

Appendix G

Approved PALs and Environmental Monitoring Plan



George E. Meyer
Secretary

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

RECEIVED

MAY 10 1995

Ans'd _____

101 South Webster Street
Box 7921

Madison, Wisconsin 53707

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MAY 7 1995

Ms. Myrna Riegler, Director
Adams County Landfill
1420 Hwy 21
Friendship, WI 53934

FILE REF: FID# 70104056
Adams Cnty
SW
Approvals

SUBJECT: Modification to the Plan of Operation Approval - for
Compliance with Subtitle D Requirements at the Adams County
Landfill, License #3150

Dear Ms. Riegler:

I am pleased to inform you that your requested modifications to your plan of operation approval, for revisions to your approved plan of operation in order to comply with the requirements of USEPA 40 CFR Part 258 RCRA Subtitle "D", have been approved provided the condition in the attached approval are followed. The Department believes that the proposed modification will not have an adverse effect on the performance of your landfill. You should attach this plan of operation approval modification directly to the plan of operation approval issued on May 18, 1988.

Your report addresses the Subtitle D requirements for location restrictions, revised landfill design to incorporate composite liner and composite cap, operating criteria, groundwater monitoring, closure and post closure care and financial assurance criteria.

We sent you a draft of this approval with a cover letter dated March 24, 1995, in order to allow you to comment on the approval. We discussed several conditions regarding design and construction documentation with your consultant by phone, however no changes to the conditions were requested. We have added a condition (#6) regarding the drainage layer over the liner that was not included in the draft approval. We discussed the additional condition with your consultant by phone on April 5, 1995. We received a letter from you dated April 25, 1995, requesting changes to several of the groundwater monitoring conditions. We have made the requested changes in the attached approval. We also rounded-up some of the PAL calculations.

History of this Plan Modification Request

On August 17, 1993, we received a report and plan sheets, dated August 1993, requesting a plan modification for Subtitle D compliance submitted on behalf of the Adams County landfill by Mid-State Associates, Inc. (MSA). In a phone conversation with your consultant and at a meeting with the previous landfill director and your consultant, we requested a great deal of additional information. We also requested that the plan sheets be revised to remove

obsolete items such as the gas vents, and that the location of the gas extraction wells shown on the plan sheets be confirmed. In response to our request, a revised report and set of plan sheets, dated February 1994, were submitted to me on March 17, 1994. The revised plan sheets included drawings showing the obsolete gas vents and incorrect gas extraction well locations. We sent a letter dated April 5, 1994 requesting that the entire set of plan sheets be revised and re-submitted to us. After receipt of our letter, we met with the previous landfill director and your consultant at their request to discuss our letter. On September 2, 1994 we received a second revision of the report and set of plan sheets dated August 1994. This approval only covers the report and plan sheets dated August 1994.

Design Changes

To comply with Subtitle D design requirements you have proposed a design which incorporates a geomembrane in conjunction with the clay liner and cap. For all future phase construction (Phases 3, 4 and 5), the liner will include a 60 mil high density polyethylene (HDPE) membrane placed directly on top of the clay liner. A geotextile would be placed over the geomembrane prior to placing the sand drainage layer. The leachate collection trenches have been revised to "V" shaped trenches to avoid sharp corners for geomembrane installation. Also the clay liner thickness has been reduced from five feet to four feet. The final cover over the entire landfill will include a 40 or 60 mil polyethylene geomembrane placed directly above the two foot clay layer. A geotextile will be placed over the geomembrane and a 1.5 foot clean sand drainage layer will be placed over the geotextile. One foot of silty sand rooting zone layer will be placed over the drainage layer and six inches of topsoil will complete the final cover. Four inch perforated polyethylene piping (PE) will be placed within the sand drainage layer at the top of the 4:1 sideslopes on the north and south sides of the landfill. This subsurface cut-off drain will direct water collected within the sand drainage layer at the crest of the landfill down the 4:1 sideslopes in solid wall PE piping and into the perimeter drainage ditches. A toe drain system will also be placed around the entire perimeter of the landfill consisting of perforated 6 inch PVC pipe. Water collected in the toe drain will also be directed to the perimeter ditches.

The attached approval requires you to increase the drainage blanket layer over the liner system from a minimum 12 inches to a minimum 18 inch thickness to provide additional protection of the geomembrane liner. The waste volume displaced by the additional 6 inch sand drainage layer may be recovered by increasing the final grades.

The Department is in the process of modifying NR 516 Wis. Adm. Code, the construction documentation section of our rules, which will include requirements for documentation of geomembrane liner and cap construction in landfills. You will be required to follow these requirements for landfill construction once the rules are finalized.

Operating Changes

To comply with Subtitle D operating requirements you have proposed a program for detecting and preventing the disposal of regulated hazardous waste and PCB waste. The program would involve a random inspection of incoming waste loads at least once a month. The inspections would be completed by personnel trained to recognize such waste and include spreading the waste loads on a clay pad within the working face and visually inspecting the waste. The hauler would be required to stay on site until the inspection is completed. The Department would be informed if hazardous or PCB waste are found during the inspection.

The Department is in the process of developing rules for the hazardous waste and PCB waste detection program. You may follow your proposed random waste load inspection program until the rules are finalized. Once finalized, you will be expected to follow the Department rules which will be part of the operating requirements in the revised NR 506 Wis. Adm. Code.

Monitoring Changes

Mid State Associates proposed PAL calculations for monitoring wells MW 20, 21, 22, 25, 26, 27, and 28 in addition to wells which have been part of the monitoring program for the landfill. They also proposed adding these wells to the routine water quality monitoring program. Wells MW 25, 26, 27, and 28 were installed to monitor a solid waste processing and recycling facility proposed to be constructed southeast of the landfill. This facility has not been constructed. Due to the distance from the landfill, it is not necessary to add these wells to the monitoring program for the landfill for water quality purposes. However, because of the complicated flow patterns around the landfill, we have added them for semi-annual water levels to assist in the interpretation of groundwater flow directions. Because these wells will only be used to monitor groundwater heads, PALs have not been established for them.

Wells MW 20, 21, and 22 were installed to monitor the demolition landfill which was constructed during 1990 in an area southwest of the landfill. We agree that these wells should be added to the water quality monitoring program for the landfill. These wells are close to and downgradient of the landfill. There has been an upward trend in alkalinity, hardness and specific conductivity at MW 1, 20, 21, and 22 since 1991. All of these wells are downgradient of Phase 1 of the solid waste landfill and MW 20, 21, and 22 are directly adjacent to the demolition fill area.

Because of the increasing trend in alkalinity, hardness, and specific conductivity at MW 1, 20, 21, and 22, we did not accept the PALs which Mid State Associates calculated for these constituents at these wells. The PALs calculated are higher because of the later values, which may not be representative of natural water quality. Therefore, we have substituted the PALs calculated at MW 3 for these wells and constituents. MW 3 is a water table observation well, as are these others. The water quality at MW 3 appears to be similar to the first few rounds at MW 1, 20, 21, and 22.

Ms. Myrna Riegler - Page 4

As we explained in our May 6, 1994 guidance document which we sent to you, we are not establishing PALs for pH.

Closure and Long-Term Care Changes

To comply with Subtitle D financial assurance requirements you have revised your closure and long-term care cost. The closure cost now include the installation of a geomembrane in the final cover. The long-term care costs for leachate haul and treatment have been reduced due to the reduced volume of leachate generated with installation of the composite cap. However the long-term care costs for maintenance have been increased to provide for maintenance of the composite cap. The long-term care period has been increased from 20 years to 40 years for proof of financial responsibility.

Petroleum Contaminated Soil Use as Daily Cover

Your plan modification also contains a request to use petroleum contaminated soil as daily cover at your landfill. We are approving this request provided the requirements in the attached approval regarding petroleum contaminated soil use as daily cover are followed, as well as any other state, federal or local requirements regarding petroleum contaminated soil. Please be aware that NR 722 Wis. Adm. Code, which will become effective in May 1995, restricts the volume of petroleum contaminated soil which can be used as daily cover and also restricts the volume of petroleum contaminated soil which can be disposed of in a landfill. We have attached a copy of NR 722.10(4) Wis. Adm Code which is the section of the code regarding landfill disposal of petroleum contaminated soil. Also new air regulation which will effect the disposal of petroleum contaminated soil are also being developed at this time. You should contact Joe Brehm at (608) 267-7541 to discuss the air regulations.

Please call Susan Fisher at (608) 267-9387 or Mike Miller at (715) 421-7821 if you have any questions regarding this approval.

Sincerely,

Lakshmi Sridharan

Lakshmi Sridharan, Ph.D., P.E., Chief
Solid Waste Management Section
Bureau of Solid & Hazardous Waste Management

LS:SF:ADAMSUBD.MOD
Attachments

cc: Mike Miller - Wis. Rapids Area
Katherine Kalscheur - Mid-State Assoc.
Ronald Keach - Chairman, Town of Strong's Prairie

BEFORE THE
STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

CONDITIONAL PLAN OF OPERATION APPROVAL MODIFICATION
FOR COMPLIANCE WITH SUBTITLE D REQUIREMENTS
AT THE ADAMS COUNTY LANDFILL #3150

FINDINGS OF FACT

The Department finds that:

1. Adams County owns and operates a non-hazardous solid waste disposal facility in the NE 1/4 of Section 13, T18N, R5E, Town of Strong's Prairie, Adams County, Wisconsin.
 2. A conditional plan of operation approval was issued by the Department for the facility on May 18, 1988.
 3. On September 2, 1994, Mid-State Assoc. submitted a request to the Department for a modification to the conditional plan of operation approval. The proposed modification involves design, operational, monitoring, and financial responsibility changes.
 4. The information submitted in connection with the modification request includes:
 - a. A report titled "1994 Plan Modification for the Adams County Sanitary Landfill, Adams County, Wisconsin" and 17 accompanying plan sheets, submitted by Mid-State Assoc., dated August 1994, and received by the Department on September 2, 1994.
 - b. A letter and attachments from Mid-State Assoc. dated January 3, 1995. The submittal contains additional information regarding the plan modification proposal which the Department requested in a phone conversation on November 10, 1994.
 - c. A letter and attached detail from Mid-State Assoc. dated January 25, 1995. The submittal contains additional information which the Department requested in a phone conversation on January 12, 1995.
 - d. A letter from Adams County dated April 25, 1995, regarding the draft copy of this approval sent the County with a cover letter dated March 24, 1994.
- The \$1500 plan review fee for this project was received by the Department on August 27, 1993.
5. Additional documents considered in connection with the review of the construction documentation include the following:
 - a. A report titled "Plan of Operation for the Adams County Sanitary Landfill" and 28 accompanying plan sheets, submitted by Foth & Van Dyke and received by the Department on February 19, 1988.

- b. The Department's modification to the plan of operation approval for the active gas extraction system dated August 11, 1992.
 - c. Groundwater monitoring data for the facility contained in the Department's files.
6. The special conditions set forth below are needed to assure that the environment and human health are protected. If the special conditions are complied with, the proposed modifications will not inhibit compliance with the standards set forth in the applicable portions of chs. NR 500-520, Wis. Adm. Code.

CONCLUSIONS OF LAW

- 1. The Department has authority under s. 144.44(3), Stats., to modify a plan of operation approval if the modification would not inhibit compliance with the applicable portions of chs. NR 500-520, Wis. Adm. Code.
- 2. The Department has authority to approve a plan of operation modification with special conditions if the conditions are needed to ensure compliance with the applicable portions of chs. NR 500-520, Wis. Adm. Code.
- 3. The conditions of approval set forth below are needed to ensure compliance with the applicable portions of chs. NR 500-520, Wis. Adm. Code.
- 4. The Department has the authority under s. 160.19(8), Stats., and s. NR 140.28, Wis. Adm. Code, to establish preventive action limits for indicator parameters.
- 5. In accordance with the foregoing, the Department has authority under s. 144.44, Stats., to issue the following conditional plan of operation approval modification.

CONDITIONAL PLAN OF OPERATION APPROVAL MODIFICATION

The Department hereby approves the proposed modification to the plan of operation for the Adams County landfill, subject to the following conditions:

Design and Construction

- 1. A preconstruction report shall be submitted to the Department for review at least two weeks prior to the preconstruction meeting for each segment of the composite liner and cap. At a minimum, two copies shall be provided to the central office in Madison and one copy shall be provided to the Wisconsin Rapids Area Office. The report shall include:

- a. A schedule for the entire construction project including the pre-construction meeting date, the submittal date for the construction documentation report, and the date by which the construction area will be needed for waste placement (for liner construction).
- b. Any proposed revision to the approved design include detailed diagrams incorporating all changes. A summary of any proposed revisions to the quality assurance manual submitted with the plan modification report, other than those required by the Department in this approval.
- c. Identification of the manufacturer of the geomembrane, manufacturer qualifications and technical specifications of the resin and polymer selected, and results of the manufacturer's quality control tests for the selected geomembrane (if available at the time of report submittal). Identification of the fabricator of geotextiles and other geosynthetics used in site construction, technical specifications of the products and materials to be used and methods used to bond materials together.
- d. Identification of the installation contractor, contractor qualifications, specific on-site supervisory staff, and seamer experience with the specific type of geomembrane being installed. The report shall include a quality control plan that the installation contractor will follow for the installation of the geosynthetics. The report shall describe contractor-specific: geomembrane handling procedures; welding and testing equipment; attachment methods; panel overlaps; patching, seam, and wrinkle repair procedures; use of trial seams; use of nondestructive and destructive tests and test frequency; and acceptable limits on subgrade and weather conditions.
- e. Identification of the quality assurance consultant indicating specific on-site staff and a summary of their qualifications and experience with the specific type of geomembrane being installed. The report shall include a copy of the construction quality assurance plan to be used during documentation of the construction including forms which will be used. The report shall describe the specific equipment, ~~test methods and~~ test frequency to be used by the quality assurance consultant and the laboratory to be used to test geomembrane samples.
- f. Source and construction of specialty connections between the geomembrane component and any penetrations. The report shall identify methods to test the integrity of seams and connections to penetrations of the geomembrane.
- g. Documentation from the geotextile manufacturer that all geotextile which will be in direct contact with the geomembrane has been certified to be needle free.

- h. A proposed method of removing coarse gravel and cobbles on the surface of the soil below the geomembrane, a construction method to assure a smooth surface prior to geomembrane placement, and a documentation method to record the elimination of unacceptable material on the surface below the geomembrane.
 - i. A panel layout pattern for the geomembrane placement.
 - 2. A preconstruction meeting shall be scheduled prior to the initiation of the geomembrane installation of each segment of the liner and the final cover system. The meeting shall be used to clarify or confirm design changes, acceptability of selected construction materials, construction concepts or practices, and requirements of this approval and any subsequent modifications. At a minimum, the meeting shall include the following personnel: the construction project manager, engineering design consultant, the geomembrane installer, the earth work contractor, the quality assurance personnel and appropriate Department district and central office staff.
 - 3. In addition to the construction inspections required by the plan of operation approval, additional construction inspections will be performed at this facility during each of the construction events listed below for each phase of liner and final cover construction. The Department's environmental engineer assigned to this facility shall be notified a minimum of one week prior to beginning of each construction event for the purpose of allowing the Department to inspect the work. A fee shall be paid to the Department for each required inspection in accordance with NR 520 Wis. Adm. Code. The inspection fees shall be paid at the time the construction documentation is submitted to the Department for review.
 - a. Geomembrane installation
 - b. Placement of drainage layer over the geomembrane
 - 4. The construction of the geomembrane component of the composite liner and composite cap shall comply with the proposed quality assurance manual included in appendix E of the plan modification report dated August 1994 and the following requirements. Any modifications to the approved plan must be approved by the Department prior implementing the change.
 - a. The geomembrane installation quality assurance consultant shall be an independent party not affiliated with the geomembrane manufacturer or installer. The quality assurance consultant shall have at least one million square feet installation experience with the type of geomembrane being installed.
 - b. The geomembrane panels shall be installed parallel to all slopes in excess of 10%, providing alignment of the seams in a direction along and not across the slopes.
 - c. Department approval shall be obtained prior to geomembrane installation for ambient temperatures below 32° F.

- d. Installed geomembrane shall be covered with earthen material within 30 days of completing quality control and quality assurance testing of the installation.
5. The placement of soil materials on the geomembrane/geotextile surface of the liner and the cap shall conform with the proposal submitted in the quality assurance manual included in appendix E of the plan modification report (page 18 - 20) dated August 1994. In addition to the requirements in appendix E, guidance to machine operators placing drainage material on the geosynthetic surfaces shall be provided by the use of an observer with an unobstructed view of the advancing lift of soil. Also, efforts shall be made to place the soil over the geomembrane during the coolest part of the day to minimize the development of wrinkles in the geomembrane.
6. The drainage layer over the base liner system shall include a minimum 8 oz/yd² non-woven geotextile which has been certified to be needle free placed directly over the geomembrane and a minimum 18 inch thick sand layer.
7. The drain layer in the final cover shall be terminated for a 10 foot radius around penetrations of the final cover structure, including gas extraction well risers, leachate headwell risers, and cleanout pipe risers. The sand drainage material shall be replaced with the rooting zone soil around the geomembrane penetrations.

Construction Documentation

8. A registered professional engineer or a qualified technician who is directly supervised by a professional engineer shall be continuously present and performing their assigned quality assurance duties throughout the construction event for which a documentation report is required to be submitted. The personnel performing quality assurance for geomembrane installation shall not be affiliated with the geomembrane manufacturer, fabricator, or installer.
9. Conformance testing shall be conducted on geomembrane material delivered on site and used in construction of the liner and final cover. Sampling and testing shall be performed by the quality assurance consultant or their laboratory. Conformance testing data shall be included in the construction documentation report. At a minimum the testing shall include the following:
 - a. Geomembrane thickness shall be tested at the rate of a minimum of 5 areas measured per roll.
 - b. Geomembrane tensile properties (strength and elongation in yield and break) shall be tested at a minimum of one test per 40,000 ft² of geomembrane installed and a minimum of one test on rolls from each batch of resin used to manufacture rolls delivered on site.
 - c. Geomembrane density and melt index of the polymer shall be tested at a rate of one test per 40,000 ft² of geomembrane installed and a minimum of one test on rolls from each batch of resin used to manufacture rolls delivered on site.

- d. Geomembrane environmental stress cracking resistance documentation shall be provided which shows that the manufacturer performed a minimum of one test for each batch of resin used to manufacture rolls delivered on site.
10. Pre-qualification tests for each geomembrane fusion welding machine shall be conducted by a minimum of 2 pre-qualification seams run per welding machine at the start-up of each day by each seaming technician performing geomembrane welding, with additional test runs following work interruptions, weather changes or as directed by the quality assurance engineer or qualified technician. Extrusion welding machine performance shall be verified by a minimum of two test seam per machine at the start-up each day with additional test runs as directed by the quality assurance engineer or qualified technician. Four samples from each test seam shall be immediately tested with a tensiometer in the field for peel and two samples in shear. Both tracks of the dual wedge welds shall be peel tested if the welding machine provides sufficient overlap. The testing shall be observed by the quality assurance personnel. Test results shall be collated for documentation along with notes on date and time, ambient temperature, technician, seaming machine, and machine settings. The test results shall be submitted with the construction documentation report.
11. Documentation of all seams and connections shall be performed on the geomembrane as stated below. The results of all testing shall be included in the construction documentation report.
- a. Nondestructive field seam testing shall be performed on all seams of geomembrane attached by welding to other geomembrane sheets, plastic plates and pipe penetrations. Every seam and patch shall be visually inspected by the quality assurance personnel.
 - b. Destructive field and laboratory seam test samples shall be taken at a rate of one sample per 500 feet of seam accomplished, unless another frequency is approved by the Department. The quality assurance person shall determine the location for destructive samples to be taken. Areas suspected of imperfect welding should be chosen for destructive sample location. Destructive seam test samples shall be tested under the same protocol as the welding machine test seams. The field testing shall be conducted or observed by the quality assurance personnel.
 - c. A destructive sample shall be taken from at least one end of each fusion weld greater than 100 feet long and tested for field shear and peel. The testing shall be conducted or observed by the quality assurance personnel.
 - d. Field shear and peel tests of geomembrane seams shall be performed using standardized specimen sizes in tensile testing machines. The tensile testing machine shall be equipped with electrically controlled and smoothly moving jaw separation apparatus, capable of adjustments and defined settings for jaw separation rate, and capable of displaying jaw separation rates and tensile loadings exerted on the geomembrane samples. Tensile testing machines shall be accompanied by documentation for calibration conducted within three month of the start of geomembrane installation.

- e. Geomembrane boots attached to leachate pipes exiting the landfill liner shall be leak tested following construction by submerging the entire boot/pipe connection under water for at least 24 hours and measuring the water level. The boot shall be repaired and the leak test repeated if any drop in the water level is measured. Other methods for insuring the integrity of the boot/pipe connection may be used, provided they are approved by the Department.
12. Daily inspector's summary reports shall be prepared by the quality assurance personnel for each day that installation of geomembrane is either attempted or accomplished. The reports shall describe practices employed for clay liner and cap preparation and acceptance before membrane installation. Outline drawings on 8-1/2" X 11" paper shall be prepared as necessary to record the construction events. These reports shall be appended to the construction documentation report and shall include the following information:
- a. Identification and location of geomembrane panels placed. Amount of geomembrane placed. Changes from the fabrication plan shall be noted.
 - b. Methods and procedural steps taken prior to field seaming of panels.
 - c. Identification, location and length of field seams completed.
 - d. Location and results of nondestructive seam testing.
 - e. Sample locations and results of the destructive seam testing.
 - f. Location of wrinkles large enough to double over that were cut out and patched.
 - g. Location of repairs made and results of the nondestructive testing of these repairs.
 - h. Amount and location of geotextile placed.
 - i. Procedures for placement of the sand drainage layer over the geomembrane.
 - j. Weather conditions and constraints.
13. A certification section shall be included at the immediate beginning of any construction documentation report prepared for the construction or closure of a portion of the landfill and shall include the following:
- a. The seal of all registered professional engineers who either performed quality assurance work on the project or supervised qualified technicians who did so.

- b. A table clearly identifying each registered professional engineer and qualified technician who performed quality assurance during the construction and a list of their job experiences related to the type of work they performed on this project; which aspects of construction each person provided on site quality assurance for; the number of days each was present at the landfill; and the total hours each spent at the site. The table shall also clearly identify the registered professional engineer supervising each qualified technician.
- c. A second table identifying who prepared each portion of the construction documentation report including both narrative and plan sheets.
- d. Separate signed statements by both the professional engineer(s) and qualified technician(s) identified in b. above certifying that the construction, for each item identified below, was accomplished in conformance with the approved plans and all applicable administrative code requirements. All deviations shall be explicitly noted and discussed including any changes in materials. Each statement shall also clearly identify what personal observations, knowledge or other information their certification is based on.
 - (1) The clay component of a liner or cap. The statement shall specifically address:
 - (a) The quality of clay material used and the methods utilized in its placement.
 - (b) All connections with previously placed clay layers.
 - (c) Preparation of leachate collection trenches, gas header trenches and any pipe penetrations through the clay component.
 - (d) Preparation of the upper portions of the clay component of a composite-lined or composite-capped landfill for installation of the geomembrane, including smoothness of the surface, removal of rocks and other foreign objects, and repair of the clay surface due to rain, rutting, or other damage.
 - (e) Placement of soil materials over the composite liner or composite capping layer.
 - (2) All geomembranes, grids, fabrics, nets and appurtenances. The statement shall specifically address:
 - (a) Connections with all previously placed geosynthetics.
 - (b) Placement of geomembrane in collection trenches and other irregularly shaped areas, and placement around leachate collection pipe, gas extraction wells and other penetrations of the liner and cap.

- (c) Connections of geomembrane to any penetrations of the composite liner or composite capping layer.
 - (d) The size and extent of wrinkles which developed in the geomembrane and how they were dealt with.
- (3) All elements of the construction relating to leachate or surface water routing, collection, storage and transportation, as well as the gas extraction system. The statement shall include but not be limited to: construction of leachate collection and transfer lines, all liner penetrations, collection tanks, manholes, lysimeters, gas extraction system construction, and leachate headwells.
14. The construction documentation report for each segment of the liner and final cover shall include the following additional information:
- a. Identification of all contractors and subcontractors involved with the construction and their specific duties.
 - b. Identification of the sources and product specifications for manufactured item used in site construction, such as pipe boots. This shall include the identification of all solvents and other sealants used in construction.
 - c. Documentation of the thicknesses of the drainage layer and the rooting zone layer for the final cover on a maximum 100-foot grid. Identify the methods used to document the thickness of all soil material placed above the geomembrane for both the liner and the cap.
 - d. A narrative summarizing the results of all test performed on the geomembrane, including the tests that have been performed by the resin supplier, manufacturer, installer and quality assurance consultant. The narrative shall include identification of the geomembrane and geotextile suppliers/manufactures, material specifications of the installed geosynthetics, attachment and welding methods used on the project. The report shall include the qualifications and names and experience of the installers of the geomembrane and geotextile. A sample of each of the geosynthetic materials used in the construction and seams that are representative of the installed geomembrane shall be included with the report. An analysis of all geomembrane tests shall be presented. All raw data from geomembrane testing shall be appended to the report in table formats.
 - e. Plan sheets documenting the location and designation of all geomembrane panels and seams, geomembrane patches and seam repairs, and geomembrane destructive samples. Seams shall be designated as either fusion or extrusion welded. All seams and panels shall be identified on the plan sheets with appropriate identification codes.

- f. Plan view drawings and details documenting the drainage layer and subsurface water collection and transfer system within the final cover, including the slope on all piping.
- g. Detailed drawings/photographs documenting the following:
 - (1) Geomembrane and geotextile trenches
 - (2) Splicing and joining methods between similar and dissimilar materials such as soil to soil, membrane to membrane, PVC and HDPE pipe to geomembrane and tie-ins to previously installed sections of the composite liner and cap
 - (3) Protection of the edge of the geomembrane liner and cap for future connections
 - (4) Methods used for placement of the soil components of the liner and cap, including equipment specifications

Closure

- 15. For areas of the final cover where a part or all of the clay cap has been placed and a winter season elapses prior to placement of the geomembrane portion of the composite cap, the clay cap shall be re-documented just prior to geomembrane placement as follows. First, any overlying soil above the clay and vegetation shall be completely removed including all roots. Then the upper 12 inches of the in-place clay cap shall be re-tested for dry density and moisture content on a 50-foot grid pattern. Provided the compaction standard of 90% or greater modified Proctor density is satisfied, at a minimum the upper 6 inches of the clay cap shall be scarified, re-compacted and tested to meet a minimum 90% modified Proctor density prior to placement of the additional clay or the geomembrane. If density re-tests on the upper 12 inches of clay do not meet the compaction standard, the entire 12 inch thickness of clay shall be removed in the area of the failed test, and the lower 12 inches of clay shall be re-tested for dry density and moisture content. Provided the compaction standard is met on the lower 12 inches of clay, the first 12 inches of clay shall be re-compacted to a minimum 90% modified Proctor density in 6 inch lifts. If the lower 12 inches of clay do not meet the compaction standard, the entire clay cap in the area of the failed test shall be re-compacted and retested. The depth of the clay cap shall be re-documented on a 100-foot grid pattern following completion of the density re-tests.
- 16. The closure cost for this facility have been revised to \$1,166,450 and the long term care cost have been revised to \$71,600 per year. The figures are in 1994 dollars and a breakdown of the cost are located in appendices J and K of the August 1994 plan modification report and in an addendum to the report dated January 3, 1995. The long term care period has been increased to 40 years.

Monitoring

17. Adams County shall perform monitoring in accordance with this condition until otherwise approved in writing by the Department. All data shall be submitted either on the appropriate Department forms or on diskette.

Frequency

Months

| | | | | |
|-------------|------|------|-------|------|
| Quarterly | Mar. | June | Sept. | Dec. |
| Semi-annual | Mar. | | Sept. | |
| Annual | Mar. | | | |

Monitoring Point

Frequency

Parameters

| | | |
|--|--|--|
| Leachate Head Wells | Quarterly | Liquid Elevation (00023) |
| Gas Probes | Quarterly | Per Cent Methane (85547) Barometric Pressure (00025) Ground Conditions |
| Gas Extraction System | See Department Plan Modification for the gas extraction system dated August 11, 1992 | |
| Groundwater Monitoring Wells: MW-25(045), MW-26(046), MW-27(047), MW-28(048) | Semi-annual | Groundwater Elevation (00842) |

DNR ID in parenthesis.

LEACHATE SYSTEM AND COLLECTION LYSIMETERS

| | <u>Parameters</u> | <u>Frequency</u> | |
|-------|--------------------------------------|------------------|-------------|
| | | Leachate | Lysimeters |
| 00032 | Leachate Volume Pumped | Monthly | N.A. |
| 74064 | Lysimeter Discharge | N.A. | Semi-annual |
| 00872 | Field Conductivity (@ 25°C) | Semi-annual | Semi-annual |
| 00400 | Field pH | Semi-annual | N.A. |
| 00134 | Total Suspended Solids | Semi-annual | N.A. |
| 00310 | BOD ₅ | Semi-annual | N.A. |
| 84085 | VOCs (Using EPA Method 8260 or 8021) | Semi-annual | Annual |
| 00307 | Chloride | Semi-annual | Semi-annual |
| 00900 | Total Hardness, Unfiltered | Semi-annual | Semi-annual |
| 00340 | COD, Unfiltered | Semi-annual | Semi-annual |
| 00253 | Total Manganese | Semi-annual | N.A. |
| 00120 | Total Cadmium | Semi-annual | N.A. |
| 00125 | Total Lead | Semi-annual | N.A. |
| 00610 | Total Ammonia Nitrogen | Semi-annual | N.A. |
| 74010 | Total Iron | Semi-annual | N.A. |
| 00410 | Total Alkalinity, Unfiltered | Semi-annual | Semi-annual |
| 00929 | Total Sodium | Semi-annual | Semi-annual |
| 00630 | Total Kjeldahl Nitrogen | Semi-annual | Semi-annual |
| 00945 | Total Sulfate | Semi-annual | Semi-annual |
| 00126 | Total Mercury | Semi-annual | N.A. |
| | Base/Neutral Extractable Compounds | Semi-annual | N.A. |
| | Acid Extractable Compounds | Semi-annual | N.A. |

Note: Leachate and lysimeter samples shall not be filtered. When only small sampling volumes are obtained from the lysimeter, the VOC analyses shall take precedence. The color, odor and turbidity should also be noted.

GROUNDWATER MONITORING WELLS

| | <u>Parameters</u> | <u>Frequency</u> | |
|-------|-----------------------------|------------------|------------------------|
| | | SUBTITLE D WELLS | OTHER MONITORING WELLS |
| 39036 | Alkalinity, Filtered | Semi-annual | Semi-annual |
| 00307 | Chloride | Semi-annual | Semi-annual |
| 00341 | COD, Filtered | Semi-annual | Semi-annual |
| 00872 | Field Conductivity (@ 25°C) | Semi-annual | Semi-annual |
| 22413 | Total Hardness, Filtered | Semi-annual | Semi-annual |
| 00400 | Field pH | Semi-annual | Semi-annual |
| 00010 | Field Temperature | Semi-annual | Semi-annual |
| 00842 | Groundwater Elevation | Semi-annual | Semi-annual |
| 84085 | VOCs (Method 8021 or 8260) | Semi-annual | Annual |

Groundwater Monitoring Wells

| <u>Name</u> | <u>Point I.D.</u> |
|-------------|-------------------|
| MW-1 | 001 |
| MW-1P | 002 |
| MW-2 | 003 |
| MW-2P | 004 |
| MW-3 | 005 |
| MW-3P | 006 |
| MW-6 | 007 |
| MW-6P | 008 |
| MW-7* | 009 |
| MW-7P | 010 |
| MW-9 | 012 |
| MW-16* | 013 |
| MW-17* | 014 |
| MW-17P | 015 |
| MW-18* | 016 |
| MW-18P | 017 |
| MW-19 | 018 |
| MW-19P | 019 |
| MW-20 | 040 |
| MW-21 | 041 |
| MW-22 | 042 |

Gas Extraction Wells

| <u>Name</u> | <u>Point I.D.</u> |
|-------------|-------------------|
| GW-1 | 050 |
| GW-2 | 051 |
| GW-3 | 052 |
| GW-4 | 053 |
| GW-5 | 054 |
| GW-6 | 055 |
| GW-7 | 056 |
| GW-8 | 057 |
| GW-9 | 058 |
| GW-10 | 059 |

* Subtitle D Wells.

Leachate Head Wells

| <u>Name</u> | <u>Point I.D.</u> |
|-------------|-------------------|
| LHW-1 | 020 |
| LHW-2 | 021 |
| LHW-3 | 022 |
| LHW-4 | 023 |
| LHW-5 | 024 |
| LHW-6 | 025 |
| LHW-7 | 026 |
| LHW-8 | 027 |
| LHW-9 | 028 |
| LHW-10 | 029 |

Collection Lysimeters

| <u>Name</u> | <u>Point I.D.</u> |
|-------------|-------------------|
| CLR-1 | 030 |
| CLR-2 | 031 |
| CLR-3 | 032 |
| CLR-4 | 033 |
| CLR-5 | 034 |

Leachate System

| <u>Name</u> | <u>Point I.D.</u> |
|-------------|-------------------|
| Pump M.H. | 035 |

Gas Probes

| <u>Name</u> | <u>Point I.D.</u> |
|-------------|-------------------|
| GP-1 | 036 |
| GP-2 | 037 |
| GP-3 | 038 |
| GP-4 | 039 |

18. The following preventive action limits shall apply at the designated wells:

| Well | Alk. | COD | Cond. | Hardness |
|-------|------|-----|-------|----------|
| mw1 | 290 | 32 | 590 | 310 |
| mw1p | 220 | 30 | 610 | 300 |
| mw2 | 240 | 30 | 480 | 350 |
| mw2p | 220 | 31 | 440 | 310 |
| mw3 | 290 | 32 | 590 | 390 |
| mw3p | 230 | 30 | 450 | 320 |
| mw6 | 230 | 28 | 470 | 270 |
| mw6p | 290 | 28 | 580 | 380 |
| mw7 | 290 | 30 | 560 | 370 |
| mw7p | 250 | 29 | 490 | 290 |
| mw16 | 320 | 31 | 590 | 360 |
| mw17 | 250 | 29 | 490 | 370 |
| mw17p | 250 | 29 | 370 | 290 |
| mw18 | 340 | 28 | 650 | 420 |
| mw18p | 260 | 28 | 500 | 300 |
| mw19 | 300 | 28 | 590 | 340 |
| mw19p | 240 | 29 | 460 | 320 |
| mw20 | 290 | 29 | 590 | 390 |
| mw21 | 290 | 42 | 590 | 390 |
| mw22 | 290 | 29 | 590 | 390 |
| mw25 | - | - | - | - |
| mw26 | - | - | - | - |
| mw27 | - | - | - | - |
| mw28 | - | - | - | - |

19. Within 120 days of the date of this approval, Adams County shall submit the following:

- a. Geologic cross sections constructed through all borings at the site including those for abandoned borings and wells and the monitoring wells installed to monitor the demolition landfill and the recycling facility. The cross section shall contain the information outlined in NR 512.13(2), Wis. Adm. Code.
- b. A completed Well Information Form and boring logs for monitoring wells MW 25, 26, 27, and 28.

Daily Cover Requirements

20. Petroleum contaminated soil proposed for use as daily cover at the landfill shall be characterized under the direction of the Department's Leaking Underground Storage Tank (LUST) program or as follows: sampled at a rate of one composite sample per 600 cubic yards of soil with a minimum of one sample per source, the samples shall be analyzed in accordance with Attachment A. Petroleum contaminated soil used for daily cover shall comply with the contamination limits listed in Attachment A.
21. The volume of petroleum contaminated soil used as daily cover at the landfill shall be included in the annual report.

The Department reserves the right to require the submittal of additional information and to modify this approval at any time, if in the Department's opinion, modifications are necessary. Unless specifically noted, the conditions of this approval do not supersede or replace any previous conditions of approval for this facility.

NOTICE OF APPEAL RIGHTS

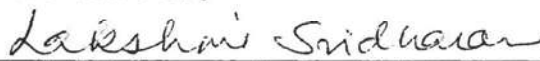
If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to section 227.52 and 227.53, Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent.

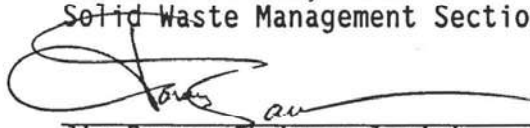
This notice is provided pursuant to section 227.48(2), Stats.

Dated: MAY 7 1995

DEPARTMENT OF NATURAL RESOURCES
For the Secretary


Lakshmi Sridharan, Ph.D., P.E., Chief
Solid Waste Management Section
Bureau of Solid and Hazardous Waste Management


Susan M. Fisher, P.E.
Solid Waste Management Section


Jim Bauer, Hydrogeologist
Solid Waste Management Section

ATTACHMENT A

**ANALYTICAL REQUIREMENTS AND CONTAMINATION LIMITS
FOR PETROLEUM CONTAMINATED SOIL**

The laboratory analyses to be performed on the petroleum contaminated soil should be based on the contaminant type as listed below. Daily cover use is only allowed for the soils which do not exceed the contamination limits listed below.

| <u>PETROLEUM CONTAMINANT TYPE</u> | <u>LABORATORY ANALYSIS *</u> | <u>CONTAMINATION LIMITS</u> |
|---|------------------------------|-----------------------------|
| gasoline; grades 80, 100, 100LL, & aviation fuel; mineral spirits | GRO & PVOC | total less than 2000 ppm |
| diesel; jet fuel; nos. 1, 2, & 4 fuel oil; kerosene | DRO, PVOC, & PAH | total less than 2000 ppm |
| crude oil; lube oil; no. 6 fuel oil | DRO & PAH | total less than 2000 ppm |
| all petroleum | Cd, leachable (TCLP)..... | less than 1.0 mg/l ** |
| contamination types | Pb, leachable (TCLP)..... | less than 5.0 mg/l ** |
| | paint filter | no free liquids *** |

* Analytical methods and additional requirements are listed below.

** May choose to run a total analysis for the metals first, if the total metal result is less than twenty times the TCLP limit, the TCLP leachable metal analysis for that metal is not required. Soil which doesn't meet a TCLP limit is a characteristic hazardous waste under current state and federal regulations.

*** Paint filter test is required only for soils near saturation.

Analytical methods: The following analytical methods and additional requirements must be used to complete the laboratory analyses listed above:

- a. GRO - Gasoline range organics by the Wisconsin DNR Modified GRO Method, with a maximum detection level of 10 mg/kg.
- b. DRO - Diesel range organics by the Wisconsin DNR Modified DRO Method, with a maximum detection level of 10 mg/kg.
- c. PVOC - Petroleum volatile organic compounds by EPA Method 5030/8020.
- d. PAH - Polynuclear aromatic hydrocarbons by EPA Methods 8310 (HPLC) or 3540/8270 or 3550/8270.
- e. (Optional) Total lead (Pb) and total cadmium (Cd) (combined inorganic and organic for each metal) by methods approved under SW-846 with a maximum detection levels of 1.0 mg/kg.
- f. Leachable Pb and leachable Cd by EPA TCLP Method. TCLP is not required if the total of the metal is run first and the total is less than twenty times the hazardous limit:

100 ppm total Pb
20 ppm total Cd.

30-00000-0000
4-1-85 2519

- g. Complete analysis for additional parameters detected during the site investigation as reported under conditions of the plan approval.
- h. Meeting the minimum testing required by this approval does not remove the responsibility to determine whether a waste is hazardous. This approval provides minimum testing requirements based on general knowledge of likely contaminants. Additional testing is needed if, by knowledge, the soil may contain other hazardous constituents.
- i. These are minimum analytical requirements. The Department may require evaluation of additional parameters based on individual site conditions.

A:ADAMSPET.TST

the landfill, or for use in the construction of soil structures within the fill area when approved for that specific use by the department, unless otherwise specifically provided in the landfill's individual license and approved plan of operation.

2. Untreated contaminated unconsolidated material that is not usable as daily cover or for soil structures and for which there is no technically and economically feasible treatment alternative may be disposed of in a landfill only with prior written approval from the department, unless otherwise specifically provided in the landfill's individual license and approved plan of operation.

(b) *Volume limitations.* 1. Except as provided in subd. 2. or 3., the volume of untreated contaminated unconsolidated material from a single site or facility that is proposed for landfill disposal may not exceed 250 cubic yards as measured *in situ*.

2. Except as provided in subd. 3., volumes of untreated contaminated unconsolidated material that exceed 250 cubic yards may be disposed of in a licensed landfill with a department-approved composite liner, or a liner that is equivalent to a composite liner in terms of environmental protection as determined by the department.

3. Volumes of untreated contaminated unconsolidated material that exceed 2000 cubic yards may be disposed of in a landfill only if prior written approval is obtained from the department after the department has reviewed a remedial action options report.

Note: Material contaminated with polychlorinated biphenyls (PCBs) must be managed in accordance with the requirements of ch. NR 157.

(5) **INSTITUTIONAL CONTROLS.** (a) Institutional controls may not substitute for recycling, treatment or engineering controls.

(b) Institutional controls may not be selected as the sole remedial action at a site or facility, unless recycling, treatment or engineering controls are not practicable, based on an evaluation conducted in compliance with s. NR 722.07 (3) (a) and written approval is obtained from the department after review of the detailed evaluation in the remedial action options report.

Note: Section NR 726.05 (8) requires that land use restrictions be recorded if certain levels of residual soil contamination will remain on-site after completion of the remedial action at a site or facility classified as industrial. The department may also require that institutional controls be put in place, on a case-by-case basis, either during remedy selection or case closure pursuant to ch. NR 726.

History: Cr. Register, April, 1995, No. 472, eff. 5-1-95.

NR 722.11 Risk assessments. (1) The responsible party may request, and the department may consider granting, approval to prepare and submit a risk assessment for the purpose of developing environmental standards only if the responsible parties demonstrate to the satisfaction of the department that:

(a) Compliance with the applicable environmental standards listed in s. NR 722.09 (2) will not be protective of public health, safety and welfare and the environment; or

(b) Attaining compliance with the applicable residual contaminant levels in ch. NR 720 is not practicable.

(2) If the department authorizes the use of a risk assessment to develop environmental standards, the respon-

sible parties shall utilize standard exposure assumptions approved by the department. The department may approve, modify or disapprove of the risk assessment prepared by the responsible parties and shall provide a written explanation of the department's action to the responsible parties.

(3) When the department enters into a contract pursuant to s. 144.442, Stats., the department shall determine whether or not a risk assessment should be prepared and by whom.

History: Cr. Register, April, 1995, No. 472, eff. 5-1-95.

NR 722.13 Remedial action options report. (1) **GENERAL.** Based on the evaluation and selection of remedial action options required in ss. NR 722.07 and 722.09, responsible parties shall document the evaluation and selection in a remedial action options report in compliance with the requirements of this section. Responsible parties shall submit the remedial action options report to the department, unless the responsible parties are not required to submit it under s. NR 700.11 (1) or are notified by the department that the report is not required to be submitted.

(2) **CONTENTS OF REPORT.** The remedial action options report shall include the following:

(a) *Cover letter.* 1. The department's identification number for the site or facility.

2. The purpose of the submittal and the desired department action or response.

3. Month, day and year of the submittal.

(b) *Executive summary.* A brief narrative summarizing the contents of the report.

(c) *Background information.* 1. Project title, name of the site or facility, its location, the mailing address and telephone number of the responsible parties, and the name, address and telephone number of the person who prepared the report.

2. The regulatory status of the site or facility.

3. A summary of the nature and extent of contamination at the site or facility, based on the data gathered during the site investigation.

4. A summary of the geologic and hydrogeologic characteristics at the site or facility, based on data gathered during the site investigation.

Note: If a site investigation report required under ch. NR 716 and a remedial action options report required under this chapter are prepared as a single submittal, the site investigation information does not need to be restated in the remedial action options portion of the combined submittal.

(d) *Remedial action options.* A brief description of each remedial action option that has been evaluated under s. NR 722.07, including all of the following information:

1. A physical and operational description of each remedial action option.

2. The degree to which each evaluated remedial action option is expected to comply with the environmental laws and standards under s. NR 722.09 (2).

Register, April, 1995, No. 472



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Remove

6
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10 + 22 + 28

Sheet _____ of 4

Project Adams Co. Landfill Comp. by C.F. Deeb

Date 4/5/94 Ckd. by _____

Proj. No. _____

Changes needed in Adams Co. Landfill Subtitle D
Plan Modification:

In a letter we should include:

- Dates when gas probes will be installed.
- State that 40 mil VLDPE will be textured on both sides (INCLUDE ALSO ON PLAN SHEETS).
- Calculated / Estimated volumes of all cover and liner soils. Especially note price differences for silty sand versus clean blow sand.
(EACH SAND SHOULD HAVE ITS OWN ROW IN CONSTRUCTION / CLOSURE COST TABLES).
- Identify where all the soil material is coming from (where on site?) ~~Extr~~

PAGE: 10 4th Sentence

- State that the top 1 ft of intermediate cover will be checked for density and if $\geq 90\%$ than resampled and recompacted before final cover is placed. If density $\leq 90\%$ then the next 1 ft will be checked for density, etc...
- Take out the word "proposed"

sedimentation basin Page: 10 4th Paragraph 2nd sentence



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Sheer 2 of 4
Project Adams Co. Landfill Comp. by C.F. Doe
Date 4/5/94 Ckd. by _____
Proj. No. _____

- State Adams Co. Landfill will specified grain size $\leq 1.75\text{mm}$ corresponding to the 15 percent on the grain size curve page 10 3rd paragraph (last sentence in paragraph).
- INCLUDE ANOTHER COPY OF THE 11'2" x 17" GROUNDWATER MAP (FIGURE 2-5)
- Include geotextile fabric, double sided textured VLDPE (40 mil) in closure material list page: 15 2nd paragraph.

Appendix "K" Changes

- State that the blower ^{flange and header pipe} would be installed before closure I, II, III ^{with} instead of before closure IV + V.
- Remove blower costs from Closure IV + V.
- FIGURE OUT WHICH CLOSURE IS MOST EXPENSIVE I, II, III or IV, V.
- Recalculate Financial Assurance for closure calculations on the MOST EXPENSIVE Closure.
- INCLUDE PER-METER DRAIN PIPING COSTS IN PHASES I, II, III closure costs (with stubs and temporary drain and erosion controls) Show on Plan sheets
- Increase closure V costs by rescanify / recompact IV, 1 geomembrane + V.



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Sheer 3 of 4

Project Adams Co. landfill Comp. by S.F. Dube

Date 4/5/94 Ckd. by _____

Proj. No. _____

- Check GAS COST PRICES. Gas venting piping should be changed to gas extraction header piping. appendix "L"
- Beef up L.T.C. Erosion repair annual estimates. "Appendix L"

QA/QC Document -

Page: 14 Add one more step to air pressure seam testing.

- After test is run, puncture opposite end of inflated seam and check to see if air is released. This will assure that the whole seam length was tested.

Page: 16 State that Adams Co. will require that a tensiometer be used for field testing (shear and sheer) not hand tests.

Plan Sheets -

Make changes as indicated on Plan sheets. Ensure that all old gas vent dots are removed, gas wells in old cover material yardage removed, FABRIC laid on all gravel / geomembrane contacts, 4' instead of 5' clay noted, gas extraction header pipe (stubbed) and perimeter surface ^{piping} drain (temporary drain) drawn in on Closure I, II, III, all lengths of piping, piping + Knotch dimensions noted



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Sheet 4 of 4

Project Adams Co. Rd. 11 Comp. by C. F. DeB

Date 4/5/94 Ckd. by _____

Proj. No. _____

Future Requirements

Impermeable and surrounded by berms
#.w. checking area.

Consider:

Checking stability calcs. again.
ASHCO may have just reran
Reg Whitesides calcs. Has ASHCO
calculated these before?

Consider "slip-jointed" boots
for pipe/geomembrane contacts
on composite cover. Better for
settling.