March 4, 2007

Alex Moon
Energy and Waste Management Bureau
Iowa Department of Natural Resources
502 East 9th Street
Wallace State Office Building
Des Moines, IA 50319-0034

Re: Proposed Rule for 567-113: "Sanitary Landfills for Municipal Solid Waste: Groundwater Protection Systems for the Disposal of Non-Hazardous Wastes"

Dear Mr. Moon:

The Des Moines County Regional Solid Waste Commission appreciates the opportunity to comment on the proposed landfill permitting rule. With the far reaching impacts of the proposed rule, it is essential to involve all of the technical community in the rulemaking process.

The rule as proposed is inconsistent with the goals stated in the preamble. If the goals are as stated, the proposed rule is a very expensive way to attain them. The goals could be met much more economically with modest changes to the current rule. DMC has always supported the goal of requiring landfilling in Iowa to occur inside of Subtitle D liners. This was attained at half of Iowa's landfills (those that chose to voluntarily comply) under the current rules, and these rules remain fully approved by USEPA as Subtitle D compliant. Unfortunately, absent several significant modifications, the proposed rules will result in more than half of Iowa's currently compliant Subtitle D landfills being reclassified as noncompliant. This inevitable result is not consistent with the stated goals for the rule.

There remains no credible threat of federal action to revoke approval of any of Iowa's current rule. USEPA has been queried on this specific topic several times, yet all of their formal correspondence has reiterated their standing approval of the current rules.

Based on the format of the various drafts since spring 2006 leading up to the proposed rule, there is evidence that an unstated goal of the proposed rule may be to adopt all of the specific text contained in the federal Subtitle D rule. This goal is unnecessary since state Subtitle D authorization is based on review and approval by USEPA, not on exactness of the replication of the federal language.

However, if this is a state goal, then the federal Subtitle D text should be adopted verbatim, and without any state embellishment. Even the current rule is stricter than the federal language in some key areas. The effects of state embellishments to the federal text can be much more significant than immediately apparent. For example, the inclusion of various state requirements in Chapter 113 following the federal text that any landfill cell not meeting all of the requirements of the chapter is considered an open dump will make many cells that comply with the federal language "open dumps" because they may not meet some of the new state requirements.

Another of the state goals in the preamble is to protect groundwater to the maximum extent practical. However, groundwater is already protected in redundancy under the current rules. Landfills are required to provide replacement water supply to any existing well users within 1000 feet of the landfill as a condition of landfill siting. In addition, potable use of groundwater onsite at a landfill is not allowed. Current monitoring and corrective action requirements ensure that any groundwater contamination from a landfill is likely to be discovered and is required to be prevented from leaving the site. Further protection of groundwater onsite – specifically groundwater that is effectively immobilized within glacial clay aquitards – provides no value in terms of human health and the environment. Such groundwater is not currently used, is not allowed to be used, and is already required to be contained onsite. Furthermore, the interpretation of groundwater protection as applied to landfills is disproportionate to all of the other state rules based on the Iowa Groundwater Protection Act.

In summary, there are many more economical methods available to achieve the stated goals in the preamble. The proposed rule is extravagant, and is likely to encourage waste exportation from Iowa (reducing the tonnage fees received by the state as well as control over the comprehensive solid waste stream), reduction or elimination of non-mandatory waste diversion programs (such as recycling, composting, and pubic education), and increased illegal disposal.

Most, if not all of the goals stated in the preamble could be achieved through rigorous enforcement of the current rule. Such an approach would minimize the statewide fiscal impact while providing an improved level of environmental protection equivalent to (and in some cases superior to) the proposed rule. Ultimately, until IDNR develops a viable enforcement plan, the rules – current or proposed – will remain a burden for those landfills that voluntarily comply, and ineffective for those choosing to ignore them.

Please recognize our daily shared goal of environmental protection, of which landfill regulation is only a part. The comments provided are intended to strengthen and sustain environmental protection while containing unnecessary fiscal impacts. Please contact me if you have any questions about these contents, or if I can help in any way.

Sincerely,

Hal Morton, Registered Geologist
Executive Director

Cc: Iowa EPC Members

Organization of Comments

The following comments are grouped in three sections: Commentary on the general statements of intent and explanation contained in the preamble of the Notice of Intended Action (NOIA); comments on the fiscal impact of the NOIA; and specific comments on the proposed rule. The following comments are compatible and supportive of (or supported by) the recommendations in the Geosyntec final report (Attachment 1) and those provided by Waste Management Inc. (WMI) dated January 24, 2007 (Attachment 2). Where possible, the following comments refer to proposals from each of those submittals. As mentioned elsewhere, the recommendations in the Geosyntec report represent the most essential changes needed to improve the proposed rule. The WMI submittal advances similar recommendations that may offer alternative approaches to improving the proposed rule.

Comments on the Premise and Preamble

Like the preamble in the Notice of Intended Action (NOIA), the following comments pertain mainly to large, overarching aspects of the proposed rule. For the sake of organization, excerpts from the NOIA preamble are used to initiate comments, with a culminating recommendation following the commentary. Some key references are included for clarity, although most references are already posted on the DNR website.

Commentary 1

"Also, because proposed new Chapter 113 does not apply to municipal solid waste landfills that did not receive waste after October 9, 1991, Chapter 102 is being amended to include new rule 102.15(455B) that addresses ongoing postclosure care requirements for municipal solid waste landfills that closed prior to October 9, 1991." [NOIA p.1¶ 2]

DNR staff has acknowledged that the proposed changes to 567-102 are not allowable as they would rescind federally provided exemptions that were used as an incentive to close substandard landfills at the outset of Subtitle D. In addition, these changes would have a staggering financial impact on local governments with no revenue stream to pay for the new requirements at long closed landfills. In some cases, affected local governments may have no choice but to reopen long closed landfills to establish a revenue stream to cover these costs.

Recommendation 1: All of the proposed changes to 567-102 should be deleted.

Commentary 2

"The purpose of rescinding Chapter 113 and adopting a new chapter in lieu thereof is to improve the current regulations by preventing groundwater contamination from municipal solid waste (MSW) landfills to the maximum extent practical. Ninety–two percent of Iowans depend on groundwater as a drinking water source. It is essential to health, welfare, and economic prosperity of all citizens in Iowa that groundwater is protected and that the prevention of groundwater contamination is of paramount importance. Furthermore, Iowa's Groundwater Protection Act, Iowa Code chapter 455E, sets the policy of the state as "… to prevent further contamination of groundwater from any source to the maximum extent practical."" [NOIA p.1¶ 2]

No relevant background information has been provided to document any groundwater contamination resulting from landfill cells that comply with the current rules. The only documentation of groundwater contamination provided by DNR staff relates entirely to old unlined cells that do not

comply with current rules. ["…Based upon the data collected during that period, the Department has determined that leachate releases from unlined landfills are occurring in the state…" – *from Draft Response to the Requirements Found in Iowa Code Section 455B.105(3) for Iowa Administrative Code567 Chapter 113*]. Additionally, DNR staff has provided no performance metrics whatsoever to measure any improvement that may be attained over time in groundwater protection as a result of the proposed rules.

Given the absence of any baseline information demonstrating insufficiency of the current rules, and the inability to demonstrate any future improvement resulting from the proposed rules, it is impossible to conclude that the proposed rules are necessary or justified. The cost to implement the proposed rule is substantial, even by the inadequate analyses performed by DNR staff (further discussion on fiscal impact will be addressed later in these comments). Such expense may be warranted if it can be demonstrated that this goal cannot be achieved by fully enforcing the current rule. However, such demonstration is not possible with the information provided to date.

It is also significant to note that at least 15 years of groundwater monitoring data have failed to demonstrate widespread danger to human health and the environment from landfill generated groundwater contamination even though all 59 operating landfills have old unlined areas on the same site. While several groundwater assessment studies are being or have been conducted, and a few corrective actions at specific landfills, the impacts have all been attributed to pre-existing unlined areas, and have been very localized in magnitude. The responsive actions taken at these affected landfills under the current rules have been successful in protecting groundwater for landfill neighbors.

<u>Recommendation 2a:</u> The proposed rule should not be finalized unless and until basic baseline information regarding insufficiency of the current rules and performance metrics for gauging the effectiveness of the proposed rules versus the current rules are provided.

Related to the overall purpose of the rulemaking, DNR staff members have admitted that some of the design requirements contained in the proposed rule (specifically the prescriptive design for abutment liners) are quite likely less protective of the environment than designs allowed under existing rule. In fact, experience with similar designs in other states has resulted in performance problems endangering the environment. DNR staff has explained that this prescriptive design is being required by EPA Region VII. However, EPA Region VII has confirmed that no federal action is proposed to rescind federal approval of any portion of the current rules (which allow for design flexibility on abutment slopes). In addition, despite having several recent opportunities to put this "demand" in writing, EPA Region VII has sent several letters that seem to allow more flexibility than what is in the proposed rule. Furthermore, research compiled for the Geosyntec report includes several EPA guidance documents and EPA-sponsored studies allowing and/or encouraging design flexibility in abutment liner systems.

<u>Recommendation 2b:</u> Any new rule proposed by DNR should be based on the best available science and engineering published rather than on hearsay or verbal communications (or miscommunications) from EPA staff. At least some parts of the proposed rule do not pass this standard.

Commentary 3

"…The uncertainty in regard to the applicability of liner requirements and other federal requirements to vertical expansions in particular has caused confusion in the regulated community and may have led to continuing noncompliance with the federal requirements. Thirty–two of the 59 operating landfills in Iowa do not have a Subtitle D compliant liner. Other states

allowed a transition period for noncompliant landfills, and the EPA recommended that Iowa do the same by implementing a compliance schedule for updating the state's current rules and by adding a deadline for landfills to comply with all of the federal requirements, including those for liner systems. The Department's compliance date for RCRA Subtitle D compliance is October 1, 2007." [NOIA p.2 ¶ 2]

If there has been confusion in the regulated community, it is a result of inadequate enforcement of the current rules by DNR. While the current rules provide flexibility for the department to use implementation schedules on a case by case basis to ease the transition from unlined to Subtitle D lined cells, no such schedules were ever required by DNR. EPA Region VII's 1997 letter approving the current state rules even specified the importance that DNR implement such schedules. However, any transitions to Subtitle D liners were voluntarily proposed and followed by the 27 currently compliant landfills.

The EPA recommendation referenced above (in the excerpt from the NOIA Preamble) to implement a compliance schedule for updating the regulations was a result of inaction by DNR to implement compliance schedules under the current rules. In fact, a review of the correspondences between EPA Region VII and DNR, it appears that EPA initially responded to interest from DNR Director Vonk in implementing the federal RD&D rules adopted after enactment of the current Iowa landfill rules. EPA Region VII Director Spratlin stated in his October 22, 2004 response letter

> *"…We are pleased that the Department is interested in promulgating this [RD&D] rule change and look forward to working with you to expand the Department's approval of the Solid Waste Permitting program to cover the same…"*

The same letter went on to explain that the new federal State Implementation Rule 40CFR239 (SIR) would guide federal review and approval of any state rule change. Under the SIR, Iowa would be expected to prove that all of its operating landfills were in compliance with the current approved landfill rules. In other words, Iowa would have to demonstrate they fully implemented the 1997 approved rules (and followed EPA's requirement to implement compliance schedules for landfills with substandard liners) by showing that all operating landfills had transitioned to a Subtitle D liner. The letter concludes with the observation:

> *"…Returning to Iowa's regulatory situation, a compliance schedule for facilities to meet the [40 CFR258] liner requirements is recommended. The MSWLC have been in place for 13 years. The Iowa Solid Waste Permit Program has been approved for seven years. The EPA strongly supports implementing the liner design upgrade requirements within Iowa's draft timeline proposed for the summer of 2006…"*

This letter does not specify <u>replacing</u> the existing federally approved state rules, but ensuring all landfills are in compliance with them, including the Subtitle D design standards in them. In other words, regardless of the flexibility approved in the "grandfather clause" for continued filling in previously approved areas, EPA will expect total compliance with the new standards whenever Iowa submits a rule change (for RD&D) for federal review and approval under the SIR. Put another way, DNR needs to demonstrate that all operating landfills have transitioned away from unlined areas and onto liners meeting the design standards in the current rule (which were authorized by EPA as Subtitle D equivalent) in order to gain approval on a rule change to incorporate RD&D (or any other rule change).

<u>Recommendation 3a:</u> Enforcing the design standards in the current rule using implementation schedules could be achieved with little or no change to the current rule. Modifying or clarifying the "grandfather clause" in the current rule, combined with the implementation of a comprehensive enforcement plan by DNR would meet the concerns of EPA Region VII and the requirements of 40CFR258 and 40CFR239. Such action would also make it extremely difficult for EPA to challenge those portions of current state rule they have already authorized.

The October 2007 compliance date approved by EPA could be used to require compliance with the current Subtitle D design standards. However, the date should be adjusted to reflect significant delays in rulemaking caused solely by DNR. The DNR letter to EPA requesting the October 2007 date included a timeline for rule promulgation and permit reviews and construction seasons to comply with any changes. The timeline was necessary in order to provide a realistic compliance schedule for landfills needing to construct new cells. That timeline is still needed whether it is applied to a new rule or an implementation schedule under the existing rule.

<u>Recommendation 3b:</u> The October 2007 compliance date should be modified to allow a realistic review and construction timeframe as previously indicated in the DNR letter to EPA recommending a compliance timeline. The adjusted compliance date should be used for compliance with the current design standards or a new final rule.

Commentary 4

States that modify their Subtitle D program must notify the EPA of the modifications and may be required to resubmit an application to the EPA for program approval. 40 CFR Part 239, which was not in place when Iowa received program approval in 1997, specifies the requirements that state permit programs must meet in order for the state Subtitle D permit programs to be determined adequate by the EPA and the procedures EPA will follow in determining the adequacy of state Subtitle D permit programs. The EPA has requested that Iowa resubmit an application for program adequacy as part of this rule–making effort and that the approval of the state's municipal solid waste permitting program will be guided by 40 CFR Part 239. [NOIA p.2 ¶ 3]

EPA is requesting a program adequacy application because of their stated concern that DNR failed to implement an implementation schedule with unlined landfills. If DNR were to demonstrate that all landfills have been brought into compliance with current liner standards, there would be no basis for a full review of the Iowa rule. 40CFR239 expresses a strong preference that EPA review only portions of permit programs that change rather than wholesale revamping of previously approved programs.

<u>Recommendation 4:</u> Since EPA has confirmed in writing that there is no intention at EPA to rescind partial or total program approval, it is important to first demonstrate that the current rule has been fully implemented before any modifications to the permit program are proposed.

Commentary 5

• Improving contaminant detection by decreasing spacing in between downgradient monitoring wells from 600 feet to 300 feet and determining monitoring well placement through groundwater flow modeling; [NOIA p.2, 1st bullet]

No justification has been provided to demonstrate inadequacy or ineffectiveness of the current rules. The current rules are already more stringent than required by federal Subtitle D. DNR staff has noted that groundwater in the glacial clay and loess soils at most landfill sites moves extremely slowly (typically less than 10 feet per thousand years). While these soils prevent wide dispersion of contaminant plumes, they also prevent distant dispersion of the plumes. In other words, most of Iowa's landfills are already situated in natural geologic settings that prevent migration of contaminants to a very high degree. Beyond that, clay soils have a significant ability to adsorb contaminants and immobilize them. The current design standards, combined with the native geologic settings at most Iowa landfills, have led to fewer, smaller and weaker contaminant plumes, and in all cases documented by DNR so far, none of the plumes have originated from the newer compliant cells, although they are the ones that will be primarily affected by the proposed rule.

Contaminant detection would actually be more significantly improved by placing the monitoring wells further from the waste boundary. Placing the monitoring wells too close to the waste boundary already results in many more false positive readings, thus increasing the difficulty of identifying true contaminant migration. Placing them nearer a reasonable Point of Compliance, as defined in Subtitle D will better ensure lateral dispersion of contaminant plumes occurs to allow for detection. By increasing the distance from the waste boundary, such close spacing of monitoring wells would be unnecessary.

It is pointless to use, in effect, a bigger microscope to search for smaller and weaker contaminant plumes. Subtitle D is intended to prevent landfills from contaminating groundwater used by others, and according to the evidence provided so far by DNR, Iowa's soils have been accomplishing this to a very high degree even with the old unlined cells. With the addition of Subtitle D liner systems, (under either the current or the proposed rule) the need for monitoring is diminished, not increased. There is no need to change the current standards, and such a change will not measurably improve environmental protection in Iowa.

Groundwater flow modeling is only required for alternative liner designs in the current and proposed rules. Since the proposed rules will effectively preclude the option of alternative liner designs, the reference to such modeling is irrelevant.

<u>Recommendation 5:</u> Decreased well spacing is unnecessary and expensive. It will lead to more false positives, making identification of true contamination concerns more difficult, not less. Groundwater flow modeling is irrelevant, since the proposed rules will effectively preclude use of alternative liner designs, and standard composite liners are not required to provide the modeling.

Commentary 6

• Implementing the minimum federal requirements for groundwater monitoring. The current list for routine sampling at MSW landfills consists of approximately 9 parameters. There are 62 parameters under Appendix I in RCRA Subtitle D; [NOIA p.2, 2nd bullet]

According to an EPA sponsored study (summarized in the final Geosyntec report), 37 of the 62 parameters included in Appendix I are rarely, if ever, found in MSW landfills. These 37 parameters should not be included for detection monitoring. EPA has allowed other states to proposed detection

monitoring lists that differ from the standard federal language as long as the state program ensures detection of contamination under conditions found throughout the state.

<u>Recommendation 6:</u> DNR should delete the 37 Appendix I parameters that have been found to be rare or absent from MSW landfills and use the EPA sponsored study by Othman et al, 2002, as technical justification (summarized in the final report by Geosyntec).

Commentary 7

• Modeling of alternative clay liners to determine their ability to prohibit groundwater contamination. This will include correcting language in current Chapter 113 to link the point of compliance modeling to the groundwater monitoring system; [NOIA p.3, 1st bullet]

The logic for this change is inverted. Subtitle D allows for a Point of Compliance (POC) to be determined by hydrogeologic conditions at a distance of up to 150 meters (492 feet) from the waste boundary, but still within the landfill property boundary. DNR notes that its current prescriptive requirement for monitoring wells within 50 feet of the waste boundary is useless for determining compliance at the POC. Subtitle D calls for the monitoring wells to be placed as close as possible to the POC, not that the POC be moved to a more restrictive monitoring well distance.

By placing the POC for alternative liner performance modeling one tenth of the Subtitle D allowable distance from the waste boundary, the proposed rule effectively eliminates the possibility of using alternative liner designs. This problem is compounded by DNR's interpretation of the term "aquifer", which includes the immobile water contained in the clay soils. As described in the Geosyntec report, clay can hold large quantities of water, but does not readily release it. As such, the federal rule, and most other states would classify Iowa's clay soils as aquitards, not aquifers.

The models designed for evaluating performance of alternative liners have overly conservative assumptions built into them. For example, regardless of the thickness of a clay liner, it is assumed in the model to be fully saturated and leaking out the bottom on Day 1. This would apply even if that liner were 1000 feet thick. The purpose of modeling alternative liner designs is to demonstrate that they provide equivalent containment when compared with a single composite liner. However, the models are not designed to allow a fair comparison.

Widely published in the technical literature is the fact that composite liners have several leaks per acre. However, composite liners are not required to be performance modeled. If they were, and if those models used the same assumptions (for example, that the liner is saturated and leaking from Day 1), composite liners would never pass the performance model either. This is not to advocate a requirement to model composite liners. It is to illustrate that the performance models allowed for alternative liners are poorly constructed to provide a reasonable comparison.

The proposed rule would consider a composite lined landfill on a sandy lakeshore to be more protective than an alternative clay lined landfill sited in 500 feet of 10^{-9} permeability clay.

<u>Recommendation 7:</u> Modeling of alternative clay liners should be based on federal standards for POC and aquifer. Reducing the distance of the POC and the depth to significantly usable groundwater make performance comparisons with composite liners impossible.

Commentary 8

• Implementing the EPA's new rules to allow states to issue research, development and demonstration permits for the addition of liquids into a MSW unit which was previously prohibited and allowing flexibility to final cover requirements; [NOIA p.3, 2nd bullet]

Recommendation 8: This is one of the true improvements to the current rule proposed in the NOIA.

Commentary 9

• Adding a compliance date of October 1, 2007, for all MSW landfills to meet the minimum federal requirements for operating over a RCRA Subtitle D compliant liner with a leachate collection system; [NOIA p.3, 3rd bullet]

As mentioned previously, this date for compliance (with either the current design standards or the proposed rule) made sense in the context of DNR Director Vonk's January 2005 letter to EPA, ISOSWO's supporting letter of February 2005, and EPA's April 2005 response letter. Each of those letters contained an implementation timeline with reasonable timeframes for rule promulgation; submittal, review and approval of permits; and construction of new compliant cells by the effective date. Significant delays by DNR in rule promulgation have effectively eliminated the timeframes for submittal, review and approval of permits, as well as construction of new compliant cells.

Recommendation 9: A firm compliance date (for the current rule or any proposed rule) is a good requirement, provided that it is adjusted to ensure reasonable time for landfills to comply. The October 2007 date should be changed to the rule finalization date on the timeline, and all of the subsequent timeframes from the January 2005 letter moved back proportionately. Based on this approach, if the rule is finalized earlier than October 2007, the timeline could be adjusted accordingly.

Commentary 10

• Extending the length of permit issuance from three years to five years. [NOIA p.3, 4th bullet]

This change will reduce paperwork and free up more DNR staff time to be spent on technical review of proposed permit changes.

Recommendation 10: This is one of the true improvements to the current rule proposed in the NOIA.

Commentary 11

Chapter 111 is being rescinded and will be incorporated in its entirety as rule 567-113.14(455B).

This total rule package will have a major fiscal impact statewide and on each landfill and the public they serve. The current Financial Assurance Instrument (FAI) Requirements that will be folded into Chapter 113 do not allow for a gradual pay-in period after the initial pay-in period. However, such a pay-in period is needed.

Recommendation 11: Landfills should be provided a 10-year pay-in period to increase FAIs impacted by the proposed rule.

Comments on the Fiscal Impact

The department has released a variety of different estimates of fiscal impact of the proposed rule:

- *"Fiscal Impact Statement Associated with the Notice of Intended Action…"*, December 2006 (or January 5, 2007 according to the DNR website)
- *"Regulatory Analysis of Proposed New Iowa Administrative Code 567 Chapter-113…"*, January 3, 2007 (or January 5, 2007 according to the DNR website)
- *"Administrative Rules – Fiscal Impact Summary – ARC 5597B"*, prepared by the Legislative Services Bureau based on information provided by the department for the January 3, 2007 ARRC meeting.
- *Draft Response to the Requirements Found in Iowa Code Section 455B.105(3) for Iowa Administrative Code 567-113…"*, February 16, 2007

The fourth report listed is based on a cost comparison of standard federal Subtitle D text (which has never been directly implemented in Iowa) with the proposed rule. In other words, this latest fiscal impact report makes no attempt to compare compliance costs for the proposed rule with cost for the current rule.

The first three of these seem to use a lot of the same estimates, although it is hard to correlate them due to the complexity of the rule and the different format of each report. Unfortunately, each of these reports relies on cost estimates developed by Shaw Environmental Services for a pair of workshops in the spring of 2005. For these workshops, which were cosponsored by DNR and ISOSWO, Shaw developed a model to estimate the cost of compliance with Subtitle D for the smallest conceivable landfill. The model was based on a 29 ton per day landfill, constructing a very small Subtitle D cell of 0.65 acres. Using this cost model to estimate the impact of the proposed rules is flawed for several reasons:

1. Current Iowa rules were (and remain) federally approved as Subtitle D. No draft of the proposed rules was available in spring 2005. The cost model Shaw developed was based on compliance with the current rules (and assumed the "grandfather clause" allowing DNR to permit continued landfilling sans liner would cease to be allowed). In other words, the 30 landfills operating without liners were expected to either close or construct liners conforming to current Iowa Subtitle D design standards. The model was developed to help estimate what either option would cost. **The Shaw cost model was used to estimate the cost to comply with the current rule, not the proposed rule.**

2. **The cell size used to develop the model was intended as a <u>minimum</u> potential cell size**, since most of the landfills operating without liners are at the small end of the spectrum. However, 11 of those landfills have indicated they plan to close by October 2007. Their solid waste will be transferred to other landfills, which may then make the remaining landfills somewhat larger in scale. In any event, a 0.65 acre cell was never considered likely to be constructed.

3. Typical cell sizes for Iowa landfills are between 2 and 5 acres, with an broader total range. In terms of materials and labor (by far the largest cost elements), **the cost estimates for materials and labor for a 0.65 acre cell would need to be multiplied by a factor of 5 or 6 (or more).**

4. **The Shaw cost model used 2005 dollars, and has not been adjusted for inflation and even greater cost increases occurring in plastics, fuel and steel since that time.** It also did not factor in increased costs due to limited availability when several landfills try to construct simultaneously.

Besides the significant underestimates resulting from unadjusted figures from the Shaw cost model, there are several significant types of costs that were omitted or overlooked in preparing the department's fiscal impact reports. Some of these include:

1. The proposed rules will not allow continued use of alternative Subtitle D liners because of the POC distance being reduced by as much as a factor of 10. While the department has reserved the ability to approve short-term variances for these existing alternative lined cells, they are not obligated to do so. In addition, already approved cells with alternative liner designs that have not yet been constructed will have to be re-engineered with composite liners. For the 17 landfills currently using alternative liner designs, these costs could be significant.

2. Recent comments by DNR staff indicate they intend to require re-modeling of previously approved cells with each cell being modeled independently using the new 50 foot POC. Since it is impossible to use the same 50 foot POC for multiple cells, the modeling cost will be incurred for each additional cell (including any already modeled but not yet constructed). Construction of larger cells to reduce the modeling demands is not a viable option because of the new frost protection requirements for liners.

3. Costs to model and construct abutment liners are only included for the next individual cell at landfills. However, several landfills will face additional abutment liners for several cells to come. Some will even be required to construct abutment liners over cells currently approved as Subtitle D cells. These unexpected additional costs can run as high as a few hundred thousand dollars per cell.

4. The increased annual costs for monitoring groundwater will need to be multiplied by 30 and added to Financial Assurance Instruments (FAIs) and/or Closure/ PostClosure Accounts (CPCAs). Since no additional timeframe has been provided, these costs will have to be incurred the first year. Using DNR's additional annual monitoring cost estimate, the one-time FAI and/or CPCA adjustment will be $662,910 for each landfill, or $31,819,680 statewide by 2008. Once invested, these funds may not be touched until postclosure is completed. These funds will not be available to cover any additional assessment costs that may arise. **The rule should incorporate a provision to allow gradual pay-in over a ten-year period for FIAs and/or CPCAs that must be increased due to new requirements of this rulemaking.**

5. The new 20% minimum slope requirements for abutments will prevent filling against the upper reaches of slopes, resulting in a loss of permitted capacity. The cost of these losses will be compounded by a need to smooth final contours, which will require placement of dirt or other non-waste material.

I have not been able to quantify all of the missing costs mentioned here. However, adjusting Table 2 from DNR's Regulatory Analysis for some of the costs specified above (cell size for construction related costs, and FAI &/or CPCA adjustments) would look like this:

Table 2 Revised. Estimated Additional Costs Incurred
(Factors and sums affected by the adjustments are shaded)

	Closed Landfills (15 Total)	Open Landfills			
		Unlined (13 Total)	Abutment Liner Only Required (28 Total)	Fully Lined (7 Total)	Combined Total Open Landfills (48 Total)
Addional One-Time Costs					
New Cell Construction	$0	$1,993,134[1]	$100,000	$40,000	$26,470,742
Additional Monitoring Well Installation	$6000	$6000	$6000	$6000	$288,000
Preparation of Revised Monitoring System Plan	$10,000	$10,000	$10,000	$10,000	$480,000
Determination of Background Water Quality	$38,800	$38,800	$38,800	$38,800	$1,862,400
FAI &/or CPCA Adjustment[2]	$662,910	$662,910	$662,910	$662,910	$31,819,680
Subtotal per Landfill	$717,710	$2,710,844	$817,710	$757,710	$63,440,822
STATEWIDE ONE-TIME TOTALS (*x* number of landfills)	$10,656,650	$35,240,972	$22,895,880[3]	$5,303,970	$63,440,822
Additional Annual Operating Costs					
Additional Water Monitoring	$22,097	$22,097	$22,097	$22,097	$1,060,656
Additional Operating Costs	$0	$17,388	$17,388	$17,388	$834,624
Subtotal per Landfill	$22,097	$39,485	$39,485	$39,485	$1,895,280
STATEWIDE ANNUAL TOTALS	$331,455	$513,305	$1,105,580	$276,395	$1,895,280

[1] Multiplying construction costs only of $313,569 by 5, then adding $354,306 for design, QC&A, etc.
[2] Multiplying the additional annual water monitoring cost of $22,097 times 30 years postclosure.
[3] Alternative lined cells may face additional cost (not shown) in lost airspace, to remodel with a 50' POC, and to redesign already approved future cells.

While several significant cost factors have yet to be estimated, the department's initial estimate of $14,396,775 statewide for first year costs at operating landfills could exceed **$63,440,822**. Landfills closing could exceed **$10,656,650** (versus the department's estimate of $822,000) in first year costs for a grand total first year statewide impact of **$74,097,472** or more (versus the initial estimate of $15,214,775). The annual statewide total impacts remain **$1,895,280** for open, and **$331,455** for closed landfills, or a combined annual impact of **$2,226,735**.

One-time costs per landfill ranging from **$717,710** at a closed landfill to **$2,710,844** for a 3 or 4 acre cell at a currently unlined landfill, and annual per landfill costs ranging from **$22,097** at a closed landfill to **$39,485** at an open landfill seem difficult to justify without a significant and demonstrable environmental benefit (and absent any threat of federal action to rescind authorization of current rules). So far, such justification has not been provided. Given the substantial fiscal impact of the proposed rule, DNR should reconsider a rigorous enforcement plan based on the current design standards which are federally approved.

Comments on the Proposed Rule

In an effort to make these comments as constructive as possible, and to minimize redundancy and confusion, they directly incorporate recommendations from comments submitted by Waste Management Inc. (WMI) in January 2007, and specifically endorse all of the recommendations included in the final report by Geosyntec – a report commissioned by ISOSWO and many of its individual members with encouragement and support from IDNR.

Geosyntec was selected based on their vast professional expertise and experience nationwide, and particularly their direct involvement in writing and co-writing many of EPA's guidance documents, research projects and technical papers; and their role as principal instructors of EPA workshops related to both Subtitles C and D. They were also selected because of their total independence from specific projects in Iowa. They have never worked on individual projects at Iowa landfills, and will therefore not be affected by the resulting rule promulgation. Absence of bias and professional credentials were considered critical by both ISOSWO and DNR due to the political tenor of this particular rulemaking thus far.

While the following comments include many smaller suggestions to improve the proposed rule, please understand that the recommendations in the Geosyntec report address many of the most significant issues in the proposed rule. While we believe the proposed rule is unsubstantiated and unnecessary; will have an inordinate fiscal impact on everyone in Iowa (including the department); and may cause more difficulty in protecting Iowa's environment than the current rules (which have not been properly enforced); **we will support finalization of the proposed rule if all of the Geosyntec recommendations are incorporated in the final rule.**

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1. Proposed Change to 113.3(455B).

"Aquifer" means a saturated geologic formation or combination of formations, which has appreciably greater ability to transmit water than do adjacent formations. ~~Typically, a~~*A*n aquifer is capable of yielding usable quantities of water to a well. [Geosyntec Final Report p. II-1]

DMC supports the recommendation and discussion (see attached copy of the report) in the Geosyntec report, understanding that the term "usable" is viewed by Geosyntec as equivalent to the term "significant quantities" contained in the federal Subtitle D language [based on discussion in Geosyntec report; also reiterated by Beth Gross, personal communication in late February 2007 following submittal of the final report]. This clarification is necessary based on a March 1, 2007 conversation with Mick Leet and Nina Koger, where Mick insisted that 5 gallons per day was a "usable quantity" of water to extract from a soil formation.

Both the current and proposed rules provide the department with the authority to include site-specific permit conditions where needed. In cases where such small volume wells are known to exist within 1000 feet of a landfill, additional monitoring of these extremely low production soil or rock strata may be appropriate. However, groundwater is already protected in redundancy under the current rules. Landfills are required to provide alternate water supply to any existing well users within 1000 feet of the landfill as a condition of landfill siting. In addition, potable use of groundwater onsite at a landfill is not allowed. Current monitoring and corrective action requirements ensure that any groundwater contamination from a landfill is likely to be discovered and is required to be prevented from leaving the site. Further protection

of groundwater onsite – specifically groundwater that is effectively immobilized within glacial clay aquitards – provides no value in terms of human health and the environment. Such groundwater is not currently used, is not allowed to be used, and is already required to be contained onsite.

Furthermore, the interpretation of groundwater protection as applied to landfills is disproportionate to all of the other state rules based on the Iowa Groundwater Protection Act. The terminology relating to aquifers should be applied consistently with other state environmental law as well as with federal Subtitle D. Iowa's General Water Quality definitions in 455B.171 refer to ***"water of the state"*** meaning

> *"any stream, lake, pond, marsh, watercourse, waterway, well spring, reservoir, aquifer, irrigation system, drainage system, and any other body or accumulation of water, surface or underground, natural or artificial, public or private, which are contained within, flow through or border upon the state or any portion thereof."*
>
> ***"Water pollution"*** means *"the contamination or alteration of the physical, chemical, biological, or radiological integrity of any water of the state…"*

455B.176 Criteria Considered prescribes that

> *"In establishing, modifying, or repealing water quality standards the commission shall base its decision upon data gathered from sources within the state regarding the following* [**emphasis added via underlining below**]*:*
>
> *1. The protection of public health;*
>
> *2. The size, depth, surface area covered, volume, direction and rate of flow, stream gradient, and temperature of the affected water of the state;*
>
> *3. The character and uses of the land area bordering the affected water of the state;*
>
> *4. The uses which have been made, are being made, or may be made of the affected water of the state for…*
>
> *5. The extent of contamination resulting from natural causes including the mineral and chemical characteristics;*
>
> *6. The extent to which floatable or settleable solids may be permitted;*
>
> *7. The extent to which suspended solids, colloids, or a combination of solids with other suspended substances may be permitted;*
>
> *8. The extent to which bacteria and other biological organisms may be permitted;*
>
> *9. The amount of dissolved oxygen that is to be present and the extent of the oxygen demanding substances which may be permitted;*
>
> *10. The extent to which toxic substance, chemicals or deleterious conditions may be permitted;*
>
> *11. The economic costs and benefits. The goal shall be a reasonable balance between total costs to the people and to the economy, and the resultant benefits to the people of Iowa."*

455B.261 Water Allocation & Use definitions include ***"aquifer"*** to mean

> *"a water-bearing geologic formation which is capable of yielding a usable quantity of water to a well or spring and which transports and stores groundwater."*

This chapter continues to define ***"basin"***, meaning

> *"a specific subsurface water-bearing reservoir having reasonably ascertainable boundaries".*

Also defined in the chapter is ***"watercourse"***, meaning

> *"any lake, river, creek, ditch, or other body of water or channel having definite banks and bed with visible evidence of the flow or occurrence of water, except lakes or ponds without outlet to which only one landowner is riparian."*

These two definitions contrast with another – ***"diffused waters"***, meaning

> *"waters from precipitation and snowmelt which is not a part of any watercourse or basin including capillary soil water."*

Each of these subchapters of 455B clearly distinguishes between usable water (water of the state) – that which flows or is stored in a basin with clear boundaries – and unusable or diffused

water. This distinction is further supported in 455B.381 Hazardous Conditions definitions, where ***"hazardous condition"*** refers to a

> *"…release of a hazardous substance onto the land, into a water of the state, or into the atmosphere, which creates an immediate or potential danger to the public health or safety or to the environment."*

This subchapter also defines ***"release"*** as

> "a threatened or real emission, discharge, spillage, leakage, pumping, pouring, emptying, or dumping of a hazardous substance into or onto the land, air, or waters of the state unless..:
> a. …done in compliance with… a permit.
> b. The hazardous substance is confined and expected to stay confined to the property owned, leased or otherwise controlled by the person having control over the hazardous substance.
> c. …application …in accordance with the product label."

455B.381 also includes a definition of ***"waters of the state"*** that is consistent with the definition in 455B.171.

Finally, 455B471 Contaminated Property defines ***"corrective action"*** to mean

> *"an action taken to reduce, minimize, eliminate, clean up, control, or monitor a release to protect the public health and safety or the environment. Corrective action includes, but is not limited to, … natural biodegradation, institutional controls, and site management practices…"*

Again, the focus is on insuring contamination does not leave the property on which it is located; to protect any other potential users of the usable water (surface or groundwater) in the vicinity.

For those sites where there are nearby low volume wells completed in the aquitard, site specific conditions for monitoring may be appropriate and the department already has authority to impose such permit conditions under current (and the proposed) rule. The current DNR interpretation of the term "aquifer" is inconsistent with standard technical usage, with other Iowa regulations, and does not provide improved environmental protection because of other redundant protections already required.

2. **Proposed Addition to 113.3:**

DMC generally supports the recommended changes and discussion provided by WMI [see WMI 1/24/07 pp 6-8 and 9, items 4 and 7]. These include adding a definition for "Relevant Point of Compliance" and "Statistically Significant Increase".

3. **Proposed Addition to 113.6:**

DMC supports the recommended addition and discussion provided by WMI [see WMI 1/24/07 p. 10, item 8] clarifying viability of Subtitle D cells permitted under the current rules.

4. **Proposed Deletion to 113.6(3)a:**

(1) A sufficient number of borings shall be made to accurately identify the stratigraphic and hydrogeologic conditions at the site.

~~(2) Excluding existing MSWLF unit areas, a minimum of one boring per acre is required for new MSWLF units.~~ [Geosyntec Final Report p. III-1]

DMC supports the recommendation and discussion (see attached copy of the report) in the Geosyntec report. Hydrogeologic characterization of landfill sites is very important, and should be based on site specific conditions. The rule as proposed by DNR will add cost with no demonstrable improvement in environmental protection.

DMC also supports the comments and recommendations of WMI regarding this section [see WMI 1/24/07 pp. 10-11, item 9].

5. Proposed Addition to 113.7:

DMC supports the recommended addition and discussion provided by WMI [see WMI 1/24/07 p. 11, item 11] clarifying viability of Subtitle D cells permitted under the current rules.

6. Proposed Addition to 113.7(5)a(1)4:

The composite liner must slope toward the leachate collection pipes at a slope greater than or equal to 2 percent. The side slopes of the composite liner shall not exceed a slope of 33 percent *unless it is demonstrated that a steeper slope is unlikely to adversely affect liner integrity.* [Geosyntec Final Report p. IV-1]

DMC supports the recommendation and discussion (see attached copy of the report) in the Geosyntec report. Liner system design should be based on site specific engineering and operational criteria, and rules should allow for innovative technologies and design.

7. Proposed Addition to 113.7(5)a(2)2:

The relevant point of compliance specified by the department must be within *4*50 feet of the planned liner or waste boundary, unless site conditions dictate otherwise, and downgradient of the facility with respect to the hydrologic unit being monitored in accordance with subparagraph 113.10(2)"a"(2) and shall be located on land owned by the owner of the MSWLF unit. The relevant point of compliance specified by the department shall be at least 50 feet from the property line of the facility. [Geosyntec Final Report p.V-1]

DMC supports the recommendation and discussion (see attached copy of the report) in the Geosyntec report. This point is further discussed in the commentary on the preamble above. Without the recommended change to the POC, alternative liner designs will be effectively disallowed. It will also make it impossible to make a fair performance comparison between an alternative liner design and a composite liner design. Based on information provided by DNR, 17 of the 27 Subtitle D compliant landfills operating in Iowa are currently using alternative liner designs, and no data has been provided to suggest any performance problems with the

alternative liners at those landfills. As noted in the Geosyntec report, EPA guidance documents warn against placing the POC too close to the waste boundary because doing so *"…can have significant implication associated with the scope, magnitude and cost of groundwater remedial actions"* [Geosyntec Final Report, p.VII-3]. Changing the proposed rule as recommended here will also ensure that Iowa's rules are consistent with those of surrounding states.

8. Proposed Addition to 113.7(5)a(2)4:

The alternative liner must slope toward the leachate collection pipes at a slope greater than or equal to 2 percent. The side slopes of the alternative liner shall not exceed a slope of 33 percent *unless it is demonstrated that a steeper slope is unlikely to adversely affect liner integrity.* [Geosyntec Final Report p. IV-1]

DMC supports the recommendation and discussion (see attached copy of the report) in the Geosyntec report. Liner system design should be based on site specific engineering and operational criteria, and rules should allow for innovative technologies and design.

9. Proposed Deletion to 113.7(5)b(3):

The leachate collection system shall be designed and constructed to minimize leachate head over the liner at all times. An MSWLF unit shall have a leachate collection system that maintains less than a 30-centimeter (i.e., 12-inch) depth of leachate over the liner. The leachate collection system shall have a method for accurately measuring the leachate head on the liner at the system's lowest points(s) within the MSWLF unit (e.g., sumps). ~~Furthermore, an additional measuring device shall be installed to measure leachate directly on the liner but not in the sump or within the collection trench. Leachate head measurements from cleanout lines or manholes are not acceptable for the second measurement. All such measurement devices shall be in place before waste is placed in the MSWLF unit.~~ [Geosyntec Final Report p. IV-2]

DMC supports the recommendation and discussion (see attached copy of the report) in the Geosyntec report. As previously noted in these comments, no technical justification has been provided to demonstrate inadequacy of current rules. Any known problems involving leachate head (based on all of the data provided by DNR during this rulemaking) are in older unlined cells, not currently compliant cells. Therefore, even if reliable technology existed for leachate head measurement, it would not measurably improve environmental protection.

DMC is generally supportive of the recommendations and discussion provided by WMI [see WMI 1/24/07 pp. 2-6] for sections 113.7(5)b(1-8). However, it appears that the Geosyntec changes provide a simpler fix for the same general concerns.

10. Proposed Addition to 113.7(5)b(7)1:

A geotextile cushion over the flexible membrane liner (FML), if the liner uses an FML *and a geotextile is required to protect the FML from an adjacent granular material*. The geotextile's mass shall be determined based on the allowable pressure on the geomembrane. [Geosyntec Final Report p. IV-3]

DMC supports the recommendation and discussion (see attached copy of the report) in the Geosyntec report. Leachate collection system design should be based on site specific engineering and operational criteria.

11. Proposed Change to 113.7(5)b(7)3:

One of the following high hydraulic materials:

- High hydraulic-conductivity material (e.g., gravel) of uniform size and ~~free of~~ *a* fines *content of no more than 5 percent by weight passing a #200 sieve*. The high hydraulic-conductivity material shall be at least 6 inches in depth and provide at least 2 inches of cover over the top of the collection pipes. The high hydraulic-conductivity material shall be surrounded by a geotextile listed in numbered paragraph 113.7(5)"b"(7)"4" *if design calculations indicate a geotextile filter is required*; or

- A geosynthetic drainage layer (e.g., geonet) with a minimum thickness of 300 mils or greater sized in accordance with appropriate design calculations. The geonet shall be covered on both sizes with the geotextiles specified in numbered paragraphs 113.7(5)"b"(7)"1" and "4" *if design calculations indicate these geotextiles are required*. [Geosyntec Final Report p. IV-4]

DMC supports the recommendation and discussion (see attached copy of the report) in the Geosyntec report. Leachate collection system design should be based on site specific engineering and operational criteria, and prescriptive standards should be realistically attainable.

12. Proposed Change to 113.7(5)b(7)5:

Coarse granular (e.g., coarse sand) top layer at least 6 inches thick to separate waste from the geotextile listed in numbered paragraph 113.7(5)"b"(7)"4." The coarse granular layer shall have a fines content of ~~less~~*no more* than ~~1~~5 percent *by weight* passing a #200 sieve. The coarse granular layer shall separate the waste from the liner and the rest of the leachate collection system while readily transmitting leachate. [Geosyntec Final Report p.IV-5]

DMC supports the recommendation and discussion (see attached copy of the report) in the Geosyntec report. Leachate collection system design should be based on site specific engineering and operational criteria, and prescriptive standards should be realistically attainable.

13. Proposed Addition of 113.7(5)b(7)6:

An alternative leachate collection system with equivalent or better performance to a leachate collection system that complies with the requirements of subparagraph 113.7(5)"b"(7)1 to 5 may also be used. [Geosyntec Final Report p. IV-6]

DMC supports the recommendation and discussion (see attached copy of the report) in the Geosyntec report. Leachate collection system design should be based on site specific engineering and operational criteria.

14. Proposed Change to 113.7(6)b(2):

1. For composite liners, the lower compacted soil liner and each 8-inch lift thereof, and the flexible membrane liner (FML). For the compacted soil portion, a minimum of *five*~~one~~ field density tests per 8-inch lift per acre shall be performed to verify that the correct density, as correlated to permeability by a laboratory analysis, has been achieved. *Laboratory hydraulic conductivity testing of Shelby tube samples from the constructed soil liner (1 test/2 acres/lift) or field hydraulic conductivity testing of the constructed soil liner or test pad*~~A double-ring infiltrometer test~~ shall be utilized as a final QC&A test of the compacted soil portion. ~~Electrical resistivity testing is required for the FML.~~ Destructive testing of the FML shall be kept to side slopes when continuous seams are utilized. Patches over FML destructive testing areas shall be checked with *non-destructive* ~~electrical resistivity~~ testing.

2. For alternative liners, each component of the liner system as determined by the department. For the compacted soil portion, a minimum of *five*~~one~~ field density tests per 8-inch lift per acre shall be performed to verify that the correct density, as correlated to permeability by a laboratory analysis, has been achieved. *Laboratory hydraulic conductivity testing of Shelby tube samples from the constructed soil liner (1 test/2 acres/every other lift) or field hydraulic conductivity testing of the constructed soil liner or test pad* ~~A double-ring infiltrometer test~~ shall be utilized as a final QC&A test of the compacted soil portion ~~and may be performed as a separate test pad~~. [Geosyntec Final Report p. IV-7]

DMC supports the recommendation and discussion (see attached copy of the report) in the Geosyntec report.

DMC also would support the WMI recommendation and discussion [see WMI 1/24/07 pp.12-13, item 13] on this section.

15. Proposed Change to 113.7(7)a(2):

If a horizontal expansion abuts an MSWLF unit that does not comply with subrules 113.7(4), 113.7(5) and 113.7(6), then the abutment of the two MSWLF units shall be designed and constructed such that leachate from the expansion drains to the new MSWLF unit that complies

with subrules 113.7(4), 113.7(5) and 113.7(6). Such a horizontal expansion must also comply with the following:

1. The abutment shall have a 20 percent minimum slope, *unless it is demonstrated that the leachate collection system will be maintained with a shallower slope*, and comply with subrules 113.7(4), 113.7(5), and 113.7(6).
2. ~~*The liner must extend from the basal liner to the top of the abutment.*~~ [Geosyntec Final Report p. IV-9]

DMC supports the recommendation and discussion (see attached copy of the report) in the Geosyntec report. Leachate collection and liner system design should be based on site specific engineering and operational criteria. As noted in the comments on the preamble, DNR staff has doubts about the environmental effectiveness of the prescribed design for abutment liners. This design will be less protective of the environment than designs allowable under the current rule, and are likely to result in environmental and engineering problems (based on experience with these designs over the last 15 years in other states). **If DNR requires abutment liner designs known to cause future environmental or engineering problems, they should also provide indemnification for future actions needed to correct those problems.**

DMC could also support the changes and discussion proposed by WMI regarding this section [see attached WMI 1/24/07, p. 1].

16. Proposed Change to 113.10:

DMC agrees with and supports comments by WMI that surface water monitoring should be removed from this section of the rules [see WMI 1/24/07 pp. 13-14, item 14].

17. Proposed Changes to 113.10(2)a(2):

DMC supports and agrees with the WMI comments and proposed changes to this section [see WMI 1/24/07 pp. 14-15, item 16].

18. Proposed Changes to 113.10(2)a(3)&(4):

DMC supports and agrees with the WMI comments and proposed changes to this section [see WMI 1/24/07 p. 15, item 17].

19. Proposed Change to 113.10(2)a(3):

Provides a high level of certainty that releases of contaminants from the site can be promptly detected. Downgradient monitoring wells shall be placed ~~along the site perimeter, within 50 feet of the planned liner or waste boundary~~ *at the point of compliance* unless site conditions

dictate otherwise, downgradient of the facility with respect to the hydrologic unit being monitored. Each groundwater underdrain system that discharges to surface water shall be included in the groundwater monitoring system, and the maximum drainage area routed through each outfall shall not exceed 10 acres unless approved by the department. [Geosyntec Final Report p. V-3]

DMC supports the recommendation and discussion (see attached copy of the report) in the Geosyntec report. This point is further discussed in the commentary on the preamble above.

20. Proposed Addition to 113.10(2)e(2):

Designed and constructed with a maximum of 300 feet between downgradient monitoring wells *unless it is demonstrated by site-specific analysis or modeling that a wider well spacing is justified.* [Geosyntec Final Report p. V-3]

DMC supports the recommendation and discussion (see attached copy of the report) in the Geosyntec report. This point is further discussed in the commentary on the preamble above.

DMC also agrees with and would support the change proposed and discussion by WMI on this section [see WMI 1/24/07 p. 2].

21. Proposed Changes to 113.10(3)&(4):

DMC supports the recommendations and discussion by WMI on this section [see WMI 1/24/07 pp. 16-20, items 19-22].

22. Proposed Addition to 113.10(5)a:

Detection monitoring is required at MSWLFs at all groundwater monitoring wells defined under subrule 113.10(2). At a minimum, a detection monitoring program must include the monitoring for the constituents listed in Appendix I, any additional *parameters required by the department on a site-specific basis, as well as the following indicator parameters:
(1) Indicator parameters to be measured in the field:
1. Temperature.
2. pH
3. Conductivity
(2) Indicator parameters to be analyzed in a laboratory:
1. Chloride.
2. Chemical oxygen demand (COD)
An alternative list of constituents may be used if it can be demonstrated that the constituents removed from the above list are not reasonably expected to be in or derived from the waste

contained in the unit and if the alternative list of constituents is expected to provide a reliable indication of leachate leakage or gas impact from the landfill. [Geosyntec Final Report p. V-4]

DMC can support this recommendation. However, it would seem more appropriate for DNR to delete from the proposed rule the 37 Appendix I parameters that have been shown to be rare or nonexistent in MSW landfills in recent EPA studies. These 37 parameters are listed in the Geosyntec final report on pp. V-5 and V-6. EPA has allowed states to proposed detection monitoring parameters that differ from Appendix I, and this proposed deletion would be based on EPA research completed since 40CFR258 was published. Since these parameters are not expected to be present in MSW, deleting them will not jeopardize environmental protection at all, but will reduce the added expense for new additional detection monitoring parameters.

DMC also supports the changes to the indicator parameters recommended by WMI [see WMI 1/24/07 pp.20-21, item 23] and the changes to Appendix I recommended by WMI [see WMI 1/24/07 pp.29-30, item 28].

23. Proposed Addition to 113.10(5):

DMC agrees with and supports WMI's recommended addition to this section clarifying the conditions for flexibility in setting site-specific detection monitoring parameters [see WMI 1/24/07 pp.23-24, items 25-26].

24. Proposed Changes to 113.10(6):

DMC agrees with and supports WMI's recommended changes to this section [see WMI 1/24/07 pp. 24-28, item 27].

25. Proposed Change to 113.12(1):

a. Have a permeability ~~less than or equal to the permeability of any bottom liner system (for MSWLFs with some type of liner) or have natural subsoils present (for unlined MSWLFs), or have a permeability~~ no greater than 1×10^{-6}~~7~~ cm/s ~~(for all lined and unlined MSWLFs), whichever is less~~;
b. Minimize infiltration through the closed MSWLF by the use of an infiltration layer that contains a minimum of *18*~~24~~ inches of compacted earthen material;
c. Minimize erosion of the final cover by the use of an erosion layer that contains a minimum of 24 inches of earthen material that is capable of sustaining native plant growth;
d. Hsve an infiltration layer and erosion layer that are a combined minimum of ~~48~~*42* inches of earthen material at all locations over the closed MSWLF unit; and

e. Have a slope of 5 percent and 25 percent. *Steeper slopes may be used if is it demonstrated that a steeper slope is unlikely to adversely affect final cover system integrity.* [Geosyntec Final Report p. VI-1]

DMC supports the recommendation and discussion (see attached copy of the report) in the Geosyntec report. Final cover system design should be based on site specific engineering and operational criteria.

DMC would also support the change proposed and discussion provided by WMI on this section [see WMI 1/24/07 p. 9, item 6].

Attachment 1

Technical Review and Comment Report

Geosyntec Final Report
February 2007

Attachment 2

Proposed Revisions to Chapter 113
Technical Comments and Recommendations

Waste Management, Inc.
January 24, 2007

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