



## Division of Solid and Infectious Waste Management

### Response to Comments

#### Rules Pertaining to the Design of Facility Components: Chapter 3745-511

##### Agency Contact for this Package

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Ohio EPA held a public comment period from August 1, 2006, to November 1, 2006, regarding multi-program Site Investigation rules (Chapter 3745-507), C&DD rules (Chapter 3745-520), and Industrial Waste rules (Chapter 3745-525). This document summarizes the comments and questions received during the comment period).

Ohio EPA reviewed and considered all comments received during the public comment period. By law, Ohio EPA has authority to consider specific issues related to protection of the environment and public health.

In response to comments, the chapters were reorganized to create a new multi-program chapter for component design. In an effort to help you review this document, the questions are grouped under the new rule reference, with a citation to the original subject rule. The name of the commenter follows the comment in parentheses.

##### General/Overall Concerns

**Comment #2372:** Factors of safety are typically integrated for each component for an engineering design. Accumulative, and sometimes synergetic effect, are often realized thereby resulting in multiple levels of risk management and reduction into a completed project. Factors of safety for each individual component of a design project need to be understood, equivalent between industries, and no one variable should be assigned a higher level of safety over another, unless the variables are considered to be a critical factor where the increase safety factor is justifiable. The proposed rules do not address the issue of factors of safety, neither individually or cumulatively, and different safety factors are used for different components of the design. For example, minimum factors of safety for the slope stability analyses range from 1.10 to 1.50 while the factors of safety for bearing capacity calculation are 3.00. The new rules require a detailed subsurface exploration

**to be performed to obtain site specific subsurface conditions to which the design will be based. Consequently, consistent factors of safety appropriate to a risk should be applied. (Michael Born, Schumaker, Loop, and Kendrick, LLP)**

**Response:** Consistent factors of safety are not appropriate due to differences in the availability and quality of the data, the likelihood of an event, and the consequences of a failure. It is not just the balancing of forces causing a failure versus keeping the unit stable. Ohio EPA considered these factors, and standard practices in the industry, when developing the agency policy Geotechnical and Stability Analyses for Ohio Waste Containment Facilities and the stability requirements adopted in 2003.

3745-511-01 Design – applicability.

**No comments received.**

3745-511-02 Design - definitions.

**Comment #1572: 507-01(C)(1) The existing regulations do not include waste or C&DD. (Michael Stepic, URS)**

**Response:** The definition of compressible material needs to include waste and C&DD to address settlement below separatory liners and caps.

3745-511-10 Geotechnical and stability analyses and reporting.

**Comment #1367: 507-300 These draft slope stability rules are more onerous than the current solid waste and residual waste rules. The draft rules require a greater level of documentation detail on methods and assumptions used in calculations than are required in the other five U.S. EPA Region 5 states. These prescriptive rules go beyond accepted engineering practices and typical factors of safety. They also remove flexibility for the engineer to consider additional structural and economic options. For example, 3745-507-330 (A) (5) specifies that residual shear strength shall be used for slopes greater than 5.0 percent and may be "loaded with one thousand four hundred forty pounds per square foot or more." The basis for these criteria is not defined, and it is unclear where the load is to be calculated. The rules include requirements for interim slopes. It is presumed by GM that this term refers to what engineers typically call "operational" slopes. Minor slope**

**failures during operational filling are common and routinely managed by operators. Depending on the definition of interim slopes, this requirement may be overly conservative. (John Thomas, GM Powertrain)**

**Response:** The stability requirements were added to OAC 3745-30-07(C)(11) in the residual waste rules in 2003. Flexibility regarding design of the facility was not removed. The rules are more explicit in establishing reporting requirements, which were taken from the Ohio EPA policy Geotechnical and Stability Analyses for Ohio Waste Containment Facilities, so that applicants can submit complete applications with fewer deficiencies.

**Comment #1580: 507-300(B)(1) “criteria for removal” is new, what is the intention of this wording? Furthermore, there does not appear to be a definition of “unacceptable material,” this should be provided within the regulation. (Michael Stepic, URS)**

**Response:** Similar to establishing slope limitations (beyond which the slope could be unstable), establishing criteria for material will assure that, if encountered, such materials that fail to meet the assumptions used in calculating the stability of the site will be removed. The term “unacceptable” in the proposed rules was changed to “undesirable” to more accurately reflect the intent of the rule (if an undesirable material is encountered, the facility can be redesigned rather than rejecting the site).

3745-511-20 Hydrostatic uplift analysis and reporting.

**Comment #1583: 507-310(A) When does “a proposal” ever happen? This should be clarified. (Michael Stepic, URS)**

**Response:** A “proposal” is the proposed design in the permit application. The program rules establish what conditions require a hydrostatic uplift analysis.

**Comment #1584: 507-310(C) Not sure if they are asking for all points within the surface for this calculation or just critical locations. Typical industry standard to date is to perform this calculation at any critical locations in the design. (Michael Stepic, URS Corporation; John Thomas, GM Powertrain)**

**Response:** All points need to be considered to confirm the critical locations, but then only the critical locations need to be analyzed.

**Comment #1585: 507-310(D)(7) and (8) These requirements appear to be in excess of what would be necessary. Please clarify why this information might be necessary. (Michael Stepic, URS Corporation)**

**Response:** Plan drawings depicting isopachs between phreatic and piezometric surfaces and the liner and excavation are necessary to locate the correct worst case scenario where seepage forces on the liner and excavation are at their greatest.

3745-511-25 Seepage force analysis and reporting.

**No comments received.**

3745-511-30 Bearing capacity analysis and reporting.

**Comment #1586: 507-320 I believe this section's title should be revised to state Bearing Capacity Analysis and Reporting "for Vertical Sump Risers Only." The point being that the whole regulation seems to be written around if the facility's design incorporates any vertical sump risers. If vertical sump risers are not used (i.e. sideslope risers are used then this section would not be applicable). Correct? (Michael Stepic, URS)**

**Response:** Although the understanding is correct, the title was not changed. Applicability is not established by the title of a rule but by the language in the rule itself.

3745-511-40 Static stability analysis and reporting.

**Comment #1452: 507-330 Static Stability Analysis and Reporting – Ohio EPA requires the applicant, owner, or operator to conduct static slope stability analysis to demonstrate specified factors of safety for various failure mechanisms. These include temporary internal slopes having equal factor of safety requirements as permanent external slopes. However, in practice, landfill operations can, and do, accommodate some instability of temporary internal slopes (e.g., washing of sand drainage layer off of slopes prior to waste placement due to large rainfall). These minor operational instability conditions can be handled as part of landfill operations without**

**compromising the integrity of the landfill design. Therefore, GM requests that Ohio EPA remove the requirements for temporary internal slopes. (John Thomas, GM Powertrain)**

**Response:** Although the commenter describes such failures as not compromising the integrity of the landfill design, the impacts and repairs of such failures are not always minor. Therefore, static stability analysis of temporary internal slopes is required. Also, identification of unstable situations through a stability analysis is preferred in order to prevent the occurrence rather than having to repair it. Nonetheless, a provision was added to account for inherently low-risk situations in which case the static stability analysis is not required.

**Comment #1587: 507-330(A)(7) and (8) Typically this is not included in a permit and has never before been a requirement by the OEPA's GeoRG's manual. What is the intent of these requirements? (Michael Stepic, URS)**

**Response:** The intent is to assess the effect of road usage on the slope. It is critical to avoid failure due to the dynamic loading associated with access roads and the effects on pore water pressure. Shallow rotational failures of roads are mentioned in Chapter 9 of Ohio EPA's policy Geotechnical and Stability Analyses for Ohio Waste Containment Facilities.

3745-511-50 Seismic stability analysis and reporting.

**Comment #1588: 507-340(A)(2) "If requested by the reviewing authority" – what is meant by this? How do you determine what this might be before submittal? (Michael Stepic, URS)**

**Response:** Please note: deep-seated translational and rotational failure analyses of internal slopes are no longer addressed by this rule. Nonetheless, to answer the question, if the reviewing authority deems an analysis is necessary, and the program rules allow the reviewing authority to pursue such lines of inquiry to determine whether the application meets approval criteria, the applicant may be requested to submit such an analysis. It may not be possible to determine the need for the analysis prior to submittal but the rules will require it to be related to other criteria.

**Comment #1589: 507-340(A)(8) Typically this is not included in a permit and has never before been a requirement by the OEPA's**

**GeoRG's manual. What is the intent of these requirements?**

**General Comment:** There is no reference to the return period of the required seismic load (the GeoRG's manual refers to 2500 years). This should be clarified in the regulations. (Michael Stepic, URS)

**Response:** The requirement was removed for purposes of determining seismic stability.

Regarding the general comment, a reference to a 2500 year return period is now specified.

3745-511-60 Settlement analysis and reporting for the liner system and leachate management system.

**Comment #1590: 507-350(E) What is the OEPA's intention with relation to this regulation with respect to existing facilities where the records may not be well documented? (Michael Stepic, URS)**

**Response:** The applicant may be able to obtain suitable data from adjacent unfilled areas to satisfy this requirement if adequate data on the materials below the vertical expansion are insufficient. If site specific data are unavailable then other sources may be used but the values and the analysis will need to be more conservative.

**Comment #1591: 507-350(D) What is the OEPA's intention of this regulation with respect to existing facilities? If a facility cannot demonstrate, to the same level of detail as required by this regulation, these requirements, is the OEPA intending to eliminate the ability of existing facilities to expand? (Michael Stepic, URS)**

**Response:** The applicant may be able to obtain suitable data from adjacent unfilled areas to satisfy this requirement if adequate data on the materials below the vertical expansion are insufficient. If site specific data are unavailable then other sources may be used but the values and the analysis will need to be more conservative.

**Comment #2519: There is no explicit reference to differential settlement although it appears to be anticipated and implied. The regulations should be clarified to provide these requirements to avoid confusion. (Michael Stepic, URS)**

**Response:** Differential settlement is a type of settlement that can occur. The Ohio EPA policy Geotechnical and Stability Analyses for Ohio Waste Containment Facilities will continue to be available as a guide.

3745-511-65 Settlement analysis and reporting for separatory leachate barrier and collection system.

**Comment #1593: 507-352 General Comment: This regulation may be very challenging. Determination of engineering settlement properties for C&DD material of varying age could become a point of contention between design professionals and regulators. This will need to be clarified. (Michael Stepic, URS)**

**Response:** If the separatory leachate barrier and collection system slope is 10% or greater, the analysis is not necessary. For flatter slopes where the analysis is necessary, it can be very challenging as noted in the comment, but necessary to assure the component will perform its intended purpose to convey leachate from the expansion away from the unlined bottom of the landfill.

3745-511-70 Unstable areas.

**Comment #2447: 507-360 The South Bass Island Study is interesting, but not applicable to landfill or lagoon siting criteria. Karst topography with thin overlying tills should be avoided unless significant/appropriately engineered liner systems are incorporated. (Michael Born, Schumaker, Loop, and Kendrick, LLP)**

**Response:** We agree that unstable areas (e.g. karst topography) should be avoided, or remediated (e.g. filling or removing of mines), but if the applicant demonstrates that the facility is engineered to be stable and that the integrity of the engineered components is ensured, then the stability requirement will be met.

3745-511-72 Underground mines.

**No comments received.**

3745-511-120 Access roads.

**No comments received.**

3745-511-210 Ground water control structures.

**Comment #2039: (F)(1):** With the expansion of the interpretation of “aquifer system”, this rule effectively will preclude most permanent ground water control structures. The phrase “shall not be used to dewater an aquifer system” should be removed, or at a minimum changed to “shall not be used to permanently dewater an aquifer system”. Draft OAC Rule 3745-520-290(C)(5)(f) repeats rule 3745-520-220(F)(1) but not in it’s entirety. This rule should not address criteria, just the requirement that permanent ground-water control structures be shown. (Christopher Cobel, Eagon & Associates, Inc.)

**Response:** The word “permanently” was added. If it does not permanently dewater an aquifer system, the ground water control would be considered a temporary measure.

**Comment #1287: (F)(1)(c):** Who decides what the minimum requirements are for maintenance? (Michael Stepic, URS Corporation)

**Response:** The permitting authority will decide.

**Comment #1288: (G):** Why can’t the effects of depressing the phreatic or piezometric surface be used to determine the factor of safety against hydrostatic uplift? If the facility can not meet the required factor of safety, is the temporary dewatering system acceptable? (Michael Stepic, URS Corporation; Rick Buffalini, Civil and Environmental Consultants, Inc.)

**Response:** As a temporary measure, the engineered components will not be protected from seepage damage such as piping when the control is discontinued, or from hydrostatic uplift if recharge occurs faster than filling activities. As long as the provisions for the stability analyses in 3745-511-20 and 3745-511-25 are met, temporary dewatering is acceptable.

3745-511-220 Foundations.

**Comment #1435: 520-525** This rule requires testing and certification of structural fill. While it may be important to control the placement of structural fill where engineered components could be impacted by its placement, many areas of structural fill cannot impact engineered components and do not need to be held to the same standard. (Chuck Satchwill, SCS Engineers)

**Response:** The C&DD program rule establishing facility design requirements was revised to apply the structural fill design (and construction) requirements where engineered components could be impacted (i.e. structural fill underlying liner systems and cap systems).

**Comment #1210: 525-234(A)(2) Pavement is generally impervious, what is the intention of its use? (Michael Stepic, URS)**

**Response:** Embankments are a component of the above ground portion of the sediment and storm water management basin. A pavement surface will protect the embankment from erosion, and can also improve embankment stability.

With the adoption of the industrial waste program, embankments can also be used to contain waste water. However, in that application, pavement above a leachate collection system is a poor design choice. Lagoon designs will be reviewed at a later date and revisions made as appropriate.

3745-511-310 Liner system.

**Comment #1207: 525-232 Should this section not be under the multi-program rules since GCLs are a typical engineering component in waste disposal facilities? Why are these materials not referenced in the C&DD program rules? Furthermore, there should be some additional language added to this regulation related to the compatibility of GCLs with the waste/leachate of the material being contained. (Michael Stepic, URS)**

**Response:** This rule is now a multi-program rule and the various programs will reference it as appropriate as the program rules are updated. Compatibility of GCLs will be addressed by the specific program chapters.

3745-511-350 Added geologic material, liner system, and leachate collection system drainage layer run-out.

**Comment #1322: 520-255(A): States a requirement for 3 times the distance needed for run-out area. This seems to be an extreme and would seem to expose a lot of liner material to weathering and damage. It is our understanding that this is not typical industry standard to expose three times the distance. (Michael Stepic, URS Corporation; Rick Buffalini, Civil and**

**Environmental Consultants, Inc.)**

**Response:** The run-out length was revised to require five feet plus three times the recompacted soil liner thickness. This is the minimum distance necessary to be able to compact soil liner and connect with geosynthetics in the tie-in.

**Comment #1323: 520-255(B): Makes a statement related to eliminating the need for cutting and excavating the berms during construction. This is not clear. This seems to be subjective regulation. (Michael Stepic, URS Corporation)**

**Response:** This specification was removed from the proposed rules.

**Comment #1968: 520-255(H): Paragraph (H) is overly prescriptive and is incorrect in the dimensions required. The paragraph should be revised to state the intended purpose and allow the designer to prepare the specific details. (Rick Buffalini, Civil and Environmental Consultants, Inc.)**

**Response:** The requirement for a minimum length of leachate collection run-out was deleted from the proposed rules.

3745-511-410 Leachate collection system drainage layer.

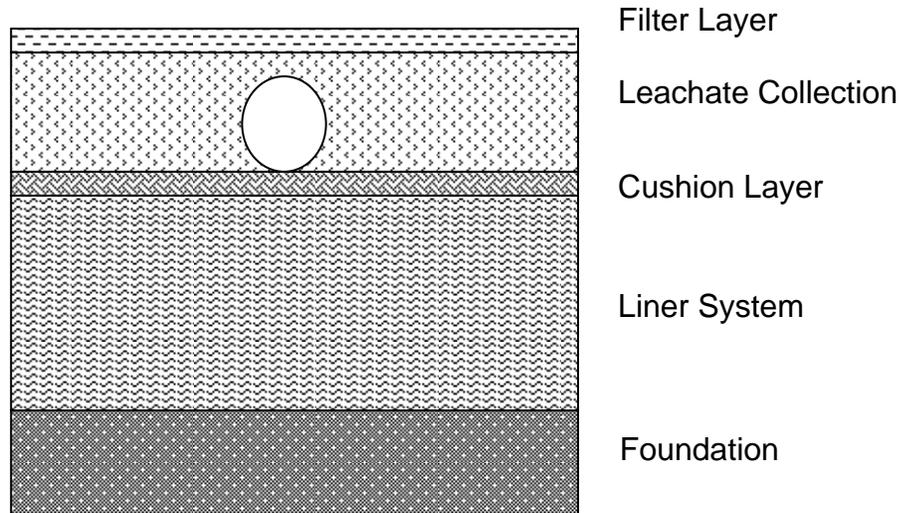
**Comment #1296: 520-240(C): Are there approved alternatives or alternatives the OEPA considers may be likely? The regulation seems to read directly to the use of geosynthetic material. (Michael Stepic, URS Corporation)**

**Response:** There are no approved alternatives or alternatives Ohio EPA considers likely.

**Comment #998: 520-420(C): How thick is the cushion layer? Can you provide a cross section from the bottom up of the landfill design for clarity? What is a Mullen burst? (Kathy Trent, Waste Management)**

**Response:** Thickness of the cushion layer will vary, but generally for geotextiles it will not exceed 1/8 inch. Mullen Burst was removed from the rule. The Mullen Burst measures the force required to burst through a fabric. The Mullen Burst test uses a circular material sample that has been clamped over a diaphragm and inflated with oil. Pressure is applied until the fabric bursts. The

pressure (in pounds per square inch) at which the fabric bursts is the bursting strength.



Cross section of landfill bottom is not to scale

**Comment #1297: 520-240(C)(2)(e): Seems to require the use of cushion layer for the facility. Would this be in addition to the leachate collection system or could it be met by the leachate collection system?**

**Response:** A cushion layer is required only when sand is not used as the leachate collection layer.

**Comment #1300: 520-420(D)(3): In addition, the regulation states a minimum thickness for tire shreds of 30-inches to 48-inches. Typical industry standard today is at 24-inches provided the facility can demonstrate that it can consolidate to no less to 12-inches. Is the OEPA changing that requirement and why? (Michael Stepic, URS Corporation)**

**Response:** For design purposes, the thickness of the scrap tire layer shall be between twelve inches and twenty-four inches, taking into account compression due to the weight of waste or C&DD. For construction purposes, the thickness of the scrap tire layer shall be not more than forty-eight inches once deployment of the tire shreds is complete. DSIWM guidance document #0599 Use of Shredded Tires in Landfill Construction suggests a maximum thickness of four feet. At less than 30 inches, concerns regarding damage to the FML increase. If the scrap tires are placed above a granular

drainage layer or if the scrap tires are debanded, then the minimum thickness is established as the commenter suggests.

3745-511-432 Leachate collection system pipes.

**Comment #1295: 520-240(A)(4):** What sort of access is the OEPA requesting? In what way does the OEPA currently consider current industry standard design of leachate collection systems that do not provide a representative leachate sample? Clarification to that regulation requirement would need to be provided, otherwise, it is extremely subjective on who feels that the acquisition of a representative sample is adequate. (Michael Stepic, URS)

**Response:** The access requirement in the proposed rules was simplified by removing the requirement to obtain a representative sample. However, the requirement to obtain a representative sample may still be a requirement imposed by a program. Current industry standard designs for access have been adequate.

**Comment #1302: 520-240(E)(6):** Discusses length and configuration of leachate system shall not exceed the limits of and capabilities of clean out devices. This should be clarified in this regulation. What are those limitations in OEPA opinion? This is a very subjective argument during the design and review process on what the designers and regulatory agency considers the limitations. (Michael Stepic, URS Corporation)

**Response:** Due to the variety of clean-out methods available (flushing, pushing, pulling, jetting) and their capabilities, a list is not established in order to provide flexibility to the owner or operator.

3745-511-434 Sumps.

**Comment #1843: 525-240** The draft rules limit leachate heads to be no more than one foot above the basal elevations. These draft rules fail to address leachate collected in sump areas. (John Thomas, GM Powertrain)

**Response:** The requirement applies to all areas outside the lateral limits of the sump. Therefore, there is no maximum head for the sump.

**Comment #1303: 520-240(G): Discusses adequate number of properly located leachate sumps. Again, who decides what is adequate and properly located? (Michael Stepic, URS Corporation)**

**Response:** The permitting authority responsible for permit approval will decide. The variety of situations is too diverse to establish a minimum standard. This allows the permitting authority to be flexible in deciding what is adequate.

**Comment #1219: 525-245(E) &**

**Comment #1304: 520-240(G)(2): Refers to the leachate sumps being recessed. If you recess the sumps to make them lower than the floor, this adds to the set back criteria from the UAS. Inherently adds approximately 1-foot to the setback criteria to the floor. What is the OEPA's reasoning for recessing the sumps? (Michael Stepic, URS Corporation)**

**Response:** Recessed sumps are not required.

3745-511-436 Pumps.

**No comments received.**

3745-511-440 Leachate collection system filter layer.

**No comments received.**

3745-511-450 Conveyance pipes.

**Comment #999: 520-240(I): Does this section prevent leachate conveyance underneath liners? In some cases there may be a need to convey leachate under a side slope liner. This is an accepted design and also prevents leachate tanks from being located within the waste limits of facility. (Kathy Trent, Waste Management)**

**Response:** There is no prohibition to place leachate conveyance apparatus below liners. However, please note, in the future, a program may prohibit such a design.

**Comment #2460: 525-292 In some cases, there are literally miles of process**

**wastewater piping at a power plant. In addition, utility industry wastewater lagoons can contain million of tons of accumulated solids and millions of gallons of water. Given this, some of the more unreasonable provisions of the proposed wastewater lagoon requirements include: Installation of cleanout wyes on influent piping; freeze protection of influent piping. (Michael Born, Schumaker, Loop, and Kendrick LLP)**

**Response:** The requirement for the cleanout wye comes from section 93.432 of the "Recommended Standards for Wastewater Facilities" also known as the "ten states standards" which is a guidance commonly used by engineers for designing such structures. The requirement for the cleanout wye no longer appears in this multi-program rule, however, please note, in the future, a program may establish such a requirement.

The freeze protection requirement comes from existing leachate conveyance requirements which can be reasonably applied to wastewater piping associated with a lagoon because burst or frozen pipes are undesirable for proper operation of the facility and protection of the environment.

3745-511-460 Leachate holding tanks.

**Comment #1220: 525-247(A)(1) The word "sufficiently" should be defined to avoid subjectivity. (Michael Stepic, URS)**

**Response:** The rule was revised to establish a minimum storage capacity of ten times the anticipated daily amount of leachate to be removed during normal operations.

**Comment #1306: 520-240(J): This discusses having leachate storage tanks outside the limits of debris. It does not appear to allow for the scenario where leachate storage tanks are placed within the limit of debris placement, for example during cell start-up when temporary leachate tanks are placed within the waste limits to utilize the landfill liner as secondary containment until which time the permanent tanks are installed. Why is that if adequate engineering controls are provided? (Michael Stepic, URS Corporation; Kathy Trent, Waste Management)**

**Response:** The rule requires the foundation of an above ground holding tank to be capable of supporting the holding tank when the tank is full of leachate without compromising the integrity of any engineered components. Any further requirements or limitations as to placement of storage tanks including placement within the disposal limits will be established by a program.

3745-511-605 Transitional cover.

**No comments received.**

3745-511-610 Cap system barrier layer.

**No comments received.**

3745-511-620 Cap system drainage layer.

**No comments received.**

3745-511-630 Cap system collection pipes and outlets.

**No comments received.**

3745-511-640 Cap system filter layer.

**No comments received.**

3745-511-650 Cap system protection layer.

**Comment #1144: 525-260(C)(4) Have a slope not less than 5.0 percent: This requirement is excessive. A minimum 2 percent slope is commonly used and should be incorporated in the proposed rules. (Gary Haney, First Energy Corp.)**

**Response:** Due to waste degradation and settlement, a two per cent slope is insufficient to minimize ponding. However, for programs addressing wastes that are not subject to degradation and minimal settlement, the program may establish an alternative minimum slope.

3745-511-680 Cap system and gas collection layer run-out.

**No comments received.**

3745-511-750 Gas collection and conveyance system.

**Comment #1330: 520-270(B)(3) references Chapter 3704 of the Revised Code for the conformance standards for extraction systems. Those requirements should be reiterated within this proposed regulation for clarity. (Michael Stepic, URS Corporation)**

**Response:** The reference to Chapter 3704 of the Revised Code in the proposed rules was deleted. Any standards adopted pursuant to Chapter 3704 of the Revised Code will be in addition to the standards established in this rule.

3745-511-755 Condensate holding tank.

**Comment #1869: 520-270(D): This rule implies a condensate management system that is separate from a leachate management system. If a facility has an existing leachate management system, can leachate and condensate share the same collection and conveyance system? (Mary Helen Smith, Mahoning County District Board of Health; Michael Stepic, URS Corporation)**

**Response:** The rules do not prohibit one collection and conveyance system for managing both leachate and condensate.

3745-511-810 Ditches.

**Comment #1145: 525-281(B)(1) Accommodate the peak flow from the twenty-five year, twenty-four hour storm event. This requirement exceeds the ten-year, twenty-four hour storm event requirements previously established and approved by OEPA for exempt waste landfills. If these proposed rules are to apply to “exempt wastes”, now defined as “industrial excluded wastes” in the proposed rules, then justification for more stringent surface water control requirements for these materials needs to be provided. (Gary Haney, First Energy Corp.)**

**Response:** For sediment and storm water management basins, the rule was revised so the storage volume will continue to be based on the ten-year, twenty-four-hour storm event.

3745-511-820 Sediment and storm water management basin system.

**Comment #1970: 520-280(D)(2) requires the sedimentation pond depth not exceed 5 feet. We are not aware of the design basis for this requirement. The depth of the pond is only one of several factors that promote the settlement of suspended solids from water prior to discharge. (Rick Buffalini, Civil and Environmental Consultants, Inc.)**

**Response:** The specifications for sediment and storm water management basins was rewritten. As a result, the pond depth requirement was removed.

3745-511-870 Level and flow control structures.

**Comment #1224: 525-293(G) What is the intention of requiring two hundred and fifty per cent of the maximum flow? Why is this extreme factor of safety required? (Michael Stepic, URS)**

**Response:** The intention is to be consistent with the specification in the Recommended Standards for Wastewater Facilities (aka ten states standards) section 93.442(b).

**End of Response to Comments**