable conecntrations were assumed to be zero
Beginning in 2007, this monitoring well will be sampled annually for GWPS constituents as required by the GADNR approved *Groundwater Monitoring Plan* (Bechtel, 1999).

Table 4
Analytical Summary, Subdivision Irrigation Wells

108 Cottage Court																		
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene
March-00	1.0U	1.0U	7.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	5.0U	NA
April-00	1.0U	1.0U	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	5.0U	NA
May-00	1.0U	1.0U	5.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	5.0U	NA
June-00	1.0U	1.0U	4.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA
July-00	1.0U	1.0U	4.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA
August-00	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA
September-00	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA
October-00	1.0U	1.0U	2.0	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA
November-00	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA
December-00	1.0U	1.0U	0.7J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA
April-01	1.0U	1.0U	3.1	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	7.0U	1.0U	1.0U	5.0U	5.0U	NA
May-01	1.0U	1.0U	6.8	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	5.0U	NA
June-01	1.0U	1.0U	3.8	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA
July-01	1.0U	1.0U	10	0.25J	1.0U	1.0U	1.0U	0.32J	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA
September-01	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	10U	NA
October-01	1.0U	1.0U	2.2	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	10U	NA
November-01	1.0U	1.0U	1.3	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	10U	1.0U
December-01	1.0U	1.0U	0.37	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.34	5.0U	10U	3.1
January-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	10U
February-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	10U

Table 4
Analytical Summary, Subdivision Irrigation Wells

108 Cottage Court

Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene
April-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	1.0U
May-02	1.0U	1.0U	3.2	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	1.0U
June-02	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	25U	9.7J	10U
July-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U
August-02	1.0U	1.0U	4.2	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	10U	50U	10U
October-03	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	10U	50U	10U
Criteria	5.0	5.0	70	100	7.0	1.0	5.0	2.0	1.0	5.0	700	1,000	10,000	1.0	75	---	---	---

Notes:
unless otherwise noted all units are expressed in milligrams per liter
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 – Not analyzed
This irrigation well is no longer being monitored for GWPS constituents as approved by GADNR letter dated February 2004.

Table 4
Analytical Summary, Subdivision Irrigation Wells

122 Plantation Court																		
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene
January-00	1.0U	1.0U	2.0	1.0U	1.0U	1.0U	1.0U	**5.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5U	5U	NA
February-00	1.0U	1.0U	2.0	1.0U	1.0U	1.0U	1.0U	**8.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5U	5U	NA
March-00	1.0U	1.0U	2.0	1.0U	1.0U	1.0U	1.0U	**8.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	5.0U	NA
April-00	1.0U	1.0U	2.0	1.0U	1.0U	1.0U	1.0U	**6.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	5.0U	NA
May-00	1.0U	1.0U	3.0	1.0U	1.0U	1.0U	1.0U	**8.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	5.0U	NA
June-00	1.0U	1.0U	2.0	1.0U	1.0U	1.0U	1.0U	**7.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA
July-00	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA
August-00	1.0U	2.0	2.0	1.0U	1.0U	1.0U	1.0U	**5.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA
September-00	1.0U	1.0U	3.0	1.0U	1.0U	1.0U	1.0U	**5.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA
October-00	1.0U	0.9J	2.0	1.0U	1.0U	1.0U	1.0U	**5.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA
November-00	1.0U	0.93	2.0	1.0U	1.0U	1.0U	1.0U	**5.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA
December-00	1.0U	2.0	1.0	1.0	1.0U	1.0U	1.0U	**4.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	NA
January-01	1.0U	1.0U	2.0	1.0U	1.0U	1.0U	1.0U	**7.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA
February-01	1.0U	1.0U	1.0	1.0U	1.0U	1.0U	1.0U	**4.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA
February-01 (dup)	1.0U	1.0U	2.0	1.0U	1.0U	1.0U	1.0U	**6.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA
March-01	1.0U	1.0U	1.0	1.0U	1.0U	1.0U	1.0U	4.0E	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA
March-01 (dup)	1.0U	1.0U	1.0	1.0U	1.0U	1.0U	1.0U	4.0E	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA
April-01	1.0U	1.0U	1.0	1.0U	1.0U	1.0U	1.0U	**5.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	5.0U	NA
April-01 (dup)	1.0U	1.0U	1.0	1.0U	1.0U	1.0U	1.0U	**5.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	5.0U	NA
May-01	1.0U	1.0U	0.1	1.0U	1.0U	1.0U	1.0U	**4.5**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	5.0U	NA
May-01 (dup)	1.0U	1.0U	0.94J	1.0U	1.0U	1.0U	1.0U	**3.4**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	5.0U	NA
June-01	1.0U	1.0U	1.2	1.0U	1.0U	1.0U	1.0U	**4.8**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.23J	25U	50U	NA
June-01 (dup)	1.0U	1.0U	0.95	1.0U	1.0U	1.0U	1.0U	**4.8**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.21J	25U	50U	NA
July-01	1.0U	1.0U	1.0	1.0U	1.0U	1.0U	1.0U	**4.6**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.26J	25U	50U	NA
July-01 (dup)	1.0U	1.0U	1.0	1.0U	1.0U	1.0U	1.0U	**4.6**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.27J	25U	50U	NA
August-01	1.0U	1.0U	1.2	1.0U	1.0U	1.0U	1.0U	**4.7**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.24J	25U	50U	NA
August-01 (dup)	1.0U	1.0U	1.1	1.0U	1.0U	1.0U	1.0U	**4.7**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.22J	25U	50U	NA
September-01	1.0U	1.0U	1.2	1.0U	1.0U	1.0U	0.32J	**5.1**	1.0U	1.0U	1.0U	1.0U	0.24J	1.0U	0.31J	5.0U	10U	NA
September-01 (dup)	1.0U	1.0U	1.2	1.0U	1.0U	1.0U	1.0U	**5.1**	1.0U	1.0U	1.0U	1.0U	0.21J	1.0U	0.30J	5.0U	10U	NA

Table 4
Analytical Summary, Subdivision Irrigation Wells

122 Plantation Court																		
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene
October-01	1.0U	1.0U	1.0	1.0U	1.0U	1.0U	1.0U	**5.6**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.26J	5.0U	10U	NA
October-01 (dup)	1.0U	1.0U	1.1	1.0U	1.0U	1.0U	1.0U	**5.9**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.27J	5.0U	10U	NA
November-01	1.0U	1.0U	1.0	1.0U	1.0U	1.0U	1.0U	**6.4**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.29J	5.0U	10U	1.0U
November-01 (dup)	1.0U	1.0U	1.0	1.0U	1.0U	1.0U	1.0U	**6.4**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.26J	5.0U	10U	1.0U
December-01	1.0U	1.0U	1.2	1.0U	1.0U	1.0U	1.0U	**5.8**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	10U	10.0
December-01 (dup)	1.0U	1.0U	1.2	1.0U	1.0U	1.0U	1.0U	**5.8**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.38J	5.0U	10U	10.0
January-02	1.0U	1.0U	1.1	1.0U	1.0U	1.0U	1.0U	**7.4**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.6	25U	50U	10U
January-02 (dup)	1.0U	1.0U	1.1	1.0U	1.0U	1.0U	1.0U	**7.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.46	25U	50U	10U
February-02	1.0U	1.0U	1.1	1.0U	1.0U	1.0U	1.0U	**6.9**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.34JB	25U	50U	10U
February-02 (dup)	1.0U	1.0U	1.1	1.0U	1.0U	1.0U	1.0U	**6.8**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.34JB	25U	50U	10U
March-02	1.0U	1.0U	1.0	1.0U	1.0U	1.0U	1.0U	**6.3**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.40J	25U	50U	10U
March-02 (dup)	1.0U	1.0U	1.0	1.0U	1.0U	1.0U	0.66J	**5.8**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.42J	25U	50U	10U
April-02	1.0U	1.0U	0.95J	1.0U	1.0U	1.0U	1.0U	**5.4**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.50J	25U	50U	3.1JB
April-02 (dup)	1.0U	1.0U	0.79J	1.0U	1.0U	1.0U	1.0U	**4.7**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	0.48J	25U	50U	10U
June-02	1.0U	1.0U	0.60J	1.0U	1.0U	1.0U	0.38J	**4.0**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	1.0U
June-02 (dup)	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	0.6	**3.9**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	10.0U
July-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	**4.1**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10.U
July-02 (dup)	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	**4.6**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10.0U
August-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	**4.1**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10.0U
August-02 (dup)	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	**4.3**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10.0U
September-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	**4.3**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10.0U
September-02 (dup)	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	**2.7**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10.0U
October-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	**5.3**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10.0U
October-02 (dup)	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	**5.1**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10.0U
November-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	**4.7**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10.0U
December-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.7	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	1.0U
December-02 (Dup)	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	**2.3**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	1.0U
January-03	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	2.0	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	1.0U
January-03 (dup)	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	**2.1**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	1.0U

Table 4
Analytical Summary, Subdivision Irrigation Wells

122 Plantation Court

Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene
February-03	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	2.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	20U	50U	2.0U
February-03(Dup)	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.2	2.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	20U	50U	2.0U
March-03	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	2.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	20U	50U	2.0U
March-03 (Dup)	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	2.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	20U	50U	2.0U
April-03	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	15	50U	10U
June-03	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	20	50U	10U
July-03	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	31	50U	10U
August-03	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	0.39J	1.0U	1.0U	41	7.4J	10U
September-03	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	31	50U	10U
August-04	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	0.41J	1.0U	1.0U	4.6J	2.6J	10U
November-04	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	0.34J	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	140	5.4J	10U
March-05	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	4.2	6.7	1.0U	1.09J	1.0U	1.0U	10U	50U	38
May-05	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	0.64J	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	140	4.3J	10U
August-05	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	**2.6**	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	100	13J	10U
September-05	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	53	2.4J	10U
November-05	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.5J	2.0J	10U
August-06	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U
Criteria	5.0	5.0	70	100	7.0	1.0	5.0	2.0	1.0	5.0	700	1,000	10,000	1.0	75	---	---	---

Notes:
unless otherwise noted all units are expressed in milligrams per liter
Irrigation well at 122 Plantation Court was replaced on March 21, 2003 subsequent to March 2003 sampling event.
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 – Not analyzed
This irrigation well is being sampled annually for GWPS constituents as approved by GADNR in letter dated December 2005.

Table 4
Analytical Summary, Subdivision Irrigation Wells

102 Plantation Court																		
Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene
January-00	1.0U	**28**	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	5U	5U	NA
February-00	1.0U	0.5J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	5U	5U	NA
March-00	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	3.0U	5.0U	5.0U	NA
April-00	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	3.0U	5.0U	5.0U	NA
May-00	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	3.0U	5.0U	5.0U	NA
June-00	1.0U	1.OU	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	10U	50U	NA
July-00	1.0U	**8.0**	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	10U	50U	NA
August-00	1.0U	**37**	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	10U	50U	NA
September-00	1.0U	**150**	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	3.0U	10U	50U	NA
October-00	1.0U	4	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	3.0U	10U	50U	NA
November-00	1.0U	**8.0**	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	10U	50U	3.3J
December-00	1.0U	**17**	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	3.0U	10U	50U	10
January-01	1.0U	**86**	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA
February-01	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA
March-01	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA
April-01	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	0.10J	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	5.0U	NA
May-01	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	0.10J	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	5.0U	NA
June-01	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA
July-01	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA
August-01	1.0U	**9.9**	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	NA
September-01	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	10U	NA
October-01	1.0U	0.027J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	10U	NA
November-01	1.0U	0.53J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	10U	3.3J
December-01	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	5.0U	10U	10
March-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	1.0U
April-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	1.0U
May-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	1.0U
June-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	25U	50U	1.0U
July-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10.0U
August-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10.0U
September-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10.0U

Table 4
Analytical Summary, Subdivision Irrigation Wells

102 Plantation Court

Date	Tetrachloroethene	Trichloroethene	Cis -1,2-dichloroethene	Trans-1,2 dichloroethene	1,1-dichloroethene	1,1-dichloroethane	1,2-dichloroethane	Vinyl Chloride	Chloroethane	Benzene	Ethylbenzene	Toluene	Total xylenes	Chlorobenzene	1,4-dichlorobenzene	2-Butanone (MEK)	Acetone	Naphthalene
October-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10.0U
November-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10.0U
December-02	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10.0U
January-03	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10.0U
February-03	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	2.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	20U	50U	2.0U
March-03	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	20U	50U	2.0U
April-03	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U
April-03 (duplicate)	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U
June-03	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U
June-03 (duplicate)	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U
July-03	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U
July-03 (duplicate)	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U
August-03	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U
August-03 (duplicate)	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U
September-03	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U
September-03 (duplicate)	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	50U	10U
August-04	1.0U	0.35J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	3.0U	1.0U	1.0U	10U	4.5J	10U
May-05	1.0U	0.37J	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	0.21J	1.0U	1.0U	10U	2.1J	10U
Criteria	5.0	5.0	70	100	7.0	1.0	5.0	2.0	1.0	5.0	700	1,000	10,000	1.0	75	---	---	---

Notes:
unless otherwise noted all units are expressed in milligrams per liter
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 – Not analyzed
This irrigation well is no longer being monitored for GWPS constituents as approved by GADNR in letter dated December 2005.

APPENDIX A
WELL PURGING AND SAMPLING RECORDS

WELL MEASUREMENTS

VELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-02	11-14-06	1007	12.03'	15.73'	
		1250	12.01'	15.73'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
KBA-11-02	11-14-06	1007	73.4°F	50%	29.91	clear
		1250	85.1°F	29%	29.94	clear

WELL MEASUREMENTS

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-3B	11-14-06	0850	10.53'	47.59'	
		1153	10.53'	47.59'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
KBA-11-3B	11-14-06	0850	53.6 °F	82%	29.91	clear
		1153	86.0 °F	29%	29.94	clear

WELL MEASUREMENTS

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KRA-11-8B	11-14-06	0829	14.46'	43.58'	
		1130	14.44'	43.58'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
KRA-11-8B	11-14-06	0829	50.0°F	85%	29.91	clear
		1130	86.9°F	30%	29.94	clear

WELL MEASUREMENTS

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-10B	11-14-06	0957	14.54'	51.54'	
		1239	14.54'	51.54'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
KBA-11-10B	11-14-06	0957	70.7°F	58%	29.91	clear
		1239	85.1°F	29%	29.94	clear

WELL MEASUREMENTS

VELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KRA-11-11A	11-14-06	0840	11.97'	36.91'	
		1146	11.96'	36.91'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
KRA-11-11A	11-14-06	0840	51.8°F	86%	29.91	clear
		1146	86.9°F	30%	29.94	clear

WELL MEASUREMENTS

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-13A	11-14-06	0930	11.33'	42.35'	
		1212	11.32'	42.35'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
KBA-11-13A	11-14-06	0930	56.3°F	78%	29.91	clear
		1212	86.0°F	29%	29.94	clear

SAMPLING STATION

Well #	Station Type
KBA-11-13A	Monitoring well

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By
	Water	Grab		11-16-06	0810	SR-TB

Instruments	Manufacturer/Mode	Serial No.	Date of Cal.	Calib.Due	Reference
pH/Eh	Horiba U22	607026	11-8-06	Calib. daily	Auto Cal Solution
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					
Redox					

GROUND LEVEL DATA (before purging)

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: Geo Pump/2 S/N: N-0737 PURGE METHOD: Peristaltic Pump Pump Type:

Proq Cyc	Date	Time	Temp (C)	pH	Cond.	Units	Turb.	Units	D.O.	Units	Redox
2gal	11-16-06	0820	22.31°C	4.90	.464	S/cm	1.5	NTU	4.72	g/L	-44
4gal	11-16-06	0830	22.39°C	4.58	.486	S/cm	17.7	NTU	4.08	g/L	-41
6gal	11-16-06	0840	22.43°C	4.47	.523	S/cm	10.8	NTU	4.08	g/L	-39
8gal	11-16-06	0850	22.48°C	4.44	.536	S/cm	0.0	NTU	3.89	g/L	-32

Well purged to dryness: [ ] Yes [ ] No

Recorded by:	Date:	Reviewed by:	Date:

Sampled: 0855 0900 0905
dup. ms/msd

WELL MEASUREMENTS

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KAA-11-13B	11-14-06	0915	14.92'	90.57'	
		1207	14.92'	90.57'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
KAA-11-13B	11-14-06	0915	55.4°F	80%	29.91	clear
		1207	86.0°F	29%	29.94	clear

WELL MEASUREMENTS

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-15	11-14-06	1020	6.46'	38.97'	
		1308	6.46'	38.97'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
KBA-11-15	11-14-06	1020	72.5°F	41%	29.91	clear
		1308	84.6°F	29%	29.94	clear

WELL MEASUREMENTS

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-16	11-14-06	1121	6.80'	44.52'	
		1352	6.80'	44.52'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
KBA-11-16	11-14-06	1121	82.9°F	32%	29.94	clear
		1352	84.2°F	29%	29.94	clear

SAMPLING STATION

Well # KAA-11-16	Station Type monitoring well

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By
	water	Grab		11-15-06	1020	SR-TB

Instruments	Manufacturer/Model	Serial No.	Date of Cal.	Calib.Due	Reference
pH/Eh	Horiba 422	602026	11-8-06	Calib. Daily	Auto Cal Solution
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					
Redox					

GROUND LEVEL DATA (before purging)

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: Geo Pump 1/2 S/N: N-0737 PURGE METHOD: Peristaltic Pump Pump Type:

Proq Cyc	Date	Time	Temp (C)	pH	Cond.	Units	Turb.	Units	D.O.	Units	Redox
2gal	11-15-06	1020	24.98°C	6.78	.110	S/cm	0.0	NTU	3.19	g/L	-79
4gal	11-15-06	1030	24.88°C	5.58	.215	S/cm	0.0	NTU	3.25	g/L	-66
6gal	11-15-06	1040	24.67°C	5.05	.346	S/cm	22.4	NTU	3.87	g/L	-91
8 gal	11-15-06	1050	24.78°C	5.04	.380	S/cm	35.8	NTU	2.94	g/L	-110

Well purged to dryness: [ ] Yes [ ] No

Recorded by: Sam Rushan	Date: 11-15-06	Reviewed by:	Date:

Sampled: 1105

WELL MEASUREMENTS

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-17B	11-14-06	1112	5.40'	44.51'	
		1347	5.40'	44.51'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
KBA-11-17B	11-14-06	1112	83.3°F	29%	29.94	clear
		1347	84.2°F	29%	29.94	clear

WELL MEASUREMENTS

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-18	11-14-06	1105	4.43'	45.62'	
		1342	4.43'	45.62'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
KBA-11-18	11-14-06	1105	83.3°F	29%	29.94	clear
		1342	84.2°F	29%	29.94	clear

WELL MEASUREMENTS

VELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-20	11-14-06	1045	3.63'	39.92'	
		1327	3.63'	39.92'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
KBA-11-20	11-14-06	1045	83.3°F	35%	29.94	clear
		1327	84.2°F	29%	29.94	clear

WELL MEASUREMENTS

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-21	11-14-06	1035	4.01'	40.35'	
		1320	4.00'	40.35'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
KBA-11-21	11-14-06	1035	80.6°F	38%	29.94	clear
		1320	84.2°F	29%	29.94	clear

WELL MEASUREMENTS

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-22B	11-14-06	0905	12.48'	52.4'	
		1200	12.47'	52.4'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
KBA-11-22B	11-14-06	0905	54.5°F	81%	29.91	clear
		1200	86.0°F	29%	29.94	clear

WELL MEASUREMENTS

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-34	11-14-06	0940	14.30'	40.82'	
		1220	14.36'	40.82'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
KBA-11-34	11-14-06	0940	59.9°F	73%	29.91	clear
		1220	85.4°F	29%	29.94	clear

SAMPLING STATION

Well #	Station Type
KBA-11-34	monitoring well

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By
	water	Grab		11-15-06	1305	SR-TB

Instruments	Manufacturer/Model	Serial No.	Date of Cal.	Calib.Due	Reference
pH/Eh	Horiba U22	602026	11-8-06	Calib daily	Auto cal solution
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					
Redox					

GROUND LEVEL DATA (before purging)

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: Geo Pump/2 S/N: N-0737 PURGE METHOD: Peristaltic Pump Pump Type:

Proq Cyc	Date	Time	Temp (C)	pH	Cond.	Units	Turb.	Units	D.O.	Units	Redox
2gal	11-15-06	1305	24.34°c	5.42	.319	S/cm	52.8	NTU	3.49	g/L	-111
4gal	11-15-06	1315	24.25°c	5.41	.325	S/cm	44.2	NTU	2.79	g/L	-110
6gal	11-15-06	1325	24.29°c	5.41	.351	S/cm	43.1	NTU	2.75	g/L	-44
8gal	11-15-06	1335	24.14°c	5.27	.356	S/cm	8.1	NTU	3.25	g/L	-65

Well purged to dryness: [ ] Yes [ ] No

Recorded by:	Date:	Reviewed by:	Date:
Sam Rushar	11-15-06		

Sampled: 1350

WELL MEASUREMENTS

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-36	11-14-06	0945	14.84'	41.44'	
		1229	14.83'	41.44'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
KBA-11-36	11-14-06	0945	65.3°F	70%	29.91	clear
		1229	85.1°F	29%	29.94	clear

WELL MEASUREMENTS

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
KBA-11-37	11-14-06	1055	4.28'	38.25'	
		1335	4.28'	38.25'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
KBA-11-37	11-14-06	1055	84.2°F	29%	29.94	clear
		1335	84.2°F	29%	29.94	clear

SAMPLING STATION

Well #	Station Type
KRA-11-37	monitoring well

SAMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By
	water	Grab		11-15-06	0930	SR-TB

Instruments	Manufacturer/Mode	Serial No.	Date of Cal.	Calib.Due	Reference
pH/Eh	Horiba U22	602026	11-8-06	Calib. daily	AutoCal Solution
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					
Redox					

GROUND LEVEL DATA (before purging)

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: Geo Pump/2 S/N: N-0937 PURGE METHOD: Peristaltic Pump Pump Type:

Proq Cyc	Date	Time	Temp (C)	pH	Cond.	Units	Turb.	Units	D.O.	Units	Redox
2gal	11-15-06	0930	24.17°C	5.49	.233	S/cm	0.0	NTU	3.78	g/L	-86
4gal	11-15-06	0940	24.09°C	5.63	.359	S/cm	18.7	NTU	3.83	g/L	-108
6gal	11-15-06	0950	24.11°C	5.72	.392	S/cm	2.5	NTU	3.18	g/L	-113
8gal	11-15-06	1000	24.10°C	5.66	.431	S/cm	2.5	NTU	1.75	g/L	-117

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

Recorded by:	Date:	Reviewed by:	Date:
[illegible]	11-15-06		

Sampled: 1015

WELL MEASUREMENTS

WELL NUMBER ID	DATE	TIME	MEASURE TO WATER	MEASURE TO BOTTOM	PHOTO VAC
PS-2	11-14-06	1014	10.07'	37.75'	
		1300	10.06'	37.75'	

WEATHER CONDITIONS

WELL NUMBER ID	DATE	TIME	TEMPERATURE	HUMIDITY	BAR. PRESSEVE	SKY CONDITIONS
PS-2	11-14-06	1014	75.2°F	[redacted] 40%	29.91	clear
		1300	85.1°F	29%	29.94	clear

SAMPLING STATION

Well # PS-2	Station Type monitoring well

AMPLE

Sample ID	Sample Matrix	Sample Type	Collection Method	Date	Time	By
	Water	Grab		11-15-06	0830	SR-TB

Instruments	Manufacturer/Mode	Serial No.	Date of Cal.	Calib.Due	Reference
pH/Eh	Horiba U22	602026	11-8-06	Calib daily	Auto Cal Solution
Conductivity/Temp					
Dissolved Oxygen					
Turbidity					
Redox					

GROUND LEVEL DATA (before purging)

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: Geo Pump/2 S/N: N-0737 PURGE METHOD: Peristaltic Pump Pump Type:

Proq Cyc	Date	Time	Temp (C)	pH	Cond.	Units	Turb.	Units	D.O.	Units	Redox
2 gal	11-15-06	0835	21.18°C	5.49	.394	S/cm	42.6	NTU	3.11	g/L	-66 mv
4 gal	11-15-06	0845	21.44°C	5.44	.431	S/cm	15.9	NTU	3.81	g/L	-84 mv
6 gal	11-15-06	0855	21.54°C	5.46	.429	S/cm	28.1	NTU	4.16	g/L	-88 mv
8 gal	11-15-06	0905	21.69°C	5.41	.428	S/cm	14.2	NTU	3.30	g/L	-95 mv

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

acorded by: Sam Renshaw	Date: 11-15-06	Reviewed by:	Date:

Sampled: 0910

APPENDIX B
ANALYTICAL REPORTS

8540 Baycenter Road Jacksonville,Florida 32256 (904) 739-2277 (904) 739-2011 fax

Columbia Analytical Services INC.
An Employee - Owned Company

November 22, 2006

Service Request No: J0605538

Sam Ross
VT Griffin Services
P.O. Box 47248
Kings Bay, GA 31547

RE: NSB Kings Bay/Site 11

Dear Sam:

Enclosed are the results of the sample(s) submitted to our laboratory on November 17, 2006. For your reference, these analyses have been assigned our service request number J0605538.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 289. You may also contact me via email at TKissinger@jax.caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Tom Kissinger
Project Chemist

Laboratory Manager: Greg Jordan
Quality Assurance Officer: Kathy Brungard

CAS Jacksonville is NELAC-accredited by the State of Florida, #E82502 valid through 6/30/07. Other state accreditations include: Arkansas, #88-0600 valid through 1/12/06; Georgia, #904 valid through 6/30/07; Louisiana, #02086 valid through 6/30/07; Texas, #T104704197-06-TX valid through 5/31/07; North Carolina, #527 valid through 12/31/06; and South Carolina, #96021001 valid through 6/30/07.

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Non CLP Tier III (w/out Raw Data)

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This report contains a total of 99 pages

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	VT Griffin Services	**Service Request No.:**	J0605538
Project:	NSB Kings Bay	**Date Received:**	11/17/06
Sample Matrix:	water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III data deliverables including validation summary forms. When appropriate to the procedure, method blank results have been reported with each analytical test. Analytical procedures performed by the lab are validated in accordance with NELAC standards. Parameters that are included in the NELAC Fields of Testing but are not included in the lab's NELAC accreditation are identified in the discussion of each analytical procedure.

Sample Receipt

7 water samples were received for analysis at Columbia Analytical Services on 11/17/06. The samples were received in good condition and consistent with the accompanying chain of custody form. Samples are refrigerated at 4±2°C upon receipt at the lab.

Volatile Organic Compounds by GC-MS

Initial Calibration Exceptions

The primary evaluation criterion was exceeded for several analytes in Initial Calibration (ICAL) ID CAL1000. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the average percent recovery of all analytes in the calibration. The calibration meets the alternative evaluation criteria.

Continuing Calibration Verification Exceptions

The primary evaluation criterion was exceeded for the following analyte in Continuing Calibration Verification (CCV) JWG0603745-2: Bromomethane. The analyte in question was not detected in the associated field samples. Since the analyte was detected in the MRL check standard, instrument sensitivity was documented. The data quality was not significantly affected and no further corrective action was taken.

Matrix Spike Recovery Exceptions

The matrix spike and duplicate matrix spike recovery of Bromomethane for sample KBA-11-13A-NOV-15-06 was outside the lower control criterion. The analyte in question was not detected in the associated field samples. Since the analyte was detected in the MRL check standard, instrument sensitivity was documented. The data quality was not significantly affected and no further corrective action was taken.

The matrix spike recovery of cis-1,2-Dichloroethene for sample KBA-11-13A-NOV-15-06 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. No further corrective action was appropriate.

Lab Control Sample Exceptions

The spike recovery of Bromomethane for Laboratory Control Sample (LCS) JWG0603744-3 was outside the lower control criterion. The analyte in question was not detected in the associated field samples. Since the analyte was detected in the MRL check standard, instrument sensitivity was documented. The data quality was not significantly affected and no further corrective action was taken.

Approved by Tom D. Kissing **Date** 11/22/06

Client: VT Griffin Services
Project: NSB Kings Bay/Site 11

Service Request: J0605538

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
J0605538-001	KBA-11-PS2-NOV-15-06	11/15/06	09:10
J0605538-002	KBA-11-37-NOV-15-06	11/15/06	10:15
J0605538-003	KBA-11-16-NOV-15-06	11/15/06	11:05
J0605538-004	KBA-11-34-NOV-15-06	11/15/06	13:50
J0605538-005	KBA-11-13A-NOV-15-06	11/16/06	08:55
J0605538-006	KBA-11-13A-NOV-15-06-DUP	11/16/06	09:05
J0605538-007	TRIP BLANK	11/16/06	00:00

Data Qualifiers

Inorganic Data

- * The result is an outlier. See case narrative.
- # The control limit criteria are not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- E The result is an estimated amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- Z Too many colonies were present (TNTC). The numeric value represents the filtration volume.
- i The MRL/MDL has been elevated due to matrix interference.
- X See case narrative.

Metals Data

- * The result is an outlier. See case narrative.
- # The control limit criteria are not applicable. See case narrative.
- B The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- E The reported value is estimated because of the presence of matrix interference.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The result was determined by Method of Standard Additions (MSA).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL has been elevated due to matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.

Organic Data

- * The result is an outlier. See case narrative.
- # The control limit criteria are not applicable. See case narrative.
- A The tentatively identified compound is a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria were exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides)
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a chromatographic interference.
- X See case narrative.

Petroleum Hydrocarbon Specific

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Chain of Custody and Sample Receipt Documentation

Columbia Analytical Services INC.
An Employee-Owned Company
www.caslab.com

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

8540 Baycenter Rd. • Jacksonville, FL 32256 • (904) 739-2277 • 800-695-7222 x06 • FAX (904) 739-2011

PAGE 1 OF 1

SR# 10055-8
CAS Contact

Project Name: NSB Kings Bay	Project Number: [redacted] SITE 11
Project Manager: Fitzgerald	Report CC: Fitzgerald
Company/Address: VT Griffin SVC, P.O. Box 47248, Kings Bay GA 31547	
Phone #: 912-573-8686	FAX#: 912-573-4037
Sampler's Signature: Sam Renshaw	Sampler's Printed Name: Sam Renshaw

ANALYSIS REQUESTED (Include Method Number and Co[redacted]

PRESERVATIVE: 2

NUMBER OF CONTAINERS: GWPS

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

	CLIENT SAMPLE ID	LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	REMARKS/ ALTERNATE DESCRIPTION
	KBA-11-PS2-NOV15-06	2007HW0013	11/15/06	0910	WATER	3	
	KBA-11-37-NOV-15-06	2007HW0014	11/15/06	1015	WATER	3	
	KBA-11-16-NOV15-06	2007HW0015	11/15/06	1105	WATER	3	
	KBA-11-34-NOV15-06	2007HW0016	11/15/06	1350	WATER	3	
EG	KBA-11-13A-NOV15-06	2007HW0017	11/16/06	0855	WATER	3	
UP	KBA-11-13A NOV-15-06	2007HW0018	11/16/06	0900	WATER	3	
S/ SD	KBA-11-13A-NOV15-06	2007HW0019	11/16/06	0905	WATER	3	

SPECIAL INSTRUCTIONS/COMMENTS

GROUNDWATER PROTECTION STANDARDS.

See QAPP ☐

TURNAROUND REQUIREMENTS
_____ RUSH (SURCHARGES APPLY)
_____ STANDARD
REQUESTED FAX DATE _____
REQUESTED REPORT DATE _____

REPORT REQUIREMENTS
____ I. Results Only
____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
____ III. Results + QC and Calibration Summaries
____ IV. Data Validation Report with Raw Data
____ V. Speicalized Forms / Custom Report
Edata ____ Yes ____ No

INVOICE INFORMATION
RQN: RQ0002T728
PO#
BILL TO: VT Griffin SVC, P.O Box 47248, Kings Bay GA 31547

SAMPLE RECEIPT: CONDITION/COOLER TEMP: _____ CUSTODY SEALS: Y N

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature: Sam Renshaw	Signature: Cheryl Cash	Signature	Signature	Signature	Signature
Printed Name: S.P. Griffin	Printed Name: Cheryl Cash	Printed Name	Printed Name	Printed Name	Printed Name
Firm: 11-17-06 0725	Firm: VT GRIFFIN	Firm	Firm	Firm	Firm
Date/Time	Date/Time: 11/17/06 0730	Date/Time	Date/Time	Date/Time	Date/Time

Distribution: White - Return to Originator; Yellow - Lab Copy; Pink - Retained by Client

SCOC 1000-07

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

Client: VT Griffin SVC Service Request # JJ00538

Project: NSB Kings Bay

Cooler received on 11-17-06 and opened on 11-17-06 by SC

COURIER: CAS UPS FEDEX DHL CLIENT Tracking #

1	Were custody seals on outside of cooler?	Yes	No	N/A
2	Were seals intact, signed and dated?	Yes	No	N/A
3	Were custody papers properly filled out?	Yes	No	N/A
4	Temperature of cooler(s) upon receipt (Should be 4 +/-2 degrees C) 1.2			
5	Correct Temperature?	Yes	No	N/A
6	Were Ice or Ice Packs present	Yes	No	N/A
7	Did all bottles arrive in good condition (unbroken, etc....)?	Yes	No	N/A
8	Were all bottle labels complete (sample ID, preservation, etc....)?	Yes	No	N/A
9	Did all bottle labels and tags agree with custody papers? SC	Yes	No	N/A
10	Were the correct bottles used for the tests indicated?	Yes	No	N/A
11	Were all of the preserved bottles received with the appropriate preservative?	Yes	No	N/A
	HNO3 pH<2 H2SO4 pH<2 ZnAc2/NaOH pH>9 NaOH pH>12 HCl pH<2			
	Preservative additions noted below			
12	Were all samples received within analysis holding times?	Yes	No	N/A
13	Were VOA vials checked for absence of air bubbles? If present, note below	Yes	No	N/A
14	Where did the bottles originate?	CAS	Client	

Sample ID	Reagent	Manuf. Lot # or CAS Chem ID	ml added	Inititials

Additional comments and/or explanation of all discrepancies noted above:

Trip Blank not listed on CoC

Client approval to run samples if discrepancies noted: Date:

SR #: J0005338 Date: 11-17-06 Initials: SC

Note that pH is checked and meets the required pH criterion listed in the column heading unless otherwise noted on cooler receipt form.

	Bottle Code																													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	40mL	40mL	40mL	40mL	125mL	125mL	125mL	125mL	250mL	250mL	250mL	250mL	250mL	250mL	250mL	500mL	500mL	500mL	1L	1L	1L	1L	1L	2oz	4oz	8oz	16oz	5g	100mL	Misc.
Container	G	G	G	G	P	P	P	P	P	P	P	P	P	G	G	P	P	P	P	P	G	G	G	G	G	G	G	ENC	P	Misc.
Pres.		HCl	Sodium Thiosulfate	H2SO4		HCl	H2SO4	HNO3		H2SO4	HNO3	ZnAcetate NaOH	NaOH		HNO3		H2SO4	HNO3		HNO3		HCl	H2SO4						Sodium Thiosulfate	
Req. pH	N/A	<2	N/A	<2	N/A	<2	<2	<2	N/A	<2	<2	>9	>12	N/A	<2	N/A	<2	<2	N/A	<2	N/A	<2	<2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sample #	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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Summary Package

Organic Analysis:
Volatile Organic Compounds by GC/MS

Summary Package

Sample and QC Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client: VT Griffin Services
Project: NSB Kings Bay/Site 11

Service Request: J0605538

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
KBA-11-PS2-NOV-15-06	J0605538-001	11/15/2006	11/17/2006
KBA-11-37-NOV-15-06	J0605538-002	11/15/2006	11/17/2006
KBA-11-16-NOV-15-06	J0605538-003	11/15/2006	11/17/2006
KBA-11-34-NOV-15-06	J0605538-004	11/15/2006	11/17/2006
KBA-11-13A-NOV-15-06	J0605538-005	11/16/2006	11/17/2006
KBA-11-13A-NOV-15-06-DUP	J0605538-006	11/16/2006	11/17/2006
TRIP BLANK	J0605538-007	11/16/2006	11/17/2006
KBA-11-13A-NOV-15-06MS	JWG0603744-1	11/16/2006	11/17/2006
KBA-11-13A-NOV-15-06DMS	JWG0603744-2	11/16/2006	11/17/2006

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

ature: _____ Name: Sam Allen

Date: 11/22/06 Title: Organics Manager

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	VT Griffin Services	**Service Request:**	J0605538
ject:	NSB Kings Bay/Site 11	**Date Collected:**	11/15/2006
ple Matrix:	Water	**Date Received:**	11/17/2006

Volatile Organic Compounds by GC/MS

Sample Name:	KBA-11-PS2-NOV-15-06	**Units:**	ug/L
Lab Code:	J0605538-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	5.0	0.15	1	11/21/06	11/21/06	JWG0603744	
Chloromethane	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
Vinyl Chloride	**0.64**	J	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Bromomethane	ND	U	1.0	0.15	1	11/21/06	11/21/06	JWG0603744	*
Chloroethane	ND	U	1.0	0.19	1	11/21/06	11/21/06	JWG0603744	
Trichlorofluoromethane	ND	U	1.0	0.21	1	11/21/06	11/21/06	JWG0603744	
1,1-Dichloroethene	ND	U	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
Acetone	ND	U	50	1.9	1	11/21/06	11/21/06	JWG0603744	
Iodomethane (Methyl Iodide)	ND	U	5.0	1.1	1	11/21/06	11/21/06	JWG0603744	
Carbon Disulfide	ND	U	10	1.1	1	11/21/06	11/21/06	JWG0603744	
Methylene Chloride	ND	U	5.0	0.29	1	11/21/06	11/21/06	JWG0603744	
Methyl tert-Butyl Ether	ND	U	2.0	1.3	1	11/21/06	11/21/06	JWG0603744	
s-1,2-Dichloroethene	**0.63**	J	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
-Dichloroethane	**0.52**	J	1.0	0.080	1	11/21/06	11/21/06	JWG0603744	
Vinyl Acetate	ND	U	10	1.1	1	11/21/06	11/21/06	JWG0603744	
cis-1,2-Dichloroethene	**27**		1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
2-Butanone (MEK)	ND	U	10	0.97	1	11/21/06	11/21/06	JWG0603744	
Bromochloromethane	ND	U	1.0	0.28	1	11/21/06	11/21/06	JWG0603744	
Chloroform	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,1,1-Trichloroethane (TCA)	ND	U	1.0	0.17	1	11/21/06	11/21/06	JWG0603744	
Carbon Tetrachloride	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
Benzene	**0.68**	J	1.0	0.088	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichloroethane (EDC)	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
Trichloroethene (TCE)	**1.2**		1.0	0.20	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichloropropane	ND	U	1.0	0.10	1	11/21/06	11/21/06	JWG0603744	
Dibromomethane	ND	U	1.0	0.22	1	11/21/06	11/21/06	JWG0603744	
Bromodichloromethane	ND	U	1.0	0.099	1	11/21/06	11/21/06	JWG0603744	
cis-1,3-Dichloropropene	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
4-Methyl-2-pentanone (MIBK)	ND	U	25	0.94	1	11/21/06	11/21/06	JWG0603744	
Toluene	**0.49**	J	1.0	0.13	1	11/21/06	11/21/06	JWG0603744	
trans-1,3-Dichloropropene	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,1,2-Trichloroethane	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
Tetrachloroethene (PCE)	ND	U	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
2-Hexanone	ND	U	25	1.4	1	11/21/06	11/21/06	JWG0603744	

nents:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: VT Griffin Services
ject: NSB Kings Bay/Site 11
ıple Matrix: Water

Service Request: J0605538
Date Collected: 11/15/2006
Date Received: 11/17/2006

Volatile Organic Compounds by GC/MS

Sample Name: KBA-11-PS2-NOV-15-06
Lab Code: J0605538-001

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dibromochloromethane	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,2-Dibromoethane (EDB)	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Chlorobenzene	**0.94**	J	1.0	0.10	1	11/21/06	11/21/06	JWG0603744	
1,1,1,2-Tetrachloroethane	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Ethylbenzene	**9.0**		1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
m,p-Xylenes	**0.27**	J	2.0	0.19	1	11/21/06	11/21/06	JWG0603744	
o-Xylene	**0.22**	J	1.0	0.083	1	11/21/06	11/21/06	JWG0603744	
Styrene	ND	U	1.0	0.062	1	11/21/06	11/21/06	JWG0603744	
Bromoform	ND	U	1.0	0.28	1	11/21/06	11/21/06	JWG0603744	
1,1,2,2-Tetrachloroethane	ND	U	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
1,2,3-Trichloropropane	ND	U	1.0	0.24	1	11/21/06	11/21/06	JWG0603744	
ns-1,4-Dichloro-2-butene	ND	U	20	3.2	1	11/21/06	11/21/06	JWG0603744	
Dichlorobenzene	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
-Dichlorobenzene	**0.18**	J	1.0	0.085	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichlorobenzene	ND	U	1.0	0.080	1	11/21/06	11/21/06	JWG0603744	
1,2-Dibromo-3-chloropropane (DBCP	ND	U	2.0	0.85	1	11/21/06	11/21/06	JWG0603744	
Naphthalene	ND	U	10	0.11	1	11/21/06	11/21/06	JWG0603744	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	89	71-122	11/21/06	Acceptable
4-Bromofluorobenzene	102	79-120	11/21/06	Acceptable
Dibromofluoromethane	98	82-116	11/21/06	Acceptable
Toluene-d8	107	88-117	11/21/06	Acceptable

nents:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	VT Griffin Services	**Service Request:**	J0605538
ject:	NSB Kings Bay/Site 11	**Date Collected:**	11/15/2006
ple Matrix:	Water	**Date Received:**	11/17/2006

Volatile Organic Compounds by GC/MS

Sample Name:	KBA-11-37-NOV-15-06	**Units:**	ug/L
Lab Code:	J0605538-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	5.0	0.15	1	11/21/06	11/21/06	JWG0603744	
Chloromethane	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
Vinyl Chloride	**1.9**		1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Bromomethane	ND	U	1.0	0.15	1	11/21/06	11/21/06	JWG0603744	*
Chloroethane	ND	U	1.0	0.19	1	11/21/06	11/21/06	JWG0603744	
Trichlorofluoromethane	ND	U	1.0	0.21	1	11/21/06	11/21/06	JWG0603744	
1,1-Dichloroethene	ND	U	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
Acetone	**7.6**	J	50	1.9	1	11/21/06	11/21/06	JWG0603744	
Iodomethane (Methyl Iodide)	ND	U	5.0	1.1	1	11/21/06	11/21/06	JWG0603744	
Carbon Disulfide	ND	U	10	1.1	1	11/21/06	11/21/06	JWG0603744	
Methylene Chloride	ND	U	5.0	0.29	1	11/21/06	11/21/06	JWG0603744	
Methyl tert-Butyl Ether	ND	U	2.0	1.3	1	11/21/06	11/21/06	JWG0603744	
-1,2-Dichloroethene	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
-Dichloroethane	**0.26**	J	1.0	0.080	1	11/21/06	11/21/06	JWG0603744	
Vinyl Acetate	ND	U	10	1.1	1	11/21/06	11/21/06	JWG0603744	
cis-1,2-Dichloroethene	**4.7**		1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
2-Butanone (MEK)	ND	U	10	0.97	1	11/21/06	11/21/06	JWG0603744	
Bromochloromethane	ND	U	1.0	0.28	1	11/21/06	11/21/06	JWG0603744	
Chloroform	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,1,1-Trichloroethane (TCA)	ND	U	1.0	0.17	1	11/21/06	11/21/06	JWG0603744	
Carbon Tetrachloride	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
Benzene	**0.56**	J	1.0	0.088	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichloroethane (EDC)	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
Trichloroethene (TCE)	ND	U	1.0	0.20	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichloropropane	ND	U	1.0	0.10	1	11/21/06	11/21/06	JWG0603744	
Dibromomethane	ND	U	1.0	0.22	1	11/21/06	11/21/06	JWG0603744	
Bromodichloromethane	ND	U	1.0	0.099	1	11/21/06	11/21/06	JWG0603744	
cis-1,3-Dichloropropene	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
4-Methyl-2-pentanone (MIBK)	ND	U	25	0.94	1	11/21/06	11/21/06	JWG0603744	
Toluene	**0.29**	J	1.0	0.13	1	11/21/06	11/21/06	JWG0603744	
trans-1,3-Dichloropropene	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,1,2-Trichloroethane	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
Tetrachloroethene (PCE)	**0.17**	J	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
2-Hexanone	ND	U	25	1.4	1	11/21/06	11/21/06	JWG0603744	

nents:

Client: VT Griffin Services
ɔject: NSB Kings Bay/Site 11
nple Matrix: Water

Service Request: J0605538
Date Collected: 11/15/2006
Date Received: 11/17/2006

Volatile Organic Compounds by GC/MS

Sample Name: KBA-11-37-NOV-15-06
Lab Code: J0605538-002

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dibromochloromethane	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,2-Dibromoethane (EDB)	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Chlorobenzene	**3.1**		1.0	0.10	1	11/21/06	11/21/06	JWG0603744	
1,1,1,2-Tetrachloroethane	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Ethylbenzene	**1.7**		1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
m,p-Xylenes	ND	U	2.0	0.19	1	11/21/06	11/21/06	JWG0603744	
o-Xylene	**0.12**	J	1.0	0.083	1	11/21/06	11/21/06	JWG0603744	
Styrene	ND	U	1.0	0.062	1	11/21/06	11/21/06	JWG0603744	
Bromoform	ND	U	1.0	0.28	1	11/21/06	11/21/06	JWG0603744	
1,1,2,2-Tetrachloroethane	ND	U	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
1,2,3-Trichloropropane	ND	U	1.0	0.24	1	11/21/06	11/21/06	JWG0603744	
ns-1,4-Dichloro-2-butene	ND	U	20	3.2	1	11/21/06	11/21/06	JWG0603744	
Dichlorobenzene	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
-Dichlorobenzene	**3.5**		1.0	0.085	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichlorobenzene	**0.31**	J	1.0	0.080	1	11/21/06	11/21/06	JWG0603744	
1,2-Dibromo-3-chloropropane (DBCP	ND	U	2.0	0.85	1	11/21/06	11/21/06	JWG0603744	
Naphthalene	**3.2**	J	10	0.11	1	11/21/06	11/21/06	JWG0603744	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	90	71-122	11/21/06	Acceptable
4-Bromofluorobenzene	99	79-120	11/21/06	Acceptable
Dibromofluoromethane	98	82-116	11/21/06	Acceptable
Toluene-d8	112	88-117	11/21/06	Acceptable

nents:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: VT Griffin Services
ject: NSB Kings Bay/Site 11
ple Matrix: Water

Service Request: J0605538
Date Collected: 11/15/2006
Date Received: 11/17/2006

Volatile Organic Compounds by GC/MS

Sample Name: KBA-11-16-NOV-15-06
Lab Code: J0605538-003

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	**0.19**	J	5.0	0.15	1	11/21/06	11/21/06	JWG0603744	
Chloromethane	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
Vinyl Chloride	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Bromomethane	ND	U	1.0	0.15	1	11/21/06	11/21/06	JWG0603744	*
Chloroethane	ND	U	1.0	0.19	1	11/21/06	11/21/06	JWG0603744	
Trichlorofluoromethane	ND	U	1.0	0.21	1	11/21/06	11/21/06	JWG0603744	
1,1-Dichloroethene	**0.33**	J	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
Acetone	ND	U	50	1.9	1	11/21/06	11/21/06	JWG0603744	
Iodomethane (Methyl Iodide)	ND	U	5.0	1.1	1	11/21/06	11/21/06	JWG0603744	
Carbon Disulfide	ND	U	10	1.1	1	11/21/06	11/21/06	JWG0603744	
Methylene Chloride	ND	U	5.0	0.29	1	11/21/06	11/21/06	JWG0603744	
Methyl tert-Butyl Ether	ND	U	2.0	1.3	1	11/21/06	11/21/06	JWG0603744	
-1,2-Dichloroethene	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
-Dichloroethane	**1.2**		1.0	0.080	1	11/21/06	11/21/06	JWG0603744	
Vinyl Acetate	ND	U	10	1.1	1	11/21/06	11/21/06	JWG0603744	
cis-1,2-Dichloroethene	**3.4**		1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
2-Butanone (MEK)	ND	U	10	0.97	1	11/21/06	11/21/06	JWG0603744	
Bromochloromethane	ND	U	1.0	0.28	1	11/21/06	11/21/06	JWG0603744	
Chloroform	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,1,1-Trichloroethane (TCA)	ND	U	1.0	0.17	1	11/21/06	11/21/06	JWG0603744	
Carbon Tetrachloride	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
Benzene	**0.38**	J	1.0	0.088	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichloroethane (EDC)	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
Trichloroethene (TCE)	ND	U	1.0	0.20	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichloropropane	ND	U	1.0	0.10	1	11/21/06	11/21/06	JWG0603744	
Dibromomethane	ND	U	1.0	0.22	1	11/21/06	11/21/06	JWG0603744	
Bromodichloromethane	ND	U	1.0	0.099	1	11/21/06	11/21/06	JWG0603744	
cis-1,3-Dichloropropene	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
4-Methyl-2-pentanone (MIBK)	ND	U	25	0.94	1	11/21/06	11/21/06	JWG0603744	
Toluene	ND	U	1.0	0.13	1	11/21/06	11/21/06	JWG0603744	
trans-1,3-Dichloropropene	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,1,2-Trichloroethane	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
Tetrachloroethene (PCE)	**0.31**	J	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
2-Hexanone	ND	U	25	1.4	1	11/21/06	11/21/06	JWG0603744	

nents:

Client: VT Griffin Services
ject: NSB Kings Bay/Site 11
ple Matrix: Water

Service Request: J0605538
Date Collected: 11/15/2006
Date Received: 11/17/2006

Volatile Organic Compounds by GC/MS

Sample Name: KBA-11-16-NOV-15-06
Lab Code: J0605538-003

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dibromochloromethane	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,2-Dibromoethane (EDB)	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Chlorobenzene	**0.27**	J	1.0	0.10	1	11/21/06	11/21/06	JWG0603744	
1,1,1,2-Tetrachloroethane	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Ethylbenzene	**3.5**		1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
m,p-Xylenes	**0.43**	J	2.0	0.19	1	11/21/06	11/21/06	JWG0603744	
o-Xylene	**0.12**	J	1.0	0.083	1	11/21/06	11/21/06	JWG0603744	
Styrene	ND	U	1.0	0.062	1	11/21/06	11/21/06	JWG0603744	
Bromoform	ND	U	1.0	0.28	1	11/21/06	11/21/06	JWG0603744	
1,1,2,2-Tetrachloroethane	ND	U	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
1,2,3-Trichloropropane	ND	U	1.0	0.24	1	11/21/06	11/21/06	JWG0603744	
ns-1,4-Dichloro-2-butene	ND	U	20	3.2	1	11/21/06	11/21/06	JWG0603744	
Dichlorobenzene	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
-Dichlorobenzene	ND	U	1.0	0.085	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichlorobenzene	ND	U	1.0	0.080	1	11/21/06	11/21/06	JWG0603744	
1,2-Dibromo-3-chloropropane (DBCP	ND	U	2.0	0.85	1	11/21/06	11/21/06	JWG0603744	
Naphthalene	**0.85**	J	10	0.11	1	11/21/06	11/21/06	JWG0603744	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	94	71-122	11/21/06	Acceptable
4-Bromofluorobenzene	105	79-120	11/21/06	Acceptable
Dibromofluoromethane	96	82-116	11/21/06	Acceptable
Toluene-d8	106	88-117	11/21/06	Acceptable

ments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: VT Griffin Services
oject: NSB Kings Bay/Site 11
nple Matrix: Water

Service Request: J0605538
Date Collected: 11/15/2006
Date Received: 11/17/2006

Volatile Organic Compounds by GC/MS

Sample Name: KBA-11-34-NOV-15-06
Lab Code: J0605538-004

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	5.0	0.15	1	11/21/06	11/21/06	JWG0603744	
Chloromethane	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
Vinyl Chloride	**0.21**	J	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Bromomethane	ND	U	1.0	0.15	1	11/21/06	11/21/06	JWG0603744	*
Chloroethane	ND	U	1.0	0.19	1	11/21/06	11/21/06	JWG0603744	
Trichlorofluoromethane	ND	U	1.0	0.21	1	11/21/06	11/21/06	JWG0603744	
1,1-Dichloroethene	ND	U	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
Acetone	**6.2**	J	50	1.9	1	11/21/06	11/21/06	JWG0603744	
Iodomethane (Methyl Iodide)	ND	U	5.0	1.1	1	11/21/06	11/21/06	JWG0603744	
Carbon Disulfide	ND	U	10	1.1	1	11/21/06	11/21/06	JWG0603744	
Methylene Chloride	ND	U	5.0	0.29	1	11/21/06	11/21/06	JWG0603744	
Methyl tert-Butyl Ether	ND	U	2.0	1.3	1	11/21/06	11/21/06	JWG0603744	
s-1,2-Dichloroethene	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
.-Dichloroethane	ND	U	1.0	0.080	1	11/21/06	11/21/06	JWG0603744	
Vinyl Acetate	ND	U	10	1.1	1	11/21/06	11/21/06	JWG0603744	
cis-1,2-Dichloroethene	**2.7**		1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
2-Butanone (MEK)	ND	U	10	0.97	1	11/21/06	11/21/06	JWG0603744	
Bromochloromethane	ND	U	1.0	0.28	1	11/21/06	11/21/06	JWG0603744	
Chloroform	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,1,1-Trichloroethane (TCA)	ND	U	1.0	0.17	1	11/21/06	11/21/06	JWG0603744	
Carbon Tetrachloride	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
Benzene	ND	U	1.0	0.088	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichloroethane (EDC)	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
Trichloroethene (TCE)	**0.60**	J	1.0	0.20	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichloropropane	ND	U	1.0	0.10	1	11/21/06	11/21/06	JWG0603744	
Dibromomethane	ND	U	1.0	0.22	1	11/21/06	11/21/06	JWG0603744	
Bromodichloromethane	ND	U	1.0	0.099	1	11/21/06	11/21/06	JWG0603744	
cis-1,3-Dichloropropene	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
4-Methyl-2-pentanone (MIBK)	ND	U	25	0.94	1	11/21/06	11/21/06	JWG0603744	
Toluene	ND	U	1.0	0.13	1	11/21/06	11/21/06	JWG0603744	
trans-1,3-Dichloropropene	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,1,2-Trichloroethane	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
Tetrachloroethene (PCE)	**5.1**		1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
2-Hexanone	ND	U	25	1.4	1	11/21/06	11/21/06	JWG0603744	

nents:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: VT Griffin Services
ject: NSB Kings Bay/Site 11
ple Matrix: Water

Service Request: J0605538
Date Collected: 11/15/2006
Date Received: 11/17/2006

Volatile Organic Compounds by GC/MS

Sample Name: KBA-11-34-NOV-15-06
Lab Code: J0605538-004

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dibromochloromethane	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,2-Dibromoethane (EDB)	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Chlorobenzene	**0.21**	**J**	1.0	0.10	1	11/21/06	11/21/06	JWG0603744	
1,1,1,2-Tetrachloroethane	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Ethylbenzene	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
m,p-Xylenes	ND	U	2.0	0.19	1	11/21/06	11/21/06	JWG0603744	
o-Xylene	ND	U	1.0	0.083	1	11/21/06	11/21/06	JWG0603744	
Styrene	ND	U	1.0	0.062	1	11/21/06	11/21/06	JWG0603744	
Bromoform	ND	U	1.0	0.28	1	11/21/06	11/21/06	JWG0603744	
1,1,2,2-Tetrachloroethane	ND	U	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
1,2,3-Trichloropropane	ND	U	1.0	0.24	1	11/21/06	11/21/06	JWG0603744	
trans-1,4-Dichloro-2-butene	ND	U	20	3.2	1	11/21/06	11/21/06	JWG0603744	
Dichlorobenzene	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
-Dichlorobenzene	**2.5**		1.0	0.085	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichlorobenzene	ND	U	1.0	0.080	1	11/21/06	11/21/06	JWG0603744	
1,2-Dibromo-3-chloropropane (DBCP	ND	U	2.0	0.85	1	11/21/06	11/21/06	JWG0603744	
Naphthalene	**0.16**	**J**	10	0.11	1	11/21/06	11/21/06	JWG0603744	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	88	71-122	11/21/06	Acceptable
4-Bromofluorobenzene	106	79-120	11/21/06	Acceptable
Dibromofluoromethane	97	82-116	11/21/06	Acceptable
Toluene-d8	109	88-117	11/21/06	Acceptable

ents:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: VT Griffin Services
ıject: NSB Kings Bay/Site 11
ıple Matrix: Water

Service Request: J0605538
Date Collected: 11/16/2006
Date Received: 11/17/2006

Volatile Organic Compounds by GC/MS

Sample Name: KBA-11-13A-NOV-15-06
Lab Code: J0605538-005

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	5.0	0.15	1	11/21/06	11/21/06	JWG0603744	
Chloromethane	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
Vinyl Chloride	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Bromomethane	ND	U	1.0	0.15	1	11/21/06	11/21/06	JWG0603744	*
Chloroethane	ND	U	1.0	0.19	1	11/21/06	11/21/06	JWG0603744	
Trichlorofluoromethane	ND	U	1.0	0.21	1	11/21/06	11/21/06	JWG0603744	
1,1-Dichloroethene	**0.48**	J	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
Acetone	ND	U	50	1.9	1	11/21/06	11/21/06	JWG0603744	
Iodomethane (Methyl Iodide)	ND	U	5.0	1.1	1	11/21/06	11/21/06	JWG0603744	
Carbon Disulfide	**4.9**	J	10	1.1	1	11/21/06	11/21/06	JWG0603744	
Methylene Chloride	ND	U	5.0	0.29	1	11/21/06	11/21/06	JWG0603744	
Methyl tert-Butyl Ether	ND	U	2.0	1.3	1	11/21/06	11/21/06	JWG0603744	
s-1,2-Dichloroethene	**1.2**		1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
-Dichloroethane	ND	U	1.0	0.080	1	11/21/06	11/21/06	JWG0603744	
Vinyl Acetate	ND	U	10	1.1	1	11/21/06	11/21/06	JWG0603744	
cis-1,2-Dichloroethene	**32**		1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
2-Butanone (MEK)	ND	U	10	0.97	1	11/21/06	11/21/06	JWG0603744	
Bromochloromethane	ND	U	1.0	0.28	1	11/21/06	11/21/06	JWG0603744	
Chloroform	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,1,1-Trichloroethane (TCA)	ND	U	1.0	0.17	1	11/21/06	11/21/06	JWG0603744	
Carbon Tetrachloride	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
Benzene	ND	U	1.0	0.088	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichloroethane (EDC)	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
Trichloroethene (TCE)	**8.8**		1.0	0.20	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichloropropane	ND	U	1.0	0.10	1	11/21/06	11/21/06	JWG0603744	
Dibromomethane	ND	U	1.0	0.22	1	11/21/06	11/21/06	JWG0603744	
Bromodichloromethane	ND	U	1.0	0.099	1	11/21/06	11/21/06	JWG0603744	
cis-1,3-Dichloropropene	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
4-Methyl-2-pentanone (MIBK)	ND	U	25	0.94	1	11/21/06	11/21/06	JWG0603744	
Toluene	**0.40**	J	1.0	0.13	1	11/21/06	11/21/06	JWG0603744	
trans-1,3-Dichloropropene	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,1,2-Trichloroethane	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
Tetrachloroethene (PCE)	**6.8**		1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
2-Hexanone	ND	U	25	1.4	1	11/21/06	11/21/06	JWG0603744	

nents:

Client: VT Griffin Services
ject: NSB Kings Bay/Site 11
ple Matrix: Water

Service Request: J0605538
Date Collected: 11/16/2006
Date Received: 11/17/2006

Volatile Organic Compounds by GC/MS

Sample Name: KBA-11-13A-NOV-15-06
Lab Code: J0605538-005

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dibromochloromethane	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,2-Dibromoethane (EDB)	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Chlorobenzene	**1.3**		1.0	0.10	1	11/21/06	11/21/06	JWG0603744	
1,1,1,2-Tetrachloroethane	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Ethylbenzene	**1.1**		1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
m,p-Xylenes	**0.29**	J	2.0	0.19	1	11/21/06	11/21/06	JWG0603744	
o-Xylene	ND	U	1.0	0.083	1	11/21/06	11/21/06	JWG0603744	
Styrene	ND	U	1.0	0.062	1	11/21/06	11/21/06	JWG0603744	
Bromoform	ND	U	1.0	0.28	1	11/21/06	11/21/06	JWG0603744	
1,1,2,2-Tetrachloroethane	ND	U	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
1,2,3-Trichloropropane	ND	U	1.0	0.24	1	11/21/06	11/21/06	JWG0603744	
ns-1,4-Dichloro-2-butene	ND	U	20	3.2	1	11/21/06	11/21/06	JWG0603744	
Dichlorobenzene	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
-Dichlorobenzene	**1.3**		1.0	0.085	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichlorobenzene	**0.17**	J	1.0	0.080	1	11/21/06	11/21/06	JWG0603744	
1,2-Dibromo-3-chloropropane (DBCP	ND	U	2.0	0.85	1	11/21/06	11/21/06	JWG0603744	
Naphthalene	**8.4**	J	10	0.11	1	11/21/06	11/21/06	JWG0603744	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	92	71-122	11/21/06	Acceptable
4-Bromofluorobenzene	102	79-120	11/21/06	Acceptable
Dibromofluoromethane	97	82-116	11/21/06	Acceptable
Toluene-d8	108	88-117	11/21/06	Acceptable

ments:

Client: VT Griffin Services
ject: NSB Kings Bay/Site 11
ple Matrix: Water

Service Request: J0605538
Date Collected: 11/16/2006
Date Received: 11/17/2006

Volatile Organic Compounds by GC/MS

Sample Name: KBA-11-13A-NOV-15-06-DUP
Lab Code: J0605538-006

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	5.0	0.15	1	11/21/06	11/21/06	JWG0603744	
Chloromethane	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
Vinyl Chloride	**0.16**	J	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Bromomethane	ND	U	1.0	0.15	1	11/21/06	11/21/06	JWG0603744	*
Chloroethane	ND	U	1.0	0.19	1	11/21/06	11/21/06	JWG0603744	
Trichlorofluoromethane	ND	U	1.0	0.21	1	11/21/06	11/21/06	JWG0603744	
1,1-Dichloroethene	**0.47**	J	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
Acetone	ND	U	50	1.9	1	11/21/06	11/21/06	JWG0603744	
Iodomethane (Methyl Iodide)	ND	U	5.0	1.1	1	11/21/06	11/21/06	JWG0603744	
Carbon Disulfide	**4.6**	J	10	1.1	1	11/21/06	11/21/06	JWG0603744	
Methylene Chloride	ND	U	5.0	0.29	1	11/21/06	11/21/06	JWG0603744	
Methyl tert-Butyl Ether	ND	U	2.0	1.3	1	11/21/06	11/21/06	JWG0603744	
s-1,2-Dichloroethene	**1.4**		1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
-Dichloroethane	ND	U	1.0	0.080	1	11/21/06	11/21/06	JWG0603744	
Vinyl Acetate	ND	U	10	1.1	1	11/21/06	11/21/06	JWG0603744	
cis-1,2-Dichloroethene	**36**		1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
2-Butanone (MEK)	ND	U	10	0.97	1	11/21/06	11/21/06	JWG0603744	
Bromochloromethane	ND	U	1.0	0.28	1	11/21/06	11/21/06	JWG0603744	
Chloroform	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,1,1-Trichloroethane (TCA)	ND	U	1.0	0.17	1	11/21/06	11/21/06	JWG0603744	
Carbon Tetrachloride	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
Benzene	ND	U	1.0	0.088	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichloroethane (EDC)	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
Trichloroethene (TCE)	**9.6**		1.0	0.20	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichloropropane	ND	U	1.0	0.10	1	11/21/06	11/21/06	JWG0603744	
Dibromomethane	ND	U	1.0	0.22	1	11/21/06	11/21/06	JWG0603744	
Bromodichloromethane	ND	U	1.0	0.099	1	11/21/06	11/21/06	JWG0603744	
cis-1,3-Dichloropropene	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
4-Methyl-2-pentanone (MIBK)	ND	U	25	0.94	1	11/21/06	11/21/06	JWG0603744	
Toluene	**0.40**	J	1.0	0.13	1	11/21/06	11/21/06	JWG0603744	
trans-1,3-Dichloropropene	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,1,2-Trichloroethane	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
Tetrachloroethene (PCE)	**7.8**		1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
2-Hexanone	ND	U	25	1.4	1	11/21/06	11/21/06	JWG0603744	

ments:

Client: VT Griffin Services
ıject: NSB Kings Bay/Site 11
ıple Matrix: Water

Service Request: J0605538
Date Collected: 11/16/2006
Date Received: 11/17/2006

Volatile Organic Compounds by GC/MS

Sample Name: KBA-11-13A-NOV-15-06-DUP
Lab Code: J0605538-006

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dibromochloromethane	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,2-Dibromoethane (EDB)	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Chlorobenzene	**1.2**		1.0	0.10	1	11/21/06	11/21/06	JWG0603744	
1,1,1,2-Tetrachloroethane	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Ethylbenzene	**1.0**		1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
m,p-Xylenes	**0.27**	J	2.0	0.19	1	11/21/06	11/21/06	JWG0603744	
o-Xylene	ND	U	1.0	0.083	1	11/21/06	11/21/06	JWG0603744	
Styrene	ND	U	1.0	0.062	1	11/21/06	11/21/06	JWG0603744	
Bromoform	ND	U	1.0	0.28	1	11/21/06	11/21/06	JWG0603744	
1,1,2,2-Tetrachloroethane	ND	U	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
1,2,3-Trichloropropane	ND	U	1.0	0.24	1	11/21/06	11/21/06	JWG0603744	
trans-1,4-Dichloro-2-butene	ND	U	20	3.2	1	11/21/06	11/21/06	JWG0603744	
Dichlorobenzene	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
-Dichlorobenzene	**1.2**		1.0	0.085	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichlorobenzene	ND	U	1.0	0.080	1	11/21/06	11/21/06	JWG0603744	
1,2-Dibromo-3-chloropropane (DBCP	ND	U	2.0	0.85	1	11/21/06	11/21/06	JWG0603744	
Naphthalene	**8.5**	J	10	0.11	1	11/21/06	11/21/06	JWG0603744	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	90	71-122	11/21/06	Acceptable
4-Bromofluorobenzene	103	79-120	11/21/06	Acceptable
Dibromofluoromethane	98	82-116	11/21/06	Acceptable
Toluene-d8	108	88-117	11/21/06	Acceptable

nents:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: VT Griffin Services
ject: NSB Kings Bay/Site 11
ple Matrix: Water

Service Request: J0605538
Date Collected: 11/16/2006
Date Received: 11/17/2006

Volatile Organic Compounds by GC/MS

Sample Name: TRIP BLANK
Lab Code: J0605538-007

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	5.0	0.15	1	11/21/06	11/21/06	JWG0603744	
Chloromethane	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
Vinyl Chloride	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Bromomethane	ND	U	1.0	0.15	1	11/21/06	11/21/06	JWG0603744	*
Chloroethane	ND	U	1.0	0.19	1	11/21/06	11/21/06	JWG0603744	
Trichlorofluoromethane	ND	U	1.0	0.21	1	11/21/06	11/21/06	JWG0603744	
1,1-Dichloroethene	ND	U	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
Acetone	ND	U	50	1.9	1	11/21/06	11/21/06	JWG0603744	
Iodomethane (Methyl Iodide)	ND	U	5.0	1.1	1	11/21/06	11/21/06	JWG0603744	
Carbon Disulfide	ND	U	10	1.1	1	11/21/06	11/21/06	JWG0603744	
Methylene Chloride	ND	U	5.0	0.29	1	11/21/06	11/21/06	JWG0603744	
Methyl tert-Butyl Ether	ND	U	2.0	1.3	1	11/21/06	11/21/06	JWG0603744	
-1,2-Dichloroethene	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
-Dichloroethane	ND	U	1.0	0.080	1	11/21/06	11/21/06	JWG0603744	
Vinyl Acetate	ND	U	10	1.1	1	11/21/06	11/21/06	JWG0603744	
cis-1,2-Dichloroethene	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
2-Butanone (MEK)	ND	U	10	0.97	1	11/21/06	11/21/06	JWG0603744	
Bromochloromethane	ND	U	1.0	0.28	1	11/21/06	11/21/06	JWG0603744	
Chloroform	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,1,1-Trichloroethane (TCA)	ND	U	1.0	0.17	1	11/21/06	11/21/06	JWG0603744	
Carbon Tetrachloride	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
Benzene	ND	U	1.0	0.088	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichloroethane (EDC)	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
Trichloroethene (TCE)	ND	U	1.0	0.20	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichloropropane	ND	U	1.0	0.10	1	11/21/06	11/21/06	JWG0603744	
Dibromomethane	ND	U	1.0	0.22	1	11/21/06	11/21/06	JWG0603744	
Bromodichloromethane	ND	U	1.0	0.099	1	11/21/06	11/21/06	JWG0603744	
cis-1,3-Dichloropropene	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
4-Methyl-2-pentanone (MIBK)	ND	U	25	0.94	1	11/21/06	11/21/06	JWG0603744	
Toluene	ND	U	1.0	0.13	1	11/21/06	11/21/06	JWG0603744	
trans-1,3-Dichloropropene	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,1,2-Trichloroethane	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
Tetrachloroethene (PCE)	ND	U	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
2-Hexanone	ND	U	25	1.4	1	11/21/06	11/21/06	JWG0603744	

nents:

Client: VT Griffin Services
ject: NSB Kings Bay/Site 11
ple Matrix: Water

Service Request: J0605538
Date Collected: 11/16/2006
Date Received: 11/17/2006

Volatile Organic Compounds by GC/MS

Sample Name: TRIP BLANK
Lab Code: J0605538-007

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dibromochloromethane	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,2-Dibromoethane (EDB)	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Chlorobenzene	ND	U	1.0	0.10	1	11/21/06	11/21/06	JWG0603744	
1,1,1,2-Tetrachloroethane	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Ethylbenzene	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
m,p-Xylenes	ND	U	2.0	0.19	1	11/21/06	11/21/06	JWG0603744	
o-Xylene	ND	U	1.0	0.083	1	11/21/06	11/21/06	JWG0603744	
Styrene	ND	U	1.0	0.062	1	11/21/06	11/21/06	JWG0603744	
Bromoform	ND	U	1.0	0.28	1	11/21/06	11/21/06	JWG0603744	
1,1,2,2-Tetrachloroethane	ND	U	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
1,2,3-Trichloropropane	ND	U	1.0	0.24	1	11/21/06	11/21/06	JWG0603744	
ns-1,4-Dichloro-2-butene	ND	U	20	3.2	1	11/21/06	11/21/06	JWG0603744	
Dichlorobenzene	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
,+-Dichlorobenzene	ND	U	1.0	0.085	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichlorobenzene	ND	U	1.0	0.080	1	11/21/06	11/21/06	JWG0603744	
1,2-Dibromo-3-chloropropane (DBCP	ND	U	2.0	0.85	1	11/21/06	11/21/06	JWG0603744	
Naphthalene	**0.74**	J	10	0.11	1	11/21/06	11/21/06	JWG0603744	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	89	71-122	11/21/06	Acceptable
4-Bromofluorobenzene	107	79-120	11/21/06	Acceptable
Dibromofluoromethane	95	82-116	11/21/06	Acceptable
Toluene-d8	105	88-117	11/21/06	Acceptable

ments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: VT Griffin Services
ject: NSB Kings Bay/Site 11
ple Matrix: Water

Service Request: J0605538
Date Collected: NA
Date Received: NA

Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: JWG0603744-4

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	5.0	0.15	1	11/21/06	11/21/06	JWG0603744	
Chloromethane	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
Vinyl Chloride	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Bromomethane	ND	U	1.0	0.15	1	11/21/06	11/21/06	JWG0603744	*
Chloroethane	ND	U	1.0	0.19	1	11/21/06	11/21/06	JWG0603744	
Trichlorofluoromethane	ND	U	1.0	0.21	1	11/21/06	11/21/06	JWG0603744	
1,1-Dichloroethene	ND	U	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
Acetone	ND	U	50	1.9	1	11/21/06	11/21/06	JWG0603744	
Iodomethane (Methyl Iodide)	ND	U	5.0	1.1	1	11/21/06	11/21/06	JWG0603744	
Carbon Disulfide	ND	U	10	1.1	1	11/21/06	11/21/06	JWG0603744	
Methylene Chloride	ND	U	5.0	0.29	1	11/21/06	11/21/06	JWG0603744	
Methyl tert-Butyl Ether	ND	U	2.0	1.3	1	11/21/06	11/21/06	JWG0603744	
-1,2-Dichloroethene	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
-Dichloroethane	ND	U	1.0	0.080	1	11/21/06	11/21/06	JWG0603744	
Vinyl Acetate	ND	U	10	1.1	1	11/21/06	11/21/06	JWG0603744	
cis-1,2-Dichloroethene	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
2-Butanone (MEK)	ND	U	10	0.97	1	11/21/06	11/21/06	JWG0603744	
Bromochloromethane	ND	U	1.0	0.28	1	11/21/06	11/21/06	JWG0603744	
Chloroform	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,1,1-Trichloroethane (TCA)	ND	U	1.0	0.17	1	11/21/06	11/21/06	JWG0603744	
Carbon Tetrachloride	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
Benzene	ND	U	1.0	0.088	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichloroethane (EDC)	ND	U	1.0	0.11	1	11/21/06	11/21/06	JWG0603744	
Trichloroethene (TCE)	ND	U	1.0	0.20	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichloropropane	ND	U	1.0	0.10	1	11/21/06	11/21/06	JWG0603744	
Dibromomethane	ND	U	1.0	0.22	1	11/21/06	11/21/06	JWG0603744	
Bromodichloromethane	ND	U	1.0	0.099	1	11/21/06	11/21/06	JWG0603744	
cis-1,3-Dichloropropene	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
4-Methyl-2-pentanone (MIBK)	ND	U	25	0.94	1	11/21/06	11/21/06	JWG0603744	
Toluene	ND	U	1.0	0.13	1	11/21/06	11/21/06	JWG0603744	
trans-1,3-Dichloropropene	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,1,2-Trichloroethane	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
Tetrachloroethene (PCE)	ND	U	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
2-Hexanone	ND	U	25	1.4	1	11/21/06	11/21/06	JWG0603744	

ments:

Client: VT Griffin Services
ject: NSB Kings Bay/Site 11
ple Matrix: Water

Service Request: J0605538
Date Collected: NA
Date Received: NA

Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: JWG0603744-4

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dibromochloromethane	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
1,2-Dibromoethane (EDB)	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Chlorobenzene	ND	U	1.0	0.10	1	11/21/06	11/21/06	JWG0603744	
1,1,1,2-Tetrachloroethane	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
Ethylbenzene	ND	U	1.0	0.12	1	11/21/06	11/21/06	JWG0603744	
m,p-Xylenes	ND	U	2.0	0.19	1	11/21/06	11/21/06	JWG0603744	
o-Xylene	ND	U	1.0	0.083	1	11/21/06	11/21/06	JWG0603744	
Styrene	ND	U	1.0	0.062	1	11/21/06	11/21/06	JWG0603744	
Bromoform	ND	U	1.0	0.28	1	11/21/06	11/21/06	JWG0603744	
1,1,2,2-Tetrachloroethane	ND	U	1.0	0.16	1	11/21/06	11/21/06	JWG0603744	
1,2,3-Trichloropropane	ND	U	1.0	0.24	1	11/21/06	11/21/06	JWG0603744	
ns-1,4-Dichloro-2-butene	ND	U	20	3.2	1	11/21/06	11/21/06	JWG0603744	
Dichlorobenzene	ND	U	1.0	0.14	1	11/21/06	11/21/06	JWG0603744	
-Dichlorobenzene	ND	U	1.0	0.085	1	11/21/06	11/21/06	JWG0603744	
1,2-Dichlorobenzene	ND	U	1.0	0.080	1	11/21/06	11/21/06	JWG0603744	
1,2-Dibromo-3-chloropropane (DBCP	ND	U	2.0	0.85	1	11/21/06	11/21/06	JWG0603744	
Naphthalene	ND	U	10	0.11	1	11/21/06	11/21/06	JWG0603744	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	89	71-122	11/21/06	Acceptable
4-Bromofluorobenzene	102	79-120	11/21/06	Acceptable
Dibromofluoromethane	94	82-116	11/21/06	Acceptable
Toluene-d8	105	88-117	11/21/06	Acceptable

nents:

Monitoring the Effectiveness of Natural Attenuation at the Old Camden County Landfill, Kings Bay Naval Submarine Base, Georgia, 2005

Francis H. Chapelle
Paul M. Bradley

U.S. Geological Survey Open-File Report
Water Resources Division
Columbia, SC

Prepared for:

Commanding Officer
Southern Division Naval Facilities Engineering Command
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Encl (2)

EXECUTIVE SUMMARY

Monitoring data collected over a six-year period show that a plume of chlorinated ethene-contaminated ground water has contracted significantly following treatment of the contaminant source area using in-situ oxidation. Prior to treatment (1998), concentrations of perchloroethene (PCE) exceeded 4,500 micrograms per liter (μg/L) in a contaminant source area associated with a municipal landfill in Kings Bay, Georgia. The plume emanating from this source area was characterized by vinyl chloride (VC) concentrations exceeding 800 μg/L. In-situ oxidation using Fenton's Reagent lowered PCE concentrations in the source area below 100 μg/L, and PCE concentrations have not rebounded above this level since treatment. In the six years following treatment, VC concentrations in the plume have decreased significantly. These concentration declines can be attributed to the movement of Fenton's Reagent-treated water downgradient through the system, the cessation of a previously installed pump-and-treat system, and the significant natural attenuation capacity of this anoxic aquifer. While in-situ oxidation briefly decreased the abundance and activity of microorganisms in the source area, this activity rebounded in less than six months. Nevertheless, the shift from sulfate-reducing to Fe(III)-reducing conditions induced by Fenton's treatment may have decreased the efficiency of reductive dechlorination in the injection zone. The results of this study indicate that source-area removal actions, particularly when applied to ground-water systems that have significant natural attenuation capacity, can be effective in decreasing the areal extent and contaminant concentrations of chlorinated ethene plumes.

INTRODUCTION

A combination of source-area removal by Fenton's Reagent in-situ oxidation, vegetable oil injection, and natural attenuation has been selected by Southern Division NAVFACENGCOM and by Georgia Department of Environmental Protection as corrective actions for chlorinated ethene-contaminated ground water at the Old Camden County Landfill, Naval Submarine Base, Kings Bay, Georgia. A comprehensive sampling and analysis program is being carried out by the U.S. Geological Survey to assess the effectiveness of this remedial strategy. This report summarizes the results of the sixth year (January, 2005 to October, 2005) of monitoring at this site.

METHODS AND MATERIALS

Geology, hydrology, and site history

The site is an abandoned landfill known as the Old Camden Road Landfill, located at the Naval Submarine Base (NSB) Kings Bay, Georgia. A map of the site showing the location of the contaminant source area and the locations of monitoring wells is shown in Figure 1. This site is underlain by sediments of back-barrier island and barrier island origin. The most permeable sands underlying the site are present between depths of 10 and 13 meters below land surface, and record sedimentation of a prograding barrier island. This permeable zone is underlain and overlain by finer-grained sands, clays, and organic-rich sediments of back-barrier origin that exhibit lower hydraulic conductivity. Aquifer tests and slug tests at this site indicate that hydraulic conductivities of the permeable sands range from 0.6 to 10 m/d. The lithology of these sands suggest that the permeable aquifer is characterized by higher hydraulic conductivities (K~10 m/d) relative to overlying and underlying sands. Because of its relative permeability, the aquifer is a preferential pathway for horizontal ground-water flow and contaminant transport in this system, and ground-water velocities are estimated to range from 15 to 30 m/y. Overlying the aquifer at depths of approximately 3-5 meters below land surface is a layer of organic-rich sands. This organic-rich layer has the important effect of removing dissolved oxygen from recharging water and producing uniformly anoxic conditions in the permeable zone.

The Old Camden Road landfill was used to dispose of municipal waste between 1974 and 1981. Trenches were excavated to a depth of between 2 and 3 meters, filled with waste, and covered with fill. At some time during waste-disposal operations, PCE was released at the landfill. The areal distribution of the PCE source area was previously identified by direct-push

sampling of ground water and aquifer sediments (Chapelle and Bradley, 1998). Prior to 1998, a discrete plume of chlorinated ethene-contaminated ground water emanated from the source area and flowed toward the northwest, and was first identified by direct push methods (ABB Environmental Services, Inc., 1997).

Water Chemistry Sampling

Ground-water samples for measurement of chlorinated ethenes and redox-sensitive parameters were collected quarterly between 1998 and 2003 from a network of monitoring wells used to further delineate the areal extent of the plume (Fig. 1). These small-diameter (2.52 cm) monitoring wells were screened between 10 and 12 meters below land surface in the contaminant-bearing high-permeablility zone. During sampling, each well was purged with a peristaltic pump until stable measurements of water temperature, conductivity, and pH were obtained. Samples for analysis of chlorinated ethenes (EPA method 8260) were collected in 40-ml glass vials, preserved with HCl, and capped with Teflon-lined septa for transport to the laboratory. Dissolved hydrogen (H_2) was measured using the gas-stripping procedure described in Chapelle et al. (1997). Concentrations of dissolved Fe(II), sulfide (Hach Co., 1989), and oxygen (Chemetrics Inc.) were measured in the field using colorimetric methods. Sulfate concentrations were measured using anion exchange chromatography with conductivity detection (Dionex Inc.). Samples for the analysis of methane were collected by filtering 2 mls of ground water (0.2 μm filters) into sealed 20 ml serum vials. In the laboratory, methane in the headspace of the vial was measured using gas chromatography with thermal conductivity detection. The amount of methane in ground water was then calculated from the headspace methane concentration using the Henry's law partition coefficient between the gaseous and dissolved

phases. Determination of predominant terminal electron-accepting processes was based on consumption of electron acceptors such as dissolved oxygen and sulfate, production of final products such as ferrous iron, sulfide, and methane, and concentrations of the intermediate product hydrogen (Chapelle et al.. 1995).

Results and Discussion

Monitoring Well Results

The locations of the USGS monitoring wells relative to the location of the contaminant source area as it existed prior to in-situ oxidation are shown in Figure 1. Ground-water chemistry parameters that indicate the efficiency of natural attenuation in the plume are shown in Tables 1-4, and data showing concentrations of chlorinated ethenes are shown in Tables 5-8. The following discussion highlights observed trends in concentrations of contaminants and effectiveness of natural attenuation at the site.

Concentrations of vinyl chloride (VC) in the plume as measured in August of 1998, prior to in-situ oxidation by Fenton's Reagent, are shown on Figure 2. At that time, concentrations of VC in the plume exceeded 800 μg/L (well USGS-6), and were also high (683 μg/L) in the plume adjacent to the neighborhood (well USGS-10). In contrast, plume concentrations of VC in October of 2005, are shown on Figure 3 and are much lower. The highest VC concentrations (140-180 μg/L) were observed at well USGS-4. Concentrations of both cis-DCE and VC have increased significantly since 1998, the only well on site where contaminant concentrations have been observed to increase over time. The highest concentration in the downgradient line of wells was observed in well USGS-11 (28 μg/L), and this represents an order of magnitude decrease since 1998. These results show that the size of the plume has contracted significantly in the six years since treatment, and that concentrations of contaminants in the remaining plume have in general decreased significantly. The increasing concentrations of cis-DCE and VC observed at well USGS-4 are the exception to this pattern, and merit close attention in the future.

A more detailed evaluation of contaminant concentration changes in the plume after

Fenton's Reagent treatment can be made by considering water-chemistry trends at individual monitoring wells. Concentration changes of sulfate and chlorinated ethenes over time measured at well USGS-3, which is representative of the monitoring wells closest to the Fenton's injection zone (Fig. 1), are shown in Figure 4. Because sulfate is an important component of Fenton's Reagent, and because background concentrations of sulfate are relatively low at this site (0-10 mg/L), sulfate is a useful tracer for ground water that has been impacted by in-situ oxidation treatment. After in-situ oxidation, concentrations of sulfate were observed to increase steadily for two years (Fig. 4A), and then, beginning in early 2001, to decline. This shows a "pulse" of high-sulfate water, indicative of Fenton's Reagent treatment, moved through the first line of monitoring wells soon after treatment. Concurrent with increasing concentrations of sulfate, concentrations of VC (Fig. 4A), trichloroethene (TCE), and cis-dichloroethene (cis-DCE) were observed to decline below measurable levels (Fig. 4B). These data show that Fenton's Reagent treatment was effective in removing chlorinated ethenes from ground water, and that treated ground water moving downgradient from the treatment zone immediately began to shrink the plume (Fig. 3).

Concentrations of sulfate and chlorinated ethenes in well KBA-13A, which is approximately 50 meters downgradient of the first line of monitoring wells, shows a pattern consistent with the transport of Fenton's Reagent-treated water progressively moving through the flow system over time. For more than a year, sulfate concentrations remained at background levels (~ 1 mg/L), and while concentrations of VC apparently decreased, they remained in the 20-60 μg/L range. In early 2000, sulfate concentrations began to rise rapidly, indicating the arrival of Fenton's Reagent-treated ground water. When sulfate concentrations peaked in mid-2001,

concentrations of VC had decreased below detectable levels (Fig. 5A). Concentration trends of TCE and cis-DCE show a more complex pattern (Fig. 5B). When sulfate-bearing water arrived at KBA-13A, concentrations of TCE appeared to increase over pre-injection levels. It wasn't until late in 2001 when concentrations of TCE began to decrease significantly. The pattern exhibited by cis-DCE is similar to that of VC, showing continual concentrations decreases after the arrival of sulfate.

The second line of monitoring wells, located immediately downgradient of KBA-13A, also shows a time-dependent pattern of sulfate and chlorinated ethene concentration changes. At well USGS-5, concentrations of sulfate began increasing in early 2002 (Fig. 6), peaked in late 2003, and have trended downward since that time. Concentrations of TCE were never measurable in water produced from USGS-5 due to the relatively efficient reductive dechlorination characteristic of this site (Chapelle and Bradley, 1998). Interestingly, however, concentrations of cis-DCE, which declined in the same manner as VC concentrations prior to arrival of treated water, actually began to increase when treated water first reached well USGS-5 (Fig. 6).

Sulfate concentrations have not increased at well USGS-4 (Fig. 6) indicating that the Fenton's-treated ground water is presently passing to the south of that well. In the absence of the arrival of Fenton's-treated ground water, concentrations of cis-DCE have increased significantly over time. This may indicate that the Fenton's injection has pushed untreated chlorinated ethene-contaminated water slightly to the north near the zone of injection, and that this untreated high cis-DCE water is now moving through well USGS-4 (Fig. 6). If that interpretation is correct, then a trend of decreasing cis-DCE concentrations should be observed as the untreated water

moves through well USGS-4 well over time. In fact, concentrations of cis-DCE have decreased for the last three quarterly samping events and may indicate the beginning of a decreasing trend. Concentration trends at well USGS-4 will be closely monitored over the next year, and duplicate samples will taken at each sampling event in order to assess apparent trends.

Concentration changes of chlorinated ethenes in the third line of monitoring wells are illustrated in Figure 7, and show differing patterns. Well USGS-9 shows a trend of decreasing VC and cis-DCE concentrations, a trend observed in six of the seven downgradient monitoring wells. By October of 2005, concentrations of VC have decreased below the detection level at wells USGS-13, and USGS-14, and concentrations of cis-DCE have also decreased over time. The sole exception is well USGS-11 (Fig. 7), where concentrations of VC and cis-DCE increased sharply in late 2000. Since 2000, however, there has been a downward trend in chlorinated ethane concentrations.

Redox Processes

Ground-water chemistry data suggest that the injection of Fenton's Reagent has modified ambient redox processes at the site. Prior to Fenton's Reagent treatment, the source area was predominantly sulfate-reducing as indicated by the depletion of dissolved sulfate and hydrogen concentrations in the 2-4 nM range characteristic of sulfate reduction. Downgradient of the sulfate-reducing source area, the system was predominantly Fe(III) reducing (Chapelle and Bradley, 1998). Following Fenton's treatment, concentrations of dissolved oxygen at well KBA-11-34 increased from below detectable levels (0.05 mg/L) to above 7 mg/L. Within three months, however, ground water at KBA-11-34 was once again anoxic but hydrogen concentrations have remained in the 0.2-0.8 nM range characteristic of Fe(III) reduction.

Similarly, as Fenton's-treated water has moved downgradient through the location of KBA-13A, concentrations of dissolved oxygen remained below detection levels (Fig. 8A), concentrations of ferrous iron and sulfate increased rapidly (Fig. 8B), and concentrations of dissolved sulfide and methane have decreased (Fig. 8C). Prior to the arrival of Fenton's treated water, hydrogen concentrations varied seasonally between levels characteristic of sulfate reduction (1-4 nM) and levels characteristic of Fe(III) reduction (0.2-0.8 nM). Since the Fenton's-treated water has arrived at KBA-11-13A, however, hydrogen concentrations have remained in the range characteristic of Fe(III) reduction. These data imply that the delivery of ferric iron to the aquifer via Fenton's Reagent has shifted the predominant microbial metabolism toward Fe(III) reduction.

The effect of vegetable oil on the water chemistry of well KBA-11-34, which is the closest monitoring well to the zone of vegetable oil injection, has become evident. Prior to May of 2003, concentrations of methane at KBA-11-34 were less than 1.0 mg/L. Beginning in September of 2003, however, concentrations of methane have increased to more than 6 mg/L. That, in turn, indicates microbial utilization of the vegetable oil, and may explain the relatively high numbers of microorganisms found in water from KBA-11-34 (U.S. Geological Survey, 2004). Bromide was added to the vegetable oil to act as a tracer. Previously, no evidence of bromide has been detected in water produced from any of the monitoring wells. However, in October of 2005 a concentration of 36.7 mg/L of bromide was detected in well USGS-2 (Table 4). This, in turn, suggests that vegetable oil-affected water has reached the first line of monitoring wells.

CONCLUSIONS

Ground-water monitoring data collected over a six-year period at the Kings Bay site

shows that source-area treatment by Fenton's Reagent has led to a significant contraction of the chlorinated ethene plume. There is considerable variability in the pattern of concentration decreases, however, that reflect a variety of hydrologic and microbiologic factors. In the upgradient part of the plume, for example, much of the observed concentration decline can be attributed directly to contaminant destruction by Fenton's Reagent (Well KBA-11-34). Furthermore, the movement of high-sulfate Fenton's-treated water downgradient also leads to declines in chlorinated ethene concentrations (wells KBA-11-13A and USGS-5). However, movement of low-sulfate, chlorinated ethene-contaminated ground water, possibly in response to Fenton's reagent injection, has served to increase chlorinated ethene concentrations in places (well USGS-4). Observed concentration changes observed in the downgradient part of the plume appear to reflect hydrologic changes induced by the cessation of pump-and-treat in the fall of 1998. Cessation of pumpage appears to have increased the effectiveness of ambient biodegradation process by slowing the rate that contaminants were being transported downgradient. These observations suggest that the efficiency of natural attenuation is an important factor in determining how contaminant plumes will respond to source-area treatment actions.

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Table 1.—Natural attenuation parameters, NAS Kings Bay, 1-25-05.

Sample	DO (mg/L)	Fe(II) (mg/L)	H_2S (mg/L)	pH (unitless)	NH_4^+ (mg/L)	CO_2 (mg/L)	DIC (mg/L)	CH_4 (mg/L)	Cl (mg/L)	Br (mg/L)	$SO_4^{=}$ (mg/L)	Temp (C)
KBA-11-34	0.0	43.3	2.625	4.13	0.60	1.66	324	8.5	9.0	<0.1	171	22.2
USGS-1	0.0	2.9	3.25	4.96			375	0.0	7.8	<0.1	186	22.2
USGS-2	0.0	14.8	0.625	4.03	0.55	3.00	304	0.6	7.8	<0.1	365	22.2
USGS-3	0.0	9.8	0.506	4.29	0.24	2.07	325	0.3	7.3	<0.1	322	21.9
USGS-15	0.0	8.95	1.70	4.03			268	0.4	8.4	<0.1	176	22.4
KBA-11-13A	0.0	12.3	0.567	4.28	1.20	4.46	387	0.4	9.2	<0.1	392	22.2
USGS-4	0.1	0.06	0.591	5.77			431	2.4	11	<0.1	23	22.2
USGS-4R	0.1	0.07	0.600	5.77			470	1.7	11.2	<0.1	10.7	22.2
USGS-5	0.0	2.42	0.389	5.36	1.1	5.21	461	1.1	10	<0.1	142	22.2
USGS-6	0.05	12.7	0.224	5.60	1.4	4.9	388	0.8	8.2	<0.1	36	22.7
USGS-7	0.0	13.3	0.220	4.14			492	0.5	8.7	<0.1	409	22.5
USGS-8	0.0	0.07	0.87	5.15			383	1.2	10.1	<0.1	28	22.2
USGS-8R	0.0	0.09	0.86	5.15			367	1.1	10.3	<0.1	23	22.2
USGS-9	0.0	0.08	0.285	5.35			193	0.1	8.9	<0.1	9.2	22.5
USGS-10	0.0	0.19	0.750	5.12	41.5	10.10	406	1.2	11	<0.1	4.0	22.2
USGS-11	0.0	0.03	0.122	4.55	5.9	8.8	307	1.2	8.9	<0.1	5.5	22.0
USGS-12	0.0	0.06	0.548	5.37			---	0.1	9.2	<0.1	6.2	21.1
USGS-13	0.1	0.06	0.046	5.13			121	0.0	5.1	<0.1	19.6	22.3
USGS-14	0.0	0.70	0.274	5.08			327	1.6	7.87	<0.1	17.2	22.4
KBA-11-37	0.0	0.19	0.750	4.70	3.8	7.3	298	1.4	11.2	<0.1	14	22.2

Table 2.—Natural attenuation parameters, NAS Kings Bay, 4-15-05..

Sample	DO (mg/L)	Fe(II) (mg/L)	H_2S (mg/L)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (mg/L)	Cl (mg/L)	Br (mg/L)	SO_4^{2-} (mg/L)	Temp (C)
KBA-11-34	0.00	13.0	1.225	4.88	1.12	5.7	266	1.6	7.17	<0.1	110	23.1
USGS-1	0.0	2.95	0.820	5.00			452	0	6.07	<0.1	147	21.9
USGS-2	0.00	34	1.050	4.10	1.12	7.8	440	0	6.84	<0.1	306	22.0
USGS-3	0.00	---	0.145	4.32	1.27	8.36	378	0	8.12	<0.1	264	21.8
USGS-15	0.00	7.5	1.890	4.12			328	0	6.86	<0.1	154	21.8
KBA-11-13A	0.00	43	0.875	4.28	1.10	7.50	421	3.1	7.84	<0.1	353	21.8
USGS-4	0.05	0.07	0.561	5.72			465	3.6	9.40	<0.1	14	21.3
USGS-4R	0.05	0.05	0.555	5.72			462	3.4	9.44	<0.1	13	21.3
USGS-5	0.20	13.4	0.244	5.44	1.60	9.75	458	1.2	8.00	<0.1	107	21.5
USGS-6	0.10	15.0	0.240	5.61	1.44	10.1	442	0.7	6.76	<0.1	31.4	21.6
USGS-7	0.00	125	0.400	5.28			465	0.6	7.69	<0.1	342	22.0
USGS-8	0.05	0.06	0.915	5.66			454	1.3	9.12	<0.1	20	22.0
USGS-8R	0.05	.07	0.985	5.66			438	1.3		<0.1		22.0
USGS-9	0.10	0.07	0.243	5.60			261	0	7.69	<0.1	11	21.9
USGS-10	0.10	0.08	1.100	5.66	2.7	7.71	408	0.9	10.45	<0.1	6.4	22.3
USGS-11	0.05	0.02	0.604	5.66	0.70	1.85	458	1.2	10.89	<0.1	5.0	22.2
USGS-12	0.05	0.01	0.790	5.52			374	1.0		<0.1		22.4
USGS-13	0.01	0.12	0.032	5.56			140	0	7.51	<0.1	16	22.4
USGS-14	0.10	0.163	0.21	5.53			302	1.4	7.92	<0.1	13.5	22.1
KBA-11-37	0.10	0.19	1.225	5.81	1.0	5.5	435	2.2	11.84	<0.1	13.9	22.1

Table 3.—Natural attenuation parameters, NAS Kings Bay, 7-20-05.

Sample	DO (mg/L)	$Fe(II)^{+}$ (mg/L)	H_2S (mg/L)	pH	[illegible]	CO_2 (mg/L)	TDS (mg/L)	CH_4 (mg/L)	Cl^- (mg/L)	Br^- (mg/L)	$SO_4^{=}$ (mg/L)	Temp (C)
KBA-11-34	0.00	25.3	1.975	4.92	0.15	1.62	360	5.3	10.28	<0.1	122	25.9
USGS-1	0.00	2.10	4.350	4.75			408	0		<0.1		23.0
USGS-2	0.00	28.1	0.700	3.83	0.41	1.14	---	0	8.44	<0.1	312	23.0
USGS-3	0.00	8.75	0.830	4.21	0.20	1.38	302	0	8.73	<0.1	256	22.7
USGS-15	0.00	7.75	1.620	3.88			325	0	8.65	<0.1	163	22.5
KBA-11-13A	0.00	29.3	1.250	4.14	0.17	5.1	386	0.7		<0.1		23.5
USGS-4	0.10	0.02	0.590	5.65	0.62	0.94	456	2.9	11.71	<0.1	25	23.5
USGS-4R	0.10	0.06	0.570	5.65			452	2.8		<0.1		23.5
USGS-5	0.00	25.0	0.350	5.24	0.31	1.2	443	0	10.61	<0.1	118	24.0
USGS-6	0.10	12.5	0.300	5.51	0.72	2.5	425	0	8.89	<0.1	30	24.4
USGS-7	0.00	64.5	0.625	5.11	0.34	3.1	441	0	8.41	<0.1	31	23.7
USGS-8	0.10	0.10	0.765	5.56			421	1.3	11.83	<0.1	24	23.5
USGS-9	0.00	0.10	0.340	5.74			285	0	9.46	<0.1	14	23.2
USGS-9R	0.00	0.11	0.295	5.74			296	0	9.38	<0.1	14	23.2
USGS-10	0.05	0.07	0.620	5.72	1.17	5.27	332	0	10.24	<0.1	8.2	23.0
USGS-11	0.00	0.06	0.700	5.72	0.50	3.47	443	1.7	11.71	<0.1	5.5	23.0
USGS-12	0.00	0.08	0.565	5.66			357	1.6	9.89	<0.1	5.0	23.1
USGS-13	0.10	0.08	0.115	5.75			143	0	10.19	<0.1	14.9	23.1
USGS-14	0.10	0.10	0.290	5.32			358	0.8	8.06	<0.1	15.93	23.3
KBA-11-37	0.40	0.21	1.025	5.64	0.15	3.47	458	3.1	12.55	<0.1	13.8	24.6

Table 4.—Natural attenuation parameters, NAS Kings Bay, 10-13-2005.

Sample	DO (mg/L)	Fe(II) (mg/L)	HS⁻ (mg/L)	pH	[illegible]	[illegible]	DIC (mg/L)	CH_4 (µg/L)	Cl (mg/L)	Br (mg/L)	SO_4^{2-} (mg/L)	Temp (C)
KBA-11-34	0.00	26.5	1.875	5.24	0.22	0.81	400	6.3	8.12	<0.1	105	---
USGS-1	0.00	0.75	3.950	5.04			403	0.2	6.19	<0.1	150	---
USGS-2	0.00	24.5	0.700	4.26	0.22	0.43	403	0.2	6.60	36.7	270	---
USGS-3	0.00	35.5	0.875	4.43	0.21	0.42	330	0.2	6.58	<0.1	230	---
USGS-15	0.00	6.5	2.200	4.19			379	0.9	6.3	<0.1	131	---
KBA-11-13A	0.00	19.8	0.875	4.38	0.31	0.75	417	0.2	7.18	<0.1	219	---
USGS-4	0.10	0.15	0.425	5.78			437	2.8	8.81	<0.1	22.9	---
USGS-4R	0.10	0.17	0.500	5.78			---	---	8.74	<0.1	18.1	---
USGS-5	0.20	17.8	0.425	5.52	0.27	1.06	424	0.8	8.04	<0.1	94.3	---
USGS-6	0.10	9.8	0.400	5.70			419	0.5	7.32	<0.1	30.4	---
USGS-7	0.00	47.5	0.525	5.36			422	0.3	7.34	<0.1	287	---
USGS-8	0.10	0.08	1.005	5.68			422	2.3	9.14	<0.1	17.4	---
USGS-9	0.10	0.04	0.525	5.67			288	0.2	26.8	<0.1	5.2	---
USGS-10	0.10	0.06	0.625	5.65	0.97	2.45	379	0.5	7.55	<0.1	7.0	---
USGS-11	0.00	0.10	0.200	5.72	0.36	1.75	420	1.8	8.83	<0.1	3.09	---
USGS-12	0.10	0.35	0.125	5.65			286	1.2	6.46	<0.1	1.34	---
USGS-13	0.05	0.11	0.550	5.67			170	0	10.67	<0.1	13.7	---
USGS-14	0.05	0.08	0.475	5.44			324	1.2	6.00	<0.1	12.4	---
KBA-11-37	0.05	0.02	0.995	5.74			424	1.6	8.95	<0.1	12.82	---
KBA-11-37R	0.05	0.00	1.00	5.74	0.56	1.35	426	2.5	4.47	<0.1	8.05	---

Table 5.–Chlorinated ethenes at Kings Bay, 1-25-04.

well no	PCE	TCE	cis-DCE	VC
KBA-11-34	35	2.7	230	<2
USGS-1	1.3	10	4.8	<2
USGS-2	14	12	4.5	<2
USGS-3	21	3.5	<1	<2
USGS-15	11	2.3	<1	<2
KBA-11-13A	38	12	16	<2
USGS-4	<1	3.3	560	180
USGS-4R	<1	3.5	700	180
USGS-5	<1	<1	11	37
USGS-6	<1	<1	5.1	2.2
USGS-7	<1	<1	5.1	<2
USGS-8	<1	<1	4.7	5.6
USGS-8R	<1	<1	5.0	5.5
USGS-9	<1	<1	2.1	2.7
USGS-10	<1	<1	53	34
USGS-11	<1	<1	42	8.5
USGS-12	<1	<1	37	7.0
USGS-13	<1	<1	2.0	<2
USGS-14	<1	<1	2.0	<2
KBA-11-37	<1	<1	5.6	<2

Table 6.–Chlorinated ethenes at Kings Bay, 4-15-05.

Well no.	PCE	TCE	[illegible]	[illegible]
KBA-11-34	11	<1	16	<2
USGS-1	1.4	8.4	4.6	<2
USGS-2	12	9.6	4.3	<2
USGS-3	17	2.9	<1	<2
USGS-15	8.5	1.9	<1	<2
KBA-11-13A	63	10	33	<2
USGS-4	<1	<1	820	180
USGS-4R	<1	3.9	970	180
USGS-5	<1	<1	9.9	30
USGS-6	<1	<1	4.7	<2
USGS-7	<1	<1	4.7	<2
USGS-8	<1	<1	5.5	5.7
USGS-8R	<1	<1	5.2	5.6
USGS-9	<1	<1	1.9	2.0
USGS-10	<1	<1	36	19
USGS-11	<1	<1	48	24
USGS-12	<1	<1	37	6.6
USGS-13	<1	<1	1.8	<2
USGS-14	<1	<1	1.4	<2
KBA-11-37	<1	<1	6.0	<2

Table 7.–Chlorinated ethenes at Kings Bay, 7-20-05

well no	PCE	TCE	cis-DCE	VC
KBA-11-34	19	1.6	110	<2
USGS-1	1.9	8.5	4.5	<2
USGS-2	15	9.1	4.3	<2
USGS-3	17	2.6	<1	<2
USGS-15	11	2.1	<1	<2
KBA-11-13A	18	9.8	14	<2
USGS-4	<1	5.2	660	140
USGS-4R	<1	5.0	650	150
USGS-5	<1	<1	9.5	32
USGS-6	<1	1.1	4.7	2.1
USGS-7	<1	<1	4.4	<2
USGS-8	<1	<1	8.0	13
USGS-9	<1	<1	2.1	2.8
USGS-9R	<1	<1	1.7	2.1
USGS-10	<1	<1	27	18
USGS-11	<1	<1	50	28
USGS-12	<1	<1	42	8.6
USGS-13	<1	<1	1.5	<2
USGS-14	<1	<1	1.5	<2
KBA-11-37	<1	<1	8.0	<2

Table 8.–Chlorinated ethenes at Kings Bay 10-13-2005.

well no	PCE	TCE	[illegible]	[illegible]
KBA-11-34	13	1.3	74	<2
USGS-1	2.1	7.9	4.9	<2
USGS-2	15	9.0	4.4	<2
USGS-3	16	2.5	<1	<2
USGS-15	8.9	1.8	2.8	<2
KBA-11-13A	2.4	6.3	6.3	<2
USGS-4	<1	6.8	630	180
USGS-4R	<1	6.2	650	150
USGS-5	<1	<1	9.3	27
USGS-6	<1	<1	5.2	<2
USGS-7	<1	<1	4.7	<2
USGS-8	<1	<1	9.8	2
USGS-9	<1	<1	2.0	2.5
USGS-10	<1	<1	26	17
USGS-11	<1	<1	57	28
USGS-12	<1	<1	46	9.6
USGS-13	<1	<1	1.5	<2
USGS-14	<1	<1	1.7	<2
KBA-11-37	<1	<1	9.0	<2
KBA-11-37R	<1	<1	9.2	<2

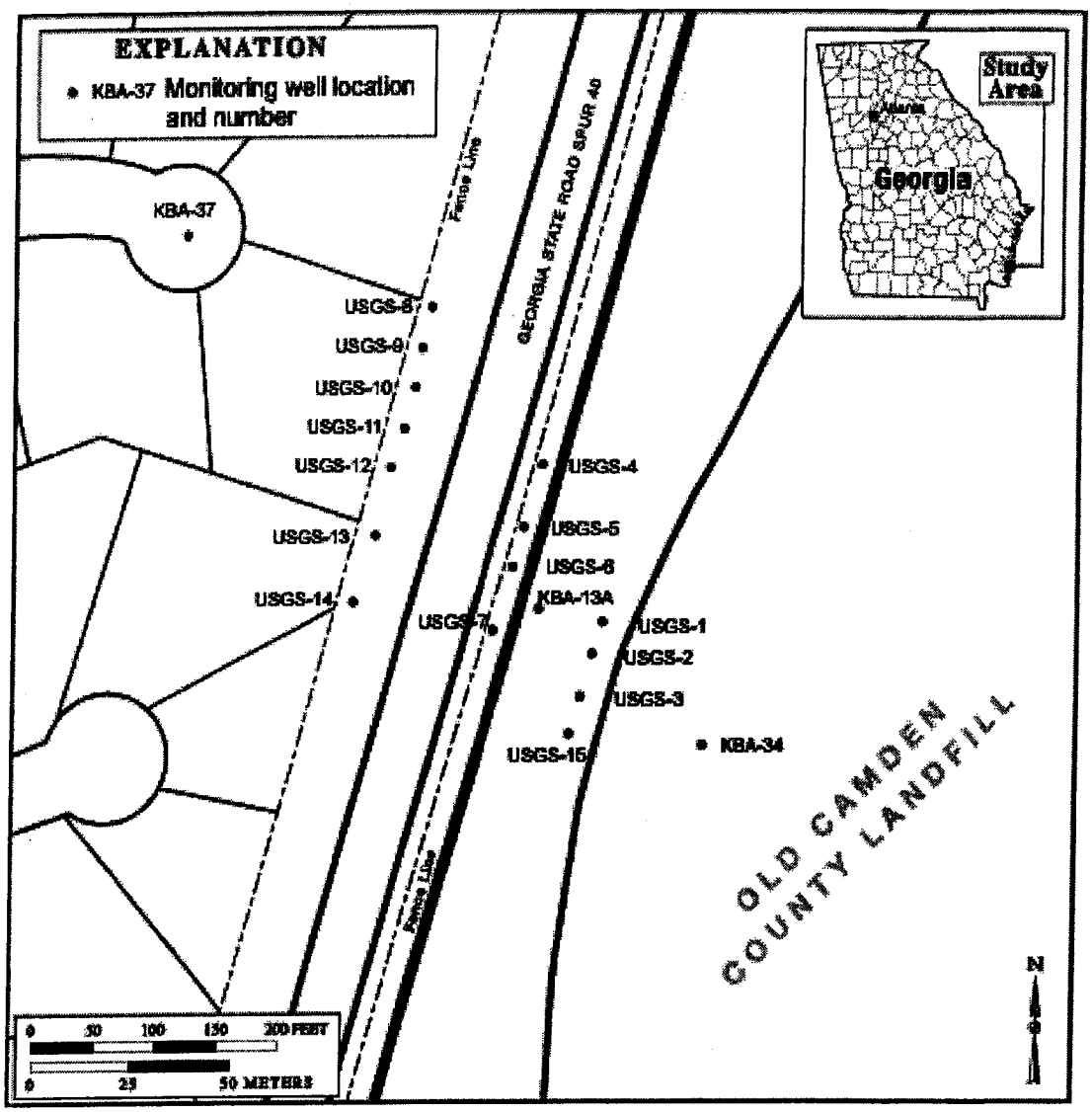


Figure 1.--Locations and numbers of monitoring wells at the Kings Bay site.

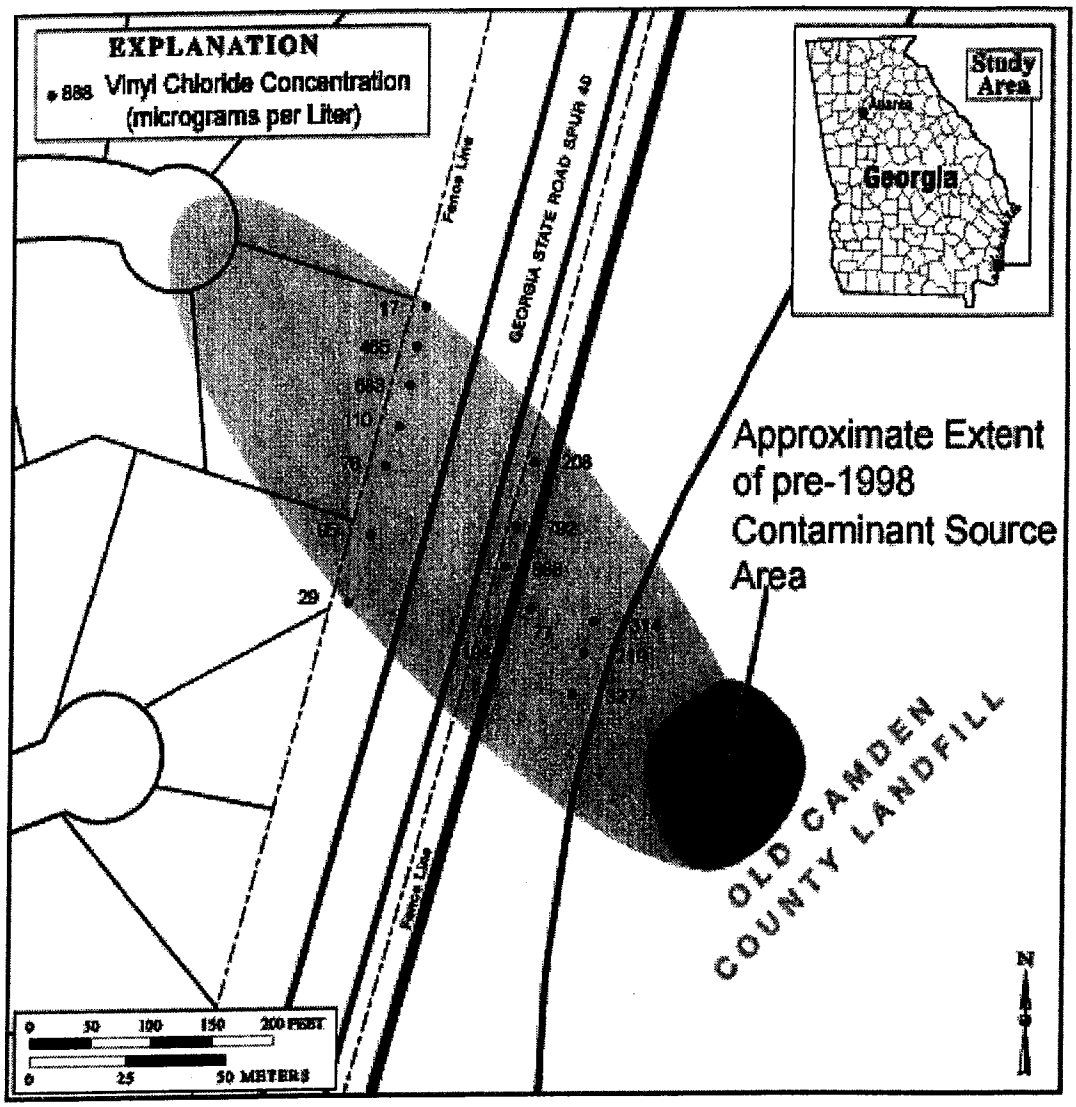


Figure 2.--Concentrations of vinyl chloride at the King's Bay Site, August 1998.

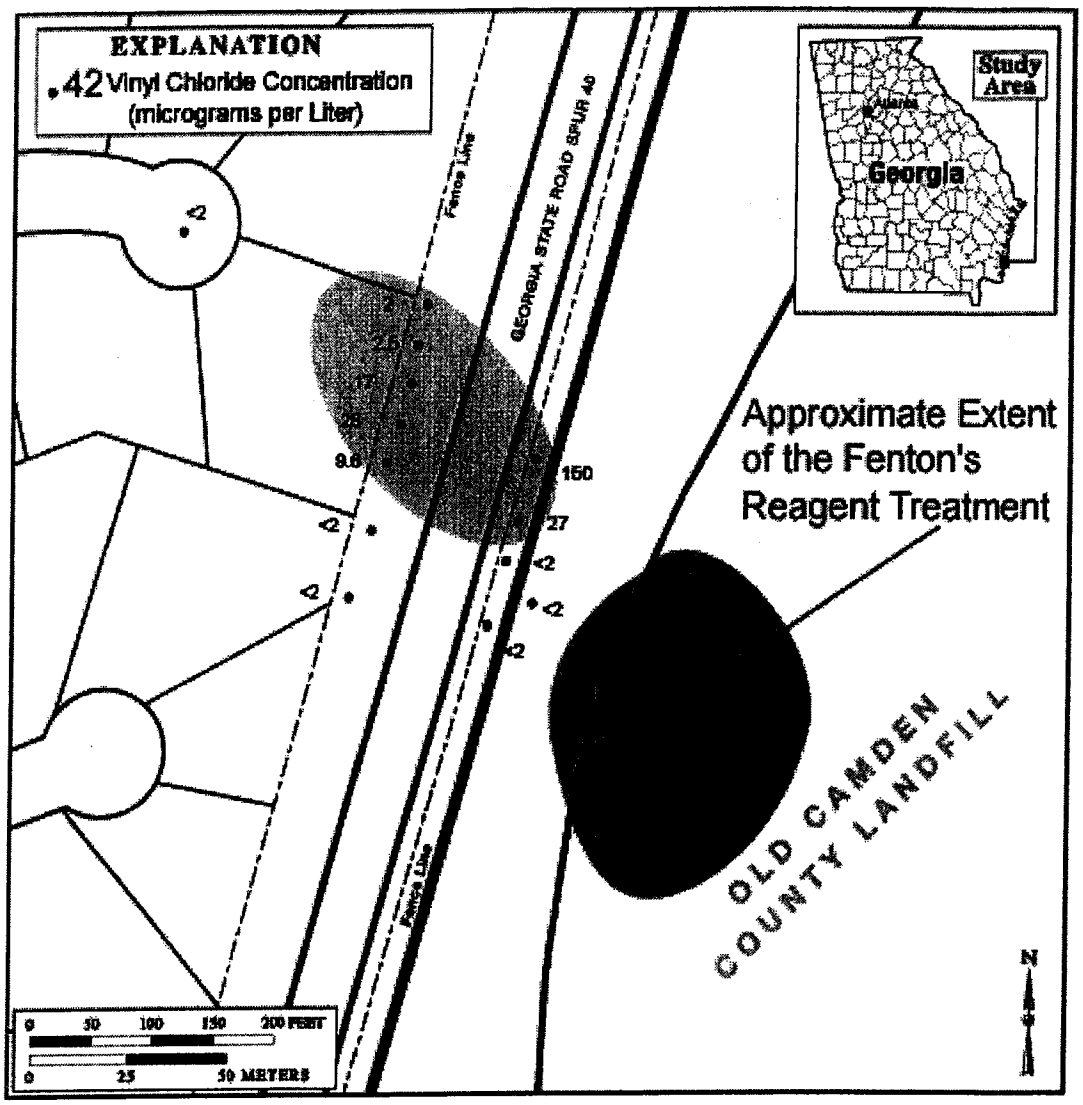


Figure 3.--Concentrations of vinyl chloride at the King's Bay Site, October 2005.

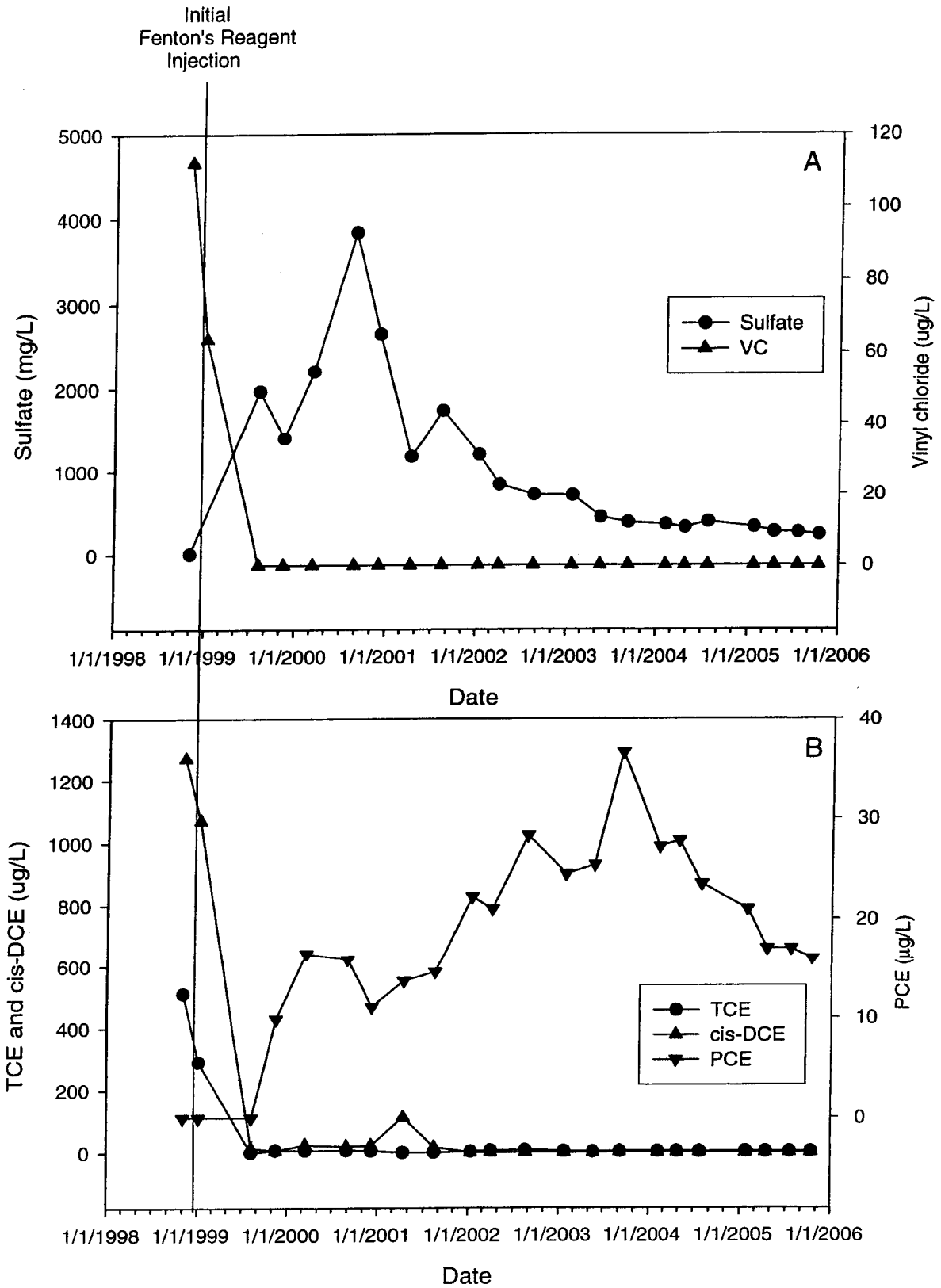


Figure 4. Concentration changes of sulfate and chlorinated ethenes over time at well USGS-3 between 1998 and 2005.

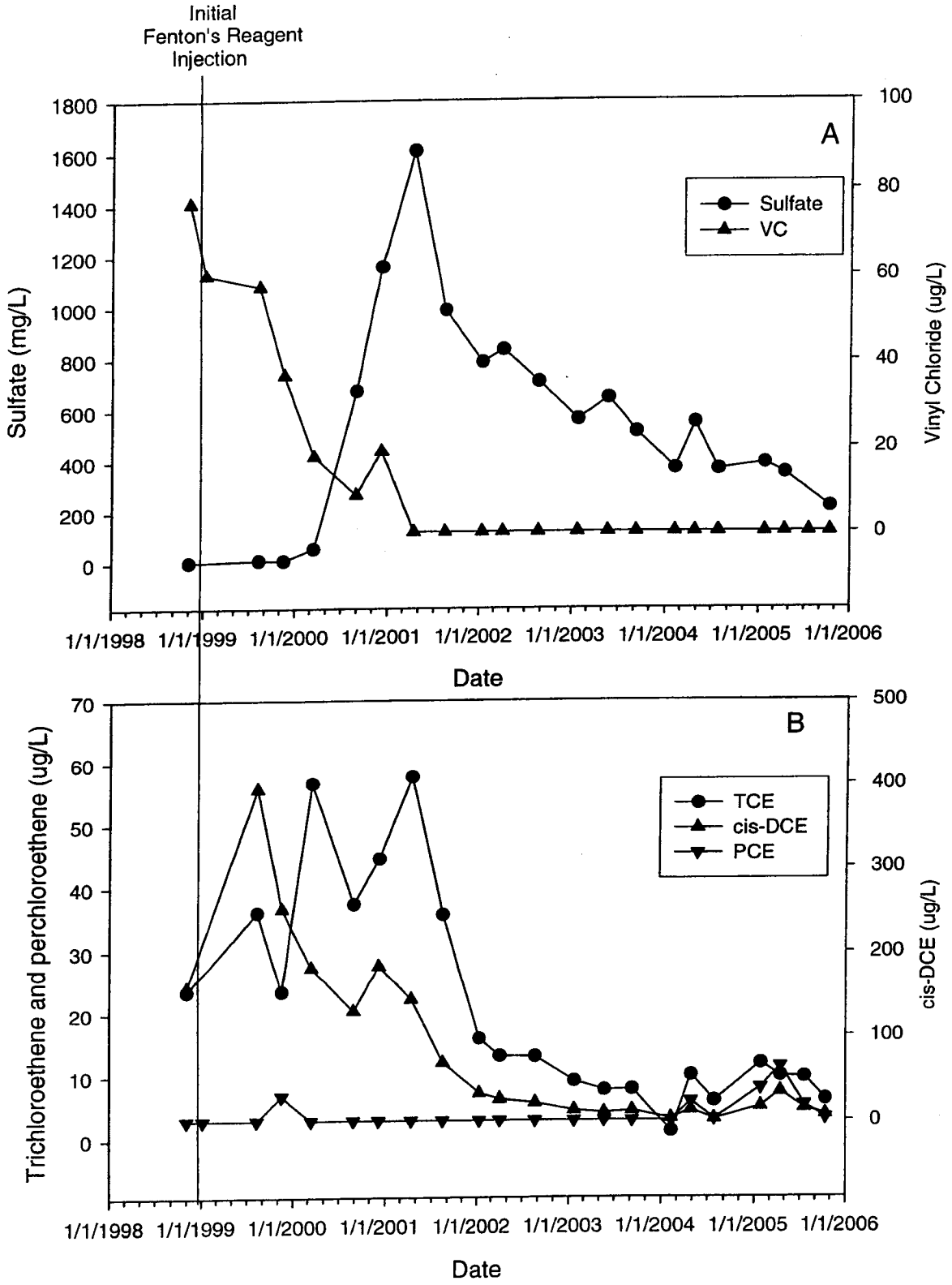
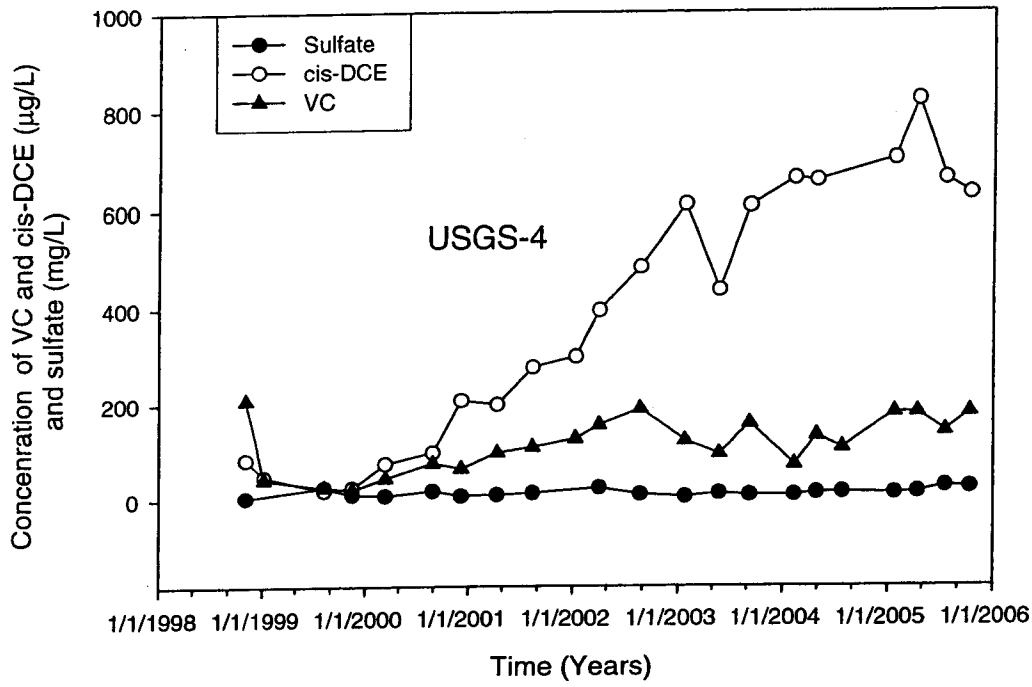


Figure 5. Concentration changes of sulfate and chlorinated etheover time at well KBA-13A between 1998 and 2005.



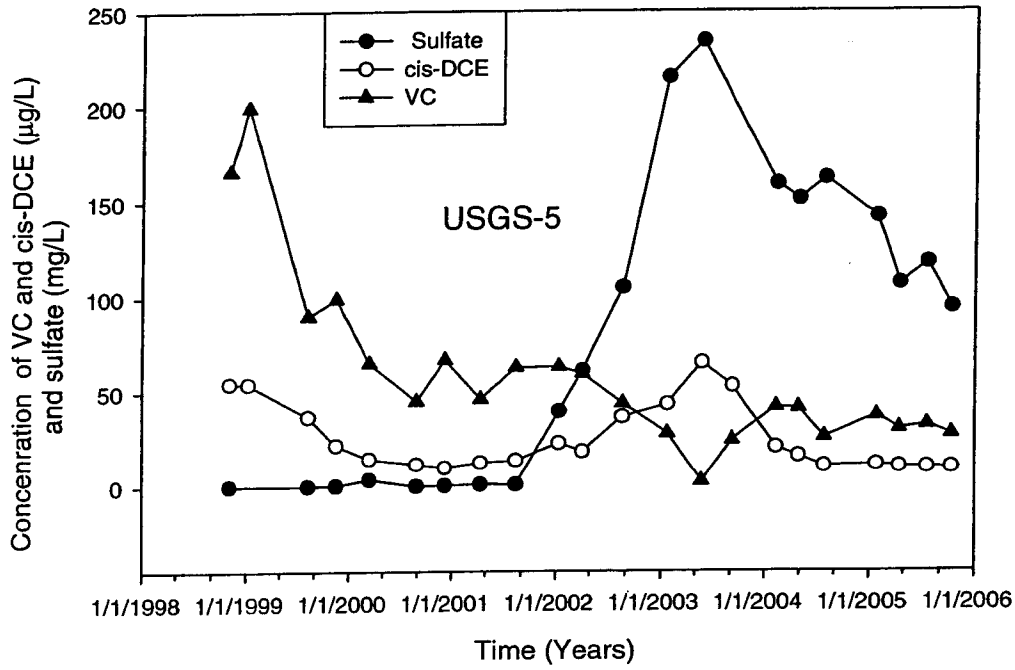


Figure 6.--Concentrationss of sulfate and chlorinated ethenes over time at wells USGS-4 and USGS-5.

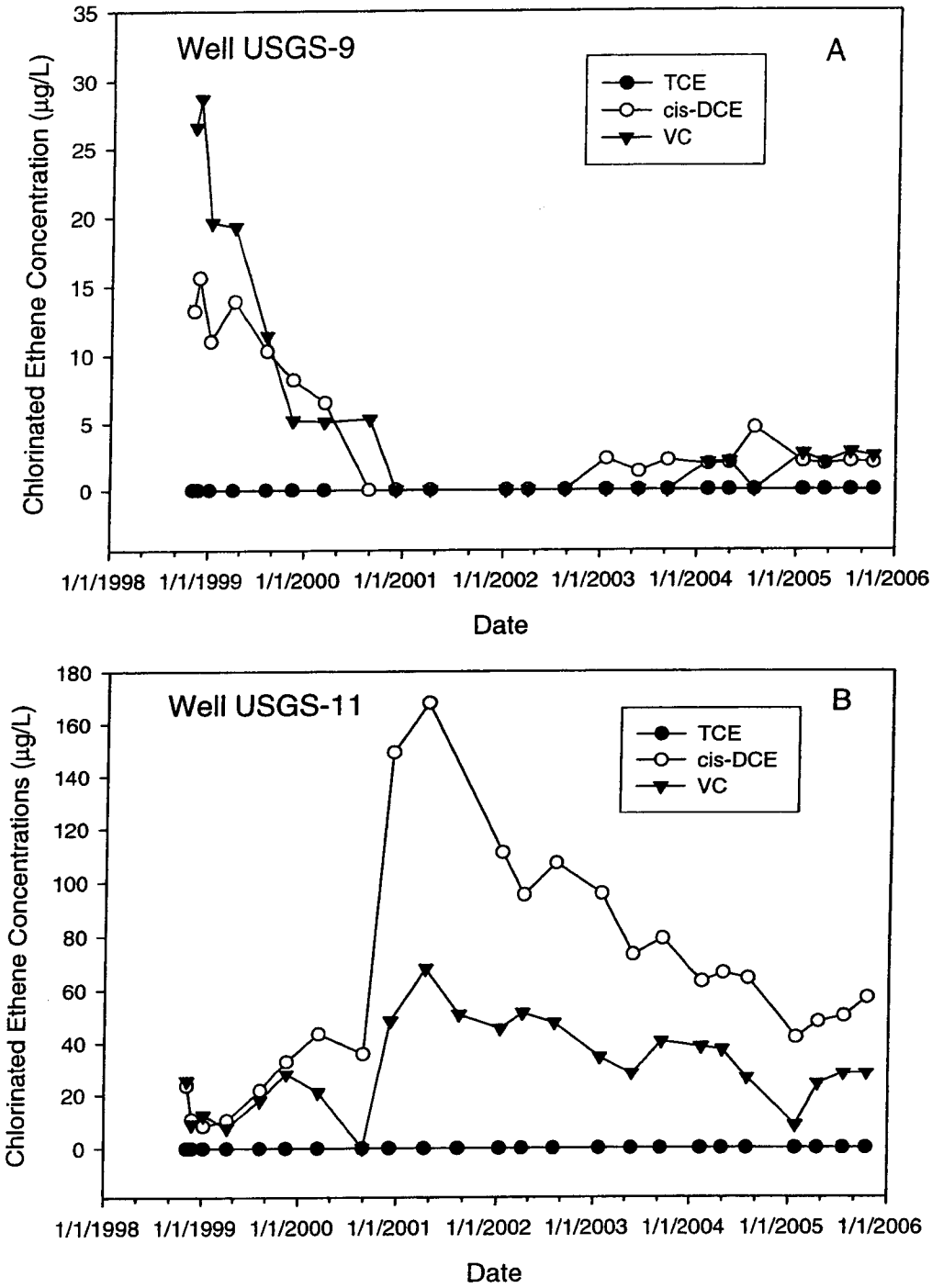


Figure 7.--Chlorinated ethene concentrations at downgradient wells USGS-9 and USGS-11between 1998 and 2005.

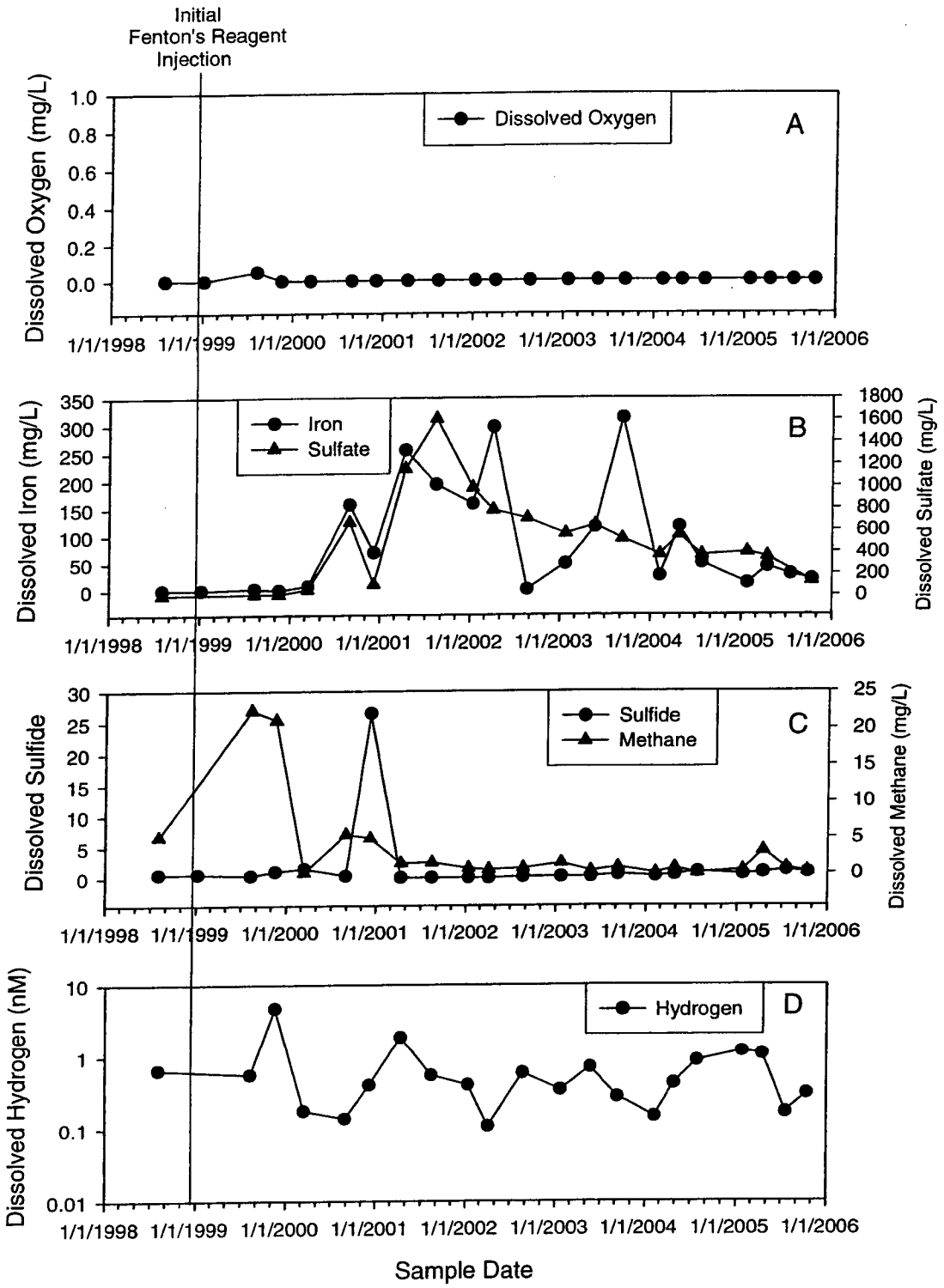


Figure 8.--Concentrations of dissolved redox-sensitive parameters at well KBA-13A between 1998 and 2005.