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BWXT Y-12
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Y-12 NATIONAL SECURITY COMPLEX

Y-12 GROUNDWATER PROTECTION PROGRAM GROUNDWATER AND SURFACE WATER SAMPLING AND ANALYSIS PLAN FOR CALENDAR YEAR 2006

January 2006

Prepared by

ELVADO ENVIRONMENTAL LLC
Under Subcontract No. 4300030332

for the

Environmental Compliance Department
Environment, Safety, and Health Division
Y-12 National Security Complex
Oak Ridge, Tennessee 37831

Managed by

BWXT Y-12, L.L.C.
for the U.S. DEPARTMENT OF ENERGY
under contract No. DE-AC05-00OR22800

MANAGED BY
BWXT Y-12, L.L.C.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

UCN-13672 (10-00)

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List of Acronyms and Abbreviations

ACO	Analytical Chemistry Organization
Bear Creek Regime	Bear Creek Hydrogeologic Regime
BWXT	BWXT Y-12, L.L.C.
Chestnut Ridge Regime	Chestnut Ridge Hydrogeologic Regime
CY	calendar year
DOE	U.S. Department of Energy
East Fork Regime	Upper East Fork Poplar Creek Hydrogeologic Regime
GWPP	Groundwater Protection Program
MAROS	Monitoring and Remediation Optimization System
REDOX	oxidation-reduction potential
SPS	sampling priority score
VOCs	volatile organic compounds
Y-12	Y-12 National Security Complex

1.0 INTRODUCTION

This plan provides a description of the groundwater and surface water quality monitoring activities planned for calendar year (CY) 2006 at the U.S. Department of Energy (DOE) Y-12 National Security Complex (Y-12) that will be managed by the Y-12 Groundwater Protection Program (GWPP). Groundwater and surface water monitoring performed by the GWPP during CY 2006 will be in accordance with DOE Order 540.1 requirements and the following goals:

- to maintain surveillance of existing and potential groundwater contamination sources;
- to provide for the early detection of groundwater contamination and determine the quality of groundwater and surface water where contaminants are most likely to migrate beyond the Oak Ridge Reservation property line;
- to identify and characterize long-term trends in groundwater quality at Y-12; and
- to provide data to support decisions concerning the management and protection of groundwater resources.

Groundwater and surface water monitoring during CY 2006 will be performed primarily in three hydrogeologic regimes at Y-12: the Bear Creek Hydrogeologic Regime (Bear Creek Regime), the Upper East Fork Poplar Creek Hydrogeologic Regime (East Fork Regime), and the Chestnut Ridge Hydrogeologic Regime (Chestnut Ridge Regime). The Bear Creek and East Fork regimes are located in Bear Creek Valley, and the Chestnut Ridge Regime is located south of Y-12 (Figure A.1). Additional surface water monitoring will be performed north of Pine Ridge, along the boundary of the Oak Ridge Reservation (Figure A.1).

Modifications to the CY 2006 monitoring program may be necessary during implementation. Changes in programmatic requirements may alter the analytes specified for selected monitoring wells or may add or remove wells from the planned monitoring network. All modifications to the monitoring program will be approved by the Y-12 GWPP manager and documented as addenda to this sampling and analysis plan.

The following sections of this report provide details regarding the CY 2006 groundwater and surface water monitoring activities. Section 2 describes the monitoring locations in each regime and the processes used to select the sampling locations. A description of the field measurements and laboratory analytes is provided in Section 3; sample collection methods and procedures are described in Section 4; and Section 5 lists the documents cited for more detailed operational and technical information.

The narrative sections of the report reference several appendices. Figures (maps and diagrams) and tables (excluding data summary tables presented in the narrative sections) are in Appendix A and Appendix B, respectively. The monitoring frequency and selection criteria for each sampling location is in Appendix C. Laboratory requirements (bottle lists, holding times, etc.) are provided in Appendix D. If issued, addenda to this plan will be inserted in Appendix E, and Groundwater Monitoring Schedules (when issued) will be inserted in Appendix F. Guidance for managing purged groundwater is provided in Appendix G.

2.0 MONITORING LOCATIONS

The monitoring locations to be sampled by the Y-12 GWPP during CY 2006 (Table B.1) were selected based on results of: (1) a comprehensive assessment of the Y-12 GWPP using the Monitoring and Remediation Optimization System (MAROS) software (BWXT Y-12, L.L.C. [BWXT] 2005), and (2) the annual sampling priority score (SPS) determined for all monitoring wells granted active status in accordance with the Y-12 GWPP Monitoring Optimization Plan (BWXT 2003). The MAROS assessment provided recommendations (e.g., sampling frequency) that prioritize monitoring locations with sufficient analytical data obtained between CY 1996 to CY 2004. Based on further review of the MAROS assessment results, a total of 81 locations were selected for sampling in CY 2006 that included semiannual, annual, and biennial sampling frequency recommendations (Appendix C). Information used to calculate the CY 2006 SPS (e.g., sampling history from CY 1986 to CY 2005, principal contaminant concentrations, and contaminant concentration trend significance) was used to select 59 additional locations for sampling in CY 2006 that were either omitted from the assessment (insufficient data) or had MAROS recommendations of "Review" or "Remove" (Appendix C).

The Y-12 GWPP monitoring network for CY 2006 includes 140 monitoring locations (Table B.1): 40 located in the Bear Creek Regime (Figure A.2), 11 located in the Chestnut Ridge Regime (Figure A.3), 85 located in the East Fork Regime (Figure A.4), and four located north of Pine Ridge (Figure A.5). Groundwater samples will be collected from a total of 111 monitoring wells, including 35 wells in the Bear Creek Regime (Figure A.2), six wells in the Chestnut Ridge Regime, and 70 wells in the East Fork Regime (Figure A.4). Well GW-722, located in the East Fork Regime, contains a Westbay™ multiport sampling system and is scheduled for sample collection from 10 ports at different depths in the well (Figure A.5). Wells GW-954 and GW-956, also located in the East Fork Regime, are equipped with multiple BARCAD pumps and are scheduled for sample collection from three (GW-954) or four (GW-956) different depths in each well (Figure A.6). Samples of groundwater discharging from six natural springs will be collected during CY 2006, including three springs (SS-1, SS-4, and SS-5) in the Bear Creek Regime (Figure A.2), two springs (SCR2.1SP and SCR2.2SP) in the Chestnut Ridge Regime (Figure A.3), and one spring (SP-17) in the East Fork Regime (Figure A.4).

Surface water samples will be collected from a total of nine sampling locations during CY 2006, including two locations in the Bear Creek Regime, three locations in the Chestnut Ridge Regime, and four locations north of Pine Ridge. In the Bear Creek Regime, samples will be collected from Bear Creek at one sampling station located from about 4.5 kilometers upstream of the confluence of Bear Creek and East Fork Poplar Creek (BCK-04.55) and from one sampling station along a northern tributary (NT-01) to Bear Creek (Figure A.2). The tributaries located in the Chestnut Ridge Regime have been numbered from west to east (SCR1 through SCR5) and surface water samples will be collected from three of the tributaries at stations (SCR1.5SW, SCR3.5SW, and S17 [located in SCR5]) located along the north side of Bethel Valley Road (Figure A.3). The surface water sampling locations north of Pine Ridge include three tributaries (NPR07.0SW, NPR12.0SW, and NPR23.0SW) near the Scarboro Community and one location (GHK2.51ESW) near Country Club Estates (Figure A.7).

3.0 FIELD MEASUREMENTS AND ANALYTICAL PARAMETERS

Before collecting samples at each monitoring location, field personnel will record (on Field Data Sheets) the following field measurements (Table B.2):

- depth to the static water level in monitoring wells;
- pH;
- water temperature;
- conductivity;
- dissolved oxygen; and
- oxidation-reduction potential (REDOX)

Field measurement of dissolved oxygen and REDOX will not be obtained for sampling ports of monitoring wells equipped with a Westbay™ multiport sampling system. Furthermore, instead of measuring the depth to the static water level, the potentiometric head (in ft) will be calculated from subsurface pressure measurements obtained from individual sample zones.

For this Sampling and Analysis Plan, specific analytes are grouped by analytical method or by type (e.g., trace metals) and referenced as parameter groups (Table B.1 and Table B.2). In addition to field measurements, all groundwater and surface water samples will be analyzed for the following suite of parameters (identified as the Standard Administrative Parameter Group):

- miscellaneous laboratory analytes (turbidity, total suspended solids and total dissolved solids);
- major anions;
- trace metals (includes major cations);
- a comprehensive suite of volatile organic compounds (VOCs); and
- gross alpha and gross beta activity.

In addition to the analytes included in the Standard Administrative Parameter Group, samples from selected locations will be analyzed for specific radionuclides and/or VOCs. Some of these analyses will supplement gross alpha and/or gross beta activity results, especially in cases where the gross activity reporting limits are elevated from interferences caused a by high dissolved solid content of the groundwater sample (see Appendix D). Additionally, determining the weight percent of uranium-235 (Table B.1 and Table B.2) is required to meet waste acceptance criteria for purge water disposal. The concentration of 1,4-dioxane also will be analyzed in samples from selected locations (Table B.1). Analysis for this compound must be performed separately from the standard VOC suite to achieve the requested reporting limit (Table B.2).

4.0 SAMPLE PLANNING, COLLECTION, AND HANDLING

The monitoring wells, springs, and surface water stations included in the GWPP monitoring network for CY 2006 are assembled into sample groups (e.g., BC-1) for sample collection, sample tracking, and data management purposes. A total of 17 sample groups are scheduled for monitoring in CY 2006, with samples collected from five to six groups per quarter (Table B.1). A Groundwater Monitoring Schedule will be prepared for each quarterly sampling event by GWPP personnel based on Table B.1 that includes additional information necessary for field personnel to collect the required samples (e.g., management of purged groundwater).

Unfiltered samples will be collected semiannually (80 samples) or annually (100 samples, including 21 biennial samples) from the monitoring locations during CY 2006. As summarized below, the number of samples to be collected during each CY quarter will range from 31 to 61, for an annual total of 180 samples.

HYDROGEOLOGIC REGIME/AREA	NUMBER OF SAMPLES PER QUARTER OF CY 2006			
	1st	2nd	3rd	4th
Bear Creek Regime	17	14	17	0
Chestnut Ridge Regime	0	11	0	0
East Fork Regime	28	32	26	31
North of Pine Ridge	0	4	0	0
TOTAL:	**45**	**61**	**43**	**31**

Personnel from the Y-12 Analytical Chemistry Organization (ACO) will be responsible for collection, transportation, and chain-of-custody control of most groundwater and surface water samples. Personnel from the Environment, Safety, and Health Division will be responsible for collection, transportation, and chain-of-custody control of the groundwater samples from Westbay well GW-722. Based on the analytical parameters for the CY 2006 monitoring locations (Table B.1 and Table B.2), ACO personnel will prepare bottle lists that specify the sample container type, size, preservative, and the laboratory test identification needed for each sampling location (see Appendix D). Sample collection will be performed in accordance with the most recent version of operating procedures for obtaining groundwater samples (BWXT 2002a, BWXT 2004a, BWXT 2004b, and BWXT 2006) and surface water samples (BWXT 2002b). All field and laboratory activities will be performed in accordance with applicable requirements of the Y-12 Integrated Safety Management System and associated job hazard analyses.

Groundwater samples will be collected from all monitoring wells not equipped with a Westbay™ multiport sampling system or with a multilevel Barcad pump system using the low-flow minimal drawdown method (low-flow method) during CY 2006. For the low-flow method, a bladder pump is permanently installed in each well that is scheduled for sample collection. If well construction prevents permanent installation (e.g., flush-mounted wells), then the pump and tubing will be installed at least 24 hours before sample collection and will be removed when sampling is completed. In accordance with the groundwater sampling procedure for the low-flow method (BWXT 2004a), groundwater is purged, and subsequently sampled, from the well at a flow rate (<300 milliliters per minute) which ensures minimal drawdown of the static water level, therefore isolating the stagnant water column above the intake of the pump. Groundwater samples are collected from a well after the water level is in steady-state drawdown (<0.1 ft over a 15-minute interval) and field parameters (pH, conductivity, water temperature, REDOX, and dissolved oxygen) have stabilized (minimal variation over four consecutive readings).

Groundwater sampling and pressure profiling using a Westbay™ multiport sampling system at well GW-722 in the East Fork Regime will be performed in accordance with the operating procedures (BWXT 2002a and BWXT 2006). The groundwater samples from each sampling port (Figure A.5) will be collected in 250-milliliter nonvented stainless steel Westbay™ sample collection bottles filled at the designated depth in the well. Once filled, the bottles will be raised to the surface and the groundwater will be transferred to laboratory sample containers. The sample collection bottles will be lowered, filled, and retrieved as many times as needed to completely fill the laboratory sample bottles. Groundwater in the first sample collection bottles retrieved from each sampling port will be used as a "formation rinse" to obtain field measurements and to condition the sample collection bottle for each zone.

Groundwater sampling using multilevel Barcad pump systems installed in wells GW-954 and GW-956 in the East Fork Regime will be performed in accordance with the standard operating procedures provided by the manufacturer (BESST Inc. 2005). Each well has three to four Barcad pumps installed at discrete depth intervals with a riser casing connecting each pump to the surface (Figure A.6). The manifold installed at the top of the riser casing for each pump has two fittings: one for gas pressurization and one for sample collection. A pressure control unit will be used by field personnel to regulate the amount of nitrate gas used to displace groundwater in the riser casing above the Barcad pump. The displaced groundwater is forced upward through the sample collection tube and discharged at the surface during well purging and sample collection. Releasing the nitrogen pressure permits groundwater to move from the formation and sand pack through the Barcad pump into the riser casing for subsequent cycles of discharge through the sample collection tube. The system is purged at least twice to remove standing water from the riser pipe, to allow fresh formation water to recharge the sand pack interval, and to obtain field measurements. Typical purge rates for Barcad Pump systems are 500-800 milliliters per minute. The laboratory sample bottles will be filled with groundwater from the sample return line after purging is completed.

In addition to the groundwater and surface water samples, field blanks and equipment rinsate samples will be collected at the frequencies and analyzed for the parameter groups specified on Table B.1. Field blank samples will be collected from at least 10% of the sample groups. Therefore, one field blank will be collected during each quarter of CY 2006: in the Bear Creek Regime during the first and third quarters and in the East Fork Regime during the second and fourth quarters. Equipment rinsate samples will be collected from Westbay well GW-722 (Table B.1). The rinsate sample will be collected immediately after field-cleaning the sampling equipment used to collect samples from the last sampling port (GW-722-17).

Trip blank samples, field duplicate samples, and laboratory quality assurance samples will be prepared and analyzed as specified in the *Quality Assurance Plan for the Analytical Chemistry Organization* (BWXT 2003b) using applicable analytical procedures. Trip blank samples will be prepared for each cooler used to transport samples for volatile organic analyses. Duplicate samples will be collected from at least 10% of the sampling locations. A total of 22 field duplicate samples will be collected during CY 2006, including six in the Bear Creek Regime, two in the Chestnut Ridge Regime, and15 in the East Fork Regime (Table B.1).

All groundwater and surface water samples will be relinquished under chain-of-custody control to the appropriate Y-12 ACO laboratory that will perform the analyses. The Y-12 ACO laboratories will perform each analyses within established holding times and deliver results within established turnaround times (see Appendix D).

5.0 REFERENCES

BESST Inc. 2005. *Standard Operating Procedures for Barcad Pumps.* Prepared for BWXT Y-12 L.L.C., Oak Ridge, Tennessee.

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U.S. Environmental Protection Agency. 1996. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods.*

APPENDIX A

FIGURES

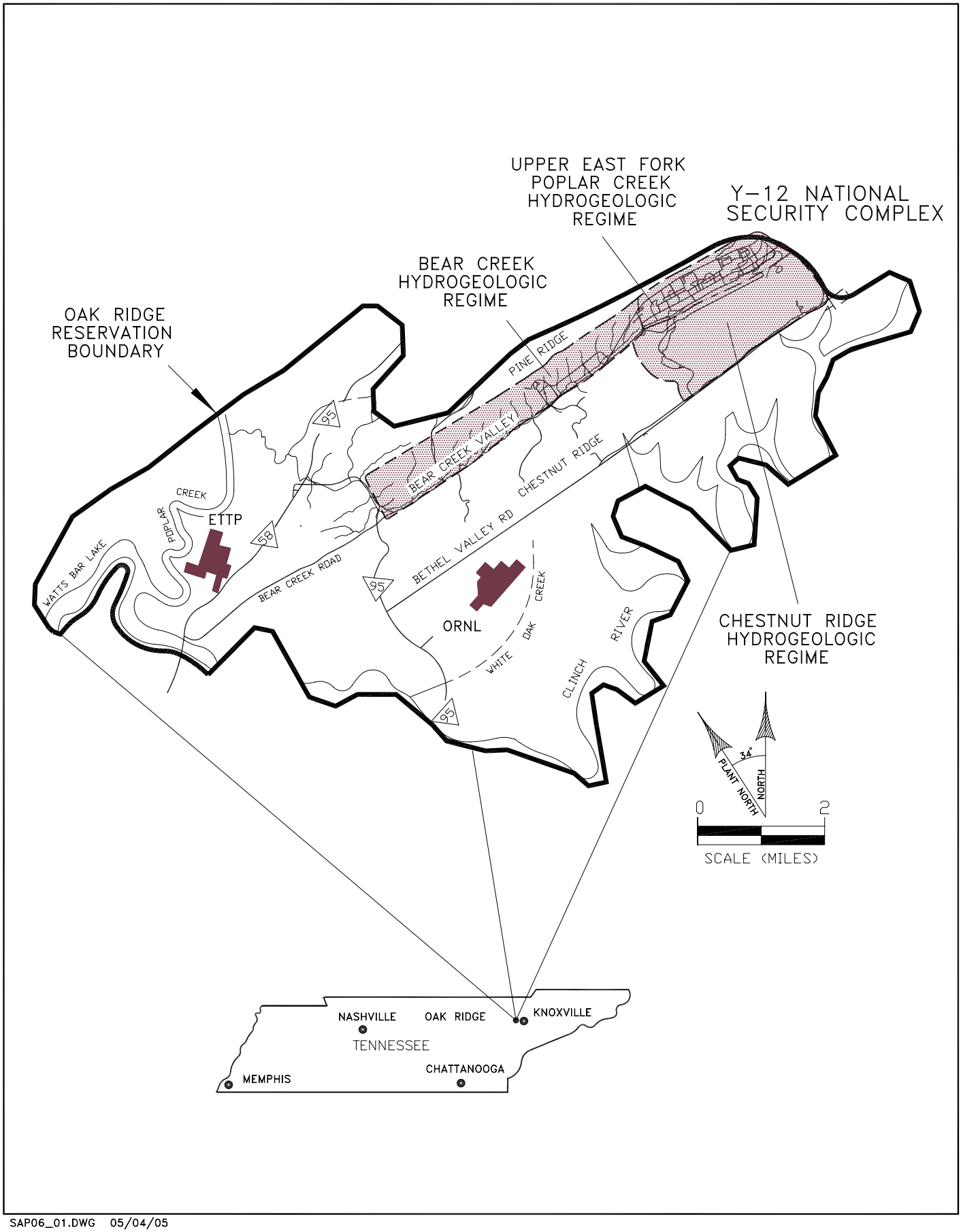

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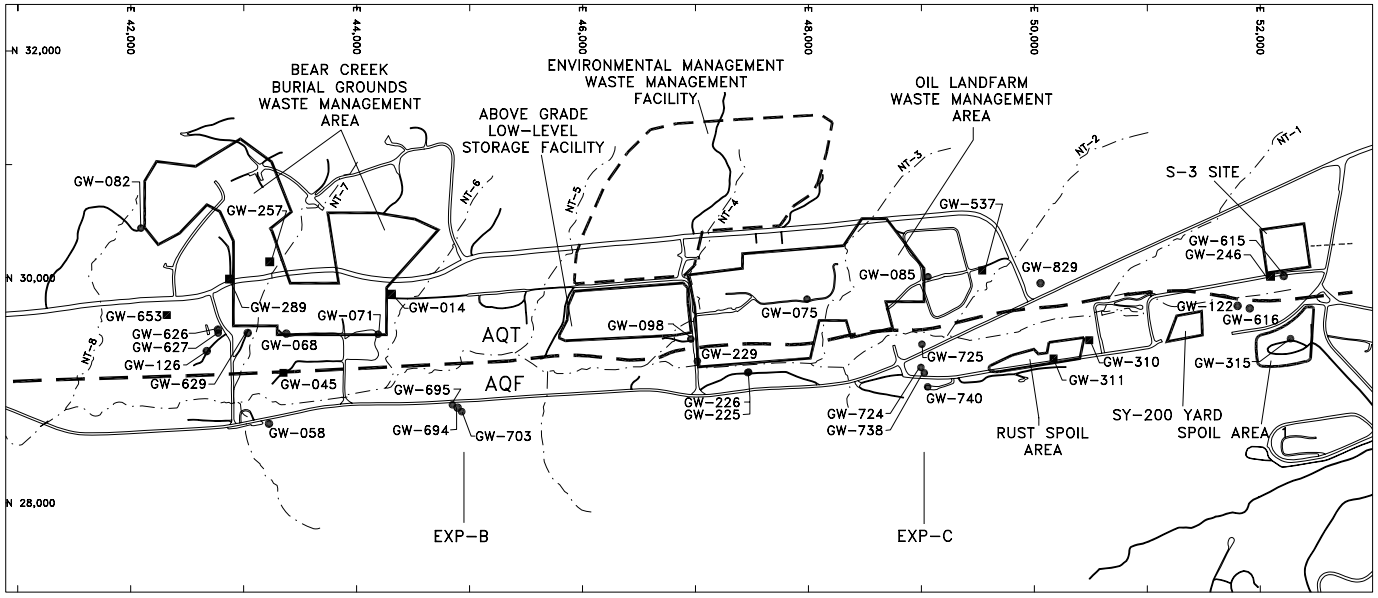
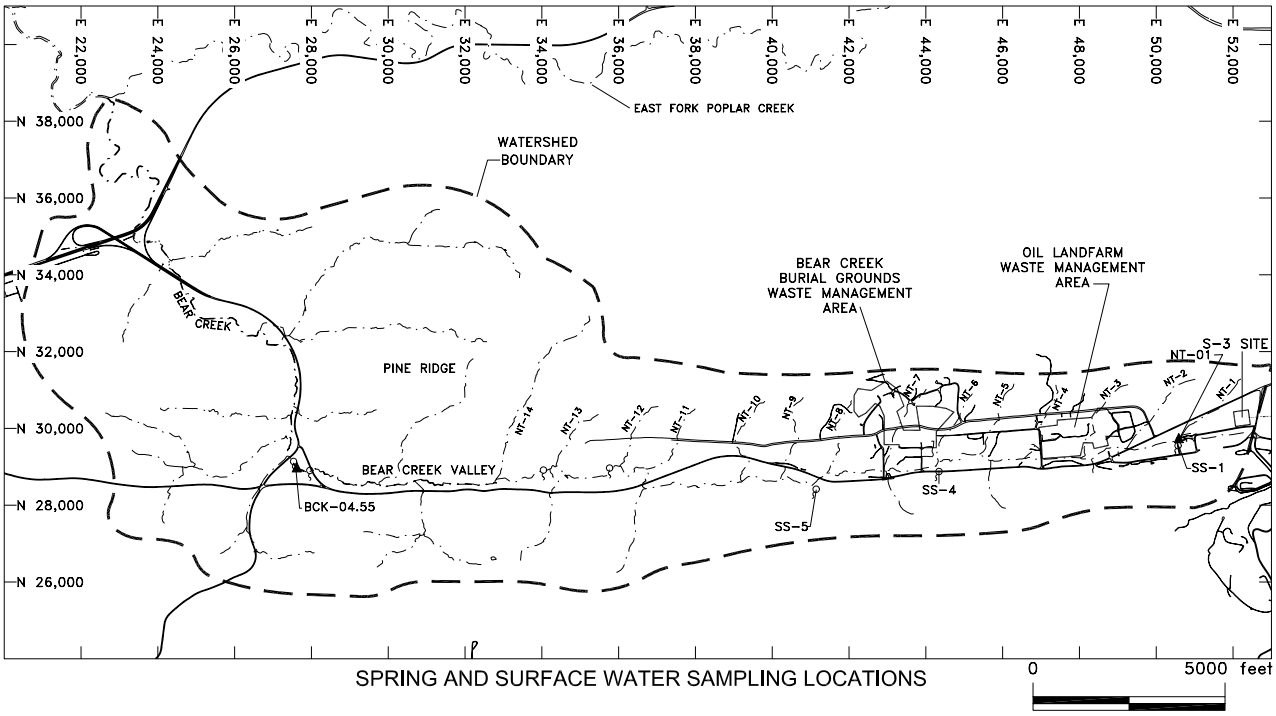
Fig. A.1. Hydrogeologic regimes at the Y-12 National Security Complex.





EXPLANATION

- ■ — Water Table Monitoring Well
- ● — Bedrock Monitoring Well
- ▲ — Surface Water Sampling Station
- ♀ — Spring Sampling Station
- EXP-C — Exit Pathway, Maynardville Limestone Picket
- — Surface Drainage Feature
- NT-5 — North Tributary
- AQT — Aquitard
- — Approximate Nolichucky Shale\Maynardville Limestone Contact
- AQF — Aquifer

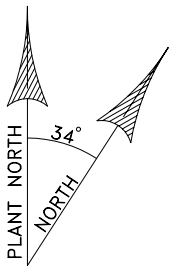


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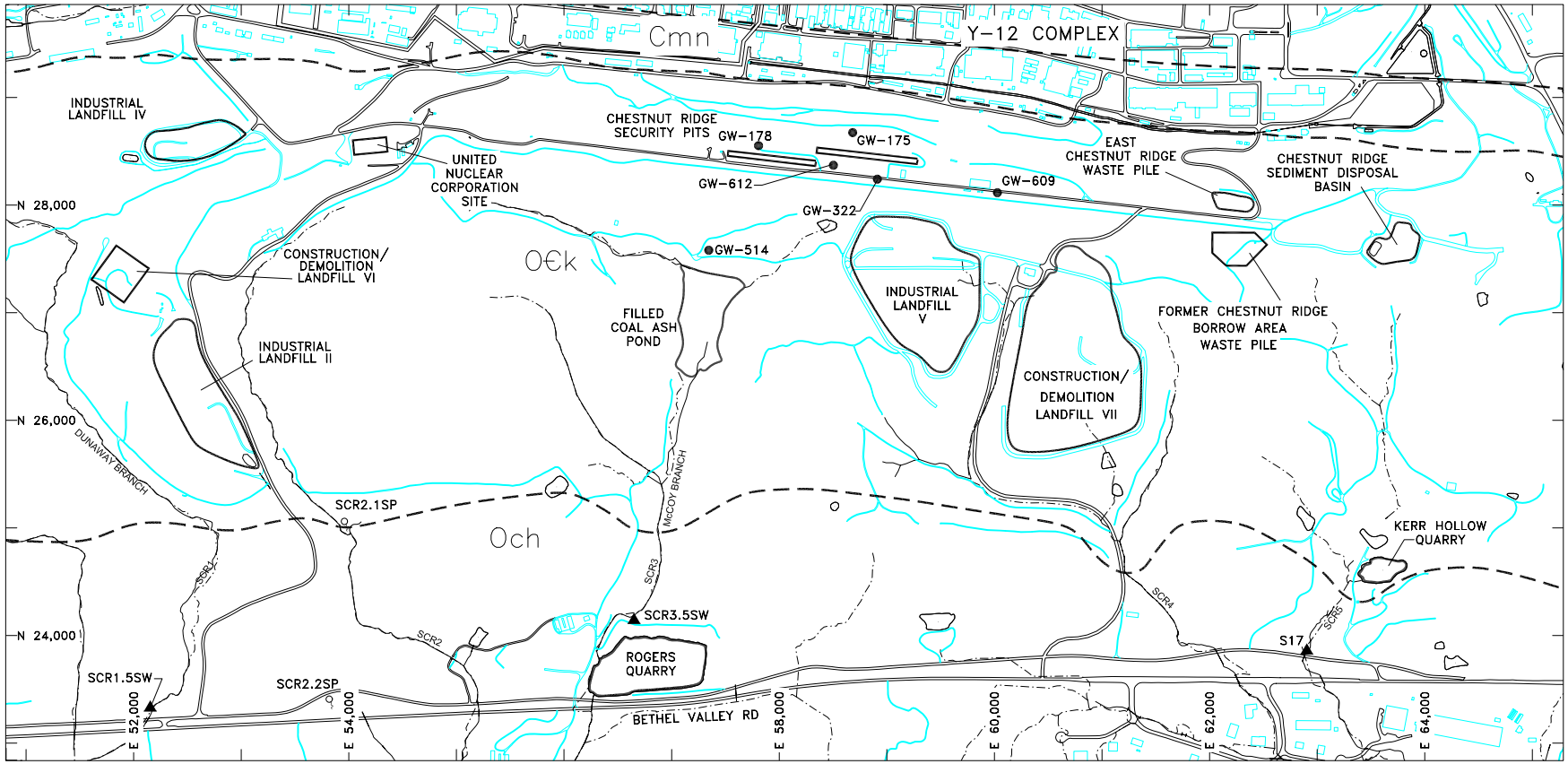
Fig. A.2. CY 2006 sampling locations in the Bear Creek Hydrogeologic Regime.



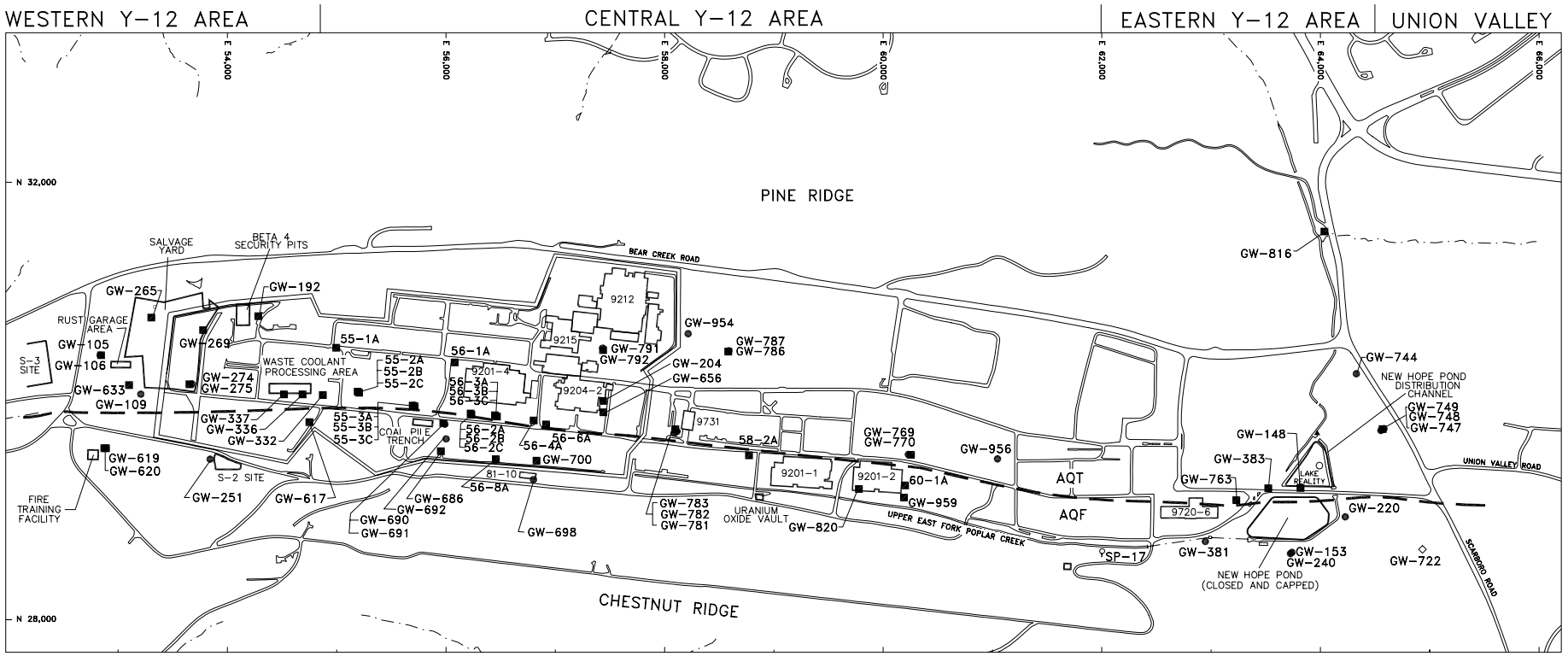
EXPLANATION

- ■ — Water Table Monitoring Well
- ● — Bedrock Monitoring Well
- ▲ — Surface Water Sampling Station
- ♀ — Spring Sampling Location
- — Surface Drainage Feature
- — Boundary of Site
- — Surface Geologic Contact
- €mn — Maynardville Limestone
- Ock — Knox Group
- Och — Chickamauga Group

PLANT NORTH
34°
NORTH

0 1600
SCALE (ft)

Fig. A.3. CY 2006 sampling locations in the Chestnut Ridge Hydrogeologic Regime.



EXPLANATION

- ■ — Water Table Monitoring Well
- ● — Bedrock Monitoring Well
- ◇ — Well With Westbay Multiport Sampling System
- ▲ — Surface Water Sampling Location
- ♀ — Spring Sampling Location

AQT — Aquitard

Approximate contact of Nolichucky Shale and Maynardville Limestone

AQF — Aquifer

PLANT NORTH 34° NORTH

0 1500

SCALE (ft)

Fig. A.4. CY 2006 sampling locations in the Upper East Fork Poplar Creek Hydrogeologic Regime.

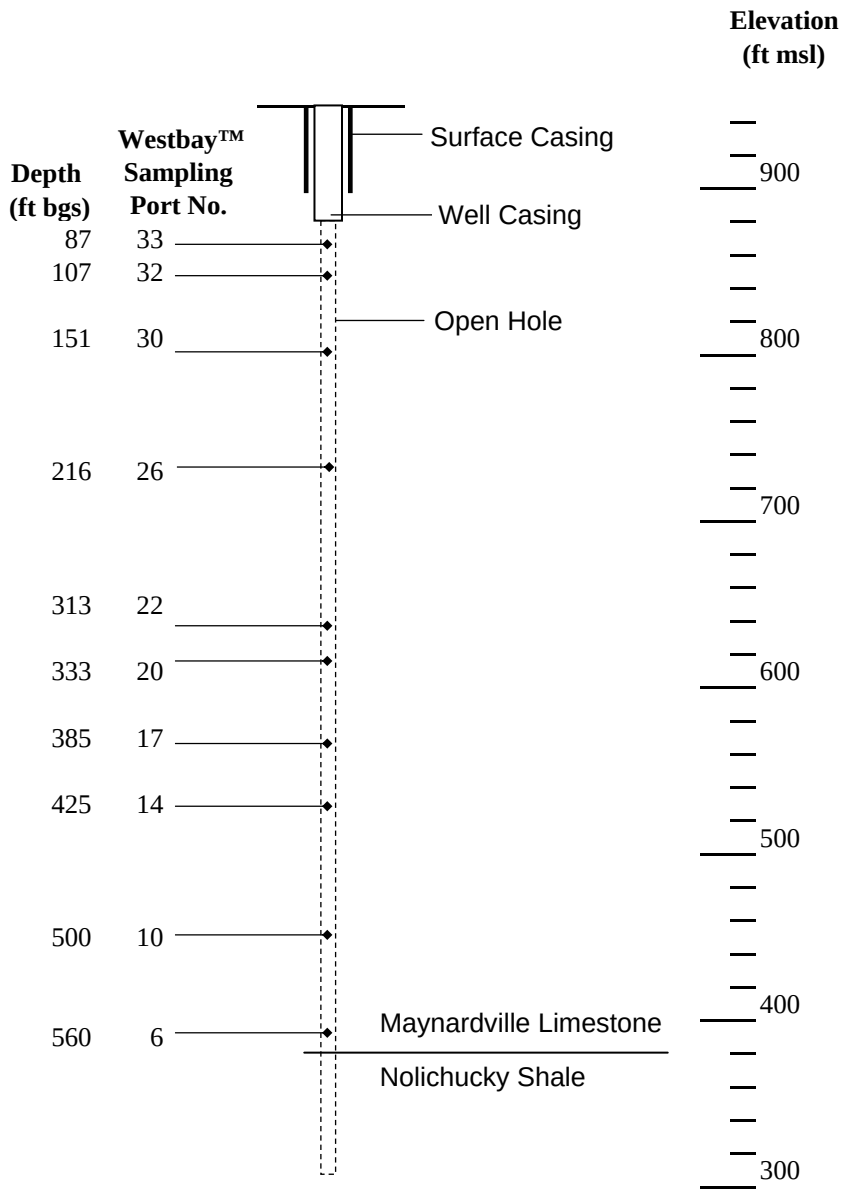


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Fig. A.5. Westbay™ monitoring system sampling port depths in well GW-722.

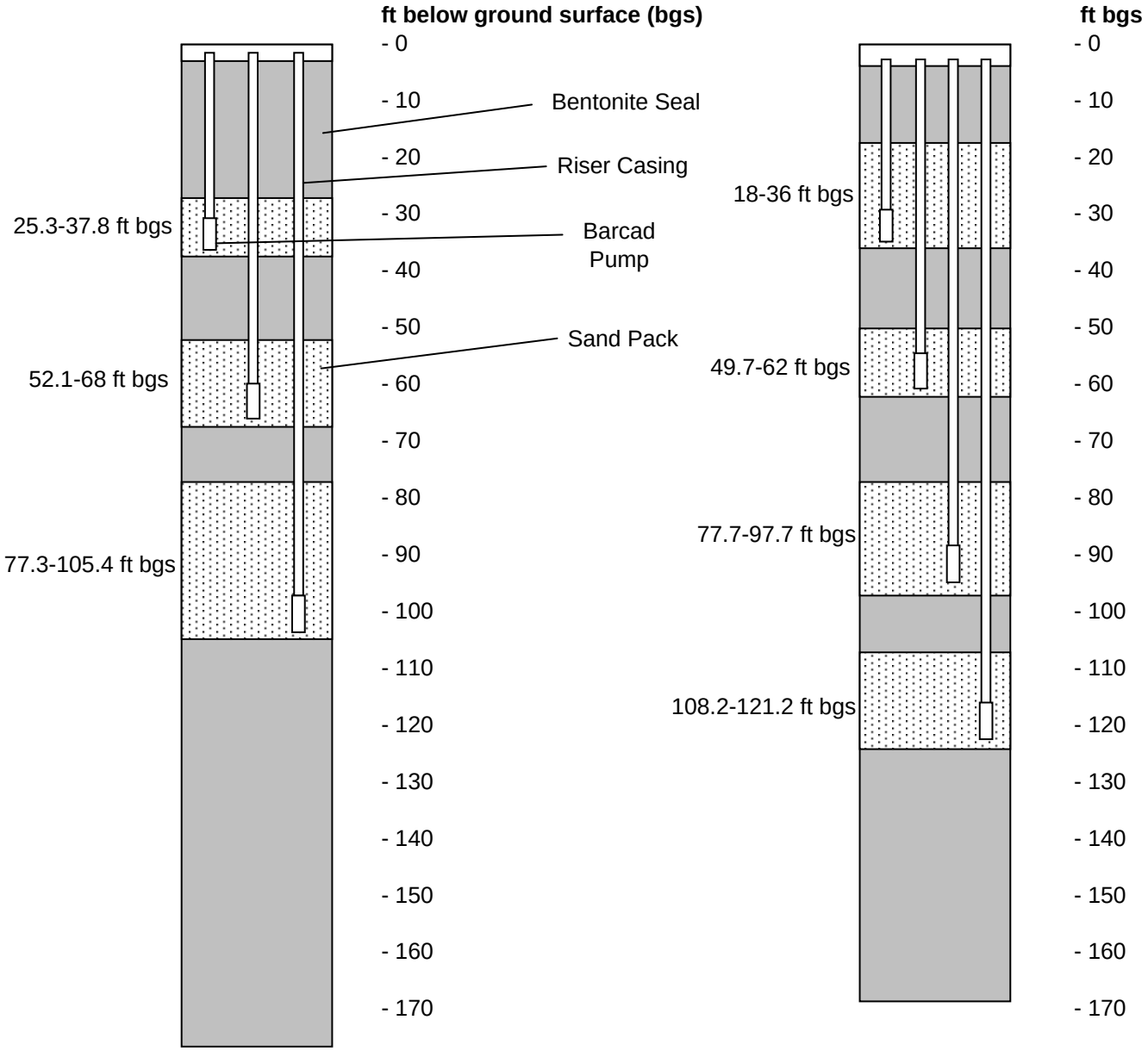

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Fig. A.6. Barcad pump system sampling depths in wells GW-954 and GW-956.

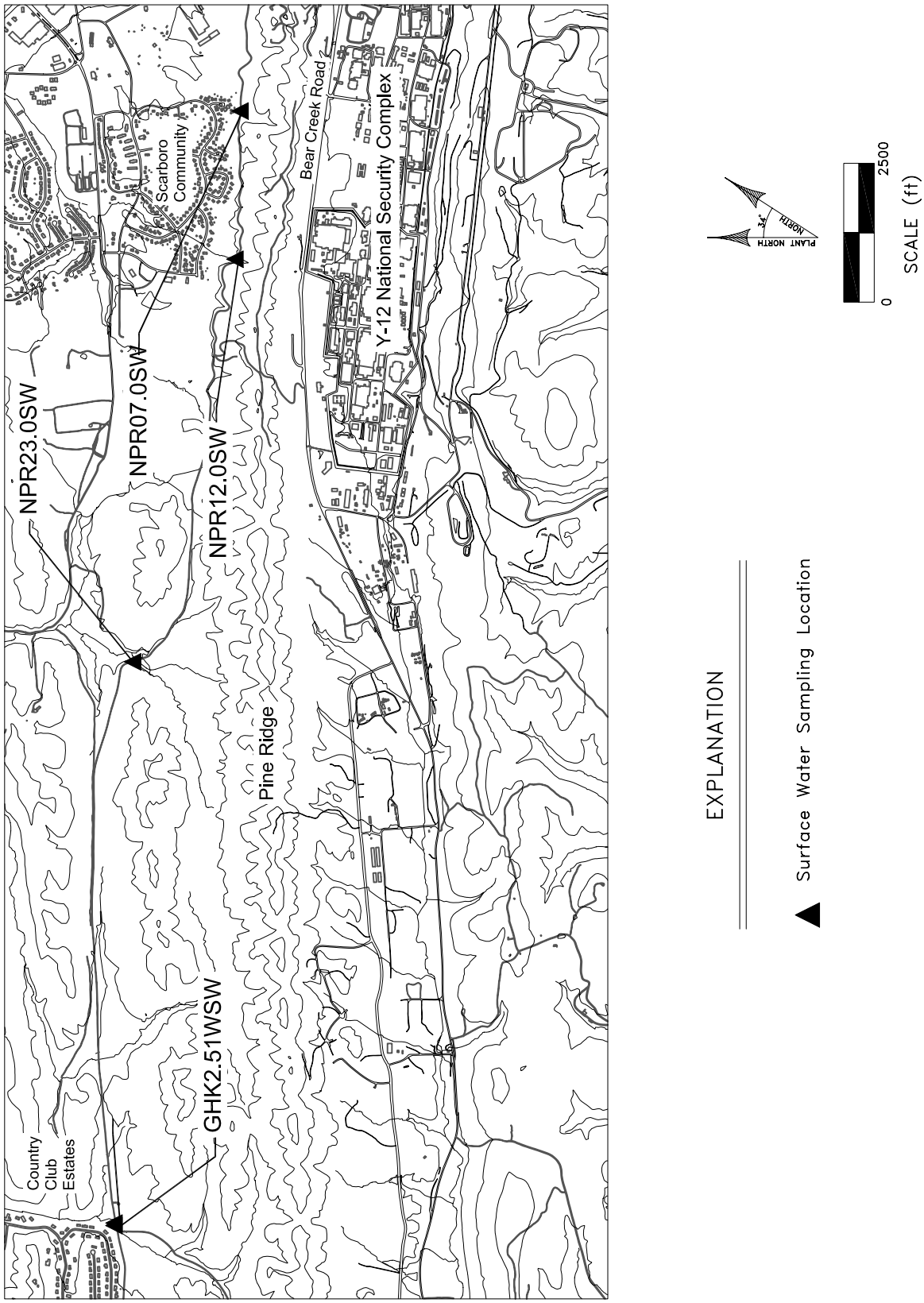

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Fig. A.7. CY 2005 surface water sampling locations north of Pine Ridge.

APPENDIX B

TABLES

Table B.1. Sampling sequence, frequency, and analytical parameters for groundwater and surface water monitoring during CY 2006

Sample Group [1]	Location [2]	Sampling Point [3]	Duplicate [4]	Monitoring Driver [5]	Parameter Groups [6]
Bear Creek Hydrogeologic Regime					
BC-1 (Q1, Q3)	BG	GW-014		SMP	STD
	BG	GW-071		SMP	STD, VOC(2)
	BG	GW-626		SMP	STD
	BG	GW-627		SMP	STD
	OLF	GW-226		SMP	STD
	OLF	GW-225	Q3	SMP	STD
	OLF	GW-085	Q1	SMP	STD
	S3	GW-246		SMP	STD, RAD(3,12)
	FIELD BLANK				VOC(1)
BC-2 (Q1)	OLF	GW-075		SMP	STD, RAD(13)
	OLF	GW-098		SMP	STD
	OLF	GW-229		SMP	STD
	OLF	GW-829		SMP	STD, RAD(3,12)
	OLF	GW-537		SMP	STD
	SPI	GW-315		SMP	STD
	S3	GW-122		SMP	STD
	S3	GW-616	Q1	SMP	STD, RAD(3,12)
	S3	GW-615		SMP	STD, RAD(3,12)
BC-3 (Q3)	EXP-B	GW-695		SMP	STD
	EXP-B	GW-694		SMP	STD
	EXP-B	GW-703		SMP	STD
	EXP-C	GW-725		SMP	STD
	EXP-C	GW-724		SMP	STD
	EXP-C	GW-738		SMP	STD
	EXP-C	GW-740		SMP	STD
	RS	GW-311		SMP	STD
	RS	GW-310	Q3	SMP	STD
BC-4 (Q2)	BG	GW-082		SMP	STD
	BG	GW-653		SMP	STD
	BG	GW-289		SMP	STD
	BG	GW-257		SMP	STD
	BG	GW-126		SMP	STD
	BG	GW-629	Q2	SMP	STD
	BG	GW-068		SMP	STD
	BG	GW-058		SMP	STD, RAD(3,12,13)
	BG	GW-045		SMP	STD, RAD(13)
BC-5 (Q2)	EXP-SW	BCK-04.55		EXP	STD
	EXP-SW	SS-5		EXP	STD
	EXP-SW	SS-4	Q2	EXP	STD
	EXP-SW	SS-1		EXP	STD
	EXP-SW	NT-01		EXP	STD

Table B.1 (continued)

Sample Group [1]	Location [2]	Sampling Point [3]	Duplicate [4]	Monitoring Driver [5]	Parameter Groups [6]
Chestnut Ridge Hydrogeologic Regime					
CR-1 (Q2)	FCAP	GW-514		SMP	STD
	CRSP	GW-175		SMP	STD
	CRSP	GW-609	Q2	SMP	STD
	CRSP	GW-178		SMP	STD
	CRSP	GW-612		SMP	STD, VOC(2)
	CRSP	GW-322		SMP	STD, VOC(2)
CR-2 (Q2)	EXP-SW	SCR1.5SW		EXP	STD
	EXP-SW	SCR2.1SP		EXP	STD
	EXP-SW	SCR2.2SP	Q2	EXP	STD
	EXP-SW	SCR3.5SW		EXP	STD
	EXP-SW	S17		EXP	STD
Upper East Fork Poplar Creek Hydrogeologic Regime/North of Pine Ridge					
EF-1 (Q1,Q3)	GRID B3	55-2A*		SMP	STD, RAD(13)
	GRID B3	55-2B*		SMP	STD
	B9201-5	55-3A	Q1	SMP	STD
	B9201-5	55-3B		SMP	STD
	B9201-5	55-3C		SMP	STD
	Y12	56-3A		SMP	STD, RAD(13)
	Y12	56-3B	Q3	SMP	STD, RAD(13)
	Y12	56-3C		SMP	STD, RAD(13)
	Y12	56-4A		SMP	STD, RAD(13)
	Y12	56-6A		SMP	STD, RAD(13)
EF-2 (Q1)	GRID B3	55-2C*		SMP	STD
	GRID B2	55-1A		SMP	STD
	GRID C3	56-2A		SMP	STD
	GRID C3	56-2B		SMP	STD
	GRID C3	56-2C		SMP	STD
	SY	GW-274		SMP	STD, RAD(3,12,13)
	SY	GW-275		SMP	STD, RAD(3,12,13)
	WCPA	GW-337		SMP	STD, VOC(2), RAD(13)
	WCPA	GW-336	Q1	SMP	STD, VOC(2)
	WCPA	GW-332		SMP	STD, VOC(2)
EF-3 (Q3)	GRID E2	GW-786		SMP	STD
	GRID E2	GW-787		SMP	STD
	GRID D2	GW-791		SMP	STD
	GRID D2	GW-792	Q3	SMP	STD
	GRID JP	GW-763		SMP	STD
	NHP	GW-381		SMP	STD

Table B.1 (continued)

Sample Group [1]	Location [2]	Sampling Point [3]	Duplicate [4]	Monitoring Driver [5]	Parameter Groups [6]
EF-4 (Q1)	EXP-SR	GW-816		SMP	STD
	GRID K1	GW-744		SMP	STD
	GRID K2	GW-747		SMP	STD
	GRID K2	GW-748		SMP	STD
	GRID K2	GW-749		SMP	STD
	NHP	GW-148		SMP	STD, RAD(13)
	NHP	GW-240	Q1	SMP	STD, RAD(13)
	NHP	GW-153		SMP	STD
EF-5 (Q3)	EXP-J	GW-722-06		EXP	STD
	EXP-J	GW-722-30		EXP	STD
	EXP-J	GW-722-26		EXP	STD
	EXP-J	GW-722-32		EXP	STD
	EXP-J	GW-722-33	Q3	EXP	STD
	EXP-J	GW-722-10		EXP	STD
	EXP-J	GW-722-22		EXP	STD
	EXP-J	GW-722-20		EXP	STD
	EXP-J	GW-722-14		EXP	STD
	EXP-J	GW-722-17		EXP	STD
	RINSATE SAMPLE				STD
EF-6 (Q2,Q4)	Y12	56-1A		SMP	STD, RAD(13)
	Y12	56-8A		SMP	STD, RAD(13)
	SY	GW-265		SMP	STD, RAD(13)
	SY	GW-269		SMP	STD, VOC(2)
	B8110	GW-698	Q2	SMP	STD
	CPT	GW-686		SMP	STD, RAD(13)
	Y12	58-6A		SMP	STD, RAD(13)
	Y12	GW-954-1		SMP	STD, RAD(13)
	Y12	GW-954-2	Q4	SMP	STD, RAD(13)
	Y12	GW-954-3		SMP	STD, RAD(13)
EF-7 (Q2,Q4)	Y12	GW-956-1		SMP	STD, RAD(13)
	Y12	GW-956-2		SMP	STD, RAD(13)
	Y12	GW-956-3		SMP	STD, RAD(13)
	Y12	GW-956-4		SMP	STD, RAD(13)
	Y12	58-2A		SMP	STD, RAD(13)
	Y12	60-1A	Q2	SMP	STD, RAD(13)
	B9201-2	GW-820		SMP	STD
	B9201-2	GW-959		SMP	STD
	GRID G3	GW-769		SMP	STD
	GRID G3	GW-770	Q4	SMP	STD, RAD(13)
	NHP	GW-383		SMP	STD
	NHP	GW-220		SMP	STD
	FIELD BLANK				VOC(1)

Table B.1 (continued)

Sample Group [1]	Location [2]	Sampling Point [3]	Duplicate [4]	Monitoring Driver [5]	Parameter Groups [6]
EF-8 (Q2)	S3	GW-105		SMP	STD
	S3	GW-106		SMP	STD
	RG	GW-633		SMP	STD, RAD(3,12)
	S3	GW-109		SMP	STD, RAD(3,12,13)
	B4	GW-192	Q2	SMP	STD
	FTF	GW-619		SMP	STD
	FTF	GW-620		SMP	STD
	S2	GW-251		SMP	STD
	EXP-E	GW-617		SMP	STD
EF-9 (Q2)	EXP-NPR	NPR07.0SW		EXP	STD
	EXP-NPR	NPR12.0SW		EXP	STD
	EXP-NPR	NPR23.0SW		EXP	STD
	EXP-NPR	GHK2.51WSW		EXP	STD
	EXP-SW	SP-17	Q2	EXP	STD
EF-10 (Q4)	T0134	GW-204		SMP	STD
	T0134	GW-656	Q4	SMP	STD
	CPT	GW-690		SMP	STD
	CPT	GW-691		SMP	STD
	CPT	GW-692		SMP	STD
	B8110	GW-700		SMP	STD
	GRID E3	GW-781		SMP	STD
	GRID E3	GW-782		SMP	STD, VOC(2)
	GRID E3	GW-783		SMP	STD

Notes:

1 Samples will be collected during the calendar year quarter as specified (e.g., Q1). Details regarding the monitoring frequency for each location is provided in Appendix C.

2 **Bear Creek Hydrogeologic Regime**

BG - Bear Creek Burial Grounds Waste Management Area
EXP-B - Exit Pathway Picket B
EXP-C - Exit Pathway Picket C
EXP-SW - Spring or Surface Water Location
OLF - Oil Landfarm Waste Management Area
RS - Rust Spoil Area
S3 - S3 Site
SPI - Spoil Area I

Chestnut Ridge Hydrogeologic Regime

CRSP - Chestnut Ridge Security Pits
EXP-SW - Spring or surface water sampling location
FCAP - Filled Coal Ash Pond

Table B.1 (continued)

Notes: (continued)

2 (continued)

Upper East Fork Poplar Creek Hydrogeologic Regime/North of Pine Ridge

B4	-	Beta-4 Security Pits
B8110	-	Building 81-10
B9201-2	-	Building 9201-2
B9201-5	-	Building 9201-5
CPT	-	Coal Pile Trench
EXP-E	-	Maynardville Limestone Exit Pathway Picket E
EXP-J	-	Maynardville Limestone Exit Pathway Picket J
EXP-NPR	-	Surface water sampling station located where drainage exits the Oak Ridge Reservation, north of Pine Ridge
EXP-SR	-	Exit pathway well in the gap through Pine Ridge along Scarboro Road
EXP-SW	-	Spring or Surface Water Location
FTF	-	Fire Training Facility
GRID	-	Comprehensive Groundwater Monitoring Plan Grid Location
NHP	-	New Hope Pond
RG	-	Rust Garage Area
T0134	-	Underground Storage Tank 0134-U
S2	-	S-2 Site
SY	-	Y-12 Salvage Yard
WCPA	-	Waste Coolant Processing Area
Y12	-	Y-12 Complex

3	BCK	-	Bear Creek Kilometer (surface water station)
	GW	-	Groundwater monitoring well
	GHK	-	Gum Hollow Kilometer (surface water station)
	NPR	-	North of Pine Ridge (surface water station)
	NT	-	North Tributary to Bear Creek (surface water station)
	S17	-	Surface water station in SCR5
	SCR	-	South Chestnut Ridge (spring or surface water station)
	SS	-	Spring sampling location: South Side of Bear Creek
	*	-	Collect samples concurrently: nested wells 55-2A, 55-2B, and 55-2C

4	Q_	-	Field duplicate samples will be collected at these locations during the quarter(s) specified.

5	EXP	-	DOE Order Exit Pathway/Perimeter Monitoring
	SMP		DOE Order Surveillance Monitoring

Table B.1 (continued)

Notes: (continued)

6 Table B.2 provides a comprehensive list of analytes, analytical methods, and the associated parameter group.

STD- Standard administrative parameter group, including the following elementary parameter groups:

FLD - Field measurements
CHEM - Miscellaneous laboratory analytes (e.g., dissolved solids) and anions
MET(1) - Metals
VOC(1) - Volatile organic compounds
VOC(2) - 1,4-Dioxane
RAD(1) - Gross alpha and gross beta activity

Radionuclide Elementary Parameter Groups:

RAD(3) - Uranium-234, -235, and -238
RAD(12) - Technetium-99
RAD(13) - Total uranium and weight percent of uranium-235

Table B.2. Field measurements and analytes that comprise the elementary parameter groups for CY 2006 groundwater and surface water samples

Parameter Group	Measurement or Analyte	Analytical Method [1]	Reporting Limit [2]	Units [3]
FLD	Depth to Water	NA	NA	ft
	Water Temperature	NA	NA	centigrade
	pH	NA	NA	pH units
	Conductivity	NA	NA	µmho/cm
	Dissolved Oxygen	NA	NA	ppm
	Oxidation-Reduction Potential (REDOX)	NA	NA	mV
CHEM (miscellaneous)	Total Dissolved Solids	EPA-160.1	1	mg/L
	Total Suspended Solids	EPA-160.2	1	mg/L
	Turbidity	EPA-180.1	0.1	NTU
CHEM (anions)	Alkalinity - HCO3	EPA-310.1	1.0	mg/L
	Alkalinity - CO3	EPA-310.1	1.0	mg/L
	Chloride	EPA-300.0	0.2	mg/L
	Fluoride	EPA-340.2	0.1	mg/L
	Nitrate (as Nitrogen)	EPA-300.0	0.028	mg/L
	Sulfate	EPA-300.0	0.25	mg/L
MET(1)	Aluminum	SW846-6010B	0.2	mg/L
	Antimony	EPA-200.8	0.0025	mg/L
	Arsenic	EPA-200.8	0.005	mg/L
	Barium	SW846-6010B	0.004	mg/L
	Beryllium	SW846-6010B	0.0005	mg/L
	Boron	SW846-6010B	0.1	mg/L
	Cadmium	EPA-200.8	0.0025	mg/L
	Calcium	SW846-6010B	0.2	mg/L
	Chromium	EPA-200.8	0.01	mg/L
	Cobalt	SW846-6010B	0.02	mg/L
	Copper	SW846-6010B	0.02	mg/L
	Iron	SW846-6010B	0.05	mg/L
	Lead	EPA-200.8	0.0005	mg/L
	Lithium	SW846-6010B	0.01	mg/L
	Magnesium	SW846-6010B	0.2	mg/L
	Manganese	SW846-6010B	0.005	mg/L
	Mercury	SW846-7470	0.0002	mg/L
	Molybdenum	SW846-6010B	0.05	mg/L
	Nickel	EPA-200.8	0.005	mg/L
	Potassium	SW846-6010B	2	mg/L
	Selenium	EPA-200.8	0.01	mg/L
	Silver	SW846-6010B	0.02	mg/L

Table B.2 (continued)

Parameter Group	Analyte	Analytical Method [1]	Reporting Limit [2]	Units [3]
MET(1) (continued)	Sodium	SW846-6010B	0.2	mg/L
	Strontium	SW846-6010B	0.005	mg/L
	Thallium	EPA-200.8	0.0005	mg/L
	Thorium	SW846-6010B	0.2	mg/L
	Uranium	EPA-200.8	0.0005	mg/L
	Vanadium	SW846-6010B	0.02	mg/L
	Zinc	SW846-6010B	0.05	mg/L
VOC(1)	Acetone	SW846-8260B-UP	10	µg/L
	Acrolein	SW846-8260B-UP	10	µg/L
	Acrylonitrile	SW846-8260B-UP	5	µg/L
	Benzene	SW846-8260B-UP	5	µg/L
	Bromochloromethane	SW846-8260B-UP	5	µg/L
	Bromodichloromethane	SW846-8260B-UP	5	µg/L
	Bromoform	SW846-8260B-UP	5	µg/L
	Bromomethane	SW846-8260B-UP	5	µg/L
	2-Butanone	SW846-8260B-UP	5	µg/L
	Carbon disulfide	SW846-8260B-UP	5	µg/L
	Carbon tetrachloride	SW846-8260B-UP	5	µg/L
	Chlorobenzene	SW846-8260B-UP	5	µg/L
	Chloroethane	SW846-8260B-UP	5	µg/L
	2-Chloroethylvinyl ether	SW846-8260B-UP	10	µg/L
	Chloroform	SW846-8260B-UP	5	µg/L
	Chloromethane	SW846-8260B-UP	5	µg/L
	Dibromochloromethane	SW846-8260B-UP	5	µg/L
	1,2-Dibromo-3-chloropropane	SW846-8260B-UP	10	µg/L
	1,2-Dibromoethane	SW846-8260B-UP	5	µg/L
	Dibromomethane	SW846-8260B-UP	5	µg/L
	1,2-Dichlorobenzene	SW846-8260B-UP	5	µg/L
	1,4-Dichlorobenzene	SW846-8260B-UP	5	µg/L
	1,4-Dichloro-2-butene	SW846-8260B-UP	5	µg/L
	trans-1,4-Dichloro-2-butene	SW846-8260B-UP	5	µg/L
	Dichlorodifluoromethane	SW846-8260B-UP	5	µg/L
	1,1-Dichloroethane	SW846-8260B-UP	5	µg/L
	1,2-Dichloroethane	SW846-8260B-UP	5	µg/L
	1,1-Dichloroethene	SW846-8260B-UP	5	µg/L
	cis-1,2-Dichloroethene	SW846-8260B-UP	5	µg/L
	trans-1,2-Dichloroethene	SW846-8260B-UP	5	µg/L
	1,2-Dichloropropane	SW846-8260B-UP	5	µg/L

Table B.2 (continued)

Parameter Group	Analyte	Analytical Method [1]	Reporting Limit [2]	Units [3]
VOC(1) (continued)	cis-1,3-Dichloropropene	SW846-8260B-UP	5	µg/L
	trans-1,3-Dichloropropene	SW846-8260B-UP	5	µg/L
	Ethanol	SW846-8260B-UP	200	µg/L
	Ethylbenzene	SW846-8260B-UP	5	µg/L
	Ethyl methacrylate	SW846-8260B-UP	5	µg/L
	2-Hexanone	SW846-8260B-UP	5	µg/L
	Iodomethane	SW846-8260B-UP	5	µg/L
	4-Methyl-2-pentanone	SW846-8260B-UP	5	µg/L
	Methylene chloride	SW846-8260B-UP	5	µg/L
	Styrene	SW846-8260B-UP	5	µg/L
	1,1,1,2-Tetrachloroethane	SW846-8260B-UP	5	µg/L
	1,1,2,2-Tetrachloroethane	SW846-8260B-UP	5	µg/L
	Tetrachloroethene	SW846-8260B-UP	5	µg/L
	Toluene	SW846-8260B-UP	5	µg/L
	Total Xylene	SW846-8260B-UP	5	µg/L
	1,1,1-Trichloroethane	SW846-8260B-UP	5	µg/L
	1,1,2-Trichloroethane	SW846-8260B-UP	5	µg/L
	Trichloroethene	SW846-8260B-UP	5	µg/L
	Trichlorofluoromethane	SW846-8260B-UP	5	µg/L
	1,2,3-Trichloropropane	SW846-8260B-UP	10	µg/L
	1,1,2-Trichloro-1,2,2-trifluoroethane	SW846-8260B-UP	5	µg/L
	Vinyl acetate	SW846-8260B-UP	10	µg/L
	Vinyl chloride	SW846-8260B-UP	2	µg/L
VOC(2)	1,4-Dioxane	SW846-8260B	5	µg/L
RAD(1)	Gross Alpha Activity	EPA-900.0	3.5	pCi/L
RAD(1)	Gross Beta Activity	EPA-900.0	7.0	pCi/L
RAD(3)	Uranium-234, -235, & -238	Y/P65-7061	0.4	pCi/L
RAD(12)	Technetium-99	Y/P65-7060	10	pCi/L
RAD(13)	Total Uranium and weight % U-235	Y/P65-8044	0.002	mg/L

Notes:

1 N/A - Not Applicable

Field measurement procedures, used by the BWXT Environmental Compliance Division (ECD) and/or Analytical Chemical Organization (ACO):

Field Measurement	ECD Procedure	ACO Procedure	Field Measurement	ECD Procedure	ACO Procedure
Depth to Water	Y50-71-015	N/A	Dissolved Oxygen	N/A	Y59-65-9154
Water Temperature	Y50-71-014	Y59-65-9152	REDOX	N/A	Y59-65-9156
pH	Y50-71-014	Y59-65-9153	Pressure Profile	Y50-71-0158	None
Conductivity	Y50-71-022	Y59-65-9160			

Table B.2 (continued)

Notes: (continued)

1 (continued)

Analytical methods from:

- *Test Methods for Evaluating Solid Waste Physical/Chemical Methods* (U.S. Environmental Protection Agency 1996)
- *Methods for Chemical Analysis of Water and Wastes* (U.S. Environmental Protection Agency 1983)
- BWXT ACO Procedures applicable to the methods shown above in the table:

Method	ACO Procedure	Method	ACO Procedure
EPA-160.1	Y/P65-7914	SW846-6010B	Y/P65-0040
EPA-160.2	Y/P65-7918	SW846-7470	Y/P65-7470
EPA-180.1	Y/P65-7615	SW846-8260B-UP	Y/P65-SW846-8260B
EPA-200.8	Y/P65-0034	Y/P65-7060	Y/P65-7060
EPA-300.0	Y/P65-7619	Y/P65-7061	Y/P65-7061
EPA-310.1	Y/P65-7639	Y/P65-8044	Y/P65-8044
EPA-340.2	Y/P65-7602		
EPA-900.0	Y50-AC-65-7074		

2 NA - not applicable

VOC(1,2) - Reporting limits are contract-required quantitation limits; also report estimated values (with qualifier) below this limit and above the instrument detection limit.

RAD(1,3,12,13) - Reporting limits are target minimum detectable activities (MDAs) that may be obtained under optimal analytical conditions; actual MDAs are sample-specific and may vary significantly from the target value.

3 ft - feet
µg/L - micrograms per liter
µmho/cm - micromhos per centimeter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
ppm - parts per million
pCi/L - picoCuries per liter

APPENDIX C

MONITORING FREQUENCY FOR CY 2006 SAMPLING LOCATIONS

Appendix C. Monitoring Frequency for CY 2006 Sampling Locations

Sampling Location	Regime[1]	MAROS Information			GWPP Final Frequency[3]	Explanation[4] (GWPP differs from MAROS)
		Trend[2]	Preliminary Frequency	Final Frequency		
Monitoring Wells						
55-1A	EF	N/A	Annual	Review	**Annual**	Selected for Review
55-2A	EF	.	.	Omitted	SemiAnnual	Selected for Review, no recent data
55-2B	EF	PI	SemiAnnual	SemiAnnual	SemiAnnual	
55-2C	EF	S	Annual	Annual	Annual	
55-3A	EF	.	.	Omitted	SemiAnnual	Selected for Review, no recent data
55-3B	EF	.	.	Omitted	SemiAnnual	Selected for Review, no recent data
55-3C	EF	.	.	Omitted	SemiAnnual	Selected for Review, no recent data
56-1A	EF	.	.	Omitted	SemiAnnual	Selected for Review, no recent data
56-2A	EF	N/A	SemiAnnual	Review	**Annual**	Selected for Review
56-2B	EF	N/A	SemiAnnual	Review	**Annual**	Selected for Review
56-2C	EF	S	Annual	Annual	Annual	
56-3A	EF	.	.	Omitted	SemiAnnual	Selected for Review, no recent data
56-3B	EF	.	.	Omitted	SemiAnnual	Selected for Review, no recent data
56-3C	EF	.	.	Omitted	SemiAnnual	Selected for Review, no recent data
56-4A	EF	.	.	Omitted	SemiAnnual	Selected for Review, no recent data
56-6A	EF	.	.	Omitted	SemiAnnual	Selected for Review, no recent data
56-8A	EF	.	.	Omitted	SemiAnnual	Selected for Review, no recent data
58-2A	EF	.	.	Omitted	SemiAnnual	Selected for Review, no recent data
60-1A	EF	.	.	Omitted	SemiAnnual	Selected for Review, no recent data
GW-014	BC	N/A	SemiAnnual	SemiAnnual	SemiAnnual	
GW-045	BC	N/A	Biennial	Review	**Even**	Selected for Review
GW-058	BC	N/A	Biennial	Review	**Even**	Selected for Review
GW-068	BC	N/A	Biennial	Review	**Even**	Selected for Review
GW-071	BC	NT	SemiAnnual	SemiAnnual	SemiAnnual	
GW-075	BC	N/A	Biennial	Biennial	Even	
GW-082	BC	I	SemiAnnual	SemiAnnual	**Annual**	Add CY 05 Data; Trend decreasing/stable
GW-085	BC	PI	SemiAnnual	SemiAnnual	SemiAnnual	
GW-098	BC	NT	Annual	Annual	Annual	
GW-105	EF	N/A	SemiAnnual	Annual	Annual	
GW-106	EF	N/A	SemiAnnual	Annual	Annual	
GW-109	EF	NT	SemiAnnual	SemiAnnual	**Annual**	Deep, near source/ Redundant with GW-108
GW-122	BC	N/A	Annual	Review	**Annual**	Selected for Review
GW-126	BC	N/A	Biennial	Review	**Even**	Selected for Review
GW-148	EF	NT	Biennial	Remove	**Even**	Selected for Review
GW-153	EF	S	Annual	Annual	Annual	
GW-175	CR	S	Annual	Annual	**Even**	Stable trend
GW-178	CR	N/A	Annual	Remove	**Even**	Selected for Review
GW-192	EF	NT	Annual	Annual	Annual	
GW-204	EF	PD	Biennial	Biennial	**Annual**	Located near process building
GW-220	EF	I	SemiAnnual	Regulated	**SemiAnnual**	
GW-225	BC	NT	SemiAnnual	SemiAnnual	SemiAnnual	
GW-226	BC	S	SemiAnnual	SemiAnnual	SemiAnnual	
GW-229	BC	S	Annual	Annual	Annual	
GW-240	EF	S	Annual	Annual	Annual	
GW-246	BC	N/A	SemiAnnual	SemiAnnual	SemiAnnual	
GW-251	EF	S	Annual	Annual	Annual	
GW-257	BC	N/A	SemiAnnual	SemiAnnual	**Annual**	Older useful data, stable trend
GW-265	EF	N/A	Biennial	Review	**SemiAnnual**	Selected for Review
GW-269	EF	N/A	Annual	Review	**SemiAnnual**	Selected for Review

Appendix C. Monitoring Frequency for CY 2006 Sampling Locations

Sampling Location	Regime[1]	MAROS Information			GWPP Final Frequency[3]	Explanation[4] (GWPP differs from MAROS)
		Trend[2]	Preliminary Frequency	Final Frequency		
GW-274	EF	PD	Annual	Annual	Annual	
GW-275	EF	S	Annual	Annual	Annual	
GW-289	BC	PI	SemiAnnual	SemiAnnual	**Annual**	Older useful data, stable trend
GW-310	BC	N/A	Biennial	Review	**Even**	Selected for Review
GW-311	BC	D	Annual	Annual	Annual	
GW-315	BC	PD	Annual	Annual	Annual	
GW-322	CR	N/A	SemiAnnual	Review	**Even**	Selected for Review
GW-332	EF	N/A	Annual	Annual	Annual	
GW-336	EF	N/A	Annual	Annual	Annual	
GW-337	EF	S	Annual	Annual	Annual	
GW-381	EF	NT	Annual	Regulated	Annual	
GW-383	EF	NT	SemiAnnual	Regulated	**SemiAnnual**	
GW-514	CR	N/A	Biennial	Biennial	Even	
GW-537	BC	D	Annual	Annual	Annual	
GW-609	CR	D	Annual	Annual	**Even**	Older data available; decreasing trend
GW-612	CR	NT	Annual	Annual	Annual	
GW-615	BC	N/A	SemiAnnual	**SemiAnnual**	**Annual**	Abundant older data; Deep, near source
GW-616	BC	N/A	SemiAnnual	Annual	Annual	
GW-617	EF	NT	Annual	Biennial	Even	
GW-619	EF	S	Annual	Biennial	Even	
GW-620	EF	D	Annual	Annual	Annual	
GW-626	BC	PI	SemiAnnual	SemiAnnual	SemiAnnual	
GW-627	BC	I	SemiAnnual	SemiAnnual	SemiAnnual	
GW-629	BC	S	Biennial	Biennial	Even	
GW-633	EF	D	Annual	Biennial	Even	
GW-653	BC	I	Annual	Annual	Annual	
GW-656	EF	S	Annual	Annual	Annual	
GW-686	EF	N/A	Annual	Review	**SemiAnnual**	Selected for Review
GW-690	EF	S	Annual	Annual	Annual	
GW-691	EF	N/A	SemiAnnual	Annual	Annual	
GW-692	EF	N/A	Annual	Remove	**Annual**	Selected for Review
GW-694	BC	NT	SemiAnnual	SemiAnnual	**Annual**	Abundant older data; sampled 2X in 2005
GW-695	BC	S	Annual	Annual	Annual	
GW-698	EF	NT	SemiAnnual	SemiAnnual	SemiAnnual	
GW-700	EF	PD	Annual	Annual	Annual	
GW-703	BC	NT	Annual	Annual	Annual	
GW-722-06	EF	.	.	Omitted	Annual	Not in assessment; Long term perimeter
GW-722-10	EF	.	.	Omitted	Annual	monitoring Westbay well ports
GW-722-14	EF	.	.	Omitted	Annual	"
GW-722-17	EF	.	.	Omitted	Annual	"
GW-722-20	EF	.	.	Omitted	Annual	"
GW-722-22	EF	.	.	Omitted	Annual	"
GW-722-26	EF	.	.	Omitted	Annual	"
GW-722-30	EF	.	.	Omitted	Annual	"
GW-722-32	EF	.	.	Omitted	Annual	"
GW-722-33	EF	.	.	Omitted	Annual	"
GW-724	BC	S	Annual	Annual	Annual	
GW-725	BC	PI	Annual	Annual	Annual	
GW-738	BC	D	Annual	Annual	Annual	
GW-740	BC	PD	Annual	Annual	Annual	

Appendix C. Monitoring Frequency for CY 2006 Sampling Locations

Sampling Location	Regime[1]	MAROS Information			GWPP Final Frequency[3]	Explanation[4] (GWPP differs from MAROS)
		Trend[2]	Preliminary Frequency	Final Frequency		
GW-744	EF	S	Biennial	Regulated	**Annual**	Long term perimeter monitoring
GW-747	EF	PI	Biennial	Regulated	**Annual**	Long term perimeter monitoring
GW-748	EF	N/A	Biennial	Biennial	Even	
GW-749	EF	S	Biennial	Biennial	**Annual**	Scheduled for P&A, final sample
GW-763	EF	NT	Annual	Annual	Annual	
GW-769	EF	I	SemiAnnual	SemiAnnual	SemiAnnual	
GW-770	EF	I	SemiAnnual	SemiAnnual	SemiAnnual	
GW-781	EF	PI	Annual	Annual	Annual	
GW-782	EF	D	Annual	Annual	Annual	
GW-783	EF	S	Annual	Annual	Annual	
GW-786	EF	N/A	Remove	Remove	**Even**	Located near process building
GW-787	EF	NT	Annual	Remove	**Even**	Located near process building
GW-791	EF	S	Annual	Annual	Annual	
GW-792	EF	S	Annual	Annual	Annual	
GW-816	EF	S	Biennial	Regulated	**Annual**	Long term perimeter monitoring
GW-820	EF	NT	SemiAnnual	SemiAnnual	SemiAnnual	
GW-829	BC	D	Annual	Annual	**Even**	Not in primary flow path (vertical delineation)
GW-954-1	EF	.	.	Omitted	SemiAnnual	New Location, not in program assessment
GW-954-2	EF	.	.	Omitted	SemiAnnual	New Location, not in program assessment
GW-954-3	EF	.	.	Omitted	SemiAnnual	New Location, not in program assessment
GW-956-1	EF	.	.	Omitted	SemiAnnual	New Location, not in program assessment
GW-956-2	EF	.	.	Omitted	SemiAnnual	New Location, not in program assessment
GW-956-3	EF	.	.	Omitted	SemiAnnual	New Location, not in program assessment
GW-956-4	EF	.	.	Omitted	SemiAnnual	New Location, not in program assessment
GW-959	EF	.	.	Omitted	SemiAnnual	New Location, quarterly sampling completed
Surface Water/Springs						
BCK-04.55	BC	.	.	Omitted	**Annual**	Long-term exit pathway station
NT-01	BC	.	.	Omitted	**Annual**	Long-term exit pathway station
SS-1	BC	S	Annual	Annual	Annual	
SS-4	BC	D	Annual	Annual	Annual	
SS-5	BC	S	Annual	Annual	Annual	
SCR1.5SW	CR	.	.	Omitted	**Annual**	Long-term exit pathway station
SCR2.1SP	CR	S	Biennial	Biennial	**Annual**	Long-term exit pathway station
SCR2.2SP	CR	S	Biennial	Biennial	**Annual**	Long-term exit pathway station
SCR3.5SW	CR	.	.	Omitted	**Annual**	Long-term exit pathway station
S17	CR	.	.	Omitted	**Annual**	Long-term exit pathway station
NPR07.0SW	NPR	.	.	Omitted	**Annual**	Long-term exit pathway station
NPR12.0SW	NPR	.	.	Omitted	**Annual**	Long-term exit pathway station
NPR23.0SW	NPR	.	.	Omitted	**Annual**	Long-term exit pathway station
GHK2.51WSW	NPR	.	.	Omitted	**Annual**	Long-term exit pathway station
SP-17	EF	N/A	Annual	Regulated	**Even**	Selected for review (nitrate)

Notes:

1. Regime
   - BC = Bear Creek Hydrogeologic Regime
   - CR = Chestnut Ridge Hydrogeologic Regime
   - EF = Upper East Fork Poplar Creek Hydrogeologic Regime
   - NPR = North of Pine Ridge

Appendix C. Monitoring Frequency for CY 2006 Sampling Locations

Notes: (continued)

2. Trend

D =	Decreasing
I =	Increasing
N/A =	Not Applicable
NT =	No Trend
PD =	Probably Decreasing
PI =	Probably Increasing
S =	Stable

3. GWPP Final Frequency (shown in **bold** typeface if different from MAROS recommendation)

Annual =	Sample collection once per year
Even =	Sample collection every other year, starting in 2006
Semiannual =	Sample collection twice per year

4. Explanation for sampling locations where the GWPP Final Frequency differs from the MAROS Final Frequency, based on information from the Sample Priority Score calculations and other information not included in the MAROS assessment.

APPENDIX D

LABORATORY REQUIREMENTS
(Bottle Lists, Holding Times, Turnaround Time, Elevated Minimum Activity)

STD

Parameter	Chemical Preservative [1]	Bottle Types/Size
Anions, Turbidity, and Fluoride	None	1 - 250 mL polyethylene
Total Suspended Solids	None	1 - 250 mL polyethylene
Total Dissolved Solids	None	1 - 250 mL polyethylene
Carbonate, Bicarbonate	None	1 - 250 mL polyethylene
Total Metals (ICP,ICP-MS, and Hg)	HNO_3	1 - 500 mL polyethylene
Radiochemistry (UV / Y-12)	HNO_3	1 – 1 L polyethylene
VOA	None	2 - 40 mL amber glass with Teflon lined septum lids
Trip Blank (VOA) **(one per cooler)**	None	1 - 40 mL amber glass with Teflon lined septum lid

STD: **ESLIMS LAB TEST ID**

FLD GWTRSAMP or GWSWSAMP
CHEM ALKALINITY-I, ANIONS, FLUORIDE, SOLIDS-TOT-S, SOLIDS-TOT-D, TURBIDITY
MET(1) ICP6010, ICPMSGW and HG7470
VOC(1) VOA8260GW
RAD(1) Gross Alpha Beta (GROSSAB-ENV)

[1] Samples chilled to 4 +/- 2C

STD, VOC(2)

Parameter	Chemical Preservative [1]	Bottle Types/Size
Anions, Turbidity, and Fluoride	None	1 - 250 mL polyethylene
Total Suspended Solids	None	1 - 250 mL polyethylene
Total Dissolved Solids	None	1 - 250 mL polyethylene
Carbonate, Bicarbonate	None	1 - 250 mL polyethylene
Total Metals (ICP,ICP-MS, and Hg)	HNO_3	1 - 500 mL polyethylene
Radiochemistry (UV / Y-12)	HNO_3	1 – 1 L polyethylene
VOA	None	2 - 40 mL amber glass with Teflon lined septum lids
VOADIOXANE		2 - 40 mL amber glass with Teflon lined septum lids
Trip Blank (VOA) **(one per cooler)**	None	1 - 40 mL amber glass with Teflon lined septum lid

STD:	**ESLIMS LAB TEST ID**
FLD	GWTRSAMP or GWSWSAMP
CHEM	ALKALINITY-I, ANIONS, FLUORIDE, SOLIDS-TOT-S, SOLIDS-TOT-D, TURBIDITY
MET(1)	ICP6010, ICPMSGW and HG7470
VOC(1)	VOA8260GW
VOC(2)	VOADIOXANE
RAD(1)	Gross Alpha Beta (GROSSAB-ENV)

[1] Samples chilled to 4 +/- 2C

STD, RAD (3,12)

Parameter	Chemical Preservative[1]	Bottle Types/Size
Anions, Turbidity, and Fluoride	None	1 – 250 mL polyethylene
Total Suspended Solids	None	1 – 250 mL polyethylene
Total Dissolved Solids	None	1 – 250 mL polyethylene
Carbonate, Bicarbonate	None	1 – 250 mL polyethylene
Total Metals (ICP,ICP-MS, and Hg)	HNO_3	1 – 500 mL polyethylene
Radiochemistry (UV / Y12)	HNO_3	1 – 1L polyethylene 1 – 500 mL polyethylene
VOA	None	2 – 40 mL amber glass with Teflon lined septum lids
Trip Blank (VOA) **(one per cooler)**	None	1 – 40 mL amber glass with Teflon lined septum lid

STD:	**ESLIMS LAB TEST ID**
FLD	GWTRSAMP or GWSWSAMP
CHEM	ALKALINITY-I, ANIONS, FLUORIDE, SOLIDS-TOT-S, SOLIDS-TOT-D TURBIDITY
MET(1)	ICP6010, ICPMSGW and HG7470
VOC(1)	VOA8260GW

RAD (1)	Gross Alpha Beta (GROSSAB-ENV)	500 mL	preserved w HNO_3
RAD (3)	^{234}U, ^{235}U, ^{238}U (ASPECU-ENV)	500 mL	preserved w HNO_3
RAD (12)	Tc-99 (TC99LS-ENV)	500 mL	preserved w HNO3

[1] Samples chilled to 4 +/- 2C

STD, RAD (3,12,13)

Parameter	Chemical Preservative[1]	Bottle Types/Size
Anions, Turbidity, and Fluoride	None	1 – 250 mL polyethylene
Total Suspended Solids	None	1 – 250 mL polyethylene
Total Dissolved Solids	None	1 – 250 mL polyethylene
Carbonate, Bicarbonate	None	1 – 250 mL polyethylene
Total Metals (ICP,ICP-MS, and Hg)	HNO_3	1 – 500 mL polyethylene
Radiochemistry (UV / Y12)	HNO_3	1 – 1L polyethylene 1 – 500 mL polyethylene
TIMS	HNO_3	1 -- 250mL polyethylene
VOA	None	2 – 40 mL amber glass with Teflon lined septum lids
Trip Blank (VOA) **(one per cooler)**	None	1 – 40 mL amber glass with Teflon lined septum lid

STD:	**ESLIMS LAB TEST ID**
FLD	GWTRSAMP or GWSWSAMP
CHEM	ALKALINITY-I, ANIONS, FLUORIDE, SOLIDS-TOT-S, SOLIDS-TOT-D TURBIDITY
MET(1)	ICP6010, ICPMSGW and HG7470
VOC(1)	VOA8260GW

RAD (1)	Gross Alpha Beta (GROSSAB-ENV)	500 mL	preserved w HNO_3
RAD (3)	^{234}U, ^{235}U, ^{238}U (ASPECU-ENV)	500 mL	preserved w HNO_3
RAD (12)	Tc-99 (TC99LS-ENV)	500 mL	preserved w HNO_3
RAD (13)	wt%U235 & mg/L U (TOTAL-U-ENV)	250 mL	preserved w HNO_3

[1] Samples chilled to 4 +/- 2C

STD, RAD (13)

Parameter	Chemical Preservative [1]	Bottle Types/Size
Anions, turbidity, and Fluoride	None	1 – 250 mL polyethylene
Total Suspended Solids	None	1 – 250 mL polyethylene
Total Dissolved Solids	None	1 – 250 mL polyethylene
Carbonate, Bicarbonate	None	1 – 250 mL polyethylene
Total Metals (ICP,ICP-MS, and Hg)	HNO_3	1 – 500 mL polyethylene
Radiochemistry (UV / Y12)	HNO_3	1 – 1 L polyethylene
TIMS	HNO_3	1 -- 250mL polyethylene
VOA	None	2 – 40 mL amber glass with Teflon lined septum lids
Trip Blank (VOA) **(one per cooler)**	None	1 – 40 mL amber glass with Teflon lined septum lid

STD:	**ESLIMS LAB TEST ID**
FLD	GWTRSAMP or GWSWSAMP
CHEM	ALKALINITY-I, ANIONS, FLUORIDE, SOLIDS-TOT-S, SOLIDS-TOT-D, TURBIDITY
MET(1)	ICP6010, ICPMSGW and HG7470
VOC(1)	VOA8260GW

RAD (1)	Gross Alpha Beta (GROSSAB-ENV)	500 mL	preserved w HNO_3
RAD (13)	wt%U235 & mg/L U (TOTAL-U-ENV)	250 mL	preserved w HNO_3

[1] Samples chilled to 4 +/- 2C

WESTBAY

Parameter	Chemical Preservative [1]	Bottle Types/Size
Anions, Turbidity, and Fluoride	None	1 - 250 mL polyethylene
Total Suspended Solids	None	1 - 250 mL polyethylene
Total Dissolved Solids	None	1 - 250 mL polyethylene
Carbonate, Bicarbonate	None	1 - 250 mL polyethylene
Total Metals (ICP,ICP-MS, and Hg)	HNO_3	1 - 250 mL polyethylene
Radiochemistry (UV / Y-12)	HNO_3	1 – 500 mL polyethylene
VOA	None	2 - 40 mL amber glass with Teflon lined septum lids
Trip Blank (VOA) **(one per cooler)**	None	1 - 40 mL amber glass with Teflon lined septum lid

STD:	**ESLIMS LAB TEST ID**		
FLD	GWTRSAMP		
CHEM	ALKALINITY-I, ANIONS, FLUORIDE, SOLIDS-TOT-S, SOLIDS-TOT-D, TURBIDITY		
MET(1)	ICP6010, ICPMSGW and HG7470		
VOC(1)	VOA8260GW		
RAD(1)	Gross Alpha Beta (GROSSAB-ENV)	500 mL	preserved w HNO_3

[1] Samples chilled to 4 +/- 2C

STD, VOC(2), RAD (13)

Parameter	Chemical Preservative [1]	Bottle Types/Size
Anions, turbidity, and Fluoride	None	1 – 250 mL polyethylene
Total Suspended Solids	None	1 – 250 mL polyethylene
Total Dissolved Solids	None	1 – 250 mL polyethylene
Carbonate, Bicarbonate	None	1 – 250 mL polyethylene
Total Metals (ICP,ICP-MS, and Hg)	HNO_3	1 – 500 mL polyethylene
Radiochemistry (UV / Y12)	HNO_3	1 – 1 L polyethylene
TIMS	HNO_3	1 -- 250mL polyethylene
VOA	None	2 – 40 mL amber glass with Teflon lined septum lids
VOADIOXANE	None	2 – 40 mL amber glass with Teflon lined septum lids
Trip Blank (VOA) **(one per cooler)**	None	1 – 40 mL amber glass with Teflon lined septum lid

STD:	**ESLIMS LAB TEST ID**
FLD	GWTRSAMP or GWSWSAMP
CHEM	ALKALINITY-I, ANIONS, FLUORIDE, SOLIDS-TOT-S, SOLIDS-TOT-D, TURBIDITY
MET(1)	ICP6010, ICPMSGW and HG7470
VOC(1)	VOA8260GW
VOC(2)	VOADIOXANE

RAD (1)	Gross Alpha Beta (GROSSAB-ENV)	500 mL	preserved w HNO_3
RAD (13)	wt%U235 & mg/L U (TOTAL-U-ENV)	250 mL	preserved w HNO_3

[1] Samples chilled to 4 +/- 2C

VOC (1)

Parameter	Chemical Preservative [1]	Bottle Types/Size
VOA	None	2 – 40 mL amber glass with Teflon lined septum lid

VOC(1) VOA8260GW

[1] Samples chilled to 4 +/- 2C

ESTABLISHED HOLDING TIMES

Parameter	Holding Times
Alkalinity (Carbonate, Bicarbonate)	14 days
Anions (Chloride, Nitrate, Sulfate)	48 hr
Fluoride	28 days
Mercury	28 days
Metals (ICP, ICPMS)	6 months
Radiochemistry (except tritium)	6 months
Solids, Total Dissolved	7 days
Solids, Total Suspended	7 days
Tritium	No EPA guidance
Uranium by Thermal Ionization Mass Spec	6 months
VOA	7 days

ESTABLISHED TURNAROUND TIMES

The Groundwater Protection Program and the Analytical Chemistry Organization (ACO) laboratory have agreed upon a turnaround time, such that the analytical data generated from all sample locations within a sample group will be transmitted to the Data Manager as a data deliverable. Currently, the turnaround time for all sample groups is 35 days from the receipt of the last sample within a group. Data is transmitted in the form of hard copy of the completed and approved lab reports for each locations, along with an electronic copy in a standardized and compatible format (please see *Y-12 Plant Groundwater Protection Program Data Management Plan, Revision 2*, November 2003, Y/SUB/03-013288/1).

ELEVATED MINIMUM DETECTABLE ACTIVITY

Groundwater samples with high TDS (>1,000 mg/L) typically have elevated minimum detectable activities (MDAs) for gross alpha (> 15 pCi/L) and gross beta (> 50 pCi/L). However, the MDAs for specific isotopic analyses are unaffected by the sample solid content. For samples with gross activity results that are less than an elevated MDA, and specific isotopic analyses have not been requested, the laboratory will issue a request to analyze for the principal alpha- or beta-emitting isotopes. That is, if the gross alpha MDA exceeds 15 pCi/L and the result is less than 15 pCi/L, then the laboratory will request analyses of isotopic uranium (by method Y/P65-7061). Similarly, if a sample has an elevated gross beta MDA (>50 pCi/L) and the result is less than the MDA, then the laboratory would request analysis of technetium-99 activity. These requests will be approved by the Y-12 Groundwater Protection Program manager, or designee, before analyses are performed.

APPENDIX E

ADDENDA TO THE CY 2006 SAMPLING AND ANALYSIS PLAN
(if issued)

APPENDIX F

CY 2006 GROUNDWATER MONITORING SCHEDULES

APPENDIX G

Y-12 GWPP MANAGEMENT OF PURGED GROUNDWATER

Y-12 GWPP MANAGEMENT OF PURGED GROUNDWATER

The GWPP contains purge water generated during sampling activities based upon characterization of analytical results (1991-2005) from each well. Purge water is defined as groundwater removed from the well prior to sample collection, and is considered a waste as determined by US EPA. This appendix provides the waste stream identity (SID) of the wells to be sampled during calendar year (CY) 2006 (see Table G.1). Subsequent groundwater monitoring schedules (GWMS) will include the contents of this table. Characterization of the purge water consists of determining if constituents in the water exceed one of the following regulatory/guidance requirements: a Safe Drinking Water Act (SDWA) Maximum Contaminant Level (MCL), a Resource, Conservation, and Recovery Act (RCRA) Toxicity Characteristic Leaching Procedure (TCLP) level (characteristic), a DOE derived concentration guideline (DCG) for radiologicals, or where groundwater has been determined to contain an RCRA F-listed waste or a multi-source leachate (F039). Well water that does not exceed one of these requirements is not contained and dispensed to the ground surface. RCRA characteristic or F-listed purge water generated by the GWPP is considered to be investigation-derived waste (IDW) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This purge water is left at the point of generation and is managed as IDW such that it meets the substantive requirements of RCRA. Currently, other purge water management options are under review and consideration.

Each well to be sampled during CY 2006 has been assigned SID 2212, SID 2214, or SID 2216. The descriptions of these waste streams are as follows:

SID 2212 – purge water which exceeds a SDWA MCL or 4% of the DCG

SID 2216 – purge water which exceeds a RCRA TCLP or 25% of the DCG

SID 2214 – purge water that carries an F-listing or contains a multi-source leachate (F039). **Currently**, only purge water emanating from the Bear Creek Burial Grounds Waste Management Area (BCBG) and the Chestnut Ridge Security Pits are considered to be **possible** multi-source leachate. For the BCBG this consist of purge water generated from all wells located between north tributary (NT) 6, NT 8, and north of Bear Creek, whose constituents exceed a SDWA MCL.

Typically, 3 to 5 gallons of purge water in generated per well using the Low Flow Minimal Draw-down Sampling Method (see procedure Y50-71-016, Rev 1.0). Purge water from wells under waste stream SID 2212 can be bulked into the same container (one drum) and transported on-site (10-gallon carboy containers), but not on public roads (Scarboro Rd). Purge water from wells under waste streams SID 2214 and SID 2216, **must have containers (drums, tanks) placed at the well location, and can not be removed from the well site**. SID 2214 and SID 2216 waste streams are considered CERCLA IDWs and must remain at the point of generation; defined as the wellhead itself. For these two waste streams, although considered an IDW, the wastewater is still a RCRA hazardous waste and the waste must be managed such that it meets the substantive requirements of RCRA. The purge water can be accumulated at the wellhead but once it leaves the point of generation the administrative requirements of RCRA (90-day areas, permits, and manifests) must be met. Therefore, containers will be left at the wellhead throughout CY 2006 for both scheduled semi-annual monitoring events, and then submitted for disposal. In order to meet the substantive requirements of RCRA, monthly inspections will be performed on these

containers to assure the integrity of the container (e.g. appropriate and legible labeling, check for leaks, chain-of-custody maintained, and assure the container is kept closed at all time).

Process Knowledge documentation (UCN-20116) will be completed for each of the waste streams and documented with the Waste Item Description (UCN 2109) form when containers are submitted for disposal. In addition, field personnel will record the following information in a logbook each time contents are placed into a container: well number, amount (gallons), SID number, date, and time. It is recommended that all containers be marked indicating the SID number. Depending on the waste stream (SID number), field personnel will need to fill out the appropriate tag (see Attachment #2) and place the tag on the drum. The GWPP will assign a UCN 2109 number and a unique barcode number for the drum (see Attachment #2). The drum must be closed at all times except when adding waste, and the chain-of-custody (COC) must be in place (COC seals or cap-seals over the bung opening).

Table G.1 Waste stream identity and RCRA waste code for groundwater purged from wells to be sampled during CY 2006

Hydrogeologic Regime	Well Number	CY 2006 Sampling Qtr	Waste Stream (SID #)	RCRA Waste Code
Bear Creek	GW-014	Q1,Q3	***SID 2214***	FO39
	GW-045	Q2	To Be Determined[1]	.
	GW-058	Q2	To Be Determined[1]	.
	GW-068	Q2	***SID 2214***	FO39
	GW-071	Q1,Q3	***SID 2214***	FO39
	GW-075	Q1	To Be Determined[1]	.
	GW-082	Q2	***SID 2214***	FO39
	GW-085	Q1,Q3	SID 2212	.
	GW-098	Q1	SID 2212	.
	GW-122	Q1	SID 2212	.
	GW-126	Q2	NOT CONTAINED	.
	GW-225	Q1,Q3	SID 2212	.
	GW-226	Q1,Q3	SID 2212	.
	GW-229	Q1	SID 2212	.
	GW-246	Q1,Q3	SID 2212	.
	GW-257	Q2	***SID 2214***	FO39
	GW-289	Q2	***SID 2214***	FO39
	GW-310	Q3	SID 2212	.
	GW-311	Q3	NOT CONTAINED	.
	GW-315	Q1	SID 2212	.
	GW-537	Q1	SID 2212	.
	GW-615	Q1	**SID 2216**	D005
	GW-616	Q1	SID 2212	.
	GW-626	Q1,Q3	***SID 2214***	FO39
	GW-627	Q1,Q3	***SID 2214***	FO39
	GW-629	Q2	***SID 2214***	FO39
	GW-653	Q2	***SID 2214***	FO39
	GW-694	Q3	NOT CONTAINED	.
	GW-695	Q3	SID 2212	.
	GW-703	Q3	SID 2212	.
	GW-724	Q3	SID 2212	.
	GW-725	Q3	SID 2212	.
	GW-738	Q3	SID 2212	.
	GW-740	Q3	SID 2212	.
	GW-829	Q1	SID 2212	.
Chestnut Ridge	GW-175	Q2	SID 2212	.
	GW-178	Q2	NOT CONTAINED	.
	GW-322	Q2	SID 2212	.
	GW-514	Q2	NOT CONTAINED	.
	GW-609	Q2	NOT CONTAINED	.
	GW-612	Q2	SID 2212	.

Table G.1 (continued)

Hydrogeologic Regime	Well Number	CY 2006 Sampling Qtr	Waste Stream (SID #)	RCRA Waste Code
East Fork	55-1A	Q1	SID 2212	.
	55-2A	Q1,Q3	To Be Determined[1]	.
	55-2B	Q1,Q3	**SID 2216**	D039
	55-2C	Q1	**SID 2216**	D039
	55-3A	Q1,Q3	**SID 2216**	D039, D040
	55-3B	Q1,Q3	**SID 2216**	D039, D040
	55-3C	Q1,Q3	**SID 2216**	D039
	56-1A	Q2,Q4	To Be Determined[1]	.
	56-2A	Q1	SID 2212	.
	56-2B	Q1	**SID 2216**	D039
	56-2C	Q1	**SID 2216**	D039
	56-3A	Q1,Q3	To Be Determined[1]	.
	56-3B	Q1,Q3	To Be Determined[1]	.
	56-3C	Q1,Q3	To Be Determined[1]	.
	56-4A	Q1,Q3	To Be Determined[1]	.
	56-6A	Q1,Q3	To Be Determined[1]	.
	56-8A	Q2,Q4	To Be Determined[1]	.
	58-2A	Q2,Q4	To Be Determined[1]	.
	58-6A	Q2,Q4	To Be Determined[1]	.
	60-1A	Q2,Q4	To Be Determined[1]	.
	GW-105	Q2	SID 2212	.
	GW-106	Q2	SID 2212	.
	GW-109	Q2	**SID 2216**	D005,D006
	GW-148	Q1	NOT CONTAINED	.
	GW-153	Q1	SID 2212	.
	GW-192	Q2	SID 2212	.
	GW-204	Q4	SID 2212	.
	GW-220	Q2,Q4	**SID 2216**	D019
	GW-240	Q1	SID 2212	.
	GW-251	Q2	SID 2212	.
	GW-265	Q2,Q4	SID 2212	.
	GW-269	Q2,Q4	SID 2212	.
	GW-274	Q1	**SID 2216**	D005, D039
	GW-275	Q1	**SID 2216**	D005
	GW-332	Q1	**SID 2216**	D039
	GW-336	Q1	**SID 2216**	D040
	GW-337	Q1	**SID 2216**	D039, D040
	GW-381	Q3	SID 2212	.
	GW-383	Q2,Q4	**SID 2216**	D039
	GW-617	Q2	SID 2212	.
	GW-619	Q2	NOT CONTAINED	.
	GW-620	Q2	SID 2212	.
	GW-633	Q2	**SID 2216**	D018
	GW-656	Q4	**SID 2216**	D040
	GW-686	Q2,Q4	SID 2212	.
	GW-690	Q4	SID 2212	.
	GW-691	Q4	**SID 2216**	D039
	GW-692	Q4	SID 2212	.

Table G.1 (continued)

Hydrogeologic Regime	Well Number	CY 2006 Sampling Qtr	Waste Stream (SID #)	RCRA Waste Code
East Fork	GW-698	Q2,Q4	SID 2212	.
	GW-700	Q4	SID 2212	.
	GW-722-06	Q3	NOT CONTAINED	.
	GW-722-10	Q3	NOT CONTAINED	.
	GW-722-14	Q3	SID 2212	.
	GW-722-17	Q3	SID 2212	.
	GW-722-20	Q3	SID 2212	.
	GW-722-22	Q3	SID 2212	.
	GW-722-26	Q3	NOT CONTAINED	.
	GW-722-30	Q3	NOT CONTAINED	.
	GW-722-32	Q3	NOT CONTAINED	.
	GW-722-33	Q3	NOT CONTAINED	.
	GW-744	Q1	NOT CONTAINED	.
	GW-747	Q1	NOT CONTAINED	.
	GW-748	Q1	NOT CONTAINED	.
	GW-749	Q1	NOT CONTAINED	.
	GW-763	Q3	SID 2212	.
	GW-769	Q2,Q4	SID 2212	.
	GW-770	Q2,Q4	SID 2212	.
	GW-781	Q4	SID 2212	.
	GW-782	Q4	SID 2212	.
	GW-783	Q4	SID 2212	.
	GW-786	Q3	NOT CONTAINED	.
	GW-787	Q3	NOT CONTAINED	.
	GW-791	Q3	**SID 2216**	D039
	GW-792	Q3	SID 2212	.
	GW-816	Q1	NOT CONTAINED	.
	GW-820	Q2,Q4	**SID 2216**	D039
	GW-954-1	Q2,Q4	To Be Determined[1]	.
	GW-954-2	Q2,Q4	To Be Determined[1]	.
	GW-954-3	Q2,Q4	To Be Determined[1]	.
	GW-956-1	Q2,Q4	To Be Determined[1]	.
	GW-956-2	Q2,Q4	To Be Determined[1]	.
	GW-956-3	Q2,Q4	To Be Determined[1]	.
	GW-956-4	Q2,Q4	To Be Determined[1]	.
	GW-959	Q2,Q4	SID 2212	.

1 - No data available to characterize waste stream, or data was older than 1995

APPENDIX G

Example of Waste Identification Tag (UCN 2114B)

for SID 2212 purge water

SID 2212

WASTE IDENTIFICATION

TO BE COMPLETED BY REQUESTER

DISPOSAL FORM SEQUENCE NO. (OR BLKT. NO.)
UCN 2109#

DISPOSAL FORM DATE
start date of container

MATERIAL DESCRIPTION
"Purge water from multiple wells. All water is under waste stream SID 2212"
~ # of gallons

TYPE AND SIZE OF CONTAINER (FOR EXAMPLE, 55-GALLON STEEL DRUM)
e.g. "55 gallon poly drum"

LOCATION OF MATERIAL
well location

DEPARTMENT
Y-12 ECD / 5000/328

SIGNATURE
signature / badge

TO BE COMPL. BY PLT. DISPOSAL COORD.

CHECKED BY | DATE

COMMENTS
Bar code #

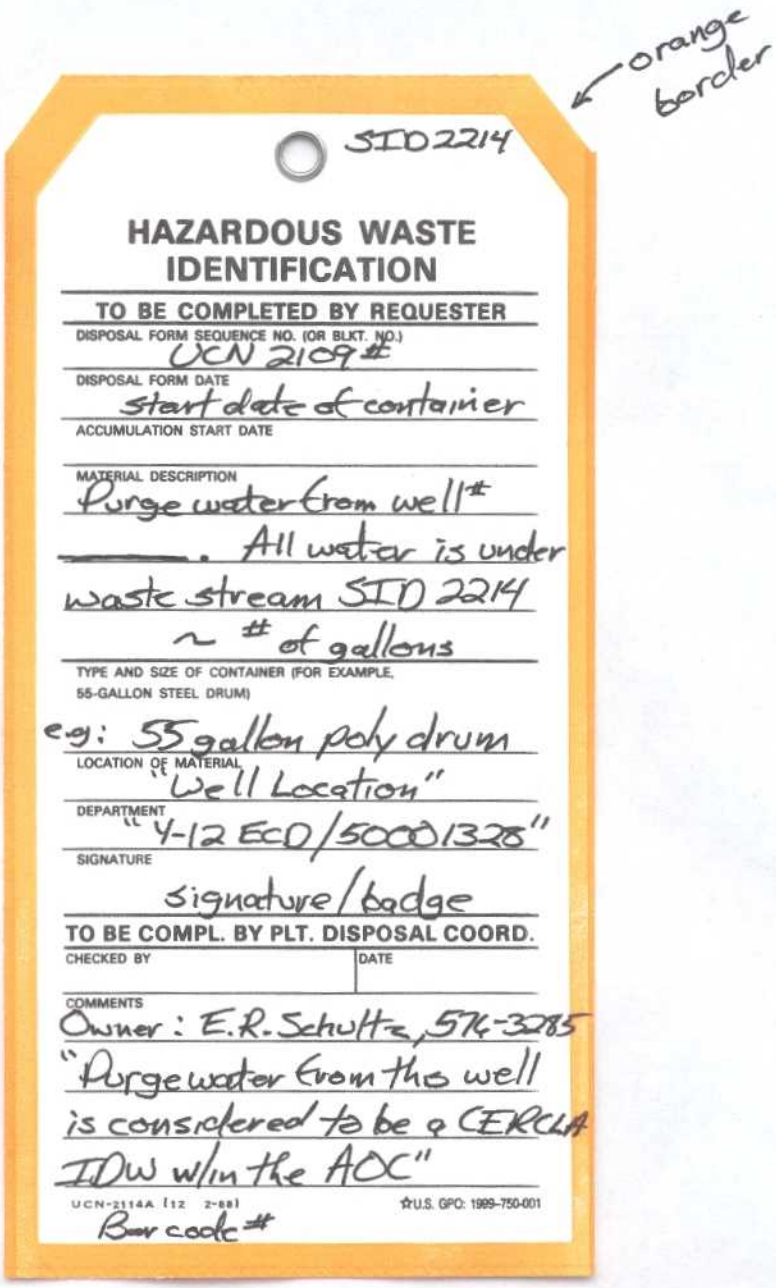
Owner: E.R. Schultz, 574-3285

UCN-2114B (12 2-88)

APPENDIX G

Example of Hazardous Waste Identification Tag (UCN 2114A)

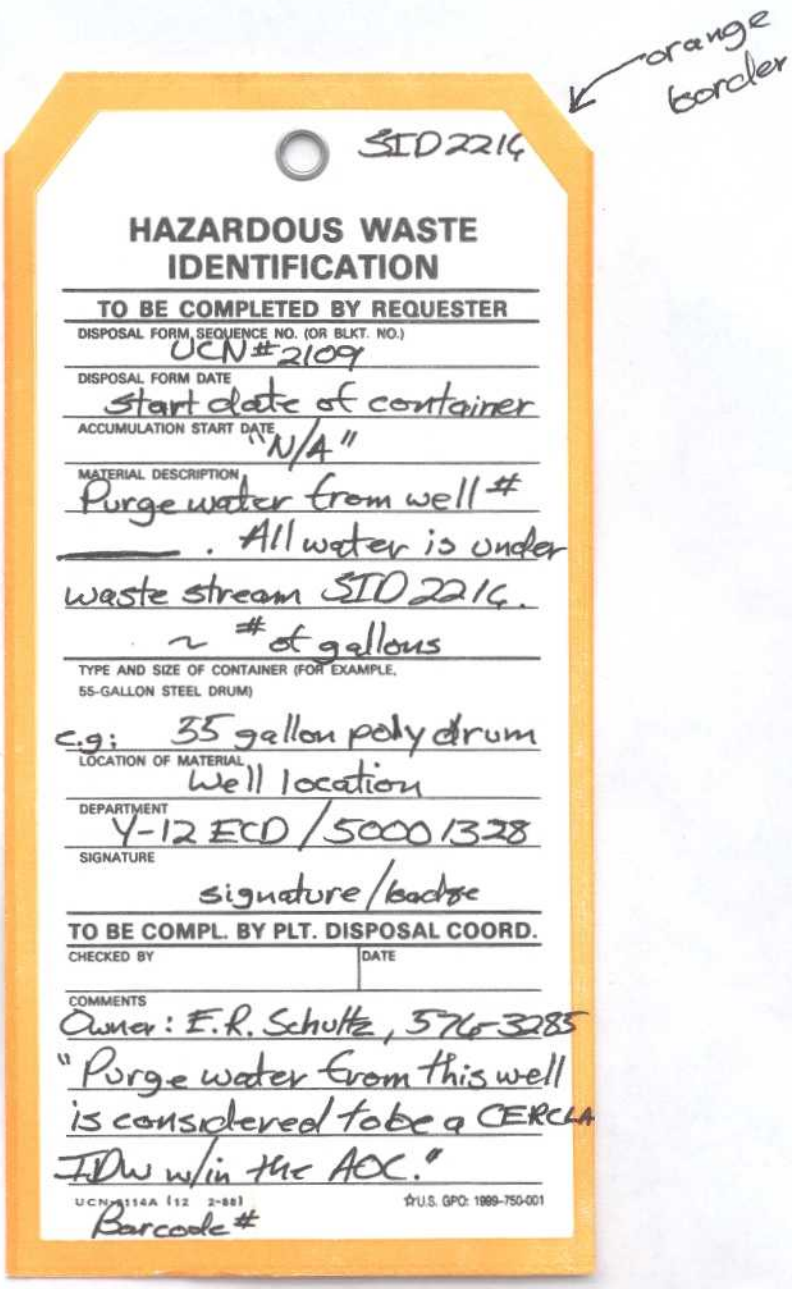
for SID 2214 purge water



APPENDIX G

Example of Hazardous Waste Identification Tag (UCN 2114A)

for SID 2216 purge water



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