Ohio Administrative Code (OAC) Chapter 3745-520

NEW CONSTRUCTION AND DEMOLITION DEBRIS (C&DD) PROGRAM REGULATIONS

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3745-520-01 New construction and demolition debris facility - applicability.

(A) This chapter is the program chapter for new construction and demolition debris facilities.

(B) This chapter shall apply to the following:

(1) The establishment of a new construction and demolition debris facility.

[Comment: "New construction and demolition debris facility" is defined in rule 3745-520-02 of the Administrative Code.]

(2) Any construction and demolition debris facility that has been permitted pursuant to this chapter.

(C) In addition to the multi-program rules made applicable by reference in this chapter, the following multi-program rules apply to this chapter:

(1) Rule 3745-500-10 of the Administrative Code which identifies wastes and activities generally excluded from regulation under Chapter 3734. of the Revised Code or rules adopted thereunder.

(2) Rule 3745-500-30 of the Administrative Code describes certain relationships among program chapters, multi-program chapters, and other rules.

[Comment: Rule 3745-500-30 of the Administrative Code clarifies, for example, that construction and demolition debris facilities regulated under this chapter are no longer regulated under Chapter 3745-400 of the Administrative Code.]

(3) Rule 3745-500-35 of the Administrative Code pertains to relationships among authorizing documents, rules, and the authority of the director and board of health.

(4) Rule 3745-500-310 of the Administrative Code regarding the criteria for issuing a permit to install.

3745-520-02 New construction and demolition debris facility - definitions.

If a term used in this chapter is defined in rule 3745-500-02 of the Administrative Code the definition in rule 3745-500-02 of the Administrative Code is applicable to this chapter unless the term is defined in this rule. As used in this chapter:

(A)

(1) "Accept" or "acceptance," in the context of material acceptance, handling, and disposal activities, means to record material in the log of operations or to place material on the ground at any location at a C&DD facility other than the designated inspection zone.

[Comment: Designating an inspection zone is optional. See rule 3745-520-640 of the Administrative Code for information regarding the inspection zone.]

(2) "Alter" or "alteration" means either of the following:

(a) As it relates to a C&DD facility, a change other than a modification to a facility.

(b) As it relates to a permit to install for a C&DD facility, a change other than a modification to a facility design plan in the permit to install.

(B) "Best management practices" means activities, procedures, and practices that an owner or operator will use at a C&DD facility to comply with authorizing documents and with Chapter 3714. of the Revised Code and rules adopted thereunder.

(C)

(1) "Category 3 wetland" means a wetland that supports superior habitat or hydrological or recreational functions as determined by an appropriate wetland evaluation methodology acceptable to the director. Category 3 wetland includes a wetland with high levels of diversity, a high proportion of native species, and high functional values and includes but is not limited to a wetland that contains or provides habitat for threatened or endangered species. Category 3 wetland may include high quality forested wetlands, including old growth forested wetlands, mature forested riparian wetlands, vernal pools, bogs, fens, and wetlands that are scarce regionally.

(2) "Closure" means either the time at which a C&DD facility will no longer accept C&DD for disposal or the effective date of an order revoking the license of the facility. Closure includes measures performed to protect public health or safety, to prevent air or water pollution, or to make the facility suitable for other uses, if any, including without limitation, the establishment and maintenance of suitable cover of soil and vegetation over areas where C&DD is buried and the minimization of erosion, the infiltration of surface water into such areas, the production of leachate, and the accumulation and runoff of contaminated surface water.

(3) "Construction and demolition debris transfer facility" or "C&DD transfer facility" means a site, location, tract of land, installation, or building that is primarily used or intended to be used for the purpose of transferring C&DD that was generated off the premises of the C&DD transfer

facility from vehicles or containers into other vehicles or containers for transportation to a C&DD facility.

(D) [Reserved.]

(E) "Exemption" means a discretionary action of the director or the approved board of health that relieves the applicant from a requirement of Chapter 3714. of the Revised Code or any rule adopted thereunder.

(F)

(1) "Facility" means "construction and demolition debris facility" or "C&DD facility."

(2) "Facility boundary" means the line represented on plan drawings and topographic maps of a C&DD facility that at a minimum encompasses the area that includes the following on property owned or controlled by the owner or operator:

(a) Authorized disposal limits.

(b) Areas within one hundred feet of the authorized disposal limits except that the facility boundary shall not extend beyond the boundary of the property owned or controlled by the owner or operator.

(c) Engineered components.

(d) Ground water monitoring, ground water assessment, and ground water corrective action apparatuses and structures.

(e) Gas monitoring apparatuses and structures.

(f) Other areas on which activities associated with disposal or operation of the facility occur, such as the following:

(i) Parking lots.

(ii) Staging areas.

(iii) Storage areas.

(iv) Buildings.

(g) Roads used to access any item listed in paragraphs (F)(2)(a) to (F)(2)(f) of this rule.

(3) "Facility's property line" has the same meaning as facility boundary.

(G) [Reserved.]

(H)

(1) "Hot load" means material arriving at a C&DD facility that is on fire or at a temperature likely to cause a fire.

(2) "Hot load handling area" means an area where hot loads are placed and extinguished or cooled.

(I)

(1) "Illegal disposal" means the disposal of C&DD not in accordance with paragraph (B) of rule 3745-520-04 of the Administrative Code. Illegal disposal does not include reuse, recycling, or storage, or the management of clean hard fill in accordance with rule 3745-400-05 of the Administrative Code.

(2) "Inspection zone" means an area where material arriving at the C&DD facility is placed and inspected prior to recording the material in the log of operations.

(J) [Reserved.]

(K) "Key employee" means an individual employed by an applicant for a permit to install for, or by the proposed transferee of a permit to install or license for, a C&DD facility in a supervisory capacity or who is empowered to make discretionary decisions with respect to the C&DD operations of the applicant or transferee, but does not include an employee who is exclusively engaged in the physical or mechanical collection, transfer, transportation, storage, or disposal of C&DD. If the applicant or transferee has entered into a contract with another person to operate the C&DD facility that is the subject of the application or transfer, key employee includes an employee of the contractor who acts in a supervisory capacity or is empowered to make discretionary decisions with respect to the operation of the facility.

(L) [Reserved.]

(M)

(1) "Main hauling road" means a road that is used to transport material to be disposed between the facility boundary and the authorized disposal limits. A main hauling road is a type of access road.

(2) "Maps prepared under the National Flood Insurance Act of 1968," or "maps have been prepared" means that the federal emergency management agency has evaluated the location of the C&DD facility for flood insurance purposes and represented its findings on such a map.

(3) "Material log-in area" means the location at a C&DD facility where the owner or operator records in the log of operations whether a load of material is accepted.

(4) "Modify" or "modification" means any of the following:

(a) As it relates to a C&DD facility, any of the following:

(i) Any design change to the facility that requires new slope stability or settlement analyses except for changes in interim slopes where a slope stability or settlement analysis has been submitted in the phasing plan in the general plan of facility operations in the license.

(ii) Removal or relocation of either a vegetated earthen berm or an equivalent barrier that is required by paragraph (B) of rule 3745-520-200 of the Administrative Code.

(iii) Construction of a main hauling road outside of the main hauling road areas specified in the facility design plan in the permit to install.

(iv) An addition or expansion of a leachate recirculation system at the facility.

(v) Any change that Ohio EPA or the approved board of health determines may endanger public health or safety or the environment, cause a nuisance or fire hazard, or cause or contribute to water pollution or air pollution, including but not limited to a change to the operation, design, or construction of the facility.

[Comment: An expansion of the authorized disposal limits of a C&DD facility or an expansion of the facility boundary results in the creation of a new facility and requires a permit to install in accordance with this chapter. An expansion of the authorized disposal limits of a C&DD facility or an expansion of a facility boundary is not a modification of a C&DD facility.]

(b) As it relates to a permit to install for a C&DD facility, either of the following:

(i) Changes to the facility design plan in the permit to install or narrative necessary to document the modification to a facility as described in paragraph (M)(4)(a) of this rule.

(ii) A change to a term or condition in the permit to install.

(c) As it relates to a license for a C&DD facility, either of the following:

(i) A change to the general plan of facility operations in the license other than at the time of license renewal.

(ii) A change to a term or condition in the license other than at the time of license renewal.

(N)

(1) "Natural area" means either of the following:

(a) An area designated by the director of natural resources as a wild, scenic, or recreational river under section 1517.14 of the Revised Code.

(b) An area designated by the United States department of the interior as a national wild, scenic, or recreational river.

(2) "Nature preserve" means any area that is formally dedicated as a nature preserve under section 1517.05 of the Revised Code.

(3) "New construction and demolition debris facility" or "new C&DD facility" or "new facility" means either of the following:

(a) A C&DD facility that has never before been authorized under Chapter 3714. of the Revised Code.

(b) A C&DD facility that is authorized under Chapter 3714. of the Revised Code and expands the facility beyond the authorized disposal limits.

(O) "Off-specification material" means material from a manufacturer that does not meet the manufacturer's product specifications.

(P)

(1) "Park" means any of the following:

(a) A park created or operated pursuant to section 301.26, 511.18, 755.08, 1545.04, or 1545.041 of the Revised Code.

(b) A state park established or dedicated under Chapter 1541. of the Revised Code.

(c) A state park purchase area established under section 1541.02 of the Revised Code.

(d) A national recreation area, any unit of the national park system, or any property that lies within the boundaries of a national park or recreation area, but that has not been acquired or is not administered by the secretary of the United States department of the interior, located in this state.

(e) Any area located in this state that is recommended by the secretary of the United States department of the interior for study for potential inclusion in the national park system in accordance with The Act of August 18, 1970, as described in rule 3745-500-03 of the Administrative Code.

(2) "Potential sources of contamination" means at least the following when applying the requirements of Chapter 3745-506 of the Administrative Code at a C&DD facility:

(a) Any location where material has been disposed, is being disposed, or will be disposed.

(b) A designated inspection zone that is not under roof or not located on an impermeable pad.

(c) A storage area that meets the following criteria:

(i) The storage area is located outside of the authorized disposal limits.

(ii) Material other than exclusively clean hard fill is stored.

(iii) Stored material is not under roof, on an impermeable pad, or containerized and covered.

(d) A hot load handling area located outside of the authorized disposal limits that is not located on an impermeable pad.

(e) Other sources as required in a final action issued by the director or approved board of health.

(3) "Pulverized debris" means a load of debris that, after demolition has occurred, but prior to acceptance of the load of debris for disposal, has been shredded, crushed, ground, or otherwise rendered to such an extent that the load of debris is unidentifiable as C&DD.

(Q) [Reserved.]

(R)

(1) "Refuse," in the context of material acceptance, handling, and disposal activities, means to remove material from a C&DD facility without accepting the material at the facility.

(2) "Reject" means to remove material from a C&DD facility after the material was accepted at the facility.

(S) "Store," "stored," or "storage" means the following:

(1) In reference to C&DD, the holding of C&DD at a C&DD facility or other location for a temporary period in a manner that satisfies the following:

(a) The C&DD remains retrievable and substantially unchanged for reuse, recycling, or disposal.

(b) At the end of the temporary period the C&DD is disposed or is reused or recycled in a beneficial manner.

(c) The holding of the C&DD does not cause a nuisance, a fire hazard, or a threat to public health or safety or the environment, does not violate Chapter 3704. or 6111. of the Revised Code, and does not cause or contribute to air or water pollution.

(d) The temporary period does not exceed thirty days unless specified as follows:

(i) Twelve months for non-putrescible C&DD that has been processed and sorted for recycling or reuse. Non-putrescible C&DD includes but is not limited to metals, non-biodegradable plastics, and glass.

(ii) Three months for putrescible C&DD that has been processed and sorted for recycling or reuse. Putrescible C&DD includes but is not limited to wood and wood-derived materials and wallboard.

(iii) Any storage time frames established in the approved general plan of facility operations if the C&DD is being stored at a licensed C&DD facility.

(2) In reference to clean hard fill, the holding of clean hard fill at a C&DD facility or other location for a temporary period in a manner that satisfies the following:

(a) The clean hard fill remains retrievable and substantially unchanged for reuse, recycling, or disposal.

(b) At the end of the temporary period the clean hard fill is disposed or is reused or recycled in a beneficial manner.

(c) The holding of the clean hard fill does not cause a nuisance, or a fire hazard, a threat to public health or safety or the environment, does not violate Chapter 3704. or 6111. of the Revised Code, and does not cause or contribute to air or water pollution.

(d) The temporary period does not exceed twenty-four months unless specified in the approved general plan of facility operations if the clean hard fill is being stored at a licensed C&DD facility.

(T) "Transporter" means a person engaged in the transportation of C&DD outside of a C&DD facility boundary.

(U) "Unloading zone" means a designated area where material is separated to ensure that only material authorized for disposal pursuant to paragraph (A) of rule 3745-520-600 of the Administrative Code is disposed in the working face.

(V) [Reserved.]

(W)

(1) "Wildlife area and refuge" means either of the following:

(a) Any area established by the department of natural resources as a state wildlife area under Chapter 1531. of the Revised Code and rules adopted under it.

(b) Any area designated by the United States department of the interior as a national wildlife refuge.

(2) "Working face" means that portion of a C&DD facility that is actively being used to place material for final disposal. The following activities do not constitute establishment of a working face:

(a) Placement of the select C&DD layer pursuant to rule 3745-520-622 of the Administrative Code.

(b) Placement of asbestos-containing waste materials in an asbestos-containing waste materials disposal area.

(c) Placement of material in the unloading zone.

(d) Placement of material in the inspection zone.

3745-520-03 New construction and demolition debris facility - general obligations.

(A) No person shall establish a new C&DD facility without first obtaining a permit to install issued in accordance with this chapter by the appropriate permitting authority.

(B) No person shall engage in construction activities at a C&DD facility without a permit to install issued in accordance with this chapter that authorizes those construction activities, unless the construction is necessary after revocation of a permit to install and authorized by the order that revoked the permit.

(C) Except for alterations during construction as provided for in Chapter 3745-512 of the Administrative Code, no person shall alter the design of a C&DD facility without first obtaining concurrence from the concurring authority for an alteration of the permit to install for the facility in accordance with rule 3745-520-320 of the Administrative Code.

(D) No person shall modify a C&DD facility without first obtaining a modified permit to install for the facility from the permitting authority in accordance with rule 3745-520-330 of the Administrative Code.

(E) No person shall operate or maintain a C&DD facility without a license issued by the licensing authority. The applicant for a license or the owner or operator shall comply with Chapter 3745-501 of the Administrative Code.

(F) No person shall deviate from the requirements in a license without first obtaining a modified license for the C&DD facility from the licensing authority in accordance with rule 3745-520-410 and Chapter 3745-501 of the Administrative Code.

(G) An owner or operator shall maintain compliance with all permits to install, licenses, orders, modifications, and alterations concurred with in writing by Ohio EPA or the approved board of health, and all other authorizing documents issued in accordance with Chapter 3714. of the Revised Code and rules adopted thereunder.

(H) Each application, request, report, notification, compliance disclosure submittal, and document and each revision of the aforementioned items submitted in accordance with this chapter to the director, Ohio EPA, or the approved board of health shall be signed in accordance with rule 3745-500-50 of the Administrative Code.

(I) An owner or operator shall implement and comply with plans as required by this chapter.

(J) An owner or operator shall ensure that the C&DD facility does not create a nuisance, fire hazard, or health hazard, or cause or contribute to air or water pollution.

(K) An owner or operator shall not cause or allow a C&DD facility to create a nuisance or health hazard from noise, dust, odors, or the attraction or breeding of birds, insects, rodents, or other vectors.

(L) An owner or operator shall obtain, maintain, and comply with applicable permits and authorizations required by Chapters 3704. and 6111. of the Revised Code.

(M) An owner or operator shall investigate evidence of damage, evidence of clogging, or evidence of failure to ensure that the integrity and effectiveness of the engineered components at the C&DD facility are maintained.

(N) An owner or operator shall maintain the integrity and effectiveness of the engineered components of the C&DD facility. If damage to or failure of an engineered component occurs after the concurring authority has concurred with the construction certification report for that engineered component, an owner or operator shall comply with rules 3745-512-60 and 3745-520-500 to 3745-520-599 of the Administrative Code.

(O) An owner or operator shall comply with the operator certification requirements of rules adopted under division (O) of section 3714.02 of the Revised Code.

(P) Pursuant to section 3714.101 of the Revised Code, falsification of any material information that is required to be submitted to a board of health or the director with respect to a permit to install or a license issued under Chapter 3714. of the Revised Code and rules adopted under it or an application for such a permit or license, or falsification of any other material information that is required to be submitted to a board of health or the director under Chapter 3714. of the Revised Code and rules adopted under it, is grounds for denial, suspension, or revocation of a permit to install or a license issued under Chapter 3714. of the Revised Code and rules adopted under it.

3745-520-04 Authorized, limited, and prohibited disposal methods.

(A) No person shall conduct, cause, or allow illegal disposal of C&DD.

(B) C&DD shall be disposed only by one or a combination of the following:

(1) Disposal in a C&DD facility licensed in accordance with Chapter 3714. of the Revised Code and rules adopted thereunder.

(2) Disposal in a solid waste disposal facility licensed in accordance with Chapter 3734. of the Revised Code and rules adopted thereunder.

(3) Disposal of construction debris by means of open burning in compliance with division (C)(1) of section 3704.11 of the Revised Code.

(4) Disposal of construction debris at a construction site where construction debris and trees and brush removed in clearing the construction site are used as fill material on the site where the materials are generated or removed.

(5) Disposal of clean hard fill at a site if the clean hard fill is used, either alone or in conjunction with clean soil, sand, gravel, or other clean aggregates, in legitimate fill operations for construction purposes or to bring the site up to a consistent grade. When clean hard fill is placed off the site of generation, a notice of intent to fill is required in accordance with rule 3745-400-05 of the Administrative Code.

3745-520-06 Ground water monitoring.

(A) An owner or operator shall conduct a ground water monitoring program in accordance with Chapter 3745-506 of the Administrative Code until the end of the post-closure care period.

(B) Not later than twelve months after issuance of a permit to install or, if it will occur sooner, prior to disposal of material in the disposal limits that were newly approved in the permit to install, an owner or operator shall do the following:

(1) Submit to Ohio EPA new ground water monitoring program plans or updated ground water monitoring program plans that comply with Chapter 3745-506 of the Administrative Code.

(2) Commence ground water sampling in accordance with Chapter 3745-506 of the Administrative Code for potential sources of contamination.

[Comment: If there is a conflict between this rule and a ground water monitoring assessment plan or ground water corrective measures plan that was approved by an order or an action of the director, approved board of health, or court having competent jurisdiction, then see rule 3745-500-35 of the Administrative Code for information about how to resolve the conflict.]

(C) An owner or operator shall not dispose of material in the disposal limits that were newly approved in a permit to install until the owner or operator has complied with paragraph (B) of this rule.

[Comment: Certain rules in Chapter 3745-506 of the Administrative Code apply only to C&DD facilities:

Rule 3745-506-700 of the Administrative Code specifies the sampling schedule and the parameters required to be sampled and analyzed during ground water detection monitoring.

Rule 3745-506-701 of the Administrative Code specifies the sampling schedule and the parameters required to be sampled and analyzed during ground water assessment monitoring.

Rule 3745-506-702 of the Administrative Code specifies the sampling schedule and the parameters required to be sampled and analyzed during ground water monitoring under the ground water corrective actions program.]

3745-520-20 Exemptions.

(A) The director or approved board of health may by order exempt any person disposing or proposing to dispose C&DD in such quantities or under such circumstances that, in the determination of the director or approved board of health, are unlikely to adversely affect public health or safety or the environment, or create a fire hazard, from any provision of Chapter 3714. of the Revised Code or any rules adopted thereunder or any order issued thereunder, except for those circumstances stated in paragraph (B) or (C) of this rule.

(B) The director or approved board of health shall not grant an exemption from either of the following rules:

(1) The sole source aquifer siting criterion in paragraph (C)(1)(b) of rule 3745-520-100 of the Administrative Code.

(2) The requirement to obtain authorizations prior to disposal of asbestos-containing waste materials in paragraph (A)(2) of rule 3745-520-600 of the Administrative Code.

(C) Flood plain exemption criteria. Neither the director nor an approved board of health shall grant an exemption from

the one hundred year flood plain siting criterion in paragraph (C)(1)(a) of rule 3745-520-100 of the Administrative Code if the director or the approved board of health determines from the permit to install application that the establishment of a new C&DD facility in the one hundred year flood plain would result in an increase of more than one foot in the elevation of the flood stage of the watercourse upstream or downstream from the proposed facility.

The applicant for a permit to install shall determine the increase in the flood stage resulting from the location of the new facility within the one hundred year flood plain of a watercourse based upon standard methodologies set forth in "Urban Hydrology for Small Watersheds" and "National Engineering Handbook, part 630, Hydrology" as described in rule 3745-500-03 of the Administrative Code.

(D) The director or approved board of health may decline to act on a request for an exemption.

(E) Obtaining comments from the director on an exemption proposed by an approved board of health.

(1) Except in the event of a natural disaster or public health emergency declared by the governor or the director of health, before an approved board of health issues an order that exempts a person disposing or proposing to dispose C&DD, the board shall provide written notice to the director of the board's intention to grant an exemption.

(2) The notice shall contain a description of the facts surrounding the proposed exemption and any other information that the director may request.

(3) Not later than thirty days after receipt of the notice, the director shall provide written comments to the board of health regarding the proposed exemption.

(4) After receiving written comments from the director, the approved board of health shall consider these comments prior to the board's issuance of an order granting the exemption.

(F) When issuing an order exempting any person disposing or proposing to dispose C&DD, the director shall act in accordance with Chapters 119., 3714., 3734., and 3745. of the Revised Code, as applicable.

(G) When issuing an order exempting any person disposing or proposing to dispose C&DD, an approved board of health shall act in accordance with Chapter 3714. and section 3709.20 of the Revised Code.

(H) The order exempting any person disposing or proposing to dispose C&DD shall contain the following:

(1) Identification of the person to whom the exemption is issued.

(2) The effective date of the order.

(3) The specific location of the activity subject to the exemption.

(4) The specific provisions of Chapter 3714. of the Revised Code or rule adopted or order issued thereunder for which the exemption is granted.

(5) Any terms or conditions established with the granting of the exemption.

(6) Any time frame or expiration date of the order granting the exemption.

(7) A summary of the circumstances and basis for the determination that the granting of the exemption is unlikely to adversely affect public health or safety or the environment or to create a fire hazard.

(I) Upon issuance of an order granting an exemption, copies of the order and any associated information shall be retained and distributed pursuant to rule 3745-500-130 of the Administrative Code.

(J) The person to whom an exemption is issued under section 3714.04 of the Revised Code and this rule shall comply with all applicable federal, state, and local laws and rules and orders except for those requirements that have been expressly exempted in accordance with section 3714.04 of the Revised Code and this rule.

3745-520-30 Log of operations prescribed by the director.

(A) The director shall prescribe forms for the log of operations.

(B) The director may include instructions and places to record the following information on the prescribed form:

(1) Name, location, and contact information for the C&DD facility and name and contact information for the owner, property titleholder, and operator.

(2) The name and signature of the person entering the information into the log of operations.

(3) Information regarding each load, hauler and vehicle or container.

(4) The description and amount of unauthorized material discovered at the C&DD facility and actions taken in response.

(5) Information regarding the containers used for the collection of unauthorized material.

(6) Information regarding general C&DD facility operations.

(7) Inspection documentation.

(8) Any other information required to be recorded on the log of operations by this chapter or any other information deemed necessary by the director to document that the C&DD facility is operated in accordance with this chapter.

(9) Dates.

3745-520-40 Application cover sheet form prescribed by the director.

(A) The director shall prescribe an application cover sheet form.

(B) The director may include instructions and places to record the following information on the prescribed form:

(1) General C&DD facility information including but not limited to name, physical location, mailing address, and telephone number.

(2) Applicant, permittee, preparer, owner, operator, and property titleholder information including but not limited to name, mailing address, and phone number.

(3) A list of the permits, licenses, plan approvals, authorizations, or other approvals that have been obtained and the name of the local, state, or federal office or agency that issued each permit, license, plan approval, authorization, or other approval. This list may include the date of issuance and expiration, if any, and any reference number associated with the permit, license, plan approval, authorization, or other approval.

(4) A notarized written statement from each titleholder of each tract of land on which the C&DD facility is located or proposed to be located that each titleholder acknowledges that the applicant is submitting an application.

(5) The statement described in and signed by the applicant in accordance with rule 3745-500-50 of the Administrative Code.

3745-520-51 C&DD disposal fee collected by multiple townships or municipal corporations.

For the fee levied under division (A) of section 3714.07 of the Revised Code:

(A) If a C&DD facility is located within the territorial boundaries of more than one municipal corporation or township and more than one of the municipal corporations or townships has enacted an ordinance or passed a resolution to appropriate a portion of the fee in accordance with division (C) of section 3714.07 of the Revised Code, then the appropriated portion of the fee shall be divided equally among all of the municipal corporations and townships that have enacted an ordinance or passed a resolution to appropriate a portion of the fee.

(B) The municipal corporation or township may appropriate this fee for the same purposes that a municipal corporation or township may levy a fee under division (C) of section 3734.57 of the Revised Code.

3745-520-70 Compliance disclosure requirements when employing a new key employee.

Not later than ninety days after employing a new key employee, an owner or operator shall submit or shall require the new key employee to submit to the licensing authority the information regarding the new key employee that is required to be submitted under division (A) of section 3714.052 of the Revised Code by an applicant for a permit to install. This applies to new key employees including but not limited to the following:

(A) New key employees of an applicant, permittee, or licensee.

(B) New partners of the applicant, permittee, or licensee, if and where the law allows the addition of a partner without dissolution of the old partnership.

(C) New officers of a private operating corporation, including:

(1) New officers of a private parent corporation.

(2) New directors of a private operating corporation.

(3) Any new individual who owns or controls the applicant, permittee, or licensee.

(D) Any new partner of a business concern that owns or controls the applicant, permittee, or licensee.

(E) If the applicant, permittee, or licensee is a governmental entity, each new key employee of the applicant, permittee, or licensee whose primary duties concern the operation of the subject C&DD facility.

(F) If the applicant, permittee, or licensee is a governmental entity but the operator of the C&DD facility is a business concern or individual who is not an employee of the governmental entity, the following:

(1) Each new individual who is the operator.

(2) Each new key employee of the operator.

(3) Each new partner of the operator.

(4) Each new officer of the operator.

3745-520-100 Siting criteria.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

[Comment: The siting criteria established in this rule are applied to an application for a permit to install at the time the application is submitted to the director or approved board of health. Circumstances related to the siting criteria that change after the application is submitted are not to be considered in issuing or denying the permit to install.]

(A) Applicability of siting criteria. A new C&DD facility in its entirety shall conform to the siting criteria in this rule except as follows:

(1) No siting criteria apply to a new facility that was operating or under construction on July 24, 1990, if the following conditions are met:

(a) An expansion was approved prior to December 22, 2005 and the expansion was onto contiguous land owned by the facility owner or operator on the date the initial license application for the facility was submitted to the licensing authority.

(b) An expansion was approved between December 22, 2005 and the effective date of this rule and the expansion was onto property within the property boundaries identified in any license issued for that facility up to and including the license issued for calendar year 2005.

(c) The applicant is proposing to expand the facility onto property within the property boundaries identified in any license issued for that facility up to and including the license issued for calendar year 2005.

(2) Only the siting criteria in paragraph (C)(1) of this rule apply to a new facility that began construction after July 24, 1990, if the following conditions are met:

(a) The facility was in operation prior to December 22, 2005.

(b) An expansion was approved between December 22, 2005 and the effective date of this rule and the expansion was onto property within the property boundaries identified in any license issued for that facility up to and including the license issued for calendar year 2005.

(c) The applicant is proposing to expand the facility onto property within the property boundaries identified in any license issued for that facility up to and including the license issued for calendar year 2005.

(B) Siting criteria.

(1) No portion of a C&DD facility shall be in either of the following locations:

(a) Within the boundaries of a one hundred year flood plain, as those boundaries are shown on the applicable maps prepared under the National Flood Insurance Act of 1968, unless the owner or operator has obtained an exemption from the licensing authority in accordance with rule 3745-520-20 of the Administrative Code. If no such maps have been prepared, the boundaries of a one hundred year flood plain shall be determined by the applicant for a permit to install based upon standard methodologies set forth in "Urban Hydrology for Small Watersheds" and "National Engineering Handbook, part 630, Hydrology."

(b) Within the boundaries of a sole source aquifer designated by the administrator of the United States environmental protection agency under the Safe Drinking Water Act.

(2) General setbacks. The horizontal disposal limits shall not be located within any of the following:

(a) One hundred feet of any of the following:

(i) A perennial stream as depicted on a USGS 7.5 minute (topographic) map.

(ii) A category 3 wetland.

(iii) The C&DD facility's property line.

(b) Five hundred feet of any of the following:

(i) Parks, natural areas, nature preserves, and wildlife areas and refuges.

(ii) A state forest purchased or otherwise acquired under Chapter 1503. of the Revised Code.

(iii) A lake or reservoir of one acre or more that is hydrogeologically connected to ground water. For purposes of this paragraph, a lake or reservoir does not include a body of water constructed and used for purposes of surface water drainage or sediment control.

(iv) A residential or public water supply well, unless one of the following conditions is met:

(a) The water supply well is a residential supply well and is controlled by the owner or operator.

(b) The water supply well is a residential supply well and is hydrologically separated from the horizontal disposal limits.

(c) The water supply well is a residential supply well and is at least three hundred feet upgradient from the horizontal disposal limits and the C&DD facility meets the criteria in paragraph (C)(3) of this rule.

(v) Land that is placed on the state registry of historic landmarks under section 149.55 of the Revised Code.

(vi) An occupied dwelling, unless written permission, which shall be notarized, is given by the owner of the dwelling.

(3) Isolation distance. The disposal limits of a C&DD facility shall not be less than five feet from the uppermost aquifer system. The material separating the disposal limits from the uppermost aquifer system shall meet the following criteria:

(a) The hydraulic conductivity of any single sample of the geologic material comprising the five-foot isolation distance shall not exceed 1.0 times ten to the negative five centimeters per second.

(b) The overall hydraulic conductivity of the entire thickness of the geologic material comprising the five-foot isolation distance shall not exceed 1.0 times ten to the negative six centimeters per second.

(4) Location of main hauling road. Any road that is designated by the owner or operator as the main hauling road at a C&DD facility shall not be located within five hundred feet of an occupied dwelling, unless written permission, which shall be notarized, is given by the owner of the occupied dwelling.

3745-520-200 Engineered components and systems of engineered components.

(A) This rule does not apply to engineered components or systems of engineered components that have already been constructed, except for the following:

(1) A vegetated earthen berm or equivalent barrier if the C&DD facility is located or proposed to be located in an area in which an applicable zoning resolution allows residential construction, unless excepted from siting criteria by paragraph (B) of rule 3745-520-100 of the Administrative Code.

(2) A leachate management system below a vertical expansion.

(3) A leachate recirculation system.

(B) A C&DD facility shall have the following engineered components and systems of engineered components:

(1) At least one permanent survey mark.

(2) Access roads that conform to rule 3745-511-120 of the Administrative Code.

(3) Permanent or temporary ground water control structures that conform to rule 3745-511-210 of the Administrative Code if necessary to meet the requirements of this chapter.

(4) An in situ foundation that conforms to rule 3745-511-220 of the Administrative Code.

(5) An added geologic material layer that conforms to rule 3745-511-220 of the Administrative Code if it is necessary in order for the selected liner system design to conform to rule 3745-520-230 of the Administrative Code.

(6) A vegetated earthen berm or an equivalent barrier that conforms to rule 3745-520-225 of the Administrative Code if the facility is located or proposed to be located in an area in which an applicable zoning resolution allows residential construction, unless excepted from siting criteria by paragraph (B) of rule 3745-520-100 of the Administrative Code.

(7) A liner system that conforms to rule 3745-520-230 of the Administrative Code.

(8) A leachate management system that conforms to rule 3745-520-240 of the Administrative Code.

(9) When a vertical expansion is proposed, a separatory leachate barrier and collection system that conforms to rule 3745-520-250 of the Administrative Code unless the vertical expansion is above the following:

(a) At least 5.0 feet of isolation material between the basal elevations of the authorized disposal limits and the uppermost aquifer system.

(b) A liner system that conforms to rule 3745-520-230 of the Administrative Code.

(c) A leachate management system that conforms to rule 3745-520-240 of the Administrative Code.

(10) A cap system that conforms to rule 3745-520-260 of the Administrative Code.

(11) A gas management system that conforms to rule 3745-520-275 of the Administrative Code.

(12) A surface water management system that conforms to rule 3745-520-280 of the Administrative Code.

(C) The applicant may include any of the following engineered components and systems of engineered components as part of a C&DD facility:

(1) Permanent or temporary ground water control structures that conform to rule 3745-511-210 of the Administrative Code.

(2) An added geologic material layer that conforms to rule 3745-511-220 of the Administrative Code.

(3) Structural fill underlying a liner system or cap system that conforms to rule 3745-511-220 of the Administrative Code. Structural fill shall not incorporate georeinforcements for the purpose of increasing the height or slope of a waste containment berm.

(4) Added geologic material layer, liner system, and leachate collection system drainage layer run-out that conform to rule 3745-511-350 of the Administrative Code.

(5) Transitional cover that conforms to rule 3745-511-605 of the Administrative Code.

(6) Cap system and gas collection layer run-out that conforms to rule 3745-511-680 of the Administrative Code.

(7) A leachate recirculation system that conforms to rule 3745-520-249 of the Administrative Code.

(8) Georeinforcements.

3745-520-225 Vegetated earthen berm and equivalent barrier design.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) A vegetated earthen berm shall be designed to conform to the following:

(1) Provide a barrier separating the C&DD facility from adjoining property and have a minimum height of six feet from the ground surface.

(2) Be comprised of earth and be vegetated.

(3) Have slopes and top configuration designed to accommodate the operational limitations of maintenance equipment.

(4) Have a maximum slope length between ditches that shall result in an erosion rate not to exceed five tons per acre per year as calculated using the "Universal Soil Loss Equation," "Revised Universal Soil Loss Equation," or the "Water Erosion Prediction Project Model" assuming disturbed soils and assuming the soil is highly susceptible to rill erosion.

(5) Be on slopes or have ditches that conform to rule 3745-511-810 of the Administrative Code adjacent to the vegetated earthen berm to prevent surface water from ponding against the vegetated earthen berm or damaging the vegetated earthen berm.

(6) Be stable from the time the vegetated earthen berm is constructed until the end of the post-closure care period.

(B) An equivalent barrier to a vegetated earthen berm shall be designed to conform to the following:

(1) Provide a barrier separating the C&DD facility from adjoining property and have a minimum height of six feet from the ground surface.

(2) Obstruct vision.

(3) Not cause surface water to pond against or damage the equivalent barrier.

(4) If an earthen berm is a component of the equivalent barrier, the vegetated earthen berm shall be stable from the time the earthen berm is constructed until the end of the post-closure care period.

3745-520-230 Liner system design.

(A) The liner system design required by this rule applies to those areas of the C&DD facility that on the date that the permit to install is issued do not contain material that has been disposed in accordance with authorizing documents issued pursuant to Chapter 3714. of the Revised Code and rules adopted thereunder.

(B) Determination of engineered components of a liner system.

(1) Notwithstanding the criteria in paragraphs (B)(2) to (B)(5) of this rule, the engineered components shall conform to paragraph (C)(1) of this rule if any of the following criteria are met:

(a) Any portion of the proposed disposal limits of the area to be lined pursuant to this rule is in a drinking water source protection area for a public water system using ground water, including the area surrounding a public water supply well that will provide water from an aquifer to the well as delineated or endorsed by Ohio EPA under Ohio's wellhead protection and source water assessment and protection programs.

(b) Any portion of the proposed disposal limits of the area to be lined pursuant to this rule is above an unconsolidated aquifer system capable of sustaining a yield of at least one hundred gallons per minute for a twenty-four-hour period.

(c) For a C&DD facility subject to paragraph (B)(1) of rule 3745-520-100 of the Administrative Code, the shortest distance from the uppermost aquifer system to the basal elevations of the liner system of the area to be lined is less than five feet.

(2) If the shortest distance from the uppermost aquifer system to the basal elevations of the liner system of the area to be lined pursuant to this rule is at least five feet and less than fifteen feet, the engineered components shall conform to paragraph (C)(1) of this rule.

(3) If the shortest distance from the uppermost aquifer system to the basal elevations of the liner system of the area to be lined pursuant to this rule is at least fifteen feet and less than twenty five feet, the engineered components shall conform to either paragraph (C)(1) or (C)(2) of this rule.

(4) If the shortest distance from the uppermost aquifer system to the basal elevations of the liner system of the area to be lined pursuant to this rule is at least twenty five feet and less than one hundred fifty feet, the engineered components shall conform to paragraph (C)(1), (C)(2), or (C)(3) of this rule.

(5) If the shortest distance from the uppermost aquifer system to the basal elevations of the liner system to be lined pursuant to this rule is at least one hundred fifty feet, the engineered components shall conform to paragraph (C)(1), (C)(2), (C)(3), or (C)(4) of this rule.

(C) A liner system shall be designed to conform to one of the following as required by paragraph (B) of this rule:

(1) Be comprised of a recompacted soil liner with a thickness not less than 3.0 feet directly beneath a flexible membrane liner.

(2) Be comprised of a recompacted soil liner with a thickness not less than 1.5 feet directly beneath a flexible membrane liner.

(3) Be comprised of a recompacted soil liner with a thickness not less than 3.0 feet.

(4) Be comprised of either of the following:

(a) A recompacted soil liner with a thickness not less than 1.5 feet.

(b) A flexible membrane liner.

(D) Different designs identified in paragraph (C) shall not be combined in a single permit to install application.

(E) The design of the engineered components of the liner system shall conform to rule 3745-511-310 of the Administrative Code.

(F) For a lateral expansion where a flexible membrane liner is not an engineered component of liner systems in both the existing area and proposed area, the liner system in the tie-in area shall be designed to prevent leachate from seeping under the flexible membrane liner.

(G) The liner system shall have a slope that conforms to the following:

(1) Have a minimum slope of 2.0 per cent in all areas accounting for settlement in accordance with rule 3745-511-60 of the Administrative Code, except along flow lines augmented by leachate collection pipes.

(2) Not exceed compaction equipment limitations.

(3) Satisfies the factors of safety for slope stability specified in rules 3745-511-40 and 3745-511-50 of the Administrative Code.

3745-520-240 Leachate management system design.

[Comment: When initially designing and constructing a leachate management system, a conservative approach may be necessary to account for further settlement of the underlying materials caused by any potential vertical expansion above the initial design.]

(A) The leachate management system design required by this rule applies to the following:

(1) Areas that on the date that the permit to install is issued do not contain material that has been disposed in accordance with authorizing documents issued pursuant to Chapter 3714. of the Revised Code and rules adopted thereunder.

(2) Areas where a vertical expansion is proposed, whether or not the areas contain disposed material.

(B) The leachate management system shall consist of the following:

(1) A leachate collection system that shall consist of the following:

(a) A leachate collection system drainage layer that conforms to rule 3745-511-410 of the Administrative Code, except for the following:

(i) Shredded tires shall not be used.

(ii) Paragraph (D) of rule 3745-511-410 of the Administrative Code does not apply to the basal elevation of the leachate collection system underlying a proposed vertical expansion if the following are true

(a) On or before December thirty-first of the year that this rule became effective, material has been disposed in accordance with authorizing documents issued pursuant to Chapter 3714. of the Revised Code and rules adopted thereunder.

(b) Positive drainage is maintained in the leachate collection system drainage layer to the sumps as demonstrated by the applicant in conformance with rule 3745-511-60 of the Administrative Code for a leachate management system associated with a liner system or with rule 3745-511-65 of the Administrative Code for a leachate management system associated with a separatory leachate barrier and collection system.

(c) Maintain not more than one foot of head of leachate above the basal elevations of the leachate collection system drainage layer.

(b) A filter layer that conforms to rule 3745-511-440 of the Administrative Code.

(c) Sumps that conform to rule 3745-511-434 of the Administrative Code.

(d) If leachate in the leachate collection system does not drain to conveyance pipes by gravity, pumps that conform to rule 3745-511-436 of the Administrative Code.

(2) Conveyance pipes that conform to rule 3745-511-450 of the Administrative Code.

(3) Leachate holding tanks that conform to rule 3745-511-460 of the Administrative Code, leachate treatment works, or a discharge connection to a public sewerage system.

(C) The leachate collection system drainage layer shall be placed above the liner system.

(D) The leachate management system shall be designed so that the depth of leachate above the basal elevations of the leachate collection system drainage layer will not exceed one foot, except in sumps.

(E) Each sump shall provide access to collect a representative sample of leachate.

3745-520-249 Leachate recirculation system design.

(A) The leachate recirculation system shall be designed to conform to the following:

(1) Be located in a phase that has a liner system that conforms to paragraph (C)(1), (C)(2), or (C)(4)(b) of rule 3745-520-230 of the Administrative Code.

[Comment: This requirement means that leachate recirculation systems may only be located in a phase that has a liner system containing a flexible membrane liner component.]

(2) Be located in a phase that has a leachate management system that conforms to rule 3745-520-240 of the Administrative Code.

(3) Be located in a phase that has a gas management system that conforms to rule 3745-520-275 of the Administrative Code.

(4) Release leachate back into disposed material in a manner that uniformly distributes the leachate within the disposed material and maximizes the contact of leachate with the disposed material, except that leachate shall not be recirculated within fifty feet of a horizontal boundary of disposed material.

(5) Not use surface application, open pits, or open excavations as methods for distributing leachate into the disposed material.

(6) Prevent the release of leachate to surface water control structures and minimize leachate outbreaks.

(B) The leachate management system shall have the capacity to handle the additional leachate. The facility design plan shall include a demonstration that the following criteria are met:

(1) The depth of leachate above the basal elevations of the leachate collection system will not exceed one foot, except in sumps, during and after the period when leachate is recirculated.

(2) The leachate pipes, conveyance structures, pumps, and holding tanks have adequate capacity to manage the amount of leachate to be recirculated.

(3) The leachate drainage layer, filter layer, and pipes will not be damaged by the increased vertical compressive stress.

(C) The design of the C&DD facility shall conform to the long-term deep-seated translational and rotational stability standards in rule 3745-511-40 of the Administrative Code while accounting for the increased pore water pressure during and after the period when leachate is recirculated.

3745-520-250 Separatory leachate barrier and collection system design.

(A) The separatory leachate barrier and collection system shall include the following systems of engineered components:

(1) A gas management system that conforms to rule 3745-520-275 of the Administrative Code to remove gas from under the liner system.

(2) A liner system that consists of a flexible membrane liner that conforms to rule 3745-511-310 of the Administrative Code overlying not less than 1.0 feet of structural fill that conforms to rule 3745-511-220 of the Administrative Code.

(3) A leachate management system above the liner system that conforms to rule 3745-520-240 of the Administrative Code, except that the leachate collection pipes shall have a slope conforming to one of the following:

(a) Rule 3745-520-240 of the Administrative Code, in which case it is necessary for the applicant to conduct a settlement analysis in accordance with rule 3745-511-65 of the Administrative Code.

(b) Be not less than 10.0 per cent in which case it is not necessary for the applicant to conduct a settlement analysis in accordance with rule 3745-511-65 of the Administrative Code.

(B) The separatory leachate barrier and collection system shall be designed to conform to the following:

(1) Function as designed from the time the engineered components are constructed until the end of the post-closure care period.

(2) Serve as a barrier to prevent leachate generated from material disposed above the separatory leachate barrier and collection system from entering into disposed material that is below the separatory leachate barrier and collection system.

(3) Manage all gas generated from the disposed material that is below the barrier in a manner that will not violate Chapter 3704. of the Revised Code and will prevent damage to the other engineered components of the separatory leachate barrier and collection system.

(4) The stability standards in rules 3745-511-40 and 3745-511-50 of the Administrative Code.

(5) For a vertical expansion over disposed waste or C&DD that is above a separatory leachate barrier and collection system that was constructed on or before December thirty-first of the year that this rule became effective, the slope of the existing separatory leachate barrier and collection system located beneath the vertical expansion will conform to the following conditions:

(a) Positive drainage in the leachate collection system drainage layer to the sumps.

(b) No more than one foot of head of leachate above the basal elevations of the leachate collection system drainage layer of the separatory leachate barrier and collection system.

(6) The surface of the structural fill shall have no abrupt changes in grade that may result in damage to overlying engineered components.

(7) Have a slope that does not exceed compaction equipment limitations.

(8) Minimize the amount of C&DD disposed beneath the separatory leachate barrier and collection system to obtain the required minimum slope.

(C) The run-out of the separatory leachate barrier and collection system shall extend beyond the phase limits by five feet.

3745-520-260 Cap system design.

(A) The cap system design required by this rule does not apply to those areas of the C&DD facility for which a certification report for a cap system has been submitted on or before the date that the permit to install is issued that demonstrates compliance with Chapter 3714. of the Revised Code and rules adopted thereunder.

(B) The cap system shall consist of the following:

(1) A means to relieve gas pressure under the cap system consisting of one or both of the following:

(a) A gas collection layer that conforms to rule 3745-511-750 of the Administrative Code placed below the cap system recompacted soil layer and above structural fill. The structural fill shall meet the following:

(i) Consists of soil.

(ii) Conforms to rule 3745-511-220 of the Administrative Code.

(iii) Has a thickness not less than twelve inches.

(b) A gas management system that conforms to rule 3745-520-275 of the Administrative Code.

(2) A filter layer that conforms to rule 3745-511-640 of the Administrative Code placed above the gas collection layer.

If a geocomposite that has a filter fabric component is used as a gas collection layer, a separate filter layer is not required.

(3) A cap system recompacted soil layer that conforms to rule 3745-511-610 of the Administrative Code placed above the filer layer. The cap system recompacted soil layer shall have a thickness not less than eighteen inches.

(4) A cap system flexible membrane liner that conforms to rule 3745-511-610 of the Administrative Code placed above and in direct and uniform contact with the cap system recompacted soil layer.

(5) A drainage layer that conforms to rule 3745-511-620 of the Administrative Code placed above the cap system flexible membrane liner.

(6) A filter layer that conforms to rule 3745-511-640 of the Administrative Code placed above the drainage layer. If a geocomposite drainage layer that has a filter fabric component is used, a separate filter layer is not required.

(7) A protection layer that conforms to rule 3745-511-650 of the Administrative Code placed above the filter layer.

(C) The cap system shall be placed above all disposed material.

(D) The cap system shall minimize infiltration of surface water into the disposal limits.

(E) The cap system shall serve as a barrier to prevent leachate outbreaks.

(F) The slope of the cap system shall not exceed twenty-five per cent.

(G) In preparation for construction of the cap system, the transitional cover shall be completely removed or prepared as necessary for construction of the cap system.

3745-520-275 Gas management system design.

(A) A gas management system shall be designed for one or more, as applicable, of the following purposes:

(1) Relieve gas pressure under a cap system with a flexible membrane liner component or under a separatory leachate barrier and collection system with a flexible membrane liner component.

(2) Control hydrogen sulfide and other gases that pose a nuisance, cause an offensive odor, or pose a threat to public health or safety or the environment or which may cause or contribute to air pollution.

(3) Control landfill gas generated as a result of leachate recirculation.

(B) A gas management system designed for the purpose in paragraph (A)(1) of this rule shall be designed as a passive or active gas extraction system, or a combination thereof.

(C) A gas management system designed for the purpose in paragraph (A)(2) or (A)(3) of this rule shall be designed as an active gas extraction system.

(D) A gas management system shall conform to rule 3745-511-750 of the Administrative Code. If the gas extraction system is designed for the purpose in paragraph (A)(2) or (A)(3) of this rule, the collected gas shall be conveyed to a gas control system.

3745-520-280 Surface water management system design.

(A) Surface water control structures shall be designed to prevent runoff of surface water from within the disposal limits and all disturbed portions of the C&DD facility from discharging to any adjacent property or waters of the state except through a discharge point for which the owner or operator has obtained a permit issued pursuant to Chapter 6111. of the Revised Code.

(B) Best management practices shall be used to prevent or reduce pollution of waters of the state. In addition to the practices specified by this rule, best management practices include but are not limited to the following:

(1) Storage practices such as wet ponds and extended-detention outlet structures.

(2) Filtration practices such as grassed swales, sand filters, and filter strips.

(3) Infiltration practices such as infiltration basins and infiltration trenches.

(4) Treatment practices such as pH adjustment and addition of coagulants.

(5) Erosion control practices such as rock lined channels and establishment of thick vegetative cover.

(C) Surface water that originates outside of the boundaries of disposed material shall not be directed under, over, or through disposed material.

(D) Permanent surface water control structures shall use non-mechanical means to convey surface water.

(E) If more than one acre of earth is disturbed, a sediment and storm water management basin system is required to treat and discharge the surface water.

(F) Sediment and storm water management basin systems shall conform to rules 3745-511-820 and 3745-511-870 of the Administrative Code.

(G) Surface water control structures, other than sediment and storm water management basin systems, shall be designed to conform to the following:

(1) Promote drainage of surface water.

(2) Eliminate ponding.

(3) Minimize erosion.

(4) Divert surface water from disposed material.

(5) Rapidly convey surface water that has not come in contact with disposed material away from disposed material.

(H) Permanent ditches shall conform to rule 3745-511-810 of the Administrative Code.

3745-520-300 Permit to install - application requirements and applicant procedures.

(A) An application for a permit to install shall be accompanied by the application fee established in section 3714.051 of the Revised Code.

(B) An applicant shall submit an application for a permit to install to the approved board of health or to the director in the absence of an approved board of health. The application and subsequent revisions to the application shall be submitted in triplicate. Each revised page or drawing shall contain the date of the revision. Revisions to the application shall be accompanied by the following:

(1) An index listing each change and the page where each change occurred.

(2) For plan drawings, a schedule on the drawing indicating what has changed.

(C) Permit to install application content.

The detail of the information in the application shall be sufficient to allow the permitting authority to determine whether the criteria for issuance set forth in rule 3745-520-312 of the Administrative Code are satisfied. A permit to install application shall contain the following:

(1) A completed application cover sheet on the form prescribed by the director.

(2) Completed permit to install application on forms prescribed by the director.

(3) The location or proposed location of the C&DD facility and anticipated beginning and ending dates for work performed.

(4) The compliance disclosure information required by section 3714.052 of the Revised Code.

(5) A copy of any local zoning resolutions for the property where the C&DD facility is located or is proposed to be located and for adjacent properties.

(6) A letter from the department of natural resources or other appropriate agency verifying the type, location, depth, and status of oil wells, gas wells, and water supply wells within five hundred feet of the proposed C&DD facility boundary.

(7) A copy of each notification and request sent pursuant to paragraph (D) of this rule.

(8) A copy of each letter of intent sent pursuant to paragraph (E) of this rule and evidence documenting the delivery of the letters.

(9) Documentation that the C&DD facility will have access roads constructed in a manner that allows use in all weather conditions and that will withstand the anticipated degree of use and minimize erosion and generation of dust, unless excepted from siting criteria in accordance with paragraph (B) of rule 3745-520-100 of the Administrative Code.

(10) A site investigation report that conforms to Chapter 3745-510 of the Administrative Code.

(11) A facility design plan that conforms to rule 3745-520-302 of the Administrative Code.

(12) Digital, GIS-compatible mapping data for the C&DD facility boundary and the boundary of the disposal limits. The data shall comply with the following standards:

(a) The data shall contain spatial reference data in a known, horizontal, geodetic datum such as the North American Datum of 1983 (NAD 83) or the World Geodetic System 1984 (WGS 84).

(b) The data shall have a horizontal accuracy of less than one meter in a known, horizontal geodetic datum such as NAD 83 or WGS 84.

(c) The boundaries shall be in the form of polygons and submitted as polygon shapefiles. The shapefiles shall be

in a form that is readable by GIS software produced after 1996. The shapefiles shall be projected in Ohio state plane south with measurement units in feet.

(d) The shapefiles containing boundary features shall contain the data necessary to distinguish between the polygon feature that represents the C&DD facility boundary and the polygon feature that represents the disposal limits using GIS software.

(13) The following information supporting the digital, GIS-compatible mapping data required by paragraph (C)(12) of this rule:

(a) The method used to record and digitize the boundary features.

(b) The horizontal accuracy of the boundary features.

(c) The reference geodetic datum in which the shapefiles were created.

(d) Contact information for the person knowledgeable about the methods used to create the shapefiles or for the person that has access to this information.

(e) The date the boundary features were digitized.

(14) An exemption request if an exemption would be necessary for issuance of the permit to install, unless the exemption request was submitted prior to submittal of the permit to install application.

(15) Any other information requested by Ohio EPA or the approved board of health that is necessary to determine whether the criteria for issuance of a permit to install set forth in rule 3745-520-312 of the Administrative Code are satisfied.

(D) Prior or concurrent to submitting an application for a permit to install, the applicant shall submit to the following entities a written notification of intent to establish a new C&DD facility and a written request for information pertaining to any regulatory requirements under Chapter 3704. or 6111. of the Revised Code:

(1) The local air pollution control authority or Ohio EPA, division of air pollution control, whichever is applicable.

(2) Ohio EPA, division of surface water.

(E) Prior to submitting an application for a permit to install, the applicant shall send letters of intent to establish a new C&DD facility. At a minimum, the letters shall include a description of the proposed facility boundary and the proposed disposal limits. The letters shall be sent via certified mail or another form of mail accompanied by a receipt to the following entities:

(1) The governments of the general purpose political subdivisions where the facility is located or proposed to be located, including but not limited to county commissioners, the legislative authority of a municipal corporation, or the board of township trustees.

(2) The owner or lessee of any easement or right of way bordering or within the proposed facility boundary.

(3) The local zoning authority having jurisdiction if any part of the facility is located or proposed to be located within an area with a zoning resolution.

(4) The local fire department that would respond to the facility.

(5) The park system administrator if any part of the facility is located or proposed to be located within or adjacent to a park boundary.

(6) The conservancy district if any part of the facility is located or proposed to be located within or adjacent to a conservancy district boundary.

(7) The authority responsible for implementing the National Flood Insurance Act of 1968, as described in rule 3745-500-03 of the Administrative Code, and rules adopted thereunder at the facility and in the vicinity of the facility.

(F) An applicant shall comply with the public hearing requirements in rule 3745-520-304 of the Administrative Code.

(G) Notices of deficiency.

(1) Permittee procedures. If the permitting authority determines that the permit to install application is incomplete or if information in addition to that required by this rule is necessary to determine whether the criteria for issuance set forth in rule 3745-520-312 of the Administrative Code are satisfied, the applicant shall provide such information not later than one hundred eighty days after the date of a notice of deficiency from the permitting authority, unless an extension is granted by the permitting authority. Not later than one hundred eighty days after the date of a notice of deficiency, the applicant may request an extension

[Comment: If after one hundred eighty days of the date of a notice of deficiency the applicant has not responded to a notice of deficiency and the applicant has not requested an extension or an extension has not been granted, it is grounds for denial of the permit to install in accordance with rule 3745-520-312 of the Administrative Code.]

(2) Permitting authority procedures.

(a) The permitting authority may decline to modify a term or condition of a permit to install.

(b) When approving a request to modify a term or condition of a permit to install, the permitting authority shall follow the appropriate procedures set forth in rule 3745-500-120 of the Administrative Code and any other applicable procedures set forth in the Revised Code.

(H) Upon request from Ohio EPA or the approved board of health, the applicant shall submit additional and identically complete copies of the permit to install application.

3745-520-302 Permit to install - facility design plan.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) General facility design plan requirements.

(1) The facility design plan shall include the drawings, calculations, and narrative necessary to demonstrate the following:

(a) That the C&DD facility conforms to the applicable siting criteria in rule 3745-520-100 of the Administrative Code.

(b) That the applicable design requirements for engineered components and systems of engineered components specified in rule 3745-520-200 of the Administrative Code are satisfied.

(2) When present or proposed at the C&DD facility, the elements and features listed in this rule shall be included in the facility design plan.

(3) If narrative is necessary to explain a drawing or a calculation, the narrative shall appear with the drawing or calculation.

(4) The facility design plan shall be signed and sealed by a professional engineer.

(5) All survey information included in the facility design plan shall be signed and sealed by a professional surveyor.

(6) The facility design plan shall establish a grid system. The grid system shall be referenced to a permanent survey mark at the C&DD facility.

(B) General drawing requirements.

(1) Drawings shall appear on plan sheets with minimum dimensions of twenty-four inches by thirty-six inches.

(2) Each plan drawing required by paragraphs (C)(2) and (C)(3) of this rule shall include and identify the following:

(a) The C&DD facility boundary.

(b) The horizontal disposal limits encompassing and showing the following:

(i) Areas of disposed material. The applicant may determine the location of disposed material using existing surveys. If the applicant does not have survey results, the applicant shall use the results of a field investigation to provide justification of the delineation of disposed material.

(ii) Areas previously authorized for material disposal where no material has been disposed and which the applicant wants to use for disposal.

(iii) Areas not previously authorized for material disposal that are proposed to be used for disposal.

(c) Roads, railroads, and structures built by humans, including the locations of maintenance buildings, weighing facilities, and storage buildings.

(d) Existing topography showing surface waters and wetlands with a contour interval no greater than five feet.

(e) The north arrow.

(f) Grid lines a maximum of five hundred feet apart.

(g) A legend with information necessary to understand the drawing.

(h) The scale of the drawing.

(C) Facility design plan contents. The facility design plan shall include the following:

(1) A plan drawing cover sheet. The plan drawing cover sheet, to be numbered sheet 1, shall contain the following information:

(a) The name of the C&DD facility.

(b) The precise geographic location of the C&DD facility boundary and of the horizontal disposal limits shown on a road map which includes the area within a five mile radius of the facility boundary with a scale of one inch equals no greater than one mile.

(c) The name, mailing address, and telephone number of the applicant.

(d) The name, mailing address, and telephone number of the C&DD facility owner, if an owner exists.

(e) The name, mailing address, and telephone number of the C&DD facility operator, if an operator exists.

(f) The name, mailing address, and telephone number of each titleholder of each tract of land to be used for the C&DD facility.

(g) The name, mailing address, and telephone number of the professional engineer signing and certifying the plans.

(2) Drawings showing the C&DD facility environs and compliance with siting criteria. Plan drawings shall show the following items that are within the area that includes the C&DD facility and all property within five hundred feet of the facility boundary. The items shall be illustrated on a series of plan drawings numbered consecutively 2A, 2B, 2C, etc. Items specified in paragraphs (C)(2)(c)(i) to (C)(2)(c)(iii) shall be shown on the same plan drawing, or a note shall be on the plan sheet stating the item does not exist. An individual plan drawing may contain information specified in more than one subparagraph. The scale on these drawings shall be one inch equals no greater than two hundred feet.

(a) Oil wells and gas wells with type, depth, and status noted for each one.

(b) The location of the boundaries of the one hundred year flood plain, as those boundaries are either shown on the applicable maps prepared under the National Flood Insurance Act of 1968, or are calculated by the applicant.

[Comment: The required calculation methodologies and the requirement to include any flood plain calculations in the facility design plan are established in paragraph (C)(6)(m) of this rule.]

(c) The location of following surface waters:

(i) Perennial streams as depicted on a USGS 7.5-minute (topographic) map.

(ii) Wetlands, with category 3 wetlands identified.

(iii) Lakes and reservoirs of one acre or more that are hydrogeologically connected to ground water. For the purpose of this rule, a lake or reservoir does not include a body of water constructed and used for purposes of surface water drainage or sediment control.

(d) The location of the boundaries of the sole source aquifer designated by the administrator of the United States environmental protection agency under the Safe Drinking Water Act.

(e) The location of residential and public water supply wells. Each well shall be identified as a residential or public water supply well. The applicant shall note each person that controls each well.

(f) The limits of all drinking water source protection areas for a public water system using ground water including the area surrounding a public water supply well that will provide water from an aquifer to the well as delineated or endorsed by Ohio EPA under Ohio's wellhead protection and source water assessment and protection programs.

(g) The presence and presumed limits of an unconsolidated aquifer system capable of sustaining a yield of at least one hundred gallons per minute for a twenty-four-hour period.

(h) The location of parks, natural areas, nature preserves, and wildlife areas and refuges.

(i) The location of a state forest purchased or otherwise acquired under Chapter 1503. of the Revised Code.

(j) The location of land that is placed on the state registry of historic landmarks under section 149.55 of the Revised Code.

(k) The location of occupied dwellings and the areas of the facility where the main hauling road may be located.

(l) The basal and final elevations of the isolation material located under the disposal limits.

(m) An isopach showing the difference between the basal and final elevations of the isolation material located under the disposal limits.

(n) The location of tracts of land showing the property lines and titleholders of each tract.

(o) The tracts of land upon which an applicable zoning resolution allows residential construction. The drawing shall be cross referenced to the copies of the applicable zoning resolutions required to be included in the permit to install application by rule 3745-520-300 of the Administrative Code. If there are no applicable zoning resolutions, make a note on the plan sheet.

(3) Drawings showing the C&DD facility design. Plan drawings shall show the following items, and the items shall be illustrated on a series of plan drawings numbered consecutively: 3A, 3B, 3C, etc. The scale on these drawings shall be one inch equals no greater than two hundred feet and contour intervals shall be no greater than five feet.

(a) The horizontal and vertical limits of excavation.

(b) The horizontal limits and final elevations of structural fill, added geologic material layer, vegetated earthen berm, and equivalent barrier to vegetated earthen berm.

(c) An isopach showing the difference between the basal and final elevations of an added geologic material layer.

(d) An isopach showing the difference between the final elevations of an added geologic material layer and top elevations of the uppermost aquifer system.

(e) The basal elevations, final elevations, and anticipated horizontal limits of the recompacted soil liner.

(f) The location and grade of temporary access roads on the internal slopes and on the facility bottom.

(g) The final elevations of the leachate collection system drainage layer, the location of leachate collection system pipes with pipe inverts, the location of temperature monitoring structures, the locations for access for leachate sampling, and the layout of the leachate management system including apparatuses outside the disposal limits.

(h) The location of sumps and for each sump above a flexible membrane liner the horizontal limits of the second flexible membrane liner.

(i) The location of the gas management system components excluding the gas collection layer.

(j) The location of leachate conveyance apparatuses that are part of the leachate recirculation system.

(k) The anticipated location and anticipated final elevations of the separatory leachate barrier and collection system.

(l) The horizontal limits and basal elevations of the disposal limits, including disposed material and areas of proposed material disposal.

(m) The horizontal limits and final elevations of disposal limits, including disposed material and areas of proposed material disposal.

(n) The location of fencing and gates.

(o) The anticipated final elevations of existing and proposed cap system.

(p) The location and grade of permanent and temporary access roads on the cap.

(q) The location and final elevations of surface water drainage and sediment controls and the final topography of areas of the facility that will be disturbed.

(r) The location of ground water control structures.

(s) The location of borings used for the site investigation.

(t) The location of permanent survey marks.

(4) Cross sections. Cross sections of the following shall be on plan drawings numbered consecutively 4A, 4B, 4C, etc. The drawings shall clearly show the horizontal and vertical scale used.

(a) The hydrogeology at the C&DD facility intercepted by borings or other subsurface investigation methods and showing the following:

(i) Existing topography.

(ii) The horizontal and vertical limits of excavation.

(iii) The horizontal limits and basal and final elevations of an added geologic material layer.

(iv) The horizontal limits and basal and final elevations of structural fill.

(v) The horizontal limits and final elevations of the liner system.

(vi) Geologic stratigraphy and significant zones of saturation corresponding to information from the subsurface investigation.

(vii) The uppermost aquifer system and saturated stratigraphic units above the uppermost aquifer system.

(viii) The subsurface investigation logs, including hydraulic conductivity measurements of the stratigraphic units, and monitoring well and piezometer construction diagrams, intercepted by the cross section.

(ix) Permanent ground water control structures.

(b) The length and width of the C&DD facility dividing the facility into quarters (i.e. three cross sections in each direction) showing the following:

[Comment: Additional cross sections may be submitted.]

(i) Existing topography.

(ii) The horizontal and vertical limits of excavation.

(iii) The horizontal limits and basal and final elevations of existing and proposed disposal limits.

(iv) The horizontal limits and basal and final elevations of the cap system.

(c) If the permit to install application is for a vertical expansion, the following at an interval no greater than every three hundred feet of length and width of the vertical expansion:

(i) Limits of existing disposed material with the date of the survey.

(ii) Previously authorized disposal limits and proposed disposal limits.

(iii) Limits of the separatory leachate barrier and collection system.

(5) Detail drawings. The following details shall be on plan drawings numbered consecutively 5A, 5B, 5C, etc. and shall show the following items:

(a) The liner system.

(b) Each leachate management system element.

(c) Each leachate recirculation system element.

(d) The separatory leachate barrier and collection system.

(e) The cap system and details showing the interactions of the outlets from the drainage layer with roads and surface water drainage controls.

(f) The run-out and tie-in area for the added geologic material layer, the liner system, the leachate collection system drainage layer, the separatory leachate barrier and collection system, and the cap system.

(g) Interactions between surface water control structures and roads.

(6) Design calculations. This section shall include the following design calculations with references to equations used, showing site specific input, assumptions, and results:

(a) The disposal volume of the C&DD facility in cubic yards.

(b) A geotechnical and stability analyses report prepared in the manner specified by Chapter 3745-511 of the Administrative Code. The following analyses, as required, shall be included in the geotechnical and stability analyses report:

(i) If the permit application is not solely for the purpose of expanding vertically over previously authorized disposal limits, the hydrostatic uplift analysis in the manner specified in rule 3745-511-20 of the Administrative Code.

(ii) If the permit application is not solely for the purpose of expanding vertically over previously authorized disposal limits, the seepage force analysis in the manner specified in rule 3745-511-25 of the Administrative Code.

(iii) If the design includes vertical sump risers located on the liner system, the bearing capacity analysis for the vertical sump risers in the manner specified in rule 3745-511-30 of the Administrative Code.

(iv) The static stability analysis for excavated slopes, internal slopes, and final slopes in the manner specified in rule 3745-511-40 of the Administrative Code.

(v) The seismic stability analysis for final slopes in the manner specified in rule 3745-511-50 of the Administrative Code.

(vi) The settlement analysis of the liner system and of the leachate management system in the manner specified in rule 3745-511-60 of the Administrative Code.

(vii) If the separatory leachate barrier and collection system is designed with a slope less than ten per cent, the settlement analysis of the separatory leachate barrier in the manner specified in rule 3745-511-65 of the Administrative Code.

(viii) Except for underground mines listed in paragraph (A) of rule 3745-510-335 of the Administrative Code, if any unstable areas were identified during the site investigation, the unstable area demonstration in the manner specified in rule 3745-511-70 of the Administrative Code.

(ix) If underground mines are present within one thousand feet of the disposal limits, the underground mine analysis in the manner specified in rule 3745-511-72 of the Administrative Code.

(c) Soil erosion.

(d) Leachate generation and level of leachate above the basal elevations of the leachate collection system drainage layer.

(e) Filter layer design.

(f) Infiltration rate of precipitation into the cap system drainage layer.

(g) Landfill gas pressure, maximum expected gas flow rate, and flow capacity of the gas collection layer.

(h) Condensate generation.

(i) Ditch design.

(j) Sediment and storm water control basin design.

(k) Level and flow control structure design.

(l) Boundaries of the one hundred year flood plain if no maps have been prepared boundaries under the National Flood Insurance Act of 1968. The boundaries of a one hundred year flood plain shall be determined by the applicant for a permit to install based upon standard methodologies set forth in "Urban Hydrology for Small Watersheds" and "National Engineering Handbook, part 630, Hydrology."

(m) Other relevant calculations.

(7) Construction specifications. This section shall include the following construction specifications when applicable:

(a) Alternatives to construction requirements in rules 3745-512-17 and 3745-512-611 of the Administrative Code.

(b) As a result of an exemption to a design requirement, construction specifications different than those required by rules 3745-520-500 to 3745-520-599 of the Administrative Code or Chapter 3745-512 of the Administrative Code.

(c) Geotechnical and stability limitations, including maximum slopes or minimum shear strengths, and criteria for removal of undesirable in situ material.

(d) Material specifications, pre-construction or construction testing, or construction activities necessary to confirm that the following engineered components are constructed to conform to the facility design plan:

(i) Equivalent barriers to vegetated earthen berms.

(ii) Ground water control structures.

(iii) Gas collection and conveyance system components.

3745-520-304 Applicant's public hearing and notice requirements.

(A) Not later than sixty days after the applicant submits an application for a permit to install for a new C&DD facility to the permitting authority, an applicant shall hold a public hearing in the township or municipal corporation in which the new facility is or is proposed to be located. The public hearing shall be held on a weekday and shall begin no earlier than six p.m. and no later than eight p.m. unless otherwise authorized by the permitting authority.

(B) Not later than thirty days prior to the public hearing, an applicant shall publish public notice of the time, date, and location of the public hearing and a general description of the new facility in a newspaper of general circulation in the locality of the new facility and shall mail a copy of the notice to the director and the approved board of health.

(C) Not later than thirty days prior to the public hearing, an applicant shall provide notification of the public hearing by certified mail to the owner of each parcel of real property that is adjacent to the new facility.

(D) If the new facility is or is proposed to be located in more than one township or municipal corporation, an applicant shall provide notice of the public hearing in accordance with paragraph (B) of this rule in a newspaper of general circulation in each locality in which the new facility is or is proposed to be located.

(E) At the public hearing, an applicant shall describe the new facility and respond to comments and questions concerning the new facility and the permit to install application. At the public hearing, any person may submit written or oral comments or questions about the new facility or the permit to install application.

(F) Not later than thirty days after the public hearing, an applicant shall provide the director and the approved board of health with a transcript of the full hearing, copies of any exhibits, displays, or other materials presented by the applicant at the hearing, and a copy of any written comments and questions submitted at the hearing.

3745-520-310 Procedures for issuing or denying a permit to install.

(A) When issuing or denying a permit to install, the permitting authority shall follow the appropriate procedures set forth in rule 3745-500-120 of the Administrative Code and any other applicable procedures set forth in the Revised Code.

(B) In deciding whether to issue or deny a permit to install, the permitting authority shall act in accordance with rule 3745-520-312 of the Administrative Code.

(C) Notice of receipt of application. An approved board of health shall notify the director of the receipt of an application for a permit to install not later than seven days after receipt of the application. The notification shall be in writing and shall contain sufficient detail to understand the scope and nature of the application. The notification shall be sent via certified mail or another form of mail accompanied by a receipt.

(D) Notices of deficiency. If the permitting authority determines that the permit to install application is incomplete or if additional information is necessary to determine whether the criteria for issuance set forth in rule 3745-520-312 of the Administrative Code are satisfied, the permitting authority may issue a notice of deficiency to the applicant. A notice of deficiency shall require that the applicant provide such information not later than one hundred eighty days after the date of a notice of deficiency from the permitting authority, unless an extension is granted. The permitting authority may decline to act on an applicant's request for an extension.

(E) Ohio EPA or the approved board of health may request that the applicant submit additional and identically complete copies of the permit to install application.

(F) Issuance of a permit to install.

(1) Upon issuance of a permit to install, the permitting authority shall stamp all copies of the permit to install application and approved plans, specifications, and information with the word "Approved" and the date of issuance.

(2) Copies of the signed permit to install and stamped copies of the permit to install application and approved plans, specifications, and information shall be retained and distributed by the permitting authority pursuant to rule 3745-500-130 of the Administrative Code.

3745-520-312 Criteria for issuing and grounds for denying a permit to install.

(A) General criteria for issuance. The permitting authority shall not issue a permit to install for a C&DD facility unless the permitting authority determines that the following criteria are satisfied:

(1) Establishment or expansion of the facility will not violate Chapter 3704., 3714., 3734., or 6111. of the Revised Code or rules adopted under those chapters.

(2) The applicant has demonstrated that the facility will not pose a threat to public health or safety or the environment, will not cause or create a nuisance, create a fire hazard, create a health hazard, and will not cause or contribute to air or water pollution.

(3) The applicant and, if they exist, owner and operator are in substantial compliance with applicable provisions of Chapter 3714. of the Revised Code and any rules adopted and any authorizing documents issued thereunder.

(4) The applicant, owner, or operator is capable of constructing, operating, and closing the facility and maintaining the facility during the post-closure care period in accordance with this chapter and with the terms and conditions of the permit to install.

(5) The applicant demonstrated that other approvals and authorizations including but not limited to approvals and authorizations issued pursuant to Chapters 3704. and 6111. of the Revised Code necessary for the construction and operation of the facility have been obtained, except for a license to operate required by Chapter 3745-501 of the Administrative Code.

(6) The permit to install application contains the information required by rule 3745-520-300 of the Administrative Code and the application documents that the facility has been designed in accordance with rule 3745-520-200 of the Administrative Code.

(7) The permit to install application demonstrates that the facility and the disposal limits will conform to the applicable siting criteria contained in rule 3745-520-100 of the Administrative Code. The permitting authority shall apply the siting criteria established in rule 3745-520-100 of the Administrative Code to an application for a permit to install at the time the application is submitted to the director or approved board of health. Circumstances related to the siting criteria that change after the application is submitted shall not be considered in issuing or denying the permit to install.

(8) Unless excepted from siting criteria by paragraph (B) of rule 3745-520-100 of the Administrative Code, the permit to install application demonstrates that access roads at the facility will be constructed in a manner that allows use in all weather conditions and that will withstand the anticipated degree of use and minimize erosion and generation of dust.

(9) If the permit to install application contains an expansion of the authorized disposal limits, the proposed expansion will not interfere with or prohibit ground water assessment or ground water corrective actions.

(10) If the permit to install application contains a vertical expansion of the authorized disposal limits, the proposed expansion will not cause any existing ground water contamination to worsen.

(11) If an exemption is necessary for issuance of the permit to install, the exemption has been issued in accordance with rule 3745-520-20 of the Administrative Code prior or concurrent to issuance of the permit to install.

(B) Grounds for denial of a permit to install. At a minimum, the permitting authority may deny a permit to install for any of the following reasons:

(1) The criteria for issuance specified in paragraph (A) of this rule are not satisfied.

(2) Falsification of material information pursuant to section 3714.101 of the Revised Code.

(3) The applicant does not respond to a notice of deficiency in the manner required by rule 3745-520-300 of the Administrative Code.

(4) The applicant, owner, or operator is not in substantial compliance with applicable provisions of Chapter 3704., 3714., 3734., or 6111. of the Revised Code or any rules adopted or any authorizing documents issued under those chapters.

(C) Discretionary criteria. When determining whether to issue or deny a permit to install, the permitting authority may consider the following:

(1) The impact the C&DD facility may have on corrective actions that are presently being taken, or that are proposed to be taken at the facility or in the immediate area, including but not limited to corrective actions pertaining to fire, gas, odors, or ground water contamination.

(2) The technical feasibility of adequately monitoring the impact of the C&DD facility on the environment.

(3) Pursuant to division (B) of section 3714.052 of the Revised Code, the history of compliance with state and federal laws pertaining to environmental protection or the environmental laws of another state or country, indicating if the applicant or any other person listed on the application has sufficient reliability, expertise, and competence to operate the proposed new C&DD facility in substantial compliance with Chapter 3714. of the Revised Code and rules adopted thereunder.

3745-520-320 Alteration of a permit to install.

[Comment: Pursuant to rule 3745-520-03 of the Administrative Code, no person shall alter the design of a C&DD facility without first obtaining concurrence from the concurring authority for an alteration of the permit to install for the facility except for alterations made during construction as provided for in Chapter 3745-512 of the Administrative Code.]

(A) A permittee may request that the concurring authority concur with an alteration of the permit to install for the C&DD facility.

(B) Content requirements for a request to alter a permit to install. A request to alter a permit to install shall at a minimum contain the following:

(1) The information necessary to demonstrate the following:

(a) The alteration is at least equivalent to applicable rule requirements of this chapter.

(b) The request is not a modification of the C&DD facility.

(c) The alteration is compatible with the unaltered requirements of the permit to install.

(d) The alteration of the C&DD facility will not violate Chapters 3704., 3714., 3734., or 6111. of the Revised Code or rules adopted under those chapters.

(e) That other approvals and authorizations including but not limited to approvals and authorizations issued pursuant to Chapters 3704. and 6111. of the Revised Code made necessary by the alteration have been obtained.

(f) The alteration of the facility design plan does not also cause a modification of the license, unless a modification request for the license is submitted concurrently.

(2) The following information describing the alteration, with revisions clearly identified:

(a) A copy of the index of alterations required by paragraph (B) of this rule.

(b) A narrative description of the alteration being requested.

(3) As needed, the following portions of the facility design plan that conform to rule 3745-520-302 of the Administrative Code:

(a) Revised plan drawings.

(b) Revised cross sections.

(c) Revised detail drawings.

(d) Additional drawings necessary to depict changes to the C&DD facility proposed in the alteration request.

(e) Revised or additional design calculations.

(f) Revised or additional construction, testing, verification, and certification requirements that are not otherwise required by rule that are necessary to ensure that the engineered components affected by the alteration request are constructed to conform to the facility design plan.

(4) An exemption request if an exemption would be necessary for concurrence with the alteration, unless the exemption request was submitted prior to submittal of the alteration request.

(5) Any other information requested by Ohio EPA or the approved board of health that is necessary to determine whether the alteration conforms to this rule.

(C) Permittee procedures.

(1) A permit to install alteration request and subsequent revisions to the request shall be submitted in triplicate to the concurring authority. Each revised page or drawing shall contain the date of the revision. Revisions to the request shall be accompanied by the following:

(a) An index listing each change and the page where each change occurred.

(b) For plan drawings, a schedule on the drawing indicating what has changed.

(2) If the approved board of health is the concurring authority, the permittee shall notify Ohio EPA of the submittal of a permit to install alteration request concurrent to initially submitting the request to the approved board of health. The notification shall be in writing and shall contain sufficient detail to understand the scope and nature of the alteration request.

(3) Upon request from Ohio EPA or the approved board of health, the permittee shall submit additional and identically complete copies of the alteration request.

(4) If the alteration is concurred with by the concurring authority, the permittee shall do the following:

(a) Insert the revised drawings and other information that were stamped by and received from the concurring authority into the appropriate place in the permit to install.

(b) Update the index of alterations required by paragraph (B) of this rule.

(D) Concurring authority procedures.

(1) The concurring authority may decline to concur with an alteration to a permit to install.

(2) Except as provided for in rule 3745-512-51 of the Administrative Code, the concurring authority shall not concur with an alteration if that alteration has already occurred at the C&DD facility.

(3) The concurring authority shall not concur with an alteration unless the concurring authority determines that the following criteria are satisfied:

(a) The permittee has demonstrated compliance with paragraph (C) of this rule.

(b) The alteration will not interfere with the permittee's, owner's, or operator's ability to construct, operate, and close the C&DD facility and maintain the facility during the post-closure care period in accordance with this chapter and with the terms and conditions of the permit to install.

(c) If an exemption is necessary for concurrence with the alteration, the exemption has been issued in accordance with rule 3745-520-20 of the Administrative Code prior or concurrent to concurrence with the alteration.

(4) When determining whether to concur with an alteration the concurring authority may consider the following:

(a) The impact the alteration may have on corrective actions that are presently being taken, or that are proposed to be taken at the C&DD facility or in the immediate area, including but not limited to corrective actions pertaining to fire, gas, odors, or ground water contamination.

(b) The technical feasibility of adequately monitoring the impact of the C&DD facility on the environment.

(c) The owner's and operator's compliance with Chapter 3714. of the Revised Code and the rules adopted thereunder and authorizing documents.

(5) Upon concurrence with an alteration, the concurring authority shall stamp the copies of the alteration request and the associated drawings and information with the word "Altered," the permit number, and the date of concurrence.

(6) Copies of the signed concurrence letter and stamped copies of the alteration request and associated drawings and information shall be retained and distributed by the concurring authority pursuant to rule 3745-500-130 of the Administrative Code.

3745-520-330 Modification of a permit to install to modify a C&DD facility.

[Comment: Pursuant to rule 3745-520-03 of the Administrative Code, no person shall modify a C&DD facility without first obtaining a modified permit to install for the facility from the permitting authority.]

[Comment: An expansion of the disposal limits or facility boundary of a C&DD facility results in the creation of a new facility and is not a modification of a facility, and requires a permit to install in accordance with this chapter.]

(A) A permittee may request that the permitting authority modify the permit to install for the C&DD facility.

(B) Content requirements for a request to modify a permit to install. A request to modify a permit to install shall at a minimum contain the following:

(1) A completed application cover sheet on the form prescribed by the director.

(2) The information necessary to demonstrate the following:

(a) The modification is at least equivalent to applicable rule requirements of this chapter.

(b) The modification is compatible with the unmodified requirements of the permit to install.

(c) The modification of the C&DD facility will not violate Chapters 3704., 3714., 3734., or 6111. of the Revised Code or rules adopted under those chapters.

(d) That other approvals and authorizations including but not limited to approvals and authorizations issued pursuant to Chapters 3704. and 6111. of the Revised Code made necessary by the modification have been obtained.

(e) The modification of the facility design plan does not also cause a modification of the license, unless a

modification request for the license is submitted concurrently.

(3) The following information describing the modification, with revisions clearly identified:

(a) An index of modifications that have occurred since the permit to install was issued.

(b) A narrative description of the modification being requested.

(4) As needed, the following portions of the facility design plan that conform to rule 3745-520-302 of the Administrative Code:

(a) Revised plan drawings.

(b) Revised cross sections.

(c) Revised detail drawings.

(d) Additional drawings necessary to depict changes to the C&DD facility proposed in the modification request.

(e) Revised or additional design calculations.

(f) Revised or additional construction, testing, verification, and certification requirements that are not otherwise required by rule that are necessary to confirm that the engineered components affected by the modification request are constructed to conform to the facility design plan.

(5) An exemption request if an exemption would be necessary for modification of the permit to install, unless the exemption request was submitted prior to submittal of the modification request.

(6) Any other information requested by Ohio EPA or the approved board of health that is necessary to determine whether the modification conforms to this rule.

(C) Permittee procedures.

(1) A permit to install modification request and subsequent revisions to the request shall be submitted in triplicate to the approved board of health or to the director in the absence of an approved board of health. Each revised page or drawing shall contain the date of the revision. Revisions to the request shall be accompanied by the following:

(a) An index listing each change and the page where each change occurred.

(b) For plan drawings, a schedule on the drawing indicating what has changed.

(2) If the approved board of health is the licensing authority, the permittee shall notify Ohio EPA of the submittal of a permit to install modification request concurrent to initially submitting the request to the approved board of health. The notification shall be in writing and shall contain sufficient detail to understand the scope and nature of the modification request.

(3) Notices of deficiency. If the permitting authority issues a notice of deficiency pursuant to paragraph (D)(2) of this rule, the permittee shall provide such information not later than one hundred eighty days after the date of a notice of deficiency from the permitting authority. Not later than one hundred eighty days after the date of a notice of deficiency, the permittee may request an extension.

(4) Upon request from Ohio EPA or the approved board of health, the permittee shall submit additional and identically complete copies of the permit to install modification request.

(5) If the permitting authority modifies the permit to install, the permittee shall insert the revised drawings and other information that were stamped by and received from the permitting authority into the appropriate place in the approved permit to install.

(D) Permitting authority procedures for acting on a permit to install modification request.

(1) The permitting authority shall follow the appropriate procedures set forth in rule 3745-500-120 of the Administrative Code and any other applicable procedures set forth in the Revised Code.

(2) Notices of deficiency. If the permitting authority determines that the permit to install modification request is incomplete or if additional information is necessary to determine whether the criteria for issuance set forth in this rule are satisfied, the permitting authority may issue a notice of deficiency to the permittee. The notice of deficiency shall require that the permittee provide such information not later than one hundred eighty days after the date of a notice of deficiency from the permitting authority, unless an extension is granted by the permitting authority. The permitting authority may decline to act on the permittee's request for an extension.

(3) The permitting authority shall not modify a permit to install for a modification of a C&DD facility that has already occurred.

(4) Grounds for modifying a permit to install. The permitting authority shall not modify a permit to install unless the permitting authority determines that the following criteria are satisfied:

(a) The permittee has demonstrated compliance with paragraph (B) of this rule.

(b) The modification will not interfere with the permittee's, owner's, or operator's ability to construct, operate, and close the C&DD facility and maintain the facility during the post-closure care period in accordance with this chapter and with the terms and conditions of the permit to install.

(c) The disposal limits and facility boundary will not expand.

(d) The C&DD facility has been designed in accordance with the rule 3745-520-200 of the Administrative Code.

(e) Unless a siting criteria exception in paragraph (B)(1) or (B)(2) of rule 3745-520-100 of the Administrative Code is satisfied, the following criteria:

(i) The modification will not result in less than five feet of isolation material existing between the uppermost aquifer system and the disposal limits, and the isolation material continues to conform to the specifications in paragraph (C)(3) of rule 3745-520-100 of the Administrative Code.

(ii) Any change to the areas where the main hauling road may be located does not result in the main hauling road being allowed within five hundred feet of an occupied dwelling unless the owner of the occupied dwelling has given written permission, which shall be notarized, to the owner or operator to do so and proof of written permission is submitted to the permitting authority. However, this criterion does not apply to occupied dwellings constructed after the date the application for the permit to install being modified was originally submitted.

(iii) The permit to install modification request demonstrates that access roads will be constructed in a manner that allows use in all weather conditions and that will withstand the anticipated degree of use and minimize erosion and generation of dust.

(iv) The permit to install modification request demonstrates that the C&DD facility will have a vegetated earthen berm or an equivalent barrier with a minimum height of six feet separating the facility from adjoining property if the facility is located in an area in which an applicable zoning resolution allowing residential construction existed on the date the application for the permit to install being modified was originally submitted and the area is still zoned in that manner.

(f) If an exemption is necessary for modification of the permit to install, the exemption has been issued in accordance with rule 3745-520-20 of the Administrative Code prior or concurrent to modification of the permit to install.

(5) Discretionary criteria. When determining whether to modify a permit to install, the permitting authority may consider the following:

(a) The impact the modification may have on corrective actions that are presently being taken, or that are proposed to be taken at the C&DD facility or in the immediate area, including but not limited to corrective actions pertaining to fire, gas, odors, or ground water contamination.

(b) The technical feasibility of adequately monitoring the impact of the C&DD facility on the environment.

(c) The owner's and operator's compliance with Chapter 3714. of the Revised Code and the rules adopted thereunder and authorizing documents.

(d) Whether the permittee responded to a notice of deficiency in the manner required by paragraph (C)(3) of this rule.

(E) Permitting authority procedures upon modifying a permit to install.

(1) Upon modifying a permit to install, the permitting authority shall stamp the copies of the permit to install modification request and the associated drawings and information with the word "Modified," the permit number, and the date of modification.

(2) Copies of the signed approval letter and stamped copies of the permit to install modification request and associated drawings and information shall be retained and distributed by the permitting authority pursuant to rule 3745-500-130 of the Administrative Code.

3745-520-335 Modification of a permit to install to change a term or condition of a permit to install.

(A) A permittee may request that the permitting authority modify a term or condition of the C&DD facility's permit to install.

(B) Permittee procedures.

(1) The permittee shall submit a request to modify a term or condition of a permit to install to the approved board of health or to the director in the absence of an approved board of health.

(2) If the permittee submits a permit to install modification request to the approved board of health, the permittee shall notify Ohio EPA of the submittal of the modification request concurrent to initially submitting the request to the approved board of health. The notification shall be in writing and shall contain sufficient detail to understand the scope and nature of the modification request.

(3) Upon request from Ohio EPA or the approved board of health, the permittee shall submit additional and identically complete copies of the modification request.

(4) If the permitting authority approves the request, the permittee shall retain a copy of the approval letter with the approved permit to install.

(C) Permitting authority procedures.

(1) The permitting authority may decline to modify a term or condition of a permit to install.

(2) When approving a request to modify a term or condition of a permit to install, the permitting authority shall follow the appropriate procedures set forth in rule 3745-500-120 of the Administrative Code and any other applicable procedures set forth in the Revised Code.

(3) To approve a request to modify a term or condition of a permit to install, the permitting authority shall issue an approval letter to the permittee. The approval letter shall contain the following:

(a) The name and location of the C&DD facility for which the approval is being issued.

(b) Identification of the term or condition of the permit to install that is being modified.

(c) The new term or condition that will supersede the original term or condition.

(d) A notice of appeal rights.

(e) The signature of the health commissioner, if the approved board of health is the permitting authority.

(4) The permitting authority shall retain and distribute copies of the signed approval letter pursuant to rule 3745-500-130 of the Administrative Code.

3745-520-340 Transfer of a permit to install.

(A) A permittee may request that the permitting authority approve transfer of the permit to install for the C&DD facility. A permit to install transfer shall not be effective unless approved by the permitting authority.

(B) Permittee and transferee procedures.

(1) Not later than one hundred twenty days prior to the proposed date of a permit to install transfer, the permittee for a C&DD facility shall submit a written request for transfer in triplicate to the approved board of health or to the director in the absence of an approved board of health. A request shall include the following information:

(a) Facility name and location.

(b) The name, mailing address, and contact information of the permittee.

(c) The names, mailing addresses, and contact information of the proposed transferee and key employees of the proposed transferee.

(d) The proposed transferee's statement of intent to assume the permittee's obligations.

(e) A notarized written statement from each titleholder of each tract of land on which the facility is located that each titleholder acknowledges that the permittee intends to transfer the permit to install to the proposed transferee.

(2) If the permittee submits a request to the approved board of health to transfer a permit to install, the permittee shall notify Ohio EPA of the submittal of a request to transfer a permit to install concurrent to initially submitting the request to the approved board of health. The notification shall be in writing and shall contain the name and location of the C&DD facility for which the permit to install is proposed to be transferred, the identity of the proposed transferee, and the reason for the transfer.

(3) Not later than one hundred twenty days prior to the date of the proposed acquisition of the C&DD facility by the proposed transferee, the proposed transferee shall comply with division (D) or (F) of section 3714.052 of the Revised Code. Compliance with division (D) or (F) of section 3714.052 of the Revised Code includes providing compliance disclosure information regarding key employees of the proposed transferee. The proposed transferee shall submit the statement described in and signed in accordance with rule 3745-500-50 of the Administrative Code when submitting the compliance disclosure information.

(4) Upon request from Ohio EPA or the approved board of health, the permittee shall submit additional and identically complete copies of the request to transfer a permit to install.

(C) Permitting authority procedures.

(1) When approving or denying the transfer of a permit to install, the permitting authority shall follow the appropriate procedures set forth in rule 3745-500-120 of the Administrative Code and any other applicable procedures set forth in the Revised Code.

(2) Not later than one hundred twenty days after receiving the request as described in paragraph (B) of this rule, the permitting authority shall approve or deny the transfer. The permitting authority may deny the transfer of the

permit to install for any of the reasons specified in division (B) of section 3714.052 of the Revised Code.

(3) Upon approving or denying the transfer of a permit to install, the permitting authority shall retain and distribute copies of the signed approval or denial letter pursuant to rule 3745-500-130 of the Administrative Code.

(4) Concurrent to approving a transfer of a permit to install, the permitting authority shall administratively change the permit to install in accordance with rule 3745-500-360 of the Administrative Code to update the administrative information in the permit to install. Copies of the administratively changed permit to install shall be distributed in accordance with rule 3745-500-130 of the Administrative Code.

3745-520-350 Suspension of a permit to install.

(A) At a minimum, the permitting authority may order the suspension of a permit to install if any of the following occur:

(1) Falsification of material information pursuant to section 3714.101 of the Revised Code.

(2) A violation of any section of Chapter 3714. of the Revised Code or any rule adopted thereunder.

(3) A violation of a term or condition of the C&DD facility's permit.

(4) Entry to the C&DD facility is refused or inspection or investigation is refused, hindered, or thwarted.

(5) The C&DD facility is not being operated or constructed in substantial compliance with applicable provisions of Chapter 3704., 3734., or 6111. of the Revised Code or any rules adopted under those chapters.

(6) The C&DD facility is not being operated or constructed in substantial compliance with authorizing documents.

(7) The director or approved board of health determines that construction at the C&DD facility has caused or is likely to cause the following:

(a) Slope stability failure.

(b) Improper installation or failure of an engineered component at the facility.

(c) A nuisance, fire hazard, health hazard, or a threat to public health, safety, or the environment, or cause or contribute to water pollution or air pollution.

(8) The director or approved board of health determines the following:

(a) Information has become known after issuance of the permit to install about circumstances related to the C&DD facility or the owner, operator, or permittee.

(b) The circumstances related to the C&DD facility or the owner, operator, or permittee existed prior to issuing the permit to install.

(c) If the information had been known prior to issuing the permit to install then one of the following would have occurred:

(i) The permit to install would not have been issued without revisions to the application.

(ii) The permit to install would have been issued with different terms or conditions.

(iii) The permit to install would have been denied.

(B) Procedures for suspending a permit to install. When suspending a permit to install, the permitting authority shall do at least the following:

(1) If the director is the permitting authority, act in accordance with Chapters 119., 3714., and 3745. of the Revised Code.

(2) If the approved board of health is the permitting authority, act in accordance with Chapter 3714. and section 3709.20 of the Revised Code.

(3) Provide notice of the intention to suspend the permit to install to the permittee prior to issuance of the written order required by paragraph (B)(4) of this rule.

(4) Issue a written order to suspend the permit to install that contains at a minimum the following information:

(a) Information identifying the permittee and the C&DD facility.

(b) The findings upon which the suspension is based.

(c) The effective date of the order.

(d) A notice of appeal rights.

(5) Retain and distribute copies of the order suspending the permit to install pursuant to rule 3745-500-130 of the Administrative Code.

(C) Permittee procedures if a permit to install has been suspended.

(1) Construction of all engineered components included in the facility design plan of the permit to install shall cease upon the effective date of the order suspending the permit to install, unless the order suspending the permit to install provides otherwise.

(2) A permittee may submit a written request for removal of the suspension of a permit to install to the approved board of health or to the director in the absence of an approved board of health. The request shall include at a minimum the following:

(a) Information that demonstrates that the grounds for suspension listed in paragraph (A) of this rule have been eliminated.

(b) A description of the actions that will be taken to prevent the grounds for suspension from reoccurring.

(3) If the permittee submits a request for removal of the suspension of a permit to install to the approved board of health, the permittee shall notify Ohio EPA of the submittal of a request concurrent to submitting the request to the approved board of health. The notification shall be in writing and shall contain sufficient detail to understand the scope and nature of the request.

(4) Suspended activities shall not recommence unless the request for removal of the suspension of a permit to install is approved through an order issued by the permitting authority.

(D) Permitting authority procedures for removing a suspension of a permit to install.

(1) A suspension shall not be removed from a permit to install until the following have occurred:

(a) The permittee has complied with paragraph (C) of this rule.

(b) Conditions or violations cited as the reason for the suspension have been remedied.

(2) The permitting authority shall remove a suspension from a permit to install through issuance of an order when the permittee has complied with paragraph (C) of this rule and the conditions or violations cited as the reason for the suspension have been remedied.

(3) Copies of an order removing a suspension from a permit to install shall be retained and distributed pursuant to rule 3745-500-130 of the Administrative Code.

3745-520-360 Revocation of a permit to install.

(A) The permitting authority may revoke a permit to install if any of the following occur:

(1) Falsification of material information pursuant to section 3714.101 of the Revised Code.

(2) Any cause that would be grounds for denial of an application for a permit to install pursuant to division (B) of section 3714.052 of the Revised Code.

(3) Information regarding a new key employee indicates any of the reasons specified in division (B) of section 3714.052 of the Revised Code for the denial of an application for a permit to install.

(4) The C&DD facility is not being operated or constructed in substantial compliance with applicable provisions of Chapter 3704., 3714., 3734., or 6111. of the Revised Code or any rules adopted under those chapters.

(5) The director or approved board of health determines that a nuisance, fire hazard, or health hazard exists at the C&DD facility including but not limited to ongoing fires or hazardous leachate, or the facility is a threat to public health or safety or the environment, or may cause or contribute to water pollution or air pollution.

(B) Permitting authority procedures.

(1) When revoking a permit to install, the permitting authority shall follow the appropriate procedures set forth in rule 3745-500-120 of the Administrative Code and any other applicable procedures set forth in the Revised Code.

(2) Revocation of a permit to install shall be through issuance of a written order that contains at a minimum the following information:

(a) Information identifying the permittee and the C&DD facility.

(b) The findings upon which the revocation is based.

(c) The effective date of the order.

(d) A notice of appeal rights.

(3) Copies of an order revoking a permit to install shall be retained and distributed pursuant to rule 3745-500-130.

(C) Construction of all engineered components included in the facility design plan of the permit to install shall cease upon the effective date of the order revoking the permit to install, unless the order revoking the permit to install provides otherwise.

3745-520-370 Expiration of a permit to install - extension and renewal requests.

(A) If a permittee has not established the C&DD facility, has not undertaken a continuing program of construction, has not entered into a binding contractual obligation to undertake and complete a continuing program of

construction within a reasonable time, or has not obtained an extension pursuant to this rule, a permit to install shall expire upon the third anniversary of the issuance of the permit to install.

(B) Requests for an extension of a permit to install expiration date.

(1) A permittee may submit a written request for an extension of the expiration date to the approved board of health or to the director in the absence of an approved board of health.

(2) If the permittee submits a request for an extension of the expiration date to the approved board of health, the permittee shall notify Ohio EPA of the submittal of an extension request concurrent to submitting the request to the approved board of health. The notification shall be in writing and shall contain sufficient detail to understand the scope and nature of the extension request.

(3) The request for an extension shall contain at a minimum the following information:

(a) C&DD facility name and location information.

(b) Permittee, owner, operator, and property titleholder information including but not limited to name, mailing address, and phone number.

(c) Justification for the extension of time.

(d) Demonstration that the C&DD facility satisfies the applicable siting criteria and design standards established in the rules in effect on the date the permit to install is to expire.

(4) Upon request from Ohio EPA or the approved board of health, the permittee shall submit additional and identically complete copies of the extension request.

(C) Permitting authority procedures for a request for an extension of a permit to install expiration date.

(1) The permitting authority may decline to act on a request for an extension of a permit to install expiration date.

(2) The permitting authority shall not approve a request for an extension unless the permitting authority determines the following:

(a) The C&DD facility satisfies the applicable siting criteria and design standards established in the rules in effect on the date the permit to install is to expire.

(b) The permittee submitted a request that conforms to this rule.

(3) If the permitting authority approves a request for an extension of the expiration date, the extension shall not exceed twelve months.

(4) The permitting authority shall retain and distribute copies of the signed approval letter and copies of any associated information pursuant to rule 3745-500-130 of the Administrative Code.

(5) The permitting authority shall not approve more than two extensions under this rule for each permit to install.

(D) If a permittee has established a C&DD facility, the permit to install for the facility will expire on the tenth anniversary of the issuance of the permit to install, unless it is renewed pursuant to this rule, and will expire every ten years thereafter, unless it is renewed every ten years pursuant to this rule.

(1) A request for renewal of a permit to install shall be submitted prior to expiration of the permit to install.

(2) A permittee shall submit a renewal request to the approved board of health or to the director in the absence of an approved board of health.

(3) If the permittee submits a renewal request to the approved board of health, the permittee shall notify Ohio EPA of the submittal of a renewal request concurrent to submitting the request to the approved board of health. The notification shall be in writing and shall contain sufficient detail to understand the scope and nature of the renewal request.

(4) The request for renewal shall include at a minimum the following information:

(a) Facility name and location information.

(b) Permittee, preparer, owner, operator, and property titleholder information including but not limited to name, mailing address, and phone number.

(c) A demonstration that the unconstructed portions of the facility satisfy the design standards established in the rules in effect on the date the permit to install is to expire.

(d) An evaluation of the integrity and effectiveness of the engineered components of the facility. This evaluation shall include at a minimum documentation that the leachate collection pipes have been inspected for evidence of settlement, deflection, deformation, and crushing.

(e) An exemption request if an exemption would be necessary for renewal of the permit to install, unless the exemption request was submitted prior to submittal of the renewal request.

(f) Any other information requested by Ohio EPA or the approved board of health that is necessary to determine whether the permit to install can be renewed pursuant to this rule.

(5) Upon request from Ohio EPA or the approved board of health, the permittee shall submit additional and identically complete copies of the renewal request.

(E) Permitting authority procedures for acting on a permit to install renewal request.

(1) The permitting authority shall not renew a permit to install unless the permitting authority determines the following:

(a) The unconstructed portions of the C&DD facility satisfy the applicable design standards established in the rules in effect on the date the permit to install is to expire.

(b) The owner and operator are in substantial compliance with applicable provisions of Chapter 3704., 3714., 3734., and 6111. of the Revised Code, rules adopted under those chapters, and authorizing documents.

(c) If an exemption is necessary for renewal of the permit to install, the exemption has been issued in accordance with rule 3745-520-20 of the Administrative Code prior or concurrent to renewal of the permit to install.

(2) The permitting authority shall retain and distribute copies of the permit to install renewal pursuant to rule 3745-500-130 of the Administrative Code.

3745-520-380 Administrative change to a permit to install.

A permit to install may be administratively changed in accordance with rule 3745-500-360 of the Administrative Code.

3745-520-400 License - application requirements and applicant procedures.

(A) License application. The detail of the information in the application shall be sufficient to allow the licensing authority to determine whether the criteria for issuance set forth in Chapter 3745-501 of the Administrative Code are satisfied. A license application shall contain the following:

(1) A completed application cover sheet on the form prescribed by the director.

(2) Completed application on forms prescribed by the director. The completed forms shall contain the following information:

(a) Hours of operation.

(b) The estimated life of the C&DD facility in years and remaining capacity information.

(c) The date the permit to install for the C&DD facility will expire.

(d) Whether the applicant is requesting authorization to recirculate leachate.

(e) Whether the applicant is requesting authorization to dispose asbestos-containing waste materials.

(f) Financial assurance documentation prepared in accordance with rules 3745-520-905 and 3745-520-910 of the Administrative Code.

[Comment: Chapter 3745-501 of the Administrative Code requires that financial assurance instruments for closure and post-closure care be executed and funded prior to the issuance of the license.]

(3) For each license application submitted after the first license issued pursuant to this chapter, identification of what has changed from the previous year's license application including an index listing each change and the page where each change occurred and for plan drawings, a schedule on the drawing indicating what has changed.

(4) If the applicant is requesting that the licensing authority authorize disposal of asbestos-containing waste materials, documentation that the C&DD facility is authorized pursuant to Chapter 3704. of the Revised Code to dispose asbestos-containing waste materials.

(5) A compliance disclosure update or an affidavit stating that there have been no changes in or addition to that information in accordance with division (C) of section 3714.052 of the Revised Code.

(6) A copy of each notification and request sent pursuant to paragraph (B)(2) of this rule.

(7) A general plan of facility operations for operating the C&DD facility using best management practices that conforms to rule 3745-520-402 of the Administrative Code. For renewal license applications, the applicant may reference a previously submitted and approved general plan of facility operations and submit updates to that plan as part of the license application in lieu of submitting an entire plan as part of the license application.

(8) An exemption request if an exemption would be necessary for issuance of the license, unless the

exemption request was submitted prior to submittal of the license application.

(9) Any other information requested by Ohio EPA or the approved board of health that is necessary to determine whether the C&DD facility is capable of being operated in accordance with this chapter.

(B) Procedures for submitting a license application.

(1) An applicant for a license shall comply with Chapter 3745-501 of the Administrative Code.

(2) Prior or concurrent to submitting an application for a license, an applicant shall submit to the following entities a written notification of intent to operate a C&DD facility and a written request for information pertaining to any regulatory requirements under Chapter 3704. or 6111. of the Revised Code:

(a) The local air pollution control authority or Ohio EPA, division of air pollution control, whichever is applicable.

(b) Ohio EPA, division of surface water.

(3) Pursuant to division (B) of section 3714.061 of the Revised Code, an applicant shall provide, at the time that an application is submitted, to the fire department that would respond to the C&DD facility a copy of the fire and explosion contingency plan and the hydrogen sulfide and other gases contingency plan that are required by rule 3745-520-402 of the Administrative Code.

(4) Concurrent to submitting an application for a license, an applicant shall provide the local air pollution control authority or Ohio EPA, division of air pollution control, whichever is applicable, a copy of the hydrogen sulfide and other gases contingency plan that is required by rule 3745-520-402 of the Administrative Code.

(5) When submitting a revision to an application for a license, an applicant shall record the date of the revision on each revised page or drawing. An applicant shall accompany subsequent revisions to a license application with the following:

(a) An index listing each change and the page where each change occurred.

(b) For plan drawings, a schedule on the drawing indicating what has changed.

3745-520-402 License application - general plan of facility operations.

A general plan of facility operations for operating the C&DD facility using best management practices shall contain the following:

(A) A phasing plan that conforms to rule 3745-520-420 of the Administrative Code.

(B) A material acceptance and handling plan that conforms to rule 3745-520-440 of the Administrative Code.

(C) A leachate sampling and analysis plan that conforms to rule 3745-520-460 of the Administrative Code.

(D) A fire and explosion contingency plan that conforms to 3745-520-470 of the Administrative Code.

(E) A hydrogen sulfide and other gases contingency plan that conforms to rule 3745-520-480 of the Administrative Code.

(F) A contingency plan for the storage, treatment, and disposal of leachate. The contingency plan for the storage, treatment, and disposal of leachate shall describe the immediate and long-term steps, including the location of an existing or proposed on-site treatment works, to be taken for leachate management in the event that collected leachate cannot be managed in accordance with the permit to install.

(G) A contingency plan for equipment failure. This plan shall specify how the owner or operator intends to operate in compliance with this chapter in the event of equipment failure. This plan shall include a description of the site-specific conditions and circumstances when the failed equipment contingency plan will be implemented.

3745-520-410 Modification of a license.

[Comment: Pursuant to rule 3745-520-03 of the Administrative Code, no person shall deviate from the requirements in a license without first obtaining a modified license for the C&DD facility from the licensing authority in accordance with this rule and Chapter 3745-501 of the Administrative Code.]

(A) Content requirements for a request to modify a license. A request to modify a license shall at a minimum contain the following:

(1) A completed application cover sheet on the form prescribed by the director in accordance with rule 3745-520-40 of the Administrative Code.

(2) A brief narrative explanation of the modification being requested.

(3) The information necessary to demonstrate the following:

(a) The modification is at least equivalent to applicable rule requirements of this chapter.

(b) The modification is compatible with the unmodified requirements of the license.

(c) Operations conducted in accordance with the modified general plan of facility operations will not violate Chapters 3704., 3714., 3734., or 6111. of the Revised Code or rules promulgated under those chapters.

(d) The modification of the license does not also cause an alteration or modification of the permit to install, unless a permit to install alteration or modification request is submitted concurrently.

(4) The following information as needed to describe changes to the operations proposed in the modification request, with revisions clearly identified:

(a) Revised portions of the general plan of facility operations.

(b) Revised or additional plan drawings.

(c) Revised or additional specifications or calculations.

(d) Revised or additional reporting or monitoring requirements that are not otherwise required by rule that are necessary to confirm the following:

(i) That the engineered components will not be adversely affected.

(ii) That the operations affected by the modification request will be in compliance with this chapter.

(5) An exemption request if an exemption would be necessary for modification of the license, unless the exemption request was submitted prior to submittal of the modification request.

(B) Licensee procedures.

(1) The license modification request and subsequent revisions to the request shall be submitted in triplicate to the licensing authority. Each revised page or drawing shall contain the date of the revision. Revisions to the request shall be accompanied by the following:

(a) An index listing each change and the page where each change occurred.

(b) For plan drawings, a schedule on the drawing indicating what has changed.

(2) If the approved board of health is the licensing authority, a licensee shall notify Ohio EPA of the submittal of a license modification request concurrent to submitting the initial license modification request to the approved board of health. The notification shall be in writing and shall contain sufficient detail to understand the scope and nature of the modification request.

(3) Upon request from Ohio EPA or the approved board of health, a licensee shall submit additional and identically complete copies of the license modification request.

(4) If the licensing authority modifies the license, the licensee shall insert the revised drawings and other information that were stamped by and received from the licensing authority into the appropriate place in the current license.

3745-520-420 Phasing plan.

(A) General requirements for the phasing plan. The phasing plan shall conform to the following:

(1) Drawings shall appear on plan sheets with minimum dimensions of twenty-four inches by thirty-six inches. If narrative is necessary to explain a drawing or a calculation, the narrative shall appear with the drawing or calculation.

(2) The phasing plan shall be signed and sealed by a professional engineer.

(3) All survey information included in the phasing plan shall be signed and sealed by a professional surveyor.

(4) Except for the plan cover sheet required by paragraph (B)(1) of this rule, each drawing in the phasing plan shall show northings and eastings referenced to the C&DD facility grid system as established in the approved facility design plan.

(5) Each drawing in the phasing plan shall show the C&DD facility boundary and the authorized disposal limits in the same location as the facility boundary and the authorized disposal limits are shown in the approved facility design plan.

(6) Each plan drawing required by paragraphs (B)(2)(a) and (B)(2)(b) of this rule shall include the following:

(a) Roads, railroads, and structures, including the locations of existing or proposed permanent access roads, maintenance buildings, office buildings, weighing facilities, and storage buildings.

(b) The areas of the C&DD facility where the main hauling road may be located shown in the same location as those areas are shown in the approved facility design plan.

(c) The north arrow.

(d) A legend containing information necessary to understand the drawing.

(e) The scale of the drawing.

(B) Phasing plan format and content. The phasing plan shall include the following:

(1) A plan cover sheet. The plan cover sheet, to be numbered sheet 1, shall contain the following information:

(a) The name of the C&DD facility.

(b) The precise geographic location of the C&DD facility boundary and of the horizontal authorized disposal limits shown on a road map which includes the area within a five mile radius of the facility boundary with a scale of one inch equals no greater than one mile.

(c) Owner, operator, and property titleholder information including name, mailing address, and telephone number.

(d) The name, mailing address, and telephone number of the professional engineer signing and certifying the plans.

(2) The following plan drawings showing the phasing. The plan drawings shall be numbered consecutively 2A, 2B, 2C, etc. An individual plan drawing may contain information specified in more than one subheading. The scale on these drawings shall be one inch equals no greater than two hundred feet and contour intervals shall be no greater than five feet.

(a) A general phasing diagram that shows all of the phases at the C&DD facility.

(b) One plan drawing for each phase of the C&DD facility showing the following engineered components and other items as they will exist immediately prior to beginning disposal in the phase:

(i) The horizontal disposal limits for the phase and the basal elevations of the disposal limits of the phase.

(ii) Topography of areas of the C&DD facility that are undisturbed, with a contour interval no greater than five feet, including but not limited to vegetation, surface waters, and wetlands.

(iii) Topography of areas of the C&DD facility that were disturbed.

(iv) The tie-in areas for the phase.

(v) The final elevations and horizontal limits of disposed material and of the cap system or transitional cover as they will exist when the phase construction is certified.

(vi) Ground water monitoring wells, piezometers, and gas monitoring locations.

(vii) The engineered components of the leachate management system.

(viii) If leachate recirculation is proposed, the location of leachate conveyance apparatuses that are part of the leachate recirculation system.

(ix) The horizontal limits of the cap system or transitional cover.

(x) The location and grade of access roads for the phase, including access roads on the cap system or transitional cover and access roads that are proposed to be built on internal slopes or across the facility bottom. Roads that are proposed but that will not be constructed until construction of subsequent phases shall be clearly marked.

(xi) The direction of flow and locations of concentrations of surface water.

(xii) Permanent and temporary surface water control structures and any permanent and temporary ground water control structures.

(xiii) The horizontal limits and final elevations of structural fill and added geologic material that do not have any engineered components constructed above them.

(xiv) The horizontal limits and final elevations of vegetated earthen berms or equivalent barriers to vegetated earthen berms, if vegetated earthen berms or equivalent barriers are required at the facility.

[Comment: Rule 3745-520-600 of the Administrative Code requires that vegetated earthen berms or equivalent barriers identified in the permit to install be constructed prior to disposing material in the disposal limits newly authorized by the permit to install.]

(xv) The location of permanent survey marks.

(c) At least one plan drawing that clearly identifies the phases of the C&DD facility where the owner or operator will be disposing material during either of the following:

(i) If the phasing plan is being submitted as part of a modification request and not with a license application, the current license year.

(ii) If the phasing plan is being submitted with a license application, the year for which the license application applies.

(d) At least one plan drawing that clearly identifies the phases of the C&DD facility where the owner or operator anticipates disposal will occur during the license year subsequent to the applicable license year described in paragraph (B)(2)(c) of this rule.

(e) At least one plan drawing that clearly identifies the phases of the C&DD facility where the owner or operator anticipates disposal will occur during the license year subsequent to the license year described in paragraph (B)(2)(d) of this rule.

(f) Plan drawings that show when cap will be constructed in accordance with the following:

[Comment: Cost estimates for financial assurance require the inclusion of the costs for construction of the cap system. As a result, as the number of phases that are not capped increases, the cost of financial assurance will also increase. A provision in rule 3745-520-905 of the Administrative Code allows the owner or operator to request a reduction in the amount of financial assurance each year that cap system is constructed at the C&DD facility.]

(i) At least one drawing shall show the cap and transitional cover that will be constructed prior to beginning disposal in the phases described in paragraph (B)(2)(c) of this rule.

(ii) At least one drawing shall show the cap and transitional cover that will be constructed prior to beginning disposal in the phases described in paragraph (B)(2)(d) of this rule.

(iii) At least one drawing shall show the cap and transitional cover that will be constructed prior to beginning disposal in the phases described in paragraph (B)(2)(e) of this rule.

(g) If leachate recirculation is being proposed, at least one plan drawing that clearly identifies the phases of the C&DD facility where the owner or operator proposes to recirculate leachate.

[Comment: To conduct leachate recirculation, the design of the leachate recirculation system must be contained within an approved permit to install and the current license must authorize leachate recirculation.]

(3) Cross sections. Cross sections of the C&DD facility shall be at an interval no greater than every three hundred feet of length and width and shall clearly show the horizontal and vertical scales used. Each cross section shall be on plan drawings numbered consecutively 3A, 3B, 3C, etc., and shall show the following items:

(a) Existing topography.

(b) The horizontal and vertical limits of excavation.

(c) The horizontal limits, basal elevations, and final elevations of the authorized disposal limits.

(d) The horizontal and vertical limits of each phase.

(e) The horizontal limits and final elevations of the following:

(i) Structural fill.

(ii) An added geologic material layer.

(iii) Liner system.

(iv) Leachate collection system.

(v) Cap protection layer, surface water control structures, berms, benches, and roads.

(4) Design calculations. This section shall include the following design calculations with references to equations used, showing site specific input, assumptions, and results:

(a) The static stability analyses for interim slopes of the phases in the manner specified in rule 3745-511-40 of the Administrative Code.

(b) The seismic stability analyses for interim slopes of the phases in the manner specified in rule 3745-511-50 of the Administrative Code.

(c) The acreage within the horizontal disposal limits that has had material disposed and the acreage within the horizontal disposal limits of each phase.

(d) The volume within the disposal limits of each phase.

(e) The total volume within the disposal limits.

(f) If leachate recirculation is being proposed, calculations for leachate recirculation including the following:

(i) The anticipated amount of leachate that will be generated by the C&DD facility. If leachate recirculation is being proposed for phases in which material has been disposed, documentation of how much leachate is currently being removed from within the disposal limits on a daily, weekly, monthly, and annual basis shall also be included.

(ii) The anticipated amount of leachate that will be recirculated.

[Comment: Rule 3745-520-654 of the Administrative Code specifies the maximum volume of leachate that may be recirculated.]

(iii) Capacity of the leachate drainage layer, filter layer, leachate piping, leachate conveyances, leachate pumps, and leachate storage tanks to manage the amount of leachate that will be recirculated.

(iv) The vertical compressive stress and pore water pressure due to leachate recirculation. For existing leachate management systems, include documentation that leachate management system components will not be damaged by the increased vertical compressive stress.

(v) The depth of leachate above the liner, except in sumps.

(g) Other relevant calculations.

3745-520-440 Material acceptance and handling plan.

The content of the material acceptance and handling plan shall be consistent with the acceptance, handling, and disposal requirements of rule 3745-520-640 of the Administrative Code. At a minimum, the material acceptance and handling plan shall contain the following:

(A) A plan drawing showing the location of the following:

(1) The inspection zone, if the C&DD facility will have an inspection zone. The plan drawing shall demonstrate that the inspection zone conforms to the following criteria:

(a) Be outside the authorized disposal limits.

(b) Be located within the main hauling road areas specified in the facility design plan.

(c) Be in close proximity to the material log-in area.

(d) Not exceed one acre in size, including associated storage areas.

[Comment: The location of each storage area within the inspection zone is not required to be shown on the plan drawing.]

(2) Material log-in area.

(3) Each fixed storage area, if the C&DD facility will have any fixed storage areas, and the type of material that will be stored in each area.

(B) If the C&DD facility will have an inspection zone, an indication of whether storage will occur within the inspection zone, and if so, a description of when and what types of material will be stored there.

(C) An indication of whether storage will occur in other areas of the C&DD facility, and if so, a description of where and when material will be stored and the type of material that will be stored. The combined total area of all storage areas at a facility shall not exceed two acres.

[Comment: This paragraph is intended to cover circumstances when the owner or operator plans to occasionally store material at the facility in a variety of locations. If the owner or operator intends to store material in a fixed storage area, that fixed storage area is required to be depicted on the plan drawing required by paragraph (A)(1) of this rule.]

(D) If portable containers will be used at the C&DD facility, a description of where and how the portable containers will be used.

(E) An indication of whether more than one working face will be used, and if so, a description of the circumstances when multiple working faces will be used.

(F) If the C&DD facility will operate during inclement weather, a description of how the facility will operate during inclement weather.

(G) A description of how each main hauling road will be marked.

(H) A description of the process to be used for recording material in the log of operations and tracking fees including but not limited to the process for assessing and calculating the fees to be remitted. The process described shall result in the following:

(1) The assessment of fees as required by Chapter 3714. of the Revised Code and rules promulgated thereunder on loads brought to the C&DD facility for disposal.

(2) The remittance of fees as required by Chapter 3714. of the Revised Code and rules promulgated thereunder that have been charged or collected.

3745-520-460 Leachate sampling and analysis plan.

[Comment: An owner or operator is not required to include references to specific laboratory analysis methods, specific method detection limits, or specific practical quantitation limits in the leachate sampling and analysis plan.]

The leachate sampling and analysis plan shall contain the following:

(A) A description of the equipment, procedures, and techniques to be used to sample and analyze leachate in accordance with rule 3745-520-660 of the Administrative

Code. Sample collection, preservation, and handling methods described in the plan shall provide for collection of representative samples of leachate.

(B) Blank forms to be used to record the information obtained during leachate sampling and analysis including at a minimum the following types of forms:

(1) Forms for recording field analysis results and conditions encountered at the C&DD facility during a sampling event.

(2) Forms for recording the chain of custody of leachate samples.

3745-520-470 Fire and explosion contingency plan.

[Comment: This plan is required to be included in an application for a license; however, the plan should also serve as a stand-alone plan that can be easily retrieved in the event the plan must be implemented.]

(A) The fire and explosion contingency plan shall provide for effective action to prevent the spread of a fire, extinguish a fire, and respond to an explosion at a C&DD facility.

(B) The fire and explosion contingency plan shall contain the following:

(1) A section containing the following general C&DD facility information:

(a) A copy of the completed application cover sheet submitted with the license application.

(b) The precise geographic location and facility boundary shown on a road map with all access points and entrances clearly identified.

(c) The name, mailing address, and telephone number of the emergency contacts for the facility. The emergency contacts shall be individuals authorized to commit facility resources such as equipment, material, and services necessary for responding to a fire or explosion. At a minimum, one individual and one back-up individual shall be designated and listed in the plan as the emergency coordinator for the facility.

(d) The name, mailing address, and telephone number of the person who prepared the fire and explosion contingency plan.

(2) A section containing notification procedures to be used by C&DD facility personnel to contact the following entities upon detection of fire or explosion and contact information for those entities. The procedures shall at a minimum conform to the notification requirements in rule 3745-520-670 of the Administrative Code. The contact information shall at a minimum include emergency telephone numbers, if available, and non-emergency telephone numbers.

(a) The fire department that would respond to the C&DD facility and other appropriate emergency response authorities.

(b) Ohio EPA, the approved board of health, and other appropriate governmental authorities.

(c) Asbestos specialists.

(3) A section describing the fire response equipment, material, and services at or available to the C&DD facility. This section shall demonstrate that the equipment, material, and services are adequate for the facility.

(4) A section describing how C&DD facility personnel may respond to a fire or explosion that includes the following:

(a) For each type of identified response, the owner or operator shall describe the actions, personnel, and equipment the owner or operator may commit to the response, and the circumstances when the response may be implemented.

(b) Each identified response shall be protective of public health and safety and the environment, shall minimize the cause or contribution to water pollution and air pollution, and shall not adversely impact the integrity or effectiveness of engineered components at the C&DD facility.

(c) At a minimum, the following types of responses shall be identified and described:

(i) Responses that may be taken during the time between the detection of a fire or explosion and the arrival of the fire department. In the case where the fire department will not respond to a particular type of fire or explosion at the C&DD facility, this section shall include the responses the owner or operator may provide in those circumstances.

(ii) Actions that may be taken by facility personnel to prevent the spread of a fire and to extinguish a fire.

(iii) Responses for subsurface fires including at a minimum the following:

(a) Techniques and frequency to be used for sampling leachate in addition to the leachate sampling required by rule 3745-520-660 of the Administrative Code in order to monitor leachate temperature, increases in the concentration of parameters due to fire, and fire-related

parameters. At a minimum, leachate shall be analyzed for the following:

(i) The same parameters as the ground water assessment parameters listed in rule 3745-506-704 of the Administrative Code.

(ii) Chemical oxygen demand, total suspended solids, and total organic carbon.

(iii) Alkanes and alkenes.

(iv) Chlorinated dibenzo-p-dioxin or chlorodibenzofuran.

(b) If a gas management system exists at the C&DD facility, techniques and frequency for monitoring gas collection devices in addition to the monitoring required by rule 3745-520-675 of the Administrative Code. At a minimum, the gas collection devices shall be monitored for the gas temperature and fire-related gases and vapors, including but not limited to carbon monoxide, alkanes, alkenes, chlorinated dibenzo-p-dioxin, and chlorodibenzofuran.

(5) Any other information requested by Ohio EPA or the approved board of health that is necessary to determine whether the owner or operator is prepared to provide effective action in response to either a fire or explosion at the C&DD facility.

3745-520-480 Hydrogen sulfide and other gases contingency plan.

[Comment: This plan is required to be included in an application for a license; however, the plan should also serve as a stand-alone plan that can be easily retrieved in the event the plan must be implemented.]

(A) The hydrogen sulfide and other gases contingency plan shall provide for effective action in response to a release of hydrogen sulfide gas or other gases created by the operation of a C&DD facility that pose the following:

(1) A nuisance.

(2) An offensive odor.

(3) A threat to public health or safety or the environment.

(4) The cause or contribution to air pollution.

(B) The hydrogen sulfide and other gases contingency plan shall contain the following:

(1) A section containing the following general C&DD facility information:

(a) A copy of the completed application cover sheet submitted with the license application.

(b) The precise geographic location and facility boundary shown on a road map with all access points and entrances clearly identified.

(c) The name, mailing address, and telephone number of the emergency contacts for the facility. The emergency contacts shall be individuals authorized to commit facility resources such as equipment, material, and services necessary for responding to a release of hydrogen sulfide or other gases created by the operation of a C&DD facility that pose a nuisance, cause an offensive odor, or pose a threat to public health or safety or the environment. At a minimum, one individual and one back-up individual shall be designated and listed in the plan as the emergency coordinator for the facility.

(d) Emergency telephone numbers, if available, and non-emergency telephone numbers for the fire department that would respond to the facility, the local air pollution control authority, if applicable, Ohio EPA, and the approved board of health.

(e) The name, mailing address, and telephone number of the person who prepared the hydrogen sulfide and other gases contingency plan.

(2) A section containing a description of how and when the owner or operator will install and operate meteorological stations at the C&DD facility at locations selected to maximize the detection of hydrogen sulfide and other gases at and beyond the facility boundary. This section shall contain the following:

(a) Selection of the number and locations of the meteorological stations necessary to characterize weather conditions at the facility and conditions affecting the transport of hydrogen sulfide and other gases.

(b) Procedures, equipment, and time frames for the installation and operation of meteorological stations. The contingency plan shall ensure that each meteorological station meets the following criteria:

(i) Be sited and located in accordance with EPA-454/R-99-005 or EPA-450/4-87-007 as described in rule 3745-500-03 of the Administrative Code.

(ii) Be capable of accurately measuring temperature, wind speed, wind direction, and barometric pressure on a continuous basis.

(iii) Record wind direction in one degree increments.

(iv) Be equipped with a data recording device capable of recording each reading.

(v) Be able to sample and record measurements at least three hundred sixty times per hour and generate thirty minute average data for all parameters as well as standard deviation and turbulence wind data for use in the calculation of atmospheric stability.

(3) A section containing a description of how and when the owner or operator will install and operate continuous ambient air monitoring equipment at the C&DD facility to maximize the detection of hydrogen sulfide at and beyond the facility boundary at locations selected to evaluate the migration of odor to off-site receptors. This section shall contain the following:

(a) Procedures for selecting the number and locations of continuous monitors to measure ambient air concentrations of hydrogen sulfide and other gases.

(b) Procedures for selection of equipment and time frames for the installation and operation of equipment. The contingency plan shall ensure that each continuous monitor conforms to and is operated in accordance with the following specifications:

(i) The equipment shall be capable of detecting hydrogen sulfide concentrations of five parts per billion by volume.

(ii) The equipment shall be compatible with a data recorder and data software.

(iii) The equipment shall take automated and continuous measurements.

(iv) The equipment shall perform an automated zero calibration at least once every twenty-four hours.

(c) Procedures to ensure that equipment is calibrated, operated, and maintained in accordance with manufacturer recommendations, instructions, and operating manuals, or other written procedures that provide adequate assurance that the equipment would reasonably be expected to monitor accurately.

(d) Procedures to ensure that equipment is field calibrated at the facility prior to placing the equipment into operation at the facility.

(e) Procedures to ensure that all measurements are recorded and retained at the facility or other location acceptable to the licensing authority and such recorded measurements are made available upon the request of the Ohio EPA or the approved board of health.

(f) Procedures to ensure that records of equipment calibration and maintenance are retained at the facility or other location acceptable to the licensing authority and such records are made available upon the request of Ohio EPA or the approved board of health.

(4) A section containing a description of the procedures, equipment, and time frames that the owner or operator will utilize to place transitional cover or construct a cap system on areas of the C&DD facility necessary to control the release of hydrogen sulfide or other gases. This section shall also contain the following:

(a) An indication of whether transitional cover will be placed or a cap system will be constructed.

(b) Provisions for complying with applicable rules for placement of transitional cover or with applicable rules for design and construction of a cap system, whichever option is chosen.

(5) A section containing a description of the procedures, equipment, and time frames that the owner or operator will utilize to construct and operate a gas management system to control the release of hydrogen sulfide or other gases. This section shall also contain the following:

(a) A statement that the owner or operator will design and construct a gas management system in accordance with rule 3745-520-275 and Chapter 3745-512 of the Administrative Code.

(b) A statement that the owner or operator will operate and monitor a gas management system in accordance with rules 3745-520-665 and 3745-520-675 of the Administrative Code.

(c) Procedures and time frames that the owner or operator will utilize to obtain each necessary authorization pursuant to Chapter 3704. of the Revised Code.

[Comment: The design of the gas management system and construction specifications are not required to be included in the contingency plan.]

(6) Any other information requested by Ohio EPA or the approved board of health that is necessary to determine whether the owner or operator is prepared to provide effective action in response to a release of hydrogen sulfide gas or other gases created by the operation of the C&DD facility that pose a nuisance, cause an offensive odor, or pose a threat to public health or safety or the environment.

3745-520-500 Construction and construction certification requirements.

(A) An owner or operator shall comply with this chapter, Chapter 3745-512 of the Administrative Code, and authorizing documents when constructing an engineered component or a system of engineered components described in rule 3745-520-200 of the Administrative Code.

(B) An owner or operator shall do the following for construction of an engineered component or a system of engineered components described in rule 3745-520-200 of the Administrative Code:

(1) Submit notification to the licensing authority at least seven days prior to beginning construction of an engineered component.

(2) Perform the shear strength evaluation required by rule 3745-512-10 of the Administrative Code for the following engineered components that are included in the C&DD facility design. The evaluation shall be submitted to the licensing authority at least seven days prior to the intended use of the materials.

(a) Added geologic material.

(b) Structural fill material.

(c) Material for the recompacted soil liner in the liner system.

(d) Flexible membrane liner.

(e) Granular drainage layer, filter layer, cushion layer, and protective layer material.

(f) Geocomposite.

(g) Geotextile.

(h) Georeinforcements.

(3) Perform the shear strength evaluation required by rule 3745-512-10 of the Administrative Code for any stratigraphic unit in the in-situ foundation that was not anticipated and that may be more susceptible to slope failure than the stratigraphic units that were tested and reported in the application for the permit to install. The evaluation shall be submitted to the licensing authority at least seven days prior to construction on the in-situ foundation.

(4) Submit the results of pre-construction testing required by rule 3745-512-15 of the Administrative Code to the licensing authority at least seven days prior to the intended use of the materials.

(5) Comply with the following if a recompacted soil liner is included in the C&DD facility design:

(a) Rule 3745-512-21 of the Administrative Code for the test pad.

(i) The owner or operator shall submit the test pad certification report to the concurring authority not later than fourteen days prior to the intended construction of the recompacted soil liner that was modeled by the test pad.

(ii) Construction of the recompacted soil liner shall not commence until the owner or operator has received concurrence from the concurring authority for the test pad certification report.

(b) Rule 3745-512-20 of the Administrative Code for the evaluation of the soils to be used to construct the recompacted soil liner. The evaluation shall be submitted to the concurring authority at least seven days prior to the intended use of the soils.

(C) For construction certification reports required by rule 3745-512-50 of the Administrative Code, an owner or operator shall comply with the following:

(1) Submit the construction certification report to the concurring authority not later than sixty days after construction activities for the construction phase have been completed.

(2) Include results of all testing and verification that the applicable construction requirements in rules 3745-520-525, 3745-520-541, and 3745-520-549 of the Administrative Code have been met.

(3) If closure activities are being conducted because the permit to install has been revoked, paragraph (A)(1) of rule 3745-512-50 of the Administrative Code does not apply. Instead, the owner or operator shall submit with the construction certification report the following:

(a) A comparison of the engineered component to the revoked permit to install.

(b) If there is a design change to the C&DD facility that requires a new slope stability analysis, a geotechnical and stability analyses report prepared in the manner specified by rule 3745-511-10 of the Administrative Code. The geotechnical and stability analyses report shall include the following:

(i) A static stability analysis for final slopes that conforms to rule 3745-511-40 of the Administrative Code.

(ii) A seismic stability analysis for final slopes that conforms to rule 3745-511-50 of the Administrative Code.

(4) If closure activities are being conducted before all final elevations have been reached and the permit to install has not been revoked, paragraph (D) of rule 3745-520-03 of the Administrative Code does not apply to a design change to the C&DD facility that requires a new slope stability analysis. Instead, the owner or operator shall submit with the construction certification report the following:

(a) Information necessary to demonstrate that the modification is at least equivalent to applicable rule requirements of this chapter.

(b) Information necessary to demonstrate that the modification is compatible with the unmodified requirements of the permit to install.

(c) Information necessary to demonstrate that the modification of the facility will not violate Chapters 3704., 3714., 3734., or 6111. of the Revised Code or rules adopted under those chapters.

(d) Information necessary to demonstrate that other approvals and authorizations including but not limited to approvals and authorizations issued pursuant to Chapters 3704. and 6111. of the Revised Code made necessary by the modification have been obtained.

(e) A geotechnical and stability analyses report prepared in the manner specified by rule 3745-511-10 of the Administrative Code. The geotechnical and stability analyses report shall include the following:

(i) A static stability analysis for final slopes that conforms to rule 3745-511-40 of the Administrative Code.

(ii) A seismic stability analysis for final slopes that conforms to rule 3745-511-50 of the Administrative Code.

(5) If the approved board of health is the concurring authority, notify Ohio EPA of the submittal of a construction certification report concurrent to submitting the report to the approved board of health. The notification shall be in writing and shall contain sufficient detail to understand the scope and nature of the construction certification report.

(6) Submit additional and identically complete copies of the construction certification report upon request from Ohio EPA or the approved board of health.

(7) Do the following upon the concurring authority's concurrence with an alteration contained within a construction certification report:

(a) Insert the revised drawings and other information that were stamped by and received from the concurring authority into the appropriate place in the permit to install.

(b) Update the index of alterations required by rule 3745-520-320 of the Administrative Code.

[Comment: Rule 3745-512-17 of the Administrative Code requires that an alternative construction material be approved prior to use of the material; therefore, a construction certification report cannot include a request for approval of an alternative material.]

(D) Concurring authority procedures for acting on a construction certification report.

(1) The concurring authority shall comply with procedures for concurrence of construction certifications in accordance with the following:

(a) If the permit to install has not been revoked, rule 3745-512-51 of the Administrative Code.

(b) If the permit to install has been revoked, rule 3745-512-52 of the Administrative Code.

(c) If the construction certification report contains a modification pursuant to paragraph (C)(4) of this rule, the concurring authority shall not concur with the construction certification report unless it determines the following:

(i) The modification is at least equivalent to applicable rule requirements of this chapter.

(ii) The modification is compatible with the unmodified requirements of the permit to install.

(iii) The modification of the facility will not violate Chapters 3704., 3714., 3734., or 6111. of the Revised Code or rules adopted under those chapters.

(iv) That other approvals and authorizations including but not limited to approvals and authorizations issued pursuant to Chapters 3704. and 6111. of the Revised Code made necessary by the modification have been obtained.

(2) Upon concurrence with an alteration contained in a construction certification report, the concurring authority shall stamp the copies of the alteration request and any altered drawings and information with the word "Altered," the permit number, and the date of concurrence.

(3) Upon concurrence with a modification contained in a construction certification report pursuant to paragraph (C)(4) of this rule, the concurring authority shall stamp the copies of the construction certification report and any drawings and information regarding the modification with the word "Modified," the permit number, and the date of concurrence.

(4) Upon concurrence with a construction certification report and any alterations or any modifications pursuant to paragraph (C)(4) of this rule contained therein, the concurring authority shall retain and distribute copies of the construction certification report, concurrence letter, and any altered or modified drawings and information pursuant to rule 3745-500-130 of the Administrative Code.

(E) Alternative materials used to construct engineered components.

(1) An owner or operator may request approval of an alternative material to construct an engineered component

in accordance with rule 3745-512-17 of the Administrative Code.

(2) An alternative material request shall be submitted in triplicate to the applicable authority identified in rule 3745-512-17 of the Administrative Code.

(3) If the approved board of health is the applicable authority, an owner or operator shall notify Ohio EPA of the submittal of an alternative material request concurrent to initially submitting the request to the approved board of health. The notification shall be in writing and shall contain sufficient detail to understand the scope and nature of the alternative material request.

(4) Upon request from Ohio EPA or the approved board of health, the owner or operator shall submit additional and identically complete copies of the alternative material request.

(F) Director or approved board of health procedures for acting on a request for approval of an alternative material to construct an engineered component.

(1) The applicable authority shall comply with rule 3745-512-17 of the Administrative Code.

(2) Upon approval of an alternative material, the authority shall stamp the copies of the alternative material request with the word "Approved" and the date of approval.

(3) Copies of the approval letter and stamped copies of the alternative material request shall be retained and distributed by the applicable authority pursuant to rule 3745-500-130 of the Administrative Code.

3745-520-525 Vegetated earthen berm and equivalent barrier construction.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) Vegetated earthen berms and equivalent barriers shall conform to the following:

(1) Not be comprised of solid waste or C&DD, except clean hard fill can be used.

(2) If vegetation is included in the design, the surface of the earthen berm shall be of sufficient thickness and fertility to support a complete and dense cover of vegetation.

(3) If comprised of an earthen berm, the surface of the berm shall be comprised of soil that results in a maximum erosion rate not exceeding five tons per acre per year as calculated using the "Universal Soil Loss Equation," "Revised Universal Soil Loss Equation," or the "Water Erosion Prediction Project Model" corresponding to the maximum slope length between ditches and assuming disturbed soils and assuming the soil is highly susceptible to rill erosion.

(4) If comprised of an earthen berm, not later that seven days after construction, be covered with mulch or other material. The cover material shall result in a maximum erosion rate not exceeding five tons per acre per year as calculated using the "Universal Soil Loss Equation," "Revised Universal Soil Loss Equation," or the "Water Erosion Prediction Project Model" corresponding to the maximum slope length between ditches and assuming disturbed soils and assuming the soil is highly susceptible to rill erosion.

(B) Certification of the vegetated earthen berm or equivalent barrier by the owner or operator shall include the following:

(1) Record drawings showing the location and topographic representation of the vegetated earthen berm or equivalent barrier, as constructed.

(2) Results of all testing and verification the vegetated earthen berm or equivalent barrier meets the standards in paragraph (A) of this rule and the design specifications in the permit to install.

3745-520-541 Leachate collection system granular drainage layer construction.

(A) If not underlying a leachate recirculation system, the granular drainage layer of the leachate collection system shall have a hydraulic conductivity at least 0.3 centimeters per second.

(B) If underlying a leachate recirculation system, the granular drainage layer of the leachate collection system shall have a hydraulic conductivity of at least two centimeters per second.

[Comment: In accordance with rule 3745-520-420 of the Administrative Code, shredded tires shall not be used.]

3745-520-549 Leachate recirculation system construction.

Certification of construction of the leachate recirculation system by the owner or operator shall include certification for each engineered component included in the design of the leachate recirculation system in the manner specified in Chapter 3745-512 of the Administrative Code, as appropriate.

3745-520-600 Operations - general obligations.

An owner or operator shall do the following:

(A) Dispose only the following materials at a C&DD facility:

(1) C&DD.

(2) Asbestos or asbestos-containing materials or products, excluding asbestos-containing waste materials unless disposal of asbestos-containing waste materials is authorized under Chapter 3704. of the Revised Code and by the licensing authority in the current license.

(B) Dispose material only within the authorized disposal limits as identified in the permit to install for the C&DD facility.

(C) Construct vegetated earthen berms or equivalent barriers if contained in the permit to install prior to disposing material in the disposal limits newly authorized by the permit to install.

(D) Upon issuance of the annual operating license, comply with the general plan of facility operations and conduct C&DD facility operations within the C&DD facility boundary only.

(E) Limit access to the C&DD facility to authorized persons only.

(F) Employ reasonable measures necessary to collect, contain, and properly dispose scattered litter at the C&DD facility. Measures may include but are not limited to frequently inspecting the facility, using portable wind screens, and ceasing disposal activities until litter can be collected and properly contained.

(G) Maintain roads within the C&DD facility in a manner that allows use in all weather conditions, which will withstand the anticipated degree of use, and will minimize erosion and generation of dust.

(H) Employ measures necessary to minimize the incidence of mud, dirt, and dust on public roads from vehicles leaving the C&DD facility.

(I) Exclude domestic and farm animals from the C&DD facility except those used for security or vector control.

(J) Post legible instructions for using the C&DD facility at each entrance to the facility. At a minimum, instructions shall include telephone numbers of emergency personnel including the local fire department, the approved board of health, and the appropriate district office of Ohio EPA, and whether the facility has authorization to dispose asbestos-containing waste materials. The instructions shall be readable from vehicles arriving to dispose material at the facility.

(K) Mow vegetative cover in areas where a cap system has been constructed at least once per year.

3745-520-605 Topographic maps, isopachs, and exceedances of the vertical or horizontal authorized disposal limits.

(A) Not later than forty-five days after receiving a written request from Ohio EPA or the approved board of health, an owner or operator shall submit to Ohio EPA and the approved board of health a topographic map of the C&DD facility and an isopach comparing the topography of areas of the facility where material has been disposed to the authorized disposal limits. The maps shall represent existing contours of the facility and shall conform to this rule.

(B) When it is discovered that the topography of the C&DD facility exceeds the vertical or horizontal authorized disposal limits, the owner or operator shall do the following:

(1) Immediately notify Ohio EPA and the approved board of health.

(2) Not later than thirty days after the discovery, submit a work plan to Ohio EPA and the approved board of health that describes how the owner or operator will determine the extent, volume, and composition of the material exceeding the authorized disposal limits.

(3) Not later than sixty days after the discovery, implement the work plan. At a minimum, the owner or operator shall conduct tests at a frequency sufficient to determine the extent, volume, and composition of the exceedance.

(4) Provide a topographic map and isopach that conform to this rule to Ohio EPA and the approved board of health after the owner or operator has determined the extent, volume, and composition of the material exceeding the authorized disposal limits.

(C) Topographic maps.

(1) A topographic map of the C&DD facility shall be certified by a professional skilled in the appropriate discipline.

(2) The scale, contour interval, and grid system of a topographic map shall be consistent with the permit to install.

(3) A topographic map shall include the following:

(a) Delineation and acreage of constructed cap including the type of cap and the year the cap system was constructed.

(b) Delineation and acreage of areas containing disposed material that has not had a cap system constructed.

(c) Delineation and acreage of areas that have been approved for disposal but have not been used.

(d) Access roads and buildings.

(e) Borrow areas and cover material stockpiles within the C&DD facility boundary.

(f) The C&DD facility boundary, horizontal authorized disposal limits, and horizontal limits of where material has been disposed.

(g) The location of the permanent survey marks.

(D) Isopachs.

(1) An isopach shall compare the topography of areas of the C&DD facility where material has been disposed to the authorized disposal limits.

(2) An isopach shall be certified by a professional skilled in the appropriate discipline.

(3) The scale, contour interval, and grid system of an isopach shall be consistent with the permit to install.

(4) An isopach shall delineate the following:

(a) The C&DD facility boundary and the horizontal authorized disposal limits.

(b) The location of the permanent survey marks.

(5) If the topography of the C&DD facility exceeds the vertical or horizontal authorized disposal limits, an isopach shall include the following:

(a) A comparison that delineates the acreage where disposal of material exceeds the authorized disposal limits.

(b) Notes that indicate the composition, calculated volume in cubic yards, maximum depth, and average depth of the material exceeding the authorized disposal limits.

3745-520-610 Records management, log of operations, and log of odor complaints.

(A) An owner or operator shall retain all authorizing documents at the C&DD facility or at another location acceptable to the licensing authority.

(B) An owner or operator shall maintain an index of alterations that have been concurred with since the permit to install was issued.

(C) Log of operations.

(1) An owner or operator shall complete a log of operations using the forms prescribed by the director, except that alternative forms may be used pursuant to paragraph (B)(2) of this rule.

(2) Alternative forms. An owner or operator shall submit an alternative form to the licensing authority at least fourteen days prior to the owner or operator using the alternative form. The owner or operator may use the alternative form unless not later than fourteen days from the date of submittal unless the licensing authority sends written notification to the owner or operator that the alternative form is unacceptable. Alternative forms for the log of operations may be either in paper or electronic format provided that all of the information requested on the prescribed forms is present.

(3) The log of operations shall be completed in accordance with the instructions on the forms prescribed by the director.

(4) The log of operations shall be completed and signed by personnel at the C&DD facility who are familiar with the operations of the facility.

(5) Completed logs of operations shall be retained at the C&DD facility or at another location acceptable to the licensing authority.

(6) If requested by Ohio EPA or the approved board of health, an owner or operator shall make logs of operations available for inspection during normal operating hours.

(7) If requested by Ohio EPA or the approved board of health, an owner or operator shall submit logs of operations or summaries of logs of operations to Ohio EPA and the approved board of health.

(D) Log of odor complaints.

(1) An owner or operator shall maintain a log of odor complaints received at the C&DD facility.

(2) Odor complaints shall be recorded in the log in chronological order.

(3) The log of odor complaints shall be retained at the C&DD facility or at another location acceptable to the licensing authority.

(4) If requested by Ohio EPA or the approved board of health, an owner or operator shall make the log of odor complaints available for inspection during normal operating hours.

(5) If requested by Ohio EPA or the approved board of health, an owner or operator shall submit the log of odor complaints to Ohio EPA and the approved board of health.

(6) The log of odor complaints shall contain the following:

(a) The date and time of receipt of the complaint.

(b) The date, time, and location the odor was experienced and a description of the odor if this information was provided in the complaint.

(c) The name and affiliation of the person submitting the complaint, if this information was provided in the complaint.

(d) A description of any investigation conducted by the owner or operator in response to the complaint.

(e) A description of any response taken by the owner or operator to reduce or eliminate the odor.

3745-520-615 Routine facility inspections.

(A) Daily inspections. An owner or operator shall inspect a C&DD facility on each day material is accepted for disposal in accordance with the following:

(1) At least once for the following:

(a) Ponding of surface water.

(b) Erosion.

(c) Litter.

(d) Leachate outbreaks.

(e) Cover integrity.

(f) Leaks and failures of the leachate conveyance and storage components, pumps, and meters.

(g) Indications of gas generation and migration.

(h) Indications of a fire or explosion including but not limited to the following:

(i) Heat.

(ii) Light from embers, combustion, or oxidation.

(iii) Settlement of disposed material that is unexpected or abnormal.

(iv) Smoke, steam, or vapor.

(v) Smoldering material.

(vi) Soot, charred material, or combustion residue.

(vii) Abnormal snowmelt patterns.

(viii) Combustion odors.

(2) At least twice for odors in accordance with the following:

(a) The owner or operator shall at a minimum conduct odor inspections prior to the day's initial acceptance of material for disposal and following the day's final acceptance of material for disposal.

(b) Odor inspections shall be conducted by the owner or operator using the following odor intensity reference scale:

Level:	Descriptors:
0	A concentration of an odorant that produces no sensation.
1	A concentration of an odorant that is barely detectable.
2	A distinct and definite odor whose characteristic is clearly detectable.
3	An odor strong enough to cause a person to avoid it completely.
4	An odor so strong as to be overpowering and intolerable for any length of time.

(c) To maximize the detection of odors, the owner or operator shall at a minimum conduct odor inspections by doing the following:

(i) Inspecting along the perimeter of disposed material and along the C&DD facility boundary.

(ii) Selecting additional locations within the C&DD facility when necessary based on previous inspections.

(iii) Stopping at each location where an odor is detected and evaluating the odor using the odor intensity reference scale.

(iv) During a subsequent inspection of the day, returning to each location where an odor was detected in a previous inspection for that day and reevaluating the odor using the odor intensity reference scale.

(B) Weekly inspections. Unless an alternative time is specified elsewhere in this chapter, an owner or operator shall inspect engineered components and systems of engineered components described in rule 3745-520-200 of the Administrative Code at least weekly for evidence of damage, clogging, or failure.

[Comment: Rule 3745-520-03 of the Administrative Code requires an owner or operator to comply with rules 3745-512-60 and 3745-520-500 to 3745-520-599 of the Administrative Code if damage to or failure of an engineered component occurs.]

[Comment: Compliance with paragraph (B) of this rule does not require destructive activities but does include observations made possible via inspection ports and equipment installed for the purpose of monitoring engineered components.]

(C) Inspection documentation. At a minimum, the following information regarding an inspection conducted in accordance with this rule shall be recorded in the log of operations:

(1) The time of the inspection and weather conditions at the time of the inspection.

(2) A description of each affected area discovered during an inspection conducted in accordance with paragraph (A)(1) of this rule and the location of each affected area on a general map of the C&DD facility.

(3) For odor inspections conducted in accordance with paragraph (A)(2) of this rule:

(a) Each location where odor was evaluated on a general map of the C&DD facility.

(b) Odor evaluation information, including intensity and general characterization of the odor, time of each odor observation, and source of the odor, if known.

(4) A discussion of each response or corrective action taken and whether the response or corrective action was successful.

(5) Whether any types of samples were taken, and if so, the type of sample and analysis results. Analysis results available after the date of the inspection shall be inserted into the log of operations for the day of the sampling event.

3745-520-620 Obligations prior to disposing in a phase.

An owner or operator shall not begin disposing in a phase until the following have occurred:

(A) The disposal limits in the previous phase have reached final elevations depicted in the approved phasing plan, except to the extent necessary for the proper operation of the C&DD facility, including the placement of the select C&DD layer pursuant to rule 3745-520-622 of the Administrative Code.

(B) The owner or operator has completed construction of all engineered components shown on the drawing representing the phase in the approved phasing plan.

(C) A construction certification report for the phase has been prepared and submitted to the concurring authority in accordance with rules 3745-520-500 and 3745-512-50 of the Administrative Code.

(D) The concurring authority has inspected the phase and provided written concurrence in accordance with rules 3745-520-500 and 3745-512-51 of the Administrative Code.

3745-520-622 Select C&DD layer.

(A) An owner or operator shall place select C&DD as the first layer disposed on a filter layer that is above a leachate collection system drainage layer. The select C&DD layer shall meet the following criteria:

(1) The select C&DD layer shall not contain asbestos-containing waste materials.

(2) The select C&DD layer shall not be comprised of fines or small particles that can restrict the flow of leachate to the leachate collection system drainage layer or clog the leachate management system.

(3) The select C&DD layer shall be placed in the following manner:

(a) As a single lift so that a minimum distance of five feet is created between the liner system and the next lift of material to be disposed.

(b) Be spread but not compacted.

(c) In a manner that protects the liner system and leachate collection system from intrusion of objects during operation of the C&DD facility.

(d) In a manner that does not damage the liner system or leachate collection system. At a minimum, material shall not be placed by pushing the material down a slope.

(B) An individual who is not the equipment operator shall be present at all times during placement of the select C&DD layer to observe placement of the select C&DD layer and confirm the leachate management system and the liner system are not damaged.

(C) An owner or operator shall submit notification to the licensing authority at least three days prior to the placement of the select C&DD layer.

(D) An owner or operator shall record in the log of operations the following information verifying the completion of placement of the select C&DD layer within a phase:

(1) The date that the select C&DD layer was placed.

(2) The phase where the select C&DD layer was placed.

(3) The thickness of the select C&DD layer.

(4) The composition of the material used for the select C&DD layer.

3745-520-630 Unauthorized material.

[Comment: Only the material authorized by paragraph (A) of rule 3745-520-600 of the Administrative Code may be disposed at a C&DD facility.]

(A) An owner or operator shall not accept pulverized debris at a C&DD facility.

(B) Upon detection of unauthorized material after acceptance, an owner or operator shall ensure that the unauthorized material is managed in accordance with the following:

(1) Unauthorized material shall be handled, stored, transported, and disposed in accordance with applicable local, state, and federal requirements.

(2) Unauthorized material shall be managed in accordance with the material acceptance and handling plan.

(3) The information required in the log of operations regarding the unauthorized material shall be recorded in the log of operations.

(4) Pulverized debris.

(a) Upon detection of pulverized debris at the unloading zone of the C&DD facility or if the approved board of health or Ohio EPA requests removal of pulverized debris from the facility in accordance with section 3714.081 of the Revised Code, an owner or operator shall do either of the following:

(i) Immediately remove the pulverized debris from the facility.

(ii) In accordance with the material acceptance and handling plan, store the pulverized debris at the facility for not longer than ten days in an area where C&DD is not disposed.

(b) An owner or operator shall reject the pulverized debris in accordance with rule 3745-520-632 of the Administrative Code.

(5) Solid waste.

This paragraph does not apply to asbestos or asbestos-containing materials or products disposed in accordance with paragraph (A) of rule 3745-520-600 of the Administrative Code. An owner or operator shall comply with the following regarding solid waste:

(a) The owner or operator shall not dispose any solid waste at the C&DD facility.

(b) If solid waste is discovered on a working face or removal is requested by the approved board of health or Ohio EPA, the owner or operator shall immediately remove the solid waste from the working face.

(c) The owner or operator shall not place any cover, C&DD, or other material on solid waste that is on a working face.

(d) The existence of solid waste on a working face of a C&DD facility does not constitute a violation of Chapter 3714. of the Revised Code or rules adopted thereunder if the following apply:

(i) The owner or operator or the employees of the facility remove the solid waste from the working face immediately.

(ii) The waste constitutes not more than two cubic yards per one thousand cubic yards of C&DD or four cubic yards per one thousand tons of C&DD disposed at the facility based on the amount of C&DD disposed at the facility on the preceding full business day as determined by using the amount of disposal fees collected under section 3714.07 of the Revised Code for wastes disposed at the facility on that preceding full business day.

(iii) The facility is not located within the boundary of a sole source aquifer as described in division (B) of section 3714.03 of the Revised Code.

3745-520-632 Loads rejected at the unloading zone.

(A) If an owner or operator of a C&DD facility rejects a load at the unloading zone of the facility because the load is not authorized for disposal at the facility or if the approved board of health or Ohio EPA requests removal of pulverized debris from the facility in accordance with section 3714.081 of the Revised Code, the owner or operator shall do the following:

(1) Record the rejection of the load in the log of operations.

(2) Prior or concurrent to removal of a rejected load from the C&DD facility, complete a rejected load form prescribed by the director. An owner or operator has successfully completed the form when all of the information is provided except for the item in paragraph (B)(8) of this rule, which applies to the transporter or shipper.

(3) Give the transporter or shipper removing the rejected load from the C&DD facility a copy of the completed rejected load form described in paragraph (B) of this rule prior to the transporter or shipper departing from the facility.

(4) Place a copy of the completed form in the log of operations.

(5) Submit by the end of the working day during which the load was removed a copy of the completed form to the licensing authority.

(B) The rejected load form prescribed by the director shall contain at a minimum the following information:

(1) The date and time the load was rejected.

(2) A unique identification number of the vehicle, trailer, railcar, or other container that was used to transport the load to the facility and the origin of the load.

(3) The name of the transporter or shipper that brought the load to the facility, if ascertainable.

(4) The reason for rejecting the load.

(5) The name of the transporter or shipper removing the load from the facility.

(6) The date and time that the load was or is being removed from the facility.

(7) Instructions for the transporter or shipper for complying with rule 3745-520-634 of the Administrative Code.

(8) Places for the transporter or shipper to record the information required by rule 3745-520-634 of the Administrative Code.

(9) The name and mailing address of the licensing authority that has jurisdiction over the facility.

3745-520-634 Transporter or shipper requirements regarding rejected loads.

[Comment: An owner or operator is required by rule 3745-520-632 to give a transporter or shipper removing a load rejected from a C&DD facility a rejected load form containing instructions for complying with this rule.]

(A) A transporter or shipper of a load that has been rejected pursuant to rule 3745-520-632 of the Administrative Code shall do the following after the load's rejection by a C&DD facility in order to notify the licensing authority of the ultimate disposition of the load:

(1) Complete the rejected load form described in paragraph (B) of rule 3745-520-632 of the Administrative Code in accordance with the following:

(a) Each transporter or shipper having custody of the rejected load shall record the following information on the rejected load form:

(i) Name and contact information.

(ii) The date and time the transporter or shipper took custody and relinquished custody of the rejected load.

(b) The transporter or shipper having final custody of the rejected load shall record the following information on the rejected load form:

(i) The date and time that one of the following occurred to the load:

(a) Ultimately disposed after its rejection.

(b) Relinquished to a licensed solid waste transfer facility.

(c) Relinquished to a location authorized to handle the material.

(ii) The location of the disposal, if known.

(iii) The name of the owner or operator of the location that accepted the load for disposal, if known.

(2) For the transporter or shipper having final custody of the rejected load, ensure that a copy of the completed rejected load form is submitted to the licensing authority listed on the rejected load form not later than fifteen days after relinquishing custody of the rejected load.

(B) A transporter or shipper of a load that has been rejected pursuant to rule 3745-520-632 of the Administrative Code shall manage the load in accordance with applicable local, state, and federal laws and regulations.

3745-520-640 Acceptance, handling, and disposal.

(A) Except for material selected for inspection in accordance with paragraph (J) of this rule, an owner or operator shall take material arriving at the C&DD facility directly to the material log-in area.

(B) While material is at the material log-in area, the owner or operator shall record in the log of operations whether the material has been accepted. No material may enter the disposal limits unless the material has been recorded as accepted in the log of operations.

(C) Refused material. Material has been refused at a C&DD facility in the following circumstances:

(1) After arriving at the facility, the material was not recorded in the log of operations and the material was immediately removed from the facility.

(2) The material was inspected in a designated inspection zone and then immediately removed from the facility.

(3) The material was inspected in a designated inspection zone, placed in the appropriate storage area in the inspection zone, stored, and then removed from the facility.

(D) Main hauling road.

(1) An owner or operator shall designate or use a road as a main hauling road only within the main hauling road areas specified in the facility design plan.

(2) An owner or operator shall not transport any material to be disposed to the disposal limits using a road that is outside of the main hauling road areas specified in the facility design plan.

(3) An owner or operator shall mark each road that is used to transport material between the facility boundary and the disposal limits to be disposed as a main hauling road in the manner described in the material acceptance and handling plan.

(E) If material has been recorded as accepted in the log of operations, an owner or operator shall directly place the material in the unloading zone in accordance with paragraph (G) of this rule, except as follows:

(1) Loads consisting of exclusively clean hard fill may be placed directly in a working face or used as fill material.

(2) Material may be taken directly to a storage area if the owner or operator has indicated in the material acceptance and handling plan that storage will occur at the C&DD facility.

(3) Hot loads shall be taken directly to the hot load handling area and managed in accordance with paragraph (F) of this rule.

(4) Asbestos-containing waste materials shall be placed in an asbestos-containing waste materials disposal area.

(F) Hot load handling.

(1) An owner or operator shall not establish the hot load handling area in a location where materials have been disposed.

(2) To prevent a fire from a hot load, the owner or operator shall establish the hot load handling area a sufficient distance away from any working face, unloading zone, and combustible material.

(3) An owner or operator shall mark the hot load handling area with at least four markers that clearly delineate the limits of the hot load handling area and that are observable by equipment operators.

(4) An owner or operator shall establish the hot load handling area where the hot load handling area is easily accessible by equipment, materials, and services necessary to prevent the spread of fire and to extinguish fire.

(5) After material has been recorded as accepted on the log of operations, an owner or operator shall ensure that any hot load is placed in the hot load handling area.

(6) An owner or operator shall prevent a hot load from damaging engineered components of the C&DD facility.

(7) An owner or operator shall prevent the spread of the fire and extinguish any fire while the material is in the hot load handling area.

(8) Once extinguished or cooled, the owner or operator shall reject the material from the C&DD facility, store the material, or place the material into the unloading zone in accordance with paragraph (G) of this rule.

(9) An owner or operator shall record information about each hot load placed in the hot load handling area in the log of operations.

(G) Unloading zone.

(1) An owner or operator shall establish the unloading zone within the boundaries of the phase that has been certified for disposal.

(2) An owner or operator shall establish the unloading zone at least one hundred feet away from an area where disposal of asbestos-containing waste materials is being conducted.

(3) An owner or operator shall mark the unloading zone with at least four markers that clearly delineate the limits of the unloading zone and that are observable by equipment operators.

(4) An owner or operator shall remove unauthorized material from the unloading zone. If unauthorized material is found in the unloading zone, the owner or operator shall comply with rules 3745-520-630 and 3745-520-632 of the Administrative Code (unauthorized material and loads rejected at the unloading zone).

[Comment: Except for pulverized debris placed in a designated inspection zone, if pulverized debris is recorded in the log of operations or unloaded anywhere within the C&DD facility, including in the unloading zone, it is a violation of division (A) of section 3714.081 of the Revised Code and rule 3745-520-630 of the Administrative Code.]

(5) An owner or operator may remove material to be stored from the unloading zone if the owner or operator has indicated in the material acceptance and handling plan that storage will occur at the C&DD facility.

(6) After an owner or operator has complied with paragraphs (G)(4) and (G)(5) of this rule, an owner or operator shall place material remaining in the unloading zone directly in a working face in accordance with paragraph (H) of this rule.

(H) Working face.

(1) An owner or operator shall establish a working face within the boundaries of the phase that has been certified for disposal.

(2) An owner or operator shall establish a working face at least one hundred feet away from an area where disposal of asbestos-containing waste materials is being conducted.

(3) An owner or operator shall mark a working face with at least four markers that clearly delineate the limits of the working face and that are observable by equipment operators.

(4) An owner or operator shall not have more than one working face at the C&DD facility unless the use of multiple working faces is authorized in the material acceptance and handling plan.

(5) An owner or operator shall establish a working face that is the smallest area necessary for operations.

(6) An owner or operator shall ensure that material is spread evenly over the working face and compacted to the smallest practical volume.

(7) An owner or operator shall ensure that material is placed or spread in the working face in lifts.

(8) An owner or operator shall not place disposed material in a manner that creates a cliff or a high steep face of disposed material.

(9) An owner or operator shall ensure that material is disposed in a manner that does not damage engineered components.

(10) An owner or operator shall ensure that material is disposed in a manner such that the slope or height of the interim slope does not exceed the slope limits established in the permit to install or license or through the geotechnical and stability analyses conducted pursuant to rules 3745-511-40 and 3745-511-50 of the Administrative Code.

(11) Upon detection of unauthorized material at a working face, an owner or operator shall comply with rule 3745-520-630 of the Administrative Code.

(I) Storage areas.

If an owner or operator has been authorized and has chosen to store material at the C&DD facility, the owner or operator shall do the following:

(1) Ensure that storage does not cause a nuisance, a fire hazard, or a threat to public health or safety or the environment, does not violate Chapter 3704., 3714., 3734., or 6111. of the Revised Code, and does not cause or contribute to air or water pollution.

(2) Ensure that unauthorized material is stored and removed from the C&DD facility in accordance with applicable rules.

(3) Mark each storage area including an area that consists solely of one or more portable containers with at least four markers that clearly delineate the limits of the storage area and that are observable by equipment operators.

(4) Ensure that unauthorized material is not stored at the C&DD facility for longer than ten days unless a longer time frame is approved in the current license.

(5) Store material containing solid waste in accordance with the time frames for storage of solid waste in Chapter 3734. of the Revised Code and rules adopted thereunder.

(6) Store asbestos-containing waste materials in accordance with Chapter 3704. of the Revised Code and any authorization issued thereunder.

(7) Document the date and quantity of material when removed, recycled, reused, or disposed from the storage area.

(J) Inspection zone.

(1) An owner or operator shall ensure that material is not placed in an inspection zone unless an owner or operator has designated an inspection zone in the material acceptance and handling plan.

(2) An owner or operator shall ensure that material is not stored in an inspection zone unless the material acceptance and handling plan contains provisions for storage within the inspection zone. Storage within the inspection zone shall conform to paragraph (I) of this rule.

(3) If an owner or operator has designated an inspection zone in the material acceptance and handling plan and has chosen to use the inspection zone, the owner or operator shall do the following:

(a) Ensure that the inspection zone conforms to the following:

(i) Has a push wall or some other method to ensure that material is contained within the inspection zone while it is being unloaded, moved, or reloaded.

(ii) Has a minimum of at least four markers that clearly delineate the limits of the inspection zone and that are observable by equipment operators.

(iii) Can be easily accessed by equipment, materials, and services necessary to prevent the spread of fire and extinguish a fire.

(b) Take material selected for inspection directly to the inspection zone after the material arrives at the C&DD facility.

(c) After inspecting the material, if the material is not refused in accordance with paragraph (C) of this rule, take the material directly to material log-in area and comply with paragraphs (B) to (I) of this rule.

(d) Place hot loads designated for inspection in the inspection zone in a manner that does not cause a fire or result in the spread of fire.

(e) Extinguish material that is within the inspection zone that is on fire.

(4) If an owner or operator removes material from a storage area within the inspection zone to transport the material to a storage area outside the inspection zone but at the C&DD facility, the owner or operator shall do the following:

(a) First take the material directly to the material log-in area.

(b) Comply with paragraphs (B), (E), and (I) of this rule.

3745-520-642 Phase completion.

(A) Not later than thirty days after completing disposal in a phase, an owner or operator shall survey the top of the disposed waste and create a topographic map and isopach of the C&DD facility that conform to rule 3745-520-605 of the Administrative Code. The drawings shall be made available to the approved board of health and Ohio EPA upon request.

(B) Not later than thirty-one days after beginning disposal in a new phase, an owner or operator shall begin constructing either cap system or transitional cover over those areas of the previous phase in accordance with the phasing plan.

3745-520-650 Control of surface water and ground water to minimize leachate generation.

To control surface water and ground water in order to minimize the generation of leachate, an owner or operator shall do the following:

(A) Grade the C&DD facility and provide drainage and diversion structures or systems to minimize infiltration of water through the cover material and cap system and to minimize erosion of the cover material and cap system.

(B) Eliminate conditions causing ponding or erosion over disposed material.

(C) Eliminate conditions causing silting or scouring in surface water drainage structures.

(D) Divert surface water that originates outside of the boundaries of disposed material away from disposed material in a manner such that water is not directed under, over, or through disposed material.

(E) Divert ground water from all phases of the C&DD facility by non-mechanical means once disposal commences at the facility.

3745-520-652 Leachate management and disposal.

(A) Leachate management system operation. An owner or operator shall do the following:

(1) Operate the leachate management system to collect leachate from each area in the C&DD facility in which a leachate collection system has been installed.

(2) Keep leachate generated by disposed material within the certified portions of the leachate management system until the leachate is removed from the C&DD facility.

(3) Operate the leachate management system such that all collected leachate is conveyed to a leachate storage tank, leachate treatment works, or discharge connection to a public sewerage system, as specified in the permit to install.

(4) Record the quantity of leachate conveyed in the log of operations.

(5) Operate the leachate management system such that depth of leachate above the basal elevations of the leachate collection system drainage layer will not exceed one foot, except in sumps.

(6) Record all incidents of activation of the leachate high level alarm in the log of operations.

(7) Have at least one back-up pump at the C&DD facility at all times unless the leachate management system functions entirely upon gravity flow. An owner or operator shall place a back-up pump into service as needed to comply with paragraph (A)(3) of this rule. Not later than seven days after a pump is replaced, the owner or operator shall submit a construction certification report for the installation of the replacement pump in accordance with rules 3745-520-500, 3745-512-50, and 3745-512-436 of the Administrative Code.

(8) Not later than thirty days after placing the select C&DD layer over any of the leachate collection pipes, visually or physically inspect the leachate collection pipes for evidence of damage or failure including but not limited to deflection, deformation, or crushing. An owner or operator shall record documentation of this inspection in the log of operations and submit the documentation to the concurring authority with a construction certification report if repair or reconstruction is necessary.

[Comment: Rule 3745-520-03 of the Administrative Code requires an owner or operator to comply with rules 3745-512-60 and 3745-520-500 to 3745-520-599 of the Administrative Code if damage to or failure of an engineered component occurs.]

(9) An owner or operator shall annually inspect the leachate collection pipes for clogging or obstruction. If any pipe is clogged or obstructed, the owner or operator shall remove the clog or obstruction.

(B) Leachate management in areas not underlain by a leachate management system.

If an owner or operator places C&DD or waste on the ground in an area of the C&DD facility not required to be underlain by a leachate management system, the owner or operator shall do the following in that area:

(1) Take action to minimize the production of leachate.

(2) Collect and contain leachate within the area and prevent leachate from discharging to waters of the state.

(3) Remove leachate from each area by the end of each working day.

(4) If they exist, maintain the structures or mechanisms used for the collection or containment of leachate to prevent blockage, clogging, leakage, or damage that may impede proper collection or containment of leachate.

[Comment: Examples of areas that may be subject to this rule are an inspection zone, a hot load handling area, and a storage area.]

(C) If a leachate outbreak occurs at the C&DD facility, an owner or operator shall at a minimum repair the outbreak and properly manage leachate from the outbreak by doing at a minimum the following:

(1) Containing and collecting the leachate and disposing the leachate and leachate-contaminated materials in accordance with paragraph (D) of this rule.

(2) Taking action to minimize, control, or eliminate the conditions that contribute to the production of leachate.

(D) An owner or operator shall manage and dispose leachate and leachate-contaminated materials in accordance with local, state, and federal requirements.

(E) An owner or operator shall implement the contingency plan for the storage, treatment, and disposal of leachate if leachate can no longer be treated and disposed in accordance with the permit to install.

3745-520-654 Leachate recirculation system operation.

(A) An owner or operator shall not operate a leachate recirculation system unless the following criteria are met:

(1) The design of the leachate recirculation system is approved in the permit to install.

(2) Operation of the leachate recirculation system is authorized in the current license.

(3) A gas management system is being operated to control hydrogen sulfide or other gases in the phase where leachate is to be recirculated.

(4) Ground water monitoring is being performed in accordance with rule 3745-520-06 and Chapter 3745-506 of the Administrative Code and the C&DD facility is not conducting a ground water assessment program or a ground water corrective actions program.

(5) The leachate sampling and analysis plan conforms to rule 3745-520-460 of the Administrative Code and leachate sampling and analysis is being performed in accordance with rule 3745-520-660 of the Administrative Code.

(B) An owner or operator shall not apply more than 4.3 gallons of leachate to any given cubic yard of area where material is disposed. The owner or operator shall record in the log of operations the amount of leachate applied to an area where material is disposed.

(C) An owner or operator shall operate a leachate recirculation system in a manner that prevents leachate outbreaks and leachate ponding.

(D) An owner or operator shall cease recirculating leachate if any of the following occur:

(1) The gas collection and conveyance system or gas control system becomes inoperable. This paragraph does not apply during periods of startup, shutdown, or malfunction, provided that the duration of startup, shutdown, or malfunction does not exceed five days.

(2) The leachate storage tank is full.

(3) Leachate outbreaks or leachate ponding.

(4) The leachate recirculation system or leachate management system or an engineered component of either fails.

(5) A slope failure.

(6) The owner or operator is conducting a ground water assessment or ground water corrective actions program.

(7) The fire and explosion contingency plan is required to be implemented for a subsurface fire.

(8) The hydrogen sulfide and other gases contingency plan is required to be implemented.

(9) The volume of leachate applied to disposed material has exceeded the volume specified in paragraph (B) of this rule.

(10) The owner or operator permanently ceases acceptance of material for disposal.

3745-520-660 Leachate sampling, analysis, and reporting.

[Comment: Chapter 3745-506 of the Administrative Code requires an owner or operator to monitor ground water for parameters that have been detected in the C&DD facility's leachate.]

(A) The owner or operator shall comply with the leachate sampling and analysis plan.

(B) Sampling frequency.

(1) An owner or operator shall sample leachate at the C&DD facility at least annually.

(2) If an owner or operator has authorization in a current license to recirculate leachate, the owner or operator shall sample leachate at the C&DD facility at least quarterly.

(C) Sampling locations. During each sampling event, an owner or operator shall obtain at least one representative leachate sample from each phase containing disposed material. Each sample shall be collected from a sampling access identified in the facility design plan.

(D) Field analysis. During each leachate sampling event, an owner or operator shall measure the pH, specific conductance, temperature, and turbidity of each leachate sample.

(E) Laboratory analysis.

(1) An owner or operator shall analyze each leachate sample for the parameters listed in rule 3745-506-703 of the Administrative Code.

(2) The practical quantitation limit (PQL) used for laboratory analysis shall be the following:

(a) Protective of public health and safety and the environment.

(b) The lowest concentration level that can be reliably achieved during routine laboratory operating conditions

that are reasonably available for the analytical method chosen by the owner or operator.

(3) For each sample the PQL shall be lower than the primary drinking water standard for the parameter included in Chapter 3745-81 of the Administrative Code, if one exists, and the secondary drinking water standard for the parameter included in Chapter 3745-82 of the Administrative Code if one exists.

(4) If the PQL does not comply with paragraph (E)(3) of this rule then an owner or operator shall do one of the following:

(a) Choose an alternative analytical method that will result in a PQL that complies with paragraph (E)(3) of this rule.

(b) Conclude that the parameter has been detected in leachate for the purpose of conducting ground water detection monitoring under Chapter 3745-506 of the Administrative Code.

(F) Submitting the sampling and analysis results.

(1) The information required by paragraph (F)(2) of this rule shall be submitted to Ohio EPA and the approved board of health as follows:

(a) An owner or operator that is not authorized in a current license to recirculate leachate shall submit the information in the annual operational report required by rule 3745-520-695 of the Administrative Code.

(b) An owner or operator that is authorized in a current license to recirculate leachate shall submit the information not later than seventy-five days after each quarterly sampling event.

(2) An owner or operator shall submit the following information when required by paragraph (F)(1) of this rule:

(a) The results of the field analysis required by paragraph (D) of this rule.

(b) The results of the laboratory analysis of the parameters listed in rule 3745-506-703 of the Administrative Code in the same order as those listed in that rule.

(c) All other parameters detected in the C&DD facility's leachate through the laboratory analysis method.

(d) The parameters that were added to the ground water monitoring parameter list in the C&DD facility's ground water monitoring plan.

(e) Quality control data used by the laboratory to determine whether the analysis results are accurate.

(f) The method detection limits, PQLs, and analysis methods used.

(g) Forms in the leachate sampling and analysis plan that were completed during leachate sampling and analysis.

(3) The information required by paragraph (F)(2) of this rule shall be signed and certified by a professional skilled in the appropriate discipline.

3745-520-665 Gas management system operation.

An owner or operator shall comply with this rule if a gas management system has been installed at the C&DD facility.

(A) Gas management system operations. An owner or operator shall do the following:

(1) Extract gas from each area of the C&DD facility in which gas collection devices have been installed.

(2) Vent collected gas to the atmosphere or convey collected gas to a gas control device, whichever is authorized in applicable authorizing documents and regulations.

(3) Operate the gas management system in a manner that prevents fire and controls odors.

(4) Perform cover maintenance to prevent ambient air infiltration into disposed material.

(5) Keep the gas management system free of liquids to the extent necessary to maintain the function of the gas management system.

(B) Gas collection device operations. An owner or operator shall operate a gas collection device in accordance with the following:

(1) Negative pressure shall be maintained at each gas well wellhead except during the following circumstances:

(a) When an increased temperature is measured and the owner or operator takes measures to prevent a subsurface fire.

(b) When a subsurface fire is occurring in the vicinity of the well and the owner or operator takes measures to respond to the fire.

(2) For gas from a gas collection device going through disposed material:

(a) The temperature shall not exceed one hundred thirty degrees Fahrenheit.

(b) The nitrogen concentration shall not exceed twenty per cent by volume.

(c) The oxygen concentration shall not exceed five per cent by volume.

(C) If monitoring of the gas management system pursuant to rule 3745-520-675 of the Administrative Code indicates positive pressure during circumstances other than those specified in paragraph (B)(1) of this rule or if monitoring indicates an exceedance of a value in paragraph (B)(2) of this rule (temperature, nitrogen, or oxygen), the owner or operator shall do the following:

(1) Prevent additional occurrences of positive pressure and additional exceedances of values in paragraph (B)(2) of this rule while performing maintenance, adjustments, or other corrective actions.

(2) For an exceedance of a value in paragraph (B)(2) of this rule, the following:

(a) Perform cover maintenance and maintenance of the gas collection device and connections to reduce air infiltration not later than five days after the monitoring event. Remonitor the gas collection device not later than one calendar day after performing maintenance.

(b) If a gas collection device is connected to a gas mover, adjust the vacuum to reduce the gas extracted not later than five days after the monitoring event. Remonitor the gas collection device not later than one calendar day after the adjustment.

(c) If the correction of the exceedance cannot be achieved not later than fifteen calendar days after the original monitoring event, notify the licensing authority in writing of the exceedance and of the actions that the owner or operator plans to take to correct the exceedance.

(3) For positive pressure, the following:

(a) Adjust the vacuum to increase the gas extracted not later than five days after the monitoring event. Remonitor the gas well not later than one calendar day after the adjustment.

(b) Do one or more of the following not later than one hundred twenty days after the original monitoring event if negative pressure cannot be achieved within fifteen calendar days of the original monitoring event, unless the monitoring event occurred during the first one hundred eighty days after gas collection system startup:

(i) Replace the gas well or expand the gas management system.

(ii) Upgrade the gas mover equipment, header pipe, or control device.

(iii) Alter the gas management system design in the permit to install to incorporate new or different components if the design of the gas management system is documented in the permit to install.

This paragraph does not apply during periods of startup, shutdown, or malfunction, provided that the duration of startup, shutdown, or malfunction does not exceed five days for the gas collection and conveyance systems and does not exceed one hour for control devices.

(D) Gas control device operations. If a gas control device exists, an owner or operator shall operate the gas control device in accordance with the following:

(1) At all times when the collected gas is conveyed to the control device.

(2) In accordance with applicable authorizations and regulations pertaining to air pollution control.

(E) In the event a component of the gas management system is inoperable, an owner or operator shall comply with the following:

(1) Not later than one hour after discovering the inoperable component, close all valves in the gas management system contributing to venting of the gas to the atmosphere.

(2) Record the incident in the log of operations. The record shall contain a description of any response or corrective actions taken and the effectiveness of the response or corrective action, including the date and time that the inoperable component was discovered and the date and time that the operation of the component resumed.

(F) Decommissioning a gas well or gas vent. An owner or operator shall decommission a gas well or gas vent in a manner that prevents infiltration of air and water into disposed material. If the gas well or gas vent penetrated the cap system, an owner or operator shall do the following:

(1) Remove any casing to a minimum of two feet below the ground surface.

(2) If casing remains within the cap system, cap the gas vent or gas well.

(3) If casing remains but is no longer present within the cap system, place fill material in the remaining casing or cap the gas vent or gas well.

(4) If all casing is removed, place fill material in the remaining borehole.

(5) Construct cap system engineered components in the area of the penetration to maintain the continuity of the cap system.

(6) Submit a construction certification report prepared in accordance with rules 3745-520-500 and 3745-512-50 of the Administrative Code for the activities required by paragraph (F) of this rule.

3745-520-670 Fire and explosion prevention, investigation, and response; implementation of the fire and explosion contingency plan.

(A) Prevention. An owner or operator shall do the following:

(1) Prohibit smoking near combustible material.

(2) Operate the C&DD facility in a manner that prevents fire from occurring in disposed material and in C&DD and waste being stored, reused, or recycled at the facility. This paragraph does not apply to hot loads handled in accordance with rule 3745-520-640 of the Administrative Code.

(3) Operate the C&DD facility in a manner that prevents explosion including but not limited to explosions in confined spaces, occupied structures, and other places where explosive gases may accumulate.

(4) Maintain at or near the C&DD facility or have available to the facility adequate equipment, material, and services to prevent the spread of fire and extinguish fire. At a minimum, the owner or operator shall ensure that the equipment, materials, and services described in the fire and explosion contingency plan are at or available to the facility.

(5) At least weekly, cover disposed combustible material with non-combustible soil or non-combustible clean hard fill. Cover material shall be placed in a manner such that it minimizes void spaces, inhibits the ability of oxygen to reach combustible material, and covers all disposed combustible material so that it is not visible. The date the cover was placed and the location, area, and type of the placed cover shall be recorded in the log of operations.

(B) Investigation.

This paragraph applies only to fires and explosions in disposed material and in C&DD and waste being stored, reused, or recycled at the facility and does not apply to hot loads handled in accordance with rule 3745-520-640 of the Administrative Code.

(1) If an indication of fire or explosion as described in paragraph (A)(1)(h) of rule 3745-520-615 of the Administrative Code is found during an inspection or at any other time, an owner or operator shall do one of the following:

(a) Acknowledge there is a fire or explosion by complying with paragraph (C) of this rule.

(b) Determine whether a fire or explosion is occurring or has occurred.

(2) When investigating, an owner or operator shall verbally notify the licensing authority prior to disturbing buried disposed material. The owner or operator shall send written notification to the licensing authority not later than seven days after delivery of the verbal notification.

(3) Investigation activities and results shall be recorded in the log of operations.

(4) If an owner or operator determines there is a fire or explosion, an owner or operator shall comply with paragraph (C) of this rule.

(C) Response.

This paragraph applies only to fires and explosions in disposed material and in C&DD and waste being stored, reused, or recycled at the facility and does not apply to hot loads handled in accordance with rule 3745-520-640 of the Administrative Code.

(1) Upon detection of a fire or explosion, an owner or operator shall do the following:

(a) Prevent the spread of the fire and extinguish the fire.

(b) Implement the fire and explosion contingency plan.

(c) Delineate the extent of the fire or the area affected by the explosion.

(d) Evaluate slope stability and the integrity of the engineered components.

(e) Record the incident in the log of operations. The record shall contain a description of any response or corrective actions taken and the effectiveness of the response or corrective action.

(f) Notify Ohio EPA and the approved board of health not later than twenty-four hours after detection of the fire or explosion. The notification shall contain the following information:

(i) A description of the incident.

(ii) Whether the fire department or other emergency personnel have entered the C&DD facility in response to the incident.

(iii) Whether the integrity or effectiveness of any engineered component at the C&DD facility has been damaged or has failed as a result of the fire or explosion, if this information is known at the time of notification.

(2) Upon a measurement equal to or greater than twenty-five per cent of the lower explosive limit of an explosive gas within a structure or confined space, an owner or operator shall do the following immediately:

(a) Evacuate the area to a safe distance.

(b) Eliminate ignition sources.

(c) Notify the fire department, Ohio EPA, and the approved board of health.

(D) Continued compliance with a fire and explosion contingency plan.

(1) An owner or operator shall continue to comply with an implemented fire and explosion contingency plan until the owner or operator has obtained written authorization from the licensing authority releasing the owner or operator from the obligation to comply with the contingency plan.

(2) The licensing authority may decline to act on a request for such an authorization.

(3) If the licensing authority chooses to act on the request, the licensing authority may release the owner or operator from the obligation to comply with the contingency plan if the licensing authority determines that the fire or explosion has been remedied.

(4) If the licensing authority grants authorization releasing the owner or operator from the obligation to comply with the contingency plan, the licensing authority shall retain and distribute copies of the authorization pursuant to rule 3745-500-130 of the Administrative Code.

3745-520-675 Monitoring to determine whether a gas management system is being properly operated and to detect fire; responses required based on monitoring results.

(A) An owner or operator shall conduct monitoring in accordance with this rule to determine whether a gas management system, if one exists at the facility, is being properly operated and to detect fire.

(B) Equipment and methods.

(1) Temperature shall be determined using monitoring equipment with an accuracy of plus or minus 2.8 degrees Fahrenheit.

(2) Carbon monoxide concentration of gas shall be determined using appropriate laboratory techniques suitable for the constituent concentration expected.

[Comment: Ohio EPA recommends using ASTM D1945-03, ASTM D1946-90, and USEPA methods 3C, 10B, and 25C, as described in rule 3745-500-03 of the Administrative Code.]

(C) Borings. At any time a boring is made into disposed material, an owner or operator shall monitor the temperature of the disposed material and the temperature of the gas within the boring.

(D) Monthly monitoring. An owner or operator shall monitor each gas collection device at least monthly for the following:

(1) Temperature of the gas.

(2) Nitrogen concentration of the gas.

(3) Oxygen concentration of the gas.

(4) Carbon dioxide concentration of the gas.

(5) Hydrogen sulfide concentration of the gas.

(6) Pressure if the gas collection device is a gas well.

(E) Quarterly monitoring. An owner or operator shall monitor the temperature of gas within leachate cleanout access pipes and leachate sump risers at least quarterly.

(F) When monitoring indicates that the temperature of the gas exceeds one hundred thirty degrees Fahrenheit but is below one hundred fifty degrees Fahrenheit, an owner or operator shall do the following:

(1) If the location demonstrating the exceedance is a gas collection device, do the following:

(a) Respond to the exceedance in accordance with the gas management system operation requirements in rule 3745-520-665 of the Administrative Code.

(b) If correction of the exceedance cannot be achieved not later than fifteen days after the original monitoring event, comply with paragraph (J) of this rule not later than twenty days after the original monitoring event.

(2) If the location demonstrating the exceedance is not a gas collection device, re-monitor the location of the exceedance to determine the temperature of the gas not later than five days after the original monitoring event. If re-monitoring reveals that the temperature exceeds one

hundred thirty degrees Fahrenheit, an owner or operator shall comply with paragraph (J) of this rule not later than five days after the re-monitoring event.

(G) When monitoring indicates that the temperature of the gas is at or above one hundred fifty degrees Fahrenheit, an owner or operator shall comply with paragraph (J) of this rule not later than five days after the monitoring event and shall respond to the exceedance in accordance with the gas management system operation requirements in rule 3745-520-665 of the Administrative Code if the location demonstrating the exceedance is a gas collection device.

(H) When monitoring indicates positive pressure at a gas well, an owner or operator shall respond to the positive pressure in accordance with the gas management system operation requirements in rule 3745-520-665 of the Administrative Code.

(I) When monitoring of gas in a gas collection device indicates that the nitrogen concentration exceeds twenty per cent by volume or the oxygen concentration exceeds five per cent by volume, an owner or operator shall respond to the exceedance in accordance with the gas management system operation requirements in rule 3745-520-665 of the Administrative Code.

(J) When required by paragraph (F) or (G) of this rule, an owner or operator shall conduct additional gas monitoring to determine the following:

(1) Temperature of the gas where the temperature is monitored pursuant to paragraphs (C) to (E) of this rule.

(2) Temperature of gas within the leachate collection pipes, if the location of the exceedance is a leachate cleanout access pipe or leachate sump riser.

(3) Temperature profile of the location of the exceedance, if the original exceedance was at or above one hundred fifty degrees Fahrenheit and if the location of the exceedance is a vertical boring or vertical engineered component. A temperature measurement shall be taken at least once every ten feet.

(4) Carbon dioxide concentration.

(5) Nitrogen concentration.

(6) Oxygen concentration.

(7) Hydrogen sulfide concentration.

(8) Carbon monoxide concentration in parts per million by volume and pressure, if the location of the exceedance is a gas well.

(K) Monitoring documentation.

(1) At a minimum, an owner or operator shall record the following information regarding monitoring conducted in accordance with this rule in the log of operations:

(a) The time of the monitoring event and weather conditions at the time of monitoring.

(b) The monitoring location.

(c) The parameters that were monitored.

(d) Monitoring results available on the date of monitoring.

(e) A discussion of each response or corrective action taken.

(2) An owner or operator shall insert the monitoring results available after the date of monitoring into the log of operations for the day of the monitoring event.

3745-520-680 Hydrogen sulfide and other gases and odors - prevention and investigation of releases; implementation of the hydrogen sulfide and other gases contingency plan.

(A) Prevention. An owner or operator shall do the following:

(1) Operate the C&DD facility in a manner that minimizes the release of hydrogen sulfide or other gases created by the operation of the C&DD facility.

(2) Prevent a nuisance, offensive odor, threat to public health or safety or the environment, air pollution, or contribution to air pollution, from the release of hydrogen sulfide or other gases created by the operation of the C&DD facility.

(B) Investigation of the source of odors.

(1) An owner or operator shall commence investigating the source of odors not later than seven days after the frequency, duration, or intensity of odors at the C&DD facility increases, as determined through routine facility inspections conducted in accordance with rule 3745-520-615 of the Administrative Code.

(2) An investigation shall include at a minimum complying with paragraphs (C) and (D) of this rule to investigate whether a release of hydrogen sulfide or other gases is a source of the odors.

(3) An odor investigation shall be conducted for a period of ninety days.

(4) An owner or operator shall record in the log of operations the steps of the investigation and any actions taken to remediate the odor during the investigation.

(5) Portable equipment used to measure ambient air concentrations of hydrogen sulfide and other gases shall conform to and be operated in accordance with paragraph (E) of this rule.

(C) Ambient air monitoring using portable equipment.

When an odor investigation in accordance with paragraph (B) of this rule is occurring, an owner or operator shall do the following:

(1) While conducting an odor inspection in accordance with rule 3745-520-615 of the Administrative Code, use portable equipment to take at least one measurement of the ambient air concentration of hydrogen sulfide and other gases at each location where an odor is evaluated using the odor intensity reference scale.

(2) Record each measurement in the log of operations.

(D) Surface emissions surveys.

(1) To evaluate the emissions of hydrogen sulfide and other gases from areas of disposed material, an owner or operator shall conduct a surface emissions survey at least weekly and in accordance with the following:

(a) Using portable equipment to measure ambient air concentrations of hydrogen sulfide and other gases from a consistent height near the surface of disposed material.

(b) Consisting of measurements taken along the perimeter of areas of disposed material and along a pattern that traverses the areas of disposed material at intervals no greater than one hundred feet apart and where visual observations are indicative of elevated concentrations of gas emissions.

(c) Consisting of measurements taken approximately fifty feet apart along the perimeter of areas of disposed material and along the traversing pattern and at intervening distances where pronounced odors are detected during the survey.

(d) At a time and during weather conditions conducive to evaluating surface emissions.

(2) An owner or operator shall complete a surface emissions survey report that includes the following:

(a) The date and time the survey was conducted.

(b) Weather conditions at the time of the survey.

(c) A topographic map that conforms to rule 3745-520-605 of the Administrative Code and includes the following:

(i) Delineation of the monitoring route taken.

(ii) The location of each measurement and the result.

(iii) The wind direction.

[Comment: An owner or operator may use the topographic map submitted in the most recent annual operational report to report the results of surface emissions surveys.]

(d) The name, mailing address, and telephone number of the person who conducted the surface emissions survey.

(e) An evaluation of the survey results.

(f) A summary of the results of the ambient air monitoring required by paragraph (C) of this rule updated to the date of the surface emissions survey.

(g) A description of any actions taken to minimize the release of hydrogen sulfide or other gases by the owner or operator in response to surface emissions survey or ambient air monitoring results. This description shall include the date when and the location where each action was performed.

(3) Not later than five days after each surface emissions survey, an owner or operator shall submit the surface emissions survey report to the licensing authority. An owner or operator shall insert a copy of the report into the log of operations for the day the survey was conducted.

(E) Portable equipment requirements.

(1) An owner or operator shall do the following:

(a) Select equipment capable of detecting hydrogen sulfide concentrations of five parts per billion.

(b) Select equipment that has a manufacturer-specified field sensor calibration verification method.

(c) Calibrate, operate, and maintain the equipment in accordance with manufacturer recommendations, instructions, and operating manuals, or other written procedures that provide adequate assurance that the equipment would reasonably be expected to monitor accurately.

(d) Field calibrate the equipment at the C&DD facility prior to placing the equipment into operation at the facility.

(2) The owner or operator shall maintain records of equipment calibration and maintenance at the C&DD facility or other location acceptable to the licensing authority.

(3) The owner or operator shall provide equipment calibration and maintenance records upon the request of Ohio EPA or the approved board of health.

(F) Implementation of the hydrogen sulfide and other gases contingency plan.

(1) An owner or operator shall implement and comply with the hydrogen sulfide and other gases contingency plan in response to any one or combination of the following events:

(a) The owner or operator determines that implementation of the contingency plan is warranted.

(b) Upon receipt of a notice that paragraph (A) of this rule has been violated.

(2) As soon as practicable but not later than twenty-four hours after an owner or operator determines that implementation of the contingency plan is warranted pursuant to paragraph (F)(1) of this rule, the owner or operator shall notify the following authorities:

(a) The fire department that would respond to the C&DD facility.

(b) The local air pollution control authority, if applicable.

(c) Ohio EPA.

(d) The approved board of health.

If the notification is not in writing, then a written notification shall be submitted to these authorities not later than three days after the owner or operator determines that implementation of the contingency plan is warranted.

(3) An owner or operator shall record in the log of operations the date and time the contingency plan was implemented.

(4) An owner or operator shall continue to comply with paragraph (B) of this rule when implementing a hydrogen sulfide and other gases contingency plan.

[Comment: Pursuant to rule 3745-520-685 of the Administrative Code, no permit to install modifications or alterations or license modifications are necessary prior to installing the required engineered components during implementation of a hydrogen sulfide or other gases contingency plan.]

(G) Continued compliance with a hydrogen sulfide or other gases contingency plan.

(1) An owner or operator shall continue to comply with an implemented contingency plan until the owner or operator has obtained written authorization from the licensing authority releasing the owner or operator from the obligation to comply with the contingency plan.

(2) The licensing authority may decline to act on a request for such an authorization.

(3) If the licensing authority chooses to act on a request, the licensing authority shall consider the concentrations measured by monitoring equipment, the trends in air quality concentrations, and the value of the air quality data.

(4) If the licensing authority grants authorization releasing the owner or operator from the obligation to comply with the contingency plan, the licensing authority shall retain and distribute copies of the authorization pursuant to rule 3745-500-130 of the Administrative Code.

3745-520-685 Exclusions from rules and instructions for complying with rules when implementing a hydrogen sulfide and other gases contingency plan.

(A) Notwithstanding the requirements of this chapter, an owner or operator is excluded from compliance with the following when implementing a hydrogen sulfide and other gases contingency plan, in order to perform the activities listed in paragraph (B) of this rule:

(1) Paragraph (B) of rule 3745-520-03 of the Administrative Code regarding construction activities.

(2) Paragraphs (C), (D), and (F) of rule 3745-520-03 of the Administrative Code regarding modifications and alterations of a permit to install and modifications of a license.

(3) Paragraph (G) of rule 3745-520-03 of the Administrative Code regarding compliance with authorizing documents, except that the owner or operator shall only deviate from the authorizing documents as little as necessary to perform the activities in paragraph (B) of this rule.

(4) The requirement of paragraph (A)(1) of rule 3745-512-50 of the Administrative Code to demonstrate compliance with the C&DD facility design in the authorizing document if design provisions for the activities listed in paragraph (B) of this rule are not contained within the authorizing document.

(B) Activities conducted under the hydrogen sulfide and other gases contingency plan:

(1) Placement of transitional cover.

(2) Installation of a cap system.

(3) Installation of a gas management system.

(4) Voluntary activities to control the release of hydrogen sulfide, other gases, and odors.

(C) For the purpose of complying with Chapter 3745-512 of the Administrative Code, the changes to the C&DD facility identified in paragraph (B) of this rule shall be submitted and reviewed as alterations submitted within a construction certification report.

3745-520-690 Certification of material by C&DD transfer facilities and documentation from railroads.

(A) Certification by an owner or operator of a facility that transfers C&DD.

(1) An owner or operator of a C&DD facility may request an owner or operator of a facility that transfers C&DD to certify that material being transferred from the transfer facility to the C&DD facility is not any of the following:

(a) Off-specification material.

(b) Hazardous waste.

(c) Solid waste.

(d) Infectious waste.

(e) Low-level radioactive waste for which treatment, recycling, storage, or disposal is regulated under division (B) of section 3748.10 of the Revised Code.

(2) Forms for certification of material from a facility that transfers C&DD.

(a) An owner or operator of a C&DD facility choosing to request that an owner or operator of a facility that transfers C&DD certify material in accordance with paragraph (A)(1) of this rule shall use a form prescribed by the director. When requesting an owner or operator of a facility that transfers C&DD to certify material, the owner or operator shall provide the form to the owner or operator of the transfer facility. The owner or operator of the C&DD facility shall make completed certification forms available upon the request of Ohio EPA or the approved board of health.

(b) The director may include instructions and places to record the following information on the prescribed certification forms:

(i) General information about the C&DD facility.

(ii) General information about the facility that transfers C&DD.

(iii) Certification information pursuant to paragraph (A)(1) of this rule.

(B) Documentation from railroads.

(1) If material is transported to a C&DD facility by a railroad that is regulated under U.S.C. Title 49, Transportation as described in rule 3745-500-03 of the Administrative Code, an owner or operator of a C&DD facility may request the railroad operator to provide either of the following:

(a) A bill of lading, or a copy of a bill of lading, from the shipper of the material.

(b) Written information indicating that the railroad did not process or add to the material.

(2) An owner or operator of a C&DD facility choosing to request that a railroad operator provide information in accordance with paragraph (B)(1) of this rule shall make available all bills of lading or written information upon the request of Ohio EPA or the approved board of health.

(C) Information provided in accordance with paragraph (A) or (B) of this rule shall not alleviate an owner or operator of a C&DD facility from the obligation to comply with the authorized materials requirements of paragraph (A) of rule 3745-520-600 and the unauthorized materials requirements of rule 3745-520-630 of the Administrative Code.

3745-520-695 Annual operational report.

An owner or operator shall submit an annual operational report to Ohio EPA and the approved board of health not later than April first of each year. The annual operational report shall be submitted using forms prescribed by the director. At a minimum, the annual operational report shall include the following information summarizing operations during the reporting year:

(A) The calendar year that the submittal represents.

(B) General C&DD facility information including but not limited to name, location, contact information, facility owner, property titleholder, and facility operator.

(C) The name, contact information, and signature of the person completing the annual operational report.

(D) A topographic map of the C&DD facility that conforms to paragraph (C) of rule 3745-520-605 of the Administrative Code and includes the following:

(1) Delineation and acreage of areas that were used for disposal during the reporting year.

(2) Delineation and acreage of areas that are to be used for disposal in the next year.

(E) An isopach of the C&DD facility that conforms to paragraph (D) of rule 3745-520-605 of the Administrative Code and includes delineation and acreage of areas that were used for disposal during the reporting year.

(F) A summary of the log of operations for the reporting year.

(G) A summary of the disposal fees collected during the reporting year.

(H) An estimate of the remaining disposal capacity and the remaining life of the C&DD facility.

(I) If the owner or operator has received concurrence for alterations to a permit to install, a copy of the index of alterations required by paragraph (B) of rule 3745-520-320 of the Administrative Code.

(J) Leachate management and treatment information, including at a minimum the following:

(1) A summary of the quantity of leachate collected for treatment and disposal on a monthly basis during the reporting year.

(2) The location of leachate treatment and disposal.

(3) Verification that the leachate management system has been inspected in accordance with paragraph (A)(8) of rule 3745-520-652 of the Administrative Code and the findings of the inspection.

(4) A comparison of the total volume of leachate collected during the reporting year to each previous year.

(5) A summary of the occurrences of any high-level alarms, causes of the alarms, and the corrective actions taken.

(K) Leachate recirculation information if the owner or operator recirculated leachate during the reporting year, including at a minimum the following:

(1) A summary of the amount of leachate that has been recirculated during the reporting year.

(2) The total volume of leachate recirculated (cumulative) in gallons per square yard of area where material was disposed. This information shall be depicted on a map of the C&DD facility.

(3) A comparison of the total volume of leachate recirculated during the reporting year to each previous year.

(4) An evaluation and supporting documentation of whether the leachate recirculation system meets the criteria in paragraph (A) of rule 3745-520-249 of the Administrative Code.

(L) Annual leachate sampling and analysis results if the owner or operator was not authorized to recirculate leachate during the reporting year. The results shall contain the information required by paragraph (E) of rule 3745-520-660 of the Administrative Code and shall be signed and certified by a professional skilled in the appropriate discipline.

[Comment: Any owner or operator that has authorization to recirculate leachate is required by rule 3745-520-660 of the Administrative Code to submit leachate sampling and analysis results quarterly.]

(M) Gas management system information if a gas management system has been installed and operated, including at a minimum the following:

(1) Value, length of time, and location for exceedances of the monitored parameters for the gas collection devices.

(2) Description and duration of periods during the reporting year when the gas management system was not operating for more than one hour.

(3) Description and duration of periods during the reporting year when any portion of the gas collection and conveyance system was not operating for more than five days.

(4) The date of installation and the location of each gas collection device added during the reporting year.

(5) The date of abandonment, decommissioning, recommissioning, or removal of any gas collection device during the reporting year.

(N) A summary of any maintenance performed on the leachate management system, ground water monitoring system, gas management system, and any other monitoring or control system installed at the C&DD facility.

[Comment: Chapter 3745-506 contains the maintenance requirements for a ground water monitoring system.]

(O) Any additional information requested by the director pertaining to operation or construction of the C&DD facility in accordance with this chapter, authorizing documents, or Chapter 3704., 3714., 3734., or 6111., of the Revised Code.

3745-520-700 General closure and post-closure care activities.

(A) For closure, an owner or operator shall do the activities listed in paragraph (C) of this rule and rule 3745-520-710 of the Administrative Code.

(B) For post-closure care, an owner or operator shall do the activities listed in paragraph (C) of this rule and rule 3745-520-750 of the Administrative Code.

(C) Closure and post-closure care activities shall include but are not limited to an owner or operator doing the following:

(1) Complying with the general obligations in rule 3745-520-03 of the Administrative Code.

(2) Complying with rule 3745-520-06 of the Administrative Code regarding ground water monitoring.

(3) Complying with the compliance disclosure requirements in rule 3745-520-70 of the Administrative Code when employing a new key employee.

(4) Maintaining and complying with the following portions of the general plan of facility operations:

(a) A leachate sampling and analysis plan that conforms to rule 3745-520-460 of the Administrative Code.

(b) A fire and explosion contingency plan that conforms to rule 3745-520-470 of the Administrative Code.

(c) A hydrogen sulfide and other gases contingency plan that conforms to rule 3745-520-480 of the Administrative Code.

(d) A contingency plan for the storage, treatment, and disposal of leachate. The contingency plan for the storage, treatment, and disposal of leachate shall describe the immediate and long-term steps, including the location of an existing or proposed on-site treatment works, to be taken for leachate management in the event that collected leachate cannot be managed in accordance with the permit to install.

(e) A contingency plan for equipment failure. This plan shall specify how the owner or operator intends to operate in compliance with this chapter in the event of equipment failure.

(5) Complying with the construction requirements in rule 3745-520-500 of the Administrative Code.

(6) Complying with rules 3745-520-650, 3745-520-652, and 3745-520-660 of the Administrative Code regarding minimization of leachate generation, leachate management and disposal, and leachate sampling, analysis, and reporting.

(7) Complying with rules 3745-520-665 to 3745-520-685 of the Administrative Code regarding operation of a gas management system, fire and explosion, and hydrogen sulfide and other gases and odors.

(8) Maintaining the signs stating that the C&DD facility is closed required by rule 3745-520-710 of the Administrative Code such that the signs remain legible.

(9) Maintaining the gates, fencing, or other sturdy obstacles blocking each entrance to the C&DD facility required by rule 3745-520-710 of the Administrative Code.

(10) Complying with the financial assurance requirements for post-closure care in rule 3745-520-910 of the Administrative Code.

(11) Maintaining roads within the C&DD facility in a manner that allows use in all weather conditions, that will withstand the anticipated degree of use, and will minimize erosion and generation of dust.

(12) Limiting access to the C&DD facility to authorized persons only.

(13) Excluding domestic and farm animals from the C&DD facility except those used for security or vector control.

(14) Mowing vegetative cover in areas where a cap system has been constructed at least once per year.

(15) Submitting an annual report to Ohio EPA and the approved board of health in accordance with the following:

(a) The annual report shall be submitted not later than April first of each year, except that the final annual report shall be submitted at the same time as the post-closure care certification report.

(b) An annual report shall contain the following:

(i) A summary of the quantity of leachate collected for treatment and disposal on a monthly basis during the reporting year, the location of leachate treatment and disposal, and verification that the leachate management system has been inspected in accordance with paragraph (A)(8) of rule 3745-520-652 of the Administrative Code.

(ii) Leachate sampling and analysis results. The results shall contain the information required by paragraph (E) of rule 3745-520-660 of the Administrative Code and shall be signed and certified by a professional skilled in the appropriate discipline.

(iii) A summary of maintenance performed on the leachate management system, ground water monitoring system,

gas management system, and other monitoring and control systems installed at the C&DD facility.

(iv) A summary of ongoing ground water assessment programs or ground water corrective actions programs, if required.

(v) Post-closure care financial assurance documentation prepared in accordance with rule 3745-520-910 of the Administrative Code using forms prescribed by the director. The cost estimates shall be revised to account for any changes at the C&DD facility and shall be adjusted for inflation. If no changes have occurred since the last update, then the cost estimates shall only be adjusted for inflation. The adjustment shall be made using an inflation factor derived from the annual implicit price deflator for gross domestic product as published by the United States department of commerce in the February issue of "Survey of Current Business" as described in rule 3745-500-03 of the Administrative Code.

(16) Retaining all authorizing documents and completed logs of operations at a location acceptable to the licensing authority where the documents are available for inspection by Ohio EPA or the approved health department during normal business hours.

(17) Maintaining all records and reports generated during closure and the post-closure care period at a location acceptable to the licensing authority where the records and reports are available for inspection by Ohio EPA or the approved health department during normal business hours.

3745-520-710 Closure of a C&DD facility.

(A) An owner or operator shall complete closure of a C&DD facility in a manner that accomplishes the following:

(1) Minimizes the need for maintenance at the facility.

(2) Prevents the failure of final slopes.

(3) Protects public health and safety and the environment.

(4) Does not create a nuisance or fire hazard.

(5) Does not cause or contribute to air or water pollution.

(6) Minimizes erosion; infiltration of surface water; production of leachate; production of hydrogen sulfide, other gases, and odors; and accumulation and runoff of contaminated surface water.

(B) An owner or operator shall provide to the licensing authority written notice of the intent and anticipated date to permanently cease acceptance of material for disposal at the C&DD facility at least ninety days prior to the anticipated date.

(C) Closure of a C&DD facility shall begin when any of the following occurs:

(1) The license issued for the facility has expired and a renewal license has not been applied for in accordance with Chapter 3745-501 of the Administrative Code.

(2) The license issued for the facility has expired, a renewal license has been applied for, and the renewal license application has been denied as a final action.

(3) The license issued for the facility has been revoked as a final action.

(4) All final elevations of the authorized disposal limits have been reached.

(5) The owner or operator ceases accepting material for disposal at the facility for a period greater than one year and all final elevations of the authorized disposal limits have not been reached.

(D) Closure activities shall include but are not limited to an owner or operator doing the following:

(1) Complying with rule 3745-520-700 of the Administrative Code (general closure and post-closure care activities).

(2) Complying with the financial assurance requirements for closure in rule 3745-520-910 of the Administrative Code.

(3) In addition to paragraph (C)(15) of rule 3745-520-700 of the Administrative Code, the annual report during closure shall contain closure financial assurance documentation prepared in accordance with rule 3745-520-905 of the Administrative Code using forms prescribed by the director. The cost estimates shall be revised to account for any changes at the C&DD facility and shall be adjusted for inflation. If no changes have occurred since the last update, then the cost estimates shall only be adjusted for inflation. The adjustment shall be made using an inflation factor derived from the annual implicit price deflator for gross domestic product as published by the United States department of commerce in the February issue of "Survey of Current Business" as described in rule 3745-500-03 of the Administrative Code.

(4) Conducting facility inspections in accordance with rule 3745-520-615 of the Administrative Code with the following exceptions:

(a) An inspection pursuant to paragraph (A)(1) of rule 3745-520-615 of the Administrative Code shall be

performed on each day that facility personnel are at the C&DD facility.

(b) The odor inspection need only be performed once during the day that the inspection required by paragraph (D)(2)(a) of this rule is performed.

(5) Reclaiming each borrow area within the C&DD facility boundary in accordance with the following:

(a) An owner or operator shall grade, contour, or terrace final slopes, wherever needed, sufficient to achieve soil stability and control landslides, erosion, and sedimentation. Highwalls may remain if the highwalls are compatible with future uses and measures will be taken to ensure public safety.

(b) Where ponds, impoundments, or other resulting bodies of water are intended for recreational use, the owner or operator shall establish banks and slopes that will provide safe access to those bodies of water. Where such bodies of water are not intended for recreation, the owner or operator shall include measures to ensure public safety, but access need not be provided.

(c) The owner or operator shall resoil the area of land affected, wherever needed, with topsoil or suitable subsoil, fertilizer, lime, or soil amendments, as appropriate, in sufficient quantity and depth to raise and maintain a diverse growth of vegetation adequate to bind the soil and control soil erosion and sedimentation.

(d) Except in borrow areas being used to obtain soil for closure activities, the owner or operator shall establish a diverse vegetative cover of grass and legumes or trees, grasses, and legumes capable of self-regeneration and plant succession.

(6) Completing the following activities within the time required:

(a) Prior to or on the date that acceptance of material for disposal ceases, the owner or operator shall permanently cease leachate recirculation if leachate is being recirculated.

(b) Prior to the completion of closure, the owner or operator shall properly remove or abandon all leachate recirculation equipment.

(c) Not later than seven days after ceasing to accept material for disposal, the owner or operator shall do the following:

(i) Provide written notification to the licensing authority of the date the C&DD facility ceased accepting material for disposal.

(ii) Block each entrance to the C&DD facility by locked gates, fencing, or other sturdy obstacles to prevent unauthorized access during the closure and post-closure care period.

(iii) Cover disposed combustible material pursuant to rule 3745-520-670 of the Administrative Code.

(d) Not later than thirty days after ceasing to accept material for disposal, the owner or operator shall post signs at each entrance to the C&DD facility stating that the facility is closed. The signs shall include the telephone numbers of the owner, emergency personnel including the local fire department, the approved board of health, and the appropriate district office of Ohio EPA. The signs shall be readable from vehicles arriving at the C&DD facility.

(e) Not later than ninety days after ceasing to accept material for disposal, the owner or operator shall submit a final annual operational report that conforms to rule 3745-520-695 of the Administrative Code.

(f) Construction of cap system in uncapped areas as follows:

(i) Not later than one year after ceasing to accept material for disposal, the owner or operator shall complete construction of a cap system over all areas of the authorized disposal limits not previously certified for the construction of a cap system.

(ii) If the owner or operator appeals the final denial or final revocation of a license to the environmental review appeals commission in accordance with section 3745.04 of the Revised Code and the commission grants a de novo hearing with respect to the appeal in accordance with section 3745.05 of the Revised Code, the owner or operator may elect to postpone the construction of a cap system. In order to postpone construction under this rule, the following shall be satisfied:

(a) The owner or operator complies and will continue to comply with all applicable financial assurance requirements.

(b) The owner or operator is in compliance with and will continue to comply with all other applicable closure requirements set forth in this chapter.

(c) The C&DD facility is not the subject of an emergency order requiring the capping or placement of cover over the facility issued pursuant to division (B) of section 3714.12 of the Revised Code.

(d) A court of competent jurisdiction has not ordered the C&DD facility to cease acceptance of material for disposal or to commence closure activities.

(e) Postponement of construction of the cap system will not create a nuisance or fire hazard, or cause or contribute to air or water pollution.

(f) The owner or operator has undertaken a continuing program of cap construction or has entered into a binding contractual obligation to complete construction of a cap system within one hundred eighty days after an entry of the commission's decision affirming the final action.

Not later than ten days after the commission grants a de novo hearing, the owner or operator shall provide written notice to the licensing authority and the director stating that the construction of the cap system will be postponed in accordance with this rule. The written notice must be accompanied by an affidavit certifying that all of the conditions required for postponement are satisfied.

Postponement under this rule shall automatically terminate upon the failure of the owner or operator to comply with any part of this rule; or the dismissal of the appeal by the commission; or the issuance of an order by the commission affirming the denial or revocation. The owner or operator shall complete construction of a cap system as required by this rule not later than one hundred eighty days after the termination of the postponement.

(g) Prior to submitting the closure certification report, the owner or operator shall file with the appropriate county recorder the following:

(i) A plat of the C&DD facility and information describing the acreage, location, depth, volume, and nature of the disposed material.

(ii) A notice that the property was previously used as a C&DD facility. The notice shall be filed in the same manner as a deed to the property. The notice shall include an engineering drawing attachment showing the vertical and lateral extent of disposed material, an indication of the volumes of disposed material, and an indication of the depth of the final cover material.

(h) Not later than ninety days after the completion of closure activities, the owner or operator shall submit to Ohio EPA and the approved board of health a closure certification report that conforms to rule 3745-520-720 of the Administrative Code.

[Comment: Rule 3745-512-30 addresses time frames for establishing complete and dense vegetation on the cap protection layer. "Completion of closure activities" includes construction of the cap system but does not include the seeding and establishment of complete and dense vegetation. Failure to achieve complete and dense vegetation within the time frames established by rule 3745-512-30 would be a violation of that rule and not this rule.]

(E) Post-closure care of a C&DD facility shall begin when one of the following occurs:

(1) The concurring authority concurs with the closure certification report in accordance with rule 3745-520-720 of the Administrative Code.

(2) Both of the following:

(a) Twelve months have passed after the closure certification report was submitted to Ohio EPA and the approved board of health.

(b) The owner and operator are in substantial compliance with the facility's authorizing documents and applicable rules.

3745-520-720 Closure certification report.

(A) The closure certification report shall be signed by a professional skilled in the appropriate discipline and shall certify that the C&DD facility has been closed in accordance with this chapter.

(B) The closure certification report shall contain at a minimum the following:

(1) A copy of the plat and a copy of the notice filed with the appropriate county recorder in accordance with rule 3745-520-710 of the Administrative Code.

(2) Documentation that the owner or operator has completed the closure activities required by rule 3745-520-710 of the Administrative Code.

(3) A list of the construction certification reports for construction of the cap system with the date of submittal and a topographic map of the entire C&DD facility showing the areas and acreage certified by each report.

The topographic map of the C&DD facility shall be certified by a professional skilled in the appropriate discipline. The scale, contour interval, and grid system of the topographic map shall be consistent with the permit to install. The topographic map shall include the facility boundary, the horizontal authorized disposal limits, the location of all materials disposed outside the authorized disposal limits, and the location of the permanent survey marks.

(4) Any other information requested by Ohio EPA or the approved board of health that is necessary to determine whether the owner or operator has completed closure of the C&DD facility in accordance with this chapter.

(C) Concurring authority requirements.

(1) The concurring authority shall not concur with a closure certification report unless the concurring authority determines that the owner or operator has demonstrated the following:

(a) The owner or operator has completed the closure activities required by rule 3745-520-710 of the Administrative Code.

(b) The owner and operator are in substantial compliance with Chapter 3714. of the Revised Code and rules adopted thereunder and authorizing documents issued thereunder.

(c) The owner and operator are in compliance with Chapters 3704. and 6111. of the Revised Code and rules adopted thereunder and authorizing documents issued thereunder.

(2) Upon concurrence, the concurring authority shall retain and distribute copies of the signed concurrence letter pursuant to rule 3745-500-130 of the Administrative Code.

3745-520-750 Post-closure care of a C&DD facility.

(A) An owner or operator shall commence post-closure care activities at the C&DD facility in accordance with paragraph (E) of rule 3745-520-710 of the Administrative Code.

(B) Post-closure care activities shall be conducted for five years unless the post-closure care period is extended in accordance with rule 3745-520-755 of the Administrative Code.

(C) Post-closure care activities shall include but are not limited to an owner or operator doing the following:

(1) Complying with rule 3745-520-700 of the Administrative Code (general closure and post-closure care activities), except that during post-closure care required information shall be submitted to the licensing authority instead of being recorded in the log of operations.

(2) Conducting facility inspections in accordance with rule 3745-520-615 of the Administrative Code with the following exceptions:

(a) The frequency of inspection shall at a minimum be quarterly.

(b) The odor inspection need only be performed once during the day of the quarterly inspection.

(c) Instead of recording inspection results in the log of operations, a written summary shall be submitted to the licensing authority not later than fifteen days after the inspection date detailing the results of the inspection and a schedule of any actions to be taken to maintain compliance with this chapter.

(3) Establishing a diverse vegetative cover of grass and legumes or trees, grasses, and legumes capable of self-regeneration and plant succession in each borrow area within the C&DD facility boundary.

(D) Not earlier than sixty days and not later than thirty days prior to the completion of the post-closure care period, an owner or operator shall do the following:

(1) Decommission the ground water monitoring system in a manner that will be protective of public health and safety and the environment, unless Ohio EPA or the approved board of health requires that the ground water monitoring system not be decommissioned. The owner or operator shall provide written notification to Ohio EPA and the approved board of health at least thirty days prior to commencing decommissioning of the ground water monitoring system.

(2) Decommission the gas management system in a manner that will be protective of public health and safety and the environment. At a minimum, gas wells and gas vents shall be decommissioned pursuant to rule 3745-520-665 of the Administrative Code.

(3) Submit to Ohio EPA and the approved board of health a post-closure care certification report that conforms to rule 3745-520-760 of the Administrative Code.

3745-520-755 Procedures for issuance of an order extending the post-closure care period.

(A) The post-closure care period may be extended by order of the approved board of health, the director, or a court of competent jurisdiction if conditions at a C&DD facility are impacting public health or safety or the environment or if ground water assessment and ground water corrective actions are required to be conducted at the facility in accordance with Chapter 3745-506 of the Administrative Code. The requirement to maintain financial assurance for post-closure care may be extended if the post-closure care period is extended pursuant to this rule.

(B) An order extending the post-closure care period shall contain at a minimum the following information:

(1) Identification and location of the C&DD facility for which the post-closure care period is extended.

(2) The effective date of the order.

(3) A summary of the conditions at the C&DD facility that are impacting public health or safety or the environment or whether ground water assessment or ground water corrective actions are required to be conducted at the C&DD facility in accordance with Chapter 3745-506 of the Administrative Code.

(4) The length of the extended post-closure care period established by the order.

(5) Any extension of the length of time that financial assurance for post-closure care is required to be maintained.

(6) Any terms or conditions established by the order.

(7) A termination date or termination provisions.

(C) When issuing an order extending the post-closure care period, the director shall act in accordance with Chapters 119., 3714., 3734., and 3745. of the Revised Code, as applicable.

(D) When issuing an order extending the post-closure care period, an approved board of health shall act in accordance with Chapter 3714. and section 3709.20 of the Revised Code.

(E) Upon issuance of an order extending the post-closure care period, copies of the order shall be retained and distributed pursuant to rule 3745-500-130 of the Administrative Code.

3745-520-760 Post-closure care certification report.

(A) The post-closure care certification report shall be signed by a professional skilled in the appropriate discipline and shall certify that the owner or operator has completed post-closure care in accordance with this chapter.

(B) The post-closure care certification report shall contain at a minimum the following:

(1) Documentation that the owner or operator has completed the post-closure activities required by rule 3745-520-750 of the Administrative Code.

(2) An assessment of the integrity and long term stability of the cap system.

(3) A summary of changes to leachate quality and quantity.

(4) Rate of leachate generation and quantity of leachate at the C&DD facility, with an explanation of how these figures were derived.

(5) A discussion of hydrogen sulfide gas migration and generation by the C&DD facility.

(6) Any other information requested by Ohio EPA or the approved board of health that is necessary to determine whether the owner or operator has conducted post-closure care of the C&DD facility in accordance with this chapter.

3745-520-905 Financial assurance for closure of a C&DD facility.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) Closure cost estimate.

(1) A cost estimate for performing the closure activities required by rule 3745-520-710 of the Administrative Code shall be calculated in current dollars and be based on a third party being paid prevailing wages to conduct the closure activities at the point in time during the licensing year that closure will be the most expensive.

(2) The cost estimate shall be at least thirteen thousand dollars per acre to the nearest tenth of an acre as established in the license application for the C&DD facility for areas that have been and are being used for the disposal.

(B) The closure financial assurance instrument shall contain an itemized written cost estimate calculated in accordance with paragraph (A) of this rule and shall be funded in an amount not less than the calculated closure cost estimate. However, the licensing authority may request that the owner or operator adjust the amount of financial assurance in conjunction with the issuance of an annual license. The licensing authority shall provide with the request an explanation of the rationale for a financial assurance amount exceeding thirteen thousand dollars per acre. If the licensing authority makes such a request, the owner or operator shall comply with the request.

(C) After executing and funding a closure financial assurance instrument, financial assurance for closure shall be maintained and may be released only in accordance with paragraph (N) of this rule.

(D) Review of closure financial assurance instrument.

(1) The owner or operator shall adjust the amount of the financial assurance instrument according to the cost estimate calculated pursuant to paragraphs (A) and (B) of this rule. Whenever the closure cost estimate increases to

an amount greater than the amount of the financial assurance maintained, the owner or operator shall cause the amount of the financial assurance instrument to be increased to an amount at least equal to the closure cost estimate and submit evidence of such increase to the licensing authority or obtain alternative financial assurance, as specified in this rule, to compensate for the increase. The amount of the financial assurance instrument shall be increased not later than sixty days after the increased cost estimate is calculated or by December thirty-first, whichever occurs first, and at least prior to license issuance.

(2) The owner or operator may use an existing financial assurance instrument to satisfy all or part of the financial assurance requirements of this rule as long as the requirements of paragraph (E) of this rule are met.

(E) The owner or operator shall select a closure financial assurance mechanism from the list of mechanisms specified in paragraphs (F), (G), (H), (I), or (J) of this rule provided the owner or operator satisfies the criteria for use of that mechanism.

(F) Closure trust fund.

(1) The owner or operator may satisfy the requirements of this rule by establishing a closure trust fund that conforms to this rule and by submitting an originally signed duplicate of the trust agreement to the licensing authority. The trustee shall be an entity which has the authority to act as a trustee and whose trust operations are regulated and examined by a federal or state agency.

(2) The wording of the trust agreement shall be identical to the wording specified in paragraph (A)(1) of rule 3745-520-930 of the Administrative Code and the trust agreement shall be accompanied by a formal certification of acknowledgment.

(3) The owner or operator shall fully fund the trust fund prior to the date of license issuance. The owner or operator shall submit to the licensing authority a receipt from the trustee for the deposit made into the trust fund.

(4) If the owner or operator establishes a closure trust fund to replace one or more alternative mechanisms specified in this rule, the owner or operator shall fully fund the trust fund in an amount at least equal to the closure cost estimate determined in accordance with paragraphs (A) and (B) of this rule.

(5) When any area of the C&DD facility with financial assurance has had the cap system constructed and the cap system certification report has been concurred with by the licensing authority, the owner or operator, or any other person authorized to perform closure, may request reimbursement for closure expenditures. Upon request for reimbursement, the licensing authority shall calculate in accordance with paragraph (M) of this rule the amount to be reimbursed and shall instruct, in writing, the trustee to make such reimbursement.

(6) When the C&DD facility is certified closed, the owner or operator, or any other person authorized to perform closure, may request reimbursement for closure expenditures after submitting a closure certification report to the licensing authority. Upon request for reimbursement, the licensing authority shall calculate in accordance with paragraph (M) of this rule the amount to be reimbursed and shall instruct, in writing, the trustee to make such reimbursement.

(7) The trust fund may be terminated when either of the following occurs:

(a) The licensing authority has approved termination because the owner or operator has substituted alternative financial assurance for closure as specified in this rule.

(b) The approved board of health or the director notifies the owner or operator in accordance with paragraph (N) of this rule that the owner or operator is no longer required by this rule to maintain financial assurance for closure of the C&DD facility.

(G) Surety bond guaranteeing payment into a closure trust fund.

(1) The owner or operator may satisfy the requirements of this rule by obtaining a surety bond that conforms to this rule and by submitting the originally signed surety bond to the licensing authority. At a minimum, the surety bond company issuing the surety bond shall be among those listed as acceptable sureties on federal bonds in "Circular 570" of the U.S. department of the treasury.

[Comment: "Circular 570" is published in the "Federal Register" annually on the first day of July; interim changes in the circular are also published in the "Federal Register."]

(2) The wording of the surety bond shall be identical to the wording specified in paragraph (B) of rule 3745-520-930 of the Administrative Code.

(3) The owner or operator who uses a surety bond to satisfy the requirements of this rule shall also establish a standby trust fund not later than the date the surety bond is obtained. Under the terms of the surety bond, all payments made thereunder shall be deposited by the surety bond company directly into the standby trust fund in accordance with instructions from the licensing authority. This standby trust fund shall meet the requirements specified in paragraph (F) of this rule, except as follows:

(a) An originally signed duplicate of the trust agreement shall be submitted with the surety bond.

(b) Until the standby trust fund is funded, pursuant to the requirements of this rule, a deposit into the standby trust fund as specified in paragraph (F) of this rule is not required.

(4) The surety bond shall guarantee that the owner or operator shall do one of the following:

(a) Fund the standby trust fund in an amount equal to the penal sum of the surety bond before the beginning of closure.

(b) Fund the standby trust fund in an amount equal to the penal sum of the surety bond not later than fifteen days after closure is required in compliance with paragraph (C) of rule 3745-520-710 of the Administrative Code.

(c) Provide alternative financial assurance as specified in this rule, and obtain written approval of the alternative financial assurance from the licensing authority not later than ninety days after both the owner or operator and the licensing authority receive notice of cancellation of the surety bond from the surety bond company.

(5) Under the terms of the surety bond, the surety bond company shall become liable on the surety bond obligation when the owner or operator fails to perform as guaranteed by the surety bond.

(6) Except as provided in paragraph (K) of this rule, the penal sum of the surety bond shall be in an amount at least equal to the closure cost estimate determined in accordance with paragraphs (A) and (B) of this rule.

(7) Under the terms of the surety bond, the surety bond shall remain in full force and effect unless the surety bond company sends written notice of cancellation by certified mail or other form of mail accompanied by a receipt to the owner or operator, the approved board of health, and the director. Cancellation shall not occur during the period of one hundred twenty days beginning on the first day that both the owner or operator and the licensing authority have received the notice of cancellation, as evidenced by the return receipts.

(8) The owner or operator may cancel the surety bond if the licensing authority has given prior written approval. The licensing authority may provide such written approval when one of the following occurs:

(a) The owner or operator substitutes alternative financial assurance for closure as specified in this rule.

(b) The licensing authority notifies the owner or operator in accordance with paragraph (N) of this rule that the owner or operator is no longer required to maintain financial assurance for closure of the C&DD facility.

(H) Surety bond guaranteeing performance of closure.

(1) The owner or operator may satisfy the requirements of this rule by obtaining a surety bond that conforms to this rule and by submitting the originally signed surety bond to the licensing authority. The surety bond company issuing the surety bond shall, at a minimum, be among those listed as acceptable sureties on federal bonds in "Circular 570" of the U.S. department of the treasury.

[Comment: "Circular 570" is published in the "Federal Register" annually on the first day of July; interim changes in the circular are also published in the "Federal Register."]

(2) The wording of the surety bond shall be identical to the wording specified in paragraph (C) of rule 3745-520-930 of the Administrative Code.

(3) The owner or operator who uses a surety bond to satisfy the requirements of this rule shall also establish a standby trust fund not later than the date the surety bond is obtained. Under the terms of the surety bond, all payments made thereunder shall be deposited by the surety bond company directly into the standby trust fund in accordance with instructions from the licensing authority. This standby trust fund shall meet the requirements specified in paragraph (F) of this rule except as follows:

(a) An originally signed duplicate of the trust agreement shall be submitted with the surety bond.

(b) Until the standby trust fund is funded in accordance with this rule, a deposit into the standby trust fund as specified in paragraph (F) of this rule is not required.

(4) The surety bond shall guarantee that the owner or operator shall do one of the following:

(a) Perform closure in accordance with rule 3745-520-710 of the Administrative Code and other requirements of any authorizing documents.

(b) Provide alternative financial assurance as specified in this rule, and obtain written approval of the alternative financial assurance from the licensing authority not later than ninety days after both the owner or operator and the licensing authority receive notice of cancellation of the surety bond from the surety bond company.

(5) Under the terms of the surety bond, the surety bond company shall become liable on the surety bond obligation when the owner or operator fails to perform as guaranteed by the surety bond. Following a determination by the approved board of health or the director that the owner or operator has failed to perform closure activities in

accordance with rule 3745-520-710 of the Administrative Code and requirements of any authorizing documents, the surety bond company shall perform closure activities in accordance with rule 3745-520-710 of the Administrative Code and requirements of any authorizing documents or shall deposit the amount of the penal sum of the surety bond into the trust fund.

(6) The penal sum of the surety bond shall be in an amount at least equal to the closure cost estimate determined in accordance with paragraphs (A) and (B) of this rule.

(7) Under the terms of the surety bond, the surety bond shall remain in full force and effect unless the surety bond company sends written notice of cancellation by certified mail or other form of mail accompanied by a receipt to the owner or operator, the approved board of health, and the director. Cancellation shall not occur during the period of one hundred twenty days beginning on the first day that both the owner or operator and the licensing authority have received the notice of cancellation, as evidenced by the return receipts.

(8) The owner or operator may cancel the surety bond if the licensing authority has given prior written approval. The licensing authority may provide such written approval when one of the following occurs:

(a) The owner or operator substitutes alternative financial assurance for closure as specified in this rule.

(b) The licensing authority notifies the owner or operator in accordance with paragraph (N) of this rule that the owner or operator is no longer required by this rule to maintain financial assurance for closure of the C&DD facility.

(9) The surety bond company shall not be liable for deficiencies in the completion of closure activities by the owner or operator after the owner or operator has been notified by the licensing authority in accordance with this rule that the owner or operator is no longer required to maintain financial assurance for closure of the C&DD facility.

(I) Closure letter of credit.

(1) The owner or operator may satisfy the requirements of this rule by obtaining an irrevocable standby letter of credit that conforms to this rule and by having the originally signed letter of credit delivered to the licensing authority. The issuing institution shall be an entity that has the authority to issue letters of credit and whose letter of credit operations are regulated and examined by a federal or state agency.

(2) The wording of the letter of credit shall be identical to the wording specified in paragraph (D) of rule 3745-520-930 of the Administrative Code.

(3) An owner or operator who uses a letter of credit to satisfy the requirements of this rule shall also establish a standby trust fund not later than the date the letter of credit is obtained. Under the terms of the letter of credit, all amounts paid pursuant to a draft by the licensing authority shall be deposited directly by the issuing institution into the standby trust fund in accordance with instructions from the licensing authority. The standby trust fund shall meet the requirements of the trust fund specified in paragraph (F) of this rule, except as follows:

(a) An originally signed duplicate of the trust agreement shall be submitted with the letter of credit.

(b) Until the standby trust fund is funded, pursuant to the requirements of this rule, a deposit into the standby trust fund as specified in paragraph (F) of this rule is not required.

(4) The letter of credit shall be accompanied by a letter from the owner or operator referring to the letter of credit by number, issuing institution, and date, and providing the following information: the names and addresses of the C&DD facility and the owner or operator and the amount of funds assured for closure of the C&DD facility by the letter of credit.

(5) The letter of credit shall be irrevocable and issued for a period of at least one year. The letter of credit shall provide that the expiration date shall be automatically extended for a period of at least one year unless, at least one hundred twenty days prior to the current expiration date, the issuing institution notifies the owner or operator, the approved board of health, and the director by certified mail or any other form of mail accompanied by a receipt of a decision not to extend the expiration date. Under the terms of the letter of credit, the period of one hundred twenty days shall begin on the day when the owner or operator, the licensing authority, and the director have received the notice, as evidenced by the return receipts.

(6) Except as provided in paragraph (K) of this rule, the letter of credit shall be issued in an amount at least equal to the closure cost estimate determined in accordance with paragraphs (A) and (B) of this rule.

(7) Following a determination by the approved board of health or the director that the owner or operator has failed to perform closure activities in accordance with rule 3745-520-710 of the Administrative Code and requirements of any authorizing documents, the approved board of health or the director may draw on the letter of credit.

(8) If the owner or operator does not establish alternative financial assurance as specified in this rule and obtain written approval of such alternative financial assurance from the licensing authority not later than ninety days after both the owner or operator, the licensing authority, and the

director have received notice from the issuing institution that it shall not extend the letter of credit beyond the current expiration date, the approved board of health or director shall draw on the letter of credit. The approved board of health or the director may delay the drawing if the issuing institution grants an extension of the term of the credit. During the final thirty days of any such extension, the approved board of health or the director shall draw on the letter of credit if the owner or operator has failed to provide alternative financial assurance as specified in this rule and has failed to obtain written approval of such alternative financial assurance from the licensing authority.

(9) The licensing authority shall return the original letter of credit to the issuing institution for termination when one of the following occurs:

(a) The owner or operator substitutes alternative financial assurance for closure as specified in this rule.

(b) The licensing authority notifies the owner or operator in accordance with paragraph (N) of this rule that the owner or operator is no longer required to maintain financial assurance for closure of the C&DD facility.

(J) Closure insurance.

(1) The owner or operator may satisfy the requirements of this rule by obtaining closure insurance that conforms to this rule and by submitting an originally signed certificate of such insurance to the licensing authority.

(2) The owner or operator using insurance as a financial assurance mechanism shall submit documentation stating whether the insurer is a subsidiary or has a corporate, legal, or financial affiliation with the owner or operator. If the closure insurance is issued by a subsidiary or affiliate, the owner or operator shall include a detailed written description of the relationship between the insurer and the owner and the operator.

(3) An insurer issuing an insurance policy in satisfaction of this rule shall be licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more states. The owner or operator shall submit to the licensing authority the following information regarding the insurer's qualifications:

(a) The most recent A.M. Best rating of the insurer.

(b) Documentation demonstrating that the insurer is domiciled in the United States.

(c) The most recent report on examination from the insurance department from the insurer's state of domicile.

(d) Documentation demonstrating that the insurer has capital and surplus of at least one hundred million dollars.

(e) Documentation demonstrating that the insurer received an unqualified opinion of the insurer's annual financial statements from an independent certified public accountant.

(4) The licensing authority may disallow use of the insurer by the owner or operator on the basis of one or more of the following:

(a) The A.M. Best rating is less than A-.

(b) The report on examination does not demonstrate that the status of the insurer is satisfactory.

(c) The opinion expressed by the independent certified public accountant in the report on examination of the insurer's financial statements.

(5) The wording of the certificate of insurance shall be identical to the wording specified in paragraph (E) of rule 3745-520-930 of the Administrative Code.

(6) Except as provided in paragraph (K) of this rule, the closure insurance policy shall be issued for a face amount at least equal to the amount of the closure cost estimate determined in accordance with paragraphs (A) and (B) of this rule. The face amount shall be the total amount the insurer is obligated to pay under the policy. Actual payments by the insurer shall not change the face amount, but the insurer's future liability shall be lowered by the amount of the payments.

(7) The closure insurance policy shall guarantee that funds shall be available to close the C&DD facility and conduct closure activities whenever closure is mandated. The policy shall also guarantee that once closure of the C&DD facility occurs, the insurer shall be responsible for paying out funds, up to an amount equal to the face amount of the policy. Upon the direction of the licensing authority, payment shall be made to such party or parties as the licensing authority specifies.

(8) When any area of the C&DD facility with financial assurance has had the cap system constructed and the cap system certification report has been concurred with by the licensing authority, the owner or operator, or any other person authorized to perform closure, may request reimbursement for closure expenditures. The licensing authority shall calculate in accordance with paragraph (M) of this rule the amount to be reimbursed and shall instruct, in writing, the insurer to make such reimbursement.

(9) The owner or operator shall maintain the policy in full force and effect until the licensing authority consents to termination of the policy by the owner or operator as specified in paragraph (J)(13) of this rule. Failure to pay the premium, without substitution of alternative financial assurance as specified in this rule, constitutes a violation of these rules, warranting such remedy as the licensing

authority deems necessary. Such violation shall be deemed to begin upon receipt by the licensing authority of a notice of future cancellation, termination, or failure to renew due to nonpayment of the premium, rather than upon the date of expiration.

(10) Each policy shall contain a provision allowing assignment of the policy to a successor owner or operator. Such assignment may be conditional upon consent of the insurer, provided such consent is not unreasonably refused.

(11) The policy shall provide that the insurer may not cancel, terminate, or fail to renew the policy except for failure to pay the premium. The automatic renewal of the policy shall, at a minimum, provide the insured with the option of renewal at the face amount of the expiring policy. If there is a failure to pay the premium, the insurer may elect to cancel, terminate, or fail to renew the policy by sending notice by certified mail to the owner or operator and to the licensing authority at least one hundred twenty days prior to the date of cancellation. Cancellation, termination, or failure to renew shall not occur during the period of one hundred twenty days beginning on the first day that both the owner or operator and the licensing authority have received the notice, as evidenced by the return receipts.

(12) If the licensing authority disallows use of the insurer, the owner or operator shall provide alternative financial assurance as specified in this rule not later than thirty days after notification of the disallowance of the insurer.

(13) The licensing authority may give written approval that the owner or operator may terminate the insurance policy when one of the following occurs:

(a) The owner or operator substitutes alternative financial assurance for closure as specified in this rule.

(b) The licensing authority notifies the owner or operator in accordance with paragraph (N) of this rule that the owner or operator is no longer required to maintain financial assurance for closure of the C&DD facility.

(K) Use of multiple financial assurance mechanisms. The owner or operator may satisfy this rule by establishing more than one financial assurance mechanism for the C&DD facility. The mechanisms that may be used in combination are limited to trust funds, surety bonds guaranteeing payment into a closure trust fund, letters of credit, and insurance. The mechanisms shall conform to paragraphs (F), (G), (I) and (J) of this rule, except that it is the combination of mechanisms, rather than each single mechanism, that shall provide financial assurance for an amount at least equal to the closure cost estimate calculated in accordance with paragraphs (A) and (B) of this rule. If an owner or operator uses a trust fund in combination with a surety bond or a letter of credit, the owner or operator may use the trust fund as the standby trust fund for the other mechanisms. A single standby trust fund may be established for two or more mechanisms. The licensing authority may invoke use of any or all of the mechanisms in accordance with paragraphs (F), (G), (I) and (J) of this rule to provide for closure of the C&DD facility.

(L) Use of a financial assurance mechanism for multiple facilities. The owner or operator may use a financial assurance mechanism specified in this rule to meet the requirements of this rule for more than one C&DD facility. Evidence of financial assurance submitted to the licensing authority shall include a list showing, for each C&DD facility, the name, address, and the amount of funds for closure assured by the financial assurance mechanism. The amount of funds available through the financial assurance mechanism shall be no less than the sum of the funds that would be available if a separate financial assurance mechanism had been established and maintained for each C&DD facility.

(M) Release of funds. Reimbursement shall be made as follows:

(1) Release of funds prior to completion of closure. The owner or operator or any other person authorized to construct the cap system on behalf of the owner or operator shall receive reimbursement from the financial assurance mechanism or a reduction in the amount of financial assurance maintained in accordance with this rule after the licensing authority's written concurrence with the cap system certification report in accordance with rules 3745-520-500 and 3745-512-51 of the Administrative Code has been obtained. Reimbursement or a reduction shall be made; however, a financial assurance instrument in the amount of five hundred fifty dollars per acre shall be maintained for maintenance of the certified cap system until closure is completed in accordance with rule 3745-520-710 of the Administrative Code.

(2) Release of funds after closure certification. The owner or operator or any other person authorized to perform closure on behalf of the owner or operator shall receive reimbursement of all remaining funds or termination of the financial assurance required under this rule only after the licensing authority has provided written concurrence with the closure certification report pursuant to rule 3745-520-720 of the Administrative Code.

(N) Release of the owner or operator from the requirements of this rule. Release of the owner or operator from this rule does not release the owner or operator from the requirements to comply with post-closure care financial assurance in accordance with rule 3745-520-910 of the Administrative Code.

(1) Upon the receipt of the written concurrence by the licensing authority with the closure certification report pursuant to rule 3745-520-720 of the Administrative Code, the owner or operator may request written approval to terminate financial assurance for closure of the particular C&DD facility in accordance with this rule.

(2) The board of health or the director may notify the owner or operator that financial assurance may be terminated if the board of health or director has issued written concurrence that the owner or operator is no longer required by this rule to maintain financial assurance for closure of the C&DD facility and the owner or operator has requested release from financial assurance obligations.

3745-520-910 Financial assurance for post-closure care of a C&DD facility.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) A cost estimate for performing the post-closure care activities required by rule 3745-520-750 of the Administrative Code shall be calculated in current dollars and be based on a third party being paid prevailing wages to conduct those activities. The cost estimate shall be accurate, complete, and appropriate for the post-closure care activities and length of time of the post-closure care period.

(B) The post-closure care financial assurance instrument shall contain an itemized written cost estimate calculated in accordance with paragraph (A) of this rule and shall be funded in an amount not less than the calculated post-closure care cost estimate. However, the licensing authority may determine the amount of financial assurance for post-closure care of a C&DD facility if the cost estimate provided by the owner or operator is inaccurate, incomplete, or inappropriate. If the licensing authority makes such a determination, the owner or operator shall fund the amount determined by the licensing authority.

(C) After executing and funding a post-closure care financial assurance instrument, financial assurance for post-closure care shall be maintained and may be released only in accordance with paragraph (N) of this rule. If an order extending the post-closure care period is issued pursuant to rule 3745-520-755 of the Administrative Code, the owner or operator may be required to maintain financial assurance for post-closure care beyond a five-year period after closure.

(D) Review of post-closure care financial assurance instrument.

(1) The owner or operator shall adjust the amount of the financial assurance instrument according to the cost estimates calculated pursuant to paragraphs (A) and (B) of this rule. Whenever the post-closure care cost estimate increases to an amount greater than the amount of the financial assurance maintained, the owner or operator shall cause the amount of the financial assurance instrument to be increased to an amount at least equal to the post-closure care cost estimate and submit evidence of such increase to the licensing authority or obtain alternative financial assurance, as specified in this rule, to compensate for the increase. The amount of the financial assurance instrument shall be increased not later than sixty days after the increased cost estimate is calculated or by December thirty-first, whichever occurs first, and at least prior to license issuance.

(2) The owner or operator may use an existing financial assurance instrument to satisfy all or part of the financial assurance requirements of this rule as long as the requirements of paragraph (E) of this rule are met.

(E) The owner or operator shall select a post-closure care financial assurance mechanism from the list of mechanisms specified in paragraphs (F), (G), (H), (I), or (J) of this rule provided the owner or operator satisfies the criteria for use of that mechanism.

(F) Post-closure care trust fund.

(1) The owner or operator may satisfy the requirements of this rule by establishing a post-closure care trust fund that conforms to this rule and by submitting an originally signed duplicate of the trust agreement to the licensing authority. The trustee shall be an entity which has the authority to act as a trustee and whose trust operations are regulated and examined by a federal or state agency.

(2) The wording of the trust agreement shall be identical to the wording specified in paragraph (A)(1) of rule 3745-520-930 of the Administrative Code and the trust agreement shall be accompanied by a formal certification of acknowledgment.

(3) The owner or operator shall fully fund the trust fund prior to the date of license issuance. The owner or operator shall submit to the licensing authority a receipt from the trustee for the deposit made into the trust fund.

(4) If the owner or operator establishes a post-closure care trust fund to replace one or more alternative mechanisms specified in this rule, the owner or operator shall fully fund the trust fund in an amount at least equal to the post-closure care cost estimate determined in accordance with paragraphs (A) and (B) of this rule.

(5) After beginning post-closure care, the owner or operator, or any other person authorized to perform post-closure care, may request reimbursement for post-closure care expenditures by submitting itemized bills to the licensing authority for post-closure care activities performed. Upon request for reimbursement, the licensing authority shall determine the amount to be reimbursed and shall instruct, in writing, the trustee to make such reimbursement in accordance with paragraph (M) of this rule.

(6) The licensing authority may agree to termination of the trust fund when either of the following occurs:

(a) The owner or operator substitutes alternative financial assurance for post-closure care as specified in this rule.

(b) The licensing authority notifies the owner or operator in accordance with paragraph (N) of this rule that the owner or operator is no longer required by this rule to maintain financial assurance for post-closure care of the C&DD facility.

(G) Surety bond guaranteeing payment into a post-closure care trust fund.

(1) The owner or operator may satisfy the requirements of this rule by obtaining a surety bond that conforms to this rule and by submitting the originally signed surety bond to the licensing authority. At a minimum, the surety bond company issuing the surety bond shall be among those listed as acceptable sureties on federal bonds in "Circular 570" of the U.S. department of the treasury.

[Comment: "Circular 570" is published in the "Federal Register" annually on the first day of July; interim changes in the circular are also published in the "Federal Register."]

(2) The wording of the surety bond shall be identical to the wording specified in paragraph (B) of rule 3745-520-930 of the Administrative Code.

(3) The owner or operator who uses a surety bond to satisfy the requirements of this rule shall also establish a standby trust fund not later than the date the surety bond is obtained. Under the terms of the surety bond, all payments made thereunder shall be deposited by the surety bond company directly into the standby trust fund in accordance with instructions from the licensing authority. This standby trust fund shall meet the requirements specified in paragraph (F) of this rule, except as follows:

(a) An originally signed duplicate of the trust agreement shall be submitted with the surety bond.

(b) Until the standby trust fund is funded, pursuant to the requirements of this rule, a deposit into the standby trust fund as specified in paragraph (F) of this rule is not required.

(4) The surety bond shall guarantee that the owner or operator will do one of the following:

(a) Fund the standby trust fund in an amount equal to the penal sum of the surety bond before the beginning of post-closure care.

(b) Fund the standby trust fund in an amount equal to the penal sum of the surety bond not later than fifteen days after closure is required in compliance with paragraph (B) of rule 3745-520-710 of the Administrative Code.

(c) Provide alternative financial assurance as specified in this rule and obtain written approval of the alternative financial assurance from the licensing authority not later than ninety days after both the owner or operator and the licensing authority receive notice of cancellation of the surety bond from the surety bond company.

(5) Under the terms of the surety bond, the surety bond company shall become liable on the surety bond obligation when the owner or operator fails to perform as guaranteed by the surety bond.

(6) Except as provided in paragraph (K) of this rule, the penal sum of the surety bond shall be in an amount at least equal to the post-closure care cost estimate determined in accordance with paragraphs (A) and (B) of this rule.

(7) Under the terms of the surety bond, the surety bond shall remain in full force and effect unless the surety bond company sends written notice of cancellation by certified mail or other form of mail accompanied by a receipt to the owner or operator, the approved board of health, and the director. Cancellation shall not occur during the period of one hundred twenty days beginning on the first day that both the owner or operator and the licensing authority have received the notice of cancellation, as evidenced by the return receipts.

(8) The owner or operator may cancel the surety bond if the licensing authority has given prior written approval. The licensing authority may provide such written approval when one of the following occurs:

(a) The owner or operator substitutes alternative financial assurance for post-closure care as specified in this rule.

(b) The licensing authority notifies the owner or operator in accordance with paragraph (N) of this rule that the owner or operator is no longer required to maintain financial assurance for post-closure care of the C&DD facility.

(H) Surety bond guaranteeing performance of post-closure care.

(1) The owner or operator may satisfy the requirements of this rule by obtaining a surety bond that conforms to this rule and by submitting the originally signed surety bond to the licensing authority. The surety bond company issuing the surety bond shall, at a minimum, be among those listed as acceptable sureties on federal bonds in "Circular 570" of the U.S. department of the treasury.

[Comment: "Circular 570" is published in the "Federal Register" annually on the first day of July; interim changes in the circular are also published in the "Federal Register."]

(2) The wording of the surety bond shall be identical to the wording specified in paragraph (C) of rule 3745-520-930 of the Administrative Code.

(3) The owner or operator who uses a surety bond to satisfy the requirements of this rule shall also establish a standby trust fund not later than the date the surety bond is obtained. Under the terms of the surety bond, all payments made thereunder shall be deposited by the surety bond company directly into the standby trust fund in accordance with instructions from the licensing authority. This standby trust fund shall meet the requirements specified in paragraph (F) of this rule except as follows:

(a) An originally signed duplicate of the trust agreement shall be submitted with the surety bond.

(b) Until the standby trust fund is funded, pursuant to the requirements of this rule, a deposit into the standby trust fund as specified in paragraph (F) of this rule is not required.

(4) The surety bond shall guarantee that the owner or operator shall do one of the following:

(a) Perform post-closure care in accordance with rule 3745-520-750 of the Administrative Code and other requirements of any authorizing documents.

(b) Provide alternative financial assurance as specified in this rule, and obtain written approval of the alternative financial assurance from the licensing authority not later than ninety days after both the owner or operator and the licensing authority receive notice of cancellation of the surety bond from the surety bond company.

(5) Under the terms of the surety bond, the surety bond company shall become liable on the surety bond obligation when the owner or operator fails to perform as guaranteed by the surety bond. Following a determination by the approved board of health or the director that the owner or operator has failed to perform post-closure care activities in accordance with rule 3745-520-750 of the Administrative Code and requirements of any authorizing documents, the surety bond company shall perform post-closure care activities in accordance with rule 3745-520-750 of the Administrative Code and requirements of any authorizing documents or shall deposit the amount of the penal sum of the surety bond into the trust fund.

(6) The penal sum of the surety bond shall be in an amount at least equal to the post-closure care cost estimate determined in accordance with paragraphs (A) and (B) of this rule.

(7) Under the terms of the surety bond, the surety bond shall remain in full force and effect unless the surety bond company sends written notice of cancellation by certified mail or other form of mail accompanied by a receipt to the owner or operator, the approved board of health, and the director. Cancellation shall not occur during the period of one hundred twenty days beginning on the first day that both the owner or operator and the licensing authority have received the notice of cancellation, as evidenced by the return receipts.

(8) The owner or operator may cancel the surety bond if the licensing authority has given prior written approval. The licensing authority may provide such written approval when one of the following occurs:

(a) The owner or operator substitutes alternative financial assurance for post-closure care as specified in this rule.

(b) The licensing authority notifies the owner or operator in accordance with paragraph (N) of this rule that the owner or operator is no longer required to maintain financial assurance for post-closure care of the C&DD facility.

(9) The surety bond company shall not be liable for deficiencies in the completion of post-closure care activities by the owner or operator after the owner or operator has been notified by the licensing authority in accordance with this rule that the owner or operator is no longer required to maintain financial assurance for post-closure care of the C&DD facility.

(I) Post-closure care letter of credit.

(1) The owner or operator may satisfy the requirements of this rule by obtaining an irrevocable standby letter of credit that conforms to the requirements of this rule and by having the originally signed letter of credit delivered to the licensing authority. The issuing institution shall be an entity that has the authority to issue letters of credit and whose letter of credit operations are regulated and examined by a federal or state agency.

(2) The wording of the letter of credit shall be identical to the wording specified in paragraph (D) of rule 3745-520-930 of the Administrative Code.

(3) An owner or operator who uses a letter of credit to satisfy the requirements of this rule shall also establish a standby trust fund not later than the date the letter of credit

is obtained. Under the terms of the letter of credit, all amounts paid pursuant to a draft by the licensing authority shall be deposited directly by the issuing institution into the standby trust fund in accordance with instructions from the licensing authority. The standby trust fund shall meet the requirements of the trust fund specified in paragraph (F) of this rule, except as follows:

(a) An originally signed duplicate of the trust agreement shall be submitted with the letter of credit.

(b) Until the standby trust fund is funded, pursuant to the requirements of this rule, a deposit into the standby trust fund as specified in paragraph (F) of this rule is not required.

(4) The letter of credit shall be accompanied by a letter from the owner or operator referring to the letter of credit by number, issuing institution, and date, and providing the following information: the names and addresses of the C&DD facility and the owner or operator and the amount of funds assured for post-closure care of the C&DD facility by the letter of credit.

(5) The letter of credit shall be irrevocable and issued for a period of at least one year. The letter of credit shall provide that the expiration date shall be automatically extended for a period of at least one year unless, at least one hundred twenty days prior to the current expiration date, the issuing institution notifies the owner or operator, the approved board of health, and the director by certified mail or any other form of mail accompanied by a receipt of a decision not to extend the expiration date. Under the terms of the letter of credit, the period of one hundred twenty days shall begin on the day when the owner or operator, licensing authority, and director have received the notice, as evidenced by the return receipts.

(6) Except as provided in paragraph (K) of this rule, the letter of credit shall be in an amount at least equal to the post-closure care cost estimate determined in accordance with paragraphs (A) and (B) of this rule.

(7) Following a determination by the approved board of health or the director that the owner or operator has failed to perform post-closure care activities in accordance with rule 3745-520-750 of the Administrative Code and requirements of any authorizing documents, the approved board of health or director may draw on the letter of credit.

(8) If the owner or operator does not establish alternative financial assurance as specified in this rule and obtain written approval of such alternative financial assurance from the licensing authority not later than ninety days after the owner or operator, licensing authority, and director have received notice from the issuing institution that it shall not extend the letter of credit beyond the current expiration date, the approved board of health or director shall draw on the letter of credit. The approved board of health or the director may delay the drawing if the issuing institution grants an extension of the term of the credit. During the final thirty days of any such extension, the approved board of health or the director shall draw on the letter of credit if the owner or operator has failed to provide alternative financial assurance as specified in this rule and has failed to obtain written approval of such alternative financial assurance from the licensing authority.

(9) The licensing authority shall return the original letter of credit to the issuing institution for termination when one of the following occurs:

(a) The owner or operator substitutes alternative financial assurance for post-closure care as specified in this rule.

(b) The licensing authority notifies the owner or operator in accordance with paragraph (N) of this rule, that the owner or operator is no longer required to maintain financial assurance for post-closure care of the C&DD facility.

(J) Post-closure care insurance.

(1) The owner or operator may satisfy the requirements of this rule by obtaining post-closure care insurance that conforms to this rule and by submitting an originally signed certificate of such insurance to the licensing authority.

(2) The owner or operator using insurance as a financial assurance mechanism shall submit documentation stating whether the insurer is a subsidiary or has a corporate, legal, or financial affiliation with the owner or operator. If the post-closure care insurance is issued by a subsidiary or affiliate, the owner or operator shall include a detailed written description of the relationship between the insurer and the owner and the operator.

(3) An insurer issuing an insurance policy in satisfaction of this rule shall be licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more states. The owner or operator shall submit to the licensing authority the following information regarding the insurer's qualifications:

(a) The most recent A.M. Best rating of the insurer.

(b) Documentation demonstrating that the insurer is domiciled in the United States.

(c) The most recent report on examination from the insurance department from the insurer's state of domicile.

(d) Documentation demonstrating that the insurer has capital and surplus of at least one hundred million dollars.

(e) Documentation demonstrating that the insurer received an unqualified opinion of the insurer's annual financial

statements from an independent certified public accountant.

(4) The licensing authority may disallow use of the insurer by the owner or operator on the basis of one or more of the following:

(a) The A.M. Best rating is less than A-.

(b) The report on examination does not demonstrate that the status of the insurer is satisfactory.

(c) The opinion expressed by the independent certified public accountant in the report on examination of the insurer's financial statements.

(5) The wording of the certificate of insurance shall be identical to the wording specified in paragraph (E) of rule 3745-520-930 of the Administrative Code.

(6) Except as provided in paragraph (K) of this rule, the post-closure care insurance policy shall be issued for a face amount at least equal to the amount of the post-closure care cost estimate determined in accordance with paragraphs (A) and (B) of this rule. Face amount shall be the total amount the insurer is obligated to pay under the policy. Actual payments by the insurer shall not change the face amount, but the insurer's future liability will be lowered by the amount of the payments.

(7) The post-closure care insurance policy shall guarantee that funds shall be available to conduct post-closure care of the C&DD facility whenever post-closure care begins. The policy shall also guarantee that once post-closure care of the C&DD facility begins, the insurer shall be responsible for paying out funds, up to an amount equal to the face amount of the policy. Upon the direction of the licensing authority, payment shall be made to such party or parties as the licensing authority specifies.

(8) After beginning post-closure care, the owner or operator, or any other person authorized to perform post-closure care activities, may request reimbursement for post-closure care expenditures. The licensing authority shall calculate in accordance with paragraph (M) of this rule the amount to be reimbursed and shall instruct, in writing, the insurer to make such reimbursement.

(9) The owner or operator shall maintain the policy in full force and effect until the licensing authority consents to termination of the policy by the owner or operator as specified in paragraph (J)(13) of this rule. Failure to pay the premium, without substitution of alternative financial assurance as specified in this rule, constitutes a violation of these rules, warranting such remedy as the licensing authority deems necessary. Such violation shall be deemed to begin upon receipt by the licensing authority of a notice of future cancellation, termination, or failure to renew due to nonpayment of the premium, rather than upon the date of expiration.

(10) Each policy shall contain a provision allowing assignment of the policy to a successor owner or operator. Such assignment may be conditional upon consent of the insurer, provided such consent is not unreasonably refused.

(11) The policy shall provide that the insurer may not cancel, terminate, or fail to renew the policy except for failure to pay the premium. The automatic renewal of the policy shall, at a minimum, provide the insured with the option of renewal at the face amount of the expiring policy. If there is a failure to pay the premium, the insurer may elect to cancel, terminate, or fail to renew the policy by sending notice by certified mail to the owner or operator and to the licensing authority at least one hundred twenty days prior to the date of cancellation. Cancellation, termination, or failure to renew may not occur during the period of one hundred twenty days beginning on the first day that both the owner or operator and the licensing authority have received the notice, as evidenced by the return receipts.

(12) If the licensing authority disallows use of the insurer, the owner or operator shall provide alternative financial assurance as specified in this rule not later than thirty days after notification of the disallowance of the insurer.

(13) The licensing authority may give written approval that the owner or operator may terminate the insurance policy when one of the following occurs:

(a) The owner or operator substitutes alternative financial assurance for post-closure care as specified in this rule.

(b) The licensing authority notifies the owner or operator in accordance with paragraph (N) of this rule, that the owner or operator is no longer required to maintain financial assurance for post-closure care of the C&DD facility.

(K) Use of multiple financial assurance mechanisms. The owner or operator may satisfy the requirements of this rule by establishing more than one financial assurance mechanism for the C&DD facility. The mechanisms are limited to trust funds, surety bonds guaranteeing payment into a post-closure care trust fund, letters of credit, and insurance. The mechanisms shall conform to paragraphs (F), (G), (I), and (J) of this rule, except that it is the combination of mechanisms, rather than each single mechanism, that shall provide financial assurance for an amount at least equal to the post-closure care cost estimate calculated in accordance with paragraphs (A) and (B) of this rule. If an owner or operator uses a trust fund in combination with a surety bond or a letter of credit, the owner or operator may use the trust fund as the standby trust fund for the other mechanisms. A single

standby trust fund may be established for two or more mechanisms. The licensing authority may invoke use of any or all of the mechanisms in accordance with paragraphs (F), (G), (I), and (J) of this rule to provide for post-closure care of the C&DD facility.

(L) Use of a financial assurance mechanism for multiple facilities. The owner or operator may use a financial assurance mechanism specified in this rule to meet the requirements of this rule for more than one C&DD facility. Evidence of financial assurance submitted to the licensing authority shall include a list showing, for each C&DD facility, the name, address, and the amount of funds for post-closure care assured by the financial assurance mechanism. The amount of funds available through the financial assurance mechanism shall be no less than the sum of the funds that would be available if a separate financial assurance mechanism had been established and maintained for each C&DD facility.

(M) Release of funds. Reimbursement shall be made as follows:

(1) Release of funds during post-closure care. The owner or operator or any other person authorized to perform post-closure care activities shall receive reimbursement from the financial assurance mechanism or a reduction in the amount of financial assurance maintained in accordance with this rule after the licensing authority's written concurrence that the post-closure care activities listed in the request for reimbursement or reduction have been performed in accordance with rule 3745-520-750 of the Administrative Code.

(2) Release of funds after post-closure care period has ended. The owner or operator or any other person authorized to perform post-closure care activities shall receive reimbursement of funds or termination of the financial assurance required under this rule only after post-closure care has been completed in accordance with rule 3745-520-750 of the Administrative Code.

(N) Release of the owner or operator from the requirements of this rule.

(1) After the completion of the post-closure care period in accordance with rule 3745-520-750 of the Administrative Code, the owner or operator may request written approval to terminate financial assurance for post-closure care of the particular C&DD facility in accordance with this rule.

(2) The board of health or the director may notify the owner or operator that financial assurance may be terminated if the board of health or director has issued written concurrence that the owner or operator is no longer required by this rule to maintain financial assurance for post-closure care of the C&DD facility and the owner or operator has requested release from financial assurance obligations.

3745-520-930 Wording of the financial instruments.

(A) Trust agreement.

(1) The trust agreement for the trust fund specified in paragraph (F) of rule 3745-520-905 of the Administrative Code and the trust agreement for the trust fund specified in paragraph (F) of rule 3745-520-910 of the Administrative Code shall be worded as follows on forms prescribed by the director, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

"Trust agreement

Trust agreement. The "agreement", entered into as of [date] by and between [name of the owner or operator], a [state] [corporation, partnership, association, proprietorship], the "grantor", and [name of corporate trustee], ["incorporated in the state of _____" or "a national bank"], the "trustee".

Whereas, the Ohio Environmental Protection Agency, ("Ohio EPA"), has established certain rules applicable to the grantor, requiring that the owner or operator of a construction and demolition debris disposal facility provide assurance that funds will be available when needed for closure and/or post-closure care of the facility.

Whereas, the grantor has elected to establish a trust to provide all or part of such financial assurance for the facilities identified herein.

Whereas, the grantor, acting through its duly authorized officers, has selected the trustee to be the trustee under this agreement, and the trustee is willing to act as trustee,

Now, therefore, the grantor and the trustee agree as follows:

Section 1. Definitions. As used in this agreement:

a) The term "grantor" means the owner or operator who enters into this agreement and any successors or assigns of the grantor.

b) The term "trustee" means the trustee who enters into this agreement and any successor trustee.

c) The term "licensing authority" means the approved board of health or in the absence of an approved board of health, the director.

Section 2. Identification of facilities and amount for closure and/or post-closure care. This agreement pertains to the facilities and amount for closure and/or post-closure care identified on attached schedule A [on Schedule A, for each facility list the name, address, and the amount for closure and/or post-closure care, or portions thereof, for which financial assurance is demonstrated by this agreement].

Section 3. Establishment of fund. The grantor and the trustee hereby establish a trust fund, the "fund", for the benefit of the licensing authority. The grantor and the trustee intend that no third party have access to the fund except as herein provided. The fund is established initially as consisting of the property, which is acceptable to the trustee, described in schedule B attached hereto. Such property and any other property subsequently transferred to the trustee is referred to as the fund, together with all earnings and profits thereon, less any payments or distributions made by the trustee pursuant to this agreement. The fund will be held by the trustee, in trust, as hereinafter provided. The trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the grantor, any payments necessary to discharge any liabilities of the grantor established by the licensing authority.

Section 4. Payment for closure and/or post-closure care. The trustee will make such payments from the fund as the licensing authority will direct, in writing, to provide for the payment of the costs of closure and/or post-closure care of the facilities covered by this agreement. The trustee will reimburse the grantor or other persons as specified by the licensing authority from the fund for closure and/or post-closure care expenditures in such amounts as the licensing authority will direct, in writing. In addition, the trustee will refund to the grantor such amounts as the licensing authority specifies in writing. Upon refund, such funds will no longer constitute part of the fund as defined herein.

Section 5. Payments comprising the fund. Payments made to the trustee for the fund will consist of cash or securities acceptable to the trustee.

Section 6. Trustee management. The trustee will invest and reinvest the principal and income of the fund and keep the fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the grantor may communicate in writing to the trustee periodically, subject, however, to the provisions of this section. In investing, reinvesting, exchanging, selling, and managing the fund, the trustee will discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

a) Securities or other obligations of the grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the investment company act of 1940, as amended, 15 U.S.C. section 80a-2(a), will not be acquired or held, unless they are securities or other obligations of the federal or a state government;

b) The trustee is authorized to invest the fund in time or demand deposits of the trustee, to the extent insured by an agency of the federal or state government; and

c) The trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

Section 7. Commingling and investment. The trustee is expressly authorized in its discretion:

a) To transfer periodically any or all of the assets of the fund to any common, commingled, or collective trust fund created by the trustee in which the fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

b) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. sections 80a-1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the trustee. The trustee may vote such shares in its discretion.

Section 8. Express powers of trustee. Without in any way limiting the powers and discretions conferred upon the trustee by the other provisions of this agreement or by law, the trustee is expressly authorized and empowered:

a) To sell, exchange, convey, transfer, or otherwise dispose of any property held by it, by public or private sale. No person dealing with the trustee will be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition;

b) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

c) To register any securities held in the fund in its own name or in the name of a nominee and to hold any

security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depository with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States government, or any agency or instrumentality thereof, with a federal reserve bank, but the books and records of the trustee will at all times show that all such securities are part of the fund;

d) To deposit any cash in the fund in interest-bearing accounts maintained or savings certificates issued by the trustee, in its separate corporate capacity, or in any other banking institution affiliated with the trustee, to the extent insured by an agency of the federal or state government; and

e) To compromise or otherwise adjust all claims in favor of or against the fund.

Section 9. Taxes and expenses. All taxes of any kind that may be assessed or levied against or in respect of the fund and all brokerage commissions incurred by the fund will be paid from the fund. All other expenses incurred by the trustee in connection with the administration of this trust, including fees for legal services rendered to the trustee, the compensation of the trustee to the extent not paid directly by the grantor, and all other proper charges and disbursements of the trustee will be paid from the fund.

Section 10. Annual valuation. The trustee will annually, not later than thirty days prior to the anniversary date of the establishment of the fund, furnish to the grantor and to the licensing authority a statement confirming the value of the trust. Any securities in the fund will be valued at market value as of no more than sixty days prior to the anniversary date of establishment of the fund. The failure of the grantor to object in writing to the trustee not later than ninety days after the statement has been furnished to the grantor and the licensing authority will constitute a conclusively binding assent by the grantor, barring the grantor from asserting any claim or liability against the trustee with respect to matters disclosed in the statement.

Section 11. Advice of counsel. The trustee may periodically consult with counsel, who may be counsel to the grantor, with respect to any question arising as to the construction of this agreement or any action to be taken hereunder. The trustee will be fully protected, to the extent licensed by law, in acting upon the advice of counsel.

Section 12. Trustee compensation. The trustee will be entitled to reasonable compensation for its service as agreed upon in writing periodically with the grantor.

Section 13. Successor trustee. The trustee may resign or the grantor may replace the trustee, but such resignation or replacement shall not be effective until the grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee will have the same powers and duties as those conferred upon the trustee hereunder. Upon the successor trustee's acceptance and the licensing authority's written approval of the appointment, the trustee will assign, transfer, and pay over to the successor trustee the funds and properties then constituting the fund. If for any reason the grantor cannot or does not act in the event of the resignation of the trustee, the trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in a writing sent to the grantor, the licensing authority, and the present trustee by certified mail not later than ten days before such change becomes effective. The licensing authority's written approval must be given prior to the ten days notice provided by the successor trustee. Any expenses incurred by the trustee as a result of any of the acts contemplated by this section will be paid as provided in section 9.

Section 14. Instructions to the trustee. All orders, requests, and instructions by the grantor to the trustee will be in writing, signed by such persons as are designated in the attached exhibit A or such other designees as the grantor may designate by amendment to exhibit A. The trustee will be fully protected in acting without inquiry in accordance with the grantor's orders, requests, and instructions. All orders, requests, and instructions by the licensing authority to the trustee will be in writing, signed by the licensing authority, and the trustee will act and will be fully protected in acting in accordance with such orders, requests, and instructions. The trustee will have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the grantor or the licensing authority hereunder has occurred. The trustee will have no duty to act in the absence of such orders, requests, and instructions from the grantor and/or the licensing authority except as provided for herein.

Section 15. Notice of nonpayment. The trustee will notify the grantor and the licensing authority by certified mail not later than ten days after the expiration of the thirty-day period following the anniversary of the establishment of the trust, if no payment is received from the grantor during the period. After the pay-in period is completed the trustee is not required to send a notice of nonpayment.

Section 16. Amendment of agreement. This agreement may be amended by an instrument in writing executed by the grantor, the trustee, and the licensing authority, or by the trustee and the licensing authority if the grantor ceases to exist.

Section 17. Irrevocability and termination. Subject to the right of the parties to amend this agreement as provided in section 16, this trust will be irrevocable and will continue until termination at the written agreement of the grantor, the trustee, and the licensing authority, or by the trustee and the licensing authority if the grantor ceases to exist. Upon termination of the trust, all remaining trust property, less final trust administration expenses, will be delivered to the grantor, unless the trust is a "standby trust" fund created in accordance with paragraph (G), (H), or (I) of rule 3745-520-905 of the Administrative Code and/or paragraph (G), (H), or (I) of rule 3745-520-910 of the Administrative Code, in which case all remaining trust property, less final trust administration expenses, will be delivered to the provider of the financial assurance.

Section 18. Immunity and indemnification. The trustee will not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this trust, or in carrying out any directions by the grantor or the licensing authority issued in accordance with this agreement. The trustee will be indemnified and saved harmless by the grantor or from the trust fund, or both, from and against any personal liability to which the trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the grantor fails to provide such defense.

Section 19. Choice of law. This agreement will be administered, construed, and enforced according to the laws of the state of Ohio.

Section 20. Interpretation. As used in this agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each section of this agreement will not affect the interpretation or the legal efficacy of this agreement. In witness whereof the parties have caused this agreement to be executed by their respective officers duly authorized and their corporate seals to be hereunto affixed and attested as of the date first above written: the parties below certify that the wording of this agreement is identical to the wording specified in paragraph (A) of rule 3745-520-930 of the Administrative Code as such rule was constituted on the date first above written.

[Signature of grantor]

[Title]

Attest:

[Title]

[Seal]

[Signature of trustee]

Attest:

[Title]

[Seal]"

(2) The following is an example of the certification of acknowledgment, which must accompany the trust agreement for a trust fund as specified in paragraph (F) of rule 3745-520-905 of the Administrative Code and/or paragraph (F) of rule 3745-520-910 of the Administrative Code:

"State of_____

County of_____

On this [date], before me personally came [owner or operator] to me known, who, being by me duly sworn, did depose and say that she/he resides at [address], that she/he is [title] of [corporation], and the corporation described in and which executed the above instrument; that she/he knows the seal of said corporation; that the seal affixed to such instrument is such corporate seal; that it was so affixed by order of the board of licensing authority(ies) of said corporation, and that she/he signed her/his name thereto by like order.

[Signature of notary public]"

(B) The surety bond guaranteeing payment into the trust fund specified in paragraph (G) of rule 3745-520-905 of the Administrative Code and the surety bond guaranteeing payment into the trust fund specified in paragraph (G) of rule 3745-520-910 of the Administrative Code, shall be worded as follows on forms prescribed by the director, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

"Financial guarantee bond

Date bond executed:_____

Effective date:_____

Principal: [legal name and business address of owner or operator]

Type of organization: [insert "individual", "joint venture", "partnership", or "corporation"]

State of incorporation:_____

Surety(ies): [name(s) and business address(es)]

Name, address, and closure and/or post-closure care amount(s) for each facility guaranteed by this bond [indicate amount of closure and/or post-closure care]: $_____

Total penal sum of bond: $_____

Surety's bond number:_____

Know all persons by these presents, that we, the principal and surety(ies) hereto are firmly bound to the licensing authority, in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally; provided that, where the surety(ies) are corporations acting as co-sureties, we, the sureties, bind ourselves in such sum "jointly and severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each surety binds itself, jointly and severally with the principal, for the payment of such sum only as is set forth opposite the name of such surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

Whereas, said principal is required to have a valid license, in order to operate each construction and demolition debris facility(ies) identified above, and

Whereas, said principal is required to provide financial assurance for closure and/or post-closure care of the facility(ies) as a condition of Chapter 3714. of the Revised Code; and

Whereas said principal shall establish a standby trust fund as specified by rule 3745-520-905 of the Administrative Code and/or rule 3745-520-910 of the Administrative Code.

Now, therefore, the conditions of the obligation are such that if the principal shall faithfully, before the beginning of closure of each facility identified above, fund the standby trust fund in the amount(s) identified above for the facility.

Or, if the principal shall fund the standby trust fund in such an amount(s) not later than fifteen days after an order to begin closure is issued by the licensing authority, or an Ohio court, or a U.S. district court, or other court of competent jurisdiction, or not later than fifteen days after a notice of revocation of the construction and demolition debris facility license, or, if the principal shall provide alternative financial assurance as specified in rule 3745-520-905 of the Administrative Code and/or rule 3745-520-910 of the Administrative Code as applicable, and obtain the licensing authority's written approval of such alternative financial assurance, not later than ninety days after the first day that notice of cancellation has been received by both the principal and the licensing authority from the surety(ies), then this obligation will be null and void; otherwise it is to remain in full force and effect.

The surety(ies) shall become liable on this bond obligation only when the principal has failed to fulfill the conditions described above. Upon notification by the licensing authority that the principal has failed to perform as guaranteed by this bond, the surety(ies) shall place funds in the amount guaranteed for the facility(ies) into the standby trust fund as directed by the licensing authority.

The liability of the surety(ies) shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the surety(ies) hereunder exceed the amount of said penal sum.

The surety(ies) may cancel the bond by sending notice of cancellation by certified mail to the principal and to the licensing authority, provided, however, that cancellation shall not occur during the one hundred twenty day period beginning on the first day of receipt of the notice of cancellation by both the principal and the licensing authority as evidenced by the return receipt(s) or while a compliance procedure is pending, as defined in rule 3745-520-905 of the Administrative Code and/or rule 3745-520-910 of the Administrative Code.

The principal may terminate this bond by sending written notice to the surety(ies), provided, however, that no such notice shall become effective until the surety(ies) receives written authorization for termination of the bond by the licensing authority.

[The following paragraph is an optional rider that may be included but is not required.]

Principal and surety(ies) hereby agree to adjust the penal sum of the bond annually so that it guarantees a new closure and/or post-closure care amount, and no decrease in the penal sum takes place without the written permission of the licensing authority.

In witness whereof, the principal and surety(ies) have executed this financial guarantee bond and have affixed their seals on the date set forth above.

The persons whose signatures appear below hereby certify that they are authorized to execute this surety bond on behalf of the principal and surety(ies) and that the wording of this surety bond is identical to the wording specified in paragraph (B) of rule 3745-520-930 of the Administrative Code as such rule was constituted on the date this bond was executed.

Principal

Signature(s):_____

Name(s) and title(s) [typed]:_____

Corporate seal:

Corporate surety(ies)

Name and address:_____

State of incorporation:_____

Liability limit: $_____

Signature(s):_____

Name(s) and title(s) [typed]:_____

Corporate seal:

[For every co-surety, provide signature(s), corporate seal, and other information in the same manner as for surety above.]

Bond premium: $_____"

(C) The surety bond guaranteeing performance of closure specified in paragraph (G) of rule 3745-520-905 of the Administrative Code and the surety bond guaranteeing performance of post-closure care specified in paragraph (G) of rule 3745-520-910 of the Administrative Code, shall be worded as follows on forms prescribed by the director, except that instructions in brackets are to be replaced by the relevant information and the brackets deleted:

"Performance bond

Date bond executed:_____

Effective date:_____

Principal: [legal name and business address of owner or operator]

Type of organization: [insert "individual", "joint venture", "partnership", or "corporation"]

State of incorporation:_____

Surety(ies): [name(s) and business address(es)]

Name, address, and closure and/or post-closure care amount for each facility guaranteed by this bond [indicate closure and/or post-closure care amount]:
$_____

Total penal sum of bond: $_____

Surety's bond number:_____

Know all persons by these presents, that we, the principal and surety(ies) hereto are firmly bound to the licensing authority, in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally; provided that, where the surety(ies) are corporations acting as co-sureties, we, the sureties, bind ourselves in such sum "jointly and severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each surety binds itself, jointly and severally with the principal, for the payment of such sum only as is set forth opposite the name of such surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

Whereas, said principal is required to have an Ohio EPA license or licenses in order to operate each construction and demolition debris facility(ies) identified above, and

Whereas said principal is required to provide financial assurance for closure and/or post-closure care, as a condition of the license(s), and

Whereas said principal shall establish a standby trust fund as is required when a surety bond is used to provide such financial assurance;

Now, therefore, the conditions of this obligation are such that if the principal shall faithfully perform closure and/or post-closure care, whenever required to do so, of each facility for which this bond guarantees closure and/or post-closure care, in accordance with rule 3745-520-905 of the Administrative Code and/or rule 3745-520-910 of the Administrative Code and other requirements of the license as such license may be amended, pursuant to all applicable laws, statutes, rules, and regulations, as such laws, statutes, rules, and regulations may be amended.

Or, if the principal shall provide alternative financial assurance as specified in rule 3745-520-905 of the Administrative Code and/or rule 3745-520-910 of the Administrative Code and obtain the licensing authority's written approval of such alternative financial assurance not later than ninety days after the date notice of cancellation is received by both the principal and the licensing authority from surety(ies), then this obligation will be null and void, otherwise it is to remain in full force and effect.

The surety(ies) shall become liable on this bond obligation only when the principal has failed to fulfill the conditions described above.

Upon notification by the licensing authority that the principal has been found in violation of the closure requirements of rule 3745-520-700 of the Administrative Code or post-closure care requirements of rule 3745-520-750 of the Administrative Code, for a facility for which this bond guarantees performance of closure or post-closure care, the surety(ies) shall either perform closure in accordance with rule 3745-520-700 of the Administrative Code and/or post-closure care in accordance with rule

3745-520-750 of the Administrative Code and other license requirements or place the closure and/or post-closure care amount guaranteed for the facility into the standby trust fund as directed by the licensing authority.

Upon notification by the licensing authority that the principal has failed to provide alternative financial assurance as specified in rule 3745-520-905 of the Administrative Code and/or rule 3745-520-910 of the Administrative Code and obtain written approval of such alternative financial assurance from the licensing authority not later than ninety days after receipt by both the principal and the licensing authority of a notice of cancellation of the bond, the surety(ies) shall place funds in the amount guaranteed for the facility(ies) into the standby trust fund as directed by the licensing authority.

The surety(ies) hereby waives notification of amendments to licenses, applicable laws, statutes, rules, and regulations and agrees that no such amendment shall in any way alleviate its (their) obligation on this bond.

The liability of the surety(ies) shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the surety(ies) hereunder exceed the amount of said penal sum.

The surety(ies) may cancel the bond by sending notice of cancellation by certified mail to the owner or operator and to the licensing authority, provided, however, that cancellation cannot occur during the one-hundred-twenty-day period beginning on the first day of receipt of the notice of cancellation by both the principal and the licensing authority, as evidenced by the return receipts. The principal may terminate this bond by sending written notice to the surety(ies), provided, however, that no such notice shall become effective until the surety(ies) receives written approval for termination of the bond by the licensing authority.

[The following paragraph is an optional rider that may be included but is not required.]

Principal and surety(ies) hereby agree to adjust the penal sum of the bond annually so that it guarantees a new closure and/or post-closure care amount, and no decrease in the penal sum occurs without the written approval of the licensing authority.

In witness whereof, the principal and surety(ies) have executed this performance bond and have affixed their seals on the date set forth above.

The persons whose signatures appear below hereby certify that they are authorized to execute this surety bond on behalf of the principal and surety(ies) and that the wording of this surety bond is identical to the wording specified in paragraph (C) of rule 3745-520-930 of the Administrative Code, as such rule was constituted on the date this bond was executed.

Principal

Signature(s):_____

Name(s) and title(s) [typed]:_____

Corporate seal:

Corporate surety(ies)

Name and address:_____

State of incorporation:_____

Liability limit: $_____

Signature(s):_____

Name(s) and title(s) [typed]:_____

Corporate seal:

[For every co-surety, provide signature(s), corporate seal, and other information in the same manner as for surety above.]

Bond premium: $_____"

(D) The letter of credit specified in paragraph (I) of rule 3745-520-905 of the Administrative Code and the letter of credit specified in paragraph (I) of rule 3745-520-910 of the Administrative Code shall be worded as follows on forms prescribed by the director, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted [note: a letter of credit may also contain provisions used by the issuing institution in its regular course of business, provided that such provisions do not alter the terms and conditions in this paragraph]:

"Irrevocable standby letter of credit

[Licensing authority]

Dear sir or madam: We hereby establish our irrevocable standby letter of credit no. _____ in your favor, at the request and for the account of [owner's or operator's name and address] up to the aggregate amount of [in words] U.S. Dollars ($_____), available upon presentation of

1) Your sight draft, bearing reference to this letter of credit no. _____, and

2) Your signed statement reading as follows: "I certify that the amount of the draft is payable pursuant to regulations

issued under the authority of Chapter 3714. of the Revised Code."

This letter of credit is effective as of [date] and will expire on [date of at least one year later], but such expiration date will be automatically extended for a period of [at least one year] on [date] and on each successive expiration date, unless, at least one hundred twenty days prior to the current expiration date, we notify both you and [owner's or operator's name] by certified mail that we have decided not to extend this letter of credit beyond the current expiration date. In the event that you are so notified, any unused portion of the credit will be available upon presentation of your sight draft for one hundred twenty days after the first day of receipt by both you and [owner's or operator's name], as evidenced by the return receipts.

Whenever this letter of credit is drawn under and in compliance with the terms of this credit, we will duly honor such draft upon presentation to us, and we will deposit the amount of the draft directly into the standby trust fund by [owner's or operator's name] in accordance with your instructions.

We certify that the wording of this letter of credit is identical to the wording specified in paragraph (D) of rule 3745-520-930 of the Administrative Code as such rule was constituted on the date shown immediately below.

[Signature(s) and title(s) of official(s) of issuing institution]
[date]

This credit is subject to [insert "the most recent edition of the "Uniform Customs and Practice for Documentary Credits", published by the "International Chamber of Commerce" or "The Uniform Commercial Code"]."

[Comment: In the event that the owner or operator ceases to exist, any unused portion of the credit will be available for the one-hundred-twenty-day period after the date of receipt by the licensing authority, as evidenced by the return receipt.]

(E) The certificate of insurance specified in paragraph (J) of rule 3745-520-905 of the Administrative Code and the certificate of insurance specified in paragraph (J) of rule 3745-520-910 of the Administrative Code, shall be worded as follows on forms prescribed by the director, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

"Certificate of insurance for closure and/or post-closure care

Name and address of insurer

(Herein called the "insurer"):_____

Name and address of insured

(Herein called the "insured"):_____

Facilities covered: [List for each facility: name, address, county in which the facility is located, and the amount of insurance for closure and/or post-closure care provided under the insurance policy (the aggregate amount for all facilities covered must total the face amount shown below).]

Face Amount: $_____

Policy Number:_____

Effective date:_____

The insurer hereby certifies that it has issued to the insured the insurance policy identified above to provide financial assurance for [insert "closure and/or post-closure care"] for the facilities identified above. The insurer further warrants that such insurance policy conforms in all respects with the requirements of paragraph (J) of rule 3745-520-905 of the Administrative Code and/or paragraph (J) of rule 3745-520-910 of the Administrative Code, as applicable as such rules were constituted on the date shown immediately below. It is agreed that any provision of the insurance policy inconsistent with such regulations is hereby amended to eliminate such inconsistency.

Whenever requested by the licensing authority the insurer agrees to furnish to the licensing authority a duplicate original of the insurance policy listed above, including all endorsements thereon.

I hereby certify that the wording of this certificate is identical to the wording specified in paragraph (E) of rule 3745-520-930 of the Administrative Code as such rule was constituted on the date shown immediately below.

[Authorized signature for insurer]

[Name of person signing]

[Title of person signing]

Signature of witness or notary:_____

[Date]"

Ohio Administrative Code (OAC) Chapter 500

MULTI – PROGRAM REGULATIONS

3745-500-01	General administration - applicability
3745-500-02	General administration - definitions
3745-500-03	Incorporation by reference
3745-500-10	Exclusions
3745-500-30	Relationships with other rules
3745-500-35	Relationships among authorizing documents, rules, and the authority of the director and board of health
3745-500-50	Signatures
3745-500-120	Procedures for issuing, denying, modifying, transferring, and revoking licenses and permits to install
3745-500-130	Retention and distribution of authorizing documents – procedures for boards of health and Ohio EPA
3745-500-150	Alteration to a solid waste permit to install
3745-500-210	Variances for solid waste facilities
3745-500-220	Variances for solid waste facilities
3745-500-310	Criteria for issuing a permit to install
3745-500-330	Termination of a permit to install issued under Chapter 3734. of the Revised Code
3745-500-350	Causes for revoking a permit to install issued under Chapter 3734. of the Revised Code
3745-500-360	Administrative change to a permit to install
3745-500-510	Alternative material requests

3745-500-01 General administration - applicability.

(A) The rules in this multi-program chapter shall apply when referenced in either of the following:

(1) A rule in a program chapter.

(2) A rule in another multi-program chapter that was made applicable by a rule in a program chapter.

(B) Notwithstanding paragraph (A) of this rule, rule 3745-500-10 of the Administrative Code applies without reference from either of the following:

(1) A rule in a program chapter.

(2) A rule in another multi-program chapter that was made applicable by a rule in a program chapter.

Program chapters are Chapters 3745-520 to 3745-599 of the Administrative Code.

3745-500-02 General administration- definitions.

As used in this chapter and any chapter making these definitions applicable, terms in this rule are defined as follows:

(A)

(1) "Access road" means the following types of roadways, other than a public road, located within a sanitary landfill facility or a C&DD facility:

(a) Any roadway used to transport waste or C&DD within the sanitary landfill facility or the C&DD facility.

(b) Any roadway used to access monitoring systems, control systems, or tanks, or to provide access for maintenance for the sanitary landfill facility or the C&DD facility.

(2) "Administrative change" means an amendment to an authorizing document that does not constitute a modification or alteration to the facility or permit to install for the facility. An administrative change is not an action.

(3) "Airport" means any airport certified by the federal aviation administration and open to the public without prior permission and without restrictions within the physical capacities of available airport facilities.

(4) "Angle of draw" means the angle of inclination from the vertical of the line connecting the edge of the workings of the underground mine and the edge of the subsidence area.

(5) "Applicant" means any person who has applied for authorization to generate, transport, dispose, or treat solid waste, C&DD, or infectious waste in accordance with rules adopted under Chapter 3714., 3734., or 6111. of the Revised Code.

(6) "Approved board of health" means the following:

(a) For rules adopted under Chapter 3734. of the Revised Code, a board of health of a health district placed on the approved list by the director in accordance with section 3734.08 of the Revised Code.

(b) For rules adopted under Chapter 3714. of the Revised Code, a board of health of a health district placed on the approved list by the director in accordance with section 3714.09 of the Revised Code.

(7) "Aquifer" means a geologic unit or formation or series of formations that are hydraulically interconnected and have the ability to receive, store, or transmit water to wells or springs.

(8) "Aquifer system" means one or more geologic units or formations that are wholly or partially saturated with water and are capable of storing, transmitting, and yielding significant amounts of water to wells or springs.

For the purpose of this definition, a geologic unit or formation is able to "yield significant amounts of water" if it is capable of yielding ground water at a time-weighted average rate greater than 0.10 gallons per minute sustained over a twenty-four hour period.

A wholly or partially saturated geologic unit or formation is not an aquifer system if the following are true:

(a) The yield of the geologic unit or formation is less than three gallons per minute.

(b) The yield of the geologic unit or formation is less than fifty per cent of the yield of any underlying or overlying geologic unit or formation that yields more than three gallons per minute sustained over a twenty-four hour period.

(c) Both the geologic unit or formation and any underlying or overlying geologic unit or formation as described in paragraph (A)(8)(b) of this rule are present under the potential source of contamination.

(d) Any underlying or overlying geologic unit or formation described in paragraph (A)(8)(b) of this rule is a likely source of water that is used for any purpose within one mile of the potential source of contamination.

(9) "Asbestos-containing waste materials" has the same meaning as in rule 3745-20-01 of the Administrative Code.

[Comment: Asbestos-containing waste materials includes asbestos-containing materials regulated under NESHAP, 40 CFR Part 61, Subpart M.]

(10) "Assets" means all existing and all probable future economic benefits obtained or controlled by a particular person.

(11) "Authorizing document" means a document issued, approved, or concurred with by the director, Ohio EPA, an approved board of health, the Ohio environmental review appeals commission, or a court of competent jurisdiction that describes activities that a person is either required to do, allowed to do, or prohibited from doing, pursuant to and in compliance with applicable rules, statutes, and orders. Authorizing document includes but is not limited to a permit, license, registration, acknowledgment of registration, plan, alteration, approval to use an alternative material, approval to use an alternative infectious waste treatment method, and order.

(B)

(1) "Bedrock" means solid rock generally overlain by unconsolidated materials. For the purpose of this definition, "solid rock" includes fractured bedrock.

(2) "Biomass fuels" means fuels from manure; fuels from any plant derived organic matter available on a renewable basis, including dedicated energy crops and trees, agricultural food and feed crops, agricultural crop wastes and residues, forestry residues and sawdust, aquatic plants, and animal bedding; and refuse derived fuel consisting of waste paper, cardboard, wood waste, or yard wastes.

(3) "Board of health" means the board of health of a city or general health district, the authority having the duties of a board of health in any city as authorized by section 3709.05 of the Revised Code, or a representative delegated by the board of health to act on behalf of the board of health.

(4) "Boring" means any method of mechanical penetration into the subsurface for the purpose of characterizing material properties, collecting material samples, or installing a probe or well.

(C)

(1) "Clean hard fill" means reinforced concrete, nonreinforced concrete, asphalt, clay tile, building brick, paving brick, mortar, block, building stone, and paving stone generated from construction and demolition activities. Brick in clean hard fill includes but is not limited to refractory brick and mortar. Clean hard fill does not include materials that are or that are contaminated with hazardous wastes, solid wastes, industrial wastes, infectious wastes, or other unauthorized materials.

For the purpose of this definition, "asphalt" means a composite material consisting of a bitumen or petroleum hydrocarbons binder mixed with mineral aggregate commonly used for construction of pavement, highways, and parking lots.

(2) "Composting facility" means a designated facility where composting of solid waste occurs in accordance with Chapter 3734. of the Revised Code and rules adopted thereunder. The composting facility includes the area of materials placement and any leachate management system structures.

(3) "Compressible layer" means a layer of unconsolidated material, C&DD, or waste that may settle after being subjected to increased vertical compressive stress.

(4) "Concurring authority" means the following:

(a) For solid waste and for infectious waste treatment, Ohio EPA.

(b) For C&DD, the approved board of health maintaining a program on the approved list under section 3714.09 of the Revised Code. In health districts that are not on the approved list under section 3714.09 of the Revised Code, Ohio EPA.

(5) "Consolidated stratigraphic unit" means a discrete layer or body of cemented or solid rock that can be readily and consistently distinguished from adjacent materials and recognized as a unit based on one or any combination of lithilogic characteristics or features, usually composition, structure, or physical properties.

(6) "Constituent" means a compound or element suspended, dissolved in, mixed in, or comprising a liquid, gas, or solid.

(7) "Construct" means to construct, reconstruct, or repair when such activity affects any engineered component of a facility. Construct does not include routine maintenance activities.

(8) "Construction and demolition debris" or "C&DD" means those materials resulting from the alteration, construction, destruction, rehabilitation, or repair of any physical structure that is built by humans, including, without limitation, houses, buildings, industrial or commercial facilities, or roadways. Construction and demolition debris includes particles and dust created during demolition activities. Construction and demolition debris does not include materials identified or listed as solid wastes, infectious wastes, or hazardous wastes pursuant to Chapter 3734. of the Revised Code and rules adopted under it; or materials from mining operations, nontoxic fly ash, spent nontoxic foundry sand, and slag; or reinforced or nonreinforced concrete, asphalt, building or paving brick, or building or paving stone that is stored for a period of less than two years for recycling into a usable construction material.

For the purpose of this definition, "materials resulting from the alteration, construction, destruction, rehabilitation, or repair of any physical structure that is built by humans" means those structural and functional materials comprising the structure and surrounding site improvements, such as brick, concrete and other masonry materials, stone, glass, wall coverings, plaster, drywall, framing and finishing lumber, roofing materials, plumbing fixtures, heating equipment, electrical wiring and components containing no hazardous fluids or refrigerants, insulation, wall-to-wall carpeting, asphaltic substances, and metals incidental to any of the above; weathered railroad ties and utility poles; and packaging removed from construction materials used during alteration, construction, rehabilitation, or repair of a structure built by humans.

Materials resulting from the alteration, construction, destruction, rehabilitation, or repair of any physical structure that is built by humans does not mean the following:

(a) Materials required to be removed prior to demolition or materials that are otherwise contained within or exist outside the structure such as solid wastes, yard wastes, furniture, and appliances.

(b) Liquids, including containerized or bulk liquids.

(c) Fuel tanks, drums, and other closed or filled containers.

(d) Tires.

(e) Batteries.

(9) "Construction and demolition debris-derived constituents" or "C&DD-derived constituents" means those constituents that are derived from disposed C&DD and includes those naturally occurring constituents that increase in concentration in ground water due to C&DD-derived constituents released from potential sources of contamination interacting with the geologic units or formations present under or around the C&DD facility.

(10) "Construction and demolition debris facility" or "C&DD facility" means any site, location, tract of land, installation, or building used for the disposal of construction and demolition debris. Construction and demolition debris facility does not include any construction site where construction debris and trees and brush removed in clearing the construction site are used as fill material on the site where the materials are generated or removed and does not include any site where materials composed exclusively of reinforced or nonreinforced concrete, asphalt, clay tile, building or paving brick, or building or paving stone are used as fill material, either alone or in conjunction with clean soil, sand, gravel, or other clean aggregates, in legitimate fill operations for construction purposes or to bring the site up to a consistent grade.

(11) "Critical layer" means a potentially liquefiable layer; or a consolidated or unconsolidated stratigraphic unit, waste, C&DD, or other material that has drained or undrained shear strength that may cause a failure. Critical layers may be less than one inch thick and may include parts of one or more unconsolidated stratigraphic units. Failure may be due to one of the following if all or part of the mass of waste or C&DD of a facility were suddenly put in place:

(a) Bearing capacity failure.

(b) Failure due to hydrostatic uplift.

(c) Failure due to seepage forces.

(d) Slope failure under static conditions.

(e) Slope failure under seismic conditions.

(f) Failure due to liquefaction.

(D)

(1) "Developed spring" means any spring that has been modified by the addition of pipes or a collection basin to facilitate the collection and use of the spring water.

(2) "Director" means the director of environmental protection or the director's authorized representative.

(3) "Disposal" means the following:

(a) For solid waste, the same meaning as in section 3734.01 of the Revised Code.

(b) For C&DD, the discharge, deposit, injection, dumping, spilling, leaking, emitting, or placing of any C&DD into or on any land or ground or surface water or into the air, except if the disposition or placement constitutes storage of C&DD, reuse, or recycling.

(4) "Disposal limits" means the horizontal and vertical boundaries within the solid waste facility or C&DD facility where solid waste or C&DD has been disposed, is being disposed, or will be disposed within those boundaries.

(E)

(1) "Enclosed combustor" means an enclosed firebox that maintains a relatively constant limited peak temperature generally using a limited supply of combustion air. An enclosed flare is considered an enclosed combustor.

(2) "Establish" or "establishment" of a facility means to dispose of waste or C&DD or construct or install any facility components and includes excavation that is related to the construction of a facility or any components thereof. Establish or establishment includes conducting such activities at any location not authorized to dispose of waste or C&DD. Establish or establishment does not include clearing, grubbing, or installing ground water monitoring wells.

(3) "Execute" means the following:

(a) For solid waste facilities, to complete and sign a document acceptable to the director for the purpose of establishing a financial assurance instrument.

(b) For C&DD facilities, to complete and sign a document acceptable to the licensing authority for the purpose of establishing a financial assurance instrument.

(4) "Exemption" means a discretionary action of the director that relieves the applicant from a requirement of Chapter 3734. of the Revised Code or any rule adopted thereunder.

(F)

(1) "Feedstock" means a solid waste that will readily decompose during the composting process including but not limited to yard waste, agricultural waste, animal waste, food scraps, animal carcasses, raw rendering material, and mixed solid waste.

(2) "Final slope" means a slope that exists when the final elevations of the disposal limits for a facility and the cap system and other associated engineered components that are required have been constructed.

(3) "Fine-grained soil" has the same meaning as fine-grained soil described by ASTM D2487 (USCS), as described in rule 3745-500-03 of the Administrative Code.

(4) "Fire" for purposes of sanitary landfill facilities and C&DD facilities includes any occurrence of one or a combination of the following:

(a) Flames or embers.

(b) Smoke.

(c) The temperature of waste or C&DD exceeds one hundred seventy degrees Fahrenheit.

(d) The carbon monoxide concentration of gas generated by waste or C&DD exceeds one thousand parts per million by volume.

(e) Any phenomenon that the director or approved board of health has determined constitutes a fire based upon the presence of two or more of the following:

(i) Elevated temperature in the disposal limits.

(ii) Rapid settlement.

(iii) Slope failure.

(iv) Elevated levels of carbon monoxide.

(5) "Food scraps" means food residuals including but not limited to vegetables, fruits, grains, dairy products, meats, and the biodegradable packaging that may be commingled.

(G)

(1) "Gas collection and conveyance system" means an active or passive system that includes gas collection devices, the gas mover system, and gas conveyance system. It does not include the gas control system.

(2) "Gas collection device" includes but is not limited to a gas collection layer, gas vent, and gas well.

(3) "Gas control device" means an open flare; an enclosed combustor, such as an enclosed flare, boiler, or process heater; and gas treatment systems.

(4) "Gas control system" includes a gas control device and associated equipment.

(5) "Gas conveyance system" means the devices used to convey gas from a gas collection device. The gas conveyance system includes header and lateral piping.

(6) "Gas management system" means the gas collection and conveyance system and the gas control system.

(7) "Gas mover" means the equipment used to cause transport of gas. Fans, blowers, and compressors are considered gas movers.

(8) "Gas mover system" includes the gas mover and associated equipment such as the power source.

(9) "Gas vent" means a passive device that solely uses positive pressure within the landfill to move the gas through the device rather than using a gas mover.

(10) "Gas well" means a device that relies on a gas mover to move out gas generated by the facility.

(11) "Geologic unit or formation" means either of the following:

(a) A body of rock that is prevailingly, but not necessarily, tabular and able to be mapped at the earth's surface or traced in the subsurface and is formally recognized by the Ohio geologic survey based on the following:

(i) Lithic characteristics or features, usually composition, structure, or physical properties.

(ii) Stratigraphic position.

(b) An unconsolidated stratigraphic unit.

(12) "Ground water" means any water below the surface of the earth in a zone of saturation.

(H)

(1) "Hazardous waste" means hazardous waste as defined in Chapter 3734. of the Revised Code and includes waste that is listed specifically as hazardous waste or exhibits one or more characteristics of hazardous waste as defined in Chapter 3745-51 of the Administrative Code.

(2) "Health commissioner" means the individual occupying the office created by section 3709.11 or 3709.14 of the Revised Code or the health commissioner's authorized representative.

(3) "Health district" means a city or general health district created by or under the authority of Chapter 3709. of the Revised Code.

(I)

(1) "Incinerator" means any equipment, machine, device, article, contrivance, structure, or part of a structure used to burn solid or infectious wastes to ash.

(2) "Independently audited" means reviewed by an independent certified public accountant in accordance with generally accepted accounting standards, or for a publicly-owned facility, an equivalent comprehensive audit performed by the auditor of the state of Ohio pursuant to Chapter 117. of the Revised Code.

(3) "Infectious waste" means all of the following substances or categories of substances:

(a) Cultures and stocks of infectious agents and associated biologicals, including, without limitation, specimen cultures, cultures and stocks of infectious agents, wastes from production of biologicals, and discarded live and attenuated vaccines.

(b) Laboratory wastes that were, or are likely to have been, in contact with infectious agents that may present a substantial threat to public health if improperly managed.

(c) Pathological wastes, including, without limitation, human and animal tissues, organs, and body parts, and body fluids and excreta that are contaminated with or are likely to be contaminated with infectious agents, removed or obtained during surgery or autopsy or for diagnostic evaluation, provided that, with regard to pathological wastes from animals, the animals have or are likely to have been exposed to a zoonotic or infectious agent.

(d) Waste materials from the rooms of humans, or the enclosures of animals, that have been isolated because of diagnosed communicable disease that are likely to transmit infectious agents. Also included are waste materials from the rooms of patients who have been placed on blood and body fluid precautions under the universal precaution system established by the "Centers for Disease Control" in the public health service of the United States department of health and human services, if specific wastes generated under the universal precautions system have been identified as infectious wastes by rules referred to in paragraph (I)(3)(h) of this rule.

(e) Human and animal blood specimens and blood products that are being disposed of, provided that, with regard to blood specimens and blood products from animals, the animals were or are likely to have been exposed to a zoonotic or infectious agent. "Blood products" does not include patient care waste such as bandages or disposable gowns that are lightly soiled with blood or other body fluids, unless such wastes are soiled to the extent that the generator of the wastes determines that they should be managed as infectious waste.

(f) Contaminated carcasses, body parts, and bedding of animals that were intentionally exposed to infectious

agents from zoonotic or human diseases during research, production of biologicals, or testing of pharmaceuticals, and carcasses and bedding of animals otherwise infected by zoonotic or infectious agents that may present a substantial threat to public health if improperly managed.

(g) Sharp wastes used in the treatment, diagnosis, or inoculation of human beings or animals or that have, or are likely to have, come in contact with infectious agents in medical, research, or industrial laboratories, including, without limitation, hypodermic needles and syringes, scalpel blades, and glass articles that have been broken.

(h) Any other waste materials generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production of testing of biologicals, that the public health council created in section 3701.33 of the Revised Code, by rules adopted in accordance with Chapter 119. of the Revised Code, identifies as infectious wastes after determining that the wastes present a substantial threat to human health when improperly managed because they are contaminated with, or are likely to be contaminated with, infectious agents.

(i) Any other waste materials the generator designates as infectious waste.

(4) "Infectious waste treatment facility" means a site, location, tract of land, installation, or building used for the treatment of infectious wastes.

(5) "Interim slope" means a slope that exists at a facility as a result of disposal including cover soils. An interim slope will exist for only part of the facility life and is not an engineered component of the facility. An interim slope is not a final slope.

(6) "Internal slope" means a slope that exists after construction of all required engineered components has been completed prior to placing waste or C&DD on the slope.

(J) [Reserved.]

(K) [Reserved.]

(L)

(1) "Lateral expansion" means the horizontal extension of the disposal limits that occurs prior to beginning, or being required to begin, closure activities.

(2) "Leachate" means liquid that has come in contact with or been released from solid waste or C&DD.

(3) "Liabilities" means probable future sacrifices of economic benefits arising from present obligations to transfer assets or provide services to other persons in the future as a result of past transactions or events.

(4) "Licensing authority" means the approved board of health or in the absence of an approved board of health, the director.

(M)

(1) "Municipal solid waste" means a type of solid waste that is generated from community, commercial, or agricultural operations. Municipal solid waste includes but is not limited to the following:

(a) Solid waste generated by community operations, including but not limited to wastes derived from households (including single and multiple household residences, hotels, motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas).

(b) Solid waste generated by commercial operations (including stores, offices, restaurants, warehouses, and other non-manufacturing activities).

(c) Solid waste generated from agricultural operations (including single-family and commercial farms, greenhouses, and nurseries).

(d) Sludge from municipal, commercial or industrial waste water treatment plants, water treatment plants, and air pollution control facilities that is co-disposed with wastes specified in paragraph (M)(1)(a), (M)(1)(b), (M)(1)(c), or (M)(1)(e) of this rule in a sanitary landfill facility.

(e) Fly ash and bottom ash generated from the incineration of municipal solid waste provided the fly ash and bottom ash are not regulated as hazardous wastes.

(N) "Nuisance" means anything that is injurious to human health or offensive to the senses; interferes with the comfortable enjoyment of life or property; and affects a community, neighborhood, or any considerable number of persons (although the extent of annoyance or damage inflicted upon individual persons may be unequal).

(O)

(1) "Occupied dwelling" means a residential dwelling and also includes a place of worship as defined in section 5104.01 of the Revised Code, a child day-care center as defined in that section, a hospital as defined in section 3727.01 of the Revised Code, a nursing home as defined in section 3721.01 of the Revised Code, a school, and a restaurant or other eating establishment. Occupied dwelling does not include a dwelling owned or controlled by the owner or operator of a facility to which the siting criteria are being applied.

(2) "Occupied structure" means an enclosed structure where one or more human beings may be present, but does not include structures that are open to natural free air

circulation such that the explosive gas hazard is minimized.

(3) "Ohio EPA" means Ohio environmental protection agency.

(4) "Open burning" means one of the following:

(a) The burning of solid wastes in an open area.

(b) The burning of solid wastes in a type of chamber or vessel that is not approved or authorized in rules adopted by the director under section 3734.02 of the Revised Code or, if the solid wastes consist of scrap tires, in rules adopted by the director under section 3734.73 of the Revised Code.

(c) The burning of treated or untreated infectious wastes in an open area or vessel that is not approved in rules adopted by the director under section 3734.021 of the Revised Code.

(d) The burning of C&DD anywhere other than on a construction site that is burning the C&DD in compliance with division (C)(1) of section 3704.11 of the Revised Code.

(5) "Open dumping" means the following:

(a) The deposition of solid wastes, other than scrap tires, into waters of the state, and also means the final deposition of solid wastes on or into the ground at any place other than a solid waste facility operated in accordance with Chapter 3734. of the Revised Code and rules adopted thereunder.

(b) The deposition of solid wastes that consist of scrap tires into waters of the state, and also means the final deposition of scrap tires on or into the ground at any place other than a scrap tire collection, storage, monofill, monocell, or recovery facility licensed under section 3734.81 of the Revised Code, or at a site or in a manner not specifically identified in division (C)(2), (C)(3), (C)(4), (C)(5), (C)(7), or (C)(10) of section 3734.85 of the Revised Code, or at any licensed solid waste facility if the deposition is not in accordance with Chapter 3734. of the Revised Code and rules adopted thereunder.

(c) The deposition of solid wastes that consist of scrap tires in buildings, trailers, or other vehicles, unless for fewer than fourteen days at a scrap tire transporter's registered business location, a licensed scrap tire facility, or an unregistered scrap tire facility operating in accordance with Chapter 3734. of the Revised Code and rules adopted thereunder.

(d) The deposition of untreated or treated infectious wastes into waters of the state, and also means the final deposition of untreated or treated infectious wastes on or into the ground at any place other than a licensed solid waste facility operated in accordance with Chapter 3734. of the Revised Code and rules adopted thereunder.

(6) "Open flare" has the same meaning as in rule 3745-76-01 of the Administrative Code.

(7) "Operator" or "facility operator" means any person who has supervisory authority or the authority to make discretionary decisions concerning the construction, operation, maintenance, or monitoring of a solid waste facility, C&DD facility, infectious waste treatment facility, or scrap tire transportation business.

(8) "Owner" means the person who holds title to the land on which the solid waste facility, C&DD facility, infectious waste treatment facility, or scrap tire transportation business is located or the person who owns a majority or controlling interest in the facility or business.

(P)

(1) "Parameter" means a measurable factor of a liquid, gas, or solid such as temperature, pH, length, or elevation, and includes constituents of the liquid, gas, or solid.

(2) "Permitting authority" means the following:

(a) For solid waste, the director.

(b) For C&DD, the approved board of health; or the director in the absence of an approved board of health; or the director if the approved board of health has determined that additional expertise is required and has requested that the director do any of the following:

(i) Act on a permit to install application.

(ii) Act on a request to modify a permit to install for a modification to a facility.

(iii) Decide whether to act on a request to modify a permit to install for a change to a term or condition of the permit to install.

(iv) Act on a request for transfer of a permit to install.

(v) Decide whether to suspend a permit to install.

(vi) Act on a request for reinstatement of a suspended permit to install.

(vii) Decide whether to revoke a permit to install.

(viii) Decide whether to act on a request for an extension of a permit to install expiration date.

(ix) Act on a request for renewal of a permit to install.

(x) Decide whether to make an administrative change to a permit to install.

(3) "Person" means the state, any political subdivision of the state or other state or local body, the United States and any agency or instrumentality thereof, and any legal entity or organization defined as a person under section 1.59 of the Revised Code, or other entity.

(4) "Phase" means a discrete volume of the disposal limits to be used for disposal at a sanitary landfill facility or C&DD facility defined by the phase limits that have been designated in an authorizing document to facilitate the systematic construction, operation, and closure of the sanitary landfill facility or C&DD facility. A phase is all or a portion of a unit.

(5) "Phase limits" means the boundaries that define the volume of a phase.

(6) "Phreatic surface" means a surface that represents the water level in an unconfined saturated zone.

(7) "Piezometric surface" means a surface that represents the actual pressure head relative to a confined saturated zone.

(8) "Potentiometric map" means a map showing the elevation of the potentiometric surface of a significant zone of saturation, aquifer, or aquifer system by means of contour lines.

(9) "Potentiometric surface" means a surface representing the total head of ground water in a significant zone of saturation, aquifer, or aquifer system and defined by the levels to which water will rise in tightly cased wells.

(10) "Premises" means either of the following:

(a) Geographically contiguous property owned by the same person.

(b) Noncontiguous property that is owned by the same person and connected by a right-of-way that the person controls and to which the public does not have access. Two or more pieces of property that are geographically contiguous and divided by public or private right-of-way or rights-of-way are a single premises.

(11) "Professional engineer" means an individual authorized to practice the profession of engineering pursuant to Chapter 4733. of the Revised Code.

(12) "Professional surveyor" means an individual authorized to practice the profession of surveying pursuant to Chapter 4733. of the Revised Code.

(13) "Public water supply well" means any well connected to a public water system as defined by division (A) of section 6109.01 of the Revised Code.

(14) "Public well field" means any system of wells that is connected to a public water system as defined by division (A) of section 6109.01 of the Revised Code.

(15) "Publicly available information" means all public records and all other information from public and private sources in oral, written, or published form that is reasonably available to the public. Publicly available information includes but is not limited to visual surveys of the area surrounding the facility from public rights-of-way and public lands and written or oral surveys of the landowners around the facility.

(Q) "Qualified ground water scientist" means an individual who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has at least five years of relevant experience in ground water hydrogeology and related fields that enable that individual to make sound professional judgments regarding ground water monitoring, contaminant fate and transport, and corrective actions.

(R)

(1) "Recycling" means converting solid waste, C&DD, or clean hard fill that would otherwise be disposed and returning the converted material to commerce as a commodity for use or exchange in an established and legitimate market. Recycling is not reuse, storage, disposal, or transfer.

(2) "Regional aquifer" means the aquifer used as a primary source of water to wells within one mile of a solid waste disposal facility or C&DD facility.

(3) "Registrant" means any person to whom a registration certificate has been issued.

(4) "Residential dwelling" means a building used or intended to be used in whole or in part as a personal residence by the owner, part-time owner, or lessee of the building or any person authorized by the owner, part-time owner, or lessee to use the building as a personal residence.

(5) "Reuse" means taking a solid waste, C&DD, or clean hard fill that would otherwise be disposed and using it for its original purpose or a similar purpose, without converting the material. Reuse does not include using solid waste, C&DD, or clean hard fill as fill. Reuse is not recycling, storage, transfer, or disposal.

(6) "Run-out" means the extension of the engineered components in the following systems used to connect to the same type of engineered component constructed during a subsequent construction event:

(a) Liner system.

(b) Leachate collection system.

(c) Separatory leachate barrier and collection system.

(d) Cap system.

(S)

(1) "Sanitary landfill facility" means an engineered facility where the final deposition of waste on or into the ground is practiced in accordance with Chapter 3734. of the Revised Code and rules adopted under it. Sanitary landfill facility includes all required features including, at a minimum, the following:

(a) The disposal limits.

(b) Engineered components.

(c) Ground water monitoring components.

(d) Scales and scalehouse.

(e) Gas monitoring components.

(f) Areas within three hundred feet of the disposal limits or either of the following:

(i) Areas within an alternate distance authorized by the director.

(ii) If the owner or operator has not been issued a permit to install submitted in accordance with section 3734.05 of the Revised Code that delineates the facility boundary, the sanitary landfill facility includes all portions of the facility described above and those areas within three hundred feet of the disposal limits unless the property line of the facility is less than three hundred feet from the limits of waste placement, in which case the sanitary landfill facility includes those areas within the property line.

(2) "Scrap tire" is a type of solid waste and means any unwanted or discarded tire, regardless of size, that has been removed from its original use. Scrap tire includes all whole scrap tires and pieces of scrap tires that are readily identifiable as parts of scrap tires by visual inspection.

For the purpose of this definition, "unwanted" means the original generator, original owner, or manufacturer of the tire no longer wants to use or is unable to use the tire for its original purpose.

For the purpose of this definition, "discarded" means the original generator, original owner, or manufacturer of the tire has otherwise managed the tire in such a manner that disposal has occurred.

Scrap tire does not include the following:

(a) A tire after it has been retreaded or regrooved for resale or reuse, unless it has been declared defective or has been returned to the seller or manufacturer for warranty adjustment.

(b) A tire that is mounted and installed on a vehicle or trailer, or carried on the vehicle or trailer as the spare tire. Trucks with more than four wheels or with different size wheels or tires may carry more than one spare tire.

For the purpose of this definition "mounted" means placing a tire on a wheel rim so that it can be installed on a vehicle. A mounted tire may be a scrap tire unless it is also installed.

For the purpose of this definition "installed" means placing of the mounted wheel and tire assembly at any of the positions on a vehicle or trailer where a wheel and tire assembly was initially placed on the vehicle or trailer during manufacture and includes the position normally used for a spare tire or tires.

(c) Tires from non-motorized vehicles such as bicycles; or tires from small equipment such as lawn mowers and wheelbarrows.

(d) Only at a retreading business, a retreadable casing stored in an enclosed building or stored in a manner otherwise authorized or exempted by the director that the retreading business has inspected and individually labeled or marked the casing as suitable for retreading.

(e) Tire derived fuel (TDF) or tire derived chips (TDC) after the TDF or TDC has been transported from the scrap tire recovery facility for use as a fuel or for an authorized beneficial use.

(f) Non-pneumatic, hard, pressed tires, such as forklift tires.

(3) "Scrap tire facility" includes but is not limited to a scrap tire collection facility, scrap tire storage facility, scrap tire recovery facility, scrap tire monofill facility, scrap tire monocell facility, and scrap tire submergence facility.

(4) "Sewage sludge" has the same meaning as in Chapter 6111. of the Revised Code and rules adopted thereunder.

(5) "Shapefile" also known as "feature classes" means digital data files that contain all of the spatial reference data and any additional data that are necessary to create maps, identify features in the maps, and perform comparative spatial analyses on those features using geographic information system (GIS) software.

(6) "Significant zone of saturation" means a zone of saturation that is able to act as a preferential pathway of migration away from potential sources of contamination.

(7) "Solid waste" means such unwanted residual solid or semisolid material as results from industrial, commercial, agricultural, and community operations and includes but is not limited to garbage, scrap tires, combustible and noncombustible material, and street dirt and debris. Solid waste excludes the following:

(a) Earth or material from construction, mining, or demolition operations, or other waste materials of the type that normally would be included in demolition debris.

(b) Nontoxic fly ash and bottom ash, including at least ash that results from the following:

(i) The combustion of coal.

(ii) The combustion of biomass fuel.

(iii) The combustion of coal in combination with scrap tires where scrap tires comprise not more than fifty per cent of heat input in any month.

(c) Spent nontoxic foundry sand.

(d) Slag and other substances that are not harmful or inimical to public health.

(e) Any material that is an infectious waste or a hazardous waste.

(8) "Solid waste disposal facility" means any site, location, tract of land, installation, or building used for incineration, composting, sanitary landfilling, or other approved methods of disposal of solid wastes.

(9) "Solid waste energy recovery facility" means any site, location, tract of land, installation, or building where mixed solid wastes or select solid waste streams, including scrap tires, are used as or intended to be used as fuel to produce energy, heat, or steam.

[Comment: A "solid waste energy recovery facility", which exclusively uses scrap tires and other approved rubber waste as fuel, may be regulated as a "scrap tire recovery facility."]

(10) "Solid waste facility" means a site, location, tract of land, installation, or building used for incineration, composting, sanitary landfilling, or other methods of disposal of solid wastes or, if the solid wastes consist of scrap tires, for collection, storage, or processing of the solid wastes; or for the transfer of solid wastes.

(11) "Solid waste management district" means a county which has established a resolution, or joint counties which have entered into an agreement, for the purposes of preparing, adopting, submitting, and implementing a solid waste management plan for the county or joint counties and for the purposes of providing for, or causing to be provided for, the safe and sanitary management of solid waste within all of the incorporated and unincorporated territory of the county or joint counties and in compliance with Chapters 343. and 3734. of the Revised Code.

(12) "Solid waste transfer facility" means any site, location, tract of land, installation, or building that is used or intended to be used primarily for the purpose of transferring solid wastes that are generated off the premises of the facility from vehicles or containers into other vehicles or containers for transportation to a solid waste disposal facility. The term does not include the following:

(a) Any facility that consists solely of portable containers that have an aggregate volume of fifty cubic yards or less, as long as the waste is not placed on the ground or on the waste handling floor.

(b) Any facility that accepts scrap tires other than scrap tires which are accepted incidental to a load of solid waste.

(c) Any facility that accepts only source-separated recyclables, except scrap tires, or commingled recyclables that are currently recoverable utilizing existing technology.

(d) Any facility that does not hold a transfer facility license and meets the following:

(i) Accepts solid waste, except scrap tires.

(ii) Recovers for recycling not less than sixty per cent of the weight of solid waste brought to the facility each month (as averaged monthly) for not fewer than eight months in each calendar year.

(iii) Disposes of not more than forty per cent of the total weight of solid waste brought to the facility each month (as averaged monthly) for not fewer than eight months in each calendar year.

(e) A facility identified as any of the following:

(i) Solid waste disposal facility.

(ii) Scrap tire collection, storage, monofill, monocell, or recovery facility.

(iii) Construction and demolition debris facility.

(13) "Spatial reference data" means digital information that identifies the geographic location of features, boundaries, and topology in reference to coordinates in a known geodetic datum such as the North American Datum of 1983 (NAD 83) or the World Geodetic System 1984 (WGS 84).

(14) "Surface water" means any water on the surface of the earth.

(T)

(1) "Tie-in" means the interface connecting the engineered components in the following systems:

(a) Liner system.

(b) Leachate collection system.

(c) Separatory leachate barrier and collection system.

(d) Cap system.

(2) "Tire derived fuel" (TDF) or "tire derived chips" (TDC) means a uniformly shredded product obtained from whole tires where the maximum size of ninety-five per cent of the shreds is less than four inches in any dimension. TDC may be used as a civil engineering material or as feedstock for the manufacturing of crumb rubber or other tire derived material. TDC is defined using ASTM D6270 as described in rule 3745-500-03 of the Administrative Code, section 3.1.29, for x-minus classified, size reduced scrap tires.

(U)

(1) "Unconsolidated stratigraphic unit" means a discrete layer or body of loosely arranged, unstratified, or uncemented material, including soil, mine spoil, glacially deposited sediments, or other earthen fill materials, that can be readily and consistently distinguished from adjacent materials and recognized as a unit based on one or any combination of characteristics or features, usually composition, structure, or physical properties.

(2) "Unit" means a discrete area delineated by the owner or operator within the authorized disposal limits of a sanitary landfill facility or a C&DD facility.

(3) "Unstable area" means a location that is susceptible to natural or human induced events or forces capable of impairing the integrity of some or all of the structural components of a facility that are responsible for preventing releases from the facility. Unstable areas can include areas where on-site or local soil conditions result in significant differential settling, areas where the downslope movement of soil or rock due to gravitational influence occurs, or areas where the lowering or collapse of the land surface occurs either locally or over broad regional areas.

(V)

(1) "Variance" means an action of the director that changes a requirement of a rule adopted under Chapter 3734. of the Revised Code.

(2) "Vertical expansion" means the vertical extension of the disposal limits that occurs prior to beginning, or being required to begin, closure activities.

(W)

(1) "Waste-derived constituents" means those constituents that are derived from waste and includes those naturally occurring constituents that increase in concentration in ground water due to waste-derived constituents released from potential sources of contamination interacting with the geologic units or formations present under or around the facility.

(2) "Water pollution" means the unpermitted release to the waters of the state from one or a combination of the following:

(a) Sediment from disturbed areas.

(b) Solid waste.

(c) Waste-derived constituents.

(d) C&DD.

(e) C&DD-derived constituents.

(f) Leachate.

(g) Naturally occurring constituents that increase in concentration in ground water due to waste-derived or C&DD-derived constituents released from the potential sources of contamination interacting with the geologic formations present under or around the facility.

(h) Infectious waste.

(3) "Waters of the state" means all streams, lakes, ponds, wetlands, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, regardless of the depth of the strata in which underground water is located, that are situated wholly or partly within, or border upon, this state, or are within its jurisdiction, except those private waters that do not combine or effect a junction with natural surface or underground waters, including those waters that are presently used, have been used, or are susceptible to use for transporting interstate commerce up to the head of navigation.

(4) "Water supply well" includes potable and non-potable water supply wells.

(5) "Wetland" has the same meaning as in rule 3745-1-02 of the Administrative Code.

(X) [Reserved.]

(Y) "Yard waste" means solid waste that includes only leaves, grass clippings, brush, garden waste, tree trunks, tree stumps, holiday trees, prunings from trees or shrubs, and vegetative waste resulting from the use of commercial

products, including but not limited to discarded flowers, potted flowers, or grave blankets that do not include plastic, metal, styrofoam, or other non-biodegradable material. Yard waste does not include wastes from industrial processing, agricultural processing, or food processing.

(Z) "Zone of saturation" or "saturated zone" means that part of the earth's crust in which all voids are filled with water. Zone of saturation or saturated zone does not include the capillary zone.

3745-500-03 Incorporation by reference.

Incorporation by reference. The text of the incorporated materials is not included in the rules contained in Chapters 3745-500 to 3745-599 of the Administrative Code. The materials listed in paragraph (B) of this rule are hereby made a part of the rules in Chapters 3745-500 to 3745-599 of the Administrative Code. For materials subject to change, only the specific version specified in this rule is incorporated. Any amendment or revision to a referenced document is not incorporated until this rule has been amended to specify the new version.

(A) Availability. The materials incorporated by reference are available as follows:

(1) Code of federal regulations (C.F.R.). Information and copies may be obtained by writing to: "U.S. Government Printing Office, P.O. Box 979050, St. Louis, MO 63197-9000." The full text of the C.F.R. is also available in electronic format at http://www.gpoaccess.gov/CFR/. The C.F.R. compilations are also available for inspection and copying at most public libraries and "The State Library of Ohio."

(2) Federal statutes. The full text is available in electronic format at http://www.gpoaccess.gov/uscode/index.html. These laws are also available for inspection and copying at most public libraries and "The State Library of Ohio."

(3) Government literature. The availability of these documents is provided in paragraph (B)(3) of this rule. However, many of the documents are also available for inspection and copying at most public libraries and "The State Library of Ohio."

(4) Specifications of the "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, third edition, including Volume II, Field Manual (SW-846)." Information and copies may be obtained by writing to: "National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Rd., Springfield, VA 22161." The full text is also available in electronic format at http://www.epa.gov/epaoswer/hazwaste/test/main.htm. These test methods are also available for inspection and copying at most public libraries and "The State Library of Ohio."

(5) Specifications of the "American Society for Testing and Materials" (ASTM). Information and copies may be obtained by writing to: "ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, Pennsylvania 19428-2959." These documents are available for purchase at http://www.astm.org.

(6) Other publications. The availability of these documents is provided in paragraph (B)(6) of this rule. However, many of the documents are also available for inspection and copying at most public libraries and "The State Library of Ohio."

(B) Incorporated materials.

(1) Appropriate "Code of Federal Regulations," the regulations listed in this rule are those effective on July 1, 2009 and include the following:

(a) 10 C.F.R. Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste."

(b) 40 C.F.R. Part 53, "Ambient Air Monitoring Reference and Equivalent Methods."

(c) 40 C.F.R. Part 58 Appendix E, "Probe and Monitoring Path Siting Criteria For Ambient Air Quality Monitoring."

(d) 40 C.F.R. Part 60, "Standards of Performance for New Stationary Sources;" specifically the following:

(i) Method 3C, "Determination of Carbon Dioxide, Methane, Nitrogen, and Oxygen from Stationary Sources."

(ii) Method 10B, "Determination of Carbon Monoxide Emissions from Stationary Sources."

(iii) Method 21, "Determination of Volatile Organic Compound Leaks."

(iv) Method 25C, "Determination of Nonmethane Organic Compounds (NMOC) in MSW Landfill Gases."

(e) 40 C.F.R. 60.18, "General Control Device Requirements."

(f) 40 C.F.R. Part 61, "National Emission Standards for Hazardous Air Pollutants (NESHAP)."

(g) 40 C.F.R. Part 122, "EPA Administered Permit Programs: The National Pollutant Discharge Elimination System".

(h) 40 C.F.R. Part 136, "Guidelines for Establishing Test Procedures for the Analysis of Pollutants."

(i) 40 C.F.R. Part 141, "National Primary Drinking Water Regulations."

(j) 40 C.F.R. Part 761, "Polychlorinated biphenyls (PCBs) manufacturing, processing, distribution in commerce, and use prohibitions."

(k) 40 C.F.R. Part 792, "Good Laboratory Practice Standards."

(l) 49 C.F.R. Subtitle B, Chapter I, Parts 171-180, "Pipeline and Hazardous Materials Safety Administration, Department of Transportation, Hazardous Materials Regulations."

(m) 49 C.F.R. Subtitle B, Chapter III, "Federal Motor Carrier Safety Regulations."

(2) Appropriate "Federal Statutes," the statutes listed in this rule are those versions of the laws amended through July 1, 2009, including the following:

(a) Act of August 18, 1970, 84 Stat. 825, 16 U.S.C. 1a-1 et seq., popularly known as the "National Park System General Authorities Act."

(b) Clean Water Act, 33 U.S.C. 1251 et seq. including the following:

(i) Chapter 26, section 1341, "Certification."

(ii) Chapter 26, section 1344, "Permits for Dredged or Fill Material."

(c) Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. 9601 et. seq.

(d) Investment Company Act of 1940, 15 U.S.C. 80A-1 et seq.

(e) Federal Meat Inspection Act, 81 Stat. 584, 21 U.S.C. 603 et seq.

(f) National Flood Insurance Act of 1968, 82 Stat. 572, 42 U.S.C. 4001 et seq.

(g) Poultry Products Inspection Act, 21 U.S.C. 451-469.

(h) Resource Conservation and Recovery Act (RCRA), 42 U.S.C. 6901 et seq.

(i) Safe Drinking Water Act, 88 Stat. 1660, 42 U.S.C. 300f et. seq.

(j) Toxic Substances Control Act, 15 U.S.C. 2601 et seq.

(k) U.S.C. Title 11, Bankruptcy.

(l) U.S.C. Title 49, Transportation.

(3) Appropriate "Government Literature," including the following:

(a) U.S. department of agriculture, natural resources conservation service documents, available at http://www.usda.gov or by writing to U.S. Department of Agriculture, Washington, DC 20250, including the following:

(i) "Agriculture Handbook 537, Predicting Rainfall Erosion Losses - A Guide to Conservation Planning" published in 1978.

(ii) "Agriculture Handbook 703, Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE)" published in 1997 and includes any computer models based on this publication.

(iii) "National Engineering Handbook, part 630 Hydrology" published in March 1985, including revisions through 2004.

(iv) "Urban Hydrology for Small Watersheds" technical release no. 55, second edition, published in June 1986.

(v) "Water Erosion Prediction Project" this model was publicly released in July 2002 and updated in September 2004 and in May 2006.

(b) U.S. Army Corps of Engineers document, available at http://www.usace.army.mil/ or by writing to U.S. Army Corps of Engineers, 441 G Street NW, Washington, DC 20314-1000: "Engineering and Design - Test Quarries and Test Fills", September 30, 1994.

(c) U.S. Bureau of Economic Analysis document, available at http://www.bea.gov or by writing to U.S. Bureau of Economic Analysis, 1441 L Street NW, Washington, DC 20230: "Survey of Current Business", February 2009.

(d) National Oceanic and Atmospheric Administration, National Weather Service documents, available at http://www.weather.gov or by writing to National Oceanic and Atmospheric Administration, 1325 East West Highway, Silver Spring, MD 20910: "Rainfall Frequency Atlas of the Eastern United States," technical paper no. 40, Weather Bureau, 1961.

(e) U.S. environmental protection agency documents, available at http://www.epa.gov/nscep or by writing to U.S. Environmental Protection Agency/National Service Center for Environmental Publications, P. O. Box 42419, Cincinnati, OH 45242-0419, including the following:

(i) "Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD) EPA-450/4-87-007", published in May 1987.

(ii) "Industrial Waste Management Evaluation Model Technical Background Document", published in August 2002.

(iii) "Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020", published in 1983.

(iv) "Meteorological Monitoring Guidance for Regulatory Modeling Applications, EPA-454/R-99-005", published in February 2000.

(f) U.S. department of treasury document, available at http://www.fms.treas.gov: "Circular 570" published in the July 1, 2009 C.F.R.

(4) Appropriate "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)," as amended through January 3, 2008, including the following:

(a) Method 1311, "Toxicity Characteristic Leaching Procedure."

(b) Method 1312, "Synthetic Precipitation Leaching Procedure."

(c) Method 3050B, "Acid Digestion of Sediments, Sludges, and Soils."

(d) Method 6010C, "Inductively Coupled Plasma - Atomic Emission Spectrometry."

(e) Method 6020A, "Inductively Coupled Plasma - Mass Spectrometry."

(f) Method 7000B, "Flame Atomic Absorption Spectrophotometry."

(g) Method 7010, "Graphite Furnace Atomic Absorption Spectrophotometry."

(h) Method 7471B, "Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)."

(i) Method 8015C, "Nonhalogenated Organics by Gas Chromatography."

(j) Method 8021B, "Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors".

(k) Method 8082A, "Polychlorinated Biphenyls (PCBs) by Gas Chromatography."

(l) Method 8260B, "Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)."

(m) Method 9045D, "Soil and Waste pH."

(n) Method 9060, "Total Organic Carbon."

(o) Method 9090A, "Compatibility Test for Wastes and Membrane Liners."

(p) Method 9095B, "Paint Filter Liquids Test."

(5) Appropriate "American Society for Testing and Materials." Each of the following ASTM standards are regulated by the date specified, another standard may be used if it is at least equivalent to those cited in this rule and is acceptable to Ohio EPA. ASTM standards include the following:

(a) ASTM C136-06, "Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates:" approved November 10, 1996, amended in 2001, 2004, 2005, and 2006.

(b) ASTM D422-63, "Standard Test Method for Particle-Size Analysis of Soils;" approved November 21, 1963; reapproved in 1998, 2002, and 2007.

(c) ASTM D698-07e1, "Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3(600 kN-m/m3));" approved in 2000; amended in 2007.

(d) ASTM D1556-07, "Standard Test Method for Density and Unit Weight of Soil in Place by the Sand Cone Method (Shallow Depth);" approved in 2000; amended in 2007.

(e) ASTM D1557-07, "Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3(2,700 kN-m/m3));" approved in 2000; amended in 2002 and 2007.

(f) ASTM D1586-08a, "Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils;" approved in 1999; amended in 2008.

(g) ASTM D1709-09, "Standard Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method;" approved in 1998; amended in 2001, 2003, 2004, 2008, and 2009.

(h) ASTM D1945-03(2010), "Standard Test Method for Analysis of Natural Gas by Gas Chromatographpy;" originally approved in 1996; reapproved in 2001; amended in 2003.

(i) ASTM D1946-90, "Standard Practice for Analysis of Reformed Gas by Gas Chromatography;" originally approved in 1962; reapproved in 1990, 2000, and 2006.

(j) ASTM D2167-08, "Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method;" approved March 15, 1994; reapproved in 2001; amended in 2008.

(k) ASTM D2434-68, "Standard Test Method for Permeability of Granular Soils (Constant Head);" approved September 13, 1968; reapproved in 1974, 2000, and 2006.

(l) ASTM D2435-04, "Standard Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading;" approved in 1996; amended in 2002, 2003, and 2004.

(m) ASTM D2487-06e1, "Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System);" approved in 2000; amended in 2006.

(n) ASTM D2850-03a, "Standard Test Method for Unconsolidated-Undrained Triaxial Compression Test on Cohesive Soils;" approved May 15, 1995, reapproved in 1999; amended in 2003; reapproved in 2007.

(o) ASTM D2974-07a, "Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils;" approved in 1971, amended in 2000 and 2007.

(p) ASTM D2976-71, "Standard Test Method for pH of Peat Materials;" approved in 1971; reapproved in 1998 and 2004.

(q) ASTM D3042-09, "Standard Test Method for Insoluble Residue in Carbonate Aggregates;" approved July 10, 1997; amended in 2003 and 2009.

(r) ASTM D3080-04, "Standard Test Method for Direct Shear Test of Soils Under Consolidated Drained Conditions;" approved August 10, 1998; amended in 2003 and 2004.

(s) ASTM D3385-09, "Standard Test Method for Infiltration Rate of Soils in Field Using Double-Ring Infiltrometer;" approved in 1994; amended in 2003 and 2009.

(t) ASTM D3441-05, "Standard Test Method for Mechanical Cone Penetration Tests of Soil;" approved in 1998; amended in 2005.

(u) ASTM D3987-06, "Standard Test Method for Shake Extraction of Solid Waste with Water;" approved October 21, 1985; reapproved in 1999 and 2004; amended in 2006.

(v) ASTM D4318-05, "Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils;" approved in 2000; amended in 2005.

(w) ASTM D4354-99, "Standard Practice for Sampling of Geosynthetics for Testing;" approved in 1989; amended in 1999; reapproved in 2004 and 2009.

(x) ASTM D4428/D4428M-07, "Standard Test Methods for Crosshole Seismic Testing;" approved in 2000; amended in 2007.

(y) ASTM D4437-08, "Standard Practice for Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes;" approved in 1994; reapproved in 1998; amended in 1999 and 2008.

(z) ASTM D4716-08, "Standard Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head;" approved in 2000; amended in 2001, 2002, 2003, 2004, 2007, and 2008.

(aa) ASTM D4751-04, "Standard Test Method for Determining Apparent Opening Size of a Geotextile;" approved in 2004.

(bb) ASTM D4767-04, "Standard Test Method for Consolidated Undrained Triaxial Compression Test for Cohesive Soils;" approved December 10, 1995; amended in 2002 and 2004.

(cc) ASTM D4833-07, "Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products;" approved in 2000; amended in 2000 and 2007.

(dd) ASTM D5084-03, "Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter;" approved in 2000; amended in 2000 and 2003.

(ee) ASTM D5093-02, "Standard Test Method for Field Measurement of Infiltration Rate Using a Double-Ring Infiltrometer with a Sealed-Inner Ring;" approved June 29, 1990, reapproved in 1997; amended in 2002; reapproved in 2008.

(ff) ASTM D5321-08, "Standard Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method;" approved October 15, 1992, reapproved in 1997; amended in 2002 and 2008.

(gg) ASTM D5322-98, "Standard Practice for Immersion Procedures for Evaluating the Chemical Resistance of Geosynthetics to Liquids;" approved in 1998; reapproved in 2003.

(hh) ASTM D5747-08, "Standard Practice for Tests to Evaluate the Chemical Resistance of Geomembranes to Liquids;" approved in 1995; reapproved in 2002; amended in 2008.

(ii) ASTM D5888-06, "Standard Guide for Storage and Handling of Geosynthetic Clay Liners;" approved in 1995; reapproved in 2002; amended in 2006.

(jj) ASTM D5993-99, "Standard Test Method for Measuring Mass Per Unit of Geosynthetic Clay Liners;" approved January 10, 1999; reapproved in 2004.

(kk) ASTM D6102-06, "Standard Guide for Installation of Geosynthetic Clay Liners;" approved in 1997; amended in 2004 and 2006.

(ll) ASTM D6243-08, "Standard Test Method for Determining the Internal and Interface Shear Resistance of Geosynthetic Clay Liner by the Direct Shear Method;" approved March 10, 1998; amended in 2006 and 2008.

(mm) ASTM D6270-08, "Standard Practice for Use of Scrap Tires in Civil Engineering Applications;" approved in 1998; reapproved in 2004; amended in 2008.

(nn) ASTM D6388-99, "Standard Practice for Tests to Evaluate the Chemical Resistance of Geonets to Liquids;" approved in 1999; reapproved in 2005.

(oo) ASTM D6392-08, "Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods;" approved in 1999; reapproved in 2006; amended in 2008.

(pp) ASTM D6389-99, "Standard Practice for Tests to Evaluate the Chemical Resistance of Geotextiles to Liquids;" approved in 1999; reapproved in 2005.

(qq) ASTM D6391-06, "Standard Test Method for Field Measurement of Hydraulic Conductivity Limits of Porous Materials Using Two Stages of Infiltration from a Borehole;" approved April 10, 1999; reapproved in 2004; amended in 2006.

(rr) ASTM D6400-04, "Standard Specification for Compostable Plastics;" approved in 1999; amended in 2004.

(ss) ASTM D6467-06a, "Standard Test Method for Torsional Ring Shear Test to Determine Drained Residual Shear Strength of Cohesive Soils;" approved October 10, 1999; amended in 2006.

(tt) ASTM D6780-05, "Standard Test Method for Water Content and Density of Soil in Place by Time Domain Reflectometry (TDR);" approved in 2002; amended in 2005.

(uu) ASTM D6938-08a, "Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth);" approved in 2006; amended in 2007 and 2008.

(6) Other publications as follows:

(a) Publications that have been made available through the Ohio EPA website at http://www.epa.ohio.gov or by writing to Ohio EPA, P.O. Box 1049, Columbus, OH 43216-1049, including the following:

(i) Ohio EPA, "Biological Criteria for the Protection of Aquatic Life, Volumes I, II, and III," (1987, updated in 1988, 1989, and 2008).

(ii) Ohio EPA, "Manual of Ohio EPA Surveillance Methods and Quality Assurance Practices," (2009).

(iii) Edward T. Rankin, Ohio EPA, "Qualitative Habitat Evaluation Index (QHEI): Rationale, Methods, and Application," (1986).

(iv) Ohio EPA, "Weekly Review," published weekly.

(b) American public health association book: "Standard Methods for the Examination of Water and Wastewater" (Andrew D. Eaton, Lenore S. Clesceri, Eugene W. Rice, Arnold E. Greenberg eds., 21st ed. 2005). Available for purchase at http://www.standardmethods.org/. Standard methods include the following:

(i) 9260 "Detection of Pathogenic Bacteria."

(ii) 9222 "Membrane Filter Technique for Members of the Coliform Group."

(iii) 9221 "Multi-Tube Fermentation Technique for Members of the Coliform Group."

(c) Association of Official Analytical Chemists book: "Official Methods of Analysis," (Dr. William Horwitz and Dr. George Latimer, Jr. eds., 18th ed. Rev. 2 2007). Available for purchase at http://www.aoac.org.

(d) National fire protection association document: "Standard for Storage of Rubber Tires" NFPA 231D (1998). Available for purchase at http://www.nfpa.org or by writing to: "National Fire Protection Association, 470 Atlantic Avenue, Boston, MA 02210."

(e) North central region (NCR) document: "Recommended Chemical Soil Test Procedures for the North Central Region," (J. R. Brown ed., Pub. No. 221, 1998). The full text is available in electronic format at http://extension.missouri.edu/publications/. Copies may be purchased by writing to: "MU Extension Publications, 2800 Maguire Blvd., Columbia, MO 65211" or at http://extension.missouri.edu/explore/shop/.

3745-500-10 Exclusions.

Chapters 3745-501 to 3745-598 of the Administrative Code shall not apply to the following:

(A) Solid wastes generated within a single-family residence, and disposed on the premises where

generated in a manner that does not create a nuisance or a threat to public health or safety or the environment.

(B) The temporary storage of solid wastes, other than scrap tires, prior to collection for disposal or transfer as long as such disposal or transfer is in accordance with Chapter 3734. of the Revised Code and rules adopted thereunder. For purposes of this exclusion, open dumping includes temporary storage of putrescible solid wastes in excess of seven days or temporary storage of any solid wastes where such storage causes a nuisance or health hazard, in the judgment of the director or approved board of health.

(C) Vehicles used for hauling solid wastes unless required to be registered as a scrap tire transporter.

(D) The materials excluded from the meaning of solid waste as defined in division (E) of section 3734.01 of the Revised Code.

(E) The beneficial use of coal combustion byproducts at coal mining and reclamation operations and abandoned mine lands regulated and authorized by the Ohio department of natural resources pursuant to section 1513.02 of the Revised Code.

(F) The beneficial use of lime mining wastes authorized by the Ohio department of natural resources pursuant to section 1514.081 of the Revised Code.

(G) Any junk yard or scrap metal processing facility licensed pursuant to Chapter 4737. of the Revised Code or motor vehicle salvage business licensed pursuant to Chapter 4738. of the Revised Code. This exclusion does not apply to sites where open dumping or open burning has occurred. This exclusion does not apply to the management of scrap tires or other use, collection, storage, recovery, disposal, or beneficial use of scrap tires at a junk yard, scrap metal processing facility, or motor vehicle salvage business.

(H) Sewage sludge treatment or disposal when the treatment or disposal is authorized by a current permit issued under Chapter 3704. or 6111. of the Revised Code.

(I) Land application of yard waste for incorporation into soil for purposes including but not limited to use as a soil amendment, agricultural and horticultural applications, or land reclamation, provided that such land application does not create a nuisance or a threat to public health or safety or the environment.

(J) Land application authorized in accordance with Chapter 6111. of the Revised Code of agricultural waste for incorporation into soil for use as a soil amendment and agricultural or horticultural applications, provided that the following conditions are met:

(1) The agricultural waste is limited to source-separated non-processed plant materials, including stems, leaves, vines, roots, vegetables, fruits, and grains.

(2) The agricultural waste is land applied exclusively on fields owned by the owner of the agricultural production operation that generated the agricultural waste.

(3) The land application of the agricultural waste does not create a nuisance or a threat to public health or safety or the environment.

(K) Controlled substances handled in compliance with Chapters 3719. and 4729. of the Revised Code or materials that have been ordered destroyed by a court of law that are destroyed at facilities licensed for the treatment of infectious waste.

3745-500-30 Relationships among program chapters, multi-program chapters, and other rules.

(A) Notwithstanding any provision of this rule any person subject to any one or combination of Chapters 3745-27, 3745-29, 3745-30, 3745-37, 3745-400, and 3745-500 to 3745-599 of the Administrative Code is obligated to comply with the following:

(1) Rule 3745-27-13 of the Administrative Code when the filling, grading, excavating, building, drilling, or mining on land where a hazardous waste facility or solid waste facility was operated.

(2) Chapter 3745-502 of the Administrative Code (solid waste fees).

(3) Rule 3745-500-35 of the Administrative Code (relationships among authorizing documents, rules, and the authority of the director and board of health).

(B) Except as provided in paragraph (C) of this rule, and except as required by administrative or judicial order, notwithstanding any provision of Chapter 3745-27, 3745-29, 3745-30, 3745-37, or 3745-400 of the Administrative Code, if a facility or activity is regulated pursuant to any one or a combination of Chapters 3745-520 to 3745-599 of the Administrative Code, then the person obligated to comply with Chapters 3745-520 to 3745-599 is not obligated to comply with Chapter 3745-27, 3745-29, 3745-30, 3745-37, or 3745-400 of the Administrative Code with regard to that facility or activity.

(C) If paragraph (B) of this rule does not apply and if a facility or activity is regulated pursuant to Chapter 3745-27, 3745-29, 3745-30, 3745-37, or 3745-400 of the Administrative Code, then notwithstanding any provision of Chapters 3745-500 to 3745-599 of the Administrative

Code except paragraph (A) of this rule, the person obligated to comply with Chapter 3745-27, 3745-29, 3745-30, 3745-37, or 3745-400 of the Administrative Code is subject to the provisions of Chapters 3745-500 to 3745-599 of the Administrative Code regarding that facility or activity only to the extent that a provision of Chapter 3745-27, 3745-29, 3745-30, 3745-37, or 3745-400 of the Administrative Code makes the contents of Chapters 3745-500 to 3745-599 of the Administrative Code applicable.

3745-500-35 Relationships among authorizing documents, rules, and the authority of the director and board of health.

(A) If it is not possible for an owner or operator to comply with an authorizing document approved under Chapter 3709., 3714., 3734., or 6111. of the Revised Code and at the same time comply with rules adopted under those chapters, the owner or operator shall comply with the authorizing document until the obligation in the authorizing document ceases. After the obligation ceases, the owner or operator shall comply with the rules adopted under Chapter 3709., 3714., 3734., or 6111. of the Revised Code with which the owner or operator could not previously comply.

(B) When a direct conflict occurs between an order issued by the director, approved board of health, or court having competent jurisdiction and rules adopted under Chapter 3709., 3714., 3734., or 6111. of the Revised Code, the owner or operator shall comply with the order until the order is terminated or until the obligation in the order ceases. After the obligation in the order has ceased, the owner or operator shall comply with the rules.

(C) Nothing in Chapters 3745-500 to 3745-599 of the Administrative Code is intended nor shall be construed to limit or infringe upon any authority granted by statute to the director or a board of health, including but not limited to issuing orders, conducting inspections, and enforcing the standards and requirements of statutes and rules adopted thereunder.

3745-500-50 Signatures.

(A) When a document is required to be signed in accordance with this rule, the applicant, owner, or operator signing that document shall be one of the following:

(1) In the case of a corporation, a principal executive officer of at least the level of vice president or a duly authorized representative, if such representative is responsible for the overall operation of the facility.

(2) In the case of a partnership, a general partner.

(3) In the case of a limited liability company, a manager, member, or other duly authorized representative of the limited liability company, if such representative is responsible for the overall operation of the facility.

(4) In the case of sole proprietorship, the owner.

(5) In the case of a municipal, state, federal, or other governmental facility, the principal executive officer, the ranking elected official, or other duly authorized employee.

(B) The signature on the document signed in accordance with this rule shall constitute personal affirmation that all statements and all assertions of fact made in the document to the best of the signatory's knowledge and belief are true and accurate, include all required information, and comply fully with applicable rules.

(C) Unless an alternate certification is specifically required, a document signed in accordance with this rule shall include the following certification statement:

"By signing this document I hereby certify that all statements and all assertions of fact made in the document to the best of my knowledge and belief are true and accurate, include all required information, and comply fully with applicable rules."

3745-500-120 Procedures for issuing, denying, modifying, transferring, and revoking licenses and permits to install.

[Comment: Procedures for suspending a license can be found in rule 3745-501-40 of the Administrative Code.]

(A) When issuing, denying, modifying, approving, or denying transfer of, or revoking a license or a permit to install for a solid waste facility, an infectious waste treatment facility, or a construction and demolition debris facility, the director shall act in accordance with Chapters 119., 3714., 3734., and 3745. of the Revised Code, as applicable.

(B) When issuing, denying, modifying, approving, or denying transfer of, or revoking a license for a solid waste facility or an infectious waste treatment facility, the approved board of health shall act in accordance with Chapter 3734. and section 3709.20 of the Revised Code.

(C) When issuing, denying, modifying, approving, or denying transfer of, or revoking a license or permit to install for a construction and demolition debris facility, the approved board of health shall act in accordance with Chapter 3714. and section 3709.20 of the Revised Code.

(D) When denying, revoking, or denying transfer of a license for a solid waste facility, an infectious waste facility, or a license or permit to install for a construction and demolition debris facility, the approved board of health shall provide, at a minimum, the following:

(1) To the owner or operator of the facility or the applicant for the license or permit to install the following:

(a) Notice of the approved board of health's intent to deny or revoke a license or permit to install. This notice shall include a provision informing the applicant, owner, or operator of the right to a hearing prior to the issuance by the approved board of health of a final action denying or revoking a license or permit. This notice shall provide a period of thirty days in which to request a hearing.

(b) Upon request, a hearing, held in accordance with section 3709.20 of the Revised Code, at which the persons that have requested the hearing are provided the following:

(i) The right to appear in person, by attorney, or by other such representation permitted to appear before the approved board of health.

(ii) The opportunity to present evidence at the hearing, including the testimony of witnesses under oath, and the opportunity to cross examine opposing witnesses.

(iii) Following the rulings on the admissibility of evidence, the opportunity to proffer evidence that has been determined to be inadmissible.

(iv) A stenographic record of the hearing.

(c) Prior to the issuance of a final action and subsequent to a hearing conducted by a referee or examiner in accordance with division (B) of section 3709.20 of the Revised Code, written recommendations presented to the approved board of health and an opportunity to submit written objections.

(d) A copy of the final action of the approved board of health regarding the denial or revocation of the license or permit, with findings of fact and conclusions of law based on the hearing held in accordance with section 3709.20 of the Revised Code. The copy with a statement of how and within what time period the final action may be appealed to the environmental review appeals commission shall be sent by certified mail or any other form of mail accompanied by a receipt. Such copy and statement shall also be sent by certified mail or any other form of mail accompanied by a receipt to persons who have requested a hearing.

(2) To persons who have requested a hearing, upon receipt of a written signed request for a hearing, notice of the hearing date, time, and place at least twenty days prior to the hearing.

3745-500-130 Retention and distribution of authorizing documents - procedures for boards of health and Ohio EPA.

(A) Procedures for boards of health.

If required by rules adopted under Chapter 3714. or 3734. of the Revised Code, copies of an authorizing document issued by the approved board of health and all associated plans, specifications, and information shall be retained and distributed in accordance with the following:

(1) The board of health shall retain at least one copy of the authorizing document and all associated plans, specifications, and information.

(2) Copies of authorizing documents shall be distributed by certified mail or another form of mail accompanied by a receipt not later than the end of the third business day following issuance of the authorizing document, except that any plans, specifications, and information accompanying an authorizing document need not be distributed by certified mail or another form of mail accompanied by a receipt.

(3) The board of health shall distribute copies of the authorizing document and any associated plans, specifications, and information as follows:

(a) Return one copy to the entity who submitted the application or request for the authorizing document.

(b) Send one copy to Ohio EPA.

(B) Procedures for Ohio EPA.

Copies of an authorizing document issued by Ohio EPA and associated plans, specifications, and information shall be retained and distributed in accordance with agency procedural rules adopted pursuant to Chapter 119. of the Revised Code.

3745-500-150 Alteration to a solid waste permit to install.

(A) Applicant procedures.

(1) A request to alter the solid waste permit to install, and subsequent revisions to the request, shall be submitted in writing to Ohio EPA. Revisions to the request shall be accompanied by the following:

(a) An index listing each change and the page where each change occurred.

(b) For plan drawings, a schedule on the drawing indicating what has changed.

(2) A request to alter the permit to install shall include a certification statement and signature in accordance with rule 3745-500-50 of the Administrative Code.

(3) Upon request from Ohio EPA, the applicant shall submit additional and identically complete copies of the request to alter the permit to install.

(B) Ohio EPA procedures for acting on a request to alter a solid waste permit to install.

(1) Ohio EPA may decline to act on the request to alter a permit to install.

(2) Ohio EPA shall not concur with a request to alter a permit to install unless Ohio EPA determines that the following criteria are satisfied:

(a) The request to alter a permit to install is at least equivalent to the applicable rule requirements.

(b) The request is not for a modification.

(c) The alteration will not interfere with the ability of the applicant, owner, or operator to construct, operate, and close the facility in accordance with Chapter 3714. or 3734. of the Revised Code and rules adopted under those chapters, and with the terms and conditions of the permit to install.

(d) The alteration will not interfere with the ability of the applicant, owner, or operator to comply with Chapters 3704., 3714., 3734., and 6111. of the Revised Code and rules adopted under those chapters.

(3) When determining whether to concur with an alteration, Ohio EPA may consider the owner's and operator's compliance with Chapters 3704., 3714., 3734., and 6111. of the Revised Code, the rules adopted under those chapters, and any authorizing documents.

(4) Upon Ohio EPA's concurrence with a request to alter a permit to install, Ohio EPA shall retain and distribute copies of the alteration request and any altered drawings and information pursuant to rule 3745-500-130 of the Administrative Code.

3745-500-210 Variances for solid waste facilities.

(A) Application for a variance for a solid waste facility shall include the following:

(1) The provision or provisions of the state law for which the variance is requested.

(2) Information regarding the reason and justification for the variance.

(3) Any other pertinent data regarding the application required by the director.

(4) A certification statement and signature in accordance with rule 3745-500-50 of the Administrative Code.

(B) In accordance with division (S)(1) of section 3745.11 of the Revised Code, the nonrefundable fee shall be paid at the time the application for a variance is submitted. If the application for a variance is part of an application for a permit to install, the variance application fee shall be paid in addition to the permit to install application fee.

(C) The director shall issue, renew, or deny an application for a variance or renewal of a variance for a solid waste facility not later than six months after the date upon which the director receives a complete application with all pertinent information and data required unless the application for a variance is part of an application for a permit to install. If an application for a variance is part of an application for a permit to install, the director shall issue, renew, or deny an application for a variance or renewal of a variance concurrent with a final or proposed action on the permit to install application.

(D) When issuing a variance for a solid waste facility, the director shall act in accordance with Chapters 119., 3734., and 3745. of the Revised Code, as applicable.

3745-500-220 Exemptions from solid waste requirements.

(A) Application for an exemption from a solid waste requirement shall include the following:

(1) The provision or provisions of the state law for which the exemption is requested.

(2) Information regarding the reason and justification for the exemption including any effects on the public health and safety and the environment if the exemption is granted.

(3) Any other pertinent data regarding the application required by the director.

(4) A certification statement and signature in accordance with rule 3745-500-50 of the Administrative Code.

(B) Pursuant to division (G) of section 3734.02 of the Revised Code, the director may exempt any person generating, collecting, storing, treating, disposing of, or

transporting solid wastes, including scrap tires, from any requirement of Chapter 3734. of the Revised Code or any rules adopted thereunder if granting the exemption is unlikely to adversely affect the public health or safety or the environment.

(C) When issuing an exemption from a solid waste requirement, the director shall act in accordance with Chapters 119., 3734., and 3745. of the Revised Code, as applicable.

(D) The director may decline to act on a request for an exemption from a solid waste requirement.

3745-500-310 Criteria for issuing a permit to install.

(A) In deciding whether to grant or deny a permit to install, the director shall evaluate whether the construction, operation, closure, and if applicable, post closure care of the facility is capable of fulfilling all appropriate regulatory requirements for protecting surface water, ground water, and air by soliciting the input and coordinating the issuance of the permit to install with all relevant divisions of Ohio EPA, as specified in the table below. The director may consult with other divisions or persons as the director deems appropriate.

-Projects to be reviewed by relevant divisions:-

Project Type	Division of Surface Water	Division of Air Pollution Control	Division of Drinking and Ground Waters
Sanitary landfill - municipal solid waste - industrial solid waste - residual solid waste - scrap tire	X	X	X
Solid waste transfer facility	X	X	
Infectious waste treatment facility	X	X	
Class I composting facility	X	X	X
Solid waste incinerator	X	X	
Scrap tire class I storage and recovery facility	X	X	
Construction and demolition debris facility	X	X	X

(B) In deciding whether to grant or deny a permit to install under Chapter 3734. of the Revised Code, the director may take into consideration the social and economic impact of the air contaminants, water pollutants, or other adverse environmental impacts that may be a consequence of issuance of the permit to install.

3745-500-330 Termination of a permit to install issued under Chapter 3734. of the Revised Code.

(A) A permit to install issued under Chapter 3734. of the Revised Code for a new facility shall terminate three years after the effective date of the permit to install if the owner or operator has neither undertaken a continuing program of installation nor entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation of the new facility.

(B) The owner or operator may request an extension of the termination date. Such request shall be submitted to the director and provide justification for the extension of time and an analysis demonstrating that the facility meets all applicable siting criteria and design standards established in the rules in effect on the date the permit to install is to expire.

(C) The director may extend the termination date of a permit to install for a period of time not to exceed twelve months if the director determines that the owner or operator has adequately justified an extension of time and has demonstrated that the facility meets all applicable siting criteria and design standards established in the rules in effect on the date the permit to install is to expire.

3745-500-350 Causes for revoking a permit to install issued under Chapter 3734. of the Revised Code.

The director may revoke a permit to install issued under Chapter 3734. of the Revised Code if one or a combination of the following occur:

(A) Any cause that would require disqualification pursuant to division (A), (B), (D), or (E) of section 3734.44 of the Revised Code from receiving a permit upon original application.

(B) The owner or operator violates Chapter 3734. of the Revised Code and rules adopted thereunder.

(C) Fraud, deceit, or misrepresentation in securing the permit to install or in the conduct of the permitted activity.

(D) Offering, conferring, or agreeing to confer any benefit to induce any other individual or business concern to violate the provisions of Chapter 3734. of the Revised Code, or any rule adopted thereunder, or of any other law relating to the transportation, transfer, treatment, storage, or disposal of solid wastes, infectious wastes, or hazardous wastes.

(E) Coercion of a customer by violence or economic reprisal or the threat thereof to utilize the services of any permittee.

(F) Preventing, without authorization of the director, any individual or business concern from transferring or disposing of solid wastes or hazardous wastes at a permitted treatment, transfer, storage, or disposal facility other than a facility owned or operated by the permittee, or preventing, without authorization of the director, any individual or business concern from treating infectious waste at a licensed infectious waste treatment facility other than a facility owned and operated by the permitee.

3745-500-360 Administrative change to a permit to install.

(A) The permitting authority may make an administrative change to a permit to install in order to do the following:

(1) Update or correct administrative information including but not limited to the telephone number, address, or name of the facility, the name of the owner or operator or person to whom the permit to install has been issued, or other facility contact information.

(2) Correct typographical errors contained in a permit to install.

(B) Procedures for requesting an administrative change to a permit to install. Unless a transfer of a permit to install has been approved, a person to whom a permit to install has been issued shall do the following:

(1) Submit a written request for an administrative change to the permitting authority. The request shall include a copy of the information proposed to be administratively changed with the desired change, and all locations in the permit to install where the change is proposed.

(2) If the approved board of health is the permitting authority, notify Ohio EPA of the submittal of a request for an administrative change concurrent to initially submitting the request to the approved board of health. The notification shall be in writing and shall contain sufficient detail to understand the scope and nature of the request.

(3) Upon request from Ohio EPA or the approved board of health, submit additional and identically complete copies of the request for an administrative change.

(4) If the permitting authority makes the administrative change, retain a copy of the administrative change with the permit to install.

(C) Permitting authority procedures are as follows:

(1) The permitting authority shall make an administrative change to a permit to install after approving transfer of a permit to install to update administrative information including but not limited to the name, address, and contact information of the permittee.

(2) The permitting authority may make an administrative change to a permit to install when requested by a permittee or when the permitting authority discovers the need for an administrative change. The permitting authority may decline to make a requested administrative change.

(3) Upon making an administrative change to a permit to install, the permitting authority shall provide written notification to the permittee of the administrative change.

(4) Copies of the changed pages shall be retained and distributed pursuant to rule 3745-500-130 of the Administrative Code.

3745-500-510 Alternative material requests.

(A) Applicant procedures.

(1) The owner or operator of the facility may request approval to use an alternative material.

[Comment: For a request to use an alternative material to construct an engineered component of the facility, rule 3745-512-17 of the Administrative Code requires approval prior to use of the material; therefore, a construction certification report cannot include a request for approval of an alternative material.]

(2) Upon request from Ohio EPA, or for a C&DD facility, the approved board of health, the owner or operator shall submit identically complete copies of the alternative material request.

(B) The director, or as appropriate, the approved board of health, acting on a request for approval to use an alternative material shall do the following:

(1) Upon approval of an alternative material, stamp the copies of the alternative material request with the word "Approved" and the date of approval.

(2) Retain and distribute copies of the stamped approval pursuant to rule 3745-500-130 of the Administrative Code.

Ohio Administrative Code (OAC) Chapter 501

LICENSING REGULATIONS

3745-501-01	Licensing – applicability.
3745-501-02	Licensing – definitions.
3745-501-05	Licenses required for solid waste, infectious waste treatment, and construction and demolition debris facilities.
3745-501-10	License applications, application procedures, and remittal of fees after license issuance.
3745-501-15	Criteria for issuing or denying facility licenses.
3745-501-20	Procedures for the licensing authority for reviewing and considering license applications.
3745-501-25	Criteria for authorizing leachate recirculation and asbestos-containing waste material disposal at a construction and demolition debris facility.
3745-501-30	Modification of a C&DD facility license.
3745-501-35	Transfer of licenses.
3745-501-40	Suspension or revocation of a license.

3745-501-01 Licensing - applicability.

The rules in this multi-program chapter shall apply when referenced in either of the following:

(A) A rule in a program chapter.

(B) A rule in another multi-program chapter that was made applicable by a rule in a program chapter.

Program chapters are Chapters 3745-520 to 3745-599 of the Administrative Code.

3745-501-02 Licensing - definitions.

If a term used in this chapter is defined in rule 3745-500-02 of the Administrative Code the definition in rule 3745-500-02 of the Administrative Code is applicable to this chapter unless the term is defined in this rule. As used in this chapter:

(A) [Reserved.]

(B) [Reserved.]

(C) [Reserved.]

(D) [Reserved.]

(E) [Reserved.]

(F) "Facility" means a "solid waste facility," "infectious waste facility," and "C&DD facility," unless expressly specified as a certain one in this chapter.

3745-501-05 Licenses required for solid waste, infectious waste treatment, and construction and demolition debris facilities.

(A) No person shall operate a facility without possessing a separate, valid license for each operation, as required by Chapter 3714. or 3734. of the Revised Code and rules adopted under those chapters. Failure to obtain a renewal license is grounds for closure.

(B) Each license shall be obtained from the licensing authority.

(C) Infectious waste treatment. The owner or operator of an infectious waste treatment facility required to obtain a license shall hold either an infectious waste treatment facility license or a solid waste facility license that contains a notation on the license stating that the facility also treats infectious wastes.

(D) A license issued pursuant to this chapter shall be effective until December thirty-first of the year for which it is issued, unless revoked.

3745-501-10 License applications, application procedures, and remittal of fees after license issuance.

(A) Application.

(1) The applicant for a facility license shall be either the owner of the facility or operator of the facility who has written permission from the land owner to apply for a license.

(2) Applications for facility licenses required by rule 3745-501-05 of the Administrative Code shall be made on forms prescribed by the director and at a minimum shall contain information regarding the applicant, owner, operator, facility contacts, property, and operations; signatures; certifications; and any other information the director may require.

(3) For a C&DD facility, a license application shall contain the information required by rule 3745-520-400 of the Administrative Code.

(B) License application and application procedures.

(1) Each application for a solid waste facility or infectious waste treatment facility license shall be accompanied by a nonrefundable fee in the amount specified in section 3734.05 of the Revised Code. For annual renewal license applications received by a licensing authority between October first and December thirty-first, the applicant shall pay an additional late fee in the amount specified in section 3734.05 of the Revised Code for each whole or partial week the application is submitted beyond September thirtieth, which is the application deadline.

(2) If the licensing authority determines that information in addition to that required by the application form is necessary to determine whether the application satisfies the requirements of Chapter 3714. or 3734. of the Revised Code and rules adopted under those chapters, as applicable, the applicant shall upon request supply such additional information.

(3) Signature. An application for a license shall be signed in accordance with rule 3745-500-50 of the Administrative Code.

(4) Time frame for application submittal.

(a) A license application shall be submitted to the licensing authority in accordance with the following:

(i) For a facility that has not previously received a license, the applicant shall submit a license application at least ninety days prior to the proposed date for accepting solid waste, infectious waste, or C&DD.

[Comment: Chapter 3734. of the Revised Code requires an applicant for a solid waste facility or infectious waste treatment facility permit to install to concurrently submit an initial application for an operating license even though the facility is not yet constructed or operating.]

(ii) For a facility that will continue operations beyond the expiration date of the current license, the applicant shall submit a license application on or before September thirtieth of the year preceding that for which the renewal license is sought.

(b) Any complete solid waste facility or infectious waste treatment facility renewal license application submitted to the licensing authority between October first and December thirty-first of the current license period shall be considered by the licensing authority if the owner or operator pays the license application fee and the late fees specified in paragraph (B)(1) of this rule.

(c) Any renewal license application not submitted to the licensing authority by December thirty-first of the current license period shall not be considered for approval or denial, and the facility will be subject to all applicable closure requirements.

[Comment: Absent any obligation to cease facility operations, any requirement pursuant to Chapter 3714. or 3734. of the Revised Code and rules adopted under those chapters, or any administrative or court order, a current licensee who has filed an application for a renewal license within the time and in the manner provided in this rule is not required to discontinue operations in the event that the licensing authority has not taken a final action on the application.]

(C) License fees required after issuance of a license.

(1) Not later than thirty days after issuance of a license for a solid waste facility or an infectious waste treatment facility, the owner or operator shall pay a license fee in the amount established by division (A) of section 3734.06, division (C) of section 3734.06, or section 3734.82 of the Revised Code, as applicable. The license application fee shall be deducted from the license fee amount. Late fees for license applications shall not be deducted from the license fee amount.

(2) The license fee for the annual license shall be based on the following:

(a) For a solid waste facility other than a solid waste transfer facility, the highest authorized maximum daily waste receipt that will be in effect in the year to which the license pertains.

(b) For a solid waste transfer facility, the amount specified in division (A)(4) of section 3734.06 of the Revised Code.

(c) For a scrap tire facility, the daily design input capacity.

Any subsequent higher authorized maximum daily waste receipt or daily design input capacity authorized after the effective date of the license shall not be considered in determining the current license fee.

(3) The license fee for the annual infectious waste treatment facility license shall be based on the average amount of infectious waste the facility is authorized to receive daily as established in the following, as applicable:

(a) The permit for the facility and any modifications to that permit issued under division (B)(2)(b) or (B)(2)(d) of section 3734.05 of the Revised Code.

(b) The annual license for the facility and any revisions to that license issued under division (B)(2)(a) of section 3734.05 of the Revised Code.

3745-501-15 Criteria for issuing or denying facility licenses.

(A) A licensing authority shall not issue a facility license unless the following criteria are met:

(1) The applicant for the license is the owner of the facility or operator of the facility who has written permission from the land owner to apply for the license.

(2) The owner or operator holds a valid permit to install or a registration, if required by Chapter 3714. or 3734. of the Revised Code and rules adopted under those chapters.

(3) In the case of an initial facility license where a permit to install or registration has been issued pursuant to Chapter 3714. or 3734. of the Revised Code and rules adopted under those chapters, the facility has been inspected by Ohio EPA and the approved health district, if applicable, and has been determined to be constructed in accordance with all authorizing documents and applicable rules and is adequately prepared for acceptance of solid waste, infectious waste, or C&DD, as applicable.

(4) The owner or operator has demonstrated that all approvals and authorizations have been obtained including but not limited to approvals and authorizations required pursuant to Chapters 3704. and 6111. of the Revised Code.

(5) The license application is complete pursuant to rule 3745-501-20 of the Administrative Code.

(6) The owner or operator is not required to conduct closure in accordance with any applicable closure rule.

(7) The owner or operator submitted the license application for renewal to the licensing authority by December thirty-first of the current license period.

(8) Financial assurance for the facility has been established and maintained for closure and post-closure care, as applicable, and documentation of the financial assurance has been submitted in accordance with Chapter 3714. or 3734. of the Revised Code and rules adopted under those chapters.

(9) For a C&DD facility, the following:

(a) The phasing plan does not conflict with the permit to install.

(b) The general plan of facility operations meets the requirements specified in rule 3745-520-400 of the Administrative Code.

(c) If an exemption is necessary for the C&DD facility to be licensed, the exemption request has been issued in accordance with rule 3745-520-20 of the Administrative Code prior or concurrent to license issuance.

(d) The license contains the compliance disclosure information required by paragraph (A)(5) of rule 3745-520-400 of the Administrative Code.

(e) The approval of the license does not grant an exemption from any requirement of Chapter 3714. or 3734. of the Revised Code and rules adopted under those chapters.

(f) For license applications that request authorization to dispose of asbestos-containing waste materials or authorization to recirculate leachate, the criteria specified in rule 3745-501-25 of the Administrative Code are met.

(10) The owner and operator, at facilities they own or operate, are in substantial compliance with, or are on a legally enforceable schedule through issuance of an administrative consent order or judicial consent order to attain compliance with, environmental laws in this state and other jurisdictions. An owner or operator is not in substantial compliance with the environmental laws of this state or other jurisdictions if the owner or operator has committed a significant or material violation of an environmental law or has committed numerous, other violations of environmental laws such that the violations reveal a practice of noncompliance with environmental laws.

(11) The owner and operator, at facilities they own or operate or facilities they previously owned or operated, have maintained a history of compliance with environmental laws in this state and other jurisdictions by resolving all administrative and judicial enforcement actions that were brought against them which were based on a significant or material violation of an environmental law, or were based on numerous, other violations of environmental laws or that revealed a practice of noncompliance with environmental laws. For purposes of this rule, an enforcement action has been resolved if the owner or operator has entered into an administrative consent order or judicial consent order with regard to the violation of environmental laws, or the owner or operator has adjudicated the issue of whether they are in violation of environmental laws to finality.

(12) The owner and operator exhibit sufficient reliability, expertise, and competency to operate the facility in substantial compliance with environmental laws in this state as a result of, and including but not limited to, the assets, employees, equipment, and other resources available at, and dedicated to, the facility.

(B) Grounds for denial. The licensing authority may deny a license application request for any of the following reasons:

(1) Any of the criteria in this rule that are applicable to the facility are not met.

(2) The license application is incomplete and the applicant has not addressed a notice of deficiency by the licensing authority.

(3) For a C&DD facility, the following additional grounds:

(a) Requirements of section 3714.052 of the Revised Code are not satisfied.

(b) Falsification has occurred pursuant to section 3714.101 of the Revised Code.

(c) A violation of Chapter 3714. of the Revised Code, any rule adopted under that chapter, including a term or condition of the facility's license has occurred.

(4) For a solid waste facility or an infectious waste treatment facility, the following additional grounds:

(a) Falsification of any material information that is required to be submitted to a licensing authority as part of the license application.

(b) A violation of Chapter 3734. of the Revised Code, any rule adopted under that chapter, including a term or condition of the facility's license has occurred.

3745-501-20 Procedures for the licensing authority for reviewing and considering license applications.

(A) If a license application is incomplete, the licensing authority shall, not later than sixty days after the receipt of an incomplete application, notify the applicant of the nature of the deficiency. If the applicant has not resubmitted a complete application to the licensing authority, the licensing authority may deny the incomplete application. An application is complete when the application contains all of the information that the applicable statute and rules required to be submitted, including such other information as the licensing authority may reasonably require to determine that the application satisfies the requirements of the applicable statute and rules.

(B) Not more than sixty days prior to issuing a license, a licensing authority shall inspect the facility and certify that the owner and operator are in substantial compliance with Chapter 3714. or 3734. of the Revised Code and rules adopted under those chapters.

(C) Procedure.

(1) When acting upon a facility license, the licensing authority shall follow the applicable procedures set forth in rule 3745-500-120 of the Administrative Code.

(2) In deciding whether to issue or deny a license, the licensing authority shall comply with rule 3745-501-15 of the Administrative Code.

(3) A renewal license application shall not be considered for issuance or denial for a facility where the owner or operator is required to conduct closure requirements in accordance with any applicable closure rule or where the owner or operator has failed to submit the license application to the licensing authority by December thirty-first of the current license period.

(4) Time frames for license actions. The licensing authority shall either issue or deny a license as follows:

(a) For a renewal license, not later than ninety days after the date upon which a complete application is received.

(b) For a facility not previously licensed, not later than forty-five days after written concurrence from Ohio EPA and the approved health district, if applicable, indicating that the site has been inspected and is prepared for operations pursuant to paragraph (A)(3) of rule 3745-501-15 of the Administrative Code.

(5) Terms and conditions. A licensing authority may impose such special terms and conditions as are necessary to protect public health and safety and the environment and to ensure that an owner and operator of a facility will comply with Chapter 3714. or 3734. of the Revised Code and rules adopted under those chapters.

(D) Requirements after license issuance.

(1) Upon issuance of a license, the licensing authority shall stamp all copies of the license application and approved plans, specifications, and information with the word "Approved" and the date of license issuance.

(2) Copies of the signed license and stamped copies of the license application and approved plans, specifications, and information shall be retained and distributed by the licensing authority in accordance with rule 3745-500-130 of the Administrative Code.

(E) License fees. For solid waste and infectious waste facilities, the licensing authority shall collect the required license fees, including any applicable late fees, and manage those funds in accordance with the applicable sections of Chapter 3734. of the Revised Code and rules adopted thereunder.

3745-501-25 Criteria for authorizing leachate recirculation and asbestos-containing waste material disposal at a construction and demolition debris facility.

[Comment: Additional authorizations are necessary in order to recirculate leachate or dispose of asbestos-containing waste materials at a C&DD facility.]

(A) Leachate recirculation.

The licensing authority may authorize the owner or operator to recirculate leachate. Authorization to recirculate leachate shall be through a condition of the license, if the following criteria are met:

(1) The approved permit contains detailed design and operational information required under Chapter 3745-520 of the Administrative Code.

(2) The owner or operator has a history of substantial compliance, compliance with environmental laws related to leachate management in this state and other jurisdictions as provided in paragraph (A)(11) of rule 3745-501-15 of the Administrative Code.

(3) The leachate recirculation, if previously authorized, has not contributed to a nuisance, slope failure, odors, or fire.

(4) The owner or operator is not required to conduct a ground water assessment program or a ground water corrective actions program.

(B) Disposal of asbestos-containing waste materials at a C&DD facility.

The licensing authority may authorize the owner or operator to dispose of asbestos-containing waste materials. Authorization to dispose of asbestos-containing waste materials shall be through a condition of the license, if the following criteria are met:

(1) The license application contains copies of the necessary air pollution control authorizations required under Chapter 3704. of the Revised Code for the disposal of asbestos-containing waste materials issued to the owner or operator.

(2) The owner or operator has a history of substantial compliance with environmental laws related to air pollution control requirements for asbestos-containing waste materials and any operational requirements regarding asbestos specified in Chapter 3745-520 of the Administrative Code, as provided in paragraph (A)(11) of rule 3745-501-15 of the Administrative Code.

3745-501-30 Modification of a C&DD facility license.

(A) The licensee of a C&DD facility may request that the licensing authority modify the license for the facility in accordance with rule 3745-520-410 of the Administrative Code, or the licensing authority may modify the license for the facility on its own initiative in accordance with applicable law.

(B) A licensing authority may, by order, modify a C&DD facility license in response to an application to modify the license if the following criteria are met:

(1) The modification has not occurred prior to approval.

(2) The modification meets the requirements for issuance of a license in accordance with this chapter.

(3) The modification will not interfere with the owner's or operator's ability to maintain compliance with this chapter, terms and conditions of the license, and Chapter 3704., 3714., 3734., or 6111. of the Revised Code and rules adopted under those chapters during the construction, operation, closure and post-closure care period for the facility.

(4) The owner or operator has demonstrated compliance with any applicable requirements for obtaining a modification including but not limited to rule 3745-520-410 of the Administrative Code.

(5) The owner or operator has demonstrated that all necessary approvals and authorizations made necessary by the proposed modification have been obtained including but not limited to approvals and authorizations required pursuant to Chapters 3704. and 6111. of the Revised Code.

(6) The owner and operator are in substantial compliance with applicable provisions of Chapters 3704., 3714., 3734., and 6111. of the Revised Code and any rules, permits, registrations, or other authorizations issued under those chapters.

(7) The phasing plan does not conflict with the permit to install.

(8) The general plan of facility operations meets the requirements specified in rule 3745-520-400 of the Administrative Code.

(9) If an exemption is necessary for modification of the license, the exemption has been issued in accordance with rule 3745-520-20 of the Administrative Code prior or concurrent to modification of the license.

(C) Licensing authority procedures.

(1) The licensing authority shall follow the applicable procedures set forth in rule 3745-500-120 of the Administrative Code when acting upon a modification of a license.

(2) Upon modifying a license, the licensing authority shall stamp all copies of the modification request and associated drawings and information with the word "Modified" and the date of license modification.

(3) The licensing authority shall retain and distribute copies of the order and stamped copies of the modification request, associated drawings, and information in accordance with rule 3745-500-130 of the Administrative Code.

(D) The licensing authority may decline to modify a license.

3745-501-35 Transfer of licenses.

(A) License transfer requests.

(1) A solid waste or infectious waste treatment facility licensee may transfer the license after receiving written authorization from the director, and if the director authorizes the transfer, the approved board of health.

(2) A construction and demolition debris facility licensee may transfer the license after receiving written authorization by the licensing authority.

(3) Licensee transfer procedures.

(a) At least one hundred twenty days prior to the proposed date of a license transfer the current licensee shall notify the director and, if applicable, the approved board of health, in writing specifying the identity of the proposed transferee and the proposed date for the transferee's assumption of the licensee's obligations. The proposed license transfer shall be made on forms prescribed by the director and at a minimum shall contain information regarding the applicant, owner, operator, facility contacts, property, and operations; signatures; certifications; and any other information the director may require.

(b) For a C&DD facility, at least one hundred twenty days prior to the proposed date of a license transfer the proposed transferee shall provide compliance disclosure information in accordance with division (D) or (F) of section 3714.052 of the Revised Code and rule 3745-500-50 of the Administrative Code.

(B) License transfer criteria. A license transfer request shall not be approved unless applicable criteria of Chapter 3714. or 3734. of the Revised Code and the following criteria are met:

(1) The prospective license transferee meets the requirements as specified in rule 3745-501-15 of the Administrative Code.

(2) The prospective license transferee has established and submitted documentation of financial assurance in accordance with Chapter 3714. or 3734. of the Revised Code and the rules adopted under those chapters.

(3) The prospective transferee of the license is the owner or operator of the facility who has written permission from the land owner.

(4) For a license for a C&DD facility, any of the reasons for denial specified in division (B) of section 3714.052 of the Revised Code have not been met by the prospective transferee.

(C) Licensing authority procedures.

(1) When acting upon a license transfer request, the licensing authority shall follow the appropriate procedures set forth in rule 3745-500-120 of the Administrative Code.

(2) Not later than one hundred twenty days after receiving the request as described in paragraph (B) of this rule, the licensing authority shall approve or deny the transfer.

3745-501-40 Suspension or revocation of a license.

(A) The licensing authority may suspend or revoke a license by order for any cause that would be grounds for suspension or revocation pursuant to Chapter 3714. or 3734. of the Revised Code and rules adopted under those chapters. Grounds include but are not limited to the following:

(1) Entry pursuant to applicable law to inspect or investigate, obtain samples, and examine or copy records to determine compliance is refused, hindered, or thwarted.

(2) The owner or operator violates Chapter 3714. or 3734. of the Revised Code and rules adopted under those chapters.

(3) The facility is not being operated in substantial compliance with applicable environmental laws.

(4) A nuisance, fire hazard, or health hazard exists at the facility.

(5) For a C&DD facility, falsification of material information pursuant to section 3714.101 of the Revised Code.

(6) For revocation of a license for a C&DD facility, any cause that would be grounds for revocation pursuant to

division (C) or (E) of section 3714.052 of the Revised Code.

(7) For a solid waste facility or infectious waste treatment facility, fraud, deceit, or misrepresentation and other grounds pursuant to section 3734.45 of the Revised Code.

(B) Procedures for suspending a facility license. When suspending a facility license, the licensing authority shall do at least the following:

(1) The director shall act in accordance with applicable provisions of Chapters 119., 3714., 3734., and 3745. of the Revised Code. The approved board of health shall act in accordance with section 3709.20 of the Revised Code and the applicable provisions of Chapters 3714. and 3734. of the Revised Code.

(2) Unless an emergency exists requiring immediate action to protect public health or safety or the environment, make a suspension of a license effective only after the licensee has been given notice in writing of the conditions or violations that need to be corrected and has been given a reasonable period of time to respond to the notice to make corrections.

(3) Issue a written order to suspend the license that contains at a minimum the following information:

(a) Information identifying the licensee and the facility.

(b) The findings upon which the suspension is based.

(c) The effective date of the order.

(d) A notice of appeal rights.

(4) Retain and distribute copies of the order suspending the facility license pursuant to rule 3745-500-130 of the Administrative Code.

(C) Licensee procedures if a facility license has been suspended.

(1) The acceptance of solid waste, infectious waste, or C&DD at the facility shall cease upon the effective date of the order suspending the facility license, unless the order suspending the facility license provides otherwise.

(2) The owner or operator shall comply with the operational requirements specified in the applicable rules.

(3) The acceptance of solid waste, infectious waste, or C&DD shall not recommence unless the licensing authority has by order reinstated the facility license.

(D) Licensing authority procedures for reinstating a suspended facility license.

(1) The licensing authority shall reinstate a suspended facility license through issuance of a written order. The written order shall at a minimum contain the following information:

(a) Information identifying the licensee and the facility.

(b) The findings upon which the suspended license is reinstated.

(c) The effective date of the order.

(d) A notice of appeal rights.

(2) The licensing authority shall retain and distribute copies of the order reinstating the facility license pursuant to rule 3745-500-130 of the Administrative Code.

(E) Procedures for revoking a facility license. When revoking a facility license, the licensing authority shall comply with the applicable procedures set forth in rule 3745-500-120 of the Administrative Code.

Ohio Administrative Code (OAC) Chapter 3745-506
Multi-Program Ground Water Monitoring Rules

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3745-506-01 Ground water monitoring program - applicability.

The rules in this multi-program chapter shall apply when referenced in either of the following:

(A) A rule in a program chapter.

(B) A rule in another multi-program chapter that was made applicable by a rule in a program chapter.

Program chapters are Chapters 3745-27, 3745-400, and 3745-520 to 3745-599 of the Administrative Code.

3745-506-02 Ground water monitoring program - definitions.

If a term used in this chapter is defined in rule 3745-500-02 of the Administrative Code the definition in rule 3745-500-02 of the Administrative Code is applicable to this chapter unless the term is defined in this rule. As used in this chapter:

(A) [Reserved.]

(B) [Reserved.]

(C) [Reserved.]

(D) [Reserved.]

(E) [Reserved.]

(F)

(1) "Field blank" means a laboratory prepared sample composed of distilled, deionized water within a sealed container that is taken to the field and handled along with samples collected, opened and exposed to ambient air in the field during sampling, and analyzed for the same volatile organic compounds as other samples contained in the cooler for the purpose of assessing potential contamination of samples from the field or laboratory environment.

(2) "Field duplicate" means a replicate ground water sample collected as close to the original sample in time as practical at a specific ground water monitoring well, to be analyzed for the identical laboratory parameters as the original sample for the purpose of assessing the precision of sampling or analytical methods.

(3) "Field equipment blank" means a sample obtained by passing distilled, deionized water through decontaminated, non-dedicated sampling equipment and collecting the sample in a clean sample container, to be analyzed for the identical laboratory parameters as the subsequent sample for the purpose of assessing potential cross-contamination of samples from non-dedicated sampling equipment.

(G)

(1) "Ground water assessment standard" or "GWAS" means a standard established in accordance with rule 3745-506-60 of the Administrative Code.

(2) "Ground water corrective actions standard" or "GWCAS" means a standard established in accordance with rule 3745-506-630 of the Administrative Code.

(3) "Ground water monitoring well maintenance problem" or "well maintenance problem" means the physical condition of the ground water monitoring well is no longer in compliance with rule 3745-506-100 of the Administrative Code and requires corrective well maintenance to return to compliance with rule 3745-506-100 of the Administrative Code.

(H) [Reserved.]

(I) [Reserved.]

(J) [Reserved.]

(K) [Reserved.]

(L) "Leachate monitoring system" means any structure or system, such as a leachate monitoring system, that can be used to obtain representative samples of leachate from a facility that can be used to identify all the constituents in the leachate. "Leachate monitoring system" does not include structures or systems that when taken together provide samples of leachate from only a portion of the facility.

(M) [Reserved.]

(N) [Reserved.]

(O) "One well volume" means the difference between the static water level measured immediately prior to purging and the total depth of the well multiplied by the cross-sectional area of the inside of the well casing.

(P) "Purging equipment volume" means the sum of the water storage capacity of the pump and any discharge lines, flow-through-cell chamber, and any other equipment used between the pump and end of all discharge lines, as applicable.

(Q) [Reserved.]

(R) "Release" means one or more waste-derived constituents or C&DD-derived constituents that have entered ground water from a potential source of contamination.

(S) [Reserved.]

(T) "Trip blank" means a laboratory prepared sample composed of distilled, deionized water within a sealed container that is taken to the field and handled along with samples collected in the field, remains sealed during the sampling event, and is analyzed for the same volatile organic compounds as other samples contained in the cooler for the purpose of assessing potential contamination of samples from the field or laboratory environment.

3745-506-50 Ground water monitoring program - general obligations.

(A) An owner or operator of a facility shall comply with this chapter and shall implement and comply with all plans required by this chapter.

(B) An owner or operator shall conduct a ground water monitoring program that does the following:

(1) Ensures that monitoring results will provide an accurate representation of ground water quality at all ground water monitoring wells installed in accordance with this chapter.

(2) Is capable of detecting, assessing, characterizing, and remediating all releases at the facility.

(3) Is protective of public health and safety and the environment, prevents nuisances and health hazards, and does not cause or contribute to water pollution.

(C) An owner or operator shall conduct a ground water monitoring program that monitors ground water occurring in the following:

(1) All significant zones of saturation above the uppermost aquifer system.

(2) The uppermost aquifer system unless paragraph (D) of rule 3745-506-100 of the Administrative Code applies to the facility.

(D) A ground water monitoring program shall have the following elements:

(1) At a minimum, a ground water detection program in accordance with rule 3745-506-400 of the Administrative Code.

(2) When applicable, a ground water assessment program in accordance with rule 3745-506-500 of the Administrative Code.

(3) When applicable, a ground water corrective actions program in accordance with rule 3745-506-600 of the Administrative Code.

(E) An owner or operator shall ensure that a qualified ground water scientist prepares and signs all documents submitted to the director, Ohio EPA, or the approved board of health in accordance with this chapter. A qualified ground water scientist signing a document under this paragraph shall make the following certification:

"I certify under penalty of law that I am a qualified ground water scientist as defined in rule 3745-500-02 of the Administrative Code, that I have prepared the information submitted in this document, and that to the best of my knowledge the information is true, accurate, complete, and meets the requirements of the rules requiring that the information be submitted. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

(F) An owner or operator shall send to the approved board of health a copy of all documents submitted to the director and Ohio EPA in accordance with this chapter.

(G) An owner or operator shall sign in accordance with rule 3745-500-50 of the Administrative Code all plans and revisions thereof, reports, data, requests, notifications, and certifications submitted to the director, Ohio EPA, or the approved board of health in accordance with this chapter.

(H) A revision to a document or plan required by this chapter shall be submitted to Ohio EPA and the approved board health prior to implementation of the revision and in accordance with the following:

(1) A revision shall comply with this chapter and shall be accompanied by an index listing the revision and the page where the revision occurred.

(2) The date of the revision shall be displayed clearly on the index page and on all pages of the document or plan where the revision is made.

(3) A revision to the statistical analysis plan shall be received by Ohio EPA and the approved board of health at least thirty days prior to submitting the results of the first statistical comparison of ground water analytical data using the revision.

(4) Unless specifically required by this chapter, approval from the director is not necessary prior to implementing the revision.

(I) All waste and C&DD resulting from activities required by this chapter shall be managed and disposed in a manner that protects public health and safety and the environment, prevents nuisances and health hazards, and does not cause or contribute to water pollution, and complies with applicable laws and regulations.

(J) The director shall retain and distribute in accordance with rule 3745-500-130 of the Administrative Code any request approved in accordance with this chapter.

3745-506-60 Ground water assessment standards for parameters in the ground water assessment program.

(A) Prior to implementing the ground water detection monitoring program in accordance with rule 3745-506-400 of the Administrative Code, an owner or operator shall determine a ground water assessment standard (GWAS) for the parameters required by the ground water detection monitoring program and ground water assessment monitoring schedules applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code to be used in the ground water assessment program in accordance with rule 3745-506-500 of the Administrative Code. A GWAS may be revised in accordance with paragraph (B) of this rule at any time during detection or assessment monitoring.

(B) A GWAS for a ground water monitoring parameter shall be established as follows:

(1) The GWAS shall be protective of public health and safety and the environment, prevent nuisances and health hazards, and not cause or contribute to water pollution.

(2) Except as provided in paragraphs (B)(3) to (B)(6) of this rule, the promulgated value for a parameter in Table 1 of this rule shall be the generic GWAS.

(3) If a hazardous parameter listed in Table 1 of this rule is designated as background, the GWAS shall be a value from the background data or an appropriate statistic based on the background data in accordance with the methods described in paragraph (B) of rule 3745-506-310 of the Administrative Code. If a non-hazardous parameter listed in Table 1 of this rule is designated as not applicable, then no GWAS is required for that parameter.

(4) If an owner or operator demonstrates that a parameter is already present in the ground water at a background concentration exceeding the corresponding generic GWAS in Table 1 of this rule, the owner or operator may instead use an appropriate value from the background data or an appropriate statistic based on the background data in accordance with the methods described in paragraph (B) of rule 3745-506-310 of the Administrative Code as an alternative GWAS.

(5) For a facility entering the compliance monitoring program within the ground water assessment program, if concentrations of a non-hazardous parameter in the release exceed the generic GWAS in Table 1 of this rule, the owner or operator may prior to implementing the initial compliance monitoring plan use a value from or an appropriate statistic based on the impacted downgradient monitoring well data as an alternative GWAS in accordance with the methods described in paragraph (B) of rule 3745-506-310 of the Administrative Code. Unless the director approves in writing, the owner or operator may not increase this alternative GWAS after implementing the compliance monitoring plan.

(6) The director may by order require the use of a different GWAS than was submitted by the owner or operator pursuant to paragraphs (B)(3) to (B)(5) of this rule. The GWAS shall not be ordered below the background concentrations unless the director determines that a level below the background concentrations is necessary to protect of public health or safety or the environment, or prevent a nuisance or a health hazard, or prevent the cause or contribution to water pollution.

(C) Generic GWAS for parameters in the ground water assessment program.

The following table contains the common names of parameters that are widely used in government regulation, scientific publications, and commerce. However, synonyms may exist for many parameters. The chemical abstract service registry number (CAS RN) for each parameter has been provided. The metals include all species in ground water that contain the element. For the purpose of this chapter, parameters numbered one to fourteen in this table are considered non-hazardous and parameters numbered fifteen to two hundred forty-six are considered hazardous.

SEE NEXT PAGE FOR TABLE…

-Table 1-

Parameter	CAS RN	GWAS mg/L	Origin[a]
- Non-hazardous -			
1) Calcium	7440-70-2	Not applicable	
2) Magnesium	7439-95-4	Not applicable	
3) Potassium	7440-09-07	Not applicable	
4) Specific conductance		Not applicable	
5) Total alkalinity		Not applicable	
6) Ammonia	7664-41-7	30	4
7) Boron	7440-42-8	0.73	2
8) Chloride	16887-00-6	250	3
9) Iron	7439-89-6	0.3	3
10) Manganese	7439-96-5	0.05	3
11) Sodium	7440-23-5	200	5
12) Sulfate	14808-79-8	250	3
13) pH		6.5< pH<8.5[b]	3
14) Total dissolved solids		500	3
- Hazardous -			
15) Nitrate/Nitrite		10	1
16) Cyanide (free)	57-12-5	0.2	1
17) Sulfide	18496-25-8	Background	
18) Aluminum	7429-90.5	0.2	3
19) Antimony	7440-36-0	0.006	1
20) Arsenic	7440-38-2	0.01	1
21) Barium	7440-39-3	2	1
22) Beryllium	7440-41-7	0.004	1
23) Cadmium	7440-43-9	0.005	1
24) Chromium	7440-47-3	0.1	2
25) Cobalt	7440-48-4	Background	
26) Copper	7440-50-8	1	3
27) Lead	7439-92-1	0.015	1
28) Mercury	7439-97-6	0.002	1
29) Nickel	7440-02-0	0.073	2
30) Selenium	7782-49-2	0.05	1
31) Silver	7440-22-4	0.1	3
32) Strontium	7440-24-6	2.2	2
33) Thallium	7440-28-0	0.002	1
34) Tin	7440-31-5	2.2	2
35) Vanadium	7440-62-2	0.018	2
36) Zinc	7440-66-6	5	3
37) Acetone; 2-Propanone	67-64-1	2.2	2
38) Acrylonitrile; 2-Propenenitrile	107-13-1	Background	
39) Benzene	71-43-2	0.005	1
40) Bromochloromethane; Chlorobromomethane	74-97-5	Background	
41) Bromodichloromethane; Dibromochloromethane	75-27-4	0.08	1,6
42) Bromoform; Tribromomethane	75-25-2	0.0085	2
43) Carbon disulfide	75-15-0	0.1	2
44) Carbon tetrachloride; Tetrachloromethane	56-23-5	0.005	1
45) Chlorobenzene; Monochlorobenzene	108-90-7	0.1	1
46) Chloroethane; Ethyl chloride	75-00-3	2.1	2
47) Chloroform; Trichloromethane	67-66-3	0.08	1,6
48) 2-Chlorotoluene; o-Chlorotoluene	95-49-8	0.073	2
49) 4-Chlorotoluene; p-Chlorotoluene	106-43-4	0.26	2
50) Dibromochloromethane; Chlorodibromomethane	124-48-1	0.08	1,6
51) 1,2-Dibromo-3-chloropropane; DBCP	96-12-8	0.0002	1
52) 1,2-Dibromoethane; Ethylene dibromide; EDB	106-93-4	0.00005	1
53) o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1	0.6	1
54) m-Dichlorobenzene; 1,3-Dichlorobenzene	541-73-1	Background	
55) p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7	0.075	1
56) trans-1,4-Dichloro-2-butene	110-57-6	Background	
57) Dichlorodifluoromethane; CFC 12	75-71-8	0.039	2

58) 1,1-Dichloroethane; Ethylidene chloride	75-34-3	0.0024	2
59) 1,2-Dichloroethane; Ethylene dichloride	107-06-2	0.005	1
60) 1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride	75-35-4	0.007	1
61) cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2	0.07	1
62) trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene	156-60-5	0.1	1
63) 1,2-Dichloropropane; Propylene dichloride	78-87-5	0.005	1
64) 1,3-Dichloropropane; Trimethylene dichloride	142-28-9	0.073	2
65) 2,2-Dichloropropane; Isopropylidene chloride	594-20-7	Background	
66) 1,1-Dichloropropene; 1,1-Dichloro-1-propene	563-58-6	Background	
67) cis-1,3-Dichloropropene	10061-01-5	Background	
68) trans-1,3-Dichloropropene	10061-02-6	Background	
69) Ethylbenzene	100-41-4	0.7	1
70) 2-Hexanone; Methyl butyl ketone	591-78-6	Background	
71) Isopropylbenzene; Cumene	98-82-8	0.068	2
72) 4-Isopropyltoluene; p-Isopropyltoluene; p-cymene	99-87-6	Background	
73) Methyl bromide; Bromomethane	74-83-9	Background	
74) Methyl chloride; Chloromethane	74-87-3	0.019	2
75) Methyl ethyl ketone; MEK; 2-Butanone	78-93-3	0.71	2
76) Methyl iodide; Iodomethane	74-88-4	Background	
77) 4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1	0.2	2
78) Methylene bromide; Dibromomethane	74-95-3	0.037	2
79) Methylene chloride; Dichloromethane	75-09-2	0.005	1
80) N-Butylbenzene	104-51-8	Background	
81) N-Propylbenzene	103-65-1	0.13	2
82) Sec-Butylbenzene	135-98-8	Background	
83) Styrene; Ethenylbenzene	100-42-5	0.1	1
84) Tert-Butylbenzene	98-06-6	Background	
85) 1,1,1,2-Tetrachloroethane	630-20-6	Background	
86) 1,1,2,2-Tetrachloroethane	79-34-5	Background	
87) Tetrachloroethylene; Tetrachloroethene; Perchloroethylene	127-18-4	0.005	1
88) Toluene; Methylbenzene	108-88-3	1	1
89) 1,2,3-Trichlorobenzene	87-61-6	0.0029	2
90) 1,2,4-Trichlorobenzene	120-82-1	0.07	1
91) 1,1,1-Trichloroethane; Methylchloroform	71-55-6	0.2	1
92) 1,1,2-Trichloroethane	79-00-5	0.005	1
93) Trichloroethylene; Trichloroethene	79-01-6	0.005	1
94) Trichlorofluoromethane; CFC-11	75-69-4	0.13	2
95) 1,2,3-Trichloropropane	96-18-4	Background	
96) 1,2,4-Trimethylbenzene	95-63-6	0.0015	2
97) 1,3,5-Trimethylbenzene	108-67-8	0.037	2
98) Vinyl acetate; Acetic acid ethenyl ester	108-05-4	0.041	2
99) Vinyl chloride; Chloroethene	75-01-4	0.002	1
100) Xylene (total); Dimethylbenzene	multiple[c]	10	1
101) Acenaphthene; 1,2-Dihydroacenaphthylene	83-32-9	Background	
102) Acenaphthylene	208-96-8	Background	
103) Acetonitrile; Methyl cyanide	75-05-8	0.013	2
104) Acetophenone; 1-Phenylethanone	98-86-2	0.37	2
105) 2-Acetylaminofluorene; 2-AAF; N-9H-fluoren-2-yl-acetamide	53-96-3	Background	
106) Acrolein; 2-Propenal	107-02-8	Background	
107) Allyl chloride; 3-Chloro-1-propene	107-05-1	Background	
108) 4-Aminobiphenyl; [1,1'-Biphenyl]-4-amine	92-67-1	Background	
109) Anthracene	120-12-7	1.1	2
110) Benzo[a]anthracene; Benzanthracene	56-55-3	Background	
111) Benzo[b]fluoranthene; Benz[e]acephenanthylene	205-99-2	Background	
112) Benzo[k]fluoranthene	207-08-9	Background	
113) Benzo[ghi]perylene	191-24-2	Background	
114) Benzo[a]pyrene	50-32-8	0.002	1
115) Benzyl alcohol; Benzenemethanol	100-51-6	0.37	2
116) bis(2-Chloroethoxy)methane; 1,1-[methylenebis(oxy)]bis[2-Chloroethane]	111-91-1	Background	

117) bis-(2-Chloroethyl)ether; Dichloroethyl ether; 1,1'-oxybis[2-Chloroethane]	111-44-4	Background	
118) bis-(2-Chloro-1-methylethyl) Ether; 2,2'-Dichloro-diisopropyl ether; DCIP; 2,2'-oxybis[1-Chloropropane]	108-60-1	Background	
119) bis(2-ethylhexyl)phthalate; Di(2-ethylhexyl)phthalate; 1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl ester)	117-81-7	0.006	1
120) 4-Bromophenyl phenyl ether; 1-Bromo-4-phenoxy-benzene	101-55-3	Background	
121) Butyl benzyl phthalate; Benzyl butyl phthalate; 1,2-Benzendicarboxylic acid; Butyl phenylmethyl ester	85-68-7	0.035	2
122) p-Chloroaniline; 4-Chlorobenzenamine	106-47-8	Background	
123) Chlorobenzilate; 4-Chloro-a-Chlorophenyl)-a-hydroxybenzeneacetic acid, Ethyl ester	510-15-6	Background	
124) p-Chloro-m-Cresol; 4-Chloro-3-Methylphenol	59-50-7	0.37	2
125) 2-Chloronaphthalene	91-58-7	0.29	2
126) 2-Chlorophenol	95-57-8	0.018	2
127) 4-Chlorophenyl phenyl ether; 1-Chloro-4-phenoxy benzene	7005-72-3	Background	
128) Chloroprene; 2-Chloro-1,3-butadiene	126-99-8	Background	
129) Chrysene	218-01-9	Background	
130) m-Cresol; 3-Methylphenol	108-39-4	0.18	2
131) o-Cresol; 2-Methylphenol	95-48-7	0.18	2
132) p-Cresol; 4-Methylphenol	106-44-5	0.018	2
133) Dibenz[a,h]anthracene	53-70-3	Background	
134) Dibenzofuran	132-64-9	Background	
135) Di-n-butyl phthalate; 1,2-Benzenedicarboxylic acid dibutyl ester	84-74-2	0.37	2
136) 3,3'-Dichlorobenzidine; 3,3'-Dichloro-[1,1'-bephenyl]-4,4'-diamine	91-94-1	Background	
137) 2,4-Dichlorophenol	120-83-2	0.011	2
138) 2,6-Dichlorophenol	87-65-0	Background	
139) Diethyl phthalate; 1,2-Benzenedicarboxylic acid, diethyl ester	84-66-2	2.9	2
140) O,O-Diethyl O-2-Pyrazinyl phosphorothioate; Thionazin	297-97-2	Background	
141) Dimethoate; Phosphorodithoic acid O,O-Dimethyl-S-[2-(methylamino)-2-oxoethyl] ester	60-51-5	Background	
142) p-(Dimethylamino)azobenzene; N,N-Dimethyl-4-(phenylazobenzenamine)	60-11-7	Background	
143) 7,12-Dimethylbenz[a]anthracene	57-97-6	Background	
144) 3,3'-Dimethylbenzidene; 3,3'-Dimethyl[1,1'biphenyl]-4,4'-diamine	119-93-7	Background	
145) 2,4-Dimethylphenol; m-Xylenol	105-67-9	0.073	2
146) Dimethyl phthalate; 1,2-Benzenedicarboxylic acid, dimethyl ester	131-11-3	Background	
147) m-Dinitrobenzene; 1,3-Dinitrobenzene	99-65-0	Background	
148) 4,6-Dintro-o-cresol; 4,6-Dinitro-2-methylphenol; 2-Methyl-4,6-dinitrophenol	534-52-1	Background	
149) 2,4-Dinitrophenol	51-28-5	Background	
150) 2,4-Dinitrotoluene; 1-Methyl-2,4-dinitrobenzene	121-14-2	Background	
151) 2,6-Dinitrotoluene; 2-Methyl-1,3-dinitrobenzene	606-20-2	Background	
152) Di-n-octyl phthalate; 1,2-Benzenedicarboxylic acid, dioctyl ester	117-84-0	Background	
153) Diphenylamine; N-phenylbenzenamine	122-39-4	0.091	2
154) Disulfoton; Phosphorodithioic acid O,O-diethyl-S-[2-(ethylthio)ethyl] ester	298-04-4	Background	
155) Ethyl methacrylate; 2-methyl-2-propenoic acid, ethyl ester	97-63-2	0.33	2
156) Ethyl methanesulfonate; Methanesulfonic acid, ethyl ester	62-50-0	Background	
157) Fluoranthene	206-44-0	0.15	2
158) Fluorene; 9H-fluorene	86-73-7	0.15	2
159) Hexachlorobenzene	118-74-1	0.001	1
160) Hexachlorobutadiene; Hexachloro-1,3-butadiene; 1,1,2,3,4,4-Hexachloro-1,3-butadiene	87-68-3	Background	
161) Hexachlorocyclopentadiene; 1,2,3,4,5,5-Hexachloro-1,3-cyclopentadiene	77-47-4	0.05	1
162) Hexachloroethane	67-72-1	Background	
163) Hexachloropropene; 1,1,2,3,3,3-Hexachloro-1-propene	1888-71-7	Background	
164) Indeno(1,2,3-cd)pyrene	193-39-5	Background	
165) Isobutyl alcohol; 2-Methyl-1-propanol	78-83-1	1.1	2
166) Isophorone; 3,5,5-Trimethyl-2-cyclohexen-1-one	78-59-1	0.73	2
167) Isosafrole; 5-(1-Propenyl)-1,3-benzodioxole	120-58-1	Background	

168) Methylacrylonitrile; 2-Methyl-2-propenenitrile	126-98-7	Background	
169) Methapyrilene; N,N-Dimethyl-N',2-pyridinyl-N'-(2-thienylmethyl)-1,2-ethanediamine	91-80-5	Background	
170) Methyloxychlor; 1,1'-(2,2,2-Trichloroethylidenebis[4-Methoxybenzene]	72-43-5	0.04	1
171) Methyl methacrylate; 2-Methyl-2-propenoic acid, methyl ester	80-62-6	0.14	2
172) Methyl methanesulfonate; Methanesulfonic acid, methyl ester	66-27-3	Background	
173) 2-Methylnaphthalene	91-57-6	0.015	2
174) Naphthalene	91-20-3	Background	
175) 1,4-Naphthoquinone; 1,4-Naphthalenedione	130-15-4	Background	
176) 1-Naphthylamine; 1-Naphthalenamine	134-32-7	Background	
177) 2-Naphthylamine; 2-Naphthalenamine	91-59-8	Background	
178) o-Nitroaniline; 2-Nitroaniline; 2-Nitrobenzenamine	88-74-4	Background	
179) m-Nitroaniline; 3-Nitroaniline; 3-Nitrobenzenamine	99-09-02	Background	
180) p-Nitroaniline; 4-Nitroaniline; 4-Nitrobenzenamine	100-01-6	Background	
181) Nitrobenzene	98-95-3	Background	
182) o-Nitrophenol; 2-Nitrophenol	88-75-5	Background	
183) p-Nitrophenol; 4-Nitrophenol	100-02-7	Background	
184) N-Nitrosodi-n-butylamine; N-Butyl-N-Nitroso-1-butanamine	924-16-3	Background	
185) N-Nitrosodiethylamine; N-Ethyl-N-nitroso-ethanamine	55-18-5	Background	
186) N-Nitrosodimethylamine; N-Methyl-N-nitrosomethanamine	62-75-9	Background	
187) N-Nitrosodiphenylamine; N-Nitroso-N-phenylbenzenamine	86-30-6	0.014	2
188) N-Nitrosodipropylamine; N-Nitroso-N-dipropylamine; di-n-propylnitrosamine; N-Nitroso-N-propyl-1-propanamine	621-64-7	Background	
189) N-Nitroso(methyl)ethylamine; N-Methyl-N-nitrosoethylamine	10595-95-6	Background	
190) N-Nitrosopiperidine; 1-Nitrosopiperidine	100-75-4	Background	
191) N-Nitrosopyrrolidine; 1-Nitrosopyrrolidine	930-55-2	Background	
192) 5-Nitro-o-toluidine; 2-Methyl-5-nitrobenzenamine	99-55-8	Background	
193) Pentachlorobenzene	608-93-5	Background	
194) Pentachloronitrobenzene	82-68-8	Background	
195) Pentachlorophenol	87-96-5	0.001	1
196) Phenacetin; N-(4-Ethoxyphenylacetamide)	62-44-2	0.031	2
197) Phenanthrene	85-01-8	Background	
198) Phenol	108-95-2	1.1	2
199) p-Phenylenediamine; 1,4-Benzenediamine	106-50-3	0.69	2
200) Pronamide; Kerb; 3,5-Dichloro-N-(1,1-dimethyl-2-propynyl benzamide)	23950-58-5	0.27	2
201) Propionitrile; Ethyl cyanide	107-12-0	Background	
202) Pyrene	129-00-0	0.11	2
203) Safrole; 5-(2-Propenyl-1,3-benzodioxole)	94-59-1	Background	
204) 1,2,4,5-Tetrachlorobenzene	95-94-3	Background	
205) 2,3,4,6-Tetrachlorophenol	58-90-2	0.11	2
206) o-Toluidine; 2-Methylbenzenamine	95-53-4	Background	
207) 2,4,5-Trichlorophenol	95-95-4	0.37	2
208) 2,4,6-Trichlorophenol	88-06-2	0.037	2
209) sym-Trinitrobenzene; 1,3,5-Trinitrobenzene	99-35-4	0.11	2
210) Aldrin	309-00-2	0.0011	2
211) alpha-BHC; alpha-benzenehexachloride	319-84-6	Background	
212) beta-BHC; beta-benzenehexachloride	319-85-7	Background	
213) delta-BHC; delta-benzenhexachloride	319-86-8	Background	
214) gamma-BHC; Lindane	58-89-9	0.0002	1
215) Chlordane	various[e]	0.002	1
216) 2,4-D; 2,4-Dichlorophenoxyacetic acid	94-75-7	0.07	1
217) 2,4-DB; 4-(2,4-dichlorophenoxy)butyric acid; Butoxone	94-68-1	Background	
218) 2,4-DP; Dichloroprop; R-(+)-2-(2,4-dichlorophenoxy)propionic acid	120-36-5	Background	
219) 4,4'-DDD; 1,1'-(2,2-Dichloroethylidene) bis[4-chlorobenzene]	72-54-8	2.80E-04	2
220) 4,4'-DDE; 1,1'-(2,2-Dichloroethyenylidene) bis[4-chlorobenzene]	72-55-9	2.00E-04	2
221) 4,4'-DDT; 1,1'-(2,2,2,-Trichloroethylidene) bis[4-chlorobenzene]	50-29-3	2.00E-04	2
222) Diallate; Carbamothioic acid, bis-(1-methyl-ethyl)-S-(2,3-dichloro-2-propenyl) ester	2303-16-4	Background	
223) Dieldrin	60-57-1	Background	

224) Dinoseb; DMBP	88-85-7	0.007	1
225) Endosulfan I	959-98-8	Background	
226) Endosulfan II	33213-65-9	Background	
227) Endosulfan sulfate	1031-07-8	Background	
228) Endrin	72-20-8	0.002	1
229) Endrin aldehyde	7421-93-4		
230) Famphur; Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl] O,O-dimethyl ester	52-85-7	Background	
231) Heptachlor; 1,4,5,6,7,8,8-heptachloro-3a,4,6,6a-tetrahydro-4,7-methano-1H-indene	76-44-8	0.0004	1
232) Heptachlor epoxide	1024-57-3	0.0002	1
233) Isodrine	465-73-6	Background	
234) Kepone	143-50-0	Background	
235) MCPA; 4-chloro-o-tolyloxyacetic acid	94-74-6	0.0018	2
236) MCPP; 2-(4-Chlorophenoxy)-2-methylpropanoic acid	93-65-2	0.0037	2
237) MDBA; Dicamba; 3,6-Dichloro-o-anisic acid	1918-00-9	0.11	2
238) 3-Methylcholanthrene; 1,2-Dihydro-3-methyl-benze[j]aceanthrylene	56-49-5	Background	
239) Methyl parathion; Parathion methyl; Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester	298-00-0	Background	
240) Parathion; Phosphorothioic acid, O,O-diethyl-O-(4-nitrophenyl) ester	56-38-2	0.022	2
241) Phorate; Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester	298-02-2	Background	
242) Polychlorinated biphenyls; PCBs; aroclors; 1,1'-Biphenyl, chloro derivatives	various[e]	0.0005	1
243) Silvex; 2,4,5-TP; 2-(2,4,5-Trichlorophenoxypropanoic acid)	93-72-1	0.05	1
244) 2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid	93-76-5	0.037	2
245) Toxaphene	8001-35-2	0.003	1
246) O,O,O-Triethyl phosphorthioate; Phosphorothioic acid, O,O,O-triethyl ester	126-68-1	Background	

Footnotes:

a. The origin of GWAS is found in the following reference table:

-Reference table-

1	USEPA, maximum contaminant level (MCL).
2	USEPA, region 3, regional screening level (RSL), or one-tenth of RSL for parameter with only non-carcinogenic effects based on Ohio EPA, division of emergency and remedial response, technical decision compendium document entitled "Use of U.S. EPA's Regional Screening Levels as Screening Values in Human Health Risk Assessments," dated August 21, 2009.
3	USEPA, secondary maximum contaminant level (SMCL).
4	USEPA drinking water advisory based on aesthetic (taste) effects.
5	World health organization advisory for sodium based on aesthetic (taste) effects.
6	MCL for total trihalomethanes.

b. The unit of measurement for pH is standard units. A pH that is less than 6.5 or greater than 8.5 is an exceedance of the generic GWAS for pH.

c. Xylene (total): Where "total" is entered, all species in ground water that contain this element are included. This entry includes o-xylene (CAS RN 96-47-6), m-xylene (CAS RN 108-38-3), p-xylene (CAS RN 106-42-3), and unspecified xylenes (dimethylbenzenes) (CAS RN 1330-20-7).

d. Chlordane: This entry includes alpha chlordane (CAS RN 5103-71-9), beta chlordane (CAS RN 5103-74-2), gamma chlordane (CAS RN 5566-34-7), and constituents of chlordane (CAS RN 57-74-9 and CAS RN 12789-03-6).

e. Polychlorinated biphenols (CAS RN 1336-36-3): This category contains congener chemicals, including constituents of aroclor 1016 (CAS RN 12674-11-2), aroclor 1221 (CAS RN 11104-28-2), aroclor 1232 (CAS RN 11141-16-5), aroclor 1242 (CAS RN 53469-21-9), aroclor 1248 (CAS RN 12672-29-6), aroclor 1254 (CAS RN 11097-69-1), and aroclor 1260 (CAS RN 11096-82-5).

3745-506-100 Ground water monitoring system.

(A) Except as provided in paragraph (D) of this rule, the ground water monitoring system shall consist of a sufficient number of ground water monitoring wells installed at appropriate locations and depths to yield ground water samples from both the uppermost aquifer system and all significant zones of saturation that exist above the uppermost aquifer system. Samples collected from the ground water monitoring system installed in accordance with this rule shall meet the following criteria:

(1) Represent the quality of the background ground water that has not been affected by past or present waste or C&DD disposal operations at the facility.

(2) Represent the quality of the ground water passing directly downgradient of and as close as practical to the potential sources of contamination.

(B) Determining the number of wells, well spacing, and well depth.

The number, spacing, and depth of ground water monitoring wells shall be based on the limits of potential sources of contamination and site-specific hydrogeologic information including but not limited to lithology, areal extent of geologic units, ground water quality, ground water elevations, yield data, and slug test data.

(C) Surface water monitoring.

(1) The director may require or authorize an owner or operator to conduct surface water monitoring, including but not limited to the monitoring of seeps, springs, or streams, as part of the ground water monitoring system in areas where the installation of a monitoring well is not practical.

(2) An owner or operator may submit to the director a written request to conduct surface water monitoring as part of the ground water monitoring system.

(3) The request shall include at a minimum the following:

(a) Sampling and analysis procedures.

(b) A list of parameters to be sampled.

(c) Procedures for analyzing field and laboratory results.

(d) Proposed surface water sampling location, including a map depicting the proposed surface water sampling location in relation to the potential sources of contamination and any ground water monitoring wells installed in the same geologic formation or unit.

(e) A demonstration showing that surface water samples will be representative of ground water quality passing directly downgradient of the limits of potential sources of contamination.

(f) Any other information requested by Ohio EPA.

(4) The director may decline to act on such a request.

(5) The director may approve the request if the director determines that the surface water samples will be representative of ground water quality passing directly downgradient of the limits of potential sources of contamination.

(D) Where the uppermost aquifer system exists more than one hundred fifty feet beneath the basal elevations of the disposal limits at the facility, the ground water monitoring system is not required to have ground water monitoring wells screened within the uppermost aquifer system. The ground water monitoring system instead shall consist of a sufficient number of ground water monitoring wells installed at appropriate locations and depths to yield ground water samples from an adequate number of significant zones of saturation to ensure the following:

(1) Detection of a release.

(2) That the samples collected conform to paragraph (A) of this rule.

(E) Each ground water monitoring well shall meet the following criteria:

(1) Be designed, installed, developed, and maintained in a manner that allows the collection of ground water samples that are representative of ground water quality in the geologic unit being monitored.

(2) A ground water monitoring well shall be cased in a manner that maintains the integrity of the monitoring well borehole.

(3) The annular space above the sampling depth shall be sealed to prevent migration of fluids along the annular space.

(4) The well casing shall be screened or perforated, and surrounded by sand or gravel in such a way that allows for the following:

(a) Minimization of the passage of formation materials into the well.

(b) Maximization of ground water flow into the well.

(c) Monitoring of discrete portions of the uppermost aquifer system or significant zones of saturation above the uppermost aquifer system.

(5) A ground water monitoring well constructed or used only for the purposes of this chapter is not required to comply with Chapter 3745-9 of the Administrative Code (water well standards) with the exception of the well sealing requirements in rules 3745-9-03 and 3745-9-10 of the Administrative Code.

(6) Each ground water monitoring well shall have a fixed, marked, and surveyed reference point established by a professional surveyor. The datum used for surveying the well reference point shall be the same datum used to survey the facility.

3745-506-110 Determination of ground water elevations and ground water flow direction.

(A) Measuring ground water elevations. An owner or operator shall measure ground water elevations in accordance with the following:

(1) Ground water elevations shall be measured in all ground water monitoring wells at the facility at least semiannually.

(2) Whenever a ground water sampling event includes greater than half of the ground water monitoring wells in a single aquifer system or significant zone of saturation, ground water elevations shall be measured in all monitoring wells within the particular aquifer system or significant zone of saturation in conjunction with that sampling event.

(3) If both the ground water elevation is to be measured and a water sample is to be collected from a ground water monitoring well during the same event, the ground water elevation shall be measured prior to that well being purged and sampled. When more than one well is to be sampled during a sampling event, the ground water elevations shall be measured in all ground water monitoring wells to be sampled during that sampling event prior to purging and sampling any of those wells.

(4) All ground water elevations shall be measured and recorded to an accuracy of plus or minus 0.01 feet from the fixed, marked, and surveyed reference point on each ground water monitoring well.

(5) Ground water elevations shall be measured within a period of time short enough to avoid temporal variations in ground water flow that could preclude an accurate determination of ground water flow rate and direction, and within a period of time not to exceed twenty-four hours.

(B) Measuring well depth. Annually, an owner or operator shall measure the total depth in all ground water monitoring wells that do not have a dedicated pump installed. The total depth of ground water monitoring wells containing dedicated pumps shall be measured whenever the dedicated pump is removed for maintenance.

(C) Reference points. An owner or operator shall measure the ground water elevation in each ground water monitoring well from the surveyed reference point for the ground water monitoring well established in accordance with rule 3745-506-100 of the Administrative Code.

(D) Potentiometric map. An owner or operator shall create one potentiometric map for each zone monitored using the collected ground water elevation measurements whenever ground water elevation measurements are obtained from all the ground water monitoring wells in an uppermost aquifer system or a significant zone of saturation. Each potentiometric map shall include the following:

(1) The locations of all monitoring wells from which ground water elevation data was used to produce the map.

(2) The limits of potential sources of contamination.

(3) Ground water elevation data expressed in the datum used in accordance with paragraph (C) of this rule and located next to the applicable ground water monitoring well from which the data was derived.

(4) Date the ground water elevation data was collected.

(5) If sufficient data exist, potentiometric contours based on a contour interval that accurately depicts the potentiometric surface and allows the clear depiction of ground water flow directions.

(6) If sufficient data exist, ground water flow direction arrows that are drawn perpendicular to the potentiometric contours to illustrate the ground water flow direction.

(7) Identification of ground water flow boundaries that influence the movement of ground water.

(E) Annual evaluation of ground water elevation data.

(1) At least annually an owner or operator shall evaluate the ground water elevation data obtained in accordance with this rule to determine whether the requirements of rule 3745-506-100 of the Administrative Code for locating the ground water monitoring wells continue to be satisfied. The results of this evaluation including potentiometric maps for every geologic unit monitored shall be included in a report that shall be submitted to Ohio EPA and the approved board of health not later than the first day of April of each year.

(2) If the evaluation shows that the requirements of rule 3745-506-100 of the Administrative Code are no longer satisfied, the owner or operator shall revise the number, location, and depth of the ground water monitoring wells as needed to bring the ground water monitoring system into compliance with rule 3745-506-100 of the Administrative Code. The owner or operator shall submit documentation of all revisions to Ohio EPA and the approved board of health. Revisions shall be submitted in accordance with rule 3745-506-50 of the Administrative Code.

3745-506-120 Establishment of background ground water quality - ground water monitoring well location criteria.

(A) Except as provided in paragraph (B) of this rule, an owner or operator shall establish background ground water quality for the ground water monitoring program by analyzing ground water samples collected from wells that are hydraulically upgradient from the limits of potential sources of contamination.

(B) Background ground water quality at a facility may be based on sampling of ground water monitoring wells that are not hydraulically upgradient from the potential sources of contamination when an owner or operator determines either of the following:

(1) Hydrogeologic conditions do not allow the owner or operator to determine which ground water monitoring wells

are hydraulically upgradient from the limits of potential sources of contamination.

(2) Sampling of other ground water monitoring wells will provide an indication of background ground water quality that is as representative or more representative than that provided by ground water monitoring wells that are hydraulically upgradient from the limits of potential sources of contamination.

3745-506-130 Operation and maintenance of ground water monitoring wells, piezometers, and other measurement, sampling, and analytical devices.

(A) Throughout the duration of the ground water monitoring program, an owner or operator shall operate and maintain the ground water monitoring wells, piezometers, and other measurement, sampling, and analytical devices to perform to design specifications.

(B) The owner or operator shall identify and record each ground water monitoring well maintenance problem.

(C) The owner or operator shall develop a blank ground water monitoring well maintenance form that shall be used to record an identified well maintenance problem. At a minimum, this form shall include places to record the following:

(1) Name of the facility.

(2) Facility identification number assigned by Ohio EPA, if applicable.

(3) Ground water monitoring well identification number.

(4) Description of well maintenance problem.

(5) Date the well maintenance problem was identified.

(6) Date the well maintenance problem was corrected.

(7) Action taken to correct the well maintenance problem.

(D) If a ground water well maintenance problem is identified, the owner or operator shall correct the problem immediately. The completed well maintenance form shall be submitted to Ohio EPA and the approved board of health not later than seventy-five days after the well maintenance problem is identified.

3745-506-140 Submission of ground water data.

Not later than seventy-five days after sampling a well, the following information shall be submitted to Ohio EPA and the approved board of health in a form prescribed by the director:

(A) All results generated and information recorded in accordance with the sampling and analysis plan specified in rule 3745-506-200 of the Administrative Code for that sampling event.

(B) All statistical analysis results from analysis of data generated in accordance with this chapter, including but not limited to summary tables comparing the results with each associated statistical limit, charts, and graphs used to analyze the data, and the results from new or updated tests for normality.

(C) Laboratory data sheets. At a minimum, the laboratory data sheets shall include the following:

(1) Name of the facility.

(2) Field sample identification number for each ground water sample.

(3) Laboratory sample identification number for each ground water sample.

(4) Sampling date.

(5) Date the laboratory received the sample.

(6) Analytical method identification numbers for all parameters.

(7) Sample extraction date, if applicable.

(8) Sample analysis date.

(9) Analytical results for all parameters including but not limited to method detection limits (MDLs), practical quantitation limits (PQLs), laboratory estimated values, and laboratory measured values.

(10) Laboratory data qualifiers, if applicable.

(11) Sample dilution factor, if applicable.

(12) Laboratory quality control information. At a minimum, the laboratory quality control information shall include the following:

(a) Case narrative describing each problem that was encountered between sample receipt and the completion of sample analysis.

(b) Field and laboratory sample identification numbers.

(c) Holding times specified in the sampling and analysis plan for each parameter, or a statement by the laboratory that all holding time requirements were met.

(d) Whether meniscus bubbles were present in any volatile organic sample containers when received by the laboratory.

(e) Surrogate and spike recoveries with control limits.

(f) Data results from the analysis of blank samples including trip blanks, method blanks, and, if required, instrument blanks with control limits.

(g) Data from the analysis of matrix spike/matrix spike duplicates (MS/MSD) and matrix spike blanks with control limits.

(h) Relative per cent difference calculations based on MS/MSD results.

(i) Laboratory control sample results if the metals spike recovery results are determined to be out of control.

(D) Data summary tables. The data summary tables shall include ground water elevation data and the analytical data collected from the sampling event applicable to the data submission and may include previously submitted data from past sampling events.

(E) The potentiometric maps required by rule 3745-506-110 of the Administrative Code.

3745-506-200 Ground water sampling and analysis plan.

(A) An owner or operator shall develop a written ground water sampling and analysis plan that documents the sampling and analysis procedures to be used to comply with this chapter. The owner or operator shall follow the sampling and analysis procedures documented in the plan.

[Comment: The owner or operator is not required to include references to specific laboratory analysis methods, specific method detection limits, or specific practical quantitation limits in the ground water sampling and analysis plan. However, rule 3745-506-140 of the Administrative Code requires the information to be submitted with the ground water data report.]

(B) Ground water sampling and analysis plan contents.

(1) Sampling procedures. The ground water sampling and analysis plan shall include copies of blank forms and a detailed description of the equipment, procedures, and techniques to be used to do the following:

(a) Measure the elevation of the ground water and the depth of ground water monitoring wells as required by rule 3745-506-110 of the Administrative Code.

(b) Determine and document the presence of immiscible layers in ground water monitoring wells when immiscible layers are known to exist or where laboratory or other physical evidence indicate immiscible layers may be present.

(c) Purge the ground water monitoring wells prior to sample withdrawal.

(i) The owner or operator shall select a well purging technique for each ground water monitoring well within the applicable ground water monitoring program from the techniques listed in rule 3745-506-210 of the Administrative Code.

(ii) When selecting a technique, the owner or operator shall consider site-specific hydrogeologic information.

(iii) If different techniques will be utilized for ground water monitoring wells within the ground water monitoring system and for ground water monitoring wells within the same uppermost aquifer system or significant zone of saturation, then each technique shall be included.

(iv) All contingent purging techniques shall be described in the ground water sampling and analysis plan, including the circumstances and conditions under which a contingent purging technique will be used. Contingent purging techniques shall be selected from the techniques listed in rule 3745-506-210 of the Administrative Code.

(d) Withdraw, handle, and preserve ground water samples.

(i) The owner or operator shall include a description of the ground water sample withdrawal technique for each ground water monitoring well and sample handling and preservation for each ground water sample in accordance with rule 3745-506-220 of the Administrative Code. If different ground water sample withdrawal techniques will be selected and implemented for ground water monitoring wells within the ground water monitoring well system and for ground water monitoring wells within the same uppermost aquifer system or significant zone of saturation, then each ground water sample withdrawal technique shall be included.

(ii) When selecting a ground water sample withdrawal technique, the owner or operator shall consider site-specific hydrogeologic information including but not limited to ground water well construction, yield data, and hydrogeologic testing results.

(iii) Contingent ground water sample withdrawal techniques, if justified by variable hydrogeologic conditions, may be selected to sample a ground water monitoring well. The circumstances and conditions under which a contingent ground water sample withdrawal technique is to be used shall be defined in the plan.

(e) Perform field analysis for temperature, pH, specific conductance, and turbidity each time the ground water monitoring well is sampled, including the following:

(i) Procedures and blank forms for recording field measurements that include the specific location, time, and site-specific conditions associated with the field data acquisition.

(ii) Procedures used for the calibration of field devices and blank forms for the documentation of calibration procedures.

(f) Decontaminate non-dedicated and non-disposable monitoring, purging, and sampling equipment prior to use at each ground water monitoring well.

(g) Establish the chain of custody of the ground water samples. Copies of the blank chain of custody form and sample label that include the information required by rule

3745-506-230 of the Administrative Code shall also be included.

(h) Obtain field quality control samples. This description shall document how the requirements of rule 3745-506-240 of the Administrative Code will be satisfied.

(i) Obtain the information required to be recorded on the ground water sampling form described in rule 3745-506-250 of the Administrative Code not otherwise required by this rule. A copy of the blank ground water sampling form shall also be included.

(2) Ground water sample analysis performance standards. The ground water sampling and analysis plan shall include provisions for performance standards for laboratory analysis of ground water samples as follows:

(a) If a parameter is reported below a practical quantitation limit (PQL), the PQL utilized by the owner or operator for that parameter shall be the lowest PQL that can be reliably achieved during routine laboratory operating conditions that are reasonably available to the owner or operator.

(b) If a parameter is detected at or above the method detection limit (MDL) but below the PQL established by the laboratory, the owner or operator shall obtain a laboratory estimate of the concentration as a value with a qualifier to indicate that the value is an estimate.

3745-506-210 Ground water monitoring well purging techniques.

(A) Ground water monitoring well purging techniques shall be selected from the following:

(1) Purging to dryness. The ground water monitoring well shall be purged dry and then allowed to recover sufficiently to withdraw a representative ground water sample. Purging to dryness shall not be selected unless purging data indicates that the sustainable yield of a ground water monitoring well is less than one hundred milliliters per minute.

(2) Volumetric purging. The ground water monitoring well shall be purged a specified volume of ground water with a bailer or pump in accordance with the following:

(a) The amount of water purged from the ground water monitoring well shall not be less than three well volumes.

(b) The ground water monitoring well shall not be purged at a rate that exceeds the expected maximum yield of the ground water monitoring well based on previous purging or hydrogeologic testing data. If the formation is confined, the monitoring well shall be purged such that the water level remains above the top of the screen, if possible.

(c) Ground water quality stabilization parameters shall be monitored and documented as required by paragraph (B) of this rule. Sample withdrawal shall not commence until ground water quality stabilization is achieved as required by paragraph (B) of this rule.

(d) If a bailer or non-dedicated pump is used during purging, the bailer or pump shall be carefully inserted and removed in a manner that minimizes agitation and aeration of the water column in the well.

(3) Low-flow purging with a pump. If low-flow purging is selected, the ground water monitoring well shall be purged at a rate that is less than the expected maximum yield of the well in order to achieve a stable water level during purging. This technique shall be performed in accordance with the following:

(a) If the ground water monitoring well is screened in a confined formation, the monitoring well shall be purged such that the water level remains above the top of the screen, if possible.

(b) Ground water quality stabilization parameter measurements obtained to comply with paragraph (B) of this rule shall not commence until the water level in the ground water monitoring well has become stable during purging and at least one purging equipment volume plus the volume of the water level drawdown that has occurred in the well casing has been purged from the ground water monitoring well through the purging equipment.

(c) Ground water quality stabilization parameters shall be monitored and documented as required by paragraph (B) of this rule. Sample withdrawal shall not commence until ground water quality stabilization is achieved as required by paragraph (B) of this rule.

(d) If a non-dedicated pump is used during purging, the pump shall be carefully inserted and removed in a manner that minimizes agitation and aeration of the water column in the well.

(4) An alternative ground water monitoring well purging technique approved by the director.

(a) An owner or operator may submit to the director a written request for approval to use an alternative ground water monitoring well purging technique.

(b) The request shall include the following:

(i) A demonstration that the proposed alternative technique is capable of producing ground water sample results that are an accurate representation of ground water quality as required by rule 3745-506-50 of the Administrative Code.

(ii) A description of the site-specific conditions and circumstances when an alternative purging technique will be used.

(c) The director may decline to act on the request.

(d) The director may approve an alternative purging technique if the director determines the alternative purging technique is capable of producing ground water sample results that are an accurate representation of ground water quality as required by rule 3745-506-50 of the Administrative Code.

(B) Ground water quality stabilization within a ground water monitoring well shall be determined as follows:

(1) Ground water quality stabilization parameters and stabilization criteria shall be chosen for each ground water monitoring well. Stabilization is considered to be achieved when stabilization parameter values over three consecutive measurements are within the associated stabilization criteria.

(a) Unless an alternative is approved by the director pursuant to paragraph (B)(1)(b) of this rule, stabilization parameters and stabilization criteria shall be chosen from those listed in the following table:

-Table 1-

Parameter:	Stabilization criteria:
Temperature	+/- 0.5° Celsius
pH	+/- 0.2 standard units
Specific conductance	+/- 3%
Oxidation-reduction potential	+/- 20 millivolts
Dissolved oxygen	+/- 10% of reading value or +/- 0.2 mg/L, whichever is greater

(b) Alternative ground water quality stabilization parameters or stabilization criteria.

(i) An owner or operator may submit a written request to the director for approval to use alternative ground water quality stabilization parameters or stabilization criteria at a specific ground water monitoring well.

(ii) The request shall include a demonstration that the alternative ground water quality stabilization parameters or stabilization criteria to be used at a specific ground water monitoring well in lieu of those provided in the table above will provide a better evaluation of the stabilization of ground water in that ground water monitoring well during purging.

(iii) The director may decline to act on the request.

(iv) The director may approve the request if the director determines that the alternative ground water quality stabilization parameters or stabilization criteria to be used at a specific ground water monitoring well in lieu of those provided in Table 1 of this rule will provide a better evaluation of the stabilization of ground water in that ground water monitoring well during purging.

(2) When conducting volumetric purging with a bailer or pump as described in paragraph (A)(2) of this rule, ground water quality stabilization parameters shall be measured in accordance with the following:

(a) At a minimum, the ground water quality stabilization parameters used shall include specific conductance and two additional parameters chosen from Table 1 of this rule.

(b) Ground water quality stabilization parameter measurements shall be taken at intervals of not less than every one-half well volume.

(c) If a bailer is used to purge the ground water monitoring well, each interval to be tested for the ground water quality stabilization parameters shall be withdrawn from the bottom of the bailer.

(3) When conducting low-flow purging as described in paragraph (A)(3) of this rule, ground water quality stabilization parameters shall be measured in accordance with the following:

(a) At a minimum, the ground water quality stabilization parameters used shall include specific conductance and three additional parameters chosen from Table 1 of this rule.

(b) Ground water quality stabilization parameter measurements shall be taken at intervals of not less than three minutes apart and such that at least one purging equipment volume is replaced between measurements.

(4) When six or more well volumes have been purged from a ground water monitoring well during a single event and the ground water quality stabilization parameters chosen in accordance with this rule have not stabilized within the criteria listed in paragraph (B)(1) of this rule, ground water quality at that monitoring well can be considered sufficiently stabilized and a sample may be withdrawn from that monitoring well.

(C) If hydrogeologic conditions occur or are expected to occur at a ground water monitoring well such that the criteria are not met for purging in accordance with the techniques described in paragraph (A) of this rule, contingent techniques may be used to purge and sample a monitoring well. Circumstances and conditions under which a contingent purging technique may be required include but are not limited to the following:

(1) The yield of the monitoring well fluctuates seasonally or between sampling events from greater than or equal to one hundred milliliters per minute to less than one hundred milliliters per minute and purging to dryness or other purging technique is proposed for when the well yields less than one hundred milliliters per minute. In this circumstance, purging to dryness in accordance with paragraph (A)(1) of this rule or another contingent purging technique shall be used.

(2) The water level in a monitoring well screened in a confined saturated zone is drawn down below the top of the ground water monitoring well screen during purging.

(3) The water level is drawn down to the level of the pump intake during purging.

3745-506-220 Ground water sample withdrawal, handling, and preservation.

(A) Sample withdrawal techniques. The description of the ground water sample withdrawal techniques in the sampling and analysis plan shall include at least the following:

(1) Procedures to minimize the physical agitation of samples including but not limited to the following:

(a) Filling sample containers for volatile organic compounds at a rate that does not do the following:

(i) Exceed the rate used to purge the well.

(ii) Aerate the sample.

(iii) Dilute the preservative below effective concentrations.

(b) Filling and capping sample containers for volatile organic compounds so that the filled and capped sample containers are not opened prior to receipt at the laboratory.

(c) Filling and capping the sample containers for volatile organic compounds in a manner that minimizes bubbles in each sample container.

(2) Procedures to minimize the exposure of samples to ambient air, airborne contaminants, and extreme temperature variations.

(B) Sample handling and preservation. The description of ground water sample handling and preservation in the sampling and analysis plan shall include at least the following:

(1) Procedures for handling and preserving samples in accordance with the requirements of the analytical method and the laboratory where analysis is performed.

(2) Procedures to minimize the exposure of the samples to excessive physical agitation and extreme temperature variations.

(3) Procedures for sampling the parameters in order from the most sensitive to the least sensitive to sampling effects. A table shall be included in the ground water sampling and analysis plan that lists all required ground water monitoring parameters, the order that the required parameters will be sampled, the required preservatives, and the type of the corresponding sample container.

(4) Procedures for temperature preservation of temperature-sensitive samples, including at a minimum the following:

(a) A description of how the samples will be cooled. Unless otherwise required by the laboratory analytical method used, temperature-sensitive samples shall be preserved by packing the samples in ice in a cooler or other equivalent temperature preservation method such that they will be cooled but not frozen. The cooler or container carrying the samples to the laboratory shall contain ice or shall have an internal temperature greater than zero degrees Celsius but not greater than six degrees Celsius.

(b) A description of when the samples will be cooled. Unless otherwise required by the laboratory analytical method used, temperature-sensitive samples shall be cooled as soon as possible following containerization.

(c) A description of the duration of temperature preservation for samples. Unless otherwise required by the laboratory analytical method used, temperature-sensitive samples shall be cooled until analytical procedures on the sample begin at the laboratory.

3745-506-230 Chain of custody of ground water samples - forms and sample labels.

To document the chain of custody of ground water samples, an owner or operator shall develop the following:

(A) A blank ground water sampling chain of custody form to document sample custody, handling, and preservation from the time each ground water sample is collected until each ground water sample is received by the laboratory. At a minimum, the blank form shall include places to record the following information:

(1) Name of the facility.

(2) Facility identification number as assigned by Ohio EPA, if applicable

(3) Field sample identification number for each ground water sample.

(4) Date and time each ground water sample was collected.

(5) The printed name and signature of each person having custody of the ground water sample prior to analysis with the exception of a person employed by a commercial carrier contracted to transport the ground water samples to the laboratory.

(6) The date and time that each person receives custody of the ground water sample, including the date and time the ground water sample is relinquished to the laboratory.

(7) Chemical preservatives added to the sample.

(8) Whether ice is present or the internal temperature of each cooler when received by the laboratory.

(9) Special instructions regarding ground water sample handling, preservation, analysis, and other information that needs to be documented to ensure that the associated ground water sample analytical results will be representative of ground water quality in accordance with rule 3745-506-50 of the Administrative Code.

(B) Sample labels containing all information necessary for effective sample tracking, including places to record the following information:

(1) Facility name.

(2) Field sample identification number.

(3) Date and time of sample collection.

(4) Parameters or parameter groups to be analyzed.

3745-506-240 Field quality control samples.

(A) At a minimum, field quality control shall include collection of the following:

(1) Field duplicate samples during each sampling event.

For sampling events when only re-sampling of ground water monitoring wells is conducted, collection of field duplicate samples is not required.

(2) Field equipment blanks if non-dedicated sampling equipment is used.

(3) Trip blanks for volatile organic compounds during semiannual sampling events.

(B) The number of field duplicate samples, field equipment blanks, and trip blanks documented in the sampling and analysis plan shall be enough to adequately demonstrate the accuracy of the analysis results.

3745-506-250 Ground water sampling forms.

An owner or operator shall develop a blank form to be used for recording field data and sample submission information. At a minimum, the blank form shall include places to record the following information:

(A) Name of the facility.

(B) Facility identification number assigned by Ohio EPA, if applicable.

(C) Ground water monitoring well identification number.

(D) Ground water monitoring well depth.

(E) Static water level depth measurement, including the date and time of measurement.

(F) Presence and thickness of immiscible layers, if required to determine and document the presence of immiscible layers in ground water monitoring wells in accordance with paragraph (B) of rule 3745-506-200 of the Administrative Code.

(G) Purging technique and device used.

(H) Purge volume.

(I) The pumping rate during purging and sampling if a pump is used.

(J) Ground water quality stabilization parameters and water level data including recorded measurements and times of measurements.

(K) Date and time purging started and the date and time purging terminated.

(L) Sampling technique and device used.

(M) Date and time each ground water sample was collected.

(N) Sample appearance.

(O) Field sample identification number for each ground water sample.

(P) Name of the person who collected the sample.

(Q) Facility weather conditions including field estimates of ambient temperature, observed precipitation conditions, and approximate wind direction and speed at the time each ground water monitoring well was sampled.

(R) Field observations that are relevant to whether the ground water sample is representative of ground water quality as required by rule 3745-506-50 of the Administrative Code including but not limited to problems encountered and all deviations made from the established ground water sampling and analysis plan.

3745-506-300 Statistical analysis plan.

The statistical analysis plan shall include the following:

(A) A table listing each ground water monitoring well to be sampled including the frequency of sampling and the gradient location of each monitoring well relative to the limits of potential sources of contamination.

(B) Detailed descriptions of the statistical analysis and retesting methods selected in accordance with rule 3745-506-310 of the Administrative Code including specific decision criteria to be followed when deciding which method to use.

(C) A demonstration that the statistical analysis methods listed in the statistical analysis plan comply with the performance standards listed in rule 3745-506-330 of the Administrative Code. The statistical analysis plan shall include a description of the test for normality used by the owner or operator and a table listing the parameters, background data for the parameters, and the results of the test for normality based on the background data listed.

(D) A table listing the background data used with the statistical analysis methods for each parameter including ground water monitoring wells and date of sampling.

(E) Documentation that the background data set in the statistical analysis plan complies with rule 3745-506-320 of the Administrative Code.

(F) A procedure for updating the background data set that complies with rule 3745-506-320 of the Administrative Code.

(G) A list of the statistical limits for each parameter for each ground water monitoring well.

(H) A statement that when a new ground water monitoring well or replacement ground water monitoring well is added to an existing ground water monitoring system, the owner or operator shall begin statistically analyzing data from the ground water monitoring well in accordance with the following schedule:

(1) If additional background data are not required to be collected by rule 3745-506-320 of the Administrative Code, statistical analysis shall begin with the first semiannual sampling event following addition of the monitoring well to the ground water monitoring system.

(2) If additional background data are required to be collected by rule 3745-506-320 of the Administrative Code, collection shall be completed not later than one year after adding the monitoring well to the ground water monitoring system. Statistical analysis shall begin with the first semiannual sampling event following collection of the background data.

(3) If an alternate time frame for collection of background data has been approved in accordance with rule 3745-506-450 of the Administrative Code, statistical analysis shall begin with the first semiannual sampling event following collection of the background data.

(I) A statement that the owner or operator shall make a statistical comparison of the background data and downgradient ground water detection monitoring analytical results to determine if there is a statistically significant change between background data and the downgradient analytical results. For organic parameters not detected in background at the facility, a quantifiable detection in a downgradient ground water monitoring well shall be considered a statistically significant change from background.

3745-506-310 Statistical analysis methods.

An owner or operator shall choose a statistical analysis method that shall be appropriate for the monitoring program being implemented.

(A) For a ground water detection program, the owner or operator shall select from the following methods:

(1) Prediction limit procedure.

(2) Control chart approach that gives control limits for each parameter.

(3) Use of a practical quantitation limit (PQL) to define a non-parametric statistical limit. If this method is chosen, the statistical limit shall be set at less than the PQL.

(4) An alternative method as described in paragraph (D) of this rule.

(B) If a ground water assessment program includes statistical analysis, the owner or operator shall select from the following methods:

(1) For deriving a background-based ground water assessment standard, the following:

(a) Tolerance limit procedure.

(b) Prediction limit procedure.

(2) For evaluating elevated parameters, the following:

(a) Confidence interval procedure.

(b) Trend analysis procedure.

(3) For evaluating non-elevated parameters, the following:

(a) Prediction limit procedure.

(b) Control chart approach that gives control limits for each parameter.

(c) Use of a PQL to define a non-parametric statistical limit. If this method is chosen, the statistical limit shall be set at less than the PQL.

(4) An alternative method as described in paragraph (D) of this rule.

(C) If a ground water corrective actions program includes statistical analysis, the owner or operator shall select from the following methods:

(1) The methods listed in paragraph (B) of this rule.

(2) Use of a maximum contaminant level or health-based limit as the statistical limit.

(3) An alternative method as described in paragraph (D) of this rule.

(D) Alternative methods. The owner or operator may choose an alternative statistical analysis method. At a minimum, the statistical analysis method and variables selected shall meet the performance standards described in rule 3745-506-330 of the Administrative Code.

(E) Retesting methods. If a retesting strategy is to be incorporated into a ground water detection, assessment, or corrective actions program, the retesting strategy shall be described in the statistical analysis plan. The description shall include the number of re-samples to be used.

3745-506-320 Background data in the statistical analysis plan.

(A) An owner or operator shall ensure that the background data set in the statistical analysis plan includes a minimum of eight, statistically independent data points for each parameter for each ground water monitoring well and that the number of data points is consistent with the statistical analysis methods and procedures as documented in the statistical analysis plan.

(B) If an owner or operator updates the background data set, the background data set shall be updated in accordance with the following requirements:

(1) A background data set shall not be updated more frequently than once a year.

(2) Analytical data from each ground water monitoring well contributing new background data shall be added to the background data set only in blocks of four or more statistically independent samples.

(3) When updating control charts there shall be at least three post-background data points after the update is complete or the statistical parameters shall be adjusted to provide adequate statistical power to detect a release.

(4) Appropriate statistical outlier tests and trend analyses shall be performed in accordance with paragraphs (D) and (E) of this rule on the background data set including the new background data.

(5) If a lower practical quantitation limit (PQL) is available to the owner or operator for use in the statistical analysis method in accordance with paragraph (G) of rule 3745-506-330 of the Administrative Code, then an owner or operator shall do the following:

(a) For organic parameters not detected in background at the facility, base the background data on the lower PQL.

[Comment: Pursuant to rule 3745-520-300 of the Administrative Code, for organic parameters not detected in background at the facility, a quantifiable detection in a downgradient ground water monitoring well is a statistically significant change from background.]

(b) For inorganic parameters or organic parameters that are detected in background at the facility, update the background data set with all appropriate data points collected using the lower PQL not later than two years after the date of the first sampling event that the lower PQL is utilized. The type and number of data points to be included in the background data set for these parameters shall be further determined as follows:

(i) All previous detections meeting the requirements of paragraphs (D), (E), and (F) of this rule shall be retained in the background data set.

(ii) All censored data points at a higher PQL shall be removed from the background data set unless one or more of the following conditions are met:

(a) The censored data points at a higher PQL include values that have been estimated by a laboratory to be between a method detection limit (MDL) and a PQL. The owner or operator may elect to retain the censored data points at a higher PQL in the background data set if the estimated values are used in place of the corresponding PQLs to represent background concentrations.

(b) The number of data points at the lower PQL to be updated plus the number of detects plus the number of estimated values in the background data set is less than eight. The lowest and then the most recent censored data points at a higher PQL shall be retained in the background data set such that the updated background data set is comprised of eight data points.

(c) A censored estimation technique that can accommodate multiple PQLs is used to estimate the summary statistics in accordance with paragraph (G) of rule 3745-506-330 of the Administrative Code.

(C) Prior to conducting the first statistical analysis utilizing any background data set, an owner or operator shall demonstrate within the statistical analysis plan that background data are representative of background ground water quality in accordance with rules 3745-506-100 and 3745-506-120 of the Administrative Code and that background data are not affected by the following:

(1) Laboratory or sampling error. This demonstration shall include the following:

(a) Verification that rejected data or data with unacceptable bias are not included in the background data set.

(b) The results of the performance of an appropriate statistical outlier test conducted in accordance with paragraph (D) of this rule.

(2) A release from potential sources of contamination. This demonstration shall include the following:

(a) A description of the results of trend analyses conducted in accordance with paragraph (E) of this rule.

(b) A comparison of background data to the range of facility data and, if available, appropriate regional data.

(D) An appropriate statistical outlier test shall be performed on the background data set for each parameter, including data from all ground water monitoring wells contributing data to the background data set. A statistical outlier shall be excluded from the background data set unless a demonstration is submitted to Ohio EPA and the approved board of health that justifies that the data point is representative of background ground water quality in accordance with paragraph (F) of this rule. Statistical outlier testing shall be conducted in accordance with the following requirements:

(1) If censored data comprise less than seventy-five per cent of the background data set, a statistical outlier shall be determined as follows:

(a) A statistical outlier test shall be performed on high and low suspect values at a type I error rate of not less than 0.01 for each parameter. Any data point identified as being statistically significant shall be considered a statistical outlier.

(b) If the highest value data point in the background data set exceeds by an order of magnitude the value of the second highest data point, the highest data point shall be considered a statistical outlier.

(2) If censored data comprise greater than or equal to seventy-five per cent of the background data set, a statistical outlier shall be determined as follows:

(a) If there is a single detection greater than or equal to the PQL, and detections greater than or equal to the MDL comprise greater than or equal to fifty per cent of the background data set, any value greater than or equal to two times the median of the background data set shall be considered a statistical outlier.

(b) If there is a single detection greater than or equal to the PQL, and detections greater than or equal to the MDL comprise less than fifty per cent of the background data set, any value greater than the highest PQL among the background data shall be considered a statistical outlier.

(c) If there are two or more detections greater than or equal to the PQL, and detections greater than or equal to the MDL comprise greater than or equal to fifty per cent of the background data set, any value greater than or equal to three times the median of the background data set shall be considered a statistical outlier.

(d) If there two or more detections greater than or equal to the PQL, and detections greater than or equal to the MDL comprise less than fifty per cent of the background data set, the highest value shall be considered a statistical outlier.

[Comment: Flowcharts to aid in understanding of paragraphs (D)(1) to (D)(2)(d) of this rule are provided in the appendices to this rule.]

(E) After performing outlier tests, statistical trend analyses shall be performed on the background data set, including data from all ground water monitoring wells contributing data to the background data set. Data causing a statistically significant change or increasing trend shall be excluded from the background data set unless a demonstration is submitted to Ohio EPA and the approved board of health that justifies that the data point is representative of background ground water quality in accordance with paragraph (F) of this rule. Statistical trend analyses shall be performed in accordance with the following:

(1) Trend analyses shall be performed at 0.01 level of significance or greater per tail for each parameter at each ground water monitoring well contributing data to the background data set.

(2) Trend analyses shall be performed using Sen's Estimate of Slope, Spearman's Rank Correlation Test, the Mann-Kendall Trend Evaluation, or another appropriate trend analysis method.

(F) Prior to conducting the first statistical analysis utilizing any background data set, an owner or operator shall submit documentation and justification for statistical outliers, data causing an increasing trend, and data causing a statistically significant change to be included into the background data set. This documentation and justification shall be received by Ohio EPA and the approved board of health at least thirty days prior to submitting the results of the first statistical comparison of ground water analytical data to the background data set, and shall include the following:

(1) Documentation. All data and results from each outlier test or trend analysis conducted in accordance with paragraphs (D) and (E) of this rule including the following:

(a) A list of identified statistical outliers, data causing an increasing trend, or data causing a statistically significant change that the owner or operator intends to include in the background data set.

(b) A description of the statistical outlier tests or trend analyses that were run on the background data set.

(c) A demonstration that the statistical outlier tests and trend analyses were run accurately and at the appropriate level of significance.

(2) Justification for the inclusion of statistical outliers. If the owner or operator intends to include a statistical outlier in the background data set, the owner or operator shall submit written justification of the representativeness of the statistical outlier that considers, as appropriate, the following:

(a) Proximity in concentration of the statistical outlier to other detections or to available estimated data that is greater than or equal to the MDL but less than the PQL from that sampling location.

(b) Supporting evidence found in relevant, professional literature that the statistical outlier concentration is within the normal range of background concentrations expected for the parameter at the facility.

(c) A comparison of the statistical outlier concentration to background data from other sample locations that are located upgradient or downgradient and are unaffected by a potential source of contamination. This comparison shall consider the range, standard deviation, and spatial variability present in background at the facility and shall demonstrate that the statistical outlier concentration is within the normal range of background concentrations expected for the parameter at the facility.

(d) Use of an appropriate outlier testing procedure not previously identified in the statistical analysis plan demonstrating that the data point previously identified as a statistical outlier in accordance with the statistical analysis plan is not an outlier.

(3) Justification for the inclusion of data causing a statistically significant change or increasing trend. If the

owner or operator intends to include data causing a statistically significant change or increasing trend in the background data set, the owner or operator shall submit written justification of the representativeness of the data causing a statistically significant change or increasing trend that considers, as appropriate, the following:

(a) Similarity of background data to other site data from other sample locations that are located upgradient or downgradient and are unaffected by a potential source of contamination.

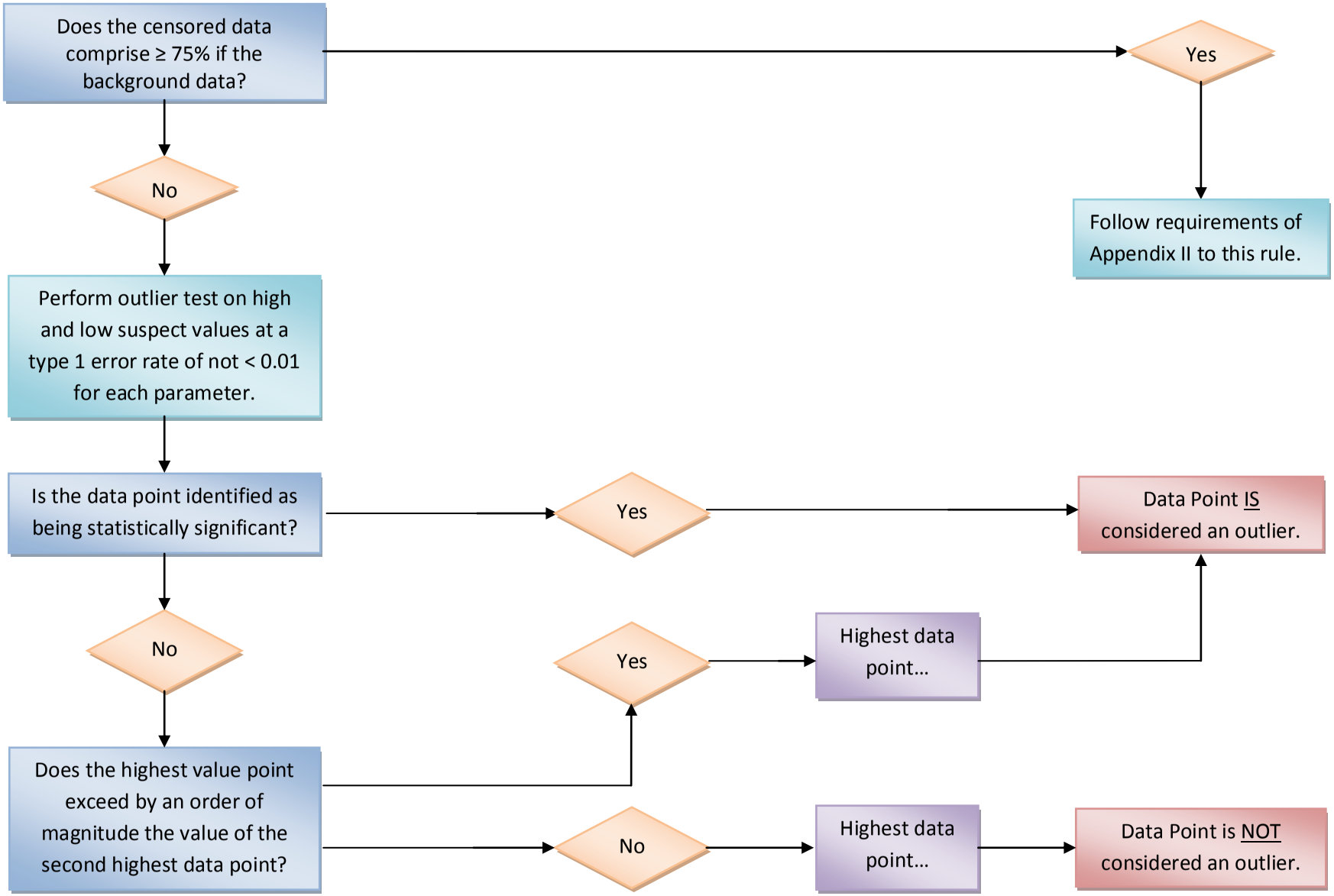
(b) Similarity of background data to appropriate regional data, if available.

(c) Information or data indicating that a source other than the facility is responsible for the change in concentration.

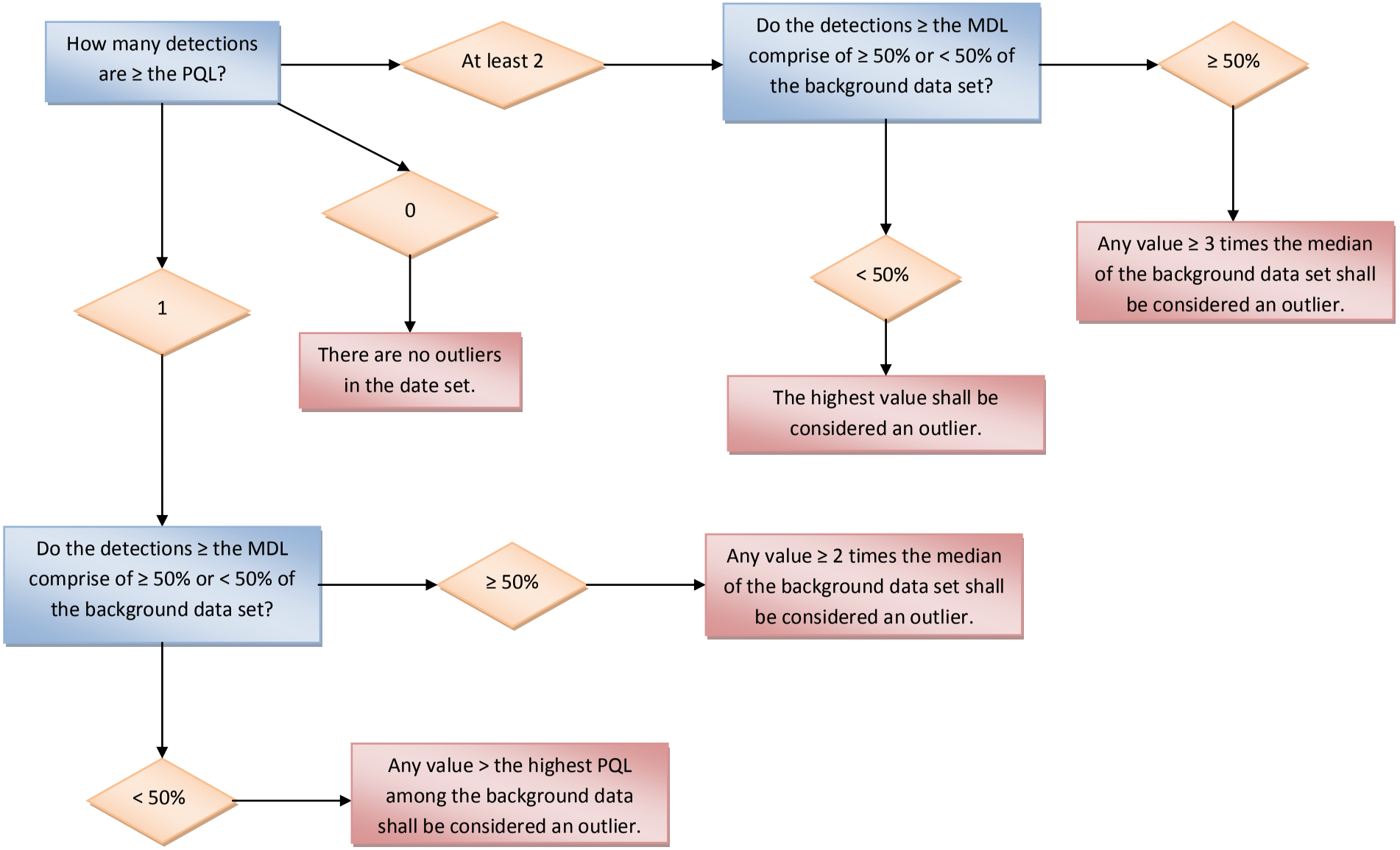
(d) Supporting evidence found in relevant, professional literature that the concentration is within the normal range of background concentrations expected for the parameter at the facility.

SEE NEXT PAGE FOR APPENDICES

Appendix I


Does the censored data comprise ≥ 75% if the background data?
Yes
Follow requirements of Appendix II to this rule.
No
Perform outlier test on high and low suspect values at a type 1 error rate of not < 0.01 for each parameter.
Is the data point identified as being statistically significant?
Yes
Data Point IS considered an outlier.
No
Yes
Highest data point…
Does the highest value point exceed by an order of magnitude the value of the second highest data point?
No
Highest data point…
Data Point is NOT considered an outlier.

Appendix II


How many detections are ≥ the PQL?
At least 2
Do the detections ≥ the MDL comprise of ≥ 50% or < 50% of the background data set?
≥ 50%
Any value ≥ 3 times the median of the background data set shall be considered an outlier.
< 50%
The highest value shall be considered an outlier.
0
There are no outliers in the date set.
1
Do the detections ≥ the MDL comprise of ≥ 50% or < 50% of the background data set?
≥ 50%
Any value ≥ 2 times the median of the background data set shall be considered an outlier.
< 50%
Any value > the highest PQL among the background data shall be considered an outlier.

3745-506-330 Performance standards for statistical analysis methods.

Each statistical analysis method included within the statistical analysis plan shall meet the following performance standards:

(A) A statistical analysis method shall be designed to allow an owner or operator to detect a release.

(B) For the ground water detection program, a statistical analysis method shall be conducted separately for each of the parameters required to be statistically evaluated in accordance with rule 3745-506-400 of the Administrative Code.

(C) For the ground water assessment program, if statistical analysis is to be performed, a statistical analysis method shall be appropriate for determining the extent or concentrations of a release in accordance with rules 3745-506-500 and 3745-506-510 of the Administrative Code and for determining the need for corrective actions for remediating the release in accordance with rule 3745-506-600 of the Administrative Code.

(D) For a corrective action being implemented under the ground water corrective actions program, if statistical analysis is to be performed, a statistical analysis method shall be appropriate for determining the effectiveness of the corrective action being implemented in accordance with a corrective action implementation plan required by paragraph (G) of rule 3745-506-600 of the Administrative Code.

(E) Test for normality. A statistical analysis method selected shall be appropriate for the distribution of parameters. If the distribution of the parameters is shown by an owner or operator to be inappropriate for a normal theory test, then the data shall be transformed or a distribution free theory test shall be used. If the distributions for the parameters differ, more than one statistical analysis method may be used.

(F) Individual and multiple well comparison procedures shall conform to the following:

(1) Comply with at least one of the following:

(a) If an individual well comparison procedure is used to compare an individual monitoring well parameter concentration to background parameter concentration or a ground water concentration level, the test shall be conducted at a type I error level not less than 0.01 for each testing period. If multiple comparison procedures are used, the type I experimentwise error rate for each testing period shall be not less than 0.05; however, the type I error rate of not less than 0.01 for individual monitoring well comparisons shall be maintained.

(b) Achieve at least fifty per cent power at a three standard deviation increase and at least eighty per cent power at a four standard deviation increase for the parameter.

(c) For control charts with up to one re-sample, the following requirements with regard to parameter limit values:

(i) Decision internal limit value equal to or less than five.

(ii) Shewhart control limit value equal to or less than five.

(iii) Reference control limit value equal to or less than one.

(2) Comply with the following:

(a) If conducting more than one re-sample as a part of the statistical analysis method or exceeding one or more control chart parameter limit values in paragraph (F)(1)(c) of this rule, the statistical test shall meet the power requirements in paragraphs (F)(1)(b) and (F)(2)(c) of this rule.

(b) Any alternative statistical analysis method selected in accordance with paragraph (D) of rule 3745-506-310 of the Administrative Code shall meet the power requirements in paragraphs (F)(1)(b) and (F)(2)(c) of this rule.

(c) If a human health standard for ground water ingestion has been determined for a parameter and the statistical limit or a GWAS calculated for that parameter is greater than or equal to the human health standard, then the statistical method shall be adjusted to achieve ninety-five per cent power at a four standard deviation increase.

(G) All statistical analysis methods selected shall account for data below the limits of detection and quantitation with one or more statistical procedures. These procedures shall be in accordance with the following:

(1) Each practical quantitation limit (PQL) used in the statistical analysis method shall be the lowest concentration that can be reliably achieved during routine laboratory operating conditions that are available to the owner or operator. If a lower PQL is available to the owner or operator for use in the statistical analysis method in accordance with this paragraph, the owner or operator shall update the background data set in accordance with rule 3745-506-320 of the Administrative Code.

(2) Any censored estimation technique used to estimate the summary statistics for the statistical limit shall meet the following requirements:

(a) The censored estimation technique shall be appropriate for the distribution and percentages of censored and uncensored data in the background data set.

(b) The censored estimation technique shall be prescribed in the statistical analysis plan completed in accordance with rule 3745-520-300 of the Administrative Code and shall be selected from the following techniques:

(i) Kaplan-Meier.

(ii) Robust regression on order statistics.

(iii) Parametric regression on order statistics.

(iv) Cohen's adjustment.

(v) Substitution of one-half the method detection limit (MDL) or the whole MDL when censoring at the MDL and one-half the PQL or the whole PQL when censoring at the PQL.

(vi) An alternative censored estimation technique. If an alternative is chosen, a written demonstration justifying that the alternative technique is appropriate for the distribution and percentages of censored and uncensored data in the background data set shall be submitted to Ohio EPA and the approved board of health at least thirty days prior to submission of the first statistical comparison utilizing a statistical limit derived from this technique.

(H) If there is only a single detection equal to or above the PQL in the background data set, the single detection equal to or above the PQL shall not be used as the statistical limit unless justified in a demonstration submitted in accordance with paragraph (F) of rule 3745-506-320 of the Administrative Code.

(I) If area-wide ground water corrective actions have been implemented or are scheduled for implementation, the statistical limit shall not be greater than the area-wide clean-up standard for a parameter.

(J) If necessary, the statistical analysis method selected shall include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

3745-506-400 Ground water detection program.

(A) An owner or operator shall conduct a ground water detection program capable of detecting a release to the following:

(1) Ground water in all significant zones of saturation above the uppermost aquifer system.

(2) Ground water in the uppermost aquifer system unless paragraph (D) of rule 3745-506-100 of the Administrative Code applies to the facility.

(B) Ground water detection monitoring plan.

The ground water detection program conducted by an owner or operator shall be documented in a ground water detection monitoring plan. The ground water detection monitoring plan shall be submitted to Ohio EPA and the approved board of health not later than ninety days prior to commencing sampling in accordance with this chapter. The ground water detection monitoring plan shall include the following:

(1) A description and documentation of a ground water monitoring system that conforms to rule 3745-506-100 of the Administrative Code. The owner or operator shall document the design, installation, development, maintenance, and sealing of each ground water monitoring well and piezometer. At a minimum, the documentation shall include completed boring logs, well construction diagrams, and completed well maintenance forms developed in accordance with rule 3745-506-130 of the Administrative Code.

(2) A ground water sampling and analysis plan that conforms to rule 3745-506-200 of the Administrative Code.

(3) Provisions for establishing background ground water quality in accordance with rule 3745-506-120 of the Administrative Code and paragraph (C) of this rule.

(4) A statistical analysis plan that conforms to rule 3745-506-300 of the Administrative Code, which shall be incorporated into the ground water detection monitoring plan and submitted to Ohio EPA and the approved board of health not later than thirty days prior to submitting the first set of ground water analytical data analyzed using the statistical analysis method.

(5) Detection monitoring procedures including a semiannual and annual monitoring schedule and the parameters to be analyzed in ground water samples. These procedures shall conform to the ground water detection program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(C) Establishing background data.

An owner or operator of a facility shall establish background data in accordance with the requirements of this chapter and in accordance with the following:

(1) The background data set shall consist of a minimum of eight independent samples from each ground water detection monitoring well for the background ground water quality parameters required by the ground water detection program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code. The date that eight independent samples are achieved through the utilization of existing data in accordance with paragraph (C)(2) of this rule or new sampling in accordance with paragraph (C)(3) of this rule is the date that background is established.

(2) If a ground water monitoring system exists, background data may be established using existing data in either of the following circumstances:

(a) The information for each sample required by rules 3745-506-140 and 3745-506-200 of the Administrative Code is available. The owner or operator shall submit the information required by rules 3745-506-140 and 3745-506-200 of the Administrative Code for each sample to be included in the background data to the Ohio EPA and the approved board of health not later than ninety days after the date the facility is required to comply with this chapter.

(b) The information for each sample does not meet the requirements of rules 3745-506-140 and 3745-506-200 of the Administrative Code, but the existing data was previously accepted by Ohio EPA as part of a regulatory requirement. The owner or operator shall submit a description of the reports that the existing data was contained within for each sample to be included in the background data to the Ohio EPA and the approved board

of health not later than ninety days after the date the facility is required to comply with this chapter.

(3) If a facility does not yet have eight independent samples for each detection monitoring well for the background ground water quality parameters required by the ground water detection program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code, then the owner or operator shall comply with the following:

(a) Not later than one hundred eighty days after the date required by the applicable program chapter to commence sampling, a minimum of four new, independent samples shall be collected from each ground water monitoring well that is part of the ground water detection program and analyzed for the background ground water quality parameters required by the ground water detection program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code. These analytical results shall be used to establish the background data for the ground water monitoring wells that are part of the ground water detection program.

(b) Not later than three hundred sixty days after the date required by the applicable program chapter to commence sampling, additional independent samples shall be collected from each ground water monitoring well that is part of the ground water detection program and analyzed for the background ground water quality parameters required by the ground water detection program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code such that there are a minimum of eight independent samples per monitoring well for each parameter. These analytical results shall be used to establish the background data for the ground water monitoring wells that are part of the ground water detection program.

(D) Semiannual and annual ground water monitoring.

Not later than one hundred eighty days after the date background data are to be established in accordance with this rule, an owner or operator shall commence monitoring in accordance with the ground water detection monitoring plan and the ground water detection program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(E) Statistical analysis.

The ground water data generated from semiannual and annual monitoring shall be statistically compared to background data when required by the ground water detection program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(F) An owner or operator shall comply with rule 3745-506-410 of the Administrative Code regarding statistically significant changes between background data and analytical results.

(G) An owner or operator may choose to comply with paragraph (A) of rule 3745-506-420 of the Administrative Code and begin a ground water assessment program without a determination of a statistically significant change between background data and analytical results.

3745-506-410 Statistically significant changes between background data and the ground water detection monitoring analytical results.

(A) Notification.

If there is a statistically significant change between background data and downgradient analytical results for a parameter in a ground water sample required to be chemically and statistically analyzed by rule 3745-506-400 of the Administrative Code, then an owner or operator shall submit written notification of the statistically significant change between background data and the analytical results to Ohio EPA and the approved board of health not later than seventy-five days after withdrawing a ground water sample from the ground water monitoring well that when analyzed demonstrated the statistically significant change. The notification shall indicate which wells and parameters have shown a statistically significant change from background data.

(B) Demonstration of a false positive.

If there is a statistically significant change between background data and downgradient analytical results for a parameter in a ground water sample required to be chemically and statistically analyzed by rule 3745-506-400 of the Administrative Code, the owner or operator may submit a false positive demonstration regarding the statistically significant change in accordance with paragraph (B)(1) or (B)(2) of this rule. If the false positive demonstration is successful, the facility may remain in the detection monitoring program.

(1) An owner or operator may demonstrate using the "1 of m" re-sampling method that a statistically significant change between background data and the analytical result was a false positive. Resampling shall be conducted in accordance with the resampling methods in the statistical analysis plan. A minimum of one of the resample results, or the number required by the statistical analysis plan, whichever is greater, shall be at or below the applicable statistical limit for the demonstration to be successful. A separate demonstration shall be made for each parameter exhibiting a statistically significant change from background. A report documenting this demonstration shall be submitted to Ohio EPA and the approved board of health not later than one hundred eighty days after withdrawal of the initial sample described in paragraph (A) of this rule.

[Comment: Pursuant to rule 3745-506-300 of the Administrative Code, the "1 of m" re-sampling method shall be documented within the statistical analysis plan.]

(2) An owner or operator may demonstrate that an alternate source, error, or natural variation caused the statistically significant change from background data. This

false positive demonstration shall be in accordance with the following:

(a) The demonstration shall be based on one or more of the following explanations:

(i) That a source other than a potential source of contamination at the facility caused the ground water contamination. This demonstration shall include at a minimum, the following:

(a) Where available, laboratory analysis results of leachate from the facility, and a comparison of the leachate results to ground water quality at the monitoring well where the statistically significant change from background occurred and other monitoring wells in the same significant zone of saturation or aquifer.

(b) A map showing location of possible sources, including estimated extent of alternate source contaminants.

(c) An analysis of ground water monitoring data demonstrating that the ground water contamination is not from potential sources of contamination at the facility. This demonstration shall include ground water quality time series plots showing all monitoring wells in the significant zone of saturation or aquifer system where the statistically significant change from background occurred, and where available, comparison of the facility ground water monitoring data to leachate data from the facility and Piper or stiff diagrams displaying the facility ground water data and potential alternate source data together.

(d) Where available, copies of any documentation of spills or storage or occurrence of materials that are being identified as the alternate source.
(e) Where available, soil sampling analytical data used to identify the alternate source.

(f) Where available, ground water quality data from other investigations related to the alternate source.

(g) A description of how the ground water monitoring program will be influenced by the ground water contamination from the alternate source.

(ii) That the statistically significant change between background data and the analytical results resulted from an error in one or a combination of the following:

(a) Sampling or reporting of sampling of the ground water monitoring wells. This demonstration shall include at a minimum, field notes and field data sheets completed during the sampling event for the affected ground water monitoring well and any field notes documenting problems encountered during construction of, development, maintenance or efforts to repair the ground water monitoring well.

(b) Chemical analysis or reporting of chemical analysis of the ground water samples. This demonstration shall include at a minimum, a case narrative or signed letter from a representative of the lab specifying the error and how the error occurred and lab data sheets showing the relevant quality control data that documents the error.

(c) Statistical analysis or reporting of statistical analysis of the chemical analytical data. This demonstration shall include a description of the statistical error causing the statistically significant increase and any changes to the statistical analysis plan that are needed to correct the error.

(iii) The statistically significant change between background data and the analytical results is due to natural variation in ground water quality. This demonstration shall include at a minimum the following:

(a) Where available, laboratory analysis results of leachate from the facility, and a comparison of the leachate results to ground water quality at the monitoring well where the statistically significant change from background occurred and other monitoring wells in the same significant zone of saturation or aquifer.

(b) Ground water quality time series plots showing all monitoring wells in the significant zone of saturation or aquifer where the statistically significant change from background occurred.

(c) Where available, ground water quality data from other wells no more than one mile from the facility boundary that are screened in the same aquifer system where the statistically significant change from background occurred, including justification that the ground water quality data from the other wells is representative of ambient ground water quality and are not impacted by contamination.

(b) A report documenting this demonstration shall be submitted to Ohio EPA and the approved board of health not later than one hundred twenty days after withdrawal of the initial sample described in paragraph (A) of this rule. If a false positive demonstration report is not received by Ohio EPA by the end of the one hundred twentieth day after withdrawal of the initial sample described in paragraph (A) of this rule, the false positive demonstration is unsuccessful.

(c) If the director does not issue a letter to the owner or operator rejecting the false positive demonstration by the end of the sixtieth day after the date the false positive demonstration report was submitted to Ohio EPA, the false positive demonstration is successful. If the director issues a letter to the owner or operator rejecting the false positive demonstration not later than sixty days after the date the false positive demonstration report was received by Ohio EPA, the false positive demonstration is unsuccessful.

[Comment: If the owner or operator does not make a successful false positive demonstration in accordance with this rule for all parameters exhibiting a statistically significant change from background data at a downgradient ground water monitoring well, paragraph (A) of rule 3745-506-500 of the Administrative Code requires the owner or operator to enter the ground water assessment program, including submitting and implementing a ground water assessment plan not later than two hundred ten days after withdrawal of the initial sample described in paragraph (A) of this rule.]

3745-506-420 Beginning a ground water assessment program without a determination of a statistically significant change.

(A) An owner or operator may choose to begin a ground water assessment program in accordance with rule 3745-506-500 of the Administrative Code without a determination of a statistically significant change between background data and analytical results. If choosing to do so, the owner or operator shall do the following:

(1) Submit to Ohio EPA and the approved board of health the following:

(a) A written statement that the facility is voluntarily entering the ground water assessment program. The statement shall identify the ground water monitoring wells to be included in the ground water assessment program.

(b) A ground water assessment plan that conforms to rule 3745-506-500 of the Administrative Code.

(2) Implement the ground water assessment plan and begin sampling the ground water monitoring wells in accordance with rule 3745-506-500 of the Administrative Code upon submittal of the information required by paragraph (A)(1) of this rule.

(3) Comply with rule 3745-506-500 of the Administrative Code upon implementation of the ground water assessment plan.

(B) The director may order an owner or operator to comply with rule 3745-506-500 of the Administrative Code under one or a combination of the following circumstances:
(1) Ground water quality data indicates the concentration of a parameter in a downgradient ground water monitoring well at more than one order of magnitude above the background concentration.

(2) A non-naturally occurring parameter is present in a downgradient ground water monitoring well.

(3) The director determines that there is a threat to public health or safety or the environment, or a threat to cause a health hazard, a nuisance, water pollution, or contribution to water pollution.

3745-506-450 Alternatives for the ground water detection program.

(A) An owner or operator may request alternatives to the detection monitoring program pursuant to this rule and in accordance with the detection monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(B) The director may decline to act on any request submitted pursuant to this rule.

(C) Reduced monitoring parameter list.

(1) An owner or operator may submit a written request to the director to use a reduced list of parameters for compliance with rule 3745-506-400 of the Administrative Code. The owner or operator shall include at a minimum the following information in the request:

(a) The parameters that the owner or operator requests to be deleted from the list of parameters required to be monitored in accordance with the ground water detection program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(b) If available, the types, quantities, and concentrations of parameters in waste and C&DD managed at the facility.

(c) If available, the concentrations in leachate and ground water of parameters listed in the ground water detection program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(d) If the facility has a leachate management system, a description of the leachate management system.

(e) A discussion how the use of the reduced monitoring parameter list is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.

(f) Other information requested by Ohio EPA.

(2) The director may approve the reduced monitoring parameter list if the director determines the following:

(a) The removed parameters are not reasonably expected to be in or derived from the waste or C&DD managed at the facility.

(b) The use of the reduced list of parameters is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.

(c) The reduced list of parameters will provide for the reliable detection of a release.

(D) Alternative inorganic indicator parameter list for those parameters to be statistically analyzed semiannually.

(1) An owner or operator may submit a written request to the director to use an alternative list of inorganic indicator parameters for compliance with rule 3745-506-400 of the Administrative Code. The owner or operator shall include at a minimum the following information in the request:

(a) The parameters that the owner or operator requests to be used in lieu of the list of parameters required to be monitored in accordance with the ground water detection program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(b) If available, the types, quantities, and concentrations of parameters in waste and C&DD managed at the facility.

(c) If available, the concentrations in leachate of parameters listed in the ground water detection program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(d) The mobility, stability, and persistence of waste-derived constituents, C&DD-derived constituents, and the associated reaction products should any reach the unsaturated and saturated zones beneath the facility.

(e) The detectability of the indicator parameters and the associated reaction products in the ground water.

(f) The concentrations and coefficients of variation of inorganic parameters in the background ground water data.

(g) A discussion of how the use of the alternative list of inorganic indicator parameters is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.

(h) Other information requested by Ohio EPA.

(2) The director may approve the alternative list of inorganic indicator parameters if the director determines the following:

(a) The use of the alternative list of inorganic indicator parameters is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.
(b) The alternative list of inorganic indicator parameters will provide for the reliable detection of a release.

(E) Alternative organic parameter list.

(1) An owner or operator may submit a written request to the director to use an alternative list of organic parameters for compliance with rule 3745-506-400 of the Administrative Code. The owner or operator shall include at a minimum the following information in the request:

(a) The parameters that the owner or operator requests to be used in lieu of the list of organic parameters required to be monitored in accordance with the ground water detection program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(b) If available, the types, quantities, and concentrations of parameters in waste and C&DD managed at the facility.

(c) If available, the concentrations in leachate of parameters listed in the ground water detection program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(d) The mobility, stability, and persistence of waste-derived constituents, C&DD-derived constituents, and the associated reaction products should any reach the unsaturated and saturated zones beneath the facility.

(e) The detectability of the parameters and the associated reaction products in the ground water.

(f) The concentrations and coefficients of variation of organic parameters in the background ground water data.

(g) A discussion of how the use of the alternative list of organic parameters is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.

(h) Other information requested by Ohio EPA.

(2) The director may approve the alternative list of organic parameters if the director determines the following:

(a) The use of the alternative list of organic parameters is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.

(b) The alternative list of organic parameters will provide for the reliable detection of a release.

(F) Alternative parameter list for low-yield wells not screened in the uppermost aquifer system.

(1) An owner or operator may submit a written request to the director to use an alternative list of parameters for compliance with rule 3745-506-400 of the Administrative Code for those monitoring wells not screened in the uppermost aquifer system that cannot produce enough water within a twenty-four hour period to allow for the analysis of all of the required parameters. The owner or operator shall include at a minimum the following information in the request:

(a) The parameters that the owner or operator requests to be used in lieu of the list of parameters required to be monitored in accordance with the ground water detection program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(b) A discussion of whether the ground water monitoring well is constructed in accordance with rule 3745-506-100 of the Administrative Code.

(c) A discussion of whether the well screen is properly placed across the significant zone of saturation in order to maximize yield.

(d) A calculation of the maximum sustainable yield of the significant zone of saturation the ground water monitoring well is screened within.

(e) Field data demonstrating that the ground water monitoring well cannot recover sufficiently within twenty-four hours after purging to supply the volume necessary to obtain samples for the parameters required to be monitored in accordance with the ground water detection program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(f) The amount of water needed to analyze the required parameters. This shall include a discussion of the parameters proposed for deletion and the amount of water needed to analyze the deleted parameters as well as the listing of the parameters which will be analyzed in the samples and how much water is required to analyze for those parameters.

(g) If available, the concentrations in leachate of parameters listed in the ground water detection program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(h) A discussion of how the use of the alternative parameter list for low-yield wells not screened in the uppermost aquifer system is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.

(i) Other information requested by Ohio EPA.

(2) The director may approve the alternative parameter list for low-yield wells not screened in the uppermost aquifer system if the director determines the following:

(a) Those monitoring wells not screened in the uppermost aquifer system cannot produce enough water within a twenty-four hour period to allow for the analysis of all of the required parameters.

(b) The use of the alternative parameter list for low-yield wells not screened in the uppermost aquifer system is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.

(G) Alternative sampling and statistical analysis frequency.

(1) An owner or operator may submit a written request to the director of an alternative frequency for sampling and statistically analyzing ground water for compliance with rule 3745-506-400 of the Administrative Code. The owner or operator shall include at a minimum the following information in the request:

(a) The alternative sampling and statistical analysis frequency that the owner or operator requests to be used in lieu of the sampling and statistical analysis frequency required by the ground water detection program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(b) A discussion of the lithology of the uppermost aquifer system and all geologic units or formations above the uppermost aquifer system.

(c) A discussion of the hydraulic conductivity of the uppermost aquifer system and all geologic units or formations above the uppermost aquifer system.

(d) A discussion of the ground water flow rates for the uppermost aquifer system and all zones of saturation above the uppermost aquifer system.

(e) The minimum distance between the upgradient edge of the limits of potential sources of contamination and the downgradient ground water monitoring well system.

(f) A discussion of the resource value of the uppermost aquifer system.

(g) A discussion of how the use of the alternative sampling and statistical analysis frequency is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.

(h) Other information requested by Ohio EPA.

(2) The director may approve the alternative sampling and statistical analysis frequency if the director determines the following:

(a) The alternative sampling and statistical analysis frequency is at least once a year.

(b) The alternative sampling and statistical analysis frequency is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.

(H) Alternative timeframe for the collection of background data.

(1) An owner or operator may submit a written request to the director of an alternative timeframe for the collection of background data for compliance with rule 3745-506-400 of the Administrative Code. The owner or operator shall include at a minimum the following information in the request:

(a) The alternative timeframe for the collection of background data that the owner or operator requests to be used in lieu of the timeframe for the collection of background data required by rule 3745-506-400 of the Administrative Code.

(b) A discussion of how the use of the alternative timeframe for the collection of background data is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.

(c) Other information requested by Ohio EPA.

(2) The director may approve the alternative timeframe for the collection of background data if the director determines the following:

(a) The alternative timeframe for the collection of background data is not more than two years.

(b) The use of the alternative timeframe for the collection of background data is unlikely to cause the facility to pose a threat to public health or safety or the environment, to

cause a nuisance or a health hazard, or to cause or contribute to water pollution.

3745-506-500 Ground water assessment program.

(A) An owner or operator shall comply with this rule for a downgradient ground water monitoring well when there is a statistically significant change between background data and analytical results for any parameter required to be chemically and statistically analyzed by rule 3745-506-400 of the Administrative Code at that downgradient ground water monitoring well, unless the owner or operator has made a successful false positive demonstration in accordance with paragraph (B) of rule 3745-506-410 of the Administrative Code for all parameters exhibiting a statistically significant change from background data at that downgradient ground water monitoring well.

(B) While conducting the ground water assessment program, an owner or operator shall undertake source control activities necessary to prevent the release from continuing. Any activities undertaken by the owner or operator shall be in compliance with all applicable federal and state laws and regulations. The source control activities are in addition to activities already required by rule, permit, or license. Source control activities may include but are not limited to gas migration mitigation, enhanced leachate collection and removal, early capping of disposed waste or C&DD, cap improvement, surface water management within the disposal limits, waste or C&DD removal, and cessation of waste or C&DD acceptance.

(C) An owner or operator shall assess and characterize the rate and extent of migration and the concentrations of a release in accordance with rule 3745-506-510 of the Administrative Code.

(D) An owner or operator shall conduct a separate ground water assessment program for each release unless approved by the director to combine separate ground water assessment programs.

(1) The owner or operator may submit a written request to the director to combine separate ground water assessment programs. The request shall include the following:

(a) A discussion of how combining the separate ground water assessment programs will facilitate the assessment of the release.

(b) A discussion of how combining the separate ground water assessment programs is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.

(2) The director may decline to act on the request.

(3) The director may approve the combining of separate ground water assessment programs if the director determines the following:

(a) That combining separate ground water assessment programs will facilitate the assessment of the release.

(b) That combining separate ground water assessment programs is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.

(E) Ground water assessment plan.

An owner or operator shall create a ground water assessment plan that describes how the owner or operator will assess and characterize the rate and extent of migration and the concentrations of constituents in a release in accordance with rule 3745-506-510 of the Administrative Code. The plan shall also include at a minimum the following:

(1) A brief description of the hydrogeologic conditions at the facility.

(2) A brief description of the ground water detection program implemented at the facility, including the following:

(a) The number, location, and depth of ground water detection monitoring wells.

(b) A tabular summary of the ground water detection monitoring analytical data for each monitoring well that demonstrated the statistically significant change as well as the pertinent background data.

(3) A detailed description of the investigatory approach to be followed during the assessment, including but not limited to the following:

(a) The proposed number, location, depth, installation method, construction, development, maintenance, and sealing of each ground water monitoring well and piezometer to be installed to meet the requirements of rule 3745-506-510 of the Administrative Code. This description shall document how the assessment monitoring wells will conform to rule 3745-506-100 of the Administrative Code. At a minimum, the documentation shall include proposed boring logs, well construction diagrams, and blank well maintenance forms developed in accordance with rule 3745-506-130 of the Administrative Code. The owner or operator shall update the ground water assessment plan to document the actual number, location, depth, installation method, construction, development, maintenance, and sealing of each ground water monitoring well and piezometer that has been installed to meet the requirements of rule 3745-506-510 of the Administrative Code.

(b) The proposed method for gathering additional hydrogeologic information.

(c) The planned use, if any, of supporting methodology including but not limited to soil-gas or geophysical surveys.

(4) A ground water sampling and analysis plan that conforms to rule 3745-506-200 of the Administrative Code

or a reference to a previously submitted sampling and analysis plan that conforms to rule 3745-506-200 of the Administrative Code.

(5) Provisions for establishing background ground water quality in accordance with rule 3745-506-120 of the Administrative Code if not previously established during the ground water detection program in accordance with rule 3745-506-400 of the Administrative Code.

(6) A detailed description of the data evaluation procedures that includes the following:

(a) A statistical analysis plan that conforms to rule 3745-506-300 of the Administrative Code if the owner or operator chooses to perform statistical analysis as part of the ground water assessment program. If statistical analysis is to be used, the statistical analysis plan shall include appropriate statistical analysis methods and procedures as necessary to comply with this rule.

(b) Details of all computer models the owner or operator chooses to use, including input parameters, the theory that is the basis of each model, all biases or limitations of each model that may affect the applicability to the ground water assessment program, and outputs of each model.

(c) If applicable, the use of previously gathered information.

(d) Criteria that will be utilized to determine if additional assessment activities are warranted.

(7) A schedule of implementation that incorporates the requirements specified in paragraphs (F), (H), and (I) of this rule.

(8) Provisions for installing at least one additional ground water monitoring well at the facility boundary in the direction of downgradient ground water flow from the affected ground water monitoring well and as many additional ground water monitoring wells at the facility boundary to meet the requirements of paragraph (D) of rule 3745-506-510 of the Administrative Code.

(9) Provisions for installing additional wells at the facility to meet the requirements of paragraph (C) of rule 3745-506-510 of the Administrative Code.

(F) Submitting a ground water assessment plan and commencing monitoring.

Unless the owner or operator has made a successful false positive demonstration in accordance with paragraph (B) of rule 3745-506-410 of the Administrative Code for all parameters exhibiting a statistically significant change from background data in each downgradient ground water monitoring well, not later than one hundred thirty-five days after the date required to notify Ohio EPA and the approved board of health of a statistically significant change between background data and analytical results in accordance with rule 3745-506-410 of the Administrative Code, an owner or operator shall do the following:

(1) Submit a ground water assessment plan that conforms to this rule to Ohio EPA and the approved board of health.

(2) Implement the ground water assessment plan and begin monitoring the ground water monitoring wells in accordance with the ground water assessment program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(G) Reduced parameter list for low-yield wells not screened in the uppermost aquifer system.

(1) An owner or operator may submit a written request to the director to use a reduced parameter list for low-yield wells not screened in the uppermost aquifer system for the monitoring required by this rule. The owner or operator shall include at a minimum the following information in the request:

(a) The parameters that the owner or operator requests to be deleted from the list of parameters required to be monitored in accordance this rule.

(b) A discussion of whether the ground water monitoring well is constructed in accordance with rule 3745-506-100 of the Administrative Code.

(c) A discussion of whether the well screen is properly placed across the significant zone of saturation in order to maximize yield.

(d) A calculation of the maximum sustainable yield of the significant zone of saturation the ground water monitoring well is screened within.
(e) Field data demonstrating that the ground water monitoring well cannot recover sufficiently within twenty-four hours after purging to supply the volume necessary to obtain samples for the parameters required to be monitored in accordance with this rule.

(f) The amount of water needed to analyze the required parameters. This shall include a discussion of the parameters proposed for deletion and the amount of water needed to analyze the deleted parameters as well as the listing of the parameters which will be analyzed in the samples and how much water is required to analyze for those parameters.

(g) If available, the concentrations in leachate of parameters required to be monitored in ground water by this rule.

(h) A discussion of how the use of the reduced parameter list for low-yield wells not screened in the uppermost aquifer system is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.

(i) If available, the types, quantities, and concentrations of parameters in waste and C&DD managed at the facility.

(j) Other information requested by Ohio EPA.

(2) The director may decline to act on the request.

(3) The director may approve the reduced parameter list for low-yield wells not screened in the uppermost aquifer system if the director determines the following:

(a) Those monitoring wells not screened in the uppermost aquifer system cannot produce enough water within a twenty-four hour period to allow for the analysis of all of the required parameters.

(b) The use of the reduced parameter list for low-yield wells not screened in the uppermost aquifer system is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.

(H) Establishing background ground water quality.

In order to establish background concentrations for each waste-derived constituent and C&DD-derived constituent detected in the ground water monitoring well that demonstrated a statistically significant change, an owner or operator shall comply with the following not later than two hundred seventy days after the date the ground water assessment plan was required to be submitted and implemented by paragraph (F) of this rule:

(1) Collect and analyze additional independent samples from any background ground water monitoring well sampled pursuant to paragraph (F) of this rule that does not have at least four independent analysis results for each waste-derived constituent and C&DD-derived constituent detected in the ground water monitoring well that demonstrated a statistically significant change. For a non-naturally occurring organic parameter, the owner or operator may in lieu of collecting background ground water samples assume that the concentration of the parameter in background ground water at the facility is below the lowest practical quantitation limit (PQL) for that parameter determined in accordance with paragraph (B)(2)(a) of rule 3745-506-200 of the Administrative Code.

(2) If statistical analysis is to be used in the assessment program, the owner or operator shall collect and analyze additional independent samples from any background ground water monitoring well sampled pursuant to paragraph (F) of this rule that does not have at least eight independent analysis results for each waste-derived constituent and C&DD-derived constituent detected in the ground water monitoring well that demonstrated a statistically significant change. For a non-naturally occurring organic parameter, the owner or operator may in lieu of collecting background ground water samples assume that the concentration of the parameter in background ground water at the facility is below the lowest PQL for that parameter determined in accordance with paragraph (B)(2)(a) of rule 3745-506-200 of the Administrative Code.

(I) Ground water assessment reports.

Written ground water assessment reports shall be submitted to Ohio EPA and the approved board of health in accordance with rule 3745-506-520 of the Administrative Code.

(J) Compliance monitoring program within the ground water assessment program.

(1) After complying with paragraphs (C) to (I) of this rule, an owner or operator may conduct a self-implementing compliance monitoring program within the ground water assessment program in accordance with this rule if the following requirements are met:

(a) The release will not threaten public health and safety and the environment, will not cause nuisances and health hazards, and will not cause or contribute to water pollution.

(b) The rate of migration, extent, and concentrations of the release determined in accordance with rule 3745-506-510 of the Administrative Code demonstrates that the concentrations of the constituents in the release that are hazardous, including parameters numbered fifteen to two hundred forty-six in Table 1 of rule 3745-506-60 of the Administrative Code do not exceed a GWAS at all points within the release that lie beyond the potential sources of contamination.

(c) The determination of the rate of migration, extent, and concentrations of the release conducted in accordance with rule 3745-506-510 of the Administrative Code demonstrates that the release is not discharging to surface water and that the release has not reached the facility boundary.

[Comment: If the conditions of paragraph (J)(1) of this rule are met, the owner or operator is not required to obtain authorization from the director to enter compliance monitoring, and thus is "self-implementing."]

(2) After complying with paragraphs (C) to (I) of this rule, an owner or operator may conduct a director-approved compliance monitoring program within the ground water assessment program in accordance with this rule if the following requirements are met:

(a) The release will not threaten public health and safety and the environment, will not cause nuisances and health hazards, and will not cause or contribute to water pollution.

(b) The rate of migration, extent, and concentrations of the release determined in accordance with rule 3745-506-510 of the Administrative Code demonstrates that the concentrations of the constituents in the release that are hazardous, including parameters numbered fifteen to two hundred forty-six in Table 1 of rule 3745-506-60 of the Administrative Code do not exceed a GWAS at all points within the release that lie beyond the limits of the potential sources of contamination.

(c) A permit to discharge to surface waters of the state has been obtained from Ohio EPA, or Ohio EPA has determined that a permit is not necessary if it has been determined in accordance with rule 3745-506-510 of the Administrative Code that the release is discharging to surface water.

(d) The owner or operator shall submit a compliance monitoring proposal to the director and shall receive

written authorization from the director to conduct a compliance monitoring program.

(i) The compliance monitoring proposal shall include the information required by rule 3745-506-520 of the Administrative Code and at a minimum the following information:

(a) Proximity of the facility to a ground water protection area or setback area as described in the siting criteria within the rules for the applicable authorizing documents for the facility.

(b) Whether the owner or operator owns additional land contiguous to but beyond the facility boundary, the distance to the property line beyond the facility boundary, and the ability to incorporate such contiguous property owned by the owner or operator into the facility for the purposes of monitoring the release to ground water.

(c) Location of all public and private water supply wells and surface water bodies within one mile of the facility.

(d) The current and expected future uses of ground water inside of and beyond the facility boundary and property boundary, including the proximity and the withdrawal rate of current and expected future users.

(ii) The director may decline to act on the request.

(iii) The director may approve the request if the director determines the following:

(a) The request from the owner or operator conforms to paragraph (J)(2)(d)(i) of this rule.

(b) The use of the compliance monitoring program is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.

(3) If a facility enters the compliance monitoring program in accordance with either paragraph (J)(1) or (J)(2) of this rule, the owner or operator shall conduct the compliance monitoring program in accordance with rule 3745-506-530 of the Administrative Code.

[Comment: Paragraph (K) of this rule requires that if a facility conducting a ground water assessment fails to enter the compliance monitoring program or does not receive director's authorization to return to the ground water detection program in accordance with paragraph (M) of this rule within one thousand five hundred days after the date the ground water assessment plan is required to be submitted, the facility shall enter the corrective actions program, unless an alternative time frame is granted by the director in writing.]

(K) Entering the ground water corrective actions program.

Upon assessing and characterizing the rate and extent of migration and the concentrations of the release in accordance with rule 3745-506-510 of the Administrative Code, an owner or operator shall conduct a ground water corrective actions program by complying with rule 3745-506-600 of the Administrative Code if one or more of the following is determined:

(1) The concentrations of the parameters in the release that are hazardous, including parameters numbered fifteen to two hundred forty-six in Table 1 of rule 3745-506-60 of the Administrative Code exceed a GWAS at any point within the release that lies beyond the potential sources of contamination.

(2) The release is discharging to surface water and the discharge is causing unacceptable impacts to surface water as determined in accordance with paragraph (C) of rule 3745-506-510 of the Administrative Code.

(3) The facility does not return to the detection monitoring program in accordance with paragraph (M) of this rule or the facility does not enter the compliance monitoring program in accordance with paragraph (J) of this rule within one thousand five hundred days after the date the ground water assessment plan is required to be submitted by paragraph (F) of this rule, unless an alternative time frame is approved by the director in writing.

(4) The facility is in the compliance monitoring program but no longer qualifies to remain in the compliance monitoring program pursuant to paragraph (J) of this rule or rule 3745-506-530 of the Administrative Code.

(5) The director determines that the release may threaten public health or safety or the environment, may cause a nuisance or health hazard, or may cause or contribute to water pollution. Without limitation the director may order an owner or operator to perform a ground water corrective actions program in accordance with rule 3745-506-600 of the Administrative Code. Factors that the director may consider in making this order include but are not limited to the following:

(a) Whether concentrations of the constituents in the release exceed a GWAS at any point within the release that lies beyond the potential sources of contamination.

(b) The rate and extent of migration of the release as determined in accordance with rule 3745-506-510 of the Administrative Code.

(c) Whether the facility lies within a ground water protection area or a setback area as described in the siting criteria within the rules for the applicable authorizing documents for the facility.

(L) Ground water monitoring wells not used or needed to make a determination of rate and extent of migration of the release.

(1) Ground water monitoring wells not used to make a determination of the rate and extent of migration and the concentrations of the release in accordance with rule 3745-506-510 of the Administrative Code shall continue to be monitored in accordance with the ground water monitoring program applicable to those ground water monitoring wells prior to the initiation of the ground water assessment program.

(2) If a ground water monitoring well was installed in accordance with paragraph (E) of this rule and is not needed to make a determination of the rate and extent of migration and the concentrations of the release in accordance with rule 3745-506-510 of the Administrative Code, then that well may be placed in the ground water detection program, may be used as a piezometer for collecting ground water elevations, or may be properly abandoned in accordance with Chapter 3745-9 of the Administrative Code.

(3) An owner or operator shall document all changes in use for the ground water monitoring well, including copies of any well sealing reports, in the appropriate monitoring plan.

(M) Reinstatement of the ground water detection program.

(1) An owner or operator may submit a written request to the director to reinstate the ground water detection program described in rule 3745-506-400 of the Administrative Code.

(2) The request shall include a demonstration of one or combination of the following:

(a) That the concentrations of all waste-derived constituents and C&DD-derived constituents at all wells within a ground water assessment program are at or below background concentrations using the statistical analysis methods described in the statistical analysis plan submitted with the ground water assessment plan for two consecutive sampling events.

(b) That a source other than a potential source of contamination at the facility caused the ground water contamination.

(c) That the statistically significant change between background data and the analytical results resulted from an error in one or a combination of the following:

(i) Sampling or reporting of sampling of the ground water monitoring wells.

(ii) Chemical analysis or reporting of chemical analysis of the ground water samples.

(iii) Statistical analysis or reporting of statistical analysis of the chemical analytical data.

(d) That the statistically significant change between background data and the analytical results resulted from natural variation in ground water quality.

(3) If more than one ground water assessment program is being conducted at the facility, then a request for reinstatement submitted pursuant to this rule shall specify which ground water assessment program is the subject of the request.

(4) The director may decline to act on the request.

(5) The director may approve reinstatement of the ground water detection program described in rule 3745-506-400 of the Administrative Code if the director determines that the owner or operator has demonstrated that one or a combination of criteria in paragraph (M)(2)(a) have occurred.

3745-506-510 Assessing and characterizing the rate, extent, and concentrations of a release during the ground water assessment program.

(A) An owner or operator shall conduct a ground water assessment program that is capable of assessing and characterizing the rate and extent of migration and the concentrations of a release in all significant zones of saturation above the uppermost aquifer system, and to ground water in the uppermost aquifer system. The ground water assessment program shall include portions of the release that exist beyond the facility boundary unless the owner or operator demonstrates to the director that despite the owner's or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such action. At a minimum, the owner or operator shall submit to the director a copy of the written access request and if a response is provided, a copy of the written statement from the property owner indicating that access is denied. The owner or operator is not relieved of responsibility to clean up a release that has migrated beyond the facility boundary where access is denied.

(B) Preliminary determination of the rate and extent of migration and the concentrations of a release.

(1) If a facility is required by rule 3745-506-500 to conduct a ground water assessment program, the owner or operator shall complete a preliminary determination of the rate and extent of migration and the concentrations of each release in all significant zones of saturation above the uppermost aquifer system and in ground water in the uppermost aquifer system. An owner or operator shall conduct the preliminary determination of rate, extent, and concentrations in accordance with the following:

(a) The requirements of the ground water assessment plan and the ground water assessment program sampling schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(b) Identify through the installation of ground water assessment monitoring wells, the sampling of ground water detection and assessment monitoring wells and other necessary means the following:

(i) The constituents in the release.

(ii) The range of concentrations of constituents in the release, including which ground water assessment standards (GWAS) are exceeded, if any, in the release. If GWAS are exceeded, the owner or operator shall define the dimensions of the portions of the release that exceed GWAS. The outer limits of the portions of the release that exceed GWAS shall not be defined by using extrapolation of ground water monitoring well data, but may be defined by using interpolation of ground water monitoring well data.

(c) Quantify the rate of migration and identify the direction of migration of each constituent in the release.

(d) In accordance with paragraph (C) of this rule, determine if the release is discharging to surface water, and if applicable, whether the discharge is causing unacceptable impacts to surface water.

(e) In accordance with paragraph (D) of this rule, determine if the release has reached the facility boundary.

(2) Except for the determination required by paragraph (C) of this rule, the owner or operator shall complete the preliminary determination of the rate, extent, and concentrations of each release not later than seven hundred thirty days after the date the ground water assessment plan is required to be submitted by rule 3745-506-500 of the Administrative Code. If the release is determined in accordance with paragraph (C) of this rule to be discharging to surface water, the owner or operator shall complete the determination in accordance with paragraph (C) of this rule not later than one thousand days after the date the ground water assessment plan is required to be submitted.

(C) Determining discharge and impact to surface water.

(1) The owner or operator shall evaluate if the release has the potential to discharge through hydraulic connection or seep to surface water. The evaluation shall begin with surface water within the facility boundary, but if the determination required by paragraph (D) of this rule indicates that the release is migrating beyond the facility boundary this evaluation shall include surface water beyond the facility boundary that could be impacted by the release. The evaluation shall consider hydrogeologic data obtained during the hydrogeologic site characterization, ground water sampling results at the facility, and any other pertinent hydrogeologic data available to the owner or operator, including but limited to the following:

(a) Hydrogeologic cross-sections showing whether each impacted significant zone of saturation or aquifer is or could be hydraulically connected to or seeping into a surface water body.

(b) Ground water elevation data and associated potentiometric maps for each impacted significant zone of saturation or aquifer, including a comparison of ground water elevations to surface water elevations for the surface water body being evaluated.

(c) The rate and extent of migration and the concentrations of the constituents in each release determined in accordance with paragraph (B)(1) of this rule.

(2) If the evaluation in paragraph (C)(1) of this rule indicates that each impacted significant zone of saturation or aquifer could be hydraulically connected to or seeping into surface water and ground water monitoring data indicate that the release could be discharging to surface water, the owner or operator shall do the following:

(a) Install and sample one or more additional ground water monitoring wells, as necessary, to determine if the release is discharging to surface water. The additional wells shall conform to the following:

(i) Be screened in each significant zone of saturation or aquifer known or suspected of containing the release.

(ii) Be within the known or estimated flowpath of the release.

(iii) Be as close as is practicable to the surface water body being evaluated.

(b) After installing additional ground water monitoring wells in accordance with paragraph (C)(2)(a) of this rule, sample the wells in accordance with the ground water assessment plan for the constituents determined in accordance with paragraph (B) of this rule to be in the release.

(c) If the concentrations of constituents in the release detected in a ground water monitoring well used to comply with paragraph (C)(2)(a) of this rule exceed background ground water concentrations and are consistent with what would be expected based on the rate, extent, and concentrations of the release, conclude that the release to ground water is discharging to surface water.

(d) If the release is determined in accordance with paragraph (B)(2)(c) of this rule to be discharging to surface water, apply to the Ohio EPA, division of surface water for a permit to discharge to surface waters of the state, including conducting any additional investigative work required as a condition of the applicable permit to discharge to surface waters of the state. At a minimum, the concentrations of the constituents in the release at the zone of discharge to surface water shall not exceed the biological and chemical-specific criteria contained in or developed pursuant to Chapter 3745-1 of the Administrative Code.

(D) Determination of a release at the facility boundary.

The owner or operator shall determine if a release has reached the facility boundary. This determination shall include the following:

(1) The owner or operator shall consider hydrogeologic data obtained during the hydrogeologic site characterization, ground water sampling results at the facility, and any other pertinent hydrogeologic data available in making the determination.

(2) The owner or operator shall install at least one additional ground water monitoring well at the facility boundary in the direction of downgradient ground water flow away from affected ground water monitoring wells causing the ground water assessment, and install as many additional ground water monitoring wells at the facility boundary as necessary to determine if the release has reached the facility boundary.

(3) After installing additional ground water monitoring wells in accordance with paragraph (D)(2) of this rule, the owner or operator shall sample the wells in accordance with the ground water assessment plan for the constituents determined in accordance with paragraph (B) of this rule to be in the release.

(4) If concentrations of the constituents in the release exceed background concentrations at monitoring wells installed at the facility boundary and the concentrations are consistent what would be expected based on the rate, extent, and concentrations of the release, the owner or operator shall conclude that the release has reached the facility boundary. If the owner or operator determines that an alternate source is causing concentrations of constituents detected in a ground water monitoring well installed at the facility boundary to exceed background ground water concentrations, the owner or operator shall demonstrate in the report that the elevated concentrations are the result of the alternate source.

(E) Notification of a release beyond the facility boundary.

If the release has migrated beyond the facility boundary, an owner or operator shall notify persons who own or reside on land that directly overlies or is reasonably expected to overlie any part of the release in accordance with the following:

(1) Not later than sixty days after making the determination that the release has migrated outside of the facility boundary.

(2) Annually until released from the obligation to notify by the director.

(3) Each notification shall at a minimum include information describing the rate and extent of migration, the concentrations of the constituents in the release that are above background concentrations, and that such person's land directly overlies or is reasonably expected to overlie part of the release.

(4) Notifications shall be sent by certified mail or any other form of mail accompanied by a receipt.

(5) The owner or operator shall submit copies of the return receipts or other evidence of each notification to Ohio EPA and the approved board of health.

(F) Following completion of a preliminary determination in accordance with paragraph (B) of this rule, a full determination in accordance with paragraph (G) of this rule is not required if one or more of the following is true:

(1) An owner or operator receives authorization from the director to return to detection monitoring in accordance with paragraph (M) of rule 3745-506-500 of the Administrative Code prior to completion of the full determination in accordance with paragraph (G) of this rule.

(2) The preliminary determination conducted in accordance with paragraph (B) of this rule demonstrates the following:

(a) The concentrations of the constituents in the release that are hazardous, including parameters numbered fifteen to two-hundred forty-six in Table 1 of rule 3745-506-60 of the Administrative Code do not exceed a GWAS within the release beyond the limits of the potential sources of contamination.

(b) The release is not discharging to surface water.

(c) The release has not reached the facility boundary.

(3) In accordance with paragraph (I) of this rule, the owner or operator receives written authorization from the director that the preliminary determination completed in accordance with paragraph (B) of this rule and any additional assessment activities completed fulfill the requirements for a full determination in accordance with paragraph (G) of this rule.

(G) Full determination of the rate and extent of migration and the concentrations of a release.

(1) Except as provided in paragraph (F) of this rule, if an owner or operator is required by rule 3745-506-500 to conduct a ground water assessment program, the owner or operator shall complete a full determination of the rate and extent of migration and the concentrations of a release in all significant zones of saturation above the uppermost aquifer system and ground water in the uppermost aquifer system.

(2) The full determination of a release shall include all determinations required by paragraphs (B), (C), and (D) of this rule and the additional requirement that the rate and extent of migration and the concentrations of a release shall be fully determined from the source area horizontally and vertically outward to where the concentrations in the release are at or below background concentrations.

(3) Except for the determination required by paragraph (C) of this rule, the full determination shall be completed not later than one thousand days after the date the ground water assessment plan is required to be submitted by rule 3745-506-500 of the Administrative Code. If the release is determined in accordance with paragraph (C) of this rule to be discharging to surface water, the owner or operator shall complete the determination in accordance with paragraph (C) of this rule not later than one thousand two hundred seventy days after the date the ground water assessment plan is required to be submitted.

(4) The owner or operator shall use at least one of the following two approaches to determine the full rate, extent, and concentrations of the release:

(a) Install and sample additional assessment wells horizontally and vertically outward from the source area of the release such that concentrations of the constituents in the release can be defined spatially through direct translation of concentrations from monitoring wells or interpolation of concentrations between monitoring wells on isopleth maps or models such that concentrations of the release are at or below background concentrations at all monitoring wells used to define the outermost and lowermost extents of the release.

(b) Install and sample additional assessment monitoring wells horizontally and vertically outward from the source area of the release such that the concentrations of constituents in the release are at or below GWAS at all of the outermost and lowermost monitoring wells and the extent of the release down to background concentrations

can be estimated in consideration of the following information:

(i) The concentration gradients of each constituent in the release using interpolation of results between the potential sources of contamination and ground water monitoring wells installed at the facility boundary or other monitoring wells installed downgradient of the potential sources of contamination, if available.

(ii) The concentration gradients of each constituent in the release, using extrapolation of source area concentrations and results from other monitoring wells installed downgradient of the source area.

(iii) The rate of migration of each constituent in the release based on results of the preliminary determination of rate, extent, and concentrations and any additional work completed.

(iv) The distance from the facility boundary to the potential sources of contamination and to the areas that exceed GWAS.

(v) If the owner of the facility owns additional land contiguous to but beyond the facility boundary, the distance to the property line beyond the facility boundary and the ability to incorporate such contiguous, facility-owned areas for the purposes of assessment and corrective actions.

(vi) The relationship of concentrations of constituents in the release to the practical quantitation limit (PQL) and the GWAS.

(vii) The threat to public health or safety or the environment, the potential to cause a nuisance or a health hazard, or the potential to cause or contribute to water pollution.

(H) The owner or operator may request the director to approve the preliminary determination of the rate and extent of migration and the concentrations of the constituents in the release that was completed in accordance with paragraph (B) of this rule as fulfilling the requirements for a full determination in paragraph (G) of this rule.

(1) The request shall be submitted to the director in the report required by paragraph (A) of rule 3745-506-520 of the Administrative Code or addendum to that report. The request shall include the following:

(a) The information and data required by rule 3745-506-520 of the Administrative Code.

(b) A description of additional contiguous property, if any, beyond the facility boundary owned or controlled by the owner or operator, the distance to the property line of the contiguous property and the ability to incorporate the contiguous properties into the facility for the purposes of monitoring the release.

(c) A description of whether the release is present in ground water that is hydraulically connected with an aquifer system that is being used or is expected to be used as a water supply source.

(d) An evaluation of regional ground water quality, including current or historical land uses at the facility and surrounding area that may affect ground water quality at the facility.

(e) A description of the locations of all public and private water supply wells within one mile of the facility boundary or property line, whichever is wider, and the availability of public water systems near the facility or surrounding area.

(f) An estimate of the potential damage to wildlife, crops, vegetation, and physical structures posed by additional hydrogeologic investigative work.

(g) A discussion of any hydrogeologic or physical characteristics of the facility and surrounding area that may limit the usefulness of additional hydrogeologic investigative work.

(2) The director may decline to act on the request.

(3) The director may approve the request if the director determines the following:

(a) The request conforms to paragraph (H)(2) of this rule.

(b) The approval of the preliminary determination as fulfilling the requirements in paragraph (G) of this rule is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.

(c) The preliminary determination complies with paragraph (B) of this rule.

(d) The preliminary determination provides all the information necessary for conducting compliance monitoring in accordance with rule 3745-506-530 of the Administrative Code or for conducting corrective actions in accordance with rule 3745-506-600 of the Administrative Code, as applicable.

(I) Semiannual determination of the rate and extent of migration and the concentration of a release.

Following completion of the first determinations required by paragraphs (B), (C), and (D) of this rule and if applicable, the first determinations required by paragraph (F) of this rule and paragraph (J) of rule 3745-506-500 of the Administrative Code, the owner or operator shall continue to make the determinations required by paragraphs (B), (C), and (D) of this rule and if applicable, the determinations required by paragraph (F) of this rule and paragraph (J) of rule 3745-506-500 of the Administrative Code, on a semiannual basis until relieved from this obligation by the director in writing.

[Comment: If an owner or operator is conducting a compliance monitoring program within the ground water assessment program, the owner or operator is also required by this rule and by paragraph (E) of rule 3745-506-530 of the Administrative Code to evaluate whether

the facility continues to qualify for the compliance monitoring program during the semiannual determination required by this paragraph.]

3745-506-520 Ground water assessment program reports.

(A) Report of the preliminary determination of the release.

The report shall include the data and information generated to date as part of the implementation of the ground water assessment program, including the following:

(1) The owner or operator shall complete a written report of the preliminary determination of the rate and extent of migration and the concentrations of the constituents in the release. The report shall demonstrate compliance by the owner or operator with paragraph (B) of rule 3745-506-510 of the Administrative Code. This report shall be submitted to Ohio EPA and the approved board of health not later than seven hundred thirty days after the date the ground water assessment plan is required to be submitted by paragraph (F) of rule 3745-506-500 of the Administrative Code. If the release is determined in accordance with paragraph (C) of rule 3745-506-510 of the Administrative Code to be discharging to surface water, the owner or operator may report the findings of the determination required by paragraph (C) of rule 3745-506-510 of the Administrative Code separately in a supplemental report which shall be submitted to Ohio EPA and the approved board of health not later than one thousand days after the date the ground water assessment plan is required to be submitted.

(2) The report shall include the data and information generated to date as part of the implementation of the ground water assessment program, including the following:

(a) A list of ground water assessment standards (GWAS) for each constituent in the release, along with justification pursuant to paragraphs (B)(3) to (B)(5) of rule 3745-506-60 of the Administrative Code for any new GWAS based on background concentrations to be used in the ground water assessment program.

(b) A characterization of the constituents in the release, including the following:

(i) A table listing the constituents in the release, including the range of concentrations detected in the release compared to GWAS.

(ii) Spatial depiction on isopleth maps of the concentrations of each constituent in the release, including depiction of the locations where a GWAS is exceeded. Isopleth maps for each constituent in the realease shall be included for each ground water sampling event and shall include all assessment monitoring wells.

(iii) A time-series graph for each constituent in the release.

(iv) A declaration and characterization of whether the release has reached the facility boundary, including a list of constituents in the release that exceed background at the facility boundary and those that exceed a GWAS at the facility boundary.

(v) The rate of migration of the constituents in the release.

(vi) A list of all constituents in the release that are discharging to surface water.

(vii) A comparison of concentrations of waste-derived constituents and C&DD-derived constituents in ground water monitoring wells used to monitor ground water discharge to surface water to the biological and chemical-specific criteria contained in or developed in pursuant to Chapter 3745-1 of the Administrative Code.

(viii) Any criteria specified in a permit to discharge to surface water issued by Ohio EPA, division of surface water in accordance with paragraph (C)(2)(d) of rule 3745-506-510 of the Administrative Code.

(c) If a permit to discharge is issued to the owner or operator, a copy of that permit.

(d) An evaluation of all practicable source controls for each release in the assessment and the effectiveness of all source controls used at the facility. The owner or operator shall propose one or more source controls per paragraph (B) of rule 3745-506-500 of the Administrative Code to the director. The director may approve or deny a proposed source control, recommend continuation of a source control, or may select additional source controls for the owner or operator to utilize at the facility. The owner or operator shall utilize any source control approved, recommended for continuation, or selected by the director.

(B) Report of additional assessment activities.

(1) If the owner or operator is required to conduct a full determination of the rate, extent, and concentration of a release in accordance with paragraph (G) of rule 3745-506-510 of the Administrative Code or otherwise conducts ground water assessment work subsequent to submission of the report of the preliminary determination of the release in accordance with paragraph (A) of this rule, the owner or operator shall complete a written report of the additional assessment activities, including all data generated as part of the implementation of the ground water assessment program since submission of a report in accordance with paragraph (A) of this rule.

(2) This report shall be submitted to Ohio EPA and the approved board of health not later than one thousand days after the date the ground water assessment plan is required to be submitted by paragraph (F) of rule 3745-506-500 of the Administrative Code. If the release is determined in accordance with paragraph (C) of rule 3745-506-510 of the Administrative Code to be discharging to surface water, the owner or operator may report the findings of the determination required by paragraph (C) of rule 3745-506-510 of the Administrative Code separately in a supplemental report which shall be submitted to Ohio EPA and the approved board of health not later than one

thousand two hundred seventy days after the date the ground water assessment plan is required to be submitted.

(C) Semiannual assessment activities report.

After the date when the owner or operator is required to submit the ground water assessment plan in accordance with paragraph (F) of rule 3745-506-500 the Administrative Code, an owner or operator shall semiannually until relieved from this obligation by the director submit to Ohio EPA and the approved board of health a report of the activities being conducted at the facility to comply with the ground water assessment plan. The report shall be in accordance with the following:

(1) The report shall be formatted in accordance with paragraphs (A) and (B) of this rule and describe the semiannual determination required by paragraph (I) of rule 3745-506-510 of the Administrative Code, or if the first determinations in accordance with paragraphs (B), (C), (D) and if applicable, paragraph (G) of rule 3745-506-510 of the Administrative Code have not been completed, the report shall describe the progress made to date towards those determinations.

(2) The report shall contain a compliance monitoring report that complies with paragraph (F) of rule 3745-506-530 of the Administrative Code if the owner or operator is conducting a compliance monitoring program.

(3) Previously submitted documents and data shall be referenced within the semiannual report as having been submitted. Submission dates for the documents and data shall be included.
(4) Where appropriate, the report shall contain or reference a narrative description of assessment activities that have occurred and data generated as part of the ground water assessment program during the semiannual period for which the report is being submitted.

[Comment: Any documents or data previously submitted by the owner or operator during the semiannual period for which the report is being submitted do not need to be submitted with the semiannual report.]

3745-506-530 Compliance monitoring program.

(A) An owner or operator conducting a self-implementing compliance monitoring program in accordance with paragraph (J)(1) of rule 3745-506-500 of the Administrative Code shall comply with the following:

(1) Create a compliance monitoring plan that contains the following:

(a) A ground water monitoring plan that conforms to paragraph (C) of this rule.

(b) Measures and procedures that ensure that the release does not threaten public health or safety or the environment, does not cause a nuisance or a health hazard, and does not cause or contribute to water pollution. The measures and procedures shall ensure the following:

(i) The concentrations of the constituents in the release that are hazardous, including parameters numbered fifteen to two hundred forty-six in Table 1 of rule 3745-506-60 of the Administrative Code, remain at or below the GWAS.

(ii) The release does not reach the facility boundary.

(iii) The release does not discharge to surface water.

(2) Submit a copy of the compliance monitoring plan that conforms to this rule to Ohio EPA and the approved board of health not later than ninety days after the date the facility enters the compliance monitoring program as part of the ground water assessment program in accordance with paragraph (J) of rule 3745-506-500 of the Administrative Code.

(3) Conduct the compliance monitoring program in accordance with the compliance monitoring plan submitted in accordance with paragraph (A) of this rule.

(B) An owner or operator conducting a director-approved compliance monitoring program in accordance with paragraph (J)(2) of rule 3745-506-500 of the Administrative Code shall comply with the following:

(1) Create and implement a compliance monitoring plan that contains the following:

(a) A ground water monitoring plan that conforms to paragraph (C) of this rule.

(b) A detailed description of how the owner or operator will maintain compliance with all terms and conditions of approval of the compliance monitoring program specified in writing by the director.

(c) Measures and procedures that ensure that the release does not threaten public health or safety or the environment, does not cause a nuisance or a health hazard, and does not cause or contribute to water pollution. The measures and procedures shall ensure the following:

(i) The concentrations of the constituents in the release that are hazardous, including parameters numbered fifteen to two hundred forty-six in Table 1 of rule 3745-506-60 of the Administrative Code remain at or below the GWAS.

(ii) The release does not cause impacts to a public water supply well or a private water supply well or spring beyond the facility boundary.

(iii) If the release is discharging to surface water, the concentrations of waste-derived constituents and C&DD-derived constituents in ground water do not exceed concentration limits in a permit for discharge to surface water obtained pursuant to paragraph (C) of rule 3745-506-510 of the Administrative Code or to exceed the biological and chemical-specific criteria contained in or developed in pursuant to Chapter 3745-1 of the Administrative Code. If a permit to discharge is issued the owner or operator shall maintain compliance with the permit to remain in compliance monitoring.

(d) Submit a copy of the compliance monitoring plan that conforms to this rule to Ohio EPA and the approved board of health not later than ninety days after the date the facility enters the compliance monitoring program as part of the ground water assessment program in accordance with paragraph (J) of rule 3745-506-500 of the Administrative Code.

(2) Conduct the compliance monitoring program in accordance with the compliance monitoring plan submitted in accordance with paragraph (A) of this rule.

(C) A ground water monitoring plan that is part of a compliance monitoring plan shall include the following:

(1) A list of the ground water monitoring wells to be sampled to monitor the effectiveness of the compliance monitoring program and a provision for ensuring that the ground water monitoring system, including any additional wells as necessary to meet the requirements of this rule, conforms to rule 3745-506-100 of the Administrative Code.

(a) At a minimum, the wells to be sampled during compliance monitoring shall include all wells that that are necessary to continue to make the semiannual determination of rate, extent, and concentration of the constituents in the release to ground water in accordance with rule 3745-506-510 of the Administrative Code.

(b) The owner or operator shall document the design, installation, development, maintenance, and sealing of all ground water monitoring wells used. At a minimum, the documentation shall include completed boring logs, well construction diagrams, and completed well maintenance forms developed in accordance with rule 3745-506-130 of the Administrative Code.

(2) A ground water sampling and analysis plan that conforms to rule 3745-506-200 of the Administrative Code or a reference to a previously submitted sampling and analysis plan that conforms to rule 3745-506-200 of the Administrative Code.

(3) Provisions for establishing background ground water quality in accordance with rule 3745-506-120 of the Administrative Code if not previously established during the ground water detection program in accordance with rule 3745-506-400 of the Administrative Code or the ground water assessment program in accordance with rule 3745-506-500 of the Administrative Code.

(4) A list of GWAS for all constituents in the release.

(5) A data analysis plan that includes procedures necessary to conduct the data analyses required by paragraph (E) of this rule and that shall be in accordance with the following:

(a) If statistical analysis is to be used, the statistical analysis plan shall be revised to include appropriate statistical analysis methods and procedures as necessary to comply with this rule and rule 3745-506-300 of the Administrative Code.

(b) If statistical analysis is not used, the plan shall describe the procedures to be used to determine when a waste-derived constituents or C&DD-derived constituent concentration is elevated, including determining when a concentration is above a GWAS in accordance with paragraph (C)(2) of this rule.

(6) Provisions for monitoring the ground water monitoring wells designated pursuant to paragraph (C)(1) of this rule in accordance with the ground water assessment program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(D) Ground water monitoring in the compliance monitoring program. Not later than one hundred eighty days after the last semiannual ground water assessment monitoring event conducted prior to entering the compliance monitoring program, an owner or operator shall commence ground water monitoring in accordance with the compliance monitoring program plan.

(E) Data analysis in the compliance monitoring program.

(1) An owner or operator conducting a self-implementing compliance monitoring program shall as part of the semiannual determination required by paragraph (I) of rule 3745-506-510 of the Administrative Code, conduct the following data analysis activities:

(a) Determine whether the concentrations of constituents in the release that are hazardous, including parameters numbered fifteen to two hundred forty-six in Table 1 of rule 3745-506-60 of the Administrative Code, exceed the GWAS.
(b) Determine whether the characteristics of the release have changed in any of the following ways:

(i) A waste-derived constituent or C&DD-derived constituent has entered ground water that was not previously documented in the reports required by rule 3745-506-520 of the Administrative Code.

(ii) If a release is discharging to surface water pursuant to paragraph (C) of rule 3745-506-510 of the Administrative Code.

(iii) If a release has reached the facility boundary pursuant to paragraph (D) of rule 3745-506-520 of the Administrative Code.

(2) An owner or operator conducting a director-approved compliance monitoring program shall as part of the semiannual determination required by paragraph (I) of rule 3745-506-510 of the Administrative Code, conduct the following data analysis activities:

(a) Determine whether the concentrations of constituents in the release that are hazardous, including parameters numbered fifteen to two hundred forty-six in Table 1 of rule 3745-506-60 of the Administrative Code, exceed the GWAS.

(b) Determine whether concentrations of the constituents in ground water at a monitoring well monitoring discharge to surface water exceed a concentration limit in a permit for discharge to surface water obtained pursuant to paragraph (C) of rule 3745-506-510 of the Administrative

Code or exceed the biological or chemical-specific criteria contained in or developed pursuant to Chapter 3745-1 of the Administrative Code.

(c) Determine whether the characteristics of the release have changed in any one or combination of the following ways:

(i) A waste-derived constituent or C&DD-derived constituent has entered ground water that was not previously documented in the reports required by rule 3745-506-520 of the Administrative Code.

(ii) A release is discharging to surface water in a place or manner not previously determined or documented in the reports required by rule 3745-506-520 of the Administrative Code.

(iii) The release has reached the facility boundary in a place or manner not previously determined or documented in the reports required by rule 3745-506-520 of the Administrative Code.

(d) Any data analysis procedures that were specified in the terms or conditions of a director-approved compliance monitoring program and any corresponding data analysis procedures needed to execute the specified data analysis procedures.

(F) Exceedances of standards while conducting compliance monitoring.

(1) Notifications.

(a) The owner or operator shall submit written notification to Ohio EPA and the approved board of health if any of the following occur:

(i) The concentrations of a constituent in the release that is hazardous, including parameters numbered fifteen to two hundred forty-six in Table 1 of rule 3745-506-60 of the Administrative Code, exceed the GWAS in a compliance monitoring well at the facility.

(ii) The owner or operator does not maintain compliance with a permit to discharge to surface water obtained pursuant to paragraph (C) of rule 3745-506-510 of the Administrative Code or concentrations of waste-derived constituents and C&DD-derived constituents in surface water or in ground water at a monitoring well monitoring discharge to surface water exceed the biological or chemical-specific criteria contained in or developed pursuant to Chapter 3745-1 of the Administrative Code.

(iii) Failure to comply with special terms and conditions of the compliance monitoring plan approved by the director found in the data analysis plan or otherwise described in paragraph (E)(3) of this rule.

(b) The owner or operator shall submit the notification to Ohio EPA and the approved board of health not later than seventy-five days after sampling the ground water monitoring well or surface water sample in which the exceedance occurred. The notification shall indicate the ground water monitoring well or surface water sample in which the exceedance occurred and the parameter that exceeded the GWAS or concentration limit.

(2) Demonstration of a false positive.

(a) If an owner or operator chooses to demonstrate that an exceedance of a GWAS for a hazardous parameter, a surface water permit standard or a surface water concentration limit in accordance with paragraph (E)(1) or (E)(2) of this rule was a false positive resulting from natural variation or an error in sampling, analysis or statistics, then the owner or operator shall submit a false positive demonstration for each parameter exceeding the GWAS or concentration limit to the director. The sampling and analysis and any statistical procedures used in the false positive demonstration shall be documented in the ground water or surface water sampling and analysis plan and the statistical analysis plan, as appropriate.

(b) The owner or operator shall submit the demonstration to the director and the approved board of health not later than one hundred twenty days after the date that the sample indicating the exceedance was withdrawn from the ground water monitoring well or surface water.

(c) The director may decline to act on the demonstration.

(d) The director may approve the request if the director determines that approving the demonstration is protective of public health and safety and the environment, prevents a nuisance or a health hazard, and does not cause or contribute to water pollution.

(e) Unless the director approves the false positive demonstration in writing by the end of the one hundred eightieth day after the date the sample indicating the exceedance was withdrawn, an owner or operator shall conduct a ground water corrective actions program in accordance with rule 3745-506-600 of the Administrative Code.

(G) Change in the characteristics of the release while conducting compliance monitoring. If the characteristics of the release change as described in paragraph (E)(1) or (E)(2) of this rule, the owner or operator shall re-evaluate in accordance with the paragraph (J) of rule 3745-506-500 of the Administrative Code whether the facility continues to meet the requirements for conducting compliance monitoring. The owner or operator shall comply with the following:

(1) If the facility continues to meet the requirements for self-implemented compliance monitoring in accordance with paragraph (J)(1) of rule 3745-506-500 of the Administrative Code and does not require the director's approval to conduct compliance monitoring based on the characteristics of the release, the facility may remain in the compliance monitoring program. The owner or operator shall revise the compliance monitoring plan not later than ninety days after the date the sample was withdrawn which identified the change in characteristics of the release. The compliance monitoring plan shall reflect the new characteristics of the release, including the waste-derived constituents and C&DD-derived constituents in the release and the rate and extent of migration and the concentrations of the constituents in the release.

(2) If paragraph (J) of rule 3745-506-500 of the Administrative Code requires the director's approval to

conduct compliance monitoring based on the revised characteristics of the release, the owner or operator may submit to the director a request to remain in the compliance monitoring program in accordance with paragraph (J)(2) of rule 3745-506-500 of the Administrative Code, and the following conditions apply:

(a) The request to remain in the compliance monitoring program shall include the same information as the compliance monitoring proposal pursuant to paragraph (J)(2)(d) of rule 3745-506-500 of the Administrative Code.

(b) The director may decline to act on the request.

(c) The director may approve the request if the director determines the following:

(i) The request from the owner or operator conforms to paragraph (G)(2)(a) of this rule.

(ii) Approving the request is protective of public health and safety and the environment, prevents a nuisance or a health hazard, and does not cause or contribute to water pollution.

(d) If the director approves the request, the director shall retain and distribute copies of the signed approval letter pursuant to rule 3745-500-130 of the Administrative Code.

(e) If the owner or operator does not receive written approval from the director to remain in compliance monitoring by the end of the one hundred eightieth day after the date the sample was withdrawn indicating the change in characteristics of the release, the owner or operator shall conduct a ground water corrective actions program in accordance with rule 3745-506-600 of the Administrative Code.

(f) If the owner or operator does receive written approval from the director within the time frame identified in paragraph (G)(3) of this rule, the owner or operator shall revise the compliance monitoring plan not later than thirty days after the date the director's approval was received to describe the new characteristics of the release, including the waste-derived constituents and C&DD-derived constituents in the release and the rate and extent of migration and the concentrations of the constituents in the release.

(H) Compliance monitoring report. The owner or operator shall semiannually complete a written report of the implementation of the compliance monitoring plan developed in accordance with paragraph (A) or (B) of this rule, including ground water monitoring, data analysis, and determinations made in accordance with paragraphs (D) and (E) of this rule. This report shall be submitted as part of the semiannual assessment activities report required by rule 3745-506-520 of the Administrative Code.

(I) The director may determine that a compliance monitoring program is not capable of meeting the requirements of this rule or rule 3745-506-500 of the Administrative Code. If the director makes a determination under this paragraph, then the director may order, without limitation, the owner or operator to do one or more of the following:

(1) Implement interim corrective actions in accordance with rule 3745-506-620 of the Administrative Code or enter the ground water corrective actions program in accordance with rule 3745-506-600 of the Administrative Code.

(2) Implement alternative measures that are practicable and consistent with the overall objective of the compliance monitoring program to control the sources of contamination.

(3) Submit a new compliance monitoring plan in accordance with paragraph (A) or (B) of this rule.

3745-506-600 Ground water corrective actions program.

(A) Ground water corrective actions program.

(1) Upon determining in accordance with rules 3745-506-500 to 3745-506-530 of the Administrative Code that ground water corrective actions are required, an owner or operator shall conduct a ground water corrective actions program that allows the director to evaluate and select the corrective actions necessary to ensure that the concentrations of all waste-derived constituents and C&DD-derived constituents in the release remain at or below or are permanently reduced to at or below the concentrations established in accordance with rule 3745-506-630 of the Administrative Code.

(2) The ground water corrective actions program shall be documented in a plan in accordance with the requirements of paragraph (B) of this rule. The owner or operator shall initiate the ground water corrective actions program by submitting a ground water corrective actions program plan to Ohio EPA and the approved board of health not later than one hundred eighty days after the date any of the following occurs:

(a) The full determination of the concentrations and extent of a release and the rate of migration of the release in accordance with paragraph (G) of rule 3745-506-510 of the Administrative Code is made if the owner or operator is required to conduct a corrective actions program in accordance with paragraph (K)(1) or (K)(2) of rule 3745-506-500 of the Administrative Code.

(b) The owner or operator is required in accordance with paragraph (K)(3) of rule 3745-506-500 of the Administrative Code to conduct a corrective actions program.

(c) The director orders the owner or operator in accordance with paragraph (K)(4) of rule 3745-506-500 of the Administrative Code or paragraph (I) or rule 3745-506-530 of the Administrative Code to conduct a corrective actions program.

(3) The ground water corrective actions program shall provide for the control of the source of the release to reduce or eliminate to the maximum extent practicable continued or additional releases.

(B) Ground water corrective actions program plan. The ground water corrective actions program plan shall contain the following:

(1) Ground water corrective actions standards (GWCAS).

(2) Evaluations of all practicable corrective actions in accordance with rule 3745-506-610 of the Administrative Code that are available for remediating each release confirmed during ground water assessment monitoring such that the concentrations of constituents in the release are permanently reduced to at or below the GWCAS. The director may require an owner or operator to evaluate one or more specific potential corrective actions within the ground water corrective actions program plan.

(C) Public notice and meeting. An owner or operator shall do the following:

(1) Not later than thirty days after the date required to submit the ground water corrective actions program plan, place a copy of the ground water assessment report submitted in accordance with rule 3745-506-500 of the Administrative Code and a copy of the ground water corrective actions program plan in a public library or other publicly accessible equivalent location in the vicinity of the facility. The owner or operator shall revise and update the copies at least annually. The copies shall be made available to the public until a corrective action is approved by the director in accordance with paragraph (E) of this rule.

(2) Not later than thirty days after the date required to submit the ground water corrective actions program plan, provide public notice to solicit public comment on the ground water corrective actions program plan. The owner or operator shall submit comments received to Ohio EPA and the approved board of health.

(3) Not later than sixty days after the date required to submit the ground water corrective actions program plan, discuss the results and content of the ground water assessment report and the ground water corrective actions program plan in a public meeting with interested parties. The owner or operator shall provide adequate and reasonable public notice of the public meeting, and the public meeting shall be held at a place near the facility in the township or municipal corporation in which the facility is located. The public meeting shall be held on a weekday and shall begin no earlier than six p.m. and no later than eight p.m., unless otherwise authorized by Ohio EPA. The owner or operator shall do the following:

(a) At the public meeting, describe the ground water corrective actions program plan and respond to comments and questions concerning the ground water corrective actions program plan. At the public meeting, a person may submit written or oral comments about the ground water corrective actions program plan.

(b) Not later than thirty days after the public meeting, provide Ohio EPA and the approved board of health with a transcript of the full meeting, copies of exhibits, displays, and other materials presented by the owner or operator at the meeting, and a copy of written comments submitted at the meeting.

(D) The owner or operator may request the director to determine that remediation of a release is not necessary.

(1) The request shall contain a demonstration of at least one of the following:

(a) The ground water is additionally contaminated by substances that have originated from a source other than the facility and those substances are present in concentrations such that cleanup of the release from the facility would not provide a significant reduction in risk to actual or potential receptors.

(b) The release is in ground water that is not hydraulically connected with an aquifer that is being used or is expected to be used as a water supply source.

(c) The release is not migrating or is not likely to migrate in concentrations that would exceed the GWCAS.

(d) Remediation of the release is technically impracticable.

(e) Remediation would result in unacceptable cross-media impacts.

(2) The director may decline to act on the request.

(3) The director may approve the demonstration that remediation of a release is not necessary if the director determines the following:

(a) The demonstration from the owner or operator fulfills at least one criteria the paragraphs (D)(1)(a) to (D)(1)(e) of this rule.

(b) Approving the request will be protective of public health and safety and the environment, will not cause a nuisance or a health hazard, and will not cause or contribute to water pollution.

(E) Director's selection and approval of a corrective action from a ground water corrective actions program plan.

(1) The director shall select and approve a corrective action from a ground water corrective actions program plan submitted by an owner or operator in compliance with paragraph (B)(2) of this rule that best satisfies the criteria listed in rules 3745-506-610 and 3745-506-630 of the Administrative Code.

(2) Not later than ninety days after the director has approved a corrective action in accordance with paragraph (E)(1) of this rule, the owner or operator shall submit to Ohio EPA and the approved board of health a corrective action implementation plan that conforms to paragraph (G) of this rule.

(F) An approval by the director pursuant to paragraph (D) or (E) of this rule shall not affect the director's authority to order an owner or operator to undertake source control measures, other measures, or other corrective actions that may be necessary to eliminate or minimize further releases, to prevent exposure to ground water, or to remediate a release to concentrations that are technically practicable and significantly reduce the threats to public health or safety or the environment, reduce the potential to

cause a nuisance or a health hazard, or reduce the potential to cause or contribute to water pollution.

(G) Corrective action implementation plan. A corrective action implementation plan shall include the following:

(1) Engineering plans and drawings for source control measures necessary for the approved corrective action, including applications and requests for authorizing documents that are required.

(2) A description of and engineering plans and drawings for all mechanical, chemical, and biological ground water treatment included within the approved corrective action, including applications and requests for authorizing documents that are required.

(3) A schedule for implementing the approved corrective action that shall include a construction schedule and a construction certification schedule for source control measures and a schedule for all mechanical, chemical, and biological ground water treatment. The schedule shall state that not later than one hundred eighty days after submitting the corrective action implementation plan, the owner or operator shall begin a continuing program of installation to undertake and complete the approved corrective action.
(4) Criteria that will be used to determine when the owner or operator will cease mechanical, chemical, and biological ground water treatment.

(5) Specific ground water monitoring procedures that shall be used to monitor the effectiveness of the ground water corrective actions program.

(6) A ground water monitoring plan that conforms to paragraph (H) of this rule.

(H) A ground water monitoring plan that is part of a corrective actions implementation plan shall include the following:

(1) A list of the ground water monitoring wells to be sampled for monitoring of the effectiveness of the ground water corrective actions program and a provision for ensuring that the ground water monitoring system, including any additional wells required to meet the requirements of this rule, conforms to rule 3745-506-100 of the Administrative Code.

(a) At a minimum, the wells to be sampled shall include all wells needed to make a determination of rate, extent, and concentration of the release in accordance with rule 3745-506-500 of the Administrative Code.

(b) The owner or operator shall document the design, installation, development, maintenance, and sealing of each ground water monitoring well used. At a minimum, the documentation shall include completed boring logs, well construction diagrams, and completed well maintenance forms developed in accordance with rule 3745-506-130 of the Administrative Code.

(2) A ground water sampling and analysis plan that conforms to rule 3745-506-200 of the Administrative Code or a reference to a previously submitted sampling and analysis plan that conforms to rule 3745-506-200 of the Administrative Code.

(3) Provisions for establishing background ground water quality in accordance with rule 3745-506-120 of the Administrative Code if not previously established during the ground water detection program in accordance with rule 3745-506-400 of the Administrative Code or the ground water assessment program in accordance with rule 3745-506-500 of the Administrative Code.

(4) If statistical analysis is to be used, a statistical analysis plan that conforms to rule 3745-506-300 of the Administrative Code that includes revisions to incorporate appropriate statistical analysis methods and procedures required to comply with this rule.

(5) Provisions for monitoring the ground water monitoring wells designated pursuant to paragraph (H)(1) of this rule in accordance with the ground water corrective actions program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(I) Certification.

An owner or operator shall submit to Ohio EPA and the approved board of health a certification report documenting that each component necessary to implement the approved corrective action has been installed or constructed in accordance with the corrective action implementation plan required by paragraph (G) of this rule. The owner or operator shall submit the certification report in accordance with the schedule required to be submitted within the corrective action implementation plan required by paragraph (G) of this rule.

(J) Ground water monitoring and data analysis in the ground water corrective actions program.

(1) Not later than ninety days after submitting the corrective action implementation plan required by paragraph (E)(2) of this rule, an owner or operator shall commence ground water monitoring in accordance with the corrective action implementation plan submitted pursuant to paragraph (E)(2) of this rule.

(2) The owner or operator shall analyze the data to determine the following:

(a) Whether the concentrations of the constituents in the release are less than the GWCAS.

(b) The effectiveness of source control measures.

(K) Five-year progress report. An owner or operator shall do the following:

(1) Every five years by the end of the thirtieth day after either the date of the anniversary of the director approving a corrective action under paragraph (E)(1) of this rule or the director ordering performance of a specific corrective action, submit a progress report to Ohio EPA, the approved board of health, and all property owners who own or reside on land that directly overlies or is

reasonably expected to overlie any part of the release. The progress report shall include the following:

(a) A description of the progress being made toward achieving the GWCAS at all points within the release that lie beyond the limits of the potential sources of contamination.

(b) An evaluation of the effectiveness of source control measures and whether changes are necessary to improve source control.

(2) If progress is not being achieved within the schedule contained in the corrective action implementation plan to achieve the GWCAS at all points within the release that lie beyond the limits of the potential sources of contamination, amend the corrective action implementation plan submitted under paragraph (G) of this rule and implement the amended plan not later than ninety days after submitting the progress report. This amended plan shall include additional activities that the owner or operator will undertake to ensure that the GWCAS will be achieved.

(L) The director may determine that the corrective action approved in accordance with paragraph (E) of this rule is not capable of meeting the requirements of rule 3745-506-610 of the Administrative Code or the GWCAS at all points within the release that lie beyond the potential sources of contamination. If the director makes a determination under this paragraph, then the director may order, without limitation, the owner or operator to do one or more of the following:

(1) Implement alternative corrective actions to control human or environmental receptor exposure to contamination to protect public health or safety or the environment, prevent a nuisance or a health hazard, or prevent water pollution or the contribution to water pollution.

(2) Implement alternative measures that are practicable and consistent with the overall objective of the corrective action to control the sources of contamination.

(3) Submit a new ground water corrective actions program plan in accordance with paragraph (B)(2) of this rule.

(M) Semiannual ground water corrective actions program activities report.

Not later than six months after a director's action issued in accordance with paragraph (E) of this rule, an owner or operator shall submit to Ohio EPA and the approved board of health a semiannual ground water corrective actions program activities report that describes the activities being conducted at the facility as part of implementation of an approved corrective action. The report shall be submitted semiannually. Documents or data previously submitted during the semiannual period need not be submitted with the report, but documents or data previously submitted shall be referenced within the report as having been previously submitted. Each semiannual ground water corrective actions program activities report shall contain the following:

(1) A narrative description of corrective action activities that have occurred during the semiannual period for which the report is being submitted.

(2) Data generated as part of the corrective action activities at the facility during the semiannual period for which the report is being submitted.

(3) An evaluation of the effectiveness of the approved corrective action.

(N) An owner or operator shall remain in the ground water corrective actions program until the end of post-closure care.

3745-506-610 Evaluations of all practicable corrective actions.

(A) A practicable corrective action evaluated for the purpose of satisfying the requirements of rule 3745-506-600 of the Administrative Code shall meet at a minimum the following criteria:

(1) Be protective of public health and safety and the environment, prevent nuisances and health hazards, and not cause or contribute to water pollution.

(2) Permanently reduce the contamination to at or below the GWCAS.

(3) Manage waste and C&DD in accordance Chapters 3734. and 3714. of the Revised Code and rules adopted thereunder.

(B) An evaluation of a practicable corrective action shall include at a minimum documentation of the following:

(1) Long-term and short-term effectiveness of the potential corrective action and the protection the corrective action would afford. This discussion shall include the degree of certainty that the corrective action will prove successful based on the following:

(a) Magnitude of reduction of existing risks.

(b) Magnitude of residual risks in terms of likelihood of further releases due to waste or C&DD remaining following implementation of the corrective action.

(c) Type and degree of long-term management required including monitoring, operations, and maintenance.

(d) Short-term risks that may affect the community, workers, and the environment during implementation of such a corrective action, including the threats to public health or safety or the environment, the potential to cause a nuisance or a health hazard, and the potential to cause or contribute to water pollution associated with excavation, transportation, disposal, and containment of waste or C&DD.

(e) Potential for human and environmental receptor exposure to remaining waste or C&DD, considering the threats to public health and safety and the environment,

the potential to cause nuisances and health hazards, and the potential to cause or contribute to water pollution associated with excavation, transportation, disposal, and containment of waste or C&DD.

(f) Long-term reliability of the engineering and institutional controls.

(g) Potential need for replacement of the corrective action.

(h) Time until the release has been reduced to at or below the proposed GWCAS.

(2) Source controls. This discussion shall include at a minimum documentation of the following:

(a) Any existing source controls being implemented at the facility and the effectiveness of the source controls.

(b) Proposal for any new source controls including the extent that the source control will reduce further releases, to which extent treatment technologies will be used, and the potential effectiveness of the source control.

(c) Discussion of how the existing and proposed source controls will work in conjunction with the practicable corrective actions.

(3) The need to coordinate with and obtain necessary approvals and permits from other local, state, and federal offices and agencies and other divisions of Ohio EPA.

(4) The available capacity and location of needed treatment, storage, and disposal services.

(5) The practicability of implementing the potential corrective action based on the following:

(a) Degree of difficulty associated with constructing the technologies.

(b) Expected operational reliability of the technologies.

(c) Availability of necessary equipment and specialists.

(6) The degree to which community concerns are addressed by the potential corrective action.

(7) The performance, reliability, ease of implementation, and potential impacts of the potential corrective action, including safety impacts, cross-media impacts, and control of exposure to any residual contamination.

(8) A schedule for initiating and completing the potential corrective action based on the following:

(a) The rate and extent of migration and the concentrations of the constituents in each release.

(b) The practical capability of remedial technologies to achieve compliance with the GWCAS and other objectives of the corrective actions.

(c) The availability of treatment and disposal capacity for waste and C&DD managed during implementation of the corrective action.

(d) The desirability of utilizing technologies that are not currently available but that may offer significant advantages over currently available technologies in terms of protection, reliability, safety, and the ability to achieve remedial objectives.

(e) The threats to public health or safety or the environment, the potential to cause a nuisance or a health hazard, and the potential to cause or contribute to water pollution from exposure to contamination prior to completion of the corrective action.

(f) Other relevant factors.

(9) Resource value of the aquifer system, including the following:

(a) Current and future uses.

(b) Proximity and withdrawal rate of users.

(c) Ground water quantity and quality.

(d) The potential damage to wildlife, crops, vegetation, and physical structures resulting from exposure to waste-derived constituents or C&DD-derived constituents.

(e) The hydrogeologic characteristics of the facility and surrounding area.

(f) Ground water removal and treatment costs.

(g) The cost and availability of alternate water supplies.

(10) Capability of the owner or operator to implement and complete the potential corrective action.

(11) Other relevant factors as determined by Ohio EPA.

3745-506-620 Interim corrective actions.

(A) While an owner or operator is conducting the ground water detection program in accordance with rule 3745-506-400 of the Administrative Code; the ground water assessment program in accordance with rule 3745-506-500 of the Administrative Code; or the ground water corrective actions program in accordance with rule 3745-506-600 of the Administrative Code, if the director or the approved board of health determines that potential sources of contamination at the facility threatens public health and safety and the environment, causes a nuisance or a health hazard, or causes or contributes to water pollution, the director or the approved board of health may order the owner or operator to perform one or both of the following:

(1) If a release has migrated beyond the facility boundary, notify by certified mail or any other form of mail accompanied by a receipt all persons who own or reside on land that directly overlies or is reasonably expected to overlie any part of the release.

(2) Take interim corrective actions specified by the director or the approved board of health to protect public health

and safety and the environment, prevent a nuisance or a health hazard, and not cause or contribute to water pollution. Interim corrective actions shall to the extent practicable be consistent with the objectives of and contribute to the performance of a corrective action that may be required by 3745-506-600 of the Administrative Code.

(B) The following factors may be considered by the director or the approved board of health in determining whether interim corrective actions are necessary:

(1) The amount of time required to develop and implement a final corrective action.

(2) Actual or potential exposure of human receptors or environmental receptors to waste-derived constituents or C&DD-derived constituents.

(3) Actual or potential contamination of drinking water supplies or sensitive ecosystems.

(4) Further degradation of the ground water that may occur if a corrective action is not initiated expeditiously.

(5) Weather conditions that may cause a release or may cause waste-derived constituents or C&DD-derived constituents to migrate or be discharged.

(6) Risks of fire, explosion, or potential for exposure to waste-derived constituents or C&DD-derived constituents as a result of an accident or failure of a container or handling system.

(7) Existing threats to public health or safety or the environment, the threat of causing a nuisance or a health hazard, or the threat of causing or contributing to water pollution.

(8) Potential threats to public health or safety or the environment, the potential to cause a nuisance or a health hazard, or the potential to cause or contribute to water pollution.

(C) If the director or the approved board of health has issued an order pursuant to paragraph (A)(2) of this rule to an owner or operator, the owner or operator shall comply with paragraph (M) of rule 3745-506-600 of the Administrative Code (semiannual ground water corrective actions program activities report) regarding the interim corrective action as ordered.

3745-506-630 Ground water corrective actions standards.

(A) Ground water corrective actions standards (GWCAS) shall be established for each parameter required to be monitored in accordance with the ground water corrective actions program monitoring schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(B) GWCAS shall be established as follows:

(1) Be protective of public health and safety and the environment, prevent nuisances and health hazards, and prevents water pollution or the contribution to water pollution.

(2) Unless an alternative ground water corrective actions standard is approved or required by the director in accordance with paragraph (C) of this rule, then the following apply:

(a) Except as provided in paragraph (B)(2)(c) of this rule, for a parameter for which a maximum contaminant level (MCL) has been promulgated under Chapter 3745-81 of the Administrative Code, the MCL shall be the concentration.

(b) Except as provided in paragraph (B)(2)(c) of this rule, for a parameter for which an MCL has not been promulgated under Chapter 3745-81 of the Administrative Code, the background concentration for the parameter established in accordance with this chapter shall be the concentration.

(c) If an owner or operator demonstrates to the satisfaction of the director that a waste-derived constituent or C&DD-derived constituent is already present in the ground water at a background concentration, then the proposed concentration shall not be set below the background concentration unless the director determines that remediation to a level below the background concentration is necessary to protect public health and safety and the environment, prevent nuisances and health hazards, and prevents water pollution or the contribution to water pollution..

(C) Alternative GWCAS.

(1) An owner or operator may submit a written request to the director to use an alternative ground water corrective actions standard for a parameter for which an MCL has not been established. The owner or operator shall include in the request a demonstration that the alternative ground water corrective actions standard is an appropriate concentration based on the following:

(a) The concentration is derived in a manner consistent with federal guidelines for assessing the health risks of environmental pollutants.

(b) The concentration is based on scientifically valid studies conducted in accordance with standard laboratory practices.

(c) For a known or suspected carcinogen, the proposed concentration shall be established at a value below a cumulative, due to lifetime exposure, excess upper-bound lifetime cancer risk of one times ten to the negative five to an individual, including sensitive subgroups.

(d) For systematic toxicants, the proposed concentration shall be a value that the human population including sensitive subgroups could be exposed to on a daily basis without appreciable risk of deleterious effects during a lifetime.

For the purposes of this rule, "systematic toxicants" include toxic chemicals that cause effects other than cancer or mutation.

(2) In the demonstration required by paragraph (C)(1) of this rule, the owner or operator shall consider the following:

(a) Multiple contaminants in the ground water.

(b) Exposure threat to sensitive human receptors and sensitive environmental receptors.

(c) Other site-specific exposure and potential exposure to ground water.

(d) Potential for waste-derived constituents or C&DD-derived constituents to threaten public health or safety or the environment, cause a nuisance or a health hazard, or cause or contribute to water pollution.

(e) The reliability, effectiveness, practicability, and other relevant factors of a corrective action.

(3) The director may decline to act on a request.

(4) The director may approve the request if the director determines that the owner or operator has successfully demonstrated compliance with paragraph (C)(1) of this rule.

(5) The director may require the use of an alternative concentration for a waste-derived constituent or C&DD-derived constituent that has been determined in accordance with rule 3745-506-500 of the Administrative Code to be in a release.

3745-506-700 Construction and demolition debris facility - ground water detection program monitoring schedule.

(A) Background ground water quality parameters. Background data for the ground water detection program shall be established in accordance with the following:

(1) For a facility that has a leachate monitoring system that can be used for conducting the leachate sampling required by Chapter 3745-400 or 3745-520 of the Administrative Code, an owner or operator shall establish background data in accordance with either one of the following:

(a) For the parameters listed in (B)(1) of this rule and the parameters that have been detected in the facility's leachate.

(b) For the parameters listed in paragraph (B)(1) of this rule and paragraph (D) of rule 3745-506-703 of the Administrative Code

(2) For a facility that does not have a leachate monitoring system that can be used for conducting the leachate sampling required by Chapter 3745-400 or 3745-520 of the Administrative Code, an owner or operator shall establish background data for the parameters listed in paragraph (B)(1) of this rule and paragraph (D) of rule 3745-506-703 of the Administrative Code.

(3) An owner or operator may alternatively establish background data for the parameters listed in paragraph (D) of rule 3745-506-703 of the Administrative Code by doing the following:

(a) In lieu of conducting background ground water sampling, assume that the parameters listed in paragraph (D) of rule 3745-506-703 of the Administrative Code are not present in background ground water at the facility.

(b) Base background for each parameter listed in paragraph (D) of rule 3745-506-703 of the Administrative Code on the lowest practical quantitation limit (PQL) available to the owner or operator in accordance with rules 3745-506-300 to 3745-506-330 of the Administrative Code.

(B) Semiannual ground water monitoring and statistical analysis.

(1) Monitoring. The ground water monitoring wells that are part of the ground water detection program shall be monitored and the samples analyzed at least semiannually for either of the following:

(a) The following parameters:

(i) Arsenic, chromium, and copper as described in paragraph (A) of rule 3745-506-703 of the Administrative Code.

(ii) The parameters in paragraph (B) of rule 3745-506-703 of the Administrative Code.

(b) If paragraph (D) of this rule applies, an alternative or reduced parameter list approved in accordance with rule 3745-506-450 of the Administrative Code.

(2) Statistical analysis. At least semiannually, the ground water data generated from semiannual ground water monitoring shall be statistically compared to background data in accordance with the statistical analysis plan.

(C) Annual ground water monitoring and statistical analysis. In addition to the monitoring required by paragraph (B) of this rule, the ground water monitoring wells that are part of the ground water detection program shall be monitored and the samples analyzed at least annually for either of the following:

(1) The following parameters:

(a) For a facility that has a leachate monitoring system that can be used for conducting the leachate sampling required by Chapter 3745-400 or 3745-520 of the Administrative Code, the parameters that have been detected in the facility's leachate.

(b) For a facility not described in paragraph (C)(1)(a) of this rule, the parameters listed in rule 3745-506-703 of the Administrative Code.

(2) If applicable pursuant to paragraph (D) of this rule, an alternative or reduced parameter list approved in accordance with rule 3745-506-450 of the Administrative Code.

(D) Alternatives for the ground water detection monitoring program in accordance with rule 3745-506-450 of the Administrative Code.

(1) The director shall not approve an alternative if the facility does not have a leachate monitoring system that can be used for conducting the leachate sampling required by Chapter 3745-400 or 3745-520 of the Administrative Code.
(2) For semiannual monitoring, the parameters identified in paragraph (B)(1)(a)(i) of this rule shall not be removed from a parameter list.

(3) Parameters that have been detected in the facility's leachate shall not be removed from a parameter list.

3745-506-701 Construction and demolition debris facility - ground water assessment program monitoring schedule.

(A) Not later than one hundred thirty-five days after the date required to notify Ohio EPA and the approved board of health of a statistically significant change in accordance with rule 3745-506-410 of the Administrative Code, an owner or operator of a C&DD facility shall do the following:

(1) Sample the ground water monitoring wells demonstrating a statistically significant change and analyze the samples for the parameters listed in rule 3745-506-704 of the Administrative Code and for the parameters that have been detected in the facility's leachate.

(2) Sample each background ground water monitoring well within the flow path and screened within the same geologic unit or formation as the ground water monitoring wells required to be sampled under paragraph (A)(1) of this rule during the same sampling event that the ground water monitoring wells are sampled in accordance with paragraph (A)(1) of this rule and analyze the samples for the parameters listed in rule 3745-506-704 of the Administrative Code and for the parameters that have been detected in the facility's leachate.

(B) Not later than seventy-five days after commencing the sampling required in paragraph (A) of this rule, an owner or operator shall sample the ground water monitoring wells not sampled under paragraph (A) of this rule that are screened within the same geologic unit or formation as the ground water monitoring wells sampled under paragraph (A) of this rule. The samples shall be analyzed for each waste-derived constituent or C&DD-derived constituent detected in the affected ground water monitoring wells sampled in accordance with paragraph (A) of this rule.

(C) Not later than seventy-five days after sampling the ground water monitoring wells in accordance with paragraphs (A) and (B) of this rule and after each subsequent semiannual sampling event and each annual sampling event, an owner or operator shall submit to Ohio EPA and the approved board of health a notification identifying all waste-derived constituents and C&DD-derived constituents in each release.

(D) Semiannual ground water monitoring. A ground water monitoring well is part of the ground water assessment program if the well is required or needed to make a first or semiannual determination of rate, extent, and concentration in accordance with rule 3745-506-510 of the Administrative Code. All ground water monitoring wells that are part of the ground water assessment program shall be monitored and the samples analyzed at least semiannually for the following:
(1) The parameters listed in rule 3745-506-703 of the Administrative Code or a reduced parameter list approved in accordance with paragraph (G) of rule 3745-506-500 of the Administrative Code.

(2) The C&DD-derived constituents reported in accordance with paragraph (C) of this rule for the most recent sampling event.

(E) Annual ground water monitoring. All ground water monitoring wells needed to determine the width of a release immediately downgradient of potential sources of contamination shall be sampled at least annually for the parameters listed in rule 3745-506-704 of the Administrative Code and for the parameters that have been detected in the facility's leachate.

3745-506-702 Construction and demolition debris facility - ground water corrective actions program monitoring schedule.

The ground water monitoring wells that are part of the ground water corrective actions program shall be monitored and analyzed on a semiannual basis in accordance with the following:

(A) For a facility that has a leachate monitoring system that can be used for conducting the leachate sampling required by Chapter 3745-400 or 3745-520 of the Administrative Code, the ground water monitoring wells shall be monitored and the samples analyzed for the following parameters:

(1) Arsenic, chromium, and copper as described in paragraph (A) of rule 3745-506-703 of the Administrative Code.

(2) Ammonia, calcium, chloride, magnesium, potassium, sodium, and sulfate as described in paragraph (B) of rule 3745-506-703 of the Administrative Code.

(3) The parameters that have been detected in the facility's leachate.

(4) The waste-derived constituents and C&DD-derived constituents determined in accordance with rules 3745-506-500 and 3745-506-510 of the Administrative Code to be in each release.

(B) For a facility not described in paragraph (A) of this rule, the ground water monitoring wells shall be monitored and the samples analyzed for the parameters listed in rule 3745-506-703 of the Administrative Code and for the C&DD-derived constituents determined in accordance with rules 3745-506-500 and 3745-506-510 of the Administrative Code to be in each release.

3745-506-703 Construction and demolition debris facility - leachate sampling and ground water monitoring parameter list.

This rule contains the common names of parameters that are widely used in government regulation, scientific publications, and commerce. However, synonyms may exist for many parameters. The chemical abstract service registry number (CAS RN) for each parameter has been provided.

(A) Metals and cyanide. The metals include all species in ground water that contain the element.
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Parameter:	CAS RN:
1) Aluminum	7429-90-5
2) Antimony	7440-36-0
3) Arsenic	7440-38-2
4) Barium	7440-39-3
5) Beryllium	7440-41-7
6) Cadmium	7440-43-9
7) Chromium	7440-47-3
8) Copper	7440-50-08
9) Cyanide (free)	57-12-5
10) Lead	7439-92-1
11) Mercury	7439-97-6
12) Nickel	7440-02-0
13) Selenium	7782-49-2
14) Strontium	7440-24-6
15) Thallium	7440-28-0
16) Vanadium	7440-62-2
17) Zinc	7440-66-6

(B) Inorganic water quality parameters.
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Parameter:	CAS RN:
18) Ammonia	7664-41-7
19) Calcium	7440-70-2
20) Chloride	16887-00-6
21) Magnesium	7439-95-2
22) Potassium	7440-09-7
23) Sodium	7440-23-5
24) Sulfate	14808-79-8

(C) Other inorganic parameters.
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Parameter:	CAS RN:
25) Boron	7440-42-8
26) Iron	7439-89-6
27) Manganese	7439-96-5
28) Nitrate/Nitrite	
29) pH	
30) Total alkalinity	
31) Total dissolved solids	

(D) Volatile organic compounds.
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Parameter:	CAS RN:
32) Acetone; 2-Propanone	67-64-1
33) Benzene	71-43-2
34) Bromodichloromethane; Dibromochloromethane	75-27-4
35) Carbon disulfide	75-15-0
36) Carbon tetrachloride; Tetrachloromethane	56-23-5
37) Chlorobenzene	108-90-7
38) Chloroethane; Ethyl chloride	75-00-3
39) Chloroform; Trichloromethane	67-66-3
40) 2-Chlorotoluene	95-49-8
41) 4-Chlorotoluene	106-43-4
42) o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1
43) p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7
44) Dichlorodifluoromethane; CFC-12	75-71-8
45) 1,1-Dichloroethane; Ethylidene chloride	75-34-3
46) 1,2-Dichloroethane; Ethylene dichloride	107-06-2
47) 1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride	75-35-4
48) cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2
49) trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene	156-60-5
50) 1,2-Dichloropropane; Propylene dichloride	78-87-5
51) 1,1-Dichloropropene; 1,1-Dichloro-1-propene	563-58-6
52) Ethylbenzene	100-41-4
53) 2-Hexanone; Methyl butyl ketone	591-78-6
54) Isopropylbenzene; Cumene)	98-82-8
55) 4-Isopropyltoluene; p-Isopropyltoluene	99-87-6
56) Methyl chloride; Chloromethane	74-87-3
57) Methyl ethyl ketone; MEK; 2-Butanone	78-93-3
58) 4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-01
59) Methylene chloride; Dichloromethane	75-09-2
60) N-Butylbenzene	104-51-8
61) N-Propylbenzene	103-65-1
62) Naphthalene	91-20-3
63) Sec-Butylbenzene	135-98-8
64) Styrene; Ethenylbenzene	100-42-5
65) Tert-Butylbenzene	98-06-6
66) 1,1,1,2-Tetrachloroethane	630-20-6
67) Tetrachloroethylene; Tetrachloroethene; Perchloroethylene	127-18-4
68) Toluene; Methylbenzene	108-88-3
69) 1,2,3-Trichlorobenzene	87-61-6
70) 1,2,4-Trichlorobenzene	120-82-1
71) 1,1,1-Trichloroethane; Methylchloroform	71-55-6
72) Trichloroethylene; Trichloroethene	79-01-6
73) Trichlorofluoromethane; CFC-11	75-69-4
74) 1,2,4-Trimethylbenzene	95-63-6
75) 1,3,5-Trimethylbenzene	108-67-8

76) Vinyl chloride; Chloroethene	75-01-4
77) Xylene (total); Dimethylbenzene	See Note 1

Note 1: Xylene (total): Where "total" is entered, all species in ground water that contain this element are included. This entry includes o-xylene (CAS RN 96-47-6), m-xylene (CAS RN 108-38-3), p-xylene (CAS RN 106-42-3), and unspecified xylenes (dimethylbenzenes) (CAS RN 1330-20-7).

3745-506-704 Construction and demolition debris facility - ground water assessment program parameter list.

This rule contains the common names of parameters that are widely used in government regulation, scientific publications, and commerce. However, synonyms may exist for many parameters. The chemical abstract service registry number (CAS RN) for each parameter has been provided.

(A) Metals. The metals include all species in ground water that contain the element.

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Parameter:	CAS RN:
1) Aluminum	7429-90-5
2) Antimony	7440-36-0
3) Arsenic	7440-38-2
4) Barium	7440-39-3
5) Beryllium	7440-41-7
6) Cadmium	7440-43-9
7) Chromium	7440-47-3
8) Cobalt	7440-48-4
9) Copper	7440-50-8
10) Lead	7439-92-1
11) Mercury	7439-97-6
12) Nickel	7440-02-0
13) Selenium	7782-49-2
14) Silver	7440-22-4
15) Strontium	7440-24-6
16) Thallium	7440-28-0
17) Tin	7440-31-5
18) Vanadium	7440-62-2
19) Zinc	7440-66-6

(B) Other inorganic parameters.

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Parameter:	CAS RN:
20) Ammonia	7664-41-7
21) Boron	7440-42-8
22) Calcium	7440-70-2
23) Chloride	16887-00-6
24) Cyanide (free)	57-12-5
25) Iron	7439-89-6
2) Magnesium	7439-95-2
27) Manganese	7439-96-5
28) Nitrate/Nitrite	
29) Potassium	7440-09-7
30) Sodium	7440-23-5
31) Sulfate	14808-79-8
32) Sulfide	18496-25-8

(C) Other parameters.

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Parameter:	
33) pH	
34) Total alkalinity	
35) Total dissolved solids	

(D) Volatile organic compounds.

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Parameter:	CAS RN:
36) Acetone; 2-Propanone	67-64-1
37) Benzene	71-43-2
38) Bromodichloromethane; Dibromochloromethane	75-27-4
39) Carbon disulfide	75-15-0
40) Carbon tetrachloride; Tetrachloromethane	56-23-5
41) Chlorobenzene	108-90-7
42) Chloroethane; Ethyl chloride	75-00-3
43) Chloroform; Trichloromethane	67-66-3
44) 2-Chlorotoluene	95-49-8
45) 4-Chlorotoluene	106-43-4
46) o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1
47) p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7
48) Dichlorodifluoromethane; CFC 12	75-71-8
49) 1,1-Dichloroethane; Ethylidene chloride	75-34-3
50) 1,2-Dichloroethane; Ethylene dichloride	107-06-2
51) 1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride	75-35-4
52) cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2
53) trans-1,2-Dichloroethylene; trans-1,2-Dichloro ethene	156-60-5
54) 1,2-Dichloropropane; Propylene dichloride	78-87-5
55) 1,1-Dichloropropene; 1,1-Dichloro-1-propene	563-58-6
56) Ethylbenzene	100-41-4
57) 2-Hexanone; Methyl butyl ketone	591-78-6
58) Isopropylbenzene; Cumene	98-82-8
59) 4-Isopropyltoluene; p-Isopropyltoluene	99-87-6
60) Methyl chloride; Chloromethane	74-87-3
61) Methyl ethyl ketone; MEK; 2-Butanone	78-93-3
62) 4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1
63) Methylene chloride; Dichloromethane	75-09-2
64) N-Butylbenzene	104-51-8
65) N-Propylbenzene	103-65-1
66) Sec-Butylbenzene	135-98-8
67) Styrene; Ethenylbenzene	100-42-5
68) Tert-Butylbenzene	98-06-6
69) 1,1,1,2-Tetrachloroethane	630-20-6
70) Tetrachloroethylene; Tetrachloroethene; Perchloroethylene	127-18-4
71) Toluene; Methylbenzene	108-88-3
72) 1,2,3-Trichlorobenzene	87-61-6
73) 1,2,4-Trichlorobenzene	120-82-1

74) 1,1,1-Trichloroethane; Methylchloroform	71-55-6
75) 1,1,2-Trichloroethane	79-00-5
76) Trichloroethylene; Trichloroethene	79-01-6
77) Trichlorofluoromethane; CFC-11	75-69-4
78) 1,2,4-Trimethylbenzene	95-63-6
79) 1,3,5-Trimethylbenzene	108-67-8
80) Vinyl chloride; Chloroethene	75-01-4
81) Xylene (total); Dimethylbenzene	See Note 1

(E) Semi-volatile organic compounds.
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Parameter:	CAS RN:
82) Acenaphthene; 1,2-Dihydroacenaphthylene	83-32-9
83) Acetophenone; 1-Phenylethanone	98-86-2
84) Anthracene	120-12-7
85) Benzyl alcohol; Benzenemethanol	100-51-6
86) bis(2-Chloroethoxy)methane; 1,1'-[methylenebis(oxy)]bis[2-chloroethane]	111-91-1
87) o-Cresol; 2-Methylphenol	95-48-7
88) p-Cresol; 4-Methylphenol	106-44-5
89) Dibenzofuran	132-64-9
90) Di-n-butyl phthalate; 1,2-Benzenedicarboxylicacid dibutyl ester	84-74-2
91) Diethyl phthalate; 1,2-Benzenedicarboxylic acid, Diethyl ester	84-66-2
92) 2,4-Dimethylphenol; m-Xylenol	105-67-9
93) Disulfoton; Phosphorodithioic acid O,O-diethyl S-[2-(ethylthio)ethyl] ester	298-04-4
94) Hexachlorobutadiene; 1,1,2,3,4,4-Hexachloro-1,3-butadiene	87-68-3
95) Isobutyl alcohol; 2-Methyl-1-propanol	78-83-1
96) Methoxychlor; 1,1'-(2,2,2-Trichloroethylidene)bis [4-Methoxybenzene]	72-43-5
97) Naphthalene	91-20-3
98) Pentachlorophenol	87-86-5
99) Phenol	108-95-2

(F) Pesticides and herbicides.
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Parameter:	CAS RN:
100) Aldrin	309-00-2
101) alpha-BHC	319-84-6
102) beta-BHC	319-85-7
103) delta-BHC	319-86-8
104) gamma-BHC	58-89-9
105) Chlordane	See Note 2
106) 4-chloro-o-tolyloxyacetic acid; MCPA	94-74-6
107) 2-(4-Chlorophenoxy)-2-methylpropanoic acid; MCPP	93-65-2
108) 2,4-DB; 4-(2,4-dichlorophenoxy)butyric acid; Butoxone	94-68-1
109) 4,4'-DDE; 1,1'-(2,2-Dichloroethyenylidene)bis[4-chlorobenzene]	72-55-9
110) 2,4-D; 2,4-Dichlorophenoxyacetic acid	94-75-7
111) 4,4'-DDT; 1,1'-(2,2,2-Trichloroethylidene)bis[4-chlorobenzene]	50-29-3
112) 3,6-Dichloro-o-anisic acid; Dicamba; MDBA	1918-00-9
113) Dieldrin	60-57-1
114) 2,4-DP; Dichloroprop; (RS)-2-(2,4-dichlorophenoxy)propionic acid	120-36-5
115) Heptachlor; 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methano-1H-indene	76-44-8
116) Heptachlor epoxide	1024-57-3
117) Silvex; 2,4,5-TP; 2-(2,4,5-Trichlorophenoxy)propanoic acid	93-72-1

Note 1: Xylene (total): Where "total" is entered, all species in ground water that contain this element are included. This entry includes o-xylene (CAS RN 96-47-6), m-xylene (CAS RN 108-38-3), p-xylene (CAS RN 106-42-3), and unspecified xylenes (dimethylbenzenes) (CAS RN 1330-20-7).

Note 2: Chlordane: This entry includes alpha chlordane (CAS RN 5103-71-9), beta chlordane (CAS RN 5103-74-2), gamma chlordane (CAS RN 5566-34-7), and parameters of chlordane (CAS RN 57-74-9 and CAS RN 12789-03-6).

3745-506-800 Sanitary landfill facility - ground water detection program monitoring schedule.

(A) Background ground water quality parameters. Background data shall be established in accordance with the following:

(1) For ground water monitoring wells screened within the uppermost aquifer system, background data shall be established for the following:

(a) The parameters listed in paragraphs (A) and (D) of rule 3745-506-803 of the Administrative Code (metals and volatile organic compounds).

(b) Ammonia, chloride, potassium, and sodium as described in paragraph (B) of rule 3745-506-803 of the Administrative Code.

(2) For ground water monitoring wells screened in significant zones of saturation above the uppermost aquifer system, background data shall be established for the following parameters:

(a) Benzene, chloroethane, 1,1-dichloroethane, vinyl chloride as described in paragraph (D) of rule 3745-506-803 of the Administrative Code.

(b) Ammonia, chloride, potassium, and sodium as described in paragraph (B) of rule 3745-506-803 of the Administrative Code.

(3) The owner or operator may alternatively establish background for the parameters listed in paragraph (D) of rule 3745-506-803 of the Administrative Code by doing the following:

(a) In lieu of conducting background ground water sampling, assume that the parameters listed in paragraph (D) of rule 3745-506-803 of the Administrative Code are not present in background ground water at the facility.

(b) Base background for each parameter listed in paragraph (D) of rule 3745-506-803 of the Administrative Code on the lowest practical quantitation limit (PQL) available to the owner or operator in accordance with rules 3745-506-300 to 3745-506-330 of the Administrative Code.

(B) Semiannual ground water monitoring and statistical analysis.

(1) Monitoring. The ground water monitoring wells that are part of the ground water detection program shall be monitored and the samples analyzed at least semiannually in accordance with the following:

(a) For ground water monitoring wells screened within the uppermost aquifer system, the parameters listed in paragraph (A)(1) of this rule or an alternative or reduced parameter list approved in accordance with rule 3745-506-450 of the Administrative Code.

(b) For ground water monitoring wells screened in significant zones of saturation above the uppermost aquifer system, the parameters listed in paragraph (A)(2) of this rule or an alternative or reduced parameter list approved in accordance with rule 3745-506-450 of the Administrative Code

(2) Statistical analysis. At least semiannually, the ground water data generated from semiannual ground water monitoring shall be statistically compared to background data in accordance with the statistical analysis plan.

(C) Annual ground water monitoring. In addition to the monitoring required by paragraph (B) of this rule, the ground water monitoring wells that are part of the ground water detection program shall be monitored and the samples analyzed at least annually for either of the following:

(1) The parameters listed in rule 3745-506-803 of the Administrative Code.

(2) An alternative or reduced parameter list approved in accordance with rule 3745-506-450 of the Administrative Code.

3745-506-801 Sanitary landfill facility - ground water assessment program monitoring schedule.

(A) Not later than one hundred thirty-five days after the date required to notify Ohio EPA and the approved board of health of a statistically significant change in accordance with rule 3745-506-410 of the Administrative Code, an owner or operator of a sanitary landfill facility shall do the following:

(1) Sample the ground water monitoring wells demonstrating a statistically significant change and analyze the samples for the parameters listed in rules 3745-506-803 and 3745-506-804 of the Administrative Code.

(2) Sample each background ground water monitoring well within the flow path and screened within the same geologic unit or formation as the ground water monitoring wells required to be sampled under paragraph (A)(1) of this rule during the same sampling event that the ground water monitoring wells are sampled in accordance with paragraph (A)(1) of this rule and analyze the samples for the parameters listed in rules 3745-506-803 and 3745-506-804 of the Administrative Code.

(B) Not later than seventy-five days after commencing the sampling required in paragraph (A) of this rule, an owner or operator shall sample the ground water monitoring wells not sampled under paragraph (A) of this rule that are screened within the same geologic unit or formation as the ground water monitoring wells sampled under paragraph (A) of this rule. These samples shall be analyzed for each waste-derived constituent detected in the affected ground water monitoring wells sampled in accordance with paragraph (A) of this rule.

(C) Not later than seventy-five days after sampling the ground water monitoring wells in accordance with paragraphs (A) and (B) of this rule and after each subsequent semiannual sampling event and each annual sampling event, an owner or operator shall submit to Ohio EPA and the approved board of health a notification identifying all waste-derived constituents that are in each release.

(D) Semiannual ground water monitoring. A ground water monitoring well is part of the ground water assessment program if the well is required or needed to make a first or semiannual determination of rate, extent, and concentration in accordance with rule 3745-506-510 of the Administrative Code. The ground water monitoring wells that are part of the ground water assessment program shall be monitored and the samples analyzed at least semiannually for the following:

(1) The parameters listed in rule 3745-506-803 of the Administrative Code or a reduced parameter list approved in accordance with paragraph (G) of rule 3745-506-500 of the Administrative Code.

(a) The waste-derived constituents reported in accordance with paragraph (C) of this rule for the most recent sampling event.

(2) Annual ground water monitoring. All ground water monitoring wells needed to determine the width of each release immediately downgradient of potential sources of contamination shall be sampled at least annually for the parameters listed in rule 3745-506-804 of the Administrative Code.

3745-506-802 Sanitary landfill facility - ground water corrective actions program monitoring schedule.

The ground water monitoring wells that are part of the ground water corrective actions program shall be monitored and analyzed on a semiannual basis for the parameters listed in rule 3745-506-803 of the Administrative Code and for the waste-derived constituents determined in accordance with rules 3745-506-500 and 3745-506-510 of the Administrative Code to be in each release.

3745-506-803 Sanitary landfill facility - ground water monitoring parameter list.

This rule contains the common names of parameters that are widely used in government regulation, scientific publications, and commerce. However, synonyms may exist for many parameters. The chemical abstract service registry number (CAS RN) for each parameter has been provided.

(A) Metals. The metals include all species in ground water that contain the element.

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Parameter:	CAS RN:
1) Antimony	7440-36-0
2) Arsenic	7440-38-2
3) Barium	7440-39-3
4) Beryllium	7440-41-7
5) Cadmium	7440-43-9
6) Chromium	7440-47-3
7) Cobalt	7440-48-4
8) Copper	7440-50-8
9) Lead	7439-92-1
10) Nickel	7440-02-0
11) Selenium	7782-49-2
12) Silver	7440-22-4
13) Thallium	7440-28-0
14) Vanadium	7440-62-2
15) Zinc	7440-66-6

(B) Other inorganic parameters. The metals include all species in ground water that contain the element.

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Parameter:	CAS RN:
16) Ammonia	7664-41-7
17) Calcium	7440-70-2
18) Chloride	16887-00-6
19) Iron	7439-89-6
20) Magnesium	7439-95-2
21) Manganese	7439-96-5
22) Nitrate/Nitrite	
23) Potassium	7440-09-7
24) Sodium	7440-23-5
25) Sulfate	14808-79-8

(C) Other parameters.

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Parameter:	
26) pH	
27) Specific conductance	
28) Temperature	
29) Total alkalinity	
30) Total dissolved solids	
31) Turbidity	

(D) Volatile organic compounds.

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Parameter:	CAS RN:
32) Acetone; 2-Propanone	67-64-1
33) Acrylonitrile	107-13-1
34) Benzene	71-43-2
35) Bromochloromethane	74-97-5
36) Bromodichloromethane; Dibromochloromethane	75-27-4
37) Bromoform; Tribromomethane	75-25-2
38) Carbon disulfide	75-15-0
39) Carbon tetrachloride; Tetrachloromethane	56-23-5
40) Chlorobenzene	108-90-7
41) Chloroethane; Ethyl chloride	75-00-3
42) Chloroform; Trichloromethane	67-66-3
43) Dibromochloromethane; Chlorodibromomethane	124-48-1
44) 1,2-Dibromo-3-chloropropane; DBCP	96-12-8
45) 1,2-Dibromethane; Ethylene dibromide; EDB	106-93-4
46) o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1
47) p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7
48) trans-1,4-Dichloro-2-butene	110-57-6
49) 1,1-Dichloroethane; Ethylidene chloride	75-34-3
50) 1,2-Dichloroethane; Ethylene dichloride	107-06-2
51) 1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride	75-35-4
52) cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2
53) trans-1,2-Dichloroethylene; trans-1,2-Dichloro ethene	156-60-5
54) 1,2-Dichloropropane; Propylene dichloride	78-87-5
55) cis-1,3-Dichloropropene	10061-01-5
56) trans-1,3-Dichloropropene	10061-02-6
57) Ethylbenzene	100-41-4
58) 2-Hexanone; Methyl butyl ketone	591-78-6
59) Methyl bromide; Bromomethane	74-83-9
60) Methyl chloride; Chloromethane	74-87-3
61) Methyl ethyl ketone; MEK; 2-Butanone	78-93-3
62) Methyl iodide; iodomethane	74-88-4
63) 4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1
64) Methylene bromide; Dibromomethane	74-95-3
65) Methylene chloride; Dichloromethane	75-09-2
66) Styrene; Ethenylbenzene	100-42-5
67) 1,1,1,2-Tetrachloroethane	630-20-6

68) 1,1,2,2-Tetrachloroethane	79-34-5
69) Tetrachloroethylene; Tetrachloroethene; Perchloroethylene	127-18-4
70) Toluene; Methylbenzene	108-88-3
71) 1,1,1-Trichloroethane; Methylchloroform	71-55-6
72) 1,1,2-Trichloroethane	79-00-5
73) Trichloroethylene; Trichloroethene	79-01-6
74) Trichlorofluoromethane; CFC-11	75-69-4
75) 1,2,3-Trichloropropane	96-18-4
76) Vinyl acetate	108-05-4
77) Vinyl chloride; Chloroethene	75-01-4
78) Xylene (total); Dimethylbenzene	Note 1

Note 1: Xylene (total): Where "total" is entered, all species in ground water that contain this element are included. This entry includes o-xylene (CAS RN 96-47-6), m-xylene (CAS RN 108-38-3), p-xylene (CAS RN 106-42-3), and unspecified xylenes (dimethylbenzenes) (CAS RN 1330-20-7).

3745-506-804 Sanitary landfill facility - ground water assessment parameter list.

This rule contains the common names of constituents that are widely used in government regulation, scientific publications, and commerce. However, synonyms may exist for many constituents. The chemical abstract service registry number (CAS RN) for each constituent has been provided.

(A) Metals. The metals include all species in ground water that contain the element.
--

Parameter	CAS RN
1) Antimony	7440-36-0
2) Arsenic	7440-38-2
3) Barium	7440-39-3
4) Beryllium	7440-41-7
5) Cadmium	7440-43-9
6) Chromium	7440-47-3
7) Cobalt	7440-48-4
8) Copper	7440-50-8
9) Lead	7439-92-1
10) Mercury	7439-97-6
11) Nickel	7440-02-0
12) Selenium	7782-49-2
13) Silver	7440-22-4
14) Thallium	7440-28-0
15) Tin	7440-31-5
16) Vanadium	7440-62-2
17) Zinc	7440-66-6

(B) Other inorganic parameters.
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Parameter	CAS RN
18) Cyanide (free)	57-12-5
19) Sulfide	18496-25-8

(C) Volatile organic compounds.
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Parameter	CAS RN
20) Acetone; 2-Propanone	67-64-1
21) Acrylonitrile; 2-Propenenitrile	107-13-1
22) Benzene	71-43-2
23) Bromochloromethane; Chlorobromomethane	74-97-5
24) Bromodichloromethane; Dibromochloromethane	75-27-4
25) Bromoform; Tribromomethane	75-25-2
26) Carbon disulfide	75-15-0
27) Carbon tetrachloride; Tetrachloromethane	56-23-5
28) Chlorobenzene	108-90-7
29) Chloroethane; Ethyl chloride	75-00-3
30) Chloroform; Trichloromethane	67-66-3
31) Dibromochloromethane; Chlorodibromomethane	124-48-1
32) 1,2-Dibromo-3-chloropropane; DBCP	96-12-8
33) 1,2-Dibromoethane; Ethylene dibromide; EDB	106-93-4
34) o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1
35) m-Dichlorobenzene; 1,3-Dichlorobenzene	541-73-1
36) p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7
37) trans-1,4-Dichloro-2-butene	110-57-6
38) Dichlorodifluoromethane; CFC 12	75-71-8
39) 1,1-Dichloroethane; Ethylidene chloride	75-34-3
40) 1,2-Dichloroethane; Ethylene dichloride	107-06-2
41) 1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride	75-35-4
42) cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2
43) trans-1,2-Dichloroethylene; trans-1,2-Dichloro ethene	156-60-5
44) 1,2-Dichloropropane; Propylene dichloride	78-87-5
45) 1,3-Dichloropropane; Trimethylene dichloride	142-28-9
46) 2,2-Dichloropropane; Isopropylidene chloride	594-20-7
47) 1,1-Dichloropropene; 1,1-Dichloro-1-propene	563-58-6
48) cis-1,3-Dichloropropene	10061-01-5
49) trans-1,3-Dichloropropene	10061-02-6
50) Ethylbenzene	100-41-4
51) 2-Hexanone; Methyl butyl ketone	591-78-6
52) Methyl bromide; Bromomethane	74-83-9
53) Methyl chloride; Chloromethane	74-87-3
54) Methyl ethyl ketone; MEK; 2-Butanone	78-93-3
55) Methyl iodide; Iodomethane	74-88-4
56) 4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1
57) Methylene bromide; Dibromomethane	74-95-3
58) Methylene chloride; Dichloromethane	75-09-2
59) Styrene; Ethenylbenzene	100-42-5
60) 1,1,1,2-Tetrachloroethane	630-20-6
61) 1,1,2,2-Tetrachloroethane	79-34-5
62) Tetrachloroethylene;	127-18-4

Tetrachloroethene; Perchloroethylene	
63) Toluene; Methylbenzene	108-88-3
64) 1,2,4-Trichlorobenzene	120-82-1
65) 1,1,1-Trichloroethane; Methylchloroform	71-55-6
66) 1,1,2-Trichloroethane	79-00-5
67) Trichloroethylene; Trichloroethene	79-01-6
68) Trichlorofluoromethane; CFC-11	75-69-4
69) 1,2,3-Trichloropropane	96-18-4
70) Vinyl acetate; Acetic acid ethenyl ester	108-05-4
71) Vinyl chloride; Chloroethene	75-01-4
72) Xylene (total); Dimethylbenzene	See note 1

(D) Semi-volatile organic compounds.
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Parameter	CAS RN
73) Acenaphthene; 1,2-Dihydroacenaphthylene	83-32-9
74) Acenaphthylene	208-96-8
75) Acetonitrile; Methyl cyanide	75-05-8
76) Acetophenone; 1-Phenylethanone	98-86-2
77) 2-Acetylaminoflourene; 2-AAF; N-9H-flouren-2-yl-acetamide	53-96-3
78) Acrolein; 2-Propenal	107-02-8
79) Allyl chloride; 3-Chloro-1-propene	107-05-1
80) 4-Aminobiphenyl; [1,1'-Biphenyl]-4-amine	92-67-1
81) Anthracene	120-12-7
82) Benzo[a]anthracene; Benzanthracene	56-55-3
83) Benzo[b]flouranthene; Benz[e]acephenanthylene	205-99-2
84) Benzo[k]flouranthene	207-08-9
85) Benzo[ghi]perylene	191-24-2
86) Benzo[a]pyrene	50-32-8
87) Benzyl alcohol; Benzenemethanol	100-51-6
88) bis(2-Chloroethoxy)methane; 1,1'-[methylenebis(oxy)]bis[2-chloroethane]	111-91-1
89) bis(2-Chloroethyl) ether; Dichloroethyl ether;1,1'-oxybis[2-Chloroethane	111-44-4
90) bis-(2-Chloro-1-methylethyl) Ether; 2,2'-Dichloro-diisopropyl ether; DCIP; 2,2'-oxybis[1-Chloropropane	108-60-1
91) bis(2-Ethylhexyl) Phthalate; 1,2-Benzenedicarboxylicacid, bis(2-Ethylhexyl) ester	117-81-7
92) 4-Bromophenyl phenyl ether; 1-Bromo-4-phenoxy-benzene	101-55-3
93) Butyl benzyl phthalate; Benzyl butyl phthalate; 1,2-Benzenedicarboxylic acid, Butyl phenylmethyl ester	85-68-7
94) p-Chloroaniline; 4-Chlorobenzenamine	106-47-8
95) Chlorobenzilate; 4-Chloro-a-(4-Chlorophenyl)-a-hydroxybenzeneacetic acid, Ethyl ester	510-15-6
96) p-Chloro-m-Cresol; 4-Chloro-3-Methylphenol	59-50-7
97) 2-Chloronaphthalene	91-58-7
98) 2-Chlorophenol	95-57-8
99) 4-Chlorophenyl phenyl ether; 1-Chloro-4-phenoxy benzene	7005-72-3
100) Chloroprene; 2-Chloro-1,3-butadiene	126-99-8
101) Chrysene	218-01-9
102) m-Cresol; 3-Methylphenol	108-39-4
103) o-Cresol; 2-Methylphenol	95-48-7
104) p-Cresol; 4-Methylphenol	106-44-5
105) Dibenz[a,h]anthracene	53-70-3
106) Dibenzofuran	132-64-9
107) Di-n-butyl phthalate; 1,2-Benzenedicarboxylicacid dibutyl ester	84-74-2
108) 3,3'-Dichlorobenzidine; 3,3'-Dichloro-[1,1'-biphenyl]-4,4'-diamine	91-94-1
109) 2,4-Dichlorophenol	120-83-2
110) 2,6-Dichlorophenol	87-65-0
111) Diethyl phthalate; 1,2-Benzenedicarboxylic acid, Diethyl ester	84-66-2
112) O,O-Diethyl O-2-Pyrazinyl phosphorothioate; Thionazin	297-97-2
113) Dimethoate; Phosphorodithoic acid O,O-Dimethyl-S-[2-(methylamino)-2-oxoethyl] ester	60-51-5
114) p-(Dimethylamino)azobenzene; N,N-Dimethyl-4-(phenylazo)benzenamine	60-11-7
115) 7,12-Dimethylbenz[a]anthracene	57-97-6
116) 3,3'-Dimethylbenzidene; 3,3'-Dimethyl[1,1'biphenyl]-4,4'-diamine	119-93-7
117) 2,4-Dimethylphenol; m-Xylenol	105-67-9
118) Dimethyl phthalate; 1,2-Benzenedicarboxylicacid, dimethyl ester	131-11-3
119) m-Dinitrobenzene	99-65-0
120) 4,6-Dinitro-o-cresol; 4,6-Dinitro-2-methylphenol;2-Methyl-4,6-dinitrophenol	534-52-1
121) 2,4-Dinitrophenol	51-28-5
122) 2,4-Dinitrotoluene; 1-Methyl-2,4-dinitrobenzene	121-14-2
123) 2,6-Dinitrotoluene; 2-Methyl-1,3-dinitrobenzene	606-20-2
124) Di-n-octyl phthalate; 1,2-Benzenedicarboxylicacid, Dioctyl ester	117-84-0
125) Diphenylamine; N-phenylbenzenamine	122-39-4
126) Disulfoton; Phosphorodithioic acid O,O-diethylS-[2-(ethylthio)ethyl] ester	298-04-4
127) Ethyl methacrylate; 2-Methyl-2-propenoic acid, ethyl ester	97-63-2
128) Ethyl methanesulfonate; Methanesulfonic acid, ethyl ester	62-50-0
129) Flouranthene	206-44-0
130) Flourene; 9H-flourene	86-73-7
131) Hexachlorobenzene	118-74-1
132) Hexachlorobutadiene; 1,1,2,3,4,4-Hexachloro-1,3-butadiene	87-68-3
133) Hexachlorocyclopentadiene; 1,2,3,4,5,5-Hexachloro-1,3-cyclopentadiene	77-47-4
134) Hexachloroethane	67-72-1
135) Hexachloropropene; 1,1,2,3,3,3-Hexachloro-1-propene	1888-71-7
136) Indeno(1,2,3-cd)pyrene	193-39-5
137) Isobutyl alcohol; 2-Methyl-1-propanol	78-83-1
138) Isophorone; 3,5,5-Trimethyl-2-cyclohexen-1-one	78-59-1

139) Isosafrole; 5-(1-Propenyl)-1,3-benzodioxole	120-58-1
140) Methacrylonitrile; 2-Methyl-2-propenenitrile	126-98-7
141) Methapyrilene; N,N-dimethyl-N'-2-pyridinyl-N'-(1/2-thienylmethyl)-1,2-ethanediamine	91-80-5
142) Methoxychlor; 1,1'-(2,2,2-Trichloroethylidene)bis [4-Methoxybenzene]	72-43-5
143) Methyl methacrylate; 2-Methyl-2-propenoic acid, methyl ester	80-62-6
144) Methyl methanesulfonate; Methanesulfonic acid, methyl ester	66-27-3
145) 2-Methylnaphthalene	91-57-6
146) Naphthalene	91-20-3
147) 1,4-Naphthoquinone; 1,4-Naphthalenedione	130-15-4
148) 1-Naphthylamine; 1-Naphthalenamine	134-32-7
149) 2-Naphthylamine; 2-Naphthalenamine	91-59-8
150) o-Nitroaniline; 2-Nitroaniline; 2-Nitrobenzenamine	88-74-4
151) m-Nitroaniline; 3-Nitroaniline; 3-Nitrobenzenamine	99-09-2
152) p-Nitroaniline; 4-Nitroaniline; 4-Nitrobenzenamine	100-01-6
153) Nitrobenzene	98-95-3
154) o-Nitrophenol; 2-Nitrophenol	88-75-5
155) p-Nitrophenol; 4-Nitrophenol	100-02-7
156) N-Nitrosodi-n-butylamine; N-Butyl-N-Nitroso-1-butanamine	924-16-3
157) N-Nitrosodiethylamine; N-Ethyl-N-nitroso-ethanamine	55-18-5
158) N-Nitrosodimethylamine; N-Methyl-N-nitroso-methananmine	62-75-9
159) N-Nitrosodiphenylamine; N-Nitroso-N-phenylbenzenamine	86-30-6
160) N-Nitrosodipropylamine; N-Nitroso-N-dipropylamine;di-n-propylnitrosamine; N-Nitroso-N-propyl-1-propanamine	621-64-7
161) N-Nitroso(methyl)ethylamine; N-Methyl-N-nitrosoethylamine	10595-95-6
162) N-Nitrsopiperidine; 1-Nitrosopiperidine	100-75-4
163) N-Nitrosopyrrolidine; 1-Nitrosopyrrolidine	930-55-2
164) 5-Nitro-o-toluidine; 2-Methyl-5-nitrobenzenamine	99-55-8
165) Pentachlorobenzene	608-93-5
166) Pentachloronitrobenzene	82-68-8
167) Pentachlorophenol	87-86-5
168) Phenacetin; N-(4-Ethoxyphenyl)acetamide	62-44-2
169) Phenanthrene	85-01-8
170) Phenol	108-95-2
171) p-Phenylenediamine; 1,4-Benzenediamine	106-50-3
172) Pronamide; 3,5-Dichloro-N-(1,1-dimethyl-2-propynyl) benzamide	23950-58-5
173) Propionitrile; Ethyl cyanide	107-12-0
174) Pyrene	129-00-0
175) Safrole; 5-(2-Propenyl)-1,3-benzodioxole	94-59-1
176) 1,2,4,5-Tetrachlorobenzene	95-94-3
177) 2,3,4,6-Tetrachlorophenol	58-90-2
178) o-Toluidine; 2-Methylbenzenamine	95-53-4
179) 2,4,5-Trichlorophenol	95-95-4
180) 2,4,6-Trichlorophenol	88-06-2
181) sym-Trinitrobenzene; 1,3,5-Trinitrobenzene	99-35-4

(E) Pesticides, polychlorinated biphenols (PCBs), and herbicides.

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Parameter	CAS RN
182) Aldrin	309-00-2
183) alpha-BHC	319-84-6
184) beta-BHC	319-85-7
185) delta-BHC	319-86-8
186) gamma-BHC; Lindane	58-89-9
187) Chlordane	See note 2
188) 2,4-D; 2,4-Dichlorophenoxyacetic acid	94-75-7
189) 4,4'-DDD; 1,1'-(2,2-Dichloroethylidene)bis[4-chlorobenzene]	72-54-8
190) 4,4'-DDE; 1,1'-(2,2-Dichloroethyenylidene)bis[4-chlorobenzene]	72-55-9
191) 4,4'-DDT; 1,1'-(2,2,2-Trichloroethylidene)bis[4-chlorobenzene]	50-29-3
192) Diallate; bis(1-Methylethyl)-carbamothoic acidS-(2,3-Dichloro-2-propenyl) ester	2303-16-4
193) Dieldrin	60-57-1
194) Dinoseb; DMBP	88-85-7
195) Endosulfan I	959-98-8
196) Endosulfan II	33213-65-9
197) Endosulfan sulfate	1031-07-8
198) Endrin	72-20-8
199) Endrin aldehyde	7421-93-4
200) Famphur; Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl]0,0-dimethyl ester	52-85-7
201) Heptachlor; 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methano-1H-indene	76-44-8
202) Heptachlor epoxide	1024-57-3
203) Isodrin	465-73-6
204) Kepone	143-50-0
205) 3-Methylcholanthrene; 1,2-Dihydro-3-methyl-benze[j]aceanthrylene	56-49-5
206) Methyl parathion; Parathion methyl; Phosphorothioicacid, 0,0-dimethyl 0-(4-nitrophenyl) ester	298-00-0
207) Parathion; Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester	56-38-2
208) Phorate; Phosphorodithioic acid, O,O-Diethyl S-[(ethylthio]methyl] ester	298-02-2
209) Polychlorinated biphenyls; PCBs; aroclors;1,1'-Biphenyl, chloro derivatives	See note 3
210) Silvex; 2,4,5-TP; 2-(2,4,5-Trichlorophenoxy) propanoic acid	93-72-1

211) 2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid	93-76-5
212) Toxaphene	8001-35-2
213) o,o,o-Triethyl phosphorothioate; Phosphorothioic acid,o,o,o-triethyl ester	126-68-1

Note 1: Xylene (total): Where "total" is entered, all species in ground water that contain this element are included. This entry includes o-xylene (CAS RN 96-47-6), m-xylene (CAS RN 108-38-3), p-xylene (CAS RN 106-42-3), and unspecified xylenes (dimethylbenzenes) (CAS RN 1330-20-7).

Note 2: Chlordane: This entry includes alpha chlordane (CAS RN 5103-71-9), beta chlordane (CAS RN 5103-74-2), gamma chlordane (CAS RN 5566-34-7), and constituents of chlordane (CAS RN 57-74-9 and CAS RN 12789-03-6).

Note 3: Polychlorinated biphenols (CAS RN 1336-36-3): This category contains congener chemicals, including constituents of aroclor 1016 (CAS RN 12674-11-2), aroclor 1221 (CAS RN 11104-28-2), aroclor 1232 (CAS RN 11141-16-5), aroclor 1242 (CAS RN 53469-21-9), aroclor 1248 (CAS RN 12672-29-6), aroclor 1254 (CAS RN 11097-69-1), and aroclor 1260 (CAS RN 11096-82-5).

Ohio Administrative Code (OAC) Chapter 3745-510
Multi-Program Site Investigation Rules

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3745-510-350	Geotechnical investigation data and results.

3745-510-01 Site investigation - applicability.

(A) The rules in this multi-program chapter shall apply when referenced in either of the following:

(1) A rule in a program chapter.

(2) A rule in another multi-program chapter that was made applicable by a rule in a program chapter.

Program chapters are Chapters 3745-520 to 3745-599 of the Administrative Code.

(B) The applicant, owner, or operator shall conduct a site investigation and prepare a site investigation report as required by this chapter.

(C) Any exception to paragraph (B) of this rule will be described by the individual program chapter.

3745-510-02 Site investigation - definitions.

If a term used in this chapter is defined in rule 3745-500-02 of the Administrative Code, that definition used in rule 3745-500-02 of the Administrative Code is applicable to this chapter.

3745-510-100 Site investigation report.

(A) The applicant, owner, or operator of a facility shall provide a site investigation report. The site investigation report shall consist of the following:

(1) A report on the hydrogeologic investigation meeting the format and standards specified in rules 3745-510-210 to 3745-510-232 and 3745-510-240 of the Administrative Code. For a facility requiring a gas migration monitoring system, the report on the hydrogeologic investigations shall include a section on the gas sources and migration pathways investigation meeting the format and standards specified in rule 3745-510-235 of the Administrative Code.

(2) A report on the geotechnical investigation meeting the format and standards specified in rules 3745-510-310 to 3745-510-350 of the Administrative Code.

(B) The site investigation report shall be in an easily understandable format and shall contain all information necessary to allow the permitting authority to determine if the applicant, owner, or operator has satisfied, as appropriate, the following:

(1) Located ground water monitoring wells to conform to Chapter 3745-506 of the Administrative Code.

(2) Demonstrated compliance with applicable stability standards.

(3) Demonstrated compliance with applicable hydrogeologic siting criteria.

(4) Designed the gas migration monitoring system to meet applicable requirements.

(C) All plan drawings in the site investigation report shall show the facility boundary, the disposal limits, and access roads. Plan drawings shall use a scale of one inch equals not more than two hundred feet. Plan drawings shall be referenced to the facility grid system if one was established.

(D) All cross sections shall show the facility boundary, the limits of excavation, the disposal limits, the horizontal scale of the cross section, and the vertical scale of the cross section. The cross section shall include an insert showing a plan view of the facility identifying the location of the cross section.

(E) The site investigation report shall contain a certification statement and signature of the applicant, owner, or operator in accordance with rule 3745-500-50 of the Administrative Code.

(F) The report on the hydrogeologic investigation shall be signed by a qualified ground water scientist and shall contain a certification statement from the qualified ground water scientist that to the best of the knowledge of the qualified ground water scientist the hydrogeologic

information contained in the report is a true and accurate representation of the hydrogeology of the facility.

(G) The report on the geotechnical investigation shall be signed and, if appropriate, sealed by such other professionals skilled in the appropriate disciplines as is necessary to comply with Ohio laws and rules.

3745-510-210 Hydrogeologic investigation cover page.

The report on the hydrogeologic investigation identified in rule 3745-510-100 of the Administrative Code shall include a cover page that includes the following:

(A) Title of the report.

(B) Name and location of the facility.

(C) Names, addresses, and telephone numbers of the applicant, owner, and the preparer of the hydrogeologic investigation report.

3745-510-220 Hydrogeologic investigation summary and conclusions.

The report on the hydrogeologic investigation identified in rule 3745-510-100 of the Administrative Code shall include clearly labeled and tabbed pages for the section titled "Summary and Conclusions," and shall include the following:

(A) A description of the following:

(1) The uppermost aquifer system.

(2) All significant zones of saturation above the uppermost aquifer system.

(3) Presence or absence of any unconsolidated aquifer system capable of sustaining a yield of one hundred gallons per minute for a twenty-four-hour period.

(4) A description of all potential gas sources and migration pathways, if applicable.

(B) Summary tables of compiled measurements and test results from the site investigation. The tables shall clearly identify the sample locations, logs, and units of measurement associated with each measurement and test result. The results from all field measurements, field tests, laboratory measurements, and laboratory tests shall be included in the summary tables. The summary tables shall also clearly identify the measurements and test results that are associated with the uppermost aquifer system, and the significant zones of saturation above the uppermost aquifer.

(C) Any figures, drawings, or references needed to provide a clear understanding of the summary information contained in the report of the hydrogeologic investigation.

(D) A map that identifies the location of each cross section included in the hydrogeologic investigation report.

3745-510-231 Uppermost aquifer system and significant zones of saturation.

The report on the hydrogeologic investigation identified in rule 3745-510-100 of the Administrative Code shall include clearly labeled and tabbed pages for the section titled "Uppermost Aquifer System and Significant Zones of Saturation," and shall include the following:

(A) A report on the regional aquifer including the following:

(1) A description of the regional aquifer based on publicly available information including the following:

(a) The identification and average yield.

(b) The direction of ground water flow.

(c) The identification of recharge and discharge areas.

(d) The identification of the regional stratigraphy, including any regional stratigraphic or structural features (such as bedrock surface, bedrock dip, or joint systems), that may influence the ground water flow system.

(e) A description of the regional and local geomorphology including but not limited to the location of surface water, floodplains, and all topographic features that may influence the ground water flow system at the facility.

(2) The Ohio department of natural resources, division of soil and water, ground water resource maps or other appropriate regional hydrogeologic data.

(3) A map showing the location of the facility with respect to the limits of any drinking water source protection area for a public water system using ground water including the area surrounding a public water supply well that will provide water from an aquifer to the well as delineated or endorsed by Ohio EPA under Ohio's wellhead protection or source water assessment and protection programs. If the limits of any subject drinking water source protection area for a public water system are not in the vicinity of the facility, a statement to that fact will be sufficient.

(4) A map showing the location of the facility and all water supply wells within one mile of the facility. The public and private wells shall be denoted differently.

(5) A description of the uppermost aquifer system and any significant zone of saturation above the uppermost aquifer system at the facility, including the following:

(a) The depth and lateral and vertical extents of the uppermost aquifer system and all significant zones of saturation above the uppermost aquifer system.

(b) Temporal fluctuations in ground water levels for a period of at least one year on a quarterly basis to determine the seasonal effects on ground water flow directions.

(c) An interpretation of the ground water flow system, including hydraulic conductivity, rate of flow, average yield, direction of flow, vertical and lateral components of flow including hydraulic gradient, and interconnections between and within the uppermost aquifer system and any significant zone of saturation above the uppermost aquifer system. This interpretation shall be described in both narrative and map form.

(d) Identification and characterization of recharge and discharge areas within the boundaries of the facility. This shall include all relationships of ground water with seeps, springs, streams, or other surface water features.

(e) Yield of the uppermost aquifer system and all significant zones of saturation above the uppermost aquifer system.

(f) The results of sampling and analyzing the quality of the ground water in the uppermost aquifer system and all significant zones of saturation above the uppermost aquifer system.

(6) A description of the site investigation activities, including field testing and laboratory testing, directly related to identifying, locating, and characterizing the uppermost aquifer system and all significant zones of saturation above the uppermost aquifer system.

(7) Cross sections that clearly show the identification, extent, and characteristics of the following:

(a) Consolidated stratigraphic units.

(b) Unconsolidated stratigraphic units.

(c) Uppermost aquifer system.

(d) Significant zones of saturation above the uppermost aquifer system.

(e) At least one cross section shall depict the deepest excavation or proposed excavation.

(8) Summary logs and drawings to identify, locate, and characterize the uppermost aquifer system and all significant zones of saturation above the uppermost aquifer system.

(9) Summary of results from field tests and laboratory tests used to identify, locate, and characterize the uppermost aquifer system and all significant zones of saturation above the uppermost aquifer system. If a field or laboratory test result was not used, include reasoning for excluding the result from consideration.

(B) Results from the site investigation including the following:

(1) A brief description of each field test method and each laboratory test method used to characterize the geologic and hydrogeologic properties for the purpose of investigating the uppermost aquifer system and all significant zones of saturation above the uppermost aquifer system.

(2) Information and results from each field test that was conducted, including completed, failed, or incomplete results. An explanation shall be provided for any test results that were not used. The results shall include the following information:

(a) Quality assurance and quality control testing conducted to verify the accuracy and precision of testing methods and equipment.

(b) The results of data validation.

(c) The characterization of each specimen used in each test.

(d) Intermediate data produced during testing.

(e) The final results of each test.

(3) All figures, drawings, or references used and marked to show how they relate to the characterization of the geologic and hydrogeologic properties.

(4) Logs, including field notes and other pertinent information, from sites investigated to obtain information, data, or samples used to identify, locate, and characterize the uppermost aquifer system and all significant zones of saturation above the uppermost aquifer system. As appropriate for the method, logs shall include the following:

(a) A description of where information, data, or samples were obtained, including, as appropriate, the following:

(i) The location of each site with northings and eastings referenced to the facility grid system or referenced to the following if a facility grid system was not established:

(a) Horizontally to the "1927 North American Datum," "1983 North American Datum," or "State Plane Coordinate System."

(b) Vertically to the "1929 or 1988 North American Vertical Sea Level Datum" as identified on the USGS 7.5 minute (topographic) map.

(ii) The surface elevation of each site to the nearest tenth of a foot.

(iii) The depth interval of all samples collected, including those submitted for laboratory testing.

(b) Information related to the subsurface investigatory method, including, as appropriate, the following:

(i) The diameter, or width and length at the surface, of the boring.

(ii) The total depth of the boring.

(iii) The total depth of the well.

(iv) The inside diameter of the well casing.

(v) The top-of-casing elevation used for water level measurement reference surveyed to the nearest hundredth foot.

(vi) The screened interval depth and elevation, the screen slot size, and the inside diameter of the screen.

(vii) A description of construction materials and the elevations at which all construction materials were placed including at a minimum the following:

(a) Sand pack.

(b) Grout.

(c) Well seal.

(c) The top and bottom elevations for each consolidated and unconsolidated stratigraphic unit.

(d) Information or data on the characteristics, composition, and features for each consolidated and unconsolidated stratigraphic unit including the following:

(i) For unconsolidated stratigraphic units, the textural classification using the Unified Soil Classification System (USCS), as described in ASTM D2487 as described in rule 3745-500-03 of the Administrative Code.

(ii) For consolidated stratigraphic units, the rock type (such as limestone, dolomite, coal, shale, siltstone, or sandstone).

(iii) Color.

(iv) Moisture content.

(v) Stratigraphic features (such as layering, interbedding, and weathering).

(vi) Fracturing, jointing, and other types of secondary porosity.

(vii) Any visible accessory minerals (such as pyrite, calcite, or gypsum).

(viii) Lateral extent.

(ix) The depth to saturation.

(x) The depth to the static water level in the boring.

(e) Information or data on the hydraulic conductivity according to the following:

(i) For each saturated unconsolidated stratigraphic unit, two field measurements of hydraulic conductivity or at least one measurement per saturated unconsolidated stratigraphic unit for each twenty acres, whichever is more.

(ii) For each unconsolidated stratigraphic unit from which an undisturbed sample can be collected, two laboratory measurements of vertical hydraulic conductivity or at least one measurement per unconsolidated stratigraphic unit for each twenty acres, whichever is more.

(iii) For each saturated consolidated stratigraphic unit, two field measurements of hydraulic conductivity or at least one measurement per saturated consolidated stratigraphic unit for each twenty acres, whichever is more.

(iv) When laboratory measurements of vertical hydraulic conductivity are obtained for unconsolidated stratigraphic units that are wholly or partially saturated, the vertical hydraulic conductivity shall be compared to the field hydraulic conductivity to evaluate the extent to which near-vertical fractures may be contributing to ground water flow through the unit.

(v) Hydraulic conductivity data shall be interpreted with respect to the primary and secondary porosity features and the stratigraphic and structural features of the investigated units that are observed or are reasonably expected to occur in the investigated units.

(f) Variations in texture, saturation, stratigraphy, structure, or mineralogy exhibited by each stratigraphic unit that could influence ground water flow or quality in the uppermost aquifer system or any significant zone of saturation above the uppermost aquifer.

(g) The geomorphology at the facility including but not limited to surface water or topographic features that may influence ground water flow in the uppermost aquifer system or any significant zone of saturation above the uppermost aquifer.

(h) All structural geologic features beneath the facility that may influence ground water flow in the uppermost aquifer system or in any significant zone of saturation above the uppermost aquifer system.

(5) Results of sampling and analyzing the ground water from the uppermost aquifer system and all significant zones of saturation above the uppermost aquifer system.

(6) All well logs and, where applicable, the decommissioning records for public water supply wells and private water supply wells within one mile of the facility.

3745-510-232 One hundred gallon per minute unconsolidated aquifer system.

The report on the hydrogeologic investigation identified in rule 3745-510-100 of the Administrative Code shall include clearly labeled and tabbed pages for the section titled "One Hundred Gallon per Minute Unconsolidated Aquifer System," and shall include the following:

(A) A report of the following:

(1) A determination, based on publicly available information, of whether an unconsolidated aquifer system capable of sustaining a yield of at least one hundred gallons per minute for a twenty-four-hour period is present or absent at the facility.

(2) If the applicant, owner, or operator chooses to refute the determination made pursuant to paragraph (A)(1) of this rule, the following:

(a) A description of the site investigation activities, including field testing and laboratory testing, directly related to determining whether and where an unconsolidated aquifer system capable of sustaining a yield of at least one hundred gallons per minute for a twenty-four-hour period exists at the facility.

(b) Summary logs and drawings appropriate for the subsurface investigatory method used to identify, locate, and characterize the subject unconsolidated aquifer system. The applicant, owner, or operator shall also include the yield of any aquifer system between the uppermost aquifer system and the subject unconsolidated aquifer system.

(c) A summary of results from field test and laboratory tests used to identify, locate, and characterize the unconsolidated aquifer system capable of sustaining a yield of at least one hundred gallons per minute for a twenty-four-hour period. If a field or laboratory test result was not used, include reasoning for excluding the result from consideration.

(B) If the applicant, owner, or operator chooses to refute the determination made pursuant to paragraph (A)(1) of this rule, results from the site investigation shall include the following:

(1) A brief description of each field test method and each laboratory test method used to characterize the geologic and hydrogeologic properties of the unconsolidated aquifer system.

(2) Information and results from each field test that was conducted, including completed, failed, or incomplete results. An explanation shall be provided for any test result that was not used. The results shall include the following information:

(a) Quality assurance and quality control testing conducted by the laboratory to verify the accuracy and precision of testing methods and equipment.

(b) The results of data validation.

(c) The characterization of each specimen used in each test.

(d) Intermediate data produced during testing.

(e) The final results of each test.

(3) All figures, drawings, or references used and marked to show how they relate to the characterization of the geologic and hydrogeologic properties.

(4) Logs, including field notes and other pertinent information, from each subsurface investigatory site used to obtain information, data, or samples utilized to identify, locate, and characterize the subject unconsolidated aquifer system, the uppermost aquifer system, and all significant zones of saturation above the uppermost aquifer system. As appropriate for the method, logs shall include the following:

(a) A description of where information, data, or samples were obtained, including, as appropriate, the following:

(i) The location of each site with northings and eastings referenced to the facility grid system or referenced to the following if a facility grid system was not established:

(a) Horizontally to the "1927 North American Datum," "1983 North American Datum," or "State Plane Coordinate System."

(b) Vertically to the "1929 or 1988 North American Vertical Sea Level Datum" as identified on the USGS 7.5 minute (topographic) map.

(ii) The surface elevation of each site to the nearest tenth of a foot.

(iii) The depth interval of all samples collected, including those samples submitted for laboratory testing.

(b) Information related to the subsurface investigatory method, including, as appropriate, the following:

(i) The diameter, or width and length at the surface, of the boring.

(ii) The total depth of the boring.

(iii) The total depth of the well.

(iv) The inside diameter of the well casing.

(v) The top-of-casing elevation used for water level measurement reference, which shall be surveyed to the nearest hundredth of a foot.

(vi) The screened interval depth and elevation, the screen slot size, and the inside diameter of the screen.

(vii) The description of all construction materials and the elevations at which all construction materials were placed including at a minimum a description and depth of the following:

(a) Sand pack.

(b) Grout.

(c) Well seal.

(c) The top and bottom elevations for each consolidated and unconsolidated stratigraphic unit.

(d) Information or data on the characteristics, composition, and features for each consolidated and unconsolidated stratigraphic unit including the following:

(i) For unconsolidated stratigraphic units, the textural classification using the Unified Soil Classification System (USCS), as described in ASTM D2487 as described in rule 3745-500-03 of the Administrative Code.

(ii) For consolidated stratigraphic units, the rock type (such as limestone, dolomite, coal, shale, siltstone, or sandstone).

(iii) Color.

(iv) Moisture content.

(v) Stratigraphic features (such as layering, interbedding, and weathering).

(vi) Fracturing, jointing, and other types of secondary porosity, and any visible accessory minerals (such as pyrite, calcite, or gypsum).

(vii) Lateral extent.

(viii) The depth to saturation.

(ix) The depth to the static water level in the boring.

(e) Information or data on the hydraulic conductivity according to the following:

(i) For each saturated unconsolidated stratigraphic unit, two field measurements of hydraulic conductivity or at least one measurement per saturated unconsolidated stratigraphic unit for each twenty acres, whichever is more.

(ii) For each unconsolidated stratigraphic unit from which an undisturbed sample can be collected, two laboratory measurements of vertical hydraulic conductivity or at least one measurement per unconsolidated stratigraphic unit for each twenty acres, whichever is more.

(iii) For each saturated consolidated stratigraphic unit, two field measurements of hydraulic conductivity or at least one measurement per saturated consolidated stratigraphic unit for each twenty acres, whichever is more.

(iv) When laboratory measurements of vertical hydraulic conductivity are obtained for unconsolidated stratigraphic units that are wholly or partially saturated, the vertical hydraulic conductivity shall be compared to the field hydraulic conductivity to evaluate the extent to which near-vertical fractures may be contributing to ground water flow through the unit.

(v) Hydraulic conductivity data shall be interpreted with respect to the primary and secondary porosity features that are observed or are reasonably expected to occur in the investigated units as well as the stratigraphic and structural features of the investigated units.

(f) All structural geologic features beneath the facility that may influence ground water flow in the subject unconsolidated aquifer system or in any significant zone of saturation above the uppermost aquifer system.

(5) Results of sampling and analyzing the ground water from the subject unconsolidated aquifer system.

3745-510-235 Gas sources and gas migration pathways.

The report on the hydrogeologic investigation identified in rule 3745-510-100 of the Administrative Code shall include clearly labeled and tabbed pages for the section titled "Gas Sources and Gas Migration Pathways," and shall include the following:

(A) A report of the following:

(1) A description of naturally occurring gas sources and potential gas migration pathways at the facility, including the following:

(a) All naturally occurring sources of explosive gas.

(b) All naturally occurring sources of hydrogen sulfide.

(c) All naturally occurring potential pathways at the facility for gas migration and interconnections between pathways. This description shall be in both narrative and map form.

(2) A description, based on publicly available information and any encounters during the site investigation, of gas sources and potential gas migration pathways built by humans within one thousand feet of the facility, including the following:

(a) Oil wells, gas wells, and landfills.

(b) Roads, railroads, underground utilities, mines, field tiles, storm sewers, water lines, electric cables, and pipelines.

(3) A description of the site investigation activities, including field testing and laboratory testing, directly related to identifying, locating, and characterizing the naturally occurring gas sources and potential gas migration pathways.

(4) Summary logs and drawings appropriate for the subsurface investigatory method used to identify, locate, and characterize the naturally occurring gas sources and potential gas migration pathways.

(5) Cross sections that clearly show the identification, extent, and characteristics of the following:

(a) Consolidated stratigraphic units.

(b) Unconsolidated stratigraphic units.

(c) The phreatic surface.

(6) A cross section of the property boundary identifying the potential gas migration pathways that are naturally occurring and the potential gas migration pathways that are built by humans.

(7) Summary of results from field tests and laboratory tests used to identify, locate, and characterize the naturally occurring gas sources and potential gas migration pathways. If a field or laboratory test result was not used, include reasoning for excluding the result from consideration.

(B) Results from the site investigation including the following:

(1) A brief description of each field test method and each laboratory test method used to characterize the geologic and hydrogeologic properties for the purpose of investigating the naturally occurring gas sources and potential gas migration pathways.

(2) Information and results from each field test that was conducted, including completed, failed, or incomplete results. An explanation shall be provided for any test result that was not used. The results shall include the following information:

(a) Quality assurance and quality control testing conducted by the laboratory to verify the accuracy and precision of testing methods and equipment.

(b) The results of data validation.

(c) The characterization of each specimen used in each test.

(d) Intermediate data produced during testing.

(e) The final results of each test.

(3) All figures, drawings, or references used and marked to show how they relate to the characterization of the geologic and hydrogeologic properties.

(4) Logs, including field notes and other pertinent information, from each subsurface investigatory site used to obtain information, data, or samples utilized to identify, locate, and characterize the naturally occurring gas sources and potential gas migration pathways. As appropriate for the method, logs shall include the following:

(a) A description of where information, data, or samples were obtained, including, as appropriate, the following:

(i) The location of each site with northings and eastings referenced to the facility grid system or referenced to the following if a facility grid system was not established:

(a) Horizontally to the "1927 North American Datum," "1983 North American Datum," or "State Plane Coordinate System."

(b) Vertically to the "1929 or 1988 North American Vertical Sea Level Datum" as identified on the USGS 7.5 minute (topographic) map.

(ii) The surface elevation of each site to the nearest tenth of a foot.

(iii) The depth interval of all samples collected including those submitted for laboratory testing.

(b) Information related to the subsurface investigatory method, including, as appropriate, the following:

(i) The diameter, or width and length at the surface, of the boring.

(ii) The total depth of the boring.

(iii) The total depth of the well.

(iv) The top-of-casing elevation used for water level measurement reference surveyed to the nearest hundredth of a foot.

(v) The screened interval depth and elevation.

(vi) A description of all construction materials and the elevations at which all construction materials were placed including at a minimum the following:

(a) Sand pack.

(b) Grout.

(c) Well seal.

(c) The top and bottom elevations for each consolidated and unconsolidated stratigraphic unit.

(d) Information or data on the characteristics, composition, and features for each consolidated and unconsolidated stratigraphic unit including the following:

(i) For unconsolidated stratigraphic units, the textural classification using the Unified Soil Classification System (USCS), as described in ASTM D2487 as described in rule 3745-500-03 of the Administrative Code.

(ii) For consolidated stratigraphic units, the rock type (such as limestone, dolomite, coal, shale, siltstone, or sandstone).

(iii) Color.

(iv) Moisture content.

(v) Stratigraphic features (such as layering, interbedding, and weathering).

(vi) Fracturing, jointing, and other types of secondary porosity, and any visible accessory minerals (such as pyrite, calcite, or gypsum).

(vii) Lateral extent.

(viii) The depth to saturation.

(ix) The depth to the static water level in the boring.

(e) A notation if any gas or odors were encountered.

3745-510-240 Hydrogeologic investigation procedures, equipment, and methodologies.

The report on the hydrogeologic investigation identified in rule 3745-510-100 of the Administrative Code shall include clearly labeled and tabbed pages for the section titled "Hydrogeologic Investigation Procedures, Equipment, and Methodologies," and shall include the following:

(A) A description and an explanation of why a particular subsurface investigatory method and sampling method were chosen to characterize the geomorphologic, geologic, and hydrogeologic properties for the purpose of preparing the topic reports specified in rules 3745-510-231 to 3745-510-235 of the Administrative Code. The procedures, methodologies, and equipment used to sample and analyze ground water from the uppermost aquifer and all significant zones of saturation above the uppermost aquifer system shall be the same as those required for the ground water sampling plan in accordance with rule 3745-506-200 of the Administrative Code. The description and explanation shall include the following:

(1) Appropriate subsurface investigatory methods used to collect data including but not limited to geophysical surveys, soil gas surveys, and borings (such as piezometers, monitoring wells, and test pits).

(2) Depth of site characterization, which shall extend from the ground surface to the bottom of the uppermost aquifer system, with the following exceptions:

(a) The applicant, owner, or operator may limit the maximum depth of the site investigation to one hundred fifty feet below the basal elevations of the disposal limits, unless paragraph (A)(2)(c) of this rule applies.

(b) If the uppermost aquifer system is a consolidated stratigraphic unit, the applicant, owner, or operator may limit the investigation of the uppermost aquifer system to the upper twenty-five feet of the saturated portion of the uppermost aquifer system.

(c) If publicly available information on the regional aquifer indicates that an unconsolidated aquifer system capable of sustaining a yield of at least one hundred gallons per minute for a twenty-four-hour period may exist beneath the facility, and the applicant, owner, or operator proposes to assign a yield of less than one hundred gallons per minute for a twenty-four-hour period, the applicant, owner, or operator shall extend the depth of the site investigation to obtain adequate site-specific information about the aquifer system to justify the assignment of lower yield.

(d) If it is necessary to evaluate below the limits established in paragraphs (A)(2)(a) or (A)(2)(b) or this rule to demonstrate the facility meets siting criteria, the applicant, owner, or operator may extend the subsurface investigation beyond those limits.

(B) The procedures used to protect samples from damage and adverse effects during transportation of the samples to the place of testing.

(C) The analytical procedures and methodology used to characterize the unconsolidated and consolidated materials obtained from borings including but not limited to test pits, drilling, and other investigation methods.

(D) The methodology, equipment, and procedures used to define the uppermost aquifer system and all significant zones of saturation above the uppermost aquifer system, including the following:

(1) Well and piezometer construction specifications.

(2) Water level measurement procedures.

(3) The methodologies, equipment, and procedures used to determine the ground water quality and any contamination in the uppermost aquifer system and the significant zones of saturation above the uppermost aquifer system. The methodologies, equipment, and procedures shall be the same as those required for the ground water sampling and analysis plan in accordance rule 3745-560-200 of the Administrative Code.

3745-510-310 Geotechnical investigation cover page.

The report on the geotechnical investigation identified in rule 3745-510-100 of the Administrative Code shall include a cover page that includes the following:

(A) Title of the report.

(B) Name and location of the facility.

(C) Names, addresses, and telephone numbers of the applicant, owner, and the preparer of the geotechnical investigation report.

3745-510-320 Geotechnical investigation summary and conclusions.

The report on the geotechnical investigation identified in rule 3745-510-100 of the Administrative Code shall include the following clearly labeled and tabbed pages for the section titled "Summary and Conclusions" and shall include the following:

(A) A description of the following:

(1) Critical layers due to shear strength.

(2) Critical layers due to liquefaction potential.

(3) Compressible layers.

(4) Highest temporal phreatic surface as determined through the hydrogeologic investigation.

(5) Highest temporal piezometric surface as determined through the hydrogeologic investigation.

(6) All piezometric surfaces associated with bedrock as determined through the hydrogeologic investigation that may affect the facility during excavation or construction.

(7) The vertical hydraulic conductivity of each unsaturated unconsolidated stratigraphic unit as determined through the hydrogeologic investigation.

(8) Unstable areas.

(B) Summary tables of measurements and test results from the site investigation. The tables shall clearly identify the sample locations, logs, and units of measurement associated with each measurement and test result. The results from all field measurements, field tests, laboratory measurements, and laboratory tests shall be included in the summary tables. The summary tables shall also clearly identify the measurements and test results that are associated with each critical layer and compressible layer.

(C) Any figures, drawings, or references necessary to provide a clear understanding of the summary information contained in the report on the geotechnical investigation.

(D) A map that identifies the location of each cross section included in the report.

3745-510-331 Critical layers due to shear strength.

The report on the geotechnical investigation identified in rule 3745-510-100 of the Administrative Code shall include labeled and tabbed pages for the section titled "Critical Layers due to Shear Strength," and shall include the following:

(A) A description of the critical layers due to shear strength.

(B) An explanation of the criteria used to identify the critical layers due to shear strength.

(C) A description of the site investigation activities directly related to identifying, locating, and characterizing the critical layers due to shear strength, including the subsurface investigatory method, field testing, and laboratory testing.

(D) A summary of the results of site investigation activities directly related to identifying, locating, and characterizing the critical layers due to shear strength.

(E) Any other sources of information used to determine the critical layers due to shear strength.

(F) Cross sections that clearly show the identification, extent, and characteristics of the following:

(1) Consolidated stratigraphic units.

(2) Unconsolidated stratigraphic units.

(3) Critical layers due to shear strength.

(4) Highest temporal phreatic surfaces.

(5) Highest temporal piezometric surfaces.

(6) Basal elevations of the disposal limits.

(7) Basal elevations of existing and proposed excavations. At least one cross section shall depict the deepest excavation or deepest proposed excavation.

3745-510-332 Critical layers due to liquefaction potential.

The report on the geotechnical investigation identified in rule 3745-510-100 of the Administrative Code shall include labeled and tabbed pages for the section titled "Critical Layers due to Liquefaction Potential," and shall include the following:

(A) A description of the critical layers due to liquefaction potential.

(B) An explanation of the criteria used to identify the critical layers due to liquefaction potential.

(C) A description of the site investigation activities directly related to identifying, locating, and characterizing the critical layers due to liquefaction potential, including the subsurface investigatory method, field testing, and laboratory testing.

(D) A summary of the results of site investigation activities directly related to identifying, locating, and characterizing the critical layers due to liquefaction potential.

(E) Any other sources of information used to determine the critical layers due to liquefaction potential.

(F) Cross sections that clearly show the identification, extent, and characteristics of the following:

(1) Consolidated stratigraphic units.

(2) Unconsolidated stratigraphic units.

(3) Critical layers due to liquefaction potential.

(4) Highest temporal phreatic surfaces.

(5) Highest temporal piezometric surfaces.

(6) Basal elevations of the disposal limits.

(7) Basal elevations of existing and proposed excavations. At least one cross section shall depict the deepest existing or proposed excavation.

3745-510-333 Compressible layers.

The report on the geotechnical investigation identified in rule 3745-510-100 of the Administrative Code shall include labeled and tabbed pages for the section titled "Compressible Layers," and shall include the following:

(A) A description of the compressible layers.

(B) An explanation of the criteria used to identify the compressible layers.

(C) A description of the site investigation activities directly related to identifying, locating, and characterizing the compressible layers, including the subsurface investigatory method, field testing, and laboratory testing.

(D) A summary of the results of site investigation activities directly related to identifying, locating, and characterizing the compressible layers.

(E) Any other sources of information used to determine the compressible layers.

(F) Cross sections that clearly show the identification, extent, and characteristics of the following:

(1) Consolidated stratigraphic units.

(2) Unconsolidated stratigraphic units.

(3) Compressible layers.

(4) Highest temporal phreatic surfaces.

(5) Highest temporal piezometric surfaces.

(6) Basal elevations of the disposal limits.

(7) Basal elevations of existing and proposed excavations. At least one cross section shall depict the deepest excavation or deepest proposed excavation.

3745-510-335 Unstable areas.

The report on the geotechnical investigation identified in rule 3745-510-100 of the Administrative Code shall include labeled and tabbed pages for the section titled "Unstable Areas," and shall include the following:

(A) Identification and description, based on publicly available information, of the following within one mile of the facility boundary:

(1) Areas with poor foundation conditions including the following:

(a) Presence of peat.

(b) Presence of loess.

(c) Presence of liquefiable soils.

(d) Soil conditions conducive to significant differential settlement.

(2) Areas susceptible to mass movement including the following:

(a) Coastal or river erosion.

(b) Landslides and rock falls, including the presence of following:

(i) Bedford shale, Kope formation, and Miamitown shale.

(ii) Weathered shales and mudstones of the Conemaugh, Monongahela, and Dunkard groups.

(iii) Lake deposits.

(iv) Cliffs of thick, massive sandstone.

(c) Presence of surface mines.

(d) Presence of underground mines.

(3) Areas with karst terrain.

(B) If publicly available information indicates the presence of underground mines, the following information shall be included in this section:

(1) The location of each mine.

(2) A description of the mining method used for each mine.

(3) The properties of the consolidated and unconsolidated stratigraphic units above each underground mine based on the findings of the site investigation.

(4) A description of the height and width of the mine voids for each underground mine.

(5) A letter from the Ohio department of natural resources, division of mineral resources management or other appropriate agency verifying the type of mine, mining method, location, depth, and status of each underground mine.

3745-510-340 Geotechnical investigation procedures, equipment, and methodologies.

The report on the geotechnical investigation identified in rule 3745-510-100 of the Administrative Code shall include labeled and tabbed pages for the section titled "Geotechnical Investigation Procedures, Equipment, and Methodologies," and shall include the following:

(A) A description and an explanation of why a particular subsurface investigatory method and sampling method were chosen to characterize the geotechnical properties for the purpose of preparing the sections specified in rules 3745-510-331 to 3745-510-335 of the Administrative Code, including the following:

(1) Appropriate subsurface investigatory methods used to collect data including but not limited to tensiometers,

geophysical surveys, and borings (such as piezometers, dutch cone penetrometers, and test pits).

(2) Depth of site characterization. The applicant, owner, or operator may limit the maximum depth of the geotechnical site investigation to unconsolidated stratigraphic units that are within fifty feet of the basal elevations of the deepest excavation at the facility if there is no information that indicates that an unconsolidated stratigraphic unit may exist deeper that could be a critical layer or compressible layer.

(3) Number of borings. The applicant, owner, or operator shall install exploratory borings for the purpose of continuous logging of the subsurface characteristics and properties at a frequency of one boring for every four acres within the facility boundary. Spacing shall be on a uniform grid system. Borings may be moved laterally from the grid to accommodate site topography and features. Additional borings shall be installed where engineered components will be placed above a critical layer or compressible layer or in an unstable area.

(B) The applicant, owner, or operator shall collect, analyze, and log in accordance with paragraph (D) of rule 3745-510-350 of the Administrative Code, the following number of undisturbed samples:

(1) The greater of the following:

(a) Ten per cent of the borings that extend to or through each unconsolidated stratigraphic unit that is a critical layer.

(b) Three samples from each unconsolidated stratigraphic unit that is a critical layer.

(2) One sample from each unconsolidated stratigraphic unit that is a compressible layer

(C) The procedures used to protect samples from damage and from adverse effects during transportation of the samples to the place of testing.

(D) The analytical procedures and methodology used to characterize the unconsolidated and consolidated materials obtained from borings including but not limited to test pits, drilling, and other investigation methods.

(E) The methodology, equipment, and procedures used to define the critical layers, compressible layers, highest temporal phreatic surfaces, and highest temporal piezometric surfaces.

3745-510-350 Geotechnical investigation data and results.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

The report on the geotechnical investigation identified in rule 3745-510-100 of the Administrative Code shall include labeled and tabbed pages for the section titled "Geotechnical Investigation Data and Results," and shall include the following:

(A) A brief description of each field test method and each laboratory test method used to characterize the geotechnical properties for the purpose of preparing the sections specified in rules 3745-510-331 to 3745-510-335 of the Administrative Code.

(B) Information and results from each field test, laboratory test, or screening activity that was conducted, including completed, failed, or incomplete results. An explanation shall be provided for any test result that was not used. The results shall include the following information:

(1) Quality assurance and quality control testing conducted by the laboratory to verify the accuracy and precision of testing methods and equipment.

(2) The results of data validation.

(3) The characterization of each specimen used in each test.

(4) Intermediate data produced during testing.

(5) The final results of each test.

(C) All figures, drawings, or references used and marked to show how they relate to the characterization of the geotechnical properties.

(D) Logs, including field notes and other pertinent information, from each subsurface investigatory site used to obtain information, data, or samples for the site investigation. As appropriate for the method, logs shall include the following:

(1) Information on the site where information, data, or samples were obtained, including, as appropriate, the following:

(a) The location of each site with northings and eastings referenced to the facility grid system or referenced to the following if a facility grid system was not established:

(i) Horizontally to the "1927 North American Datum," "1983 North American Datum," or "State Plane Coordinate System."

(ii) Vertically to the "1929 or 1988 North American Vertical Sea Level Datum" as identified on the USGS 7.5 minute (topographic) map.

(b) The surface elevation of each site to the nearest tenth of a foot.

(c) The depth interval of all samples collected including those submitted for laboratory testing.

(2) Information related to the subsurface investigatory method, including, as appropriate, the following:

(a) The diameter, or the width and length at the surface, of the boring.

(b) The total depth of the boring.

(c) The type of hammer.

(d) Method of advancing and cleaning the boring.

(e) Method of keeping the boring open.

(f) Size of casing and depth of the cased portion of boring.

(g) Equipment and method of driving the sampler.

(h) Type of sampler, length and inside diameter of barrel, and if liners were used.

(i) Size, type, and section length of sampling rods.

(j) Description of cone penetrometer, including, as appropriate, the penetrometer tip, friction sleeve, pressure transducer, and inclinometer.

(k) Type of thrust machine.

(l) Tip and thrust calibration information.

(m) Any occurrence of zero-drift.

(n) Condition of the rods and tip after withdrawal.

(o) Whether a friction reducer was used.

(p) Proximity of any existing borehole that is unbackfilled and uncased.

(3) The top and bottom elevations for each consolidated and unconsolidated stratigraphic unit.

(4) Information or data on the characteristics, composition, and features for each consolidated and unconsolidated stratigraphic unit, including the following:

(a) Variations in texture, saturation, stratigraphy, structure, or mineralogy within each stratigraphic unit that could influence the strength or compressibility of the material.

(b) For unconsolidated stratigraphic units, the textural classification using the Unified Soil Classification System (USCS), as described in ASTM D2487.

(c) For fine-grained unconsolidated stratigraphic units (e.g., silts and clays), field descriptions of consistency, plasticity, and dilatancy.

(d) For consolidated stratigraphic units, the rock type (such as limestone, dolomite, coal, shale, siltstone, or sandstone).

(e) Color.

(f) Moisture content.

(g) Lateral extent.

(h) The results from continuous penetration sampling following ASTM D1586 and the corrected and normalized standard penetration number, or results from continuous mechanical cone penetration testing following ASTM D3441.

(i) Atterberg limits.

(j) In situ unit weight.

(k) Dry unit weight.

(E) The following information on each unconsolidated stratigraphic unit:

(1) For unconsolidated stratigraphic units susceptible to bearing capacity failure, the effective drained or undrained peak shear strength parameters, as appropriate, shall be provided on three representative samples using ASTM D3080 (direct shear), ASTM D2850 (unconsolidated undrained compression), or ASTM D4767 (consolidated undrained triaxial compression).

(2) For unconsolidated stratigraphic units susceptible to failure under static conditions or failure under seismic conditions, the effective shear strength shall be provided on three representative samples using ASTM D3080 (direct shear), ASTM D4767 (consolidated undrained triaxial compression), or ASTM D6467 (torsional ring shear).

(3) For saturated unconsolidated stratigraphic units susceptible to failure under static conditions or failure under seismic conditions, the undrained shear strength using fully saturated samples shall be provided on three representative samples using ASTM D2850 (unconsolidated-undrained triaxial compression).

(4) For all unconsolidated stratigraphic units consisting of fine-grained soils, all of the inputs, intermediate results, outputs, calculations, and parameters resulting from testing samples using ASTM D2435 (one-dimensional consolidation) on one representative sample.

Ohio Administrative Code (OAC) Chapter 3745-511
Multi-Program Design Rules

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Surface water management components	
3745-511-810	Ditches.
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3745-511-870	Level and flow control structures.

3745-511-01 Design - applicability.

The rules in this multi-program chapter shall apply when referenced in either of the following:

(A) A rule in a program chapter.

(B) A rule in another multi-program chapter that was made applicable by a rule in a program chapter.

Program chapters are Chapters 3745-520 to 3745-599 of the Administrative Code.

3745-511-02 Design - definitions.

If a term used in this chapter is defined in rule 3745-500-02 of the Administrative Code, that definition used in rule 3745-500-02 of the Administrative Code is applicable to this chapter unless the term is defined in this rule. As used in this chapter:

(A) [Reserved.]

(B) [Reserved.]

(C) "Compressible material" means in situ soils, added geologic material, structural fill, recompacted soil liner, recompacted soil barrier layer, or material comprised of soil, C&DD, or waste that may settle after being subjected to increased vertical compressive stress.

(D) [Reserved.]

(E) [Reserved.]

(F) [Reserved.]

(G) [Reserved.]

(H) "Hydrostatic surface" means the uppermost piezometric surface and potentiometric surface as those terms are defined in rule 3745-500-02 of the Administrative Code.

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

(A) The applicant shall comply with rules 3745-511-10 to 3745-511-72 of the Administrative Code, as applicable, to demonstrate the geotechnical performance and stability of the design and that the subsurface foundation can support the facility. The demonstration shall include analyses and a report that provide sufficient information to the permitting authority for a complete evaluation of the geotechnical performance of the design, the stability of the design, and the stability of the subsurface foundation of the facility. The geotechnical and stability analyses shall be based on the data collected in accordance with Chapter 3745-510 of the Administrative Code.

(B) Each section of the geotechnical and stability report shall be clearly labeled.

(C) The first section of the geotechnical and stability report shall be titled "Summary and Conclusions" and shall include at a minimum the following information:

(1) A summary of findings and conclusions, including slope limitations and criteria for removal of undesirable material, from the site investigation report that are pertinent to the geotechnical and stability analyses.

(2) A summary of findings and conclusions, including slope limitations and criteria for removal of undesirable material, from the geotechnical and stability analyses pertinent to the evaluation of the design of the facility.

(3) A table summarizing the field measurements, field test results, laboratory measurements, and laboratory test results pertinent to the geotechnical and stability analyses associated with the critical layers and compressible layers.

(4) For all values used in the geotechnical and stability analyses that were not based on field measurements, field test results, laboratory measurements, or laboratory test results, a table summarizing the values, the rationale used to determine the values, and references to any source material that was used to determine the values. These values include but are not limited to the following:

(a) Saturation levels.

(b) Phreatic and piezometric surfaces.

(c) Compressibility characteristics and shear strengths of non-critical layers.

(d) Non-compressible layers.

(e) Waste or C&DD layers that were not sampled and tested during the site investigation.

(5) A table summarizing the geotechnical and stability analyses that were conducted and the results of those analyses.

(D) The geotechnical and stability analyses report shall contain a certification statement and applicant's signature in accordance with rule 3745-500-50 of the Administrative Code.

(E) The geotechnical and stability analyses report shall be signed and, if appropriate, sealed by such professionals skilled in the appropriate disciplines as is necessary to comply with Ohio laws and rules.

3745-511-20 Hydrostatic uplift analysis and reporting.

(A) The hydrostatic uplift analysis of the liner system shall demonstrate that the facility is designed to have a factor of safety of at least 1.4 against failure of any engineered component due to hydrostatic uplift at the surfaces described in paragraphs (B)(1) to (B)(3) of this rule and upon the structures described in paragraph (B)(4) of this rule. The factor of safety shall not be based on any influence or depression of the phreatic surface or peizometric surface caused by the operation or use of temporary or mechanical ground water control structures.

(B) Analysis for the hydrostatic uplift shall address the following:

(1) Critical locations along the surface where the liner system recompacted soil liner is to be placed.

(2) If no liner system recompacted soil liner will be used, the critical locations along the surface where the leachate collection system drainage layer will be placed.

(3) If no liner system recompacted soil liner and no leachate collection system drainage layer will be used, the critical locations located two feet below the basal elevations of the disposal limits.

(4) Underground structures at the facility.

(C) The geotechnical and stability analyses of the liner system shall not rely on any of the tensile qualities of any of the geosynthetic engineered components included in the design other than those engineered components used primarily for tensile reinforcement.

(D) The geotechnical and stability analyses report identified in rule 3745-511-10 of the Administrative Code shall contain a section titled "Hydrostatic Uplift Analysis" which shall include the following information:

(1) The scope, extent, and findings from the site investigation bearing on hydrostatic uplift.

(2) A description of the rationale used for the selection of the analysis input parameters.

(3) A description of the method used to calculate hydrostatic uplift.

(4) A description of the assessed conditions.

(5) A description of the rationale used for the selection of the critical cross section that, at a minimum, shall consider the worst case interaction of the highest critical hydrostatic surface with the surfaces and structures identified in paragraphs (B)(1) to (B)(4) of this rule.

(6) An isopach map showing the differences between the highest critical hydrostatic surface and the top of the surfaces and basal elevations of the structures identified in paragraphs (B)(1) to (B)(4) of this rule.

(7) An isopach map of the thickness of material between the top of the surface identified in paragraphs (B)(1) to (B)(3) of this rule and the top of the zone of saturation.

(8) A drawing of each critical cross section that shows the details of the input information for the analysis model including the following:

(a) The material boundaries.

(b) The applicable dimensions, including the difference between the top of the highest critical hydrostatic surface and the top of the zone of saturation and the difference

between the top of the surfaces identified in paragraphs (B)(1) to (B)(3) of this rule and the height, width, length, and diameter of the structures identified in paragraph (B)(4) of this rule.

(c) The material types.

(d) The in situ unit weights and saturated unit weights of the materials.

(9) All inputs, outputs, and calculations used for the hydrostatic uplift analysis. If a computer was used for any calculations, the computer inputs and outputs shall also be included.

3745-511-25 Seepage force analysis and reporting.

(A) The seepage force analysis shall determine whether seepage forces exist, and if present, analyze those phases where the hydrostatic surface is determined to be higher than the basal elevations of any excavations within and adjacent to the disposal limits. The analysis of seepage forces shall demonstrate that the facility is designed to meet the factors of safety in paragraph (B) of this rule against the critical hydraulic gradient of the recompacted soil liner and the foundation soils arising from seepage forces caused by reaching or exceeding the critical hydraulic gradient.

(B) The factors of safety against the critical hydraulic gradient shall be the following:

(1) The factor of safety shall be 1.5 at all points along the basal elevations of all excavations within and adjacent to the disposal limits.

(2) If temporary or mechanical ground water control structures are necessary to meet the factor of safety in paragraph (B)(1) of this rule and a recompacted soil liner is a component of the liner system, the factor of safety shall be 2.0 at all points along the surface of the recompacted soil liner. The factor of safety for this paragraph shall not be based on any influence or depression of the hydrostatic surface caused by the operation or use of the temporary or mechanical ground water control structures.

(C) The seepage force analysis shall assess sources and steady state conditions including but not limited to the following:

(1) Unlined sediment and storm water management basins with hydrostatic head at the designed maximum operating pool level.

(2) Unlined ditches with hydrostatic head from full flow conditions.

(3) Surface waters of the state.

(4) Aquifers.

(5) Significant zones of saturation.

(D) The geotechnical and stability analyses report identified in rule 3745-511-10 of the Administrative Code shall contain a section titled "Seepage Forces Analysis" which shall include the following information:

(1) The scope, extent, and findings from the site investigation bearing on seepage forces.

(2) A description of the rationale used for the selection of the analysis input parameters.

(3) A description of the method used to calculate the seepage gradients.

(4) A description of the assessed failure modes and conditions including at a minimum the surface and subsurface sources for seepage gradients.

(5) A description of the rationale used for the selection of the critical cross section analyzed. At a minimum, the location with the highest critical hydrostatic surface with the minimum distance between the effective source of seepage and the critical point being analyzed shall be included.

(6) An isopach map depicting the differences between the highest critical hydrostatic surface and the surfaces required to be analyzed in accordance with paragraph (B) of this rule.

(7) A drawing of each critical cross section that shows the details of the input information for the analysis model including the following:

(a) The material boundaries and the highest temporal hydrostatic surface.

(b) The applicable dimensions, including the depth of excavation, the depth to the top of the recompacted soil liner, the depth to saturation, the depth to the highest critical hydrostatic surface, and the depth to the top of the source of the hydrostatic head being analyzed.

(c) The material types.

(d) The in situ unit weight, saturated unit weight, specific gravity, and void ratio of the materials.

(8) All inputs, outputs, and calculations used for the seepage force analysis and a drawing of the critical cross section showing the following as appropriate for the analytical method used:

(a) Flow net with boundary flow and equipotential lines.

(b) Phreatic or piezometric lines.

(c) Boundary conditions.

(d) Flow vectors and areas with the highest flow velocities.

(e) Points of critical seepage identifying areas with the highest exiting gradient with the gradient listed.

(f) The in situ unit weight, saturated unit weight, specific gravity, and void ratio values used.

3745-511-30 Bearing capacity analysis and reporting.

(A) A bearing capacity analysis shall be conducted for all vertical sump risers located on the liner system and shall demonstrate that the design of the liner system and the vertical sump risers provides a factor of safety of at least 3.0 against bearing capacity failure caused by the vertical sump risers.

(B) The geotechnical and stability analyses report identified in rule 3745-511-10 of the Administrative Code shall contain a section titled "Bearing Capacity Analysis of Vertical Sump Risers" which shall include the following information:

(1) The scope, extent, and findings of the site investigation bearing on the bearing capacity analysis.

(2) A description of the rationale used for the selection of the analysis input parameters.

(3) A description of the method used to calculate bearing capacity.

(4) A description of the assessed failure modes and conditions.

(5) A drawing of each critical cross section that fully depicts the analysis input model including the following:

(a) The material boundaries.

(b) The temporal high piezometric surface and temporal high phreatic surface.

(c) The material types.

(d) The in situ unit weights and saturated unit weights.

(6) A cross section of each vertical sump riser showing the liner system, subsurface, and failure surfaces.

(7) All inputs, outputs, and calculations used for the bearing capacity analysis. If a computer was used for any calculations, the computer inputs and outputs shall also be included.

3745-511-40 Static stability analysis and reporting.

(A) The static analyses required by this rule shall be used to demonstrate the following:

(1) The minimum interface and internal shear strengths of engineered components and the materials will provide the factors of safety required by this rule.

(2) The minimum factors of safety are met using shear strengths for the in situ foundation materials. Shear strength is determined by the laboratory testing performed during the site investigation conducted in accordance with Chapter 3745-510 of the Administrative Code.

(B) An assessment using a two dimensional limit equilibrium method of failure modes and conditions that at a minimum shall include the following:

(1) Short-term deep-seated translational and rotational failure. This analysis shall demonstrate, using total stress shear strengths and appropriate pore water pressures, that the following slopes have a factor of safety of at least 1.30 against failure:

(a) Internal slopes.

(b) Excavated slopes.

(c) Interim slopes.

(d) Final slopes.

(2) Long-term deep-seated translational and rotational failure. This analysis shall demonstrate, using effective stress shear strengths, that the following slopes have a factor of safety of at least 1.50 against failure:

(a) Interim slopes.

(b) Final slopes.

This analysis is not required if either the pore water pressure will dissipate within one year and the factor of safety of the static stability analysis described in paragraph (B)(1) of this rule is at least 1.50 or if the construction and filling sequence or features of the facility will buttress the slope.

(3) Shallow translational and rotational failure for drained conditions. This analysis shall demonstrate that the following slopes have a factor of safety of at least 1.50 against failure:

(a) If the design includes a liner system, internal slopes.

(b) Final slopes.

(4) Shallow translational and rotational failure of final slopes for saturated conditions. This analysis shall demonstrate that, with the head on the cap barrier layer equivalent to the thickness of the drainage layer, the cap system has a factor of safety of at least 1.10 against failure.

(5) Shallow translational and rotational failure of the leachate collection system drainage layer and protective layer and of the cap system drainage layer and cap system protection layer. This analysis shall demonstrate that these layers have a factor of safety of at least 1.10 against failure using residual shear strengths and static equipment loading.

(6) Dynamic loading on access roads built into or onto excavated slopes, internal slopes, or the cap system. This analysis shall demonstrate that the integrity of the liner system, leachate management system, and cap system will not be impaired using anticipated dynamic loading.

(C) For all slopes greater than 5.0 per cent that may be loaded with one thousand four hundred forty pounds per square foot or more of vertical compressive stress, the residual shear strength shall be used during the assessment of failure mechanisms for all interfaces between geosynthetics and for all interfaces between a geosynthetic and another material.

(D) The geotechnical and stability analyses of the liner system or the cap system shall not rely on any of the tensile strength properties of any of the geosynthetic engineered components included in the design other than those engineered components used primarily for tensile reinforcement.

(E) The geotechnical and stability analyses report identified in rule 3745-511-10 of the Administrative Code shall contain a section titled "Static Stability Analysis" which shall contain the following information:

(1) The scope, extent, and findings of the site investigation and earthen materials testing program bearing on static stability.

(2) A description of the rationale used for the selection of the analysis input parameters.

(3) A description of the method used to calculate static stability.

(4) For each of the failure modes and conditions assessed, a description of the rationale used for the selection of the critical cross sections for the excavated slopes, internal slopes, interim slopes, and final slopes.

(5) A drawing of each critical cross section that fully depicts the analysis input model including the following:

(a) The material boundaries.

(b) The highest temporal phreatic surfaces and highest temporal piezometric surfaces.

(c) The material types.

(d) The in situ weights and the saturated unit weights of the materials.

(e) The material shear strengths.

(6) The plan view showing the locations of the critical cross sections that includes the northings and eastings for the endpoints of the critical cross sections.

(7) A summary of the results using a two dimensional limit equilibrium method for each of the critical cross sections.

(8) All inputs, outputs, and calculations used for the static stability analysis. If a computer was used for any calculations, the computer inputs and outputs shall also be included.

3745-511-50 Seismic stability analysis and reporting.

(A) The seismic analyses required by this rule shall be used to determine the minimum shear strengths of engineered components and materials necessary to provide the factors of safety required by this rule.

(B) The seismic stability analysis shall demonstrate that the facility is designed to have a factor of safety of at least 1.00 against failure using a two dimensional limit equilibrium method and using a return period of two thousand five hundred years. The seismic stability analysis shall include an assessment of failure modes and conditions that at a minimum shall include the following:

(1) If the design includes a liner system, long-term deep-seated translational and rotational failure mechanisms of the interim slopes using effective stress shear strengths.

(2) Long-term deep-seated translational and rotational failure mechanisms of the final slopes using effective stress shear strengths.

(3) Shallow translational and shallow rotational failure mechanisms of final slopes for unsaturated conditions.

(4) Liquefaction failure mechanisms.

[Comment: The return period of two thousand five hundred years is cited to allow use of different seismic hazards maps. Therefore, the map published by the U.S. geological survey depicting the peak horizontal acceleration with two per cent probability of exceedance in fifty years is acceptable.]

(C) For all slopes greater than 5.0 per cent that may be loaded with one thousand four hundred forty pounds per square foot or more of vertical compressive stress, the residual shear strength shall be used during the assessment of failure mechanisms for all interfaces between geosynthetics and for all interfaces between a geosynthetic and another material.

(D) The geotechnical and stability analyses of the liner system or the cap system shall not rely on any of the tensile qualities of any of the geosynthetic engineered components included in the design other than those engineered components used primarily for tensile reinforcement.

(E) The geotechnical and stability report identified in rule 3745-511-10 of the Administrative Code shall contain a section titled "Seismic Stability Analysis" which shall contain the following information:

(1) The scope, extent, and findings of the site investigation and earthen materials testing program bearing on seismic stability.

(2) A description of the rationale used for the selection of the analysis input parameters.

(3) A description of the method used to calculate the seismic stability.

(4) For each of the failure modes and conditions, a description of the rationale used for the selection of the critical cross sections for the interim slopes and final slopes.

(5) A drawing of each critical cross section that fully depicts the analysis input model including the following:

(a) The material boundaries.

(b) The highest temporal phreatic surface and the highest temporal piezometric surface.

(c) The material types.

(d) The in situ unit weights and the saturated unit weights of the materials.

(e) The material shear strengths.

(6) A plan view showing the location of each critical cross section including the northings and eastings for the endpoints of each critical cross section.

(7) A summary of the results using a two dimensional limit equilibrium method for each of the critical cross sections.

(8) All inputs, outputs, and calculations used for the seismic stability analysis. If a computer was used for any calculations, the computer inputs and outputs shall also be included.

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

(A) The settlement analysis shall demonstrate that the liner system is designed to meet the design requirements for the liner system after accounting for the following:

(1) The total mass of materials above the liner system.

(2) One hundred per cent of the primary consolidation settlement and the secondary consolidation settlement of the compressible materials beneath the surface of the liner system. Secondary settlement shall be calculated using a one hundred-year time frame.

(B) The settlement analysis shall demonstrate that the leachate management system is designed to meet the design requirements for the leachate management system after accounting for the following:

(1) The total mass of materials above the leachate management system.

(2) One hundred per cent of the primary consolidation settlement and the secondary consolidation settlement of the compressible materials beneath the leachate collection system. Secondary settlement shall be calculated using a one hundred-year time frame.

(C) The geotechnical and stability analyses of the liner system shall not rely on any of the tensile strength properties of any of the geosynthetic engineered components included in the design other than those engineered components used primarily for tensile reinforcement.

(D) The geotechnical and stability analyses report identified in rule 3745-511-10 of the Administrative Code shall include a section titled "Settlement Analysis of the Liner System and Leachate Management System" which shall include the following information:

(1) A description of the rationale used for the selection of the settlement analysis input parameters.

(2) A description of the method used to calculate settlement.

(3) A description of the assessed settlement modes and conditions.

(4) A drawing of each critical cross section that fully depicts the analysis input model including the following:

(a) The liner system.

(b) The leachate management system.

(c) The material boundaries.

(d) The material characteristics.

(e) The material types.

(f) The in situ unit weights and saturated unit weights of the materials.

(5) A plan view showing the location of each critical cross section including northings and eastings for the endpoints of each critical cross sections.

(6) A summary of the results.

(7) All inputs, outputs, and calculations used for the settlement analysis. If a computer was used for any calculations, the computer inputs and outputs shall also be included.

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

(A) The settlement analysis shall demonstrate that the design requirements for the separatory leachate barrier and collection system will be met after accounting for the following:

(1) The total mass of materials above the separatory leachate barrier and collection system.

(2) One hundred per cent of the initial consolidation settlement, primary consolidation settlement, and the secondary consolidation settlement of the compressible materials beneath the surface of the separatory leachate

barrier and collection system. Secondary settlement shall be calculated using a one hundred-year time frame.

(B) The geotechnical and stability analyses of the separatory leachate barrier and collection system shall not rely on any of the tensile qualities of any of the geosynthetic engineered components included in the design other than those engineered components used primarily for tensile reinforcement.

(C) The geotechnical and stability analyses report identified in rule 3745-511-10 of the Administrative Code shall include a section titled "Settlement Analysis of the Separatory Leachate Barrier and Collection System" which shall include the following information:

(1) The scope, extent, and findings of the site investigation and earthen materials testing program bearing on the settlement analysis.

(2) A description of the rationale used for the selection of the settlement analysis input parameters.

(3) A description of the method used to calculate settlement.

(4) A description of the assessed settlement modes and conditions.

(5) A drawing of each critical cross section that fully depicts the analysis input model including the following:

(a) The liner system.

(b) The leachate management system.

(c) The material boundaries.

(d) The material characteristics.

(e) The material types.

(f) The in situ unit weights and saturated unit weights of the materials.

(6) A plan view showing the location of each critical cross section including northings and eastings for the endpoints of each critical cross sections.

(7) A summary of the results.

(8) All inputs, outputs, and calculations used for the settlement analysis. If a computer was used for any calculations, the computer inputs and outputs shall also be included.

3745-511-70 Unstable areas.

(A) The owner or operator shall demonstrate that the facility will not be affected by the inherent instability of the area and is designed to maintain the integrity of the engineered components. For the in situ foundation, the owner or operator shall demonstrate that the integrity is maintained within fifty feet of the basal elevations of the deepest excavation at the facility.

(B) The geotechnical and stability analyses report identified in rule 3745-511-10 of the Administrative Code shall include a section titled "Unstable Areas" which shall include the following information:

(1) The scope, extent, and findings of the site investigation bearing on unstable areas.

(2) Drawings, cross-sections, and calculations necessary to demonstrate compliance with paragraph (A) of this rule.

3745-511-72 Underground mines.

(A) The owner or operator shall demonstrate that the facility will not be affected by any underground mines at the facility and that the facility is designed to maintain the integrity of the engineered components.

(B) The geotechnical and stability report identified in rule 3745-511-10 of the Administrative Code shall contain a section titled "Underground Mines" which shall include the following information:

(1) The location of any and all underground mines based on the findings of the site investigation and the letter required by rule 3745-510-335 of the Administrative Code from the Ohio department of natural resources division of mineral resources management or other appropriate agency regarding the respective underground mines.

(2) The angle of draw for the underground mines.

(3) The following, as appropriate:

(a) An analysis by a professional engineer, with at least five years of relevant experience in the abatement of mines, that demonstrates the facility will not be affected by the underground mines and the design of the facility will maintain the integrity of the engineered components. For the in situ foundation, the owner or operator shall demonstrate that the integrity will be maintained within fifty feet of the basal elevations of the deepest excavation at the facility.

(b) If any underground mine has been or will be removed, a description of how the mine has been or will be removed. The description shall include scale drawings showing the vertical and lateral extent of mine removal activities in relation to the boundary of the facility and the disposal limits.

(c) If any underground mine will be filled to eliminate the potential for subsidence, a description of the filling activities. The description shall include the grout mixes to

be used, the rationale for selection of grout, and how the grout will be injected.

3745-511-120 Access roads.

(A) Access roads shall be designed to have grades of twelve per cent or less.

(B) For an access road located on internal slopes, the liner system, the leachate management system, or the cap system, the access road shall conform to the requirements to meet the static stability standards in rule 3745-511-40 of the Administrative Code.

3745-511-210 Ground water control structures.

(A) Temporary and permanent ground water control structures shall be designed to meet the following criteria:

(1) Engineered components of the liner system shall not be used as ground water control structures.

(2) Maintenance of the ground water control structures is minimal.

(3) For permanent ground water control structures, control of ground water flow shall be through the use of non-mechanical means (such as impermeable barriers or permeable drainage structures) to prevent the following:

(a) Flow of ground water through the liner into the disposal limits.

(b) Damage to the liner system from seepage forces caused by high gradients.

(B) No permanent ground water control structures may be used to permanently dewater an aquifer system, except if the recharge and discharge zones of the aquifer system are located entirely within the facility boundary.

(C) Temporary ground water control structures using mechanical or non-mechanical means may be used to depress the phreatic or piezometric surface to address seepage or hydrostatic uplift below the liner system. Temporary ground water control structures may be in operation while the liner system is constructed and during operations of the facility. However, in accordance with rules 3745-511-20 and 3745-511-25 of the Administrative Code, the effects of depressing the phreatic or piezometric surface cannot be used in determining the factor of safety against hydrostatic uplift and seepage forces.

3745-511-220 Foundations.

(A) This rule applies to in situ foundation, added geologic material, structural fill, and embankments.

(B) Foundations shall conform to the requirements to meet the stability standards in rules 3745-511-20 to 3745-511-72 of the Administrative Code.

(C) If the surface of the foundation is immediately beneath the liner system or cap system, the surface of the foundation shall have no abrupt changes in grade that may result in damage to the liner system or cap system.

(D) For structural fill and embankments, if the surface is vegetation, the surface shall have a maximum slope length between ditches that shall result in an erosion rate of not more than five tons per acre per year as calculated using the "Universal Soil Loss Equation," "Revised Universal Soil Loss Equation," or the "Water Erosion Prediction Project Model" as described in rule 3745-500-03 of the Administrative Code assuming disturbed soils and the soils are highly susceptible to rill erosion.

(E) For embankments, the interior and exterior slopes shall be protected from erosion. If an embankment supports a liner system, the surface of the liner system shall also be protected from erosion. Means of erosion protection shall include one or a combination of the following:

(1) Permanent vegetation.

(2) Pavement.

(3) Any alternative means that was approved by the permitting authority so long as the alternative means will protect the slope from erosion and discourage the growth of deep-rooted plants.

(F) For above ground embankments, also conform to both of the following:

(1) Have a width at the top that is not less than eight feet.

(2) Have slopes that shall not exceed twenty-five per cent provided the embankment will be protected from erosion by means specified in paragraph (E) of this rule.

3745-511-310 Liner system.

(A) This rule applies to recompacted soil liner, geosynthetic soil liner, and flexible membrane liner engineered components of the liner system.

(B) The liner system shall conform to the requirements to meet the stability standards in rules 3745-511-20 to 3745-511-72 of the Administrative Code.

(C) For recompacted soil liner, there shall be no abrupt changes in grade that may result in damage to any engineered geosynthetic components in the liner system or leachate collection system.

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

(A) Added geologic material shall extend beyond the construction phase limits, the liner system, or the leachate collection system drainage layer run-out by at least three times the depth of the added geologic material.

(B) The run-out of the liner system shall extend beyond the construction phase limits by at least five feet plus three times the thickness of the recompacted soil liner.

3745-511-410 Leachate collection system drainage layer.

(A) The leachate collection system drainage layer shall consist of one or more of the following engineered components:

(1) A granular drainage layer that conforms to paragraph (E) of this rule.

(2) A shredded tire layer that conforms to paragraph (F) of this rule.

(3) A geocomposite drainage layer, which shall also include an overlying permeable material layer. A leachate collection system drainage layer comprised of geocomposite shall be covered by not less than twelve inches of permeable material.

(4) Leachate collection system pipes that conform to rule 3745-511-432 of the Administrative Code. If leachate collection system pipes are not a component of the leachate drainage layer, another means to measure temperature at the base of the leachate drainage layer shall be provided.

(B) In addition to the engineered components listed in paragraph (A) of this rule, the leachate collection system drainage layer may include a filter layer. If included, the filter layer shall conform to rule 3745-511-440 of the Administrative Code.

(C) The basal elevation of the leachate collection system drainage layer shall have the following slopes:

(1) A slope not less than 0.5 per cent beneath leachate collection system pipes.

(2) A slope not less than 2.0 per cent in all other areas.

(D) The leachate collection system drainage layer shall conform to the requirements to meet the stability standards in rules 3745-511-20 to 3745-511-72 of the Administrative Code.

(E) A leachate collection system drainage layer comprised of granular materials shall be designed to have a thickness of not less than one foot. The permitting authority may approve use of an alternative thickness provided the applicant demonstrates that the depth of leachate above the basal elevations of the drainage layer will not exceed one foot at all times prior to the end of the post-closure care period in all areas other than in a sump.

(F) A leachate collection system drainage layer comprised of tire shreds shall be designed to meet the following criteria:

(1) Have a thickness not less than twelve inches and not more than twenty-four inches, accounting for compression due to the weight of waste or C&DD.

(2) If the drainage layer is placed above a flexible membrane liner, a cushion layer shall be placed between the flexible membrane liner and the drainage layer. The cushion layer shall consist of either of the following:

(a) A drainage layer comprised of granular material designed to have a thickness not less than ten inches.

(b) A geotextile or geocomposite.

3745-511-432 Leachate collection system pipes.

Leachate collection system pipes shall be designed to meet the following criteria:

(A) Be imbedded in the leachate collection system drainage layer.

(B) Have a slope not less than 0.5 per cent.

(C) Have access for cleanout and sampling devices. The access shall be protected from damage caused by differential settling and by vehicles.

(D) Have lengths and configurations that shall not exceed the capabilities of the cleanout devices.

3745-511-434 Sumps.

(A) The leachate management system shall incorporate an adequate number of sumps to serve as transfer points for leachate removal so that the depth of leachate does not exceed one foot at all times prior to the end of the post-closure care period in all areas other than in a sump.

(B) Sumps shall be equipped with automatic high level alarms. The position of the high level alarms shall be established at not greater than one foot above the top elevation of the lateral limits of the sump.

(C) Sumps with vertical risers shall meet the bearing capacity standards in rule 3745-511-30 of the Administrative Code.

(D) Sumps with pumps shall be designed so pumps can be accessed for maintenance and replacement.

(E) Sumps above a flexible membrane liner shall incorporate a second flexible membrane liner under the sump.

3745-511-436 Pumps.

(A) The leachate management system shall incorporate an adequate number of automated pumps so that the depth of leachate does not exceed one foot at all times prior to the end of the post-closure care period in all areas other than in a sump.

(B) Pumps shall have sufficient capacity to convey the anticipated daily amount of leachate to be removed during normal operations. The anticipated daily amount does not include surface water diverted to the leachate collection system during construction of the contiguous leachate management system engineered components.

3745-511-440 Leachate collection system filter layer.

(A) The leachate collection system filter layer shall be placed above the leachate collection system drainage layer and the leachate collection system pipes.

(B) The leachate collection system filter layer shall be designed to minimize clogging in the leachate collection system drainage layer, leachate collection system pipes, and sumps at all times prior to the end of the post-closure care period.

3745-511-450 Conveyance pipes.

(A) Conveyance pipes shall be designed to meet the following criteria:

(1) Have a diameter and schedule capable of conveying the anticipated amount of fluid under anticipated operating pressures.

(2) Be protected from damage caused by freezing temperatures, crushing, and deflection.

(3) Be capable of being inspected for leaks.

(B) For conveyance pipes that penetrate the liner system, a seepage control device shall be included.

(C) For conveyance pipes that penetrate a flexible membrane liner, the penetration shall be booted.

3745-511-460 Leachate holding tanks.

[Comment: Pursuant to rule 3745-42-11 of the Administrative Code, industrial waste holding tanks, including leachate holding tanks, are also required to obtain a permit through Ohio EPA, division of surface water.]

(A) Leachate holding tanks shall be designed to have a minimum storage capacity of ten times the anticipated daily amount of leachate to be removed during normal operations. The anticipated daily amount does not include surface water diverted to the leachate collection system during construction of the contiguous leachate management system engineered components.

(B) Metal leachate holding tanks shall incorporate cathodic protection.

(C) The foundation of an above-ground holding tank shall be capable of supporting the holding tank when the tank is full of leachate without compromising the integrity of any engineered component.

(D) Leachate load-out facilities shall be designed to meet the following:

(1) Be protected from damage caused by freezing and facility operations.

(2) Prevent releases of leachate from load-out facilities.

(3) Contain spills and facilitate spill cleanup.

3745-511-605 Transitional cover.

(A) The transitional cover shall have a maximum slope length between ditches that shall result in an erosion rate of not more than five tons per acre per year as calculated using the "Universal Soil Loss Equation," "Revised Universal Soil Loss Equation," or the "Water Erosion Prediction Project Model" as described in rule 3745-500-03 of the Administrative Code assuming disturbed soils and the soils are highly susceptible to rill erosion.

(B) The slope of the surface of the transitional cover shall have a minimum slope to prevent ponding.

3745-511-610 Cap system barrier layer.

(A) This rule applies to cap system recompacted soil layer, geosynthetic soil liner, and flexible membrane liner engineered components of the cap system barrier layer.

(B) The cap system barrier layer shall conform to the requirements to meet the stability standards in rules 3745-511-40 to 3745-511-50 of the Administrative Code.

(C) For recompacted soil layer, there shall be no abrupt changes in grade that may result in damage to any engineered geosynthetic components in the cap system.

3745-511-620 Cap system drainage layer.

(A) The cap system drainage layer shall consist of either of the following engineered components:

(1) A granular drainage layer that conforms to paragraph (D) of this rule.

(2) A geocomposite drainage layer.

(B) The cap system drainage layer shall conform to the requirements to meet the stability standards in rules 3745-511-40 and 3745-511-50 of the Administrative Code.

(C) The cap system drainage layer may include a pipe system. If included, the pipe system shall conform to rule 3745-511-630 of the Administrative Code.

(D) A cap system drainage layer comprised of granular materials shall be designed to meet the following criteria:

(1) Have a thickness not less than one foot. The permitting authority may approve use of an alternative thickness provided the applicant demonstrates that infiltration of surface water is minimized.

(2) Not clog or freeze.

(3) Prevent damage to the underlying flexible membrane liner.

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

(A) Cap system collection pipes shall be designed to meet the following criteria:

(1) Be imbedded in the cap system drainage layer.

(2) Have a slope not less than 0.5 per cent.

(3) Be sized and spaced to safely pass the calculated maximum flow from the drainage layer.

(4) Be accessible for use of cleanout devices. The access shall be protected from damage caused by differential settling.

(5) Have lengths and configurations that shall not exceed the capabilities of the cleanout devices.

(B) Cap system collection pipe outlets shall be designed to meet the following criteria:

(1) Be sized and spaced to safely convey the calculated maximum flow of liquids from the cap system drainage layer to the surface water management system.

(2) Not clog or freeze.

(C) The permitting authority may approve a cap system without collection pipes and outlets provided the applicant demonstrates that the cap system conforms to the requirements to meet the stability standards in rules 3745-511-40 and 3745-511-50 of the Administrative Code.

3745-511-640 Cap system filter layer.

(A) The cap system filter layer shall be placed above the cap system drainage layer or the gas collection layer and, if present, above the cap system collection pipe system.

(B) The cap system filter layer shall conform to the requirements to meet the stability standards in rules 3745-511-40 and 3745-511-50 of the Administrative Code.

(C) The cap system filter layer shall be designed to minimize clogging of the cap system drainage layer at all times prior to the end of the post-closure care period.

3745-511-650 Cap system protection layer.

(A) The cap system protection layer shall conform to the requirements to meet the stability standards in rules 3745-511-40 and 3745-511-50 of the Administrative Code.

(B) The thickness of the cap system protection layer shall be either of the following:

(1) Not less than thirty-six inches for a facility located in Ashtabula, Cuyahoga, Erie, Fulton, Geauga, Lake, Lorain, Lucas, Ottawa, or Williams county.

(2) Not less than thirty inches for a facility located in an Ohio county other than those listed in paragraph (B)(1) of this rule.

(C) The thickness of the cap system drainage layer may be used to satisfy the thickness requirement of the cap system protection layer specified in paragraph (B) of this rule.

(D) The slope of the surface of the cap system protection layer shall conform to the following:

(1) Have at least a 5.0 per cent slope in all areas other than where surface water control structures are located.

(2) Not exceed compaction equipment limitations.

(3) Not exceed maintenance equipment limitations.

(4) Have a maximum slope length between ditches that shall result in an erosion rate of not more than five tons per acre per year as calculated using the "Universal Soil Loss Equation," "Revised Universal Soil Loss Equation," or the "Water Erosion Prediction Project Model" as described in rule 3745-500-03 of the Administrative Code assuming disturbed soils and assuming the soil is highly susceptible to rill erosion.

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

The run-out of the components of the cap system and gas collection layer shall extend beyond the construction phase limits by at least five feet plus three times the thickness of the cap system recompacted soil layer.

3745-511-750 Gas collection and conveyance system.

(A) The gas collection and conveyance system shall be designed to meet the following criteria:

(1) Consist of one or more of the following:

(a) A gas collection layer that conforms to paragraph (B) of this rule. Gas collected in the gas collection layer shall be directed to a gas vent or gas well or other gas collection device.

(b) Gas vents.

(c) Gas wells, which can be vertical or horizontal and conform to paragraph (C) of this rule.

(d) Gas collection devices other than a collection layer, vent, or well, including elements of the leachate collection system.

(e) A gas mover system. The gas mover system shall have the capacity to manage the maximum gas generation flow rate expected over the intended use period of the gas mover system.

(f) A gas conveyance system.

(2) Either vent collected gas to the atmosphere or convey collected gas to one or more gas control devices.

(3) Not compromise the integrity of the cap system, the leachate management system, the liner system, or the separatory leachate barrier and collection system. At a minimum, the design of the gas collection and conveyance system shall meet the following criteria:

(a) Gas vents and gas wells that are installed through waste or C&DD shall not be installed within ten feet of the top of the liner system or separatory leachate barrier and collection system.

(b) Any penetrations through the cap system shall account for settlement of the waste or C&DD relative to the respective gas vent, gas well, or gas conveyance system component.

(4) Not cause fires within the disposal limits. At a minimum, perforations in any gas wells shall not occur within twenty feet of the surface.

(5) Prevent restricted gas flow due to accumulation of leachate or condensate.

(6) Be capable of isolating any individual gas vents and any individual gas wells and any portions of the gas conveyance system for maintenance and repair.

[Comment: Certain municipal solid waste landfills are required to control air emissions. Permits for gas collection and control systems are obtained through Ohio EPA, division of air pollution control.]

(B) The gas collection layer shall be designed to meet the following criteria:

(1) As a component of a cap system, be as close as possible to the surface of C&DD or waste.

(2) Either remain dry or be oversized to accommodate leachate and condensate. If oversized to accommodate leachate and condensate, the gas collection system shall direct the leachate and condensate to the waste or C&DD mass or to the leachate collection system.

(3) If below a flexible membrane liner or geosynthetic clay liner, also meet the following criteria:

(a) Provide sufficient flow capacity to reduce the gas pressure sufficiently to conform to the requirements to meet the stability standards in rules 3745-511-40 and 3745-511-50 of the Administrative Code.

(b) Have a surface without abrupt changes in grade that may result in damage to the flexible membrane liner or geosynthetic clay liner.

(C) Gas wells shall be designed to obtain gas samples, control flow, accommodate the withdrawal of leachate and condensate, and measure the following:

(1) Temperatures at different locations down the well.

(2) Water level in the well.

(3) Gas pressure.

(4) Gas composition.

(5) Gas flow.

(D) Condensate collected in the gas collection and conveyance system shall be directed to one or more of the following:

(1) The leachate management system.

(2) A condensate storage tank that conforms to rule 3745-511-755 of the Administrative Code.

(3) A public sewerage system.

(4) A wastewater treatment works permitted in accordance with Chapter 6111. of the Revised Code.

(5) The waste or C&DD mass provided the following are true:

(a) The condensate is collected from within or above the disposal limits.

(b) The waste or C&DD mass is above a leachate collection system.

(E) Any conveyance pipes used to convey condensate shall conform to rule 3745-511-450 of the Administrative Code.

3745-511-755 Condensate holding tank.

[Comment: Pursuant to rule 3745-42-11 of the Administrative Code, industrial waste holding tanks, including condensate holding tanks, are required to obtain a permit through Ohio EPA, division of surface water.]

(A) Condensate holding tanks shall be designed to have a minimum storage capacity of ten times the anticipated daily amount of condensate generated from continuous operation of the gas collection and conveyance system.

(B) Metal condensate holding tanks shall incorporate cathodic protection.

(C) The foundation of an above-ground holding tank shall be capable of supporting the holding tank when the tank is full of condensate without compromising the integrity of any engineered components.

(D) Condensate load-out facilities shall be designed to meet the following:

(1) Be protected from damage caused by freezing and facility operations.

(2) Prevent releases of leachate from load-out facilities.

(3) Contain spills and facilitate spill cleanup.

3745-511-810 Ditches.

(A) Ditches shall be designed to accommodate the peak flow from the twenty-five-year, twenty-four-hour storm event.

(B) Ditches shall be designed to minimize silting, scouring, and erosion.

(C) The slope of ditches along flow lines shall be a minimum of two per cent.

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

(A) Sediment and storm water management basin systems shall be designed to meet the following criteria:

(1) Incorporate at least three ponds or cells, as described in paragraphs (A)(2) to (A)(4) of this rule, placed in series. Each pond or cell shall be designed to meet the following:

(a) Minimize short circuiting and dead storage areas.

(b) Be capable of being dewatered to a level below the desired operational level.

(c) Have primary outlets or water passageways that shall safely convey the surface water flow from a ten-year, twenty-four-hour storm event using non-mechanical means.

(d) Have an emergency spillway that shall, in combination with the primary outlet, safely discharge the surface water flow from a one hundred-year, twenty-four-hour storm event using non-mechanical means.

(2) Have a primary settling pond or cell, also known as a forebay, that shall be designed to meet the following criteria:

(a) Be capable of removing medium sand sized particles.

(b) If the length to width ratio is less than four to one, use baffles or other means to increase the flow path between the inlet and the outlet.

(c) Be capable of being easily cleaned out at any time of the year.

(3) Have a secondary settling pond or cell that shall be designed to meet the following criteria:

(a) Be capable of settling a particle with a settling velocity of 0.0009 feet per second.

(b) If the length to width ratio is less than four to one, use baffles or other means to increase the flow path between the inlet and the outlet.

(c) Be capable of storing the volume of run off from a ten-year, twenty-four-hour storm event.

(d) Contain an inlet of the emergency spillway that shall be at an elevation that will not allow surface water flow into the emergency spillway until the twenty-five-year, twenty-four-hour storm event.

(e) Be equipped to prevent floatables from being discharged through the outlet.

(f) Be equipped with a dewatering device that draws from the surface of the pooled water.

(4) Have a third pond or cell, also known as a discharge control pond, that shall be designed to discharge the volume of runoff from a 0.75-inch rainfall in not less than twenty-four hours.

(B) The containment structures of the sediment and storm water management basin shall be designed to meet the following criteria:

(1) Provide not less than one foot of freeboard above the designed maximum operating pool level after accounting for settlement.

(2) Have a slope that does not exceed compaction and maintenance equipment limitations.

(3) Use a seepage control device for any penetrations through the liner system.

(4) If structural fill is used, use structural fill that conforms to the design standards in rule 3745-511-220 of the Administrative Code.

(5) If the embankment is above ground, the embankment shall conform to the design standards in rule 3745-511-220 of the Administrative Code.

(C) The surface of discharge points of the sediment and storm water management basin system shall have rip rap. Rip rap shall extend as far as necessary to provide erosion protection and re-aeration of discharge water.

3745-511-870 Level and flow control structures.

(A) The sediment and storm water management basin system or lagoon shall be designed with as many multi-purpose level and flow control structures as necessary for the purposes of drawdown, flow distribution, flow and depth measuring, sampling, and pumping.

(B) Level and flow control structures shall be designed to meet the following criteria:

(1) Be accessible for maintenance and adjustment of controls.

(2) Be located to avoid freezing and ice damage to the control structures.

(3) Be able to be preset to prevent the liquid elevation from dropping below the desired operational level.

(4) Not use stop logs.

(5) For level control structures, include valves, slide tubes, or dual slide gates.

(6) For flow control structures, be able to immediately stop flow of liquid into the sediment and storm water management basin system pond or cell, or lagoon.

(C) An above-ground sediment and storm water management basin system pond or cell, or lagoon shall have an overflow device to prevent overfilling during operations. The elevation of the overflow device shall be not more than 0.5 feet above the designed maximum operating pool level of the pond or lagoon. The overflow device shall be able to accommodate peak instantaneous flow. The permitting authority may approve use of a device other than an overflow device to preclude overfilling provided the applicant demonstrates that the device will prevent the liquid level from rising 0.5 feet above the designed maximum operating pool level.

[Comment: Existence of an overflow device or an alternative does not constitute authorization to discharge pursuant to Chapter 6111. of the Revised Code. Authorization to discharge is obtained through a national pollutant discharge elimination system (NPDES) permit from Ohio EPA, division of surface water.]

(D) Discharge structures shall be able to accommodate two hundred fifty per cent of the maximum flow through the sediment and storm water management basin system pond or cell, or lagoon.

(E) Any pipe intake or riser spillway shall have an anti-vortex device.

Ohio Administrative Code (OAC) Chapter 3745-512
Multi-Program Construction Rules

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3745-512-01 Construction - applicability and general compliance.

(A) The rules in this multi-program chapter shall apply when referenced in either of the following:

(1) A rule in a program chapter.

(2) A rule in another multi-program chapter that was made applicable by a rule in a program chapter.

Program chapters are Chapters 3745-520 to 3745-599 of the Administrative Code.

(B) General compliance.

(1) The applicant, owner, or operator shall test, construct and certify engineered components as required by this chapter.

(2) Any exception to the applicability of paragraph (B)(1) of this rule will be made by the program chapter. If an engineered component is not included in the facility's design, this chapter does not require that the engineered component be constructed. However, if an engineered component is included in the facility's design, and has not yet been constructed, then paragraph (B)(1) of this rule is applicable.

3745-512-02 Construction - definitions.

If a term used in this chapter is defined in rule 3745-500-02 of the Administrative Code, that definition used in rule 3745-500-02 of the Administrative Code is applicable to this chapter.

3745-512-10 Shear strength evaluation and reporting.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) Any material used to an construct engineered component of the facility shall undergo a shear strength evaluation in accordance with this rule prior to use of the construction material. The owner or operator shall not use any material to construct the facility unless the results of the shear strength evaluation meet all applicable specifications in this rule and meet the material specifications established by the geotechnical and slope stability analyses in the authorizing document.

(B) The shear strength evaluation of the construction material shall be signed and sealed by a professional engineer.

(C) The owner or operator shall test representative samples of the specific soils and the geosynthetic materials used at the facility and use the results in accordance with the following:

(1) Prior to the initial use of each specific geosynthetic material in the construction of engineered components at a facility, the shear strength for all soil to geosynthetic and geosynthetic to geosynthetic interfaces that include the material shall be determined at least twice using ASTM D5321 (direct shear test) or ASTM D6243 (direct shear test for geosynthetic clay liner). Testing shall be conducted with the specific recompacted soil with the highest liquid limit expected to be used in the uppermost lift. Prior to each subsequent construction event, shear strength shall be determined at least once using samples of the materials identified by the initial two tests as being at the highest risk for interface failure.

(2) The tests of each interface required by paragraph (C)(1) of this rule shall be conducted to determine the shear strength failure envelope that represents the entire range of normal stresses that will be experienced by the interface during facility construction and disposal operations. Each test shall use representative samples of the materials that create the interface. If a shear stress point plots below the minimum shear strength failure envelope established in the stability analysis report in the authorizing document, the test is considered a failed test. If the authorizing document does not include a minimum shear strength envelope, then a shear strength failure envelope shall be developed in the manner established by rule 3745-511-40 of the Administrative Code.

(3) The results from tests required by paragraph (C)(1) of this rule for the flexible membrane liner interface with a liner system recompacted soil liner or cap system recompacted soil layer shall be used to establish the lowest per cent compaction and the highest per cent above optimum moisture content to be used during construction of the recompacted soil liner and recompacted soil layer.

(4) If no recompacted soil liner is required and if a flexible membrane liner is required, the tests required by paragraph (C)(1) of this rule of the interface created by the soil that will be beneath and in contact with the flexible membrane liner shall use the following soils:

(a) For in situ foundation, the soil with the highest liquid limit that is acceptable for construction. Representative samples shall be compacted at four per cent above the optimum moisture content and at ninety-five per cent of the maximum density based on ASTM D698 (standard proctor).

(b) For added geologic material, structural fill, or embankment, the soil with the highest moisture content and lowest density that is acceptable for construction.

(5) Tests of interfaces with a geosynthetic clay liner shall be conducted using hydrated samples of the geosynthetic clay liner.

(D) The owner or operator shall test representative samples of the specific fine-grained soils to be used in the construction of an engineered component at the facility,

excluding in situ foundation, and use the results in accordance with the following:

(1) Representative samples shall be compacted at the lowest per cent compaction and the highest per cent above optimum moisture content expected during construction. For recompacted soil liner material, samples from the test pad constructed in accordance with rule 3745-512-21 of the Administrative Code may be used instead of using remolded samples. The results from tests required by paragraphs (D)(2) and (D)(3) of this rule shall be used to establish the highest moisture content and the lowest density to be used during construction of the engineered component.

(2) Prior to the initial use of each specific fine-grained soil, determine the effective shear strength of the samples described in paragraph (D)(1) of this rule using ASTM D3080 (direct shear test), ASTM D4767 (consolidated-undrained triaxial compression test), or ASTM D6467 (torsional ring shear test). The tests required by this rule shall be conducted to determine the shear strength failure envelope that represents the entire range of normal stresses that will be experienced by the engineered component during facility construction and disposal operations. If a shear stress point plots below the minimum shear strength failure envelope established in the stability analysis report in the authorizing document, the test is considered a failed test. If the authorizing document does not include a minimum shear strength envelope, then a shear strength failure envelope shall be developed in the manner established by rule 3745-511-40 of the Administrative Code

(3) Prior to the initial use of each specific fine-grained soil used in the construction of an engineered component under the disposal limits, determine the undrained shear strength of fully saturated samples described in paragraph (D)(1) of this rule using ASTM D2850 (unconsolidated-undrained triaxial compression).

3745-512-15 Pre-construction testing.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) Any material used to construct an engineered component of the facility shall undergo pre-construction testing by the owner or operator in accordance with this rule prior to use of the construction material. The owner or operator shall not use any material to construct the facility unless the results of the pre-construction testing meet all applicable specifications in this chapter and the material specifications that were established by the authorizing document.

(B) The evaluation of the construction material shall be signed and sealed by a professional engineer. The evaluation shall determine whether all applicable specifications in this chapter and the material specifications established by the authorizing document are being met.

(C) For added geologic material, the owner or operator shall perform pre-construction testing on representative samples of the soil to determine the following:

(1) The maximum dry density and optimum moisture content according to ASTM D698 (standard proctor) or ASTM D1557 (modified proctor) at a frequency of not less than once for every ten thousand cubic yards of soil.

(2) The recompacted laboratory hydraulic conductivity using ASTM D5084 (falling head permeameter) at a frequency of not less than once for every ten thousand cubic yards of soil. Sample preparation and compaction shall model the construction requirements established in paragraphs (A)(5) to (A)(8) of rule 3745-512-222 of the Administrative Code.

(D) For structural fill using rocks or using soil with more than thirty per cent material retained on the 0.75-inch sieve, the owner or operator shall construct a test fill as described in "Test Quarries and Test Fills" to determine the size and type of construction equipment to be used, lift thickness, number of passes, and use of water.

(E) For structural fill using soil with not more than thirty per cent material retained on the 0.75-inch sieve, the owner or operator shall perform pre-construction testing on representative samples of the soil to determine the following:

(1) The maximum dry density and optimum moisture content according to ASTM D698 (standard proctor) or ASTM D1557 (modified proctor) at a frequency of not less than once for every ten thousand cubic yards of soil.

(2) If a vegetated surface is specified in the authorizing document, the grain size distribution of soil used in the top lift according to ASTM D422 (sieve and hydrometer) at a frequency of not less than once for every three thousand cubic yards of soil.

(F) For embankment material, the owner or operator shall perform pre-construction testing on representative samples of the soil to determine the following:

(1) The maximum dry density and optimum moisture content according to ASTM D698 (standard proctor) or ASTM D1557 (modified proctor) at a frequency of not less than once for every ten thousand cubic yards of soil.

(2) The grain size distribution according to ASTM D422 (sieve and hydrometer) at a frequency of not less than once for every three thousand cubic yards of soil.

(G) For geosynthetic clay liner, the owner or operator shall perform pre-construction testing on representative samples to determine the dry bentonite mass per square foot according to ASTM D5993 at a frequency of not less than once per fifty thousand square feet of geosynthetic clay liner.

(H) For granular material used as leachate collection system drainage layer, the owner or operator shall perform

pre-construction testing on representative samples at a frequency of not less than once for every three thousand cubic yards of granular material to determine the following:

(1) Hydraulic conductivity using ASTM D2434 (constant head).

(2) Grain size distribution using ASTM C136 (sieve).

(3) Carbonate content using ASTM D3042 at a pH of 4.0.

(I) For tire shreds used as leachate collection system drainage layer, the owner or operator shall perform pre-construction testing on representative samples at a frequency of not less than once for every seven thousand five hundred cubic yards of tire shred material to determine the following:

(1) Hydraulic conductivity at the maximum projected normal compressive stress using a method prescribed by the professional engineer that will provide accurate and representative results.

(2) Size distribution using a method prescribed by the professional engineer that will provide accurate and representative results. This paragraph does not apply if the tire shred drainage layer is placed above a cushion layer that is a leachate collection system drainage layer comprised of granular material.

(J) For geocomposite, the owner or operator shall perform pre-construction testing on representative samples to determine the following:

(1) Apparent opening size of the filter fabric component of the geocomposite according to ASTM D4751 at a frequency in accordance with ASTM D4354 (sampling geosynthetics) "Procedure B" where a unit is considered one roll and a lot size shall not exceed one hundred thousand square feet.

(2) Transmissivity using ASTM D4716 at the maximum projected normal compressive stress and at a frequency in accordance with ASTM D4354 (sampling geosynthetics) "Procedure B" where a unit is considered one roll and a lot size shall not exceed one hundred thousand square feet. The substrate and superstrate used in the testing shall be significantly similar to or adequately represent the engineered components being used below and above the geocomposite.

(K) For tire shreds used for the permeable material overlying a geocomposite drainage layer, the owner or operator shall perform pre-construction testing on representative samples of the shredded tires for size distribution using a method prescribed by the professional engineer that will provide accurate and representative results.

(L) For material used to surround leachate pipes, the owner or operator shall perform pre-construction testing on representative samples at a frequency of not less than once for every three thousand cubic yards of granular material to determine the following:

(1) Grain size distribution according to ASTM C136 (sieve).

(2) Hydraulic conductivity using ASTM D2434 (constant head).

(3) Carbonate content using ASTM D3042 at a pH of 4.0.

(M) For material for the granular filter layer, the owner or operator shall perform pre-construction testing on representative samples at a frequency of not less than one test per ten thousand cubic yards of material to determine the following:

(1) Grain size distribution according to ASTM C136 (sieve).

(2) Hydraulic conductivity using ASTM D2434 (constant head).

(3) For granular filter layers over the leachate collection system drainage layer or within the disposal limits, carbonate content using ASTM D3042 at a pH of 4.0 .

(N) For geotextile filter layer, the owner or operator shall perform pre-construction testing to determine the apparent opening size according to ASTM D4751 at a frequency in accordance with ASTM D4354 (sampling geosynthetics) "Procedure B" where a unit is considered one roll and a lot size shall not exceed one hundred thousand square feet.

(O) For transitional cover, the owner or operator shall perform pre-construction testing on representative samples at a frequency of not less than one test per ten thousand cubic yards of material to determine the following:

(1) The grain size distribution according to ASTM D422 (sieve and hydrometer).

(2) The atterberg limits according to ASTM D4318.

(3) For soil used in the top lift, if any soil amendment is necessary to provide sufficient fertility to support a dense and complete cover of vegetation.

(P) For material for the recompacted soil layer of a cap system, the owner or operator shall perform pre-construction testing on representative samples of the soil. The pre-construction testing shall determine the following:

(1) The maximum dry density and optimum moisture content according to ASTM D698 (standard proctor) or ASTM D1557 (modified proctor) at a frequency of not less than once for every three thousand cubic yards of soil.

(2) The grain size distribution according to ASTM D422 (sieve and hydrometer) at a frequency of not less than once for every three thousand cubic yards of soil.

(3) The atterberg limits according to ASTM D4318 at a frequency of not less than once for every three thousand cubic yards of soil.

(4) The recompacted laboratory hydraulic conductivity according to ASTM D5084 (falling head permeameter) at a

frequency of not less than once for every ten thousand cubic yards of soil. Sample preparation and compaction shall model the construction requirements established in paragraphs (A)(5) to (A)(8) of rule 3745-512-611 of the Administrative Code.

(Q) For material used for granular drainage layer in the cap system, the owner or operator shall perform pre-construction testing on representative samples at a frequency of not less than once for every ten thousand cubic yards of granular material to determine the following:

(1) Hydraulic conductivity using ASTM D2434 (constant head).

(2) Grain size distribution using ASTM C136 (sieve).

(R) For cap protection layer, the owner or operator shall perform pre-construction testing on the soil to determine the following:

(1) The atterberg limits according to ASTM D4318 at a frequency of not less than once for every five thousand cubic yards of soil.

(2) Organic content according to "Test Method C" of ASTM D2974 at a frequency of not less than once for every five thousand cubic yards of soil.

(3) The grain size distribution according to ASTM D422 (sieve and hydrometer) at a frequency of not less than once for every five thousand cubic yards of soil.

(4) The per cent dispersion according to ASTM D4221 at a frequency of not less than once for every five thousand cubic yards of soil.

(5) For soil used in the top lift, at a frequency of not less than once for every ten thousand cubic yards of soil, if any soil amendment is necessary to provide sufficient fertility to support a dense and complete cover of vegetation.

(S) For the separation layer of the gas collection layer, the owner or operator shall perform pre-construction testing on representative samples to verify the separation layer meets the following specifications:

(1) For granular material, grain size distribution according to ASTM C136 (sieve) at a frequency of not less than once for every ten thousand cubic yards of material.

(2) For a geotextile, apparent opening size according to ASTM D4751 at a frequency in accordance with ASTM D4354 (sampling geosynthetics) "Procedure B" where a unit is considered one roll and a lot size shall not exceed one hundred thousand square feet.

(T) For granular material for the gas collection layer in the cap system, the owner or operator shall perform pre-construction testing on representative samples to verify the gas collection layer meets the specifications in the authorizing document at a frequency of not less than once for every ten thousand cubic yards of granular material.

(U) For geocomposite used as a gas collection layer in the cap system, the owner or operator shall perform pre-construction testing on representative samples to determine the following:

(1) Apparent opening size according to ASTM D4751 at a frequency in accordance with ASTM D4354 (sampling geosynthetics) "Procedure B" where a unit is considered one roll and a lot size shall not exceed one hundred thousand square feet.

(2) Transmissivity using ASTM D4716 at the maximum projected normal compressive stress and at a frequency in accordance with ASTM D4354 (sampling geosynthetics) "Procedure B" where a unit is considered one roll and a lot size shall not exceed one hundred thousand square feet.

3745-512-17 Alternative materials evaluation and reporting.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) The owner or operator may use an alternative material to construct an engineered component of the facility if the alternative material undergoes an evaluation in accordance with this rule prior to use. An alternative material shall not be used to construct the facility unless the use was approved prior to use by the permitting authority.

(B) The permitting authority may decline to act on the alternative material request.

(C) The alternative material evaluation shall be signed and sealed by a professional engineer and include the following:

(1) A narrative section that identifies the alternative material and the engineering component for which it will be used.

(2) A demonstration that the alternative material meets the approval requirements established in paragraph (G) of this rule, as applicable.

[Comment: As defined and instructed by the applicable program chapter, if use of the alternative material meets the definition of an alteration, the owner or operator shall also submit an alteration request (the alternative material evaluation may be included in the alteration request). If use of the alternative material meets the definition of a modification, the owner or operator shall also submit a permit to install application (the alternative material evaluation may be included in the permit to install application).]

(D) Procedures for requesting and acting on an alternative material request shall be pursuant to rule 3745-500-510 of the Administrative Code.

(E) The approval for use of an alternative material is valid only for the area identified in the alternative material request. If the alternative material is to be used in additional areas, the owner or operator shall submit another evaluation under this rule.

(F) Approval to use an alternative material does not relieve the owner or operator from complying with requirements established by this chapter and any specification in the authorizing document.

(G) The permitting authority shall not approve use of an alternative material unless it determines the following:

(1) The alternative material is not a solid waste.

(2) Use of the alternative material does not interfere with the ability of the owner or operator to do the following:

(a) Construct, operate, close, and maintain during the post-closure care period the facility in compliance with Chapters 3704., 3714., 3734., and 6111. of the Revised Code or rules promulgated thereunder and with authorizing documents.

(b) Conduct corrective actions presently being taken or that are proposed to be taken at the facility or in the immediate area including but not limited to fire, gas, odors, or ground water corrective actions.

(c) Monitor the impact of the facility on the environment.

(3) The owner or operator has demonstrated the ability or is otherwise capable of using the alternative material.

(4) The alternative material meets the following applicable standards:

(a) For embankment material, the alternative soil type shall have low permeability, good compactability, good cohesiveness, and be free of foreign material, deleterious material, industrial waste, solid waste, C&DD, and objects exceeding six inches in any dimension.

(b) For liner system flexible membrane liner, the alternative material shall be chemically resistant to damage caused by leachate. To evaluate chemical resistance, the permitting authority shall determine that at least one of the following is used by the owner or operator:

(i) U.S. EPA method 9090 or ASTM D5747. The immersion temperature shall be fifty degrees Centigrade if ASTM D5322 (immersion) is used in conjunction with ASTM D5747.

(ii) Any documented data, including data regarding the permeance and permeability of the flexible membrane liner to the constituents in the leachate or other materials that may come in contact with the flexible membrane liner.

(c) For liner system flexible membrane liner, the alternative thickness shall result in a consistent seam.

(d) For liner cushion layer used in the leachate collection system granular drainage layer, the alternative material shall protect the liner system flexible membrane liner from damage caused by construction materials and construction activities.

(e) For granular drainage material used as the leachate collection system drainage layer, the alternative material shall conform to the following:

(i) Use of the material will not result in the depth of leachate above the basal elevation of the leachate collection system drainage layer to exceed one foot, except in a recessed sump.

(ii) Use of the material will not result in clogging of the sump.

(iii) Be chemically compatible with the leachate.

(f) For liner cushion layer used in the leachate collection system tire shred drainage layer, the alternative material shall be chemically resistant to damage caused by leachate. To evaluate chemical resistance, the permitting authority shall determine that at least one of the following is used by the owner or operator:

(i) ASTM D6389 for the geotextile component and ASTM D6388 for the geonet component. The immersion temperature shall be fifty degrees Centigrade if ASTM D5322 (immersion) is used.

(ii) Any documented data demonstrating that the alternative material is resistant to the constituents in the leachate or other materials that may come in contact with the liner cushion layer.

(g) For leachate collection system geocomposite drainage layer, the alternative material shall be chemically resistant to damage caused by leachate. To evaluate chemical resistance, the permitting authority shall determine that at least one of the following is used by the owner or operator:

(i) ASTM D6389 for the geotextile component and ASTM D6388 for the geonet component. The immersion temperature shall be fifty degrees Centigrade if ASTM D5322 (immersion) is used.

(ii) Any documented data demonstrating that the alternative material is resistant to the constituents in the leachate or other materials that may come in contact with the geocomposite.

(h) For pipes and risers in the leachate collection system, the alternative material shall be chemically and physically resistant to damage caused by waste, C&DD, leachate, and gas that may come in contact with the pipes and risers.

(i) For the geotextile filter layer in the leachate collection system, the alternative material shall be chemically resistant to damage caused by leachate. To evaluate chemical resistance, the permitting authority shall determine that at least one of the following is used by the owner or operator:

(i) ASTM D6389. The immersion temperature shall be fifty degrees Centigrade if ASTM D5322 (immersion) is used.

(ii) Any documented data demonstrating that the alternative material is resistant to the constituents in the leachate or other materials that may come in contact with the geotextile.

(j) For conveyance pipes in the leachate management system, the alternative material shall be chemically and physically resistant to damage caused by waste, C&DD, leachate, and gas that may come in contact with the conveyance pipes.

(k) For transitional cover material, the alternative soil type shall have low permeability, good compactability, good cohesiveness, and be free of foreign material, deleterious material, industrial waste, solid waste, C&DD, and large objects in such quantities that could interfere with the construction and intended purpose of the transitional cover.

(l) For liner cushion layer in the gas collection layer, the alternative material shall protect the cap system flexible membrane liner from damage caused by construction materials and construction activities.

(m) For cap system flexible membrane liner, the alternative material shall be chemically resistant to damage caused by leachate. To evaluate chemical resistance, the owner or operator shall determine that at least one of the following is used by the owner or operator:

(i) U.S. EPA method 9090 or ASTM D5747. The immersion temperature shall be fifty degrees Centigrade if ASTM D5322 (immersion) is used in conjunction with ASTM D5747.

(ii) Any documented data, including data regarding the permeance and permeability of the flexible membrane liner to the constituents in the leachate or other materials that may come in contact with the flexible membrane liner.

(n) For cap system flexible membrane liner, the alternative thickness shall result in a consistent seam.

(o) For liner cushion layer underlying the granular drainage layer in the cap system, the alternative material shall protect the cap system flexible membrane liner from damage caused by construction materials and construction activities.

3745-512-20 Recompacted soil liner material evaluation and reporting.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) The owner or operator shall perform pre-construction testing in accordance with this rule prior to construction of the recompacted soil liner.

(B) The owner or operator shall use only soils that meet the range of soil properties established in the recompacted soil liner test pad certification report required by rule 3745-512-21 of the Administrative Code. The soil properties shall meet the following criteria:

(1) One hundred per cent of the particles shall have a maximum dimension not greater than two inches.

(2) Not more than ten per cent of the particles by weight shall have a dimension greater than 0.75 inches.

(3) Have plasticity properties lying above the A-line as described in ASTM D2487 (USCS).

(4) The recompacted laboratory hydraulic conductivity results, as evaluated under paragraph (C)(4) of this rule, do not exceed 1.0 times ten to the negative seven centimeters per second.

(C) The evaluation shall be signed and sealed by a professional engineer. The evaluation shall determine whether the soil conforms to the standards in paragraph (B) of this rule with a delineation of acceptable and unacceptable sources. The evaluation shall contain the results of the following pre-construction testing performed on representative samples of the borrow soils:

(1) The maximum dry density and optimum moisture content according to ASTM D698 (standard proctor) or ASTM D1557 (modified proctor) at a frequency of not less than once for every two thousand cubic yards of borrow soil.

(2) The grain size distribution according to ASTM D422 (sieve and hydrometer) at a frequency of not less than once for every one thousand five hundred cubic yards of borrow soil.

(3) The atterberg limits according to ASTM D4318 at a frequency of not less than once for every one thousand five hundred cubic yards of borrow soil.

(4) The recompacted laboratory hydraulic conductivity according to ASTM D5084 (falling head permeameter) at a frequency of not less than once for every ten thousand cubic yards of borrow soil. Sample preparation and compaction shall model lift placement.

3745-512-21 Recompacted soil liner test pad certification.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) The owner or operator shall construct a test pad, perform testing, and submit a test pad certification report in accordance with this rule prior to construction of the recompacted soil liner. The director, or for a C&DD facility

the concurring authority, may approve an alternative to a test pad provided the recompacted soil liner can attain the hydraulic conductivity specification established in the applicable program chapter.

(B) The construction of the recompacted soil liner shall be modeled by the owner or operator using an approved test pad. The test pad shall be used to determine the construction details required to attain the hydraulic conductivity specification applied to the recompacted soil liner by the program chapter. The test pad shall be constructed as many times as necessary to meet the hydraulic conductivity criterion. The test pad shall be used to establish a set of parameters for certification of the soils to be used in the construction of the recompacted soil liner. A test pad shall be constructed whenever there is a significant change in soil material properties or whenever the owner or operator would like to amend the construction details. The test pad shall meet the following criteria:

(1) Be designed so that the proposed tests will yield valid results.

(2) Be of sufficient size to perform valid field hydraulic conductivity testing with a width at least three times the width of compaction equipment and a length at least two times the length of compaction equipment, including power equipment and any attachment.

(3) Have a thickness of not less than thirty inches.

(4) Be constructed using not less than six lifts.

(5) Be constructed with soil that meets the criteria established in paragraph (B) of rule 3745-512-20 of the Administrative Code.

(C) The owner or operator shall perform pre-construction testing on representative samples of the soils used to construct the test pad at a frequency of not less than twice per lift for the following:

(1) Maximum dry density and optimum moisture content according to ASTM D698 (standard proctor) when using compaction equipment applying an approximate compactive effort of twelve thousand four hundred foot-pounds per cubic foot or ASTM D1557 (modified proctor) when using compaction equipment applying an approximate compactive effort of fifty-six thousand foot-pounds per cubic foot.

(2) Grain size distribution using ASTM D422 (sieve and hydrometer).

(3) Atterberg limits using ASTM D4318.

(D) The owner or operator shall perform construction testing on the constructed lifts of the test pad to determine the density and moisture content according to ASTM D6938 (nuclear method), ASTM D1556 (sand cone), ASTM D2167 (rubber balloon), or ASTM D6780 (TDR) at a frequency of not less than three tests per lift. The locations of the individual tests shall be adequately spaced to represent the constructed area and shall be offset from one lift to the next lift. Any penetration shall be repaired using bentonite.

(E) The owner or operator shall perform post-construction testing on the test pad to determine field hydraulic conductivity using one of the following:

(1) ASTM D6391 (two stage borehole).

(2) ASTM D3385 (double ring infiltrometer).

(3) ASTM D5093 (sealed double ring infiltrometer).

(F) The recompacted soil liner construction details established by test pad construction and testing shall include the following:

(1) The maximum loose lift thickness.

(2) The minimum soil moisture content, which shall be not less than the optimum moisture content as determined by ASTM D698 (standard proctor) or ASTM D1557 (modified proctor). The director, or for a C&DD facility the concurring authority, may approve an alternative construction detail for minimum soil moisture content provided use of the alternative construction detail results in a recompacted soil liner that meets the hydraulic conductivity specification established in the applicable program chapter.

(3) The minimum soil dry density, which shall be not less than ninety-five per cent of the maximum dry density as determined by ASTM D698 (standard proctor) or shall be at least ninety per cent of the maximum dry density as determined by ASTM D1557 (modified proctor). The director, or for a C&DD facility the concurring authority, may approve an alternative construction detail for minimum soil dry density provided use of the alternative construction detail results in a recompacted soil liner that meets the hydraulic conductivity specification established in the applicable program chapter.

(4) The specific type and weight of compaction equipment used to compact the test pad soils.

(5) The minimum number of passes of the compaction equipment. For the purposes of this paragraph, one pass is defined as a single contact of the compactor over an area.

(G) The owner or operator shall include the following in a test pad certification report:

(1) Certification that construction of the test pad was in accordance with paragraph (B) of this rule.

(2) The soil property acceptance criteria for the following that will be used to construct the recompacted soil liner:

(a) The maximum dry density and optimum moisture content.

[Comment: Density and moisture content construction limits are also established through shear strength testing in accordance with rule 3745-512-10 of the Administrative Code. Acceptance criteria for construction of

recompacted soil liner may need to be adjusted for purposes of meeting both shear strength and permeability criteria.]

(b) The grain size distribution.

(c) The atterberg limits.

(3) The results of all the testing required by paragraphs (C) to (E) of this rule.

(4) Proposed recompacted soil liner construction details established in accordance with paragraph (F) of this rule.

(5) The signature and seal of a professional engineer.

3745-512-30 Construction activities - general requirements.

(A) The owner or operator shall construct engineered components in compliance with the authorizing document and with the requirements in this chapter. Except as provided in rule 3745-512-50 of the Administrative Code, an engineered component cannot be altered without obtaining prior written concurrence from the concurring authority. If an engineered component is altered and concurrence is not obtained, the owner or operator shall reconstruct the engineered component to meet the requirements in this chapter and the specifications in the authorizing document.

(B) Until the construction certification report has been concurred with by the concurring authority, the owner or operator shall keep copies of construction activity logs at the facility. These logs shall be made available upon request to Ohio EPA and the approved board of health.

(C) If any oil or gas well is discovered within the disposal limits, the owner or operator shall demonstrate that the well was properly plugged and abandoned in accordance with Chapter 1509. of the Revised Code prior to construction of any engineered component above the well. The demonstration shall be included in the construction certification report required under rule 3745-512-50 of the Administrative Code.

(D) If any underground mine was required to be filled, the owner or operator shall demonstrate that the underground mine was filled to eliminate the potential for subsidence in accordance with rule 3745-512-35 of the Administrative Code prior to construction of any engineered component within the angle of draw of the underground mine. The demonstration shall be included in the construction certification report required under rule 3745-512-50 of the Administrative Code.

(E) The owner or operator shall employ measures to attain compliance with applicable laws and authorizing documents for erosion control of all disturbed soils.

(F) The owner or operator shall clear naturally occurring vegetation only to the extent necessary for proper construction of the facility.

(G) Not later than one year after having constructed one of the following engineered components, the owner or operator shall establish a complete and dense vegetative cover of healthy grasses or other non-woody vegetation on that engineered component if a vegetated surface is specified in the authorizing document:

(1) Structural fill.

(2) Embankment.

(3) Vegetated earthen berm. Woody vegetation is acceptable.

(4) Transitional cover.

(5) Cap protection layer.

[Comment: Pursuant to rule 3745-39-04 of the Administrative Code, the owner or operator may have other requirements for storm water erosion control.]

(H) Any permanent or temporary ground water control structure shall be installed by the owner or operator in a timely manner so that the effect of the control measure is fully evident at the time the ground water is needed to be controlled. If the control structure is necessary for construction, construction cannot begin until the ground water is adequately controlled.

3745-512-35 Filling of underground mines demonstration and reporting.

The owner or operator shall demonstrate that an underground mine was filled to eliminate the potential for subsidence. Each demonstration shall include the following:

(A) An evaluation, based on the findings of the site investigation, of the condition of the underground mine and the consolidated and unconsolidated stratigraphic units above the underground mine within the angle of draw. The evaluation of the condition shall at a minimum include the following:

(1) The angle of draw.

(2) The presence and extent of the void spaces.

(3) The presence and extent of fracturing.

(4) The presence and extent of water in the underground mine.

(B) A description of the filling activities, including the grout mixes used and the rationale for the selection of the grout mixes.

(C) Drawings showing the vertical and lateral extent of mine filling activities in relation to the facility boundary and the disposal limits.

(D) The location of and findings from confirmation borings used to demonstrate that the potential for subsidence has been eliminated.

(E) A list of abandoned mine abatement projects undertaken by the professional engineer, a brief description of each project, and the responsibility the professional engineer had with each project.

3745-512-50 Construction certification.

(A) For each engineered component at the facility, the owner or operator shall demonstrate the following through a construction certification report:

(1) Compliance with the facility design in the authorizing document.

(2) The engineered component was installed in a manner that did not damage the engineered component or other engineered components.

(3) Compliance with the construction requirements in this chapter for the engineered component.

(B) The construction certification report shall be signed and sealed by a professional engineer.

(C) Each construction certification report shall include the following:

(1) A narrative section that identifies the engineered components that were constructed during the construction event, which shall include the following:

(a) A comparison of each constructed engineered component to the design and any material or construction specification in the authorizing document and to the material and construction specifications in this chapter.

(b) A summary of how construction was impacted by weather, equipment limitations, and any other difficulty that was encountered.

(c) A description of measures taken to protect engineered components from damage during construction due to desiccation, freeze/thaw cycles, wet/dry cycles, intrusion of objects, and construction activities.

(2) All alterations and alternatives that relate to the installation of any engineered component to be certified, and to be presented as follows:

(a) A listing of all alterations previously concurred with and all alternatives previously approved.

(b) All alteration requests which are proposed for concurrence. The alteration request shall conform to the requirements in 3745-512-55 of the Administrative Code.

(3) The certification requirements for each engineered component constructed during the construction event in accordance with rules 3745-512-110 to 3745-512-870 of the Administrative Code and in accordance with any requirement in the authorizing document, which shall include the following:

(a) Test results including all passing, failing, and inconclusive test results.

(b) All survey information, which shall be signed and sealed by a professional surveyor. At a minimum, survey data shall be reported in a table with the northing and easting for each designated survey point. Survey points are to be not more than one hundred feet apart. The northings and eastings shall be based on the grid system established in the authorizing document. If the authorizing document does not establish a grid system, the owner or operator shall establish a grid system for the purposes of construction certification. Additional points shall be established at grade breaks and other critical locations as necessary to accurately portray the surface being surveyed.

(4) A demonstration that the integrity of the engineered components was maintained, including references to construction activity logs.

(5) If any oil or gas well was plugged and abandoned, a demonstration of compliance with paragraph (C) of rule 3745-512-30 of the Administrative Code.

(6) If any underground mine was filled to eliminate the potential for subsidence, a demonstration of compliance with paragraph (D) of rule 3745-512-30 of the Administrative Code.

(7) Verification that whenever equipment is used to test an engineered component, the equipment is properly calibrated in accordance with the manufacturer's recommendations and specifications.

(8) A description of the experience, training, responsibilities in decision making, and any other qualifications of the personnel who provided construction oversight and conducted all of the testing on the engineered components for which the certification report is being submitted.

(9) A certification statement and signature in accordance with rule 3745-500-50 of the Administrative Code.

3745-512-51 Procedure for concurrence of construction certification.

(A) The concurring authority may decline to act on the construction certification, including the alterations contained therein, of an engineered component until the construction certification report is complete.

(B) The concurring authority may decline to concur on a request to alter the design of the engineered component.

(C) The concurring authority shall not concur with a construction certification report unless the following is determined:

(1) The engineered component being certified was constructed in accordance with Chapter 3714. or 3734. of the Revised Code, and rules adopted thereunder.

(2) The engineered component being certified was constructed in accordance with the specifications in the authorizing document, unless the owner or operator has requested concurrence of an alteration made during construction and the requested alteration is contained within the construction certification report and the criteria in paragraph (C)(3) of this rule were met.

(3) Alterations made during construction and requested in the construction certification report meet the following:

(a) The subject of the request is not a modification of the facility.

(b) The alteration request applies only to the portion of the facility being certified.

(c) Will not interfere with the ability of the owner or operator to construct, operate, close, and maintain during the post-closure care period the facility in compliance with Chapters 3704., 3714., 3734., or 6111. of the Revised Code or rules promulgated thereunder, and with authorizing documents.

(d) The owner or operator has obtained other approvals and authorizations including but not limited to approvals and authorizations issued pursuant to Chapters 3704., 3714., 3734., or 6111. of the Revised Code made necessary by the alteration.

(e) Will not interfere with the ability of the owner or operator to conduct corrective actions presently being taken or that are proposed to be taken at the facility or in the immediate area including but not limited to fire, explosion, gas, odors, or ground water corrective actions.

(f) There is no interference with the ability of the owner or operator to monitor the impact of the facility on the environment.

(D) Any concurrence of a construction certification report is void if any statement or assertion of fact made in the construction certification report is false, inaccurate, or omits required information.

3745-512-52 Procedure for concurrence of construction certifications when there are no effective authorizing documents.

(A) The concurring authority may decline to act on the construction certification of an engineered component until the construction certification report is complete.

(B) The concurring authority shall not concur with a construction certification report unless the following is determined:

(1) The engineered component being certified was constructed in accordance with Chapter 3714. or 3734. of the Revised Code, and rules adopted thereunder.

(2) The engineered component being certified was constructed in accordance with the applicable design requirements in Chapter 3745-511 of the Administrative Code.

(C) Any concurrence of a construction certification report is void if any statement or assertion of fact made in the construction certification report is false, inaccurate, or omits required information

3745-512-55 Failed tests and alterations.

(A) Upon detection by the owner or operator or upon notification by the concurring authority that a failed test or an alteration which was not previously concurred with by the concurring authority has occurred in any engineered component or portion of a facility, the owner or operator shall comply with the procedures contained in this rule.

[Comment: Alternatives are not alterations. Use of an alternative material requires prior approval in accordance with rule 3745-512-17 of the Administrative Code.]

(B) Failed test. For the purposes of this rule, a failed test occurs when a test performed on an engineered component of the facility yields a result that does not meet the specifications established in the applicable authorizing document and in the rules. If, prior to submission of the construction certification report for the engineered component or portion of the facility, the owner or operator determines that there is a failed test, the owner or operator shall either comply with paragraph (C) of this rule or perform the following:

(1) Assess the engineered component or portion of the facility to determine if construction is in compliance with the applicable authorizing document and rules.

(2) Implement measures to attain compliance with the applicable authorizing document and rules. An area with a verified failure shall be reconstructed or, in the case of in situ foundation, have nonconforming material removed and replaced with structural fill or added geologic material. Reconstructed areas shall be retested at a frequency sufficient to demonstrate to the concurring authority that compliance was attained.

(C) Alteration. If, prior to submission of the construction certification report for the constructed engineered component or portion of the facility, the owner or operator determines that there is an alteration which was not previously concurred with by the concurring authority, the owner or operator shall include the information required by paragraph (G) of this rule in the construction certification report in accordance with rule 3745-512-50 of the Administrative Code.

(D) If, after submission of the construction certification report, the owner or operator determines that the construction certification report is in error because a failed test or an alteration which was not concurred with by the concurring authority was detected, the owner or operator shall do the following:

(1) Notify the concurring authority of the noncompliance verbally not later than twenty-four hours after detection and in writing not later than seven days after detection.

(2) Not later than fourteen days after submitting the written notification required by paragraph (D)(1) of this rule, do either of the following:

(a) For a failed test, follow the applicable steps outlined in paragraph (B) of this rule and amend the construction certification report in accordance with paragraph (F) of this rule.

(b) For an alteration which was not previously concurred with by the concurring authority, submit the information required by paragraph (G) of this rule.

[Comment: Compliance with paragraph (D) of this rule does not relieve the owner or operator from liability for failure to construct or operate the facility in compliance with the applicable authorizing document, other requirements of this chapter, or failure to submit a certification report that is true, accurate, and complete as required by the construction certification requirements.]

(E) If the owner or operator is notified by the concurring authority that there is a failed test or an alteration which was not previously concurred with by the concurring authority, the owner or operator shall do the following:

(1) For a failed test detected prior to submission of the construction certification report, implement measures to attain compliance with the applicable authorizing document and rules. An area with a verified failure shall be reconstructed. Reconstructed areas shall be retested at a frequency sufficient to demonstrate to the concurring authority that compliance was attained.

(2) For an alteration detected prior to submission of the construction certification report, submit the information required by paragraph (G) of this rule in accordance with rule 3745-512-50 of the Administrative Code.

(3) For a failed test or an alteration detected after submission of the construction certification report, do either of the following not later than twenty-one days after receiving notice from the concurring authority:

(a) For a failed test, follow the applicable steps outlined in paragraph (B) of this rule and amend the construction certification report in accordance with paragraph (F) of this rule.

(b) For an alteration which was not previously concurred with by the concurring authority, submit the information required by paragraph (G) of this rule to the concurring authority.

(F) Amendments. The owner or operator amending the construction certification report shall submit the amendment to the concurring authority. The amendment shall contain the following:

(1) Identification of the engineered component and portion of the facility affected.

(2) Explanation of the circumstances of the failed test and how compliance was attained.

(3) Testing results from reconstructed areas.

(4) The signature and seal of a professional engineer.

(G) Alterations. The owner or operator requesting an alteration shall provide the following information to the concurring authority:

(1) Identification of the engineered component and portion of the facility affected and an explanation of the alteration.

(2) A demonstration that the alteration is at least equivalent to the requirements in the applicable authorizing document and rules.

(3) Supporting documentation including applicable testing results.

(4) If the failed test is a test required by rule 3745-512-10 of the Administrative Code, the alteration request shall include a revised geotechnical and stability analysis in accordance with rules 3745-511-20 to 3745-511-72 of the Administrative Code, as appropriate.

(5) If the alteration is requested after the construction certification report is submitted, the alteration request shall be signed and sealed by a professional engineer.

3745-512-60 Repair of damaged or failed engineered components.

(A) Immediately upon discovery of a damaged or failed engineered component and in accordance with applicable federal, state, and local statutes and rules, the owner or operator shall do the following:

(1) Notify the following:

(a) For a licensed facility, the licensing authority.

(b) For a permitted facility, the permitting authority.

(c) If a spill needs to be reported, the Ohio EPA emergency response twenty-four-hour telephone service for spill reporting.

(d) If necessary, emergency responders.

(2) Take all actions in accordance with all applicable federal, state, and local statutes and rules necessary to protect public health and safety and the environment including but not limited to the following:

(a) Prevent the release of pollution (such as waste, C&DD, and leachate) from the facility to waters of the state.

(b) Prevent the release of pollution (such as explosive gas, hydrogen sulfide gas, particulates, and fugitive dust) to the air or control such pollution such that the owner or operator is in compliance with all applicable air permits issued under Chapter 3704. of the Administrative Code.

(c) Prevent the occurrence of blowing litter, attraction of vectors, and fire.

(d) Prevent the damage or failure from worsening.

(e) Prevent future damage or another failure.

(f) Provide access to the responders, investigators, and the licensing and permitting authorities to the area with the failure.

(B) The owner or operator shall use all testing, analyses, observations, and calculations necessary to investigate the nature of and determine the cause of the damage or failure.

(C) The owner or operator shall repair or reconstruct the damaged or failed engineered component.

(D) The owner or operator shall reconstruct any engineered component in strict accordance with applicable authorizing documents and submit a construction certification report prepared in accordance with rule 3745-512-50 of the Administrative Code.

(E) If the damage or failure of the engineered component was due to inadequate design, prior to reconstruction of the engineered component the owner or operator shall obtain authorization for another design from the permitting authority or, if the change is an alteration, from the concurring authority.

(F) If the damage or failure of the engineered component was due to an inadequate material, the owner or operator shall reconstruct the failed engineered component with a material that will prevent a failure from occurring.

(G) Not later than forty-five days after the date of discovery of the damaged or failed engineered component, the owner or operator shall submit to the concurring authority an investigation report that contains at a minimum the following information:

(1) The name and location of the facility.

(2) The name, address, and telephone number of the owner and operator.

(3) A summary describing the activities taken by the owner or operator to investigate and respond to the damage or failure, including repair or reconstruction.

(4) The potential causes of the damage or failure and an assessment of whether the damage or failure was due to inadequate design or inadequate materials.

(5) A description and schedule of the following additional activities the owner or operator will conduct:

(a) To continue to respond to the damage or failure.

(b) To investigate the damage or failure.

(c) To prevent similar damage or failure from occurring in the future.

(6) All photographs and results of sampling, testing, and analyses conducted during the investigation.

(H) The owner or operator may request an extension of the time frame in paragraph (G) of this rule. The request for an extension shall be submitted to the concurring authority. The concurring authority may grant an extension provided the following are met:

(1) The owner or operator is in compliance with paragraph (A) of this rule.

(2) The owner or operator needs the extension of time to be able to comply with paragraph (B), (C), or (D) of this rule.

(3) The owner or operator has conducted the response and investigation of the damage or failure in a timely manner.

(4) The granting of the extension will not adversely affect public health or safety or the environment or cause or contribute to water pollution or air pollution.

3745-512-110 Permanent survey marks.

(A) Permanent survey marks shall be established by the owner or operator prior to construction of any other engineered component.

(B) Permanent survey marks shall be constructed by the owner or operator to conform to the following:

(1) Reference horizontally to the "1927 North American Datum," "1983 North American Datum," or "State Plane Coordinate System" and vertically to the "1929 or 1988 North American Vertical Sea Level Datum" as identified on the USGS 7.5 minute (topographic) map.

(2) Be at least as stable as a poured concrete monument ten inches in diameter installed to a depth of forty-two inches below the ground surface.

(3) Include a corrosion resistant metallic disk, which indicates horizontal and vertical coordinates of the survey mark.

(4) Contain a magnet or ferromagnetic rod to allow identification through magnetic detection methods.

(5) Have survey control standards for all survey marks that shall be in accordance with the following:

(a) For all permanent survey marks, the maximum vertical error shall be one inch to five thousand feet horizontal.

(b) At least one permanent survey mark shall be established from a known control point with a maximum horizontal error of one foot horizontal to two thousand five hundred feet horizontal.

(c) For any supplemental permanent survey mark, the maximum horizontal error shall be one foot horizontal distance to five thousand feet horizontal.

(C) Certification of permanent survey marks by the owner or operator shall include the following information:

(1) An identification and description of the known control points used to establish the horizontal and vertical coordinates of the facility permanent survey marks.

(2) The horizontal and vertical coordinates of the known control points and facility permanent survey marks.

(3) A summary of surveying activities performed to determine the coordinates of the facility permanent survey marks.

(4) A copy of the 7.5-minute USGS (topographic) map used in establishing the survey marks with the known control points and the location of the facility permanent survey marks clearly identified on the map.

(5) A detailed drawing showing the design of the facility permanent survey marks, as constructed.

(6) The results of all testing and verification that the permanent survey marks meet the standards in paragraph (B) of this rule and any specification in the authorizing document.

3745-512-120 Access roads.

(A) The owner or operator shall use material to construct access roads that does not contain solid waste, foreign material, or deleterious material and is able to withstand the anticipated degree of use and allow passage of vehicles at all times with a minimum of erosion and dust generation. Clean hard fill may be used.

(B) Certification of access roads by the owner or operator shall include the following:

(1) Record drawing showing the location and topographic representation of the access roads, as constructed.

(2) The results of all testing and verification that the access road material meets the standards in paragraph (A) of this rule and the specifications in the authorizing document.

3745-512-210 Ground water control structures.

Certification of ground water control structures by the owner or operator shall include the following:

(A) Record drawings of the ground water control structures showing the location, plan views, cross sections, and details, as constructed.

(B) Results of all testing and verification that the ground water control structures meet the specifications in the authorizing document.

3745-512-221 In situ foundation.

(A) The in situ foundation shall conform to the following:

(1) Be free of foreign material and deleterious material.

(2) Be free of industrial waste, solid waste, and C&DD.

(3) If a flexible membrane liner is to be placed upon the in situ foundation, the in situ foundation shall meet the following criteria to provide direct and uniform contact:

(a) The surface shall have no particles with a maximum dimension greater than 0.5 inches.

(b) If the in situ foundation is comprised of unconsolidated material, the surface shall be proof rolled to locate soft areas that are to be either compacted or replaced with added geologic material meeting the requirements of rule 3745-512-222 of the Administrative.

(B) For any stratigraphic unit in the in situ foundation that may be a critical layer that was not tested and reported in the application for the authorizing document, the owner or operator shall perform pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

[Comment: If in situ foundation material is removed and the replacement material does not meet the standards of added geologic material in rule 3745-512-222 of the Administrative Code, the reconstructed area of in situ foundation could become part of the uppermost aquifer system. If the uppermost aquifer system is extended, then the separation distance between the uppermost aquifer system and liner system is reduced. Possible consequences of the reduction are that the facility no longer meets siting criteria or the design is no longer appropriate for waste or C&DD to be disposed.]

(C) The location and final elevation of the in situ foundation shall be surveyed prior to constructing any engineered component on the in situ foundation.

(D) Certification of in situ foundation preparation by the owner or operator shall include the following:

(1) Record drawings showing the location and plan views with topographic representation of the elevations of the in situ foundation as it existed after preparation was completed.

(2) The results of all testing and verification that the in situ foundation preparation meets the standards in paragraph (A) of this rule and the specifications in the authorizing document.

3745-512-222 Added geologic material layer.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) Added geologic material shall be placed by the owner or operator in lifts to attain uniform compaction. Each lift shall conform to the following:

(1) Be free of foreign material and deleterious material.

(2) Be free of industrial waste, solid waste, and C&DD.

(3) Be free of large objects in such quantities that could interfere with the added geologic material's construction and intended purpose.

(4) Be constructed with a soil capable of attaining a hydraulic conductivity that does not exceed 1.0 times ten to the negative six centimeters per second when compacted in accordance with paragraphs (A)(5) to (A)(8) of this rule.

(5) Be constructed in loose lifts of eight inches thick or less.

(6) Be constructed of a soil with a maximum clod size that does not exceed the lift thickness.

(7) Be compacted to either at least ninety-five per cent of the maximum dry density as determined by ASTM D698 (standard proctor) or at least ninety per cent of the maximum dry density as determined by ASTM D1557 (modified proctor), or to the density established in accordance with rule 3745-512-10 of the Administrative Code if that density is greater.

(8) Be placed with either a soil moisture content equal to or greater than the moisture content of the pre-construction hydraulic conductivity sample or to the moisture content established in accordance with rule 3745-512-10 of the Administrative Code.

(9) If a flexible membrane liner is to be placed upon the added geologic material, the surface of the added geologic material shall have no particles with a maximum dimension greater than 0.5 inches.

(B) Testing of the added geologic material shall be performed by the owner or operator in conformance with the following:

(1) Pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Pre-construction testing on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(3) Construction testing on the constructed lifts to determine the density and moisture content according to ASTM D6938 (nuclear method), ASTM D1556 (sand cone), ASTM D2167 (rubber balloon), or ASTM D6780 (TDR) at a frequency of not less than five tests per acre per lift. The locations of the individual tests shall be adequately spaced to represent the constructed area and shall be offset from one lift to the next lift. Any penetration shall be repaired by the owner or operator using bentonite.

(C) The location, basal elevations, and final elevations of the added geologic material shall be surveyed prior to constructing any engineered component on the added geologic material.

(D) Certification of the added geologic material by the owner or operator shall include the following:

(1) Record drawings showing the location and plan views with topographic representation of final elevations of the added geologic material, as constructed.

(2) The table of survey information described in rule 3745-512-50 of the Administrative Code, including a comparison of the survey data to the elevations in the authorizing document.

(3) Results of all construction testing performed under paragraph (B)(3) of this rule.

(4) Results of all testing and verification that the added geologic material meets the standards in paragraph (A) of this rule and the specifications in the authorizing document.

3745-512-223 Structural fill.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) Structural fill shall conform to the following:

(1) Be free of foreign material and deleterious material.

(2) Be free of industrial waste, solid waste, and C&DD. Clean hard fill may be used.

(3) The material specifications established in paragraphs (B) to (F), as applicable.

(B) Structural fill consisting of rocks shall meet the following criteria:

(1) Each lift shall be constructed by the owner or operator with the size and type of construction equipment, lift thickness, number of passes, and use of water in accordance with corresponding construction details as established by the pre-construction test fill in accordance with rule 3745-512-15 of the Administrative Code.

(2) Rocks shall not exceed two-thirds the lift thickness in any direction.

[Comment: If structural fill consisting of rocks becomes part of the uppermost aquifer system, then the separation distance between the uppermost aquifer system and liner system is reduced. Possible consequences of the reduction are that the facility no longer meets siting criteria or the design is no longer appropriate for waste or C&DD to be disposed.]

(C) Structural fill consisting of soil with more than thirty per cent of the material retained on the 0.75-inch sieve shall be constructed by the owner or operator in lifts to attain uniform compaction. Each lift shall meet the following criteria:

(1) Be constructed with the size and type of construction equipment, lift thickness, number of passes, and use of water in accordance with corresponding construction details as established by the pre-construction test fill in accordance with rule 3745-512-15 of the Administrative Code.

(2) Rocks shall not exceed two-thirds the lift thickness in any direction.

(3) If used as subbase under a geosynthetic clay liner or flexible membrane liner, be constructed of a soil with a maximum clod size that does not exceed the lift thickness.

(D) Structural fill consisting of soil with less than thirty per cent of the material retained on the 0.75-inch sieve shall be constructed by the owner or operator in lifts to attain uniform compaction. Each lift shall meet the following criteria:

(1) Be constructed in loose lifts of twelve inches thick or less.

(2) Rocks shall not exceed two-thirds the lift thickness in any direction.

(3) Be compacted to either at least ninety-five per cent of the maximum dry density as determined by ASTM D698 (standard proctor) or at least ninety per cent of the maximum dry density as determined by ASTM D1557 (modified proctor), or the density established in accordance with rule 3745-512-10 of the Administrative Code if that density is greater.

(4) If used as subbase under a geosynthetic clay liner or flexible membrane liner, be constructed of a soil with a maximum clod size that does not exceed the lift thickness.

(E) If a geosynthetic clay liner or flexible membrane liner is to be placed upon structural fill, at a minimum the top 1.0 feet of structural fill shall consist of soil.

(F) If a vegetated surface is specified in the authorizing document, the top lift of the structural fill shall meet the following criteria:

(1) Be of sufficient thickness and fertility to support a complete and dense cover of vegetation.

(2) Be comprised of soil that shall result in an erosion rate of not more than five tons per acre per year as calculated using the "Universal Soil Loss Equation," "Revised Universal Soil Loss Equation," or the "Water Erosion Prediction Project Model" corresponding to the maximum slope length between ditches and assuming disturbed soils and that the soils are highly susceptible to rill erosion.

(3) Not later than seven days after construction, be covered by the owner or operator with mulch or other material. The mulch or other covering material shall result in an erosion rate of not more than five tons per acre per year as calculated using the "Universal Soil Loss Equation," "Revised Universal Soil Loss Equation," or the "Water Erosion Prediction Project Model" corresponding to the maximum slope length between ditches and assuming the mulch or other material is a disturbed soil that is highly susceptible to rill erosion.

(G) The owner or operator shall perform testing of structural fill in conformance with the following:

(1) For structural fill using soil, pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Pre-construction testing performed by the owner or operator on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(3) For structural fill using soil with less than thirty per cent of the material retained on the 0.75-inch sieve, construction testing on the constructed lifts to determine the density and moisture content according to ASTM D6938 (nuclear method), ASTM D1556 (sand cone), ASTM D2167 (rubber balloon), or ASTM D6780 (TDR) at a frequency of not less than one test per acre per lift. The locations of the individual tests shall be adequately spaced to represent the constructed area and shall be offset from one lift to the next lift. When used under geosynthetic clay liner, any penetration shall be repaired by the owner or operator using bentonite.

(H) Certification of structural fill by the owner or operator shall include the following:

(1) Record drawings showing the location and plan views with topographic representation of final elevations of the structural fill, as constructed.

(2) For structural fill using soil with less than thirty per cent of the material retained on the 0.75-inch sieve, results of all construction testing performed under paragraph (G)(3) of this rule.

(3) Results of all testing and verification that the structural fill meets the standards in paragraphs (A) to (F) of this rule and the specifications in the authorizing document.

3745-512-224 Embankment.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) Embankment material shall be placed by the owner or operator in lifts to attain uniform compaction. Each lift shall conform to the following:

(1) Be free of foreign material and deleterious material.

(2) Be free of industrial waste, solid waste, and C&DD.

(3) Be free of objects exceeding six inches in any dimension.

(4) Have plasticity properties lying above the A-line as described in ASTM D2487 (USCS), unless an alternative soil type that lies below the A-line is approved in accordance with rule 3745-512-17 of the Administrative Code.

(5) Be constructed in loose lifts of eight inches thick or less.

(6) Be constructed of a soil with a maximum clod size that does not exceed the lift thickness.

(7) Be compacted to either at least ninety-five per cent of the maximum dry density as determined by ASTM D698 (standard proctor) or at least ninety per cent of the maximum dry density as determined by ASTM D1557 (modified proctor), or the density established in accordance with rule 3745-512-10 of the Administrative Code if that density is greater.

(B) If a flexible membrane liner is to be placed upon the embankment material, the surface of the embankment shall have no particles with a maximum dimension greater than 0.5 inches.

(C) If a vegetated surface is specified in the authorizing document, the embankment shall be constructed by the owner or operator to conform to the following:

(1) The top lift of the embankment shall meet the following criteria:

(a) Be of sufficient thickness and fertility to support a complete and dense cover of vegetation.

(b) Be comprised of soil that shall result in an erosion rate of not more than five tons per acre per year as calculated using the "Universal Soil Loss Equation," "Revised Universal Soil Loss Equation," or the "Water Erosion Prediction Project Model" corresponding to the maximum slope length between ditches and assuming disturbed soils and that the soils are highly susceptible to rill erosion.

(c) Not later than seven days after construction, be covered with mulch or other material. The mulch or other covering material shall result in an erosion rate of not more than five tons per acre per year as calculated using the "Universal Soil Loss Equation," "Revised Universal Soil Loss Equation," or the "Water Erosion Prediction Project Model" corresponding to the maximum slope length between ditches and assuming the mulch or other material is a disturbed soil that is highly susceptible to rill erosion.

(2) Permanent vegetation shall consist of perennial-type, low-growing, spreading grasses that minimize erosion and can be mowed. The permanent vegetation shall not consist of crown vetch, alfalfa, or deep-rooted plants.

(D) Testing on embankment material shall be performed by the owner or operator in conformance with the following:

(1) Pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Pre-construction testing on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(3) Construction testing on the constructed lifts to determine the density and moisture content according to ASTM D6938 (nuclear method), ASTM D1556 (sand cone), ASTM D2167 (rubber balloon), or ASTM D6780 (TDR) at a frequency of not less than five tests per acre per lift. The locations of the individual tests shall be adequately spaced to represent the constructed area and shall be offset from one lift to the next lift. Any penetration shall be repaired by the owner or operator using bentonite.

(E) Certification of embankment by the owner or operator shall include the following:

(1) Record drawings showing the location and plan views with topographic representation of final elevations of the embankment, as constructed.

(2) Results of all construction testing performed under paragraph (D)(3) of this rule.

(3) Results of all testing and verification that the embankment meets the standards in paragraphs (A) to (C)(1) of this rule and the specifications in the authorizing document. If an alternative material is used, the evaluation conducted pursuant to rule 3745-512-17 of the Administrative Code was submitted prior to use of the alternative material and therefore verification is not required to be submitted with the construction certification report under this rule. However, results of all testing to verify that the alternative material meets material specifications are required in the construction certification report.

3745-512-310 Liner system recompacted soil liner.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) The liner system recompacted soil liner shall be constructed by the owner or operator with a minimum of six lifts and in a manner to attain uniform compaction. Each lift shall conform to the following:

(1) Be free of foreign material and deleterious material.

(2) Be free of industrial waste, solid waste, and C&DD.

(3) Be constructed with soils that meet the range of soil properties established in the recompacted soil liner test pad certification report required by rule 3745-512-21 of the Administrative Code and evaluated in accordance with rule 3745-512-20 of the Administrative Code.

(4) Be constructed in accordance with corresponding construction details as established in the recompacted soil liner test pad certification report in accordance with rule 3745-512-21 of the Administrative Code that was approved or concurred with by the director, or for C&DD facilities, the concurring authority.

(5) Have a maximum clod size that shall not exceed three inches.

(B) The owner or operator shall perform construction testing on the constructed lifts of the liner system recompacted soil liner to determine the density and moisture content according to ASTM D6938 (nuclear method), ASTM D1556 (sand cone), ASTM D2167 (rubber balloon), or ASTM D6780 (TDR) at a frequency of not less than five times per acre per lift. The locations of the individual tests shall be adequately spaced to represent the constructed area and shall be offset from one lift to the next lift. At least one test per lift shall be located within five feet of the edge of the construction phase. Any penetration shall be repaired by the owner or operator using bentonite.

(C) Certification of liner system recompacted soil liner by the owner or operator shall include the following:

(1) Record drawings showing the location and plan views with topographic representation of the basal and final elevations of the recompacted soil liner, as constructed.

(2) The table of survey information described in rule 3745-512-50 of the Administrative Code and a comparison of the survey data to the elevations in the authorizing document.

(3) Results of all construction testing performed under paragraph (B) of this rule.

(4) Results of all testing and verification that the constructed lifts of the recompacted soil liner meet the standards in paragraph (A) of this rule and the specifications in the authorizing document.

3745-512-320 Liner system geosynthetic clay liner.

(A) Liner system geosynthetic clay liner shall conform to the following:

(1) Have a dry bentonite mass per unit area of at least 0.75 pounds per square foot at zero per cent moisture content.

(2) Be handled and stored by the owner or operator in accordance with ASTM D5888 (storage and handling of GCL) as described in rule 3745-500-03 of the Administrative Code.

(3) Be installed by the owner or operator in accordance with ASTM D6102 (installation of GCL) as described in rule 3745-500-03 of the Administrative Code. The surface of the subbase shall be free of sharp edged protrusions and of any particle protruding more than 0.25 inches. Seam overlap shall be increased to account for shrinkage due to weather conditions.

(B) Liner system geosynthetic clay liner that does not contain internal reinforcement shall not be used by the owner or operator in areas beneath leachate collection piping or in sump areas.

(C) Testing of the liner system geosynthetic clay liner shall be performed by the owner or operator in conformance with the following:

(1) Pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Pre-construction testing on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(D) Certification of the liner system geosynthetic clay liner by the owner or operator shall include the results of all testing and verification that the geosynthetic clay liner meets the standards in paragraphs (A) and (B) of this rule and the specifications in the authorizing document.

3745-512-330 Liner system flexible membrane liner.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) When immediately beneath the liner system flexible membrane liner, the liner system recompacted soil liner, geosynthetic clay liner, in situ foundation, added geologic material, structural fill consisting of soil, or embankment, as applicable, shall conform to the following:

(1) The surface shall be free of sharp edged protrusions and of any particle protruding more than 0.25 inches.

(2) Contact with the liner system flexible membrane liner shall be direct and uniform.

(B) The liner system flexible membrane liner shall be a high density polyethylene (HDPE) geomembrane that is at least sixty mils thick, unless an alternative material or thickness is approved in accordance with rule 3745-512-17 of the Administrative Code.

(C) The liner system flexible membrane liner shall be seamed in conformance with the following:

(1) All flexible membrane liner panels shall be seamed to form one continuous liner.

(2) The seaming material used shall be physically and chemically resistant to damage caused by waste, C&DD, leachate, and gas that may come in contact with the seams.

(3) Under sumps where two flexible membrane liners are specified in the authorizing document, the two liners shall be seamed together.

(D) Testing of the liner system flexible membrane liner shall be performed by the owner or operator in conformance with the following:

(1) Pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Construction testing in accordance with the following, unless the manufacturer's specifications for testing are more stringent in which case the manufacturer's specifications shall be used:

(a) The performance of each seaming apparatus in use each day shall be tested using peel tests according to ASTM D6392 (integrity of seams) and performed on scrap pieces of the flexible membrane liner material when an apparatus is started, operators change, an apparatus is restarted, and at the beginning of each seaming period.

(b) Nondestructive testing shall be performed on one hundred per cent of the flexible membrane liner seams, including repairs.

(c) A nondestructive test of seams in accordance with ASTM D4437 shall be considered a failed test if any of the following occur:

(i) For air pressure testing between twenty-five and thirty pounds per square inch, the following:

(a) When performed on high density polyethylene (HDPE) with a thickness not less than sixty mils, a drop of at least three pounds per square inch occurs or there is an unsustained pressure.

(b) When performed on high density polyethylene (HDPE) with a thickness less than sixty mils, a drop of at least four pounds per square inch occurs or there is an unsustained pressure.

(ii) For a nondestructive test other than in accordance with paragraph (D)(2)(c)(i) of this rule, criteria for detection of any discontinuity as appropriate for the method shall be used to determine if the test is a failed test.

(d) Destructive testing for peel according to ASTM D6392 (integrity of seams) shall be performed on randomly selected samples of seam, excluding repairs of destructive testing locations, at a frequency of not less than one per five hundred feet per person per seaming apparatus.

(e) A peel test shall be considered a failed test if failure occurs in any part of the seam.

(E) Certification of the liner system flexible membrane liner by the owner or operator shall include the following:

(1) Plan views of the deployment of the flexible membrane liner panels and the locations, as constructed, and identification of all destructive tests and of all repairs made by the owner or operator.

(2) If the flexible membrane liner is not placed directly above the recompacted soil liner, the plan views described in paragraph (E)(1) of this rule shall also include a topographic representation of elevations of the flexible membrane liner, including the run-out if applicable, as constructed.

(3) If the flexible membrane liner is not placed directly above the recompacted soil liner, the table of survey information described in rule 3745-512-50 of the Administrative Code and a comparison of the survey data to the elevations in the authorizing document.

(4) Results of all construction testing performed under paragraph (D)(2) of this rule.

(5) Results of all testing and verification that deployment and seaming of the flexible membrane liner meets the standards in paragraphs (A) to (C) of this rule and the specifications in the authorizing document. If an alternative material is used, the evaluation conducted pursuant to rule 3745-512-17 of the Administrative Code was submitted prior to use of the alternative material and therefore verification is not required to be submitted with the construction certification report under this rule. However, results of all testing to verify that the alternative material meets material specifications are required in the construction certification report.

3745-512-350 Added geologic material layer, liner system, and leachate collection system tie-in area.

(A) Added geologic material and engineered components in the liner system and leachate collection system tie-in area shall be inspected by the owner or operator, and if damage or deterioration is evident, tested prior to beginning construction of adjoining added geologic material and liner system and leachate collection system

to confirm that none of the engineered components was damaged and that all engineered components continue to meet all specifications required to be certified as applicable to the engineered component.

(B) If an engineered component in the tie-in area was damaged or does not meet all the specifications required to be certified, as applicable for the engineered component, the owner or operator shall comply with the procedures for failed tests and alterations in rule 3745-512-55 of the Administrative Code.

3745-512-411 Leachate collection system granular drainage layer.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) The leachate collection system granular drainage layer shall meet the criteria in paragraphs (A)(1) to (A)(3) of this rule. In lieu of sand or gravel, an alternative material may be used by the owner or operator, including solid waste or C&DD, if the alternative material is approved in accordance with rule 3745-512-17 of the Administrative Code:

(1) Be free of foreign material and deleterious material.

(2) Have not more than five per cent of the particles by weight passing through the number two hundred standard sieve.

(3) Have not more than five per cent carbonate content by weight using ASTM D3042 at a pH of 4.0.

(B) For a leachate collection system granular drainage layer placed against a liner system flexible membrane liner and where the granular drainage layer is not comprised of a material with a sand classification as described in ASTM D2487 (USCS), the owner or operator shall do the following:

(1) Place a liner cushion layer between the flexible membrane liner and the granular drainage layer.

(2) Use a liner cushion layer consisting of one of the following:

(a) A geotextile with a minimum average roll value for weight of sixteen ounces per square yard and puncture resistance of at least three hundred ten pounds as determined by ASTM D4833 (index puncture resistance).

(b) For a granular drainage layer comprised of rounded or sub-rounded gravel with no dimension greater than one inch in length, a geotextile with a minimum average roll value for weight of eight ounces per square yard.

(c) An alternative material that is approved in accordance with rule 3745-512-17 of the Administrative Code.

(3) Overlap and sew the liner cushion layer to prevent exposure of the flexible membrane liner.

(C) Testing of the material used for the leachate collection system granular drainage layer and the liner cushion layer, if used, shall be performed by the owner or operator in conformance with the following:

(1) Pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Pre-construction testing on representative samples in accordance with rule 3745-512-15 of the Administrative Code

(D) Certification of the leachate collection system granular drainage layer by the owner or operator shall include the following:

(1) Record drawings showing the location, including the run-out, and plan views with topographic representation of the basal and final elevations of the granular drainage layer, as constructed.

(2) The table of survey information described in rule 3745-512-50 of the Administrative Code and a comparison of the survey data to the elevations in the authorizing document.

(3) Results of all testing and verification that the granular drainage layer, including the cushion layer if applicable, meets the standards in paragraphs (A) and (B) of this rule and the specifications in the authorizing document. If an alternative material is used, the evaluation conducted pursuant to rule 3745-512-17 of the Administrative Code was submitted prior to use of the alternative material and therefore verification is not required to be submitted with the construction certification report under this rule. However, results of all testing to verify that the alternative material meets the material's specifications are required in the construction certification report.

(4) Measures taken by the owner or operator to prevent clogging of the granular drainage layer in the run-out.

3745-512-415 Leachate collection system tire shred drainage layer.

(A) The leachate collection system tire shred drainage layer shall be underlain by a liner cushion layer consisting of either of the following:

(1) A leachate collection system granular drainage layer constructed by the owner or operator in accordance with rule 3745-512-411 of the Administrative Code.

(2) A geotextile or geocomposite meeting the following criteria:

(a) Be composed of polyethylene, unless an alternative material is approved in accordance with rule 3745-512-17 of the Administrative Code.

(b) For tire shreds which are debeaded with no dimension greater than twelve inches in length, a minimum average roll value for weight of eight ounces per square yard.

(c) For tire shreds which do not meet the criteria in paragraph (A)(2)(b) of this rule, a minimum average roll value for weight of sixteen ounces per square yard and puncture resistance of at least three hundred ten pounds as determined by ASTM D4833 (index puncture resistance) as described in rule 3745-500-03 of the Administrative Code.

(d) For a liner cushion layer consisting of a geotextile or for the top geotextile of a geocomposite, the geotextile shall be overlapped and sewn by the owner or operator to prevent exposure of the liner system flexible membrane liner and made in accordance with the manufacturer's specifications.

(e) For a liner cushion layer consisting of geocomposite, the geonet component shall be overlapped and secured by the owner or operator with cable ties in accordance with the manufacturer's specifications.

(B) The leachate collection system tire shred drainage layer shall meet the following criteria:

(1) Be free of foreign material and deleterious material.

(2) Be free of industrial waste, solid waste, and C&DD.

(3) Be deployed by the owner or operator to a thickness that conforms to the following:

(a) If the tire shreds are not debeaded and a geotextile or geocomposite cushion layer is used, not less than thirty inches.

(b) Not more than forty-eight inches once deployment of the tire shreds is complete.

(4) Have not more than ten per cent of the particles by weight with any dimension greater than twelve inches. If a liner cushion layer with a minimum average roll value for weight of eight ounces per square yard is used, the debeaded tire shreds shall have no particles with any dimension greater than twelve inches. This paragraph does not apply if the tire shred drainage layer is placed above a cushion layer consisting of a drainage layer comprised of granular material.

(5) Have not more than five per cent of the particles by weight passing through the number two hundred standard sieve.

(6) The entire thickness of tire shreds shall be deployed as one lift. Tire shreds may be temporarily used in thicknesses that exceed forty-eight inches to create access roads across the cushion layer for delivery of additional tire shreds into the phase.

(C) Testing of tire shreds and the geotextile or geocomposite liner cushion layer, if used, shall be performed by the owner or operator in conformance with the following:

(1) Pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Pre-construction testing of tire shreds on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(D) If the tire shreds are not debeaded and a geotextile or geocomposite liner cushion layer is used above a liner system flexible membrane liner, the owner or operator shall use test pits to determine if the tire shreds have damaged the liner system flexible membrane liner as follows:

(1) All test pits shall be dug in the presence of the concurring authority, unless the concurring authority has given prior written authorization for the owner or operator to proceed in the absence of the concurring authority.

(2) Locations of test pits shall be agreed upon by the owner or operator and the concurring authority. At least one test pit shall be created in each acre where tire shreds were deployed. If any of the following in paragraphs (D)(2)(a) or (D)(2)(b) of this rule occur, the test pit shall be located in the area of the occurrence. Additional test pits are necessary if the occurrence was in a large area or occurred in multiple areas.

(a) Equipment used to deliver, place, or spread the tire shreds had a ground pressure of more than five pounds per square inch.

(b) Tire shreds are deployed in such a manner that the shreds are dragged or pushed across the liner cushion layer.

(3) Each test pit shall expose at least nine square feet of the liner system flexible membrane liner.

(4) Once the liner system flexible membrane liner is exposed pursuant to paragraph (D)(3) of this rule, the flexible membrane liner shall be visually inspected, photographed, and examined by the owner or operator to determine if any puncture or gouge exists.

(5) If a puncture or gouge is detected pursuant to paragraph (D)(4) of this rule, the owner or operator shall do the following:

(a) Patch the liner system flexible membrane liner. Patches are subject to the testing and certification requirements of rule 3745-512-330 of the Administrative Code.

(b) Dig, inspect, photograph, and examine additional test pits in accordance with this rule. The number and locations of the additional test pits shall be agreed upon by the owner or operator and the concurring authority. If the owner or operator detects additional punctures or gouges, the concurring authority shall determine the location and extent of liner system flexible membrane liner that shall be replaced.

(6) The geotextile or geocomposite liner cushion layer shall be repaired by the owner or operator. Repairs are

subject to the criteria established in paragraph (A)(2) of this rule.

(7) After inspection and repair pursuant to paragraphs (D)(4) to (D)(6) of this rule, the owner or operator shall replace tire shreds in the test pit to the depth necessary to conform to this rule and the authorizing documents.

(E) Certification of the leachate collection system tire shred drainage layer by the owner or operator shall include the following:

(1) Record drawings showing the location, including the run-out if applicable, and plan views with topographic representation of the basal and final elevations of the tire shred drainage layer, as constructed, and the granular liner cushion layer, if applicable.

(2) Results of the test pit investigation performed under paragraph (D) of this rule, if applicable.

(3) Results of all testing and verification that the shredded tire drainage layer, including the geotextile or geocomposite liner cushion layer, meets the standards in paragraphs (A) and (B) of this rule and the specifications in the authorizing document. If an alternative material is used, the evaluation conducted pursuant to rule 3745-512-17 of the Administrative Code was submitted prior to use of the alternative material and therefore verification is not required to be submitted with the construction certification report under this rule. However, results of all testing to verify that the alternative material meets material specifications are required in the construction certification report.

(4) Measures taken by the owner or operator to prevent clogging of the tire shred drainage layer in the run-out.

3745-512-420 Leachate collection system geocomposite drainage layer.

(A) The leachate collection system geocomposite drainage layer shall meet the following criteria:

(1) Be composed of polyethylene, unless an alternative material is approved in accordance with rule 3745-512-17 of the Administrative Code.

(2) The filter fabric components shall have an apparent opening size necessary to retain the permeable material overlying the geocomposite.

(3) The filter fabric components shall have an apparent opening size and either a porosity or percentage of open area available to resist clogging by adjacent soil.

(4) Have a minimum transmissivity to ensure that the leachate collection system limits the depth of leachate above the basal elevations of the leachate collection system to not exceed one foot, except in a sump. The minimum transmissivity is calculated by dividing the pre-construction test results for transmissivity, conducted in accordance with rule 3745-512-15 of the Administrative Code, by a factor of safety of 2.0 and appropriate reduction factors for elastic deformation, intrusion, creep deformation, biological clogging, and chemical clogging.

(5) Be placed by the owner or operator without folds or wrinkles and be overlapped and secured in a manner that will keep the geocomposite in place during placement of overlying materials and be placed and secured in accordance with the manufacturer's specifications.

(6) Each panel of geocomposite shall be secured by the owner or operator to adjoining panels. The geonet shall be overlapped and secured with cable ties in accordance with the manufacturer's specifications. The top geotextile shall also be overlapped and sewn in accordance with the manufacturer's specifications.

(B) The leachate collection system geocomposite drainage layer shall be overlain by the owner or operator with permeable material. Permeable material shall meet the following criteria:

(1) Be free of foreign material and deleterious material.

(2) Be capable of protecting the liner system from the intrusion of objects during construction and operation of the facility.

(3) Have a hydraulic conductivity not less than that used for the waste or C&DD mass when designing the leachate collection system.

(4) If shredded tires are used by the owner or operator, the shredded tires shall conform to the following:

(a) Be debeaded with no dimension greater than twelve inches in length if the minimum average roll value for weight of the filter fabric component of the geocomposite is less than sixteen ounces per square yard or the puncture resistance is less than three hundred ten pounds as determined by ASTM D4833 (index puncture resistance) as described in rule 3745-500-03 of the Administrative Code.

(b) Have not more than ten per cent of the particles by weight with any dimension greater than twelve inches if the minimum average roll value for weight of the filter fabric component of the geocomposite is not less than sixteen ounces per square yard and the puncture resistance is not less than three hundred ten pounds as determined by ASTM D4833 (index puncture resistance) as described in rule 3745-500-03 of the Administrative Code.

(c) The layer of shredded tires shall have a thickness not more than forty-eight inches once deployment of the shredded tires by the owner or operator is complete. The entire thickness of shredded tires shall be deployed as one lift. Shredded tires may be temporarily used in thicknesses that exceed forty-eight inches to create access roads across the geocomposite for delivery of additional shredded tires into the phase.

(C) Testing of the leachate collection system geocomposite drainage layer and permeable material shall be performed by the owner or operator in conformance with the following:

(1) Pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) For geocomposite drainage layer, pre-construction testing on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(3) For shredded tires used for the permeable material overlying the geocomposite drainage layer, pre-construction testing on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(D) If shredded tires used for the permeable material overlying the leachate collection system geocomposite drainage layer are not debeaded and the leachate collection system is placed above a liner system flexible membrane liner, the owner or operator shall use test pits to determine if the shredded tires have damaged the liner system flexible membrane liner as follows:

(1) All test pits shall be dug in the presence of the concurring authority, unless the concurring authority has given prior written authorization for the owner or operator to proceed in the absence of the concurring authority.

(2) Locations of test pits shall be agreed upon by the owner or operator and the concurring authority. At least one test pit shall be created in each acre where tire shreds were deployed. If any of the following in paragraph (D)(2)(a) or (D)(2)(b) of this rule occur, the test pit shall be located in the area of the occurrence. Additional test pits are necessary if the occurrence was in a large area or occurred in multiple areas.

(a) Equipment used to deliver, place, or spread the tire shreds has a ground pressure of more than five pounds per square inch.

(b) Tire shreds are deployed in such a manner that the shreds are dragged or pushed across the liner cushion layer.

(3) Each test pit shall expose at least nine square feet of the liner system flexible membrane liner.

(4) Once the liner system flexible membrane liner is exposed pursuant to paragraph (D)(3) of this rule, it shall be visually inspected, photographed, and examined by the owner or operator to determine if any puncture or gouge exists.

(5) If a puncture or gouge is detected pursuant to paragraph (D)(4) of this rule, the owner or operator shall do the following:

(a) Patch the liner system flexible membrane liner. Patches are subject to the testing and certification requirements of rule 3745-512-330 of the Administrative Code.

(b) Dig, inspect, photograph, and examine additional test pits in accordance with this rule. The number and locations of the additional test pits shall be agreed upon by the owner or operator and the concurring authority. If the owner or operator detects additional punctures or gouges, the concurring authority shall determine the location and extent of liner system flexible membrane liner that shall be replaced.

(6) The geocomposite drainage layer shall be repaired by the owner or operator by use of sewing, heat bonding, or other method of seaming, and results in complete coverage of the liner system flexible membrane liner.

(7) After inspection and repair pursuant to paragraphs (D)(4) to (D)(6) of this rule, the owner or operator shall replace tire shreds in the test pit to the depth necessary to conform to this rule and the authorizing documents.

(E) Certification of the leachate collection system geocomposite drainage layer by the owner or operator shall include the following:

(1) Record drawings showing the location, including the run-out if applicable, and plan views with topographic representation of the final elevation of the permeable material, as constructed.

(2) Results of the test pit investigation performed under paragraph (D) of this rule, if applicable.

(3) Results of all testing and verification that the geocomposite drainage layer and the placement of the permeable material overlying the geocomposite drainage layer meet the standards in paragraphs (A) and (B) of this rule and the specifications in the authorizing document. If an alternative material is used, the evaluation conducted pursuant to rule 3745-512-17 of the Administrative Code was submitted prior to use of the alternative material and therefore verification is not required to be submitted with the construction certification report under this rule. However, results of all testing to verify that the alternative material meets material specifications are required in the construction certification report.

(4) Measures taken by the owner or operator to prevent clogging of the geocomposite drainage layer in the run-out.

3745-512-432 Leachate collection system pipes.

(A) Leachate collection system pipes and sump risers shall meet the following criteria:

(1) Be permanently fused together.

(2) If perforated, shall not be wrapped with filter fabric.

(B) The owner or operator shall surround leachate collection system pipes with material to protect the pipes from crushing, deflection, and deformation. The surrounding material shall not be wrapped with filter fabric.

(C) All leachate collection system pipe cleanout access, sample access, and sump risers shall have removable covers that are designed to prevent foreign materials from entering the leachate management system and to prevent odors and gas from being released.

(D) Materials used by the owner or operator for leachate collection system pipes, surrounding pipes, cleanout access, sample access, and sump risers shall meet the following criteria:

(1) Be resistant to crushing and deformation under the expected maximum loads and settlement.

(2) Material used by the owner or operator to surround pipes shall meet the following criteria:

(a) Have a permeability not less than the permeability of the leachate drainage layer.

(b) Have a uniformity coefficient less than 5.0.

(c) Contain particles with dimensions that will not clog any pipe perforations.

(d) Have not more than five per cent carbonate content by weight using ASTM D3042, as described in rule 3745-500-03 of the Administrative Code, at a pH of 4.0.

(3) Pipes and risers shall be composed of high density polyethylene (HDPE), unless an alternative material, other than corrugated metal, is approved in accordance with rule 3745-512-17 of the Administrative Code.

(E) Pre-construction testing of material used to surround leachate collection system pipes shall be performed by the owner or operator on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(F) Certification of the leachate collection system pipes by the owner or operator shall include the following:

(1) Record drawings of the pipes showing the location of the pipes in plan view, the slope of the pipes, and the elevation of the pipe invert at the ends of each run of pipe, as constructed.

(2) The table of survey information described in rule 3745-512-50 of the Administrative Code and a comparison of the survey data to the elevations in the authorizing document.

(3) Record drawings showing the location, plan views, and elevations of the sumps.

(4) Drawings showing the details of the cleanout access, sample access, sumps, and sump risers, as constructed.

(5) Results of all testing and verification that the pipes meet the standards in paragraphs (A) to (D) of this rule and the specifications in the authorizing document. If an alternative material is used, the evaluation conducted pursuant to rule 3745-512-17 of the Administrative Code was submitted prior to use of the alternative material and therefore verification is not required to be submitted with the construction certification report under this rule. However, results of all testing to verify that the alternative material meets material specifications are required in the construction certification report.

3745-512-433 Temperature monitoring structures.

Certification of the temperature monitoring structures by the owner or operator shall include the following:

(A) Record drawings of the temperature monitoring structures and locations, as constructed.

(B) Results of all testing and verification that the temperature monitoring structures meet the specifications in the authorizing document.

3745-512-436 Pumps.

(A) The materials in the pump shall be physically and chemically resistant to damage from waste, C&DD, leachate, gas, and other materials that may come in contact with the pump.

(B) Each pump shall be tested by the owner or operator to verify proper operation.

(C) Any electrical control panels used for pump operations shall be explosion proof.

(D) Certification of the pump by the owner or operator shall include the following:

(1) Summary information for each pump shall be presented in a summary table that identifies each pump manufacturer and model, the location of each pump, and the elevations of the on/off switch and the high level alarm.

(2) The pump curve and system curve and the friction loss calculations for each pump.

(3) Results of all testing and verification that the pumps meet the standards in paragraphs (A) to (C) of this rule and the specifications in the authorizing document.

3745-512-441 Leachate collection system granular filter layer.

(A) The leachate collection system granular filter layer material shall maximize the flow of liquid moving through the granular filter layer and shall meet the following criteria:

(1) The permeability shall not be less than the permeability of the underlying drainage layer.

(2) Contain not more than five per cent carbonate content by weight using ASTM D3042, as described in rule 3745-500-03 of the Administrative Code, at a pH of 4.0.

(3) Have a uniformity coefficient less than 5.0.

(B) Testing of the material used for the leachate collection system granular filter layer shall be performed by the owner or operator in conformance with the following:

(1) Pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Pre-construction testing on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(C) Certification of the leachate collection system granular filter layer by the owner or operator shall include the following:

(1) Record drawings showing the location, including the run-out if applicable, and plan views with topographic representation of the basal and final elevations of the granular filter layer, as constructed.

(2) Results of all testing and verification that the granular filter layer meets the standards in paragraph (A) of this rule and the specifications in the authorizing document.

3745-512-442 Leachate collection system geotextile filter layer.

(A) The leachate collection system geotextile filter layer shall meet the following criteria:

(1) Be composed of polyethylene, unless an alternative material is approved in accordance with rule 3745-512-17 of the Administrative Code.

(2) Have an appropriate apparent opening size necessary to retain waste or C&DD overlying the geotextile filter.

(3) Have an apparent opening size and either a porosity or percentage of open area available to resist clogging by adjacent waste or C&DD.

(4) Have a minimum permittivity to ensure that the layer does not create a perched zone above the leachate collection system drainage layer.

(5) Be overlapped and sewn by the owner or operator to keep the geotextile in place during placement of overlying materials and be placed and secured in accordance with the manufacturer's specifications.

(B) Testing of the leachate collection system geotextile filter layer shall be performed by the owner or operator in conformance with the following:

(1) Pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Pre-construction testing on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(C) Certification of the leachate collection system geotextile filter layer by the owner or operator shall include the following:

(1) Record drawings showing the plan views, including the run-out if applicable, of the geotextile filter layer, as constructed.

(2) The results of all testing and verification that the geotextile filter layer meets the standards in paragraph (A) of this rule and the specifications in the authorizing document. If an alternative material is used, the evaluation conducted pursuant to rule 3745-512-17 of the Administrative Code was submitted prior to use of the alternative material and therefore verification is not required to be submitted with the construction certification report under this rule. However, results of all testing to verify that the alternative material meets material specifications are required in the construction certification report.

3745-512-450 Conveyence pipes.

(A) Conveyence pipes shall meet the following criteria:

(1) Be composed of high density polyethylene (HDPE), unless an alternative material is approved in accordance with rule 3745-512-17 of the Administrative Code.

(2) Be resistant to crushing and deformation under the expected maximum loads and settlement.

(3) Be resistant to buoyancy.

(4) Be solid wall.

(5) Be permanently joined together by the owner or operator.

(B) Conveyance pipes located outside the disposal limits shall be pressure tested by the owner or operator to verify that no leaks exist.

(C) Certification of the conveyance pipes by the owner or operator shall include the following:

(1) Record drawings of the conveyance pipes showing the location of the pipes in plan view, the elevation of the pipe invert at the ends of each run of pipe, and if the conveyance pipes are gravity drained, the slope of the pipes, as constructed.

(2) Drawings showing the details of the conveyance pipes, as constructed.

(3) Results of all testing and verification that the conveyance pipes meet the standards in paragraphs (A) and (B) of this rule and the specifications in the authorizing document. If an alternative material is used, the evaluation conducted pursuant to rule 3745-512-17 of the Administrative Code was submitted prior to use of the alternative material and therefore verification is not required to be submitted with the construction certification report under this rule. However, results of all testing to verify that the alternative material meets material specifications are required in the construction certification report.

3745-512-460 Tanks.

(A) The owner or operator shall visually inspect each tank to identify any leak, repair each leak found, and test the repair. Testing shall use air pressure at twice the hydrostatic pressure at the bottom of the tank when the tank is full.

(B) Certification of each tank by the owner or operator shall include the following:

(1) Record drawings depicting the location of the tank and spill containment, as constructed.

(2) Record drawings showing the details of the tank, spill containment, and load-out facilities, as constructed.

(3) Results of all testing and verification that the tank meets the standards in paragraph (A) of this rule and the specifications in the authorizing document.

3745-512-470 Discharge connections to public sewerage systems.

Certification of discharge connections to public sewerage systems by the owner or operator shall include results of all testing and verification that the discharge connections to public sewerage systems meet the specifications in the authorizing document.

3745-512-475 On-site leachate treatment works.

Certification of on-site leachate treatment works by the owner or operator shall include results of all testing and verification that the leachate treatment works meet the specifications in the authorizing document.

3745-512-500 Separatory leachate barrier and collection system.

Certification of the separatory leachate barrier and collection system by the owner or operator shall include certification for each engineered component included in the design of the separatory leachate barrier and collection system in the manner specified in this chapter.

3745-512-605 Transitional cover.

(A) Transitional cover material shall meet the following criteria:

(1) Be free of foreign material and deleterious material.

(2) Be free of industrial waste, solid waste, and C&DD.

(3) Be free of large objects in such quantities that could interfere with the construction and intended purpose of the transitional cover material.

(4) Be comprised of soil that shall result in an erosion rate of not more than five tons per acre per year as calculated using the "Universal Soil Loss Equation," "Revised Universal Soil Loss Equation," or the "Water Erosion Prediction Project Model" as described in rule 3745-500-03 of the Administrative Code corresponding to the maximum slope length between ditches and assuming disturbed soils and that the soils are highly susceptible to rill erosion.

(5) Have plasticity properties lying above the A-line as described in ASTM D2487 (USCS) as described in rule 3745-500-03 of the Administrative Code, unless an alternative soil type that lies below the A-line is approved in accordance with rule 3745-512-17 of the Administrative Code.

(6) Have sufficient fertility to support vegetation.

(7) Be a soil layer not less than twenty-four inches thick.

(B) Not later than seven days after construction, the owner or operator shall cover the transitional cover with mulch or other material. The mulch or other material covering the transitional cover also shall result in an erosion rate of not more than five tons per acre per year as calculated using the "Universal Soil Loss Equation," "Revised Universal Soil Loss Equation," or the "Water Erosion Prediction Project Model" as described in rule 3745-500-03 of the Administrative Code corresponding to the maximum slope length between ditches and assuming the mulch or other material is a disturbed soil that is highly susceptible to rill erosion.

(C) Certification of the transitional cover by the owner or operator shall include the following:

(1) Record drawings showing the location and plan views with topographic representation of the basal and final elevations of the transitional cover, as constructed.

(2) Results of all testing and verification that the transitional cover meets the standards in paragraphs (A) and (B) of this rule and the specifications in the authorizing document. If an alternative material is used, the evaluation conducted pursuant to rule 3745-512-17 of the Administrative Code was submitted prior to use of the alternative material and therefore verification is not required to be submitted with the construction certification report under this rule. However, results of all testing to verify that the alternative material meets material specifications are required in the construction certification report.

3745-512-611 Cap system recompacted soil layer.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) The cap system recompacted soil layer shall be constructed by the owner or operator in lifts to attain uniform compaction. Each lift shall meet the following criteria:

(1) Be free of foreign material and deleterious material.

(2) Be free of industrial waste, solid waste, and C&DD.

(3) Be constructed with soil meeting the following criteria:

(a) One hundred per cent of the particles shall have a maximum dimension not greater than two inches.

(b) Not more than ten per cent of the particles by weight shall have a dimension greater than 0.75 inches.

(c) Have plasticity properties lying above the A-line as described in ASTM D2487 (USCS).

(4) Either of the following:

(a) The recompacted laboratory hydraulic conductivity shall not exceed 1.0 times ten to the negative six centimeters per second when each lift is compacted in accordance with the following:

(i) The loose lifts are of a thickness which shall not exceed the length of the compactor tines.

(ii) The soil has a maximum clod size that does not exceed three inches.

(iii) One of the following dry density standards:

(a) For compaction equipment applying an approximate compactive effort of twelve thousand four hundred foot-pounds per cubic foot, at least ninety-five per cent of the maximum dry density as determined by ASTM D698 (standard proctor).

(b) For compaction equipment applying an approximate compactive effort of fifty-six thousand foot-pounds per cubic foot, at least ninety per cent of the maximum dry density as determined by ASTM D1557 (modified proctor).

(c) If the maximum dry density established in accordance with rule 3745-512-10 of the Administrative Code is greater than the density established in paragraphs (A)(4)(a)(iii)(a) and (A)(4)(a)(iii)(b) of this rule, that higher maximum dry density.

(iv) One of the following minimum soil moisture standards:

(a) For compaction equipment applying an approximate compactive effort of twelve thousand four hundred foot-pounds per cubic foot, not less than the optimum moisture content as determined by ASTM D698 (standard proctor).

(b) For compaction equipment applying an approximate compactive effort of fifty-six thousand foot-pounds per cubic foot, not less than the optimum moisture content as determined by ASTM D1557 (modified proctor).

(c) If the optimum moisture content established in accordance with rule 3745-512-10 of the Administrative Code is less than the moisture content established in paragraphs (A)(4)(a)(iv)(a) and (A)(4)(a)(iv)(b) of this rule, that lower moisture content.

(b) Be compacted in accordance with corresponding construction details as established in the recompacted soil liner test pad certification report in accordance with rule 3745-512-21 of the Administrative Code that was approved or concurred with by the director, or for C&DD facilities, the concurring authority.

(B) Testing of material used for the cap system recompacted soil layer shall be conducted by the owner or operator in conformance with the following:

(1) Pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Pre-construction testing on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(3) Construction testing on the constructed lifts to determine the density and moisture content according to ASTM D6938 (nuclear method), ASTM D1556 (sand cone), ASTM D2167 (rubber balloon), or ASTM D6780 (TDR) at a frequency of not less than five times per acre per lift. The locations of the individual tests shall be adequately spaced to represent the constructed area and shall be offset from one lift to the next lift. At least one test per lift shall be located within five feet of the edge of the construction phase. Any penetration shall be repaired using bentonite.

(C) Certification of the cap system recompacted soil layer by the owner or operator shall include the following:

(1) Record drawings showing the location, including the run-out if applicable, and plan views with topographic representation of the basal and final elevations of the recompacted soil layer, as constructed.

(2) The table of survey information described in rule 3745-512-50 of the Administrative Code and a comparison of the survey data to the elevations in the authorizing document.

(3) Results of all construction testing of the recompacted soil layer material performed under paragraph (B)(3) of this rule.

(4) Results of all testing and verification that the constructed lifts of recompacted soil layer meet the standards in paragraph (A) of this rule and the specifications in the authorizing document.

3745-512-612 Cap system geosynthetic clay liner.

(A) Cap system geosynthetic clay liner shall conform to the following:

(1) Have a dry bentonite mass per unit area of at least 0.75 pounds per square foot at zero per cent moisture content.

(2) Be handled and stored by the owner or operator in accordance with ASTM D5888 (storage and handling of GCL) as described in rule 3745-500-03 of the Administrative Code.

(3) Be placed by the owner or operator with direct and uniform contact onto not less than twelve inches of either structural fill consisting of soil or transitional cover.

(4) Be installed by the owner or operator in accordance with ASTM D6102 (installation of GCL) as described in rule 3745-500-03 of the Administrative Code. The surface of the subbase shall be free of sharp edged protrusions and of any particle protruding more than 0.25 inches.

(5) Have a minimum overlap of six inches or, for end-of-panel seams, a minimum overlap of twelve inches. Overlap shall be increased in accordance with the manufacturer's specifications and to account for shrinkage due to weather conditions. Granular or powdered bentonite to enhance bonding at the seams shall be used by the owner or operator in accordance with the manufacturer's specifications.

(B) Testing of the geosynthetic clay liner shall be performed by the owner or operator in conformance with the following:

(1) Pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Pre-construction testing on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(C) Certification of the cap system geosynthetic clay liner by the owner or operator shall include the following:

(1) Record drawings showing the plan views, including the run-out if applicable, with topographic representation of the final elevations of the geosynthetic clay liner, as constructed.

(2) The results of all testing and verification that the geosynthetic clay liner meets the standards in paragraph (A) of this rule and the specifications in the authorizing document.

3745-512-613 Cap system flexible membrane liner.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) When immediately beneath the cap system flexible membrane liner, the cap system recompacted soil layer, the geosynthetic clay liner, structural fill consisting of soil, or transitional cover, as applicable, shall conform to the following:

(1) The surface shall be free of sharp edged protrusions and of any particle protruding more than 0.25 inches.

(2) Contact with the cap system flexible membrane liner shall be direct and uniform.

(B) The thickness of cap system flexible membrane liner shall be one of the following:

(1) At least forty mils thick.

(2) For flexible membrane liner consisting of high density polyethylene (HDPE) geomembrane, at least sixty mils thick.

(3) An alternative thickness that was approved in accordance with rule 3745-512-17 of the Administrative Code.

(C) The cap system flexible membrane liner shall be seamed by the owner or operator in conformance with the following:

(1) All flexible membrane liner panels shall be seamed to form one continuous liner.

(2) The seaming material used shall be physically and chemically resistant to damage caused by waste, C&DD, leachate, and gas that may come in contact with the seams.

(D) The owner or operator shall perform testing of the cap system flexible membrane liner in conformance with the following:

(1) Pre-construction testing performed on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Construction testing in accordance with the following, unless the manufacturer's specifications for testing are more stringent in which case the manufacturer's specifications shall be used:

(a) The performance of each seaming apparatus in use each day shall be tested using peel tests according to ASTM D6392 (integrity of seams) and performed on scrap pieces of the flexible membrane liner material when an apparatus is started, operators change, an apparatus is restarted, and at the beginning of each seaming period.

(b) Nondestructive testing of seams in accordance with ASTM D4437 shall be performed on one hundred per cent of the flexible membrane liner seams.

(c) A nondestructive test shall be considered a failed test if any of the following occur:

(i) For air pressure testing between twenty-five and thirty pounds per square inch, the following:

(a) When performed on high density polyethylene (HDPE) with a thickness not less than sixty mils, a drop of at least three pounds per square inch occurs or there is an unsustained pressure.

(b) When performed on high density polyethylene (HDPE) with a thickness less than sixty mils, a drop of at least four pounds per square inch occurs or there is an unsustained pressure.

(ii) For a nondestructive test other than in accordance with paragraph (D)(2)(c)(i) of this rule, criteria for detection of any discontinuity as appropriate for the method shall be used to determine if the test is a failed test.

(d) Destructive testing for peel according to ASTM D6392 (integrity of seams) shall be performed on randomly selected samples of seam, excluding repairs of destructive testing locations, at a frequency of not less than one per five hundred feet per person per seaming apparatus.

(e) A peel test shall be considered a failed test if a failure occurs through any part of the seam.

(E) Certification of the cap system flexible membrane liner by the owner or operator shall include the following:

(1) Plan views of the deployment of the flexible membrane liner panels and the locations, as constructed, and identification of all destructive tests and all repairs made by the owner or operator.

(2) If the flexible membrane liner is not placed directly above a cap system recompacted soil layer, the plan views described in paragraph (E)(1) of this rule shall also include a topographic representation of elevations of the flexible membrane liner, including the run-out if applicable, as constructed.

(3) If the flexible membrane liner is not placed directly above a cap system recompacted soil layer, the table of survey information described in rule 3745-512-50 of the Administrative Code and a comparison of the survey data to the elevations in the authorizing document.

(4) Results of all construction testing performed under paragraph (D)(2) of this rule.

(5) Results of all testing and verification that deployment and seaming of the flexible membrane liner meets the standards in paragraphs (A) to (C) of this rule and the specifications in the authorizing document. If an alternative material is used, the evaluation conducted pursuant to rule 3745-512-17 of the Administrative Code was submitted prior to use of the alternative material and therefore verification is not required to be submitted with the construction certification report under this rule. However, results of all testing to verify that the alternative material meets material specifications are required in the construction certification report.

3745-512-621 Cap system granular drainage layer.

(A) The cap system granular drainage layer shall meet the following criteria:

(1) Be free of foreign material and deleterious material.

(2) Have not more than five per cent of the particles by weight passing through the number two hundred standard sieve.

(3) Have a hydraulic conductivity not less than 0.5 centimeters per second.

(B) If the cap system granular drainage layer is placed on a flexible membrane liner, and the granular drainage layer is not comprised of a material with a sand classification as described in ASTM D2487 (USCS) as described in rule 3745-500-03 of the Administrative Code, a cushion layer shall be placed by the owner or operator between the flexible membrane liner and the granular drainage layer. The cushion layer shall conform to the following:

(1) Consist of a geotextile with either of the following minimum average roll values unless an alternative material is approved in accordance with rule 3745-512-17 of the Administrative Code:

(a) Sixteen ounces per square yard and puncture resistance of at least three hundred ten pounds as determined by ASTM D4833 (index puncture resistance) as described in rule 3745-500-03 of the Administrative Code.

(b) For rounded or sub-rounded gravel with no dimension greater than one inch in length, eight ounces per square yard.

(2) Be sewn by the owner or operator to prevent exposure of the flexible membrane liner.

(C) Testing of the material used for the cap system granular drainage layer shall be performed by the owner or operator in conformance with the following:

(1) Pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Pre-construction testing on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(D) Certification of the cap system granular drainage layer by the owner or operator shall include the following:

(1) Record drawings showing the location, including the run-out if applicable, and plan views with topographic

representation of the basal and final elevations of the granular drainage layer, as constructed.

(2) The table of survey information described in rule 3745-512-50 of the Administrative Code and a comparison of the survey data to the elevations in the authorizing document.

(3) Results of all testing and verification that the granular drainage layer, including the cushion layer if applicable, meets the standards in paragraphs (A) and (B) of this rule and the specifications in the authorizing document. If an alternative material is used, the evaluation conducted pursuant to rule 3745-512-17 of the Administrative Code was submitted prior to use of the alternative material and therefore verification is not required to be submitted with the construction certification report under this rule. However, results of all testing to verify that the alternative material meets material specifications are required in the construction certification report.

3745-512-625 Cap system geocomposite drainage layer.

(A) The cap system geocomposite drainage layer shall meet the following criteria:

(1) The filter fabric components shall have an apparent opening size necessary to retain the soil overlying the geocomposite.

(2) The filter fabric components shall have an apparent opening size and either a porosity or percentage of open area available to resist clogging by adjacent soil.

(3) Have a minimum transmissivity to ensure that the overlying cap protection layer will not become saturated. The minimum transmissivity is calculated by dividing the pre-construction test results for transmissivity, conducted in accordance with rule 3745-512-15 of the Administrative Code, by a factor of safety of 2.0 and appropriate reduction factors for elastic deformation, intrusion, creep deformation, biological clogging, and chemical clogging.

(4) Be placed by the owner or operator without folds or wrinkles and be overlapped and secured in a manner that will keep the geocomposite in place during placement of overlying materials and be placed and secured in accordance with the manufacturer's specifications.

(5) Each panel of geocomposite shall be secured by the owner or operator to adjoining panels. The geonet shall be overlapped and secured with cable ties in accordance with the manufacturer's specifications. The top geotextile shall also be overlapped and sewn in accordance with the manufacturer's specifications.

(B) Testing of the cap system geocomposite shall be performed by the owner or operator in conformance with the following:

(1) Pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Pre-construction testing on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(C) Certification of the cap system geocomposite drainage layer by the owner or operator shall include the following:

(1) Record drawings showing the location, including the run-out if applicable, as constructed.

(2) Results of all testing and verification that the geocomposite meets the standards in paragraph (A) of this rule and the specifications in the authorizing document.

3745-512-630 Cap system collection pipes and outlets.

(A) Cap system collection pipes and pipe outlets shall meet the following criteria:

(1) Be permanently fused together.

(2) If perforated, shall not be wrapped with filter fabric.

(B) The owner or operator shall surround cap system collection pipes with material to protect the pipes from crushing, deflection, and deformation. The surrounding material shall meet the following criteria:

(1) Contain particles with dimensions that will not clog any pipe perforations

(2) Not be wrapped with filter fabric.

(C) Materials used by the owner or operator for cap system collection pipes, cleanout access, and pipe outlets shall meet the following criteria:

(1) Be resistant to crushing and deformation under the expected maximum loads and settlement.

(2) Not consist of corrugated metal.

(D) Certification of the cap system collection pipes by the owner or operator shall include the following:

(1) Record drawings of the pipes showing the location of the pipes in plan view, the slope of the pipes, and the elevation of the pipe invert at the ends of each run of pipe, as constructed.

(2) Record drawings showing the locations, plan views, and elevations of the cleanout access and outlets.

(3) Drawings showing the details of the cleanout access and outlets, as constructed.

(4) Results of all testing and verification that the cap system collection pipes meet the standards in paragraphs (A) to (C) of this rule and the specifications in the authorizing document.

3745-512-641 Cap system granular filter layer.

(A) The cap system granular filter layer material shall maximize the flow of liquid moving through the granular filter layer and meet the following criteria:

(1) The permeability shall not be less than the permeability of the underlying drainage layer

(2) Have a uniformity coefficient less than 5.0.

(B) Testing of material used for the cap system granular filter layer shall be performed by the owner or operator in conformance with the following:

(1) Pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Pre-construction testing on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(C) Certification of the cap system granular filter layer by the owner or operator shall include the following:

(1) Record drawings showing the location, including the run-out if applicable, and plan views with topographic representation of the basal and final elevations of the granular filter layer, as constructed.

(2) Results of all testing and verification that the granular filter layer meets the standards in paragraphs (A) and (B) of this rule and the specifications in the authorizing document.

3745-512-645 Cap system geotextile filter layer.

(A) The cap system geotextile filter layer shall meet the following criteria:

(1) Have an appropriate apparent opening size necessary to retain material in the cap protection layer overlying the geotextile filter.

(2) Have an apparent opening size and either a porosity or percentage of open area available to resist clogging by material from the cap protection layer.

(3) Have a minimum permittivity to ensure that the layer does not create a perched zone above the cap system drainage layer.

(4) Be overlapped and sewn by the owner or operator to keep the geotextile in place during placement of overlying materials and be placed and secured in accordance with the manufacturer's specifications.

(B) Testing of the cap system geotextile filter layer shall be performed by the owner or operator in conformance with the following:

(1) Pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Pre-construction testing on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(C) Certification of the cap system geotextile filter layer by the owner or operator shall include the following:

(1) Record drawings showing the plan views, including the run-out if applicable, of the geotextile filter layer, as constructed.

(2) Results of all testing and verification that the geotextile filter layer meets the standards in paragraph (A) of this rule and the specifications in the authorizing document.

3745-512-650 Cap system protection layer.

(A) The cap system protection layer shall be constructed with soils meeting the following criteria:

(1) Have a plasticity index between 5.0 and 25.0.

(2) Have a maximum organic content of five per cent.

(3) Have a maximum silt content of 65.0 per cent.

(4) If the plasticity index is less than 15.0, the soil shall have less than 50.0 per cent dispersion.

(5) Have sufficient fertility in the uppermost portion to support vegetation.

(6) Be comprised of a soil that shall result in an erosion rate of not more than five tons per acre per year as calculated using the "Universal Soil Loss Equation," "Revised Universal Soil Loss Equation," or the "Water Erosion Prediction Project Model" as described in rule 3745-500-03 of the Administrative Code corresponding to the maximum slope length between ditches and assuming disturbed soils and that the soils are highly susceptible to rill erosion.

(B) Not later than seven days after construction, the owner or operator shall cover the cap system protection layer with mulch or other material. The mulch or other covering material shall result in an erosion rate of not more than five tons per acre per year as calculated using the "Universal Soil Loss Equation," "Revised Universal Soil Loss Equation," or the "Water Erosion Prediction Project Model" as described in rule 3745-500-03 of the Administrative Code corresponding to the maximum slope length between ditches and assuming the mulch or other material is a disturbed soil that is highly susceptible to rill erosion.

(C) Testing of material used for the cap system protection layer shall be performed by the owner or operator in conformance with the following:

(1) Pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Pre-construction testing on representative samples in accordance with rule 3745-512-15 of the Administrative Code

(D) Certification of the cap system protection layer by the owner or operator shall include the following:

(1) Record drawings showing the location, including the run-out if applicable, and plan views with topographic representation of the basal and final elevations of the protection layer, as constructed.

(2) The table of survey information described in rule 3745-512-50 of the Administrative Code and a comparison of the survey data of the final elevations to the elevations in the authorizing document.

(3) Results of all testing and verification that the protection layer meets the standards in paragraphs (A) and (B) of this rule and the specifications in the authorizing document.

3745-512-680 Cap system and gas collection layer tie-in area.

(A) All engineered components in the cap system and gas collection layer tie-in area shall be inspected and, if damage or deterioration is evident, tested prior to beginning construction of the adjoining cap system and gas collection system to confirm that none of the engineered components was damaged and that all engineered components continue to meet all specifications required to be certified.

(B) If an engineered component in the tie-in area was damaged or does not meet all the specifications required to be certified, as applicable for the engineered component, the owner or operator shall comply with the procedures for failed tests and alterations in rule 3745-512-55 of the Administrative Code.

3745-512-751 Gas collection and conveyance system gas collection layer.

(A) For a gas collection and conveyance system gas collection layer immediately beneath a liner or gas barrier consisting of recompacted soil, a separation layer shall be placed by the owner or operator between the recompacted soil and the gas collection layer. The separation layer shall meet either of the following:

(1) For a separation layer consisting of granular material, the uniformity coefficient of the granular material shall be less than 5.0.

(2) For a separation layer consisting of geotextile overlying a granular gas collection layer, meet the following criteria:

(a) The geotextile shall be composed of polyethylene, unless an alternative material is approved in accordance with rule 3745-512-17 of the Administrative Code.

(b) The geotextile shall have an apparent opening size and either a porosity or percentage of open area available to resist clogging by the recompacted soil liner or gas barrier.

(c) The geotextile layer shall be overlapped and sewn by the owner or operator to keep the geotextile layer in place during placement of overlying materials and be placed and secured in accordance with the manufacturer's specifications.

(B) For a gas collection and conveyance system gas collection layer immediately beneath a flexible membrane liner and where the granular material does not conform to a sand classification as described in ASTM D2487 (USCS) as described in rule 3745-500-03 of the Administrative Code, the owner or operator shall do the following:

(1) Place a cushion layer between the flexible membrane liner and the gas collection layer.

(2) Use a cushion layer consisting of one of the following:

(a) A geotextile with a minimum average roll value for weight of sixteen ounces per square yard and puncture resistance of at least three hundred ten pounds as determined by ASTM D4833 (index puncture resistance).

(b) For a granular gas collection layer comprised of rounded or sub-rounded gravel with no dimension greater than one inch in length, a geotextile with a minimum average roll value for weight of eight ounces per square yard.

(c) An alternative material that is approved in accordance with rule 3745-512-17 of the Administrative Code.

(3) Overlap and sew the cushion layer to prevent exposure of the granular gas collection layer during construction activities and place and secure in accordance with the manufacturer's specifications.

(C) For a gas collection layer comprised of a geocomposite, the geocomposite shall meet the following criteria:

(1) Have a minimum gas transmissivity at the appropriate suction pressure to provide sufficient flow capacity. The minimum gas transmissivity is calculated by dividing the pre-construction test results for gas transmissivity, conducted in accordance with rule 3745-512-15 of the Administrative Code, by a factor of safety of 2.0 and appropriate reduction factors for elastic deformation, intrusion, creep deformation, biological clogging, and chemical clogging.

(2) Be placed by the owner or operator without folds or wrinkles and be overlapped and secured in a manner that will keep the geocomposite in place during placement of overlying materials and be placed and secured in accordance with the manufacturer's specifications.

(3) Each panel of geocomposite shall be secured by the owner or operator to adjoining panels. The geonet shall be overlapped and secured with cable ties in accordance with the manufacturer's specifications. The top geotextile shall also be overlapped and sewn in accordance with the manufacturer's specifications.

(D) For a gas collection and conveyance system gas collection layer comprised of a geocomposite and where the gas collection layer is below a recompacted soil liner or gas barrier, the filter fabric component of the gas collection layer shall meet the following criteria:

(1) Have an appropriate apparent opening size necessary to retain the recompacted soil liner material overlying the geocomposite.

(2) Have an apparent opening size and either a porosity or percentage of open area available to resist clogging by the recompacted soil liner material.

(E) Testing of the material used for the gas collection and conveyance system gas collection layer, including the separation layer, if applicable, shall be performed by the owner or operator in conformance with the following:

(1) For materials used for the gas collection and conveyance system gas collection layer and for the separation layer, pre-construction testing on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(2) For material used for the gas collection and conveyance system gas collection layer, pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(3) For material used for a separation layer located immediately beneath the cap system recompacted soil layer, pre-constuction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(F) Certification of the gas collection and conveyance system gas collection layer by the owner or operator shall include the following:

(1) Record drawings showing the location, including the run-out if applicable, and plan views with topographic representation of the basal and final elevations of the gas collection layer, as constructed.

(2) Results of all testing and verification that the gas collection and conveyance system gas collection layer, including the separation layer and cushion layer, as applicable, meets the standards in paragraphs (A) to (D) of this rule. If an alternative material is used, the evaluation conducted pursuant to rule 3745-512-17 of the Administrative Code was submitted prior to use of the alternative material and therefore verification is not required to be submitted with the construction certification report under this rule. However, results of all testing to verify that the alternative material meets material specifications are required in the construction certification report.

(3) Demonstration that approvals and authorizations issued pursuant to Chapter 3704. of the Revised Code for the construction and operation of gas control devices at the facility have been obtained.

3745-512-752 Gas collection and conveyance system.

[Comment: Construction certification of the gas collection layer is addressed in rule 3745-512-751 of the Administrative Code.]

(A) The gas collection and conveyance system components shall be composed of materials that are chemically and physically resistant to damage from waste, C&DD, leachate, condensate, and gas that may come in contact with the gas collection and conveyance system.

(B) The gas mover system shall be tested by the owner or operator to verify it is operating properly.

(C) Gas vents and gas wells installed by the owner or operator through waste or C&DD shall conform to the following:

(1) Be sealed at the surface to prevent infiltration of air.

(2) Not be installed within ten feet of a liner system or separatory leachate barrier and collection system.

[Comment: If the facility accepted asbestos or asbestos containing material, additional requirements may apply. Compliance with this rule does not relieve the owner or operator from complying with requirements established by statutes or other rules.]

(D) Gravel used by the owner or operator around pipe perforations shall be of a dimension that will not penetrate or block the perforations.

(E) Certification of the gas collection and conveyance system by the owner or operator shall include the following:

(1) Record drawings of the gas collection and conveyance system showing the location and surface elevations, as constructed.

(2) The table of survey information described in rule 3745-512-50 of the Administrative Code and a comparison of the liner system or the separatory leachate barrier surface elevations to the depth of the boring for the gas vent or gas well.

(3) Drawings showing the details of the gas collection and conveyance system, as constructed.

(4) Results of all testing and verification that the gas collection and conveyance system meets the standards in paragraphs (A) to (D) of this rule and the specifications in the authorizing document.

(5) Demonstration that approvals and authorizations issued pursuant to Chapter 3704. of the Revised Code for

the construction and operation of gas control devices at the facility were obtained.

3745-512-810 Ditches.

Certification of the ditch by the owner or operator shall include the following:

(A) Record drawings of the location and elevation of the ditch, including the elevation of culvert inverts, as constructed.

(B) Results of all testing and verification that the ditch meets the specifications in the authorizing document.

3745-512-820 Sediment and storm water management basin system.

Certification of the sediment and storm water management basin system by the owner or operator shall include the following:

(A) Record drawings of the location and elevation of the sediment and storm water management basin, including inlets, outlets, water passageways, and discharge structures, as constructed.

(B) Drawings showing the details of inlets, outlets, water passageways, and discharge structures, as constructed.

(C) Results of all testing and verification that the sediment and storm water management basin system meets the specifications in the authorizing document.

(D) Certification of structural fill, if a component of the sediment and storm water management basin system, in accordance with rule 3745-512-223 of the Administrative Code.

(E) Certification of embankment, if a component of the sediment and storm water management basin system, in accordance with rule 3745-512-224 of the Administrative Code.

3745-512-870 Level and flow control structures.

(A) Level and flow control structures shall meet the following criteria:

(1) Be adequately ventilated for safety and to minimize corrosion.

(2) Be tamper-resistant.

(3) Be composed of non-corrodible materials. Metal on metal contacts in control structures shall be of similar alloys to discourage electrochemical reactions.

(B) Certification of the level and flow control structures by the owner or operator shall include the following:

(1) Record drawings of the level and flow control structures, as constructed.

(2) Drawings showing the details of the level and flow control structures, as constructed.

(3) Results of all testing and verification that the level and flow control structures meet the standards in paragraph (A) of this rule and the specifications in the authorizing document.