

## H-Area Hazardous Waste Management Facility Corrective Action Report, Third and Fourth Quarter 1999, Volumes I and II

RECORDS ADMINISTRATION



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by

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Exploration Resources

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# **H-Area Hazardous Waste Management Facility Corrective Action Report (U)**

**Third and Fourth Quarter 1999**

**Volume I**

**April 2000**

**Westinghouse Savannah River Company, LLC  
Savannah River Site  
Aiken, SC 29808**

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## EXECUTIVE SUMMARY

The groundwater in the uppermost aquifer beneath the H-Area Hazardous Waste Management Facility (HWMF) at the Savannah River Site (SRS) is routinely monitored for various hazardous and radioactive constituents as required by Module III, Section D, of the 1995 Resource Conservation and Recovery Act (RCRA) Renewal Permit (South Carolina Hazardous and Mixed Waste Permit SC1-890-008-989), effective October 5, 1995 (hereafter referred to as the RCRA permit). Currently, the H-Area HWMF monitoring network consists of 130 HSB wells and 8 HSL wells screened in the three hydrostratigraphic units that make up the regulatory uppermost aquifer beneath the H-Area HWMF (Figures 2–5, Appendix B). This report presents the results of the required groundwater monitoring program as identified in Section IIID.H.11.c of the RCRA permit and Section C of the Underground Injection Control (UIC) permit application (hereafter referred to as the UIC application).

The following constituents and indicators exceeded the Groundwater Protection Standards (GWPS) during the second half of 1999 in samples from monitoring wells at the H-Area HWMF: cadmium, cobalt, mercury, nitrate-nitrite (as N), vanadium, beta dose, gross alpha, nonvolatile beta, strontium-90, total radium (sum of radium-226 and radium-228), tritium, and the sum of alpha and sum of beta.

The following radionuclides exceeded the GWPS for either sum of alpha activity or sum of beta activity: carbon-14, cobalt-60, iodine-129, strontium-90, technetium-99, uranium-233/234, and uranium-238. In addition, radium-226 and radium-228 each individually exceeded the standard for total radium.

At least one constituent exceeded GWPS in 89 (65%) of the 138 H-Area wells during the second half of 1999. Tritium was the most widespread constituent detected above the GWPS; it exceeded GWPS in 85 (62%) of the wells during one or both quarters. In addition to tritium, nonvolatile beta and nitrate-nitrite as nitrogen exceeded GWPS in more than 30 wells.

Constituents exceeding the GWPS were found primarily in the Upper Aquifer Zone of the Upper Three Runs Aquifer (UAZ of the UTRA) and the Lower Aquifer Zone of the Upper Three Runs



Aquifer (LAZ of the UTRA). Isoconcentration maps included in Volume II of this report indicate both the concentration or activity and the extent of the contamination during the second half of 1999 in each of the three hydrostratigraphic units.

Water-level maps indicate that the groundwater velocities and directions at the H-Area HWMF have remained relatively constant since the basins were closed in 1991. Groundwater flow in the UAZ of the UTRA for Third and Fourth Quarter 1999 was south or southeast and in the LAZ of the UTRA, southeast toward Fourmile Branch. Flow in the Gordon Aquifer (GA) was northwest toward Upper Three Runs Creek.

The estimated groundwater velocities during the second half of 1999 ranged between approximately 722 ft/year during Third Quarter and 813 ft/year during Fourth Quarter in the UAZ of the UTRA. In the LAZ of the UTRA, velocity estimates were estimated to be 22 ft/year during both Third Quarter and Fourth Quarter. The estimated velocity in the GA was 173 ft/year for Third Quarter and 172 ft/year for Fourth Quarter 1999.

The H-Area Groundwater Remediation Wastewater Treatment Unit (WTU) facility operating permit was received on July 7, 1997, and shakedown operations began on July 8, 1997. The WTUs operated in a shakedown mode through the second quarter of 1999. Full operation of the H-Area WTU began on July 1, 1999.

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## **SEMIANNUAL CORRECTIVE ACTION REPORT**

### **Introduction**

Savannah River Site (SRS) monitors groundwater quality at the H-Area Hazardous Waste Management Facility (HWMF) and provides results of this monitoring to the South Carolina Department of Health and Environmental Control (SCDHEC) semiannually as required by the Resource Conservation and Recovery Act (RCRA) permit. SRS also performs monthly sampling of the Wastewater Treatment Unit (WTU) effluent in accordance with Section C of the Underground Injection Control (UIC) application.

The H-Area HWMF is described in the introduction to Module III, Section D, of the RCRA permit. The H-Area HWMF well network monitors three distinct hydrostratigraphic units in the uppermost aquifer beneath the facility. The hydrostratigraphy at the H-Area HWMF is described in RCRA permit Section IIID.H.2, and the groundwater monitoring system is described in IIID.H.4 and Appendix IIID-B. A detailed description of the regulatory uppermost aquifer is included in the RCRA Part B post-closure care RCRA permit renewal application for the H-Area HWMF submitted to SCDHEC in October 1993.

Sampling and analysis are conducted as required by Section IIID.H.6 for the constituents and at the intervals specified in Appendix IIID-D of the RCRA permit. Groundwater quality is compared to the Groundwater Protection Standards (GWPS) list described in Appendix IIID-A of the RCRA permit.

### ***System Evaluation***

The H-Area HWMF operated continuously for most of the Third and Fourth Quarter 1999. Approximately 36.5 million gallons were treated and injected. Even with a limited number of outages, the WTU operated with nearly 100% availability.

In the second half of 1999, no widespread changes in historical contaminant trends and/or levels were observed, which is expected because of the location of the monitoring well network in relation to the extraction and injection well networks and the amount of time since continuous operation. The

most evident event in the hydrographs is the large recharge to the shallow aquifer systems that occurred during 1998. The resulting water elevation increases and subsequent decreases are seen in almost every well, with deeper zones showing lesser responses as would be expected (e.g., well cluster HSB117). The water elevations began to decrease from these high levels in late 1998 and have continued to decrease throughout 1999.

Although no consistent drawdown or mounding effects were observed during the Third and Fourth Quarter 1999, inferred drawdown and mounding from test measurements look very promising. Figure 8 (Appendix B) shows an interpretation of the extent of injection and extraction well areas of influence and was created using aquifer testing results. Although the areas of influence are not directly equivalent to capture areas, the figure shows that the current extraction and injection well network appears to be adequate to affect a majority of the Phase I Capture Zones. It is anticipated that drawdown during operation is similar to the responses seen during aquifer testing, which indicate a significant zone of capture.

As discussed in following sections, a slight increase in water elevations in 1999 is indicated only in the hydrographs for HSB65 (Upper Aquifer Zone). The deviations are small, however, compared to the 1998 recharge event. It is expected that the water elevation effects from remedial activities will become more discernable as remedial operations continue.

In general, the plume configurations have not changed significantly since the First and Second Quarter 1999, though some of the concentration maps show slightly smaller plumes. Increases and decreases observed on time-series plots and control charts show no discernable correlation or pattern. The one clear exception is that injection of tritiated water is affecting HSB65 and HSB65C, which show a significant increase of tritium since mid-1998. This response is expected as this well cluster is very close to the injection well network. The rest of the monitoring wells are much further from the injection well network, and tritium response has not yet been observed in these wells.

The seepage line in the area of the H-Area HWMF has experienced a reduction of water in the past six months. This condition could be due to the current drought and/or the operation of nearby extraction wells of the remediation system. However, the specific cause has not yet been identified. The seepage line will continue to be observed.

A statistical evaluation of water quality and water level data was performed and is included in this report (Section IIID.H.11.c.ix). Shewhart-CUSUM charts (Appendix F) are provided in accordance with the RCRA permit application. Several trends in water quality and water levels were identified and are discussed in the Statistical Evaluation, Section IIID.H.11.c.x of this report.

### **Water Quality and Elevation Data Tables (IIID.H.11.c.i)**

Water quality and water elevation data for the second half of 1999 for all H-Area HWMF wells are presented in Table C-1 (Appendix C). Table C-1 includes modifiers that define laboratory accuracy and precision. Definitions of the abbreviations and the modifiers, as well as descriptions of holding times, data rounding, and data qualification practices are also provided in Appendix C. Constituents that exceeded either the GWPS or United States Environmental Protection Agency (US EPA)-approved holding times are denoted by symbols in columns headed ST and H, respectively.

SRS utilizes a data filtering process to better evaluate the data collected. This process qualifies certain data (those analyses with Functional Guideline codes *R*, *U*, and *J*) for the purposes of regulatory decision making. The data tables in Appendix C include both a column for all data collected and a column for filtered data for comparison purposes. Permission to implement the data filtering process was requested from SCDHEC and granted on April 21, 1998.

Variable-speed pumps have been installed in wells with a history of elevated analytical results for metals. Samples from wells with variable-speed pumps can be collected at a slower rate to minimize turbidity, which has been associated with elevated metals levels. The chart below identifies those wells that currently have variable-speed pumps. The remaining HSB wells have single-speed pumps.

<b>Variable-Speed Pumps</b>
HSB-67, 68, 69, 84A, 84D, 86C, 86D, 101D, 102D, 103D, 104D, 105D, 106D, 107D, 108D, 110D, 111D, 111E, 112D, 112E, 113D, 114C, 114D, 116C, 116D, 117C, 125D, and 136D
HSL-1D, 2D, 3D, 4D, 5D, 6D, 7D, and 8D

### ***Analytical Results***

All data received from the laboratories are validated and verified in accordance with SRS and US EPA guidelines. Due to analytical limitations, curium-245/246 activities are reported as an upper

limit of curium-246 activities, and uranium-233/234 activities are reported as an upper limit of uranium-234.

Data received from the laboratories for the following radionuclide analyses were rejected during Third Quarter 1999: cobalt-60 in two wells, curium-243/244 in one well, curium-245/246 in two wells, plutonium-238 in one well, plutonium-239/240 in two wells, thorium-228 in one well, and thorium-230 in three wells. This is a significant reduction in rejected values due to laboratory analytical problems compared to the first half of 1999.

Wells HSB109D and HSB113D could not be sampled during the second half of 1999 because they were consistently dry. Depth to water could not be determined for several wells because there was no water in the standpipe or the well was dry. As can be seen in Table 7, conditions were considerably dryer than normal for four of six months during the second half of 1999. As would be expected, current dry conditions did not affect the availability of water elevations for wells in the GA.

Table 1 summarizes the maximum activities detected for radionuclides and indicators in the H-Area groundwater during Third and Fourth Quarter 1999, and Table 2 summarizes the maximum concentrations detected for other constituents that exceeded the GWPS during Third and Fourth Quarter 1999. Note that the standard for beta dose factor is unitless; the associated value is the result of a calculation in which a factor of 1 or greater indicates an exceedance of the 4 mrem/yr standard for beta-emitting radionuclides.

**Table 1. Maximum Activities of Radionuclides and Indicators**

Radionuclide	Maximum Activity	Quarter	Well	Aquifer Unit	GWPS
Gross alpha	110 pCi/L	Fourth	HSB102D	UAZ of the UTRA	15 pCi/L
Nonvolatile beta	3,700 pCi/L	Fourth	HSB102D	UAZ of the UTRA	50 pCi/L
Strontium-90	1,000 pCi/L	Third	HSB115D	UAZ of the UTRA	8 pCi/L
Tritium	8,100 pCi/mL	Third	HSB137C	LAZ of the UTRA	20 pCi/mL
Total radium	17 pCi/L	Third	HSB115D	UAZ of the UTRA	5 pCi/L
Sum of alpha	40 pCi/L	Third	HSB102D	UAZ of the UTRA	15 pCi/L
Sum of beta	1,200 pCi/L	Third	HSB101D	UAZ of the UTRA	50 pCi/L
Beta dose factor	160	Third	HSB115D	UAZ of the UTRA	1

**Table 2. Maximum Concentrations of Nonradiological Constituents**

Constituent	Maximum Concentration	Quarter	Well	Aquifer Unit	GWPS
Cadmium	6.7 µg/L	Third	HSB113D	UAZ of the UTRA	5 µg/L
Cobalt	32 µg/L	Third	HSB115D	UAZ of the UTRA	3 µg/L
Mercury	23 µg/L	Third	HSB101D	UAZ of the UTRA	2 µg/L
Nitrate/nitrite as nitrogen	66,000 µg/L	Third	HSB145C	LAZ of the UTRA	10,000 µg/L
Vanadium	39 µg/L	Third	HSB101D	UAZ of the UTRA	4 µg/L

Note: During the evaluation of the Third and Fourth Quarter 1999 data, WSRC discovered that the data for HSB101C and HSB101D had apparently been switched during the period from September 1998 through 1999. A subsequent field investigation revealed that the identification signs on the wells had been switched due to human error. The signs have been corrected, and the corrected data sets for HSB101C and HSB101D during Third and Fourth Quarter 1998 and First and Second Quarter 1999 are provided in the errata section at the end of this report. The data for Third and Fourth Quarter 1999 have been corrected in Table C-1. WSRC has also conducted a similar data review to make sure a similar problem has not occurred with any other HSB wells.

### **Appendix IX Analyses**

Appendix IX samples were collected during Third Quarter 1999 in accordance with the RCRA permit. Based on the Appendix IX results, confirmation samples were required for sulfide, beryllium, and thallium. Confirmation sampling was performed during Fourth Quarter 1999, and the confirmation results indicated that beryllium and thallium were present in the groundwater above the sample-specific estimated quantitation limit (ssEQL) but below their respective maximum contaminant levels (MCLs) of 4 µg/L and 2 µg/L. Therefore, a modification will be submitted to the RCRA Permit Application to add beryllium and thallium to the GWPS list. All of the sulfide results were *U*, *J*, or *R* qualified. Therefore, the results are not considered valid confirmations for sulfide. The laboratory appears to be experiencing problems with the matrix spike recoveries for the sulfide analyses. SRS is investigating this problem and will correct it. Table 3 summarizes the Fourth Quarter 1999 confirmation sampling results.

**Table 3. Results from Appendix IX Confirmation Sampling**

Well Name	Sample Date	Constituent	Result	Qualifiers*	Filtered	Det. Limit	ssEQL	Units
HSB102D	12/9/99	Beryllium	0.544			0.034	0.2	µg/L
HSB113C	12/6/99	Beryllium	0.487			0.034	0.2	µg/L
HSB114C	12/6/99	Beryllium	0.605	//6		0.034	0.2	µg/L
HSB114C	12/6/99	Beryllium	<0.32	U//6	<1.6	0.16	1.6	µg/L
HSB114C	12/6/99	Beryllium	0.668	//6		0.034	0.2	µg/L
HSB114D	12/9/99	Beryllium	0.407			0.034	0.2	µg/L
HSB115D	12/9/99	Beryllium	0.701			0.034	0.2	µg/L
HSB101D	12/6/99	Sulfide	1	R/L/CI	Rej.	0.385	1	mg/L
HSB102D	12/9/99	Sulfide	<1	JU/LQ/C	<1	0.385	1	mg/L
HSB105D	12/9/99	Sulfide	0.58	J//LQ/C	NDD	0.385	1	mg/L
HSB114C	12/6/99	Sulfide	0.68	R/LQ/CI	Rej.	0.385	1	mg/L
HSB114C	12/6/99	Sulfide	<10,000	JU/Q/	<10,000	1,000	10,000	µg/L
HSB114C	12/6/99	Sulfide	0.58	R/LQ/CI	Rej.	0.385	1	mg/L
HSB114D	12/9/99	Sulfide	1.17	J/LQ/C	NDD	0.385	1	mg/L
HSB115D	12/9/99	Sulfide	0.78	J//LQ/C	NDD	0.385	1	mg/L
HSB113C	12/6/99	Thallium	1.79			0.014	0.5	µg/L
HSB115D	12/9/99	Thallium	0.804			0.014	0.5	µg/L

\*Notes: The format for the qualifier column is FG Code/STORET Code/EMS Code.

In the Filtered column, Rej. indicates a rejected result, and NDD indicates a result that is not "decision" data.

### **Water Elevations**

Synchronous water elevations were measured during Third and Fourth Quarter 1999 in compliance with Section IIID.H.7 of the RCRA permit. Potentiometric maps are provided in Volume II of this report. A discussion of the maps is given below in Section IIID.H.11.c.v of this report.

The synchronous water level measurement for well HSB145C was not performed during Fourth Quarter 1999. The sampling subcontractor could not provide a reason for this exclusion. SRS has requested the sampling subcontractor to provide better documentation for any such exclusion or mishap in the future.

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**Hydrographs (IIID.H.11.c.ii)**

Hydrographs showing the water elevations for the H-Area HWMF are provided in Appendix E. Hydrograph data include synchronous water level measurements and water level measurements taken during sampling. Clustered wells are shown on a single graph. A discussion of the hydrographs is given below in Section IIID.H.11.c.x of this report.

**Time vs. Concentration Plots (IIID.H.11.c.iii)**

Appendix D contains time series plots of mercury, nitrate/nitrite, gross alpha, iodine-129, nonvolatile beta, strontium-90, and tritium data for selected wells. The wells were selected to delineate the extent of the constituent distribution, to monitor the migration of the constituents, and to follow trends of constituents present at high levels. Constituents reported as below detection were not plotted. For data collected since October 1, 1998, data that have been filtered as described in Section IIIC.H.11.c.i of this report also are not plotted.

**Isoconcentration Maps (IIID.H.11.c.iv)**

Isoconcentration maps for iodine-129 and strontium-90 in the three hydrostratigraphic units during Third Quarter 1999 and for mercury, nitrate, gross alpha, nonvolatile beta, and tritium during Fourth Quarter 1999 are presented in Volume II of this report.

The contaminant concentrations/activities posted on the plume maps have undergone data filtering as described in Appendix C. The filtered maximum value for a given quarter is posted on the isoconcentration and isoactivity maps. However, SRS has made use of some "NDD" (not decision data) values on a case-by-case basis in accordance with SCDHEC guidance. NDD values consistent with surrounding data points have been considered in the positioning of the isoconcentration/isoactivity contours, but the NDD values are not posted on the maps because there is a lower level of certainty associated with the NDD points. All of the values (filtered and unfiltered) are provided in the Appendix C data tables.



### **Potentiometric Maps (IIID.H.11.c.v)**

Piezometric and potentiometric surface maps for the monitored water-bearing units during Third and Fourth Quarter 1999 are located in Volume II. Synchronous water elevations measured within a two-week time span were used to construct the piezometric and potentiometric maps. The maps illustrate groundwater flow patterns beneath the H-Area HWMF for Third and Fourth Quarter 1999. A regional decline in water levels in the UTRA was seen for the Third Quarter 1999 data (compared to First and Second Quarter 1999 data) and continued with the Fourth Quarter 1999 data. This decline is consistent with anticipated effects from the overall recharge deficit seen throughout 1999.

As part of the data evaluation performed for this report, several wells were identified for which the water level may be below the base of the standpipe. SRS will investigate these wells and provide adjustments as necessary as part of the routine well maintenance program. These adjustments will be identified in future Corrective Action Reports.

### **Potentiometric Cross-Sections and Isoconcentration Cross-Sections (IIID.H.11.c.vi)**

Potentiometric and isoconcentration cross-sections, required by RCRA permit Section IIID.H.11.c.vi, are located in Appendix B.

### **Groundwater Velocity and Direction (IIID.H.11.c.vii)**

Groundwater velocity calculations provide a basis for estimates of the transport rate for constituents originating from the H-Area HWMF. Velocities in the UTRA and GA are calculated along representative flow paths to characterize the approximate groundwater velocity within these units and in areas down-gradient from the basins.

Groundwater velocities are estimated using the following equation:

$$\text{Velocity (ft/day)} = \frac{\text{Hydraulic Conductivity (ft/day)}}{\text{Porosity (unitless)}} \times \frac{dh(\text{ft})}{dl(\text{ft})}$$

The value  $dh$  is the difference in head, and  $dl$  is the length of the flow path. Flow path length is calculated to the nearest 25 ft. Velocity estimates vary depending on the vertical gradient between wells, the size of the area under consideration, the number of data points, and the length and location of the flow path. Because these calculations are based on inferred or estimated parameters, velocity estimates are only accurate to an order of magnitude.

Horizontal flow rate estimates for the hydrostratigraphic units during Third and Fourth Quarter 1999 are provided in Table 4.

**Table 4. Horizontal Groundwater Velocities in the Hydrostratigraphic Units beneath the H-Area HWMF**

	<b>UAZ of the UTRA</b>	<b>LAZ of the UTRA</b>	<b>GA</b>
$K_h$ (ft/day)	34.2	1	40
Effective porosity	0.20	0.20	0.25
$dh/dl$	Varies	Varies	Varies
Groundwater velocity (ft/yr) (3Q99)	722	22	173
Groundwater velocity (ft/yr) (4Q99)	813	22	172

The estimated velocities are not significantly different from First and Second Quarter 1999 for the LAZ of the UTRA and for the GA. Estimated velocities in the UAZ of the UTRA are significantly higher than those reported for the First and Second Quarter 1999 but not significantly different than historical results. Flow in the UAZ of the UTRA was south or southeast along both paths during Third and Fourth Quarter 1999. Flow in the LAZ of the UTRA was southeast during both quarters. Flow in the GA was northwest toward Upper Three Runs Creek.

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**Extent and Severity of Groundwater Contamination (IID.H.11.c.viii)**

Constituents that exceeded the GWPS (Table A-1, Appendix A) during Third and Fourth Quarter 1999 in the H-Area HWMF wells are denoted in Table C-1 (Appendix C).

As shown in Table C-1, the following constituents and indicators exceeded the GWPS during the second half of 1999 in samples from monitoring wells at the H-Area HWMF: cadmium, cobalt, mercury, nitrate-nitrite (as N), vanadium, beta dose, gross alpha, nonvolatile beta, strontium-90, total radium (sum of radium-226 and radium-228), tritium, and the sum of alpha and sum of beta.

The Baseline Summary submitted in March 2000 with the 2000 RCRA Part B Permit Renewal Application indicated that vanadium should be removed from the GWPS list based on the historical data set for HSB wells through 1996. SRS has recently switched to ICP/MS analyses for metals to achieve lower detection limits. It is possible that the Third and Fourth Quarter 1999 vanadium hits are the result of the lower detection limits associated with ICP/MS. All but one of the vanadium hits were very close to the sample-specific estimated quantitation limit (ssEQL) of 10 µg/L, ranging from 10.5 to 12.5 µg/L. All but one of the vanadium hits were accompanied by low pH (4.1-4.6) and/or high specific conductivity (92-707). The Third and Fourth Quarter 1999 vanadium hits appear random (three in the UAZ, three in the LAZ, and one in the GA) and do not define a plume. SRS will evaluate the vanadium results from First Quarter 2000 after they become available to determine if any trends are developing and will investigate potential correlations between the analytical method, pH, and conductivity with vanadium hits. Any findings will be provided in a future Corrective Action Report.

The 2000 Part B Renewal Application submitted in March 2000 also proposed a sampling reduction in the wells across Fourmile Branch (HSB-130C, 130D, 132C, 132D, 140A, 140C, 140D, 141A, 141CR, 141D, 146A, 146C, 146D, 148C, and 148D). Although there were various low-level metals hits in these wells, the low tritium activities (ranging from 1.49 to 14.2 pCi/mL) and low nitrate concentrations (0.06 to 0.74 mg/L) support the theory that Fourmile Branch and its tributary are an effective hydrogeologic barrier, and that any contamination in these wells is not associated with the

H-Area HWMF. No contaminant exceeded its GWPS in these wells during Third and Fourth Quarter 1999.

The following radionuclides exceeded the GWPS for either sum of alpha activity or sum of beta activity: carbon-14, cobalt-60, iodine-129, strontium-90, technetium-99, uranium-233/234, and uranium-238. In addition, radium-226 and radium-228 each individually exceeded the standard for total radium.

The extent and severity of groundwater contamination is delineated by the contours above the GWPS on the isoconcentration maps (Volume II). Tritium is the most widespread contaminant and exceeds the GWPS in all three aquifers (Map 10 in Volume II). Elevated activities north of the basins are probably due to tritium sources in the burial grounds. The highest activities are downgradient of the basins in the UAZ and LAZ of the UTRA. Tritium is also present in the UAZ of the UTRA along the H-Area Inactive Process Sewer Line to the basins. Tritium exceeded the GWPS in two GA wells during Third Quarter 1999 (HSB118A and HSB119A) and three GA wells during Fourth Quarter 1999 (HSB68A as well as HSB118A and HSB119A).

Nitrate-nitrite (as N) (Map 6 in Volume II) is present in all the aquifer zones under and south of the basins. Gross alpha (Map 2 in Volume II), uranium-233/234 (Map 11 in Volume II), uranium-238 (Map 12 in Volume II), and iodine-129 (Map 3 in Volume II) are present in a few wells, mostly near the western end of the basins. Nonvolatile beta and strontium-90 (Maps 7 and 8 in Volume II) are present in the UAZ of the UTRA below and south of the basins. Nonvolatile beta is also present to a lesser extent in the LAZ. Technetium-99 (Map 9 in Volume II) is present in the UAZ and LAZ of the UTRA below and south of the western end of the basins. Mercury (Map 5 in Volume II) is present in the UAZ and LAZ of the UTRA below and south of the eastern end of the basins.

### ***Background Results***

Wells HSB66, HSB83A, and HSB85B are the background wells for the H-Area HWMF. They are screened in the UAZ of the UTRA, GA, and LAZ of the UTRA, respectively. No constituents were found to exceed their GWPS in any of the three background wells during Third and Fourth Quarter 1999.

From 1993 to the present, tritium sometimes exceeds its GWPS of 20 pCi/mL in well HSB66; however, tritium levels were only 13 pCi/mL during both Third and Fourth Quarter 1999.

### **Statistical Evaluation (IIID.H.11.c.ix)**

The H-Area RCRA Permit requires an annual statistical evaluation of water quality and water level data to assess significant changes or impacts associated with operation of the H-Area WTU. Constituents listed in Appendix IIID-A of the RCRA permit must be evaluated in all Point of Compliance (POC) wells and in a representative number of plume assessment wells.

Control charts have historically been used in industry and laboratories to monitor processes to determine whether the monitoring data shows a constituent either "in control" or "out of control." For groundwater monitoring, control charts can be used to monitor water quality data and to flag anomalous results. The statistical procedure used by SRS to assess the effectiveness of corrective action is the Shewhart-CUSUM control chart. The chart is designed to be used to detect both increasing and decreasing trends and to identify either sudden incursions (contaminant slugs) or steady drifts (changes in plume concentration or size). Water level data is evaluated similarly.

The selected wells for this statistical analysis include all POC wells (as listed in Table IIID-B of the RCRA permit) and a representative number of plume wells, as follows:

HSB-125D, 126C, 126D, 127C, 127D, 129C, 129D, 135C, 135D, 136C, 136D, 137C, 137D, 139C, 139D, 145C, 145D.

For this evaluation, the background dataset consisted of all samples from the first quarter of 1990 (first quarter of 1993 for water level data) through the last quarter of 1995. The end of 1995 was chosen as a background cutoff date to provide adequate background sample quantities and to provide control plot points for at least one year prior to startup of remediation operations. The entire dataset included sample results through Fourth Quarter 1999.

### ***Plotting of Results***

Shewhart-CUSUM control plots are given in Appendix F for those constituent/well pairings that made it through the data qualification and treatment process. Recommended values for the  $h$  and  $SCL$  control point parameters have been used and plotted appropriately. To maintain clarity and uniformity in all the control plots, the y-axis ranges have been set between -6 and +6 standardized units. The following details the generation of the plots, with an interpretation of the results discussed in Section IIID.H.11.c.x of this report.

### ***Analytes***

A large number of the datasets (well/analyte pairings) did not result in control charts because of too few background values, non-normality of the dataset (i.e., could not transform into a normal distribution), or too many non-detects in the dataset. Most of the remaining datasets that passed the control chart requirement tests were normally distributed, with other datasets requiring a log-normal transformation. Statistical tests indicated that four datasets (HSB101C Tritium; HSB129C Gross Alpha; HSB135D Nonvolatile Beta; and HSB136C Gross Alpha) exhibited seasonality. Trends were detected in about half of the datasets (84 decreasing, 15 increasing).

Examination of the analyte control charts reveals three types of responses: (a) no significant change from past performance, (b) significant increases or decreases (or both) indicated from 1996 through 1998), and (c) significant increases in late 1998 only. The majority of control charts were of type (a) or (b). The (b) type response primarily indicates that the particular dataset is not well suited for control chart analysis.

Only two well/analyte datasets showed significant increases (HSB106D Nitrate-Nitrite as Nitrogen; HSB106D Tritium). There appears to be no spatial distribution/correlation to these increases.

### ***Water Elevations***

Four of the selected well datasets did not generate a water elevation control chart because of non-normality in the background data (HSB-104D, 126D, 139D, and 145D). None of the selected well

datasets had a seasonality test performed because the background period for the water elevation data was only three years (1993 through 1995), and four years of data is required for a seasonality test. All of the datasets were determined to not exhibit trends. Only one dataset (HSB125D) exhibited a log-normal distribution; all other datasets were determined to meet normal distribution requirements without any transformation.

Examination of the water elevation control charts reveals three types of responses: (a) no significant change from past performance, (b) significant increases in water levels, and (c) significant decreases in water levels. A significant increase was only observed in one well (HSB123A) and is likely due to the high recharge event in 1998 and not to remediation activities.

The significant decreases are indicated for 25 wells, in both the UAZ and LAZ of the UTRA. Examination of the hydrographs for these wells shows that the "statistically significant decreases" are only slightly lower elevations compared to long term trends.

### **Evaluation of Water Quality and Water Elevation Data (IIC.H.11.c.x)**

#### ***Water Quality***

Examination of the concentration maps, time-series plots, and control charts for analyte data provides little indication of effect from remedial activities. In general, the plume configurations have not changed significantly since the First and Second Quarter 1999, though some of the concentration maps show slightly smaller plumes.

In general, increases and decreases observed on time-series plots and control charts show no discernable correlation or pattern. The one clear exception is that injection of tritiated water is affecting HSB65 and HSB65C, which show a significant increase of tritium since mid-1998. This response is expected as this well cluster is very close to the injection well network. The rest of the monitoring wells are much further from the injection well network and, as expected, tritium response has not yet been observed in these wells.

As discussed in the last annual Corrective Action Report (CAR), increases were noted for nonvolatile beta and iodine-129 in HSB113D. Subsequent monitoring shows that the iodine-129

concentrations are back down to historical values, but the nonvolatile beta concentrations appear to be still slightly elevated. As before, the cause for the increase is not known as this well is not in close proximity to active remediation wells, but is close to the "hot spot" locale just south of Basin 4. This and other monitoring wells will continue to be observed.

### ***Water Elevations***

Examination of the potentiometric maps, hydrographs, and control charts for water elevation data indicates that measured effects from remedial activities are relatively small and few in number. The control chart results do not appear to be detecting water elevation response from remedial activities. Any water elevation increases and decreases from remedial activities are apparently too small at the monitoring wells to be reflected on the potentiometric maps.

Examination of the hydrographs indicates only that for the HSB65 well cluster (near the injection well network), a slight increase in water elevations in 1999 in the UAZ has occurred. The deviations are small, however, compared to the 1998 recharge event. It is expected that the water elevation effects from remedial activities will become more discernable as remedial operations continue.

In general, the monitoring wells are located on the edge of the estimated impact areas for the extraction and injection well networks, which accounts for some of the difficulty in observing responses from remediation. The observation piezometers (HOB series) are located closer to the extraction and injection wells, which allows these wells to have larger and more rapid effects from remediation system operations. Evaluation of adequacy of the piezometer network to monitor remediation operations is ongoing.

### **Volume and Rates of Groundwater Pumped (IIID.H.11.c.xi)**

The H-Area WTU operated in accordance with Consent Order 99-21-HW during Third and Fourth Quarter 1999. Table 5 summarizes the average pump rates for each well, the monthly volumes, and the total volumes pumped from each extraction well during Third and Fourth Quarter 1999 in accordance with the RCRA permit. The individual well volumes (and, consequently, the average flow rates) are estimated from instrument readings. The well totals are based on well performance



recorded by the programmable logic controllers (PLC) and extraction totals recorded by the totalizers on the extraction tanks. Data are collected daily from the totalizers.

**Table 5. Volume Pumped (gallons) during the Second Half of 1999<sup>1</sup>**

Well	Rate (gpm)	July 1999	August 1999	Sept. 1999	October 1999	Nov. 1999	Dec. 1999	6-Month Total
HEX 1	21.67	870,700	851,400	808,600	1,034,200	975,900	1,049,100	5,589,900
HEX 2	4.68	206,700	204,300	N/A	N/A	N/A	N/A	411,000
HEX 3	19.22	821,900	805,600	828,600	855,800	792,200	854,800	4,958,900
HEX 4	17.33	739,600	718,200	688,100	788,900	733,700	801,900	4,470,400
HEX 9	9.36	431,800	426,600	378,100	399,400	378,400	401,400	2,415,700
HEX 12	6.71	408,200	403,700	218,600	274,100	209,400	217,700	1,731,700
HEX 16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HEX 17	35.33	1,376,800	1,325,600	1,483,200	1,684,500	1,553,200	1,689,300	9,112,600
HEX 18	26.29	1,261,500	1,211,400	1,106,900	1,128,400	980,300	1,093,200	6,781,700
HEX 19	3.75	174,000	172,200	153,200	174,300	138,900	154,700	967,300
Total		6,291,200	6,119,000	5,665,300	6,339,600	5,762,000	6,262,100	36,439,200

<sup>1</sup> Estimated from instrument readings. Totals based on recorded well performance and extraction totals. N/A – Not applicable.

#### Volume and Rates of Treated Groundwater Injected (IID.H.11.c.xii)

The H-Area WTU operated in accordance with Consent Order 99-21-HW during Third and Fourth Quarter 1999. Table 6 summarizes the average pump rate for each well, the monthly volumes, and the total volumes pumped to each injection well during Third and Fourth Quarter 1999 in accordance with the RCRA permit. The individual well volumes (and consequently, the average flow rates) are estimated from instrument readings. The well totals are based on PLC-recorded well performance and injection totals recorded by the totalizers on the injection tanks. Data are collected daily from the totalizers. The difference in total volume extracted (Table 5) and total volume injected (Table 6) is due to the time delay between collecting extraction and injection readings as well as water retention in the WTU.

**Table 6. Volume Injected (gallons) during the Second Half of 1999<sup>1</sup>**

Well	Rate (gpm)	July 1999	August 1999	Sept. 1999	October 1999	Nov. 1999	Dec. 1999	6-Month Total
HIN 1	4.06	183,800	180,400	161,500	178,200	151,100	191,800	1,046,800
HIN 2	5.11	207,400	203,700	216,700	211,500	224,800	254,200	1,318,300
HIN 3	3.54	157,700	153,700	149,100	140,500	129,700	182,200	912,900
HIN 4	5.09	201,600	197,800	223,200	236,800	208,000	244,500	1,311,900
HIN 5	5.39	278,200	275,800	195,300	212,900	197,100	230,300	1,389,600
HIN 6	6.00	273,800	269,400	227,300	280,500	280,300	216,600	1,547,900
HIN 7	5.24	197,900	194,200	163,200	292,400	318,700	186,400	1,352,800

Well	Rate (gpm)	July 1999	August 1999	Sept. 1999	October 1999	Nov. 1999	Dec. 1999	6-Month Total
HIN 8	12.24	523,200	509,400	483,300	570,100	509,800	560,500	3,156,300
HIN 9	0.51	N/A	N/A	9,200	42,300	10,200	47,900	109,600
HIN 10	2.56	121,500	119,300	98,800	109,200	90,900	120,700	660,400
HIN 11	4.89	215,700	212,200	206,300	209,000	179,600	239,100	1,261,900
HIN 12	19.50	894,800	862,600	750,300	905,600	830,300	786,500	5,030,100
HIN 13	10.36	481,200	473,100	416,600	437,700	384,100	480,600	2,673,300
HIN 14	10.09	432,600	424,500	409,500	405,700	381,100	548,900	2,602,300
HIN 15	10.50	504,900	490,800	422,700	446,500	398,900	444,800	2,708,600
HIN 16	12.04	560,800	546,700	498,700	537,100	460,300	502,300	3,105,900
HIN 17	19.39	846,500	816,500	796,400	891,400	854,700	795,600	5,001,100
HIN 18	5.14	210,500	207,600	249,000	250,200	165,400	241,900	1,324,600
Total		6,292,100	6,137,700	5,677,100	6,357,600	5,775,000	6,274,800	36,514,300

<sup>1</sup> Estimated from instrument readings. Totals based on recorded well performance and extraction totals. N/A – Not applicable.

### Rainfall and Recharge (IID.H.11.c.xiii)

Table 7 specifies the monthly rainfall data in inches for H Area in 1999. The maximum, minimum, average and standard deviation between 1989 and 1999 is also provided for comparison purposes. The values in parentheses represent the year in which the maximum or minimum rainfall occurred. Recharge to groundwater is estimated to be 30% of rainfall in the General Separations Area.

**Table 7. Rainfall Data for H Area: Monthly Totals for 1999; Maximum, Minimum, and Averages for 1989-1999**

Month	1999 value	Max. value (yr)	Min. value (yr)	Average	SD
January	5.76	8.17 (98)	1.48 (89)	5.12	2.054
February	2.34	7.22 (95)	1.31 (91)	3.82	2.170
March	2.67	7.44 (91)	1.33 (95)	4.06	2.514
April	1.47	6.51 (91)	0.76 (95)	3.08	2.195
May	2.3	3.87 (96)	1.18 (93)	2.65	1.000
June	8.12	12.14 (92)	1.43 (90)	6.22	3.465
July	9.16	16.39 (91)	1.66 (93)	7.13	3.813
August	1.83	10.37 (90)	1.39 (97)	5.74	3.144
September	8.05	8.05 (99)	0.54 (90)	4.74	2.344
October	3.5	18.03 (90)	0.67 (93)	4.83	5.133
November	0.85	7.7 (92)	0.85 (99)	2.65	1.992
December	1.62	8.89 (97)	1.62 (99)	3.72	2.066

### **Summary of System Downtime (IID.H.11.c.xiv)**

Appendix G summarizes the operations activities and downtime for Third and Fourth Quarter 1999. Highlights follow:

#### ***July 1999***

The WTU operated with 99.4 percent availability during the month of July. Vibration problems associated with the reverse osmosis (RO) feed pumps continued and caused a flexible joint to leak.

#### ***August 1999***

The WTU operated with 97.5 percent availability during the month of August. The small amount of system unavailability was caused mainly by vibration problems associated with the RO feed pumps, which led to a pump repair and replacement of flexible joints.

Mercury (Hg) sampling was conducted to help define Hg levels in the untreated groundwater and to provide a baseline for Hg removal effectiveness at the H-Area WTU under existing operating conditions. A separate bench-scale ion-exchange material testing study was also planned for First Quarter 2000 to evaluate the relative effectiveness of the current ion-exchange material versus commercially available Hg-specific cationic exchange material(s).

#### ***September 1999***

The WTU was shut down for 48.5 hours due to severe weather conditions caused by Hurricane Floyd. Vibration problems associated with the RO feed pumps led to a pump repair and replacement of flexible joints.

The RO feed pump's flexible joints were replaced with more rugged flexible joints. The valve and spring assemblies associated with the RO feed pumps were replaced with an assembly that would provide less flow loss and thus reduce pump cavitation and vibration harmonics.

### ***October 1999***

The WTU operated with 100 percent availability during the month of October.

### ***November 1999***

The WTU was down between November 28, 1999, and November 30, 1999, for a scheduled maintenance outage. During this outage the WTU water collection trench and sump were cleaned.

Other tasks performed during the outage included:

- Installed manual isolation valves around the effluent water (bag) filter
- Replaced the RO concentrate flow-indicating transmitter
- Installed several enhancements to the programmable logic control (PLC) system

### ***December 1999***

The WTU operated with 99.5 percent availability during the month of December.

### **Minor Modifications to the System (IIID.H.11.c.xv)**

Modifications are discussed in conjunction with the discussion of system downtime in the previous section.

### **Effectiveness of the Corrective Action System (IIID.H.11.c.xvi)**

The H-Area HWMF operated continuously for most of the Third and Fourth Quarter 1999. Approximately 36.5 million gallons were treated and injected. Even with a limited number of outages, the WTU operated with nearly 100% availability. Because of the relatively recent initiation of continuous operations and the natural reduction of responses through the aquifer, evaluating the effectiveness of the remedial activities at this time is still difficult. This difficulty is evident in that no widespread changes in historical contaminant trends and/or levels are yet observed, only minor water

elevation responses have been seen, and surface water concentration changes are minor and are likely being masked by the continued drought conditions.

At this time, effectiveness of the system can best be inferred from the amount of contaminants being removed in the WTU, the amount of tritium being reinjected, and the inferred drawdown and mounding from aquifer test measurements. As the amount of time the WTU operates increases, it is expected that definitive contaminant trend changes will be observed in the monitoring wells, water elevation responses will increase, and significant surface water concentration changes can be identified.

## **Nature and Extent of Contamination**

### ***Contaminant Trends***

Time trends of key contaminants are provided in Appendix D, and plume maps of key contaminants are provided in Appendix H. Each map illustrates the contaminant plumes in the UAZ and LAZ of the UTRA and posts concentration/activity values in the GA. Information from all three aquifer zones is combined on a single map for each contaminant to allow easy comparison of contaminant extent in all three aquifer zones. The contour intervals on each map include the GWPS for that contaminant and additional contours to adequately represent the contaminant distribution.

### **Upper Aquifer Zone of the Upper Three Runs Aquifer (UAZ of the UTRA)**

The tritium and nonvolatile beta maps represent the maximum extent of contamination in the aquifer zones below the HWMF. These maps also illustrate the primary contaminant migration pathways in the UAZ of the UTRA between the basins and the Fourmile Branch seepage line. These pathways likely represent areas of higher permeability in the aquifer zone. However, the three-dimensional extent and geological cause of these pathways have not been resolved.

The tritium and nonvolatile beta plumes extend downgradient of the basins to Fourmile Branch in both the UAZ and the LAZ of the UTRA. Tritium and nonvolatile beta activities are also elevated along the H-Area Inactive Process Sewer Line (HIPSL) and downgradient of the basins. Recently,

tritium has been elevated in wells HSB65 and HSB65C in the UAZ of the UTRA, possibly due to the injection of treated groundwater from the WTU. Tritium activities were not previously elevated in these wells. Several contaminant migration pathways are evident on the maps in the UAZ of the UTRA. The first extends from HSB101D and HSB102D to the Fourmile Branch tributary near HSB125D. A second pathway extends south beneath Basin H-3 through HSB105D and HSB145D to Fourmile Branch near HSB126D. The precise configuration of the pathway near Fourmile Branch is unclear. The nonvolatile beta plume in the UAZ identifies a third pathway to the southwest through HSB68. A fourth major pathway appears to be through well clusters HSB111 and HSB115 to the Fourmile Branch. This pathway generally contains the highest levels of contamination.

The tritium plume generally defines the maximum extent of contamination from the H-Area HWMF in the UAZ of the UTRA. It extends from the southern portion of the HIPSL to the tributary creek east of the H-Area HWMF and south to the Fourmile Branch seepage line. The tritium plume west of Basin H-4 appears to commingle with the southwest plume from the Burial Ground Complex (BGC). The 1,000 pCi/mL contour highlights the H-Area plume. The highest tritium activities in Third and Fourth Quarter 1999 were in POC wells HSB86, HSB111D, HSB114D and HSB115D. Tritium activity in the UAZ of the UTRA has declined significantly since 1992.

Evaluation of historical data reveals that nitrates are not significantly elevated in the groundwater at the H-Area HWMF. The highest nitrates concentration in the UAZ of the UTRA during Third and Fourth Quarter 1999 was in HSB114D. Although the GWPS of 10 mg/L was exceeded in 12 UAZ wells, only 5 of those wells exceeded 20 mg/L. Nitrates concentrations in the UAZ of the UTRA have declined significantly since 1992.

Mercury concentrations are elevated east of the H-Area HWMF. Three plumes extend from the basins to Fourmile Branch and its tributary. The first plume extends from Basin H-4 (HSB107D and HSB108D) to the Fourmile Branch seepage line (HSB127D). Concentrations in HSB127D (near the seepage line) have decreased to well below the GWPS. The second plume extends from HSB105D and HSB104D to HSB145D. The Fourth Quarter 1999 data identify a third plume extending from HSB101D, HSB102D, and HSB103D through HSB67 to the tributary to Fourmile Branch.

Mercury in the UAZ of the UTRA did not change significantly from 1992 to 1998, suggesting that mercury was not highly mobile in the aquifer. The short period of abnormally high recharge in First Quarter 1998 and subsequent higher groundwater levels appears to correspond with an increase in mercury concentrations in monitoring wells adjacent to the Basins. Since First Quarter 1999, the plumes have further changed, particularly near the active extraction wells of HEX3, HEX4, and HEX19, suggesting some effect from the operation of the remediation system.

Gross alpha activities are relatively low at the H-Area HWMF. Only the 15 pCi/L isoactivity contour is required to illustrate the four gross alpha plumes in H-Area. The first (western) plume extends from HSB86D, HSB115D, HSB114D, and HSB113D downgradient to the Fourmile Branch seep line. The highest activities in this plume are at HSB115D. Another (eastern) plume extends from HSB102D through HSB67 to the tributary of Fourmile Branch. The highest activity in this plume is at HSB102D. Two other plumes (one originating under the H-4 Basin near HSB108D and one originating under the H-3 Basin near HSB105D) are of low concentration.

The nonvolatile beta plumes are extensive and, along with tritium, illustrate the maximum extent of contamination in the UAZ of the UTRA at the HWMF. There are four nonvolatile beta plumes. The western plume extends from POC wells HSB116D, HSB113D, and HSB112D downgradient to the Fourmile Branch seep line. The highest activities in this plume are in wells HSB115D and HSB86D. A second plume extends from POC well HSB108D downgradient to HSB69, and in an attenuated form through HSB84D to the Fourmile Branch seep line. The highest activities in this plume are in wells HSB68 and HSB107D. A third plume extends south from HSB105D through HSB145D. The highest activities in this plume are in wells HSB105D and HSB145D. Since the nonvolatile beta activity is low in HSB126D, the plume may attenuate north of HSB126D or migrate to the tributary of Fourmile Branch. A fourth plume extends from HSB102D, and possibly commingles with the third plume, extending to the tributary of Fourmile Branch through HSB103D, HSB67, and HSB134D. The highest activities in this plume are in wells HSB102D and HSB134D. Nonvolatile beta in the UAZ of the UTRA has declined since 1992.

Strontium-90 is the primary contributor to nonvolatile beta activity in the groundwater. The strontium-90 plume is similar to the nonvolatile beta plume and mirrors the four plumes delineated by

nonvolatile beta in aerial extent. The highest strontium-90 activities in the first plume are in wells HSB115D and HSB136D. The highest strontium-90 activities in the second plume are historically in wells HSB68 and HSB108D. The highest strontium-90 activities in the third plume are historically in wells HSB105D and HSB145D. The highest strontium-90 activities in the fourth plume are in well HSB102D. Strontium-90 in the UAZ of the UTRA has declined since 1992.

Iodine-129 is a constituent of concern due to removal difficulties experienced during Phase I WTU operations. However, iodine-129 is not widespread in the UAZ of the UTRA at the H-Area HWMF. It appears to be restricted to the vicinity of HSB114D and HSB113D. Scattered hits have occurred in other HSB wells but do not exceed the GWPS.

#### Lower Aquifer Zone of the Upper Three Runs Aquifer (LAZ of the UTRA)

Tritium maps illustrate the maximum extent of contamination in the LAZ of the UTRA at the HWMF. The primary contaminant migration pathways are not as clear in the LAZ of the UTRA as they are in the UAZ of the UTRA at the H-Area HWMF. This suggests that the tan clay is locally competent as a confining unit. Aquifer testing has demonstrated the lower permeability and subsequent slower migration through the LAZ of the UTRA relative to the UAZ of the UTRA. Two aspects of the contaminant distributions in the LAZ of the UTRA support this conclusion: first, the greater "spread" between similar contour intervals in the LAZ, which suggests a more significant component of diffusion in transport through the LAZ, and second, the persistence of elevated tritium activities in the LAZ.

Contamination appears primarily downgradient from the western edge of Basin H-4, downgradient from Basin H-1, and southeast of the basins. The activities of mobile contaminants (e.g., tritium) are frequently higher in the LAZ than the UAZ of the UTRA. Comparison of the 20 pCi/mL tritium contour in both aquifer zones illustrates that tritium is more widespread in the LAZ than the UAZ.

Tritium contamination in the LAZ of the UTRA consists of three plumes. The tritium plumes define the maximum extent of contamination in the LAZ of the UTRA at the HWMF. The first (western) plume extends from Basin H-4 down to Fourmile Branch. The highest tritium activities in Third and Fourth Quarter 1999 were south of Basin H-4, in wells HSB117C, HSB137C, HSB86C, and



HSB136C. A 1,000 pCi/mL isoactivity contour marks the western edge of the plume. It is possible that the BGC Southwest Plume contributes to the tritium contamination west of the H-Area HWMF in the LAZ because little control is available between the BGC and H-Area HWMF.

The second (southeastern) plume is centered around HSB139C, HSB145C, and HSB68C. Lower activities in upgradient POC wells suggest that this contamination may be associated with vertical migration through the tan clay confining unit. The third plume extends from Basin H-1 through HSB102C, migrating south.

Tritium activities have decreased in the LAZ of the UTRA since 1992, but not as significantly as in the UAZ. The significant difference in tritium decreases in the UAZ and LAZ demonstrates that activity levels in the LAZ are not based on continual vertical migration from the UAZ. The slower migration of tritium through the LAZ provides additional time for decay prior to discharging to Fourmile Branch.

The low tritium activities in HSB130C, HSB148C, HSB140C, HSB146C, HSB141CR, and HSB132C (located on the opposite side of Fourmile Branch from the H-Area HWMF) demonstrate that Fourmile Branch and its tributary are hydrologic barriers to contaminant migration in the LAZ as well as in the UAZ. The only exception to this conclusion is the low tritium activities in HSB131C.

Evaluation of historical data reveals that nitrates are not significantly elevated in the groundwater at the H-Area HWMF. The highest concentration of nitrates in the LAZ of the UTRA during Third and Fourth Quarter 1999 was at HSB117C. Although the GWPS of 10 mg/L was exceeded in 16 LAZ wells, only 7 of those wells exceeded 20 mg/L. Nitrates in the LAZ of the UTRA have declined somewhat since 1992.

Mercury in the LAZ consists of two small plumes. The first plume is centered around HSB145C and HSB139C. The second plume is centered around HSB103C.

Gross alpha in the LAZ historically consisted of one small plume extending from Basin H-4 between HSB115C and HSB114C through HSB86C and downgradient to HSB117C. Recent monitoring results suggest that this plume has been significantly reduced.

The nonvolatile beta plume in the LAZ is defined by the 50 pCi/L isoactivity contour and extends downgradient and west of Basin H-4, through HSB86D to Fourmile Branch. Nonvolatile beta is present sporadically at low levels throughout the aquifer zone. The extent of the nonvolatile beta plume has decreased slightly since 1992.

Strontium-90 is the primary contributor to nonvolatile beta activity in the groundwater. The strontium-90 plume is smaller than the nonvolatile beta plume, extending out from Basin H-4 between HSB115C and HSB114C and through HSB86C.

Iodine-129 is a constituent of concern due to removal difficulties experienced during Phase I WTU shakedown operations. However, iodine-129 is not widespread in the LAZ of the UTRA, with only sporadic occurrences in low activities. The highest activity of iodine-129 is historically found in HSB86C.

#### Gordon Aquifer (GA)

Although contaminant values are posted, contaminant plumes are not illustrated in the GA. Evaluation of historical data indicates that the Green Clay is an effective confining zone for many contaminants. Tritium is the only contaminant that exceeds GWPS in the GA. Tritium exceeds the GWPS in two wells, but the distribution is irregular and the contaminant migration pathways are not clearly understood. Nitrates and nonvolatile beta do not exceed GWPS in the GA. Mercury, gross alpha, iodine-129, and strontium-90 are not present in the GA.

#### **H-Area Inactive Process Sewer Line (HIPSL)**

The HIPSL is the now-unused piping that carried effluent from the separations facilities to the H-Area Seepage Basins. The HIPSL consists of various diameter vitrified clay pipes that, while still in service, collapsed in at least one area, releasing contaminants into the soil. The HIPSL is included as a part of the H-Area HWMF and its associated RCRA permit.

The HIPSL is situated across the General Separations Area groundwater divide. From the HIPSL area, groundwater in the Upper Three Runs Aquifer (UTRA) flows toward both Upper Three Runs

Creek and Fourmile Branch. Water table wells HSL1 through HSL8 monitor groundwater in the UAZ of the UTRA in the area immediately proximal to the HIPSL. In general, groundwater contaminants observed in HSL wells include radionuclides (especially tritium), metals, and nitrate.

### **Underground Injection Control (UIC) Sampling Results**

SRS remained in compliance with the H-Area UIC permit during Third and Fourth Quarter 1999. Monthly compliance samples were collected from the H-Area WTU injection tank, and the results are provided in Appendix C (Table C-2) along with other pertinent data.

With the exception of mercury, all of the nonradionuclide constituents were below the UIC permit limits during Third and Fourth Quarter 1999. Mercury was consistently detected during all six months and exceeded the UIC permit limit in June and July. The July result was a confirmation sample of the June mercury result. Corrective action was taken, and a second July sample was collected to verify that the problem was corrected. The corrective action involved changing out the resin in the cation exchange column and re-evaluating the life of the resin based on mercury.

Although the November vanadium result was originally reported as 80.1 µg/L, re-analysis of the sample indicated that vanadium was below detection. Barium, cobalt, and copper were consistently detected during Third and Fourth Quarter 1999, but concentrations were well below the UIC permit limits. Arsenic, chromium, cobalt, copper, vanadium, and zinc were also detected during Third and Fourth Quarter 1999 but were below UIC permit limits. No organic constituents were detected in the UIC compliance samples during Third and Fourth Quarter 1999.

Carbon-14 and iodine-129 were detected in the H-Area UIC compliance samples twice each during Third and Fourth Quarter 1999 but were below the UIC permit limits. Radium-226, uranium-234, and uranium-238 each were detected once in the H-Area UIC compliance samples during all of Third and Fourth Quarter 1999 but were below the UIC permit limits.

## **Tritium Activities at Selected Locations in Fourmile Branch**

Tritium activities in Fourmile Branch, a tributary of the Savannah River, are measured monthly at SRS as part of routine monitoring activities conducted by the Environmental Monitoring Section of Westinghouse Savannah River Company. Four locations (Figure 6, Appendix B) have been monitored by SRS and the U.S. Geological Survey since 1991, providing a long term record of tritium activity in Fourmile Branch. These locations include: (1) FM-2 at Road 4, (2) FM-2B above F-Area, (3) FM-3A below F-Area, and (4) FM-A7 at Road A7. Three of these sampling locations lie within the surface waters of Fourmile Branch. Site FM-3A is located on a tributary of Fourmile Branch. Surface water is sampled continuously at these four locations and composited over a one-week period for analysis of tritium activities.

Mean activities, standard deviations, and sample size at the four locations from 1991 to 1998 are provided in Table 8. The general trend from 1991 to 1998 has been one of declining activities at all four locations (Figure 7, Appendix B). This trend is anticipated to continue in Fourmile Branch as a result of natural radioactive decay and site remediation efforts. Monitoring of the four locations will continue, and, beginning in 2000, USGS and SRS propose to monitor eight additional locations on Fourmile Branch to evaluate tritium activities in surface water and its potential effect, if any, on human health and ecological resources.

A surface water sampling and analysis plan was submitted to SCDHEC in March 2000 for the eight proposed sampling locations. This sampling plan is designed to provide surface water monitoring along the upper reaches of Fourmile Branch in support of the corrective action programs for the F- and H-Area HWMFs and to augment compliance monitoring data. The new sampling locations will improve the spatial sampling resolution on Fourmile Branch. The data obtained from this sampling will provide a better understanding of the contaminant flux entering Fourmile Branch from the various General Separations Area waste units and will aid in evaluation of the effectiveness of the F- and H-Area corrective action measures.

**Table 8. Mean Tritium Activities (pCi/mL) at Four Sampling Locations in Fourmile Branch, 1991-1998**

Year	FM-2		FM-2B		FM-3A		FM-A7	
	Mean $\pm$ $\sigma$	n	Mean $\pm$ $\sigma$	n	Mean $\pm$ $\sigma$	n	Mean $\pm$ $\sigma$	n
1998	16 $\pm$ 9	26	49 $\pm$ 16	26	1,310 $\pm$ 420	26	320 $\pm$ 106	26
1997	19 $\pm$ 5	27	68 $\pm$ 16	27	1,170 $\pm$ 270	27	349 $\pm$ 96	27
1996	22 $\pm$ 7	15	91 $\pm$ 16	26	1,590 $\pm$ 150	26	473 $\pm$ 83	26
1995	23 $\pm$ 11	25	88 $\pm$ 17	26	1,850 $\pm$ 370	26	455 $\pm$ 138	26
1994	33 $\pm$ 8	25	106 $\pm$ 19	25	2,060 $\pm$ 440	26	485 $\pm$ 77	26
1993	43 $\pm$ 18	26	126 $\pm$ 22	26	2,040 $\pm$ 470	26	517 $\pm$ 111	26
1992	59 $\pm$ 15	26	202 $\pm$ 41	26	2,740 $\pm$ 470	26	619 $\pm$ 91	26
1991	56 $\pm$ 26	27	251 $\pm$ 62	27	2,570 $\pm$ 770	27	659 $\pm$ 168	27

### Aquifer Pump Tests

Aquifer testing was performed at the H-Area HWMF from 3/3/99 through 4/18/99. Four injection and six extraction tests were performed in the UAZ of the UTRA. The pumping wells utilized were: HIN-5, 13, 15, and 16, and HEX-1, 3, 9, 16, 18, and 19. Testing included a step test and a constant flow rate stress test with recovery. Each test occurred over a nine- to ten-day period and consisted of 72 hours pre-test stabilization (with step test), 72 hours of pumping, and 72 hours of recovery.

During aquifer testing, efforts were made to minimize disruption of the remediation system. Every effort was made to minimize the impact to the aquifer tests from the operation of nearby injection or extraction wells. No significant impacts were observed. Tests were typically performed in pairs with at least one injection and one extraction test occurring at the same time.

Transmissivity for the UAZ ranged from 1.27E+02 to 2.23E+03 ft<sup>2</sup>/day with an average of 1.09E+03 ft<sup>2</sup>/day, hydraulic conductivity ranged from 8.04E+00 to 7.96E+01 ft/day with an average of 3.71E+01 ft/day, and the average specific yield was 2.3E-01. The ratio of vertical to horizontal conductivity for the UAZ was 0.01.

The results of testing indicate that some spatial variation of permeability exists in the UAZ. However, the average conductivity determined for the injection wells was very close to that of the extraction

side. Compared to the results of testing at the F-Area HWMF, the UAZ at the H-Area HWMF is almost three times less permeable on average. In general, the hydraulic properties determined from the aquifer tests compare favorably with the results of previous testing and are consistent with the nature of the aquifer sediments.

### **Errata**

The identification signs for wells HSB101C and HSB101D were inadvertently switched in the field during September 1998. Because of this misidentification, field and analytical data for each of those two wells were incorrectly associated with the other well in the corrective action reports for Third and Quarter 1998 and First and Second Quarter 1999. The data tables for those wells in those two reports are reprinted below with the correct data associated with each well.

**WELL HSB101C**

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72001.9 E58604.4	33.280640 °N 81.652346 °W	176.3-166.3 ft msl	258.5 ft msl	4" PVC	S	Barnwell (IIB <sub>1</sub> )

SAMPLE DATE	07/07/98	10/30/98
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**FIELD DATA**

Constituents	3Q98	4Q98	Unit
Water elevation	227.8	226.0	ft msl
pH	5.0	9.3	pH
Sp. conductance	41	95	µS/cm
Water temperature	20.9	18.2	°C
Alkalinity as CaCO <sub>3</sub>	6	9	mg/L
Turbidity	1	2	NTU
Volumes purged	2.9	2.4	well vol
Sampling code		N	
Synchronous water level	227.0 (09/17/98)	225.3 (12/21/98)	ft msl

**ANALYTICAL DATA****Inorganic Constituents**

Constituents	3Q98	Mod	Filt.	ST	H	DF	Lab	4Q98	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.085	U//	< 0.20			1	GE								µg/L
Arsenic, total recoverable	<3.0	U//	< 3.0			1	GE								µg/L
Barium, total recoverable	12	//				1	GE								µg/L
Cadmium, total recoverable	0.16	J/E/	NDD			1	GE								µg/L
Chromium, total recoverable	3.5	//				1	GE								µg/L
Cobalt, total recoverable	<0.20	U//	< 0.20			1	GE								µg/L
Copper, total recoverable	0.58	//				1	GE								µg/L
Cyanide	4.8	J/EV2	NDD			1	GE								µg/L
Lead, total recoverable	<2.0	U//	< 2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	< 0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	1.2	//				1	GE								µg/L
Nitrate-nitrite as nitrogen	910	N//				1	GE	600	//				1	GE	µg/L
Selenium, total recoverable	0.96	J/E/	NDD			1	GE								µg/L
Silver, total recoverable	<1.0	U//	< 1.0			1	GE								µg/L
Tin, total recoverable	<2.0	U//	< 2.0			1	GE								µg/L
Vanadium, total recoverable	<2.0	U//	< 2.0			1	GE								µg/L
Zinc, total recoverable	7.8	//				1	GE								µg/L

**Organic Constituents**

Constituents	3Q98	Mod	Filt.	ST	H	DF	Lab	4Q98	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	< 1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<9.9	U//	< 9.9			1	GE								µg/L
Dichloromethane	<1.0	U//	< 1.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	< 1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	< 1.0			1	GE								µg/L
Trichlorofluoromethane	<1.0	U//	< 1.0			1	GE								µg/L

## WELL HSB101C (cont.)

## Radioactive Constituents

Constituents	3Q98	Mod	Filt.	ST	H	DF	Lab	4Q98	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<1.6E-02	U//	< 0.0757			1	GP								pCi/L
Carbon-14	<2.5E+00	U//	< 8.9100			1	GP								pCi/L
Cobalt-60	<-1.6E+00	U//	< 3.3200			1	GP								pCi/L
Curium-242	<-6.4E-03	U//	< 0.1410			1	GP								pCi/L
Curium-243/244	<7.0E-02	U//	< 0.1330			1	GP								pCi/L
Curium-245/246	<-6.1E-03	U//	< 0.1330			1	GP								pCi/L
Gross alpha	<6.1E-01	U//	< 0.6300			1	GP	<3.4E-01	U//	<1.1E+00			1	GE	pCi/L
Iodine-129	<-3.0E-01	U//	< 0.9360			1	GP								pCi/L
Nickel-63	<-1.6E+00	U/	< 3.3200												pCi/L
Nonvolatile beta	<1.1E+00	U//	< 1.7300			1	GP	<1.5E+00	U//	<1.8E+00			1	GE	pCi/L
Plutonium-238	<6.1E-04	U//	< 0.1150			1	GP								pCi/L
Plutonium-239/240	<-1.8E-02	U//	< 0.1230			1	GP								pCi/L
Radium-226	<4.9E-01	U//	< 0.1890			1	GP								pCi/L
Radium-228	<5.9E-01	U//	< 1.2100			1	GP								pCi/L
Strontium-90	<9.4E-01	U//	< 1.7600			1	GP								pCi/L
Technetium-99	<2.9E-01	U//	< 20.7000			1	GP								pCi/L
Thorium-228	<1.8E-01	U//	< 0.8440			1	GP								pCi/L
Thorium-230	<1.9E-01	U//	< 0.5180			1	GP								pCi/L
Thorium-232	<4.4E-02	U//	< 0.3030			1	GP								pCi/L
Sum of alphas															
Sum of betas															
Tritium	1.0E+01	//				1	GP	6.6E+00	//				1	GE	pCi/mL
Uranium-233/234	<1.6E-02	U//	< 0.1120			1	GP								pCi/L
Uranium-235	<2.1E-02	U//	< 0.0640			1	GP								pCi/L
Uranium-238	<1.6E-02	U//	< 0.1120			1	GP								pCi/L



**WELL HSB101D**

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71997.5 (IIB2)	33.280614 °N	236.1-216.1 ft msl	258.7 ft msl	4" PVC	V	Water Table
E58594.8	81.652362 °W					

<u>SAMPLE DATE</u>	<u>07/27/98</u>	<u>10/30/98</u>
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**FIELD DATA**

<u>Constituents</u>	<u>3Q98</u>	<u>4Q98</u>	<u>Unit</u>
Water elevation	234.2	232.6	ft msl
pH	21.5	6.2	pH
Sp. conductance	7	340	µS/cm
Water temperature	280	19.4	°C
Alkalinity as CaCO <sub>3</sub>	124	42	mg/L
Turbidity		39	NTU
Volumes purged	0.0	0.023	well vol
Sampling code	6	XN	
Synchronous water level	233.6 (09/17/98)	231.1 (12/21/98)	ft msl

**ANALYTICAL DATA****Inorganic Constituents**

Constituents	3Q98	Mod	Filt.	ST	H	DF	Lab	4Q98	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	0.19	J/E/	NDD			1	GE								µg/L
Arsenic, total recoverable	39	/V/				1	GE								µg/L
Barium, total recoverable	3.1	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	< 1.0			1	GE								µg/L
Chromium, total recoverable	2.0	J/E/	NDD			1	GE								µg/L
Cobalt, total recoverable	0.13	J/E/	NDD			1	GE								µg/L
Copper, total recoverable	0.40	//				1	GE								µg/L
Cyanide	<10	U//	< 10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	< 2.0			1	GE								µg/L
Mercury, total recoverable	2.4	//		■		1	GE	4.8	//		■		1	GE	µg/L
Nickel, total recoverable	<0.20	U//	< 0.20			1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	17,000	/V/		■		10	GE	29,000	//		■		25	GE	µg/L
Selenium, total recoverable	<5.0	U//	< 5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	< 1.0			1	GE								µg/L
Tin, total recoverable	<2.0	U//	< 2.0			1	GE								µg/L
Vanadium, total recoverable	140	//		■		1	GE								µg/L
Zinc, total recoverable	<5.0	U//	< 5.0			1	GE								µg/L

**Organic Constituents**

Constituents	3Q98	Mod	Filt.	ST	H	DF	Lab	4Q98	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	UJ/O/1	< 1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	< 10			1	GE								µg/L
Dichloromethane	<16	UJ/QV/1	< 1.0			1	GE								µg/L
Tetrachloroethylene	<1.0	UJ/O/1	< 1.0			1	GE								µg/L
Trichloroethylene	<1.0	UJ/O/1	< 1.0			1	GE								µg/L
Trichlorofluoromethane	<1.0	UJ/O/1	< 1.0			1	GE								µg/L

## WELL HSB101D (cont.)

## Radioactive Constituents

Constituents	3Q98	Mod	Filt.	ST	H	DF	Lab	4Q98	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<3.0E-02	UI//	< 0.0297	■		1	GP								pCi/L
Beta dose	8.03			■											pCi/L
Carbon-14	5.8E+02	//		■		1	GP								pCi/L
Cobalt-60	<-1.5E+00	UI//	< 3.4200			1	GP								pCi/L
Curium-242	<1.1E-02	UI//	< 0.0316			1	GP								pCi/L
Curium-243/244	<1.5E-02	UI//	< 0.0626			1	GP								pCi/L
Curium-245/246	<0.0E+00	UI//	< 0.0297			1	GP								pCi/L
Gross alpha	9.5E-01	//				1	GP	<9.1E+00	U//	<2.9E+00			1	GE	pCi/L
Iodine-129	5.2E+00	//				1	GP								pCi/L
Nickel-63	<-1.5E+00	UI	< 3.4200												pCi/L
Nonvolatile beta	1.0E+01	//				1	GP	7.6E+01	//		■		1	GE	pCi/L
Plutonium-238	<0.0E+00	UI//	< 0.0246			1	GP								pCi/L
Plutonium-239/240	<1.6E-02	UI//	< 0.0245			1	GP								pCi/L
Radium-226	1.6E+00	//				1	GP								pCi/L
Radium-228	<-2.6E-01	UI//	< 1.0900			1	GP								pCi/L
Strontium-90	2.0E+01	//		■		1	GP								pCi/L
Technetium-99	3.9E+01	//				1	GP								pCi/L
Thorium-228	<1.2E-01	UI/C/	<0.659			1	GP								pCi/L
Thorium-230	<-6.8E-02	UI/C/	<0.652			1	GP								pCi/L
Thorium-232	<-4.5E-02	UI/C/	<0.584			1	GP								pCi/L
Sum of alphas	3.3E+00														pCi/L
Sum of betas	6.4E+02			■											pCi/L
Total radium	1.6E+00														pCi/L
Tritium	1.2E+03	//		■		1	GP	2.9E+03	//		■		1	GE	pCi/mL
Uranium-233/234	1.3E+00	//				1	GP								pCi/L
Uranium-235	2.5E-01	//				1	GP								pCi/L
Uranium-238	1.8E+00	//				1	GP								pCi/L

**WELL HSB101C**

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72001.9 E58604.4	33.280640 °N 81.652346 °W	176.3-166.3 ft msl	258.5 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE	01/14/99	04/19/99
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**FIELD DATA**

Constituents	1Q99	2Q99	Unit
Water elevation	224.9	225.2	ft msl
pH	5.6	5.4	pH
Sp. conductance	37	64	µS/cm
Water temperature	20.1	20.0	°C
Alkalinity as CaCO <sub>3</sub>	0	11	mg/L
Turbidity	0	1	NTU
Volumes purged	3.4	9.1	well volumes
Sampling code			
Synchronous water level	225.4 (03/22/99)	224.9 (06/18/99)	ft msl

**ANALYTICAL DATA****Inorganic Constituents**

Constituents	1Q99	Mod	Filt.	ST	H	DF	Lab	2Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.20	U//	<0.20			1	GE								µg/L
Arsenic, total recoverable	<3.0	U//	<3.0			1	GE								µg/L
Barium, total recoverable	13	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	2.3	J//	NDD			1	GE								µg/L
Cobalt, total recoverable	<0.20	U//	<0.20			1	GE								µg/L
Copper, total recoverable	0.47	J//	NDD			1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.069	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	1.0	J//	NDD			1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	650	//				1	GE	530	//				1	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

**Organic Constituents**

Constituents	1Q99	Mod	Filt.	ST	H	DF	Lab	2Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<9.9	U//	<9.9			1	GE								µg/L
Dichloromethane	<1.6	JU/LV/O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU/L/O	<5.0			1	GE								µg/L

**WELL HSB101C (cont.)****Radioactive Constituents**

Constituents	1Q99	Mod	Filt.	ST	H	DF	Lab	2Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<-1.2E-01	U//	<5.2E-01			1	GP								pCi/L
Beta dose	NA														
Carbon-14	<2.4E+00	JU/L/I	<7.0E+00			1	GP								pCi/L
Cobalt-60	<5.4E-01	U//	<3.9E+00			1	GP								pCi/L
Curium-242	<3.2E-02	U//	<4.9E-01			1	GP								pCi/L
Curium-243/244	<-1.3E-02	U//	<2.8E-01			1	GP								pCi/L
Curium-245/246	<4.1E-02	U//	<2.8E-01			1	GP								pCi/L
Gross alpha	<3.0E-01	JU/L/I	<6.5E-01			1	GP	7.3E-01	J//	NDD			1	GP	pCi/L
Iodine-129	8.6E-01	J//	NDD			1	GP								pCi/L
Nickel-63	<1.5E+01	U//	<7.5E+01			1	GP								pCi/L
Nonvolatile beta	1.1E+00	J//	NDD			1	GP	1.6E+00	J//	NDD			1	GP	pCi/L
Plutonium-238	<7.0E-02	U//	<1.0E-01			1	GP								pCi/L
Plutonium-239/240	<-8.3E-03	U//	<1.8E-01			1	GP								pCi/L
Radium-226	<3.8E-01	U//	<5.0E-01			1	GP								pCi/L
Radium-228	1.0E+00	J//	NDD			1	GP								pCi/L
Strontium-90	<-4.3E-03	U//	<1.2E+00			1	GP								pCi/L
Technetium-99	<1.7E+00	U//	<2.1E+01			1	GP								pCi/L
Thorium-228	<1.2E-01	U//	<3.0E-01			1	GP								pCi/L
Thorium-230	<1.2E-01	U//	<2.1E-01			1	GP								pCi/L
Thorium-232	<2.6E-02	U//	<1.8E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Tritium	7.6E+00	//				1	GP	6.7E+00	//				1	GP	pCi/mL
Uranium-233/234	<5.9E-02	U//	<1.7E-01			1	GP								pCi/L
Uranium-235	<3.0E-02	U//	<4.5E-02			1	GP								pCi/L
Uranium-238	<3.0E-02	U//	<1.1E-01			1	GP								pCi/L

# WELL HSB101D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71997.5 E58594.8	33.280614 °N 81.652362 °W	236.1-216.1 ft msl	258.7 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 01/22/99 04/26/99

## FIELD DATA

Constituents	1Q99	2Q99	Unit
Water elevation	230.4	231.3	ft msl
pH	6.3	7.7	pH
Sp. conductance	480	480	µS/cm
Water temperature	20.8	21.1	°C
Alkalinity as CaCO3	40	114	mg/L
Turbidity	6	1	NTU
Volumes purged	0.072	1.8	well volumes
Sampling code	XN		
Synchronous water level	230.9 (03/22/99)	230.8 (06/18/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	1Q99	Mod	Filt.	ST	H	DF	Lab	2Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.20	U//	<0.20			1	GE								µg/L
Arsenic, total recoverable	4.1	//				1	GE								µg/L
Barium, total recoverable	4.2	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	2.5	J//	NDD			1	GE								µg/L
Cobalt, total recoverable	0.17	J//	NDD			1	GE								µg/L
Copper, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	24	//		■		4	GE	7.8	//		■		1	GE	µg/L
Nickel, total recoverable	7.3	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	44,000	//		■		50	GE	26,000	//		■		25	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	28	//		■		1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	1Q99	Mod	Filt.	ST	H	DF	Lab	2Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU//O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	JU//Q/	<10	●		1	GE								µg/L
Dichloromethane	<5.0	JU//O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichloroethylene	1.1	J//O	NDD			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU//O	<5.0			1	GE								µg/L

# WELL HSB101D (cont.)

## Radioactive Constituents

Constituents	1Q99	Mod	Filt.	ST	H	DF	Lab	2Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<-3.8E-02	U//	<4.9E-01	■		1	GP								pCi/L
Beta dose	3.2			■		1	GP								
Carbon-14	6.0E+02	//		■		1	GP								pCi/L
Cobalt-60	<8.2E-01	U//	<4.3E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<2.7E-01			1	GP								pCi/L
Curium-243/244	<0.0E+00	U//	<2.4E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<2.6E-01			1	GP								pCi/L
Gross alpha	6.0E+00	J//	NDD			1	GP	7.9E+00	//				1	GP	pCi/L
Iodine-129	3.9E+00	J//	NDD			1	GP								pCi/L
Nickel-63	<1.7E+01	U//	<7.2E+01			1	GP								pCi/L
Nonvolatile beta	1.4E+02	//		■		1	GP	2.8E+01	J//K//	NDD			1	GP	pCi/L
Plutonium-238	3.7E-01	R//4	Rej			1	GP								pCi/L
Plutonium-239/240	<1.6E-02	U//	<1.2E-01			1	GP								pCi/L
Radium-226	<4.4E-01	U//	<5.9E-01			1	GP								pCi/L
Radium-228	<8.7E-01	JU//C	<9.4E-01			1	GP								pCi/L
Strontium-90	2.2E+01	//		■		1	GP								pCi/L
Technetium-99	1.3E+02	//		■		1	GP								pCi/L
Thorium-228	<1.9E-01	U//	<2.6E-01			1	GP								pCi/L
Thorium-230	<3.4E-02	U//	<1.0E-01			1	GP								pCi/L
Thorium-232	<0.0E+00	U//	<5.8E-02			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	7.5E+02			■											pCi/L
Tritium	5.5E+03	//		■		1	GP	3.5E+03	//				1	GP	pCi/mL
Uranium-233/234	3.4E-01	J//	NDD			1	GP								pCi/L
Uranium-235	<-3.0E-02	U//	<2.3E-01			1	GP								pCi/L
Uranium-238	2.1E-01	J//	NDD			1	GP								pCi/L

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## APPENDIX A: GROUNDWATER PROTECTION STANDARD

Established for the H-Area Hazardous Waste Management Facility by the 1995 RCRA Renewal Permit.

Analyte	Concentration/Activity Limit	Unit
<i>Inorganic Constituents</i>		
Antimony	6	µg/L
Arsenic	50	µg/L
Barium	2,000	µg/L
Cadmium	5	µg/L
Chromium	100	µg/L
Cobalt	3 <sup>a</sup>	µg/L
Copper	1,300	µg/L
Cyanide	20 <sup>b</sup>	µg/L
Lead	15	µg/L
Mercury	2	µg/L
Nickel	100	µg/L
Nitrate	10,000	µg/L
Selenium	50	µg/L
Silver	50	µg/L
Tin	2.6 <sup>a</sup>	µg/L
Vanadium	4 <sup>a</sup>	µg/L
Zinc	5,000	µg/L
<i>Organic Constituents</i>		
Benzene	5	µg/L
Bis(2-ethylhexyl) phthalate	10 <sup>c</sup>	µg/L
Dichloromethane (methylene chloride)	5	µg/L
Tetrachloroethylene	5	µg/L
Trichloroethylene	5	µg/L
Trichlorofluoromethane	5 <sup>d</sup>	µg/L
<i>Radiological Constituents</i>		
Gross alpha	15	pCi/L



Analyte	Concentration/Activity Limit	Unit
Nonvolatile beta	50 <sup>c</sup>	pCi/L
Tritium	20,000	pCi/L
Americium-241	Sum of alphas <15 pCi/L	pCi/L
Carbon-14	Sum of beta dose <4 mrem/yr and <50 pCi/L	pCi/L
Cobalt-60	Sum of beta dose <4 mrem/yr and <50 pCi/L	pCi/L
Curium-242	Sum of alphas <15 pCi/L	pCi/L
Curium-243/244	Sum of alphas <15 pCi/L	pCi/L
Curium-245/246	Sum of alphas <15 pCi/L	pCi/L
Iodine-129	Sum of beta dose <4 mrem/yr and <50 pCi/L	pCi/L
Nickel-63	Sum of beta dose <4 mrem/yr and <50 pCi/L	pCi/L
Plutonium-238	Sum of alphas <15 pCi/L	pCi/L
Plutonium-239/240	Sum of alphas <15 pCi/L	pCi/L
Radium-226	Total radium <5 pCi/L	pCi/L
Radium-228	Sum of beta dose <4 mrem/yr and <50 pCi/L and total radium <5 pCi/L	pCi/L
Strontium-90	Sum of beta dose <4 mrem/yr and <50 pCi/L and strontium-90 <8 pCi/L	pCi/L
Technetium-99	Sum of beta dose <4 mrem/yr and <50 pCi/L	pCi/L
Thorium-228	Sum of alphas <15 pCi/L	pCi/L
Thorium-230	Sum of alphas <15 pCi/L	pCi/L
Thorium-232	Sum of alphas <15 pCi/L	pCi/L
Total radium (radium-226 and -228)	5	pCi/L
Uranium-233/234	Sum of alphas <15 pCi/L	pCi/L
Uranium-234	Sum of alphas <15 pCi/L	pCi/L
Uranium-235	Sum of alphas <15 pCi/L	pCi/L
Uranium-238	Sum of alphas <15 pCi/L	pCi/L

<sup>a</sup> Concentrations are observed background levels.

<sup>b</sup> Concentration is the practical quantitation limit (PQL) for EPA Method 335.2 (used by WA) and 335.3 (used by GE).

<sup>c</sup> Concentration is the Appendix IX PQL for EPA Method 8270.

<sup>d</sup> Concentration is the Appendix IX PQL for EPA Method 8240.

<sup>e</sup> This is the screening level above which providers of public drinking water should perform analyses for specific man-made radionuclides. The standard for the total dose equivalent from all such radionuclides is 4 mrem/yr.

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APPENDIX B: FIGURES

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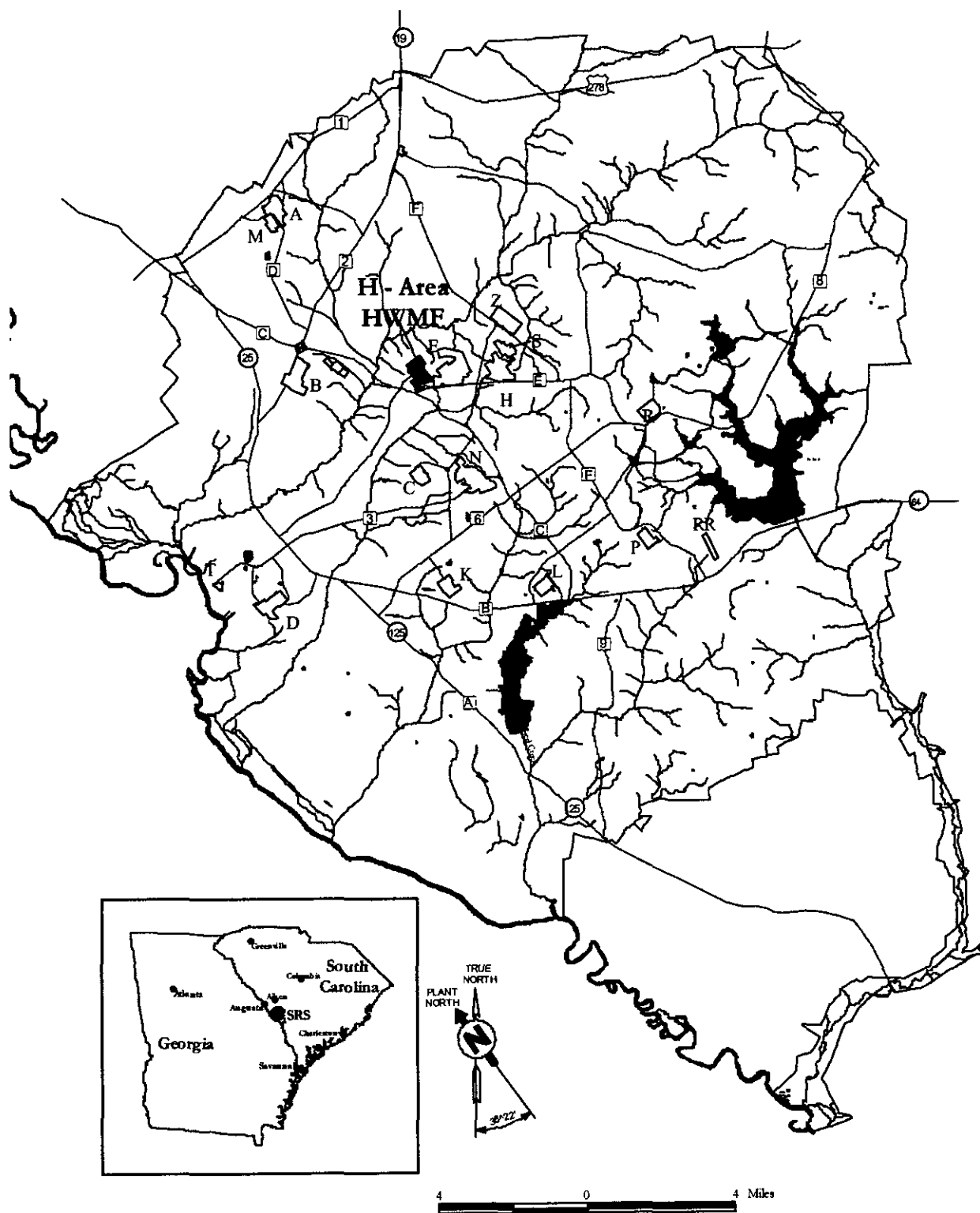
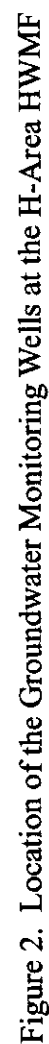


Figure 1. Location of the H-Area HWMF at the Savannah River Site

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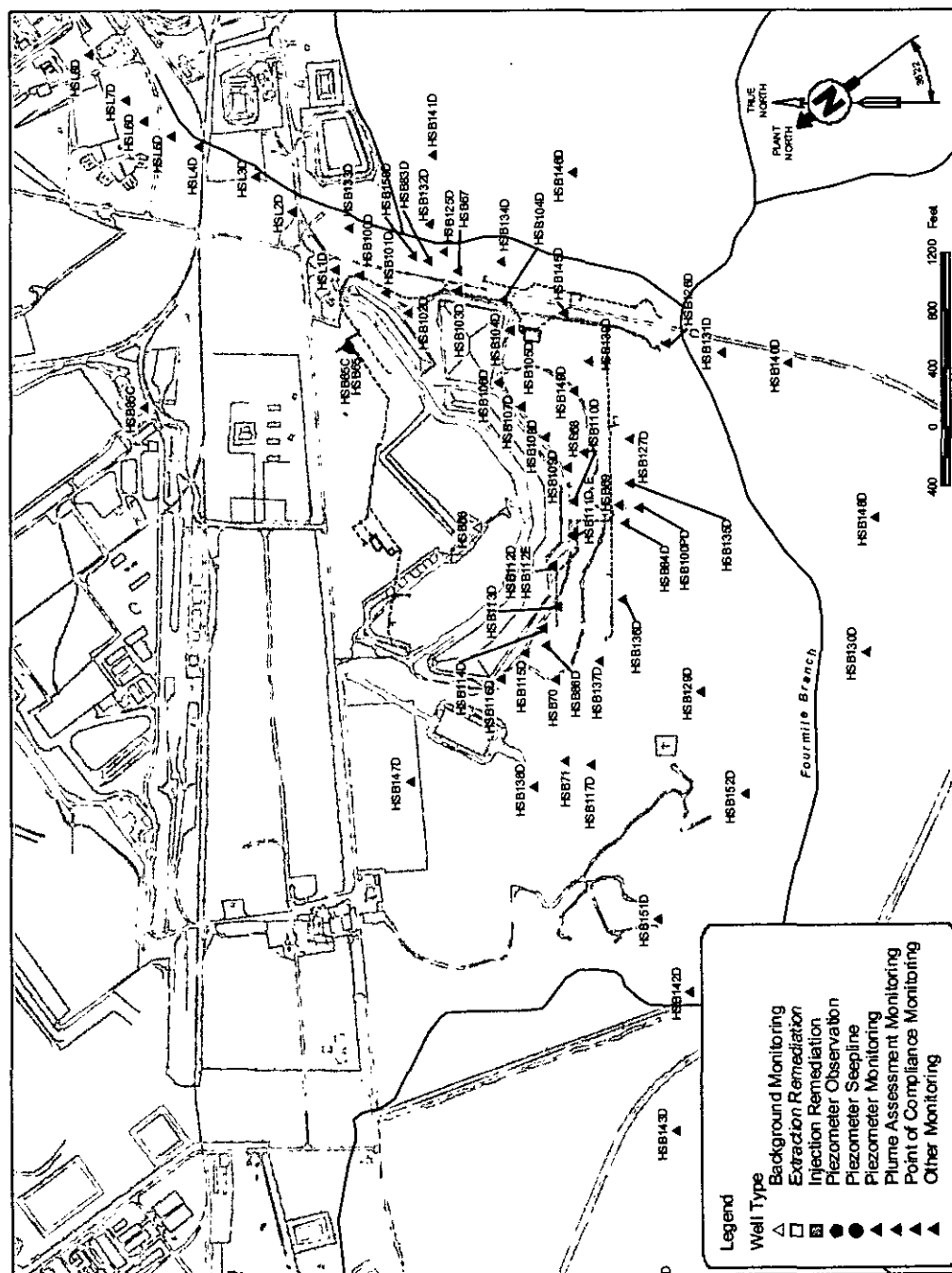
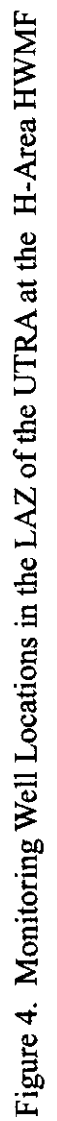


Figure 3. Monitoring Well Locations in the UAZ of the UTRA at the H-Area HWMF



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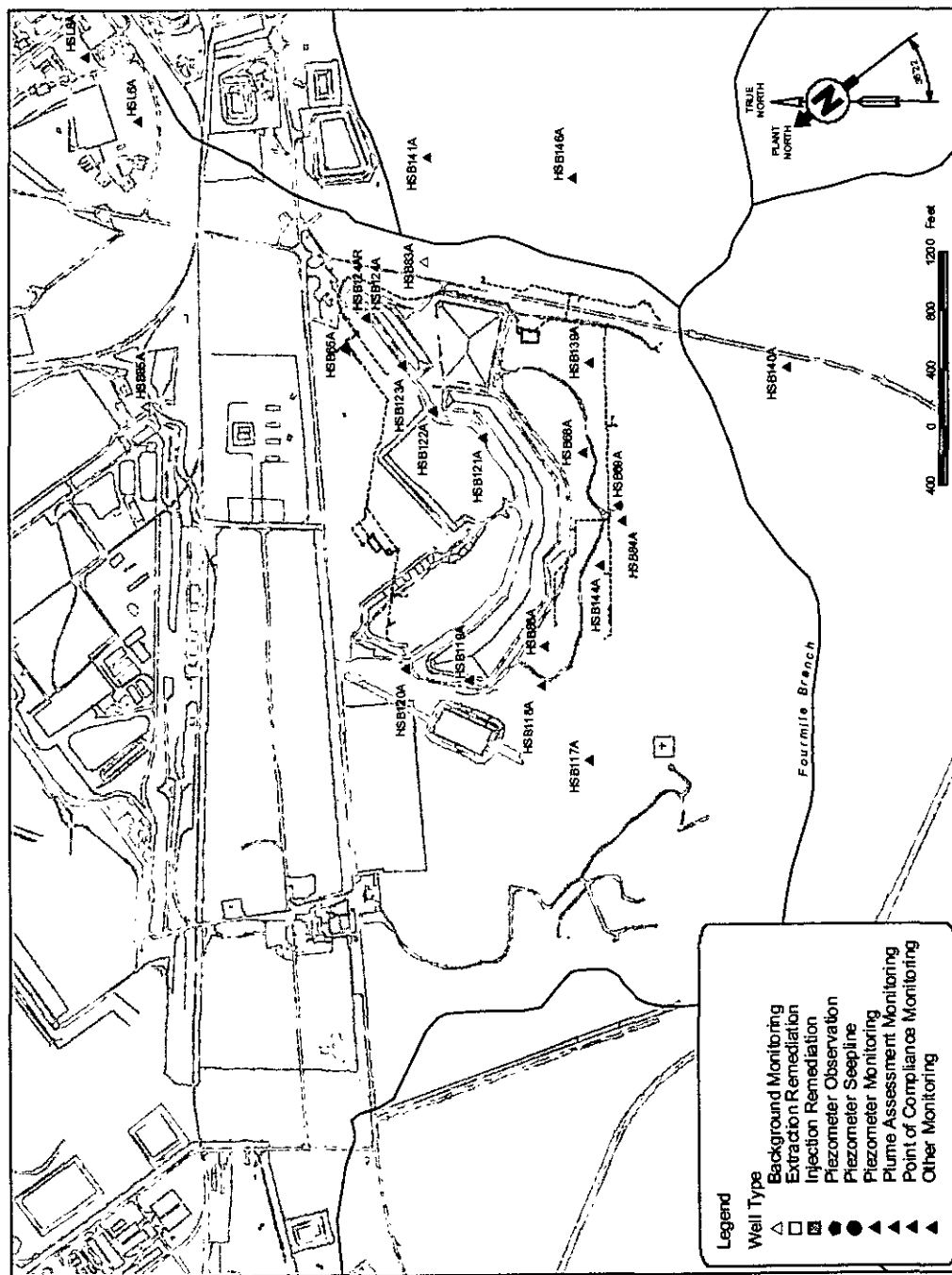
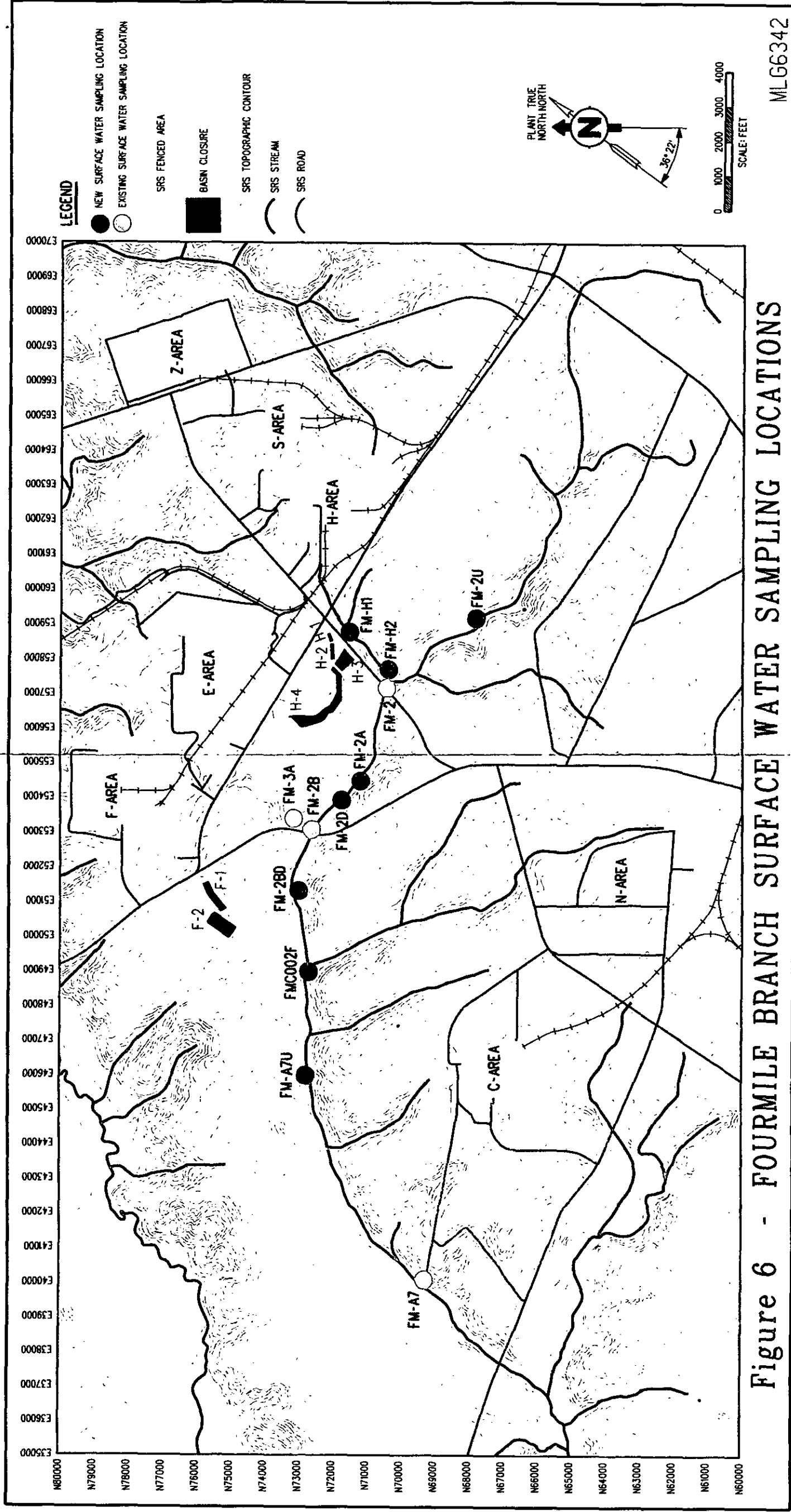


Figure 5. Monitoring Well Locations in the GA at the H-Area HWMF

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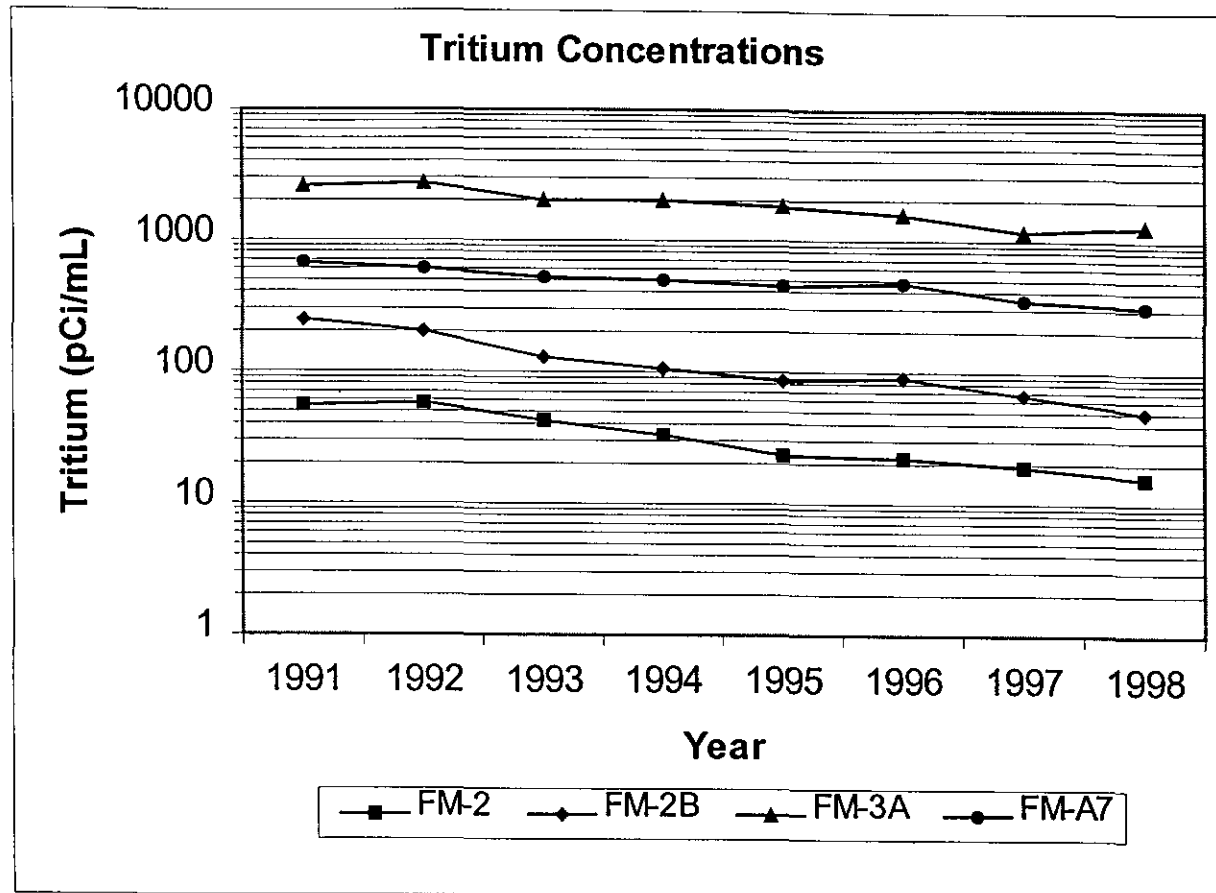


Figure 7. Tritium Trends in Fourmile Branch, 1991–1998

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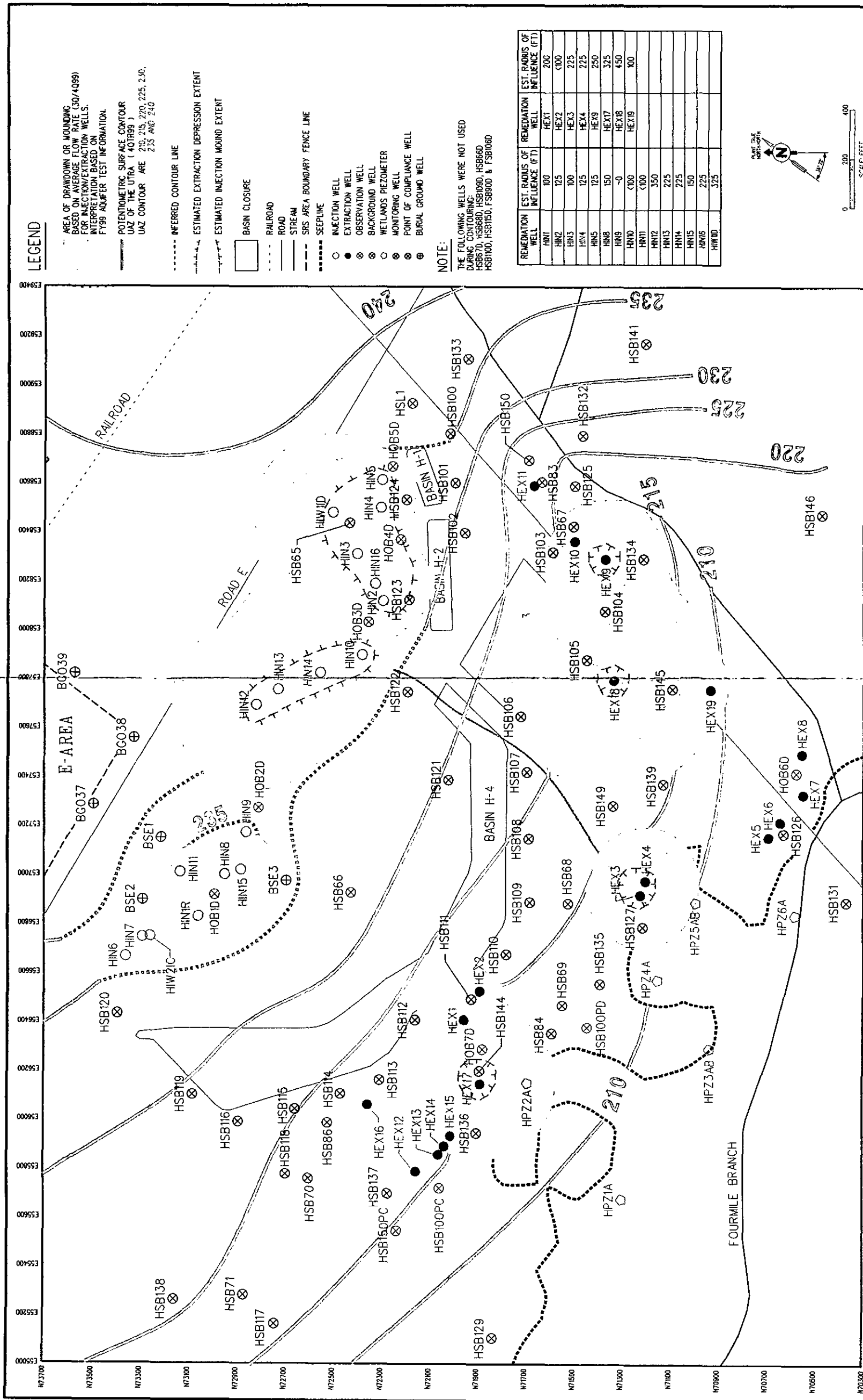


FIGURE 8.  
H-Area Seepage Basin Extent of Injection and Extraction Well Impacts for the Upper Aquifer Zone of the Upper Three Runs Aquifer

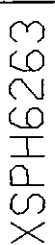


Figure 9. Contoured Gross Alpha Plume (4Q99) in Hydrostratigraphic Cross-Section B - B',

H AREA SEEPAGE BASINS HYDROSTRATIGRAPHIC CROSS-SECTION B - B'

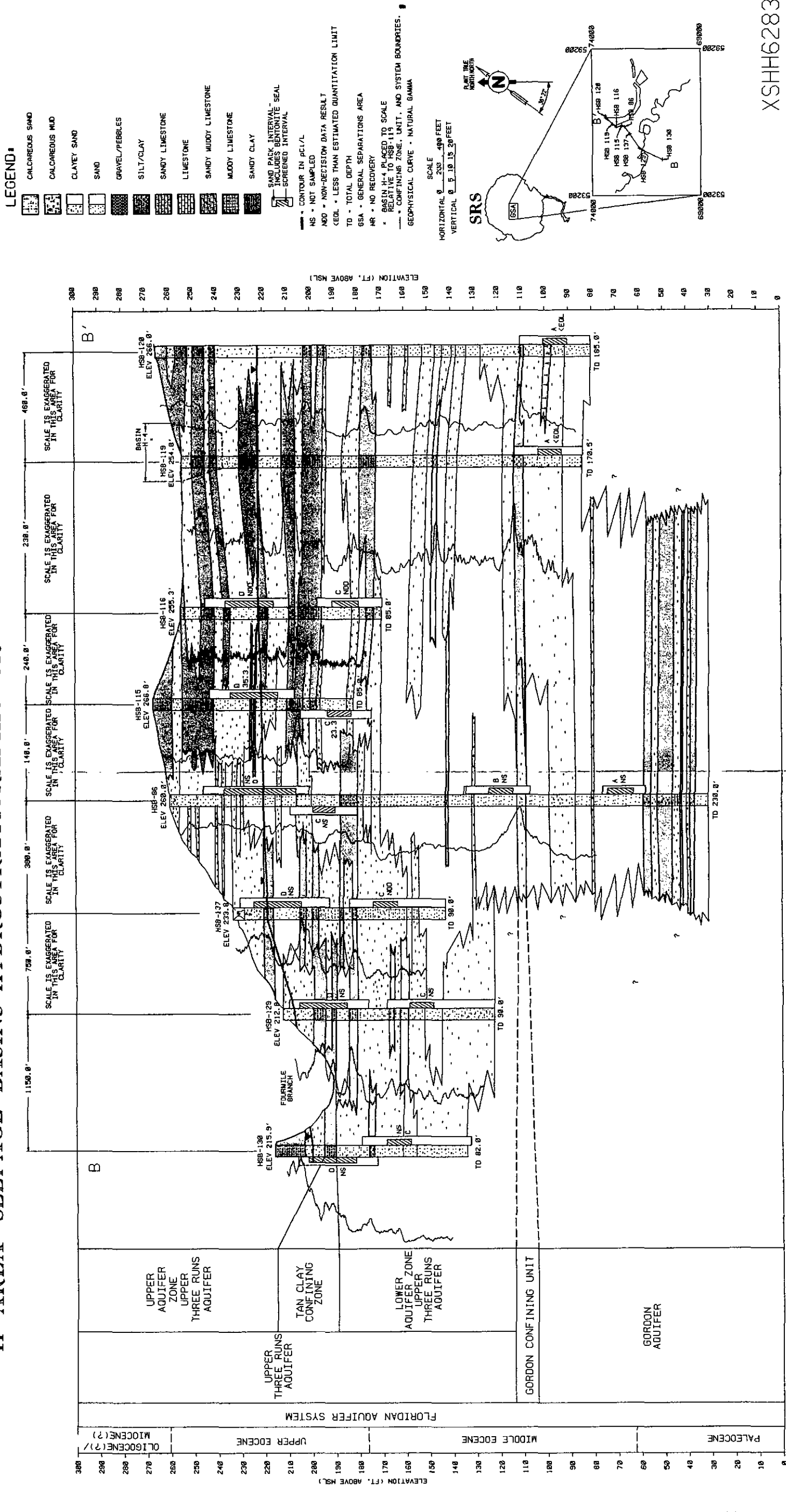
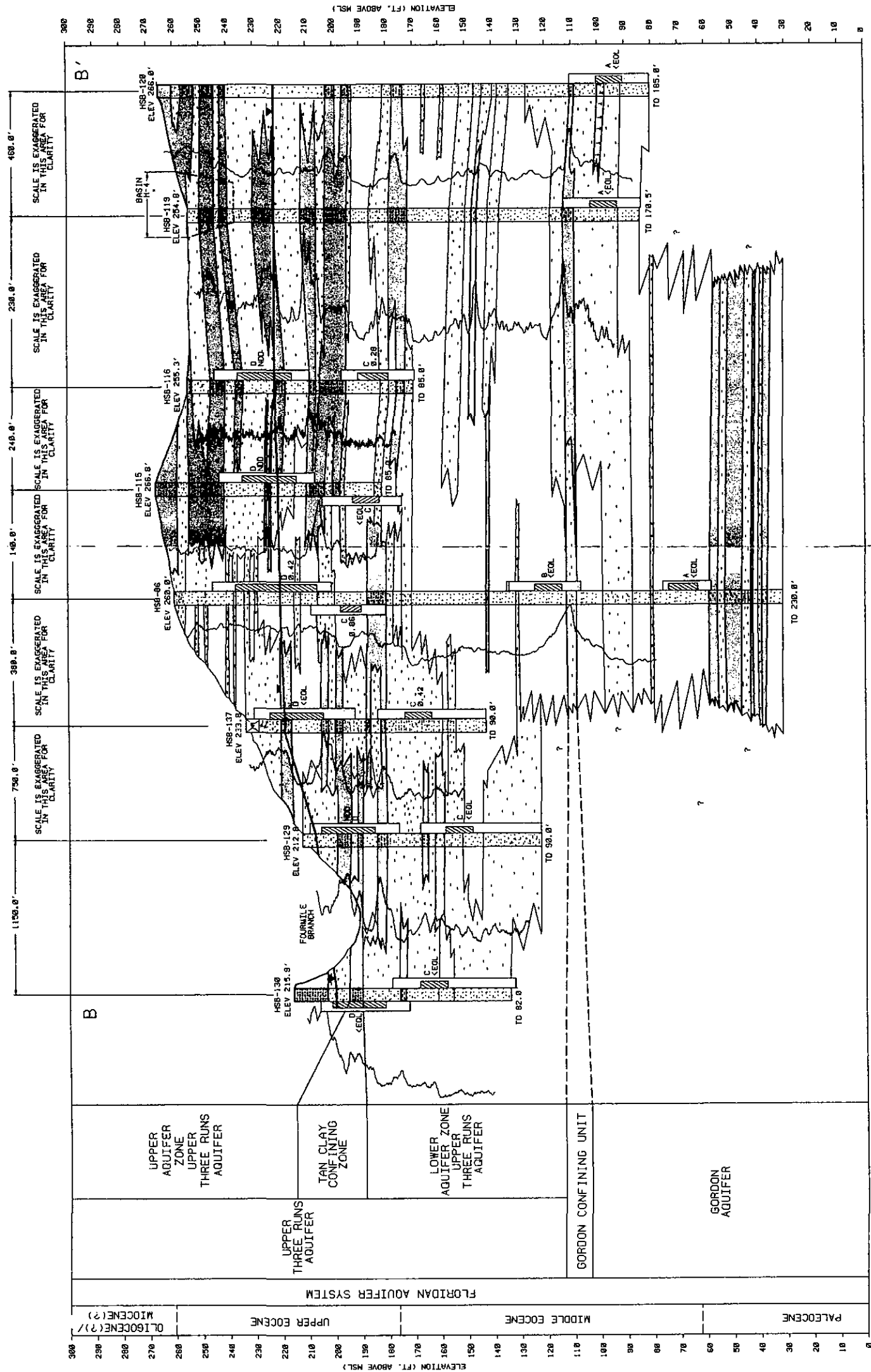


Figure 10.  
Contoured Iodine-129 Plume (3Q99) in Hydrostratigraphic Cross-Section B - B'



**Figure 11.**

H AREA SEEPAGE BASINS HYDROSTRATIGRAPHIC CROSS-SECTION B - B'



LEGEND

- CALCAREOUS SAND
- CALCAREOUS MUD
- CLAYEY SAND
- SAND
- GRAVEL/PEBBLES
- SILT/CLAY
- SANDY LIMESTONE
- LIMESTONE
- SANDY MUDDY LIMESTONE
- MUDDY LIMESTONE
- SANDY CLAY
- SANDY CLAY INTERVAL - INCLUDES BITUMINOUS SEAL
- SCREENED INTERVAL

<EOL - LESS THAN ESTIMATED QUANTIFICATION LIMIT  
NS - NOT SAMPLED  
NDS - NON-DECISION DATA RESULT  
TD - TOTAL DEPTH  
GSA - GENERAL SEPARATIONS AREA  
NR - NO RECOVERY  
\* BASIN H-4 PLACED TO SCALE  
\* BASIN H-4 RELATIVE TO HSB-119  
\* CONTOUR IN mg/L  
GEOPHYSICAL CURVE - NATURAL GAMMA  
SCALE  
HORIZONTAL 1" = 100 FEET  
VERTICAL 1" = 10 FEET

SRS



XSPH6267

Figure 12.  
Contoured Mercury Plume (4Q99) in Hydrostratigraphic Cross-Section B - B'

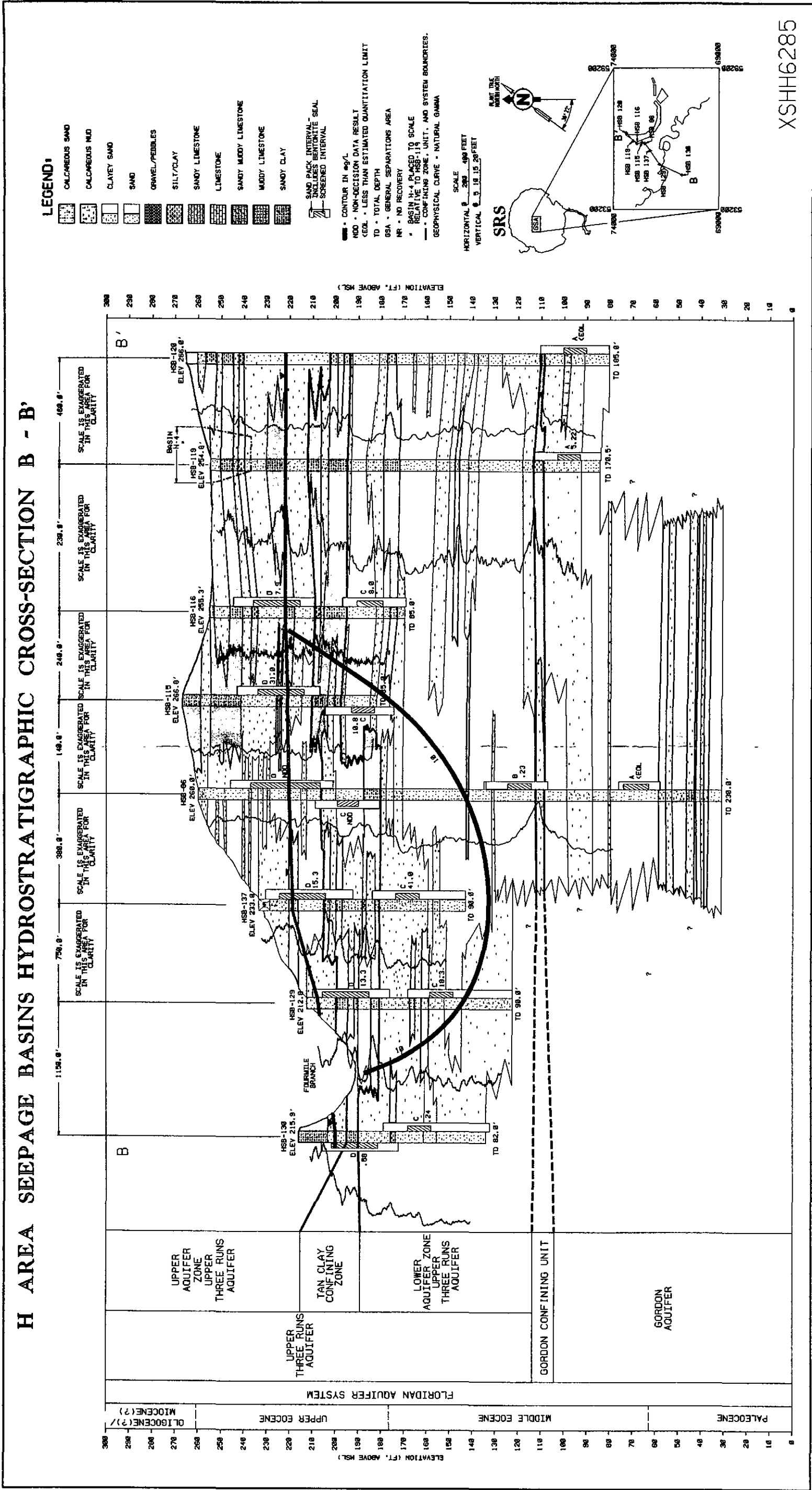


Figure 13.  
Contoured Nitrate Plume (4Q99) in Hydrostratigraphic Cross-Section B - B'

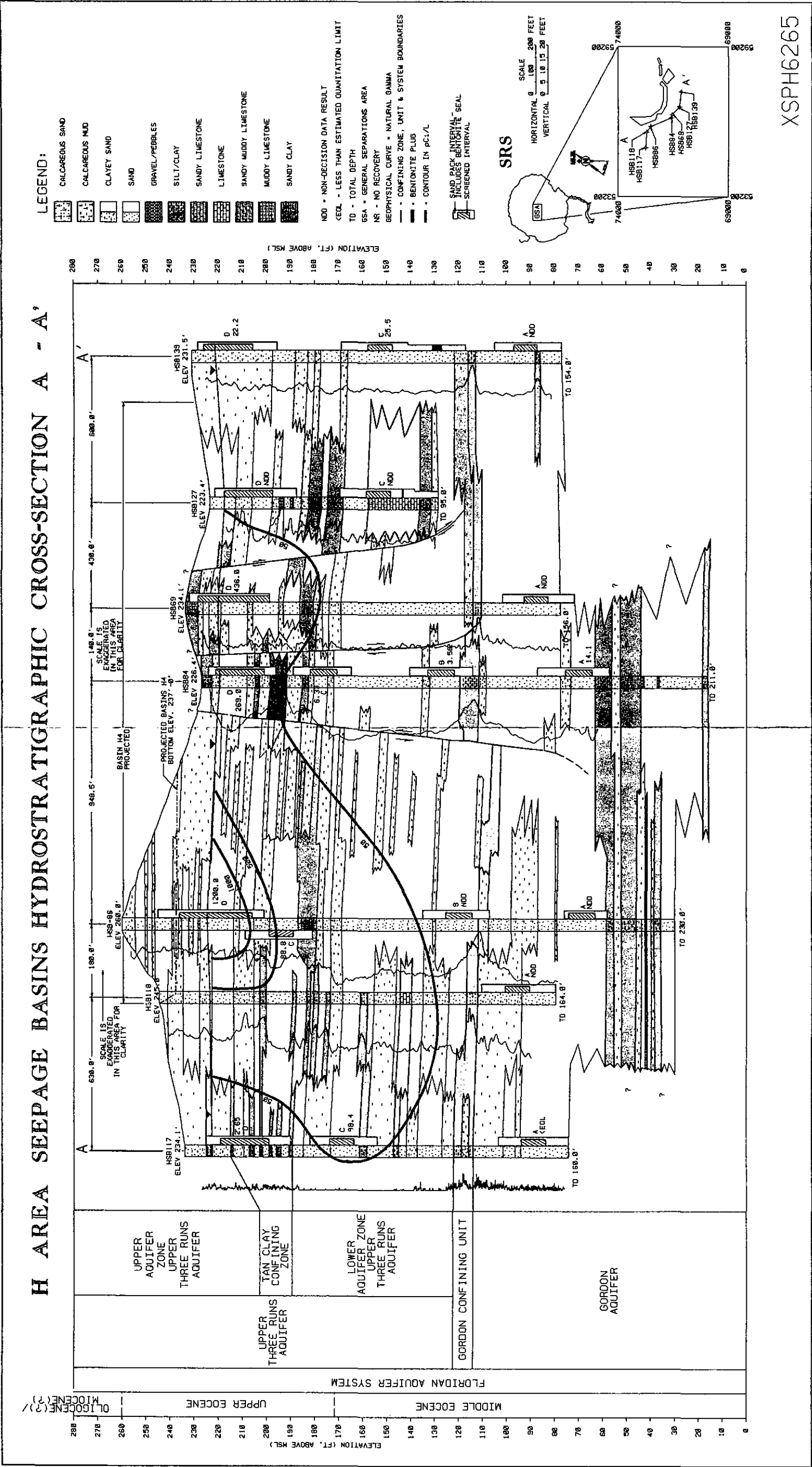
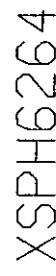


Figure 14.  
Contoured Nonvolatile Beta Plume(4Q99)  
in Hydrostratigraphic Cross-Section A - A'

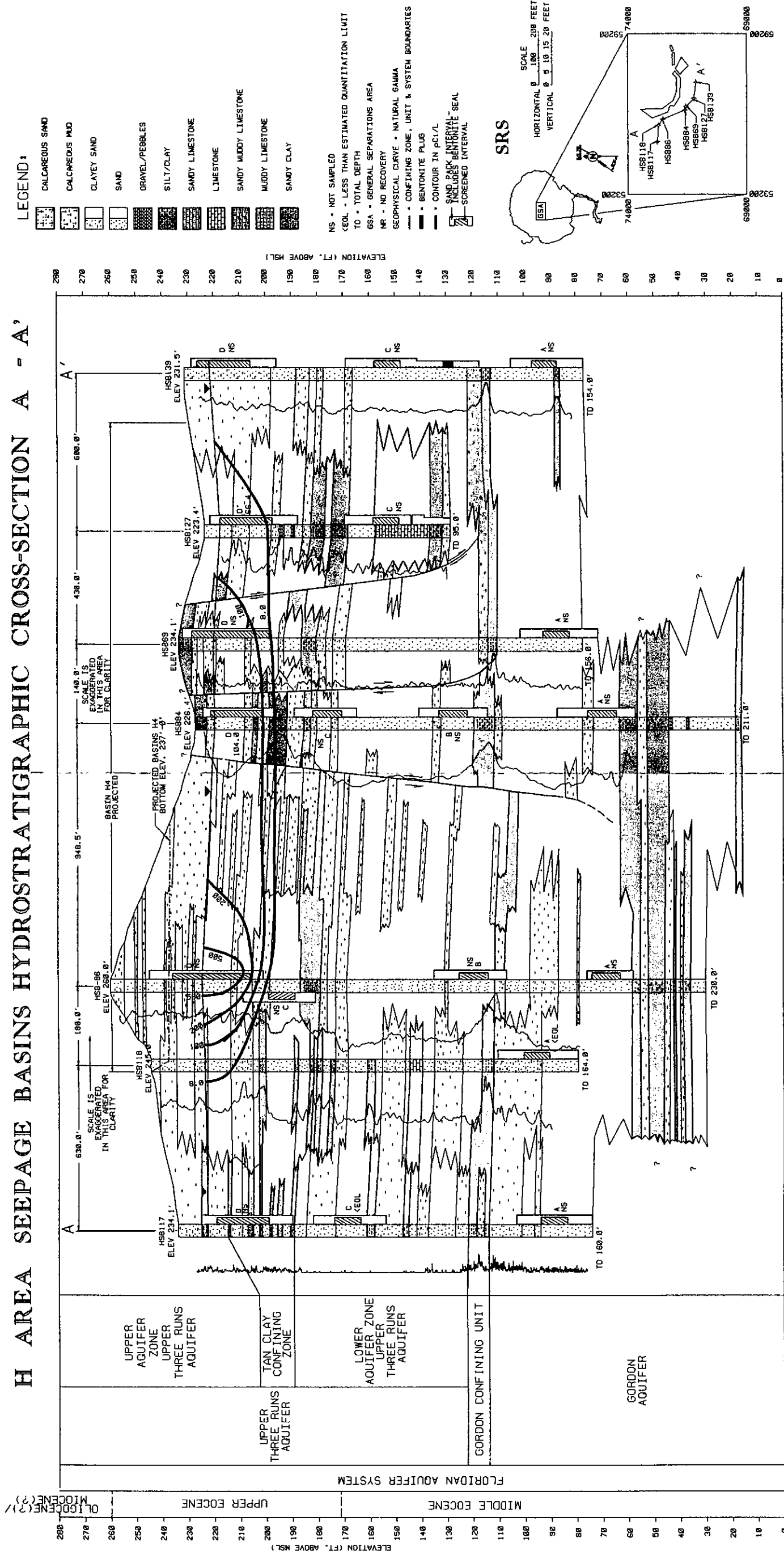
**LEGEND:**



H-Area HWMF



# H AREA SEEPAGE BASINS HYDROSTRATIGRAPHIC CROSS-SECTION A - A'



XSPH6270

Figure 16.  
Contoured Strontium-90 Plume (3Q99) in  
Hydrostratigraphic Cross-Section A - A'

H AREA SEEPAGE BASINS HYDROSTRATIGRAPHIC CROSS-SECTION B - B'

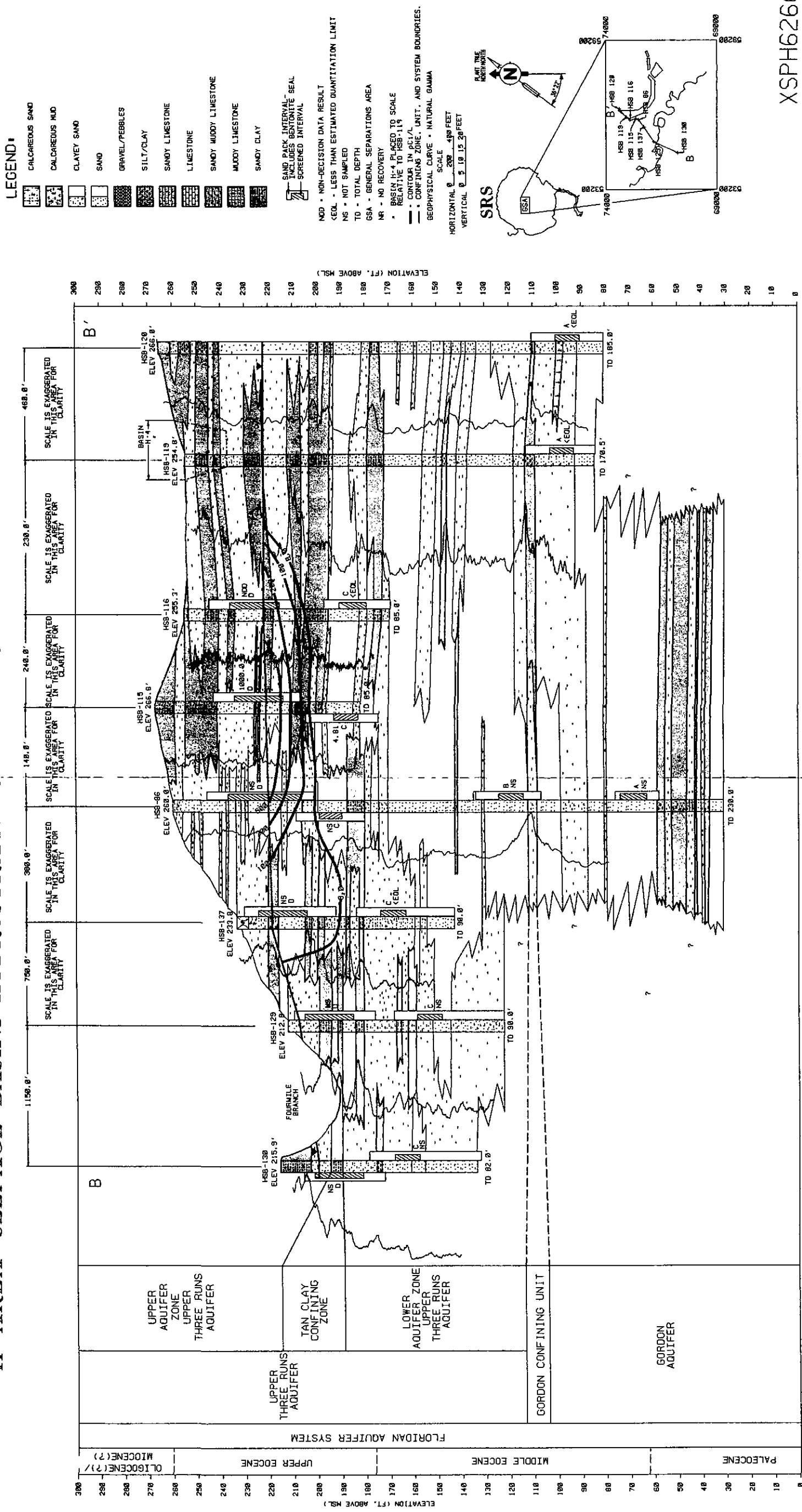
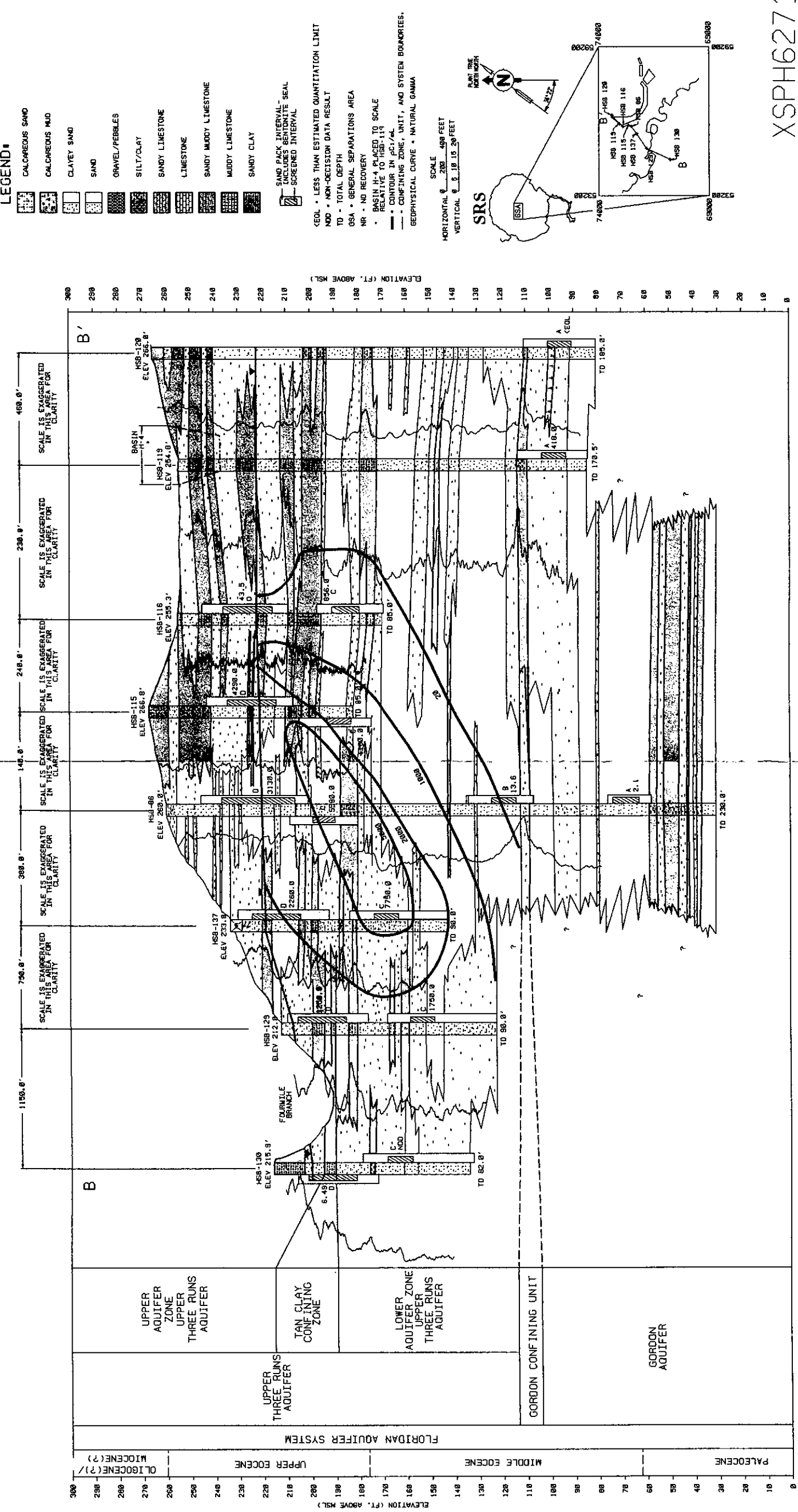


Figure 17.  
Contoured Strontium-90 Plume (3Q99)  
in Hydrostratigraphic Cross-Section B - B'

XSPH6266

Figure 18.  
Contoured Tritium Plume (4Q99) in Hydrostratigraphic Cross-Section A - A'

H AREA SEEPAGE BASINS HYDROSTRATIGRAPHIC CROSS-SECTION B - B'



XSPH6271

Figure 19.  
Contoured Tritium Plume (4Q99) in Hydrostratigraphic Cross-Section B - B'

H-Area HWMF  
Page B-39/B-40  
Third and Fourth Quarter 1999

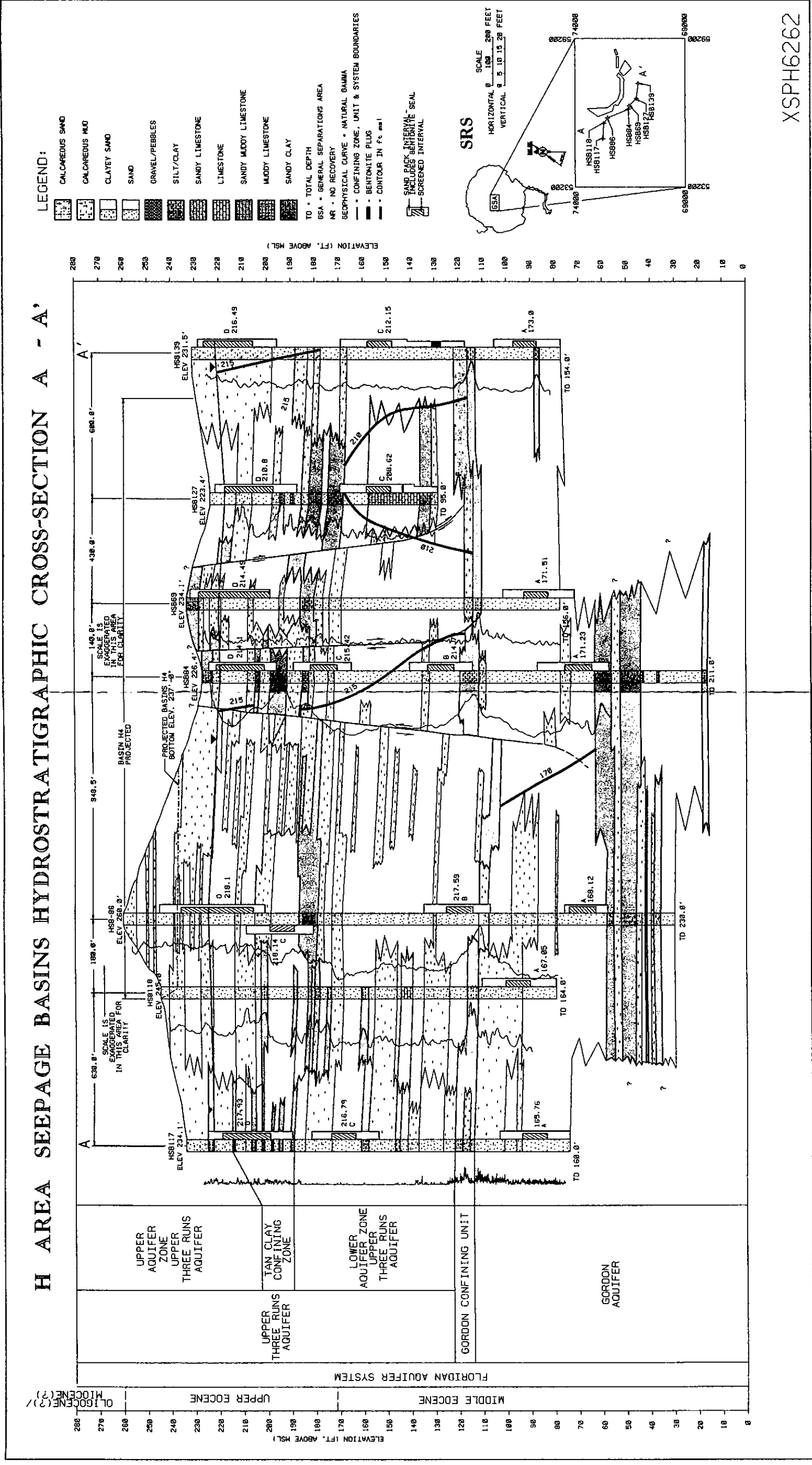


Figure 20.  
Equipotential Surfaces (4Q99) in Hydrostratigraphic Cross-Section A - A'

H AREA SEEPAGE BASINS HYDROSTRATIGRAPHIC CROSS-SECTION B - B'

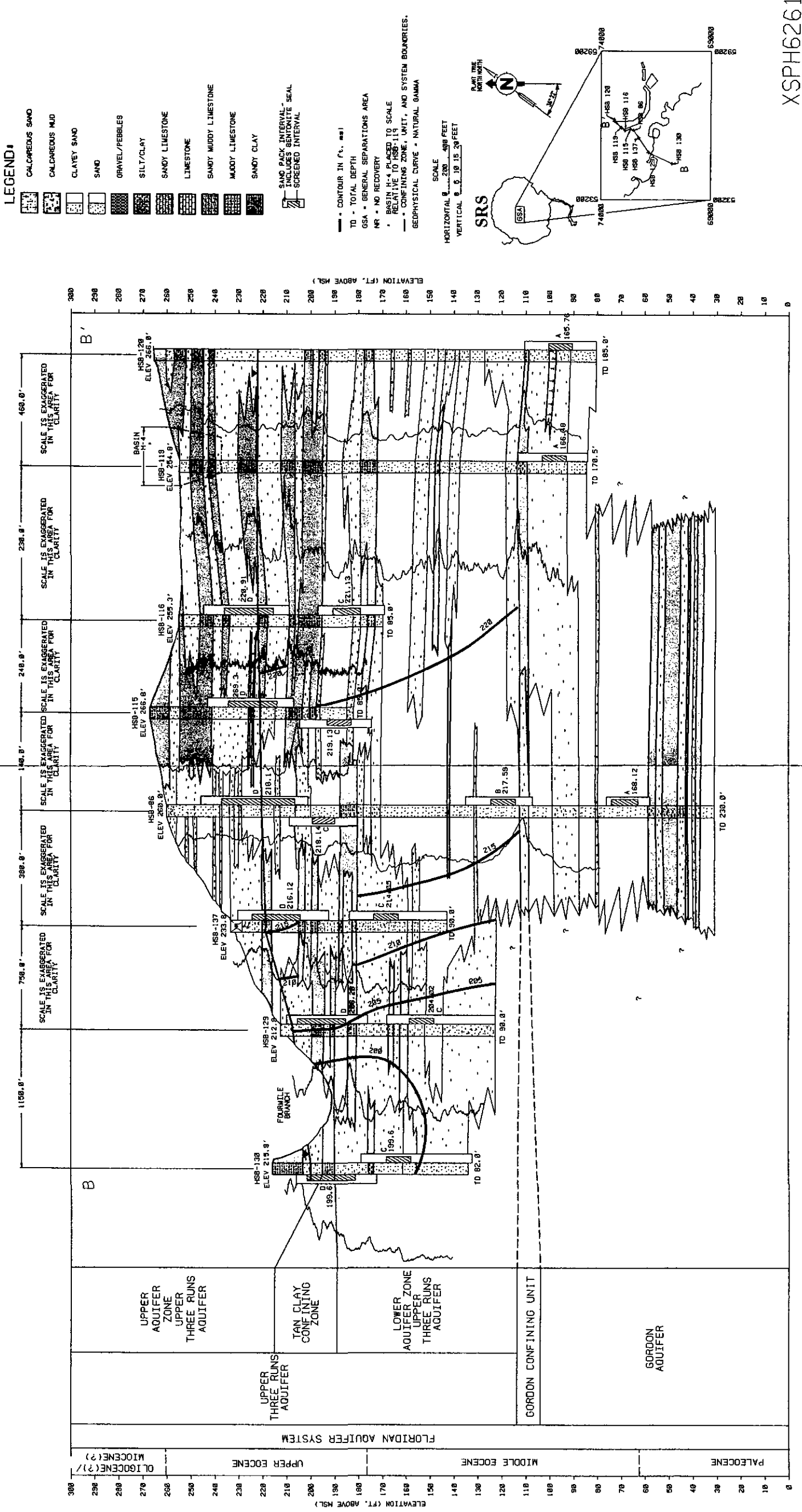


Figure 21.  
Equipotential Surfaces (4Q99) in Hydrostratigraphic Cross-Section B - B'

XSPH6261

## APPENDIX C: GROUNDWATER MONITORING RESULTS TABLES

### Key to Reading the Tables

The following abbreviations may appear in the data tables:

#### *Constituents*

Sp. conductance      specific conductance

#### *Laboratories*

EM      Environmental Protection Department/Environmental Monitoring Section  
         (EPD/EMS) Laboratory

EX      EMAX Laboratories, Inc.

GE and GP      General Engineering Laboratories, Inc.

TM      Thermo NUtech

WA      Recra LabNet Philadelphia (Roy F. Weston, Inc., until June 1997)

#### *Sampling Codes*

A      pump was surging excessively; aerated

B      blank sample was collected

C      well was pumping continuously

D      well was dry

E      equipment blank was collected

I      well went dry during sampling; insufficient water to collect all samples

L      well went dry before sampling began; only depth to water can be determined

N      well was not stabilized before sampling began

P      inaccessibility or mechanical failure prevented sample collection and field  
         analysis of the water

S      no water in standpipe; for water-level events only

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W	unable to sample because of stabilization or sampling equipment failure; only water-level measurements were obtained
X	well went dry during purging; samples were collected after well recovered

***Pump Types***

S	sample collected using a single-speed centrifugal downhole pump
V	sample collected using a variable-speed pump

***Units***

mg/L	milligrams per liter
msl	mean sea level
NTU	nephelometric turbidity unit
pCi/L	picocuries per liter
pCi/mL	picocuries per milliliter
pH	pH units
µg/L	micrograms per liter
µS/cm	microsiemens per centimeter

***Data Table Column Headings***

DF	dilution factor
H	exceeded the holding time
Mod	modifier
ST	exceeded the GWPS

***Other***

CS	carbon steel
E	exponential notation (e.g., 1.1E-09 = 1.1 x 10-9 = 0.0000000011)
PVC	polyvinyl chloride



TOC	top of casing
NDD	not "decision" data

### **Data Qualification**

The contract laboratories submit sample- or batch-specific quality assurance/quality control information either at the same time as analytical results or in a quarterly summary. Properly defined and used data modifiers (also referred to as qualifiers) can be a key component in assessing data usability. In the data tables, these modifiers appear under the column *Mod*. Three possible fields for modifiers for each quarter are separated by slashes. Functional Guideline qualifiers (FG) may appear before the first slash, STORET codes between the two slashes, and EMS codes after the second slash. For further information on modifiers and their definitions, contact EMS.

### ***Modifiers***

#### **Functional Guideline Codes (FG)**

(Blank)	Data are not qualified. Numbers should be interpreted exactly as reported.
J	The analyte was positively identified; the associated numerical value is an estimated concentration of the analyte in the sample.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
U	Material was analyzed for, but not detected. See "Results below Detection" on p. C-5.

---

**STORET Codes**

C	The result is calculated.
I	The result is less than the ssEQL but equal to or greater than the MDL.
K	The actual concentration is known to be less than the reported result.
L	The actual concentration is known to be greater than the reported result.
Q	The sample was held beyond the normal holding time prior to analysis.
V	The analyte was detected in both the method blank and the sample.
Y	The result is from an unpreserved or incorrectly preserved sample; the data may not be accurate.

**EMS Codes**

A	Compound identification criteria were not met.
C	Laboratory control sample (LCS) or blank spike (BS) criteria were not met.
D	ICP serial dilution criteria were not met.
H	Internal standard (IS) criteria were not met when the IS was used for quantitation.
I	Matrix spike recovery was not within the control limits.
K	A tentatively identified compound is a suspected aldol-condensation product.
L	Initial or continuing calibration criteria were not met.
O	Surrogate or tracer spike recovery is out of specification.
P	Graphite furnace atomic absorption QC a. Duplicate injection criteria were not met. b. Post-digestion spike recovery was not within control limits and the sample absorbance is > 50% of the post-digestion spike absorbance.
S	The sample was analyzed by the method of standard additions.
W	Graphite furnace atomic absorption QC: the post-digestion spike recovery is not within control limits and the sample absorbance is < 50% of the post-digestion spike absorbance.

---

X	The laboratory duplicate RPD or MS/MSD RPD was not within control limits.
4	Matrix interference is present.
5	Matrix spike concentration was $< 0.25\times$ the sample concentration, and the percent recovery cannot be determined.
6	The analyte was detected in both the sample and associated field blank.
8	The analyte was detected in both the sample and associated trip blank.
9	The field duplicate RPD was not within control limits.

### Results below Detection

For radiological analyses, the analytical result field contains the result calculated by the analytical instrument software and reported by the laboratory, even if it is negative.

For nonradiological analyses, if the laboratory reports an analyte as not detected, the ssEQL<sup>1</sup> appears in the result field preceded by a less-than symbol (<). If an analyte is reported by the laboratory as detected but is converted to a nondetect during validation, the numeric value reported by the laboratory is retained, but the < symbol is added to the record.

### Data Filtering

Data in the column headed *Filt.* have been filtered to clarify their usability. In this column, *Rej* is used to indicate rejected data. For nondetects, this column contains the less-than symbol (<) and the ss-EQL or sample-specific minimum detectable activity. For chemical analyses, this is the same numeric value as appears in the unfiltered result column unless the result was converted to a nondetect during validation.

---

<sup>1</sup> The ssEQL is defined as the lowest concentration that can be achieved reliably for a specific sample within specified limits of precision and accuracy during routine laboratory operating conditions. The ssEQL is modified for sample dilution or concentration or because of an unusual aliquot size that affects analytical sensitivity.

For all data qualified with the Functional Guideline code *J*, indicating an estimated quantity, the *Filt.* column contains the letters *NDD*, meaning that these data are considered not "decision" data.

None of the filtered data (rejected, undetected, or estimated) are considered in discussions of results above standards in this report.

### **Holding Times**

Standard analytical methods include a limit, called holding time, on the maximum elapsed time between sample collection and extraction or analysis by the laboratory. In the data tables, a large bullet (•) in the *H* (holding time) column indicates that holding time was exceeded. Analyses performed beyond holding times may not yield valid results.

The South Carolina Department of Health and Environmental Control (SCDHEC) allows only 15 minutes to elapse between sampling and analysis for pH. Thus, only field pH measurements can meet the holding time criterion; laboratory pH analyses always will exceed it.

### **Sampling Dates**

Samples for field data are collected once each quarter, but samples for analytical data may be collected more than once each quarter. Because the results tables present the highest analytical results for each quarter, the date of collection for reported analytical results may not coincide with the date of collection for field data.

### **Beta Dose**

If any beta-emitting radionuclides on the GWPS exceeded their minimum detectable activity (MDA), beta dose was calculated and entered into the data tables in this appendix. If the data were filtered out because they were below MDA, rejected, or estimated for any reason, they were not included in the calculation of beta dose.

A number greater than 1 in the beta dose column indicates that the 4 mrem/yr standard for beta dose has been exceeded. The values were obtained by dividing each detected, unfiltered beta-emitting radionuclide's measured concentration by the EPA's conversion factor, shown in the table below.

***Activity to Dose Conversion Factors for H-Area HWMF Beta Emitters***

Analyte	EPA 1976 dose (4 mrem/yr) limit
Carbon-14	2,000 pCi/L
Cobalt-60	100 pCi/L
Iodine-129	1 pCi/L
Nickel-63	50 pCi/L
Radium-228*	5 pCi/L
Strontium-90	8 pCi/L
Technetium-99	900 pCi/L

\*The EPA's 1976 guidance document gives no equivalent for radium-228, so the GWPS of 5 pCi/L for the sum of radium-226 and -228 is used for radium-228.

For each well, the unfiltered activities (in pCi/L) for each of the beta emitters on the GWPS is divided by its individual limit (also in pCi/L), and all of the resulting ratios (unitless) are added, as shown below:

$$A_{C-14}/2,000 + A_{Co-60}/100 + A_{I-129}/1 + A_{Ni-63}/50 + A_{Ra-228}/5 + A_{Sr-90}/8 + A_{Tc-99}/900 = \text{Beta dose factor}$$

where A is the measured activity for each radionuclide.

If the beta dose factor exceeds 1.0, the beta dose for a theoretical person drinking 2 L/day of that well's water exceeds the EPA standard of 4 mrem/yr.

**Table C-1. Groundwater Monitoring Results for Individual Wells**

**WELL HSB 65**

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72425.6 E58432.0	33.281296 °N 81.653622 °W	242.4-212.4 ft msl	272 ft msl	4" PVC	S	UAZ_UTRA

<u>SAMPLE DATE</u>	07/06/99	10/05/99
--------------------	----------	----------

FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	232.5	236.2	ft msl
pH	4.8	4.9	pH
Sp. conductance	115	106	µS/cm
Water temperature	22.9	21.5	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.3	0.4	NTU
Volumes purged	7.4	2.9	Well vol
Sampling code			
Synchronous water level	235.3 (09/16/99)	235.9 (12/06/99)	ft msl

ANALYTICAL DATA

**Inorganic Constituents**

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	0.050	J//	NDD			1	GE	0.098	J//	NDD			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	8,200	//				3	GE	7,300	//				5	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

**Organic Constituents**

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 65 (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	9.5E-01	J//	NDD			1	GP	7.3E-01	J//	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<1.1E+00	U//	<1.3E+00			1	GP	5.9E+00	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.3E+03	//5		■		1	GP	1.3E+03	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 65A

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72436.2 E58436.0	33.281326 °N 81.653633 °W	73.2-62.5 ft msl	273.6 ft msl	4" PVC	S	Gordon

SAMPLE DATE 07/26/99 10/05/99

### FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	171.5	170.8	ft msl
pH	7.2	7.0	pH
Sp. conductance	199	188	µS/cm
Water temperature	21.4	19.9	°C
Alkalinity as CaCO3	89	66	mg/L
Turbidity	0.8	0.8	NTU
Volumes purged	2.5	2.6	Well vol
Sampling code			
Synchronous water level	170.6 (09/16/99)	170.6 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	24	//				1	WA	<20	U/V/	<50			1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



# WELL HSB 65A (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	2.0E+00	J/I	NDD			1	TM	<3.0E-01	U//	<1.1E+00			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<-4.6E-01	U//	<2.0E+00			1	TM	1.9E+00	J/I	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	<2.0E-02	U//	<5.6E-01			1	TM	<-1.8E-02	U//	<6.2E-01			1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 65B

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72445.6 E58439.4	33.281352 °N 81.653642 °W	133.3-123.3 ft msl	273.7 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/06/99 10/05/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	224.2	224.3	ft msl
pH	7.7	7.5	pH
Sp. conductance	194	190	µS/cm
Water temperature	23.0	19.7	°C
Alkalinity as CaCO3	83	72	mg/L
Turbidity	0.5	3.2	NTU
Volumes purged	1.8	2.6	Well vol
Sampling code			
Synchronous water level	224.2 (09/16/99)	223.9 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	140	//				1	GE	37	//				1	WA	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 65B (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<3.8E-01	U//	<8.4E-01			1	GP	<2.9E-01	U//	<7.1E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	3.2E+00	//				1	GP	<2.9E-01	U//	<1.2E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	4.9E+00	//5				1	GP	6.8E-01	J//	NDD			1	TM	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 65C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72439.6 E58447.1	33.281351 °N 81.653610 °W	218.6-207.8 ft msl	273.6 ft msl	4" PVC	S.	UAZ_UTRA

SAMPLE DATE 07/06/99 10/05/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	236.4	237.2	ft msl
pH	4.8	4.8	pH
Sp. conductance	136	125	µS/cm
Water temperature	23.1	22.1	°C
Alkalinity as CaCO3	0	0	mg/L
Turbidity	0.4	0.2	NTU
Volumes purged	4.1	2.5	Well vol
Sampling code			
Synchronous water level	236.2 (09/16/99)	236.9 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	0.16	J/V	NDD			1	GE	0.52	//				1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	12,000	//		■		10	GE	11,000	//		■		5	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 65C (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	3.5E+00	//				1	GP	4.4E+00	//				1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	3.5E+00	//				1	GP	4.6E+00	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.5E+03	//5		■		1	GP	1.6E+03	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 66

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72429.2 E56928.3	33.278850 °N 81.657589 °W	228.1-198.1 ft msl	280.2 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/28/99 10/18/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	210.6	210.7	ft msl
pH	4.9	5.2	pH
Sp. conductance	29	29	µS/cm
Water temperature	21.2	21.5	°C
Alkalinity as CaCO3	0	0	mg/L
Turbidity	2.3	3.0	NTU
Volumes purged	4.0	5.4	Well vol
Sampling code			
Synchronous water level	210.6 (09/16/99)	210.6 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable	<4.7	U//	<4.7			1	WA								µg/L
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	1,900	//				1	GE	2,000	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 66 (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.2E+00	J/V	NDD			1	GP	<1.6E+00	U/V	<7.4E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<6.0E-01	U//5	<1.7E+00			1	GP	1.3E+00	J/V	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.3E+01	//				1	GP	1.3E+01	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 67

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71505.0 E58424.3	33.279247 °N 81.651855 °W	230.7-200.7 ft msl	237.8 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 07/20/99 11/01/99

### FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	222.4	211.8	ft msl
pH	4.4	4.1	pH
Sp. conductance	109	107	µS/cm
Water temperature	19.8	20.5	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.7	0.4	NTU
Volumes purged	2.8	3.3	Well vol
Sampling code			
Synchronous water level	212.5 (09/16/99)	211.7 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	4.3	//		■		1	GE	3.6	//		■		1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	9,100	//				5	GE	9,300	//				5	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



# WELL HSB 67 (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	6.8E+00	//				1	GP	7.0E+00	//				1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	2.7E+02	J/K/C	NDD			1	GP	4.9E+02	//		■		1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	6.8E+02	//5		■		1	GP	9.0E+02	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 68

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71528.0 E56901.0	33.276813 °N 81.655911 °W	243.3-213.3 ft msl	250.1 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE	07/19/99	10/20/99
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### FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	217.8		ft msl
pH	4.3	4.2	pH
Sp. conductance	93	95	µS/cm
Water temperature	19.8	19.2	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.9	1.9	NTU
Volumes purged	4.1		Well vol
Sampling code			
Synchronous water level	D (09/16/99)	D (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	1.9	//				1	GE	1.9	//				1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	8,800	//				5	GE	8,400	//				5	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 68 (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.7E+01	//		■		1	GP	7.4E+01	//		■		1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.4E+03	//		■		1	GP	1.5E+03	//		■		1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.9E+02	//5		■		1	GP	1.2E+02	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 68A

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71526.9 E56892.1	33.276796 °N 81.655932 °W	58.0-47.5 ft msl	249.4 ft msl	4" PVC	S	Gordon

SAMPLE DATE 07/01/99 10/04/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	172.1	171.4	ft msl
pH	6.6	6.6	pH
Sp. conductance	121	133	µS/cm
Water temperature	19.5	20.0	°C
Alkalinity as CaCO3	51	49	mg/L
Turbidity	0.5	0.7	NTU
Volumes purged	2.4	2.5	Weil vol
Sampling code			
Synchronous water level	171.3 (09/16/99)	171.0 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	10	J//	NDD			1	GE	35	J/Q/	NDD	●		1	WA	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

## WELL HSB 68A (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<1.7E-01	U//	<9.1E-01			1	GP	1.7E+01	//		■		1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	3.0E+00	J//	NDD			1	GP	1.2E+01	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	<1.0E-01	U//	<5.8E-01			1	GP	8.2E+01	//		■		1	TM	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 68B

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71525.5 E56882.1	33.276776 °N 81.655956 °W	134.5-123.5 ft msl	250 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/01/99 10/04/99

### FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	215.1	214.9	ft msl
pH	7.3	7.5	pH
Sp. conductance	214	235	µS/cm
Water temperature	20.5	21.2	°C
Alkalinity as CaCO <sub>3</sub>	94	98	mg/L
Turbidity	9.8	7.0	NTU
Volumes purged	2.4	3.0	Well vol
Sampling code			
Synchronous water level	214.9 (09/16/99)	214.6 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	220	//				1	GE	<40	U/V/	<50			1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 68B (cont.)

### Radioactive Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<6.6E-01	U//	<1.1E+00			1	GP	<5.1E-01	U//	<1.5E+00			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	2.4E+00	J//	NDD			1	GP	<6.7E-01	U//	<1.5E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.4E+01	//				1	GP	<2.4E-01	U//	<6.1E-01			1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 68C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71524.1 E56872.7	33.276758 °N 81.655978 °W	179.5-168.4 ft msl	250.1 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/02/99 10/04/99

### FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	215.7	215.6	ft msl
pH	6.0	7.3	pH
Sp. conductance	120	126	µS/cm
Water temperature	21.1	21.4	°C
Alkalinity as CaCO <sub>3</sub>	8	8	mg/L
Turbidity	10.5	2.3	NTU
Volumes purged	0.032	0.032	Well vol
Sampling code	XN	XN	
Synchronous water level	215.6 (09/16/99)	215.3 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	0.058	J/V	NDD			1	GE	0.21	//				1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	12,000	//		■		5	GE	12,000	//		■		5	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



## WELL HSB 68C (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.9E+00	J//	NDD			1	GP	1.4E+00	J//	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.4E+01	//				1	GP	<6.9E-01	U//	<1.2E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thonium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.6E+03	//		■		1	GP	1.4E+03	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

**WELL HSB 69**

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71546.9 E56475.1	33.276160 °N 81.657069 °W	229.0-199.0 ft msl	236 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE	07/19/99	10/20/99
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FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	215.9	214.5	ft msl
pH	4.4	4.5	pH
Sp. conductance	46	51	µS/cm
Water temperature	20.5	20.5	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.7	0.5	NTU
Volumes purged	3.2	3.3	Well vol
Sampling code			
Synchronous water level	215.0 (09/16/99)	214.3 (12/06/99)	ft msl

ANALYTICAL DATA*Inorganic Constituents*

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.21	U/V	<0.20			1	GE	0.085	J/V	NDD			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	2,100	//				1	GE	2,200	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

*Organic Constituents*

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 69 (cont.)

## Radioactive Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	3.4E+00	J//	NDD			1	GP	1.0E+01	//				1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	4.9E+02	//		■		1	GP	4.4E+02	//		■		1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	2.9E+01	//5		■		1	GP	3.1E+01	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 69A

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71549.4 E56465.1	33.276149 °N 81.657100 °W	93.1-83.1 ft msl	236.6 ft msl	4" PVC	S	Gordon

SAMPLE DATE 07/28/99 10/11/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	172.2	171.7	ft msl
pH	6.8	6.7	pH
Sp. conductance	152	152	µS/cm
Water temperature	20.7	20.4	°C
Alkalinity as CaCO3	67	63	mg/L
Turbidity	0.9	0.4	NTU
Volumes purged	3.3	2.4	Well vol
Sampling code			
Synchronous water level	171.6 (09/16/99)	171.3 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	37	//				1	WA	<20	U//	<50			1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 69A (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.3E+00	J/V	NDD			1	TM	9.8E-01	J/V	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.3E+00	J/V/5	NDD			1	GP	3.3E+00	J/K/C	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	<0.0E+00	U//	<4.8E-01			1	TM	<2.2E-01	U//	<5.4E-01			1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 70

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72606.9 E55758.9	33.277336 °N 81.661013 °W	235.7-205.7 ft msl	242.8 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/07/99 10/11/99

### FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	220.1	215.9	ft msl
pH	5.2	5.5	pH
Sp. conductance	58	57	µS/cm
Water temperature	19.9	21.6	°C
Alkalinity as CaCO <sub>3</sub>	0	5	mg/L
Turbidity	1.1	1.1	NTU
Volumes purged	4.1	5.0	Well vol
Sampling code			
Synchronous water level	215.8 (09/16/99)	215.9 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	450	//				1	GE	440	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 70 (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	6.5E-01	J/V	NDD			1	GP	9.7E-01	J/V	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.0E+01	//				1	GP	1.0E+01	J/K/C	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	3.3E+01	//5		■		1	GP	3.5E+01	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

◆ = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 70C

SRS Coord	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72597.3 E55757.1	33.277311 °N 81.660999 °W	174.9-164.9 ft msl	243.1 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/16/99 10/18/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	219.7	218.7	ft msl
pH	8.5	7.0	pH
Sp. conductance	398	433	µS/cm
Water temperature	22.8	18.9	°C
Alkalinity as CaCO3	15	38	mg/L
Turbidity	1.7	0.8	NTU
Volumes purged	0.0	0.028	Well vol
Sampling code	XN	XN	
Synchronous water level	218.7 (09/16/99)	218.3 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.68	JU//4	<10			5	GE								µg/L
Arsenic, total recoverable	<15	U//	<15			5	GE								µg/L
Barium, total recoverable	150	//				5	GE								µg/L
Cadmium, total recoverable	<5.0	U//	<5.0			5	GE								µg/L
Chromium, total recoverable	4.6	J//	NDD			5	GE								µg/L
Cobalt, total recoverable	<5.0	U//	<5.0			5	GE								µg/L
Copper, total recoverable	4.5	J//	NDD			5	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<10	U//	<10			5	GE								µg/L
Mercury, total recoverable	<0.089	U//	<0.20			1	GE	<0.084	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	12	//				5	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	46,000	//		■		25	GE	42,000	//		■		25	GE	µg/L
Selenium, total recoverable	<25	U//	<25			5	GE								µg/L
Silver, total recoverable	<5.0	U//	<5.0			5	GE								µg/L
Tin, total recoverable	<25	U//	<25			5	GE								µg/L
Vanadium, total recoverable	<50	U//	<50			5	GE								µg/L
Zinc, total recoverable	<50	U//	<50			5	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	1.7	J//	NDD			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer



**WELL HSB 70C (cont.)****Radioactive Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<8.1E-02	U//	<5.6E-01			1	GP								pCi/L
Beta dose factor	3.3E-01														NONE
Carbon-14	1.9E+02	//		■		1	GP								pCi/L
Cobalt-60	<-6.0E-01	U//	<3.1E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<3.5E-01			1	GP								pCi/L
Curium-243/244	<-1.0E-01	U//	<8.1E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<3.2E-01			1	GP								pCi/L
Gross alpha	3.9E+00	J/K/C	NDD			1	GP	2.1E+00	J/V	NDD			1	GP	pCi/L
Iodine-129	1.5E+00	J//	NDD			1	GP								pCi/L
Nickel-63	<2.8E+01	U//	<3.2E+01			1	GP								pCi/L
Nonvolatile beta	1.4E+02	//		■		1	GP	1.3E+02	//		■		1	GP	pCi/L
Plutonium-238	<1.7E-01	U//	<5.0E-01			1	GP								pCi/L
Plutonium-239/240	<-4.5E-02	U//	<5.9E-01			1	GP								pCi/L
Radium-226	3.2E+00	//				1	GP								pCi/L
Radium-228	<3.6E-01	U//	<6.0E-01			1	GP								pCi/L
Strontium-90	<4.0E-01	JU/L/C	<1.0E+00			1	GP								pCi/L
Technetium-99	2.1E+02	//		■		1	GP								pCi/L
Thorium-228	<4.0E-07	U//	<5.0E-01			1	GP								pCi/L
Thorium-230	2.7E-01	J/V	NDD			1	GP								pCi/L
Thorium-232	<0.0E+00	U//	<1.0E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	4.0E+02			■											pCi/L
Total radium	3.2E+00														pCi/L
Tritium	5.4E+03	//5		■		1	GP	4.9E+03	//		■		1	GP	pCi/mL
Uranium-233/234	<1.5E-01	U//	<4.3E-01			1	GP								pCi/L
Uranium-235	<-2.9E-02	U//	<3.8E-01			1	GP								pCi/L
Uranium-238	<2.8E-02	U//	<3.3E-01			1	GP								pCi/L

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 71

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72875.9 E55279.2	33.277148 °N 81.662799 °W	234.8-204.8 ft msl	241.4 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/07/99 10/14/99

### FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	221.5	219.8	ft msl
pH	5.4	5.5	pH
Sp. conductance	28	33	µS/cm
Water temperature	20.1	19.8	°C
Alkalinity as CaCO <sub>3</sub>	2	4	mg/L
Turbidity	2.9	2.8	NTU
Volumes purged	3.9	4.3	Well vol
Sampling code			
Synchronous water level	216.8 (09/16/99)	216.8 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	740	//				1	GE	1,100	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 71 (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<5.3E-01	U//	<7.2E-01			1	GP	<8.6E-01	U//	<7.5E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.4E+00	J//	NDD			1	GP	2.1E+00	J//	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	4.2E+01	//5		■		1	GP	6.5E+01	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 71C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72866.6 E55281.5	33.277131 °N 81.662775 °W	181.9-171.9 ft msl	241.6 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/16/99 10/19/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	220.6	218.9	ft msl
pH	6.4	6.5	pH
Sp. conductance	197	226	µS/cm
Water temperature	20.0	18.3	°C
Alkalinity as CaCO3	19	43	mg/L
Turbidity	1.4	0.9	NTU
Volumes purged	0.31	0.032	Well vol
Sampling code	XN	XN	
Synchronous water level	218.2 (09/16/99)	218.1 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.048	U/V/	<0.20			1	GE	<0.039	U/V/	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	18,000	//		■		25	GE	17,000	//		■		25	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 71C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	6.5E+00	J/K/C	NDD			1	GP	6.7E+00	//				1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	2.0E+01	//				1	GP	4.3E+01	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.9E+03	//5		■		1	GP	1.5E+03	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

**WELL HSB 83A**

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71648.6 E58606.1	33.279861 °N 81.651655 °W	76.0-65.2 ft msl	237.3 ft msl	4" PVC	S	Gordon

SAMPLE DATE	07/07/99	10/04/99
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**FIELD DATA**

Parameter	3Q99	4Q99	Unit
Water elevation	173.9	172.8	ft msl
pH	7.0	7.1	pH
Sp. conductance	183	174	µS/cm
Water temperature	21.7	19.5	°C
Alkalinity as CaCO <sub>3</sub>	80	61	mg/L
Turbidity	0.6	0.3	NTU
Volumes purged	2.1	4.0	Well vol
Sampling code			
Synchronous water level	172.7 (09/16/99)	172.4 (12/06/99)	ft msl

**ANALYTICAL DATA****Inorganic Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	<50	U//	<50			1	GE	<10	U//	<50			1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

**Organic Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 83A (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.1E+00	J/V	NDD			1	GP	<5.6E-01	U//	<9.3E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<7.2E-01	U//	<1.3E+00			1	GP	<5.2E-01	U//	<1.4E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	<6.2E-02	U//5	<7.2E-01			1	GP	<2.3E-01	U//	<6.4E-01			1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

**WELL HSB 83B**

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71639.6 E58594.9	33.279823 °N 81.651667 °W	132.1-121.2 ft msl	237 ft msl	4" PVC	S	LAZ_UTRA

<b>SAMPLE DATE</b>	07/28/99	10/04/99
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FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	222.7	222.2	ft msl
pH	6.8	6.7	pH
Sp. conductance	106	104	µS/cm
Water temperature	20.9	19.8	°C
Alkalinity as CaCO <sub>3</sub>	47	40	mg/L
Turbidity	1.0	0.3	NTU
Volumes purged	2.5	3.5	Well vol
Sampling code			
Synchronous water level	222.1 (09/16/99)	221.8 (12/06/99)	ft msl

ANALYTICAL DATA**Inorganic Constituents**

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	<20	U//6	<50			1	GE	<40	U//	<50			1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

**Organic Constituents**

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



# WELL HSB 83B (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	6.6E-01	J/V	NDD			1	GP	<1.2E-02	U//	<7.1E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	2.1E+00	J/V/5	NDD			1	GP	1.3E+00	J/V	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.1E+00	J/V	NDD			1	TM	1.1E+00	J/V	NDD			1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 83C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71636.9 E58614.8	33.279849 °N 81.651609 °W	171.2-160.2 ft msl	237.1 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/07/99 10/05/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	223.6	224.1	ft msl
pH	5.4	5.1	pH
Sp. conductance	21	20	µS/cm
Water temperature	21.7	19.8	°C
Alkalinity as CaCO3	2	2	mg/L
Turbidity	0.6	0.4	NTU
Volumes purged	3.9	3.7	Well vol
Sampling code			
Synchronous water level	224.0 (09/16/99)	223.8 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	<90	U//	<50			1	GE	<40	U//	<50			1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 83C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<2.3E-01	U//	<9.4E-01			1	GP	<2.3E-02	U//	<8.1E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<8.2E-01	U//	<1.2E+00			1	GP	<8.2E-02	U//	<1.4E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	<6.3E-01	U//5	<7.0E-01			1	GP	<1.1E-01	U//	<6.0E-01			1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 83D

<u>SRS Coord</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71628.1 E58601.7	33.279809 °N 81.651627 °W	228.7-198.7 ft msl	237 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/07/99 10/05/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	223.4	223.8	ft msl
pH	5.2	5.0	pH
Sp. conductance	58	56	µS/cm
Water temperature	23.7	20.8	°C
Alkalinity as CaCO3	3	1	mg/L
Turbidity	1.8	1.0	NTU
Volumes purged	9.7	3.3	Well vol
Sampling code			
Synchronous water level	223.6 (09/16/99)	223.5 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	0.25	//				1	GE	0.22	//				1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	3,400	//				3	GE	3,000	//				3	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 83D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	2.0E+00	J//	NDD			1	GP	<1.2E-01	U//	<8.4E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	2.2E+01	//				1	GP	<2.6E-01	U//	<1.5E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.0E+02	//5		■		1	GP	7.3E+01	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA -- Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA -- Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA -- Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon -- Gordon Aquifer

# WELL HSB 84A

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71586.2 E56359.1	33.276057 °N 81.657450 °W	75.9-64.7 ft msl	228.7 ft msl	4" PVC	V	Gordon

SAMPLE DATE 07/02/99 10/06/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	172.2	172.5	ft msl
pH	6.9	6.8	pH
Sp. conductance	110	107	µS/cm
Water temperature	19.7	20.9	°C
Alkalinity as CaCO <sub>3</sub>	38	39	mg/L
Turbidity	0.4	0.3	NTU
Volumes purged	1.7	2.9	Well vol
Sampling code			
Synchronous water level	171.2 (09/16/99)	171.0 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	40	J//	NDD			1	GE	<30	U//	<50			1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 84A (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.8E+00	J/V	NDD			1	GP	2.2E+00	J/V	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.5E+01	//				1	GP	1.4E+01	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	2.5E+00	//				1	GP	1.3E+00	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 84B

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71603.3 E56352.4	33.276084 °N 81.657501 °W	132.9-121.8 ft msl	228.9 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/02/99 10/05/99

### FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	208.8	208.7	ft msl
pH	8.4	7.4	pH
Sp. conductance	144	193	µS/cm
Water temperature	21.3	20.8	°C
Alkalinity as CaCO <sub>3</sub>	49	80	mg/L
Turbidity	3.3	0.5	NTU
Volumes purged	0.018	2.2	Well vol
Sampling code	XN		
Synchronous water level	208.6 (09/16/99)	208.5 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	1,600	//				1	GE	770	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



## WELL HSB 84B (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<8.3E-01	U//	<1.0E+00			1	GP	<7.2E-01	U//	<1.1E+00			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	8.4E+00	//				1	GP	3.6E+00	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	6.1E+01	//		■		1	GP	2.4E+01	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 84C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71597.1 E56360.1	33.276083 °N 81.657469 °W	181.8-170.9 ft msl	229.1 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/02/99 10/05/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	211.1	211.1	ft msl
pH	6.4	6.8	pH
Sp. conductance	74	78	µS/cm
Water temperature	19.9	20.8	°C
Alkalinity as CaCO3	18	18	mg/L
Turbidity	1.1	2.0	NTU
Volumes purged	0.038	0.038	Well vol
Sampling code	XN	XN	
Synchronous water level	211.1 (09/16/99)	210.7 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	3,200	//				3	GE	3,100	//				3	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 84C (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<5.1E-01	U//	<8.3E-01			1	GP	7.9E-01	J//	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	3.0E+00	J//	NDD			1	GP	6.3E+00	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	4.2E+02	//		■		1	GP	3.6E+02	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB 84D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71583.9 E56349.9	33.276037 °N 81.657470 °W	219.5-199.5 ft msl	228.8 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 07/19/99 10/07/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	215.6	214.3	ft msl
pH	4.6	4.6	pH
Sp. conductance	43	44	µS/cm
Water temperature	19.9	19.8	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.6	0.1	NTU
Volumes purged	4.7	3.0	Well vol
Sampling code			
Synchronous water level	214.7 (09/16/99)	213.9 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.59	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	4.6	//				1	GE								µg/L
Barium, total recoverable	7.5	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	2.6	J//	NDD			1	GE								µg/L
Cobalt, total recoverable	0.77	J//	NDD			1	GE								µg/L
Copper, total recoverable	1.1	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.28	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	3.6	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	2,000	//				1	GE	1,800	//				1	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	11	//				1	GE								µg/L
Zinc, total recoverable	16	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU//O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU//O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU//O	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 84D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<7.8E-02	U//	<1.2E-01	■		1	GP								pCi/L
Beta dose factor	1.4E+01														NONE
Carbon-14	<4.5E+00	U//	<7.1E+00			1	GP								pCi/L
Cobalt-60	<2.0E+00	U//	<4.7E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<1.3E-01			1	GP								pCi/L
Curium-243/244	<-3.8E-02	U//	<3.0E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<1.2E-01			1	GP								pCi/L
Gross alpha	<8.9E-01	U//	<8.7E-01			1	GP	3.8E+00	//				1	GP	pCi/L
Iodine-129	1.9E+00	J//	NDD			1	GP								pCi/L
Nickel-63	<1.1E+01	U//	<1.4E+01			1	GP								pCi/L
Nonvolatile beta	2.7E+02	//		■		1	GP	2.7E+02	//				1	GP	pCi/L
Plutonium-238	<1.5E-02	U//	<4.5E-02			1	GP								pCi/L
Plutonium-239/240	<-7.2E-03	U//	<9.3E-02			1	GP								pCi/L
Radium-226	<1.3E+00	U/V/	<9.5E-01			1	GP								pCi/L
Radium-228	2.6E+00	//				1	GP								pCi/L
Strontium-90	1.0E+02	//		■		1	GP								pCi/L
Technetium-99	<4.4E+00	U//	<7.4E+00			1	GP								pCi/L
Thorium-228	<-8.1E-02	U//	<4.5E-01			1	GP								pCi/L
Thorium-230	<1.2E-01	U//	<1.7E-01			1	GP								pCi/L
Thorium-232	<0.0E+00	U//	<9.5E-02			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	1.1E+02			■											pCi/L
Total radium	2.6E+00														pCi/L
Tritium	3.4E+01	//		■		1	GP	2.6E+01	//				1	GP	pCi/mL
Uranium-233/234	<2.8E-01	U/V/	<1.0E-01			1	GP								pCi/L
Uranium-235	<2.6E-02	U//	<1.1E-01			1	GP								pCi/L
Uranium-238	2.6E-01	J//	NDD			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 85A

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N73791.9 E58943.4	33.285152 °N 81.654930 °W	71.1-61.1 ft msl	294.4 ft msl	4" PVC	S	Gordon

SAMPLE DATE 07/06/99 10/07/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	168.9	168.4	ft msl
pH	6.8	6.6	pH
Sp. conductance	178	184	µS/cm
Water temperature	22.0	19.9	°C
Alkalinity as CaCO3	74	74	mg/L
Turbidity	0.4	0.4	NTU
Volumes purged	3.0	3.1	Well vol
Sampling code			
Synchronous water level	168.1 (09/16/99)	168.1 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.14	JU/V4	<2.0			1	GE	<2.0	U//	<2.0			1	GE	µg/L
Arsenic, total recoverable	2.0	J//	NDD			1	GE	<3.3	U//6	<3.0			1	GE	µg/L
Barium, total recoverable	33	//				1	GE	31	//				1	GE	µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE	<1.0	U//	<1.0			1	GE	µg/L
Chromium, total recoverable	2.2	J//	NDD			1	GE	<2.7	U//6	<3.0			1	GE	µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE	<1.0	U//	<1.0			1	GE	µg/L
Copper, total recoverable	1.8	//				1	GE	5.7	//				1	GE	µg/L
Cyanide	<10	U//	<10			1	GE						1	GE	µg/L
Lead, total recoverable	0.32	J//	NDD			1	GE	0.49	J//	NDD			1	GE	µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	<2.0	U//	<2.0			1	GE	<2.0	U//	<2.0			1	GE	µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	40	J//	NDD			1	GE	30	//				1	WA	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE	<5.0	U//	<5.0			1	GE	µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE	<1.0	U//	<1.0			1	GE	µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE	<5.0	U//	<5.0			1	GE	µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE	<10	U//6	<10			1	GE	µg/L
Zinc, total recoverable	<10	U//	<10			1	GE	<10	U//	<10			1	GE	µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 85A (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<5.6E-02	U//	<1.4E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	<7.4E-01	U//	<7.9E+00			1	GP								pCi/L
Cobalt-60	<1.3E-02	U//	<3.3E+00			1	GP								pCi/L
Curium-242	<2.0E-02	U//	<1.5E-01			1	GP								pCi/L
Curium-243/244	<9.3E-03	U//	<1.2E-01			1	GP								pCi/L
Curium-245/246	9.4E-02	R//4	Rej			1	GP								pCi/L
Gross alpha	1.0E+00	J//I	NDD			1	GP	2.2E+00	J//I	NDD			1	TM	pCi/L
Iodine-129	<7.6E-01	U//	<9.5E-01			1	GP								pCi/L
Nickel-63															
Nonvolatile beta	1.3E+00	J//I	NDD			1	GP	2.8E+00	J//I	NDD			1	TM	pCi/L
Plutonium-238	<7.3E-02	U//	<2.1E-01			1	GP								pCi/L
Plutonium-239/240	<2.3E-02	U//	<9.6E-02			1	GP								pCi/L
Radium-226	6.0E-01	J//I	NDD			1	GP								pCi/L
Radium-228	<5.2E-01	U//	<8.6E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	<2.1E-01	U//	<1.7E+00			1	GP								pCi/L
Technetium-99	<5.6E+00	U//	<6.3E+00			1	GP								pCi/L
Thorium-228	<1.5E-01	U//	<4.2E-01			1	GP								pCi/L
Thorium-230	<8.2E-02	U//	<2.0E-01			1	GP								pCi/L
Thorium-232	<3.2E-02	U//	<9.7E-02			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Tritium	<0.0E+00	U//5	<6.9E-01			1	GP	<1.0E-02	U//	<5.4E-01			1	TM	pCi/mL
Uranium-233/234	<4.5E-02	U//	<1.1E-01			1	GP								pCi/L
Uranium-235	<4.3E-03	U//	<9.5E-02			1	GP								pCi/L
Uranium-238	<8.6E-02	U//	<9.5E-02			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

**WELL HSB 85B**

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N73789.3 E58953.3	33.285162 °N 81.654898 °W	143.2-133.2 ft msl	294.5 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE	07/06/99	10/07/99
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FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	233.7	232.9	ft msl
pH	10.8	10.9	pH
Sp. conductance	364	399	µS/cm
Water temperature	31.6	21.6	°C
Alkalinity as CaCO <sub>3</sub>	80	73	mg/L
Turbidity	0.6	0.4	NTU
Volumes purged	0.015	0.015	Well vol
Sampling code	XN	XN	
Synchronous water level	232.9 (09/16/99)	232.6 (12/06/99)	ft msl

ANALYTICAL DATA**Inorganic Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	940	//				1	GE	890	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

**Organic Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA = Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA = Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA = Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon = Gordon Aquifer



## WELL HSB 85B (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<1.2E+00	U//	<1.7E+00			1	GP	<1.8E-01	U//	<1.1E+00			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.8E+00	J//	NDD			1	GP	2.1E+00	J//	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	3.3E+00	//5				1	GP	4.2E+00	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 85C

SRS Coord	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N73802.3 E58947.4	33.285182 °N 81.654939 °W	224.2-214.2 ft msl	294.1 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/06/99 10/07/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	238.3	231.2	ft msl
pH	4.7	4.5	pH
Sp. conductance	39	41	µS/cm
Water temperature	23.0	20.7	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.6	0.4	NTU
Volumes purged	10	4.5	Well vol
Sampling code			
Synchronous water level	238.5 (09/16/99)	238.4 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	2,600	//				1	GE	2,700	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB 85C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.3E+00	J//	NDD			1	GP	<2.7E+00	U//6	<8.2E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	2.1E+00	J//	NDD			1	GP	1.9E+00	J//	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	9.8E+00	//5				1	GP	1.1E+01	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

**WELL HSB 86A**

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72520.2 E55985.9	33.277514 °N 81.660247 °W	73.9-63.1 ft msl	262.4 ft msl	4" PVC	S	Gordon

SAMPLE DATE	07/26/99	10/04/99
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FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	168.8	168.1	ft msl
pH	6.7	6.5	pH
Sp. conductance	122	127	µS/cm
Water temperature	21.4	20.7	°C
Alkalinity as CaCO <sub>3</sub>	40	40	mg/L
Turbidity	0.1	0.3	NTU
Volumes purged	2.6	2.6	Well vol
Sampling code			
Synchronous water level	168.0 (09/16/99)	167.9 (12/06/99)	ft msl

ANALYTICAL DATA**Inorganic Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	420	//				1	GE	<20	U/V/	<50			1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

**Organic Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 86A (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.2E+00	J/V	NDD			1	GP	<7.0E-01	U//	<1.0E+00			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<-1.1E-01	U//	<1.9E+00			1	TM	1.7E+00	J/V	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	9.9E-01	J/V	NDD			1	GP	2.1E+00	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 86B

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72519.0 E55976.9	33.277497 °N 81.660269 °W	124.0-113.8 ft msl	261.9 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/14/99 10/04/99

### FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	217.8	217.9	ft msl
pH	7.1	7.3	pH
Sp. conductance	206	213	µS/cm
Water temperature	20.2	20.7	°C
Alkalinity as CaCO <sub>3</sub>	90	95	mg/L
Turbidity	1.7	1.0	NTU
Volumes purged	2.4	2.7	Well vol
Sampling code			
Synchronous water level	218.1 (09/16/99)	217.4 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	<40	U/V//	<50			1	GE	230	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 86B (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.3E+00	J/V	NDD			1	GP	<4.3E-01	U//	<9.5E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<1.1E+00	U//	<1.3E+00			1	GP	2.4E+00	J/V	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.2E+00	J/V5	NDD			1	GP	1.4E+01	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB 86C

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72529.7 E55984.6	33.277533 °N 81.660269 °W	199.4-189.4 ft msl	262.9 ft msl	4" PVC	V	LAZ_UTRA

SAMPLE DATE 07/19/99 10/27/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	219.5	216.1	ft msl
pH	5.1	4.6	pH
Sp. conductance	283	286	µS/cm
Water temperature	20.5	19.8	°C
Alkalinity as CaCO3	0	0	mg/L
Turbidity	0.7	1.6	NTU
Volumes purged	2.5	2.3	Well vol
Sampling code			
Synchronous water level	218.4 (09/16/99)	217.9 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	2.0	//		■		1	GE	0.86	//				1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	33,000	//		■		25	GE	30,000	J/Q/	NDD			●	25	GE µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer



## WELL HSB 86C (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	6.4E+00	//5				1	GP	4.5E+00	//				1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	8.2E+01	//		■		1	GP	8.9E+01	//		■		1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	6.3E+03	//5		■		1	GP	5.6E+03	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB 86D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72522.1 E55996.5	33.277536 °N 81.660223 °W	236.6-206.6 ft msl	263 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 07/19/99 10/27/99

### FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	219.4	218.1	ft msl
pH	4.1	3.8	pH
Sp. conductance	257	264	µS/cm
Water temperature	20.0	19.8	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.9	8.3	NTU
Volumes purged	4.1	4.4	Well vol
Sampling code			
Synchronous water level	218.4 (09/16/99)	217.9 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	0.24	//				1	GE	0.42	//					1	GE µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	27,000	//		■		25	GE	27,000	J/Q/	NDD	●		25	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA = Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

## WELL HSB 86D (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt	ST	H	DF	Lab	4Q99	Mod	Filt	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	2.2E+01	//5		■		1	GP	2.6E+01	//		■		1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.7E+03	//		■		1	GP	1.2E+03	//		■		1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	2.3E+03	//5		■		1	GP	3.1E+03	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB100C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72077.2 E58806.5	33.281136 °N 81.651960 °W	163.0-153.0 ft msl	260.2 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/06/99 10/05/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	226.2	226.4	ft msl
pH	5.7	5.7	pH
Sp. conductance	29	33	µS/cm
Water temperature	22.2	20.6	°C
Alkalinity as CaCO <sub>3</sub>	5	6	mg/L
Turbidity	1.2	0.4	NTU
Volumes purged	3.3	3.2	Well vol
Sampling code			
Synchronous water level	226.2 (09/16/99)	225.9 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	2.8	J/V	NDD			1	GE								µg/L
Barium, total recoverable	3.0	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	4.2	//				1	GE								µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Copper, total recoverable	<0.88	U/V//	<1.0			1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	2.1	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	170	//				1	GE	140	//				1	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB100C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<9.1E-03	U//	<1.2E-01			1	GP								pCi/L
Beta dose factor	7.4E-01														NONE
Carbon-14	<-5.8E-01	U//	<7.7E+00			1	GP								pCi/L
Cobalt-60	<3.5E-01	U//	<4.3E+00			1	GP								pCi/L
Curium-242	<1.9E-02	U//	<5.7E-02			1	GP								pCi/L
Curium-243/244	<-1.8E-04	U//	<1.4E-01			1	GP								pCi/L
Curium-245/246	<9.1E-03	U//	<1.2E-01			1	GP								pCi/L
Gross alpha	<5.9E-01	U//	<6.2E-01			1	GP	<2.3E-01	U//	<5.6E-01			1	GP	pCi/L
Iodine-129	<5.4E-01	U//	<9.9E-01			1	GP								pCi/L
Nickel-63	3.7E+01	//				1	GP								pCi/L
Nonvolatile beta	<5.6E-01	U//	<1.1E+00			1	GP	<9.6E-02	U//	<1.3E+00			1	GP	pCi/L
Plutonium-238	<-4.3E-02	U//	<2.4E-01			1	GP								pCi/L
Plutonium-239/240	<-1.5E-02	U//	<1.2E-01			1	GP								pCi/L
Radium-226	1.0E+00	J//	NDD			1	GP								pCi/L
Radium-228	<7.4E-01	U//	<1.1E+00			1	GP								pCi/L
Total radium	NA														
Strontium-90	<1.4E-01	U//	<1.7E+00			1	GP								pCi/L
Technetium-99	<-4.3E+00	U//	<6.2E+00			1	GP								pCi/L
Thorium-228	<-1.4E-02	U//	<4.4E-01			1	GP								pCi/L
Thorium-230	<7.3E-02	U//	<1.8E-01			1	GP								pCi/L
Thorium-232	<4.4E-02	U//	<1.8E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	3.7E+01														pCi/L
Tritium	1.3E+00	J//5	NDD			1	GP	9.2E-01	J//	NDD			1	GP	pCi/mL
Uranium-233/234	<4.1E-03	U//	<1.0E-01			1	GP								pCi/L
Uranium-235	<0.0E+00	U//	<4.4E-02			1	GP								pCi/L
Uranium-238	<0.0E+00	U//	<4.4E-02			1	GP								pCi/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA -- Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA -- Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA -- Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon -- Gordon Aquifer

# WELL HSB100D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72073.8 E58796.9	33.281113 °N 81.651978 °W	236.9-216.9 ft msl	260.1 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 08/02/99 10/05/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	236.1	235.5	ft msl
pH	5.5	5.2	pH
Sp. conductance	74	53	µS/cm
Water temperature	22.9	21.4	°C
Alkalinity as CaCO3	8	5	mg/L
Turbidity	1.3	1.4	NTU
Volumes purged	2.5	2.7	Well vol
Sampling code			
Synchronous water level	235.1 (09/16/99)	234.9 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	2.9	J/V	NDD			1	GE								µg/L
Barium, total recoverable	17	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	2.2	J/V	NDD			1	GE								µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Copper, total recoverable	14	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	2.4	//				1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	0.80	J/V	NDD			1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	3,500	//				3	GE	2,300	//				1	GE	µg/L
Selenium, total recoverable	2.0	J/V	NDD			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	5.9	J/V	NDD			1	GE								µg/L
Zinc, total recoverable	31	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<1.3	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB100D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<0.0E+00	U//	<1.1E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	<3.6E+00	U//	<7.7E+00			1	GP								pCi/L
Cobalt-60	<1.5E+00	U//	<4.0E+00			1	GP								pCi/L
Curium-242	<4.3E-02	U//	<1.3E-01			1	GP								pCi/L
Curium-243/244	<2.4E-02	U//	<2.2E-01			1	GP								pCi/L
Curium-245/246	<6.8E-03	U//	<1.9E-01			1	GP								pCi/L
Gross alpha	<1.6E+00	U//	<6.6E-01			1	GP	2.6E+00	J//	NDD			1	GP	pCi/L
Iodine-129	<5.3E-01	U//	<1.3E+00			1	GP								pCi/L
Nickel-63	<3.8E+00	JU/L/I	<8.0E+00			1	GP								pCi/L
Nonvolatile beta	1.3E+02	//		■		1	GP	1.3E+02	//		■		1	GP	pCi/L
Plutonium-238	<2.4E-02	U//	<2.9E-01			1	GP								pCi/L
Plutonium-239/240	<7.3E-03	U//	<1.8E-01			1	GP								pCi/L
Radium-226	1.1E+00	J//	NDD			1	GP								pCi/L
Radium-228	1.7E+00	J//	NDD			1	GP								pCi/L
Total radium	NA														
Strontium-90	6.5E+01	J/L/C	NDD			1	GP								pCi/L
Technetium-99	<6.1E+00	U//	<8.0E+00			1	GP								pCi/L
Thorium-228	<8.4E-02	U//	<2.4E-01			1	GP								pCi/L
Thorium-230	<2.0E-02	U//	<2.7E-01			1	GP								pCi/L
Thorium-232	<5.2E-02	U//	<1.6E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Tritium	4.3E+01	//		■		1	GP	6.0E+01	//		■		1	GP	pCi/mL
Uranium-233/234	<7.8E-02	U//	<2.4E-01			1	GP								pCi/L
Uranium-235	<0.0E+00	U//	<1.0E-01			1	GP								pCi/L
Uranium-238	<5.6E-02	U//5	<2.0E-01			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB101C

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72001.9 E58604.4	33.280640 °N 81.652346 °W	176.3-166.3 ft msl	258.5 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 08/02/99 10/05/99

### FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	225.7	225.2	ft msl
pH	5.9	6.0	pH
Sp. conductance	40	45	µS/cm
Water temperature	21.7	20.6	°C
Alkalinity as CaCO <sub>3</sub>	15	10	mg/L
Turbidity	0.6	0.7	NTU
Volumes purged	3.9	6.1	Well vol
Sampling code			
Synchronous water level	225.0 (09/16/99)	224.8 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	2.6	J/V	NDD			1	GE								µg/L
Barium, total recoverable	24	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	4.2	//				1	GE								µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Copper, total recoverable	4.1	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	2.7	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	610	//				1	GE	480	//				1	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	7.9	J/V	NDD			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

#### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<2.3	U/V	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer



# WELL HSB101C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<-1.4E-02	U//	<3.7E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	<2.6E+00	U//	<7.6E+00			1	GP								pCi/L
Cobalt-60	<3.1E-01	U//	<4.0E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<2.6E-01			1	GP								pCi/L
Curium-243/244	<6.2E-02	U//	<3.7E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<2.3E-01			1	GP								pCi/L
Gross alpha	<2.5E-01	U//	<7.3E-01			1	GP	<3.5E-01	U//	<7.2E-01			1	GP	pCi/L
Iodine-129	<4.5E-01	U//	<1.0E+00			1	GP								pCi/L
Nickel-63	<1.0E+00	JU/L/I	<8.6E+00			1	GP								pCi/L
Nonvolatile beta	2.3E+00	J/I	NDD			1	GP	<9.1E-01	U//	<1.3E+00			1	GP	pCi/L
Plutonium-238	<-6.2E-03	U//	<2.9E-01			1	GP								pCi/L
Plutonium-239/240	<2.4E-02	U//	<2.0E-01			1	GP								pCi/L
Radium-226	<1.6E-01	U//	<5.6E-01			1	GP								pCi/L
Radium-228	<2.0E-01	U//	<7.1E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	<-9.2E-02	JU/L/C	<1.5E+00			1	GP								pCi/L
Technetium-99	<-2.1E+00	U//	<8.5E+00			1	GP								pCi/L
Thorium-228	<6.3E-02	U//	<1.6E-01			1	GP								pCi/L
Thorium-230	<7.4E-02	U//	<1.8E-01			1	GP								pCi/L
Thorium-232	<0.0E+00	U//	<7.3E-02			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Tritium	7.2E+00	//				1	GP	4.6E+00	//				1	GP	pCi/mL
Uranium-233/234	<2.4E-02	U//	<2.2E-01			1	GP								pCi/L
Uranium-235	<-6.8E-03	U//	<1.9E-01			1	GP								pCi/L
Uranium-238	<-6.8E-03	U//5	<1.9E-01			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

**WELL HSB101D**

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71997.5 E58594.8	33.280614 °N 81.652362 °W	236.1-216.1 ft msl	258.7 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE	07/21/99	10/18/99
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FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	232.5	232.0	ft msl
pH	6.5	6.4	pH
Sp. conductance	707	460	µS/cm
Water temperature	21.3	21.4	°C
Alkalinity as CaCO <sub>3</sub>	114	77	mg/L
Turbidity	0.9	2.2	NTU
Volumes purged	0.0	0.023	Well vol
Sampling code	XN	XN	
Synchronous water level	231.7 (09/16/99)	231.4 (12/06/99)	ft msl

ANALYTICAL DATA*Inorganic Constituents*

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.16	JU/V4	<2.0			1	GE								µg/L
Arsenic, total recoverable	12	//				1	GE								µg/L
Barium, total recoverable	9.7	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	3.0	J/V	NDD			1	GE								µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Copper, total recoverable	<0.67	U/V	<1.0			1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<40	U//	<40			20	GE								µg/L
Mercury, total recoverable	23	//		■		5	GE	9.9	//		■		1	GE	µg/L
Nickel, total recoverable	1.1	J/V	NDD			1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	51,000	//		■		25	GE	38,000	//		■		25	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<0.34	JU/V4	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	39	//		■		1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

*Organic Constituents*

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<11	U//	<11			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	1.2	J/K/O	NDD			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB101D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<1.3E-01	U//	<6.7E-01	■		1	GP								pCi/L
Beta dose factor	2.1E+01			■											NONE
Carbon-14	1.0E+03	//		■		1	GP								pCi/L
Cobalt-60	<4.7E-01	U//	<3.1E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<4.1E-01			1	GP								pCi/L
Curium-243/244	<1.3E-01	U//	<3.8E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<3.8E-01			1	GP								pCi/L
Gross alpha	3.0E+00	J/V5	NDD			1	GP	1.0E+01	//				1	GP	pCi/L
Iodine-129	1.1E+01	//				1	GP								pCi/L
Nickel-63	<7.1E+00	JU/L/CI	<1.6E+01			1	GP								pCi/L
Nonvolatile beta	1.1E+02	//		■		1	GP	2.1E+02	//				1	GP	pCi/L
Plutonium-238	2.1E-01	R//4	Rej			1	GP								pCi/L
Plutonium-239/240	<-2.5E-02	U//	<3.2E-01			1	GP								pCi/L
Radium-226	8.8E-01	J/V	NDD			1	GP								pCi/L
Radium-228	<-2.2E-01	U//	<8.3E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	7.5E+01	//		■		1	GP								pCi/L
Technetium-99	1.1E+02	//		■		1	GP								pCi/L
Thorium-228	<2.8E-02	U//	<5.4E-01			1	GP								pCi/L
Thorium-230	<1.0E-01	U//	<1.0E-01			1	GP								pCi/L
Thorium-232	<-8.2E-03	U//	<1.8E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	1.2E+03			■											pCi/L
Tritium	5.3E+03	//5		■		1	GP	2.3E+03	//				1	GP	pCi/mL
Uranium-233/234	6.6E-01	J/V	NDD			1	GP								pCi/L
Uranium-235	<-1.6E-02	U//	<3.5E-01			1	GP								pCi/L
Uranium-238	6.2E-01	J/V	NDD			1	GP								pCi/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB102C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71960.1 E58399.7	33.280213 °N 81.652803 °W	176.7-166.7 ft msl	259 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/06/99 10/05/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	224.1	224.2	ft msl
pH	5.8	6.0	pH
Sp. conductance	155	165	µS/cm
Water temperature	21.7	20.9	°C
Alkalinity as CaCO3	11	9	mg/L
Turbidity	0.5	0.5	NTU
Volumes purged	2.7	3.4	Well vol
Sampling code			
Synchronous water level	224.0 (09/16/99)	223.9 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	3.4	//				1	GE								µg/L
Barium, total recoverable	38	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	2.4	J/V	NDD			1	GE								µg/L
Cobalt, total recoverable	1.6	//				1	GE								µg/L
Copper, total recoverable	<1.5	U/V	<1.0			1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	0.42	//				1	GE	0.43	//				1	GE	µg/L
Nickel, total recoverable	7.4	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	16,000	//		■		25	GE	12,000	//		■		25	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	18	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

**WELL HSB102C (cont.)****Radioactive Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<1.1E-01	U//	<1.7E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	<5.2E+00	U//	<7.9E+00			1	GP								pCi/L
Cobalt-60	<5.6E-01	U//	<4.0E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<1.8E-01			1	GP								pCi/L
Curium-243/244	<9.8E-02	U//	<3.0E-01			1	GP								pCi/L
Curium-245/246	<5.6E-02	U//	<1.7E-01			1	GP								pCi/L
Gross alpha	2.3E+00	J//	NDD			1	GP	1.9E+00	J//	NDD			1	GP	pCi/L
Iodine-129	1.5E+00	J//	NDD			1	GP								pCi/L
Nickel-63	<1.2E+01	U//	<1.4E+01			1	GP								pCi/L
Nonvolatile beta	3.9E+00	//				1	GP	3.3E+00	J//	NDD			1	GP	pCi/L
Plutonium-238	<2.7E-02	U//	<8.1E-02			1	GP								pCi/L
Plutonium-239/240	<0.0E+00	U//	<4.6E-02			1	GP								pCi/L
Radium-226	2.2E+00	//				1	GP								pCi/L
Radium-228	<4.0E-01	U//	<1.2E+00			1	GP								pCi/L
Total radium	NA														
Strontium-90	<2.8E-01	U//	<1.7E+00			1	GP								pCi/L
Technetium-99	<3.5E+00	U//	<6.2E+00			1	GP								pCi/L
Thorium-228	<1.7E-01	U//	<5.3E-01			1	GP								pCi/L
Thorium-230	<1.4E-03	U//	<2.6E-01			1	GP								pCi/L
Thorium-232	<1.6E-02	U//	<2.1E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Total radium	2.2E+00														pCi/L
Tritium	1.7E+02	//5		■		1	GP	1.1E+02	//		■		1	GP	pCi/mL
Uranium-233/234	<3.6E-03	U//	<8.0E-02			1	GP								pCi/L
Uranium-235	<1.9E-02	U//	<1.1E-01			1	GP								pCi/L
Uranium-238	<1.1E-02	U//	<8.0E-02			1	GP								pCi/L

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB102D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71952.4 E58393.4	33.280186 °N 81.652805 °W	236.3-216.3 ft msl	258.6 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 08/05/99 11/02/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	229.3	228.7	ft msl
pH	4.2	3.9	pH
Sp. conductance	215	231	µS/cm
Water temperature	20.9	23.5	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	5.3	14.8	NTU
Volumes purged	0.12	0.49	Weil vol
Sampling code	XN	XN	
Synchronous water level	228.5 (09/16/99)	228.3 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.18	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	<3.0	U//	<3.0			1	GE								µg/L
Barium, total recoverable	17	//				1	GE								µg/L
Cadmium, total recoverable	0.37	J//	NDD			1	GE								µg/L
Chromium, total recoverable	<3.5	U//	<3.0			1	GE								µg/L
Cobalt, total recoverable	2.5	//				1	GE								µg/L
Copper, total recoverable	13	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	5.7	//				1	GE								µg/L
Mercury, total recoverable	7.2	//		■		1	GE	7.1	//		■		1	GE	µg/L
Nickel, total recoverable	9.6	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	20,000	//		■		25	GE	23,000	//		■		10	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	45	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<2.1	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB102D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<2.4E-02	U//	<6.6E-01	■		1	GP								pCi/L
Beta dose factor	1.2E+02			■											NONE
Carbon-14	2.0E+02	//		■		1	GP								pCi/L
Cobalt-60	2.1E+01	//				1	GP								pCi/L
Curium-242	<2.8E-02	U//	<7.7E-01			1	GP								pCi/L
Curium-243/244	<2.4E-02	U//	<6.6E-01			1	GP								pCi/L
Curium-245/246	<1.3E-01	U//	<4.0E-01			1	GP								pCi/L
Gross alpha	6.2E+01	//		■		1	GP	1.1E+02	//		■		1	GP	pCi/L
Iodine-129	6.3E+00	//				1	GP								pCi/L
Nickel-63	1.3E+02	J/L/CI	NDD			1	GP								pCi/L
Nonvolatile beta	2.2E+03	//		■		1	GP	3.7E+03	//		■		1	GP	pCi/L
Plutonium-238	<1.7E-01	U//	<5.9E-01			1	GP								pCi/L
Plutonium-239/240	<3.7E-02	U//	<5.9E-01			1	GP								pCi/L
Radium-226	3.2E+00	//				1	GP								pCi/L
Radium-228	3.7E+00	//				1	GP								pCi/L
Strontium-90	8.7E+02	//		■		1	GP								pCi/L
Technetium-99	5.3E+01	//		■		1	GP								pCi/L
Thorium-228	<3.3E-02	U//	<2.4E-01			1	GP								pCi/L
Thorium-230	<1.2E-03	U//	<2.3E-01			1	GP								pCi/L
Thorium-232	<3.7E-02	U//	<2.5E-01			1	GP								pCi/L
Sum of alphas	4.0E+01			■											pCi/L
Sum of betas	1.2E+03			■											pCi/L
Total radium	6.9E+00			■											pCi/L
Tritium	4.1E+03	//		■		1	GP	2.9E+03	//		■		1	GP	pCi/mL
Uranium-233/234	1.9E+01	//		■		1	GP								pCi/L
Uranium-235	1.1E+00	J//	NDD			1	GP								pCi/L
Uranium-238	2.2E+01	//		■		1	GP								pCi/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB103C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71593.9 E58323.6	33.279279 °N 81.652293 °W	169.2-159.2 ft msl	247.4 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/26/99 10/11/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	223.4	222.7	ft msl
pH	4.9	4.8	pH
Sp. conductance	215	217	µS/cm
Water temperature	20.5	20.6	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.5	0.4	NTU
Volumes purged	2.4	0.0	Well vol
Sampling code			
Synchronous water level	222.6 (09/16/99)	222.4 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.14	JU//4	<2.0			1	GE								µg/L
Arsenic, total recoverable	<1.3	U//6	<3.0			1	GE								µg/L
Barium, total recoverable	72	//				1	GE								µg/L
Cadmium, total recoverable	0.63	J//	NDD			1	WA								µg/L
Chromium, total recoverable	<0.75	JU//4	<7.0			1	WA								µg/L
Cobalt, total recoverable	14	//		■		1	GE								µg/L
Copper, total recoverable	<1.6	U//	<1.0			1	GE								µg/L
Cyanide	<1.6	U//	<15			1	WA								µg/L
Lead, total recoverable	0.42	J//	NDD			1	GE								µg/L
Mercury, total recoverable	1.4	//				1	GE	1.4	//				1	GE	µg/L
Nickel, total recoverable	<4.1	U//6	<26			1	WA								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	22,000	//		■		25	GE	22,000	//				10	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<0.31	JU//4	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<3.0	U//6	<10			1	GE								µg/L
Zinc, total recoverable	19	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	WA								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	1.3	J//	NDD			1	WA								µg/L
Trichloroethylene	3.7	J/K/O	NDD			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA = Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



## WELL HSB103C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<0.0E+00	JU/L/I	<1.9E-01			1	GP								pCi/L
Beta dose factor	4.1E-02														NONE
Carbon-14	3.4E+01	//				1	GP								pCi/L
Cobalt-60	<3.4E-01	U//	<4.0E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<2.3E-01			1	GP								pCi/L
Curium-243/244	<0.0E+00	U//	<1.9E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<2.0E-01			1	GP								pCi/L
Gross alpha	6.0E+00	//				1	TM	5.3E+00	//				1	GP	pCi/L
Iodine-129	1.3E+00	J/V	NDD			1	GP								pCi/L
Nickel-63	<2.0E+00	U//	<1.3E+01			1	GP								pCi/L
Nonvolatile beta	2.4E+01	//				1	TM	1.9E+01	J/K/C	NDD			1	GP	pCi/L
Plutonium-238	<1.1E-02	U//	<1.4E-01			1	GP								pCi/L
Plutonium-239/240	3.5E-01	R//4	Rej			1	GP								pCi/L
Radium-226	3.4E+00	//				1	GP								pCi/L
Radium-228	3.5E+00	J/V/6	NDD			1	TM								pCi/L
Strontium-90	1.5E+00	J/V	NDD			1	GP								pCi/L
Technetium-99	2.1E+01	//				1	GP								pCi/L
Thorium-228	<2.8E-02	U//	<5.4E-01			1	GP								pCi/L
Thorium-230	<5.7E-02	U//	<3.1E-01			1	GP								pCi/L
Thorium-232	<0.0E+00	U//	<1.1E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	5.6E+01			■											pCi/L
Total radium	3.4E+00														pCi/L
Tritium	5.1E+02	//		■		1	TM	4.5E+02	//				1	GP	pCi/mL
Uranium-233/234	<2.4E-02	U//	<1.7E-01			1	GP								pCi/L
Uranium-235	<9.5E-03	U//	<1.2E-01			1	GP								pCi/L
Uranium-238	<5.5E-03	U//	<1.2E-01			1	GP								pCi/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB103D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71588.1 E58315.6	33.279253 °N 81.652302 °W	233.7-213.7 ft msl	247.6 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 08/04/99 10/20/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	224.1	223.5	ft msl
pH	4.3	4.4	pH
Sp. conductance	196	173	µS/cm
Water temperature	20.4	20.1	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	1.6	1.3	NTU
Volumes purged	3.8	3.0	Well vol
Sampling code			
Synchronous water level	223.8 (09/16/99)	223.1 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.30	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	<3.0	U//	<3.0			1	GE								µg/L
Barium, total recoverable	22	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	<2.9	U//	<3.0			1	GE								µg/L
Cobalt, total recoverable	1.5	//				1	GE								µg/L
Copper, total recoverable	1.6	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	2.8	//		■		1	GE	2.4	//		■		1	GE	µg/L
Nickel, total recoverable	2.2	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	16,000	//		■		25	GE	14,000	//		■		25	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	5.9	J//	NDD			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

## WELL HSB103D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<5.7E-02	U//	<3.4E-01	■		1	GP								pCi/L
Beta dose factor	1.0E+01														NONE
Carbon-14	1.7E+01	//				1	GP								pCi/L
Cobalt-60	<3.0E+00	U//	<5.1E+00			1	GP								pCi/L
Curium-242	<5.0E-02	U//	<4.6E-01			1	GP								pCi/L
Curium-243/244	<-3.6E-02	U//	<7.2E-01			1	GP								pCi/L
Curium-245/246	<-1.2E-02	U//	<3.4E-01			1	GP								pCi/L
Gross alpha	7.5E+00	//				1	GP	1.2E+01	//				1	GP	pCi/L
Iodine-129	1.0E+01	//				1	GP								pCi/L
Nickel-63	<1.8E+00	JU/L/I	<8.8E+00			1	GP								pCi/L
Nonvolatile beta	3.8E+02	//		■		1	GP	2.8E+02	//				1	GP	pCi/L
Plutonium-238	<-3.9E-02	U//	<2.6E-01			1	GP								pCi/L
Plutonium-239/240	<3.9E-02	U//	<1.4E-01			1	GP								pCi/L
Radium-226	3.6E+00	//				1	GP								pCi/L
Radium-228	<1.2E-01	U//	<8.1E-01			1	GP								pCi/L
Strontium-90	1.6E+02	J/L/C	NDD			1	GP								pCi/L
Technetium-99	2.9E+01	//				1	GP								pCi/L
Thorium-228	<5.4E-02	U//	<4.6E-01			1	GP								pCi/L
Thorium-230	1.9E-01	R//4	Rej			1	GP								pCi/L
Thorium-232	<3.0E-02	U//	<2.2E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	5.6E+01			■											pCi/L
Total radium	3.6E+00														pCi/L
Tritium	1.1E+03	//		■		1	GP	1.0E+03	//				1	GP	pCi/mL
Uranium-233/234	<2.5E-01	U//V//	<1.5E-01			1	GP								pCi/L
Uranium-235	<-2.9E-02	U//	<2.1E-01			1	GP								pCi/L
Uranium-238	<9.1E-02	U//5	<1.7E-01			1	GP								pCi/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB104C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71376.8 E58082.6	33.278406 °N 81.652506 °W	173.5-163.5 ft msl	247.9 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/06/99 10/11/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	219.3	219.0	ft msl
pH	7.2	6.7	pH
Sp. conductance	115	126	µS/cm
Water temperature	20.6	21.5	°C
Alkalinity as CaCO <sub>3</sub>	28	26	mg/L
Turbidity	0.6	0.3	NTU
Volumes purged	2.2	2.7	Well vol
Sampling code			
Synchronous water level	219.1 (09/16/99)	218.8 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	1.9	J//	NDD			1	GE								µg/L
Barium, total recoverable	75	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	2.8	J//	NDD			1	GE								µg/L
Cobalt, total recoverable	<0.12	JU//4	<1.0			1	GE								µg/L
Copper, total recoverable	6.8	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	2.9	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	7,400	//				3	GE	7,000	//				3	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	2.4	//				1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB104C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<2.7E-02	U//	<1.6E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	8.0E+00	J//	NDD			1	GP								pCi/L
Cobalt-60	<-3.9E-01	U//	<4.2E+00			1	GP								pCi/L
Curium-242	<-9.5E-03	U//	<1.2E-01			1	GP								pCi/L
Curium-243/244	<-1.8E-04	U//	<1.4E-01			1	GP								pCi/L
Curium-245/246	1.3E-01	R//4	Rej			1	GP								pCi/L
Gross alpha	<9.0E-01	U//	<9.5E-01			1	GP	1.5E+00	J//K/C	NDD			1	GP	pCi/L
Iodine-129	<4.1E-01	U//	<1.2E+00			1	GP								pCi/L
Nickel-63	1.5E+01	J//	NDD			1	GP								pCi/L
Nonvolatile beta	1.1E+01	//				1	GP	1.1E+01	//				1	GP	pCi/L
Plutonium-238	<3.8E-02	U//	<7.2E-02			1	GP								pCi/L
Plutonium-239/240	<-3.3E-03	U//	<7.2E-02			1	GP								pCi/L
Radium-226	1.9E+00	J//	NDD			1	GP								pCi/L
Radium-228	<7.6E-01	U//	<1.1E+00			1	GP								pCi/L
Total radium	NA														
Strontium-90	2.9E+00	J//	NDD			1	GP								pCi/L
Technetium-99	6.7E+00	J//	NDD			1	GP								pCi/L
Thorium-228	<-1.1E-01	U//	<6.7E-01			1	GP								pCi/L
Thorium-230	<4.8E-02	U//	<2.6E-01			1	GP								pCi/L
Thorium-232	<0.0E+00	U//	<1.1E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.8E+02	//5		■		1	GP	1.9E+02	//		■		1	GP	pCi/mL
Uranium-233/234	<3.8E-02	U//	<1.2E-01			1	GP								pCi/L
Uranium-235	<3.8E-02	U//	<1.2E-01			1	GP								pCi/L
Uranium-238	<1.3E-01	U//	<5.0E-02			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

**WELL HSB104D**

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71370.2 E58075.8	33.278380 °N 81.652511 °W	230.6-210.6 ft msl	247.8 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE	08/04/99	10/20/99
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**FIELD DATA**

Parameter	3Q99	4Q99	Unit
Water elevation	222.0	221.4	ft msl
pH	4.5	4.4	pH
Sp. conductance	79	104	µS/cm
Water temperature	21.0	19.9	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	1.2	1.6	NTU
Volumes purged	3.6	4.5	Well vol
Sampling code			
Synchronous water level	222.1 (09/16/99)	220.9 (12/06/99)	ft msl

**ANALYTICAL DATA****Inorganic Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.28	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	<3.0	U//	<3.0			1	GE								µg/L
Barium, total recoverable	15	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	<1.8	U//	<3.0			1	GE								µg/L
Cobalt, total recoverable	0.76	J//	NDD			1	GE								µg/L
Copper, total recoverable	2.0	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	2.5	//		■		1	GE	2.1	//		■		1	GE	µg/L
Nickel, total recoverable	2.2	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	5,700	//				5	GE	7,300	//				5	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	5.6	J//	NDD			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

**Organic Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<11	U//	<11			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB104D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<2.7E-02	U//	<3.2E-01			1	GP								pCi/L
Beta dose factor	9.5E-01														NONE
Carbon-14	<5.1E+00	U//	<7.7E+00			1	GP								pCi/L
Cobalt-60	4.5E+00	J//	NDD			1	GP								pCi/L
Curium-242	<6.3E-02	U//	<4.2E-01			1	GP								pCi/L
Curium-243/244	<7.1E-02	U//	<5.8E-01			1	GP								pCi/L
Curium-245/246	<9.0E-03	U//	<2.5E-01			1	GP								pCi/L
Gross alpha	2.2E+00	J//	NDD			1	GP	9.4E+00	//				1	GP	pCi/L
Iodine-129	1.6E+00	J//	NDD			1	GP								pCi/L
Nickel-63	<7.7E+00	JU/L/I	<8.1E+00			1	GP								pCi/L
Nonvolatile beta	5.9E+02	//		■		1	GP	2.9E+02	//				1	GP	pCi/L
Plutonium-238	<0.0E+00	U//	<9.0E-02			1	GP								pCi/L
Plutonium-239/240	<5.5E-02	U//	<1.5E-01			1	GP								pCi/L
Radium-226	1.6E+00	//				1	GP								pCi/L
Radium-228	4.8E+00	//				1	GP								pCi/L
Strontium-90	3.0E+02	J/L/C	NDD			1	GP								pCi/L
Technetium-99	<4.8E+00	U//	<7.6E+00			1	GP								pCi/L
Thorium-228	<5.2E-02	U//	<4.9E-01			1	GP								pCi/L
Thorium-230	<1.1E-01	U//	<1.9E-01			1	GP								pCi/L
Thorium-232	<5.4E-02	U//	<1.6E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	4.8E+00														pCi/L
Total radium	6.4E+00			■											pCi/L
Tritium	6.2E+02	//		■		1	GP	3.3E+02	//				1	GP	pCi/mL
Uranium-233/234	<3.0E-01	U//	<1.5E-01			1	GP								pCi/L
Uranium-235	<4.6E-03	U//	<1.3E-01			1	GP								pCi/L
Uranium-238	1.8E-01	J//5	NDD			1	GP								pCi/L

### Notes:

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NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB105C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71447.3 E57883.8	33.278237 °N 81.653166 °W	162.2-152.2 ft msl	249.5 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/08/99 10/11/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	218.1	218.9	ft msl
pH	6.1	6.1	pH
Sp. conductance	87	89	µS/cm
Water temperature	21.5	20.5	°C
Alkalinity as CaCO <sub>3</sub>	14	15	mg/L
Turbidity	0.5	0.5	NTU
Volumes purged	2.9	3.9	Well vol
Sampling code			
Synchronous water level	217.9 (09/16/99)	217.7 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	2.6	J/V	NDD			1	GE								µg/L
Barium, total recoverable	13	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	3.0	J/V	NDD			1	GE								µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Copper, total recoverable	1.6	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	2.1	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	5,500	//				5	GE	4,500	//				3	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	20	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	1.4	//				1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer



**WELL HSB105C (cont.)****Radioactive Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<8.6E-02	U//	<1.2E-01			1	GP								pCi/L
Beta dose factor	1.5E-02														NONE
Carbon-14	2.9E+01	//				1	GP								pCi/L
Cobalt-60	<-1.4E-01	U//	<3.5E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<5.9E-02			1	GP								pCi/L
Curium-243/244	1.2E-01	R//4	Rej			1	GP								pCi/L
Curium-245/246	<3.8E-02	U//	<5.7E-02			1	GP								pCi/L
Gross alpha	<4.9E-01	U//	<8.1E-01			1	GP	<-3.2E-02	U//	<7.7E-01			1	GP	pCi/L
Iodine-129	<-3.9E-01	U//	<1.0E+00			1	GP								pCi/L
Nickel-63	<9.2E+00	U//	<1.3E+01			1	GP								pCi/L
Nonvolatile beta	<1.0E+00	U//	<1.2E+00			1	GP	<8.9E-01	U//	<1.4E+00			1	GP	pCi/L
Plutonium-238	<-1.9E-02	U//	<2.5E-01			1	GP								pCi/L
Plutonium-239/240	<0.0E+00	U//	<1.2E-01			1	GP								pCi/L
Radium-226	<6.4E-01	U//	<4.3E-01			1	GP								pCi/L
Radium-228	<-2.1E-01	U//	<7.7E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	<2.5E-01	U//	<2.2E+00			1	GP								pCi/L
Technetium-99	<2.9E+00	U//	<6.1E+00			1	GP								pCi/L
Thorium-228	<6.8E-02	U//	<4.9E-01			1	GP								pCi/L
Thorium-230	<1.4E-03	U//	<2.5E-01			1	GP								pCi/L
Thorium-232	<2.6E-02	U//	<1.8E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	2.9E+01														
Tritium	9.5E+01	//5		■		1	GP	9.5E+01	//		■		1	GP	pCi/L
Uranium-233/234	<7.4E-02	U//	<1.1E-01			1	GP								pCi/mL
Uranium-235	<-2.7E-02	U//	<2.6E-01			1	GP								pCi/L
Uranium-238	<-1.8E-02	U//	<2.3E-01			1	GP								pCi/L

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

**WELL HSB105D**

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71454.8 E57877.4	33.278244 °N 81.653197 °W	231.8-211.8 ft msl	249.5 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE	08/04/99	10/20/99
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**FIELD DATA**

Parameter	3Q99	4Q99	Unit
Water elevation	222.3	221.7	ft msl
pH	4.1	4.2	pH
Sp. conductance	103	116	µS/cm
Water temperature	20.6	19.7	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.3	0.4	NTU
Volumes purged	4.1	3.5	Well vol
Sampling code			
Synchronous water level	222.6 (09/16/99)	221.7 (12/06/99)	ft msl

**ANALYTICAL DATA****Inorganic Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.84	U//	<4.0			2	GE								µg/L
Arsenic, total recoverable	2.2	J//	NDD			2	GE								µg/L
Barium, total recoverable	32	//				2	GE								µg/L
Cadmium, total recoverable	<2.0	U//	<2.0			2	GE								µg/L
Chromium, total recoverable	<2.4	U//	<6.0			2	GE								µg/L
Cobalt, total recoverable	1.8	J//	NDD			2	GE								µg/L
Copper, total recoverable	8.7	//				2	GE								µg/L
Cyanide	3.7	J//	NDD			1	GE								µg/L
Lead, total recoverable	1.3	J//	NDD			2	GE								µg/L
Mercury, total recoverable	9.2	//		■		1	GE	6.9	//		■		1	GE	µg/L
Nickel, total recoverable	11	//				2	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	8,600	//				5	GE	8,500	//				5	GE	µg/L
Selenium, total recoverable	<10	U//	<10			2	GE								µg/L
Silver, total recoverable	<2.0	U//	<2.0			2	GE								µg/L
Tin, total recoverable	<10	U//	<10			2	GE								µg/L
Vanadium, total recoverable	<20	U//	<20			2	GE								µg/L
Zinc, total recoverable	<20	U//	<20			2	GE								µg/L

**Organic Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU//O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU//O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU//O	<5.0			1	GE								µg/L

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB105D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<7.0E-02	U//	<5.1E-01	■		1	GP								pCi/L
Beta dose factor	2.8E+01														NONE
Carbon-14	<5.1E+00	U//	<7.7E+00			1	GP								pCi/L
Cobalt-60	5.6E+00	J//	NDD			1	GP								pCi/L
Curium-242	<2.7E-02	U//	<4.3E-01			1	GP								pCi/L
Curium-243/244	<3.5E-02	U//	<4.2E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<2.0E-01			1	GP								pCi/L
Gross alpha	4.6E+00	//				1	GP	1.8E+01	//		■		1	GP	pCi/L
Iodine-129	2.8E+01	//				1	GP								pCi/L
Nickel-63	<5.7E+00	JU//L/I	<8.6E+00			1	GP								pCi/L
Nonvolatile beta	2.9E+02	//		■		1	GP	4.0E+02	//		■		1	GP	pCi/L
Plutonium-238	<1.9E-02	U//	<1.8E-01			1	GP								pCi/L
Plutonium-239/240	<9.5E-03	U//	<1.5E-01			1	GP								pCi/L
Radium-226	2.5E+00	//				1	GP								pCi/L
Radium-228	<5.8E-01	U//	<9.7E-01			1	GP								pCi/L
Strontium-90	2.1E+02	J//L/C	NDD			1	GP								pCi/L
Technetium-99	2.5E+01	//				1	GP								pCi/L
Thorium-228	<6.5E-02	U//	<4.3E-01			1	GP								pCi/L
Thorium-230	2.1E-01	R//4	Rej			1	GP								pCi/L
Thorium-232	<6.7E-03	U//	<1.5E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	5.3E+01			■											pCi/L
Total radium	2.5E+00														pCi/L
Tritium	1.5E+03	//		■		1	GP	7.7E+02	//		■		1	GP	pCi/mL
Uranium-233/234	8.8E-01	J//	NDD			1	GP								pCi/L
Uranium-235	<7.0E-02	U//	<1.8E-01			1	GP								pCi/L
Uranium-238	4.0E-01	J//V5	NDD			1	GP								pCi/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB106C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71720.9 E57651.5	33.278464 °N 81.654309 °W	168.7-158.7 ft msl	252.9 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/08/99 10/11/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	220.5	220.5	ft msl
pH	5.9	6.3	pH
Sp. conductance	80	84	µS/cm
Water temperature	21.4	20.9	°C
Alkalinity as CaCO <sub>3</sub>	7	9	mg/L
Turbidity	0.5	0.4	NTU
Volumes purged	4.0	3.0	Well vol
Sampling code			
Synchronous water level	220.3 (09/16/99)	220.2 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	2.7	J//	NDD			1	GE								µg/L
Barium, total recoverable	34	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	1.7	J//	NDD			1	GE								µg/L
Cobalt, total recoverable	<0.094	JU//4	<1.0			1	GE								µg/L
Copper, total recoverable	3.3	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	0.35	J//	NDD			1	GE								µg/L
Mercury, total recoverable	0.32	//				1	GE	0.32	//				1	GE	µg/L
Nickel, total recoverable	1.3	J//	NDD			1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	6,000	//				5	GE	5,700	//				3	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	200	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	4.1	//				1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

## WELL HSB106C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<5.7E-02	U//	<1.4E-01			1	GP								pCi/L
Beta dose factor	6.4E-01														NONE
Carbon-14	<4.7E+00	U//	<7.8E+00			1	GP								pCi/L
Cobalt-60	<-1.4E+00	U//	<3.7E+00			1	GP								pCi/L
Curium-242	<2.3E-02	U//	<7.0E-02			1	GP								pCi/L
Curium-243/244	<1.1E-02	U//	<1.4E-01			1	GP								pCi/L
Curium-245/246	<4.5E-02	U//	<6.8E-02			1	GP								pCi/L
Gross alpha	9.6E-01	J/V	NDD			1	GP	<6.6E-01	U//	<9.9E-01			1	GP	pCi/L
Iodine-129	<-7.4E-02	U//	<1.3E+00			1	GP								pCi/L
Nickel-63	3.2E+01	//				1	GP								pCi/L
Nonvolatile beta	<7.3E-01	U//	<1.6E+00			1	GP	1.8E+00	J/V	NDD			1	GP	pCi/L
Plutonium-238	<0.0E+00	U//	<1.3E-01			1	GP								pCi/L
Plutonium-239/240	<-1.0E-02	U//	<2.2E-01			1	GP								pCi/L
Radium-226	<1.1E+00	U/V/	<4.2E-01			1	GP								pCi/L
Radium-228	<2.7E-01	U//	<8.9E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	<2.2E-01	U//	<1.6E+00			1	GP								pCi/L
Technetium-99	<-5.7E-01	U//	<6.7E+00			1	GP								pCi/L
Thorium-228	<1.5E-01	U//	<4.1E-01			1	GP								pCi/L
Thorium-230	<1.6E-01	U//	<2.6E-01			1	GP								pCi/L
Thorium-232	<-8.9E-03	U//	<2.0E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	3.2E+01														
Tritium	1.4E+02	//5		■		1	GP	1.4E+02	//		■		1	GP	pCi/L
Uranium-233/234	<-1.6E-02	U//	<3.1E-01			1	GP								pCi/mL
Uranium-235	<3.6E-02	U//	<1.1E-01			1	GP								pCi/L
Uranium-238	<2.7E-02	U//	<1.9E-01			1	GP								pCi/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB106D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71727.8 E57644.8	33.278468 °N 81.654340 °W	230.7-210.7 ft msl	252.9 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 07/19/99 10/20/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	224.1	223.3	ft msl
pH	4.6	4.4	pH
Sp. conductance	92	90	µS/cm
Water temperature	20.0	19.9	°C
Alkalinity as CaCO3	0	0	mg/L
Turbidity	1.0	1.6	NTU
Volumes purged	3.8	3.3	Well vol
Sampling code			
Synchronous water level	223.5 (09/16/99)	223.0 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.20	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	4.2	//				1	GE								µg/L
Barium, total recoverable	15	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	3.3	//				1	GE								µg/L
Cobalt, total recoverable	1.4	//				1	GE								µg/L
Copper, total recoverable	3.9	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	0.41	J//	NDD			1	GE								µg/L
Mercury, total recoverable	1.1	//				1	GE	0.48	//				1	GE	µg/L
Nickel, total recoverable	2.5	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	7,400	//				3	GE	6,900	//				5	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	11	//				1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

**WELL HSB106D (cont.)****Radioactive Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<6.4E-03	U//	<1.4E-01	■		1	GP								pCi/L
Beta dose factor	2.7E+01														NONE
Carbon-14	<8.5E-01	U//	<6.9E+00			1	GP								pCi/L
Cobalt-60	<1.9E+00	U//	<3.8E+00			1	GP								pCi/L
Curium-242	<7.1E-03	U//	<1.6E-01			1	GP								pCi/L
Curium-243/244	<8.0E-02	U//	<8.0E-02			1	GP								pCi/L
Curium-245/246	<2.7E-02	U//	<8.0E-02			1	GP								pCi/L
Gross alpha	2.6E+00	J//	NDD			1	GP	9.5E+00	//				1	GP	pCi/L
Iodine-129	8.9E+00	//				1	GP								pCi/L
Nickel-63	<1.5E+00	U//	<1.6E+01			1	GP								pCi/L
Nonvolatile beta	3.2E+02	//		■		1	GP	2.9E+02	//		■		1	GP	pCi/L
Plutonium-238	<3.9E-03	U//	<8.6E-02			1	GP								pCi/L
Plutonium-239/240	<3.9E-03	U//	<8.6E-02			1	GP								pCi/L
Radium-226	<7.2E-01	U//	<8.6E-01			1	GP								pCi/L
Radium-228	3.6E+00	//				1	GP								pCi/L
Strontium-90	1.4E+02	//		■		1	GP								pCi/L
Technetium-99	7.9E+00	J//	NDD			1	GP								pCi/L
Thorium-228	<1.6E-01	U//	<4.2E-01			1	GP								pCi/L
Thorium-230	<7.5E-03	U//	<1.9E-01			1	GP								pCi/L
Thorium-232	<6.5E-03	U//	<1.4E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	1.5E+02			■											pCi/L
Total radium	3.6E+00														pCi/L
Tritium	4.4E+02	//		■		1	GP	4.2E+02	//		■		1	GP	pCi/mL
Uranium-233/234	<1.7E-01	U//	<1.1E-01			1	GP								pCi/L
Uranium-235	<1.3E-02	U//	<9.3E-02			1	GP								pCi/L
Uranium-238	<1.3E-02	U//	<9.3E-02			1	GP								pCi/L

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB107C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71698.5 E57432.0	33.278056 °N 81.654844 °W	169.3-159.3 ft msl	261.6 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/13/99 10/15/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	217.7	217.4	ft msl
pH	6.5	6.7	pH
Sp. conductance	143	136	µS/cm
Water temperature	19.7	19.9	°C
Alkalinity as CaCO3	33	26	mg/L
Turbidity	0.7	0.3	NTU
Volumes purged	3.1	2.5	Well vol
Sampling code			
Synchronous water level	217.2 (09/16/99)	217.1 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	2.0	J/V	NDD			1	GE								µg/L
Barium, total recoverable	38	//				1	GE								µg/L
Cadmium, total recoverable	0.24	J/V	NDD			1	GE								µg/L
Chromium, total recoverable	2.3	J/V	NDD			1	GE								µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Copper, total recoverable	<0.55	JU/V4	<1.0			1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	3.2	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	8,200	//				5	GE	8,300	//				5	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	12	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU/L/O	<5.0			1	GE								µg/L
Tetrachloroethylene	7.2	J/L/O	NDD			1	GE								µg/L
Trichloroethylene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU/L/O	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



**WELL HSB107C (cont.)****Radioactive Constituents**

Constituents	3Q99	Mod	Filt	ST	H	DF	Lab	4Q99	Mod	Filt	ST	H	DF	Lab	Unit
Americium-241	<1.0E-01	U//	<1.6E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	<1.9E+00	U//	<9.7E+00			1	GP								pCi/L
Cobalt-60	<1.1E+00	U//	<3.9E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<1.7E-01			1	GP								pCi/L
Curium-243/244	<1.5E-02	U//	<3.6E-01			1	GP								pCi/L
Curium-245/246	<3.9E-02	U//	<2.7E-01			1	GP								pCi/L
Gross alpha	<4.6E-02	U//	<1.1E+00			1	GP	1.9E+00	J//	NDD			1	TM	pCi/L
Iodine-129	<7.6E-01	U//	<1.2E+00			1	GP								pCi/L
Nickel-63	<6.8E-01	U//	<1.6E+01			1	GP								pCi/L
Nonvolatile beta	4.2E+00	//				1	GP	1.6E+01	//				1	TM	pCi/L
Plutonium-238	<2.6E-02	U//	<2.5E-01			1	GP								pCi/L
Plutonium-239/240	<7.1E-03	U//	<2.9E-01			1	GP								pCi/L
Radium-226	3.1E+00	//				1	GP								pCi/L
Radium-228	<2.4E-01	U//	<8.3E-01			1	GP								pCi/L
Strontium-90	<9.1E-01	U//	<1.7E+00			1	GP								pCi/L
Technetium-99	1.3E+01	J//	NDD			1	GP								pCi/L
Thorium-228	<9.7E-02	U//	<6.8E-01			1	GP								pCi/L
Thorium-230	<4.8E-02	U//	<3.3E-01			1	GP								pCi/L
Thorium-232	<9.7E-03	U//	<2.1E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Total radium	3.1E+00														
Tritium	3.7E+02	//5		■		1	GP	3.9E+02	//		■		1	TM	pCi/L
Uranium-233/234	<6.8E-02	U//	<3.0E-01			1	GP								pCi/L
Uranium-235	<9.0E-03	U//	<2.0E-01			1	GP								pCi/L
Uranium-238	<7.5E-02	U//	<1.1E-01			1	GP								pCi/L

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB107D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71696.6 E57412.2	33.278019 °N 81.654892 °W	235.1-215.1 ft msl	262.3 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 08/04/99 10/20/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	221.9	221.1	ft msl
pH	4.9	4.9	pH
Sp. conductance	123	109	µS/cm
Water temperature	20.6	19.5	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	1.4	0.7	NTU
Volumes purged	3.8	5.6	Well vol
Sampling code			
Synchronous water level	221.3 (09/16/99)	220.8 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.26	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	<3.0	U//	<3.0			1	GE								µg/L
Barium, total recoverable	20	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	<1.8	U//	<3.0			1	GE								µg/L
Cobalt, total recoverable	0.56	J//	NDD			1	GE								µg/L
Copper, total recoverable	1.1	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	1.3	//				1	GE	1.3	//				1	GE	µg/L
Nickel, total recoverable	1.2	J//	NDD			1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	10,000	//		■		5	GE	10,000	//				5	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	5.7	J//	NDD			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU//O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU//O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU//O	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB107D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt	ST	H	DF	Lab	4Q99	Mod	Filt	ST	H	DF	Lab	Unit
Americium-241	<7.6E-02	U//	<3.3E-01			1	GP								pCi/L
Beta dose factor	2.5E-02														NONE
Carbon-14	8.1E+00	J/V	NDD			1	GP								pCi/L
Cobalt-60	<2.7E+00	U//	<4.6E+00			1	GP								pCi/L
Curium-242	<7.6E-02	U//	<4.1E-01			1	GP								pCi/L
Curium-243/244	<2.8E-01	U//	<6.1E-01			1	GP								pCi/L
Curium-245/246	<-9.3E-03	U//	<2.6E-01			1	GP								pCi/L
Gross alpha	4.5E+00	//				1	GP	8.4E+00	//				1	GP	pCi/L
Iodine-129	2.2E+00	J/V	NDD			1	GP								pCi/L
Nickel-63	<4.0E+00	JU/L/I	<9.6E+00			1	GP								pCi/L
Nonvolatile beta	3.0E+02	//		■		1	GP	3.9E+02	//		■		1	GP	pCi/L
Plutonium-238	<-5.0E-03	U//	<1.4E-01			1	GP								pCi/L
Plutonium-239/240	<2.8E-02	U//	<8.3E-02			1	GP								pCi/L
Radium-226	1.5E+00	J/V	NDD			1	GP								pCi/L
Radium-228	<-1.2E+00	U//	<1.2E+00			1	GP								pCi/L
Total radium	NA														
Strontium-90	2.2E+02	J/L/C	NDD			1	GP								pCi/L
Technetium-99	2.2E+01	//				1	GP								pCi/L
Thorium-228	<-9.4E-02	U//	<5.2E-01			1	GP								pCi/L
Thorium-230	<2.1E-01	U//	<2.3E-01			1	GP								pCi/L
Thorium-232	<4.3E-02	U//	<2.3E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	2.2E+01														pCi/L
Tritium	1.6E+02	//		■		1	GP	1.4E+02	//		■		1	GP	pCi/mL
Uranium-233/234	5.9E-01	J/V	NDD			1	GP								pCi/L
Uranium-235	<3.2E-02	U//	<9.6E-02			1	GP								pCi/L
Uranium-238	<-1.7E-02	U//5	<2.1E-01			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB108C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71688.7 E57155.5	33.277583 °N 81.655553 °W	196.0-186.0 ft msl	266.2 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/06/99 10/11/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	216.6	216.4	ft msl
pH	6.9	6.8	pH
Sp. conductance	85	123	µS/cm
Water temperature	21.0	21.5	°C
Alkalinity as CaCO3	41	50	mg/L
Turbidity	0.9	3.2	NTU
Volumes purged	2.5	3.7	Well vol
Sampling code			
Synchronous water level	216.3 (09/16/99)	216.1 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	2.2	J//	NDD			1	GE								µg/L
Barium, total recoverable	8.8	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	4.5	//				1	GE								µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Copper, total recoverable	<1.4	U//	<1.0			1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	2.4	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	1,500	//				1	GE	1,300	//				1	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

**WELL HSB108C (cont.)****Radioactive Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<3.5E-02	U//	<5.2E-02			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	<5.8E+00	U//	<7.9E+00			1	GP								pCi/L
Cobalt-60	<2.0E+00	U//	<3.0E+00			1	GP								pCi/L
Curium-242	<9.2E-03	U//	<1.1E-01			1	GP								pCi/L
Curium-243/244	<1.8E-02	U//	<1.3E-01			1	GP								pCi/L
Curium-245/246	<3.5E-02	U//	<5.2E-02			1	GP								pCi/L
Gross alpha	<7.7E-01	U//	<9.9E-01			1	GP	<2.8E-01	U//	<8.5E-01			1	GP	pCi/L
Iodine-129	<4.3E-01	U//	<1.1E+00			1	GP								pCi/L
Nickel-63	<8.6E+00	U//	<1.3E+01			1	GP								pCi/L
Nonvolatile beta	1.6E+00	J//	NDD			1	GP	1.5E+00	J//	NDD			1	GP	pCi/L
Plutonium-238	<2.4E-02	U//	<7.3E-02			1	GP								pCi/L
Plutonium-239/240	<3.3E-03	U//	<7.3E-02			1	GP								pCi/L
Radium-226	<2.3E-01	U//	<6.9E-01			1	GP								pCi/L
Radium-228	<7.4E-01	U//	<8.7E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	<1.7E-01	U//	<1.4E+00			1	GP								pCi/L
Technetium-99	<8.4E-01	U//	<6.1E+00			1	GP								pCi/L
Thorium-228	<2.0E-01	U//	<6.6E-01			1	GP								pCi/L
Thorium-230	<6.0E-02	U//	<4.1E-01			1	GP								pCi/L
Thorium-232	<2.2E-02	U//	<2.9E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Tritium	9.9E+01	//5		■		1	GP	9.8E+01	//		■		1	GP	pCi/mL
Uranium-233/234	<4.0E-02	U//	<1.5E-01			1	GP								pCi/L
Uranium-235	<1.9E-02	U//	<1.5E-01			1	GP								pCi/L
Uranium-238	<1.3E-01	U//	<1.0E-01			1	GP								pCi/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB108D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71688.0 E57145.6	33.277566 °N 81.655577 °W	232.0-212.0 ft msl	266.3 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE	08/31/99	10/20/99
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## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	219.7	219.3	ft msl
pH	4.5	4.6	pH
Sp. conductance	78	68	µS/cm
Water temperature	20.9	19.7	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	1.0	0.6	NTU
Volumes purged	5.6	0.0	Well vol
Sampling code		XN	
Synchronous water level	219.5 (09/16/99)	219.1 (12/06/99)	ft msl

## ANALYTICAL DATA

## Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.22	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	<3.2	U//	<3.0			1	GE								µg/L
Barium, total recoverable	20	//				1	GE								µg/L
Cadmium, total recoverable	0.33	J//	NDD			1	GE								µg/L
Chromium, total recoverable	<3.7	U//	<3.0			1	GE								µg/L
Cobalt, total recoverable	4.0	//		■		1	GE								µg/L
Copper, total recoverable	1.7	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	0.65	J//	NDD			1	GE								µg/L
Mercury, total recoverable	2.6	//		■		1	GE	6.3	//				1	GE	µg/L
Nickel, total recoverable	8.4	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	5,400	//				5	GE	4,900	//				3	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<3.7	U//	<10			1	GE								µg/L
Zinc, total recoverable	23	//				1	GE								µg/L

## Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB108D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<1.5E-02	U//	<1.9E-01			1	GP								pCi/L
Beta dose factor	2.2E-01														NONE
Carbon-14	2.2E+01	//				1	GP								pCi/L
Cobalt-60	2.1E+01	//				1	GP								pCi/L
Curium-242	<0.0E+00	U//	<9.7E-02			1	GP								pCi/L
Curium-243/244	<7.1E-03	U//	<1.6E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<9.4E-02			1	GP								pCi/L
Gross alpha	2.1E+01	J//	NDD			1	GP	1.2E+01	//				1	GP	pCi/L
Iodine-129	2.6E+00	J//	NDD			1	GP								pCi/L
Nickel-63	6.7E+01	J//C	NDD			1	GP								pCi/L
Nonvolatile beta	2.5E+03	//5		■		1	GP	1.7E+03	//		■		1	GP	pCi/L
Plutonium-238	3.6E-01	R//4	Rej			1	GP								pCi/L
Plutonium-239/240	<1.1E-02	U//	<1.4E-01			1	GP								pCi/L
Radium-226	4.0E+00	//				1	GP								pCi/L
Radium-228	<7.7E-01	U//	<1.5E+00			1	GP								pCi/L
Strontium-90	9.2E+02	J//1	NDD			1	GP								pCi/L
Technetium-99	9.2E+00	J//	NDD			1	GP								pCi/L
Thorium-228	<1.0E-01	U//	<5.1E-01			1	GP								pCi/L
Thorium-230	<1.2E-01	U//	<2.8E-01			1	GP								pCi/L
Thorium-232	<3.3E-02	U//	<9.9E-02			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	4.3E+01														pCi/L
Total radium	4.0E+00														pCi/L
Tritium	2.1E+02	//		■		1	GP	3.1E+02	//		■		1	GP	pCi/mL
Uranium-233/234	4.7E-01	J//	NDD			1	GP								pCi/L
Uranium-235	<1.5E-02	U//	<1.7E-01			1	GP								pCi/L
Uranium-238	<2.0E-01	U//	<1.9E-01			1	GP								pCi/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB109C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71684.8 E56895.6	33.277151 °N 81.656229 °W	178.4-168.4 ft msl	261.6 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/16/99 10/11/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	217.1	216.7	ft msl
pH	7.2	6.3	pH
Sp. conductance	49	47	µS/cm
Water temperature	19.9	21.3	°C
Alkalinity as CaCO <sub>3</sub>	8	9	mg/L
Turbidity	0.7	0.4	NTU
Volumes purged	2.5	2.4	Well vol
Sampling code			
Synchronous water level	216.4 (09/16/99)	216.3 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	4.4	//				1	GE								µg/L
Barium, total recoverable	4.4	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	3.8	//				1	GE								µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Copper, total recoverable	0.94	J//	NDD			1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	1.9	J//	NDD			1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	2,000	//				1	GE	1,800	//				1	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<0.37	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	11	//				1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU/L/O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU/L/O	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer



# WELL HSB109C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<3.8E-02	U//	<2.0E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	<-2.4E+00	U//	<9.5E+00			1	GP								pCi/L
Cobalt-60	<4.1E-03	U//	<3.6E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<1.3E-01			1	GP								pCi/L
Curium-243/244	<-9.2E-03	U//	<2.0E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<1.1E-01			1	GP								pCi/L
Gross alpha	<2.0E-01	U//	<6.9E-01			1	GP	<4.3E-01	U//	<9.4E-01			1	GP	pCi/L
Iodine-129	<9.1E-01	U//	<9.0E-01			1	GP								pCi/L
Nickel-63	<2.4E+00	U//	<1.4E+01			1	GP								pCi/L
Nonvolatile beta	<6.0E-01	U//	<1.3E+00			1	GP	<4.4E-01	U//	<1.6E+00			1	GP	pCi/L
Plutonium-238	<7.1E-04	U//	<1.3E-01			1	GP								pCi/L
Plutonium-239/240	<-8.5E-03	U//	<1.1E-01			1	GP								pCi/L
Radium-226	<3.1E-01	U//	<8.4E-01			1	GP								pCi/L
Radium-228	<-5.3E-01	U//	<8.6E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	<6.2E-01	U//	<1.2E+00			1	GP								pCi/L
Technetium-99	<3.6E+00	U//	<7.8E+00			1	GP								pCi/L
Thorium-228	<2.4E-02	U//	<6.8E-01			1	GP								pCi/L
Thorium-230	<1.4E-01	U//	<3.0E-01			1	GP								pCi/L
Thorium-232	<-1.0E-02	U//	<2.2E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Tritium	3.4E+01	//5		■		1	GP	3.9E+01	//		■		1	GP	pCi/mL
Uranium-233/234	<-3.8E-03	U//	<8.3E-02			1	GP								pCi/L
Uranium-235	<-3.8E-03	U//	<8.3E-02			1	GP								pCi/L
Uranium-238	<0.0E+00	U//	<4.7E-02			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB109D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71685.6 E56885.5	33.277136 °N 81.656257 °W	233.0-213.0 ft msl	261.2 ft msl	4" PVC	S	UAZ_UTRA

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation			ft msl
pH			pH
Sp. conductance			µS/cm
Water temperature			°C
Alkalinity as CaCO3			mg/L
Turbidity			NTU
Volumes purged			Well vol
Sampling code	D	D	
Synchronous water level	D (09/16/99)	D (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable															
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen															
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

**WELL HSB109D (cont.)****Radioactive Constituents**

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha															
Iodine-129															
Nickel-63															
Nonvolatile beta															
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium															
Uranium-233/234															
Uranium-235															
Uranium-238															

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB110C

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71779.3 E56680.7	33.277009 °N 81.656979 °W	181.4-171.4 ft msl	255.7 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/16/99 10/04/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	217.2	216.8	ft msl
pH	4.9	5.2	pH
Sp. conductance	22	21	µS/cm
Water temperature	20.1	19.8	°C
Alkalinity as CaCO3	2	1	mg/L
Turbidity	1.8	0.7	NTU
Volumes purged	2.6	2.4	Well vol
Sampling code			
Synchronous water level	216.7 (09/16/99)	216.5 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	3.7	//				1	GE								µg/L
Barium, total recoverable	4.4	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	4.5	//				1	GE								µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Copper, total recoverable	7.0	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	2.7	//				1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	2.1	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	550	//				1	GE	520	//				1	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<0.40	U/V/	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	8.7	J/V	NDD			1	GE								µg/L
Zinc, total recoverable	12	//				1	GE								µg/L

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene	0.71	J/IL/O	NDD			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU/L/O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU/L/O	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA = Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB110C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<3.0E-02	U//	<9.0E-02			1	GP								pCi/L
Beta dose factor	2.6E-02														NONE
Carbon-14	5.3E+01	//		■		1	GP								pCi/L
Cobalt-60	<6.6E-01	U//	<4.0E+00			1	GP								pCi/L
Curium-242	<-8.1E-03	U//	<1.8E-01			1	GP								pCi/L
Curium-243/244	<-7.2E-03	U//	<1.6E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<9.0E-02			1	GP								pCi/L
Gross alpha	<3.7E-01	U//	<5.8E-01			1	GP	<4.5E-01	U//	<6.2E-01			1	GP	pCi/L
Iodine-129	<6.4E-01	U//	<9.0E-01			1	GP								pCi/L
Nickel-63	<-7.8E-01	U//	<1.4E+01			1	GP								pCi/L
Nonvolatile beta	<6.9E-01	U//	<1.2E+00			1	GP	<-1.6E-01	U//	<1.4E+00			1	GP	pCi/L
Plutonium-238	<1.4E-02	U//	<1.0E-01			1	GP								pCi/L
Plutonium-239/240	<3.8E-02	U//	<5.7E-02			1	GP								pCi/L
Radium-226	<2.4E-01	U//	<8.7E-01			1	GP								pCi/L
Radium-228	<2.7E-01	JU/L/C	<1.3E+00			1	GP								pCi/L
Total radium	NA														
Strontium-90	<1.8E-01	U//	<1.1E+00			1	GP								pCi/L
Technetium-99	<-9.0E-01	U//	<7.7E+00			1	GP								pCi/L
Thorium-228	<2.3E-02	U//	<6.3E-01			1	GP								pCi/L
Thorium-230	<9.9E-02	U//	<2.5E-01			1	GP								pCi/L
Thorium-232	<-3.8E-02	U//	<3.0E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	5.3E+01			■											pCi/L
Tritium	5.6E+00	//5				1	GP	7.3E+00	//				1	GP	pCi/mL
Uranium-233/234	<8.4E-03	U//	<1.0E-01			1	GP								pCi/L
Uranium-235	<-3.9E-03	U//	<8.5E-02			1	GP								pCi/L
Uranium-238	<1.2E-02	U//	<8.5E-02			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB110D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71785.2 E56672.1	33.277008 °N 81.657013 °W	231.4-211.4 ft msl	255.6 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 08/02/99 10/13/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	218.0		ft msl
pH	4.6	4.6	pH
Sp. conductance	40	37	µS/cm
Water temperature	21.1	19.6	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.5	0.8	NTU
Volumes purged	3.2		Well vol
Sampling code			
Synchronous water level	217.4 (09/16/99)	D (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.31	JU//4	<2.0			1	GE								µg/L
Arsenic, total recoverable	1.2	J//	NDD			1	GE								µg/L
Barium, total recoverable	4.2	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	2.5	J//	NDD			1	GE								µg/L
Cobalt, total recoverable	2.8	//				1	GE								µg/L
Copper, total recoverable	5.7	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	0.44	J//	NDD			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	0.075	J//	NDD			1	GE	µg/L
Nickel, total recoverable	3.7	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	1.700	//				1	GE	1,400	//				1	GE	µg/L
Selenium, total recoverable	1.8	J//	NDD			1	GE								µg/L
Silver, total recoverable	<0.39	JU//4	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	8.9	J//	NDD			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<2.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB110D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<6.7E-02	U//	<2.0E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	<-1.2E-01	U//	<7.4E+00			1	GP								pCi/L
Cobalt-60	<-1.4E-02	U//	<3.6E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<2.3E-01			1	GP								pCi/L
Curium-243/244	<0.0E+00	U//	<2.0E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<2.0E-01			1	GP								pCi/L
Gross alpha	<1.2E+00	U//	<7.7E-01			1	GP	1.8E+00	J//K/C	NDD			1	GP	pCi/L
Iodine-129	<2.1E-01	U//	<1.2E+00			1	GP								pCi/L
Nickel-63	<-9.4E-01	JU//L/I	<8.8E+00			1	GP								pCi/L
Nonvolatile beta	6.0E+01	//		■		1	GP	6.6E+01	//		■		1	GP	pCi/L
Plutonium-238	<6.9E-02	U//	<4.2E-01			1	GP								pCi/L
Plutonium-239/240	<-6.1E-03	U//	<1.7E-01			1	GP								pCi/L
Radium-226	<3.0E-01	U//	<4.7E-01			1	GP								pCi/L
Radium-228	<2.5E-02	U//	<1.4E+00			1	GP								pCi/L
Total radium	NA														
Strontium-90	3.0E+01	J//L/C	NDD			1	GP								pCi/L
Technetium-99	<-3.8E+00	U//	<8.1E+00			1	GP								pCi/L
Thorium-228	<-1.3E-02	U//	<2.5E-01			1	GP								pCi/L
Thorium-230	<-1.4E-02	U//	<1.8E-01			1	GP								pCi/L
Thorium-232	<5.7E-02	U//	<8.5E-02			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Tritium	2.3E+01	//		■		1	GP	2.0E+01	//				1	GP	pCi/mL
Uranium-233/234	<1.6E-01	U//	<1.9E-01			1	GP								pCi/L
Uranium-235	<-1.0E-02	U//	<1.7E-01			1	GP								pCi/L
Uranium-238	<4.7E-02	U//5	<1.7E-01			1	GP								pCi/L

### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB111C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71919.4 E56501.9	33.277027 °N 81.657722 °W	150.7-140.7 ft msl	256 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/14/99 10/11/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	217.5	217.3	ft msl
pH	5.1	5.2	pH
Sp. conductance	68	51	µS/cm
Water temperature	19.8	20.4	°C
Alkalinity as CaCO <sub>3</sub>	0	1	mg/L
Turbidity	2.1	0.5	NTU
Volumes purged	2.8	2.9	Well vol
Sampling code			
Synchronous water level	217.3 (09/16/99)	217.0 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	3.9	//				1	GE								µg/L
Barium, total recoverable	5.4	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	4.4	//				1	GE								µg/L
Cobalt, total recoverable	0.30	J//	NDD			1	GE								µg/L
Copper, total recoverable	2.6	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	19	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	6,400	//				3	GE	4,200	//				3	GE	µg/L
Selenium, total recoverable	1.5	J//	NDD			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	4.6	J//	NDD			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<1.5	JU/L/OB	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU/L/O	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer



## WELL HSB111C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<8.1E-02	U//	<1.2E-01			1	GP								pCi/L
Beta dose factor	3.0E-02														NONE
Carbon-14	1.0E+01	J//	NDD			1	GP								pCi/L
Cobalt-60	<5.0E-01	U//	<3.7E+00			1	GP								pCi/L
Curium-242	<2.2E-02	U//	<2.9E-01			1	GP								pCi/L
Curium-243/244	<2.1E-02	U//	<2.5E-01			1	GP								pCi/L
Curium-245/246	<4.1E-02	U//	<1.2E-01			1	GP								pCi/L
Gross alpha	<6.1E-01	U//	<7.6E-01			1	GP	<6.7E-01	U//	<8.2E-01			1	GP	pCi/L
Iodine-129	<7.9E-01	U//	<9.5E-01			1	GP								pCi/L
Nickel-63	<6.4E-01	U//	<1.5E+01			1	GP								pCi/L
Nonvolatile beta	1.0E+01	//				1	GP	5.3E+00	//				1	GP	pCi/L
Plutonium-238	<4.7E-02	U//	<9.0E-02			1	GP								pCi/L
Plutonium-239/240	<8.9E-03	U//	<1.1E-01			1	GP								pCi/L
Radium-226	2.4E+00	//				1	GP								pCi/L
Radium-228	<1.2E-01	U//	<1.0E+00			1	GP								pCi/L
Strontium-90	<3.6E-01	U//	<1.3E+00			1	GP								pCi/L
Technetium-99	2.7E+01	//				1	GP								pCi/L
Thorium-228	<1.6E-01	U//	<6.5E-01			1	GP								pCi/L
Thorium-230	<5.9E-02	U//	<3.2E-01			1	GP								pCi/L
Thorium-232	<6.2E-02	U//	<1.9E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	2.7E+01														pCi/L
Total radium	2.4E+00														pCi/L
Tritium	6.8E+02	//5		■		1	GP	4.5E+02	//		■		1	GP	pCi/mL
Uranium-233/234	<9.8E-03	U//	<1.3E-01			1	GP								pCi/L
Uranium-235	<1.6E-02	U//	<1.1E-01			1	GP								pCi/L
Uranium-238	<0.0E+00	U//	<6.1E-02			1	GP								pCi/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB111D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71926.2 E56494.5	33.277030 °N 81.657754 °W	195.7-185.7 ft msl	256 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 07/21/99 10/19/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	216.9	215.7	ft msl
pH	5.4	4.8	pH
Sp. conductance	158	202	µS/cm
Water temperature	20.1	19.2	°C
Alkalinity as CaCO <sub>3</sub>	2	0	mg/L
Turbidity	0.4	0.4	NTU
Volumes purged	2.2	2.7	Well vol
Sampling code			
Synchronous water level	216.7 (09/16/99)	215.4 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	1.2	J//	NDD			1	GE								µg/L
Barium, total recoverable	9.0	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	3.3	//				1	GE								µg/L
Cobalt, total recoverable	0.32	J//	NDD			1	GE								µg/L
Copper, total recoverable	<2.1	U//	<1.0			1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	0.56	J//	NDD			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.069	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	1.3	J//	NDD			1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	16.000	//		■		25	GE	20.000	//		■		25	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	3.9	J/K/O	NDD			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB111D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<3.2E-02	U//	<7.1E-01			1	GP								pCi/L
Beta dose factor	8.7E-02														NONE
Carbon-14	4.4E+01	//				1	GP								pCi/L
Cobalt-60	<1.3E+00	U//	<4.0E+00			1	GP								pCi/L
Curium-242	<6.9E-02	U//	<8.9E-01			1	GP								pCi/L
Curium-243/244	<7.0E-02	U//	<8.3E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<4.0E-01			1	GP								pCi/L
Gross alpha	<9.4E-01	U//5	<2.9E+00			1	GP	2.4E+00	J//	NDD			1	GP	pCi/L
Iodine-129	1.2E+00	J//	NDD			1	GP								pCi/L
Nickel-63	<2.2E+00	JU/LCI	<1.6E+01			1	GP								pCi/L
Nonvolatile beta	1.3E+01	//				1	GP	4.8E+01	//				1	GP	pCi/L
Plutonium-238	<3.1E-01	U//	<5.8E-01			1	GP								pCi/L
Plutonium-239/240	<1.2E-01	U//	<4.8E-01			1	GP								pCi/L
Radium-226	3.7E+00	//				1	GP								pCi/L
Radium-228	<7.8E-02	U//	<8.8E-01			1	GP								pCi/L
Strontium-90	<7.8E-01	U//	<1.3E+00			1	GP								pCi/L
Technetium-99	5.8E+01	//		■		1	GP								pCi/L
Thorium-228	<5.8E-02	U//	<4.6E-01			1	GP								pCi/L
Thorium-230	<1.3E-01	U//	<1.8E-01			1	GP								pCi/L
Thorium-232	<8.0E-03	U//	<1.8E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	1.0E+02			■											pCi/L
Total radium	3.7E+00														pCi/L
Tritium	2.3E+03	//5		■		1	GP	2.5E+03	//				1	GP	pCi/mL
Uranium-233/234	<4.8E-02	U//	<4.8E-01			1	GP								pCi/L
Uranium-235	<3.5E-02	U//	<4.2E-01			1	GP								pCi/L
Uranium-238	<4.3E-02	U//	<4.1E-01			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB111E

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71932.8 E56487.2	33.277033 °N 81.657786 °W	231.7-211.7 ft msl	255.9 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 08/04/99 11/02/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	217.0		ft msl
pH	4.5	4.3	pH
Sp. conductance	46	42	µS/cm
Water temperature	21.2	19.9	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.8	0.8	NTU
Volumes purged	4.9		Well vol
Sampling code		S	
Synchronous water level	216.6 (09/16/99)	D (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.48	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	<3.0	U//	<3.0			1	GE								µg/L
Barium, total recoverable	2.5	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	<3.1	U//	<3.0			1	GE								µg/L
Cobalt, total recoverable	<0.10	JU//4	<1.0			1	GE								µg/L
Copper, total recoverable	3.0	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	0.36	J//	NDD			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	0.066	J//	NDD			1	GE	µg/L
Nickel, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	2,400	//				3	GE	2,200	//				1	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<0.33	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	8.0	J//	NDD			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU//O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU//O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU//O	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

**WELL HSB111E (cont.)****Radioactive Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<4.4E-02	U//	<4.3E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	<4.2E-01	U//	<7.6E+00			1	GP								pCi/L
Cobalt-60	<9.7E-01	U//	<3.4E+00			1	GP								pCi/L
Curium-242	<3.2E-02	U//	<4.5E-01			1	GP								pCi/L
Curium-243/244	<2.4E-01	U//	<6.1E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<1.9E-01			1	GP								pCi/L
Gross alpha	2.1E+00	//				1	GP	1.7E+00	J//	NDD			1	GP	pCi/L
Iodine-129	<2.2E-01	U//	<1.2E-01			1	GP								pCi/L
Nickel-63	<2.4E+00	JU/L/I	<8.8E+00			1	GP								pCi/L
Nonvolatile beta	1.2E+01	//				1	GP	1.5E+01	//				1	GP	pCi/L
Plutonium-238	<4.0E-02	U//	<1.2E-01			1	GP								pCi/L
Plutonium-239/240	<4.3E-02	U//	<3.1E-01			1	GP								pCi/L
Radium-226	<9.0E-01	U//	<4.9E-01			1	GP								pCi/L
Radium-228	1.0E+00	J//	NDD			1	GP								pCi/L
Total radium	NA														
Strontium-90	6.5E+00	J/L/C	NDD			1	GP								pCi/L
Technetium-99	<8.6E-01	U//	<8.0E+00			1	GP								pCi/L
Thorium-228	<3.0E-02	U//	<4.2E-01			1	GP								pCi/L
Thorium-230	<1.2E-01	U//	<1.6E-01			1	GP								pCi/L
Thorium-232	<2.9E-02	U//	<2.3E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Tritium	8.2E+01	//		■		1	GP	2.7E+01	//		■		1	GP	pCi/mL
Uranium-233/234	<2.6E-01	U//	<2.6E-01			1	GP								pCi/L
Uranium-235	<1.9E-02	U//	<1.9E-01			1	GP								pCi/L
Uranium-238	2.1E-01	J//5	NDD			1	GP								pCi/L

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB112C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72156.4 E56417.4	33.277413 °N 81.658404 °W	150.6-140.6 ft msl	254.9 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/13/99 10/04/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	218.5	218.4	ft msl
pH	6.4	6.2	pH
Sp. conductance	65	62	µS/cm
Water temperature	19.7	20.0	°C
Alkalinity as CaCO3	15	18	mg/L
Turbidity	1.0	0.3	NTU
Volumes purged	2.5	2.5	Well vol
Sampling code			
Synchronous water level	218.3 (09/16/99)	217.9 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	2.0	J//	NDD			1	GE								µg/L
Barium, total recoverable	7.9	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	4.0	//				1	GE								µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Copper, total recoverable	1.1	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	12	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	2,100	//				1	GE	1,600	//				1	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	3.1	J//	NDD			1	GE								µg/L
Zinc, total recoverable	14	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU/L/O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU/L/O	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB112C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<5.0E-02	U//	<2.6E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	1.1E+01	J//	NDD			1	GP								pCi/L
Cobalt-60	<3.1E-02	U//	<3.9E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<1.6E-01			1	GP								pCi/L
Curium-243/244	<-1.2E-02	U//	<2.6E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<1.5E-01			1	GP								pCi/L
Gross alpha	<4.6E-02	U//	<7.4E-01			1	GP	6.4E-01	J//	NDD			1	GP	pCi/L
Iodine-129	<-9.5E-03	U//	<1.1E+00			1	GP								pCi/L
Nickel-63	<1.4E+00	U//	<1.9E+01			1	GP								pCi/L
Nonvolatile beta	2.7E+00	J//	NDD			1	GP	3.7E+00	//				1	GP	pCi/L
Plutonium-238	<2.9E-02	U//	<2.0E-01			1	GP								pCi/L
Plutonium-239/240	<-4.6E-02	U//	<3.1E-01			1	GP								pCi/L
Radium-226	1.8E+00	//				1	GP								pCi/L
Radium-228	1.5E+00	J//	NDD			1	GP								pCi/L
Total radium	NA														
Strontium-90	<3.5E-01	U//	<2.1E+00			1	GP								pCi/L
Technetium-99	1.2E+01	J//	NDD			1	GP								pCi/L
Thorium-228	<-1.8E-01	U//	<6.5E-01			1	GP								pCi/L
Thorium-230	<3.6E-02	U//	<1.1E-01			1	GP								pCi/L
Thorium-232	<-1.8E-02	U//	<2.3E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Total radium	1.8E+00														pCi/L
Tritium	1.9E+02	//5		■		1	GP	1.4E+02	//		■		1	GP	pCi/mL
Uranium-233/234	<3.8E-02	U//	<2.7E-01			1	GP								pCi/L
Uranium-235	<-3.5E-02	U//	<2.8E-01			1	GP								pCi/L
Uranium-238	<0.0E+00	U//	<1.1E-01			1	GP								pCi/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB112D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72161.6 E56408.1	33.277410 °N 81.658439 °W	198.3-188.3 ft msl	255.1 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 07/13/99 10/04/99

### FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	218.0	217.4	ft msl
pH	5.7	5.6	pH
Sp. conductance	59	55	µS/cm
Water temperature	19.5	19.7	°C
Alkalinity as CaCO <sub>3</sub>	2	3	mg/L
Turbidity	0.8	0.2	NTU
Volumes purged	2.3	2.7	Well vol
Sampling code			
Synchronous water level	217.6 (09/16/99)	216.8 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	2.4	J//	NDD			1	GE								µg/L
Barium, total recoverable	0.86	J//	NDD			1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	3.3	//				1	GE								µg/L
Cobalt, total recoverable	<0.049	JU//V4	<1.0			1	GE								µg/L
Copper, total recoverable	1.6	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	1.8	J//	NDD			1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	3,100	//				3	GE	3,500	//				3	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	3.5	J//	NDD			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

#### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU//O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU//O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU//O	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



## WELL HSB112D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<0.0E+00	U//	<1.7E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	<4.9E+00	U//	<9.6E+00			1	GP								pCi/L
Cobalt-60	<4.5E-01	U//	<3.2E+00			1	GP								pCi/L
Curium-242	<-2.9E-02	U//	<3.8E-01			1	GP								pCi/L
Curium-243/244	<-1.4E-02	U//	<3.0E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<1.7E-01			1	GP								pCi/L
Gross alpha	<1.4E-01	U//	<5.3E-01			1	GP	<2.8E-01	U//	<6.9E-01			1	GP	pCi/L
Iodine-129	<6.9E-01	U//	<1.3E+00			1	GP								pCi/L
Nickel-63	<-7.0E+00	U//	<1.8E+01			1	GP								pCi/L
Nonvolatile beta	2.4E+00	J/V	NDD			1	GP	4.1E+00	//				1	GP	pCi/L
Plutonium-238	<-3.3E-02	U//	<2.6E-01			1	GP								pCi/L
Plutonium-239/240	<1.8E-02	U//	<2.1E-01			1	GP								pCi/L
Radium-226	6.0E+00	//		■		1	GP								pCi/L
Radium-228	9.8E-01	J/V	NDD			1	GP								pCi/L
Total radium	NA														
Strontium-90	<9.0E-01	U//	<1.7E+00			1	GP								pCi/L
Technetium-99	1.1E+01	J/V	NDD			1	GP								pCi/L
Thorium-228	<7.1E-02	U//	<5.9E-01			1	GP								pCi/L
Thorium-230	<1.3E-02	U//	<3.6E-01			1	GP								pCi/L
Thorium-232	<3.0E-02	U//	<2.1E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Total radium	6.0E+00			■											pCi/L
Tritium	4.3E+02	//5		■		1	GP	4.6E+02	//				1	GP	pCi/mL
Uranium-233/234	<5.6E-02	U//	<2.3E-01			1	GP								pCi/L
Uranium-235	<-2.7E-02	U//	<2.6E-01			1	GP								pCi/L
Uranium-238	<3.7E-02	U//	<1.1E-01			1	GP								pCi/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB112E

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72166.6 E56399.5	33.277407 °N 81.658471 °W	231.7-211.7 ft msl	255.1 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 08/03/99 10/04/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	219.4		ft msl
pH	5.5	5.2	pH
Sp. conductance	45	38	µS/cm
Water temperature	22.9	20.3	°C
Alkalinity as CaCO <sub>3</sub>	3	1	mg/L
Turbidity	5.3	9.7	NTU
Volumes purged	0.20		Well vol
Sampling code	XN	XN	
Synchronous water level	D (09/16/99)	D (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.35	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	<3.0	U//	<3.0			1	GE								µg/L
Barium, total recoverable	12	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	<6.4	U//	<3.0			1	GE								µg/L
Cobalt, total recoverable	1.5	//				1	GE								µg/L
Copper, total recoverable	4.1	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	1.8	J//	NDD			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	4.9	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	2,600	//				1	GE	2,300	//				1	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	7.7	J//	NDD			1	GE								µg/L
Zinc, total recoverable	14	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<2.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB112E (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<6.4E-02	U//	<3.9E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	<4.1E-01	U//	<7.5E+00			1	GP								pCi/L
Cobalt-60	<3.3E-01	U//	<3.3E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<2.7E-01			1	GP								pCi/L
Curium-243/244	<7.9E-02	U//	<2.4E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<2.4E-01			1	GP								pCi/L
Gross alpha	<1.1E+00	U//	<1.0E+00			1	GP	2.0E+00	J//	NDD			1	GP	pCi/L
Iodine-129	<4.6E-01	U//	<9.3E-01			1	GP								pCi/L
Nickel-63	<-1.8E+00	JU/L/I	<8.5E+00			1	GP								pCi/L
Nonvolatile beta	2.1E+01	//				1	GP	3.5E+01	//				1	GP	pCi/L
Plutonium-238	<-1.1E-01	U//	<3.5E-01			1	GP								pCi/L
Plutonium-239/240	<1.2E-02	U//	<1.7E-01			1	GP								pCi/L
Radium-226	<7.3E-01	U//	<1.3E-01			1	GP								pCi/L
Radium-228	8.7E-01	J//	NDD			1	GP								pCi/L
Total radium	NA														
Strontium-90	9.8E+00	J/L/C	NDD			1	GP								pCi/L
Technetium-99	<5.5E+00	U//	<8.0E+00			1	GP								pCi/L
Thorium-228	<1.3E-03	U//	<4.8E-01			1	GP								pCi/L
Thorium-230	2.5E-01	R//4	Rej			1	GP								pCi/L
Thorium-232	<2.3E-02	U//	<1.6E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Tritium	4.7E+01	//		■		1	GP	5.2E+01	//		■		1	GP	pCi/mL
Uranium-233/234	<3.7E-03	U//	<2.8E-01			1	GP								pCi/L
Uranium-235	<-6.7E-03	U//	<1.9E-01			1	GP								pCi/L
Uranium-238	<5.4E-02	U//5	<2.4E-01			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB113C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72312.3 E56160.4	33.277339 °N 81.659384 °W	161.7-151.7 ft msl	261 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/26/99 10/11/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	218.4	218.1	ft msl
pH	4.8	4.9	pH
Sp. conductance	105	94	µS/cm
Water temperature	21.3	20.8	°C
Alkalinity as CaCO3	0	0	mg/L
Turbidity	0.3	0.3	NTU
Volumes purged	2.3	2.5	Well vol
Sampling code			
Synchronous water level	218.3 (09/16/99)	217.6 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	<1.1	U//6	<3.0			1	GE								µg/L
Barium, total recoverable	23	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	<1.6	U//6	<7.0			1	WA								µg/L
Cobalt, total recoverable	1.3	J//	NDD			1	WA								µg/L
Copper, total recoverable	5.2	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	0.66	J//	NDD			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	<2.9	U//6	<2.0			1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	11,000	//		■		5	GE	9,400	//				3	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<0.33	JU//V4	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<3.0	U//6	<10			1	GE								µg/L
Zinc, total recoverable	16	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	WA								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

**WELL HSB113C (cont.)****Radioactive Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<0.0E+00	JU/L/I	<2.3E-01			1	GP								pCi/L
Beta dose factor	4.7E-02														NONE
Carbon-14	<2.2E+01	U//6	<8.0E+00			1	GP								pCi/L
Cobalt-60	<7.1E-01	U//	<4.5E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<2.6E-01			1	GP								pCi/L
Curium-243/244	<0.0E+00	U//	<2.3E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<2.3E-01			1	GP								pCi/L
Gross alpha	2.5E+00	J//	NDD			1	TM	<6.9E-01	U//	<9.2E-01			1	GP	pCi/L
Iodine-129	2.4E+00	J//	NDD			1	GP								pCi/L
Nickel-63	<7.2E-01	U//	<1.3E+01			1	GP								pCi/L
Nonvolatile beta	3.2E+01	//				1	TM	1.4E+01	//				1	GP	pCi/L
Plutonium-238	<-3.0E-02	U//	<2.0E-01			1	GP								pCi/L
Plutonium-239/240	5.7E-01	R//4	Rej			1	GP								pCi/L
Radium-226	1.6E+00	J//	NDD			1	GP								pCi/L
Radium-228	2.7E+00	J//	NDD			1	TM								pCi/L
Total radium	NA														
Strontium-90	<5.1E-02	U//	<7.9E-01			1	GP								pCi/L
Technetium-99	4.3E+01	//				1	GP								pCi/L
Thorium-228	<-1.4E-03	U//	<4.5E-01			1	GP								pCi/L
Thorium-230	<5.0E-02	U//	<3.4E-01			1	GP								pCi/L
Thorium-232	<-8.0E-03	U//	<1.8E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	4.3E+01														
Tritium	1.0E+03	//		■		1	GP	8.7E+02	//		■		1	GP	pCi/L
Uranium-233/234	<3.6E-02	U//	<1.5E-01			1	GP								pCi/mL
Uranium-235	<-5.6E-03	U//	<1.2E-01			1	GP								pCi/L
Uranium-238	<1.8E-02	U//	<1.2E-01			1	GP								pCi/L

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB113D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72302.7 E56164.3	33.277324 °N 81.659355 °W	236.2-216.2 ft msl	260.9 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 08/05/99 11/02/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	217.9	216.5	ft msl
pH	4.0		pH
Sp. conductance	339		µS/cm
Water temperature	25.9		°C
Alkalinity as CaCO3	0		mg/L
Turbidity	0.5		NTU
Volumes purged	2.7		Well vol
Sampling code		P	
Synchronous water level	217.2 (09/16/99)	216.8 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.49	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	<3.0	U//	<3.0			1	GE								µg/L
Barium, total recoverable	42	//				1	GE								µg/L
Cadmium, total recoverable	6.7	//		■		1	GE								µg/L
Chromium, total recoverable	13	//				1	GE								µg/L
Cobalt, total recoverable	9.2	//		■		1	GE								µg/L
Copper, total recoverable	44	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	3.6	//				1	GE								µg/L
Mercury, total recoverable	0.37	//				1	GE								µg/L
Nickel, total recoverable	31	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	34,000	//		■		25	GE								µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<0.38	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<4.3	U//	<10			1	GE								µg/L
Zinc, total recoverable	77	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU/L/O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU/L/O	<5.0			1	GE								µg/L

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB113D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<2.2E-01	U//	<3.1E-01			1	GP								pCi/L
Beta dose factor	2.5E+01			■											NONE
Carbon-14	3.9E+01	//				1	GP								pCi/L
Cobalt-60	3.7E+01	//				1	GP								pCi/L
Curium-242	<2.6E-02	U//	<3.1E-01			1	GP								pCi/L
Curium-243/244	1.2E+00	J//	NDD			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<1.3E-01			1	GP								pCi/L
Gross alpha	2.4E+01	//		■		1	GP								pCi/L
Iodine-129	2.4E+01	//				1	GP								pCi/L
Nickel-63	1.5E+02	J/L/I	NDD			1	GP								pCi/L
Nonvolatile beta	1.6E+03	//		■		1	GP								pCi/L
Plutonium-238	<-1.1E-02	U//	<1.7E-01			1	GP								pCi/L
Plutonium-239/240	<2.4E-02	U//	<1.4E-01			1	GP								pCi/L
Radium-226	8.8E+00	//		■		1	GP								pCi/L
Radium-228	3.6E+00	J/L/I	NDD			1	GP								pCi/L
Strontium-90	7.1E+02	J/L/C	NDD			1	GP								pCi/L
Technetium-99	7.6E+01	//		■		1	GP								pCi/L
Thorium-228	<9.6E-02	U//	<5.3E-01			1	GP								pCi/L
Thorium-230	<6.8E-02	U//	<2.5E-01			1	GP								pCi/L
Thorium-232	<9.3E-03	U//	<2.3E-01			1	GP								pCi/L
Sum of alphas	2.3E+00														pCi/L
Sum of betas	1.8E+02			■											pCi/L
Total radium	8.8E+00			■											pCi/L
Tritium	2.7E+03	//		■		1	GP								pCi/mL
Uranium-233/234	2.3E+00	//				1	GP								pCi/L
Uranium-235	<2.0E-02	U//	<1.9E-01			1	GP								pCi/L
Uranium-238	8.0E-01	J//5	NDD			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB114C

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72464.6 E56107.0	33.277589 °N 81.659820 °W	195.6-185.6 ft msl	263.8 ft msl	4" PVC	V	LAZ_UTRA

SAMPLE DATE 08/02/99 10/19/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation			ft msl
pH	4.6	4.6	pH
Sp. conductance	191	165	µS/cm
Water temperature	20.5	19.4	°C
Alkalinity as CaCO3	0	0	mg/L
Turbidity	0.1	0.3	NTU
Volumes purged	2.8		Well vol
Sampling code			
Synchronous water level	D (09/16/99)	D (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable	<0.23	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	<1.2	U//	<3.0			1	GE								µg/L
Barium, total recoverable	24	//				1	GE								µg/L
Cadmium, total recoverable	0.46	J//	NDD			1	GE								µg/L
Chromium, total recoverable	<2.6	U//	<3.0			1	GE								µg/L
Cobalt, total recoverable	2.1	//				1	GE								µg/L
Copper, total recoverable	1.6	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	0.12	J//	NDD			1	GE	<0.082	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	<5.6	U//	<2.0			1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	19,000	//		■		25	GE	17,000	//		■		25	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<4.5	U//	<10			1	GE								µg/L
Zinc, total recoverable	17	//				1	GE								µg/L

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene	<1.0	JU//O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU//O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU//O	<5.0			1	GE								µg/L

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



# WELL HSB114C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<2.1E-01	U//	<6.1E-01			1	GP								pCi/L
Beta dose factor	4.2E+00			■											NONE
Carbon-14	1.0E+02	//		■		1	GP								pCi/L
Cobalt-60	<5.3E-01	U//	<4.0E+00			1	GP								pCi/L
Curium-242	<4.3E-02	U//	<1.2E+00			1	GP								pCi/L
Curium-243/244	<1.7E-01	U//	<1.0E+00			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<6.1E-01			1	GP								pCi/L
Gross alpha	1.7E+00	J/V	NDD			1	GP	4.5E+00	//				1	GP	pCi/L
Iodine-129	4.1E+00	//				1	GP								pCi/L
Nickel-63	<6.3E+00	JU/L/CI	<2.0E+01			1	GP								pCi/L
Nonvolatile beta	2.1E+01	//				1	GP	4.4E+01	//				1	GP	pCi/L
Plutonium-238	<0.0E+00	U//	<3.4E-01			1	GP								pCi/L
Plutonium-239/240	<2.0E-02	U//	<5.6E-01			1	GP								pCi/L
Radium-226	1.7E+00	J/V	NDD			1	GP								pCi/L
Radium-228	<1.2E-01	U//	<8.5E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	<8.7E-02	U//	<1.5E+00			1	GP								pCi/L
Technetium-99	9.1E+01	//		■		1	GP								pCi/L
Thorium-228	<4.6E-02	U//	<4.9E-01			1	GP								pCi/L
Thorium-230	<4.0E-02	U//	<1.7E-01			1	GP								pCi/L
Thorium-232	<6.4E-03	U//	<1.4E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	2.0E+02			■											pCi/L
Tritium	2.3E+03	//		■		1	GP	1.9E+03	//				1	GP	pCi/mL
Uranium-233/234	<2.8E-01	U//	<5.9E-01			1	GP								pCi/L
Uranium-235	<2.4E-02	U//	<5.9E-01			1	GP								pCi/L
Uranium-238	<2.4E-01	U//	<4.2E-01			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB114D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72474.2 E56104.6	33.277606 °N 81.659845 °W	232.8-212.8 ft msl	264 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 08/05/99 11/02/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	218.9	218	ft msl
pH	3.9	4.1	pH
Sp. conductance	395	357	µS/cm
Water temperature	24.3	19.5	°C
Alkalinity as CaCO3	0	0	mg/L
Turbidity	0.4	1.2	NTU
Volumes purged	2.7	0.3	Well vol
Sampling code		XN	
Synchronous water level	218.1 (09/16/99)	217.6 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.21	U/N/	<2.0			1	GE								µg/L
Arsenic, total recoverable	<3.0	U//	<3.0			1	GE								µg/L
Barium, total recoverable	46	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	12	//				1	GE								µg/L
Cobalt, total recoverable	12	//		■		1	GE								µg/L
Copper, total recoverable	19	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.6	U/N/	<2.0			1	GE								µg/L
Mercury, total recoverable	0.12	J/N/	NDD			1	GE	0.25	//				1	GE	µg/L
Nickel, total recoverable	18	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	42.000	//		■		25	GE	41.000	//		■		25	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	52	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<2.2	U/N/	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

## WELL HSB114D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<1.2E-01	U//	<7.2E-01	■		1	GP								pCi/L
Beta dose factor	1.4E+02			■											NONE
Carbon-14	1.1E+02	//		■		1	GP								pCi/L
Cobalt-60	2.2E+01	//				1	GP								pCi/L
Curium-242	<0.0E+00	U//	<5.0E-01			1	GP								pCi/L
Curium-243/244	<5.2E-02	U//	<8.4E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<4.3E-01			1	GP								pCi/L
Gross alpha	2.4E+01	//		■		1	GP	2.2E+01	//		■		1	GP	pCi/L
Iodine-129	9.3E+01	//		■		1	GP								pCi/L
Nickel-63	1.3E+02	J/L/Ci	NDD			1	GP								pCi/L
Nonvolatile beta	8.1E+02	//		■		1	GP	7.5E+02	//		■		1	GP	pCi/L
Plutonium-238	<6.1E-02	U//	<5.9E-01			1	GP								pCi/L
Plutonium-239/240	<3.0E-02	U//	<4.9E-01			1	GP								pCi/L
Radium-226	1.2E+01	//		■		1	GP								pCi/L
Radium-228	<4.4E-01	U//	<8.5E-01			1	GP								pCi/L
Strontium-90	4.0E+02	//		■		1	GP								pCi/L
Technetium-99	1.5E+02	//		■		1	GP								pCi/L
Thorium-228	3.6E-01	R//4	Rej			1	GP								pCi/L
Thorium-230	<1.4E-02	U//	<3.5E-01			1	GP								pCi/L
Thorium-232	<9.0E-03	U//	<2.0E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	7.7E+02			■											pCi/L
Total radium	1.2E+01			■											pCi/L
Tritium	6.1E+03	//		■		1	GP	5.4E+03	//		■		1	GP	pCi/mL
Uranium-233/234	1.2E+00	J/V	NDD			1	GP								pCi/L
Uranium-235	<7.6E-02	U//	<4.6E-01			1	GP								pCi/L
Uranium-238	6.3E-01	J/V	NDD			1	GP								pCi/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB115C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72653.2 E56043.2	33.277902 °N 81.660355 °W	192.8-182.8 ft msl	269.3 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 08/02/99 10/19/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	220.3	219.3	ft msl
pH	6.0	6.0	pH
Sp. conductance	152	137	µS/cm
Water temperature	21.1	19.7	°C
Alkalinity as CaCO3	12	8	mg/L
Turbidity	0.1	0.6	NTU
Volumes purged	2.8	2.7	Well vol
Sampling code			
Synchronous water level	219.3 (09/16/99)	219.0 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	<3.3	U/V/	<3.0			1	GE								µg/L
Barium, total recoverable	17	//				1	GE								µg/L
Cadmium, total recoverable	0.37	J/V/	NDD			1	GE								µg/L
Chromium, total recoverable	<2.6	U/V/	<3.0			1	GE								µg/L
Cobalt, total recoverable	1.5	//				1	GE								µg/L
Copper, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	0.048	J/V/	NDD			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	<1.6	U/V/	<2.0			1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	13,000	//		■		25	GE	11,000	//		■		25	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<0.38	U/V/	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<7.0	U/V/	<10			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU/L/O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU/L/O	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB115C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<-7.4E-02	U//	<1.2E+00	■		1	GP								pCi/L
Beta dose factor	2.4E+01			■		1	GP								NONE
Carbon-14	7.5E+01	//		■		1	GP								pCi/L
Cobalt-60	<7.2E-01	U//	<3.9E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<7.3E-01			1	GP								pCi/L
Curium-243/244	<-1.1E-01	U//	<1.3E+00			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<6.2E-01			1	GP								pCi/L
Gross alpha	1.3E+00	J//	NDD			1	GP	3.2E+00	J//	NDD			1	GP	pCi/L
Iodine-129	2.3E+01	//				1	GP								pCi/L
Nickel-63	<-6.1E+00	JU//LCI	<2.1E+01			1	GP								pCi/L
Nonvolatile beta	2.2E+01	//				1	GP	3.0E+01	//				1	GP	pCi/L
Plutonium-238	<1.8E-01	U//	<5.0E-01			1	GP								pCi/L
Plutonium-239/240	<2.5E-01	U//	<6.4E-01			1	GP								pCi/L
Radium-226	2.4E+00	J//	NDD			1	GP								pCi/L
Radium-228	<3.9E-01	U//	<8.4E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	4.8E+00	//				1	GP								pCi/L
Technetium-99	3.3E+01	//				1	GP								pCi/L
Thorium-228	<-5.6E-02	U//	<4.7E-01			1	GP								pCi/L
Thorium-230	<-4.7E-02	U//	<2.5E-01			1	GP								pCi/L
Thorium-232	<-4.0E-02	U//	<2.4E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	1.4E+02			■											
Tritium	1.6E+03	//		■		1	GP	1.2E+03	//		■		1	GP	pCi/L
Uranium-233/234	<8.2E-02	U//	<6.9E-01			1	GP								pCi/mL
Uranium-235	<-4.8E-02	U//	<5.7E-01			1	GP								pCi/L
Uranium-238	<7.3E-02	U//	<4.4E-01			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB115D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72662.3 E56039.8	33.277916 °N 81.660381 °W	233.9-213.9 ft msl	269.1 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 08/05/99 11/02/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	220.2		ft msl
pH	3.8	4.0	pH
Sp. conductance	286	288	µS/cm
Water temperature	31.3	27.3	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	5.5	13.4	NTU
Volumes purged	0.73		Well vol
Sampling code	XN	XN	
Synchronous water level	(09/16/99)	D (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	1.3	J//	NDD			1	GE								µg/L
Barium, total recoverable	150	//				1	GE								µg/L
Cadmium, total recoverable	3.3	//				1	GE								µg/L
Chromium, total recoverable	<3.8	U//	<3.0			1	GE								µg/L
Cobalt, total recoverable	32	//		■		1	GE								µg/L
Copper, total recoverable	13	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	15	//				1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	0.047	J//	NDD			1	GE	µg/L
Nickel, total recoverable	45	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	30,000	//		■		25	GE	31,000	//				25	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	67	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<1.5	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB115D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<1.3E-01	U//	<7.9E-01	■		1	GP								pCi/L
Beta dose factor	1.6E+02														NONE
Carbon-14	1.8E+01	//				1	GP								pCi/L
Cobalt-60	5.7E+01	//		■		1	GP								pCi/L
Curium-242	<0.0E+00	U//	<5.5E-01			1	GP								pCi/L
Curium-243/244	<-3.4E-02	U//	<9.4E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<4.7E-01			1	GP								pCi/L
Gross alpha	3.6E+01	//		■		1	GP	3.6E+01	//		■		1	GP	pCi/L
Iodine-129	3.5E+01	//				1	GP								pCi/L
Nickel-63	3.9E+02	J/L/C/	NDD			1	GP								pCi/L
Nonvolatile beta	2.6E+03	//		■		1	GP	2.3E+03	//		■		1	GP	pCi/L
Plutonium-238	<6.4E-02	U//	<5.5E-01			1	GP								pCi/L
Plutonium-239/240	<0.0E+00	U//	<2.1E-01			1	GP								pCi/L
Radium-226	1.1E+01	//		■		1	GP								pCi/L
Radium-228	6.6E+00	//		■		1	GP								pCi/L
Strontium-90	1.0E+03	//		■		1	GP								pCi/L
Technetium-99	5.8E+01	//		■		1	GP								pCi/L
Thorium-228	<1.8E-01	U//	<2.7E-01			1	GP								pCi/L
Thorium-230	<1.4E-01	U//	<2.6E-01			1	GP								pCi/L
Thorium-232	<-1.5E-02	U//	<1.9E-01			1	GP								pCi/L
Sum of alphas	2.9E+00			■											pCi/L
Sum of betas	1.2E+03			■											pCi/L
Total radium	1.7E+01			■											pCi/L
Tritium	4.2E+03	//		■		1	GP	4.3E+03	//		■		1	GP	pCi/mL
Uranium-233/234	2.9E+00	//				1	GP								pCi/L
Uranium-235	<4.0E-02	U//	<5.6E-01			1	GP								pCi/L
Uranium-238	1.1E+00	J/V	NDD			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB116C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72888.1 E55989.1	33.278333 °N 81.660953 °W	190.5-180.5 ft msl	257.5 ft msl	4" PVC	V	LAZ_UTRA

SAMPLE DATE 07/02/99 10/12/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	221.7	221.3	ft msl
pH	5.3	5.1	pH
Sp. conductance	81	82	µS/cm
Water temperature	19.6	19.5	°C
Alkalinity as CaCO <sub>3</sub>	2	1	mg/L
Turbidity	0.3	0.2	NTU
Volumes purged	2.5	2.7	Well vol
Sampling code			
Synchronous water level	221.0 (09/16/99)	220.9 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	3.0	//				1	GE								µg/L
Barium, total recoverable	6.0	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	2.2	J//	NDD			1	GE								µg/L
Cobalt, total recoverable	2.7	//				1	GE								µg/L
Copper, total recoverable	<0.69	U//	<1.0			1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	0.24	//				1	GE	0.28	//				1	GE	µg/L
Nickel, total recoverable	1.5	J//	NDD			1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	8,400	//				5	GE	8,000	//				5	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU//O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU//O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU//O	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer



## WELL HSB116C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<8.4E-02	U//	<1.3E-01			1	GP								pCi/L
Beta dose factor	2.8E-02														NONE
Carbon-14	1.2E+01	J//	NDD			1	GP								pCi/L
Cobalt-60	<7.4E-01	U//	<4.1E+00			1	GP								pCi/L
Curium-242	<-9.0E-03	U//	<1.1E-01			1	GP								pCi/L
Curium-243/244	<-3.4E-02	U//	<1.6E-01			1	GP								pCi/L
Curium-245/246	<5.0E-02	U//	<5.0E-02			1	GP								pCi/L
Gross alpha	<3.1E-01	U//	<6.8E-01			1	GP	<6.9E-01	U//	<1.1E+00			1	GP	pCi/L
Iodine-129	2.8E+00	J//	NDD			1	GP								pCi/L
Nickel-63	<6.4E+00	U//	<1.4E+01			1	GP								pCi/L
Nonvolatile beta	4.0E+00	//				1	GP	6.4E+00	//				1	GP	pCi/L
Plutonium-238	<5.1E-02	U//	<1.1E-01			1	GP								pCi/L
Plutonium-239/240	<-7.5E-03	U//	<9.7E-02			1	GP								pCi/L
Radium-226	<4.1E-01	U//	<6.4E-01			1	GP								pCi/L
Radium-228	<1.4E-01	U//	<9.4E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	<6.5E-02	U//	<1.8E+00			1	GP								pCi/L
Technetium-99	2.5E+01	//				1	GP								pCi/L
Thorium-228	<4.0E-02	U//	<5.9E-01			1	GP								pCi/L
Thorium-230	<1.0E-02	U//	<2.5E-01			1	GP								pCi/L
Thorium-232	<0.0E+00	U//	<1.1E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	2.5E+01														pCi/L
Tritium	9.0E+02	//		■		1	GP	8.6E+02	//		■		1	GP	pCi/mL
Uranium-233/234	<2.9E-02	U//	<1.2E-01			1	GP								pCi/L
Uranium-235	<-1.4E-02	U//	<1.3E-01			1	GP								pCi/L
Uranium-238	<1.9E-02	U//	<5.7E-02			1	GP								pCi/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB116D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72898.1 E55988.2	33.278354 °N 81.660975 °W	234.5-214.5 ft msl	256.8 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 08/05/99 11/01/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	222.2	221.1	ft msl
pH	4.6	4.3	pH
Sp. conductance	86	83	µS/cm
Water temperature	21.6	19.7	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.8	0.5	NTU
Volumes purged	2.2	0.23	Well vol
Sampling code		XN	
Synchronous water level	221.0 (09/16/99)	220.7 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	<2.6	U//	<3.0			1	GE								µg/L
Barium, total recoverable	24	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	<9.2	U//	<3.0			1	GE								µg/L
Cobalt, total recoverable	1.5	//				1	GE								µg/L
Copper, total recoverable	3.4	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<1.6	JU//4	<2.0			1	GE								µg/L
Mercury, total recoverable	0.14	J//	NDD			1	GE	0.10	J//	NDD			1	GE	µg/L
Nickel, total recoverable	9.0	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	8,300	//				5	GE	7,900	//				5	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<0.37	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<6.4	U//	<10			1	GE								µg/L
Zinc, total recoverable	10	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU//O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU//O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU//O	<5.0			1	GE								µg/L

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB116D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<3.0E-02	U//	<2.7E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	<2.9E+00	U//	<7.4E+00			1	GP								pCi/L
Cobalt-60	1.3E+01	J//	NDD			1	GP								pCi/L
Curium-242	<1.1E-01	U//	<4.0E-01			1	GP								pCi/L
Curium-243/244	<9.0E-02	U//	<3.7E-01			1	GP								pCi/L
Curium-245/246	<4.7E-02	U//	<1.4E-01			1	GP								pCi/L
Gross alpha	6.3E+00	//				1	GP	<1.3E+00	U//	<9.8E-01			1	GP	pCi/L
Iodine-129	2.6E+00	J//	NDD			1	GP								pCi/L
Nickel-63	1.2E+01	J//L/I	NDD			1	GP								pCi/L
Nonvolatile beta	6.5E+02	//		■		1	GP	1.0E+03	//		■		1	GP	pCi/L
Plutonium-238	<2.7E-02	U//	<8.1E-02			1	GP								pCi/L
Plutonium-239/240	<4.9E-03	U//	<1.3E-01			1	GP								pCi/L
Radium-226	2.5E+00	//				1	GP								pCi/L
Radium-228	<3.5E-01	U//	<1.2E+00			1	GP								pCi/L
Total radium	NA														
Strontium-90	4.1E+02	J//L/C	NDD			1	GP								pCi/L
Technetium-99	<2.5E+00	U//	<8.0E+00			1	GP								pCi/L
Thorium-228	<6.1E-03	U//	<4.7E-01			1	GP								pCi/L
Thorium-230	<6.8E-02	U//	<2.1E-01			1	GP								pCi/L
Thorium-232	<7.2E-03	U//	<1.6E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Total radium	2.5E+00														pCi/L
Tritium	3.5E+01	//		■		1	GP	4.4E+01	//		■		1	GP	pCi/mL
Uranium-233/234	4.9E-01	J//	NDD			1	GP								pCi/L
Uranium-235	<5.1E-03	U//	<1.4E-01			1	GP								pCi/L
Uranium-238	1.9E-01	J//5	NDD			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB117A

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72733.6 E55170.1	33.276655 °N 81.662810 °W	94.8-84.8 ft msl	237.3 ft msl	4" PVC	S	Gordon

SAMPLE DATE 07/26/99 10/11/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	166.4	165.7	ft msl
pH	6.8	7.0	pH
Sp. conductance	131	130	µS/cm
Water temperature	20.3	19.3	°C
Alkalinity as CaCO <sub>3</sub>	57	56	mg/L
Turbidity	0.6	0.2	NTU
Volumes purged	2.7	2.7	Well vol
Sampling code			
Synchronous water level	165.7 (09/16/99)	165.6 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen	30	J//	NDD			1	GE	<20	U//	<50			1	GE	µg/L
Nitrate-nitrite as nitrogen															
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time  
■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)  
NA = Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB117A (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.7E+00	J//	NDD			1	GP	<2.1E-01	U//	<1.4E+00			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	2.8E+00	//				1	GP	<1.2E+00	U//	<1.5E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	<-4.3E-02	U//	<6.1E-01			1	GP	<8.6E-02	U//	<5.2E-01			1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB117C

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72740.7 E55162.9	33.276659 °N 81.662842 °W	175.1-165.1 ft msl	237.4 ft msl	4" PVC	V	LAZ_UTRA

SAMPLE DATE 07/21/99 10/19/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	219.3	217.5	ft msl
pH	4.4	4.5	pH
Sp. conductance	352	383	µS/cm
Water temperature	19.1	18.1	°C
Alkalinity as CaCO3	0	0	mg/L
Turbidity	0.6	0.2	NTU
Volumes purged	2.4	2.5	Well vol
Sampling code			
Synchronous water level	216.6 (09/16/99)	216.6 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable	<0.30	JU/V4	<2.0			1	GE								µg/L
Arsenic, total recoverable	2.3	J/V	NDD			1	GE								µg/L
Barium, total recoverable	64	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	1.9	J/V	NDD			1	GE								µg/L
Cobalt, total recoverable	3.8	//		■		1	GE								µg/L
Copper, total recoverable	<0.73	JU/V4	<1.0			1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	0.34	//				1	GE	0.55	//				1	GE	µg/L
Nickel, total recoverable	2.8	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	42,000	//		■		25	GE	43,000	//		■		25	GE	µg/L
Selenium, total recoverable	1.9	J/V	NDD			1	GE								µg/L
Silver, total recoverable	<0.34	JU/V4	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	4.2	J/V	NDD			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB117C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<2.1E-01	U//	<8.7E-01			1	GP								pCi/L
Beta dose factor	2.6E-01														NONE
Carbon-14	1.8E+02	//		■		1	GP								pCi/L
Cobalt-60	<1.3E+00	U//	<3.8E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<4.5E-01			1	GP								pCi/L
Curium-243/244	<0.0E+00	U//	<4.2E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<4.2E-01			1	GP								pCi/L
Gross alpha	9.0E+00	//5				1	GP	8.8E+00	//				1	GP	pCi/L
Iodine-129	3.5E+00	J//V	NDD			1	GP								pCi/L
Nickel-63	<7.6E+00	JU/L/CI	<1.5E+01			1	GP								pCi/L
Nonvolatile beta	3.8E+01	//				1	GP	9.8E+01	//		■		1	GP	pCi/L
Plutonium-238	<3.2E-01	U//	<4.4E-01			1	GP								pCi/L
Plutonium-239/240	<8.4E-02	U//	<2.5E-01			1	GP								pCi/L
Radium-226	5.8E+00	//		■		1	GP								pCi/L
Radium-228	1.5E+00	J//V	NDD			1	GP								pCi/L
Strontium-90	<-1.9E-03	U//	<1.2E+00			1	GP								pCi/L
Technetium-99	1.6E+02	//		■		1	GP								pCi/L
Thorium-228	<1.1E-02	U//	<5.8E-01			1	GP								pCi/L
Thorium-230	<1.1E-01	U//	<2.0E-01			1	GP								pCi/L
Thorium-232	<0.0E+00	U//	<1.2E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	3.4E+02			■											pCi/L
Total radium	5.8E+00			■											pCi/L
Tritium	5.5E+03	//5		■		1	GP	6.0E+03	//		■		1	GP	pCi/mL
Uranium-233/234	<5.9E-02	U//	<7.0E-01			1	GP								pCi/L
Uranium-235	<-6.2E-02	U//	<8.0E-01			1	GP								pCi/L
Uranium-238	<5.9E-02	U//	<7.0E-01			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB117D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72747.6 E55155.6	33.276662 °N 81.662875 °W	220.3-200.3 ft msl	237.6 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/07/99 10/11/99

### FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	220.4	218.8	ft msl
pH	5.1	5.1	pH
Sp. conductance	22	25	µS/cm
Water temperature	19.6	19.8	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	1.9	2.9	NTU
Volumes purged	3.3	5.4	Well vol
Sampling code			
Synchronous water level	218.0 (09/16/99)	217.7 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	660	//				1	GE	1,200	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



## WELL HSB117D (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<4.4E-02	U//	<7.8E-01			1	GP	9.0E-01	J/I/K/C	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<9.3E-01	U//	<1.3E+00			1	GP	2.7E+00	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.7E+01	//5				1	GP	4.6E+01	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB118A

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72696.4 E55775.6	33.277561 °N 81.661143 °W	101.0-91.0 ft msl	247.3 ft msl	4" PVC	S	Gordon

SAMPLE DATE 07/07/99 10/11/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	167.7	167.1	ft msl
pH	6.6	6.8	pH
Sp. conductance	166	152	µS/cm
Water temperature	20.2	20.0	°C
Alkalinity as CaCO <sub>3</sub>	57	55	mg/L
Turbidity	0.6	0.3	NTU
Volumes purged	2.8	2.9	Well vol
Sampling code			
Synchronous water level	167.0 (09/16/99)	166.9 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	3.2	//				1	GE								µg/L
Barium, total recoverable	8.6	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	5.0	//				1	GE								µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Copper, total recoverable	2.2	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	6.1	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	2,700	//				3	GE	2,600	//				1	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	15	//				1	GE								µg/L

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<2.4	U//8	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA = Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB118A (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<9.2E-03	U//	<1.2E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	1.1E+01	J//	NDD			1	GP								pCi/L
Cobalt-60	<2.2E+00	U//	<4.2E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<5.8E-02			1	GP								pCi/L
Curium-243/244	<0.0E+00	U//	<5.9E-02			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<5.6E-02			1	GP								pCi/L
Gross alpha	<3.4E-01	U//	<1.0E+00			1	GP	<3.5E-01	U//	<1.0E+00			1	GP	pCi/L
Iodine-129	<8.7E-01	U//	<1.4E+00			1	GP								pCi/L
Nickel-63	<7.6E+00	U//	<1.4E+01			1	GP								pCi/L
Nonvolatile beta	3.9E+00	//				1	GP	2.1E+00	J//	NDD			1	GP	pCi/L
Plutonium-238	<0.0E+00	U//	<4.7E-02			1	GP								pCi/L
Plutonium-239/240	<-3.8E-03	U//	<8.3E-02			1	GP								pCi/L
Radium-226	<1.1E+00	U//	<5.3E-01			1	GP								pCi/L
Radium-228	<3.4E-01	U//	<8.0E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	<-4.2E-01	U//	<1.9E+00			1	GP								pCi/L
Technetium-99	<1.5E+00	U//	<6.1E+00			1	GP								pCi/L
Thorium-228	<4.0E-02	U//	<6.0E-01			1	GP								pCi/L
Thorium-230	<9.8E-03	U//	<2.4E-01			1	GP								pCi/L
Thorium-232	<-1.7E-02	U//	<2.2E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Tritium	8.2E+02	//5		■		1	GP	7.6E+02	//		■		1	GP	pCi/mL
Uranium-233/234	<-1.2E-02	U//	<1.2E-01			1	GP								pCi/L
Uranium-235	<0.0E+00	U//	<5.2E-02			1	GP								pCi/L
Uranium-238	<8.9E-03	U//	<1.1E-01			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB119A

SRS Coord	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N73082.5 E56100.2	33.278944 °N 81.661038 °W	103.3-93.3 ft msl	257.1 ft msl	4" PVC	S	Gordon

SAMPLE DATE 07/06/99 10/11/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	167.0	166.4	ft msl
pH	7.1	6.5	pH
Sp. conductance	134	130	µS/cm
Water temperature	22.0	20.3	°C
Alkalinity as CaCO <sub>3</sub>	34	29	mg/L
Turbidity	0.6	0.4	NTU
Volumes purged	2.8	2.4	Weil vol
Sampling code			
Synchronous water level	166.3 (09/16/99)	166.3 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.15	JU/V4	<2.0			1	GE								µg/L
Arsenic, total recoverable	5.7	//				1	GE								µg/L
Barium, total recoverable	13	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	3.1	//				1	GE								µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Copper, total recoverable	<1.2	U/V/	<1.0			1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	3.1	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	5,600	//				3	GE	5,200	//				3	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	17	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB119A (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<0.0E+00	U//	<7.0E-02			1	GP								pCi/L
Beta dose factor	7.9E-01														NONE
Carbon-14	7.4E+01	//		■		1	GP								pCi/L
Cobalt-60	<9.1E-02	U//	<4.9E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<7.3E-02			1	GP								pCi/L
Curium-243/244	<-1.2E-02	U//	<1.5E-01			1	GP								pCi/L
Curium-245/246	<7.0E-02	U//	<7.0E-02			1	GP								pCi/L
Gross alpha	<5.7E-01	U//	<8.7E-01			1	GP	9.0E-01	J//K/C	NDD			1	GP	pCi/L
Iodine-129	<6.6E-01	U//	<1.2E+00			1	GP								pCi/L
Nickel-63	3.6E+01	//				1	GP								pCi/L
Nonvolatile beta	1.3E+01	//				1	GP	9.4E+00	//				1	GP	pCi/L
Plutonium-238	<-1.4E-03	U//	<2.2E-01			1	GP								pCi/L
Plutonium-239/240	<-1.7E-02	U//	<1.3E-01			1	GP								pCi/L
Radium-226	1.8E+00	J//V	NDD			1	GP								pCi/L
Radium-228	<4.7E-01	U//	<7.2E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	<-3.3E-01	U//	<1.9E+00			1	GP								pCi/L
Technetium-99	3.2E+01	//				1	GP								pCi/L
Thorium-228	<4.2E-02	U//	<4.6E-01			1	GP								pCi/L
Thonium-230	<7.1E-02	U//	<2.6E-01			1	GP								pCi/L
Thorium-232	<-2.5E-02	U//	<2.4E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	1.4E+02			■											pCi/L
Tritium	3.8E+02	//5		■		1	GP	4.2E+02	//				1	GP	pCi/mL
Uranium-233/234	<-3.3E-02	U//	<1.5E-01			1	GP								pCi/L
Uranium-235	<7.9E-03	U//	<9.4E-02			1	GP								pCi/L
Uranium-238	<-7.2E-03	U//	<9.4E-02			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB120A

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N73395.1 E56431.9	33.280177 °N 81.660772 °W	101.0-91.0 ft msl	268.2 ft msl	4" PVC	S	Gordon

SAMPLE DATE 07/02/99 10/12/99

### FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	166.4	165.8	ft msl
pH	6.7	6.7	pH
Sp. conductance	190	207	µS/cm
Water temperature	19.9	20.3	°C
Alkalinity as CaCO <sub>3</sub>	94	89	mg/L
Turbidity	0.5	0.3	NTU
Volumes purged	2.5	2.5	Well vol
Sampling code			
Synchronous water level	165.6 (09/16/99)	165.6 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.18	JU//V4	<2.0			1	GE								µg/L
Arsenic, total recoverable	3.5	//				1	GE								µg/L
Barium, total recoverable	32	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	2.5	J//	NDD			1	GE								µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Copper, total recoverable	1.9	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	1.6	J//	NDD			1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	40	J//	NDD			1	GE	<30	U//	<50			1	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

#### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU//L/O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU//L/O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU//L/O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU//L/O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU//L/O	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB120A (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<2.2E-02	U//	<2.6E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	<-2.7E+00	U//	<7.7E+00			1	GP								pCi/L
Cobalt-60	<4.3E-01	U//	<3.6E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<1.3E-01			1	GP								pCi/L
Curium-243/244	<0.0E+00	U//	<1.3E-01			1	GP								pCi/L
Curium-245/246	<1.1E-01	U//	<2.6E-01			1	GP								pCi/L
Gross alpha	2.4E+00	J//	NDD			1	GP	<9.9E-01	U//	<1.2E+00			1	GP	pCi/L
Iodine-129	<1.9E-01	U//	<9.0E-01			1	GP								pCi/L
Nickel-63	2.9E+01	J//	NDD			1	GP								pCi/L
Nonvolatile beta	2.8E+00	//				1	GP	1.6E+00	J//	NDD			1	GP	pCi/L
Plutonium-238	<5.1E-02	U//	<9.0E-02			1	GP								pCi/L
Plutonium-239/240	<-6.9E-03	U//	<9.0E-02			1	GP								pCi/L
Radium-226	9.8E-01	J//	NDD			1	GP								pCi/L
Radium-228	<7.4E-01	U//	<7.4E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	<-3.0E-01	U//	<1.8E+00			1	GP								pCi/L
Technetium-99	<-2.9E+00	U//	<6.6E+00			1	GP								pCi/L
Thorium-228	<1.0E-01	U//	<6.6E-01			1	GP								pCi/L
Thorium-230	<-7.6E-03	U//	<3.1E-01			1	GP								pCi/L
Thorium-232	<2.0E-02	U//	<2.4E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Tritium	<1.9E-01	U//	<6.0E-01			1	GP	<1.3E-01	U//	<5.1E-01			1	GP	pCi/mL
Uranium-233/234	<1.2E-01	U//	<1.3E-01			1	GP								pCi/L
Uranium-235	<-9.1E-03	U//	<1.2E-01			1	GP								pCi/L
Uranium-238	<1.1E-01	U//	<5.7E-02			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB121A

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72024.8 E57389.6	33.278709 °N 81.655589 °W	98.3-88.3 ft msl	274.6 ft msl	4" PVC	-S	Gordon

SAMPLE DATE 07/16/99 10/08/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	171.9	171.1	ft msl
pH	7.0	6.7	pH
Sp. conductance	227	217	µS/cm
Water temperature	20.0	19.3	°C
Alkalinity as CaCO <sub>3</sub>	93	102	mg/L
Turbidity	0.3	0.2	NTU
Volumes purged	2.3	3.7	Well vol
Sampling code			
Synchronous water level	170.9 (09/16/99)	170.8 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	5.2	//				1	GE								µg/L
Barium, total recoverable	31	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	2.9	J//	NDD			1	GE								µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Copper, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	<20	U//	<50			1	GE	<20	U//	<50			1	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<0.38	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	9.3	J//	NDD			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU//O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU//O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU//O	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer



**WELL HSB121A (cont.)****Radioactive Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<-1.0E-02	U//	<2.2E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	1.9E+01	J//	NDD			1	GP								pCi/L
Cobalt-60	<9.5E-01	U//	<3.6E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<1.4E-01			1	GP								pCi/L
Curium-243/244	<-1.0E-02	U//	<2.2E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<1.3E-01			1	GP								pCi/L
Gross alpha	1.2E+00	J//	NDD			1	GP	<8.7E-01	U//	<1.2E+00			1	GP	pCi/L
Iodine-129	<-7.7E-02	U//	<1.1E+00			1	GP								pCi/L
Nickel-63	<-1.9E+00	U//	<1.5E+01			1	GP								pCi/L
Nonvolatile beta	2.3E+00	J//	NDD			1	GP	1.3E+00	J//K/C	NDD			1	GP	pCi/L
Plutonium-238	<-8.9E-03	U//	<1.2E-01			1	GP								pCi/L
Plutonium-239/240	<5.2E-03	U//	<1.3E-01			1	GP								pCi/L
Radium-226	<5.4E-01	U//	<7.1E-01			1	GP								pCi/L
Radium-228	<2.1E-01	JU//L/C	<6.6E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	<1.3E-01	U//	<1.2E+00			1	GP								pCi/L
Technetium-99	<2.4E+00	U//	<7.9E+00			1	GP								pCi/L
Thorium-228	<3.7E-02	U//	<5.2E-01			1	GP								pCi/L
Thorium-230	<-9.1E-03	U//	<2.0E-01			1	GP								pCi/L
Thorium-232	<-9.1E-03	U//	<2.0E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Tritium	<3.4E-02	U//5	<5.7E-01			1	GP	<-3.7E-01	U//	<6.2E-01			1	GP	pCi/mL
Uranium-233/234	<1.2E-01	U//V/	<8.1E-02			1	GP								pCi/L
Uranium-235	<-1.1E-02	U//	<1.1E-01			1	GP								pCi/L
Uranium-238	<6.2E-02	U//	<4.6E-02			1	GP								pCi/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB122A

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72195.9 E57747.4	33.279671 °N 81.654979 °W	95.4-85.4 ft msl	271.6 ft msl	4" PVC	S	Gordon

SAMPLE DATE 07/16/99 10/08/99

### FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	171.6	170.8	ft msl
pH	7.1	6.9	pH
Sp. conductance	205	194	µS/cm
Water temperature	20.1	19.1	°C
Alkalinity as CaCO <sub>3</sub>	79	87	mg/L
Turbidity	0.7	0.2	NTU
Volumes purged	2.5	2.4	Well vol
Sampling code			
Synchronous water level	170.7 (09/16/99)	170.7 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	6.2	//				1	GE								µg/L
Barium, total recoverable	26	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	3.3	//				1	GE								µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Copper, total recoverable	<0.27	JU//4	<1.0			1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	2.1	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	<10	U//	<50			1	GE	<20	U//	<50			1	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<0.38	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	13	//				1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

#### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	0.58	J//L/O	NDD			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU//L/O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU//L/O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU//L/O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU//L/O	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

**WELL HSB122A (cont.)****Radioactive Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<4.4E-02	U//	<1.3E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	<1.1E+00	U//	<9.7E+00			1	GP								pCi/L
Cobalt-60	<5.2E-01	U//	<3.4E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<1.5E-01			1	GP								pCi/L
Curium-243/244	<0.0E+00	U//	<1.3E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<1.3E-01			1	GP								pCi/L
Gross alpha	<-8.6E-02	U//	<9.7E-01			1	GP	1.2E+00	J/V	NDD			1	GP	pCi/L
Iodine-129	<2.1E-01	U//	<1.2E+00			1	GP								pCi/L
Nickel-63	<3.7E+00	U//	<1.9E+01			1	GP								pCi/L
Nonvolatile beta	1.4E+00	J/V	NDD			1	GP	1.6E+00	J/K/C	NDD			1	GP	pCi/L
Plutonium-238	<1.7E-02	U//	<5.0E-02			1	GP								pCi/L
Plutonium-239/240	<0.0E+00	U//	<5.0E-02			1	GP								pCi/L
Radium-226	<4.0E-01	U//	<8.7E-01			1	GP								pCi/L
Radium-228	<2.9E-01	U//	<9.8E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	<2.6E-01	U//	<1.5E+00			1	GP								pCi/L
Technetium-99	<3.6E+00	U//	<7.4E+00			1	GP								pCi/L
Thorium-228	<9.3E-03	U//	<5.5E-01			1	GP								pCi/L
Thorium-230	<-5.4E-02	U//	<3.2E-01			1	GP								pCi/L
Thorium-232	<3.8E-02	U//	<1.1E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Tritium	<-4.0E-01	U//5	<5.7E-01			1	GP	<-1.3E-01	U//	<6.5E-01			1	GP	pCi/mL
Uranium-233/234	<3.8E-02	U//	<1.2E-01			1	GP								pCi/L
Uranium-235	<-4.0E-03	U//	<8.8E-02			1	GP								pCi/L
Uranium-238	<1.7E-02	U//	<1.3E-01			1	GP								pCi/L

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB123A

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72189.8 E58124.8	33.280273 °N 81.653973 °W	103.6-93.6 ft msl	265.7 ft msl	4" PVC	S	Gordon

SAMPLE DATE 07/08/99 10/15/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	172.3	171.7	ft msl
pH	11.4	11.1	pH
Sp. conductance	1292	1200	µS/cm
Water temperature	25.3	20.9	°C
Alkalinity as CaCO3	262	271	mg/L
Turbidity	0.8	0.4	NTU
Volumes purged	0.019	0.020	Well vol
Sampling code	XN	XN	
Synchronous water level	171.6 (09/16/99)	171.6 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	4.1	//				1	GE								µg/L
Barium, total recoverable	46	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	1.7	J//	NDD			1	GE								µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Copper, total recoverable	1.6	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	4.3	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	10	J//	NDD			1	GE	<50	U//	<50			1	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

**WELL HSB123A (cont.)****Radioactive Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<-1.0E-02	U//	<1.3E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	<-1.6E+00	U//	<7.8E+00			1	GP								pCi/L
Cobalt-60	<2.0E-01	U//	<3.5E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<6.3E-02			1	GP								pCi/L
Curium-243/244	<-2.0E-04	U//	<1.6E-01			1	GP								pCi/L
Curium-245/246	<2.0E-02	U//	<6.1E-02			1	GP								pCi/L
Gross alpha	3.7E+00	J//	NDD			1	GP	<1.4E+00	U//	<1.2E+00			1	GP	pCi/L
Iodine-129	<2.1E-01	U//	<7.5E-01			1	GP								pCi/L
Nickel-63	<4.6E-01	U//	<1.4E+01			1	GP								pCi/L
Nonvolatile beta	6.9E+00	//				1	GP	2.6E+00	//				1	GP	pCi/L
Plutonium-238	<-9.3E-03	U//	<2.0E-01			1	GP								pCi/L
Plutonium-239/240	<0.0E+00	U//	<1.2E-01			1	GP								pCi/L
Radium-226	3.1E+00	//				1	GP								pCi/L
Radium-228	<3.1E-01	U//	<8.7E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	<4.6E-01	U//	<1.2E+00			1	GP								pCi/L
Technetium-99	<-1.1E+00	U//	<6.3E+00			1	GP								pCi/L
Thorium-228	<2.2E-01	U//	<5.2E-01			1	GP								pCi/L
Thorium-230	<6.1E-02	U//	<3.4E-01			1	GP								pCi/L
Thorium-232	<-2.8E-02	U//	<2.7E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Total radium	3.1E+00														
Tritium	<2.3E-01	U//5	<6.3E-01			1	GP	<-8.8E-02	U//	<6.0E-01			1	GP	pCi/L
Uranium-233/234	<-1.2E-01	U//	<7.5E-01			1	GP								pCi/L
Uranium-235	<1.3E-01	U//	<3.8E-01			1	GP								pCi/L
Uranium-238	<1.3E-01	U//	<3.8E-01			1	GP								pCi/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA = Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB124AR

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72202.7 E58531.7	33.280965 °N 81.652927 °W	104.6-94.6 ft msl	266.8 ft msl	4" PVC	S	Gordon

SAMPLE DATE 07/08/99 10/12/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	172.1	171.4	ft msl
pH	7.2	6.9	pH
Sp. conductance	218	206	µS/cm
Water temperature	20.5	20.1	°C
Alkalinity as CaCO <sub>3</sub>	84	89	mg/L
Turbidity	0.4	0.2	NTU
Volumes purged	2.6	2.6	Well vol
Sampling code			
Synchronous water level	171.2 (09/16/99)	170.0 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	1.6	J//	NDD			1	GE								µg/L
Barium, total recoverable	58	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	5.0	//				1	GE								µg/L
Cobalt, total recoverable	2.0	//				1	GE								µg/L
Copper, total recoverable	4.2	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	2.0	//				1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	5.3	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	10	J//	NDD			1	GE	3.0	J//	NDD			1	WA	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	22	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB124AR (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<4.7E-02	U//	<7.1E-02			1	GP								pCi/L
Beta dose factor	7.9E-01														NONE
Carbon-14	<2.2E+00	U//	<7.9E+00			1	GP								pCi/L
Cobalt-60	<-5.2E-01	U//	<4.3E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<7.3E-02			1	GP								pCi/L
Curium-243/244	<3.5E-02	U//	<1.5E-01			1	GP								pCi/L
Curium-245/246	<4.7E-02	U//	<7.1E-02			1	GP								pCi/L
Gross alpha	<9.6E-01	U//	<1.3E+00			1	GP	1.3E+00	J//K/C	NDD			1	GP	pCi/L
Iodine-129	<-2.7E-01	U//	<1.1E+00			1	GP								pCi/L
Nickel-63	4.0E+01	//				1	GP								pCi/L
Nonvolatile beta	<1.1E+00	U//	<1.4E+00			1	GP	1.8E+00	J//	NDD			1	GP	pCi/L
Plutonium-238	<4.0E-02	U//	<1.2E-01			1	GP								pCi/L
Plutonium-239/240	<-2.9E-02	U//	<2.8E-01			1	GP								pCi/L
Radium-226	<8.9E-01	U//	<6.0E-01			1	GP								pCi/L
Radium-228	<4.6E-01	U//	<8.2E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	<-1.5E-01	U//	<1.6E+00			1	GP								pCi/L
Technetium-99	<-3.9E+00	U//	<6.3E+00			1	GP								pCi/L
Thorium-228	<7.9E-03	U//	<4.6E-01			1	GP								pCi/L
Thorium-230	<7.4E-02	U//	<2.3E-01			1	GP								pCi/L
Thorium-232	<-1.6E-02	U//	<2.0E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	4.0E+01														pCi/L
Tritium	<-6.2E-02	U//5	<6.2E-01			1	GP	<-5.6E-02	U//	<6.4E-01			1	GP	pCi/mL
Uranium-233/234	<8.4E-02	U//	<1.3E-01			1	GP								pCi/L
Uranium-235	<-3.0E-02	U//	<2.9E-01			1	GP								pCi/L
Uranium-238	<3.2E-02	U//	<2.2E-01			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB125C

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71503.6 E58592.8	33.279519 °N 81.651408 °W	155.6-145.6 ft msl	231.9 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/14/99 10/06/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	223.1	222.6	ft msl
pH	5.4	5.1	pH
Sp. conductance	22	22	µS/cm
Water temperature	19.8	18.7	°C
Alkalinity as CaCO3	3	3	mg/L
Turbidity	0.7	0.6	NTU
Volumes purged	2.5	3.1	Well vol
Sampling code			
Synchronous water level	222.6 (09/16/99)	222.3 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	<100	U/V/	<50			1	GE	100	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



# WELL HSB125C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<-2.9E-03	U//	<9.7E-01			1	GP	<3.4E-01	U//	<7.0E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<7.8E-01	U//	<1.5E+00			1	GP	<8.5E-01	U//	<1.3E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	2.6E+00	//5				1	GP	1.5E+00	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB125D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71498.2 E58584.1	33.279492 °N 81.651421 °W	219.4-199.4 ft msl	231.7 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 07/14/99 10/06/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	220.5	219.8	ft msl
pH	5.5	5.4	pH
Sp. conductance	109	100	µS/cm
Water temperature	18.7	18.7	°C
Alkalinity as CaCO3	5	5	mg/L
Turbidity	0.7	0.2	NTU
Volumes purged	3.4	2.8	Well vol
Sampling code			
Synchronous water level	219.8 (09/16/99)	219.7 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	1.7	J//	NDD			1	GE								µg/L
Barium, total recoverable	9.3	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	2.6	J//	NDD			1	GE								µg/L
Cobalt, total recoverable	1.7	//				1	GE								µg/L
Copper, total recoverable	1.5	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	0.80	//				1	GE	0.60	//				1	GE	µg/L
Nickel, total recoverable	3.0	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	8,000	//				3	GE	6,400	//				5	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	3.1	J//	NDD			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	JU/L/O	<10			1	GE								µg/L
Dichloromethane	<5.0	JU/L/O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU/L/O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU/L/O	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB125D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<3.9E-02	U//	<1.2E-01			1	GP								pCi/L
Beta dose factor	1.5E-02														NONE
Carbon-14	2.9E+01	//				1	GP								pCi/L
Cobalt-60	<-7.9E-01	U//	<4.3E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<1.3E-01			1	GP								pCi/L
Curium-243/244	<3.0E-02	U//	<2.1E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<1.2E-01			1	GP								pCi/L
Gross alpha	1.3E+00	J//	NDD			1	GP	2.8E+00	J//	NDD			1	GP	pCi/L
Iodine-129	<5.7E-01	U//	<1.1E+00			1	GP								pCi/L
Nickel-63	<2.9E+00	U//	<1.8E+01			1	GP								pCi/L
Nonvolatile beta	7.9E+00	//				1	GP	7.2E+00	//				1	GP	pCi/L
Plutonium-238	<0.0E+00	U//	<6.1E-02			1	GP								pCi/L
Plutonium-239/240	<-2.5E-02	U//	<1.7E-01			1	GP								pCi/L
Radium-226	1.5E+01	//		■		1	GP								pCi/L
Radium-228	<6.4E-01	U//	<1.2E+00			1	GP								pCi/L
Strontium-90	<7.1E-01	U//	<1.5E+00			1	GP								pCi/L
Technetium-99	9.4E+00	J//	NDD			1	GP								pCi/L
Thorium-228	<-4.9E-02	U//	<5.8E-01			1	GP								pCi/L
Thorium-230	<-1.7E-02	U//	<3.3E-01			1	GP								pCi/L
Thorium-232	<0.0E+00	U//	<1.2E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	2.9E+01														pCi/L
Total radium	1.5E+01			■											pCi/L
Tritium	4.8E+02	//5		■		1	GP	2.1E+02	//				1	GP	pCi/mL
Uranium-233/234	<3.1E-02	U//	<1.3E-01			1	GP								pCi/L
Uranium-235	<0.0E+00	U//	<6.0E-02			1	GP								pCi/L
Uranium-238	<5.5E-02	U//	<1.1E-01			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB126C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N70627.7 E57178.2	33.275273 °N 81.653432 °W	181.3-176.3 ft msl	212.6 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/08/99 10/05/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	204.0	204.0	ft msl
pH	7.3	7.1	pH
Sp. conductance	269	256	µS/cm
Water temperature	19.7	18.5	°C
Alkalinity as CaCO <sub>3</sub>	75	69	mg/L
Turbidity	0.3	0.3	NTU
Volumes purged	3.2	3.2	Well vol
Sampling code			
Synchronous water level	203.7 (09/16/99)	203.8 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	12,000	//		■		25	GE	10,000	//		■		25	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB126C (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	9.7E-01	J/V	NDD			1	GP	<4.4E-01	U//	<1.1E+00			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	4.6E+00	//				1	GP	2.8E+00	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	4.6E+02	//5		■		1	GP	3.9E+02	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB126D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N70633.4 E57169.6	33.275272 °N 81.653466 °W	200.5-190.5 ft msl	212.7 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/08/99 10/05/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	205.7	205.2	ft msl
pH	4.9	4.6	pH
Sp. conductance	248	288	µS/cm
Water temperature	20.7	20.6	°C
Alkalinity as CaCO3	0	0	mg/L
Turbidity	4.2	10.3	NTU
Volumes purged	0.10	0.52	Well vol
Sampling code	XN	XN	
Synchronous water level	203.6 (09/16/99)	204.6 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	<3.0	U//	<3.0			1	GE								µg/L
Barium, total recoverable	390	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	1.2	J//	NDD			1	GE								µg/L
Cobalt, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Copper, total recoverable	<0.96	U//	<1.0			1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	1.0	//				1	GE	0.87	//				1	GE	µg/L
Nickel, total recoverable	4.4	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	31,000	//		■		50	GE	30,000	//		■		25	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<11	U//	<11			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	1.1	//				1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time  
■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)  
NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB126D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<2.7E-02	U//	<1.2E-01	■		1	GP								pCi/L
Beta dose factor	1.4E+01														NONE
Carbon-14	3.4E+01	//				1	GP								pCi/L
Cobalt-60	<2.2E-01	U//	<3.7E+00			1	GP								pCi/L
Curium-242	<9.5E-03	U//	<1.2E-01			1	GP								pCi/L
Curium-243/244	<1.8E-04	U//	<1.4E-01			1	GP								pCi/L
Curium-245/246	<3.7E-02	U//	<5.5E-02			1	GP								pCi/L
Gross alpha	<8.4E-01	U//	<1.5E+00			1	GP	2.1E+00	J//	NDD			1	GP	pCi/L
Iodine-129	1.4E+01	//				1	GP								pCi/L
Nickel-63	<5.0E+00	U//	<1.4E+01			1	GP								pCi/L
Nonvolatile beta	8.2E+00	//				1	GP	1.7E+01	//				1	GP	pCi/L
Plutonium-238	3.7E-01	J//	NDD			1	GP								pCi/L
Plutonium-239/240	<3.7E-02	U//	<2.9E-01			1	GP								pCi/L
Radium-226	1.3E+00	J//	NDD			1	GP								pCi/L
Radium-228	5.3E-01	J//	NDD			1	GP								pCi/L
Total radium	NA														
Strontium-90	<2.3E-01	U//	<1.2E+00			1	GP								pCi/L
Technetium-99	2.9E+01	//				1	GP								pCi/L
Thorium-228	<1.5E-01	U//	<3.6E-01			1	GP								pCi/L
Thorium-230	<5.5E-02	U//	<1.6E-01			1	GP								pCi/L
Thorium-232	<3.1E-02	U//	<9.3E-02			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	7.7E+01			■											
Tritium	1.5E+03	//5		■		1	GP	1.4E+03	//		■		1	GP	pCi/L
Uranium-233/234	<5.4E-02	U//	<2.2E-01			1	GP								pCi/mL
Uranium-235	<2.6E-02	U//	<2.5E-01			1	GP								pCi/L
Uranium-238	<0.0E+00	U//	<1.1E-01			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB127C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71210.1 E56792.1	33.275932 °N 81.655580 °W	158.4-148.4 ft msl	225.7 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/02/99 10/08/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	208.9	208.6	ft msl
pH	7.7	7.1	pH
Sp. conductance	237	250	µS/cm
Water temperature	19.8	19.1	°C
Alkalinity as CaCO3	62	90	mg/L
Turbidity	0.8	0.2	NTU
Volumes purged	2.8	2.8	Well vol
Sampling code			
Synchronous water level	208.6 (09/16/99)	208.4 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	9,500	//				5	GE	9,300	//				5	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



## WELL HSB127C (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<7.2E-01	U//	<7.5E-01			1	GP	<5.5E-01	U//	<1.3E+00			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.1E+01	//				1	GP	4.3E+00	J/K/C	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	8.1E+02	//		■		1	GP	8.3E+02	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB127D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71218.9 E56788.0	33.275945 °N 81.655608 °W	217.8-197.8 ft msl	226.1 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/02/99 10/08/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	212.1	210.9	ft msl
pH	4.6	4.6	pH
Sp. conductance	70	56	µS/cm
Water temperature	18.7	19.4	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	1.4	1.0	NTU
Volumes purged	3.7	4.7	Well vol
Sampling code			
Synchronous water level	212.0 (09/16/99)	210.6 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.24	JU//4	<2.0			1	GE								µg/L
Arsenic, total recoverable	2.3	J//	NDD			1	GE								µg/L
Barium, total recoverable	19	//				1	GE								µg/L
Cadmium, total recoverable	0.71	J//	NDD			1	GE								µg/L
Chromium, total recoverable	2.5	J//	NDD			1	GE								µg/L
Cobalt, total recoverable	3.9	//				1	GE								µg/L
Copper, total recoverable	17	//				1	GE								µg/L
Cyanide	3.6	J//	NDD			1	GE								µg/L
Lead, total recoverable	1.8	J//	NDD			1	GE								µg/L
Mercury, total recoverable	0.24	//				1	GE	0.33	//				1	GE	µg/L
Nickel, total recoverable	4.9	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	6,900	//				5	GE	4,700	//				3	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	24	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	JU//O	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	JU//O	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	JU//O	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	JU//O	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB127D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<3.9E-02	U//	<1.2E-01			1	GP								pCi/L
Beta dose factor	9.1E+00			■											NONE
Carbon-14	1.4E+01	J//	NDD			1	GP								pCi/L
Cobalt-60	5.4E+00	R//4	Rej			1	GP								pCi/L
Curium-242	<2.0E-02	U//	<2.6E-01			1	GP								pCi/L
Curium-243/244	<4.7E-02	U//	<3.2E-01			1	GP								pCi/L
Curium-245/246	<9.5E-03	U//	<2.1E-01			1	GP								pCi/L
Gross alpha	7.3E+00	//				1	GP	1.0E+01	//				1	GP	pCi/L
Iodine-129	3.1E+00	J//	NDD			1	GP								pCi/L
Nickel-63	3.9E+01	//				1	GP								pCi/L
Nonvolatile beta	7.9E+01	//		■		1	GP	8.7E+01	J/K/C	NDD			1	GP	pCi/L
Plutonium-238	<1.5E-01	U//	<2.0E-01			1	GP								pCi/L
Plutonium-239/240	<0.0E+00	U//	<9.7E-02			1	GP								pCi/L
Radium-226	1.2E+00	J//	NDD			1	GP								pCi/L
Radium-228	<7.1E-01	U//	<9.5E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	6.6E+01	//		■		1	GP								pCi/L
Technetium-99	9.2E+00	J//	NDD			1	GP								pCi/L
Thorium-228	<7.9E-02	U//	<9.2E-01			1	GP								pCi/L
Thorium-230	<5.3E-02	U//	<2.9E-01			1	GP								pCi/L
Thorium-232	<9.9E-03	U//	<2.2E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	1.0E+02			■											pCi/L
Tritium	1.0E+02	//		■		1	GP	7.5E+01	//		■		1	GP	pCi/mL
Uranium-233/234	<5.8E-02	U//	<2.3E-01			1	GP								pCi/L
Uranium-235	<3.9E-02	U//	<1.2E-01			1	GP								pCi/L
Uranium-238	<7.8E-02	U//	<1.4E-01			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB129C

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71830.4 E55110.0	33.274559 °N 81.661214 °W	157.8-147.8 ft msl	215.1 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/21/99 10/19/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	204.9	204.3	ft msl
pH	5.8	5.4	pH
Sp. conductance	220	236	µS/cm
Water temperature	20.2	17.8	°C
Alkalinity as CaCO3	10	8	mg/L
Turbidity	1.3	0.9	NTU
Volumes purged	0.0	0.027	Well vol
Sampling code	XN	XN	
Synchronous water level	203.5 (09/16/99)	203.8 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.092	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	25,000	//		■		25	GE	18,000	//		■		25	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

## WELL HSB129C (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.9E+00	J/V/5	NDD			1	GP	1.3E+00	J/V	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	6.4E+01	//		■		1	GP	5.4E+01	//		■		1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	2.3E+03	//5		■		1	GP	1.8E+03	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB129D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71837.1 E55103.4	33.274563 °N 81.661244 °W	205.2-185.2 ft msl	214.7 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/13/99 10/18/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	208.8	207.5	ft msl
pH	4.9	5.0	pH
Sp. conductance	138	129	µS/cm
Water temperature	18.9	20.7	°C
Alkalinity as CaCO3	1	1	mg/L
Turbidity	0.7	6.5	NTU
Volumes purged	3.3	4.9	Well vol
Sampling code			
Synchronous water level	204.8 (09/16/99)	206.1 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	0.038	J/V	NDD			1	GE	0.075	J/V	NDD			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	14,000	//		■		5	GE	13,000	//		■		25	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB129D (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<8.7E-01	U//	<1.0E+00			1	GP	<1.1E+00	U/V//	<9.0E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.2E+01	//				1	GP	1.1E+01	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.5E+03	//5		■		1	GP	1.3E+03	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA = Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB130C

SRS Coord.	Lat/Longitude	Screen Zone	Elevation	Top of Casing	Casing	Pump	Screen Zone
N70762.4 E54643.6	33.271436 °N 81.660367 °W	169.9-159.9 ft msl		218.3 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/02/99 10/08/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	199.8	199.6	ft msl
pH	7.8	7.5	pH
Sp. conductance	150	151	µS/cm
Water temperature	21.1	18.4	°C
Alkalinity as CaCO3	77	74	mg/L
Turbidity	1.4	0.2	NTU
Volumes purged	3.5	3.9	Well vol
Sampling code			
Synchronous water level	199.3 (09/16/99)	199.6 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	230	//				1	GE	240	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time  
■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)  
NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



## WELL HSB130C (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<3.4E-02	U//	<9.9E-01			1	GP	<8.7E-01	U//	<9.5E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<8.4E-01	U//	<1.3E+00			1	GP	<3.9E-01	U//	<1.0E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	9.7E-01	J//	NDD			1	GP	7.2E-01	J//	NDD			1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB130D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N70757.2 E54651.7	33.271438 °N 81.660336 °W	202.1-182.1 ft msl	218.6 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/02/99 10/08/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	200.0	199.7	ft msl
pH	6.6	5.7	pH
Sp. conductance	45	39	µS/cm
Water temperature	20.6	18.5	°C
Alkalinity as CaCO <sub>3</sub>	24	12	mg/L
Turbidity	0.6	0.4	NTU
Volumes purged	3.2	2.5	Well vol
Sampling code			
Synchronous water level	200.4 (09/16/99)	199.7 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	500	//				1	GE	580	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB130D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	7.5E-01	J//	NDD			1	GP	<3.5E-01	U//	<6.9E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.5E+00	J//	NDD			1	GP	<3.3E-01	U//	<1.1E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	6.9E+00	//				1	GP	6.5E+00	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB131C

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N70374.7 E56894.9	33.274252 °N 81.653687 °W	158.5-148.5 ft msl	211.7 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/02/99 10/11/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	203.8	203.7	ft msl
pH	7.0	7.7	pH
Sp. conductance	195	201	µS/cm
Water temperature	20.9	19.2	°C
Alkalinity as CaCO <sub>3</sub>	83	82	mg/L
Turbidity	0.7	0.4	NTU
Volumes purged	3.8	2.9	Well vol
Sampling code			
Synchronous water level	203.4 (09/16/99)	203.6 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	3,100	//				3	GE	2,900	//				3	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA -- Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA -- Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA -- Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon -- Gordon Aquifer

**WELL HSB131C (cont.)****Radioactive Constituents**

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<4.3E-01	U//	<7.9E-01			1	GP	<4.3E-01	U//	<1.2E+00			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	2.1E+00	J//	NDD			1	GP	<8.5E-01	U//	<1.6E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.4E+02	//		■		1	GP	1.3E+02	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB131D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N70365.0 E56891.1	33.274224 °N 81.653678 °W	205.7-195.7 ft msl	212.1 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/02/99 10/11/99

### FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	206.1	204.9	ft msl
pH	5.3	5.0	pH
Sp. conductance	25	23	µS/cm
Water temperature	22.2	21.8	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	1.5	1.0	NTU
Volumes purged	9.1	5.6	Well vol
Sampling code			
Synchronous water level	203.9 (09/16/99)	204.5 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	410	//				1	GE	390	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

**WELL HSB131D (cont.)****Radioactive Constituents**

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.4E+00	J//	NDD			1	GP	<4.0E-01	U//	<6.2E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	2.2E+00	J//	NDD			1	GP	<9.9E-01	U//	<1.3E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	8.1E+00	//				1	GP	7.9E+00	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB132C

<u>SRS Coord</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71472.4 E58787.7	33.279768 °N 81.650835 °W	178.6-168.6 ft msl	240.5 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/28/99 10/13/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	220.9	220.3	ft msl
pH	5.4	5.4	pH
Sp. conductance	22	22	µS/cm
Water temperature	21.3	19.6	°C
Alkalinity as CaCO3	2	2	mg/L
Turbidity	0.6	1.0	NTU
Volumes purged	2.1	2.2	Well vol
Sampling code			
Synchronous water level	220.1 (09/16/99)	220.1 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	30	J//	NDD			1	GE	<40	U//	<50			1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer



# WELL HSB132C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<2.3E-01	U//	<1.3E+00			1	GP	<3.7E-01	U//	<6.9E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<1.2E+00	U//5	<1.5E+00			1	GP	<6.9E-01	U//	<1.4E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	<8.4E-02	U//	<6.5E-01			1	GP	<4.6E-02	U//	<6.3E-01			1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB132D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71469.5 E58799.3	33.279780 °N 81.650798 °W	226.5-206.5 ft msl	240.7 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/28/99 10/13/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	220.3	219.7	ft msl
pH	5.1	4.7	pH
Sp. conductance	18	20	µS/cm
Water temperature	21.3	19.7	°C
Alkalinity as CaCO3	0	0	mg/L
Turbidity	0.9	3.0	NTU
Volumes purged	2.3	2.2	Well vol
Sampling code			
Synchronous water level	219.6 (09/16/99)	219.7 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	590	//				1	GE	530	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB132D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<2.2E-01	U//	<6.5E-01			1	GP	<4.2E-01	U//	<9.1E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<8.9E-01	U//5	<1.2E+00			1	GP	<1.3E-01	U//	<1.5E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.3E+01	//				1	GP	1.1E+01	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB133C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71949.5 E59110.3	33.281349 °N 81.650912 °W	183.3-173.3 ft msl	255.6 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/02/99 10/18/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	229.9	230.3	ft msl
pH	6.1	5.7	pH
Sp. conductance	25	31	µS/cm
Water temperature	21.2	18.9	°C
Alkalinity as CaCO3	13	5	mg/L
Turbidity	0.7	0.9	NTU
Volumes purged	2.5	2.5	Well vol
Sampling code			
Synchronous water level	230.0 (09/16/99)	229.6 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	50	J//	NDD			1	GE	40	J//	NDD			1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

LAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB133C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	6.7E-01	J//	NDD			1	GP	<3.9E-01	U//	<5.8E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<7.4E-01	U//	<1.1E+00			1	GP	<2.0E-02	U//	<1.4E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	<1.8E-01	U//	<6.5E-01			1	GP	<-2.4E-01	U//	<6.0E-01			1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB133D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71943.5 E59102.3	33.281323 °N 81.650921 °W	228.5-208.5 ft msl	255.3 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/02/99 10/18/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	235.6	236.0	ft msl
pH	5.6	4.9	pH
Sp. conductance	45	49	µS/cm
Water temperature	20.7	18.6	°C
Alkalinity as CaCO <sub>3</sub>	4	0	mg/L
Turbidity	0.7	1.0	NTU
Volumes purged	3.0	2.6	Well vol
Sampling code			
Synchronous water level	235.5 (09/16/99)	235.4 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	400	//				1	GE	460	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB133D (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	8.7E-01	J/V	NDD			1	GP	<6.0E-01	U//	<6.8E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<1.2E+00	U//	<1.3E+00			1	GP	1.4E+00	J/V	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.4E+01	//				1	GP	1.2E+01	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB134C

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71210.3 E58289.9	33.278376 °N 81.651636 °W	159.1-149.1 ft msl	238.4 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/07/99 10/11/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	219.7	219.7	ft msl
pH	6.0	6.0	pH
Sp. conductance	51	52	µS/cm
Water temperature	20.3	20.0	°C
Alkalinity as CaCO <sub>3</sub>	16	13	mg/L
Turbidity	1.2	0.2	NTU
Volumes purged	2.8	2.6	Well vol
Sampling code			
Synchronous water level	219.7 (09/16/99)	219.4 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	1,100	//				1	GE	1,200	//				5	WA	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



# WELL HSB134C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt	ST	H	DF	Lab	4Q99	Mod	Filt	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<2.3E-01	U//	<8.9E-01			1	GP	<2.8E-01	U//	<9.0E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	2.0E+00	J//V	NDD			1	GP	1.6E+00	J//V	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	2.1E+01	//5		■		1	GP	2.0E+01	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB134D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71217.3 E58296.5	33.278402 °N 81.651633 °W	225.8-205.8 ft msl	238.1 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/19/99 11/01/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	219.9	218.5	ft msl
pH	4.1	3.8	pH
Sp. conductance	149	140	µS/cm
Water temperature	19.8	20.3	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	1.0	1.0	NTU
Volumes purged	3.1	3.0	Well vol
Sampling code			
Synchronous water level	218.6 (09/16/99)	218.3 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.41	U/V/	<2.0			1	GE								µg/L
Arsenic, total recoverable	5.0	//				1	GE								µg/L
Barium, total recoverable	66	//				1	GE								µg/L
Cadmium, total recoverable	0.23	J//	NDD			1	GE								µg/L
Chromium, total recoverable	2.7	J//	NDD			1	GE								µg/L
Cobalt, total recoverable	3.1	//		■		1	GE								µg/L
Copper, total recoverable	5.7	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.26	U/V/	<0.20			1	GE	0.64	//				1	GE	µg/L
Nickel, total recoverable	1.8	J//	NDD			1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	12,000	//		■		5	GE	14,000	//				5	GE	µg/L
Selenium, total recoverable	1.6	J//	NDD			1	GE								µg/L
Silver, total recoverable	<0.33	JU//V4	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	12	//		■		1	GE								µg/L
Zinc, total recoverable	<10	U//	<10			1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB134D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<0.0E+00	U//	<1.1E-01			1	GP								pCi/L
Beta dose factor	6.1E+01			■											NONE
Carbon-14	2.0E+01	//				1	GP								pCi/L
Cobalt-60	4.7E+00	R//4	Rej			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<1.3E-01			1	GP								pCi/L
Curium-243/244	<6.6E-02	U//	<2.0E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<1.1E-01			1	GP								pCi/L
Gross alpha	7.8E+00	//				1	GP	1.2E+01	//				1	GP	pCi/L
Iodine-129	9.4E+00	//				1	GP								pCi/L
Nickel-63	<2.2E+00	U//	<1.5E+01			1	GP								pCi/L
Nonvolatile beta	9.1E+02	//		■		1	GP	1.2E+03	//				1	GP	pCi/L
Plutonium-238	<-4.0E-03	U//	<8.9E-02			1	GP								pCi/L
Plutonium-239/240	<-8.1E-03	U//	<1.1E-01			1	GP								pCi/L
Radium-226	1.5E+00	J//V	NDD			1	GP								pCi/L
Radium-228	1.2E+00	J//V	NDD			1	GP								pCi/L
Total radium	NA														
Strontium-90	4.1E+02	//		■		1	GP								pCi/L
Technetium-99	1.4E+01	J//V	NDD			1	GP								pCi/L
Thorium-228	<1.6E-01	U//	<5.5E-01			1	GP								pCi/L
Thorium-230	<1.3E-02	U//	<3.1E-01			1	GP								pCi/L
Thorium-232	<-2.2E-02	U//	<2.8E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	4.4E+02			■											
Tritium	3.4E+02	//		■		1	GP	4.5E+02	//				1	GP	pCi/mL
Uranium-233/234	<5.4E-01	U//V	<1.6E-01			1	GP								pCi/L
Uranium-235	<-1.8E-02	U//	<1.4E-01			1	GP								pCi/L
Uranium-238	2.6E-01	J//V	NDD			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB135C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71390.2 E56560.8	33.275953 °N 81.656539 °W	157.3-147.3 ft msl	232 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/02/99 10/05/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	206.0	206.0	ft msl
pH	8.2	7.5	pH
Sp. conductance	180	189	µS/cm
Water temperature	21.9	19.4	°C
Alkalinity as CaCO3	95	71	mg/L
Turbidity	9.2	6.9	NTU
Volumes purged	2.6	2.8	Well vol
Sampling code			
Synchronous water level	205.7 (09/16/99)	205.8 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	360	//				1	GE	340	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB135C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<6.6E-01	U//	<7.9E-01			1	GP	<8.9E-01	U//	<1.2E+00			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<1.2E+00	U//	<1.2E+00			1	GP	1.6E+00	J//	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.5E+01	//				1	GP	1.4E+01	//5				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB135D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71396.7 E56552.8	33.275954 °N 81.656572 °W	219.9-199.9 ft msl	232.3 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/02/99 10/05/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	214.8	213.9	ft msl
pH	5.0	4.6	pH
Sp. conductance	30	39	µS/cm
Water temperature	21.3	19.4	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.9	0.6	NTU
Volumes purged	7.1	4.6	Well vol
Sampling code			
Synchronous water level	214.1 (09/16/99)	213.6 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	2,400	//				1	GE	2,400	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB135D (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	8.3E-01	J/V	NDD			1	GP	1.3E+00	J/V	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	2.3E+01	//				1	GP	6.9E+01	//		■		1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.9E+01	//				1	GP	1.5E+01	//5				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA -- Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA -- Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA -- Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon -- Gordon Aquifer

# WELL HSB136C

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71900.3 E55949.6	33.276084 °N 81.659139 °W	170.5-160.5 ft msl	227.9 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/21/99 10/18/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	211.3	210.9	ft msl
pH	9.3	6.0	pH
Sp. conductance	289	320	µS/cm
Water temperature	20.9	20.3	°C
Alkalinity as CaCO3	30	17	mg/L
Turbidity	3.2	2.3	NTU
Volumes purged	0.0	0.030	Well vol
Sampling code	XN	XN	
Synchronous water level	213.3 (09/16/99)	211.5 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable	<0.31	JU/IV4	<2.0			1	GE								µg/L
Arsenic, total recoverable	<3.0	U//	<3.0			1	GE								µg/L
Barium, total recoverable	77	//				1	GE								µg/L
Cadmium, total recoverable	0.27	J//	NDD			1	GE								µg/L
Chromium, total recoverable	2.4	J//	NDD			1	GE								µg/L
Cobalt, total recoverable	1.1	//				1	GE								µg/L
Copper, total recoverable	<1.8	U/V/	<1.0			1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.095	U/V/	<0.20			1	GE	µg/L
Nickel, total recoverable	6.0	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	32,000	//		■		25	GE	31,000	//		■		25	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<0.42	JU/IV4	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	<10	U//	<10			1	GE								µg/L
Zinc, total recoverable	14	//				1	GE								µg/L

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<5.0	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



## WELL HSB136C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt	ST	H	DF	Lab	4Q99	Mod	Filt	ST	H	DF	Lab	Unit
Americium-241	<-2.7E-02	U//	<5.9E-01			1	GP								pCi/L
Beta dose factor	2.6E-01														NONE
Carbon-14	1.9E+02	//		■		1	GP								pCi/L
Cobalt-60	<-3.0E+00	U//	<2.7E+00			1	GP								pCi/L
Curium-242	<0.0E+00	U//	<3.6E-01			1	GP								pCi/L
Curium-243/244	<8.5E-02	U//	<5.9E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<3.4E-01			1	GP								pCi/L
Gross alpha	3.4E+00	J//5	NDD			1	GP	2.1E+00	//			1		GP	pCi/L
Iodine-129	3.6E+00	J//	NDD			1	GP								pCi/L
Nickel-63	<4.2E+00	JU/L/Ci	<1.5E+01			1	GP								pCi/L
Nonvolatile beta	5.6E+01	//		■		1	GP	4.6E+01	//			1		GP	pCi/L
Plutonium-238	<1.5E-01	U//	<2.2E-01			1	GP								pCi/L
Plutonium-239/240	<7.4E-02	U//	<2.2E-01			1	GP								pCi/L
Radium-226	3.2E+00	//				1	GP								pCi/L
Radium-228	1.1E+00	J//	NDD			1	GP								pCi/L
Strontium-90	<-1.5E-01	U//	<1.3E+00			1	GP								pCi/L
Technetium-99	1.5E+02	//		■		1	GP								pCi/L
Thorium-228	<-1.9E-02	U//	<6.0E-01			1	GP								pCi/L
Thorium-230	<2.1E-02	U//	<2.5E-01			1	GP								pCi/L
Thorium-232	<0.0E+00	U//	<1.2E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	3.4E+02			■											pCi/L
Total radium	3.2E+00														pCi/L
Tritium	5.0E+03	//5		■		1	GP	4.2E+03	//			■	1	GP	pCi/mL
Uranium-233/234	<1.8E-02	U//	<5.0E-01			1	GP								pCi/L
Uranium-235	<-1.3E-02	U//	<5.1E-01			1	GP								pCi/L
Uranium-238	<-1.1E-02	U//	<4.5E-01			1	GP								pCi/L

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB136D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71906.0 E55941.7	33.276084 °N 81.659171 °W	220.2-200.2 ft msl	228 ft msl	4" PVC	V	UAZ_UTRA

SAMPLE DATE 07/19/99 11/01/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	216.6	214.5	ft msl
pH	4.3	4.1	pH
Sp. conductance	208	191	µS/cm
Water temperature	20.2	19.8	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.9	0.6	NTU
Volumes purged	3.9	3.3	Well vol
Sampling code			
Synchronous water level	215.3 (09/16/99)	214.3 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.18	JU/V4	<2.0			1	GE								µg/L
Arsenic, total recoverable	1.9	J/V	NDD			1	GE								µg/L
Barium, total recoverable	68	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	1.9	J/V	NDD			1	GE								µg/L
Cobalt, total recoverable	6.3	//		■		1	GE								µg/L
Copper, total recoverable	2.9	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<2.0	U//	<2.0			1	GE								µg/L
Mercury, total recoverable	0.22	//				1	GE	0.30	//				1	GE	µg/L
Nickel, total recoverable	7.6	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	23,000	//		■		25	GE	19,000	//				25	GE	µg/L
Selenium, total recoverable	2.5	J/V	NDD			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	5.4	J/V	NDD			1	GE								µg/L
Zinc, total recoverable	32	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	1.7	J/IK/O	NDD			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB136D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<0.0E+00	U//	<9.0E-01	■		1	GP								pCi/L
Beta dose factor	1.2E+02			■											NONE
Carbon-14	9.7E+01	//		■		1	GP								pCi/L
Cobalt-60	3.1E+01	//				1	GP								pCi/L
Curium-242	<0.0E+00	U//	<9.8E-01			1	GP								pCi/L
Curium-243/244	<0.0E+00	U//	<9.0E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<9.0E-01			1	GP								pCi/L
Gross alpha	3.2E+01	//5		■		1	GP	2.5E+01	//		■		1	GP	pCi/L
Iodine-129	4.6E+01	//				1	GP								pCi/L
Nickel-63	1.2E+02	J/L/Cl	NDD			1	GP								pCi/L
Nonvolatile beta	1.1E+03	//		■		1	GP	1.1E+03	//		■		1	GP	pCi/L
Plutonium-238	<3.8E-02	U//	<4.5E-01			1	GP								pCi/L
Plutonium-239/240	<9.3E-02	U//	<5.0E-01			1	GP								pCi/L
Radium-226	1.6E+01	//		■		1	GP								pCi/L
Radium-228	2.3E+00	J/V	NDD			1	GP								pCi/L
Strontium-90	5.6E+02	//		■		1	GP								pCi/L
Technetium-99	5.6E+01	//		■		1	GP								pCi/L
Thorium-228	<7.1E-03	U//	<4.7E-01			1	GP								pCi/L
Thorium-230	<3.8E-02	U//	<1.1E-01			1	GP								pCi/L
Thorium-232	<0.0E+00	U//	<1.1E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	7.9E+02			■											pCi/L
Total radium	1.6E+01			■											pCi/L
Tritium	1.9E+03	//5		■		1	GP	1.3E+03	//		■		1	GP	pCi/mL
Uranium-233/234	9.0E-01	J/V	NDD			1	GP								pCi/L
Uranium-235	<-3.4E-02	U//	<4.4E-01			1	GP								pCi/L
Uranium-238	6.4E-01	J/V	NDD			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB137C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72269.9 E55700.2	33.276494 °N 81.660513 °W	173.8-163.8 ft msl	236 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/16/99 10/18/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	214.1	213.5	ft msl
pH	6.4	5.7	pH
Sp. conductance	397	374	µS/cm
Water temperature	19.9	20.5	°C
Alkalinity as CaCO <sub>3</sub>	19	8	mg/L
Turbidity	1.6	0.2	NTU
Volumes purged	0.0	2.2	Well vol
Sampling code	XN		
Synchronous water level	215.7 (09/16/99)	213.9 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<10	U//	<10			5	GE								µg/L
Arsenic, total recoverable	<15	U//	<15			5	GE								µg/L
Barium, total recoverable	46	//				5	GE								µg/L
Cadmium, total recoverable	<5.0	U//	<5.0			5	GE								µg/L
Chromium, total recoverable	4.1	J//	NDD			5	GE								µg/L
Cobalt, total recoverable	<5.0	U//	<5.0			5	GE								µg/L
Copper, total recoverable	9.2	//				5	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	<10	U//	<10			5	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	0.42	//				1	GE	µg/L
Nickel, total recoverable	<10	U//	<10			5	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	41,000	//		■		25	GE	41,000	//		■		25	GE	µg/L
Selenium, total recoverable	<25	U//	<25			5	GE								µg/L
Silver, total recoverable	<5.0	U//	<5.0			5	GE								µg/L
Tin, total recoverable	<25	U//	<25			5	GE								µg/L
Vanadium, total recoverable	<50	U//	<50			5	GE								µg/L
Zinc, total recoverable	<50	U//	<50			5	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<11	U//	<11			1	GE								µg/L
Dichloromethane	1.7	J//	NDD			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB137C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<-2.7E-02	U//	<5.9E-01			1	GP								pCi/L
Beta dose factor	1.0E+00														NONE
Carbon-14	2.4E+02	//		■		1	GP								pCi/L
Cobalt-60	<2.2E+00	U//	<5.0E+00			1	GP								pCi/L
Curium-242	<-2.9E-02	U//	<6.4E-01			1	GP								pCi/L
Curium-243/244	<8.4E-02	U//	<5.9E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<3.3E-01			1	GP								pCi/L
Gross alpha	9.1E+00	J/K/C	NDD			1	GP	2.2E+00	J/V	NDD			1	GP	pCi/L
Iodine-129	8.8E+00	J/V	NDD			1	GP								pCi/L
Nickel-63	<7.5E+00	JU/L/CI	<1.3E+01			1	GP								pCi/L
Nonvolatile beta	5.5E+01	//		■		1	GP	7.1E+01	//		■		1	GP	pCi/L
Plutonium-238	<1.6E-01	U//	<2.4E-01			1	GP								pCi/L
Plutonium-239/240	<-9.6E-02	U//	<6.5E-01			1	GP								pCi/L
Radium-226	<1.3E+00	U/V	<5.6E-01			1	GP								pCi/L
Radium-228	3.6E+00	//				1	GP								pCi/L
Strontium-90	<-1.5E-01	JU/L/C	<1.0E+00			1	GP								pCi/L
Technetium-99	1.5E+02	//		■		1	GP								pCi/L
Thorium-228	<5.6E-02	U//	<5.6E-01			1	GP								pCi/L
Thorium-230	<9.9E-02	U//	<2.9E-01			1	GP								pCi/L
Thorium-232	<5.4E-02	U//	<2.2E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	3.9E+02			■											pCi/L
Total radium	3.6E+00														pCi/L
Tritium	8.1E+03	//5		■		1	GP	7.8E+03	//		■		1	GP	pCi/mL
Uranium-233/234	<-5.0E-02	U//	<4.8E-01			1	GP								pCi/L
Uranium-235	<-1.9E-02	U//	<4.2E-01			1	GP								pCi/L
Uranium-238	<-6.7E-02	U//	<5.3E-01			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB137D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72278.9 E55696.1	33.276508 °N 81.660542 °W	225.3-205.3 ft msl	236.6 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/16/99 10/18/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	217.9	216.4	ft msl
pH	5.0	4.9	pH
Sp. conductance	166	160	µS/cm
Water temperature	19.1	18.7	°C
Alkalinity as CaCO3	0	0	mg/L
Turbidity	0.6	0.5	NTU
Volumes purged	3.7	4.0	Well vol
Sampling code			
Synchronous water level	216.5 (09/16/99)	215.9 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.16	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	14,000	//		■		25	GE	15,000	//		■		25	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time  
 ■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)  
 NA = Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

## WELL HSB137D (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	3.1E+00	J/K/C	NDD			1	GP	2.8E+00	//				1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	4.7E+01	//				1	GP	8.9E+01	//		■		1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	2.0E+03	//5		■		1	GP	2.3E+03	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB138D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N73160.2 E55260.7	33.277746 °N 81.663400 °W	228.1-208.1 ft msl	252.4 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/16/99 10/14/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	221.6	230.8	ft msl
pH	6.0	5.5	pH
Sp. conductance	20	24	µS/cm
Water temperature	20.1	18.9	°C
Alkalinity as CaCO3	18	5	mg/L
Turbidity	3.5	1.2	NTU
Volumes purged	0.0	20	Well vol
Sampling code	XN	XN	
Synchronous water level	219.9 (09/16/99)	219.7 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	390	//				1	GE	1,200	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time  
■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)  
NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



## WELL HSB138D (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt	ST	H	DF	Lab	4Q99	Mod	Filt	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<3.5E-01	U//	<4.8E-01			1	GP	<2.2E-01	U//	<5.6E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.8E+00	J//	NDD			1	GP	1.8E+00	J//	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.6E+01	//5				1	GP	3.1E+01	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

## WELL HSB139A

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71127.4 E57365.4	33.276684 °N 81.653910 °W	97.6-87.6 ft msl	233.7 ft msl	4" PVC	S	Gordon

SAMPLE DATE 07/08/99 10/12/99

### FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	173.9	173.1	ft msl
pH	7.3	6.9	pH
Sp. conductance	215	223	µS/cm
Water temperature	19.9	19.7	°C
Alkalinity as CaCO <sub>3</sub>	99	97	mg/L
Turbidity	0.5	0.5	NTU
Volumes purged	2.6	2.4	Well vol
Sampling code			
Synchronous water level	173.0 (09/16/99)	172.8 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	40	J//	NDD			1	GE	<30	U//	<50			1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time  
■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)  
NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB139A (cont.)

### Radioactive Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<1.1E-01	U//	<1.0E+00			1	GP	1.4E+00	J//	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<5.2E-01	U//	<1.4E+00			1	GP	1.5E+00	J//	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	<2.4E-01	U//5	<6.3E-01			1	GP	<2.0E-01	U//	<6.4E-01			1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB139C

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71129.8 E57374.5	33.276704 °N 81.653890 °W	158.5-148.5 ft msl	233.8 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/21/99 10/19/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	213.2	212.4	ft msl
pH	5.3	5.2	pH
Sp. conductance	333	320	µS/cm
Water temperature	20.5	18.6	°C
Alkalinity as CaCO3	4	6	mg/L
Turbidity	1.2	0.3	NTU
Volumes purged	0.0	0.024	Well vol
Sampling code	XN	XN	
Synchronous water level	212.2 (09/16/99)	212.1 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	2.1	//		■		1	GE	1.3	//				1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	38,000	//		■		25	GE	36,000	//				■	25	GE µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB139C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	3.2E+00	J//5	NDD			1	GP	<9.9E-01	U//	<2.1E+00			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.4E+01	//				1	GP	2.6E+01	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	2.3E+03	//5		■		1	GP	2.3E+03	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB139D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71133.2 E57384.4	33.276728 °N 81.653871 °W	226.7-206.7 ft msl	233.8 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/08/99 10/12/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	218.2	213.8	ft msl
pH	5.1	5.3	pH
Sp. conductance	33	34	µS/cm
Water temperature	19.5	20.2	°C
Alkalinity as CaCO3	0	0	mg/L
Turbidity	2.0	4.4	NTU
Volumes purged	3.0	3.9	Well vol
Sampling code			
Synchronous water level	217.0 (09/16/99)	216.3 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	1,400	//				1	GE	1,100	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB139D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.2E+00	J//	NDD			1	GP	2.9E+00	//				1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	4.3E+01	//				1	GP	2.2E+01	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	6.5E+01	//5		■		1	GP	1.9E+02	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB140A

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N70050.3 E56535.4	33.272948 °N 81.654003 °W	91.0-81.0 ft msl	235.9 ft msl	4" PVC	S	Gordon

SAMPLE DATE 07/06/99 10/06/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	175.5	174.9	ft msl
pH	6.9	7.0	pH
Sp. conductance	141	140	µS/cm
Water temperature	21.5	19.3	°C
Alkalinity as CaCO3	51	60	mg/L
Turbidity	0.7	0.2	NTU
Volumes purged	2.4	2.6	Well vol
Sampling code			
Synchronous water level	174.7 (09/16/99)	174.5 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	10	J//	NDD			1	GE	<20	U//	<50			1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



## WELL HSB140A (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.3E+00	J/V	NDD			1	GP	<6.6E-01	U//	<8.1E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.3E+00	//				1	GP	<9.0E-01	U//	<1.3E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	<-1.3E-01	U//5	<6.8E-01			1	GP	<-6.6E-03	U//	<5.4E-01			1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB140C

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N70049.2 E56551.8	33.272972 °N 81.653958 °W	171.6-161.6 ft msl	235.6 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/06/99 10/06/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	205.3	205.3	ft msl
pH	5.3	5.4	pH
Sp. conductance	21	21	µS/cm
Water temperature	21.5	18.9	°C
Alkalinity as CaCO3	4	4	mg/L
Turbidity	0.9	0.8	NTU
Volumes purged	3.1	3.5	Well vol
Sampling code			
Synchronous water level	205.0 (09/16/99)	205.0 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	560	//				1	GE	510	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA = Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

**WELL HSB140C (cont.)****Radioactive Constituents**

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	9.7E-01	J//	NDD			1	GP	<3.4E-01	U//	<7.0E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<1.6E+00	U//	<1.6E+00			1	GP	1.2E+00	J//	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	3.0E+00	//5				1	GP	2.6E+00	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA = Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB140D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N70036.0 E56560.6	33.272957 °N 81.653909 °W	214.1-194.1 ft msl	236.2 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/06/99 10/06/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	212.5	212.1	ft msl
pH	4.7	4.8	pH
Sp. conductance	16	17	µS/cm
Water temperature	21.2	19.3	°C
Alkalinity as CaCO3	0	0	mg/L
Turbidity	1.0	0.5	NTU
Volumes purged	5.0	4.9	Well vol
Sampling code			
Synchronous water level	212.2 (09/16/99)	211.6 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	430	//				1	GE	390	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB140D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	NA														
Beta dose factor															
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.9E+00	//				1	GP	1.3E+00	J/V	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.5E+00	J/V	NDD			1	GP	2.1E+00	J/V	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	9.2E+00	//5				1	GP	7.2E+00	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB141A

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71213.6 E59168.7	33.279817 °N 81.649329 °W	90.6-80.6 ft msl	254.6 ft msl	4" PVC	S	Gordon

SAMPLE DATE 07/19/99 10/07/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	175.0	174.2	ft msl
pH	11.3	11.2	pH
Sp. conductance	1050	938	µS/cm
Water temperature	22.3	19.4	°C
Alkalinity as CaCO3	445	223	mg/L
Turbidity	0.4	0.5	NTU
Volumes purged	2.4	0.016	Well vol
Sampling code		XN	
Synchronous water level	174.0 (09/16/99)	173.9 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	70	//				1	GE	<80	U//	<50			1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB141A (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<2.3E-02	U//	<1.1E+00			1	GP	<4.3E-01	U//	<1.8E+00			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<1.2E+00	U//	<1.5E+00			1	GP	<1.0E+00	U//	<1.5E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	6.1E-01	J//5	NDD			1	GP	1.5E+00	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB141CR

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71226.7 E59167.2	33.279843 °N 81.649358 °W	162.1-152.1 ft msl	254.3 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/19/99 10/07/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	228.5	226.8	ft msl
pH	5.8	5.5	pH
Sp. conductance	24	23	µS/cm
Water temperature	20.8	18.5	°C
Alkalinity as CaCO <sub>3</sub>	4	4	mg/L
Turbidity	0.4	0.3	NTU
Volumes purged	0.0	2.6	Well vol
Sampling code			
Synchronous water level	226.8 (09/16/99)	226.4 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	130	//				1	GE	130	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA = Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



## WELL HSB141CR (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<2.4E-01	U//	<4.4E-01			1	GP	7.9E-01	J//	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.8E+00	J//	NDD			1	GP	1.1E+00	J//	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	8.3E-01	J//5	NDD			1	GP	<3.7E-01	U//	<5.7E-01			1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB141D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71184.4 E59170.9	33.279756 °N 81.649266 °W	237.8-217.8 ft msl	254.8 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/20/99 10/07/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	243.7	234.2	ft msl
pH	5.2	5.3	pH
Sp. conductance	24	19	µS/cm
Water temperature	25.8	29.4	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	12.7	14.9	NTU
Volumes purged	0.35	0.75	Well vol
Sampling code	XN	XN	
Synchronous water level	235.3 (09/16/99)	233.4 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.078	U/V/	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	160	//				1	GE	160	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB141D (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<7.7E-01	U//	<9.8E-01			1	GP	2.6E+00	//				1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<7.8E-01	U//	<1.3E+00			1	GP	<7.7E-01	U//	<1.1E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.4E+01	//5				1	GP	1.1E+01	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB142C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N73119.0 E53505.3	33.274791 °N 81.667942 °W	171.6-161.6 ft msl	204 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/14/99 10/13/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	198.9	198.1	ft msl
pH	5.4	5.3	pH
Sp. conductance	23	22	µS/cm
Water temperature	18.3	18.2	°C
Alkalinity as CaCO <sub>3</sub>	2	2	mg/L
Turbidity	1.3	0.9	NTU
Volumes purged	3.3	2.8	Well vol
Sampling code			
Synchronous water level	196.3 (09/16/99)	197.8 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	300	//				1	GE	280	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA = Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB142C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<3.5E-01	U//	<6.0E-01			1	GP	<4.2E-02	U//	<1.5E+00			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	2.4E+00	J//	NDD			1	GP	<1.4E+00	U//	<1.4E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.1E+01	//5				1	GP	9.7E+00	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB142D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N73113.0 E53493.1	33.274758 °N 81.667962 °W	199.7-189.7 ft msl	204.2 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/27/99 10/13/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	199.7	197.2	ft msl
pH	4.7	5.0	pH
Sp. conductance	41	37	µS/cm
Water temperature	23.8	21.0	°C
Alkalinity as CaCO3	0	1	mg/L
Turbidity	9.6	14.7	NTU
Volumes purged	0.15	0.20	Well vol
Sampling code	XN	XN	
Synchronous water level	195.6 (09/16/99)	196.8 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	<50	U//	<50			1	GE	1,000	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB142D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<7.8E-01	U//	<7.8E-01			1	GP	9.2E-01	J//K/C	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.4E+00	J//5	NDD			1	GP	5.0E+00	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	2.5E+02	//		■		1	GP	3.5E+02	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_ UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_ UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB143C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N73738.2 E52773.2	33.274966 °N 81.671072 °W	179.1-169.1 ft msl	222.2 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/16/99 10/06/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	208.5	207.6	ft msl
pH	5.1	5.0	pH
Sp. conductance	48	44	µS/cm
Water temperature	19.6	19.0	°C
Alkalinity as CaCO3	0	1	mg/L
Turbidity	0.7	0.3	NTU
Volumes purged	3.1	3.3	Well vol
Sampling code			
Synchronous water level	207.1 (09/20/99)	207.4 (12/07/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	520	//				1	GE	490	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time  
■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)  
NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



# WELL HSB143C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.0E+00	J/V	NDD			1	GP	<5.7E-01	U//	<6.8E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<7.3E-01	U//	<1.2E+00			1	GP	1.4E+00	J/V	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	5.4E+00	//5				1	GP	4.2E+00	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB143D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N73754.0 E52774.5	33.275003 °N 81.671099 °W	216.9-196.9 ft msl	222.9 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/16/99 10/06/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	212.1	211.0	ft msl
pH	4.5	4.5	pH
Sp. conductance	17	17	µS/cm
Water temperature	19.5	19.2	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.7	0.6	NTU
Volumes purged	4.8	5.2	Well vol
Sampling code			
Synchronous water level	210.4 (09/20/99)	210.8 (12/07/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	350	//				1	GE	370	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB143D (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.8E+00	J//	NDD			1	GP	1.5E+00	J//	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<5.0E-01	U//	<1.5E+00			1	GP	3.4E+00	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	6.5E+00	//5				1	GP	5.8E+00	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

## WELL HSB144A

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71892.1 E56200.5	33.276475 °N 81.658462 °W	88.6-78.6 ft msl	235.6 ft msl	4" PVC	S	Gordon

SAMPLE DATE 07/14/99 10/12/99

### FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	170.8	170.0	ft msl
pH	6.7	6.8	pH
Sp. conductance	139	132	µS/cm
Water temperature	20.0	20.0	°C
Alkalinity as CaCO <sub>3</sub>	57	52	mg/L
Turbidity	0.7	0.2	NTU
Volumes purged	2.5	2.4	Well vol
Sampling code			
Synchronous water level	169.9 (09/16/99)	169.8 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	<50	U//	<50			1	GE	<80	U//	<50			1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB144A (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	8.6E-01	J//	NDD			1	GP	9.2E-01	J//	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.7E+00	J//	NDD			1	GP	1.7E+00	J//	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.7E+01	//5				1	GP	1.6E+01	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB145C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71098.9 E57769.0	33.277280 °N 81.652792 °W	174.7-164.7 ft msl	235.7 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/07/99 10/12/99

### FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	212.1	211.9	ft msl
pH	6.0	6.0	pH
Sp. conductance	334	331	µS/cm
Water temperature	20.4	19.6	°C
Alkalinity as CaCO <sub>3</sub>	15	18	mg/L
Turbidity	0.6	1.0	NTU
Volumes purged	2.5	2.6	Well vol
Sampling code			
Synchronous water level	211.8 (09/16/99)	( )	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	1.3	//				1	GE	1.7	//				1	WA	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	66,000	//		■		25	GE	36,000	//		■		50	WA	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB145C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.8E+00	J/W	NDD			1	GP	9.3E+00	//				1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	3.7E+01	//				1	GP	5.0E+01	//		■		1	TM	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.6E+03	//5		■		1	GP	1.6E+03	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB145D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71088.0 E57753.9	33.277231 °N 81.652810 °W	194.2-184.2 ft msl	236.2 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/19/99 10/20/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	217.8	215.3	ft msl
pH	5.1	5.5	pH
Sp. conductance	220	228	µS/cm
Water temperature	20.8	21.1	°C
Alkalinity as CaCO3	0	7	mg/L
Turbidity	2.4	4.5	NTU
Volumes purged	2.6	2.7	Well vol
Sampling code			
Synchronous water level	215.6 (09/16/99)	212.3 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	2.3	//		■		1	GE	2.5	//		■		1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	24,000	//		■		25	GE	24,000	//		■		25	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



## WELL HSB145D (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	3.5E+01	//		■		1	GP	5.2E+01	//		■		1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	5.0E+02	//		■		1	GP	6.6E+02	//		■		1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.3E+03	//5		■		1	GP	1.5E+03	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB146A

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N70478.9 E58454.0	33.277026 °N 81.649784 °W	95.5-85.5 ft msl	251.6 ft msl	4" PVC	S	Gordon

SAMPLE DATE 07/16/99 10/07/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	176.0	175.2	ft msl
pH	7.2	7.1	pH
Sp. conductance	185	175	µS/cm
Water temperature	20.1	19.6	°C
Alkalinity as CaCO3	81	85	mg/L
Turbidity	0.9	0.2	NTU
Volumes purged	2.6	3.1	Well vol
Sampling code			
Synchronous water level	175.1 (09/16/99)	174.9 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	200	//				1	GE	<20	U//	<50			1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB146A (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST H	DF	Lab	4Q99	Mod	Filt.	ST H	DF	Lab	Unit
Americium-241													
Beta dose factor	NA												
Carbon-14													
Cobalt-60													
Curium-242													
Curium-243/244													
Curium-245/246													
Gross alpha	<5.7E-01	U//	<7.4E-01		1	GP	<7.0E-01	U//	<7.5E-01		1	GP	pCi/L
Iodine-129													
Nickel-63													
Nonvolatile beta	<5.6E-01	U//	<1.3E+00		1	GP	1.4E+00	J/V	NDD		1	GP	pCi/L
Plutonium-238													
Plutonium-239/240													
Radium-226													
Radium-228													
Total radium	NA												
Strontium-90													
Technetium-99													
Thorium-228													
Thorium-230													
Thorium-232													
Sum of alphas	NA												
Sum of betas	NA												
Tritium	<-3.2E-01	U//5	<5.6E-01		1	GP	<8.6E-02	U//	<5.8E-01		1	GP	pCi/mL
Uranium-233/234													
Uranium-235													
Uranium-238													

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

**WELL HSB146C**

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N70471.6 E58473.1	33.277041 °N 81.649719 °W	162.3-152.3 ft msl	252.3 ft msl	4" PVC	S	LAZ_UTRA

<u>SAMPLE DATE</u>	<u>07/06/99</u>	<u>10/07/99</u>
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**FIELD DATA**

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	209.1	209.1	ft msl
pH	7.7	6.9	pH
Sp. conductance	55	84	µS/cm
Water temperature	19.5	19.3	°C
Alkalinity as CaCO3	28	41	mg/L
Turbidity	0.6	0.8	NTU
Volumes purged	2.8	2.7	Well vol
Sampling code			
Synchronous water level	208.7 (09/16/99)	208.9 (12/06/99)	ft msl

**ANALYTICAL DATA****Inorganic Constituents**

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	740	//				1	GE	570	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

**Organic Constituents**

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

**Notes:**

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB146C (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	9.3E-01	J//	NDD			1	GP	1.1E+00	J//	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<8.1E-01	U//	<1.3E+00			1	GP	1.2E+00	J//	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	9.0E+00	//5				1	GP	8.7E+00	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB146D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N70469.7 E58493.0	33.277069 °N 81.649663 °W	224.1-204.0 ft msl	253.1 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/06/99 10/07/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	219.9	220.1	ft msl
pH	5.3	4.8	pH
Sp. conductance	15	17	µS/cm
Water temperature	20.4	20.8	°C
Alkalinity as CaCO3	0	0	mg/L
Turbidity	9.1	2.1	NTU
Volumes purged	0.096	0.28	Well vol
Sampling code	XN	XN	
Synchronous water level	220.6 (09/16/99)	219.4 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	600	//				1	GE	520	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB146D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<4.9E-01	U//	<9.6E-01			1	GP	<5.7E-01	U//	<6.9E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<1.2E+00	U//	<1.4E+00			1	GP	<2.1E-01	U//	<1.2E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	8.8E+00	//5				1	GP	9.0E+00	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB147D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N73827.9 E55804.4	33.280110 °N 81.663265 °W	235.2-215.2 ft msl	267.3 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/07/99 10/06/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	226.9	226.7	ft msl
pH	5.2	4.9	pH
Sp. conductance	27	26	µS/cm
Water temperature	23.9	19.4	°C
Alkalinity as CaCO3	1	0	mg/L
Turbidity	14.8	10.7	NTU
Volumes purged	0.26	0.26	Well vol
Sampling code	XN	XN	
Synchronous water level	226.7 (09/16/99)	226.5 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	290	//				1	GE	280	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time  
■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)  
NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



# WELL HSB147D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<5.0E-01	U//	<6.1E-01			1	GP	6.5E-01	J//	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<1.3E+00	U//	<1.4E+00			1	GP	2.6E+00	J//	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	9.6E+00	//5				1	GP	7.6E+00	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB148C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N70151.5 E55344.2	33.271228 °N 81.657336 °W	168.9-158.9 ft msl	250.9 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/06/99 10/08/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	201.1	201.1	ft msl
pH	8.7	8.3	pH
Sp. conductance	55	59	µS/cm
Water temperature	19.8	18.6	°C
Alkalinity as CaCO3	23	22	mg/L
Turbidity	2.7	5.4	NTU
Volumes purged	0.036	0.036	Well vol
Sampling code	XN	XN	
Synchronous water level	200.8 (09/16/99)	201.0 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	500	//				1	GE	500	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB148C (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.1E+00	J/V	NDD			1	GP	1.1E+00	J/V	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	2.2E+00	J/V	NDD			1	GP	2.1E+00	J/K/C	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.1E+00	J/V/5	NDD			1	GP	1.5E+00	J/V	NDD			1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB148D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N70160.9 E55355.7	33.271268 °N 81.657324 °W	218.1-198.1 ft msl	251.1 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE	07/06/99	10/08/99
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## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	211.7	211.4	ft msl
pH	6.7	7.8	pH
Sp. conductance	100	93	µS/cm
Water temperature	19.8	20.8	°C
Alkalinity as CaCO3	52	44	mg/L
Turbidity	11.2	12.1	NTU
Volumes purged	0.11	0.46	Well vol
Sampling code	XN	XN	
Synchronous water level	171.4 (09/16/99)	211.2 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	60	//				1	GE	<70	U/V/	<50			1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB148D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	2.2E+00	J/V	NDD			1	GP	4.1E+00	//				1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	2.2E+00	J/V	NDD			1	GP	2.0E+00	J/K/C	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	7.8E+00	//5				1	GP	9.1E+00	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB149D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N71338.8 E57286.3	33.277023 °N 81.654529 °W	227.0-207.0 ft msl	240 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/14/99 10/12/99

### FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	219.3	217.6	ft msl
pH	4.7	4.9	pH
Sp. conductance	21	23	µS/cm
Water temperature	19.8	19.5	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	4.7	6.0	NTU
Volumes purged	2.2	2.3	Well vol
Sampling code	A		
Synchronous water level	218.1 (09/16/99)	217.4 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	0.058	J/V	NDD			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	310	//				1	GE	650	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB149D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	7.6E-01	J/V	NDD			1	GP	2.0E+00	//				1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<5.8E-01	U//	<1.4E+00			1	GP	<1.2E+00	U//	<1.3E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.8E+01	//5				1	GP	2.6E+01	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB150D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N71692.6 E58692.8	33.280100 °N 81.651512 °W	226.9-206.9 ft msl	239 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 08/03/99 10/13/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	225.8	224.8	ft msl
pH	5.1	4.7	pH
Sp. conductance	30	45	µS/cm
Water temperature	24.4	20.3	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	6.1	10.2	NTU
Volumes purged	0.081	0.0	Well vol
Sampling code	XN	XN	
Synchronous water level	224.5 (09/16/99)	224.5 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable	<0.32	U//	<2.0			1	GE								µg/L
Arsenic, total recoverable	<3.0	U//	<3.0			1	GE								µg/L
Barium, total recoverable	6.8	//				1	GE								µg/L
Cadmium, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Chromium, total recoverable	<7.1	U//	<3.0			1	GE								µg/L
Cobalt, total recoverable	<0.098	JU//4	<1.0			1	GE								µg/L
Copper, total recoverable	16	//				1	GE								µg/L
Cyanide	<10	U//	<10			1	GE								µg/L
Lead, total recoverable	1.8	J//	NDD			1	GE								µg/L
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable	4.3	//				1	GE								µg/L
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	10	J//	NDD			1	GE	1,700	//				1	GE	µg/L
Selenium, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Silver, total recoverable	<1.0	U//	<1.0			1	GE								µg/L
Tin, total recoverable	<5.0	U//	<5.0			1	GE								µg/L
Vanadium, total recoverable	8.1	J//	NDD			1	GE								µg/L
Zinc, total recoverable	24	//				1	GE								µg/L

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene	<1.0	U//	<1.0			1	GE								µg/L
Bis(2-ethylhexyl) phthalate	<10	U//	<10			1	GE								µg/L
Dichloromethane	<2.5	U//	<5.0			1	GE								µg/L
Tetrachloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichloroethylene	<1.0	U//	<1.0			1	GE								µg/L
Trichlorofluoromethane	<5.0	U//	<5.0			1	GE								µg/L

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



# WELL HSB150D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241	<1.6E-02	U//	<3.9E-01			1	GP								pCi/L
Beta dose factor	NA														
Carbon-14	<1.5E-01	U//	<7.5E+00			1	GP								pCi/L
Cobalt-60	<-1.3E+00	U//	<3.3E+00			1	GP								pCi/L
Curium-242	<-1.1E-02	U//	<3.2E-01			1	GP								pCi/L
Curium-243/244	<-3.5E-02	U//	<5.0E-01			1	GP								pCi/L
Curium-245/246	<0.0E+00	U//	<1.7E-01			1	GP								pCi/L
Gross alpha	2.1E+00	J//	NDD			1	GP	5.7E+00	J/K/C	NDD			1	GP	pCi/L
Iodine-129	<1.4E-01	U//	<1.2E+00			1	GP								pCi/L
Nickel-63	<-5.6E+00	JU/L/I	<9.5E+00			1	GP								pCi/L
Nonvolatile beta	<8.3E-01	U//	<1.7E+00			1	GP	4.3E+01	//				1	GP	pCi/L
Plutonium-238	<2.9E-02	U//	<1.8E-01			1	GP								pCi/L
Plutonium-239/240	<7.0E-02	U//	<1.1E-01			1	GP								pCi/L
Radium-226	<5.0E-01	U/V/	<4.6E-01			1	GP								pCi/L
Radium-228	<-8.7E-03	U//	<7.8E-01			1	GP								pCi/L
Total radium	NA														
Strontium-90	<-4.2E-03	JU/L/C	<1.3E+00			1	GP								pCi/L
Technetium-99	<-3.0E+00	U//	<8.2E+00			1	GP								pCi/L
Thorium-228	<-1.1E-01	U//	<4.8E-01			1	GP								pCi/L
Thorium-230	<2.2E-01	U//	<2.4E-01			1	GP								pCi/L
Thorium-232	<-7.5E-03	U//	<1.7E-01			1	GP								pCi/L
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.3E+01	//				1	GP	4.7E+01	//				1	GP	pCi/mL
Uranium-233/234	<5.3E-02	U//	<1.9E-01			1	GP								pCi/L
Uranium-235	<0.0E+00	U//	<9.7E-02			1	GP								pCi/L
Uranium-238	<0.0E+00	U//5	<9.6E-02			1	GP								pCi/L

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

# WELL HSB151C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72997.9 E54014.9	33.275355 °N 81.666365 °W	180.6-170.6 ft msl	213.6 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/07/99 10/13/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	206.5	206.4	ft msl
pH	4.9	4.8	pH
Sp. conductance	77	75	µS/cm
Water temperature	19.9	18.7	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.4	0.2	NTU
Volumes purged	2.4	4.0	Well vol
Sampling code			
Synchronous water level	205.1 (09/16/99)	205.9 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	0.20	J//	NDD			1	GE	0.19	J//	NDD			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	7,800	//				3	GE	7,200	//				5	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA = Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB151C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.1E+00	J//	NDD			1	GP	1.6E+00	J//K/C	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	7.0E+00	//				1	GP	1.1E+01	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	8.8E+02	//5		■		1	GP	9.2E+02	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB151D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72997.8 E54026.4	33.275373 °N 81.666334 °W	207.6-197.6 ft msl	213.6 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/07/99 10/13/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	205.7	205.7	ft msl
pH	5.1	4.9	pH
Sp. conductance	26	27	µS/cm
Water temperature	20.7	20.6	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	6.9	4.8	NTU
Volumes purged	3.4	5.3	Well vol
Sampling code			
Synchronous water level	204.1 (09/16/99)	205.1 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	1,500	//				1	GE	1,700	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSB151D (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	6.3E-01	J//	NDD			1	GP	<8.7E-01	U//	<9.5E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.9E+00	J//	NDD			1	GP	2.2E+00	J//	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	3.7E+01	//5		■		1	GP	3.5E+01	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB152C

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72012.0 E54346.7	33.273716 °N 81.663576 °W	183.1-173.1 ft msl	214.1 ft msl	4" PVC	S	LAZ_UTRA

SAMPLE DATE 07/14/99 10/13/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	198.9	198.3	ft msl
pH	4.8	4.6	pH
Sp. conductance	118	114	µS/cm
Water temperature	18.0	17.4	°C
Alkalinity as CaCO3	0	0	mg/L
Turbidity	0.8	1.4	NTU
Volumes purged	3.1	3.1	Well vol
Sampling code			
Synchronous water level	197.8 (09/16/99)	198.1 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	0.19	J/V	NDD			1	GE	0.16	J/V	NDD			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	12,000	//		■		5	GE	12,000	//		■		5	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB152C (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	7.0E-01	J//	NDD			1	GP	<8.8E-01	U//	<9.2E-01			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	3.2E+01	//				1	GP	2.9E+01	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.2E+03	//5		■		1	GP	1.1E+03	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

## Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSB152D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72011.7 E54362.1	33.273740 °N 81.663535 °W	207.0-197.0 ft msl	214.1 ft msl	4" PVC	S	UAZ_UTRA

SAMPLE DATE 07/27/99 10/13/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation			ft msl
pH	5.3	4.6	pH
Sp. conductance	106	45	µS/cm
Water temperature	27.9	25.0	°C
Alkalinity as CaCO3	7	0	mg/L
Turbidity	11.1	14.6	NTU
Volumes purged	0.27		Well vol
Sampling code	XN	XN	
Synchronous water level	D (09/16/99)	D (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable															
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	320	//				1	GE	1,800	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA = Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA = Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA = Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon = Gordon Aquifer



# WELL HSB152D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	1.4E+00	J/V	NDD			1	GP	1.6E+00	J/IK/C	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	3.2E+00	//5				1	GP	1.1E+01	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	8.9E+01	//		■		1	GP	1.8E+02	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSL 1D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72179.6 E58925.0	33.281556 °N 81.651846 °W	239.8-219.8 ft msl	264 ft msl	2" PVC	V	UAZ_UTRA

SAMPLE DATE 08/02/99 10/12/99

### FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	237.1	236.4	ft msl
pH	4.5	4.5	pH
Sp. conductance	56	54	µS/cm
Water temperature	21.2	20.8	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.1	0.2	NTU
Volumes purged	3.9	3.3	Well vol
Sampling code			
Synchronous water level	236.1 (09/16/99)	235.9 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable	<4.7	U//	<4.7				1	WA							µg/L
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	0.042	J//	NDD				1	GE	<0.20	U//			<0.20	1	GE µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	3.800	//					3	GE	3,300	//				2	GE µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSL 1D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<3.1E+00	U/V/	<6.6E-01			1	GP	1.1E+01	//				1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.7E+01	//				1	GP	1.8E+01	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.5E+02	//		■		1	GP	1.3E+02	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

## WELL HSL 2D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72190.8 E59423.5	33.282394 °N 81.650556 °W	245.3-225.2 ft msl	265.5 ft msl	2" PVC	V	UAZ_UTRA

SAMPLE DATE 08/02/99 10/12/99

### FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	242.3	241.6	ft msl
pH	5.2	5.1	pH
Sp. conductance	43	41	µS/cm
Water temperature	20.8	19.8	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.4	1.1	NTU
Volumes purged	4.6	4.1	Well vol
Sampling code			
Synchronous water level	241.1 (09/16/99)	240.7 (12/06/99)	ft msl

### ANALYTICAL DATA

#### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable	<4.7	U//	<4.7			1	WA								µg/L
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	1,100	//				1	GE	950	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

#### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA -- Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA -- Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA -- Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon -- Gordon Aquifer

## WELL HSL 2D (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<8.1E-01	U/V/	<6.7E-01			1	GP	1.1E+00	J/V/	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<9.0E-01	U//	<1.2E+00			1	GP	<3.3E-01	U//	<1.2E+00			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	2.2E+01	//		■		1	GP	2.2E+01	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSL 3D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72251.5 E59770.6	33.283094 °N 81.649759 °W	253.8-233.7 ft msl	267.6 ft msl	2" PVC	V	UAZ_UTRA

SAMPLE DATE 08/02/99 10/12/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	249.9	248.9	ft msl
pH	4.7	4.8	pH
Sp. conductance	32	29	µS/cm
Water temperature	22.1	21.3	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	3.4	3.7	NTU
Volumes purged	6.0	3.2	Well vol
Sampling code			
Synchronous water level	247.9 (09/16/99)	247.4 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable	<4.7	U//	<4.7				1	WA							µg/L
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20				1	GE	<0.20	U//			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	1,300	//					1	GE	890	//			1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA = Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

## WELL HSL 3D (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<8.5E-01	U/V	<6.2E-01			1	GP	2.4E+00	J/V	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	<1.2E+00	U//	<1.3E+00			1	GP	1.8E+00	J/V	NDD			1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.0E+02	//		■		1	GP	8.2E+01	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSL 4D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72453.7 E60171.9	33.284196 °N 81.649095 °W	265.1-245.0 ft msl	273.2 ft msl	2" PVC	V	UAZ_UTRA

SAMPLE DATE 08/02/99 10/12/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	262.7	261.0	ft msl
pH	5.6	5.7	pH
Sp. conductance	95	77	µS/cm
Water temperature	22.3	21.4	°C
Alkalinity as CaCO3	4	5	mg/L
Turbidity	0.9	2.8	NTU
Volumes purged	6.2	5.0	Well vol
Sampling code			
Synchronous water level	259.2 (09/16/99)	258.5 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable	0.60	J/V	NDD			1	WA								µg/L
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	1,500	//				1	GE	800	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time  
■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)  
NA - Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer



# WELL HSL 4D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<1.5E+00	U/V/	<4.9E-01			1	GP	2.0E+00	J/V/	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	6.4E+01	//		■		1	GP	4.6E+01	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.9E+01	//				1	GP	1.7E+01	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSL 5D

SRS Coord.	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72562.2 E60339.4	33.284709 °N 81.648865 °W	267.7-247.8 ft msl	276.6 ft msl	2" PVC	V	UAZ_UTRA

SAMPLE DATE 08/02/99 10/12/99

## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	267.3	265.9	ft msl
pH	5.4	4.9	pH
Sp. conductance	56	39	µS/cm
Water temperature	28.7	27.3	°C
Alkalinity as CaCO3	6	0	mg/L
Turbidity	4.2	5.2	NTU
Volumes purged	2.5	0.0	Well vol
Sampling code		XN	
Synchronous water level	262.0 (09/16/99)	264.0 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable	<4.7	U//	<4.7			1	WA								µg/L
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	1,400	//				1	GE	1,300	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time  
■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)  
NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSL 5D (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<6.0E-01	U/V/	<4.6E-01			1	GP	2.5E+00	//				1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	2.1E+01	//				1	GP	1.3E+01	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	1.1E+01	//				1	GP	8.9E+00	//				1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSL 6D

<u>SRS Coord.</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72659.7 E60531.1	33.285238 °N 81.648549 °W	264.0-243.9 ft msl	280 ft msl	2" PVC	V	UAZ_UTRA

SAMPLE DATE 08/03/99 10/13/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	260.6	259.1	ft msl
pH	4.3	4.3	pH
Sp. conductance	50	79	µS/cm
Water temperature	21.9	21.7	°C
Alkalinity as CaCO3	0	0	mg/L
Turbidity	8.5	10.5	NTU
Volumes purged	0.36	0.0	Well vol
Sampling code	XN	XN	
Synchronous water level	257.2 (09/16/99)	256.1 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable	<4.7	U//	<4.7			1	WA								µg/L
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	0.15	J//	NDD			1	GE	0.17	J//	NDD			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	330	//				1	GE	330	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

- = exceeded holding time
- = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)
- NA = Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA - Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA - Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon - Gordon Aquifer

## WELL HSL 6D (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<2.7E+00	U/V/	<7.1E-01			1	GP	7.7E+00	J/K/C	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	3.2E+01	//				1	GP	4.5E+01	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	2.3E+01	//		■		1	GP	2.1E+01	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSL 7D

SRS Coord	Lat/Longitude	Screen Zone Elevation	Top of Casing	Casing	Pump	Screen Zone
N72674.4 E60723.0	33.285583 °N 81.648073 °W	262.4-242.3 ft msl	283.8 ft msl	2" PVC	V	UAZ_UTRA

SAMPLE DATE	08/03/99	10/13/99
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## FIELD DATA

Parameter	3Q99	4Q99	Unit
Water elevation	259.5	258.2	ft msl
pH	4.4	4.6	pH
Sp. conductance	47	47	µS/cm
Water temperature	22.0	20.4	°C
Alkalinity as CaCO3	0	0	mg/L
Turbidity	11.3	13.5	NTU
Volumes purged	0.35	0.0	Well vol
Sampling code	XN	XN	
Synchronous water level	257.5 (09/16/99)	256.6 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable	<4.7	U//	<4.7			1	WA								µg/L
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	<0.20	U//	<0.20			1	GE	<0.20	U//	<0.20			1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	2,500	//				1	GE	2,300	//				1	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

## WELL HSL 7D (cont.)

### Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<3.9E+00	U/V/	<1.4E+00			1	GP	1.5E+00	J/K/C	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	3.3E+00	J/V/	NDD			1	GP	2.9E+00	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	2.7E+01	//		■		1	GP	2.6E+01	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

# WELL HSL 8D

<u>SRS Coord</u>	<u>Lat/Longitude</u>	<u>Screen Zone Elevation</u>	<u>Top of Casing</u>	<u>Casing</u>	<u>Pump</u>	<u>Screen Zone</u>
N72688.1 E61117.1	33.286257 °N 81.647061 °W	268.4-248.4 ft msl	288.7 ft msl	2" PVC	V	UAZ_UTRA

SAMPLE DATE 08/02/99 10/13/99

## FIELD DATA

<u>Parameter</u>	<u>3Q99</u>	<u>4Q99</u>	<u>Unit</u>
Water elevation	259.8	259.0	ft msl
pH	5.0	5.0	pH
Sp. conductance	88	74	µS/cm
Water temperature	27.0	23.4	°C
Alkalinity as CaCO <sub>3</sub>	0	0	mg/L
Turbidity	0.4	10.4	NTU
Volumes purged	4.3	0.0	Well vol
Sampling code		XN	
Synchronous water level	258.7 (09/16/99)	258.0 (12/06/99)	ft msl

## ANALYTICAL DATA

### Inorganic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Antimony, total recoverable															
Arsenic, total recoverable															
Barium, total recoverable															
Cadmium, total recoverable	<4.7	U//	<4.7			1	WA								µg/L
Chromium, total recoverable															
Cobalt, total recoverable															
Copper, total recoverable															
Cyanide															
Lead, total recoverable															
Mercury, total recoverable	0.34	//				1	GE	0.31	//				1	GE	µg/L
Nickel, total recoverable															
Nitrate as nitrogen															
Nitrate-nitrite as nitrogen	9,500	//				5	GE	6,100	//				5	GE	µg/L
Selenium, total recoverable															
Silver, total recoverable															
Tin, total recoverable															
Vanadium, total recoverable															
Zinc, total recoverable															

### Organic Constituents

<u>Constituents</u>	<u>3Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>4Q99</u>	<u>Mod</u>	<u>Filt.</u>	<u>ST</u>	<u>H</u>	<u>DF</u>	<u>Lab</u>	<u>Unit</u>
Benzene															
Bis(2-ethylhexyl) phthalate															
Dichloromethane															
Tetrachloroethylene															
Trichloroethylene															
Trichlorofluoromethane															

#### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer



# WELL HSL 8D (cont.)

## Radioactive Constituents

Constituents	3Q99	Mod	Filt.	ST	H	DF	Lab	4Q99	Mod	Filt.	ST	H	DF	Lab	Unit
Americium-241															
Beta dose factor	NA														
Carbon-14															
Cobalt-60															
Curium-242															
Curium-243/244															
Curium-245/246															
Gross alpha	<2.5E+00	U/V/	<7.1E-01			1	GP	9.9E-01	J/K/C	NDD			1	GP	pCi/L
Iodine-129															
Nickel-63															
Nonvolatile beta	1.3E+01	//				1	GP	9.9E+00	//				1	GP	pCi/L
Plutonium-238															
Plutonium-239/240															
Radium-226															
Radium-228															
Total radium	NA														
Strontium-90															
Technetium-99															
Thorium-228															
Thorium-230															
Thorium-232															
Sum of alphas	NA														
Sum of betas	NA														
Tritium	6.4E+01	//		■		1	GP	5.1E+01	//		■		1	GP	pCi/mL
Uranium-233/234															
Uranium-235															
Uranium-238															

### Notes:

● = exceeded holding time

■ = exceeded groundwater protection or monitoring constituent standard (See Appendix A.)

NA – Not applicable. Applies to beta dose and sum of betas if there are no beta-emitting radionuclides above detection limits; to sum of alphas if there are no alpha-emitting radionuclides above detection limits; and to total radium if neither radium-226 nor radium-228 was above detection limit

UAZ\_UTRA – Upper Aquifer Zone of the Upper Three Runs Aquifer; LAZ\_UTRA – Lower Aquifer Zone of the Upper Three Runs Aquifer; Gordon – Gordon Aquifer

Table C-2. UIC Results

## H-Area WTU UIC Sample Results: July-December 1999

UIC Permitted Constituents			Reg	Jul-99	Jul-99 (2)	Aug-99	Sep-99	Oct-99	Nov-99	Dec-99
Constituent	Unit	Limit	Result	Result	Result	Result	Result	Result	Result	Result
<b>Section I, INORGANICS</b>										
Antimony	µg/L	6	<2	<2	<2	<2	<2	<2	<2	<2
Arsenic	µg/L	50	3.10	<3	<3	<3	<3	<3	<3	3.31
Barium	µg/L	2000	<2	<2	<2	<2	<2	<2	<2	<2
Cadmium	µg/L	5	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	µg/L	100	<3	<3	<3	<3	<3	<3	<3	3.36
Cobalt	µg/L	140	11.30	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	1300	7.23	1.54	<1	<1	<1	<1	1.75	<2
Cyanide	µg/L	200	<10	<10	<10	<10	<10	<10	<10	<5
Lead	µg/L	50	<2	<2	<2	<2	<2	<2	<2	<2
Mercury	µg/L	2	2.06	0.51	1.78	1.41	1.26	1.42	1.69	1.69
Nickel	µg/L	100	12.80	<2	<2	<2	<2	<2	<2	<2
Selenium	µg/L	50	<5	<5	<5	<5	<5	<5	<5	<3
Silver	µg/L	50	<1	<1	<1	<1	<1	<1	<1	<1
Tin	µg/L	50	<5	<5	<5	<5	<5	<5	<5	<2
Vanadium	µg/L	49	<10	<10	<10	<10	<10	<10	80.10	12.40
Zinc	µg/L	5000	24.40	<10	<10	<10	<10	<10	<10	<10
<b>Section II, ORGANICS</b>										
Benzene	µg/L	5	<1	<1	<1	<1	<1	<1	<1	<1
B2EHP	µg/L	140	<10	<10.2	<10	<10	<10	<10	<10	<10.5
Methylene Chloride	µg/L	5	<5	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	µg/L	5	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethylene	µg/L	5	<1	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	µg/L	100	<5	<5	<5	<5	<5	<5	<5	<5
<b>Section III, RADIONUCLIDES</b>										
Americium-241	pCi/L	<15	<1.23	<1.01	<0.298	<0.891	<0.366	<0.0662	<0.266	<0.266
Cesium-137	pCi/L	<50	<7.29	<6.88	<9.35	<7.3	<8.9	<6.83	<6.1	<6.1
Curium-242	pCi/L	<15	<0.61	<0.337	<0.373	<0.64	<0.182	<0.0628	<0.158	<0.158
Curium-243/244	pCi/L	<15	<0.59	<1.01	<0.261	<1.23	<0.209	<0.116	<0.228	<0.228
Curium-246	pCi/L	<15	<0.589	<0.322	<0.298	<0.39	<0.169	<0.0398	<0.155	<0.155
Carbon-14	pCi/L	<150	43.90	40.30	<17.5	<17.3	<30.9	<25	<23.9	<23.9
Cobalt-60	pCi/L	<50	<16.6	<7.41	<6.28	<7.43	<8.47	<6.77	<6.21	<6.21
Iodine-129	pCi/L	<60	<3.24	<7.02	4.79	<6.15	<8.65	<1.9	2.16	2.16
Plutonium-238	pCi/L	<15	<0.985	<0.897	<0.176	<0.478	<0.217	<0.158	<0.219	<0.219
Plutonium-239/240	pCi/L	<15	<0.205	<0.435	<0.176	<0.339	<0.0979	<0.0627	<0.402	<0.402
Nickel-63	pCi/L	<50	<40.9	<74.7	<33.6	<33.5	<24.6	<24.9	<24.9	<24.9
Radium-226	pCi/L	TR<2	<1.6	<2.87	<1	<1.46	<2.59	8.07	<1.32	<1.32
Radium-228	pCi/L	TR<2	<2.56	<3.89	<1.86	<2.57	<1.9	<1.85	<1.47	<1.47
Strontium-90	pCi/L	<170	<2.62	3.26	2.13	<2.35	<2.49	<3.8	<2.78	<2.78
Technetium-99	pCi/L	<170	<13.2	<13.5	<12.8	<14.2	<12	<10.4	<40.3	<40.3
Thorium-228	pCi/L	<15	<0.802	<0.752	<0.844	<0.918	<0.76	<0.768	<0.719	<0.719
Thorium-230	pCi/L	<15	<0.438	<0.324	<0.336	<0.0953	<0.263	<0.377	<0.348	<0.348
Thorium-232	pCi/L	<15	<0.324	<0.0928	<0.406	<0.242	<0.241	<0.207	<0.175	<0.175
Uranium-233/234	pCi/L	<25	<1.97	4.12	<0.496	<0.477	<0.327	<0.391	<0.497	<0.497
Uranium-235	pCi/L	<15	<0.641	<0.876	<0.312	<0.319	<0.202	<0.212	<0.438	<0.438
Uranium-238	pCi/L	<50	<1.06	3.42	<0.43	<0.486	<0.408	<0.157	<0.268	<0.268

H-Area WTU UIC Sample Results: July 1999

UIC Permitted Constituents	Unit	Reg Limit	Raw Result	Rad Acc	Qual.	QL	July Result	Exceedence Y/N	Notes
Section I, INORGANICS									Samples collected 7/21/99
Antimony	µg/L	6	0.184		JI	2	<2	N	
Arsenic	µg/L	50	3.1			3	3.10	N	
Barium	µg/L	2000	0.839		JI	2	<2	N	
Cadmium	µg/L	5	0.538		JI	1	<1	N	
Chromium	µg/L	100	2.69		JI	3	<3	N	
Cobalt	µg/L	140	11.3			1	11.30	N	
Copper	µg/L	1300	7.23			1	7.23	N	
Cyanide	µg/L	200	10		U	10	<10	N	
Lead	µg/L	50	2		U	2	<2	N	
Mercury	µg/L	2	2.06			0.2	2.06	Y	
Nickel	µg/L	100	12.8			2	12.80	N	
Selenium	µg/L	50	5		U	5	<5	N	
Silver	µg/L	50	0.408		JI	1	<1	N	
Tin	µg/L	50	5		U	5	<5	N	
Vanadium	µg/L	49	10		U	10	<10	N	
Zinc	µg/L	5000	24.4			10	24.40	N	
Section II, ORGANICS									
Benzene	µg/L	5	1		U	1	<1	N	
B2EHP	µg/L	140	10		U	10	<10	N	
Methylene Chloride	µg/L	5	5		U	5	<5	N	
Tetrachloroethylene	µg/L	5	1		U	1	<1	N	
Trichloroethylene	µg/L	5	1		U	1	<1	N	
Trichlorofluoromethane	µg/L	100	5		U	5	<5	N	
Section III, RADIONUCLIDES									
Americium-241	pCi/L	<15	-0.047	0.095	U	1.23	<1.23	N	
Cesium-137	pCi/L	<50	-0.038	1.9	U	7.29	<7.29	N	
Curium-242	pCi/L	<15	0	0	U	0.61	<0.61	N	
Curium-243/244	pCi/L	<15	0	0	U	0.59	<0.59	N	
Curium-246	pCi/L	<15	0	0	U	0.589	<0.589	N	
Carbon-14	pCi/L	<150	43.9	9.06		31.6	43.90	N	
Cobalt-60	pCi/L	<50	11.8	5.87	JI	16.6	<16.6	N	
Iodine-129	pCi/L	<60	3.09	1.18	JI	3.24	<3.24	N	
Plutonium-238	pCi/L	<15	0.326	0.312	U	0.985	<0.985	N	
Plutonium-239/240	pCi/L	<15	0	0	U	0.205	<0.205	N	
Nickel-63	pCi/L	<50	45.3	11.7	JL	40.9	<40.9	N	
Radium-226	pCi/L	TR<25	1.08	0.536	JI	1.6	<1.6	N	
Radium-228	pCi/L	TR<25	-1.12	0.673	U	2.56	<2.56	N	
Strontium-90	pCi/L	<170	1.6	0.684	JI	2.62	<2.62	N	
Technetium-99	pCi/L	<170	-2.01	3.53	U	13.2	<13.2	N	
Thorium-228	pCi/L	<15	-0.061	0.162	U	0.802	<0.802	N	
Thorium-230	pCi/L	<15	0.0708	0.111	U	0.438	<0.438	N	
Thorium-232	pCi/L	<15	0.0161	0.066	U	0.324	<0.324	N	
Uranium-233/234	pCi/L	<25	1.56	0.729	JI	1.97	<1.97	N	
Uranium-235	pCi/L	<15	0.148	0.21	U	0.641	<0.641	N	
Uranium-238	pCi/L	<50	0.259	0.301	U	1.06	<1.06	N	

## H-Area WTU UIC Sample Results: July 1999 Resampling

UIC Permitted Constituents		Reg	Raw	Rad			July	Exceedence	
Constituent	Unit	Limit	Result	Acc	Qual.	QL	Result	Y/N	Notes
Section I, INORGANICS									
Antimony	µg/L	6	0.186		JI	2	<2	N	Samples collected 7/27/99
Arsenic	µg/L	50	2.38		JI	3	<3	N	
Barium	µg/L	2000	0.628		JI	2	<2	N	
Cadmium	µg/L	5	1		U	1	<1	N	
Chromium	µg/L	100	1.17		JI	3	<3	N	
Cobalt	µg/L	140	0.037		JI	1	<1	N	
Copper	µg/L	1300	1.54			1	1.54	N	
Cyanide	µg/L	200	10		U	10	<10	N	
Lead	µg/L	50	2		U	2	<2	N	
Mercury	µg/L	2	0.505			0.2	0.51	N	
Nickel	µg/L	100	2		U	2	<2	N	
Selenium	µg/L	50	5		U	5	<5	N	
Silver	µg/L	50	1		U	1	<1	N	
Tin	µg/L	50	5		U	5	<5	N	
Vanadium	µg/L	49	3.39		JI	10	<10	N	
Zinc	µg/L	5000	10		U	10	<10	N	
Section II, ORGANICS									
Benzene	µg/L	5	1		U	1	<1	N	
B2EHP	µg/L	140	10.2		U	10.2	<10.2	N	
Methylene Chloride	µg/L	5	1.75		UV	5	<5	N	
Tetrachloroethylene	µg/L	5	1		U	1	<1	N	
Trichloroethylene	µg/L	5	1		U	1	<1	N	
Trichlorofluoromethane	µg/L	100	5		U	5	<5	N	
Section III, RADIONUCLIDES									
Americium-241	pCi/L	<15	0.0816	0.221	U	1.01	<1.01	N	
Cesium-137	pCi/L	<50	-1.63	1.88	U	6.88	<6.88	N	
Curium-242	pCi/L	<15	0	0	U	0.337	<0.337	N	
Curium-243/244	pCi/L	<15	0.0816	0.221	U	1.01	<1.01	N	
Curium-246	pCi/L	<15	0	0	U	0.322	<0.322	N	
Carbon-14	pCi/L	<150	40.3	8.91		31.2	40.30	N	
Cobalt-60	pCi/L	<50	1.47	1.69	U	7.41	<7.41	N	
Iodine-129	pCi/L	<60	3.06	2.58	JI	7.02	<7.02	N	
Plutonium-238	pCi/L	<15	0.0894	0.206	U	0.897	<0.897	N	
Plutonium-239/240	pCi/L	<15	-0.017	0.034	U	0.435	<0.435	N	
Nickel-63	pCi/L	<50	-12.8	19.8	U	74.7	<74.7	N	
Radium-226	pCi/L	TR<25	2.32	0.969	JI	2.87	<2.87	N	
Radium-228	pCi/L	TR<25	-1.78	0.856	UJ	3.89	<3.89	N	
Strontium-90	pCi/L	<170	3.26	0.556		1.89	3.26	N	
Technetium-99	pCi/L	<170	2.16	3.65	U	13.5	<13.5	N	
Thorium-228	pCi/L	<15	0.0839	0.178	U	0.752	<0.752	N	
Thorium-230	pCi/L	<15	0.0161	0.065	U	0.324	<0.324	N	
Thorium-232	pCi/L	<15	0	0	U	0.093	<0.0928	N	
Uranium-233/234	pCi/L	<25	4.12	1.18		2.76	4.12	N	
Uranium-235	pCi/L	<15	0.364	0.329	JI	0.876	<0.876	N	
Uranium-238	pCi/L	<50	3.42	2.5		2.5	3.42	N	

# H-Area WTU UIC Sample Results: August 1999

UIC Permitted Constituents		Reg	Raw	Rad			August	Exceedence	
Constituent	Unit	Limit	Result	Acc	Qual.	QL	Result	Y/N	Notes
Section I, INORGANICS									
Antimony	µg/L	6	2		U	2	<2	N	Samples collected 8/3/99
Arsenic	µg/L	50	2.79		UV	3	<3	N	
Barium	µg/L	2000	2		U	2	<2	N	
Cadmium	µg/L	5	1		U	1	<1	N	
Chromium	µg/L	100	1.67		UV	3	<3	N	
Cobalt	µg/L	140	1		U	1	<1	N	
Copper	µg/L	1300	0.801		JI	1	<1	N	
Cyanide	µg/L	200	10		U	10	<10	N	
Lead	µg/L	50	2		U	2	<2	N	
Mercury	µg/L	2	1.78			0.2	1.78	N	
Nickel	µg/L	100	2		U	2	<2	N	
Selenium	µg/L	50	5		U	5	<5	N	
Silver	µg/L	50	0.43		UV	1	<1	N	
Tin	µg/L	50	5		U	5	<5	N	
Vanadium	µg/L	49	6		UV	10	<10	N	
Zinc	µg/L	5000	10		U	10	<10	N	
Section II, ORGANICS									
Benzene	µg/L	5	1		UJ	1	<1	N	
B2EHP	µg/L	140	10		U	10	<10	N	
Methylene Chloride	µg/L	5	5		UJ	5	<5	N	
Tetrachloroethylene	µg/L	5	1		UJ	1	<1	N	
Trichloroethylene	µg/L	5	1		UJ	1	<1	N	
Trichlorofluoromethane	µg/L	100	5		UJ	5	<5	N	
Section III, RADIONUCLIDES									
Americium-241	pCi/L	<15	0.0687	0.098	U	0.298	<0.298	N	
Cesium-137	pCi/L	<50	0.36	3.01	U	9.35	<9.35	N	
Curium-242	pCi/L	<15	0.0186	0.075	U	0.373	<0.373	N	
Curium-243/244	pCi/L	<15	-0.017	0.023	U	0.261	<0.261	N	
Curium-246	pCi/L	<15	0.0686	0.098	U	0.298	<0.298	N	
Carbon-14	pCi/L	<150	15.3	4.9	JI	17.5	<17.5	N	
Cobalt-60	pCi/L	<50	0.311	1.55	U	6.28	<6.28	N	
Iodine-129	pCi/L	<60	4.79	1.08		2.87	4.79	N	
Plutonium-238	pCi/L	<15	-0.007	0.014	U	0.176	<0.176	N	
Plutonium-239/240	pCi/L	<15	-0.007	0.014	U	0.176	<0.176	N	
Nickel-63	pCi/L	<50	27.3	9.47	JI	33.6	<33.6	N	
Radium-226	pCi/L	TR<25	0.724	0.353	JI	1	<1	N	
Radium-228	pCi/L	TR<25	-1.6	0.427	UJ	1.86	<1.86	N	
Strontium-90	pCi/L	<170	2.13	0.538		1.93	2.13	N	
Technetium-99	pCi/L	<170	0.376	3.44	U	12.8	<12.8	N	
Thorium-228	pCi/L	<15	0.0549	0.19	U	0.844	<0.844	N	
Thorium-230	pCi/L	<15	-0.028	0.033	U	0.336	<0.336	N	
Thorium-232	pCi/L	<15	0.0202	0.082	U	0.406	<0.406	N	
Uranium-233/234	pCi/L	<25	0.0625	0.12	U	0.496	<0.496	N	
Uranium-235	pCi/L	<15	-0.02	0.028	U	0.312	<0.312	N	
Uranium-238	pCi/L	<50	0.0214	0.087	U	0.43	<0.43	N	

# H-Area WTU UIC Sample Results: September 1999

UIC Permitted Constituents		Reg	Raw	Rad			September	Exceedence	
Constituent	Unit	Limit	Result	Acc	Qual.	QL	Result	Y/N	Notes
Section I, INORGANICS									
Antimony	µg/L	6	0.359		JI	2	<2	N	Samples collected 9/6/99
Arsenic	µg/L	50	1.73		JI	3	<3	N	
Barium	µg/L	2000	0.405		JI	2	<2	N	
Cadmium	µg/L	5	1		U	1	<1	N	
Chromium	µg/L	100	2.37		JI	3	<3	N	
Cobalt	µg/L	140	1		U	1	<1	N	
Copper	µg/L	1300	1		U	1	<1	N	
Cyanide	µg/L	200	2.08		JI	10	<10	N	
Lead	µg/L	50	2		U	2	<2	N	
Mercury	µg/L	2	1.41			0.2	1.41	N	
Nickel	µg/L	100	2		U	2	<2	N	
Selenium	µg/L	50	5		U	5	<5	N	
Silver	µg/L	50	1		U	1	<1	N	
Tin	µg/L	50	5		U	5	<5	N	
Vanadium	µg/L	49	10		U	10	<10	N	
Zinc	µg/L	5000	10		U	10	<10	N	
Section II, ORGANICS									
Benzene	µg/L	5	1		UJ	1	<1	N	
B2EHP	µg/L	140	10		UJ	10	<10	N	
Methylene Chloride	µg/L	5	2.51		UJ	5	<5	N	
Tetrachloroethylene	µg/L	5	1		UJ	1	<1	N	
Trichloroethylene	µg/L	5	1		UJ	1	<1	N	
Trichlorofluoromethane	µg/L	100	5		UJ	5	<5	N	
Section III, RADIONUCLIDES									
Americium-241	pCi/L	<15	-0.053	0.182	U	0.891	<0.891	N	
Cesium-137	pCi/L	<50	0.175	1.9	U	7.3	<7.3	N	
Curium-242	pCi/L	<15	0.0515	0.144	U	0.64	<0.64	N	
Curium-243/244	pCi/L	<15	0.0527	0.283	U	1.23	<1.23	N	
Curium-246	pCi/L	<15	-0.051	0.042	U	0.39	<0.39	N	
Carbon-14	pCi/L	<150	13.1	4.81	JI	17.3	<17.3	N	
Cobalt-60	pCi/L	<50	-0.547	1.94	U	7.43	<7.43	N	
Iodine-129	pCi/L	<60	4.76	2.4	JI	6.15	<6.15	N	
Plutonium-238	pCi/L	<15	0.0182	0.1	U	0.478	<0.478	N	
Plutonium-239/240	pCi/L	<15	0.0169	0.069	U	0.339	<0.339	N	
Nickel-63	pCi/L	<50	-4.38	8.9	U	33.5	<33.5	N	
Radium-226	pCi/L	TR<25	0.681	0.448	JI	1.46	<1.46	N	
Radium-228	pCi/L	TR<25	-0.666	0.621	U	2.57	<2.57	N	
Strontium-90	pCi/L	<170	2.13	0.639	JI	2.35	<2.35	N	
Technetium-99	pCi/L	<170	0.665	3.83	U	14.2	<14.2	N	
Thorium-228	pCi/L	<15	0.0661	0.212	U	0.918	<0.918	N	
Thorium-230	pCi/L	<15	0	0	U	0.095	<0.0953	N	
Thorium-232	pCi/L	<15	-0.015	0.022	U	0.242	<0.242	N	
Uranium-233/234	pCi/L	<25	0.0771	0.121	U	0.477	<0.477	N	
Uranium-235	pCi/L	<15	0.0258	0.07	U	0.319	<0.319	N	
Uranium-238	pCi/L	<50	0.161	0.154	U	0.486	<0.486	N	

# H-Area WTU UIC Sample Results: October 1999

UIC Permitted Constituents		Reg	Raw	Rad			October	Exceedence	
Constituent	Unit	Limit	Result	Acc	Qual.	QL	Result	Y/N	Notes
Section I, INORGANICS									
Antimony	µg/L	6	2		U	2	<2	N	Samples collected 10/18/99
Arsenic	µg/L	50	2.69		JI	3	<3	N	
Barium	µg/L	2000	0.648		JI	2	<2	N	
Cadmium	µg/L	5	1		U	1	<1	N	
Chromium	µg/L	100	1.79		JI	3	<3	N	
Cobalt	µg/L	140	1		U	1	<1	N	
Copper	µg/L	1300	1		U	1	<1	N	
Cyanide	µg/L	200	10		U	10	<10	N	
Lead	µg/L	50	2		U	2	<2	N	
Mercury	µg/L	2	1.26			0.2	1.26	N	
Nickel	µg/L	100	2		U	2	<2	N	
Selenium	µg/L	50	5		U	5	<5	N	
Silver	µg/L	50	1		U	1	<1	N	
Tin	µg/L	50	5		U	5	<5	N	
Vanadium	µg/L	49	6.5		JI	10	<10	N	
Zinc	µg/L	5000	10		U	10	<10	N	
Section II, ORGANICS									
Benzene	µg/L	5	1		U	1	<1	N	
B2EHP	µg/L	140	10		U	10	<10	N	
Methylene Chloride	µg/L	5	5		U	5	<5	N	
Tetrachloroethylene	µg/L	5	1		U	1	<1	N	
Trichloroethylene	µg/L	5	1		U	1	<1	N	
Trichlorofluoromethane	µg/L	100	5		U	5	<5	N	
Section III, RADIONUCLIDES									
Americium-241	pCi/L	<15	0.048	0.0905	U	0.366	<0.366	N	
Cesium-137	pCi/L	<50	0.53	2.35	U	8.9	<8.9	N	
Curium-242	pCi/L	<15	0.026	0.0521	U	0.182	<0.182	N	
Curium-243/244	pCi/L	<15	0.0483	0.0685	U	0.209	<0.209	N	
Curium-246	pCi/L	<15	0.0241	0.0483	U	0.169	<0.169	N	
Carbon-14	pCi/L	<150	10.4	8.47	U	30.9	<30.9	N	
Cobalt-60	pCi/L	<50	0.564	2.29	U	8.47	<8.47	N	
Iodine-129	pCi/L	<60	4.02	2.91	JI	8.65	<8.65	N	
Plutonium-238	pCi/L	<15	0.0459	0.0597	U	0.217	<0.217	N	
Plutonium-239/240	pCi/L	<15	0.014	0.028	U	0.098	<0.0979	N	
Nickel-63	pCi/L	<50	-3.29	6.55	U	24.6	<24.6	N	
Radium-226	pCi/L	TR<25	0.978	0.76	U	2.59	<2.59	N	
Radium-228	pCi/L	TR<25	0.223	0.457	U	1.9	<1.9	N	
Strontium-90	pCi/L	<170	2.44	0.677	JI	2.49	<2.49	N	
Technetium-99	pCi/L	<170	-0.996	3.21	U	12	<12	N	
Thorium-228	pCi/L	<15	-0.0207	0.18	U	0.76	<0.76	N	
Thorium-230	pCi/L	<15	-0.0175	0.049	U	0.263	<0.263	N	
Thorium-232	pCi/L	<15	-0.0089	0.0457	U	0.241	<0.241	N	
Uranium-233/234	pCi/L	<25	0.0732	0.0933	U	0.327	<0.327	N	
Uranium-235	pCi/L	<15	-0.0128	0.0182	U	0.202	<0.202	N	
Uranium-238	pCi/L	<50	0.0478	0.0965	U	0.408	<0.408	N	

### H-Area WTU UIC Sample Results: November 1999

UIC Permitted Constituents	Reg	Raw	Rad			November	Exceedence	
Constituent	Unit	Limit	Result	Acc	Qual.	QL	Result	Y/N
Section I, INORGANICS								
Antimony	µg/L	6	0.16		JU	2	<2	N
Arsenic	µg/L	50	1.48		J	3	<3	N
Barium	µg/L	2000	2		U	2	<2	N
Cadmium	µg/L	5	1		U	1	<1	N
Chromium	µg/L	100	2.64		J	3	<3	N
Cobalt	µg/L	140	1		U	1	<1	N
Copper	µg/L	1300	1.75			1	1.75	N
Cyanide	µg/L	200	10		U	10	<10	N
Lead	µg/L	50	2		U	2	<2	N
Mercury	µg/L	2	1.42			0.2	1.42	N
Nickel	µg/L	100	2		U	2	<2	N
Selenium	µg/L	50	5		U	5	<5	N
Silver	µg/L	50	1		U	1	<1	N
Tin	µg/L	50	5		U	5	<5	N
Vanadium	µg/L	49	80.1			10	80.10	N <sup>a</sup>
Zinc	µg/L	5000	10		U	10	<10	N
Section II, ORGANICS								
Benzene	µg/L	5	1		U	1	<1	N
B2EHP	µg/L	140	10		U	10	<10	N
Methylene Chloride	µg/L	5	2.99		J	5	<5	N
Tetrachloroethylene	µg/L	5	1		U	1	<1	N
Trichloroethylene	µg/L	5	1		U	1	<1	N
Trichlorofluoromethane	µg/L	100	5		U	5	<5	N
Section III, RADIONUCLIDES								
Americium-241	pCi/L	<15	0.0012	0.0154	U	0.066	<0.0662	N
Cesium-137	pCi/L	<50	-0.458	1.81	U	6.83	<6.83	N
Curium-242	pCi/L	<15	0.0004	0.0142	U	0.063	<0.0628	N
Curium-243/244	pCi/L	<15	0.0001	0.0283	U	0.116	<0.116	N
Curium-246	pCi/L	<15	0.0038	0.0095	U	0.04	<0.0398	N
Carbon-14	pCi/L	<150	5.72	6.81	U	25	<25	N
Cobalt-60	pCi/L	<50	-0.57	1.77	U	6.77	<6.77	N
Iodine-129	pCi/L	<60	1.78	0.646	J	1.9	<1.9	N
Plutonium-238	pCi/L	<15	0.0478	0.043	U	0.158	<0.158	N
Plutonium-239/240	pCi/L	<15	0.0062	0.0155	U	0.063	<0.0627	N
Nickel-63	pCi/L	<50	-1.68	6.63	U	24.9	<24.9	N
Radium-226	pCi/L	TR<25	8.07	1.45		3.52	8.07	N
Radium-228	pCi/L	TR<25	0.509	0.457	U	1.85	<1.85	N
Strontium-90	pCi/L	<170	3.22	1.03	J	3.8	<3.8	N
Technetium-99	pCi/L	<170	1.86	2.81	U	10.4	<10.4	N
Thorium-228	pCi/L	<15	-0.0008	0.177	U	0.768	<0.768	N
Thorium-230	pCi/L	<15	0.118	0.11	U	0.377	<0.377	N
Thorium-232	pCi/L	<15	-0.0216	0.0252	U	0.207	<0.207	N
Uranium-233/234	pCi/L	<25	0.186	0.126	U	0.391	<0.391	N
Uranium-235	pCi/L	<15	0.0312	0.0539	U	0.212	<0.212	N
Uranium-238	pCi/L	<50	-0.0117	0.0167	U	0.157	<0.157	N

<sup>a</sup> - Sample re-analyzed: 5.92 µg/L and "U" qualified



# H-Area WTU UIC Sample Results: December 1999

UIC Permitted Constituents		Reg	Raw	Rad			December	Exceedence	
Constituent	Unit	Limit	Result	Acc	Qual.	QL	Result	Y/N	Notes
Section I, INORGANICS									
Antimony	µg/L	6	0.248		U	2	<2	N	Samples collected 12/7/99
Arsenic	µg/L	50	3.31		U	3	3.31	N	
Barium	µg/L	2000	0.716		U	2	<2	N	
Cadmium	µg/L	5	1		U	1	<1	N	
Chromium	µg/L	100	3.36		U	3	3.36	N	
Cobalt	µg/L	140	1		U	1	<1	N	
Copper	µg/L	1300	2		U	2	<2	N	
Cyanide	µg/L	200	5		U	5	<5	N	
Lead	µg/L	50	2		U	2	<2	N	
Mercury	µg/L	2	1.69			0.2	1.69	N	
Nickel	µg/L	100	0.288		U	2	<2	N	
Selenium	µg/L	50	3		U	3	<3	N	
Silver	µg/L	50	0.579		U	1	<1	N	
Tin	µg/L	50	0.518		U	2	<2	N	
Vanadium	µg/L	49	12.4		U	10	12.40	N	
Zinc	µg/L	5000	10		U	10	<10	N	
Section II, ORGANICS									
Benzene	µg/L	5	1		U	1	<1	N	
B2EHP	µg/L	140	10.5		U	10.5	<10.5	N	
Methylene Chloride	µg/L	5	5		U	5	<5	N	
Tetrachloroethylene	µg/L	5	1		U	1	<1	N	
Trichloroethylene	µg/L	5	1		U	1	<1	N	
Trichlorofluoromethane	µg/L	100	1		U	1	<5	N	
Section III, RADIONUCLIDES									
Americium-241	pCi/L	<15	0.11	0.0997	J	0.266	<0.266	N	
Cesium-137	pCi/L	<50	0.795	1.601	U	6.1	<6.1	N	
Curium-242	pCi/L	<15	0.023	0.0451	U	0.158	<0.158	N	
Curium-243/244	pCi/L	<15	0.011	0.0475	U	0.228	<0.228	N	
Curium-246	pCi/L	<15	0.022	0.0442	U	0.155	<0.155	N	
Carbon-14	pCi/L	<150	19.9	6.7109	J	23.9	<23.9	N	
Cobalt-60	pCi/L	<50	1.2	1.59	U	6.21	<6.21	N	
Iodine-129	pCi/L	<60	2	0.6795	J	2.16	<2.16	N	
Plutonium-238	pCi/L	<15	0.011	0.0455	U	0.219	<0.219	N	
Plutonium-239/240	pCi/L	<15	0.012	0.0907	U	0.402	<0.402	N	
Nickel-63	pCi/L	<50	-1.66	5.5814	U	24.9	<24.9	N	
Radium-226	pCi/L	TR<25	0.428	0.3955	JU	1.32	<1.32	N	
Radium-228	pCi/L	TR<25	0.338	0.3667	U	1.47	<1.47	N	
Strontium-90	pCi/L	<170	2.36	0.7423	J	2.78	<2.78	N	
Technetium-99	pCi/L	<170	-2.91	8.891	U	40.3	<40.3	N	
Thorium-228	pCi/L	<15	0.091	0.18	U	0.719	<0.719	N	
Thorium-230	pCi/L	<15	0.052	0.0876	U	0.348	<0.348	N	
Thorium-232	pCi/L	<15	0.04	0.0573	U	0.175	<0.175	N	
Uranium-233/234	pCi/L	<25	0.081	0.126	U	0.497	<0.497	N	
Uranium-235	pCi/L	<15	0.07	0.114	U	0.438	<0.438	N	
Uranium-238	pCi/L	<50	-0.017	0.024	U	0.268	<0.268	N	

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