

RESPONSE TO ADDITIONAL COMMENTS ON
PROPOSED PARTS 807, AND 810 THROUGH 815

Development, Operating and Reporting Requirements
for Nonhazardous Waste Landfills
(R88-7)

by

The Scientific/Technical Section,
Illinois Pollution Control Board

June 7, 1990

INTRODUCTION

This document was prepared by the Scientific/Technical Section (STS) staff of the Illinois Pollution Control Board consisting of Dr. Harish Rao, STS Chief, Mr. Anand Rao and Mr. Morton Dorothy, STS staff scientists, in response to testimony presented at the April 6, 1990 hearing and additional comments received since the second First Notice of March 1, 1990 on the Board's proposed nonhazardous solid waste landfill regulations of R88-7 proceedings. STS has addressed the concerns of the commentators and suggested language changes. It must be noted that the major changes occur in Subpart B on inert wastes while most of the remaining changes are for clarity and are not intended to substantively alter the intent of the proposed rules. For the most part, the suggested changes involve re-wording or reorganization of certain subsections. The changes to the second First Notice are indicated using strikeouts and underlining.

The comments addressed in this document were provided by the Illinois Environmental Protection Agency (Agency); Waste Management Inc. (WMI), which includes testimony presented at the hearing (WMI's testimony) and post hearing comments (P.C. #38); and by the National Seal Company (NSC), which provided testimony, and exhibits which include "Fabrication of Polyethylene FML Field Seams," "Standard No. 54, Flexible Membrane Liner," and "Construction Quality Assurance for Hazardous Waste Land Disposal Facilities" at the hearing. As most of WMI's post hearing comments were repeated from their earlier testimony or comments, STS has provided common response to both sets of comments. The comments are referenced in this document either by comment number (Agency's comments), by the page number (WMI's comments) or by exhibit or transcript page number.

SECTION-BY-SECTION RESPONSES

Section 807.105 Relation to Other Rules

1. Response to the Agency's comment #1

The proposed rules were developed for the sole purpose of regulating nonhazardous solid waste disposal facilities. STS does not recommend the application of these rules cumulatively with RCRA regulations of hazardous waste facilities. STS suggests clarifying changes to subsection (a) as follows:

a) Persons and facilities regulated..... Part or 35 Ill. Adm. Code 811 through 815~~7~~. ~~h~~However, if such a facility also.... in 35 Ill. Adm. Code 810.103, such units are subject to ~~such~~ requirements of this Part and 35 Ill. Adm. Code 811 through 815.

Section 810.103 Definitions

1. Response to the Agency's comment #2 (A)

See STS's discussion at Section 811.704.

2. Response to the Agency's comment #2 (B)

STS believes that the additional explanation to the statutory definition of "Aquifer" is needed to clarify the boundaries of the aquifer and is consistent with the Illinois Groundwater Protection Act.

3. Response to the Agency's comment #2 (C)

STS recommends the inclusion of the Agency's suggested definition of the term "Bedrock" as follows:

"Bedrock" means the solid rock formation immediately underlying any loose superficial material such as soil, alluvia or glacial drift.

4. Response to hearing Questions (Tr. pg. 648-650)

STS suggests deletion of the term "non-watersoluble" in the definition of "inert waste" as follows:

"Inert waste" means...shall include only non-biodegradable, and non-putrescible ~~and non-watersoluble~~ solid wastes....

5. Response to the Agency's comment #2 (E)

STS agrees that the definition of "Perched aquifer" is not clear and notes that the term is inaccurate. STS suggests the following changes for the purpose of clarity:

"Perched ~~watertable~~ ~~aquifer~~" means an elevated watertable above a discontinuous saturated lense, that is bounded by an elevated watertable resting on a low permeability (such as clay) layer within a high permeability (such as sand) formation.

6. Based on the Agency's questions regarding the applicability of rules to "new" units located in existing facilities, it was pointed out that Part 814, which utilizes the standards of Part 811, would govern the operation of such units.

"New facility" or "New unit" means a solid waste landfill facility or a unit....

....effective date of this Part.

A new unit located in an existing facility shall be considered a unit subject to Part 814, which references applicable requirements of Part 811.

7. STS suggests the following change in the definition of "New facility" or "New unit" to clarify this intent. Further, the term "maximum allowable concentration", in the definition of significant modification should be changed to "maximum allowable predicted concentration" for consistency with the reset of the rule as follows:

"Significant Modification"will occur:

A change in....or the maximum allowable predicted concentrations;

8. Response to the Agency's comment #2 (F)

STS agrees with the Agency that the term "Uppermost aquifer" needs to be defined and suggests the inclusion of the following definition:

"Uppermost aquifer" means the first geologic formation above and below the bottom elevation of a constructed liner or wastes, where no constructed liner is present, that is an aquifer, and which includes any lower aquifer that is hydraulically connected to this aquifer within the facility's permit area.

9. Response to WMI's comments (P.C. #38, pg. #2) and Chambers Development comments (P.C. #33)

STS agrees that the definition of "waste piles" does not specify a time period for the removal of accumulated wastes and suggests a one year period, as follows, for Board consideration:

"Waste pile" means an area...show that within the preceeding year the waste has been is being removed for utilization or disposed ~~that there is a plan for disposal~~ elsewhere.

10. Response to the Agency's comment #2 (G)

STS notes that the definition of the term "Zone of attenuation" does account for what the Agency terms "disposal of wastes in trenches." It must be noted that the term "bottom of the wastes" is not referring to a single point, but was a reference to the entire surface area over which the waste is placed. However, for the purposes of clarity, STS suggests the following alternative language:

"Zone of attenuation" is the three dimensional region formed by excluding the volume occupied by the placement of waste from extending downwards from the bottom of the wastes or from the ground surface, whichever is lower, to the bottom of the uppermost aquifer, and bounded by the smaller of the volumes resulting from vertical planes drawn to the bottom of the uppermost aquifer at the property boundary or 100 feet horizontally from the edge of one or more adjacent units.

Section 811.105 Compaction

1. Response to WMI's comments (WMI's testimony, pg. #2 and P.C. #38, pg. #3)

STS notes that the regulations allow the placement of wastes in areas other than the lowest part of the active face under certain weather conditions. However, for reasons of safety or difficulties related to the site's characteristics, the following addition is suggested:

All wastes shall be deposited at the lowest part of the active face, and compacted to the highest achievable density necessary to minimize void space and settlement unless precluded by extreme weather conditions. The Agency may approve an alternate location for placement of wastes, if the operator demonstrates that it is required under the conditions existing at the site or for reasons of safety.

Section 811.108 Salvaging

1. Response to the Agency's comment #4

STS agrees that the salvageable materials should not be described as wastes and suggests the following change to subsection (c)(2):

c)

2) May not be accumulated..... alternative conditions for the management of ~~the wastes~~ such materials in compliance with subsection (c)(1).

Section 811.111 Post Closure Maintenance

1. Response to the Agency's comment #5

STS has no objections to the inclusion of additional language that provides quantifiable standards and suggests the following additions to subsections (c)(2) and (c)(5):

c)

2) All rills, gullies and crevices six inches or deeper identified in the inspection shall be filled. Areas identified by the operator or the Agency inspection as particularly susceptible to erosion shall be recontoured.

5) All reworked surfaces, and areas with failed or eroded vegetation in excess of 100 square feet cumulatively, shall be revegetated in accordance with the approved closure plan for the facility.

Subpart B: Inert Waste Landfill

1. Response to WMI's comments (P.C. #38, pg. #4-5) and Chambers Development comments (P.C. #33)

In response to the Board's request for comments on sufficiency of the groundwater protection measures for inert waste landfills, WMI has suggested that such landfills should be required to have a groundwater monitoring program. STS believes that groundwater monitoring will not be workable without also including hydrogeologic site investigation requirements necessary to establish an effective monitoring network.

The lesser requirements for inert waste landfills are intentional in these regulations and are based on the concept that solid waste can and will be stringently screened to determine if the waste can be considered inert. STS notes that the general

requirements in Subpart A (Sections 811.101 through 811.111) apply to all landfills including location and operational standards. Nevertheless, because of concerns expressed both by WMI and Board members that standards for inert waste landfills may be inadequate, STS suggests for Board consideration, (1) the use of a random load checking program to help prevent hazardous wastes or non-inert waste from being accepted at an inert waste facility, (2) the inclusion of a leachate testing program aimed at deterring non-inert wastes from being intentionally or otherwise deposited in an inert waste landfill and (3) specification of reporting requirements.

The load checking will involve a prohibition against accepting wastes if there is no accompanying documentation showing that the waste is inert in accordance with the determination procedure prescribed in Section 811.202. In addition, STS proposes a random load checking program which is an adaptation of the one used at chemical and putrescible waste landfills (it includes checking for non-inert wastes as well as hazardous wastes, decreased minimum random inspections of waste loads to one per week, and one leachate analysis per month in accordance with 811.202 of leachate generated from a randomly chosen waste sample). The results of the load checking will be required to be included in the annual report to be sent to the Agency.

The leachate testing program will require operators of inert waste landfills to collect representative samples of leachate on a six-month basis and test it in accordance with Section 811.202 to confirm that the leachate is not contaminated. In addition, once in two years, a broad scan organics scan of the leachate will be required in accordance with 811.319 (a)(3). If the leachate testing confirms that it is contaminated or that organics are present, then the inert waste unit or units will become subject to the requirements and standards applying to a chemical or putrescible waste landfill, including any closure and remedial action requirements.

STS recommends using the above framework for adding new Sections 811.206 and 811.207 which provide the requirements for leachate sampling and load checking respectively for Board consideration.

STS also corrects the reference to the Board standard and adds language to specify what the operator must test in subsection (a) and suggests language to (b)(2) that will ensure that in carrying out the test, the extraction fluid used represents the physical and chemical characteristics (such as pH and temperature) of the infiltrating fluid flowing through the waste. With regard to P.C. 33, STS notes that the intent in the proposed regulations is to allow an appropriate test to be chosen based on the site specific conditions and that would include consideration of the "time factor" in obtaining representative samples of leachate.

The suggested changes are as follows:

Section 811.202 Determination of Contaminated Leachate

- a) Leachate shall be considered.... greater than the ~~standards for public and food processing water supply standards in 35 Ill. Adm. Code...302.5.~~ The operator shall determine whether the leachate from the waste is contaminated by analyzing it for constituents for which a numerical standard has been established by the Board.
- b) 2) The test shall utilize an extraction fluid ~~resembling~~ representative of the physical and chemical characteristics of the liquid expected to infiltrate through the waste.
- c) [No change]

Section 811.206 Leachate Sampling

- a) All inert waste landfills shall be designed to include a monitoring system capable of collecting representative samples of leachate generated by the waste, using methods such as, but not limited to, a pressure-vacuum lysimeter, trench lysimeter or a well point. The sampling locations shall be located so as to collect the least diluted leachate samples.
- b) Leachate samples shall be collected and analyzed at least once in six month to determine, using the statistical procedures of subsection 811.320 (e), whether the collected leachate is contaminated as defined in 35 Ill. Adm. Code 810.103.
- c) Once every two years, leachate samples shall be tested for the presence of organic chemicals in accordance with subsection 811.319 (a)(3). If the results of such testing shows the presence of organic chemicals, the operator shall notify the Agency of this finding, in writing, before the end of the business day following the finding.
- d) If the results of testing of leachate samples in accordance with subsection (b) confirm that the leachate is contaminated as defined in 35 Ill. Adm. Code 810.103, the operator shall notify the Agency of this finding, in writing, before the end of the business day following the finding. In addition, the inert waste landfill facility causing the contamination:
- 1) shall no longer be subject to the inert waste landfill requirements

of Subpart B;

- 2) shall be subject to the requirements for Putrescible and Chemical Waste Landfills of Subpart C, including closure and remedial action.
- e) The results of the chemical analysis tests shall be included in the Quarterly Groundwater Reports submitted to the Agency in accordance with 35 Ill. Adm. Code 813.502 for permitted facilities and with Subpart D of 35 Ill. Adm. Code 815 for non-permitted facilities.

Section 811.207 Load Checking

- a) The operator shall not accept wastes for disposal at an inert waste landfill unless it is accompanied by documentation that such wastes are inert based on testing of the leachate from such wastes performed in accordance with the requirements of Section 811.202.
- b) The operator shall institute and conduct a random load checking program at each inert waste facility in accordance with the requirements of Section 811.323 except that this program shall also be designed:
- 1) to detect and discourage attempts to dispose non-inert wastes at the landfill;
 - 2) to require the facility's inspector to examine at least one random load of solid waste delivered to the landfill on a random day each week; and
 - 3) to require the operator to test one randomly selected waste sample in accordance with Section 811.202 (a) and (b) to determine if the waste is inert.
- b) The operator shall include the results of the load checking in the Annual Report submitted to the Agency in accordance with 35 Ill. Adm. Code 813.501 for permitted facilities and with Subpart C of 35 Ill. Adm. Code 815 for non-permitted facilities.

Section 811.302 Facility Location

1. Response to WMI's comments (WMI's testimony, pg. # 3 and P.C. #38, pg. #3)

The restrictions specified in Section 811.302(e) for locating landfill facilities in close proximity to airports are based on federal

criteria at 40 CFR 257.3-8 (c). Any future changes in that section of the CFR will have to be proposed to the Board for adoption in Illinois in accordance with the Administrative Procedures Act.

Section 811.306Liner Systems

1. Response to the Agency's comment #7 and NSC's comments (exhibit #27)

The issue of clay liner thickness has been discussed extensively at hearings. STS's "Response to Comments" document (Exhibit #1) also addresses this issue. The Agency's comments continue to advocate a minimum liner thickness of 10 feet to ensure sufficient protection. However, the Agency does not provide technical support for prescribing a 10 foot minimum liner thickness. STS notes that such rule-of-thumb prescriptions might have been appropriate before, when landfill development was in its infancy and inadequate scientific design standards were available. STS contends that a 3 feet minimum liner thickness is sufficient to meet the design and performance standards, provided the landfill is equipped with the proposed leachate drainage and collection system and meets the proposed construction quality standards. STS believes that this conclusion is supported by the technical information in the record.

Regarding the option of a composite liner, STS notes that a properly installed composite liner will provide greater protection against groundwater seepage compared to a compacted earth liner alone. A composite liner consisting of a geomembrane in contact with an underlying compacted earth layer offers the greatest degree of impermeability. Geomembranes have extremely low permeability and any leachate movement through the geomembrane is due to diffusion. Diffusion is controlled by the concentration gradient across the geomembrane. On the other hand, leachate movement through a clay liner is due to convection which is controlled by the pressure gradient across the clay liner. A geomembrane/clay composite layer functions well because the geomembrane provides a barrier to pressure driven mass transfer, while the underlying clay liner forms a barrier to concentration driven mass transfer. The two components together in a composite liner therefore develop a high degree of resistance to movement of leachate through the liner system.

The information presented at the April 6th hearings (Exhibit #27) indicates that a geomembrane used in combination with a clay liner reduces the leakage of leachate over a 10 year period from 160,000 gallons for a clay liner compacted to 10^{-7} cm/sec to 70 gallons for an intact composite liner. The large volume of leachate collected from a composite liner will significantly

reduce the threat of groundwater contamination. STS recognizes the problems associated with geomembranes, such as faulty seams, tears and punctures. However, testimony before the Board has shown that a geomembrane in combination with a clay liner is still effective since small tears or punctures in the geomembrane do not affect the integrity of the entire liner system. Based on these observations, STS recommends the use of a composite liner consisting of a geomembrane underlain by 3 foot compacted clay liner as an alternative specification to a 5 foot compacted clay liner and suggests the following changes to subsection (d)(5):

d) Compacted Earth Liner Standards

5) Alternative specifications, using standard construction techniques, for hydraulic conductivity and liner thickness may be utilized, ~~provided that~~ under the following conditions:

~~A) In no case shall t~~ The liner thickness shall be no less than 1.52 meter (5 feet) unless a composite liner consisting of a geomembrane immediately overlying a compacted earth liner is installed. The following minimum standards shall apply for a composite liner:

i) the geomembrane shall be no less than 60 mils (0.06 inch) in thickness and meet the requirements of subsection (e); and

ii) the compacted earth liner shall be no less than 0.91 meter (3 feet) in thickness and meet the requirements of subsections (d)(2) through (d)(4).

Section 811.309 Leachate Treatment and Disposal System

1. Response to WMI's comments (WMI's Testimony, pg. #4 and P.C. #38, pg. #7)

Subsection 811.309(b) requires parallel operations that allow the management and disposal of leachate during routine maintenance. The additional operations may include storage and/or other treatment processes.

2. Response to the Agency's comment #8

Subsection (c) prescribes design standards for leachate treatment and disposal systems and does not cover groundwater monitoring

requirements. However, STS notes that the standards for the groundwater monitoring system contained in Section 811.318, does require all potential sources of discharges to the groundwater within the facility to be monitored as a part of the facility's monitoring program.

3. STS recommends the addition of a subsection (d)(5) to prevent the leachate drainage and collection system from being used for storage. STS suggests the following change:

d) Standards for Leachate Storage Systems

5) The leachate drainage and collection system shall not be used for the purpose of storing leachate.

4. Response to WMI's comments (P.C. #38, pg. #7)

STS agrees that the standards should allow hauling of leachate to treatment works in situations where a direct connection to sewerage system is not available or temporarily restricted and recommends the addition of a new subsection 811.309(e)(6). The suggested changes which include a minor change in subsection (e)(5) are as follows:

e)

5) Leachate shall be allowed to flow into the sewerage system at all times; however, if access...

6) Where leachate is not directly discharged into a sewerage system, the operator shall provide storage capacity sufficient to transfer all leachate to an offsite treatment works. The storage system shall meet the requirements of subsection (d).

5. STS recommends changes to subsection (f)(6) to be consistent with the suggested changes to 35 Ill. Adm Code 810.103 (see Section 810.103, comment #4) as follows:

f)

6) Daily and intermediate cover shall be permeable to the extent necessary to prevent the accumulation of water and formation of perched watertables ~~conditions~~ and gas buildup, or alternatively cover shall...

6. In response to WMI's comments regarding the frequency of leachate monitoring [811.309(g)], STS recommends that the Board consider

requiring a reduced frequency of once per year, if a constituent to be monitored is not detected. However, if a monitored constituent is detected, then the frequency could revert to quarterly sampling. STS suggests the following changes:

g)

- 1) Representative samples of leachate shall be collected from each unit and tested in accordance with subsections (2) and (3) at a frequency of once per quarter while the leachate management system is in operation. The frequency of testing may be changed to once per year for any monitored constituent, if it is not detected in the leachate. However, if such a constituent is detected in the leachate, testing frequency shall return to a quarterly schedule.

7. STS thanks WMI for pointing out the error in lettering Subsection 811.309(g). The subsection will be re-lettered as follows:

gh) Time of Operation of the Leachate Management System

Section 811.310 Landfill Gas Monitoring

1. Response to the Agency's comment #9 and WMI's comments (P.C. #38, pg. #9)

STS notes that the subsection (b)(8) was intended to prescribe minimum location standards for ambient air monitoring and was not intended to prescribe the type of monitor to be used. The following change will be made to clarify this intent:

b)

- 8) At least..... air monitoring locations shall be chosen and samples shall be taken ~~located~~ no higher...

-
2. Response to WMI's comments (WMI's testimony, pg. #6 and P.C. #38, pg. #9)

STS notes that landfill operations may have an impact on air quality and therefore it is reasonable to include air toxics among constituents that may need to be monitored. In order to address WMI's concern regarding monitoring of compounds on the list of air toxics adopted by the Board pursuant to Section 9.5 of the Act, STS recommends the addition of a new subsection (c)(5) that clarifies the monitoring requirements of such compounds. The suggested addition to Section 811.310 is as follows:

c)

5) The operator shall include in the permit a list of air toxics to be monitored in accordance with subsection (d). The Agency shall determine the monitoring frequency of the listed compounds based upon their emission rates and ambient levels in the atmosphere.

Section 811.311 Landfill Gas Management System

1. Response to WMI's comments (WMI's testimony, pg. # 7 and P.C. #38, pg. #9)

STS thanks WMI for pointing out the typographical error in subsection (a)(1) and corrects it as follows:

a)

1) A methane concentration greater.... which is located at or beyond ~~outside~~ the property boundary or 30.5 meters (100 feet) from the edge of the unit, whichever is less;

2. Response to WMI's comments (WMI's testimony, Pg. #7)

The intent of subsection (c)(10) is to require a test for leakage of the portion of gas collection system that conveys the gas leaving the units to the processing and disposal facility. STS suggests the following additional language for the purposes of clarity:

c)

10) The portion of the gas collection system, used to convey the gas collected from one or more units for processing and disposal shall be tested..... collection system or entry of air into the system.

Section 811.312 Landfill Gas Processing and Disposal System

1. Response to WMI's comments (WMI's testimony, pg. #7 and P.C. #38, pg. #9)

The WMI's comment regarding transfer of landfill gas to a third party is not very clear. If WMI's concern is about offsite gas processing facilities, STS notes that subsection (g)(1) provides the criteria based on volume of gas processed, for determining whether or not an off-site gas processing facility should be considered as a part of the solid waste disposal facility.

2. In response to WMI's concern regarding direct discharge of gas to the atmosphere, STS suggests clarifying changes to subsections

(c) and (f)(2). Also, a change in subsection 811.312(e) reflects the inclusion of the control device requirements under the new source performance standards of the Federal Clean Air Act applicable in Illinois under Section 9.1 of the Act. The suggested changes are as follows:

c) No gas may be discharged directly to the atmosphere. ~~Gas shall be~~ unless treated or....35 Ill. Adm. Code 200 through 245.

f)

2) All constituents and parameters.... shall be identified and included in the a permit issued by the Agency pursuant to 35 Ill. Adm. Code 200 through 245. At a minimum...

e) When.....requirements of ~~35 Ill. Adm. Code 230.110~~ new source performance standards adopted pursuant to Section 9.1(b) of the Act.

Section 811.314 Final Cover

1. Response to WMI's testimony (Tr. pg. #566-568)

STS notes that the proposed rules already require an intermediate cover to be placed in accordance with Section 811.313, if a final cover cannot be placed within 60 days of the placement of the final lift. Therefore, if placement of the final lift occurs at the end of the construction season, and it is not technically feasible to place the final cover, then the requirements of Section 811.313 will apply. No change is recommended.

Section 811.315 Hydrogeologic Site Investigation

1. Response to WMI's comments (WMI's testimony, pg.# 8)

STS notes that the hydrogeologic site investigation is carried out for the purpose of characterizing the uppermost aquifer, identifying the potential contaminant pathways, and determining the direction and rate of groundwater movement. The information developed from the hydrogeologic investigation will be used for the groundwater impact assessment and establishment of a groundwater monitoring program.

The proposed rules provide a systematic three phase approach for performing the hydrogeologic site investigation and is based on testimony presented at the 11-15-85 hearing by Dr. Berg of the ISGS. However, the requirements of this Section allows the operator to use any number of alternative phases to carry out

the site investigation as long as the required information is collected in a systematic sequence to meet the purposes of the hydrogeologic site investigation.

2. Response to the Agency's comment #10 (A)

STS agrees that the use of the term "disposal related disturbance" in the existing language of subsection (b)(1) may lead to confusion and suggests the following clarifying change:

b)

- 1) The investigation shall be conducted in a minimum of three phases prior to submission of any application to the Agency for a permit to develop and operate a landfill facility ~~any disposal related disturbance.~~
-

3. Response to the Agency's comment #10 (C), Chambers Development Company (P.C. #33) and WMI's comments (P.C. #38, pg. #11)

Boreholes must be placed within the boundaries of the unit, in order to characterize the hydrogeology of the site accurately. STS notes that the placement of borehole as close as feasible to the geographic center of the site is a minimum requirement that is based on information in the record in this proceeding. Also, a properly sealed borehole will not provide a pathway for contaminant migration. STS also notes that an operator is not prevented from also locating boreholes outside the "footprint" of the landfill site, if it will provide additional information.

4. Response to the Agency's comment #10 (D)

STS notes that the Agency's comment refers to subsection (c)(2)(B) and not (e)(2)(B). The existing language accounts for the possibility of the upper most aquifer being a bedrock aquifer. If such a scenario exists, then the boring should extend 50 feet below the bedrock aquifer. However, for the purpose of clarity, STS suggests the following change:

c)

2)

- B) A minimum of one continuously... specified by this phase of the investigation. The boring shall extend at least 15.2 meters (50 feet) below the bottom of the uppermost aquifer or through the full depth of the confining layer below the uppermost aquifer, or to bedrock if the bedrock is below the upper

most aquifer, whichever elevation is higher.
The locations...

5. Response to Chambers Development (P.C. #33)

The term, "extending down to the bottom of the uppermost aquifer" refers to the depth to which the requirements of subsection (d)(2)(D) apply. The proposed definition of "aquifer" is a minor modification of the statutory definition that is adequate and serves the purposes of these proposed regulations without the specification of a flow rate. No change is recommended.

With regard to the flow characterization required in subsection (e)(1)(h), the intent is to obtain sufficient information to meet the purposes of the hydrogeological investigation. Variations in quality and quantity of flow are needed to establish background concentrations.

6. Response to WMI's comments (P.C. #38, pg. #11, Tr. pg. # 589-595)

The requirements of the phase III investigation involve the collection of additional information based on the data base developed during the phase I and II investigations, to carry out the specific tasks listed in subsection (e)(1). STS notes that in order to collect the additional information, the operator may use methods such as test pits, borings and monitoring wells. STS agrees that the existing language of subsection (e)(2) and subsection (f) are not very clear and after consolidating the methods in subsection (e) and rewriting subsection (f) for clarity, suggests the following language:

e)

2) ~~Specific Requirements~~ In addition to the specific requirements applicable to phase I and II investigations, the operator shall collect information needed to meet the minimum standards of a phase III investigation by using methods that may include, but are not limited to, excavation of test pits, additional borings located at intermediate points between boreholes placed during phase I and II investigations, placement of piezometers and monitoring wells, and institution of procedures for sampling and analysis.

~~A) New boring...the study area.~~

~~B) At least one test pit...area of each unit.~~

~~C) All borings...on homogeneous strata.~~

f)The operator may conduct...in any number of alternative ~~phases~~ ways provided that the necessary information is collected in a systematic sequence consisting of at least three phases that is equal to or superior to the investigation procedures of this Section.

Section 811.317Groundwater Impact Assessment

1.Response to the Agency's comment #11

The subsection (a)(1) requires the operator to estimate the net amount of seepage from the unit by giving consideration to both inward and outward movement of groundwater. For the purposes of clarity, STS recommends the inclusion of minimum design standards for the leachate drainage system in subsection (a)(1)(A). Suggested change is as follows:

a)

1)

A)That the minimum design standards for slope configuration, cover ~~design~~, liner design, leachate drainage and collection system ~~design and operation~~ apply, i and

2.STS corrects a typographical oversight and suggests changes to address comments on groundwater quality standards (see comment #1, Section 811.320) as follows:

b)The groundwater contaminant transport (GCT) model results...considered acceptable if the GCT model ~~operator~~ predicts that the concentrations...are less than the applicable groundwater quality standards, ~~as determined in~~ of Section 811.320, within 100 years of closure.

Section 811.318Design, Construction and Operation of Groundwater Monitoring Systems

1.STS believes that the existing language of subsection (b)(5) is not consistent with the requirements of groundwater monitoring programs (Section 811.319) and suggests the following changes:

b)

5)A minimum of at least...unit. Such well or wells shall be used to monitor any statistically significant increase in the concentration of any constituent, in accordance with subsection 811.320(e) and shall be used for determining compliance with an applicable groundwater

~~quality standard of Section 811.320. Such a statistically significant increase above the applicable groundwater quality standards of Section 811.320 in a well located at or beyond the compliance boundary shall constitute a violation of a groundwater quality standard.~~ An observed statistically significant increase above the applicable groundwater quality standards of Section 811.320 in a well located at or beyond the compliance boundary shall constitute a violation of a groundwater quality standard.

2. STS corrects a typographical error in subsection 811.318(c) as follows:

c) Maximum Allowable Predicted Concentrations

The operator shall...at all monitoring points. The predicted values shall be used to establish the maximum ~~predicted~~ allowable predicted concentrations (MPAPC) at each monitoring point. The MPAPCs calculated in this subsection shall be applicable within the zone of attenuation.

3. Response to WMI's comments (WMI's testimony, pg. #9 and P.C. #38, pg. #13)

In response to WMI's concern regarding the standards for the design and construction of monitoring wells, STS notes that the standards allow the use of any material for well casing, as long as the performance standards of subsection 811.318(d) are met.

4. Response to the Agency's comment #12 (A)

The purpose of subsection (e)(2) is to ensure that a representative groundwater sample is obtained. STS notes that during the initial pumping, the sample will contain both the water from the aquifer and the stagnant water present in the well casing and therefore, proper sampling techniques should be employed to collect samples which contain at least 95 percent of the aquifer water. It is possible to estimate the percent of water coming from the aquifer and that from the storage, if the transmissivity of the aquifer and the pumping rate are known. A detailed discussion on this subject is contained in a document titled "Procedures for the Collection of Representative Water Quality Data from Monitoring Wells" (Exhibit 2AR R84-17 D).

Section 811.319 Groundwater Monitoring Programs

1. Response to WMI's comments (WMI's testimony, pg. # 10 and P.C. #38, pg. #13)

In the section on monitoring schedule and frequency , STS agrees that the use of the term "threat to groundwater" needs further clarification and suggests the deletion of subsection (a)(1)(A)(ii) and adding clarifying changes to subsection (a)(1)(B). As noted at hearing, STS deletes subsection (a)(1)(B)(iii). The following changes are suggested:

a)Detection Monitoring Program

1) Monitoring Schedule and Frequency

A)The monitoring period....except as specified in subsection (a)(3) ~~or may institute more frequent sampling throughout the time the source constitutes a threat of to groundwater contamination. For the purposes of this section, The source shall be considered a threat to groundwater, if either of the following occur:~~ i) the results of the monitoring indicate that the concentrations of any of the constituent monitored within the zone of attenuation are above the maximum allowable predicted concentration for that constituent~~.~~
~~er~~

~~ii)the concentration of any constituent monitored at or beyond the zone of attenuation is above background or greater than 50% of any Board established standard in Section 811.320 that is applicable.~~

B)Beginning fifteen years after closure of the unit, or five years after all other potential sources of discharge no longer constitute a threat to groundwater are ~~of contamination~~ , considered as defined.....

~~iii)Monitoring shall ...sample is observed.~~

2.Response to the Agency's comment #13 (C)

The intent of subsection (a)(1)(C)(i) is to determine if there is a statistically significant increase in the concentration of any monitored constituent compared to its previous value and does not imply comparisons of absolute values. STS notes that the number of samples obtained at each periodic sampling should be adequate to perform the statistical analysis required by this subsection. In order to clarify any perceived confusion, STS suggests the following changes to subsection (a)(1)(C)(i):

i)No statistically significant increase is detected in the concentration of any constituent above that

measured and recorded during the immediately preceding scheduled sampling greater than the previous sample is detected for three consecutive years, after changing to an annual monitoring frequency; or

3. Response to WMI's comments (WMI's testimony, pg.# 10 and P.C. #38, pg. #14 to 16, Tr. pg. # 568-578)

STS believes that the language suggested by WMI is vague and does not clearly define the basis for choosing constituents to be monitored. STS agrees that the standards should allow the use of indicator constituents. However, indicator constituents selected for monitoring should represent all the constituents in the leachate in terms of their transport processes (advection, dispersion and reactivity). STS suggests the addition of subsection 811.319(a)(2)(B) as follows:

a)

2) Criteria for Choosing Constituents to be Monitored

A) The operator....following requirements:

Ai) The constituent....leachate; and

Bii) The Board has.....contamination.

B) One or more indicator constituents representative of the transport processes of constituents in the leachate, may be chosen for monitoring in place of the constituents it represents. The use of such indicator constituents must be included in an Agency approved permit.

4. Response to WMI's comments (WMI's testimony, pg.#13 and P.C. #38, pg. #16)

STS notes that any observed increase in accordance with subsection 811.319(a)(4)(A) will trigger the confirmation procedures. In order to clarify the intent of the existing language, STS suggests the following changes to subsection 811.319(a)(4)(A):

a)

4)

A) The confirmation....conditions. The operator shall, ~~under any of the following conditions,~~ institute the confirmation procedures of subsection (a)(4)(B). ~~However, the operator shall after~~

notifying the Agency in writing, within 10 days, of ~~such an the following~~ observed increases and ~~instituting the procedures of subsection (a)(4)(B) for confirming the increase:~~

5. Response to WMI's comments (WMI's testimony, pg.#13)

The requirements of subsection 811.319(a)(4)(B) clearly states that the Agency should be notified within 10 days of the determination of the source of the increase. The requirement does not imply that the determination should be made within 10 days.

STS agrees that it may not be possible for the operator to notify the Agency of a confirmed increase within 24 hours of the confirmation during weekends and state holidays and recommends changes to subsection (a)(4)(B)(i) as follows:

a)

4)

B)

i) The operator shall verify.... observed increase. The operator shall notify the Agency of any confirmed increase before the end of the next business day following ~~within 24 hours of~~ the confirmation.

6. Response to WMI's comments (WMI's testimony, pg.# 13 and P.C. #38, pg. #17, Tr. pg. # 619-622)

The reference to the term "remodeling" in WMI's comments is not very clear. For the purposes of this discussion, remodeling is assumed to be a process of model recalibration. The model recalibration involves the use of new site specific information which affect the model's parameters and for confirming the MAPCs established during the hydrogeologic assessment. STS notes that the model recalibration must be performed under the same boundary conditions, that is being in compliance with the applicable groundwater quality standards at or beyond the zone of attenuation for a period of 100 years.

The concept of model recalibration before the assessment monitoring, as suggested by WMI, is not acceptable. STS believes that a model recalibration is warranted only if new site specific information which affect the model's parameters, comes to light during the assessment monitoring. The requirements of subsection (c) allows the operator to perform model recalibration using new information developed during the assessment monitoring. However, STS suggests additional language to subsection (c)(1) to clearly articulate the provision for model

recalibration.

7. Response to the Agency's comment #13 (B), (C) and WMI's comments (WMI's testimony, pg.#14 and P.C. #38, pg. #19)

STS agrees that when the assessment monitoring has confirmed a monitored increase above an applicable groundwater quality standard that is attributable to the solid waste disposal facility at or beyond the zone of attenuation, the operator may, as part of a remedial program, or under the Section 34 of the Act be required by the Agency to halt the acceptance of wastes at the affected units. STS recommends changes to subsection (b)(3) requiring the operator to assess the impacts of continued waste acceptance at a facility. STS also suggests the addition of a requirement in subsection (d)(1) to include such information along with the technical support for the proposed remedial action plans.

In response to the Agency's comments regarding the applicability of groundwater monitoring program, STS notes that the requirements of Part 811 apply to both permitted and non-permitted facilities. However, STS agrees that the existing language of subsection (d)(2)(C) is not very clear and recommend changes for the purpose of clarity.

In response to WMI's comments regarding the remedial action requirements of subsection (d) , STS notes that the remedial action procedures are triggered either by an exceedence of the applicable groundwater quality standards of Section 811.320 in accordance with subsection (b)(3), or if the groundwater impact assessment of subsection (c) indicates the need for remedial action. However, STS agrees the existing language of subsections (b), (c) and (d) needs clarification and recommends changes. STS notes that several subsections within subsection (d) have been relettered.

Changes suggested in response to comments 6 and 7 are as follows:

b) Assessment Monitoring

- 1) The assessment monitoring shall be conducted to collect information to assess the nature and extent....
- 3) If the analysis of the assessment monitoring data program shows that the concentration of one or more constituents, monitored at or beyond the zone of attenuation is above the applicable groundwater quality standards of Section 811.320 and is attributable to the solid waste disposal facility, ~~exceeds the applicable Section~~

~~811.320 groundwater quality standards beyond the zone of attenuation, then the operator shall determine the nature and extent of the groundwater contamination including an assessment of the potential impact on the groundwater should waste continue to be accepted at the facility and shall implement remedial action requirements in accordance with subsection (d).~~

4) If the analysis of the assessment monitoring data ~~program~~ shows that the concentration...

c) Assessment of Potential Groundwater Impact Assessment

An operator required to conduct a groundwater impact assessment ~~under this Section~~ in accordance with subsection (b)(4) shall assess the potential impacts ~~of the increased concentrations~~ outside the zone of attenuation that may result from confirmed increases above the maximum allowable predicted concentration within the zone of attenuation, attributable to the facility, in order to determine if there is need for remedial action. In addition to the requirements of Section 811.317, the following ~~standards~~ shall apply:

- 1) The operator assessment shall... programs and such information may be used for the recalibration of the GCT model; and
- 2) The operator shall submit the groundwater impact assessment and any proposed remedial action plans determined...assessment monitoring program. ~~Permitted facilities shall submit this information as an application for significant permit modification.~~

d) Remedial Action

1) The operator shall submit plans for the remedial action to the Agency. Such plans and all supporting information including data collected during the assessment monitoring shall be submitted within 90 days of determination of either of the following:

- A) ~~If~~ The groundwater impact assessment performed in accordance with subsection (c), shows a potential for exceeding the groundwater quality standards of Section 811.320 at or beyond the zone of attenuation, indicates that remedial action is needed; or if it is

~~B) Any confirmed, under either subsection (a) or subsection (b), that there is a statistically significant increase above the applicable groundwater quality standards of Section 811.320 is determined to be attributable to the solid waste disposal facility in accordance with subsection (b). at or beyond the zone of attenuation, then the operator shall institute a remedial action program in compliance with the following standards.~~

~~12) The plans...pursuant to subsection (b). If the facility has been issued a permit...significant modification to the permit;~~

~~23) The operator shall implement the plan for remedial action shall be implemented within 90 days of the following:~~

~~A) 90 days of the Completion of the groundwater impact assessment under subsection (c) that requires remedial action;~~

~~B) 90 days of Establishing that detection a violation of an applicable groundwater quality standard of Section 811.320 is attributable to the solid waste disposal facility in accordance with under subsection (b)(3); or~~

~~C) Agency approval of the remedial action plan, where the facility has been permitted by the Agency pursuant of Section 21 of the Act, within 90 days...action plan.~~

~~34) The remedial action program shall consist of.....~~

~~45) Termination of the Remedial Action~~

~~A) The remedial action program shall continue in accordance with the plan until monitoring shows that the concentrations of all monitored constituents are below the threat of exceeding the maximum allowable predicted concentration of any constituent within the zone of attenuation, and the threat of exceeding and below the applicable groundwater quality standards of Section 811.320 at or beyond the zone of attenuation, over a period of 4 consecutive quarters no longer exist.~~

~~B) The operator shall submit to the Agency all information collected under subsection (d)(5)(A) necessary to show that the threat of exceeding the maximum allowable concentration of any constituent no~~

~~longer exists.~~ If the facility is permitted, ~~facilities~~ then the operator shall submit this information as a significant modification of the permit.

Section 811.320 Groundwater quality standards

1. Response to WMI's comments (WMI's testimony, pg. #17, Tr. pg. # 540-546)

STS notes that in its Response to Comments document dated March 1, 1990, Section 811.320 was expanded to establish clearly what the term, "applicable ground water quality standard" would be under different situations. Each of these situations was included at subsections (a)(1)(A) through (D). For the situation in which the background is above an existing Board established standard for a specific monitored constituent, the STS had recommended that the lower of the two, namely the Board established standard would be the applicable standard. The STS had intended, in such a situation, that the operator would apply for an adjusted groundwater quality standard in accordance with subsection (b)(3). However, after reconsideration, based on the comments and hearing testimony, STS agrees that filing an adjusted standard each time the background concentration is above a Board established standard may not be feasible. STS therefore recommends that subsections (a)(1)(B) and (a)(1)(C) be deleted in their entirety and suggests changes to (a)(1)(A) and relettering of (a)(1)(D); minor clarifying changes to (b)(3) are also suggested for clarity as follows:

a)

1)

A) ~~The background concentration, if there is no Board established standard for that constituent; or~~

~~B) The background concentration, if ... for that constituent;~~

~~C) The Board established standard, if ... below the background concentration; or~~

D) The Board established standard adjusted by the Board in accordance with the justification procedure of subsection (b).

b) Justification for Adjusted Groundwater Quality Standards

3) For groundwater which contains naturally occurring constituents which do not meet ~~exceed~~ the standards requirements of 35 Ill. Adm. Code.....

2. STS notes that the performance standards for the design of landfills require new units to be in compliance with the applicable groundwater quality standards of Section 811.320 for a period of 100 years after the closure of the unit. However, this standard has not been clearly articulated in the proposed rules. STS believes that the compliance period should be included under the groundwater quality standards and suggests the following addition to subsection 811.320(a)(2):

a)

- 2) Any statistically significant increase above an applicable groundwater quality standard established pursuant to subsection (a) that is attributable to the facility and which occurs outside at or beyond at the zone of attenuation within 100 years after closure of the last unit accepting waste within such a facility shall constitute a violation.

3. Response to WMI's comments (WMI's testimony, pg.#14 and 15)

STS notes that for any monitored constituent, only one groundwater quality standard established in accordance with subsection 811.320(a) exists and it is applicable at or beyond the zone of attenuation. In order to clarify any perceived confusion, STS recommends the use of consistent terminology in the text of the rules where ground quality standards are referred, and suggests the use of "applicable groundwater quality standards of Section 811.320," as a possible referencing format. This format has been incorporated in the changes suggested in the preceding pages. STS suggests the following change to subsection (c)(1) for consistency in this regard as well as with the definition of "zone of Attenuation":

c)

- 1) The zone of attenuation, within which concentrations of constituents in leachate discharged from the unit may exceed the applicable groundwater quality standard of Section 811.320, is volume bounded... uppermost aquifer and excluding the volume occupied by the waste.

4. Response to WMI's comments (WMI's testimony, pg. #17)

The proposed rules require the gathering of monitoring data prior to acceptance of waste at a landfill for establishing background concentrations. In fact, subsection 811.320(d) requires initial monitoring to start during the hydrogeologic investigations.

5. Response to the Agency's comment #14 (A)

STS notes that the statistical tests, such as those listed in subsection (e)(4)(C), may be used to determine whether or not, monitored concentrations above an absolute value represents a statistically significant increase. For example, a confidence interval may be constructed for the mean concentration of a monitored constituent and compared with an absolute value, such as an MAPC. If the entire confidence interval's lower bound exceeds the MAPC, that is strong evidence of a statistically significant increase in the mean concentration above the MAPC. No changes to this section are suggested.

6. Response to the Agency's comment #14 (B)

Where percentage of nondetects are between 15 and 50 percent, Cohen's adjustment must be used to account for the nondetects. A number of statistical tests may be used to analyze the adjusted data. However, the application of tests other than those listed in subsection (e)(4)(C) will require special considerations and guidance from a qualified statistician. Therefore, only the tests listed in subsection (e)(4)(C) are specified. It must be noted that the use of other statistical tests are allowed as long as they meet the requirements of subsection (e)(6).

STS agrees that the rules should allow the use of transformation procedures to normalize the sampling data and use the normal theory statistical tests, if data transformation is successful. This was the intent, but was not explicitly included. However based on the Agency's comments, STS recommends changes to subsections (e)(1) and (e)(3)(B) to include data transformation provisions.

7. Response to the Agency's comment #14 (C)

STS believes that the general performance standards of 35 Ill. Adm. Code 724.197(i) are not adequate for choosing the appropriate statistical test or tests for analyzing groundwater monitoring data. Even though the standards of Part 724 address issues, such as nondetects and data distribution in general terms, detailed requirements will be useful for choosing an appropriate test. STS notes that the existing language of subsection (e) reflects the requirements of Part 724 and provides additional guidance. STS recommends that the Board retain the existing subsection (e).

STS agrees that the experiment-wise error rates are applicable to the tests listed in subsection (e)(4)(C); however, the error rates for these tests must be specified by the Agency in

accordance with the requirements of Part 724. STS suggests changes to clarify the intent of subsection (e)(4)(C).

STS notes that the proposed rules specify statistical tests based on the adequacy of the background data and analytical capability.

These issues are addressed in subsections 811.319(a)(4) and 811.320(e).

Suggested changes to subsection (e)

e)

1) Statistical tests shall be used to analyze groundwater monitoring data. One or more of the normal theory statistical tests listed in subsection (e)(4) shall be chosen first for analyzing the data set or transformations of the data set. ~~unless~~ Where such normal theory tests are demonstrated to be inappropriate, tests listed in subsections (e)(5) ~~and or a test in accordance with subsection~~ (e)(6) shall be used. Any.....

3) Monitored data that.... (MDL). The following procedures shall be used to analyze such data, unless an alternative procedure, ~~as prescribed~~ in accordance with subsection (e)(6), is shown to be applicable:

B) Where percentage of nondetects in the data base used is between 15 and 50 percent, and the data or data transformations are normally distributed,...

4) Normal theory statistical tests ~~that the owner or operator shall use:~~

B) Parametric analysis of..... but not limited to, Fisher's Least Significant difference (LSD), Student ~~M~~Newman-Kuel procedure,....

C) Control charts, prediction intervals and tolerance intervals, for which the type I error levels shall be specified by the Agency in accordance with the requirements of 35 Ill. Adm. Code 724.197(i) are ~~not~~ applicable.

5) Nonparametric statistical tests shall include ~~that the owner or operator shall use~~ use: Mann-Whitney U-test...

6) ~~The owner or operator may use~~ Any other statistical test ~~that it can demonstrate is more appropriate due to~~ based on the distribution of the sampling data may be used, if it is demonstrated to meet the requirements of 35 Ill. Adm Code 724.197(i).

Section 811.321Waste Placement

1. Response to WMI's comments (WMI's testimony, pg. #2 and P.C. #38, pg. #3)

STS provides additional language to subsection 811.321(a)(1) to address WMI's concern regarding the requirements for waste placement (see comment #1, Section 811.105). Also, a typographical oversight in subsection 811.321(a)(2)(C) is corrected. The suggested changes are as follows:

a) Phasing of Operations

1) Waste disposal....the placement of waste shall begin in the lowest part of the active face of the unit, located in the part of the facility most downgradient with respect to groundwater flow, part of the facility, in the lowest possible part of the unit.

2)

C) When groundwater...requirements of Section 811.319.....

Section 811.323Load Checking Program

1. Response to WMI's comments (P.C. #38, pg. #21)

The requirements of this Section does not prevent the operator from returning unacceptable wastes to the generator. To clarify the intent of this Section, STS suggests the following addition to subsection (c)(1):

c)

1) If any regulated hazardous wastes are.... known. Waste loads identical to the regulated hazardous waste identified through the random load checking which have not yet been deposited in the landfill shall not be accepted.
The area where.....

Section 811.503Construction Quality Assurance

1. Response to WMI's comments (WMI's testimony, pg.#18 and P.C. #38, pg. #22)

In response to WMI's comments regarding the duties of the CQA officer, STS notes that the requirements of Section 811.503 allows the CQA officer to designate an officer-in-absentia to carry out

the duties listed in subsection 811.503(a). STS suggests the following clarifying addition to subsection 811.503(b):

- b) If the CQA officer is unable to be present to perform, as required by subsection (a), then the CQA officer shall provide, in writing, reasons for his absence, a designation of a person who shall exercise professional judgement in carrying out the duties of a CQA officer as the designated CQA officer-in-absentia, and a signed statement that.... absence of the CQA.

Note: STS suggests that the Board consider the option of allowing the CQA officer-in-absentia to also perform the other duties of a CQA in addition to those listed in Section 811.503. If such an option is acceptable, then the requirements of subsection 811.503(b) should more appropriately be included under the duties and qualifications of the CQA at Section 811.502(b), perhaps as new subsection 811.502(b)(3).

Section 811.504 Sampling Requirements

1. STS corrects a typographical error and suggests the following changes to subsections (b) and (c) to correct the incorrect use of statistical terms:

A sampling program.... all construction activities, in order to ~~insure~~, at a minimum,....

- b) The sampling program shall be based upon statistical sampling techniques ~~to yield a 95 percent level of confidence. and shall establish and specify criteria for acceptance or rejection of materials and operations.~~

~~c) A criteria.... properties or standards.~~

Section 811.505 Documentation

1. Response to the Agency's comment #16

STS agrees that the description of data for both on-site as well as off-site materials must be provided and suggests the following changes to subsection (a)(6):

- a)
6) A description of all materials ~~received~~ used and references or results of testing and documentation;

Section 811.506 Foundations and Subbases

1. Response to Chambers Development Company (P.C. #33)

STS agrees with and thanks them for their comments and makes the following change to subsection (a):

- a) ~~The CQA officer shall identify and confirm the results of~~ ensure that the site investigation is carried out in accordance with the plans, identify unexpected...as-built drawings.

Section 811.507 Compacted Earth Liner

1. Response to the Agency's comment #17 (A)

The rationale for the use of field permeability tests for determining the hydraulic conductivity of the test liner is discussed in the STS's background report. STS notes that field testing is not specified for the full-scale liner. Field testing methods for measuring hydraulic conductivity are discussed in the summary of David Daniel's testimony before the Board (exhibit 13B, docket A) and EPA's technical guidance document on construction quality assurance (exhibit 2DF, docket D).

2. Response to the Agency's comment #17 (B)

STS notes that the subsection (a)(4) only specifies the minimum number of lifts to be used during the construction of a test liner. The operator may choose any number of lifts above the minimum to meet the performance standards.

3. STS notes that the existing language of subsection 811.507(a) does not provide for CQA officer's oversight during the construction and testing of test fills. STS believes that the CQA officer should be involved in the above mentioned activities and suggests the following addition to subsection 811.507(c):

- c) The CQA officer shall inspect the construction and testing of test fills to ensure that the requirements of subsection (a) are met. During construction of.... shall ~~ensure~~ the following:

Section 811.700 Scope, Applicability and Definitions

1. Financial assurance requirement

The financial assurance requirements of 35 Ill. Adm. Code 807.602, allow the operator to submit the financial assurance to the Agency before the receipt of the waste as opposed to submitting the information with the permit application. This requirement has

been inadvertently left out of the proposed rules. STS believes that such a requirement must be included in financial assurance requirements of Section 811.700 and suggests the following addition:

- b)Financial assurance...insurance or self-insurance. The operator shall provide financial assurance to the Agency before the receipt of the waste.

Section 811.704Closure and Postclosure Care Cost Estimates

- 1.Response to the Agency's comment #20 (A)

STS agrees that the term "active parts" used in the existing language of subsection (a) is not defined and suggests the following changes for the purposes of clarity:

- a)Written cost estimate. The operator shall have a written estimate of the cost of closureing of all active parts of the facility where wastes have been deposited in accordance with the requirements of this Part;..... and the cost of postclosure care and plans required by this Part and the written postclosure care plans required by 35 Ill. Adm. Code 812.115....

Section 811.705Revision of Cost Estimate

- 1.Response to the Agency's comment #21

STS thanks the Agency for pointing out the typographical oversight and corrects subsection (b) as follows:

- b)The operator shall..... with current operations, and the requirements of this Subchapter. The operator..

Section 812.309Landfill Gas Monitoring Systems

- 1.Response to WMI's comments (P.C. #38, pg. #9)

STS notes that the proposed rule includes the predictive gas flow model as a tool, which the operator may use to determine the optimum location of monitoring points. The requirement does not prevent the operator from using other techniques. STS notes that the Board's proposed rule does not require the use of a predictive gas flow model. STS corrects a typographical error in subsection (a) and suggests the addition of a new subsection (c) which clarifies the intent of this Section. The suggested changes are as follows:

a)A description of the..... pursuant to 35 Ill. Adm. Code 811.310(b)(23); ~~and~~

b)The location and design of sampling points-; and

c)Support for the items under subsections (a) and (b) must be provided

and
shall
includ
de
the
resul
ts of
the
predi
ctive
model
ing
study
of
the
gas
flow,
if
used,
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accor
dance
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35
Ill.
Adm.
Code
811.3
10(b)
(2).

Section 812.316Results of the Groundwater Impact Assessment

1.Response to Chambers Development Company (P.C. #33)

The 100-year period is used in modeling to assess groundwater impacts, to design the landfill and to predict what the concentrations are over time and space. The 15 years of monitoring is a minimum established by statute for landfills not exclusively disposing waste generated at the site. The criteria for discontinuing monitoring is included in the section on monitoring (35 Ill. Adm. Code 811.319).

Section 813.110Adjusted Standards to Engage in Experimental Practices

1. Response to the Agency's comment #35

STS believes that the Agency's evaluation and recommendation of any experimental practice should be considered in a Board review and suggests the following changes to subsection (d) to clarify the intent of this Section:

d) The Board will review all requests to conduct experimental practices in accordance with Section 28.1 of the Act, 35 Ill. Adm. Code 106. Subpart G and any Agency recommendation regarding the experimental practice under the following criteria assumptions:

Section 813.111 Agency Review of Contaminant Transport Model

1. Response to the Agency's comment #36

STS agrees with the Agency's comment and recommends the addition of language suggested by the Agency to subsection (c) as follows:

(c) An applicant..... accepted by the Agency and shall demonstrate that the model is acceptable for use in the site specific hydrogeology of the proposed facility.

Section 813.201 Initiation of a Modification or Significant Modification

1. STS notes that the proposed rules does not require the operator to apply to the Agency since the term "may be initiated" is used in subsection 813.201 (a), and suggests changing this subsection to require operators to file application to the Agency for any modification or significant modification as follows:

a) A modification or significant modification to an approved permit ~~may~~ shall be initiated.....

Section 813.501 Annual Reports

1. Response to the Agency comment #38

STS agrees with the Agency's comments and recommends the changes to subsection (c)(1) as follows:

c)

1) A waste volume summary that includes:

A) Total ~~amount~~ volume of solid waste accepted at the facility in units of cubic meter (cubic yard) as measured at the

gate;

B) Remaining solid waste capacity in each unit in units of cubic meter (cubic yard) as measured at the gate; and

2. In response to the Agency's comments at the April 6th hearing (transcript pg. #653-654), STS believes that any modification or significant modification affecting the operation of the facility must be included in the annual report and submitted to the Agency in accordance with 35 Ill. Adm. Code 813.501 and 815.301. STS recommends new language to subsection (c)(4) to reflect this intent, and rename existing subsection (c)(4) as (c)(5). The suggested changes (also to Section 815.303) are as follows:

c)

4) Any modification or significant modification affecting the operation of a facility shall be included.

5) Signature of the person.....

Section 813.503 Information to be Retained at or near the Waste Disposal Facility

1. Response to WMI's hearing testimony (Tr. pg. #545)

Onsite maintenance of records during postclosure may be difficult. STS agrees that an alternate active site in the state, if one exists, must be provided to the Agency. The following changes are suggested:

Information developed...normal working hours. If there is no active office for maintenance of records at the facility during the postclosure care period, then an alternate active operation site in the state, owned or operated by the same facility operator, may be specified. The Agency must be notified of the address and telephone number of the operator at the alternative facility where the information will be retained.

Section 815.303 Information to be submitted

1. STS suggests the following changes to subsection (d) in response to the Agency's comments (see Section 813.501, comment #2):

d) A summary of all ~~significant~~ modifications, including significant modifications, made to the operations during the course of the year.

Section 815.501 Scope and Applicability

1. STS suggests the following changes in response to WMI's comments (see Section 813.503, comment #1):

All facilities....care period. If there is no active office for maintenance of records at the facility during the postclosure care period, then an alternate active operation site in the state, owned or operated by the same facility operator, may be specified. The Agency must be notified of the address and telephone number of the operator at the alternative facility where the information will be retained.

GENERAL RESPONSES**I. Response to Comments on Procedural Issues (P.C. # 38, pg. 24-25, Tr. pg. 437-439)**

WMI in its questioning at hearing and in its comments states that the involvement of STS in this proposed rulemaking and that its interactions with consultants previously involved in the landfill regulatory proposal (R84-17D) are somehow improper and that they would appear to constitute ex parte contacts. STS responds to this charge by noting that extreme care has been taken throughout this regulatory proceeding to ensure that all information received by the STS regarding the proposal was introduced into the public record, either in writing or made public at a hearing.

Mr. DiMambro was retained as a STS consultant because he was intimately involved with the earlier hearings in this proceeding and with the first First Notice proposal of February 25, 1988. STS communication with Mr. DiMambro since he left the Board has been to ask for details of the earlier proposal and its technical support and to have him appear at hearing if any new information was going to be presented and to answer questions. Mr. DiMambro was not present at the last hearing on April 6, 1990; however, any information that was received from Mr. DiMambro after the June 1989 hearings was included in the Response to Comments document prepared by STS. That STS document (Ex. 26) contains the STS recommendations and suggested language for the Board's consideration. Ex. 26 was mailed to persons on the notice list, submitted into the public record and was open to questioning and post-hearing comments.

Under the procedural rules of 35 Ill. Adm. Code 101.200 (d), if an ex parte contact occurs then it should be made a matter of public record. Since the STS's communications with the outside consultant has been included in the Response to Comments document and made a part of the public record, STS does not consider its actions to be inappropriate or that such actions are improperly influencing the Board's proposal.

II. Response to comments on groundwater modeling (P. C. # 38, pg. 12-13, Tr. pg. 532)

STS wishes to note yet again that the earlier STS Background Document (Ex. 1), the testimony of Dr. Jennings and Dr. Ham in the earlier R84-17D hearings, the testimony of Ms. Uhlman at the November 27, 1989 hearing as well as post hearing comments (P.C. 22) by DENR listing several models and applications of those models all add to the evidence and support in the record that there are groundwater contaminant transport (GCT) models that can be

used and that it is reasonable to use such GCT models for the purposes intended in the proposed regulations. STS notes that, particularly because of the variations in the site-specific hydrogeology, no single model can be prescribed under all situations. This is the reason that the proposed regulations instead prescribes standards and conditions that a groundwater contaminant transport model must meet before it can be approved for use.

In addition, WMI is incorrect in believing that modeling is "used to set a groundwater regulatory standard." Groundwater modeling is a tool that can be used for designing landfills to meet the groundwater quality standards outside the zone of attenuation (ie. "100 feet in 100 years" standard). The model also serves to predict concentrations of contaminants as a function of distance and time. Increases measured above a predicted concentration can provide an early warning trigger for potential increases above a groundwater standard at or outside the compliance boundary.

III. STS thanks American Colloid Company and 3M Industrial Chemical Products division for their comments (Exhibits #25 and #26 respectively) and notes that the existing requirements of the proposed rules are adequate to address their concerns.

IV. STS's response to the Agency's comments on the financial assurance requirements

The following is STS's response to the financial assurance questions in the Agency comment. (PC 34) As the Board noted earlier, (see p. 29 of the March 1, 1990 Second First Notice Opinion) problems with the financial assurance regulations not related to this R88-7 proposal will have to be dealt with in another proceeding.

Also, since many of the Agency's post-hearing comments are newly raised and thus have not been aired, they cannot be considered in any event. The following responses are only "interim" observations for Board consideration.

1. Comment: Automatic defaults. Agency urged the Board to follow the STS recommendation of 6/7/89 that the financial assurance mechanisms provide an automatic default if the operator fails to provide additional or substitute financial assurance when required to do so (Section 811.710(h) (PC 34, #18).

Response: STS notes that in R84-22, the Board removed the automatic default mechanism after hearing testimony that it was unacceptable to sureties. The Board specified a five year bond with a one year extension, during which the Agency could obtain a closure order triggering a default. These provisions are

linked, and need to be considered together.

The automatic default language is not appropriate for the trust fund, since there is no default associated with trust funds.

Once the money is in the trust fund, it stays there until paid out for closure and post-closure care expenses, or released by the Agency.

2.Comment: Extend the exemption for State and local government in Section 811.700(c) to include the U.S. Government (PC 34, #19).

Response: STS appreciates the logic of extending the exemption to the U.S. Government, since it is also a taxpayer liability. However, the Agency did not give a specific example of the problem it is addressing, or provide a statutory rationale.

Section 21.1 of the Act does not exclude the U.S. Government. The STS is not aware of any basis in State law for expanding the exemption. Nor is the STS aware of any federal law preempting State regulation in this area. It is possible that a provision could be added to Section 811.715 to the effect that the U.S. Government automatically meets the financial test, and gross revenue test. Section 811.715(b) would require the Government to provide a bond without surety. This would fix the amount of liability, and place the burden of proof on the Government with regard to payments.

3.Comment: Set a minimum of five years for extended post-closure care periods (Section 811.704(h)(4)).

Response: Section 811.704(h)(4) merely requires financial assurance for any extended post-closure care period. The length of the extension is governed by other portions of the rules, or by the outcome of a specific enforcement action.

4.Comment: Delete "duplicate" from Section 811.710(a) (PC 34, #22A).

Response: The trustee will probably insist on a signed original of the trust document. The copy or duplicate of the trust document to be sent to the Agency must also be signed, such a document has been termed "original duplicate." This does not mean a photocopy of the original. As is discussed below, the STS recommends that a requirement be added to use IEPA forms where available.

5. Comment: Require the use of IEPA forms. (PC 34, #22B).

Response: STS agrees with the need for required forms which cannot be duplicated. However, rather than specify this at numerous points in the text, STS recommends that a single Section be added, as follows:

Section 811.@@@ Use of Forms

The Agency shall promulgate financial assurance forms based on this Subpart and Appendix A. Owners and operators shall use such forms if available.

6. Comment: add a sentence to Section 811.710(d)(4) requiring that, if an operator switches from another financial assurance mechanism to a trust fund, the payment schedule be back-calculated to the date on which the operator became subject to the financial assurance requirement (PC 34, #22C).

Response: "Assumed closure date" is defined in Section 811.700(e). This is the time during the next permit term when the cost of closure will be greatest. Section 811.710(d)(2) defines the pay-in period as the number of years remaining until the assumed closure time. Since permits have a maximum term of five years (Section 813.108), the maximum pay-in period is five years. Part 811 differs from the hazardous waste rules insofar as it places this 5-year cap on the pay-in period.

The Agency's suggested changes introduces a new level of complexity to the trust fund calculations. The amount of additional security the State receives is small compared with the crude approximations used in getting to the amount of required contributions in the first place. Moreover, requiring quicker funding would discourage the use of trusts, which give the State the best security. STS, therefore, suggests that the Board not impose requirements which discourage the use of trusts.

7. Comment: Establish a 10 year maximum for the pay-in period for additional financial assurance to meet new post-closure care requirements under Section 811.710(d)(7). (PC 34, #22D)

Response: As discussed above, the "assumed closure time" is never more than five years away. This places a five year cap on pay-in periods.

Section 811.710(d)(7) allows an operator at least three years to fund a trust for the excess. Existing facilities are likely to already be at the point of maximum cost exposure, such that the general rules would require immediate full funding of the trust. However, as is discussed above, the trust is the preferred method of financial assurance from the State's perspective. The three year minimum encourages operators to use the trust.

8. Comment: Limit requests to withdraw excess funds from a trust to one per year (PC 34, #22E).

Response: Excess funds can come about in one of two ways: from the annual valuation of the trust (Section 811.710(e)), or from a reduction in the cost estimate (Section 811.704). The former

is intrinsically limited to once per year. The latter is linked to permit modifications. If an operator is indeed changing his operations so as to reduce the cost of closure and post-closure care, the excess funds from the trust are to be released.

9. Comment: Shorten bond terms to 1 year with 1 year extension; delete Section 811.711(g)(1), which provides that bonds to not satisfy the financial assurance requirement during the extended period (PC 34, #23-25).

Response: The Agency's position is inconsistent with its position on automatic defaults, discussed above, and appear to misreading the existing rules.

The Agency might consider placing sites under close scrutiny as expiration of financial assurance documents approaches. With a 5 year bond, 20% of sites are within one year of expiration. However, with 1 year bonds, 100% would require close scrutiny. This would be much more difficult to administer.

Under the existing rules and proposal, if an operator failed to renew the financial assurance, the Agency would have an additional year to obtain a closure order and collect on the bond. However, if the extended bond met the financial assurance requirement, the Agency could not allege failure to have financial assurance as a basis for the enforcement action. If the operator were otherwise in compliance, the Agency could not get a closure order, and hence could not collect on the bond, STS suggests that the Agency's problems with the financial assurance rules appear to stem from the incorrect assumption that it has to wait until the end of the extension year to take action.

When the operator fails to renew financial assurance, he violates the Act and regulations. The Agency could file an enforcement action alleging this simple violation, along with a motion for expedited consideration advising the Board that a final decision is needed to determine financial assurance.

10. Comment: The Agency cannot provide notice to the surety within 30 days after the expiration of a bond if the operator fails to renew, as required in App. A, Illus. C. (PC 34, #26-28).

Response: This notice requirement is triggered only by a failure to provide substitute financial assurance prior to the expiration date of the bond. Some sort of notice to the surety is needed if the surety's liability is to be extended for another year. (Sureties need to know this to establish loss reserves.) The Agency might consider establishing a system which closely monitors sites prior to expiration of financial assurance, and

to move to a "if in doubt, notify" posture.

The financial assurance rules place powerful tools in the Agency's hands.

11.Comment: The bond language allows operators to "walk away" from a site (PC 34, #26-28).

Response: Section 811.711(e)(2)(A) specifies that it is a "failure to perform" if the operator abandons a site. Similar language is specified for the other mechanisms. The Agency is not required to file an enforcement action; abandonment is a condition of default in and of itself. The Agency need only notify the surety that abandonment has occurred. If the surety refuses to pay, the Agency should sue in Circuit Court, where the question is simply whether abandonment did or did not occur.

This is not linked to the 30 day notification requirement discussed above, under which the Agency must notify the surety within 30 days after expiration of a bond if the operator fails to provide substitute financial assurance. Failure to provide substitute financial assurance is something the Agency can tell just from its files. On the other hand, there is no time limit on the notification that abandonment has occurred. After expiration of the bond, if the Agency determines that abandonment occurred during the term of the bond, the surety remains liable.