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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:

SOLID WASTE	)	R90- 26
RULES FOR THE	)	
ILLINOIS FOUNDRY AND	)	
STEEL INDUSTRIES	)	

NOTICE OF FILING

TO: Clerk of the Pollution Control Board
State of Illinois Center
100 W. Randolph Street, Suite 11-500
Chicago, IL 60601

Larry Eastep
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, IL 62706

PLEASE TAKE NOTICE that on the 3rd day of December, 1990, we filed with the Clerk of the Pollution Control Board, copies of the following documents on behalf of the Illinois Steel Group and Illinois Cast Metals Association:

1. Statement of Reasons;
2. Synopsis of Testimony;
3. Recommendation Regarding Need for Economic Impact Study;
4. Joint Proposal of Regulation; and
5. Motion for Waiver of Signature Requirements.

The Illinois Steel Group
The Illinois Cast Metals Association

By: _____
Its Attorneys, Ross & Hardies

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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:

SOLID WASTE RULES FOR THE ILLINOIS FOUNDRY AND STEEL INDUSTRIES	))))	R90- 26

JOINT PROPOSAL OF REGULATION

Pursuant to 35 Ill.Adm.Code §§102.120 and 811.101(b), the Illinois Steel Group and the Illinois Cast Metals Association hereby submit their Joint Proposal for Solid Waste Rulemaking.

Respectfully submitted
The Illinois Steel Group
The Illinois Cast Metals Association

by: _____
One of their attorneys

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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:

SOLID WASTE RULES FOR THE ILLINOIS FOUNDRY AND STEEL INDUSTRIES) R90-26

STATEMENT OF REASONS

I. REGULATORY BACKGROUND.

The development of solid waste rules in Illinois has had a long and colorful history. Modern efforts began in 1984 with the initiation of Board docket R84-17. That docket progressed through four iterations with no real result or even concensus as to what such a rule should regulate.

Throughout the R84-17 process, the Illinois Steel Group (ISG) and the Illinois Cast Metals Association (ICMA) participated both as independent industry groups and under the Illinois Environmental Regulatory Group/Illinois State Chamber of Commerce umbrella. Witnesses, comments and examination were provided by these groups to both support (Docket B) and indicate the technical and economic problems (Dockets A, C and D) of the various proposals.

In 1986, the Board proposed its own rulemaking effort (R88-7) in the area. Again, both ISG and ICMA participated in hearings on this docket both independently and under the IERG umbrella. The R88-7 docket resulted in an adopted rule on August 17, 1989, which set up a three tiered classification program for Illinois landfills.

II. PURPOSE OF THE ISG/ICMA PROPOSAL

As noted above, the Board's Final Order in docket R86-7 set up a three tiered classification system for Illinois landfills and standards for the operation of each type. The system sorts all Illinois non-hazardous waste streams into a classification as either an inert waste, a chemical waste or a putrescible waste.

Very few of the waste streams from ISG/ICMA facilities could be classified as putrescible. It is also unclear how many ISG/ICMA wastes will qualify for an inert classification under the current rule. What is clear, however, is that there are ISG/ICMA high volume waste streams which will not meet the inert limits and will, therefore, require disposal at chemical waste landfills.

It is the belief of the members of the ISG and ICMA that the state's interests would be better served by a less stringent disposal standard for the high volume/low risk wastes produced by their facilities. The waste streams involved are relatively innocuous when compared to many waste streams that will be sent to chemical waste landfills and, therefore, do not require the degree of control necessary to contain contaminants that may be released by the higher risk streams. In addition, the high volumes of waste involved will rapidly deplete the state's already dwindling landfill capacity. Finally, while ISG/ICMA wastes are relatively stable when disposed of in monofills, the addition of other dissimilar waste streams to these wastes may increase the release of contaminants into the environment.

For these reasons, the Illinois Steel Group and the Illinois Cast Metals Association are proposing the regulatory package accompanying this Statement of Reasons.

III. PROPOSAL SUMMARY

The ISG/ICMA regulatory proposal creates three new waste classifications which will apply only to waste streams produced

by the steel and foundry industries. These new waste classes fit into the Board's current regulatory scheme in place of the "inert" class. The chemical and putrescible waste disposal requirements and landfill standards would remain in place and would be applicable to those steel and foundry industry wastes not meeting the industry specific standards proposed.

The three new classes are delimited, as is the current rule, by the leachability of the waste. The leachability limits for each new class are provided in the table at proposed section 811.805 and are based upon the federal and Illinois MCL's.

The rule proposal includes standards for the operation, monitoring and closure of disposal sites for each of the waste classes. These are largely based upon the existing landfill standards and language from the existing rules was used verbatim wherever possible.

The most stringent of the proposed waste classes is the "low risk" class. These wastes must be disposed of in engineered landfills which would be designed and operated per standards similar in scope to those for chemical waste landfills. However, because these waste represent a relatively low risk of harm to the environment, standards for liner depth, leachate collection and other similar requirements have been reduced.

The intermediate proposed waste class is that of "potentially usable" wastes. Landfills accepting this waste class must be designed and operated to standards equivalent to the current standards for "inert" wastes.

The least stringent waste class is that of "beneficially usable" wastes. These wastes produce a leachate that does not exceed any currently promulgated MCL. They may be "disposed of" by use as road bullest, construction fill, and other traditional uses of slag and foundry sand.

IV. DESCRIPTION OF PROPOSAL

The ISG/ICMA regulatory proposal is designed to append to existing sections 811 and 814 covering new and existing landfills, respectively. The existing language from these two sections was used wherever possible to maintain the Board's format.

Subpart H

Section 811.801 restricts the proposal's use to steel and foundry industry use and provides exemptions for some beneficial reuses of these wastes.

Section 811.802 is largely taken from section 811.202. However, a specific method for leachate extraction has been provided and the definition of "contaminated" has been shifted to 811.804.

Section 811.803 defines the frequency of periodical testing and what specific changes in conditions would require a retest.

Section 811.804 provides three new waste classifications for steel and foundry industry wastes. All three are based upon the leachability of the waste.

Section 811.805 includes the applicable concentration limits for each waste class identified in section 811.804.

Subpart J

Section 811.901 identifies the group of wastes covered by subpart J.

Section 811.902 provides a partial list of acceptable beneficial uses for wastes covered by subpart J.

Section 811.903 requires load quality certifications for beneficially used wastes.

Section 811.904 provides Agency notification requirements for beneficially fused waste.

Subpart K

This subpart provides requirements for the operation of a steel or foundry industry "potentially usable" waste landfill.

Section 811.1001 sets out the limits of applicability for this subpart.

Section 811.1002 provides the design period for landfills covered by this subpart.

Section 811.1003 sets forth minimum final cover requirements for subpart K landfills.

Section 811.1004 provides minimum vegetation and slope design requirements for landfills closed per this subpart.

Section 811.1005 sets forth requirements for the sampling of leachates from subpart K landfills.

Section 811.1006 provides load documentation and inspection standards for wastes sent to potentially usable waste landfills.

Subpart L

This subpart provides standards for landfills accepting low risk wastes from the steel and foundry industry.

Section 811.1101 limits the applicability of the subpart to landfills accepting steel and foundry industry low risk wastes.

Section 811.1102 provides minimum location standards for subpart L landfills.

Section 811.1103 provides the design period length for subpart L landfills.

Section 811.1104 provides requirements for ensuring the mechanical integrity of the landfill.

Section 811.1105 provides standards for the construction of the facility's foundation.

Section 811.1106 provides requirements for the design and construction of the landfill liner, slurry trenches and cutoff walls.

Section 811.1107 provides design and construction requirements for low permeability and vegetation supporting final cover layers.

Section 811.1108 sets forth standards for conducting a three phased hydrogeologic site investigation.

Section 811.1109 provides requirements for the plugging and sealing of boring holes created during the hydrogeologic site investigation.

Section 811.1110 provides methods for the determination of the landfill's impact on surrounding groundwater.

Section 811.1111 sets forth standards for the design, construction and operation of a groundwater monitoring system.

Section 811.1112 provides criteria for designing and conducting a groundwater monitoring program.

Section 811.1113 provides the groundwater quality limits which must be met at or beyond the zone of attenuation. It also provides the method of determining the zone of attenuation, for

determining a groundwater standard exceedance and for obtaining an adjusted standard from the Board.

Section 811.1114 sets forth standards for the placement of new waste within the landfill.

Section 811.1115 provides standards for the grading and revegatation of the landfill during closure.

Section 811.1116 provides load documentation and inspections standards for wastes sent to low risk waste landfills.

Part 814

As with the above, the following sections are similar in format and content to the previously promulgated Part 814 rules and have been designed to append to them.

Subpart F

This subpart sets forth standards for those existing steel and foundry landfills which accept low risk waste and plan to stay open for more than seven years.

Section 814.601 defines the limits of applicability of this subpart.

Section 814.602 provides that subpart F landfills are to comply with the section 811 requirements with certain enumerated exceptions. The section also provides additional design standards for subpart F landfills including a leachate collection system, slope safety factor requirements and a design period definition for financial assurance purposes.

Subpart G

This subpart provides standards for the operation of those existing steel and foundry industry landfills accepting low risk waste which will close within seven years.

Section 814.701 provides a definition of the scope and applicability of this subpart.

Section 814.702 requires that landfills covered by this subpart comply with the section 811 standards and certain enumerated exceptions. The section also provides additional requirements for subpart G landfills including limits on expansion, groundwater standards and compliance boundaries, and a design period calculation formula.

Subpart H

This subpart provides standards for the operation and closure of those existing steel and foundry industry waste landfills which must initiate closure within two years.

Section 814.802 defines which facilities must close within two years.

Section 814.802 provides that landfills covered by this subpart may close under the section 807 closure standards rather than section 811 standards.

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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:

SOLID WASTE RULES FOR THE ILLINOIS FOUNDRY AND STEEL INDUSTRIES) R90-26

JOINT RULEMAKING PROPOSAL

ILLINOIS STEEL GROUP AND
ILLINOIS CAST METALS ASSOCIATION

SUBPART H

811.801 Scope & Applicability

a. In addition to the requirements of Subpart A, the standards of this subpart apply exclusively to non-protectible wastes from the steel and foundry industries.

b. Landfills units regulated under this subpart shall accept waste only from the steel and foundry industries.

c. This part shall not apply to the legitimate use of iron and steelmaking slags including the use as a base for road building, but not including use for land reclamation except as allowed under Section 811.801(e).

d. This part shall not apply to the legitimate use of foundry sand which has been demonstrated as suitable for beneficial use under Section 811.804, including the use as a base for road building, but not including use for land reclamation except as allowed under Section 811.801(e).

e. The use of iron and steelmaking slags and foundry sands for land reclamation purposes may be approved by the Agency provided it is determined that these uses do not pose a threat to public health and the environment.

f. The use of iron and steelmaking slags and foundry sands as raw material in the manufacture of another product shall in no way be restricted by this part.

811.802 Determination of Waste Status

a. A representative sample of leachate extracted from the waste by the laboratory procedure listed in 35 Ill. Adm. Code Appendix B may be used to model the expected constituents and concentrations of the leachate.

b. Actual samples of leachate from an existing solid waste disposal unit or beneficial use site may be utilized under the following conditions:

1) The waste in the existing unit is similar to the waste to be used or disposed;
2) The conditions under which the leachate was formed are similar to those expected to be encountered; and
3) Leachate is sampled so as to be representative of undiluted and unattenuated leachate emanating from the unit.

811.803 Sampling Frequency

a. All wastes shall be tested annually.

b. Additional testing on individual waste streams shall be conducted when any of the following occurs:

1) There is a change in the raw materials which could significantly affect the wastes' leaching characteristics;
2) There is a modification to the process which generates the waste and the change could significantly affect the wastes' leaching characteristics; or
3) There is an addition of a new process which may generate a new waste material.

811.804 Waste Classification

a. Wastes regulated by this subpart shall be classified on the basis of leaching potential as determined by the procedure at Section 811.802.

b. Non-putrecible wastes regulated by this subpart shall fall into one of four classifications:

1. Beneficially Usable;
2. Potentially Usable;
3. Low Risk; or
4. Chemical

c. Maximum Allowable Leaching Concentration (MALC) for the Beneficially Usable, Potentially Usable and Low Risk classes are presented in the table at Section 811.805. Wastes exceeding the MALC's for the Low Risk class shall be regulated as Chemical Wastes under Subpart C.

811.805 Waste Classification Table

MAXIMUM ALLOWABLE LEACHING CONCENTRATIONS

(Concentrations in mg/L)

Parameter	Beneficially Usable Wastes	Potentially Usable Wastes	Low Risk Wastes
(Primary Standards)			
Arsenic	0.05	0.05	0.25
Barium	1.0	1.0	5.0
Cadmium	0.01	0.01	0.05
Chromium	0.05	0.05	0.25
Lead	0.05	0.05	0.25
Nitrate	10	10	50
Selenium	0.01	0.01	0.05
Fluoride	4	4	20
(Secondary Standards)			
Chloride	250	250	500
Manganese	0.15	0.75	3.75
Copper	5	5	10
Iron	5	5	15
Sulfates	400	400	800
Zinc	5	10	50
TDS	1,200	1,200	5,000

NOTE: Any waste which leaches concentrations of constituents above the levels stated for Low Risk Wastes would be considered a Chemical Waste and, therefore, subject to the disposal requirements of a Chemical Waste.

SUBPART J

STANDARDS FOR DISPOSAL OF BENEFICIALLY USABLE STEEL AND FOUNDRY INDUSTRY WASTES

811.901 Scope and Applicability

The standards of this subpart, along with Sections 811.101 and 811.102, shall apply to all steel and foundry industry wastes not exempt under Section 811.801 and meeting the MALC limits for beneficially usable wastes provided in Section 811.905.

811.902 Limitations on Use

Wastes regulated by this subpart may be used as road ballast, construction fill material, daily cover to landfills and similar beneficial uses.

811.903 Certification

The generator of wastes regulated by this subpart shall certify each load sent to a offsite beneficial use as meeting the requirements of subpart H.

811.904 Notification of Use

The generator of wastes regulated by this subpart shall notify the Agency of the location of each beneficial use site through the use of an annual report.

SUBPART K

STEEL AND FOUNDRY INDUSTRY POTENTIALLY USABLE WASTE LANDFILLS

Section 811.1001 Scope and Applicability

The standards of this Subpart, in addition to the requirements of Subpart A, shall apply to all landfills in which only potentially usable waste is to be placed.

Section 811.1002 Design Period

The design period for all potentially usable waste disposal units shall be the estimated operating life of the unit plus a minimum postclosure care period of five years. For landfills, other than those used exclusively for disposing waste generated at the site, the minimum postclosure care period, for purposes of monitoring settling at the site, shall be 15 years.

Section 811.1003 Final Cover

A minimum of 0.46 meter (1.5 feet) of soil material that will support vegetation which prevents or minimizes erosion shall be applied over all disturbed areas. Where no vegetation is required for the intended postclosure land use, the requirements of Section 811.1004(b) will not apply; however, the final surface shall still be designed to prevent or minimize erosion.

Section 811.1004 Final Slope and Stabilization

a) The waste disposal unit shall be designed and constructed to achieve a minimum static slope safety factor of 1.5 and a minimum seismic safety factor of 1.3.

b) Standards for Vegetation

1) Vegetation shall be promoted on all reconstructed surfaces to minimize wind and water erosion;

2) Vegetation shall be compatible with (i.e., grow and survive under) the local climatic conditions;

3) Vegetation shall require little maintenance;

4) Vegetation shall consist of a diverse mix of native and introduced species consistent with the postclosure land use; and

5) Temporary erosion control measures, including, but not limited to, the application, alone or in combination, of mulch, straw, netting, or chemical soil stabilizers, shall be undertaken while vegetation is being established.

c) The landfill site shall be monitored for settling for a minimum period of 15 years after closure as specified in Section 811.1002 in order to meet the requirements of this Section.

Section 811.1005 Leachate Sampling

a) All potentially usable 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 dilute leachate samples.

b) Leachate samples shall be collected and analyzed at least once every six months to determine, using the statistical procedures of Section 811.320(e), the proper waste classification as defined in 35 Ill. Adm. Code 811.802

c) Once every two years, leachate samples shall be tested for the presence of organic chemicals in accordance with Section 811.319(a)(3). If the results of such testing show 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 exceeds the limits for potentially usable waste as defined in 35 Ill. Adm. Code 811.804, the operator shall notify the Agency of this finding, in writing before the end of the business day following the finding. In addition, the potentially usable waste landfill facility causing the contamination:

1) shall no longer be subject to the potentially usable waste landfill requirements of Subpart K;

2) shall be subject to the requirements for Low Risk Waste Landfills of Subpart L, 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 815 Subpart D for non-permitted facilities.

Section 811.1006 Load Checking

a) The operator shall not accept wastes for disposal at an potentially usable waste landfill unless it is accompanied by documentation that such wastes are potentially usable based on testing of the leachate from such wastes performed in accordance with the requirements of Section 811.1002.

b) The operator shall institute and conduct a random load checking program at each potentially usable 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-potentially usable wastes at the landfill;

2) to require the facility's inspector 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 on an annual basis in accordance with Section 811.1002(a) and (b) to determine if the waste is potentially usable as defined in this part.

c) 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 35 Ill. Adm. Code 815 Subpart C for non-permitted facilities.

SUBPART L

NEW STEEL AND FOUNDRY INDUSTRY LOW RISK WASTE LANDFILLS

811.1101 Scope and Applicability

The standards of this subpart, along with subpart A, shall apply to all new landfills in which steel and foundry industry low risk wastes are to be placed.

811.1102 Facility Location

a) No part of a unit shall be located within a setback zone established pursuant to Section 14.2 or 14.3 of the Act;

b) No part of a unit shall be located within the recharge zone or within 366 meters (1200 feet), vertically or horizontally, of a sole-source aquifer designated by the United States Environmental Protection Agency pursuant to Section 1424 (e) of the Safe Drinking Water Act (42 U.S.C. 300f et seq.) unless there is a stratum between the bottom of the waste disposal unit and the top of the aquifer that meets the following minimum requirements:

1) The stratum has a minimum thickness of 15.2 meters (50 feet);
2) The maximum hydraulic conductivity in both the horizontal and vertical directions is no greater than $1x10^{-7}$ centimeters per second, as determined by in situ borehole or equivalent tests;
3) There is no indication of continuous sand or silt seams, faults, fractures or cracks within the stratum that may provide paths for migration; and
4) Age dating of extracted water samples from both the aquifer and the stratum indicates that the time of

travel for water percolating downward through the relatively impermeable stratum is no faster than 15.2 meters (50 feet) in 100 years.

c) A facility located within 152 meters (500 feet) of the right of way of a township or county road or state or interstate highway shall have its operations screened from view by a barrier of natural objects, fences, barricades, or plants no less than 2.44 meters (8 feet) in height.

d) No part of a unit shall be located closer than 152 meters (500 feet) from an occupied dwelling, school, or hospital that was occupied on the date when the operator first applied for a permit to develop the unit or the facility containing the unit, unless the owner of such dwelling, school, or hospital provides permission to the operator, in writing, for a closer distance.

811.1103 Design Period

The design period for low risk waste disposal units shall be the estimated operating life plus 20 years.

811.1104 Foundation and Mass Stability Analysis

a) The material beneath the unit shall have sufficient strength to support the weight of the unit during all phases of construction and operation. The loads and loading rate shall not cause or contribute to the failure of the liner.

b) The total settlement or swell of the foundation shall not cause or contribute to the failure of the liner.

c) The solid waste disposal unit shall be designed to achieve a safety factor against bearing capacity failure of at least: 2.0 under static conditions and 1.5 under seismic loadings.

d) The waste disposal unit shall be designed to achieve a factor of safety against slope failure of at least: 1.5 for static conditions and 1.3 under seismic conditions.

e) In calculating factors of safety, both long term (in tens or hundreds of years) and short term (over the design period of the facility) conditions expected at the facility shall be considered.

f) The potential for earthquake or blast induced liquefaction, and its effect on the stability and integrity of the unit shall be considered and taken into account in

the design. The potential for landslides or earthquake induced liquefaction outside the unit shall be considered if such events could affect the unit.

811.1105 Foundation Construction

a) If the in situ material provides insufficient strength to meet the requirements of Section 811.1104, then the insufficient material shall be removed and replaced with clean materials sufficient to meet the requirements of Section 811.1104.

b) All trees, stumps, roots, boulders and debris shall be removed.

c) All material shall be compacted to achieve the strength and density properties necessary to demonstrate compliance with this Part in conformance with a construction quality assurance plan pursuant to Subpart E.

d) Placement of frozen soil or soil onto frozen ground is prohibited.

e) The foundation shall be constructed and graded to provide a smooth, workable surface on which to construct the liner.

811.1106 Liner Systems

a) All units shall be equipped with a compacted earth liner designed in compliance with the requirements of this Section.

b) The liner shall be stable during all phases on construction and operation. The side slopes shall achieve a minimum static safety factor of 1.3 and a minimum seismic safety factor of 1.0 at all times.

c) The liner shall be designed to function for the entire design period.

d) Compacted Earth Liner Standards

1) The minimum allowable thickness shall be 0.76 meters (2.5 feet).
2) The liner shall be compacted to achieve a maximum hydraulic conductivity of 1×10^{-7} centimeters per second.
3) The construction and compaction of the liner shall be carried out in accordance with the construction quality assurance procedures of Subpart E so as to reduce void spaces and allow the liner to support

the loadings imposed by the waste disposal operation without settling that causes or contributes to the failure of the leachate collection system.

4) The liner shall be constructed from materials whose properties are not affected by contact with the constituents of the leachate expected to be produced.

e) Slurry Trenches and Cutoff Walls Used to Prevent Migration of Leachate

1) Slurry trenches and cutoff walls built to contain leachate migration shall be used only in conjunction with a compacted earth liner meeting the requirements of subsection (d) or as part of a remedial action required by Section 811.319.

2) Slurry trenches and cutoff walls shall extend into the bottom confining layer to a depth that will establish and maintain a continuous hydraulic connection and prevent seepage.

3) Exploration borings shall be drilled along the route of the slurry trench or cutoff wall to confirm the depth to the confining layer. In situ tests shall be conducted to determine the hydraulic conductivity of the confining layer.

4) Slurry trenches and cutoff walls shall be stable under all conditions during the design period of the facility. They shall not be susceptible to displacement or erosion under stress or hydraulic gradient.

5) Slurry trenches and cutoff walls shall be constructed in conformance to a construction quality assurance plan, pursuant to Subpart E, that insures that all material and construction methods meet design specifications.

f) The owner or operator may utilize liner configurations other than those specified in this Section, special construction techniques, and admixtures, provided that:

1) The alternative technology or material provides equivalent, or superior, performance to the requirements of this Section;

2) The technology or material has been successfully utilized in at least one application or pilot facility similar to the proposed application; and

3) Methods for manufacturing quality control and construction quality assurance can be implemented.

811.1107 Final Cover System

a) The unit shall be covered by a final cover consisting of a low permeability layer overlain by a final protective layer constructed in accordance with the requirements of this Section.

b) Standards for the Low Permeability Layer

1) Construction of a low permeability layer shall begin not later than 60 days after placement of the final lift of solid waste.

2) The low permeability layer shall cover the entire unit and connect with the liner system.

3) The low permeability layer shall consist of any one of the following:

A) A compacted earth layer constructed in accordance with the following standards:

i. The minimum allowable thickness shall be 0.46 meters (1.5 feet);

ii. The layer shall be compacted to achieve a permeability of 1×10^{-7} centimeters per second and minimize void spaces.

iii. Alternative specifications may be utilized provided that the performance of the low permeability layer is equal to or superior to the performance of a layer meeting the requirements of subsections (b) (3) (A) (i) and (b) (3) (A) (ii).

B) A geomembrane constructed in accordance with the following standards:

i. The geomembrane shall provide performance equal or superior to the compacted earth layer described in subsection (b) (3) (A).

ii. The geomembrane shall have strength to withstand the normal stresses imposed by the waste stabilization process.

iii. The geomembrane shall be placed over a prepared base free from sharp objects and other materials which may cause damage.

C. Any other low permeability layer construction techniques or materials, provided that they provide equivalent or superior performance to the requirements of this subsection.

c) Standards for the Final Protective Layer

1. The final protective layer shall cover the entire low permeability layer.

2. The thickness of the final protective layer shall be sufficient to protect the low permeability layer from freezing and minimize root penetration of the low permeability layer, but shall not be less than 0.46 meter (1.5 feet).

3. The final protective layer shall consist of soil material capable of supporting vegetation.

4. The final protective layer shall be placed as soon as possible after placement of the low permeability layer to prevent desiccation, cracking, freezing or other damage to the low permeability layer.

811.1108 Hydrogeologic Site Investigations

a) Purpose

The operator shall conduct a hydrogeologic investigation to develop hydrogeologic information for the following uses:

1) Provide information to perform a groundwater impact assessment; and

2) Provide information to establish a groundwater monitoring system.

b) General Requirements

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.

2) The study area shall consist of the entire area occupied by the facility and any adjacent areas, if necessary for the purpose of the hydrogeological investigation set forth in subsection (a).

3) All borings shall be sampled continuously at all recognizable points of geologic variation, except that where continuous sampling is impossible or where non-continuous sampling can provide equivalent information, samples shall be obtained at intervals no greater than 1.52 meters (five feet) in homogeneous strata.

c) Minimum Requirements for a Phase I Investigation

1) The operator shall conduct a Phase I Investigation to develop the following information:

A) Climatic aspects of the study area;

B) The regional and study area geologic setting, including a description of the geomorphology and stratigraphy of the area;

C) The regional groundwater regime including water table depths and aquifer characteristics; and

D) Information for the purpose of designing a Phase II Hydrogeologic Investigation.

2) Specific Requirements

A) The regional hydrogeologic setting of the unit shall be established by using material available from all possible sources, including, but not limited to, the Illinois Scientific Surveys, the Agency, other State and Federal organizations, water well drilling logs, and previous investigations.

B) A minimum of one continuously sampled boring shall be drilled on the site, as close as feasible to the geographic center, to determine if the available regional hydrogeologic setting information is accurate and to characterize the site-specific hydrogeology to the extend 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 of any additional borings, required under this subsection, may be chosen by the investigator, but shall be sampled continuously.

d) Minimum Requirements for a Phase II Investigation

1) Information to be developed

Using the information developed in the Phase I survey, a Phase II study shall be conducted to collect the site-specific information listed below as needed to augment data collected during the Phase I investigation and to prepare for the Phase III investigation:

A) Structural characteristics and distribution of underlying strata including bedrock;

B) Chemical and physical properties including, but not limited to, lithology, mineralogy, and hydraulic characteristics of underlying strata including those below the uppermost aquifer;

C) Soil characteristics, including soil types, distribution, geochemical and geophysical characteristics;

D) The hydraulic conductivities of the uppermost aquifer and all strata above it;

E) The vertical extent of the uppermost aquifer;

F) The direction and rate of groundwater flow.

2) Specific Requirements

A) One boring shall be located as close as feasible to the topographical high point, and another shall be located as close as feasible to the topographical low point of the study area.

B) At least one boring shall be at or near each corner of the site. Where the property is irregularly shaped the borings shall be located near the boundary in a pattern and spacing necessary to obtain data over the entire study area.

C) Additional borings may be located at intermediate points at locations and spacings necessary to establish the continuity of the stratigraphic units.

D) Piezometers and groundwater monitoring wells shall be established to determine the direction and flow characteristics of the groundwater in all strata and extending down to the bottom of the uppermost aquifer. Groundwater samples taken from such monitoring wells shall be used to develop preliminary information needed for establishing background concentrations in accordance with subsection (e) (1) (G).

E) Other methods may be utilized to confirm or accumulate additional information. Such methods may be used only as a supplement to, not in lieu of, site-specific boring information. Other methods include, but are not limited to, geophysical well logs, geophysical surveys, aerial photography, age dating, and test pits.

e) Minimum Standards for a Phase III Investigation

1) Using the information developed during the Phase I and Phase II Investigations, the operator shall conduct a Phase III Investigation. This investigation shall be conducted to collect or augment the site-specific information needed to carry out the following:

A) Verification and reconciliation of the information collected in the Phase I and II investigations;

B) Characterization of potential pathways for contaminant migration;

C) Correlation of stratigraphic units between borings;

D) Continuity of petrographic features including, but not limited to, sorting, grain size distribution, cementation and hydraulic conductivity;

E) Identification of zones of potentially high hydraulic conductivity;

F) Identification of the confining layer, if present;

G) Concentrations of chemical constituents present in the groundwater and expected to appear in the leachate below the unit, down to the bottom of the uppermost aquifer, using a broad range of chemical analysis and detection procedures such as, gas chromatographic and mass spectrometric scanning. However, additional measurements and procedures shall be carried out to establish background concentrations, in accordance with Section 811.320(d), for:

i) Any constituent for which there is a public or food processing water supply standard at 35 Ill. Adm. Code 302 established by the Board and which is expected to appear in the leachate; and

ii) Any other constituent for which there is no Board-established standard, but which is expected to appear in the leachate at concentrations above PQL, as defined in Section 811.319(a) (4) for that constituent;

H) Characterization of the seasonal and temporal, naturally and artificially induced, variations in groundwater quality and groundwater flow.

I) Identification of unusual or unpredicted geologic features, including: fault zones, fractures traces, facies changes, solution channels, buried stream deposits, cross cutting structures and other geologic features that may affect the ability of the operator to monitor the groundwater or predict the impact of the disposal facility on groundwater.

2) 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 not limited to excavation to 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.

f) The operator may conduct the hydrogeologic investigation in any number of alternative 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.

811.1109 Plugging and Sealing of Drill Holes

All drill holes, including exploration borings that are not converted into monitoring wells, monitoring wells that are no longer necessary to the operation of the site, and other holes that may cause or facilitate contamination of groundwater shall be sealed in accordance with the following standards:

a) If not sealed or plugged immediately, the drill hole shall be covered to prevent injury to people or animals.

b) All drill holes no longer intended for use shall be back-filled with materials that are compatible with the geochemistry of the site and with the leachate in sufficient quantities and in such a way as to prevent the creation of a pathway for contaminants to migrate.

c) For drill holes in gravels and other permeable strata where a watertight seal is not necessary to prevent the creation of pathway, drill cuttings and other earthen materials may be utilized as backfill.

d) All excess drilling mud, oil, drill cuttings, and any other contaminated materials uncovered during or created by drilling shall be disposed of in accordance with the requirements of 35 Ill. Adm. Code 700 through 749, 807 and 809 through 815.

e) The operator shall restore the area around the drill hole to its original condition.

811.1110 Groundwater Impact Assessment

The impacts of the leachate seepage of leachate from the unit shall be assessed in a systematic fashion using the techniques described in this Section.

a) Procedures for Performing the Groundwater Impact Assessment

1) The operator shall estimate the amount of seepage from the unit during operations which assume:

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

B) That the actual design standards planned for the unit apply. Other designs for the unit may be used if determined by the operator to be appropriate to demonstrate the impacts to groundwater.

2) The concentration of constituents in the leachate shall be determined from actual leachate samples from the waste or similar waste, or laboratory derived extracts.

811.1111 Design, Construction and Operation of Groundwater Monitoring Systems

a) All potential sources of discharges to groundwater within the facility, including, but not limited to all waste disposal units shall be identified and studied through a network of monitoring wells operated during the active life of the unit and for the time after closure specified in accordance with Section 811.1112. Monitoring wells designed and constructed as part of the monitoring network shall be maintained along with records that include, but are not limited to, exact well location, well size, type of well, the design and construction practice used in its installation and well and screen depths.

b) Standards for the Location of Monitoring Points

1) A network of monitoring points shall be established at sufficient locations downgradient with respect to groundwater flow and not excluding the downward direction, to detect any discharge of contaminants from any part of a potential source of discharge.

2) Monitoring wells shall be located in stratigraphic horizons that could serve as contaminant migration pathways.

3) Monitoring wells shall be established as close to the potential source of discharge as possible without interfering with the waste disposal operations, and within half the distance from the edge of the potential source of discharge to the edge of the zone of attenuation downgradient, with respect to groundwater flow, from the source.

4) The network of monitoring points of several potential sources of discharge within a single facility may be combined into a single monitoring network, provided that discharges from any part of all potential sources can be detected.

5) A minimum of at least one monitoring well shall be established at the edge of the zone of attenuation and shall be located downgradient with respect to groundwater flow and not excluding the downward direction, from the unit. Such well or wells shall be used to monitor any statistically significant increase in the concentration of any constituent, in accordance with Section 811.1113(e) and shall be used for determining compliance with an applicable groundwater quality standard of Section 811.1113. An observed statistically significant increase above the applicable groundwater quality standards of Section 811.1113 in a well located at or beyond the compliance boundary shall constitute a violation.

c) Maximum Allowable Predicted Concentrations

The operator shall use the same calculation methods, data, and assumptions as used in the groundwater impact assessment to predict the concentration over time and space of all constituents chosen to be monitored in accordance with Section 811.1112 at all monitoring points. The predicted values shall be used to establish the maximum allowable predicted concentrations (MAPC) at each monitoring point. The MAPCs calculated in this subsection shall be applicable within the zone of attenuation.

d) Standards for Monitoring Well Design and Construction

1) All monitoring wells shall be cased in a manner that maintains the integrity of the borehole. The casing material shall be inert so as not to affect the water sample. Casing requiring solvent-cement type coupling shall not be used.

2) Wells shall be screened to allow sampling only at the desired interval. Annular space between the borehole wall and well screen section shall be packed with gravel sized to avoid clogging by the material in the zone being monitored. The slot size of the screen shall be designed to minimize clogging. Screens shall be fabricated from material expected to be inert with respect to the constituents of the groundwater to be sampled.

3) Annular space above the well screen section shall be sealed with a relatively impermeable, expandable material such as a cement/bentonite grout, which does not react with or in any way affect the sample, in order to prevent contamination of samples and groundwater and avoid interconnections. The seal shall extend to the highest known seasonal groundwater level.

4. The annular space shall be back-filled with expanding cement grout from an elevation below the frost line and mounded above the surface and sloped away from the casing so as to divert surface water away.

5. The annular space between the upper and lower seals and in the unsaturated zone may be back filled with uncontaminated cuttings.

6. All wells shall be covered with vented caps and equipped with devices to protect against tampering and damage.

7. All wells shall be developed to allow free entry of water, minimize turbidity of the sample, and minimize clogging.

8. The transmissivity of the zone surrounding all well screens shall be established by field testing techniques.

9. Other sampling methods and well construction techniques may be utilized if they provide equal or superior performance to the requirements of this subsection.

e. Standards for Sample Collection and Analysis

1. The groundwater monitoring program shall include consistent sampling and analysis procedures to assure that monitoring results can be relied upon to provide data representative of groundwater quality in the zone being monitored.

2. The operator shall utilize procedures and techniques to insure that collected samples are representative of the zone being monitored and that prevent cross contamination of samples from other monitoring wells or from other samples. At least 95 percent of a collected sample shall consist of groundwater from the zone being monitored.

3. The operator shall establish a quality assurance program that provides quantitative detection limits and the degree of error for analysis of each chemical constituent.

4. The operator shall establish a sample preservation and shipment procedure that maintains the reliability of the sample collected for analysis.

5. The operator shall institute a chain of custody procedure to prevent tampering and contamination of the collected samples prior to completion of analysis.

6. At a minimum, the operator shall sample the following parameters at all wells at the time of sample collection and immediately before filtering and preserving samples for shipment:

   A. The elevation of the water table;

   B. The depth of the well below ground;

   C. pH;

   D. The temperature of the sample;

   E. Specific Conductance;

811.1112 Groundwater Monitoring Programs

a) Detection Monitoring Program

Any use of the term "maximum allowable predicted concentration" in this Section is a reference to 35 Ill. Adm. Code 811.1111(c). The operator shall implement a detection monitoring program in accordance with the following requirements;

1. Monitoring Schedule and Frequency

   A) The monitoring period shall begin as soon as waste is placed into the unit of a new landfill or within one year of the effective date of this Part for an existing landfill. Monitoring shall continue for a minimum period of fifteen years after closure. The operator shall sample all monitoring points for all potential sources of contamination on a quarterly basis except as specified in subsection

(a) (3) or may institute more frequent sampling throughout the time the source constitutes a threat to groundwater. For the purposes of this section, the source shall be considered a threat to groundwater, if 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.

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, as defined in subsection (a) (1) (A), the monitoring frequency may change on a well by well basis to an annual schedule if either of the following conditions exist. However, monitoring shall return to a quarterly schedule at any well where a statistically significant increase is determined to have occurred in accordance with Section 811.1113(e), in the concentration of any constituent with respect to the previous sample.

i. All constituents monitored within the zone of attenuation have returned to a concentration less than or equal to ten percent of the maximum allowable predicted concentration; or

ii. All constituents monitored within the zone of attenuation are less than or equal to their maximum allowable predicted concentration for eight consecutive quarters.

C. Monitoring shall be continued for a minimum period of five years after closure or, in the case of landfills, other than those used exclusively for disposing waste generated at the site, a minimum period of fifteen years after closure. Monitoring, beyond the minimum period, may be discontinued under the following conditions:

i. No statistically significant increase is detected in the concentration of any constituent above that measured and recorded during the immediately preceding scheduled sampling for three consecutive years, after changing to an annual monitoring frequency; or

ii. Immediately after contaminated leachate is no longer generated by the unit.

2) Criteria for Choosing Constituents to be Monitored

A) The operator shall monitor each well for constituents that will provide a means for detecting groundwater contamination. Constituents shall be chosen for monitoring if they meet the following requirements:

i) The constituent appears in, or is expected to be in, the leachate; and

ii) The Board has established for the constituent a public or food processing water supply standard, at 35 Ill. Adm. Code 302, the Board has established a groundwater quality standard under the Illinois Groundwater Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 7451 et seq.), or the constituent may otherwise cause or contribute to groundwater 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.

3) Confirmation of Monitored Increase

A) The confirmation procedures of this section shall be used only if the concentrations of the constituents monitored can be measured at or above the practical quantitation limit (PQL). The PQL is defined as the lowest concentration that can be reliably measured within specified limits of precision and accuracy under routine laboratory operating conditions. The operator shall institute the confirmation procedures of subsection (a)(4)(B) after notifying the Agency in writing, within 10 days, of the following observed increases:

i) The concentration of any constituent monitored in accordance with subsection (a)(1) and (a)(2) shows a progressive increase over four consecutive quarters;

ii) The concentration of any constituent exceeds the maximum allowable predicted concentration at an established monitoring point within the zone of attenuation;

iii) The concentration of any constituent monitored in accordance with subsection (a)(3) exceeds the preceding measured concentration at any established monitoring point; and

iv) The concentration of any constituent monitored at or beyond the zone of attenuation exceeds the applicable groundwater quality standards of Section 811.1113.

B) The confirmation procedures shall include the following:

i) The operator shall verify any observed increase by taking additional samples within 45 days of the initial observation and ensure that the samples and sampling protocol used will detect any statistically significant increase in the concentration of the suspect constituent in accordance with subsection 811.1113(e), so as to confirm the observed increase. The operator shall notify the Agency of any confirmed increase before the end of the next business day following the confirmation.

ii) The operator shall determine the source of any confirmed increase, which may include, but shall not be limited to, natural phenomena, sampling or analysis errors, or an off-site source.

iii) The operator shall notify the Agency in writing of any confirmed increase and state the source of the confirmed increase and provide the rationale used in such a determination within ten days of the determination.

b) Assessment Monitoring

The operator shall begin an assessment monitoring program in order to confirm the source of the contamination and to provide information needed to carry out a groundwater impact assessment in accordance with subsection (c). The assessment monitoring program shall be conducted in accordance with the following requirements:

1) The assessment monitoring shall be conducted to collect information to assess the nature and extent of groundwater contamination, which shall consist of, but not limited to, the following steps:

A) More frequent sampling of the wells in which the observation occurred;

B) More frequent sampling of any surrounding wells;

C) The placement of additional monitoring wells to determine the source and extent of the contamination;

D) Monitoring of additional constituents that might indicate the source and extent of contamination; and

E) Any other investigative techniques that will assist in determining the nature and extent of the contamination.

2) The operator of the facility for which assessment monitoring is required shall file the plans for an assessment monitoring program with the Agency. If the facility is permitted by the Agency, then the plans shall be filed for review as a significant permit modification pursuant to 35 Ill.Adm.Code 813, Subpart B. The assessment monitoring program shall be implemented within 90 days of confirmation of any monitored increase in accordance with subsection (a)(4) or, in the case of permitted facilities, within 90 days of the Agency approval.

3) If the analysis of the assessment monitoring data 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 811.1113 and is attributable to the solid waste disposal facility, 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 in accordance with subsection (d).

4) If the analysis of the assessment monitoring data shows that the concentration of one or more constituents is attributable to the solid waste disposal facility and exceeds the maximum allowable predicted concentration within the zone of attenuation, then the operator shall conduct a groundwater impact assessment in accordance with the requirements of subsection (c).

c) Assessment of Potential Groundwater Impact

An operator required to conduct a groundwater impact assessment in accordance with subsection (b)(4) shall assess the potential impacts 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 shall apply:

1) The operator shall utilize any new information developed since the initial assessment and information from the detection and assessment monitoring 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 necessary pursuant to subsection (d) to the Agency within 180 days of the start of the assessment monitoring program.

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) The groundwater impact assessment performed in accordance with subsection (c), indicates that remedial action is needed; or

B) Any confirmed increase above the applicable groundwater quality standards of Section 811.1113 is determined to be attributable to the solid waste disposal facility in accordance with subsection (b).

2) If the facility has been issued a permit by the Agency, then the operator shall submit this information as an application for significant modification to the permit.

3) The operator shall implement the plan for remedial action within 90 days of the following:

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

B) Establishing that a violation of an applicable groundwater quality standard of Section 811.1113 is attributable to the solid waste disposal facility in accordance with subsection (b)(3); or

C) Agency approval of the remedial action plan, where the facility has been permitted by the Agency.

4) The remedial action program shall consist of one or a combination of one or more of the following solutions:

A) Retrofit additional groundwater protective measures within the unit;

B) Construct an additional hydraulic barrier, such as a cutoff wall or slurry wall system;

C) Pump and treat the contaminated groundwater; or

D) Any other equivalent technique which will prevent further contamination of groundwater.

5) Termination of the Remedial Action Program

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 maximum allowable predicted concentration within the zone of attenuation, and below the applicable groundwater quality standards of Section 811.1113 at or beyond the zone of attenuation, over a period of 4 consecutive quarters.

B) The operator shall submit to the Agency all information collected under the subsection (d)(5)(A). If the facility is permitted then the operator shall submit this information as significant modification of the permit.

811.1113 Groundwater Quality Standards

a) Applicable Groundwater Quality Standards

1) Groundwater quality shall be maintained at each constituent's background concentration, at or beyond the zone of attenuation. The applicable groundwater quality standard established for any constituent shall be:

A) The background concentration; or

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

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 at or beyond the zone of attenuation within 100 years after closure of the last unit accepting waste within such a facility shall constitute a violation.

3) For the purposes of this Part:

A) "Background concentration" means that concentration of a constituent that is established as the background in accordance with subsection (d); and

B) "Board established standard" is the concentration of a constituent adopted by the board as a standard for public and food processing water supplies under 35 Ill.Adm.Code 302 or as a groundwater quality standard adopted by the Board pursuant to Section 14.4 of the Act or Section 8 of the Illinois Groundwater Protection Act, whichever is lower.

b) Justification for Adjusted Groundwater Quality Standards

1) An operator may petition the Board for an adjusted groundwater quality standard in accordance with the procedures specified in Section 28.1 of the Act and 35 Ill.Adm.Code 106.410 through 106.416.

2) For groundwater which contains naturally occurring constituents which meet the requirements of 35 Ill.Adm.Code 302.301, 302.304, and 302.305, the Board will specify adjusted groundwater quality standards no greater than those of 35 Ill.Adm.Code 302.301, 302.304, and 302.305, upon a demonstration by the generator that:

A) The change in standards will not interfere with, or become injurious to, any present or potential beneficial uses for such waters;

B) The change in standards is necessary for economic or social development by providing information including, but not limited to the impacts of the standards on the regional economy, social disbenefits such as loss of jobs or closing of landfills and economic analysis contrasting the health and environmental benefits with costs likely to be incurred in meeting the standards; and

C) All technically feasible and economically reasonable methods are being used to prevent the degradation of the groundwater quality.

3) For groundwater which contains naturally occurring constituents which do not meet the standards of 35 Ill.Adm.Code 302.301, 302.304, and 302.305, the Board will specify adjusted groundwater quality standards, upon a demonstration by the operator that:

A) The groundwater does not presently serve as a source of drinking water;

B) The change in standards will not interfere with, or become injurious to, any present or potential beneficial uses for such waters;

C) The change in standards is necessary for economic or social development, by providing information including, but not limited to, the impacts of the standards on the regional economy, social disbenefits such as loss of jobs or closing of landfills, and economic analysis contrasting the health and environmental benefits with costs likely to be incurred in meeting the standards; and

D) The groundwater cannot presently, and will not in the future, serve as a source of drinking water because:

i) It is impossible to remove water in usable quantities;

ii) the groundwater is situated at a depth or location such that recovery of water for drinking purposes is not technologically feasible or economically reasonable;

iii) The groundwater is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption;

iv) The total dissolved solids content of the groundwater is more than 3,000 mg/l and that the water will not be used to serve a public water supply system; or

v) The total dissolved solids content of the groundwater exceeds 10,000 mg/l.

c) Determination of the Zone of Attenuation.

1) The zone of attenuation, within which concentrations of constituents in leachate discharged from the unit may exceed the applicable groundwater quality standard of this Section, is a volume bounded by a vertical plane at the property boundary or 100 feet from the edge of the unit, whichever is less, extending from the ground surface to the bottom of the uppermost aquifer and excluding the volume occupied by the waste.

2) Zones of attenuation shall not extend to the annual high water mark of navigable surface waters.

3) Overlapping zones of attenuation from units within a single facility may be combined into a single zone for the purposes of establishing a monitoring network.

d) Establishment of Background Concentrations

1) The initial monitoring to determine background concentrations shall commence during the hydrogeological assessment required by Section 811.1108. The background concentrations for those parameters identified in Section 811.308(e)(1)(G) and 811.1112(a)(2) and (a)(3) shall be established based on quarterly sampling of wells for one year, monitored in accordance with the requirements of subsections (d)(2), (d)(3) and (d)(4), which may be adjusted during the operation of a facility. Statistical tests and procedures shall be employed, in accordance with subsection (e), depending on the number, type and fre-

quency of samples collected from the wells, to establish the background concentrations. Adjustments to the background concentrations shall be made only if changes in the concentrations of constituents observed in upgradient wells over time are determined, in accordance with subsection (3), to be statistically significant. Background concentrations determined in accordance with this subsection shall be used for the purposes of establishing groundwater quality standards, in accordance with subsection (a). The operator shall prepare a list of background concentrations established in accordance with this subsection. The operator shall maintain such a list at the facility, shall submit a copy of the list to the Agency for establishing standards in accordance with subsection (a), and shall provide updates to the list within ten days of any change to the list.

2) A network of monitoring wells shall be established upgradient from the unit, with respect to groundwater flow, in accordance with the following standards, in order to determine the background concentrations of constituents in the groundwater:

   A) The wells shall be located at such a distance that discharges of contaminants from the unit will not be detectable;

   B) The wells shall be sampled at the same frequency as other monitoring points to provide continuous background concentration data, throughout the monitoring period; and

   C) The wells shall be located at several depths to provide data on the spatial variability.

3) A determination of background concentrations may include the sampling of wells that are not hydraulically upgradient of the waste unit where:

A) Hydrogeologic conditions do not allow the owner or operator to determine what wells are hydraulically upgradient of the waste; and

B) Sampling at other wells will provide an indication of background concentrations that is representative of that which would have been provided by upgradient wells.

4) If background concentrations cannot be determined on site, then alternative background concentrations may be determined from actual monitoring data from the aquifer of concern, which includes, but is not limited to, data from another landfill site that overlies the same aquifer.

e) Statistical Analysis of Groundwater Monitoring Data

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 transformation of the data set. where such normal theory tests are demonstrated to be inappropriate, tests listed in subsection (e)(5) or a test in accordance with subsection (e)(6) shall be used. Any statistical test chosen from subsections (e)(4) or (3)(5), the level of significance (Type 1 error level) shall be no less than 0.01, for individual well comparisons, and no less than 0.05, for multiple well comparisons. The statistical analysis shall include, but not be limited to, the accounting of data below, the detection limit of the analytical method used, the establishment of background concentrations and the determination of whether statistically significant changes have occurred in:

A) The concentration of any chemical constituent with respect to the background concentration or maximum allowable predicted concentration; and

B) The established background concentration of any chemical constituents over time.

2) The statistical test or tests used shall be based upon the sampling and collection protocol of Sections 811.1111 and 811.1112.

3) Monitored data that are below the level of detection shall be reported as not detected (ND). The level of detection for each constituent shall be the minimum concentration of that constituent which can be measured and reported with 99 percent confidence that the true value is greater than zero, which is defined as the method detection limit (MDL). The following procedures shall be used to analyze such data, unless an alternative procedure in accordance with subsection (e) (6), is shown to be applicable:

A) Where the percentage of nondetects in the data base used is less than 15 percent, the operator shall replace NDs with the MDL divided by two, then proceed with the use of one or more of the Normal Theory statistical tests listed in subsection (e) (4);

B) Where the percentage of nondetected in the data base or data transformations used in between 15 and 50 percent, and the data are normally distributed, the operator shall use Cohen's adjustment to the sample mean and standard deviation, followed by one or more of the tests listed in subsection (e) (4) (C). However, where data are not normally distributed, the operator shall use an applicable nonparametric test from subsection (e) (5);

C) Where the percentage of nondetects in the database used is above 50 percent, then the owner or operator shall use the test of proportions listed in subsection (e) (4).

4) Normal theory statistical tests:

A) Student t-test including, but not limited to, Cochran's Approximation to the Behren-Fisher (CABF) t-test and Averaged Replicate (AR) t-test.

B) Parametric analysis of variance (ANOVA) followed by one or more of the multiple comparison procedures including, but not limited to, Fisher's Least Significant Difference (LSD), Student Newman-Kuel procedure, Duncan's New Multiple Range Test and Tukey's W 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).

5) Nonparametric statistical tests shall include: Mann-Whitney U-test, Kruskal-Wallis test, a nonparametric analysis of variance (ANOVA) for multiple comparisons or the Wilcoxon Rank Sum test.

6) Any other statistical test 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).

811.1114 Waste Placement

a) Phasing of Operations

1) Waste disposal operations shall move from the lowest portions of the unit to the highest portions. Except as provided in subsection (a)(2), 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.

2) The operator may dispose of wastes in areas other than those specified in subsection (a) (1) only under any of the following conditions:

A) Climatic conditions, such as wind and precipitation, are such that the placement of waste in the bottom of the unit would cause water pollution, litter, damage to any part of the liner or damage to equipment;

B) The topography of the land surrounding the unit makes the procedure of subsection (a) (1) environmentally unsound, for example, because steep slopes surround the unit;

C) When groundwater monitoring wells, constructed in accordance with the requirements of Section 811.319, are placed 50 feet, or less, downgradient from the filled portions of the unit; or

D) Equipment required for placement is temporarily unavailable.

b) Initial Waste Placement

1) An initial layer of waste, a minimum of five feet thick, shall be placed over the entire liner as soon as is practicable after construction, but prior to the onset of weather conditions that may cause the compacted earth liner to freeze.

2) Waste shall not be placed over areas that are subject to freezing conditions until the liner has been inspected, tested, and reconstructed (if necessary) to meet the requirement of Section 811.306.

811.1115 Final Slope and Stabilization

a) All final slopes shall be designed and constructed to a grade capable supporting vegetation and which minimizes erosion.

b) All slopes shall be designed to drain runoff away from the cover and which prevents ponding. No standing water shall be allowed anywhere in or on the unit.

c) Vegetation

1) Vegetation shall be promoted on all reconstructed surfaces to minimize wind and water erosion of the final protective cover;

2) Vegetation shall be compatible with the climatic conditions;

3) Vegetation shall require little maintenance;

4) Vegetation shall consist of a diverse mix of native and introduced species that is consistent with the postclosure land use;

5) Vegetation shall be tolerant of the landfill gas expected to be generated;

6) The root depth of the vegetation shall not exceed the depth of the final protective cover system.

7) Temporary erosion control measures, including but not limited to mulch straw, netting and chemical soil stabilizers, shall be undertaken while vegetation is being established.

d) Structures Constructed Over the Unit

1) Structures constructed over the unit must be compatible with the land use;

2) Such structures must in no way interfere with the operation of a cover system, leachate collection system or any monitoring system.

811.1116 Load Checking

a) The operator shall not accept wastes for disposal at an offsite low risk waste landfill unless it is accompanied by documentation that such wastes are low risk wastes based on testing of the leachate from such wastes performed in accordance with the requirements of Section 811.802.

b) The operator shall institute and conduct a random load checking program at each low risk 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-low risk wastes at the landfill;

2) to require the facility's inspector 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 811.802(a) and (b) to determine if the waste is low risk.

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 815.Subpart C for non-permitted facilities.

PART 814

SUBPART F: STANDARDS FOR EXISTING UNITS ACCEPTING LOW RISK WASTES FROM THE STEEL AND FOUNDRY INDUSTRIES THAT MAY REMAIN OPEN FOR MORE THAN SEVEN YEARS

Section 814.601 Scope and Applicability

a) The standards in this Subpart are applicable to all existing units of landfills, including those exempt from permit requirements in accordance with Section 21 (d) of the Act, that have accepted or accept low risk wastes. Based on an evaluation of the information submitted pursuant to Subpart A and any Agency site inspection, units that meet the requirements of this Subpart may remain open for an indefinite period of time beyond seven years after the effective date of this Part.

b) Based on an evaluation of the information submitted pursuant to Subpart A and any Agency site inspection, units which are unable to comply with the requirements of this Subpart are subject to the requirements of Subpart G or Subpart H.

Section 814.602 Applicable Standards

a) All of the requirements for new units described in 35 Ill. Adm. Code 811 Subparts H through L shall apply to units regulated under this Subpart except the following:

1) The location standards in 35 Ill. Adm. Code 811.1102(a), (d), and (e);

2) The foundation and mass stability analysis standards in 35 Ill. Adm. Code 811.1104 and 811.1105;

3) The final cover requirements of 35 Ill. Adm. Code 811.1107 shall not apply to units or parts of units closed, covered and vegetated prior to the effective date of this Part.

4) The hydrogeological site investigation requirements of 35 Ill. Adm. Code 811.1108, except that information shall be collected to implement a groundwater monitoring program in accordance with 35 Ill. Adm.

Code 811.1111 and 811.1112 and establish background concentrations for the purpose of establishing water quality standards pursuant to 35 Ill. Adm. Code 811.1113; and

b) Units regulated under this Subpart shall be subject to the following standards:

1) The unit must be equipped with a system which will effectively drain and collect leachate and transport it to a leachate management system. However, if the facility can provide proof that the federal MCL's will not be exceeded at the compliance boundary, no leachate collection or transport system shall be required.

2) The operator shall provide a long-term static safety factor of at least 1.5 to protect a completed unit against slope failure;

3) Calculation of the Design Period

For the purpose of calculating financial assurance the design period shall be calculated as follows:

A) The design period shall be no less than the operating life of the landfill plus fifteen years of postclosure care;

B) The postclosure care period shall be extended by three years for each year the unit is expected to be in operation up to the applicable design period required by 35 Ill. Adm. Code 811 (For example, an existing unit with expected operating lives of three or seven years after the effective date of this Part would be required to provide financial assurance during operation and for a postclosure care period of either 15 years since 3 x 3 = 9 years is less than the 15 year minimum specified in subsection (b) (3) (A); or 20 years since 3 x 7 = 21 years is greater than the 20 years specified in Section 811.1103(a), respectively).

SUBPART G: STANDARDS FOR EXISTING UNITS ACCEPTING LOW RISK WASTES FROM THE STEEL OR FOUNDRY INDUSTRIES THAT MUST INITIATE CLOSURE WITHIN SEVEN YEARS

Section 814.701 Scope and Applicability

a) The standards in this Subpart are applicable to all existing units of landfills, including those exempt from permit requirements in accordance with Section 21(d) of the Act, that have accepted or accept low risk wastes. Based on an evaluation of the information submitted pursuant to Subpart A and any Agency site inspection, units that meet the requirements of this Subpart shall initiate closure between two and seven years after the effective date of this Part.

b) Based on an evaluation of the information submitted pursuant to Subpart A and any Agency site inspection, units which are unable to comply with the requirements of this Section are subject to the requirements of Subpart H.

Section 814.702 Applicable Standards

a) All of the requirements for new units described in 35 Ill. Adm. Code 811 Subparts H through L shall apply to units regulated under this subpart, except the following:

1) The location standards in 35 Ill. Adm. Code 811.1102(a), (c), (d), and (e);

2) The foundation and mass stability analysis standards in 35 Ill. Adm. Code 811.1104 and 811.1105;

3) The final cover requirements of 35 Ill. Adm. Code 811.1107 shall not apply to units or parts of units closed, covered and vegetated prior to the effective date of this Part;

4) The hydrogeological site investigation requirements of 35 Ill. Adm. Code 811.1108;

5) The groundwater impact assessment standards of 35 Ill. Adm. Code 811.1110;

6) The groundwater monitoring program requirements of 35 Ill. Adm. Code 811.1111(c); and

7) The groundwater quality standards of 35 Ill. Adm. Code 811.1113(a), (b) and (c).

b) The following standards shall apply to units regulated under this Subpart:

1) No new units shall be opened and an existing unit may not expand beyond the area included in a permit prior to the effective date of this Part or, in the case of permit exempt facilities, beyond the area needed for landfilling to continue until closure is initiated;

2) After the effective date of this Part, the unit may apply for supplemental waste stream permits provided, however, that the additional waste streams are of a similar or compatible chemical makeup to the wastes previously disposed of in the unit. The unit may also continue to accept special waste under permits existing prior to the effective date of this Part and may renew those permits as necessary.

3) Groundwater Standards

A unit shall not contaminate a source of drinking water at the compliance boundary, defined as any point on the edge of the unit at or below the ground surface. At any point on the compliance boundary, the concentration of constituents shall not exceed the federal MCL's. The Board may provide for a zone of attenuation and adjust the compliance boundary in accordance with Section 28.1 of the Act and the procedures of 35 Ill. Adm. Code 106.Subpart G upon petition demonstration by the operator that the alternative compliance boundary will not result in contamination of groundwater which may be needed or used for human consumption. In reviewing such petitions, the Board will consider the following factors:

A) The hydrogeological characteristics of the unit and surrounding land, including any natural attenuation and dilution characteristics of the aquifer;

B) The volume and physical and chemical characteristics of the leachate;

C) The quantity, quality, and direction of flow of groundwater underlying the facility;

D) The proximity and withdrawal rates of groundwater users;

E) The availability of alternative drinking water supplies;

F) The existing quality of the groundwater, including other sources of contamination and their cumulative impacts on the groundwater;

G) Public health, safety, and welfare effects; and

H) In no case shall the zone of compliance extend beyond the facility property line or beyond the annual high water mark of any navigable surface water.

4) Calculation of the Design Period

For the purposes of calculating financial assurance the design period shall be calculated as follows:

A) The design period shall be no less than five years; and

B) The postclosure care period shall be extended by three years for each year the unit is expected to be in operation up to the applicable design period required by 35 Ill. Adm. Code 811. (For example, an existing unit with an expected life of three years after the effective date of this Part would be required to provide financial assurance for nine years of postclosure care, 9 = 3 x 3.)

SUBPART H: STANDARDS FOR EXISTING UNITS ACCEPTING POTENTIALLY REUSABLE STEEL OR FOUNDRY INDUSTRY WASTE ONLY, OR ACCEPTING LOW RISK STEEL OR FOUNDRY INDUSTRY WASTES THAT MUST INITIATE CLOSURE WITHIN TWO YEARS

Section 814.801 Scope and Applicability

a) The standards in this Subpart are applicable to all existing units of landfills, including those exempt from permit requirements in accordance with Section 21(d) of the Act, that accept potentially reusable waste only, or which accept low risk wastes.

b) All units that cannot demonstrate compliance with the requirements of Subpart B, Subpart F or Subpart G or are scheduled to begin closure within two years of the effective date of this Part must begin closure within two years of the effective date of this Part.

c) A new permit shall not be required for any facility at which all units will close within two years of the effective date of this Part.

Section 814.802 Standards for Operation and Closure

a) All units regulated in this Subpart are subject to all requirements in 35 Ill. Adm. Code 807.

b) All units regulated under this Subpart are subject to all conditions of the existing permit.

CWW-601
M/JAG

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:

SOLID WASTE RULES FOR THE ILLINOIS FOUNDRY AND STEEL INDUSTRIES) R90- 26

MOTION FOR WAIVER OF SIGNATURE REQUIREMENT

NOW COMES THE ILLINOIS STEEL GROUP AND ILLINOIS CAST METALS ASSOCIATION and moves that the Illinois Pollution Control Board waive the 200 signature requirement found at 35 Ill.Adm.Code §102-121(i) for the rulemaking proposal filed on their behalf this date. The rulemaking is being submitted pursuant to 35 Ill.Adm.Code 811.102(b) which provides the proponents with an opportunity to address issues specific to the steel and foundry industries.

Respectfully submitted
for the Illinois Steel Group and
Illinois Cast Metals Assoc.

by: _____
One of their attorneys

JAMES T. HARRINGTON
CHARLES W. WESSELHOFT
Ross & Hardies
150 N. Michigan Avenue
Suite 2600
Chicago, IL 60601
312-558-1000

CWW-607
M/JAG

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
SOLID WASTE	)	R90-26
RULES FOR THE	)	
ILLINOIS FOUNDRY AND	)	
STEEL INDUSTRIES	)	

RECOMMENDATION REGARDING

NEED FOR ECONOMIC IMPACT STUDY

It is the recommendation of the proponents that an Economic Impact Study (EcIS) not be conducted in this matter. The economic impact of the proposed rule directly affects only the member companies of the proponents. It is the proponent's intention to present sufficient testimony at hearing as to define the rule's impact on the Illinois companies involved.

Respectfully submitted,

The Illinois Steel Group
The Illinois Cast/Metals Association

by: _____
One of their Attorneys

JAMES T. HARRINGTON
CHARLES W. WESSELHOFT
Ross & Hardies
150 N. Michigan Avenue
Suite 2600
Chicago, IL 60601
312-558-1000

CWW-604
M/JAG

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:

SOLID WASTE RULES FOR THE ILLINOIS FOUNDRY AND STEEL INDUSTRIES	))))	R90-26

SYNOPSIS OF TESTIMONY

The Illinois Steel Group (ISG) and Illinois Cast Metals Association (ICMA) intend to present a number of witnesses at hearing in support of the joint rulemaking proposal filed with the Board on this date. However, neither the number of witnesses to be presented nor their identities have yet been determined. Listed below are the major areas of testimony that will be covered:

1. A characterization of typical high volume/low risk waste streams from the foundry industry including source, chemical composition, volume and current disposal methods.

2. A characterization of typical high volume/low risk waste streams from the steel industry including

source, chemical composition, volume and current disposal methods.

3. The basis for and reasonableness of the proposed leachate test limits.

4. Typical chemical reactions within various types of landfills and the surrounding environment.

5. Typical leachate quality emanating from foundry and steel industry monofills.

6. Beneficial uses for foundry sands.

7. Beneficial uses for blast furnace slags.

8. Estimated foundry industry disposal costs under current rule/proposed rule.

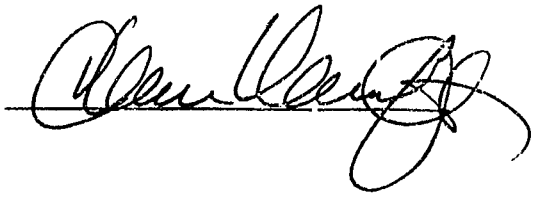
9. Estimated steel industry disposal costs under current rule/proposed rule.

PROOF OF SERVICE

The undersigned certifies that on the 3rd day of December, 1990, copies of the following documents: Statement of Reasons; Synopsis of Testimony; Recommendation Regarding Need for Economic Impact Study; Joint Proposal of Regulation; and Motion for Waiver of Signature Requirement on behalf of the Illinois Steel Group and Illinois Cast Metals Association were served upon those listed below by depositing said documents in the U.S. Mail, at 150 N. Michigan Avenue, Chicago, Illinois, on or before 5:00 p.m. on the 3rd day of December, 1990.

Clerk of the Pollution Control Board
State of Illinois Center
100 West Randolph, Suite 11-500
Chicago, IL 60601

Larry Eastep
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, IL 62706



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