M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY GROUNDWATER MONITORING AND CORRECTIVE-ACTION REPORT (U)

SECOND QUARTER 1995

Volume I

Publication Date: August 1995

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Controlled Nuclear Information

Reviewing Official:

R.S. AYLER, ERE MANAGER
(Name and Title)

Date:

AUGUST 15, 1995

Westinghouse Savannah River Company
Savannah River Site
Aiken, SC 29808

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MASTER

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Summary

This report describes the corrective-action program at the M-Area Hazardous Waste Management Facility (HWMF) at the Savannah River Site (SRS) during second quarter 1995. This program is required by South Carolina Hazardous Waste Permit SC1-890-008-989 and section 264.100(g) of the South Carolina Hazardous Waste Management Regulations. Program activities are summarized below.

- Beginning third quarter 1994, changes in sampling, analyses, and reporting, as outlined in the M-Area HWMF 1992 RCRA Part B permit renewal application (Revision 3, June 1994), were initiated. Briefly, the quarterly reports will reflect these changes as follows: (1) first quarter reports will include monitoring results for first quarter and the previous quarter, corrective-action results for first quarter, and an annual summary from the previous calendar year of the corrective-action program; (2) second quarter reports will contain corrective-action results for second quarter; (3) third quarter reports will contain monitoring results for second and third quarters, corrective-action results for third quarter, an annual summary from the previous calendar year of the monitoring results, and Appendix IX analyses results; and (4) fourth quarter reports will include corrective-action results for fourth quarter and average annual groundwater flow rates.
- Compared to first quarter 1995, average water levels decreased in the M-Area Aquifer Zone, the Upper Lost Lake Aquifer Zone, and the Middle Sand Aquifer Zone. There was no change in the Lower Lost Lake Aquifer Zone, during second quarter 1995 (see the *Water-Elevation Changes* subsection).
- During second quarter 1995, the M-1 air stripper removed a total of 2,959 pounds of solvent from the groundwater beneath the M-Area HWMF. The M-1 operated a total of 1767.4 hrs with a downtime of 416.6 hrs, resulting in a total utility of 80.7 percent. The emission rate was 1.69 lbs/hr. The quarterly throughput was 45,271,720 gallons at an average water feed rate of 430 gallons per minute (gpm). The average quarterly influent of tetrachloroethylene was less than 2,765 ug/L and of trichloroethylene was 4,986 ug/L. The average quarterly effluent total was less than 3.34 ug/L (see the *Air Stripper Performance* subsection and Table 2, Appendix D.)
- The A-1 air stripper removed a total of 117 pounds of solvent from the groundwater beneath the M-Area HWMF during second quarter 1995. The A-1 operated 1,629.9 hrs with a downtime of 554.1 hrs, resulting in a total utility of 74.8 percent. The quarterly throughput was 5,886,977 gallons at an average water feed rate of 61 gpm. The average quarterly influent of tetrachloroethylene was less than 179 ug/L. The average quarterly influent of trichloroethylene was 2,188 ug/L. The average quarterly effluent total was less than 3.34 ug/L (see the *Air Stripper Performance* subsection and Table 3, Appendix D).
- During the second quarter of 1995, the Integrated Demonstration Vadose Zone Unit (IDU) removed a total of 318.0 pounds and destroyed a total of 299.7 pounds of degreaser solvent from the vadose zone beneath the M-Area HWMF. The IDU did not operate during April due to equipment malfunctions; during the quarter, it operated a total of 271.1 hrs with a downtime of 1,912.9 hrs, resulting in a total utility of 12.4 percent. The emission rate was 0.6020 lbs/hr hydrogen chloride vapor, 0.0381 lbs/hr tetrachloroethylene, and 0.0043 lbs/hr

trichloroethylene. The average inlet air feed rate was 121.6 cubic feet per minute. The average quarterly influent of tetrachloroethylene was 113.8 parts per million volume (ppmv) and of trichloroethylene was 54.3 ppmv. The average quarterly effluent total was 9.3 ppmv (see the *Vadose Zone Unit Performance* subsection and Table 4, Appendix D).

- The four vadose zone units (782-3M, -4M, -5M, and -6M) averaged 93 and 94 percent destruction rates for tetrachloroethylene and trichloroethylene, respectively, during their early operation period (May/June). Total tetrachloroethylene and trichloroethylene removal was 7,800 pounds and 2,950 pounds, respectively.
- Horizontal flow rate estimates in the five aquifer zones were as follows during second quarter 1995: M-Area Aquifer Zone, 155 to 420 ft/year; Upper Lost Lake Aquifer Zone, 205 to 310 ft/year; Lower Lost Lake Aquifer Zone, 215 ft/year; Middle Sand Aquifer Zone, 195 ft/year; and Crouch Branch Aquifer Zone, 260 ft/year (see the *Groundwater Flow Directions and Rates* subsection and Table 8, Appendix D).

Introduction

Description of Facilities

The M-Area Hazardous Waste Management Facility (HWMF), located in the northwest portion of the Savannah River Site (SRS) (Figures 1 and 2, Appendix C), consists of the M-Area Settling Basin; a seepage area, overflow ditch, and inlet process sewer line; and Lost Lake, a shallow upland depression.

The unlined settling basin operated from 1958 until 1985, receiving waste water that contained volatile organic solvents used for metal degreasing and chemical constituents and depleted uranium from fuel fabrication processes in M-Area. The underground process sewer line transported M-Area process waste waters to the basin. Water periodically overflowed from the basin through the ditch to the seepage area adjacent to the ditch and to Lost Lake.

Because of the hazardous nature of the constituents released to the environment during operation of the basin, the M-Area HWMF is subject to the requirements of the Resource Conservation and Recovery Act (RCRA). The facility currently is operating under a RCRA Part B post-closure care permit application (WSRC, 1994). A brief history of the M-Area HWMF compliance and post-closure programs is located in the *Monitoring and Corrective-Action Program Assessment* section in the reports for first and third quarter.

Compliance Monitoring Program

Requirements and Standards

Point-of-compliance (POC) wells monitor groundwater quality at the M-Area HWMF (Figure 2, Appendix C) as mandated by RCRA and associated South Carolina regulations. The M-Area HWMF RCRA Part B post-closure care permit application (WSRC, 1994) specifies the following monitoring regimen:

- quarterly monitoring for synchronous water elevations
- quarterly monitoring of new wells for one year
- semi-annual monitoring for pH, specific conductance, temperature, and Groundwater Protection Standard (GWPS) constituents (except polychlorinated biphenyls [PCBs]); only POC wells MSB 1D, 2D, 3D, 4D, 57D, 58D, 59D, and 60D are monitored for PCBs
- annual monitoring for gross alpha, nonvolatile beta, total alpha-emitting radium, and selected inorganic constituents
- monitoring during the third quarter of each year of 20 percent of the POC wells (MSB 3B, 8A, 8B, 8C, 58D, 64B, 64C, and 64D in 1994) for Appendix IX constituents (EPA, 1992c)

Analytical results are compared to the GWPS as defined in Table E-20 of the current Part B permit application (WSRC, 1994), standard background concentrations as defined in the 1987 Part B permit (WSRC, 1987), or drinking water standards (EPA, 1986, 1993a, 1993b) (see Appendix A). Standard background concentrations were determined during the assessment

monitoring program, using groundwater samples from background wells MSB 29B, 29C, 29D, 43A, 43B, and 43D (WSRC, 1987, 1994). Results are also compared to flagging criteria established by the SRS Environmental Protection Department/Environmental Monitoring Section (EPD/EMS) (see Appendix B).

The SRS Environmental Restoration Department (ERD) reports the monitoring results to the South Carolina Department of Health and Environmental Control (SCDHEC) as required by South Carolina Hazardous Waste Permit SC1-890-008-989 (SCDHEC, 1987) and section 264.100(g) of the South Carolina Hazardous Waste Management Regulations (SCDHEC, 1992).

Point-of-Compliance Well Network

Currently, the M-Area HWMF POC well network is composed of 41 wells: MSB 1B, 1C, 1CC, 1D, 2B, 2C, 2D, 3B, 3C, 3D, 4B, 4C, 4D, 5A, 5B, 5C, 6A, 6B, 6C, 7A, 7B, 7C, 8A, 8B, 8C, 13A, 13CC, 13D, 57D, 58D, 59D, 60D, 62B, 62C, 62D, 63B, 63C, 63D, 64B, 64C, and 64D.

This network developed as follows:

- Wells MSB 1A, 2A, 3A, 4A, 5A, 6A, 7A, 8A, 13A, 13B, and 13C, installed in the early 1980s, were approved by SCDHEC as the original POC wells.
- Well MSB 22 was approved by SCDHEC for interim sampling to replace well MSB 3A.
- Sampling at wells MSB 1A, 2A, 3A, 4A, and 13C was stopped in 1990 due to declining water levels at the M-Area HWMF resulting from basin closure and the recovery system operation.
- Sampling of well MSB 22 as a POC well was stopped in 1991; this well currently is part of the plume definition well network.
- Wells MSB 1B, 1C, 1CC, 1D, 2B, 2C, 2D, 3B, 3C, 3D, 4B, 4C, 4D, 5B, 5C, 6B, 6C, 7B, 7C, 8B, 8C, 13CC, 13D, 57D, 58D, 59D, 60D, 62B, 62C, 62D, 63B, 63C, 63D, 64B, 64C, and 64D were installed in 1990 (MSB 1D, 2D, 3D, 4D, and 13D replaced wells MSB 1A, 2A, 3A, 4A, and 13C).
- Well MSB 13B was removed from the POC well network beginning third quarter 1994.

A record of well installations, replacements, and abandonments is found in the EPD/EMS well inventory (EPD/EMS, 1994). The aquifer zones monitored by the POC well network, described in WSRC 1994 and identified in this report in the front section of Appendix D, are defined according to Lewis and Aadland (1993).

Corrective-Action Monitoring Program

Requirements and Standards

Data from background, plume definition, and recovery wells (Figures 3 and 18, Appendix C) are used to assess the effectiveness of the corrective-action program for the M-Area HWMF. Background and plume definition wells monitor the horizontal and vertical extent of groundwater contamination, groundwater flow rates and directions, groundwater quality, and changes in piezometric and potentiometric surfaces. Recovery wells pump contaminated groundwater to air strippers, which remove volatile organic contaminants from the water before it is returned to the ground.

The M-Area HWMF RCRA Part B post-closure care permit application (WSRC, 1994) specifies the following monitoring regimen for these wells to meet RCRA requirements:

Background wells

- quarterly monitoring for synchronous water elevations
- quarterly monitoring of new wells for one year
- semi-annual monitoring for pH, specific conductance, temperature, and GWPS constituents (except PCBs)
- annual monitoring for gross alpha, nonvolatile beta, and total alpha-emitting radium

Plume definition wells

- quarterly monitoring for synchronous water elevations
- quarterly monitoring of new wells for one year
- semi-annual monitoring for pH, specific conductance, temperature, and GWPS constituents (except PCBs); only plume definition wells MSB 9B, 9C, 10C, and 31C are monitored semi-annually for PCBs
- annual monitoring for gross alpha, nonvolatile beta, and total alpha-emitting radium
- annual monitoring for 53 plume definition wells for selected inorganic constituents

Recovery wells

- monthly monitoring for water elevations
- monthly monitoring for pH, specific conductance, temperature, and GWPS constituents (except PCBs); only recovery wells RWM 1, 6, and 10 are monitored for PCBs

Analytical results are compared to standards and reported to SCDHEC as described for the POC wells.

Corrective-Action Monitoring Well Network

The background, plume definition, and recovery well network currently consists of the following wells:

- Background wells: MSB 29B, 29C, 29D, 43A, 43B, and 43D
- Plume definition wells (346 total wells): the 7 wells of the ABP series, 1 well of the ABW series, 6 wells of the AC series, 4 wells of the ACB series, 18 wells of the AMB series, 3 wells of the AOB series, 4 wells of the ARP series, 21 wells of the ASB series, 7 wells of the MCB series, 236 wells of the MSB series, and 39 wells of the SRW series
- Recovery wells: RWM 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13B, 13C, 14B, 14C, 15B, and 16

A record of well installations, replacements, and abandonments is found in the EPD/EMS well inventory (EPD/EMS, 1994). The aquifer zones monitored by the background, plume definition, and recovery well network, described in WSRC (1994) and identified in this report in the front section of Appendix D, are defined according to Lewis and Aadland (1993).

Corrective-Action System Operation and Performance

Corrective action is accomplished in A/M Areas by pumping volatile organic compound (VOC) contaminated groundwater to two air strippers where the VOCs are removed and by pumping VOC-contaminated air, using vacuum extraction, from the vadose zone to a catalytic-oxidation unit where the VOCs are destroyed. A production air stripper in M-Area (M-1), fed by 11 recovery wells, has been in operation since April 1985 and operating full scale since September 1985. A second air stripper in A-Area (A-1), fed by a single recovery well, has been in operation since March 1992. A production catalytic-oxidation unit at the Integrated Demonstration Site (782-7M IDU), fed by a single vapor extraction well, has been in experimental operation since 1990 and in full-scale operation since August 1994. The four full scale vadose zone units (782-3M, -4M, -5M, -6M) were started up in April for functional testing. By May the units were operational, although total operating time was highly variable. A description of the systems that compose the corrective-action program is presented in WSRC (1994) (see References Cited page 12).

Air Stripper Performance

A summary of the system downtime for both air strippers is presented in Table 1 (Appendix D).

M-1 Air Stripper

A summary of second quarter 1995 operating and performance data for the M-1 air stripper is presented in Table 2 (Appendix D). During the quarter, the stripper removed 2,959 lbs of degreaser solvent from 45,271,720 gallons of water while operating at a utility of 80.7 percent and with an emission rate for the quarter of 1.69 lbs/hr. The average inlet water feed rate was 430 gallons per minute (gpm) for second quarter. The average quarterly influent of tetrachloroethylene was less than 2,765 ug/L and of trichloroethylene was 4,986 ug/L. The average quarterly effluent total was less than 3.37 ug/L.

The M-1 air stripper has removed a cumulative total of 296,580 lbs of solvent from more than 2 billion gallons of groundwater while operating at an average utility of 95.2 percent. When combined with the contaminated water treated by the pilot air stripper, the prototype air stripper, and the start-up of the full-scale M-1 air stripper system (16,200, 15,900, and 2,100 lbs, respectively for a total of 34,200), the total mass of tetrachloroethylene and trichloroethylene removed by the M-1 air stripper is 330,780 lbs.

The water feed rate to the M-1 air stripper has averaged 425 gpm since startup. Total inlet solvent concentrations have decreased from roughly 47,100 ug/L in April 1985 to a low of less than 6,796 ug/L as recorded in June, 1993. Inlet concentrations currently average near 8,000 ug/L. Stripping efficiency has always been greater than 99.95 percent, with effluent tetrachloroethylene and trichloroethylene concentrations less than their permit limits of 5 ug/L.

A-1 Air Stripper

A summary of second quarter 1995 operating and performance data for the A-1 air stripper is presented in Table 3 (Appendix D). During the quarter, the stripper removed 117 lbs of degreaser solvent from 5,886,977 gallons of water while operating at a utility of 74.8 percent and with an emission rate of 0.07 lbs/hr for the quarter. The average inlet water feed rate was 61 gpm. The average quarterly influent of tetrachloroethylene was less than 179 ug/L. The average quarterly influent of trichloroethylene was 2,188 ug/L. The average quarterly effluent total was less than 3.34 ug/L.

The A-1 air stripper has removed a cumulative total of 1,873 lbs of solvent from more than 77 million gallons of groundwater while operating at an average utility of 92.1 percent. The water feed rate to the A-1 air stripper has averaged 54 gpm since startup. Stripping efficiency has been greater than 99.8 percent, with effluent tetrachloroethylene and trichloroethylene concentrations less than their permit limits of 5 ug/L.

Vadose Zone Unit Performance

Integrated Demonstration Unit

A summary of the system downtime for the Integrated Demonstration Vadose Zone Unit (IDU) is presented in Table 1.

A summary of second quarter 1995 operating and performance data for the IDU is presented in Table 4 (Appendix D). During the quarter, the IDU removed a total of 318 lbs of degreaser solvent while operating at an average utility of 12.4 percent and with an emission rate for the quarter of 0.6020 lbs/hr hydrogen chloride vapor, 0.0381 lbs/hr tetrachloroethylene, and 0.0043 lbs/hr trichloroethylene. The average quarterly influent of tetrachloroethylene was 113.8 parts per million volume (ppmv) and trichloroethylene was 54.3 ppmv. The average quarterly effluent total was 9.3 ppmv.

The IDU has removed a cumulative total of 2,766 lbs of solvent while operating at an average utility of 32.2 percent. Combined with the experimental vadose zone stripping (approximately 1,500 lbs in 1987 and 16,000 lbs in 1990), the total mass of tetrachloroethylene and trichloroethylene removed by the IDU is 20,266 lbs.

Full Scale Units

A summary of the systems downtime is presented in Table 1.

A summary of the initial operating months (May/June) is presented in Table 4A (Appendix D). During this timeframe the vadose zone units removed 7,800 pounds of PCE and 2,950 pounds of TCE. The average utility of operation for the four units was 70 percent. Destruction rates for the four units average 93 percent for PCE and 94 percent for TCE. Hydrochloric emission rates totaled 8,200 pounds for the period.

Recovery Well System

Monthly and cumulative volumes of groundwater pumped from the recovery well system and average flow rates for recovery wells RWM 1 through 12 are presented in Table 5 (Appendix D). Monthly concentrations (ug/L) of tetrachloroethylene and trichloroethylene in each well are presented in Table 6 (Appendix D).

The concentration data in Table 6 (Appendix D) are presented as a function of time in Figures 4 through 15 (Appendix C). Missing data for these plots are due to a scheduling error during first quarter 1994. WSRC inadvertently missed two months (January and March) of analytical sampling at recovery wells RWM 1 through 12.

Vapor Extraction Well System

Vapor extraction well AMH 2 pumps contaminated air to the IDU. Table 4 (Appendix D) presents a summary of second quarter 1995 activity at the IDU.

Air Stripper Modifications

M-1 and A-1 Air Strippers

No major modifications were made to the M-1 or A-1 air stripper during second quarter 1995.

Vadose Zone Unit Modifications

Integrated Demonstration and Full Scale Units

No major modifications were made to the IDU during second quarter 1995. The full scale units went through start-up operations in April and were in full-scale operational mode in May and June.

Effectiveness of the Corrective-Action Program

Each quarter, the corrective-action program in A/M Areas is evaluated using piezometric and potentiometric maps (Appendix F) to determine groundwater flow rates and directions and water-elevation difference maps (Figures 18 through 21, Appendix C), recharge data, and hydrographs (Appendix E) to determine the effects of the recovery well system.

The piezometric, potentiometric, and water-elevation difference maps for this report were constructed using synchronous water elevations taken during second quarter 1995 (Table 7, Appendix D). Maps were constructed for each of the aquifer zones described in Figure E-11 of WSRC (1994). Aquifer zone names are identified in this report in the front section of Appendix D. Map directions are oriented to true north. Hydrographs were created using quarterly synchronous water-elevation measurements.

During second quarter 1995, synchronous water elevations (Table 7, Appendix D) were measured in A/M Areas wells from December 19 through December 21. Wells MSB 10D, 11E, 17C, 17D, and 51DD were dry when the synchronous measurements were taken. Wells MSB 23, 26, 45C, 46B, and 84A and SRW 8BB, 10, and 14C had no water in their standpipes when samples were taken. Synchronous water elevations for wells MSB 1A and 3A were not reported because of mechanical problems with the standpipes.

Groundwater Flow Directions and Rates

Piezometric and Potentiometric Surfaces

- Horizontal gradients in the M-Area Aquifer Zone (Map 1, Appendix F) are low and variable. The mounds and depressions probably are produced by the artificial recharge surrounding the area and pumping from recovery wells RWM 6, 8, 9, and 10. South of the M-Area HWMF, near the Miscellaneous Chemical Basin, a water-table divide appears to divert flow naturally to the southwest and southeast.
- Potentiometric contours for the Upper Lost Lake Aquifer Zone (Map 2, Appendix F) indicate a semi-radial flow pattern, with the highest water elevations located north of A/M Areas, and flow away from this area to the southwest, south, and southeast. Near the M-Area HWMF and A-014 outfall, flow is to the south. A mound in the potentiometric surface at the M-Area HWMF may result from local recharge from the M-Area Aquifer Zone at this location, possibly enhanced by recovery system water-level drawdown to the north. A smaller mound in the potentiometric surface located north of the Metallurgical Laboratory Seepage Basin may be the result of pumping by recovery wells RWM 12 to the northeast and RWM 9 and 11 to the southwest.
- Flow beneath the Lower Lost Lake Aquifer Zone (Map 3, Appendix F) is multi-directional, toward the east, southeast, and south. The most prominent feature is a north-south oriented trough beneath the M-Area HWMF. The potentiometric depression that occurs near the recovery wells surrounding the M-Area HWMF may result from the recovery well system.
- The south to southeast flow direction in the Middle Sand Aquifer Zone of the Crouch Branch Confining Unit (CBCU) (Map 4, Appendix F) is similar to that of the Lower Lost Lake Aquifer Zone. The effects of pumping in the overlying Upper and Lower Lost Lake Aquifer Zones cause a slight depression beneath the M-Area HWMF.

- Flow in the Crouch Branch Aquifer Zone (Map 5, Appendix F) is from the northeast to the southwest, apparently controlled by regional discharge to the Savannah River.

Horizontal Groundwater Flow Rates

Horizontal groundwater flow rates are calculated using the following equation:

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

Hydraulic conductivity constants estimated for the M-Area Aquifer Zone, the Upper Lost Lake Aquifer Zone, the Lower Lost Lake Aquifer Zone, the Middle Sand Aquifer Zone of the CBCU, and the Crouch Branch Aquifer Zone are 27, 45, 45, 45, and 40 ft/day, respectively; the effective porosity value for each is 0.20 (Lewis and Aadland, 1992). The value dh is the difference in head, and dl is the length of the flow path shown on the map. The ratio dh/dl is the horizontal gradient. Gradient, flow rate per day, and flow rate per year were each determined to two significant digits in the calculations.

The estimated groundwater flow rates for second quarter 1995 (Table 8, Appendix D) were as follows:

- M-Area Aquifer Zone: 155 to 420 ft/year
- Upper Lost Lake Aquifer Zone: 205 to 310 ft/year
- Lower Lost Lake Aquifer Zone: 215 ft/year
- Middle Sand Aquifer Zone of the CBCU: 195 ft/year
- Crouch Branch Aquifer Zone: 260 ft/year

These results are within the same order of magnitude as the flow rates for fourth quarter 1993.

The estimated average annual groundwater flow rates for 1994 were as follows:

- M-Area Aquifer Zone: 250 ft/year
- Upper Lost Lake Aquifer Zone: 330 ft/year
- Lower Lost Lake Aquifer Zone: 220 ft/year
- Middle Sand Aquifer Zone of the CBCU: 240 ft/year
- Crouch Branch Aquifer Zone: 290 ft/year

Recharge

Precipitation measurements for the A/M Areas during second quarter 1995 are provided below.

A/M Areas Precipitation Data for Second quarter 1995

	Monthly Precipitation (in.)	Historical Average 1952-1995 (in.)
April	1.28	3.35
May	1.77	3.86
June	8.15	4.47
Three-month total	11.20	11.68

Water-Elevation Changes

Figures 18 through 21 (Appendix C) show water-elevation drawdowns in the different aquifer zones caused by the operation of the recovery well system from first quarter 1985 to second quarter 1995. First quarter 1985 water elevations represent conditions prior to pumping by the recovery well system. Second quarter 1995 water elevations represent conditions after nine years of recovery system operation. Data used to construct the maps are presented in Tables 9 through 12 (Appendix D), and the results are described below:

- The water-elevation difference map for M-Area Aquifer Zone (Figure 18) shows the area of greatest decline as a ring bordered on the east by recovery wells RWM 1, 2, 3, 4, 5, 8, and 10. The maximum decline (-14 ft) during second quarter 1995 was the same during first quarter 1995.
- The area of greatest decline in Upper Lost Lake Aquifer Zone (Figure 19) centers around recovery wells RWM 2, 4 and 5. The maximum decline (-36.5 ft) during second quarter 1995 was almost twice during first quarter 1995 and was near RWM 5.
- The water-elevation decline for Lower Lost Lake Aquifer Zone (Figure 20) is greatest near recovery wells RWM 1, 4, 5, 7, and 10. Maximum decline (-17.0 ft) during second quarter 1995 was slightly more than during first quarter 1995.
- The location of the maximum decline in Middle Sand Aquifer Zone of the CBCU (Figure 21) was similar to trends in the Lower Lost Lake Aquifer Zone. The maximum decline (-13.3 ft) during second quarter 1995 indicates that water-elevation decline during this quarter was slightly more than during first quarter 1995.

The estimated water-elevation drawdown in each aquifer zone during second quarter 1995 is provided below.

Estimated Water-Elevation Drawdown Due to the Recovery Well System¹

Aquifer Zone	Maximum Water-Elevation Drawdown (ft)	Water-Elevation Drawdown Outside Zone of Capture ^a (ft)	Estimated Drawdown Due to Recovery System (ft)
M-Area	14.0	8.3 ^b	5.7
Upper Lost Lake	39.7	7.0 ^b	32.7
Lower Lost Lake	17.0	5.8 ^c	11.2
Middle Sand of the CBCU	13.3	7.0 ^b	6.3

^a Silverton Road Waste Site.

^b Observed at well cluster SRW 15.

^c Observed at well SRW 13A.

The above estimates were made by subtracting the water-elevation drawdown in each unit in wells outside the influence of the recovery well system (outside the zone of capture) from the maximum water-elevation drawdown in each unit in wells influenced by the recovery well system. The changes in water elevation outside the zone of capture were obtained from measurements from well cluster SRW 15 and well SRW 13A.

Compared to first quarter 1995, average water levels decreased (i.e., the drawdowns increased) in the M-Area Aquifer Zone, the Upper Lost Lake Aquifer Zone and the Middle Sand Aquifer Sand Zone and remained the same in the Lower Lost Lake Aquifer Zone during the second quarter 1995. Average water elevations during the past four quarters are provided in the following table.

Average Water-Elevation Drawdown^a (ft)

Aquifer Zone	3Q94	4Q94	1Q95	2Q95
M-Area	8.7	9.1	8.6	9.1
Upper Lost Lake	10.6	10.0	9.9	10.0
Lower Lost Lake	10.1	8.6	8.6	8.6
Middle Sand of the CBCU	7.0	6.1	5.8	6.1

^a This drawdown has not been corrected for natural decline.

Hydrographs, showing water-elevation changes for selected M-Area HWMF monitoring wells over time, are provided in Appendix E. Monitoring wells located near recovery wells generally reflect water-level decline caused by the recovery well system. Water elevations in monitoring wells away from the recovery well system show variations related to rainfall, proximity to streams and other physical features, and other factors.

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Errata and Revisions

Result values for earlier quarters presented in this report may differ from the values for those same quarters presented in previous reports because some re-analyses may have occurred after the quarterly reports were printed. Also, samples for field data are collected once each quarter but samples for analytical data may be collected more than once each quarter. Thus, because the results tables present the highest analytical result for the quarter, the reported analytical result may be from a sample collected on a different date from the date the field data sample was collected.

First Quarter 1994:

- Pages 2-6 through 2-47, Table 2-1, Groundwater Monitoring Results for Point-of-Compliance Wells. The following data modifiers should be added to the *Mod* column for the wells and analytes indicated.

<u>Well</u>	<u>Analyte</u>	<u>Modifier</u>
MSB 1B	all Appendix IX analytes	1
MSB 1C	chloride	3
MSB 2B, 2C, 4B, 13B	all Appendix IX analytes	Y
MSB 3C, 6B	aluminum, arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, sodium, uranium, zinc	Y
MSB 7C	mercury	J3
MSB 8C	selenium	J3
MSB 13CC	chlorobenzene, 1,1-dichloroethane, 1,1-dichloroethylene, trans-1,2-dichloroethylene, 1,1,2,2-tetrachloroethane, tetrachloroethylene, 1,1,1-trichloroethane	1
MSB 58D	lead	3
	selenium	J3
MSB 62B	zinc	3

- Pages 3-14 through 3-353, Table 3-2, Appendix IX Constituents in Groundwater from Plume Definition Wells. The following data modifiers should be added to the *Mod* column for the wells and analytes indicated.

<u>Well</u>	<u>Analyte</u>	<u>Modifier</u>
ABP 8C, ASB 9B, MSB 40D, 40TA, 41B, 41C, 41D, 41TA, 42B, 42C, 42D, 42TA, 43A, 43B, 43D, 43TA, 44A, 79B, 79C	all analytes	Y

MSB 12TB	chlorobenzene, 1,1-dichloroethane, 1,1-dichloroethylene, trans-1,2-dichloroethylene, 1,1,2,2-tetrachloroethane, tetrachloroethylene, 1,1,1-trichloroethane	1
MSB 27A, SRW 16B	trichloroethylene	1
MSB 53C	chlorobenzene, 1,1-dichloroethane, 1,1-dichloroethylene, trans-1,2 dichloroethylene, 1,1,2,2-tetrachloroethane, 1,1,1-trichloroethane	1
MSB 12TA, 75B, SRW 1, 3A, 4BB, 5, 6, 7, 8BB, 10, 10BB, 11, 11BB, 16A, 17BB, 17C	all analytes	1
SRW 1BB	trans-1,2-dichloroethylene	1
SRW 2, 4, 12C	tetrachloroethylene, trichloroethylene	1
SRW 3BB	tetrachloroethylene	3
	chlorobenzene, trans-1-2 dichloroethylene, 1,1,2,2-tetrachloroethane, 1,1,1-trichloroethane	J3
SRW 8	trichloroethylene	3
SRW 15A	chlorobenzene, 1,1-dichloroethane, 1,1-dichloroethylene, trans-1-2 dichloroethylene, 1,1,2,2-tetrachloroethane, tetrachloroethylene, 1,1,1-trichloroethane, trichloroethylene	J3

- Pages 3-354 through 3-407, Table 3-3, Inorganic Constituents in Groundwater from Selected Plume Definition Wells. The following data modifiers should be added to the *Mod* column for the wells and analytes indicated.

<u>Well</u>	<u>Analyte</u>	<u>Modifier</u>
MSB 12A	aluminum, arsenic, barium, chromium, copper, lead, mercury, nickel, selenium, silver, sodium, uranium, zinc	Y
MSB 12B	aluminum, arsenic, barium, chromium, copper, mercury, nickel, selenium, silver, sodium, uranium, zinc	Y
	lead	JY3
MSB 17B	sulfate	J3
MSB 21C, 31B, 36B	selenium	J3
MSB 39A	total phosphates	3
RWM 1	cyanide	1
	sulfate	3

Second Quarter 1994:

- Page 1-1, Chapter 6. In the first bulleted item, sodium was elevated in 27 (not 25) wells and trichloroethylene was elevated in 37 (not 38) wells.

Third Quarter 1994:

- Page I-8, Map 2, Appendix I, Volume III. Flow path line C-C' was unintentionally omitted from the Upper Lost Lake Aquifer Zone potentiometric contour map. The flow rate derived from this path line is provided in Table 8, Appendix D, Volume I.

Appendix A

Standards

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Standards

<u>Constituent</u>	<u>Unit</u>	<u>Standard</u>	<u>Source</u>
Aluminum	ug/L	100	WSRC (1987) ^a
Arsenic	ug/L	50	EPA (1993a) ^b
Barium	ug/L	1,000	WSRC (1994) ^c
Cadmium	ug/L	5	EPA (1993a)
Chloride	ug/L	4,200	WSRC (1987)
Chlorobenzene	ug/L	100	WSRC (1994)
Chromium	ug/L	100	EPA (1993a)
Cobalt	ug/L	4	WSRC (1994)
Copper	ug/L	1,300	WSRC (1994)
Cyanide	ug/L	200	WSRC (1994)
1,1-Dichloroethane	ug/L	5	WSRC (1994)
1,1-Dichloroethylene	ug/L	7	WSRC (1994)
trans-1,2-Dichloroethylene	ug/L	100	WSRC (1994)
Gross alpha	pCi/L	15	EPA (1993a)
Lead	ug/L	50	WSRC (1994)
Mercury	ug/L	2	EPA (1993a)
Nickel	ug/L	4	WSRC (1994)
Nitrate	ug/L	2,400	WSRC (1987)
Nonvolatile beta	pCi/L	50	EPA (1993a)
PCB 1254	ug/L	0.5	WSRC (1994)
Radium, total alpha-emitting ^d	pCi/L	5	EPA (1993a)
Selenium	ug/L	10	WSRC (1994)
Silver	ug/L	100	EPA (1993b)
Sodium	ug/L	4,600	WSRC (1987)
Sulfate	ug/L	3,000	WSRC (1987)
1,1,2,2-Tetrachloroethane	ug/L	5	WSRC (1994)
Tetrachloroethylene	ug/L	5	WSRC (1994)
Total phosphate as P	ug/L	300	WSRC (1987)
1,1,1-Trichloroethane	ug/L	200	WSRC (1994)
Trichloroethylene	ug/L	5	WSRC (1994)
Uranium	ug/L	100	WSRC (1987)
Zinc	ug/L	5,000	EPA (1993b)

^a Concentrations with WSRC (1987) sources are background concentrations.

^b Concentrations and activities with EPA (1993a) sources are primary drinking water standards.

Concentrations with EPA (1993b) sources are secondary drinking water standards.

^c Concentrations with WSRC (1994) sources are groundwater protection standards.

^d The standard used for total alpha-emitting radium is the primary drinking water standard for total radium.

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Appendix B

Flagging Criteria

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Flagging Criteria

The Savannah River Site Environmental Protection Department/Environmental Monitoring Section (EPD/EMS) flagging criteria are as follows:

- Flag 2 criteria for constituents equal the Safe Drinking Water Act (SDWA) final Primary Drinking Water Standards (PDWS), the SDWA proposed PDWS, or the SDWA Secondary Drinking Water Standards (SDWS). If a constituent does not have a drinking water standard, the Flag 2 criterion equals 10 times the method detection limit (MDL) calculated as the 90th percentile detection limit obtained recently by one of the primary analytical laboratories.
- Flag 1 criteria for constituents equal one-half of the final PDWS, one-half the proposed PDWS, or one-half the SDWS. If a constituent does not have a drinking water standard, the Flag 1 criterion equals 5 times the MDL calculated as the 90th percentile detection limit obtained recently by one of the primary analytical laboratories.
- Flag 0 criteria are assigned to constituent levels below Flag 1 criteria, constituent levels below the sample detection limits, or constituents having no flagging criteria.

The following parameters are exceptions to the flagging rules:

- EPD/EMS sets flagging criteria for pH and specific conductance. No flags are set for alkalinity, calcium, carbonate, magnesium, potassium, silica, sodium, total dissolved solids, total phosphates (as P), and total phosphorus. Analyses for these parameters are conducted as part of the biennial comprehensive analyses or by special request.
- Aesthetic parameters such as color, corrosivity, Eh, odor, surfactants, and turbidity are not assigned flagging criteria but are analyzed by special request.
- Common laboratory contaminants and cleaners such as dichloromethane (methylene chloride), ketones, phthalates, and toluene are not assigned flagging criteria unless they have primary drinking water standards. These constituents are analyzed by special request.

Analyte	Unit	Flag 1	Flag 2	Source ^a
Acenaphthene	ug/L	50	100	EPA Method 8270
Acenaphthylene	ug/L	50	100	EPA Method 8270
Acetone	ug/L	500	1,000	EPA Method 8240
Acetonitrile (Methyl cyanide)	ug/L	500	1,000	EPA Method 8240
Acetophenone	ug/L	50	100	EPA Method 8270
2-Acetylaminofluorene	ug/L	50	100	EPA Method 8270
Acrolein	ug/L	100	200	EPA Method 8240
Acrylonitrile	ug/L	100	200	EPA Method 8240
Actinium-228	pCi/L	1.64E+03	3.27E+03	Proposed PDWS (EPA, 1991)
Alachlor	ug/L	1	2	Final PDWS (EPA, 1993a)
Aldicarb ^b	ug/L	1.5	3	Final PDWS (EPA, 1993a)
Aldicarb sulfone ^b	ug/L	1	2	Final PDWS (EPA, 1993a)
Aldicarb sulfoxide ^b	ug/L	2	4	Final PDWS (EPA, 1993a)
Aldrin	ug/L	0.25	0.5	EPA Method 8080
Alkalinity (as CaCO ₃)		No flag	No flag	Set by EPD/EMS
Allyl chloride	ug/L	250	500	EPA Method 8240
Aluminum	ug/L	25	50	SDWS (EPA, 1993b)
Aluminum, dissolved	ug/L	25	50	SDWS (EPA, 1993b)
Aluminum, total recoverable	ug/L	25	50	SDWS (EPA, 1993b)
Americium-241	pCi/L	3.17E+00	6.34E+00	Proposed PDWS (EPA, 1991)
Americium-243	pCi/L	3.19E+00	6.37E+00	Proposed PDWS (EPA, 1991)

4-Aminobiphenyl	ug/L	50	100	EPA Method 8270
Ammonia	ug/L	500	1,000	APHA Method 417B
Ammonia nitrogen	ug/L	500	1,000	EPA Method 350.1
Aniline	ug/L	50	100	EPA Method 8270
Anthracene	ug/L	50	100	EPA Method 8270
Antimony	ug/L	3	6	Final PDWS (EPA, 1993a)
Antimony, dissolved	ug/L	3	6	Final PDWS (EPA, 1993a)
Antimony, total recoverable	ug/L	3	6	Final PDWS (EPA, 1993a)
Antimony-125	pCi/L	1.5E+02	3E+02	Interim Final PDWS (EPA, 1977)
Aramite	ug/L	50	100	EPA Method 8270
Arsenic	ug/L	25	50	Final PDWS (EPA, 1993a)
Arsenic, dissolved	ug/L	25	50	Final PDWS (EPA, 1993a)
Arsenic, total recoverable	ug/L	25	50	Final PDWS (EPA, 1993a)
Asbestos	Fibers/L	3,500,000	7,000,000	Final PDWS (EPA, 1993a)
Atrazine	ug/L	1.5	3	Final PDWS (EPA, 1993a)
Azobenzene	ug/L	50	100	EPA Method 625
Barium	ug/L	1,000	2,000	Final PDWS (EPA, 1993a)
Barium, dissolved	ug/L	1,000	2,000	Final PDWS (EPA, 1993a)
Barium, total recoverable	ug/L	1,000	2,000	Final PDWS (EPA, 1993a)
Barium-140 ^C	pCi/L	4.5E+01	9E+01	Interim Final PDWS (EPA, 1977)
Benzene	ug/L	2.5	5	Final PDWS (EPA, 1993a)
alpha-Benzene hexachloride	ug/L	0.25	0.5	EPA Method 8080
beta-Benzene hexachloride	ug/L	0.25	0.5	EPA Method 8080
delta-Benzene hexachloride	ug/L	0.25	0.5	EPA Method 8080
Benzidine	ug/L	250	500	EPA Method 8270
Benzo[a]anthracene	ug/L	0.05	0.1	Proposed PDWS (EPA, 1990)
Benzo[b]fluoranthene	ug/L	0.1	0.2	Proposed PDWS (EPA, 1990)
Benzo[k]fluoranthene	ug/L	0.1	0.2	Proposed PDWS (EPA, 1990)
Benzoic acid	ug/L	250	500	EPA Method 8270
Benzo[g,h,i]perylene	ug/L	50	100	EPA Method 8270
Benzo[a]pyrene	ug/L	0.1	0.2	Final PDWS (EPA, 1993a)
1,4-Benzoquinone	ug/L	50	100	EPA Method 8270
Benzyl alcohol	ug/L	50	100	EPA Method 8270
Beryllium	ug/L	2	4	Final PDWS (EPA, 1993a)
Beryllium, dissolved	ug/L	2	4	Final PDWS (EPA, 1993a)
Beryllium, total recoverable	ug/L	2	4	Final PDWS (EPA, 1993a)
Beryllium-7	pCi/L	3E+03	6E+03	Interim Final PDWS (EPA, 1977)
Bis(2-chloroethoxy) methane	ug/L	50	100	EPA Method 8270
Bis(2-chloroethyl) ether	ug/L	50	100	EPA Method 8270
Bis(2-chloroisopropyl) ether	ug/L	50	100	EPA Method 8270
Bis(chloromethyl) ether	ug/L	50	100	EPA Method 8270
Bis(2-ethylhexyl) phthalate	ug/L	3	6	Final PDWS (EPA, 1993a)
Bismuth-214	pCi/L	9.4E+03	1.89E+04	Proposed PDWS (EPA, 1991)
Boron	ug/L	150	300	EPA Method 6010
Boron, dissolved	ug/L	150	300	EPA Method 6010
Boron, total recoverable	ug/L	150	300	EPA Method 6010
Bromide	ug/L	5,000	10,000	EPA Method 300.0
Bromodichloromethane	ug/L	50	100	Final PDWS (EPA, 1993a)
Bromoform	ug/L	50	100	Final PDWS (EPA, 1993a)
Bromomethane (Methyl bromide)	ug/L	5	10	EPA Method 8240
4-Bromophenyl phenyl ether	ug/L	50	100	EPA Method 8270
Butylbenzyl phthalate		No flag	No flag	Set by EPD/EMS
2-sec-Butyl-4,6-dinitrophenol	ug/L	3.5	7	Final PDWS (EPA, 1993a)
Cadmium	ug/L	2.5	5	Final PDWS (EPA, 1993a)
Cadmium, dissolved	ug/L	2.5	5	Final PDWS (EPA, 1993a)
Cadmium, total recoverable	ug/L	2.5	5	Final PDWS (EPA, 1993a)
Calcium		No flag	No flag	Set by EPD/EMS
Calcium, dissolved		No flag	No flag	Set by EPD/EMS
Calcium, total recoverable		No flag	No flag	Set by EPD/EMS
Carbofuran	ug/L	20	40	Final PDWS (EPA, 1993a)

Carbon-14	pCi/L	1E+03	2E+03	Interim Final PDWS (EPA, 1977)
Carbonate		No flag	No flag	Set by EPD/EMS
Carbon disulfide	ug/L	5	10	EPA Method 8240
Carbon tetrachloride	ug/L	2.5	5	Final PDWS (EPA, 1993a)
Cerium-141 ^c	pCi/L	1.5E+02	3E+02	Interim Final PDWS (EPA, 1977)
Cerium-144	pCi/L	1.31E+02	2.61E+02	Proposed PDWS (EPA, 1991)
Cesium-134 ^d	pCi/L	4.07E+01	8.13E+01	Proposed PDWS (EPA, 1991)
Cesium-137	pCi/L	1E+02	2E+02	Interim Final PDWS (EPA, 1977)
Chlordane	ug/L	1	2	Final PDWS (EPA, 1993a)
Chloride	ug/L	125,000	250,000	SDWS (EPA, 1993b)
4-Chloroaniline	ug/L	50	100	EPA Method 8270
Chlorobenzene	ug/L	50	100	Final PDWS (EPA, 1993a)
Chlorobenzilate	ug/L	50	100	EPA Method 8270
4-Chloro-m-cresol	ug/L	50	100	EPA Method 8270
Chloroethane	ug/L	5	10	EPA Method 8240
Chloroethene (Vinyl chloride)	ug/L	1	2	Final PDWS (EPA, 1993a)
Chloroethyl vinyl ether	ug/L	5	10	EPA Method 8240
2-Chloroethyl vinyl ether	ug/L	5	10	EPA Method 8240
Chloroform	ug/L	50	100	Final PDWS (EPA, 1993a)
Chloromethane (Methyl chloride)	ug/L	5	10	EPA Method 8240
2-Chloronaphthalene	ug/L	50	100	EPA Method 8240
2-Chlorophenol	ug/L	50	100	EPA Method 8270
4-Chlorophenyl phenyl ether	ug/L	50	100	EPA Method 8270
Chloroprene	ug/L	1,000	2,000	EPA Method 8240
Chromium	ug/L	50	100	Final PDWS (EPA, 1993a)
Chromium, dissolved	ug/L	50	100	Final PDWS (EPA, 1993a)
Chromium, total recoverable	ug/L	50	100	Final PDWS (EPA, 1993a)
Chromium-51 ^c	pCi/L	3E+03	6E+03	Interim Final PDWS (EPA, 1977)
Chrysene	ug/L	0.1	0.2	Proposed PDWS (EPA, 1990)
Cobalt	ug/L	20	40	EPA Method 6010
Cobalt, dissolved	ug/L	20	40	EPA Method 6010
Cobalt, total recoverable	ug/L	20	40	EPA Method 6010
Cobalt-57	pCi/L	5E+02	1E+03	Interim Final PDWS (EPA, 1977)
Cobalt-58 ^d	pCi/L	4.5E+03	9E+03	Interim Final PDWS (EPA, 1977)
Cobalt-60	pCi/L	5E+01	1E+02	Interim Final PDWS (EPA, 1977)
Color		No flag	No flag	Set by EPD/EMS
Copper	ug/L	500	1,000	Final PDWS (SCDHEC, 1981)
Copper, dissolved	ug/L	500	1,000	Final PDWS (SCDHEC, 1981)
Copper, total recoverable	ug/L	500	1,000	Final PDWS (SCDHEC, 1981)
Corrosivity		No flag	No flag	Set by EPD/EMS
m-Cresol (3-Methylphenol)	ug/L	50	100	EPA Method 8270
o-Cresol (2-Methylphenol)	ug/L	50	100	EPA Method 8270
p-Cresol (4-Methylphenol)	ug/L	50	100	EPA Method 8270
Curium-242	pCi/L	6.65E+01	1.33E+02	Proposed PDWS (EPA, 1991)
Curium-243	pCi/L	4.15E+00	8.3E+00	Proposed PDWS (EPA, 1991)
Curium-243/244 ^e	pCi/L	4.15E+00	8.3E+00	Proposed PDWS (EPA, 1991)
Curium-244	pCi/L	4.92E+00	9.84E+00	Proposed PDWS (EPA, 1991)
Curium-245/246 ^e	pCi/L	3.12E+00	6.23E+00	Proposed PDWS (EPA, 1991)
Curium-246	pCi/L	3.14E+00	6.27E+00	Proposed PDWS (EPA, 1991)
Cyanide	ug/L	100	200	Final PDWS (EPA, 1993a)
Dalapon ^b	ug/L	100	200	Final PDWS (EPA, 1993a)
p,p'-DDD	ug/L	0.5	1	EPA Method 8080
p,p'-DDE	ug/L	0.5	1	EPA Method 8080
p,p'-DDT	ug/L	0.5	1	EPA Method 8080
Diallate	ug/L	50	100	EPA Method 8270
Dibenz[a,h]anthracene	ug/L	0.15	0.3	Proposed PDWS (EPA, 1990)
Dibenzofuran	ug/L	50	100	EPA Method 8270
Dibromochloromethane	ug/L	50	100	Final PDWS (EPA, 1993a)
1,2-Dibromo-3-chloropropane	ug/L	0.1	0.2	Final PDWS (EPA, 1993a)
1,2-Dibromoethane	ug/L	0.025	0.05	Final PDWS (EPA, 1993a)

Dibromomethane (Methylene bromide)	ug/L	5	10	EPA Method 8240
Di-n-butyl phthalate		No flag	No flag	Set by EPD/EMS
1,2-Dichlorobenzene	ug/L	300	600	Final PDWS (EPA, 1993a)
1,3-Dichlorobenzene	ug/L	50	100	EPA Method 8270
1,4-Dichlorobenzene	ug/L	37.5	75	Final PDWS (EPA, 1993a)
3,3'-Dichlorobenzidine	ug/L	50	100	EPA Method 8270
trans-1,4-Dichloro-2-butene	ug/L	150	300	EPA Method 8240
Dichlorodifluoromethane	ug/L	5	10	EPA Method 8240
1,1-Dichloroethane	ug/L	5	10	EPA Method 8240
1,2-Dichloroethane	ug/L	2.5	5	Final PDWS (EPA, 1993a)
1,1-Dichloroethylene	ug/L	3.5	7	Final PDWS (EPA, 1993a)
1,2-Dichloroethylene	ug/L	25	50	Final PDWS (EPA, 1993a)
cis-1,2-Dichloroethylene	ug/L	35	70	Final PDWS (EPA, 1993a)
trans-1,2-Dichloroethylene	ug/L	50	100	Final PDWS (EPA, 1993a)
Dichloromethane (Methylene chloride)	ug/L	2.5	5	Final PDWS (EPA, 1993a)
2,4-Dichlorophenol	ug/L	50	100	EPA Method 8270
2,6-Dichlorophenol	ug/L	50	100	EPA Method 8270
2,4-Dichlorophenoxyacetic acid	ug/L	35	70	Final PDWS (EPA, 1993a)
1,2-Dichloropropane	ug/L	2.5	5	Final PDWS (EPA, 1993a)
cis-1,3-Dichloropropene	ug/L	5	10	EPA Method 8240
trans-1,3-Dichloropropene	ug/L	5	10	EPA Method 8240
Dieldrin	ug/L	2.5	5	EPA Method 8080
Di(2-ethylhexyl) adipate	ug/L	200	400	Final PDWS (EPA, 1993a)
Diethyl phthalate		No flag	No flag	Set by EPD/EMS
Dimethoate	ug/L	50	100	EPA Method 8270
p-Dimethylaminoazobenzene	ug/L	50	100	EPA Method 8270
p-(Dimethylamino)ethylbenzene	ug/L	50	100	EPA Method 8270
7,12-Dimethylbenz[a]anthracene	ug/L	50	100	EPA Method 8270
3,3'-Dimethylbenzidine	ug/L	50	100	EPA Method 8270
a,a-Dimethylphenethylamine	ug/L	50	100	EPA Method 8270
2,4-Dimethyl phenol	ug/L	50	100	EPA Method 8270
Dimethyl phthalate		No flag	No flag	Set by EPD/EMS
1,3-Dinitrobenzene	ug/L	50	100	EPA Method 8270
2,4-Dinitrophenol	ug/L	250	500	EPA Method 8270
2,4-Dinitrotoluene	ug/L	50	100	EPA Method 8270
2,6-Dinitrotoluene	ug/L	50	100	EPA Method 8270
Di-n-octyl phthalate		No flag	No flag	Set by EPD/EMS
1,4-Dioxane	ug/L	50	100	EPA Method 8270
Diphenylamine	ug/L	50	100	EPA Method 8270
1,2-Diphenylhydrazine	ug/L	50	100	EPA Method 8270
Diquat dibromide ^D	ug/L	10	20	Final PDWS (EPA, 1993a)
Dissolved organic carbon	ug/L	5,000	10,000	EPA Method 9060
Disulfoton	ug/L	50	100	EPA Method 8270
Eh		No flag	No flag	Set by EPD/EMS
Endosulfan I	ug/L	0.5	1	EPA Method 8080
Endosulfan II	ug/L	0.5	1	EPA Method 8080
Endosulfan sulfate	ug/L	0.5	1	EPA Method 8080
Endothall ^D	ug/L	50	100	Final PDWS (EPA, 1993a)
Endrin	ug/L	1	2	Final PDWS (EPA, 1993a)
Endrin aldehyde	ug/L	0.5	1	EPA Method 8080
Endrin ketone		No flag	No flag	Set by EPD/EMS
Ethylbenzene	ug/L	350	700	Final PDWS (EPA, 1993a)
Ethyl methacrylate	ug/L	50	100	EPA Method 8270
Ethyl methanesulfonate	ug/L	50	100	EPA Method 8270
Europium-152	pCi/L	3E+01	6E+01	Interim Final PDWS (EPA, 1977)
Europium-154	pCi/L	1E+02	2E+02	Interim Final PDWS (EPA, 1977)
Europium-155	pCi/L	3E+02	6E+02	Interim Final PDWS (EPA, 1977)
Famphur	ug/L	50	100	EPA Method 8270

Fluoranthene	ug/L	50	100	EPA Method 8270
Fluorene	ug/L	50	100	EPA Method 8270
Fluoride	ug/L	2,000	4,000	Final PDWS (EPA, 1993a)
Glyphosate ^b	ug/L	350	700	Final PDWS (EPA, 1993a)
Gross alpha	pCi/L	7.5E+00	1.5E+01	Final PDWS (EPA, 1993a)
Heptachlor	ug/L	0.2	0.4	Final PDWS (EPA, 1993a)
Heptachlor epoxide	ug/L	0.1	0.2	Final PDWS (EPA, 1993a)
Heptachlorodibenzo-p-dioxin isomers	ug/L	0.00325	0.0065	EPA Method 8280
1,2,3,4,6,7,8-HPCDD	ug/L	0.00325	0.0065	EPA Method 8280
Heptachlorodibenzo-p-furan isomers	ug/L	0.00225	0.0045	EPA Method 8280
1,2,3,4,6,7,8-HPCDF	ug/L	0.00225	0.0045	EPA Method 8280
Hexachlorobenzene	ug/L	0.5	1	Final PDWS (EPA, 1993a)
Hexachlorobutadiene	ug/L	50	100	EPA Method 8270
Hexachlorocyclopentadiene	ug/L	25	50	Final PDWS (EPA, 1993a)
Hexachlorodibenzo-p-dioxin isomers	ug/L	0.00225	0.0045	EPA Method 8280
1,2,3,4,7,8-HXCDD	ug/L	0.00225	0.0045	EPA Method 8280
Hexachlorodibenzo-p-furan isomers	ug/L	0.002	0.004	EPA Method 8280
1,2,3,4,7,8-HXCDF	ug/L	0.002	0.004	EPA Method 8280
Hexachloroethane	ug/L	50	100	EPA Method 8270
Hexachlorophene	ug/L	250	500	EPA Method 8270
Hexachloropropene	ug/L	50	100	EPA Method 8270
2-Hexanone	ug/L	50	100	EPA Method 8240
Indeno[1,2,3-c,d]pyrene	ug/L	50	100	EPA Method 8270
Iodine	ug/L	250	500	APHA Method 415A
Iodine-129	pCi/L	5E-01	1E+00	Interim Final PDWS (EPA, 1977)
Iodine-131 ^c	pCi/L	1.5E+00	3E+00	Interim Final PDWS (EPA, 1977)
Iodomethane (Methyl iodide)	ug/L	75	150	EPA Method 8240
Iron	ug/L	150	300	SDWS (EPA, 1993b)
Iron, dissolved	ug/L	150	300	SDWS (EPA, 1993b)
Iron, total recoverable	ug/L	150	300	SDWS (EPA, 1993b)
Iron-55 ^c	pCi/L	1E+03	2E+03	Interim Final PDWS (EPA, 1977)
Iron-59 ^c	pCi/L	1E+02	2E+02	Interim Final PDWS (EPA, 1977)
Isobutyl alcohol	ug/L	500	1,000	EPA Method 8240
Isodrin	ug/L	50	100	EPA Method 8270
Isophorone	ug/L	50	100	EPA Method 8270
Isosafrole	ug/L	50	100	EPA Method 8270
Kepone	ug/L	50	100	EPA Method 8270
Lanthanum-140 ^c	pCi/L	3E+01	6E+01	Interim Final PDWS (EPA, 1977)
Lead	ug/L	25	50	Final PDWS (SCDHEC, 1981)
Lead, dissolved	ug/L	25	50	Final PDWS (SCDHEC, 1981)
Lead, total recoverable	ug/L	25	50	Final PDWS (SCDHEC, 1981)
Lead-212	pCi/L	6.2E+01	1.23E+02	Proposed PDWS (EPA, 1991)
Lindane	ug/L	0.1	0.2	Final PDWS (EPA, 1993a)
Lithium	ug/L	25	50	EPA Method 6010
Lithium, dissolved	ug/L	25	50	EPA Method 6010
Lithium, total recoverable	ug/L	25	50	EPA Method 6010
Magnesium		No flag	No flag	Set by EPD/EMS
Magnesium, dissolved		No flag	No flag	Set by EPD/EMS
Magnesium, total recoverable		No flag	No flag	Set by EPD/EMS
Manganese	ug/L	25	50	SDWS (EPA, 1993b)
Manganese, dissolved	ug/L	25	50	SDWS (EPA, 1993b)
Manganese, total recoverable	ug/L	25	50	SDWS (EPA, 1993b)
Manganese-54	pCi/L	1.5E+02	3E+02	Interim Final PDWS (EPA, 1977)
Mercury	ug/L	1	2	Final PDWS (EPA, 1993a)
Mercury, dissolved	ug/L	1	2	Final PDWS (EPA, 1993a)
Mercury, total recoverable	ug/L	1	2	Final PDWS (EPA, 1993a)

Methacrylonitrile	ug/L	250	500	EPA Method 8240
Methapyrilene	ug/L	50	100	EPA Method 8270
Methoxychlor	ug/L	20	40	Final PDWS (EPA, 1993a)
3-Methylcholanthrene	ug/L	50	100	EPA Method 8270
2-Methyl-4,6-dinitrophenol	ug/L	250	500	EPA Method 8270
Methyl ethyl ketone		No flag	No flag	Set by EPD/EMS
Methyl isobutyl ketone		No flag	No flag	Set by EPD/EMS
Methyl methacrylate	ug/L	50	100	EPA Method 8270
Methyl methanesulfonate	ug/L	50	100	EPA Method 8270
2-Methylnaphthalene	ug/L	50	100	EPA Method 8270
Molybdenum	ug/L	250	500	EPA Method 6010
Molybdenum, dissolved	ug/L	250	500	EPA Method 6010
Molybdenum, total recoverable	ug/L	250	500	EPA Method 6010
Naphthalene	ug/L	50	100	EPA Method 8270
1,4-Naphthoquinone	ug/L	50	100	EPA Method 8270
1-Naphthylamine	ug/L	50	100	EPA Method 8270
2-Naphthylamine	ug/L	50	100	EPA Method 8270
Neptunium-237	pCi/L	3.53E+00	7.06E+00	Proposed PDWS (EPA, 1991)
Nickel	ug/L	50	100	Final PDWS (EPA, 1993a)
Nickel, dissolved	ug/L	50	100	Final PDWS (EPA, 1993a)
Nickel, total recoverable	ug/L	50	100	Final PDWS (EPA, 1993a)
Nickel-59 ^C	pCi/L	1.5E+02	3E+02	Interim Final PDWS (EPA, 1977)
Nickel-63 ^C	pCi/L	2.5E+01	5E+01	Interim Final PDWS (EPA, 1977)
Niobium-95 ^C	pCi/L	1.5E+02	3.E+02	Interim Final PDWS (EPA, 1977)
Nitrate as nitrogen	ug/L	5,000	10,000	Final PDWS (EPA, 1993a)
Nitrate-nitrite as nitrogen	ug/L	5,000	10,000	Final PDWS (EPA, 1993a)
Nitrite as nitrogen	ug/L	500	1,000	Final PDWS (EPA, 1993a)
m-Nitroaniline	ug/L	50	100	EPA Method 8270
o-Nitroaniline	ug/L	50	100	EPA Method 8270
p-Nitroaniline	ug/L	50	100	EPA Method 8270
Nitrobenzene	ug/L	50	100	EPA Method 8270
Nitrogen by Kjeldahl method	ug/L	500	1,000	EPA Method 351.2
2-Nitrophenol	ug/L	50	100	EPA Method 8270
4-Nitrophenol	ug/L	50	100	EPA Method 8270
4-Nitroquinoline-1-oxide	ug/L	50	100	EPA Method 8270
N-Nitrosodi-n-butylamine	ug/L	50	100	EPA Method 8270
N-Nitrosodiethylamine	ug/L	50	100	EPA Method 8270
N-Nitrosodimethylamine	ug/L	50	100	EPA Method 8270
N-Nitrosodiphenylamine	ug/L	50	100	EPA Method 8270
N-Nitrosodipropylamine	ug/L	50	100	EPA Method 8270
N-Nitrosomethylethylamine	ug/L	50	100	EPA Method 8270
N-Nitrosomorpholine	ug/L	50	100	EPA Method 8270
N-Nitrosopiperidine	ug/L	50	100	EPA Method 8270
N-Nitrosopyrrolidine	ug/L	50	100	EPA Method 8270
5-Nitro-o-toluidine	ug/L	50	100	EPA Method 8270
Nonvolatile beta	pCi/L	2.5E+01	5E+01	Interim Final PDWS (EPA, 1977)
Octachlorodibenzo-p-dioxin isomers	ug/L	0.005	0.01	EPA Method 8280
Octachlorodibenzo-p-furan isomers	ug/L	0.005	0.01	EPA Method 8280
Odor		No flag	No flag	Set by EPD/EMS
Oil & Grease	ug/L	5,000	10,000	EPA Method 413.1
Oxamyl ^D	ug/L	100	200	Final PDWS (EPA, 1993a)
Parathion	ug/L	0.25	0.5	EPA Method 8080
Parathion methyl	ug/L	0.25	0.5	EPA Method 8080
PCB 1016	ug/L	0.25	0.5	Final PDWS (EPA, 1993a)
PCB 1221	ug/L	0.25	0.5	Final PDWS (EPA, 1993a)
PCB 1232	ug/L	0.25	0.5	Final PDWS (EPA, 1993a)
PCB 1242	ug/L	0.25	0.5	Final PDWS (EPA, 1993a)
PCB 1248	ug/L	0.25	0.5	Final PDWS (EPA, 1993a)

PCB 1254	ug/L	0.25	0.5	Final PDWS (EPA, 1993a)
PCB 1260	ug/L	0.25	0.5	Final PDWS (EPA, 1993a)
PCB 1262	ug/L	0.25	0.5	Final PDWS (EPA, 1993a)
Pentachlorobenzene	ug/L	50	100	EPA Method 8270
Pentachlorodibenzo-p-dioxin isomers	ug/L	0.00275	0.0055	EPA Method 8280
1,2,3,7,8-PCDD	ug/L	0.00275	0.0055	EPA Method 8280
Pentachlorodibenzo-p-furan isomers	ug/L	0.00275	0.0055	EPA Method 8280
1,2,3,7,8-PCDF	ug/L	0.00275	0.0055	EPA Method 8280
Pentachloroethane	ug/L	50	100	EPA Method 8270
Pentachloronitrobenzene	ug/L	50	100	EPA Method 8270
Pentachlorophenol	ug/L	0.5	1	Final PDWS (EPA, 1993a)
pH	pH	8	10	Set by EPD/EMS
pH	pH	4	3	Set by EPD/EMS
Phenacetin	ug/L	50	100	EPA Method 8270
Phenanthrene	ug/L	50	100	EPA Method 8270
Phenol	ug/L	50	100	EPA Method 8270
Phenols	ug/L	25	50	EPA Method 420.1
p-Phenylenediamine	ug/L	50	100	EPA Method 8270
Phorate	ug/L	0.5	1	EPA Method 8080
Picloram ^b	ug/L	250	500	Final PDWS (EPA, 1993a)
2-Picoline	ug/L	50	100	EPA Method 8270
Plutonium-238	pCi/L	3.51E+00	7.02E+00	Proposed PDWS (EPA, 1991)
Plutonium-239	pCi/L	3.11E+01	6.21E+01	Proposed PDWS (EPA, 1991)
Plutonium-239/240 ^e	pCi/L	3.11E+01	6.21E+01	Proposed PDWS (EPA, 1991)
Plutonium-240	pCi/L	3.11E+01	6.22E+01	Proposed PDWS (EPA, 1991)
Plutonium-241 ^c	pCi/L	3.13E+01	6.26E+01	Proposed PDWS (EPA, 1991)
Plutonium-242 ^c	pCi/L	3.27E+01	6.54E+01	Proposed PDWS (EPA, 1991)
Potassium		No flag	No flag	Set by EPD/EMS
Potassium, dissolved		No flag	No flag	Set by EPD/EMS
Potassium, total recoverable		No flag	No flag	Set by EPD/EMS
Potassium-40	pCi/L	1.5E+02	3E+02	Proposed PDWS (EPA, 1986)
Promethium-144	pCi/L	5E+01	1E+02	EPA Method 901.1
Promethium-146	pCi/L	5E+01	1E+02	EPA Method 901.1
Promethium-147	pCi/L	2.62E+03	5.24E+03	Proposed PDWS (EPA, 1991)
Pronamid	ug/L	50	100	EPA Method 8270
Propionitrile	ug/L	1,000	2,000	EPA Method 8240
Pyrene	ug/L	50	100	EPA Method 8270
Pyridine	ug/L	50	100	EPA Method 8270
Radium (alpha-emitting) ^f	pCi/L	1E+01	2E+01	Proposed PDWS (EPA, 1991)
Radium-226	pCi/L	1E+01	2E+01	Proposed PDWS (EPA, 1991)
Radium-228	pCi/L	1E+01	2E+01	Proposed PDWS (EPA, 1991)
Radon-222	pCi/L	1.5E+02	3E+02	Proposed PDWS (EPA, 1991)
Ruthenium-103 ^c	pCi/L	1E+02	2E+02	Interim Final PDWS (EPA, 1977)
Ruthenium-106	pCi/L	1.5E+01	3E+01	Interim Final PDWS (EPA, 1977)
Safrole	ug/L	50	100	EPA Method 8270
Selenium	ug/L	25	50	Final PDWS (EPA, 1993a)
Selenium, dissolved	ug/L	25	50	Final PDWS (EPA, 1993a)
Selenium, total recoverable	ug/L	25	50	Final PDWS (EPA, 1993a)
Silica		No flag	No flag	Set by EPD/EMS
Silica, dissolved		No flag	No flag	Set by EPD/EMS
Silica, total recoverable		No flag	No flag	Set by EPD/EMS
Silver	ug/L	50	100	SDWS (EPA, 1993b)
Silver, dissolved	ug/L	50	100	SDWS (EPA, 1993b)
Silver, total recoverable	ug/L	50	100	SDWS (EPA, 1993b)
Simazine ^b	ug/L	2	4	Final PDWS (EPA, 1993a)
Sodium		No flag	No flag	Set by EPD/EMS
Sodium, dissolved		No flag	No flag	Set by EPD/EMS
Sodium, total recoverable		No flag	No flag	Set by EPD/EMS

Sodium-22	pCi/L	2.33E+02	4.66E+02	Proposed PDWS (EPA, 1991)
Specific conductance	uS/cm	250	500	Set by EPD/EMS
Strontium-89	pCi/L	1E+01	2E+01	Interim Final PDWS (EPA, 1977)
Strontium-89/90 ^e	pCi/L	4E+00	8E+00	Final PDWS (EPA, 1993a)
Strontium-90	pCi/L	4E+00	8E+00	Final PDWS (EPA, 1993a)
Styrene	ug/L	50	100	Final PDWS (EPA, 1993a)
Sulfate	ug/L	200,000	400,000	Proposed PDWS (EPA, 1990)
Sulfide	ug/L	5,000	10,000	EPA Method 9030
Sulfotep	ug/L	50	100	EPA Method 8270
Surfactants		No flag	No flag	Set by EPD/EMS
2,3,7,8-TCDD	ug/L	0.000015	0.00003	Final PDWS (EPA, 1993a)
2,3,7,8-TCDF	ug/L	0.002	0.004	EPA Method 8280
Technetium-99	pCi/L	4.5E+02	9E+02	Interim Final PDWS (EPA, 1977)
1,2,4,5-Tetrachlorobenzene	ug/L	50	100	EPA Method 8270
Tetrachlorodibenzo-p-dioxin isomers	ug/L	0.00225	0.0045	EPA Method 8280
Tetrachlorodibenzo-p-furan isomers	ug/L	0.002	0.004	EPA Method 8280
1,1,1,2-Tetrachloroethane	ug/L	5	10	EPA Method 8240
1,1,2,2-Tetrachloroethane	ug/L	5	10	EPA Method 8240
Tetrachloroethylene	ug/L	2.5	5	Final PDWS (EPA, 1993a)
2,3,4,6-Tetrachlorophenol	ug/L	50	100	EPA Method 8270
Thallium	ug/L	1	2	Final PDWS (EPA, 1993a)
Thallium, dissolved	ug/L	1	2	Final PDWS (EPA, 1993a)
Thallium, total recoverable	ug/L	1	2	Final PDWS (EPA, 1993a)
Thionazin	ug/L	50	100	EPA Method 8270
Thorium-228	pCi/L	6.25E+01	1.25E+02	Proposed PDWS (EPA, 1991)
Thorium-230	pCi/L	3.96E+01	7.92E+01	Proposed PDWS (EPA, 1991)
Thorium-232	pCi/L	4.4E+01	8.8E+01	Proposed PDWS (EPA, 1991)
Thorium-234	pCi/L	2E+02	4.01E+02	Proposed PDWS (EPA, 1991)
Tin	ug/L	10	20	EPA Method 282.2
Tin, dissolved	ug/L	10	20	EPA Method 282.2
Tin, total recoverable	ug/L	10	20	EPA Method 282.2
Tin-113 ^c	pCi/L	1.5E+02	3E+02	Interim Final PDWS (EPA, 1977)
Toluene	ug/L	500	1,000	Final PDWS (EPA, 1993a)
o-Toluidine	ug/L	50	100	EPA Method 8270
Total carbon	ug/L	5,000	10,000	EPA Method 9060
Total coliform		0	0	Final PDWS (EPA, 1993a)
Total dissolved solids		No flag	No flag	Set by EPD/EMS
Total hydrocarbons	ug/L	5,000	10,000	EPA Method 418.1
Total inorganic carbon	ug/L	5,000	10,000	EPA Method 9060
Total organic carbon	ug/L	5,000	10,000	EPA Method 9060
Total organic halogens	ug/L	25	50	EPA Method 9020
Total organic nitrogen	ug/L	500	1,000	APHA Method 420
Total petroleum hydrocarbons	ug/L	5,000	10,000	EPA Method 418.1
Total phosphates (as P)		No flag	No flag	Set by EPD/EMS
Total phosphorus		No flag	No flag	Set by EPD/EMS
Toxaphene	ug/L	1.5	3	Final PDWS (EPA, 1993a)
2,4,5-TP (Silvex)	ug/L	25	50	Final PDWS (EPA, 1993a)
Tributyl phosphate	ug/L	50	100	EPA Method 8270
1,2,4-Trichlorobenzene	ug/L	35	70	Final PDWS (EPA, 1993a)
1,1,1-Trichloroethane	ug/L	100	200	Final PDWS (EPA, 1993a)
1,1,2-Trichloroethane	ug/L	2.5	5	Final PDWS (EPA, 1993a)
Trichloroethylene	ug/L	2.5	5	Final PDWS (EPA, 1993a)
Trichlorofluoromethane	ug/L	5	10	EPA Method 8240
2,4,5-Trichlorophenol	ug/L	50	100	EPA Method 8270
2,4,6-Trichlorophenol	ug/L	50	100	EPA Method 8270
2,4,5-Trichlorophenoxyacetic acid	ug/L	2.5	5	EPA Method 8150
1,2,3-Trichloropropane	ug/L	5	10	EPA Method 8240
O,O,O-Triethyl phosphorothioate	ug/L	50	100	EPA Method 8270

1,3,5-Trinitrobenzene	ug/L	50	100	EPA Method 8270
Tritium	pCi/mL	1E+01	2E+01	Final PDWS (EPA, 1993a)
Turbidity ^g		No flag	No flag	Set by EPD/EMS
Uranium	ug/L	10	20	Proposed PDWS (EPA, 1991)
Uranium, dissolved	ug/L	10	20	Proposed PDWS (EPA, 1991)
Uranium, total recoverable	ug/L	10	20	Proposed PDWS (EPA, 1991)
Uranium alpha activity	pCi/L	1.5E+01	3E+01	Proposed PDWS (EPA, 1991)
Uranium-233/234 ^e	pCi/L	6.9E+00	1.38E+01	Proposed PDWS (EPA, 1991)
Uranium-234	pCi/L	6.95E+00	1.39E+01	Proposed PDWS (EPA, 1991)
Uranium-235	pCi/L	7.25E+00	1.45E+01	Proposed PDWS (EPA, 1991)
Uranium-238	pCi/L	7.3E+00	1.46E+01	Proposed PDWS (EPA, 1991)
Vanadium	ug/L	40	80	EPA Method 6010
Vanadium, dissolved	ug/L	40	80	EPA Method 6010
Vanadium, total recoverable	ug/L	40	80	EPA Method 6010
Vinyl acetate	ug/L	5	10	EPA Method 8240
Xylenes	ug/L	5,000	10,000	Final PDWS (EPA, 1993a)
Yttrium-88	pCi/L	5E+01	1E+02	EPA Method 901.1
Zinc	ug/L	2,500	5,000	SDWS (EPA, 1993b)
Zinc, dissolved	ug/L	2,500	5,000	SDWS (EPA, 1993b)
Zinc, total recoverable	ug/L	2,500	5,000	SDWS (EPA, 1993b)
Zinc-65	pCi/L	1.5E+02	3E+02	Interim Final PDWS (EPA, 1977)
Zirconium-95 ^c	pCi/L	1E+02	2E+02	Interim Final PDWS (EPA, 1977)
Zirconium/Niobium-95 ^c	pCi/L	1E+02	2E+02	Interim Final PDWS (EPA, 1977)

- ^a References for methods are in Appendix E; references for dated sources are at the end of this appendix.
- ^b EMS is currently unable to perform this analysis.
- ^c EMS discontinued monitoring this radionuclide because it is inappropriate for the SRS Groundwater Monitoring Program.
- ^d EPD/EMS set this flagging criterion using the 1991 proposed PDWS because the final PDWS in 1977 may have been in error.
- ^e For double radionuclide analyses where each separate radionuclide has its own standard, the more stringent standard is used.
- ^f The applied standard is for radium-226.
- ^g The primary maximum contaminant level range for turbidity is 1–5 NTU, which is inappropriate for the SRS Groundwater Monitoring Program.

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Appendix C

Figures

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Figure 2. Location of the M-Area HWMF within A/M Areas and Location of Point-of-Compliance Wells at the M-Area HWMF

Figure 3. Location of the Plume Definition and Background Wells at the M-Area HWMF

Well RWM 1

Figure 4. Average Monthly Influent Concentrations vs. Time for RWM 1

Well RWM 2

Figure 5. Average Monthly Influent Concentrations vs. Time for RWM 2

Well RWM 3

Figure 6. Average Monthly Influent Concentrations vs. Time for RWM 3

Well RWM 4

Figure 7. Average Monthly Influent Concentrations vs. Time for RWM 4

Well RWM 5

Figure 8. Average Monthly Influent Concentrations vs. Time for RWM 5

Well RWM 6

Figure 9. Average Monthly Influent Concentrations vs. Time for RWM 6

Well RWM 7

Figure 10. Average Monthly Influent Concentrations vs. Time for RWM 7

Well RWM 8

Figure 11. Average Monthly Influent Concentrations vs. Time for RWM 8

Well RWM 9

Figure 12. Average Monthly Influent Concentrations vs. Time for RWM 9

Well RWM 10

Figure 13. Average Monthly Influent Concentrations vs. Time for RWM 10

Well RWM 11

Figure 14. Average Monthly Influent Concentrations vs. Time for RWM 11

Well RWM 12

Figure 15. Average Monthly Influent Concentrations vs. Time for RWM 12

Figure 16. Location of the Recovery Wells at the M-Area HWMF and Water-Elevation Differences, M-Area Aquifer Zone, First Quarter 1985 to Second Quarter 1995

19.

Figure 18. Water-Elevation Differences, Lower Lost Lake Aquifer Zone, First Quarter 1985 to Second Quarter 1995

Figure 19.

Appendix D

Results Tables

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Key to Reading the Tables

The following abbreviations may appear in the data tables:

Constituents

1,2,3,4,6,7,8-HPCDD	1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin
1,2,3,4,6,7,8-HPCDF	1,2,3,4,6,7,8-heptachlorodibenzo-p-furan
1,2,3,4,7,8-HXCDD	1,2,3,4,7,8-hexachlorodibenzo-p-dioxin
1,2,3,4,7,8-HXCDF	1,2,3,4,7,8-hexachlorodibenzo-p-furan
Lindane	gamma-benzene hexachloride
PCB	polychlorinated biphenyl
1,2,3,7,8-PCDD	1,2,3,7,8-pentachlorodibenzo-p-dioxin
1,2,3,7,8-PCDF	1,2,3,7,8-pentachlorodibenzo-p-furan
Sp. conductance	specific conductance
TCDD	tetrachlorodibenzo-p-dioxin
TCDF	tetrachlorodibenzo-p-furan

Laboratories

CN	Clemson Technical Center, Inc.
EM	Environmental Protection Department/Environmental Monitoring Section (EPD/EMS) Laboratory
GE and GP	General Engineering Laboratories
SC	Savannah River Technology Center
SP	Spencer Testing Services, Inc.
TM	TMA/Eberline
WA and WS	Roy F. Weston, Inc.

Miscellaneous

CS	carbon steel
DF	dilution factor column in data tables
H	holding time column in data tables
Mod	modifier column in data tables
PDWS	primary drinking water standard
PVC	polyvinyl chloride
ST	exceeded standard column in data tables
SZ	screen zone column in data tables
TOC	top of casing

Nomenclature

AZ	Aquifer Zone
Crouch Branch AZ	previously Black Creek
• CBA	Crouch Branch Aquifer
• CBC or CBCU	Crouch Branch Confining Unit
• LCBC	Lost Lake AZ - CBCU
CZ	Confining Zone

Nomenclature (cont.)

Lower Lost Lake AZ	previously Lower Congaree
• L	Lost Lake (Undifferentiated) AZ
• LL	Lower Lost Lake AZ
• (LL)L/MCBC	Lower Lost Lake/Middle Sand AZ of the CBCU

M-Area AZ		previously Water Table
•	GC	Green Clay CZ
•	GCL	Green Clay - Lost Lake
•	M	M-Area AZ
•	MGC	M-Area AZ - Green Clay CZ
Middle Sand AZ of the CBCU		previously Ellenton Sand
•	MCBC	Middle Sand AZ of the CBCU
Upper Lost Lake AZ		previously Upper Congaree
•	UL	Upper Lost Lake AZ
Miscellaneous Nomenclature		
•	MGCL	M-Area AZ - Green Clay CZ - Lost Lake AZ
•	UD	Undifferentiated
•	VZ	Vadose Zone

Sampling Codes

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
P	inaccessibility or mechanical failure prevented sample collection and field analysis of the water
S	no water in standpipe; for water-level events only
X	well went dry during purging; samples collected after well recovered

Sampling Methods

B	sample collected using an open-bucket bailer
P	sample collected using a bladder pump
S	sample collected using a single-speed centrifugal downhole pump
V	sample collected using a variable-speed pump

Units

E	exponential notation (e.g., $1.1\text{E}-09 = 1.1 \times 10^{-9} = 0.0000000011$)
mg/L	milligrams per liter
msl	mean sea level
MSL	million structures per liter
NTU	nephelometric turbidity unit

Units (cont.)

pCi/L	picocuries per liter
pCi/mL	picocuries per milliliter
pH	pH unit
ug/L	micrograms per liter
uS/cm	microsiemens per centimeter

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 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.

The laboratory procedure used for the determination of specific conductance allows one day to elapse between sampling and analysis. Thus, laboratory specific conductance measurements may exceed the holding time criterion.

Data Rounding

Constituent results in analytical results tables that appear to equal the final PDWS but are not marked in the *ST* (exceeded the final PDWS or screening level) column are below the final PDWS in the database. Values stored in the database contain more significant digits than the reported results. Apparent discrepancies in the tables are due to the rounding of reported results.

Data Qualification

The contract laboratories continually assess their own accuracy and precision according to U.S. Environmental Protection Agency (EPA) guidelines. They 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 result modifiers (also referred to as qualifiers) can be a key component in assessing data usability. Result modifiers designed by the EPD/EMS and provided to the primary laboratories are defined below. These modifiers appear in the data tables under the column *Mod*. The lettered modifiers are based on EPA's STORET codes.

Result Modifiers

(Blank)	Data are not qualified. Numbers should be interpreted exactly as reported.
I	The value in the result field is the instrument reading, not the sample quantification limit. Always used with the result qualifier <i>U</i> .
J	Value is estimated because quantitation in the sample or in associated quality control samples did not meet specifications.
L	Value is off-scale high. The actual value is not known but is known to be greater than the value shown.
M	Presence of the analyte is verified but not quantified.
R	Result was rejected because performance requirements in the sample analysis or associated quality control analyses were not met.
T	Analyte was not detected; if present, it was below the criteria for detection.

- U** Material analyzed for but not detected. Analytical result reported is less than the sample quantitation limit.
- V** Analyte was detected in an associated method blank.
- Y** Result was obtained from an unpreserved or improperly preserved sample. Data may not be accurate.
- 1** Result may be an underestimation of the true value due to analytical bias.
- 2** Result may be an overestimation of the true value due to analytical bias.
- 3** The associated result may be of poor precision (high variability) due to analytical bias.
- 4** Result is associated with QA results indicating matrix interference.
- 6** The associated result is from a reanalysis performed out of holding time due to problems with an earlier analysis.

TABLE 1. Summary of Downtime for the M-1 Air Stripper, the A-1 Air Stripper, and the Integrated Demonstration Vadose Zone Unit

M-1 AIR STRIPPER

<u>Month</u>	<u>Hours</u>	<u>Description</u>
April	207.8	Preventive maintenance, equipment repair, lightning damage
May	35.5	Preventive maintenance
June	<u>173.3</u>	Preventive maintenance, equipment repair, lightning damage
TOTAL	416.6	

A-1 AIR STRIPPER

<u>Month</u>	<u>Hours</u>	<u>Description</u>
April	171.0	Equipment failure, lightning damage
May	316.2	Equipment failure
June	<u>66.9</u>	Preventive maintenance, electrical work
TOTAL	554.1	

INTEGRATED DEMONSTRATION VADOSE ZONE UNIT

<u>Month</u>	<u>Hours</u>	<u>Description</u>
April ^a	720.0	Equipment failure, lightning damage
May	722.5	Operation interlock due to low air flow
June	<u>470.4</u>	Equipment repair
TOTAL	1912.9	

^aThe Integrated Demonstration Vadose Zone Unit did not operate during April

TABLE 2. Summary of Monthly Operation and Performance of the M-1 Air Stripper

<u>Operation Parameter</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>Quarterly Status</u>
Operating Time (hours)	512.2	708.5	546.7	1767.4
Downtime (hours)	207.8	35.5	173.3	416.6
Percent Utility (%)	71.1	95.2	75.9	80.7
Throughput (gal)	14606310	17377290	13288120	45271720
Water Feed Rate (gpm)	475	409	405	430
Average Air Feed Rate (cfm)	2500	2500	2500	2500
Total Solvent Removed (lbs)	1174	1174	608	2958
Emission Rate (lbs/hr)	2.29	1.66	1.11	1.69
<u>Average Concentration (ug/L)</u> <u>Stripper Influent</u>				
Tetrachloroethylene	3964	2980	<1350	<2765
Trichloroethylene	5674	5143	4140	4986
Total	9638	8123	<5490	<7751
<u>Stripper Effluent</u>				
Tetrachloroethylene	<1.67	<1.67	<1.67	<1.67
Trichloroethylene	<1.67	<1.67	<1.67	<1.67
Total	<3.34	<3.34	<3.34	<3.34

^aThis value is an average including one or more results obtained from unpreserved or improperly preserved samples. Data may not be accurate.

^bQuarterly averages including detection limit values are for full detection limits

TABLE 3. Summary of Monthly Operation and Performance of the A-1 Air Stripper

<u>Operation Parameter</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>Quarterly Status</u>
Operating Time (hours)	549.0	427.8	653.1	1629.9
Downtime (hours)	171.0	316.2	66.9	554.1
Percent Utility (%)	76.3	57.5	90.7	74.8
Throughput (gal)	1833329	1753917	2299731	5886977
Water Feed Rate (gpm)	56	68	59	61
Average Air Feed Rate (cfm)	350	350	350	350
Total Solvent Removed (lbs)	35	33	49	117
Emission Rate (lbs/hr)	0.06	0.08	0.08	0.07
<u>Average Concentration (ug/L)</u>				
<u>Stripper Influent</u>				
Tetrachloroethylene	<167	<170	<200	<179
Trichloroethylene	2133	2080	2350	2188
Total	<2300	<2250	<2550	<2367
<u>Stripper Effluent</u>				
Tetrachloroethylene	<1.67a,b	<1.67b	<1.67	<1.67
Trichloroethylene	<1.67a,b	<1.67b	<1.67	<1.67
Total	<3.34	<3.34	<3.34	<3.34

^aThis value is an average including one or more results obtained from unpreserved or improperly preserved samples. Data may not be accurate.

^bThis value is an average including one or more results that are estimated because quantitation in the sample or in associated control samples did not meet specifications. Also, an analytical factor caused poor precision; the associated result may be of high visibility.

^cQuarterly averages including detection limit values are for full detection limits

TABLE 4. Summary of Monthly Operation and Performance of the Integrated Demonstration Vadose Zone Unit

<u>Operation Parameter</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>Quarterly Status</u>
Operating Time (hours)	0	21.5	249.6	271.1
Downtime (hours)	720	722.5	470.4	1912.9
Percent Utility (%)	0	2.9	34.7	12.4
Average Air Feed Rate (cfm)	0	169.4	195.4	121.6
Total Solvent Removed (lbs)	0	22.1	295.9	318.0
Total Solvent Destroyed (lbs)	0	20.8	278.9	299.7
Emission Rate (lbs/hr)				
Hydrogen chloride	0	0.84	0.97	0.6020
Tetrachloroethylene	0	0.05	0.06	0.0381
Trichloroethylene	0	0.01	0.01	0.0043
Average Concentration (ppmv)				
<u>Influent</u>				
Tetrachloroethylene	0	170.6b	170.6b	113.8
Trichloroethylene	0	81.4b	81.4b	54.3
Total	0	252.0	252.0	168.0
<u>Effluent</u>				
Tetrachloroethylene	0	12.2	12.2	8.1
Trichloroethylene	0	1.7	1.7	1.2
Total	0	13.9	13.9	9.3

^aThe Integrated Demonstration Vadose Zone Unit did not operate during April.

^bThis value is an average including one or more results taken during the operation time of January 1995.

TABLE 4A. Summary of Quarterly Operation and Performance (May/June) of the Vadose Zone Units

<u>Operation Parameter</u>	<u>782-3M</u>	<u>782-4M</u>	<u>782-5M</u>	<u>782-6M</u>
Percent Utility (%)	67	88	84	41
Total Solvent Removed (lbs)	2550	3400	3200	1600
Total Solvent Destroyed (lbs)	2473	3008	3136	1416
<u>Influent (lbs)</u>				
Tetrachloroethylene	2300	2600	1700	1200
Trichloroethylene	250	800	1500	400
Total	2550	3400	3200	1600
<u>Effluent (lbs)</u>				
Tetrachloroethylene	70	312	34	144
Trichloroethylene	7	80	30	40
Total	77	392	64	184
Emission Rate (lbs): Hydrochloric	2200	2600	2100	1200
<u>Destruction Rate (%)</u>				
Tetrachloroethylene	97	88	98	88
Trichloroethylene	97	90	98	90

TABLE 5. Volume Pumped and Average Flow from Individual Recovery Wells

Well Number	April Monthly Volume (gal)	Cumulative Volume since 4/85 (gal)	Average Flow Rate (gpm)	Well Operation (hours)	May Monthly Volume (gal)	Cumulative Volume since 4/85 (gal)	Average Flow Rate (gpm)	Well Operation (hours)	June Monthly Volume (gal)	Cumulative Volume since 4/85 (gal)	Average Flow Rate (gpm)	Well Operation (hours)
RWM 1	577013	104075950	19	512.2	214963	104290913	5	708.5	584146	104875059	19	523.9
RWM 2	0	93405109	0	0	0	93405109	0	0	17993	93423102	6	54.1
RWM 3	2556182	251736420	83	512.2	2974720	254711140	70	708.5	2242524	256953664	68	546.7
RWM 4	1818184	148965943	59	512.2	2089027	151054970	49	708.5	1571399	152626369	48	546.7
RWM 5	1139733	147512971	53	361.8	2197430	149710401	52	708.5	1660462	151370863	51	546.7
RWM 6	0	221897925	0	0	0	221897925	0	0	0	221897925	0	0
RWM 7	1630707	138833747	53	512.2	1950693	140784440	46	708.5	1475361	142259801	45	546.7
RWM 8	1498606	142773736	49	512.2	2068766	144842502	49	708.5	1560484	146402986	48	546.7
RWM 9	0	163332217	0	0	0	163332217	0	0	0	163332217	0	0
RWM 10	928529	174718570	30	512.2	1465202	176183772	34	708.5	13288120	189471892	405	546.7
RWM 11	2981851	264176813	97	512.2	3424557	267601370	81	708.5	2576491	270177861	79	546.7
RWM 12	1833329	77174273	56	549.0	1753917	78928190	68	427.8	2299731	81227921	59	653.1

^aOperating hours are partial estimates due to failed totalizers. Estimates are based on flow rate and throughput.
^bMonthly volumes are partial estimates due to failed totalizers. Estimates are based on flow rate and time.

TABLE 6. Average Monthly Tetrachloroethylene and Trichloroethylene Concentrations in Individual Recovery Wells

Well Number	April Solvent Concentration			May Solvent Concentration			June Solvent Concentration			Quarterly Average Solvent Concentration		
	Tetrachloro- ethylene (ug/L)	Trichloro- ethylene (ug/L)	Total (ug/L)	Tetrachloro- ethylene (ug/L)	Trichloro- ethylene (ug/L)	Total (ug/L)	Tetrachloro- ethylene (ug/L)	Trichloro- ethylene (ug/L)	Total (ug/L)	Tetrachloro- ethylene (ug/L)	Trichloro- ethylene (ug/L)	Total (ug/L)
RWM 1	13100	30300	43400	12000	27000	39000	8930	24400	3330	17077	27233	44310
RWM 2	11600	15200	26800	NA	NA	NA	11500	10700	22200	11550	12950	24500
RWM 3	2730	7080	9810	3790	9600	13390	3030	9080	12110	3183	8587	11770
RWM 4	1150	6140	7290	955	5800	6755	1410	7690	9100	1172	6543	7712
RWM 5	760	893	1653	860	975	1835	620	1160	1780	747	1009	1756
RWM 6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RWM 7	5740	6000	11740	7690	6520	14120	6005	5780	11785	6478	6100	12578
RWM 8	985	1460	2445	150	1650	1800	580	888	1468	572	1333	1905
RWM 9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RWM 10	7250	4950	12200	7010	4130	11140	6100	4010	10110	6787	4363	11150
RWM 11	112	1060	1172	1520	2240	3760	128	1860	1988	587	1720	2307
RWM 12	<83	2060	<2143	<83	2360	<2443	<100	1640	<1740	<89	2020	<2109

^aThis value represents an average of monthly stripper influent analyses.

^bNA = Not Applicable

Table 7. Synchronous Water Elevations

M-Area Aquifer Zone

<u>Well</u>	<u>SZ^a</u>	<u>3Q94</u>	<u>4Q94</u>	<u>1Q95</u>	<u>2Q95</u>
ABP 1A	GCL	225.3	225.0	224.9	224.5
ABP 1DD	MGC	227.1	227.3	225.6	227.3
ABP 2A	GCL	224.3	223.8	223.7	223.1
ABP 2DD	MGC	224.1	223.5	223.4	222.8
ABP 3	MGC	225.9	225.3	225.2	224.8
ABP 4	MGCL	224.0	223.4	223.4	222.9
ABP 4DD	MGC	225.0	224.4	224.3	223.8
ABP 6D	MGC	224.1	223.6	223.5	222.8
ABP 7D	MGC	225.0	224.4	224.4	223.9
ABP 8D	M	223.8	223.2	223.1	222.5
AC 1B	GCL	213.9	213.4	214.1	214.5
AC 2B	MGC	227.8	227.5	227.5	227.4
AC 3B	M	213.7	213.1	213.0	212.8
ACB 1A	M	238.1	238.2	238.7	238.4
ACB 2A	M	239.4	239.3	239.8	239.5
ACB 3A	M	239.1	239.0	239.6	239.5
ACB 4A	MGC	239.5	239.7	239.8	239.9
AMB 4D	M	234.0	233.9	234.4	234.1
AMB 5	MGCL	234.3	234.3	234.8	234.5
AMB 6	GCL	234.5	234.5	234.9	234.7
AMB 7	M	234.7	234.8	235.2	234.9
AMB 8D	M	234.4	234.4	234.9	234.6
AMB 9D	M	234.7	234.8	235.3	234.9
AMB 10D	M	236.1	236.2	236.6	236.2
AMB 10DD	M	359.1	359.4	359.2	359.2
AMB 11D	M	236.9	236.9	237.2	237.0
AMB 12D	M	235.5	235.5	235.8	235.6
AMB 14D	M	-	-	233.7	-
AMB 15D	M	-	-	235.0	-
AMB 16D	M	-	-	234.4	-
AOB 1	M	237.1	236.8	237.6	237.7
AOB 2	M	237.8	237.6	238.3	238.4
AOB 3	M	238.8	238.7	239.1	239.2
ARP 1A	GCL	218.2	217.5	217.4	216.6
ARP 2	GC	220.3	219.8	219.7	219.2
ARP 3	GCL	223.1	222.6	222.0	222.1
ARP 4	GCL	220.4	219.9	219.7	219.5
ASB 1A	M	247.8	237.7	238.3	238.0
ASB 2A	M	-	-	-	-
ASB 2AR	MGCL	239.2	239.0	239.7	239.3
ASB 3A	M	-	-	-	-
ASB 3AR	MGCL	239.7	239.5	240.3	240.0
ASB 4	M	238.8	238.6	239.4	278.2
ASB 5A	M	-	-	-	-
ASB 5AR	MGCL	237.4	237.2	237.7	237.5
ASB 6A	MGCL	237.4	237.1	237.8	237.6
ASB 7	MGCL	-	-	-	-
ASB 8	GCL	234.9	234.8	235.0	235.0
ASB 9	MGC	242.3	241.7	242.6	244.0
MCB 2	M	225.9	225.2	225.2	225.7
MCB 4	MGCL	226.2	225.6	225.4	225.2
MCB 5	MGC	226.3	225.8	225.7	225.6
MCB 6	MGC	213.4	213.2	220.5	213.1
MCB 8D	MGC	226.8	226.1	226.0	226.0

Table 7 (cont.)

M-Area Aquifer Zone (cont.)

MCB 9D	MGCL	224.6	224.0	223.8	223.6
MSB 1A	M	—	—	232.1	232.2
MSB 1D	MGCL	231.5	231.3	231.6	231.6
MSB 2A	MGC	163.7	233.4	232.7	234.0
MSB 2D	MGCL	232.1	232.0	232.4	232.4
MSB 3A	M	—	—	—	—
MSB 3D	MGC	230.9	230.8	—	—
MSB 4A	M	231.3	231.2	231.3	231.4
MSB 4D	M	230.4	230.5	230.5	230.5
MSB 5A	M	228.6	228.4	228.4	—
MSB 6A	M	228.4	223.6	228.0	227.9
MSB 7A	MGC	229.4	229.0	229.0	228.7
MSB 7C	GCL	223.6	223.5	223.5	223.2
MSB 8A	M	230.5	230.1	230.1	230.1
MSB 9B	GCL	230.8	230.7	230.9	230.8
MSB 9C	M	230.9	230.7	230.9	230.9
MSB 10C	GCL	230.1	230.0	230.2	230.1
MSB 10D	M	—	—	—	—
MSB 11D	GC	231.0	231.1	231.2	231.1
MSB 11E	M	239.8	—	239.8	239.8
MSB 11F	M	231.3	231.2	231.4	231.4
MSB 12D	MGC	234.2	234.1	234.0	234.2
MSB 13C	M	229.8	229.5	229.6	229.6
MSB 13CC	GCL	225.3	225.9	225.7	225.2
MSB 13D	MGC	229.2	229.0	229.1	229.1
MSB 14B	GCL	217.7	219.7	219.0	218.2
MSB 14C	M	232.3	232.1	232.4	232.2
MSB 15C	M	242.8	243.0	245.1	242.9
MSB 15D	MGC	232.8	232.9	233.2	233.0
MSB 16C	M	231.4	231.5	231.7	231.8
MSB 17B	GCL	226.7	226.4	226.4	226.1
MSB 17C	M	—	—	—	—
MSB 17D	M	227.8	227.4	227.5	227.1
MSB 18B	GCL	222.9	222.6	222.6	222.3
MSB 18C	MGC	230.0	228.8	228.5	228.8
MSB 19C	M	238.9	238.8	239.4	239.4
MSB 20C	M	227.9	227.6	227.6	227.3
MSB 21C	M	230.0	229.7	229.8	229.4
MSB 22	M	231.7	231.7	—	—
MSB 23	M(VZ)	—	—	—	—
MSB 24	M	235.2	234.9	235.3	235.0
MSB 25	M	—	237.2	—	—
MSB 26	M	237.0	—	237.6	237.3
MSB 27	M	236.2	235.9	236.3	236.1
MSB 27A	MGC	229.6	229.5	230.2	229.6
MSB 28	M	231.1	230.9	231.2	230.9
MSB 29D	MGCL	233.0	232.8	233.1	232.9
MSB 29DD	M	233.3	233.2	233.4	233.2
MSB 30C	M	231.4	231.2	231.5	231.3
MSB 31C	MGC	235.2	235.0	235.9	235.9
MSB 32	MGC	224.3	224.6	225.6	224.8
MSB 33	MGC	217.6	217.5	219.2	218.6
MSB 34C	MGCL	230.3	230.2	230.8	230.4
MSB 35D	M(VZ)	243.5	243.4	243.5	243.5
MSB 36D	M	237.9	237.9	237.9	237.8
MSB 37D	MGC	232.6	232.4	233.0	232.6

Table 7 (cont.)

M-Area Aquifer Zone (cont.)

MSB 38D	M	233.9	233.9	234.4	234.4
MSB 39D	MGC	233.0	232.7	232.8	233.0
MSB 40D	MGC	228.5	228.1	227.8	227.3
MSB 41D	M	241.0	241.0	241.0	241.0
MSB 42D	MGC	233.8	233.8	234.2	234.1
MSB 43D	MGCL	232.1	229.8	232.2	232.1
MSB 43DD	M	232.3	230.0	232.1	232.3
MSB 44C	MGCL	235.7	235.8	236.3	235.9
MSB 45C	MGC	-	-	-	-
MSB 46C	MGC	240.4	239.3	240.7	238.3
MSB 47D	MGC	234.3	233.9	234.3	233.9
MSB 49D	M	230.3	229.7	229.5	229.7
MSB 50D	M	201.9	202.2	203.1	202.6
MSB 51D	GC	210.6	210.3	211.2	211.5
MSB 51DD	MGC	-	-	211.6	213.0
MSB 52D	M	239.0	238.6	239.4	240.1
MSB 53D	MGC	234.1	233.9	234.3	234.1
MSB 54D	GCL	233.9	233.7	233.7	233.5
MSB 55D	GCL	233.9	233.6	233.7	233.4
MSB 56D	M	221.2	220.7	222.0	222.3
MSB 57D	M	232.3	232.0	232.4	232.5
MSB 58D	M	232.0	231.9	232.3	232.2
MSB 59D	M	231.0	230.9	231.1	231.0
MSB 60D	M	231.3	231.1	231.3	231.4
MSB 61D	GCL	226.5	226.3	227.0	226.9
MSB 62D	M	230.1	230.0	230.3	230.2
MSB 63D	MGC	230.6	230.2	230.4	230.5
MSB 64D	MGC	228.1	227.8	227.9	227.5
MSB 65D	M	233.9	233.7	234.5	234.6
MSB 66D	MGC	231.8	231.7	232.1	231.7
MSB 67D	MGC	233.6	233.3	233.7	233.4
MSB 68D	MGC	234.5	234.2	234.5	234.2
MSB 69D	MGCL	234.0	233.8	234.0	233.6
MSB 70D	M	222.4	222.0	222.1	221.6
MSB 74D	MGCL	233.3	232.8	231.3	234.0
MSB 77D	MGCL	234.8	234.4	234.7	234.5
MSB 78D	MGC	225.0	224.7	224.9	224.4
MSB 82D	MGCL	233.8	233.5	233.7	233.4
MSB 83D	MGCL	214.1	233.8	233.9	233.6
MSB 85D	MGCL	233.7	233.5	233.6	233.3
MSB 88D	MGC	204.9	205.0	206.3	204.9
SRW 1	M	213.3	212.9	212.7	213.0
SRW 2	M	215.1	214.7	214.5	214.6
SRW 3A	GCL	214.3	213.9	213.9	213.9
SRW 4	M	214.0	213.5	213.5	213.5
SRW 5	M	217.1	211.7	211.6	211.9
SRW 6	M	212.9	212.5	212.4	212.6
SRW 7	M	211.6	211.1	211.0	211.6
SRW 8	M	207.3	208.7	208.8	209.5
SRW 9	M	199.3	198.7	200.5	201.5
SRW 9A	MGC	198.6	198.7	200.4	200.1
SRW 9B	M	200.0	199.6	201.5	201.8
SRW 10	M	-	-	-	-
SRW 11	M	211.1	210.7	210.6	211.3
SRW 12A	M	193.6	193.5	196.4	195.6
SRW 12B	M	187.6	187.9	192.2	190.9

Table 7 (cont.)

M-Area Aquifer Zone (cont.)

SRW 12C	M	195.2	194.6	199.7	198.9
SRW 13C	M	212.3	209.8	210.0	210.2
SRW 14C	M	—	—	—	—
SRW 15C	M	213.4	213.0	212.8	213.2
SRW 16C	MGC	216.1	215.7	215.8	215.7

Upper Lost Lake Aquifer Zone

<u>Well</u>	<u>SZ</u>	<u>3Q94</u>	<u>4Q94</u>	<u>1Q95</u>	<u>2Q95</u>
ABP 3C	UL	198.1	197.7	198.8	197.9
ABP 8C	UL	198.8	198.0	198.6	198.2
ABW 1	UL	226.4	226.3	226.8	226.8
AC 1A	UL	214.0	213.4	214.1	214.5
AC 2A	UL	221.5	221.7	221.9	221.5
AC 3A	UL	211.6	211.1	211.1	210.9
AMB 11B	UL	223.5	223.6	224.4	224.1
AMB 18C	UL	—	—	234.5	—
AMB 19C	UL	—	—	232.5	—
ASB 2C	UL	—	—	—	—
ASB 3C	UL	—	—	—	—
ASB 6C	UL	224.8	224.8	224.8	225.1
ASB 8C	UL	224.1	224.0	224.6	224.4
ASB 9C	UL	221.6	221.4	222.2	221.9
ASB 10C	UL	—	—	—	—
MCB 5C	UL	195.9	195.6	196.5	195.7
MCB 6C	UL	196.4	196.1	197.0	196.4
MCB 7C	UL	194.9	194.6	195.5	194.9
MSB 1C	UL	216.2	219.3	217.5	216.8
MSB 1CC	UL	218.3	220.8	219.5	218.8
MSB 2C	UL	217.7	220.4	219.2	218.4
MSB 3C	UL	219.3	222.2	220.5	219.9
MSB 4C	UL	214.1	219.4	215.4	214.7
MSB 5C	UL	223.8	224.3	224.2	223.6
MSB 6C	UL	224.9	224.7	224.9	224.4
MSB 8C	UL	220.9	221.4	221.3	220.7
MSB 11B	UL	217.5	221.8	218.7	218.4
MSB 11C	UL	219.9	224.0	221.2	220.7
MSB 12B	UL	218.7	219.8	215.4	218.42
MSB 12C	UL	223.8	224.6	224.2	223.6
MSB 13B	UL	206.0	214.1	192.8	200.2
MSB 15A	UL	220.5	222.8	221.7	221.3
MSB 16A	UL	220.0	224.0	220.6	220.5
MSB 17A	UL	217.5	218.0	217.9	217.1
MSB 18A	UL	213.4	214.0	213.9	213.1
MSB 19B	UL	216.9	217.4	218.5	218.0
MSB 20A	L(UD)	219.4	219.9	219.7	219.2
MSB 23B	UL	223.2	223.9	225.4	224.5
MSB 24A	UL	225.5	225.9	227.9	226.1
MSB 26A	UL	224.9	225.2	225.0	225.3
MSB 27B	UL	225.7	225.9	227.9	226.3
MSB 28A	UL	224.3	224.9	224.8	224.7
MSB 29C	UL	231.1	230.9	231.2	231.0
MSB 30CC	UL	225.7	226.1	226.2	226.0
MSB 31CC	UL	213.7	214.1	220.8	220.1

Table 7 (cont.)

Upper Lost Lake Aquifer Zone (cont.)

MSB 32C	UL	216.3	216.5	218.0	216.8
MSB 33C	UL	210.7	210.9	211.6	211.0
MSB 34B	UL	227.6	227.5	228.2	227.6
MSB 35B	UL	219.9	220.4	221.9	221.7
MSB 36C	UL	214.6	215.4	216.0	215.3
MSB 37C	UL	229.0	228.9	229.4	229.0
MSB 39C	UL	215.7	216.9	216.9	216.0
MSB 40C	UL	204.9	205.0	205.7	205.0
MSB 42C	UL	232.1	232.1	232.6	232.3
MSB 43B	UL	229.9	229.8	230.2	230.0
MSB 44B	L(UD)	225.2	225.6	226.3	225.8
MSB 45B	UL	226.7	226.9	227.7	227.1
MSB 46B	UL	-	-	-	226.1
MSB 47C	UL	233.3	233.0	233.4	233.1
MSB 48D	UL	233.3	233.1	233.2	233.0
MSB 50B	UL	201.8	201.9	202.8	202.2
MSB 53C	UL	223.9	223.9	224.4	224.2
MSB 55HC	UL	233.5	233.3	233.4	233.1
MSB 61C	UL	224.5	224.4	224.9	224.8
MSB 62C	UL	223.7	225.0	224.3	223.8
MSB 63C	UL	221.0	221.8	221.7	221.1
MSB 64C	UL	223.6	223.7	223.7	223.2
MSB 70C	UL	218.8	218.5	218.6	218.0
MSB 74C	UL	210.9	211.2	212.0	211.4
MSB 75C	UL	209.8	210.2	210.9	210.0
MSB 76C	UL	221.9	221.6	221.7	221.3
MSB 79C	UL	210.2	210.9	211.3	210.2
MSB 87C	UL	243.2	242.9	243.6	243.8
MSB 88C	UL	203.7	203.8	205.2	203.9
MSB 89C	UL	230.0	229.7	229.9	229.2
SRW 2B	UL	208.4	207.9	209.1	208.9
SRW 14B	UL	206.0	205.5	206.6	206.5
SRW 15B	UL	210.3	209.7	210.7	210.7

Lower Lost Lake Aquifer Zone

Well	SZ	3Q94	4Q94	1Q95	2Q95
AMB 4B	LL	225.1	225.2	225.8	225.5
AMB 7B	LL	225.3	225.4	226.1	225.8
AMB 10B	LL	223.6	223.8	224.6	224.1
ASB 2CR	LL	221.8	223.8	224.4	224.1
ASB 3CR	LL	223.5	223.4	224.0	223.8
ASB 5C	LL	223.5	223.4	224.0	223.9
ASB 8B	(LL)L/MCBC	221.3	221.3	221.8	221.6
ASB 9B	L(UD)	221.2	221.2	221.9	221.6
ASB 10CR	LL	223.8	223.7	224.3	195.1
MSB 1B	LL	207.7	215.8	209.3	207.8
MSB 2B	LL	210.1	216.2	211.6	210.3
MSB 3B	LL	209.5	216.1	-	-
MSB 4B	LL	205.0	216.2	206.6	205.1
MSB 5B	LL	208.0	212.1	211.0	207.8
MSB 6B	LL	206.9	208.7	208.4	206.9
MSB 7B	LL	207.6	209.1	209.0	207.5
MSB 8B	LL	208.9	211.1	210.5	208.8
MSB 9A	LL/CBC	208.7	215.9	210.4	208.8
MSB 10B	LL	212.9	217.6	214.4	213.6

Table 7 (cont.)

Lower Lost Lake Aquifer Zone (cont.)

MSB 11A	LL	211.9	216.3	213.2	212.5
MSB 12A	LL	208.6	213.0	211.6	208.4
MSB 13A	LL	207.5	212.7	211.0	207.4
MSB 14A	L(UD)	215.5	218.3	216.8	215.9
MSB 15AA	LL	213.7	217.1	215.0	214.5
MSB 17BB	LL	213.1	214.3	214.0	212.9
MSB 21A	LL	221.5	222.4	222.0	221.6
MSB 21B	LL	220.7	221.8	221.3	220.8
MSB 25A	LL	216.3	217.6	219.9	217.3
MSB 26B	LL	218.8	220.8	219.9	219.6
MSB 29B	LL	225.0	225.0	225.4	225.2
MSB 30B	LL	225.9	226.1	226.3	226.0
MSB 31B	LL	213.8	214.1	220.8	220.2
MSB 32B	LL	211.2	211.2	212.9	211.9
MSB 33B	LL/CBC	207.6	207.7	208.6	208.1
MSB 36B	LL	214.5	213.3	215.9	215.2
MSB 38B	LL/CBC	215.2	217.2	217.6	216.4
MSB 38C	LL	218.4	219.8	221.1	220.4
MSB 39B	LL	211.8	214.1	213.4	212.0
MSB 40B	LL	204.9	205.0	205.7	205.1
MSB 41C	LL	218.4	218.5	219.3	218.9
MSB 42B	LL	226.5	226.5	227.0	226.8
MSB 43A	LL	229.8	229.6	230.0	229.9
MSB 45A	LL	216.4	217.2	217.9	216.8
MSB 47B	LL	225.9	225.7	226.3	223.9
MSB 48C	LL	225.2	225.1	225.5	225.3
MSB 49B	LL	203.6	204.2	204.4	203.5
MSB 51B	L(UD)	204.5	204.6	205.6	205.0
MSB 52B	LL	220.0	220.1	220.8	220.4
MSB 53B	LL	223.0	223.0	223.5	223.3
MSB 54C	LL	227.4	227.2	227.6	227.4
MSB 55C	LL	229.9	229.8	230.0	229.9
MSB 62B	LL	207.9	214.4	210.3	207.9
MSB 63B	LL	208.8	212.5	210.9	208.9
MSB 66C	LL	229.3	229.2	229.7	229.3
MSB 67C	LL	227.2	227.1	227.5	227.2
MSB 68C	LL	225.4	225.3	225.8	225.4
MSB 69C	LL	228.1	227.9	228.3	228.1
MSB 71B	L(UD)	218.1	217.7	217.9	217.7
MSB 72B	LL	200.2	200.0	200.8	200.4
MSB 73B	LL	202.3	202.6	203.0	202.2
MSB 74B	LL/CBC	211.0	211.2	212.1	211.3
MSB 75B	LL	210.0	210.5	211.5	210.3
MSB 77C	LL	224.7	224.6	225.2	224.9
MSB 79B	LL	208.0	208.9	209.1	208.0
MSB 81B	LL	220.7	220.8	221.4	221.1
MSB 82C	LL	228.8	228.6	229.0	228.7
MSB 83C	LL	229.0	228.8	225.0	228.9
MSB 84C	LL	230.3	230.1	230.4	230.3
MSB 85C	LL	225.4	225.3	225.7	225.6
MSB 86C	LL	225.7	225.6	226.0	225.9
MSB 87B	LL	218.4	218.8	219.8	219.3
MSB 89B	LL	-	207.5	208.6	207.3
SRW 1BB	LL	208.0	207.7	208.7	208.8
SRW 3BB	LL	209.1	208.9	209.9	209.7
SRW 4BB	LL	207.9	207.5	208.5	208.5

Table 7 (cont.)

Lower Lost Lake Aquifer Zone (cont.)

SRW 8BB	LL	—	—	—	—
SRW 10BB	LL	205.8	205.5	207.7	206.7
SRW 11BB	LL	206.1	205.8	207.1	207.0
SRW 13A	LL	201.0	201.5	202.9	202.6
SRW 16A	LL/CBC	214.7	214.5	214.6	214.5
SRW 16B	L	215.5	215.0	215.3	215.2
SRW 17BB	LL	212.9	212.5	213.1	213.01
SRW 17C	LL	212.9	212.8	213.3	213.3
SRW 17D	LL	—	—	—	—

Middle Sand Aquifer Zone of the Crouch Branch Confining Unit

<u>Well</u>	<u>SZ</u>	<u>3Q94</u>	<u>4Q94</u>	<u>1Q95</u>	<u>2Q95</u>
AMB 4A	MCBC	219.6	219.8	220.4	220.1
AMB 7A	MCBC	219.6	219.8	220.4	219.9
AMB 10A	MCBC	218.5	218.7	219.5	219.0
AMB 13AR	MCBC	219.3	219.5	220.3	219.9
AMB 17A	MCBC	—	—	220.4	—
AMB 18A	MCBC	—	—	220.2	—
ASB 6AA	MCBC	219.1	219.1	219.8	219.6
ASB 8A	MCBC	220.1	220.1	220.4	220.4
MSB 10A	MCBC	210.1	215.6	211.8	210.5
MSB 12TA	CBC	192.7	193.1	194.1	193.3
MSB 19A	MCBC	214.5	215.0	216.0	215.5
MSB 29A	MCBC	220.6	220.8	221.2	221.0
MSB 30AA	MCBC	224.5	224.7	224.8	224.6
MSB 33A	MCBC	204.8	205.0	205.8	205.3
MSB 34A	MCBC	219.2	219.5	220.2	219.5
MSB 34TA	CBC	202.7	203.1	204.0	203.2
MSB 35A	CBC	216.9	217.2	218.3	217.8
MSB 36A	MCBC	210.1	212.2	211.7	210.4
MSB 37B	MCBC	220.0	220.1	220.7	220.3
MSB 39A	MCBC	209.2	211.5	210.8	209.3
MSB 40A	MCBC	203.1	203.4	204.0	203.3
MSB 41A	MCBC	217.7	217.8	218.6	218.3
MSB 41B	MCBC	217.9	218.0	218.8	218.8
MSB 42A	MCBC	219.9	220.1	220.7	220.4
MSB 44A	MCBC	218.4	218.7	219.3	218.9
MSB 46A	MCBC	215.8	217.0	217.0	216.7
MSB 47BB	MCBC	220.5	220.5	221.0	220.8
MSB 48A	CBC	223.3	223.3	223.7	223.5
MSB 48B	CBC	224.7	224.6	225.0	224.8
MSB 49A	MCBC	197.8	198.3	198.8	197.9
MSB 54B	MCBC	223.0	222.9	223.3	223.2
MSB 55B	CBC	222.6	222.6	223.0	222.8
MSB 64B	MCBC	208.1	210.8	210.0	208.0
MSB 66B	MCBC	219.9	220.0	200.6	220.4
MSB 67B	MCBC	219.7	219.8	220.3	220.1
MSB 68B	MCBC	220.2	220.3	220.8	220.6
MSB 69B	MCBC	221.7	221.7	222.2	222.0
MSB 77B	MCBC	222.6	222.6	223.2	222.9
MSB 82A	MCBC	222.5	223.2	221.2	222.7
MSB 82B	LL/CBC	221.0	221.1	221.5	221.3
MSB 83B	MCBC	222.6	222.5	223.0	222.8

Table 7 (cont.)

Middle Sand Aquifer Zone of the Crouch Branch Confining Unit (cont.)

MSB 84A	MCBC	200.3	—	194.1	208.7
MSB 88B	MCBC	201.1	201.3	202.2	201.3
SRW 2A	MCBC	206.9	206.9	207.8	207.9
SRW 13B	MCBC	201.6	203.5	204.7	204.7
SRW 14A	CBC	203.8	203.8	204.8	204.7
SRW 15A	MCBC	209.8	209.4	210.5	210.4

Crouch Branch Aquifer Zone

<u>Well</u>	<u>SZ</u>	<u>3Q94</u>	<u>4Q94</u>	<u>1Q95</u>	<u>Well</u>	<u>2</u>
ASB 6TA	CBA	214.9	214.9	215.5	ASB 6TA	2
ASB 8TA	CBA	216.5	216.6	217.2	ASB 8TA	2
MSB 12TB	CBA	192.9	193.3	194.3	MSB 12TB	1
MSB 21TA	CBA	194.4	194.8	195.8	MSB 21TA	1
MSB 23TA	CBA	201.6	202.1	202.9	MSB 23TA	2
MSB 23TR	CBA	199.5	199.9	200.7	MSB 23TR	2
MSB 27TA	CBA	201.4	201.8	202.7	MSB 27TA	2
MSB 29TA	CBA	212.3	212.9	213.6	MSB 29TA	2
MSB 30A	CBA	199.0	199.3	200.3	MSB 30A	1
MSB 31A	CBA	199.4	198.7	199.7	MSB 31A	1
MSB 33TA	CBA	195.0	195.3	196.3	MSB 33TA	1
MSB 34TB	CBA	203.4	203.7	204.6	MSB 34TB	2
MSB 35TA	CBA	200.3	200.6	206.5	MSB 35TA	2
MSB 36TA	CBA	195.1	195.4	196.4	MSB 36TA	1
MSB 37A	CBA	207.9	208.2	209.0	MSB 37A	2
MSB 37TA	CBA	207.8	208.0	208.8	MSB 37TA	2
MSB 38TA	CBA	198.1	198.8	199.6	MSB 38TA	1
MSB 39TA	CBA	192.8	193.3	194.4	MSB 39TA	1
MSB 40TA	CBA	189.5	189.8	190.9	MSB 40TA	1
MSB 41TA	CBA	206.9	207.1	207.9	MSB 41TA	2
MSB 42TA	CBA	206.4	206.7	207.5	MSB 42TA	2
MSB 43TA	CBA	202.6	203.6	204.5	MSB 43TA	2
MSB 47TA	CBA	217.4	217.4	218.0	MSB 47TA	2
MSB 48TA	CBA	223.2	223.1	223.5	MSB 48TA	2
MSB 54TA	CBA	220.3	220.3	220.7	MSB 54TA	2
MSB 55TA	CBA	214.7	214.9	215.4	MSB 55TA	2
MSB 66TA	CBA	206.7	207.2	208.0	MSB 66TA	2
MSB 69TA	CBA	215.8	216.0	216.7	MSB 69TA	2
MSB 77TA	CBA	222.3	222.4	222.8	MSB 77TA	2
MSB 82TA	CBA	214.9	215.2	215.8	MSB 82TA	2
MSB 83TA	CBA	216.2	216.3	216.9	MSB 83TA	2
MSB 85B	CBA	222.3	222.3	222.8	MSB 85B	2
MSB 85TA	CBA	221.8	221.8	222.2	MSB 85TA	2

Note: See the front matter of this appendix for the definitions of the abbreviations in the screen zone (SZ) column.

^aSZ = screen zone.

^b— = no data available.

Table 8. Horizontal Gradients and Flow Rates in the Five Aquifer Zones

First Quarter 1995

Aquifer Zone	Transect	Horizontal Gradient	Flow Rate (ft/day)	Flow Rate (ft/year)
M-Area	A-A' ^a	0.0029	0.39	140
	B-B'	0.0025	0.34	120
	C-C'	0.0087	1.2	440
Upper Lost Lake	A-A'	0.0032	0.72	260
	B-B'	0.0029	0.65	240
	C-C'	0.0046	1.00	370
Lower Lost Lake	A-A'	0.0029	0.65	240
Middle Sand of the CBCU	A-A'	0.0038	0.86	310
Crouch Branch	A-A'	0.0036	0.72	260

Second Quarter 1995

Aquifer Zone	Transect	Horizontal Gradient	Flow Rate (ft/day)	Flow Rate (ft/year)
M-Area	A-A' ^a	0.0031	0.42	155
	B-B'	0.0032	0.43	160
	C-C'	0.0085	1.15	420
Upper Lost Lake	A-A'	0.0030	0.67	245
	B-B'	0.0025	0.57	205
	C-C'	0.0038	0.85	310
Lower Lost Lake	A-A'	0.0027	0.60	215
Middle Sand of the CBCU	A-A'	0.0023	0.54	195
Crouch Branch	A-A'	0.0036	0.72	260

^aTransects for second quarter 1995 are identified on the piezometric and potentiometric maps in Appendix F.

Table 9. Summary of Water-Elevation Drawdowns in the M-Area Aquifer Zone

Well	Static Water Elevation	Drawdown Water Elevation	Drawdown
	(ft above msl) <u>1Q85</u>	(ft above msl) <u>2Q95</u>	
ABP 1A	229.0	224.5	4.5
ABP 1DD	-	227.3	-
ABP 2A	228.4	223.1	5.3
ABP 2DD	-	222.8	-
ABP 3	229.8	224.8	5.0
ABP 4	227.5	222.9	4.6
ABP 4DD	-	223.8	-
ABP 6D	-	222.8	-
ABP 7D	-	223.9	-
ABP 8D	-	222.5	-
AC 1B	222.9	214.5	8.4
AC 2B	240.8	227.4	13.4
AC 3B	221.1	212.8	8.3
ACB 1A	247.8	238.4	9.4
ACB 2A	247.4	239.5	7.9
ACB 3A	247.3	239.5	7.8
ACB 4A	248.1	239.9	8.2
AMB 4D	-	234.1	-
AMB 5	-	234.5	-
AMB 6	-	234.7	-
AMB 7	-	234.9	-
AMB 8D	-	234.6	-
AMB 9D	-	234.9	-
AMB 10D	-	236.2	-
AMB 10DD	-	359.2	-
AMB 11D	-	237.0	-
AMB 12D	-	235.6	-
AOB 1	246.5	237.7	8.8
AOB 2	246.7	238.4	8.3
AOB 3	-	239.2	-
ARP 1A	224.5	216.6	7.9
ARP 2	227.1	219.2	7.9
ARP 3	227.8	222.1	5.7
ARP 4	224.2	219.5	4.7
ASB 1A	244.4	238.0	6.4
ASB 2A	244.7	-	-
ASB 2AR	-	239.3	-
ASB 3A	244.4	-	-
ASB 3AR	-	240.0	-
ASB 4	243.4	278.2	-
ASB 5A	244.0	-	-
ASB 5AR	-	237.5	-
ASB 6A	243.9	237.6	6.3
ASB 7	242.4	-	-
ASB 8	240.7	235.0	5.7
ASB 9	244.2	244.0	0.2
MCB 2	-	225.7	-
MCB 4	-	225.2	-
MCB 5	-	225.6	-
MCB 6	-	213.1	-
MCB 8D	-	226.0	-
MCB 9D	-	223.6	-

Table 9 (cont.)

<u>Well</u>	Static Water Elevation (ft above msl)	Drawdown Water Elevation (ft above msl)	Drawdown (ft)
	<u>1Q85</u>	<u>2Q95</u>	
MSB 1A	244.2	232.2	12.0
MSB 1D	-	231.6	-
MSB 2A	244.4	234.0	10.4
MSB 2D	-	232.4	-
MSB 3A	244.3	-	-
MSB 3D	-	-	-
MSB 4A	243.9	231.4	12.5
MSB 4D	-	230.5	-
MSB 5A	241.2	-	-
MSB 6A	239.4	227.9	11.5
MSB 7A	240.5	228.7	11.8
MSB 7C	-	223.2	-
MSB 8A	242.3	230.1	12.2
MSB 9B	244.6	230.8	13.8
MSB 9C	244.9	230.9	14.0
MSB 10C	243.5	230.1	13.4
MSB 10D	-	-	-
MSB 11D	244.9	231.1	13.8
MSB 11E	-	239.8	-
MSB 11F	245.0	231.4	13.6
MSB 12D	242.3	234.2	8.1
MSB 13C	-	229.6	-
MSB 13CC	-	225.2	-
MSB 13D	-	229.1	-
MSB 14B	231.1	218.2	12.9
MSB 14C	245.1	232.2	12.9
MSB 15C	-	242.9	-
MSB 15D	-	233.0	-
MSB 16C	245.2	231.8	13.4
MSB 17B	238.4	226.1	12.3
MSB 17C	240.9	-	-
MSB 17D	-	227.1	-
MSB 18B	231.8	222.3	9.5
MSB 18C	238.5	228.8	9.7
MSB 19C	245.0	239.4	5.6
MSB 20C	239.9	227.3	12.6
MSB 21C	242.5	229.4	13.1
MSB 22	244.2	-	-
MSB 23	247.7	-	-
MSB 24	244.2	235.0	9.2
MSB 25	243.9	-	-
MSB 26	246.5	237.3	9.2
MSB 27	248.2	236.1	12.1
MSB 27A	243.6	229.6	14.0
MSB 28	244.1	230.9	13.2
MSB 29D	241.8	232.9	8.9
MSB 29DD	-	233.2	-
MSB 30C	243.5	231.3	12.2
MSB 31C	246.0	235.9	10.1
MSB 32	226.5	224.8	1.7
MSB 33	220.2	218.6	1.6
MSB 34C	242.2	230.4	11.8

Table 9 (cont.)

<u>Well</u>	Static Water Elevation (ft above msl) <u>1Q85</u>	Drawdown Water Elevation (ft above msl) <u>2Q95</u>	Drawdown (ft)
MSB 35D	-	243.5	-
MSB 36D	245.7	237.8	7.9
MSB 37D	242.5	232.6	9.9
MSB 38D	-	234.4	-
MSB 39D	244.7	233.0	11.7
MSB 40D	233.5	227.3	6.2
MSB 41D	241.9	241.0	0.9
MSB 42D	243.5	234.1	9.4
MSB 43D	242.2	232.1	10.1
MSB 43DD	-	232.3	-
MSB 44C	247.4	235.9	11.5
MSB 45C	243.6	-	-
MSB 46C	247.0	238.3	8.7
MSB 47D	-	233.9	-
MSB 49D	-	229.7	-
MSB 50D	-	202.6	-
MSB 51D	-	211.5	-
MSB 51DD	-	213.0	-
MSB 52D	-	240.1	-
MSB 53D	-	234.1	-
MSB 54D	-	233.5	-
MSB 55D	-	233.4	-
MSB 56D	-	222.3	-
MSB 57D	-	232.5	-
MSB 58D	-	232.2	-
MSB 59D	-	231.0	-
MSB 60D	-	231.4	-
MSB 61D	-	226.9	-
MSB 62D	-	230.2	-
MSB 63D	-	230.5	-
MSB 64D	-	227.5	-
MSB 65D	-	234.6	-
MSB 66D	-	231.7	-
MSB 67D	-	233.4	-
MSB 68D	-	234.2	-
MSB 69D	-	233.6	-
MSB 70D	-	221.6	-
MSB 74D	-	234.0	-
MSB 77D	-	234.5	-
MSB 78D	-	224.4	-
MSB 82D	-	233.4	-
MSB 83D	-	233.6	-
MSB 85D	-	233.3	-
MSB 88D	-	204.9	-
SRW 1	-	213.0	-
SRW 2	-	214.6	-
SRW 3A	-	213.9	-
SRW 4	-	213.5	-
SRW 5	-	211.9	-
SRW 6	-	212.6	-
SRW 7	-	211.6	-
SRW 8	-	209.5	-

Table 9 (cont.)

<u>Well</u>	Static Water Elevation (ft above msl)	Drawdown Water Elevation (ft above msl)	Drawdown (ft)
	<u>1Q85</u>	<u>2Q95</u>	
SRW 9	-	201.5	-
SRW 9A	204.9	200.1	4.8
SRW 9B	206.6	201.8	4.8
SRW 10	-	-	-
SRW 11	-	211.3	-
SRW 12A	199.3	195.6	3.7
SRW 12B	193.1	190.9	2.2
SRW 12C	200.6	198.9	1.7
SRW 13C	217.0	210.2	6.8
SRW 14C	221.3	-	-
SRW 15C	221.5	213.2	8.3
SRW 16C	225.7	215.7	10.0

Average Drawdown (ft) = 9.11

a - = no data available.

Table 10. Summary of Water-Elevation Drawdowns in the Upper Lost Lake Aquifer Zone

<u>Well</u>	Static Water Elevation (ft above msl)	Drawdown Water Elevation (ft above msl)	Drawdown (ft)
	<u>1Q85</u>	<u>2Q95</u>	
ABP 3C	- ^a	197.9	-
ABP 8C	-	198.2	-
ABW 1	229.4	226.8	2.6
AC 1A	222.7	214.5	8.2
AC 2A	232.1	221.5	10.6
AC 3A	220.3	210.9	9.4
AMB 11B	-	224.1	-
ASB 2C	-	-	-
ASB 3C	-	-	-
ASB 6C	-	-	-
ASB 8C	229.4	-	-
ASB 9C	-	225.1	-
ASB 10C	-	224.4	-
MCB 5C	-	221.9	-
MCB 6C	-	-	-
MCB 7C	-	195.7	-
MSB 1C	-	196.4	-
MSB 1CC	-	194.9	-
MSB 2C	-	216.8	-
MSB 3C	-	218.8	-
MSB 4C	-	218.4	-
MSB 5C	-	219.9	-
MSB 6C	-	214.7	-
MSB 8C	-	223.6	-
MSB 11B	234.5	224.4	10.1
MSB 11C	237.0	220.7	16.3
MSB 12B	234.1	218.4	15.7
MSB 12C	236.6	220.7	15.9
MSB 13B	-	218.4	-
MSB 15A	235.4	223.6	11.8
MSB 16A	236.7	200.2	36.5
MSB 17A	227.8	221.3	6.5
MSB 18A	221.6	220.5	1.1
MSB 19B	223.6	217.1	6.5
MSB 20A	230.3	213.1	17.2
MSB 23B	239.2	218.0	21.2
MSB 24A	241.6	219.2	22.4
MSB 26A	238.5	224.5	14.0
MSB 27B	240.1	226.1	14.0
MSB 28A	236.2	225.3	10.9
MSB 29C	239.5	226.3	13.2
MSB 30CC	-	224.7	-
MSB 31CC	-	231.0	-
MSB 32C	-	226.0	-
MSB 33C	213.0	220.1	-
MSB 34B	240.6	216.8	23.8
MSB 35B	230.0	211.0	19.0
MSB 36C	223.0	227.6	-
MSB 37C	238.8	221.7	17.1
MSB 39C	225.9	215.3	10.6
MSB 40C	210.7	229.0	-
MSB 42B	235.8	216.0	19.8

Table 10 (cont.)

<u>Well</u>	Static Water Elevation (ft above msl)	Drawdown Water Elevation (ft above msl)	Drawdown (ft)
	<u>1Q85</u>	<u>2Q95</u>	
MSB 42C	244.7	205.0	39.7
MSB 43B	239.6	232.3	7.3
MSB 44B	235.4	230.0	5.4
MSB 45B	238.1	225.8	12.3
MSB 46B	235.3	227.1	8.2
MSB 47C	-	226.1	-
MSB 48D	-	233.1	-
MSB 50B	-	233.0	-
MSB 53C	-	202.2	-
MSB 55C	-	224.2	-
MSB 55HC	-	233.1	-
MSB 61C	-	224.8	-
MSB 62C	-	223.8	-
MSB 63C	-	221.1	-
MSB 64C	-	223.2	-
MSB 70C	-	218.0	-
MSB 74C	-	211.4	-
MSB 75C	-	210.0	-
MSB 76C	-	221.3	-
MSB 79C	-	210.2	-
MSB 87C	-	243.8	-
MSB 88C	-	203.9	-
MSB 89C	-	229.2	-
SRW 2B	216.0	208.9	7.1
SRW 14B	213.3	206.5	6.8
SRW 15B	217.7	210.7	7.0

Average Drawdown (ft) = 10.02

^a - = no data available.

Table 11. Summary of Water-Elevation Drawdowns in the Lower Lost Lake Aquifer Zone

<u>Well</u>	Static Water Elevation (ft above msl) <u>1Q85</u>	Drawdown Water Elevation (ft above msl) <u>2Q95</u>	Drawdown (ft)
AMB 4B	- ^a	225.5	-
AMB 7B	-	225.8	-
AMB 10B	-	224.1	-
ASB 2CR	-	224.1	-
ASB 3CR	-	223.8	-
ASB 5C	-	223.9	-
ASB 8B	225.2	221.6	3.6
ASB 9B	-	221.6	-
ASB 10CR	-	195.1	-
MSB 1B	-	207.8	-
MSB 2B	-	210.3	-
MSB 3B	-	-	-
MSB 4B	-	205.1	-
MSB 5B	-	207.8	-
MSB 6B	-	206.9	-
MSB 7B	-	207.5	-
MSB 8B	-	208.8	-
MSB 9A	225.8	208.8	17.0
MSB 10B	225.8	213.6	12.2
MSB 11A	226.0	212.5	13.5
MSB 12A	220.7	208.4	12.3
MSB 13A	220.2	207.4	12.8
MSB 14A	229.4	215.9	13.5
MSB 15AA	-	214.5	-
MSB 17BB	-	212.9	-
MSB 21A	232.6	221.6	11.0
MSB 21B	-	220.8	-
MSB 25A	231.9	217.3	14.6
MSB 26B	-	219.6	-
MSB 29B	233.7	225.2	8.5
MSB 30B	233.4	226.0	7.4
MSB 31B	230.2	220.2	10.0
MSB 32B	-	211.9	-
MSB 33B	210.3	208.1	2.2
MSB 36B	224.9	215.2	9.7
MSB 38B	-	216.4	-
MSB 38C	-	220.4	-
MSB 39B	222.5	212.0	10.5
MSB 40B	209.4	205.1	4.3
MSB 41C	222.4	218.9	3.5
MSB 43A	-	229.9	-
MSB 45A	224.7	216.8	7.9
MSB 47B	-	223.9	-
MSB 48C	-	225.3	-
MSB 49B	-	203.5	-
MSB 51B	-	205.0	-
MSB 52B	-	220.4	-
MSB 53B	-	223.3	-
MSB 54C	-	227.4	-
MSB 55C	-	229.9	-
MSB 62B	-	207.9	-
MSB 63B	-	208.9	-

Table 11 (cont.)

Well	Static Water Elevation (ft above msl) <u>1Q85</u>	Drawdown Water Elevation (ft above msl) <u>2Q95</u>	Drawdown (ft)
MSB 66C	-	229.3	-
MSB 67C	-	227.2	-
MSB 68C	-	225.4	-
MSB 69C	-	228.1	-
MSB 71B	-	217.7	-
MSB 72B	-	200.4	-
MSB 73B	-	202.2	-
MSB 74B	-	211.3	-
MSB 75B	-	210.3	-
MSB 77C	-	224.9	-
MSB 79B	-	208.0	-
MSB 81B	-	221.1	-
MSB 82C	-	228.7	-
MSB 83C	-	228.9	-
MSB 84C	-	230.3	-
MSB 85C	-	225.6	-
MSB 86C	-	225.9	-
MSB 87B	-	219.3	-
MSB 89B	-	207.3	-
SRW 1BB	-	208.8	-
SRW 3BB	-	209.7	-
SRW 4BB	-	208.5	-
SRW 8BB	-	-	-
SRW 10BB	-	206.7	-
SRW 11BB	-	207.0	-
SRW 13A	208.4	202.6	5.8
SRW 16A	224.5	214.5	10.0
SRW 16B	224.7	215.2	9.5
SRW 17BB	-	213.0	-
SRW 17C	-	213.3	-
SRW 17D	-	-	-
Average Drawdown (ft) = 8.55			

^a - = no data available.

Table 12. Summary of Water-Elevation Drawdowns in the Middle Sand Aquifer Zone of the CBCU

<u>Well</u>	<u>Static Water Elevation</u> (ft above msl) <u>1Q85</u>	<u>Drawdown Water Elevation</u> (ft above msl) <u>2Q95</u>	<u>Drawdown</u> (ft)
AMB 4A	- ^a	220.1	-
AMB 7A	-	219.9	-
AMB 10A	-	219.0	-
AMB 13AR	-	219.9	-
ASB 6AA	-	219.6	-
ASB 8A	-	220.4	-
MSB 10A	223.8	210.5	13.3
MSB 12TA	-	193.3	-
MSB 19A	219.5	215.5	4.0
MSB 29A	-	221.0	-
MSB 30AA	-	224.6	-
MSB 33A	207.3	205.3	2.0
MSB 34A	226.4	219.5	6.9
MSB 34TA	-	203.2	-
MSB 35A	223.0	217.8	5.2
MSB 36A	219.1	210.4	8.7
MSB 37B	226.4	220.3	6.1
MSB 39A	219.0	209.3	9.7
MSB 40A	207.1	203.3	3.8
MSB 41A	221.5	218.3	3.2
MSB 41B	221.6	218.8	2.8
MSB 42A	226.3	220.4	5.9
MSB 44A	224.7	218.9	5.8
MSB 46A	225.0	216.7	8.3
MSB 47BB	-	220.8	-
MSB 48A	-	223.5	-
MSB 48B	-	224.8	-
MSB 49A	-	197.9	-
MSB 54B	-	223.2	-
MSB 55B	-	222.8	-
MSB 64B	-	208.0	-
MSB 66B	-	220.4	-
MSB 67B	-	220.1	-
MSB 68B	-	220.6	-
MSB 69B	-	222.0	-
MSB 77B	-	222.9	-
MSB 82A	-	222.7	-
MSB 82B	-	221.3	-
MSB 83B	-	222.8	-
MSB 84A	-	208.7	-
MSB 88B	-	201.3	-
SRW 2A	214.8	207.9	6.9
SRW 13B	210.7	204.7	6.0
SRW 14A	211.4	204.7	6.7
SRW 15A	217.4	210.4	7.0
Average Drawdown (ft) = 6.13			

^a - = no data available.

Appendix E

Hydrographs

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Hydrograph Well Cluster ABP 1

Hydrograph Well Cluster ABP 2

Hydrograph Well Cluster ABP 3

Hydrograph Well Cluster ABP 4

Hydrograph Well ABP 6D

Hydrograph Well ABP 7D

Hydrograph Well Cluster ABP 8

Hydrograph Well ABW 1

Hydrograph Well Cluster AC 1

Hydrograph Well Cluster AC 2

Hydrograph Well Cluster AC 3

Hydrograph Well ACB 1A

Hydrograph Well ACB 2A

—■— ACB2A

Hydrograph Well ACB 3A

Hydrograph Well ACB 4A

—■— ACB4A

Hydrograph Well AMB 1A

Hydrograph Well AMB 2

—■— AMB2

Hydrograph AMB 3A

Hydrograph Well Cluster AMB 4

Hydrograph Well AMB 5

Hydrograph Well AMB 6

Hydrograph Well Cluster AMB 7

Hydrograph Well AMB 8D

Hydrograph Well AMB 9D

Hydrograph Well Cluster AMB 10

Hydrograph Well Cluster AMB 11

Hydrograph Well AMB 12D

Hydrograph Well AMB 13AR

Hydrograph Well AMB 14D

Hydrograph Well AMB 15D

Hydrograph Well AMB 16D

Hydrograph Well AMB 17D

Hydrograph Well AMB 18D

Hydrograph Well AMB 19C

Hydrograph Well AOB 1

Hydrograph Well AOB 2

—■— AOB2

Hydrograph Well AOB 3

—■— AOB3

Hydrograph Well ARP 1A

Hydrograph Well ARP 2

—■— ARP2

Hydrograph Well ARP 3

Hydrograph Well ARP 4

Hydrograph Well ASB 1A

Hydrograph Well Cluster ASB.2

Hydrograph Well Cluster ASB 3

Hydrograph Well ASB 4

Hydrograph Well Cluster ASB 5

Hydrograph Well Cluster ASB 6

Hydrograph Well ASB 7

Hydrograph Well Cluster ASB 8

Hydrograph Well Cluster ASB 9

Hydrograph Well Cluster ASB 10

Hydrograph Well MCB 2

Hydrograph Well MCB 4

Hydrograph Well Cluster MCB 5

Hydrograph Well Cluster MCB 6

Hydrograph Well MCB 7

Hydrograph Well MCB 8

Hydrograph Well MCB 9

Hydrograph Well Cluster MSB 1

Hydrograph Well Cluster MSB 2

Hydrograph Well Cluster MSB 3

Hydrograph Well Cluster MSB 4

Hydrograph Well Cluster MSB 5

◆ MSB5A ■ MSB5B ▲ MSB5C

Hydrograph Well Cluster MSB 6

Hydrograph Well Cluster MSB 7

Hydrograph Well Cluster MSB 8

Hydrograph Well Cluster MSB 9

Hydrograph Well Cluster MSB 10

Hydrograph Well Cluster MSB 11

Hydrograph Well Cluster MSB 12

Hydrograph Well Cluster MSB 13

Hydrograph Well Cluster MSB 14

Hydrograph Well Cluster MSB 15

Hydrograph Well Cluster MSB 16

Hydrograph Well Cluster MSB 17

Hydrograph Well Cluster MSB 18

Hydrograph Well Cluster MSB 19

Hydrograph Well Cluster MSB 20

Hydrograph Well Cluster MSB 21

Hydrograph Well Cluster MSB 22

Hydrograph Well Cluster MSB 23

Hydrograph Well Cluster MSB 24

Hydrograph Well Cluster MSB 25

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Hydrograph Well Cluster MSB 42

Hydrograph Well Cluster MSB 43

Hydrograph Well Cluster MSB 44

Hydrograph Well Cluster MSB 45

Hydrograph Well Cluster MSB 46

Hydrograph Well Cluster MSB 47

Hydrograph Well Cluster MSB 48

Hydrograph Well Cluster MSB 49

Hydrograph Well Cluster MSB 50

Hydrograph Well Cluster MSB 51

Hydrograph Well Cluster MSB 52

Hydrograph Well Cluster MSB 53

Hydrograph Well Cluster MSB 54

Hydrograph Well Cluster MSB 55

—○— MSB 55B —◆— MSB 55C —□— MSB 55D —▲— MSB 55HC —X— MSB 55TA

Hydrograph Well Cluster MSB 56

Hydrograph Well MSB 57D

Hydrograph Well MSB 58D

Hydrograph Well MSB 59D

Hydrograph Well MSB 60D

Hydrograph Well Cluster MSB 61

Hydrograph Well Cluster MSB 62

Hydrograph Well Cluster MSB 63

Hydrograph Well Cluster MSB 64

Hydrograph Well MSB 65D

—○— MSB 65D

Hydrograph Well Cluster MSB 66

Hydrograph Well Cluster MSB 67

—○— MSB 67B —◆— MSB 67C —□— MSB 67D

Hydrograph Well Cluster MSB 68

Hydrograph Well Cluster MSB 69

Hydrograph Well Cluster MSB 70

Hydrograph Well MSB 71B

Hydrograph Well MSB 72B

—○— MSB 72B

Hydrograph Well MSB 73B

Hydrograph Well Cluster MSB 74

Hydrograph Well Cluster MSB 75

Hydrograph Well MSB 76C

—○— MSB 76C

Hydrograph Well Cluster MSB 77

—○— MSB 77B —◆— MSB 77C —□— MSB 77D —▲— MSB 77TA

Hydrograph Well MSB 78D

—○— MSB 78D

Hydrograph Well Cluster MSB 79

Hydrograph Well MSB 81B

Hydrograph Well Cluster MSB 82

Hydrograph Well Cluster MSB 83

Hydrograph Well Cluster MSB 84

Hydrograph Well Cluster MSB 85

Hydrograph Well MSB 86C

—○— MSB 86C

Hydrograph Well Cluster MSB 87

Hydrograph Well Cluster MSB 88

—○— MSB 88B —◆— MSB 88C —□— MSB 88D

Hydrograph Well Cluster MSB 89

—○— MSB 89B —◆— MSB 89C

Hydrograph Well Cluster SRW 1

Hydrograph Well Cluster SRW 2

Hydrograph Well Cluster SRW 3

Hydrograph Well Cluster SRW 4

Hydrograph Well SRW 5

Hydrograph Well SRW 6

Hydrograph Well SRW 7

Hydrograph Well Cluster SRW 8

Hydrograph Well Cluster SRW 9

Hydrograph Well Cluster SRW 10

Hydrograph Well Cluster SRW 11

Hydrogrpah Well Cluster SRW 12

Hydrograph Well Cluster SRW 13

Hydrograph Well Cluster SRW 14

Hydrograph Well Cluster SRW 15

Hydrograph Well Cluster SRW 16

Hydrograph Well Cluster SRW 17

Appendix F

Water-Elevation Maps

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REFERENCE DOCUMENT #
WSRC-TR-95-0138-2 for 2Q95
M-Area Hazardous Waste Management
Facility Groundwater Monitoring Report

LEGEND

- PAVED ROAD
- UNPAVED ROAD
- SRS SITE BOUNDARY
- RAILROAD
- TOPOGRAPHIC CONTOUR
INTERVAL 10 FT
- STREAM
- WASTE UNIT
- BUILDING
- GROUNDWATER
MONITORING WELL
- RECOVERY WELL

33:21:20.14 -81:46:01.71		33:21:20.14 -81:42:44.11	
33:18:46.37 -81:46:01.71		33:18:46.37 -81:42:44.11	
LATITUDE- LONGITUDE			
SCALE: 1 IN = 958.33 FT SCALE: 1:11500			
SAVANNAH RIVER SITE ADMINISTRATION AND MATERIALS AREA 2Q95			
Contour Interval: 2 Feet			
DWG NO. GM1915	REV. NO. 0	REV. DATE 8-14-95	AREA M-AREA
		ENVIRONMENTAL RESTORATION <i>"Restoring the Environment Today for a Cleaner Tomorrow"</i>	
TITLE CROUCH BRANCH AQUIFER ZONE POTENTIOMETRIC SURFACE MAP 2Q95			
CREATED BY TRACY L. MICKLEY	DATE 8-14-95	APPROVED BY NA	DATE NA
PREPARED BY BRUCE REEVES	DATE 8-14-95	APPROVED BY NA	DATE NA
APPROVED BY NA	DATE NA	APPROVED BY NA	DATE NA
APPROVED BY NA	DATE NA	APPROVED BY NA	DATE NA

Map 5
Potentiometric Surface Map of the Crouch Branch Aquifer Zone, Second Quarter 1995
M-Area HWMF F-7 Second Quarter 1995

430000 430250 430500 430750 431000 431250 431500 431750 432000 432250

431750 432000 432250 432500 432750 433000 433250 433500

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REFERENCE DOCUMENT #
 WSRC-TR-95-0138-2 for 2095
 M-Area Hazardous Waste Management
 Facility Groundwater Monitoring Report

LEGEND

- PAVED ROAD
- UNPAVED ROAD
- SRS SITE BOUNDARY
- RAILROAD
- TOPOGRAPHIC CONTOUR
INTERVAL 10 FT
- STREAM
- WASTE UNIT
- BUILDING
- GROUNDWATER
MONITORING WELL
- RECOVERY WELL

33:21:20.17
 -81:46:01.71
 -81:42:44.11

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DATE	APPROVED BY	DATE	APPROVED BY	DATE	APPROVED BY	DATE	APPROVED BY
8-14-95	TRACY L. MCKLEY	8-14-95	TRACY L. MCKLEY	8-14-95	BRUCE REEVES	8-14-95	BRUCE REEVES
NA	APPROVED BY	NA	APPROVED BY	NA	APPROVED BY	NA	APPROVED BY
8-14-95	TRACY L. MCKLEY	8-14-95	TRACY L. MCKLEY	8-14-95	BRUCE REEVES	8-14-95	BRUCE REEVES
NA	APPROVED BY	NA	APPROVED BY	NA	APPROVED BY	NA	APPROVED BY
8-14-95	TRACY L. MCKLEY	8-14-95	TRACY L. MCKLEY	8-14-95	BRUCE REEVES	8-14-95	BRUCE REEVES
NA	APPROVED BY	NA	APPROVED BY	NA	APPROVED BY	NA	APPROVED BY
8-14-95	TRACY L. MCKLEY	8-14-95	TRACY L. MCKLEY	8-14-95	BRUCE REEVES	8-14-95	BRUCE REEVES

ENVIRONMENTAL RESTORATION

SRS

Restoring the Environment Today for a Better Tomorrow

M-Area Aquifer Zone Potentiometric Surface Map 2095

CREATED BY: TRACY L. MCKLEY
 PREPARED BY: BRUCE REEVES
 APPROVED BY: NA
 DATE: 8-14-95

APPROVED BY: NA
 DATE: 8-14-95

APPROVED BY: NA
 DATE: 8-14-95

APPROVED BY: NA
 DATE: 8-14-95

SAVANNAH RIVER SITE ADMINISTRATION AND MATERIALS AREA 2095

Contour Interval: 2 Feet

SCALE: 1 IN = 958.33 FT
SCALE: 1:11500

LATITUDE-LONGITUDE

33:21:20.14 -81:42:44.11
 33:18:46.37 -81:42:44.11
 33:18:46.37 -81:46:01.71
 33:21:20.14 -81:46:01.71

DWG NO. GM1911
REV. NO. 0
REV. DATE 8-14-95
AREA M-AREA

Map 1
 Water-Elevation Contour Map of the M-Area Aquifer Zone, Second Quarter 1995
 M-Area HWMF
 F-3
 Second Quarter 1995

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REFERENCE DOCUMENT #
 WSRC-TR-95-0138-2 for 2095
 M-Area Hazardous Waste Management
 Facility Groundwater Monitoring Report

LEGEND

- PAVED ROAD
- UNPAVED ROAD
- SRS SITE BOUNDARY
- RAILROAD
- TOPOGRAPHIC CONTOUR
INTERVAL 10 FT
- STREAM
- WASTE UNIT
- BUILDING
- GROUNDWATER
MONITORING WELL
- RECOVERY WELL

55:21:20.14
 -81:46:01.71
 -81:42:44.11

SCALE: 1 IN = 958.33 FT
SCALE: 1:11500

SAVANNAH RIVER SITE ADMINISTRATION AND MATERIALS AREA 2Q95

Contour Interval: 2 Feet

DWG NO. GM1912	REV. NO. 0	REV. DATE 8-14-95	AREA M-AREA
SRS		ENVIRONMENTAL RESTORATION <i>"Restoring the Environment Today for a Cleaner Tomorrow"</i>	
TITLE UPPER LOST LAKE AQUIFER ZONE POTENTIOMETRIC SURFACE MAP 2Q95			
CREATED BY TRACY L. MICKLEY	DATE 8-14-95	APPROVED BY NA	DATE NA
PREPARED BY BRUCE REEVES	DATE 8-14-95	APPROVED BY NA	DATE NA
APPROVED BY NA	DATE NA	APPROVED BY NA	DATE NA
APPROVED BY NA	DATE NA	APPROVED BY NA	DATE NA

430000 430250 430500 430750 431000 431250 431500 431750 432000 432250

REFERENCE DOCUMENT #
 WSRC-TR-95-0138-2 for 2095
 M-Area Hazardous Waste Management
 Facility Groundwater Monitoring Report

LEGEND

- PAVED ROAD
- UNPAVED ROAD
- SRS SITE BOUNDARY
- RAILROAD
- TOPOGRAPHIC CONTOUR
INTERVAL 10 FT
- STREAM
- WASTE UNIT
- BUILDING
- GROUNDWATER
MONITORING WELL
- RECOVERY WELL

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 -81:46:01.71
 -81:42:44.11

33:21:2

33:18:4

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DWG NO.
GM1913

S

TITLE
LO

CREATED BY
TRACY L. M
PREPARED BY
BRUCE REE
APPROVED BY
NA
APPROVED BY
NA

Potentiometric Sur
M-Area HW

SCALE: 1 IN = 958.33 FT
SCALE: 1:11500

SAVANNAH RIVER SITE ADMINISTRATION AND MATERIALS AREA 2Q95

Contour Interval: 2 Feet

DWG NO. GM1913	REV. NO. 0	REV. DATE 8-14-95	AREA M-AREA
<p>ENVIRONMENTAL RESTORATION</p> <p><i>'Restoring the Environment Today for a Cleaner Tomorrow'</i></p>	
TITLE LOWER LOST LAKE AQUIFER ZONE POTENTIOMETRIC SURFACE MAP 2Q95			
CREATED BY TRACY L. MICKLEY	DATE 8-14-95	APPROVED BY NA	DATE NA
PREPARED BY BRUCE REEVES	DATE 8-14-95	APPROVED BY NA	DATE NA
APPROVED BY NA	DATE NA	APPROVED BY NA	DATE NA
APPROVED BY NA	DATE NA	APPROVED BY NA	DATE NA

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50 433000 433250 433500

REFERENCE DOCUMENT #
WSRC-TR-95-0138-2 for 2Q95
M-Area Hazardous Waste Management
Facility Groundwater Monitoring Report

LEGEND

- PAVED ROAD
- UNPAVED ROAD
- SRS SITE BOUNDARY
- RAILROAD
- TOPOGRAPHIC CONTOUR
INTERVAL 10 FT
- STREAM
- WASTE UNIT
- BUILDING
- GROUNDWATER
MONITORING WELL
- RECOVERY WELL

SCALE: 1 IN = 958.33 FT
SCALE: 1:11500

SAVANNAH RIVER SITE ADMINISTRATION AND MATERIALS AREA 2Q95

Contour Interval: 2 Feet

DWG NO. GM1914	REV. NO. 0	REV. DATE 8-14-95	AREA M-AREA
SRS		ENVIRONMENTAL RESTORATION <i>"Restoring the Environment Today for a Cleaner Tomorrow"</i>	
TITLE MIDDLE SAND AQUIFER ZONE POTENTIOMETRIC SURFACE MAP 2Q95			
CREATED BY TRACY L. MICKLEY	DATE 8-14-95	APPROVED BY NA	DATE NA
PREPARED BY BRUCE REEVES	DATE 8-14-95	APPROVED BY NA	DATE NA
APPROVED BY NA	DATE NA	APPROVED BY NA	DATE NA
APPROVED BY NA	DATE NA	APPROVED BY NA	DATE NA

Map 4

Potentiometric Surface Map of the Middle Sand Aquifer Zone of the Crouch Branch Confining Unit
M-Area HWMF F-6 Second Quarter 1995