South Carolina
DHEC
Department of Health and Environmental Control
2600 Bull Street, Columbia, SC 29201

Commissioner: Douglas E. Bryant

Board: John H. Burriss, Chairman
Sandra J. Molander, Secretary

Richard E. Jabbour, DDS
William M. Hull, Jr., MD
Roger Leaks, Jr.

RECEIVED
Promoting Health, Protecting the Environment

October 16, 1995

95 OCT 18 PM 3:33
MAIL CONTROL

CERTIFIED MAIL

Dr. Mario Fiori, Manager
Savannah River Operations Office
Post Office Box A
Aiken, South Carolina 29802

954411

Re: Savannah River Site
SC1890008989
Aiken, South Carolina

Orig./AMERW

Dear Dr. Fiori:

Enclosed is a copy of the executed Second Amendment to Settlement Agreement 87-52-SW for the above referenced facility located in Aiken, South Carolina.

The United States Department of Energy - Savannah River Site should be aware that paragraphs 2 and 3 of the NOW THEREFORE section require the facility to complete certain requirements and to submit certain information to the Department within the specified time frames. The information should be sent to the following address:

South Carolina Department of Health and Environmental Control
Bureau of Solid and Hazardous Waste Management
2600 Bull Street
Columbia, South Carolina 29201
Attention: Kim K. Hagan

Should any questions arise concerning this matter, please contact me at (803) 896-4152.

Sincerely,

Kim K. Hagan

Kim K. Hagan
Enforcement Section
Bureau of Solid and Hazardous
Waste Management

KKH/kkh
c: Shelly Sherritt
Hazardous Waste Permitting

Jo Cherie Bomar
Hazardous Waste Section
Division of Hydrogeology

Crystal Rippy
Hazardous Waste Permitting

James Burckhalter
Lower Savannah District, EQC

recycled paper

THIS IS A TRUE COPY OF DEPARTMENT OF HE
& ENVIRONMENTAL CONTROL RECORDS
Kim K. Hagan

THE STATE OF SOUTH CAROLINA
BEFORE THE DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

IN RE: UNITED STATES DEPARTMENT OF ENERGY
AIKEN, ALLENDALE, AND BARNWELL COUNTIES

SECOND AMENDMENT TO SETTLEMENT AGREEMENT
87-52-SW

WHEREAS, On November 12, 1987, Settlement Agreement 87-52-SW between the South Carolina Department of Health and Environmental Control ("Department") and the United States Department of Energy (USDOE) became effective; and

WHEREAS, said Agreement required USDOE to submit to the Department a revised Part B Permit Application for the Mixed Waste Management Facility (MWMF) on or before July 29, 1988; and

WHEREAS, USDOE submitted a revised Part B permit application on July 29, 1988; and

WHEREAS, On May 10, 1991, the first Amendment to Settlement Agreement 87-52-SW became effective; and

WHEREAS, USDOE submitted a revised Part B permit application for the MWMF on November 25, 1992 as required by the first Amendment to the Settlement Agreement; and

WHEREAS, said first Amendment required USDOE to submit to the Department a corrective action plan on or before November 30, 1993; and

WHEREAS, USDOE submitted said corrective action plan as a revision to the Part B Permit Application on November 29, 1993, and this plan did not contain all of the information required in a corrective action plan; and

WHEREAS, USDOE has agreed to address groundwater corrective action for the complete Burial Ground Complex (BGC), including the MWMF, in one Part B Permit Application which will be submitted in phases, each of which addresses a separate groundwater plume area; and

WHEREAS, USDOE and the Department held a series of meetings to discuss a phased plume-by-plume approach to groundwater remediation which considers risk at the Burial Ground Complex; and

WHEREAS, on January 31, 1995, USDOE submitted the Burial Ground Complex Field Investigation Preliminary Data Report #1.

NOW THEREFORE IT IS ORDERED with the consent of USDOE that the following requirements are hereby incorporated into Settlement Agreement 87-52-SW of 1987, and that the Agreement is amended as if the following were included completely therein.

1. Within ninety (90) days of the execution date of this Amendment and until a post closure permit has been issued by the Department, USDOE shall

attend quarterly meetings with the Department. During these quarterly meeting USDOE must present information which includes, but is not limited to an update on the hydrogeologic investigation of the BGC (including the scheduled activities) and an update on the Part B Permit application. USDOE must propose to the Department dates for the next quarterly meeting within thirty (30) days after the previous quarterly meeting.

2. Two (2) weeks prior to the date for the quarterly meeting required by paragraph 1 above, USDOE shall submit to the Department an agenda for the meeting and any substantial data or information to be discussed during the upcoming meeting.

3. No later than November 15, 1995, USDOE shall submit to the Department a Part B Permit Application for the MWMF and groundwater contamination of the Burial Ground Complex as defined in paragraph 4 below. This application must satisfy the requirements of R. 61-79.270 and shall include , but not be limited to: a) for the groundwater plume originating from the southwest corner of the Old Radioactive Waste Burial Ground, (i) information pertaining to source units which may have contributed to groundwater contamination, (ii) a sufficient characterization of the site hydrogeology, (iii) the extent, nature, and rate of migration of contaminant plumes to define acceptable groundwater quality standards, and (iv) a schedule and strategy for remedial measures to achieve these standards; (b) submittal dates for (i) information describing the extent, nature, and rate of migration of groundwater contaminant plumes to define acceptable groundwater quality standards and

(ii) a plan for remedial activities to achieve these standards for the remaining groundwater plumes of contamination in the Burial Ground Complex.

4) In its review of the Part B permit application, the Department shall give consideration to DOE's technical demonstration(s). The demonstration(s) for acceptable groundwater protection standards shall be for each plume in the BGC and may include an alternate concentration limit proposal which complies with R. 61-79.264.94(b) and which includes, but not limited to, supporting data and the risk to human health and the environment.

5) If USDOE fails to comply with any time schedule in this Amendment or any extension approved by the Department, USDOE agrees to pay to the Department a civil penalty for each day of noncompliance; provided, USDOE shall have no liability where the delay was caused by events constituting *force majeure* as described in the following paragraph. Pursuant to Section 44-56-140 of the South Carolina Hazardous Waste Management Act, the Department may assess a civil penalty of up to $25,000.00 per day per violation. Provided, further, that this stipulated penalty is in addition to, and not a substitute for, any claims the Department may make and penalties it may impose for any violation of the South Carolina Hazardous Waste Management Act, as provided for in the final paragraph of this Agreement.

6) If any *force majeure* event occurs which causes or may cause a delay in meeting any of the scheduled activities of this Order, SRS must notify the Department in writing at least one (1) week before the scheduled date,

describing in detail the anticipated length of the delay, the precise cause or causes of the delay, if ascertainable, the measures taken or to be taken to prevent or minimize the delay, and the timetable by which those measures will be implemented.

The Department shall provide written notice as soon as practicable that a specified extension of time has been granted or that no extension has been granted. An extension shall be granted for any scheduled activity delayed by an event of *force majeure* which shall mean any event arising from causes beyond the control of SRS that causes a delay in or prevents the performance of any of the conditions under this Consent Order including, but not limited to: a) acts of God, fire, war, insurrection, civil disturbance, explosion; b) adverse weather conditions that could not be reasonably anticipated causing an unusual delay in transportation and/or field work activities; c) restraint by court order or order of public authority; d) inability to obtain, after exercise of reasonable diligence and timely submittal of all applicable applications, any necessary authorizations, approvals, permits, or licenses due to action or inaction of any governmental agency or authority; and e) delays caused by compliance with applicable statutes or regulations governing contracting, procurement, or acquisition procedures, despite the exercise of reasonable diligence by SRS.

Events which are not *force majeure* include by example, but are not limited to, unanticipated or increase costs of performance, changed economic circumstances, normal precipitation events, or any person's failure to exercise due diligence in obtaining governmental permits or fulfilling

contractual duties. Such determination will be made in the sole discretion of the enforceable part of this Consent Order and thereafter be referred to as an attachment to the Consent Order.

IT IS FURTHER AGREED that failure to meet deadlines established herein or any other violation of the provisions of this Order shall be deemed a violation of the South Carolina Hazardous Waste Management Act and therefore shall be deemed unlawful. Upon ascertaining any such violation, the Department shall initiate action to obtain compliance with this Order and the aforesaid Act.

THE SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

DATE: 10/9/95

BY: Douglas E. Bryant
Commissioner

WE CONSENT:

UNITED STATES DEPARTMENT OF ENERGY

Mario P. Fiori, Manager

DATE: 19 Sep 95

DATE:

THE SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

Hartsill W. Truesdale, P.E., Chief
Bureau of Solid and Hazardous
Waste Management

DATE: 10/01/95

Approved by: Legal Office

DATE: 10/5/95

#16

THIS IS A TRUE COPY OF DEPARTMENT OF HEALTH & ENVIRONMENTAL CONTROL RECORDS
Helen Grant

THE STATE OF SOUTH CAROLINA
BEFORE THE DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

IN RE: UNITED STATES DEPARTMENT OF ENERGY
AIKEN, ALLENDALE, AND BARNWELL COUNTIES

AMENDMENT TO SETTLEMENT AGREEMENT
87-52-SW

WHEREAS, on November 12, 1987, Settlement Agreement 87-52-SW between the South Carolina Department of Health and Environmental Control ("DHEC") and the United States Department of Energy ("DOE"), SC1890008989, became effective; and

WHEREAS, said Settlement Agreement required DOE to submit a revised Part B Permit Application for the Mixed Waste Management Facility ("MWMF") to include corrections to the deficiencies as described in DHEC's January 14, 1987, Notice of Deficiencies ("NOD") and in the Agreement and its Attachment on or before July 29, 1988; and

WHEREAS, a groundwater monitoring system was installed at the MWMF and some site specific hydrogeologic information was generated; and

WHEREAS, on July 29, 1988, DOE submitted a revised Part B Permit Application for the MWMF as well as a variance request to the following informational requirements of the Part B: R.61-79.270.14(b)(2); R.61-79.270.21(a); and R.61-79.270.21(b); and

WHEREAS, review by DHEC personnel determined the revised Part B Permit Application to be improved but still incomplete in regard to the groundwater information as shown by the attached NOD dated October 21, 1988; and

WHEREAS, on July 13, 1989, the attached NOD regarding groundwater deficiencies was forwarded to DOE along with a letter denying the variance

request for R.61-79.270.14(b)(2), R.61-79.270.21(a), and R.61-79.270.21(b). The July 13, 1989, letter was sent by certified mail to DOE and required the submission of a revised Part B Permit Application addressing the groundwater, R.61-79.270.14(b)(2), R.61-79.270.21(a), and R.61-79.270.21(b) deficiencies within thirty (30) days of receipt of the letter; and,

WHEREAS, DOE received the July 13, 1989, NOD on July 17, 1989; and,

WHEREAS, DOE has not submitted a revised Part B Permit Application for the MWMF in response to the July 13, 1989, NOD; and,

WHEREAS, on November 7, 1989, DHEC reviewed an Assessment Monitoring Plan for the MWMF. This plan was prepared and submitted subsequent to DOE's detecting groundwater contamination at the MWMF; and,

WHEREAS, DHEC's December 19, 1989, review of the Assessment Monitoring Plan for the MWMF revealed deficiencies in the plan and required that a revised plan be submitted. DHEC's December 19, 1989, review includes deficiencies relating to hazardous constituents in the groundwater as defined by RCRA as well as concerns and deficiencies relating to groundwater contamination by other constituents e.g., radionuclides, as defined by the South Carolina Pollution Control Act (PCA); and,

WHEREAS, the detection of groundwater contamination at the MWMF and the need to perform a groundwater assessment requires additional groundwater information to be included in the Part B permit application for the MWMF in order for the application to be determined complete; and,

WHEREAS, on January 26, 1990, DOE personnel notified DHEC by telephone that rags and wipes used with F-listed solvents (R.61-79.261 Subpart D) for cleaning and radioactive decontamination have been disposed in trenches

within the Low Level Radioactive Waste Disposal Facility (LLRWDF, Building number 643-7G). The LLRWDF and the MWMF (Building number 643-28G) are adjacent; and,

WHEREAS, DOE desires to incorporate the LLRWDF into the MWMF Part B permit application.

CONCLUSIONS OF LAW

DHEC has determined that DOE has violated Settlement Agreement 87-52-SW and Section 44-56-130 of the 1976 South Carolina Code of Laws, as amended, for failure to submit a revised Part B Permit Application for the Mixed Waste Management Facility which corrected the deficiencies cited in Settlement Agreement 87-52-SW and its attachment.

AGREEMENT

WHEREAS, without trial or adjudication of any issue of fact or law, the parties have agreed to the following settlement agreement, thereby resolving disputes set forth as described above, without this Settlement Agreement constituting an admission by DOE in respect to any such issue(s) of fact or law alleged herein or through their attorneys and authorized officials; and,

NOT WITHSTANDING the above and in that the question of DHEC's authority to assess civil penalties for violations of the South Carolina Hazardous Waste Management Regulations at the SRS is in Litigation (Natural Resource Defense Council, Inc., Energy Research Foundation, South Carolina League of Women Voters, and the Georgia Conservancy; Plaintiffs: DHEC, Intervenor - Plaintiffs; V. DOE, Secretary John S. Herrington and Acting Assistant Secretary William E. Vaughan; Civil Action No. 1:85-2583-6),

DHEC agrees to delay assessment and/or negotiation of a monetary payment or penalty until a decision is rendered in the aforementioned suit. Furthermore, DHEC and DOE agree to stay negotiation of a payment and/or penalty pending the outcome of this suit.

NOW, THEREFORE, in the spirit of mutual cooperation between DHEC and DOE and in settlement of existing disputes stated herein, and consistent with the Memorandum of Agreement (MOA) between DOE and DHEC dated April 8, 1985, as amended April 6, 1988, DOE shall perform the following:

1) On or before June 17, 1991, December 16, 1991, and June 15, 1992, submit to DHEC status reports on the preparation of the Post-Closure Part B Permit Application for the MWMF; and

2) On or before November 30, 1992, submit to DHEC a revised Part B Permit Application for the MWMF to include the LLRWDF and to correct the following deficiencies:

R.61-79.270.21(a), failure to include Environmental Protection Agency hazardous waste identification numbers for waste contained in each MWMF landfill cell; and

R.61-79.270.21(b), failure to include detailed design and construction information for the landfill; and the deficiencies relating to groundwater as specified in the July 13, 1989, NOD which is attached to this Settlement Agreement.

Further, the revised Part B Permit Application for the MWMF must include the following information as a result of the detection of groundwater contamination at the MWMF:

R.61-79.270.14(c)(1), a summary of the groundwater monitoring data

obtained during the interim status period;

R.61-79.270.14(c)(4), a description of any plumes of contamination that has entered the groundwater from a regulated unit; and

R.61-79.270.14(c)(8), sufficient information, supporting data, and analyses to establish an alternate concentration limit demonstration (ACL). If, based on the status reports or the final submission of the ACL, DHEC or DOE determine that an ACL is not appropriate, then DOE will submit a corrective action plan on November 30, 1993. In preparing the Part B Permit Application, for the MWMF, DOE agrees to address the hazardous constituents in the groundwater pursuant to RCRA. Further DOE agrees to address the non-hazardous constituents pursuant to the PCA or the MOA, as appropriate, to include a proposed course of action with justification. In its review of said Part B Permit Application DHEC shall give consideration to DOE's technical and economic feasibility demonstration(s).

IT IS FURTHER AGREED THAT, consistent with the MOA:

(a) DOE shall be permitted to exceed the time schedule set forth in this Agreement only to the extent that the delay is caused by reasons entirely beyond the control of DOE or the control of any entity controlled by or under common control of DOE. In any event, the burden of establishing a basis for an extension shall be exclusively on DOE.

(b) If DOE determines it may fail to achieve any deadline set forth in this Agreement, DOE shall submit a written report by messenger or certified mail to DHEC. Such report shall be submitted at least five (5) working days prior to the deadline anticipated to be missed and shall include the following:

(1) An explanation for the anticipated failure to meet the deadline;

(2) The measures taken and to be taken by DOE to minimize the delay;

(3) The timetable by which those measures will be implemented which will not be beyond the period of time reasonably necessary for completion of those activities on an expedited schedule calculated to minimize the delay.

(4) Any documentation relevant to (a) and (b).

(c) DHEC will respond in writing within five (5) working days to any report by DOE pursuant to Paragraphs (a) and (b) of this Section by indication whether DHEC approved DOE's proposed date or time period for completion of the delayed activities. DHEC's written approval will be incorporated into the Settlement Agreement. If DHEC does not so approve, DHEC will so state in writing, and also state the date by which, or the time period within which, DOE shall achieve the tasks as to which the deadline applied, which written response shall be deemed to be incorporated into this Settlement Agreement.

IT IS FURTHER AGREED, that failure to meet the requirements of this Settlement Agreement, as amended, shall be deemed a violation of the Hazardous Waste Management Act and therefore shall be deemed unlawful. Upon ascertaining any such violation, DHEC shall promptly initiate action(s) which may include court action to obtain compliance with both this Settlement Agreement, as amended, and the aforesaid Act. Such action

shall be consistent with the MOA between DOE and DHEC dated April 8, 1985, as amended April 6, 1988.

THE SOUTH CAROLINA DEPARTMENT OF
HEALTH AND ENVIRONMENTAL CONTROL

DATE: May 10 1991 BY Michael D. Jarrett
Columbia, South Carolina Michael D. Jarrett, Commissioner

WE CONSENT

United States Department of Energy

DATE: 5/1/91

DATE 4/22/91

THE SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

DATE: 5/9/91

Hartsill W. Truesdale, P.E., Chief
Bureau of Solid and Hazardous
Waste Management

DATE: May 9, 1991

Approved by: Legal Office

#16

THE STATE OF SOUTH CAROLINA
BEFORE THE DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

IN RE: UNITED STATES DEPARTMENT OF ENERGY
AIKEN, ALLENDALE AND BARNWELL COUNTIES

SETTLEMENT AGREEMENT
87-52 -SW

The United States Department of Energy ("DOE") owns and is responsible for the operation of the Savannah River Plant ("SRP"), (SC1890008989), a nuclear materials production facility located in Aiken, Allendale, and Barnwell Counties in South Carolina.

Operations of the SRP have involved the handling and disposal of various forms of wastes, including chemical, solid, liquid, and hazardous wastes.

Under Section 6001 of the Resource Conservation and Recovery Act ("RCRA"), federal facilities and activities "... shall be subject, to, and comply with all Federal, State, interstate, and local requirements, both substantive and procedural (including any requirement for permits or reporting or any provisions for injuctive relief and such sanctions as may be imposed by a Court to enforce such relief), respecting control and abatement of solid waste or hazardous waste disposal in the same manner, and to the same extent, as any person is subject to such requirements, including the payment of reasonable service charges."

FINDINGS OF FACT

1) DOE owns and is responsible for the operation of the SRP, a national defense nuclear materials production facility located in Aiken, Allendale, and Barnwell Counties in South Carolina.

2) On September 21, 1979, the South Carolina Department of Health and Environmental Control (DHEC) instituted emergency hazardous waste management regulations. On March 31, 1980, DHEC promulgated the South Carolina Hazardous Waste Management Regulations. These regulations were amended on January 29, 1981; on June 22, 1984; on January 24, 1986; and on March 19, 1987.

3) Pursuant to the emergency regulations, on December 10, 1979, DOE submitted to DHEC a notification of its hazardous waste activities. On September 29, 1980, DOE submitted to DHEC an application for a hazardous waste facility permit (Part A) for storage and for disposal in seepage basins. At that time, DOE and the U.S. Justice Department questioned the extent of RCRA and State jurisdiction over DOE hazardous waste activities. The September 29, 1980, submission modified the December 19, 1979, notification by excluding certain waste management units which DOE had determined were not covered by the Federal program.

4) On April 2, 1981, the U.S. Environmental Protection Agency (EPA) granted DHEC interim authorization to conduct Phase I of the Federal hazardous waste program. Phase II, Components A and B were granted November 18, 1982. Phase II, Component C was granted December 22, 1983. DHEC's Final Authorization application was approved by EPA on November 8, 1985.

5) DOE and DHEC entered into a Memorandum of Agreement (MOA) on April 8, 1985.

6) On November 22, 1985, DOE submitted a closure plan for the Mixed Waste Management Facility (MWMF). DOE contends that this plan was a protective closure plan.

7) On May 27, 1986, DHEC formally requested additional information concerning the application for a hazardous waste facility permit ("Part B") for the MWMF at SRP. This request was made pursuant to the South Carolina Hazardous Waste Management Act and the MOA. The Part B was required to be submitted no later than three months after receipt of the May 27, 1986, letter.

8) On July 3, 1986, EPA published a Federal Register Notice in Volume 51, Number 128 which provided guidance on obtaining EPA authority to regulate radioactive mixed waste.

9) On August 29, 1986, DOE submitted to DHEC its Part B for the MWMF.

10) DHEC personnel conducted an initial review of DOE's Part B for the MWMF and issued a Notice of Deficiencies ("NOD") on January 14, 1987. DOE was given thirty (30) days from receipt of the NOD to respond to the deficiencies.

11) On February 20, 1987, DHEC received DOE's revisions to the Part B for the MWMF.

12) DHEC's review of DOE's February 20, 1987, revisions to the Part B for the MWMF indicates that DOE has failed to adequately address some of the deficiencies which had been cited in the January 14, 1987, NOD. DHEC's second NOD as transmitted by DHEC letter of July 30, 1987, is attached to this Agreement ("Attachment").

13) On March 6, 1987, DHEC approved DOE's well installation proposal for the MWMF.

14) On June 30, 1987, DOE submitted a revised Part A which included the MWMF.

CONCLUSIONS OF LAW

DOE has violated Department Hazardous Waste Management Regulations, promulgated pursuant to Section 44-56-10 et seq., of the 1976 South Carolina Code of Laws, as amended, as follows:

1) R.61-79.270.21(a), for failure to include in the Part B a list of all hazardous waste placed in each landfill cell;

2) R.61-79.270.14(c)(2), for failure to completely identify the uppermost aquifer and aquifers hydraulically interconnected beneath the facility property, including ground-water flow direction and rate, and the basis for such identification in the Part B.

3) R.61-79.270.14(c)(3), for failure to delineate the point of compliance, to include an illustration of any existing and proposed wells, and to delineate all information required under R.61-79.270.14(c)(2) on the site topographic map.

4) R.61-79.270.14(c)(4), for failure to adequately describe the plume(s) of contamination that has entered the ground water from a regulated unit;

5) R.61-79.270.14(c)(5), for failure to include complete plans and an engineering report which describes the proposed ground-water monitoring program to be implemented under R.61-79.264.97; and

6) R.61-79.270.14(c)(6), for failure to adequately establish a detection monitoring program meeting the requirements of R.61-79.264.98.

AGREEMENT

WHEREAS, without trial or adjudication of any issue of fact or law, the parties have agreed to the following settlement agreement, thereby

resolving disputes set forth as described above, without this Settlement Agreement constituting an admission by DOE in respect to any such issue(s) of fact or law alleged herein or through their attorneys and authorized officials;

NOW THEREFORE, in the spirit of mutual cooperation between DHEC and DOE and in settlement of existing disputes stated herein, and consistent with the Memorandum of Agreement (MOA) between DOE and DHEC dated April 8, 1985, DOE will on or before July 29, 1988, submit to DHEC a revised Part B Permit Application for the Mixed Waste Management Facility to include corrections to the deficiencies as described in DHEC's January 14, 1987, NOD and in this Agreement and its Attachment.

IT IS FURTHER AGREED THAT, consistent with the MOA:

(a) DOE shall be permitted to exceed the time schedules set forth in this Agreement only to the extent that the delay is caused by reasons entirely beyond the control of DOE or the control of any entity controlled by or under common control of DOE. In any event, the burden of establishing a basis for an extension shall be exclusively on DOE.

(b) If DOE determines it may fail to achieve any deadline set forth in this Agreement, DOE shall submit a written report by messenger or certified mail to DHEC. Such report shall be submitted at least five (5) working days prior to the deadline anticipated to be missed and shall include the following:

(1) An explanation for the anticipated failure to meet the deadline;

(2) The measures taken and to be taken by DOE to minimize the delay;

(3) The timetable by which those measures will be implemented which

will not be beyond the period of time reasonably necessary for completion of those activities on an expedited schedule calculated to minimize the delay.

(4) Any documentation relevant to (a) and (b).

(c) DHEC will respond in writing within five (5) working days to any report by DOE pursuant to Paragraphs (a) and (b) of this Section by indication whether DHEC approves DOE's proposed date or time period for completion of the delayed activities. DHEC's written approval will be deemed to be incorporated into the Settlement Agreement. If DHEC does not so approve, DHEC will so state in writing, and also state the date by which, or the time period within which, DOE shall achieve the task as to which the deadline applied, which written response shall be deemed to be incorporated into this Settlement Agreement.

IT IS FURTHER AGREED that failure to submit a complete Part B application by the date specified in this Agreement may result in the initiation of procedures to terminate interim status and that failure to meet deadlines established herein for submission of Part B Application as specified in Agreement requirement item one (1) above shall be deemed a violation of the Hazardous Waste Management Act, and therefore shall be deemed unlawful. Upon ascertaining any such violation, DHEC shall promptly initiate action to obtain compliance with both this Agreement and the aforesaid Act.

THE SOUTH CAROLINA DEPARTMENT OF
HEALTH AND ENVIRONMENTAL CONTROL

Date: [illegible]
Columbia, South Carolina

BY: [illegible]
Michael D. Jarrett
Commissioner

WE CONSENT:

UNITED STATES DEPARTMENT OF ENERGY

R. Morgan Date: 11/2/87

James D. Bauer Date: 10/29/87
Office of Chief Counsel

THE SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

Hartsill W. Truesdale Date: 11/9/87
Hartsill W. Truesdale, P.E., Chief
Bureau of Solid and Hazardous
Waste Management

Sam L. Finklea III Date: 11/10/87
Approved by: Legal Office

Attachment

NOTICE OF DEFICIENCY

Savannah River Plant
SC1 890 008 989
Volume VII - Mixed Waste Management Facility (Revisions)

Regulation/ Checklist No.	Application Page No.	Comment
270.11(a) and B 270.10(d) 270.13 A		*1. Part A of the application included in Volume I must be amended to include the MWMF.
270.14(b)(2) C-1	Classification	2. For each hazardous waste disposed at the facility, the following information should be provided: 2a. General description of the waste. 2b. Hazardous characteristics. 2c. Basis for hazard designation. 2d. Laboratory report on analysis results.
270.21(a) D-3a		3. A list should be provided of all hazardous wastes placed in each landfill cell. If any treatment was accomplished in the landfill during its active life, describe the nature and quantity of the waste remaining in the landfill after treatment was accomplished.
		4. See attached Ground-Water and EPA review comments.

* This comment is noted for the first time.

Savannah River Plant
SC1 890 008 989
Revised Part-B Permit Application, Volumes VII and VIII
Ground-Water Review
Reviewed by Harry L. Mathis

Introduction

SRP is currently required to install and operate a detection monitoring system. A proposal for the detection monitoring well system was submitted to the Department for review during a meeting on July 25, 1986. After several revisions the facility was given approval to begin installation of the wells in a March 6, 1987 letter from David Wilson to S.R. Wright. In revising the permit application SRP did not respond to many of the writer's review comments (3 thru 7) as listed in the January 14, 1987 Notice of Deficiencies (NOD). Therefore, the following review includes references to these comments as well as an additional comment generated during review of the revised documents.

Specific Comments and Regulatory Citations

1. [270.14(c)(2)] See Item 3 of the writer's completeness review in the January 14, 1987 NOD for specific comments.

2. [270.14(c)(3)] The revised topographic map failed to include a delineation of the point of compliance (POC) and an illustration of any existing and proposed wells. This information was included on the map in the original submittal, however, in revising the topographic map this information was omitted. Also, see item 4 of the writer's completeness review in the January 14, 1987 NOD for specific comments.

3. [270.14(c)(4)] See Item 5 of the writer's completeness review in the January 14, 1987 NOD for specific comments.

4. [270.14(c)(5)] See Item 6 of the writer's completeness review in the January 14, 1987 NOD for specific comments.

5. [270.14(c()6)] See Item 7 of the writer's completeness review in the January 14, 1987 NOD for specific comments.

January 14, Ground-Wat

SAVANNAH RIVER PLANT
SC1 890 008 989
Part B Application, Volumes VII and VIII
Ground-Water Review
Reviewed by Harry L. Mathis

Introduction

The Part-B application was submitted to meet regulatory requirements for post-closure of a mixed waste (hazardous/ radioactive materials) land disposal facility. SRP is currently required to develop and operate a detection monitoring system which meets the requirements of 264.98. A proposal for the detection monitoring well system (October 6, 1986 letter from Wright to Truesdale) has been reviewed (November, 1986 memo to Hartsill Truesdale). Design and evaluation of the monitoring system was based on available regional groundwater flow data. Once installed (proposed for early 1987) site specific ground-water flow direction data will be available and locations for additional, more closely spaced, downgradient wells can be evaluated.

Specific Comments and Regulatory Citations

1. [270.14(b)(13)] The post closure care period was not specified.

2. [270.14(b)(19)] The application failed to include a topographic map showing a distance of 1000 feet around the facility. Specific examples of problems with the map submitted as figure 1-1 include, but may not be limited to, the following:

a) Contours were not shown for the entire facility area depicted on the map;

b) All access and internal roads are not clearly shown on the map;

c) The topography depicted on the map does not accurately illustrate all surface run-off features, particularly drainage ditches adjacent to the perimeter road;

d) All access control (fences, gates) should be illustrated such that ground truth is represented;

e) Any withdrawl wells both on-site and off-site should be shown;

f) Buildings; treatment, storage, or disposal operations, or other structures should be shown; and,

g) The locations of any operational units within the site should be illustrated.

3. [270.14(c)(2)] The application failed to adequately identify the uppermost aquifer and aquifers hydraulically interconnected beneath the facility property, including ground-water flow direction and rate, and the basis for such identification. Specific examples were additional information is needed include, but may not be limited to, the following:

a) Identification of the uppermost aquifer in the application was based on information developed primarily for the F and H Hazardous Waste Management Facilities. Site specific identification, based on detailed data collected at the facility, will be needed;

b) Delineation of ground-water flow rates and directions are based on data interpolated from adjacent areas. Site specific evaluations will be needed;

c) The Ellenton Formation is described as the principle confining unit, however, the unit appears to be absent below the WMA as suggested by the log for well P-1 (figure 2-9) - see comment 3d below;

d) Designation of confining units must be based on site specific data due to the high rate of variability in physical properties of the units. In addition to the information discussed in the permit application, all possible hydrologic data (field and lab) should be generated as a result of installing the monitoring well system in order to fully characterize the physical properties of all hydrologic units. This information, and all current data should be illustrated on hydrologically and lithologically detailed maps and cross-sections. All existing data discussed in the permit application should be provided, especially that pertaining to head relationships between the "Tuscaloosa"/Ellenton and the Congaree;

e) All data and calculations generated during pump and slug tests should be provided;

f) Structural features for all pertinent hydrologic units should be delineated using site specific data. This information should be illustrated on maps of an appropriate scale;

g) For consistency in stratigraphic nomenclature the terms "Black Creek" and "Middendorf" should be used in lieu of "Tuscaloosa";

h) Any potential pathways for enhanced ground-water migration should be delineated. This would include but not be limited to the calcareous interval within the McBean Formation. This subject is discussed briefly on page VII-43, however, site specific data should be provided;

i) Geophysical logs should be provided for all wells used in developing the general hydrogeologic information. This especially includes those used in constructing the geologic cross-sections and maps. These logs should all be of the same vertical scale;

j) The discussion on page VII-16 of the regional dip should include the direction of dip;

k) The captions for figures 2-19 and 2-20 appear to be interchanged.

4. [270.14(c)(3)] The application failed to delineate all of the information required under 270.14(c)(2) on the site topographic map. Specific examples include, but may not be limited to, the following:

a) Detailed (hydrologic and lithologic) maps should be used to illustrate the physical properties of all pertinent hydrologic units. These maps should be clear, concise, and of equal scale. The maps used to illustrate data for the surrounding areas are at various scales, lack contouring, and are difficult to orientate and evaluate;

b) The location of well data points used in the water table elevation map should be illustrated on the site topographic map; and,

c) Section 2.1.2 described the hydrology of the units beneath the WMA and discusses the results of much slug and pump test data. The locations of the wells used in these test should be illustrated on large scale site maps.

5. [270.14(c)(4)] Description of any plume of contamination. Presently there is no data to indicate that ground-water quality has or has not been impacted by any hazardous waste constituents. However, as discussed in the Technical Summary of Ground-Water Quality Protection Program at Savannah River Plant, dated December, 1983 (DPST-83-829), a grid of monitoring wells, used primarily for radionuclides, exists in the 643-7G area. Also, mercury monitoring was discussed. As the migration pathways of radionuclides in ground-water would be at least similar to any possible plumes of contamination, any available information and an evaluation of this information should be included in the permit application. Any other available

monitoring data in addition to that above which would benefit characterization of any existing contaminants plumes should also be included.

6. [270.14(c)(4)] The application failed to provide complete plans and an engineering report which describe the proposed ground-water monitoring program to be implemented. Examples of additional information needed include but may not be limited to the following:

a) Section 2.3.1. states that 36 wells will be installed around the perimeter of the MWMF. Does this count include monitoring well BGO-25? If so, should the total number of well proposed not be 37?

b) The current proposal calls for installing downgradient monitoring wells on 400 foot centers. Once detailed site specific ground-water flow data is available additional more closely spaced downgradient wells will be needed;

c) The information concerning the installation and construction techniques for the ground-water detection monitoring system should be revised. The revision of the application should reflect any changes and/or modifications as described in the October 6, 1986 revised proposal (S.R. Wright to H.W. Truesdale) and the writers' November, 1986 review comments and recommendations (memo to H.W. Truesdale);

d) Current guidance from EPA (Ground-Water Monitoring Technical Enforcement Document (TEGD), dated September, 1986) recommends that well casing and screens which may be in contact with volatile organic constituents and are exposed to corrosive ground-water conditions should be constructed of fluorocarbon resins. The use of PVC may result in non-representative organic analyses and stainless steel may leach certain metals. If material other than fluorocarbon resins are to be used, justification must be provided which details the reasons for it's use. This should include, but not be limited to, the following considerations: durability, structural integrity, reactability, and absorption and leaching characteristics;

e) All suspected hazardous constituents which may affect ground-water quality, as required under 264.93, must be included in the list of parameters to be analyzed. The "Technical Summary" (DPST-83-829) lists polychlorinated biphenol (PCB) as a possible waste constituents. If PCB's are a suspected contaminant, the list of parameters to be analyzed should be expanded;

f) Concentration limits for all parameters to be analyzed must be specified as required under 264.94. Until background water quality can be established the concentration limits shown in Table 1 of 264 Subpart F should be used;

g) The comprehensive list of parameters, Table 2-12 (page VII-90), to be analyzed during the first year must be expanded to include all of the parameters listed in 265.92(b)(1)(2) and (3). A variance from some of the parameters may be requested and should be based on at least two rounds of data;

h) Paragraph Two of Section 2.3.3. (page VII-91) describes well cluster FSB-85 As the upgradient well. Should this not read HSB-85?

i) The sampling and analysis plan should include a complete description of the sample containers. This should include, but may not be limited to, material of construction, caps, liners, and septa. Of particular concern is the use of teflon liners, amber glass containers and teflon septa for certain parameters;

j) The sampling and analysis plan should include special sampling procedures to be used for collecting samples for the volatile organic analysis;

k) The sampling and analysis plan should include a complete description of the laboratory QA/QC procedures. Also, field QA/QC must also be discussed and should include the use of spikes, field blanks, trip blanks, lab blanks, etc.;

l) The proposed alternative statistical procedure can not be fully evaluated without a complete presentation of explicit example calculations, including all data and any manipulations or evaluations of the data prior to analysis, and literature reference citations documenting alternative t-test procedures. However, there do appear to be some aspects of the proposed method which appear to conflict with the basic purpose of the statistical analyses. Primarily this includes: (1) Generating background water quality data over a period of two years. This is an excessive time period and conflicts with the one year as specified in 264.97(h). It would be appropriate, however, to sample 8 rounds during a one year period; and (2) In accordance with current guidance, (September, 1986 TEGD), regardless of the t-test to be used, background data must be compared to the data from each well individually each time they are sampled. The proposed practice of averaging the current data with data from the previous quarter may not be compatible with this guidance.

Therefore, SRP should incorporate the use of the Cochran's Approximation to the Behran's-Fisher Students T-test (CABFST). SRP may use the proposed method in addition to, but not in lieu of, the CABFST and/or propose an alternative method or revise the currently proposed method. For specific guidance the September 1986 TEGD should be consulted.

7. [270.14(c)(6)] Failure to adequately establish a detection monitoring program meeting the requirements of 264.98. Examples of problems include but may not be limited to the following:

a) The proposed list of indicator parameters, waste constituents, or reaction products may not provide a reliable indication of the presence of hazardous constituents in the ground-water. See comments 6-e and 6-g above for additional information;

b) The description of the proposed sampling, analysis and statistical comparison procedures to be utilized in evaluating ground-water monitoring data is incomplete. See Comments 6i-l above for additional information;

c) The permit application must include a description of the notification and response protocol to be followed in the event a significant increase or change occurs in any of the monitored parameters. This protocol must meet all of the requirements of 264.98(h-j); and,

d) As previously discussed (August 21, 1986 letter to S.R. Wright) bimonthly monitoring is recommended during the first year to accelerate development of background statistics and ground-water quality information.

EPA COMMENTS ON
MWMF PART B APPLICATION
GROUNDWATER INFORMATION
SAVANNAH RIVER PLANT

§270.14(c)(2) - General Hydrogeologic Information

1. Supplement to 1st NOD groundwater comment "3. d)":

   - Site specific lithologic data obained during the drilling phase should include sieve analyses on samples obtained from the various lithologic units comprising the uppermost aquifer/interconnected aquifers and confining units. Grain size distribution curves plotted from the sieve analysis data should be presented. Any grain size/sorting trends identified for the lithologic units should be described. Estimates of hydraulic conductivities of the various lithologic units should be calculated using the grain size distribution data and empirical relationships. Show all calculations.

§270.14(c)(5) & (6) - General Monitoring Requirements and Detection Monitoring Program

1. The proposed well locations BGO-15 through BGO-19 do not include a clustered well to monitor the McBean Formation. Additional clustered wells should be proposed to monitor the McBean groundwater quality in these areas.

2. Supplement to 1st NOD groundwater comment "6. e)":

   - the list of parameters to be analyzed must include all anticipated reaction products.

3. As per §264.98 (a)(1)(2) and (3) and to the extent possible, include a more complete description of the wastes handled in the waste management area. This description must include but may not be limited to the following:

   a. Describe the location and approximate gross quantity of the various wastes placed in the waste management area. Present this information on a map of the waste management area (such as the oil burial locations). NOTE: SRP responded on a similar comment generated from the Closure Plan review. Their response stated that records on waste inventory are inadequate. However, in lieu of a complete waste inventory description, a general description of where the approximate locations of the different types of wastes have been placed must be submitted.

   b. Summarize the waste source of the hazardous constituents comprising the list of constituents and reaction products to be monitored.

   c. Describe the mobility, stability and persistence of the waste constituents and reaction products in the unsaturated zone beneath the waste management area.

   d. Describe the detectability of the waste constituents and reaction products in the groundwater.