DEPARTMENT OF ENVIRONMENTAL QUALITY

WASTE AND HAZARDOUS MANAGEMENT DIVISION

SOLID WASTE MANAGEMENT

(By authority conferred on the director and the department of environmental quality by Sections 11538, 11539, and 11540 of 1994 PA 451, and Executive Reorganization Order No. 1995-16, MCL 324.11538, 324.11539, 324.11540, and 324.99903.)

PART 1. GENERAL PROVISIONS

R 299.4101 Definitions; A, B.

Rule 101. As used in these rules:

(a) "Aashto" means American association of state highway and transportation officials.

(b) "Act" means Act No. 451 of the Public Acts of 1994, as amended, being §324.101 et seq. of the Michigan Compiled Laws, and known as the natural resources and environmental protection act.

(c) "Act 299" means Act No. 299 of the Public Acts of 1980, as amended, being §399.101 et seq. of the Michigan Compiled Laws, and known as the occupational code.

(d) "Act 399" means Act No. 399 of the Public Acts of 1976, as amended, being §325.1001 et seq. of the Michigan Compiled Laws, and known as the safe drinking water act.

(e) "Active life" means the period of operation beginning with the initial receipt of solid waste and ending with the completion of closure activities in accordance with the act and these rules.

(f) "Active portion" means that part of a facility or unit that has received or is receiving wastes and that has not been partially or finally closed in accordance with these rules. The active portion does not include areas that have interim cover which complies with R 299.4429(7) or a constructed unit or portion of a unit that has not received waste.

(g) "Active work area" means the area which is or will be used for the storage, transport, or disposal of solid waste, methane gas, or leachate or in which heavy equipment is or will be used as part of the landfill operation. The active work area includes all of the following:

(i) The active portion.

(ii) Leachate collection and storage systems, exclusive of any of the following:

(A) Forcemains.

(B) Sewers.

(C) Enclosed manholes.

(D) Sewer hookups.

(iii) Gas collection and handling systems, exclusive of any of the following:

(A) Enclosed flares.

(B) Energy recovery facilities.

(C) Pipelines for gas and gas condensate associated with energy recovery facilities.

(iv) Heavy equipment storage and maintenance areas and borrow areas in which heavy equipment is or will be used.

(v) Haul roads used for waste transport, exclusive of the entrance and scales.

(vi) Any on-site processing plant.

(vii) Other operations that involve the storage or disposal of solid waste or leachate. Operations that do not involve the storage or disposal of solid waste or leachate, such as any of the following, are not part of the active work area:

(A) Monitoring wells.

(B) Access roads.

(C) Berms.

(D) Screening.

(E) Stormwater retention ponds.

(F) Light duty maintenance buildings.

(G) Office buildings.

(h) "Agronomic rate" means the addition of wastes to the soil at rates that are recognized to improve soil and crop production.

(i) "Applicant" means an owner or operator who has applied for a construction permit or operating license under part 115 of the act.

(j) "Appropriate organization" means any organization that has demonstrated,or is demonstrating, a substantial interest in solid waste management.

(k) "Aquifer" means a geologic formation, group of formations, or portion of a formation that is capable of yielding significant quantities of groundwater to wells or springs.

(l) "Asbestos waste" means asbestos-containing waste material, as defined in 40 C.F.R §61.141 under the national emission standard for asbestos.The definition of asbestos-containing waste material and related definitions are adopted by reference in R 299.4131.

(m) "ASTM" means the American society for testing and materials.

(n) "Attendant" means the individual who accepts solid waste at the entrance to the solid waste disposal area.

(o) "Average daily flow rate" means the average flow, in gallons per acre per day, removed from a secondary collection system or leak detection during the last 3 months. The average daily flow rate shall be calculated monthly by averaging the flow rate for the current month with those from the preceding 2 months.

(p) "Background" means the concentration or level of a substance which exists in the environment at or regionally proximate to a site and which is not attributable to any release at or regionally proximate to the site.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4102 Definitions; C to E.

Rule 102. As used in these rules:

(a) “Cement kiln dust” means particulate material that is collected in air emission control devices which serve portland cement kilns.

(b) “Closed unit” means a landfill unit at which final closure has been completed and certified in accordance with R 299.4317 or R 299.4449.

(c) “Commercial waste” means all types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, but does not include household waste from single residences, hazardous waste, and industrial wastes. Commercial waste includes solid waste from any of the following:

(i) Multiple residences.

(ii) Hotels and motels.

(iii) Bunkhouses.

(iv) Ranger stations.

(v) Crew quarters.

(vi) Campgrounds.

(vii) Picnic grounds.

(viii) Day-use recreation areas.

(d) “Composite liner” means a system that consists of both of the following components:

(i) An upper component that consists of a flexible membrane liner which is installed in direct and uniform contact with the lower compacted soil component. The flexible membrane liner shall have a nominal thickness not less than 30 mils thick. For high-density polyethylene components, the flexible membrane shall have a nominal thickness not less than 60 mils.

(ii) A lower component that consists of any of the following soil layers:

(A) Compacted soil which is not less than 2 feet thick and which is in compliance with R 299.4913.

(B) A bentonite geocomposite liner that is in compliance with R 299.4914.

(C) An alternative soil layer that is approved under these rules.

(e) “Composting” means the process by which biological decomposition of yard clippings or compostable material is carried out under controlled aerobic conditions and which stabilizes the organic fraction into a material that can easily and safely be stored, handled, and used in an environmentally

acceptable manner. The presence of insignificant anaerobic zones within the composting material will not cause the process to be classified as other than composting.

(f) "Composting facility" means a facility where composting of yard clippings or compostable material occurs using composting technology. Composting technology may include physical turning, windrowing, aeration, or other mechanical handling of organic matter.

(g) "Construction and demolition waste" means waste building materials, packaging, and rubble that results from construction, remodeling, repair, and demolition operations on houses, commercial or industrial buildings, and other structures. Construction and demolition waste includes trees and stumps which are more than 4 feet in length and 2 inches in diameter and which are removed from property during construction, maintenance, or repair. Construction and demolition waste does not include any of the following, even if it results from the construction, remodeling, repair, and demolition of structures:

(i) Asbestos waste.

(ii) Household waste.

(iii) Corrugated containerboard.

(iv) Appliances.

(v) Drums and containers.

(vi) Any aboveground or underground tank and associated piping, except septic tanks.

(vii) Solid waste that results from any processing technique which renders individual waste components unrecognizable, such as pulverizing or shredding, unless the type and origin of such waste is known not to contain the wastes listed in paragraphs (i) to (vi) of this subdivision.

(h) "Contiguous property" means the same or geographically contiguous property that may be divided by a public or private right-of-way. Pieces of property owned by the same person and connected by a right-of-way which the owner controls and to which the public does not have access are also contiguous.

(i) "Designated planning agency" means a governmental unit or regional planning agency that is determined, under the act, to be responsible for the preparation of a solid waste management plan.

(j) "Disease vectors" means any rodents, flies, mosquitoes, or other animals, including insects, that are capable of transmitting disease to humans.

(k) "Disposal" means any of the following:

(i) The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste into or on any land or water so that the solid waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwaters. Disposal includes the placement of solid waste in an open dump, landfill, or waste piles that are not exempt under R 299.4129(2) or R 299.4130.

(ii) The open burning or incineration of solid waste.

(iii) The processing of solid waste.

(iv) The storage or handling of solid waste at a solid waste transfer facility.

(v) The abandonment of solid waste in place of other disposal.

(l) "Disposal area type" means 1 of the following types of disposal areas defined by the act and these rules:

(i) Municipal solid waste landfill.

(ii) Industrial waste landfill.

(iii) Construction and demolition waste landfill.

(iv) Municipal incinerator ash landfill.

(v) Incinerator.

(vi) Processing plant.

(vii) Transfer facility.

(viii) Waste pile.

(m) "Domestic well" means a well that is intended to furnish water to a single household for any beneficial use.

(n) "Enforceable mechanism" means a legal method whereby the state, a county or municipal government, or a person can take action to guarantee compliance with an approved county solid waste management plan. Enforceable mechanisms include any of the following:

(i) Contracts.

(ii) Intergovernmental agreements.

(iii) Laws.
(iv) Ordinances.
(v) Rules.
(vi) Regulations.

(o) “Environmental contamination” means the release of a hazardous substance in a quantity that is or may become injurious to the environment or to the public health, safety, or welfare.

(p) “Environmental interest group” means a nonprofit citizens' organization that has bylaws which support environmental enhancement or the conservation of Michigan's natural resources and that has an organization which does not directly reflect an economic interest of its members.

(q) “Existing disposal area” means any of the following:

(i) A disposal area that has been issued a construction permit under the act.

(ii) A disposal area that had engineering plans approved by the director before January 11, 1979.

(iii) An industrial waste landfill that was authorized to operate by the director or by court order before October 9, 1993.

(iv) An industrial waste pile that is located at the site of generation on October 9, 1993.

(r) “Existing unit” or “existing landfill unit” means any landfill unit that receives solid waste as of October 9, 1993. Waste placement in existing landfill units shall be consistent with past operating practices or modified practices to ensure good management.

History: 1982 AACS; 1993 AACS; 1999 AACS; 2005 AACS.

R 299.4103 Definitions; F to L.

Rule 103. As used in these rules:

(a) "Facility" means a solid waste disposal area as defined in R 299.4106a.

(b) "Floodplain" means the lowland and relatively flat areas which adjoin inland and coastal waters and which are inundated by the 100-year flood.The 100-year flood is a flood that has a 1% or greater chance of recurring in any given year or a flood of a magnitude equaled or exceeded once in 100 years on the average over a significantly long period.

(c) "Floodway" means the channel of a watercourse and those portions of the floodplain adjoining the channel that are reasonably required to transmit the 100-year flood.

(d) "Food processing wastes" means solid wastes that result from processing fruits and vegetables for preservation by freezing, drying, or canning.

(e) "General public" means private citizens who are unlikely to incur a financial gain or loss greater than that of an average homeowner, taxpayer, or consumer as a result of any action taken by a planning committee.

(f) "Geologist" or "qualified groundwater scientist" means a scientist or engineer who has received a baccalaureate or postgraduate degree in the natural sciences or engineering and who has sufficient training and experience in groundwater hydrology and related fields, as demonstrated by state registration, professional certifications, or completion of accredited university programs, to make sound professional judgments regarding groundwater monitoring, contaminant fate and transport, and corrective action.

(g) "Geotextile" means any permeable material that is used with foundation, soil, rock, earth, or any other geotechnical engineering-related material as an integral part of a man-made structure or system.

(h) "Groundwater" means water below the land surface in a zone of saturation.

(i) "Groundwater level" means the surface of the groundwater in the uppermost aquifer in unconfined conditions or the bottom of the confining bed in confined conditions.

(j) "Hazardous substance" means a hazardous substance as defined in Part 201 of the act.

(k) "Household waste" means any solid waste that is derived from single households, but does not include any of the following:

(i) Commercial waste.
(ii) Industrial waste.
(iii) Construction and demolition waste.

(l) "Hydraulic conductivity" or "permeability" means the rate of flow of a liquid under a differential pressure through a material. The hydraulic conductivity of cohesive soils shall be determined using the methods specified in R 299.4920.

(m) "Incinerator" means a device which is specifically designed for the destruction, by burning, of garbage or other combustible refuse or waste material, or both, and in which the products of combustion are emitted into the outer air by passing through a stack or chimney. For purposes of the act and these rules, the following devices are not incinerators:

(i) A thermal treatment unit that is designed solely for the purpose of destroying contaminants in soil.

(ii) Boilers, industrial furnaces, or power plants that burn site-separated material, source-separated material, or industrial waste as fuel.

(iii) A device that is used to incinerate medical waste and other waste from a facility that generates medical waste.

(n) "Industrial waste" means solid waste which is generated by manufacturing or industrial processes or originates from an industrial site and which is not a hazardous waste regulated under part 111 of the act.

(o) "Industrial waste landfill" means a landfill that is used for the disposal of industrial waste which has been characterized for hazard and which has been determined to be nonhazardous under part 111 of the act. An industrial waste landfill may accept industrial waste of different types and from different generators, but shall not accept hazardous waste generated by conditionally exempt small quantity generators, as defined under part 111 of the act.

(p) "Landfill unit" means a discrete area of land which is permitted to receive waste for permanent disposal and which is not a waste pile. For purposes of these rules, the discrete area shall consist of all areas where waste is or will be contiguous, excluding any portion that has been closed under part 111 of the act. Contiguous portions may be separated by berms and may contain different liner or leachate collection designs and separate leachate collection systems, if waste in one portion is or will be in contact with waste in another portion. The boundaries of a landfill unit may be increased by lateral extensions consistent with the construction permit or plans approved by the department. A landfill unit may be any of the following:

(i) A new unit.

(ii) An existing unit.

(iii) A preexisting unit.

(iv) A closed unit.

(q) "Lateral expansion" means a horizontal expansion of the solid waste boundary of a landfill beyond the limit established in a construction permit or engineering plans approved by the solid waste control agency before January 11, 1979.

(r) "Lateral extension" means the extension of an existing unit within the solid waste boundary, but beyond that area constructed and licensed on October 9, 1993.

(s) "Leachate" means liquid which has come in contact with, passed through, or emerged from, solid waste and which contains soluble, suspended, or miscible materials that are removed from the wastes.

(t) "Lead acid battery" means a storage battery in which the electrodes are grids of lead oxides that change in composition during charging and discharging and in which the electrolyte is dilute sulfuric acid.

(u) "Leak detection system" means the secondary collection system of an unmonitorable unit. The purpose of a leak detection system is to detect, collect, and remove leaks of hazardous substances at the earliest practicable time through all areas of the top liner likely to be exposed to waste or leachate during the active life and postclosure period.

(v) "Lift" means a layer of placed material, including a layer of compacted clay in a landfill layer or cap, or a layer of waste in a sanitary landfill.

(w) "Liquid waste" means any waste material that is determined to contain free liquids as defined by method 9095, the paint filter liquids test, as described in the publication entitled "Test Methods for Evaluating Solid Wastes, Physical-Chemical Methods" SW-846, which is adopted by reference in R 299.4133. For purposes of the act and these rules, liquid waste does not include industrial waste sludges that are disposed of at a location other than a type II landfill.

(x) "Low-hazard industrial waste" means an industrial waste that has a low potential for groundwater contamination when managed in accordance with these rules. Wastes that meet this definition are designated in R 299.4122.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4104 Definitions; M to R.

Rule 104. As used in these rules:

(a) "Medical waste" means waste as defined in section 13825 of Act No. 368 of the Public Acts of 1978, as amended, being §333.13825 of the Michigan Compiled Laws.

(b) "Method detection limit" means the minimum concentration of a substance which can be measured and reported with 99% confidence, for which the analyte concentration is greater than zero, and which is determined from analysis of a sample in a given matrix that contains the analyte.

(c) "Monitorable unit" means a landfill unit for which it is possible to determine the unit's impact on groundwater using groundwater monitoring. A unit remains a monitorable unit in any of the following circumstances:

(i) A unit's monitoring system detects hazardous substances above background, but the owner or operator demonstrates that the source of hazardous substances is not a landfill unit at or adjacent to the facility and that other substances that do not exceed background can be used as reliable indicators of leakage from the unit.

(ii) The unit is constructed over or adjacent to an open dump or another unit, but an impact on the groundwater has not been detected from the open dump or another unit.

(iii) The director waives groundwater monitoring for the unit.

(d) "Municipal solid waste landfill" or "type II landfill" means a landfill which receives household waste or municipal solid waste incinerator ash, and which is not a land application unit, surface impoundment, injection well, or waste pile. A municipal solid waste landfill also may receive other types of solid waste, such as any of the following:

(i) Construction and demolition waste.

(ii) Sewage sludge.

(iii) Commercial waste.

(iv) Nonhazardous sludge.

(v) Hazardous waste from conditionally exempt small quantity generators.

(vi) Industrial waste. Such a landfill may be publicly or privately owned.

(e) "New disposal area" means a disposal area that requires a construction permit under the act and includes all of the following:

(i) A disposal area, other than an existing disposal area, that is proposed for construction.

(ii) For landfills, a lateral expansion, vertical expansion, or other expansion that results in an increase in the design capacity of an existing disposal area.

(iii) For disposal areas other than landfills, an enlargement in capacity beyond that indicated in the construction permit or in engineering plans approved before January 11, 1979.

(iv) For all disposal areas, an alteration of an existing disposal area to a different disposal area type than had been specified in the previous construction permit application or in engineering plans that were approved by the director or his or her designee before January 11, 1979.

(f) "Natural soil barrier" means any combination of natural or recompacted soil which is not less than 10 feet thick and which consists predominantly of soils that have a unified soil classification of SC, ML, CL, CL/ML, or CH.A natural soil barrier may contain soil types other than SC, ML, CL, CL/ML, or CH if the anamalous soils are not hydraulically connected to the uppermost aquifer, do not extend beyond the solid waste boundary, and are not considered as part of the thickness determination.

(g) "New unit" means any landfill unit that has not received solid waste before October 9, 1993.

(h) "Nuisance" means conditions that unreasonably interfere with the enjoyment of life and property, such as noise, blowing debris, odors, vectors, or pest animals.

(i) "Open burning" means either of the following:

(i) A fire from which the products of combustion are emitted directly into the outer air without passing through a stack or chimney.

(ii) The combustion of solid waste without controlling combustion air to maintain adequate temperature for efficient combustion, containment of the combustion reaction in an enclosed device to provide sufficient residence
time and mixing for complete combustion, and control of the emission of the combustion products.

(j) "Open dump" means a disposal area which is not licensed under the act and which is not otherwise authorized by the director.

(k) "Operator" means the person who is in control of, or responsible for, the operation of a facility or part of a facility.

(l) "Owner" means the person who owns a facility or part of a facility.

(m) "Paper mill waste" means all of the following waste that is generated by pulp or paper mills:

(i) Wastewater treatment sludge.

(ii) Bark and wood residue.

(iii) Scrap paper.

(iv) Lime mud and grit.

(v) Rejects from screens, cleaners, and pulp mills.

(vi) Green liquor dregs.

(vii) Other wastes that the department determines have similar characteristics.

(n) "Pile" means any noncontainerized accumulation of solid waste that is used for treatment or storage.

(o) "Planning committee" means a committee that is established under the act to aid in the preparation of a county solid waste management plan.

(p) "Practical quantitation limit" means the lowest level that can be reliably achieved within specified limits of precision and accuracy under routine laboratory conditions and based on all of the following:

(i) Quantitation.

(ii) Precision and accuracy.

(iii) Normal operation of the laboratory.

(iv) The practical need in a compliance monitoring program to have a sufficient number of laboratories available to conduct the analyses.

(q) "Preexisting unit" means any landfill unit which is or was licensed under the act, but which does not receive waste after October 9, 1993.

(r) "Processing" means changing the physical or chemical character of solid waste, by separation, treatment, or other methods, so as to make the waste or a constituent of the waste disposable or usable as a resource. The following activities do not constitute processing:

(i) Compaction.

(ii) Incineration, thermal treatment of contaminated soil, or burning waste as fuel, if these activities are permitted under part 55 of the act.

(iii) Metal processing by scrap dealers.

(iv) Industrial operations that use, reuse, or reclaim industrial waste, source-separated material, or site-separated material to make a raw material or new product.

(v) Separation of recyclable materials from small quantities of solid waste. A small quantity is not more than 2 tons per day or 60 tons per month.

(vi) Separation of recyclable material at a landfill.

(vii) The separation of small quantities of solid waste from source- separated material. The volume of solid waste removed shall be considered a small quantity if it is less than 10% of the total volume of material received.

(viii) Composting of yard clippings, if the requirements of R299.4120 are met.

(ix) Composting of material other than yard clippings which is approved under R 299.4121 and which does not involve more than 500 cubic yards at any time. Composting facilities exceeding 500 cubic yards shall be licensed as processing plants.

(x) Shredding or chipping of trees, stumps, and brush.

(xi) Treatment of contaminated soil or other waste generated from the remediation of environmental contamination at the site of environmental contamination before disposal at a facility licensed under this part.

(xii) The addition of small quantities of sorbent material to individual loads of waste within the active portion of a type II landfill.

(s) "Public meeting" means a regularly scheduled meeting of the designated planning agency.

(t) "Regulated hazardous waste" means a hazardous waste, as defined in R 299.9203, that is not excluded from regulation under R 299.9204 or that was not generated by a conditionally exempt small quantity generator as defined in R 299.9205.

(u) "Responsible individual" means an individual who is familiar with the requirements of the act and these rules as they relate to the daily operation and maintenance of the solid waste disposal area where he or she is employed and who has the capability and the authority to make decisions regarding the daily operation and maintenance of that disposal area which are necessary to comply with the act and these rules.

(v) "Runoff" means any rainwater, leachate, or other liquid that drains over land from any part of a facility.

(w) "Run-on" means any rainwater, leachate, or other liquid that drains over land onto any part of a facility.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4105 Definitions; S to W.

Rule 105. As used in these rules:

(a) “Sanitary landfill” means a type of disposal area consisting of 1 or more landfill units and the active work areas associated with these units. Sanitary landfills shall be classified as 1 of the following types of landfills:

(i) A type II landfill, which is a municipal solid waste landfill and includes a municipal solid waste incinerator ash landfill.

(ii) A type III landfill, which is any landfill that is not a municipal solid waste landfill or hazardous waste landfill and includes all of the following:

(A) Construction and demolition waste landfills.

(B) Industrial waste landfills.

(C) Landfills which accept waste other than household waste, municipal solid waste incinerator ash, or hazardous waste from conditionally exempt small quantity generators.

(b) “Saturated zone” or “zone of saturation” means that part of the earth's crust in which all voids are filled with water.

(c) “Scavenging” means the uncontrolled picking of materials from solid waste.

(d) “Secondary collection system” means the liquid collection and removal system between the liners of a multiple liner system in a landfill cell. In the case of an unmonitorable unit, the secondary collection system is also a leak detection system.

(e) “Sludge” means any solid or semisolid waste that is generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility. “Sludge” also includes any other semisolid industrial waste.

(f) “Specific site” means an area within a municipality or municipalities.

(g) “Sole-source aquifer” means those aquifers that are designated under section 1424(e) of the federal safe drinking water act of 1974, Public Law 93-523, 42 U.S.C. §300h et seq.

(h) “Solid waste boundary” means the outermost perimeter of the solid waste (projected in the horizontal plane) as it would exist at completion of the sanitary landfill and as authorized in a construction permit or in engineering plans approved for the landfill unit by the solid waste control agency before January 11, 1979.

(i) “Solid waste control agency” means the certified health department that has jurisdiction in the county or, in the absence of a certified health department, the department.

(j) “Solid waste management industry” means any of the following:

(i) An individual or organization that derives a substantial portion of its income from the collection, transportation, or disposal of solid waste.

(ii) A manufacturing industry that collects, transports, and disposes of solid waste that is generated incidental to its operation.

(iii) A unit of government or subdivision thereof that collects, transports, or disposes of solid waste within its political boundary when 4 members, as defined in paragraphs (i) and (ii) of this subdivision, cannot be found.

(k) “Solid waste management system” means a set of procedures that provides for the collection, transportation, separation, recycling, recovery, and disposal of solid waste.

(l) “Speculative accumulation” means the storage of material intended for recycling or reuse at a site for a period of over 1 year, or for low-hazard industrial waste accumulated at the site of generation, a period of 3 years. A material is not accumulated speculatively, however, if the person who accumulates it can show that the material can be recycled into marketable raw materials or new products and that, during the period, the amount of material that is recycled or that is transferred to a different site for recycling equals not less than 75%, by weight or volume, of the amount of material that was accumulated at the beginning of the period.

(m) “Standard industrial classification number” means the number assigned to an industry by the United States office of management and budget and contained in the standard industrial classification manual. The manual is adopted by reference in R 299.4126.

(n) “Statistically significant increase” means a verified increase in groundwater concentration for a given constituent for which statistical analysis is required in the approved hydrogeological monitoring plan that is inconsistent with background concentrations given chance expectations for the site as a whole.

(o) “Sump” means any lined pit, manhole, or reservoir that serves to collect liquids drained from a leachate collection and removal system, secondary collection system, or leak detection system.

(p) “Surface water” means a body of water that has its top surface exposed to the atmosphere and includes a flowing body, a pond, or a lake, except for drainageways and ponds that are used solely for wastewater conveyance, treatment, or control.

(q) “Synthetic liner” or “flexible membrane liner” means very low-permeability synthetic membrane liners or barriers that are used with any geotechnical engineering-related material as an integral part of a man-made project, structure, or system.

(r) “Total inorganic nitrogen” means the sum of ammonia?nitrogen, nitrate-nitrogen, and nitrite-nitrogen.

(s) “TSCA” means the toxic substances control act, 15 U.S.C. §2601 et seq.

(t) “Unmonitorable unit” means a landfill unit that is not a monitorable unit.

(u) “Uppermost aquifer” means the geologic formation which is nearest to the natural ground surface and which is an aquifer and includes lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary.

(v) “Vertical expansion” means the landfilling of solid waste above the elevations indicated in the construction permit or in engineering plans approved for the landfill unit by the solid waste control agency before January 11, 1979. Increases in elevation approved by the director are not new disposal areas if the volume of waste to be disposed of is not expanded beyond the volume previously approved and if the expansion is in compliance with the act and these rules.

(w) “Wetland” means the areas defined as wetlands in part 303 of the act.

History: 1982 AACS; 1993 AACS; 1999 AACS; 2005 AACS.

R 299.4106 Terms defined in the act.

Rule 106. Terms defined in the act have the same meaning when used in these rules.

History: 1982 AACS.

R 299.4106a Definitions of terms used in act.

Rule 106a. As used in the act:

(a) "Approved hydrogeologic monitoring program" means a monitoring program which is approved by the director and which is in compliance under R 299.4905.

(b) "Compost" means organic matter from yard clippings or compostable materials which have undergone biological decomposition by composting, which have been stabilized to a degree that it is potentially beneficial to plant growth without creating a nuisance, and which are used or sold for use as a soil amendment, artificial topsoil, or growing medium amendment or for other similar uses.

(c) "Conversion" means the process by which any of the following is recycled into marketable raw materials or new products:

(i) Glass.
(ii) Metal.
(iii) Wood.
(iv) Paper products.
(v) Plastics.
(vi) Rubber.
(vii) Textiles.
(viii) Garbage.
(ix) Yard clippings.

(x) Other materials approved by the department.

Conversion includes the composting of yard clippings and compostable material in accordance with these rules, but does not include the speculative accumulation of the materials specified in this subdivision.

(d) "Establish a disposal area" as used in the act, means to create a new disposal area, as defined in these rules.

(e) "Modification" means a significant change in the approved plans for a landfill that does not constitute an upgrading, including any of the following:

(i) An increase in the final elevation of a landfill unit that does not result in an increase in design capacity or a change in the solid waste boundary. An increase in the final elevation of a landfill which is necessary to comply with changes in the act or these rules, but which does not result in a vertical expansion, is not a modification.

(ii) A reduction in the protection provided by a liner or cover system.

(iii) Other significant changes in design. The substitution of one equivalent type of material for another in a landfill design shall not be considered significant, if the change is approved by the department.

(f) "New products" means marketable consumer goods produced from site- separated or source-separated material. New products shall not be used in a manner constituting disposal, unless the new products are any of the following:

(i) Inert materials.

(ii) Compost produced from yard clippings.

(iii) Compostable material.

(iv) Material applied to the land for agricultural or silvicultural use in a manner consistent with the act and these rules.

(g) "Operating landfill," as used in section 11525a of the act, means a landfill which is either open or closed, but which has not completed the postclosure period specified in the act.

(h) "Raw materials" means materials which are returned for reuse to the original industry which produced the material, which are sold for use in an industrial process to make new products, or which are used as fuel in a unit permitted to burn the material as fuel under part 55 of the act.

(i) "Rubber" means crumb rubber or ground tires that does not contain steel and fiber.

(j) "Scrap" means metal that is a recyclable material. Used appliances shall not be considered scrap unless capacitors or other parts that may contain polychlorinated biphenyls have been removed and disposed of in compliance with the act and TSCA, if applicable.

(k) "Solid waste disposal area" means the disposal area that is approved in a construction permit or engineering plans approved by the solid waste control agency before January 11, 1979, and all contiguous property that is owned by the same person which has been approved for the disposal of solid waste in other construction permits.

(l) "Upgrading," as used in section 11510 of the act, means any of the following:

(i) The installation of thicker or additional liners in the bottom or final cover of a landfill.

(ii) The installation of gas recovery systems at a landfill.

(iii) The installation of equipment to separate recyclable material at a landfill.

(iv) A restriction in the type of waste that is received at a landfill beyond that previously approved.

(v) Other improvements to a disposal area that are approved by the director.

(m) "Wood" means any of the following:

(i) Trees.

(ii) Branches.

(iii) Bark.

(iv) Wood pallets.

(v) Lumber or other wood product which has not been treated, painted, mixed with glues and fillers, or otherwise contaminated during manufacture or use.

(vi) Wood chips or sawdust from the materials listed in this subdivision.

History: 1993 AACS; 1999 AACS.

R 299.4107 Construction permit; applicability; permit modification; incomplete application.

Rule 107. (1) A person shall not establish a new disposal area without receiving a construction permit from the director, except as provided in the act and these rules.

(2) A person who applies for a modification of a construction permit shall submit an application on a form provided by the department. The application shall include both revised engineering plans for the effected changes that comply with these rules and the fee required by the act. An application for a modification is not required to contain other information required for a new disposal area by the act and these rules. An application for a construction permit modification shall be reviewed in accordance with sections 11510 and 11511 of the act.

(3) A person shall not construct a disposal area contrary to a construction permit or plans approved before January 11, 1979, unless the change is approved by the director. Changes to approved plans that do not constitute a new disposal area or a modification may be approved by the director or his or her designee without following the process specified by section 11510 and section 11511 of the act.

(4) The statutory review periods set forth in sections 11511 and 11516 of the act shall not commence until the director, his or her designated representative, or a certified health department determines that an application is administratively complete in that it includes all submittals that are specified in the act and these rules. The determination shall be made and acknowledged within 15 working days of receipt of an application by the certified health department or the director. An application that is determined to be administratively incomplete shall be returned to the applicant, without prejudice, specifically listing those items that are required to make the application complete, together with all filing fees, within 15 working days of receipt by the certified health department or the director.

(5) A determination by a certified health department, the director, or his or her designee that an application is complete shall not be construed as a determination that the application is in compliance with all of the requirements of the act and these rules.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4108 Variances for type III landfills.

Rule 108. (1) A request for a variance for a type III landfill that is a new disposal area shall be in writing, shall accompany the application for a construction permit, and shall include justification for the variance.

(2) A request for a variance for a type III landfill that is an existing disposal area shall be in writing, shall accompany the application for an operating license, and shall include the justification for the variance.

(3) The notice that is published under the act shall include a listing and description of the variances requested by the applicant.

(4) Variances to the following rules that are applicable to type III landfills shall be granted in writing by the solid waste control agency upon a demonstration by the applicant that the requirement in the rules is not feasible and prudent and that either the substitute requirement will provide an equivalent degree of protection for the public health and environment or that the public health, welfare, and environment will not be additionally impaired:

(a) R 299.4304(4), time required to reach final grades.

(b) R 299.4304(5), final cover slope.

(c) R 299.4305(2)(b), horizontal isolation.

(d) R 299.4306(1) for an alternative boundary of compliance in place of the solid waste boundary if the criteria for classification of solid waste disposal facilities and practices, 40 C.F.R. part 257.3-4, are met. The provisions of 40 C.F.R. part 257.3-4 are adopted by reference in R 299.4134.

(e) R 299.4315(3), access.

(f) R 299.4315(4), waste placement supervision.

(g) R 299.4315(5), control of dust and blowing paper.

(h) R 299.4316(1), daily and interim cover.

(i) R 299.4316(2), intermediate cover.

(j) R 299.4317(1), closure time period.

(k) The specifications of R 299.4306, R 299.4307, or R 299.4310(1) and (2) under exceptional circumstances considering only the following factors:

(i) Unique hydrogeological situations.

(ii) The unusual nature of a specific waste with limited potential for environmental damage.
(iii) An opportunity to utilize a waste for a useful purpose.
(iv) The volume of waste to be disposed of.
(v) A demonstration by the applicant that granting the waiver will not result in impairment of the current uses of affected natural resources and that use of the selected disposal area is as reasonable and prudent as the utilization of an alternative disposal area.
(vi) Public comments on the proposed variance. Before granting a variance under this rule, the director shall do all of the following:
(A) Consult with the certified health department.
(B) Discuss the requested variance at the public hearing if a hearing is held under section 11510 of the act.
(C) Notify adjacent property owners of the proposed variance.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4109 Rescission.
Rule 109. R 325.2701 and R 325.2702 (formerly R 325.1101 and R 325.1102), R 325.2721 to R 325.2723 (formerly R 325.1103 to R 325.1105), R 325.2731 to R 325.2735 (formerly R 325.1106 to R 325.1110), and R 325.2741 to R 325.2789, appearing on pages 1966 to 1982 of the 1979 Michigan Administrative Code, are rescinded.

History: 1982 AACS.

R 299.4110 "Other wastes regulated by statute" defined.
Rule 110. As provided by section 11506 of the act, the following wastes are "other wastes regulated by statute" and are exempt from regulation as solid wastes under part 115 of the act:
(a) Hazardous waste regulated under part 111 of the act.
(b) Waste which is contaminated by polychlorinated biphenyls and which is disposed of in a facility that is licensed under TSCA.
(c) Drilling muds, land clearing debris, and other wastes associated with the exploration, development, or production of crude oil, natural gas, or geothermal energy, when managed within the same field where it was generated and where such management is authorized by the supervisor of wells in a permit or order issued under part 615 of the act.
(d) Dredgings that are approved by the department for disposal under either of the following provisions:
(i) By issuance of a permit issued under part 301 of the act authorizing the disposal, if dredgings of more than 300 cubic yards that are removed from either an area of concern identified by the international joint commission or an area adjacent to or immediately downstream of a facility regulated under part 201 of the act are evaluated for contamination and, if contaminated, are managed in a manner consistent with part 201 of the act. To evaluate dredgings for contamination, a person shall do either of the following:
(A) Analyze for PCB's, polynuclear aromatic hydrocarbons, and the metals identified in table 101. Dredgings shall not be considered contaminated if they meet the criteria for inert material specified in R 299.4115.
(B) Instead of analyses, demonstrate that the particle sizes of the dredgings are such that 95% or more of the particles will be retained on a No. 200 sieve.
(ii) by department approval of a finding of no significant impact prepared under the national environmental policy act of 1969, §42 U.S.C. 4321 et seq.
(e) Tires that are managed in compliance with part 169 of the act.
(f) Animals that are composted or disposed of in accordance with Act No. 239 of the Public Acts of 1982, being §287.651 et seq. of the Michigan Compiled Laws.
(g) Earth overburden, rock, lean ore, and iron ore tailings that are regulated under part 631 of the act.
(h) Septage waste which is regulated under part 117 of the act and which is disposed of in a land application unit.
(i) The following waste that is regulated under part 31 of the act:

(i) Liquid waste that is disposed of in accordance with a permit or order issued under part 31 of the act, except for sludges or residues that are generated from the disposal.

(ii) Sludge that is disposed of in a land application unit under a residuals management plan which is approved under part 31 of the act.

(j) The following waste, at the point that it is regulated under part 55 of the act:

(i) Wood and stumps that are burned in accordance with part 55 and part 515 of the act.

(ii) Medical waste that is burned in a unit which is permitted or licensed to burn the waste under part 55 of the act. Medical waste that is disposed of at a location other than at a unit as specified in this paragraph is not exempt from part 115 of the act and these rules.

(iii) Contaminated soil that is treated in a thermal treatment unit which is permitted under part 55 of the act, if the soil is contained at the treatment site so that the operation does not expose the soil to the atmosphere and the elements. Residues from the treatment shall be disposed of under a plan that is approved by the department.

(iv) Chipped tires, creosote railroad ties, and industrial waste that is burned as fuel in a boiler, industrial furnace, or power plant which is permitted under part 55 of the act, to burn the waste as fuel.

(k) Contaminated soil or other waste that is generated from the remediation of environmental contamination, and that is allowed to be disposed of at the site of environmental contamination or at other property which is owned by the responsible party under a remedial action plan that is approved under part 201 or part 213 of the act.

(l) Solid waste in open dumps which did not receive waste after October 9, 1991, and which receive final cover pursuant to either of the following provisions:

(i) A remedial action plan that is approved under part 201 of the act.

(ii) A grant under part 191 or part 195 of the act.

History: 1993 AACS; 1999 AACS.

R 299.4111 Nondetrimental material managed for agricultural or silvicultural use; conditions for exemption as solid waste.

Rule 111. (1) A person shall not apply sludges, ashes, or other solid waste to the land without having obtained a license under the act, unless the director has approved a plan for managing the wastes as nondetrimental materials that are appropriate for agricultural or silvicultural use or has otherwise authorized the application under part 31 of the act.

(2) A plan for managing nondetrimental materials that are appropriate for agricultural or silvicultural use shall contain all of the following information:

(a) Analytical data that is required under R 299.4118 to characterize the material.

(b) Additional characteristics of the material applicable to its proposed use. Wastes that are proposed for use as fertilizer shall be characterized by representative sampling and analysis for all of the following using analytical procedures that are specified by the EPA publication entitled "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods", SW-846, 3rd edition, which is adopted by reference in R 299.4133, or the document entitled "Standard Methods for the Examination of Water and Wastewater," 19th edition, which is adopted by reference in R 299.4139:

(i) Percent dry solids.

(ii) Total kjeldahl nitrogen.

(iii) Total ammonia nitrogen.

(iv) Nitrate nitrogen.

(v) Total phosphorus.

(vi) Specific gravity.

(vii) Chemical oxygen demand.

(viii) Five-day biological oxygen demand.

(ix) pH.

(c) All of the following information to characterize the soil types at the application area or areas:

(i) Soil type.

(ii) Soil pH.

(iii) Lime index.

(iv) Cation exchange capacity.

(v) Proposed nutrient application rates.
(d) The name and address and written approval of the titleholder of the land or lands.
(e) The proposed application rate.
(f) The proposed method of application, including the equipment to be used.
(g) The method and frequency of soil tilling to be employed.
(h) The type of vegetation to be maintained, and how it will be managed.
(3) The director shall approve a plan that is submitted under this rule if he or she finds that application of the material to the land will serve as an effective fertilizer or soil conditioner or serve another beneficial use and will be applied to the soil at an agronomic rate, but will not violate part 31 or part 55 of the act or any other state law and will not create a nuisance.
(4) The director shall approve or deny a plan that is submitted under this rule within 120 days of receiving a plan that contains the information specified in subrule (2) of this rule. The director shall impose any conditions on a plan that are necessary to protect human health and the environment.

History: 1993 AACS; 1999 AACS.

R 299.4112 Emergency disposal; conditions for approval.
Rule 112. (1) If a material poses a threat or substantial nuisance to the public or the environment, a person may petition the director to approve the emergency disposal of the material as follows:
(a) At a location that is not licensed pursuant to the provisions of the act.
(b) At a disposal area that is licensed pursuant to the provisions of the act, but is not authorized by a county plan.
(c) In a manner that is not in accordance with the provisions of the act or these rules.
(2) Approval of emergency disposal by the director, or his or her designee, if granted, shall be in compliance with all of the following provisions:
(a) Be oral or written. If oral, it shall be followed by written approval within 5 days.
(b) Not be more than 90 days in duration.
(c) Clearly specify the type and quantity of material and the manner and location of its disposal.

History: 1993 AACS.

R 299.4113 Coal ash used to reclaim, develop, or enhance land; conditions for approval.
Rule 113. (1) A person who seeks to use ash from the combustion of coal to reclaim, develop, or otherwise enhance land shall prepare a plan for such use for review and approval by the director. The plan shall describe how the proposed use will reclaim, develop, or enhance the land and shall do 1 of the following:
(a) Demonstrate that the ash is inert under R 299.4114 to R 299.4117.
(b) Demonstrate that site conditions are sufficient to prevent the migration of ash constituents in a manner that will violate the water quality performance standard of R 299.4306.
(c) Demonstrate that the plan is otherwise protective of human health and the environment.
(2) A plan that proposes the use of ash which meets the leaching criteria of R 299.4116 shall include all of the following information:
(a) Information that is required under R 299.4116.
(b) A demonstration that the ash will not adversely affect human health or the environment from all exposure routes other than groundwater.
(c) Topographic maps of the area to be reclaimed, developed, or otherwise enhanced. The maps shall be in compliance with R 299.4909. The area shall be in compliance with the location standards of R 299.4305.
(d) A closure plan that contains the information specified in R 299.4446.
(e) Authorization of the titleholder of the land approving the land use.
(f) Restrictions on postclosure use, including a restrictive covenant that is in compliance with the act.
(3) A plan that proposes the use of ash which does not meet the leaching criteria of R 299.4116 shall include all of the following:

(a) A hydrogeological report which is in compliance with R 299.4904 and which does any of the following:

(i) Verifies the presence of a natural soil barrier that is in compliance with R 299.4912.

(ii) Demonstrates that hazardous substances will be attenuated before reaching the saturated zone.

(iii) Demonstrates that the water quality performance standard of R 299.4306 will otherwise be met.

(b) Engineering plans and an engineering report that are prepared and sealed by a registered professional engineer.

(c) The information specified by subrule (2) of this rule.

(4) The director shall approve a plan for using ash to reclaim, develop, or enhance land if he or she determines that reclamation in accordance with the plan will satisfy all of the following provisions:

(a) The requirements of the act and this rule.

(b) Other state law.

(c) Will not create a nuisance.

(5) The director shall approve or deny a plan submitted under this rule within 120 days of receiving a plan containing the information specified in subrule (2) or (3) of this rule. The director shall impose any conditions on a plan that are necessary to protect human health and the environment.

History: 1993 MR 9, Eff. Oct. 8, 1993; 1999 MR 3, Eff. Apr. 12, 1999.

R 299.4114 Inert materials.

Rule 114. (1) The use of inert material on land does not require a construction permit or operating license under the act.

(2) Except as specified in subrule (3) of this rule, all of the following are inert materials:

(a) Rock.

(b) Trees, stumps, and other land clearing debris that is buried on the site of generation, or other location approved by the landowner, if all of the following conditions are met:

(i) The burial is not in a floodplain or wetland.

(ii) The debris is buried not less than 4 feet above the level of the groundwater.

(iii) The burial does not violate other federal, state, or local law.

(iv) The burial does not create a nuisance.

(v) The amount of debris is not more than 1 acre in size and is not more than 20 feet in depth.

(c) Excavated soil, except as provided in subrule (3) of this rule.

(d) Construction brick, masonry, pavement, and broken concrete that is reused for fill, riprap, slope stabilization, or other construction if all of the following conditions are met:

(i) The use does not violate part 301 or part 303 of the act or subrule (3) of this rule.

(ii) The material does not include exposed reinforcing bars or other construction and demolition waste.

(iii) The owner or operator of a site that is intended to receive more than 1,000 cubic yards of construction brick, masonry, pavement and broken concrete notifies the director or his or her designee by submitting a form that is provided by the director.

(e) Chipped tires used in the construction and operation of a sanitary landfill, if approved by the department.

(f) Portland cement clinker produced by a cement kiln using solid waste as a fuel or feed stock, but not including cement kiln dust that is generated as a waste in the process.

(g) Low-hazard industrial waste that, based on representative sampling, is in compliance with the inertness criteria contained in R 299.4115, if the generator notifies the director of the reuse, on a form provided by the department, and maintains characterization records for not less than 3 years.

(h) Low-hazard industrial waste which is used as aggregate, road, or building material and which in ultimate use will be stabilized or bonded by cement, limes, or asphalt, if the waste is not stored in a manner constituting speculative accumulation before use.

(i) Other materials that are designated as inert for uses approved by the director based on either of the following:

(ii) A petition that is submitted under R 299.4118.

(iii) An approval by the director before the effective date of these rules.

(3) Materials that are specified in subrule (2)(c) and (d)) of this rule are not inert materials if they are contaminated by hazardous substances in concentrations sufficient to cause environmental contamination. To determine whether a material is contaminated, a person may do either of the following:

(a) Test the material in accordance with the test methods listed in R 299.4118. A material shall not be considered contaminated if the concentration of hazardous substances in the material is less than the concentrations listed for inert materials in R 299.4115.

(b) Apply knowledge of the material. Materials that are specified in subrule (2)(c) and (d) of this rule are not contaminated unless they have been contaminated during use, such as by chemical spills, application of paint or coatings, or by changes in the material during use.

History: 1993 AACS; 1999 AACS.

R 299.4115 Criteria for designating inert materials appropriate for general reuse.

Rule 115. (1) A person may petition the director to designate a solid waste as an inert material that is appropriate for general reuse.

(2) The director shall approve a petition that is submitted pursuant to this rule if the petition demonstrates that the concentration of hazardous substances in the material is below 1 of the following criteria:

(a) The background concentration of the substance or substances.

(b) The method detection limit for the substance or substances in question.

(c) Type B criteria for soil specified in R 299.5711. The director shall waive type B criteria based on inhalation hazards if the petition demonstrates that the waste is not of a respirable particle size and is not likely to be reduced to such size under the conditions that the waste may be exposed to.

(3) A petition to designate a material as inert for general reuse shall contain the information that is specified in R 299.4118.

History: 1993 AACS.

R 299.4116 Criteria for designating inert materials appropriate for reuse at a specific location.

Rule 116. (1) A person may petition the director to designate a solid waste as an inert material that is appropriate for reuse at a specific property.

(2) The director shall approve a petition that is submitted pursuant to this rule if the petition demonstrates both of the following:

(a) The material does not pose a threat to groundwater as specified in subrule (3) of this rule.

(b) The material will not otherwise result in an unacceptable risk, as defined in R 299.5711. If the concentration of hazardous substances in the material exceeds the levels specified in R 299.5711, the applicant shall demonstrate that the conditions of reuse on the specific property will prohibit exposures that would result in an unacceptable risk. To do so, the applicant shall provide the applicable information specified in R 299.5717 and R 299.5719.

(3) A solid waste shall be considered to not pose a threat to groundwater if the concentration of each hazardous substance in the leachate of the waste is less than 1 of the following:

(a) The leachate concentration generated by background soil.

(b) The method detection limit for the substance in question.

(c) All of the following concentrations.

(i) For a carcinogen acting by a threshold or a nonthreshold mechanism, the concentration that represents an increased cancer risk of 1 in 1,000,000 calculated according to the procedures in R 299.5723.

(ii) For a hazardous substance that is not a carcinogen, a genotoxic teratogen, or a germ line mutagen, the concentration that represents the human life cycle safe concentration calculated according to the procedures in R 299.5725.

(iii) For a hazardous substance that has a secondary maximum contaminant level, that level.

(iv) For a hazardous substance that, singly or in combination with other hazardous substances present at the site, imparts adverse aesthetic characteristics to groundwater, the concentration that is documented as the taste or odor threshold or the concentration below which appearance or

other aesthetic characteristics are not adversely affected. The criteria of this subdivision shall apply only when the level required by this subdivision is less than the level required by subdivision (a) or (b) of this subrule. A taste or odor threshold concentration or a concentration that adversely affects appearance shall be determined according to methods approved by the United States environmental protection agency.

(d) A concentration that is otherwise authorized pursuant to the provisions of act 245.

(4) A petition to designate a material as inert at a specific location shall contain the information specified in R 299.4118.

History: 1993 AACS.

R 299.4117 Criteria for designating inert materials appropriate for specific reuse instead of virgin material.

Rule 117. (1) A person may petition the director to designate a solid waste as an inert material appropriate for a specific type of reuse instead of virgin material.

(2) The director shall approve a petition pursuant to this rule if the petition demonstrates any of the following:

(a) The material meets the criteria of R 299.4115.

(b) The material does not pose a threat to groundwater, as specified in R 299.4116, and the conditions of reuse will prohibit exposures that result in unacceptable risks as defined in R 299.5711.

(c) The material does not pose a greater hazard to human health and the environment during reuse than the virgin material that it replaces when used in the following manner:

(i) As a component of concrete, grout, mortar, or casting molds.

(ii) When used as a raw material in asphalt for road construction.

(iii) As aggregate, road, or building material that, in ultimate use, will be stabilized or bonded by cement, limes, or asphalt.

(iv) In other uses that are approved by the director.

(3) A petition to designate a material as inert for specific reuse shall contain the information specified in R 299.4118 for all of the following:

(a) The waste material itself.

(b) The product, if any, that contains the waste as a component.

(c) Either or both of the following, if necessary for comparison with the waste or waste product:

(i) The raw material that the waste replaces.

(ii) The product, if any, that contains raw material other than waste.

(4) A person may conduct a pilot project on the suitability of using low-hazard industrial waste for a specific reuse if all of the following conditions are met:

(a) The amount used is not more than 100 tons.

(b) The person notifies the director or his or her designee before use.

(c) The person submits a report on the reuse, as specified in subrule (6) of this rule.

(d) The person verifies that the storage of low-hazard industrial waste awaiting the pilot project has not resulted in environmental contamination.

(5) A person may petition the director to designate a solid waste that is not in compliance with the definition of a low-hazard industrial waste as an inert material for the purpose of conducting a pilot project on the suitability of the waste for a specific reuse. The director shall approve the petition if both of the following conditions are met:

(a) The petition includes a detailed description of the proposed pilot project, including all of the following:

(i) The location of the project.

(ii) A description of the waste, including a characterization that complies with the provisions of R 299.4118.

(iii) The volume of waste to be used.

(iv) The nature of the reuse, and a description of any processes that are required to convert the waste to a product.

(v) The procedures for conducting all testing on the final product to determine compliance with the provisions of subrule (1) of this rule which ensure representative sampling of the final product.

(vi) The proposed completion date.

(b) The director determines that the project does not pose an unacceptable risk of environmental contamination.

(6) A person who conducts a pilot project pursuant to the provisions of this rule shall submit a final report to the director or his or her designee within 90 days of the completion date that describes the results of the project.

History: 1993 AACS.

R 299.4118 Petitions to classify wastes.

Rule 118. (1) A person may petition the director to designate a solid waste as an inert material, compostable material, or, low-hazard industrial waste.

(2) A petition to classify a waste shall include all of the following information on a form provided by the department:

(a) The name and site address of the facility that generates the material.

(b) The facility contact person and phone number.

(c) A general description of the material for which the petition is submitted, including all of the following:

(i) A description of the process that is used to produce the material, including a schematic diagram of the process and a list of raw materials that are used in the process.

(ii) The maximum and average amounts of material generated monthly and annually.

(iii) Documentation that the material is not a hazardous waste, as defined in part 111 of the act and the administrative rules promulgated under part 111 of the act.

(iv) A description of the current disposal location for the material.

(v) The proposed use or disposal method for the material.

(d) For uses where the waste may present an inhalation or direct contact hazard, a description of the total concentration of each of the following chemical constituents that may be present in the material in light of the process used:

(i) Any hazardous constituents listed in 40 C.F.R. part 258, appendix II, that may be present in the material, in light of the process used. The list contained in 40 C.F.R. part 258, appendix II, is adopted by reference in R 299.4134.

(ii) Any constituents which are not listed in 40 C.F.R. part 258, appendix II, but which have had a primary or secondary drinking water standard established under 40 C.F.R. parts 141 and 143, including all of the following:

(A) Total chloride.

(B) Total nitrogen.

(C) Total iron.

(D) Total manganese.

(E) Total sulfates.

(iii) The following constituents, based on health advisories issued by the United States environmental protection agency for these compounds:

(A) Total molybdenum.

(B) Total sodium.

(iv) Any indicator parameters that may be useful in establishing a groundwater monitoring program for the waste.

(e) For constituents that are present in the material at potential levels of concern, a determination of the leaching potential of the constituents using any of the following:

(i) The toxicity characteristic leaching procedure, being EPA test method 1311 contained in the EPA document entitled "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," SW-846 3rd edition, which is adopted by reference in R 299.4133.

(ii) The synthetic precipitation leaching procedure, being EPA test method 1312 contained in the EPA document entitled "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," SW-846 3rd edition, which is adopted by reference in R 299.4133.

(iii) Other test methods which are approved by the department and which more accurately simulate conditions at the site.

(f) A description of the techniques that are used to sample and analyze the waste, including all of the following:

(i) The name, address, and contact person of the facility that sampled and analyzed the material.

(ii) A description of the sampling plan used to ensure that the samples were representative of the material. The description shall include sample locations, the number of samples taken, and sampling methods used. Sampling plans shall be consistent with those contained in the EPA document entitled "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," SW-846 3rd edition, which is adopted by reference in R 299.4133.

(iii) A description of the sample preservation method and the type of container used to collect samples.

(iv) A description of the specific analytical methods used for each constituent and the method detection limits achieved. Analytical methods shall be appropriate methods contained in the EPA document entitled "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," SW-846 3rd edition, which is adopted by reference in R 299.4133, or other methods approved by the director and shall achieve practical quantitation limits approved by the director or his or her designee.

(v) Chain of custody procedures.

(3) After receiving a petition under this rule, the director shall do both of the following:

(a) Within 60 days of receiving the petition, determine whether the petition contains all of the information required by this rule and request any additional information that is necessary to evaluate the petition.

(b) Within 180 days of receiving all of the information necessary to evaluate the petition, either approve the petition with any conditions that are necessary to protect human health and the environment or deny the petition.

(4) Material that is classified by the director based on a petition under this rule shall be retested to confirm the classification not less than annually using procedures specified in this rule. The test results shall be submitted to the director. The director shall specify a more frequent schedule for testing if the characteristics of the material may vary significantly.

(5) If a hazardous substance is reported to be present in a sample at concentrations above the waste classification criteria of these rules, a person may demonstrate that the data are not statistically significant, using 1 of the methods specified in R 299.4908.

(6) The EPA document entitled "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," SW-846 3rd edition, which is adopted by reference in R 299.4133.

History: 1993 AACS; 1999 AACS.

R 299.4119 The approval of site and source-separated materials not listed in the act.

Rule 119. (1) Except as specified in subrule (2) of this rule, the director shall approve materials that are not specified in the act as site or source separated material if the person who seeks the exemption demonstrates that the materials will not violate subrule (2) of this rule and that they can be converted into raw materials or new products by any of the following means:

(a) By being returned to the original process from which they were generated.

(b) By being used or reused as ingredients in an industrial process to make a product.

(c) By being used or reused as effective substitutes for commercial products.

(2) For purposes of the act and these rules, waste materials shall not be considered site or source separated for the purpose of conversion into raw materials or new products if the materials are any of the following:

(a) Stored in a manner constituting speculative accumulation.

(b) Mixed with other material so that the waste materials cannot be converted into raw materials or new products without processing to remove the other material.

(c) Applied to or placed on the land, or used to produce products that are placed on the land, in a manner that constitutes disposal, unless the materials are any of the following:

(i) Yard clippings that are separated for conversion into compost in accordance with R 299.4120.

(ii) Waste other than yard clippings approved for use as compost under R 299.4121.

(iii) Nondetrimental materials that are applied to the land in accordance with a plan approved under R 299.4111.

(iv) Inert materials that are specified in R 299.4114 to R 299.4117.

(v) Other materials approved pursuant to this rule.

(d) Injurious to human health or the environment or materials which will create a nuisance during storage or use.

(3) All of the following shall be considered source-separated material if the criteria of subrule (2) of this rule are met:

(a) Utility poles or pole segments reused as poles, posts, or similar uses.

(b) Railroad ties reused in landscaping, embankments, or similar uses.

(c) Any of the following, when used to stabilize, solidify, or otherwise treat waste at a site of environmental contamination or at a facility licensed under part 111 or part 115 of the act:

(i) Cement kiln dust.

(ii) Lime kiln dust.

(iii) Water softening limes.

(iv) Sugar beet limes.

(v) Coal flyash.

(vi) Wood ash.

(vii) Other material approved by the director.

History: 1993 AACS; 1999 AACS.

R 299.4120 Yard clippings separated for use as compost.

Rule 120. (1) Yard clippings shall be considered to be site or source- separated for the purpose of conversion into compost if all of the following provisions apply to the yard clippings:

(a) The yard clippings are separated from other solid waste, and maintained separately until used as compost.

(b) The yard clippings are composted at the site of generation or transported to an off-site composting facility where conversion to compost occurs, except as specified in subrule (2) of this rule.

(c) The yard clippings are not stored in a manner constituting, speculative accumulation, as specified in subrules (3) and (4) of this rule.

(d) The yard clippings are managed as a product or resource in a manner that does not create a nuisance.

(2) Yard clippings may be composted at a location other than a composting facility in the following circumstances:

(a) The disposal occurs at the site of generation.

(b) The disposal occurs as a part of normal farming operations. For purposes of this rule, the use of yard clippings by persons on their own property for their own use on that property as part of agricultural, horticultural, or silvacultural operations is considered to be normal farming operations.

(c) The disposal occurs at a location that contains limited volumes of yard clippings and where conversion to compost may occur under natural decay without creating a nuisance.

(3) Yard clippings accumulated at a transfer facility or staging area that is not designed for composting shall not be stored in a manner that constitutes speculative accumulation. The owner or operator of the transfer facility or staging area is responsible for maintaining the records necessary to demonstrate that speculative accumulation is not occurring.

(4) Yard clippings at a composting facility are subject to the definition of speculative accumulation starting in the third year after the yard clippings are received. The owner or operator of the composting facility is responsible for maintaining the records necessary to demonstrate that speculative accumulation of compost is not occurring.

(5) Deleterious material removed from yard clippings or from compost produced from yard clippings may be landfilled as solid waste and is not subject to the landfill prohibition in section 11521 of the act.

History: 1993 AACS; 1999 AACS.

R 299.4121 Petitions for use of solid waste other than yard clippings as compost.

Rule 121. (1) A person shall not use a solid waste, other than yard clippings, as compost, unless the director approves the waste as a separated material appropriate for such use pursuant to the provisions of this rule.

(2) A person who proposes to separate a waste for use as compost shall file a petition with the director pursuant to the provisions of R 299.4118. To characterize such compost, the petitioner shall include all of the following information in the petition:

(a) The type of waste and its potential for creating a nuisance or environmental contamination.

(b) Compost maturity, as determined by a reduction of organic matter during composting. Organic matter shall be determined by measuring the volatile residues content using EPA method 160.4 or another method that is approved by the director.

(c) Foreign matter content, as determined by drying a sample of compost using EPA method 160.3 and by passing a weighed sample of the dried compost through a 14- or 6-millimeter screen. The material remaining on the screen shall be separated and weighed. The weight of the separated foreign matter divided by the weight of the total sample multiplied by 100
shall be the foreign matter content.

(d) Particle size, as determined by a sieve analysis.

(3) The director shall approve a material for use as compost if the person who proposes such use demonstrates all of the following:

(a) The material has or will be converted to compost under controlled conditions at a composting facility.

(b) The material will not be a source of environmental contamination or cause a nuisance.

(c) Use of the compost material will be done at agronomic rates.

(4) EPA methods 160.3 and 160.4 are contained in the document entitled "Methods for Chemical Analysis of Water and Waste, EPA-600," March, 1979 edition, and are adopted by reference in R 299.4138.

History: 1993 AACS.

R 299.4122 Criteria for designating low-hazard industrial waste.

Rule 122. (1) An industrial waste shall be classified as a low-hazard industrial waste if it is 1 of the following wastes resulting from processes of consistent character:

(a) Coal or wood ash, as defined in the act.

(b) Cement kiln dust, when stabilized to minimize leaching of inorganic chemicals, to an unconfined comprehensive strength equal to or greater than 100 pounds per square inch and a vertical hydraulic conductivity that is not more than 1 x 10-7 centimeters per second.

(c) Paper mill waste, as defined in R 299.4104.

(d) Sludge from the treatment and conditioning of water for domestic use.

(e) Residues from the thermal treatment of petroleum contaminated soil, media, and debris.

(2) An industrial waste that is not listed in subrule (1) of this rule shall be considered a low-hazard industrial waste if it is a by-product of a production process or sludge of 1 of the following industries and the generator has determined, based on testing of representative samples or applying knowledge of the characteristics of the waste in light of the materials or process used to generate the waste, that the waste will not leach more than the following concentration of hazardous substances:

(a) For paper or paperboard mills that have a standard industrial classification of 2621 or 2631, any of the following concentrations:

(i) For metals listed in table 101, the threshold value listed in that table.

(ii) For nonhalogenated volatile organics listed in table 103, the threshold value listed in that table.

(iii) For aromatic volatile organics listed in table 104, the threshold value listed in that table.

(iv) For phenolic compounds listed in table 105, the threshold value listed in that table.

(b) For primary metals or fabricated metal industries that have a standard industrial classification of 33 or 34, any of the following concentrations:

(i) For metals listed in table 101, the threshold value listed in that table.

(ii) For halogenated volatile organics specified in table 102, the threshold value listed in that table.

(iii) For nonhalogenated volatile organics listed in table 103, the threshold value listed in that table.

(iv) For aromatic volatile organics listed in table 104, the threshold value listed in that table.

(v) For phenolic compounds listed in table 105, the threshold value listed in that table.

(vi) For formaldehyde, 10 mg/l.

(c) For lumber and wood product industries that have a standard industrial classification of 24, any of the following concentrations:

(i) For metals listed in table 101, the threshold value listed in that table.

(ii) For nonhalogenated volatile organics listed in table 103, the threshold value listed in that table.

(iii) For aromatic volatile organics listed in table 104, the threshold value listed in that table.

(iv) For phenolic compounds listed in table 105, the threshold value listed in that table.

(v) For formaldehyde, 10 mg/l.

(d) For cement manufacturing industries that have a standard industrial classification of 3241, any of the following concentrations:

(i) For metals listed in table 101, the threshold value listed in that table.

(ii) For halogenated volatile organics specified in table 102, the threshold value listed in that table.

(iii) For nonhalogenated volatile organics listed in table 103, the threshold value listed in that table.

(iv) For aromatic volatile organics listed in table 104, the threshold value listed in that table.

(3) Industries not listed in subrule (2) of this rule may petition the director to designate a waste as a low-hazard industrial waste by submitting a petition pursuant to the provisions of R 299.4118. The director shall designate a waste as a low hazard industrial waste if the petition submitted pursuant to the provisions of R 299.4118 demonstrates that the concentration of hazardous substances in leachate from the waste does not exceed either the method detection limit of the substance or any of the following concentrations:

(a) For constituents listed in table 101, that concentration. The concentrations in table 101 represent 10 times the drinking water standard specified in 40 C.F.R. part 257, or 1/10 the hazardous waste threshold specified in R 299.9217, whichever is greater.

(b) For constituents not listed in table 101, 10 times either of the following concentrations:

(i) For a carcinogen acting by a threshold or a nonthreshold mechanism, the concentration that represents an increased cancer risk of 1 in 1,000,000 calculated according to the procedures in R 299.5723.

(ii) For a hazardous substance that is not a carcinogen, a genotoxic teratogen, or a germ line mutagen, the concentration that represents the human life cycle safe concentration calculated according to the procedures in R 299.5725.

(4) To evaluate the leaching potential of an industrial waste, the person shall analyze representative samples of the waste in accordance with the toxicity characteristic leaching procedure EPA method 1311 or the synthetic precipitation leaching procedure, EPA method 1312. Samples shall be collected and analyzed in accordance with the document entitled "Test Methods for Evaluating Solid Waste," SW-846, 3rd edition, dated February, 1987, which is adopted by reference in R 299.4133. As specified in that document, 4 discrete samples shall constitute the minimum number of samples necessary to be considered representative of a waste.

History: 1993 AACS.

R 299.4123 Table 101; threshold values for inorganic constituents.

Rule 123. Table 101 reads as follows:

TABLE 101

Constituent	Low-Hazard Waste Threshold Value (mg/l)
Arsenic	0.5
Barium	10.0
Cadmium	0.1
Chromium	0.5
Copper	10.0
Lead	0.5
Manganese	0.5
Mercury (inorganic)	0.02
Nickel (soluble salts)	1.0
Selenium	0.1

Silver	0.5
Zinc	50.0

History: 1993 AACS.

R 299.4124 Table 102; threshold values for halogenated volatile organics. Rule 124. Table 102 reads as follows:

TABLE 102

Constituent	Low-Hazard Waste Threshold Value (mg/l)
Benzyl chloride	0.002
Bromodichloromethane	0.003
Bromoform	0.04
Bromomethane	0.1
Carbon tetrachloride	0.05
Chlorobenzene	10.0
Chloroethane	0.09
Chloroform	0.6
Chloromethane	0.03
Dibromochloromethane	0.004
Dibromomethane	0.7
1,2-Dichlorobenzene	6.0
1,3-Dichlorobenzene	6.0
1,4-Dichlorobenzene	0.75
Dichlorodifluoromethane	10.0
1,1-Dichloroethane	7.0
1,2-Dichloroethane	0.05
1,1-Dichloroethene	0.07
Cis-1,2-dichloroethene	0.7
Trans-1,2-dichloroethene	1.0
1,2-Dichloropropane	0.005
1,3-Dichloropropene	0.002
Methylene chloride	0.05
1,1,1,2-Tetrachloroethane	0.01
1,1,2,2-Tetrachloroethane	0.002
Tetrachloroethene	0.07
1,1,1-Trichloroethane	2.0
1,1,2-Trichloroethane	0.006
Trichloroethene	0.05
Trichlorofluoromethane	20.0
1,2,3-Trichloropropane	0.4
Vinyl chloride	0.02

History: 1993 AACS.

R 299.4125 Table 103; threshold values for nonhalogenated volatile organics. Rule 125. Table 103 reads as follows:

TABLE 103

Constituent	Low-Hazard Waste Threshold Value (mg/l)
Diethyl ether	10.0
Methylethylketone (2-butanone)	10.0

Methylisobutylketone (4-methyl-2-pentanone) 4.0

History: 1993 AACS.

R 299.4126 Table 104; threshold values for aromatic volatile organics.

Rule 126. Table 104 reads as follows:

TABLE 104

Constituent	Low-Hazard Waste Threshold Value (mg/l)
Benzene	0.05
1,2-Dichlorobenzene	6.0
1,3-Dichlorobenzene	6.0
1,4-Dichlorobenzene	0.75
Ethylbenzene	0.7
Toluene	8.0
Total xylene isomers	3.0
o-Xylene	3.0
m-Xylene	3.0
p-Xylene	3.0

History: 1993 AACS.

R 299.4127 Table 105; threshold values for phenolic compounds.

Rule 127. Table 105 reads as follows:

TABLE 105

Constituent	Low-Hazard Waste Threshold Value (mg/l)
2-chlorophenol	0.4
o-Cresol (2-methylphenol)	20.0
m-Cresol (3-methylphenol)	20.0
p-Cresol (4-methylphenol)	20.0
Cresol	20.0
2,4-Dichlorophenol	0.2
2,4-Dimethylphenol	4.0
2,5-Dimethylphenol	0.04
2-Methyl-4,6-dinitrophenol	0.03
Pentachlorophenol	10.0
Phenol	40.0
2,4,5-Trichlorophenol	40.0
2,4,6-Trichlorophenol	0.2

History: 1993 AACS.

R 299.4128 Open dumping and open burning prohibited.

Rule 128. (1) A person shall not dispose of solid waste in an open dump, except as provided in the act.

(2) Solid waste from an individual's own household or from the planting of privately owned farmland shall be considered a hazard to health and shall not be disposed of in an open dump upon the individual's own land, as provided in section 11512 of the act, if it is any of the following:

(a) Asbestos waste.

(b) A hazardous commercial chemical product.

(c) A used battery.

(d) A pesticide container.

(e) Waste from the demolition of the residence, except for components that are listed as inert material in R 299.4114.

(3) Open burning of solid waste is prohibited, except as provided in subrules (4), (5), and (6) of this rule.

(4) If not prohibited by local ordinance, an individual is not prohibited by the act and these rules from burning solid waste from the individual's own household upon the individual's own land if both of the following conditions are met:

(a) The burning does not create a nuisance and is otherwise in compliance with part 55 of the act and the administrative rules promulgated under part 55 of the act.

(b) The burning is conducted in an approved container constructed of metal or masonry that has a metal covering device that does not have openings larger than ¾ inch.

(5) A person may burn waste for energy recovery in a facility other than an incinerator under R 299.4110.

(6) A person may burn trees, logs, brush, and stumps under R 299.4110.

(7) The open burning of grass clippings or leaves, or both, is prohibited in any municipality that has a population of 7,500 or more persons under section 11522 of the act, unless specifically authorized by local ordinance. A municipality shall report an open burning ordanance to the department within 30 days of the enactment of the ordinance.

History: 1993 AACS; 1999 AACS.

R 299.4129 Storage of solid waste in uncontained waste piles.

Rule 129. (1) Except as provided in subrule (2) of this rule, the storage of waste in a pile that is not contained in accordance with R 299.4130 constitutes disposal and requires a permit or license under the act. A waste pile that is required to have a permit or license under the act shall be in compliance with the hydrogeological report, groundwater monitoring, and groundwater performance standards which are applicable to type III landfills and which are specified in part 3 of these rules.

(2) The storage of the following waste in piles before reuse or disposal does not require a permit or license under the act and these rules if the conditions specified in subrule (3) of this rule are met:

(a) Low-hazard industrial waste that is separated and stored before being returned to the original process from which the waste was generated or was being used or reused as ingredients in an industrial process to make a product, unless The materials are being stored in a manner which constitutes speculative accumulation.

(b) Low-hazard industrial waste that is stored in a waste pile which was in existence on October 8, 1993, if the pile does not expand horizontally.

(c) Low-hazard industrial waste that is stored for less than 60 days before being transported for disposal.

(d) Construction and demolition waste that is stored at the site of generation for less than 1 year before being transported for disposal.

(3) Owners and operators of waste piles that are specified in subrule (2) of this rule shall ensure that the unit is not in violation of part 31 or part 55 of the act, does not create a nuisance, and does not result in environmental contamination after closure.

History: 1993 AACS; 1999 AACS.

R 299.4130 Storage of solid waste in contained waste piles.

Rule 130. (1) The storage of solid waste in a pile shall not constitute disposal if the pile has a containment system that is designed, installed, and operated to prevent any migration of accumulated liquids out of the system to the soil, groundwater, or surface water at any time during the use of the system. To prevent the migration of liquids, the system shall be in compliance with the provisions of this rule and have 1 of the following:

(a) A natural soil barrier which is in compliance with the provisions of R 299.4307(3)(a).

(b) A liner that is in compliance with the provisions of R 299.4307(4).

(c) A vault or pad that is in compliance with the provisions of subrule (5) of this rule.

(2) Waste pile containment systems shall be constructed of, or lined with, materials that are compatible with the waste to be placed in the system and shall have sufficient strength and thickness to prevent failure due to all of the following:

(a) Pressure gradients, including static head and external hydrological forces.

(b) Physical contact with the waste to which the materials are exposed.

(c) Climatic conditions.

(d) The stress of daily operation, including stresses from nearby vehicular traffic.

(3) Waste pile containment systems shall be placed on a foundation or base which is capable of providing support to the secondary containment system and resistance to pressure gradients above and below the system and which is capable of preventing structural failure due to settlement, compression, or uplift.

(4) Waste pile containment systems shall be sloped or otherwise designed or operated to drain and remove liquids that result from leaks, spills, or precipitation. Spilled or leaked waste and accumulated precipitation shall be removed from the secondary containment system within 24 hours.

(5) Vaults or pads that are used for waste pile containment shall be constructed of steel, poured reinforced concrete, precast concrete, solid masonry, or an equivalent material and shall be designed to do all of the following:

(a) Withstand the full loads to which they will be subjected.

(b) Have water stops in place at all joints, if any.

(c) Prevent the migration of the material out of the containment system.

(d) Prevent migration of moisture into the vault, if the vault is subject to hydraulic pressure.

(e) Have walls which will prevent runoff and runon and which are not more than 6 feet in height above interior grade, unless normal access is provided.

(f) Have a stable foundation.

(6) The owner and operator of a waste pile shall do all of the following:

(a) Design, construct, operate, and maintain a runon control system that is capable of preventing flow onto the pile during peak discharge from not less than a 24-hour, 25-year storm.

(b) Design, construct, operate, and maintain a runoff management system to collect and control, at a minimum, the water volume resulting from a 24-hour, 25-year storm.

(c) Manage collection and holding facilities associated with run-on and runoff control systems such that design capacity of the system is maintained.

(7) Waste that is being accumulated speculatively in piles shall be separated from general refuse and other waste.

(8) The owner and operator of a waste pile that could be subject to dispersal by wind shall cover or otherwise manage the pile so wind dispersal is controlled.

(9) The owner and operator of a waste pile shall manage runoff from the pile as leachate in accordance with the provisions of R 299.4308.

(10) At closure, the owner and operator of a waste pile shall remove or decontaminate all of the following in accordance with the act and these rules:

(a) Waste residues.

(b) Contaminated liners.

(c) Subsoils.

(d) Structures.

(e) Equipment.

History: 1993 AACS.

R 299.4131 Federal asbestos regulations; adoption by reference.

Rule 131. (1) The definition of asbestos-containing waste material and related definitions contained in 40 C.F.R. §61.141 are adopted by reference in these rules.

(2) The asbestos standards for active waste disposal sites contained in 40 C.F.R. §61.154 are adopted by reference in these rules.

(3) Federal asbestos regulations are contained in 40 C.F.R. parts 61 to 62, July 1, 1997 edition. The 1997 edition is available from the Superintendent of Documents, Government Printing Office, Washington, DC 20402, at a cost as of the time of adoption of these rules of $19.00, or from

the Michigan Department of Environmental Quality, Waste Management Division, P.O. Box 30241, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of $19.00. The regulations specified in this rule are available for inspection at the Lansing office of the department.

History: 1993 AACS; 1999 AACS.

R 299.4132 Standard industrial classification manual; adoption by reference.

Rule 132. (1) The office of management and budget document entitled "Standard Industrial Classification Manual," 1987 edition, is adopted by reference in these rules.

(2) The document adopted in subrule (1) of this rule is available from the Superintendent of Documents, Government Printing Office, Washington, DC 20402, at a cost as of the time of adoption of these rules of $29.00 each, or from the Michigan Department of Environmental Quality, Waste Management Division, P.O. Box 30241, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of $29.00. The document adopted in this rule is available for inspection at the Lansing office of the department.

History: 1993 AACS; 1999 AACS.

R 299.4133 Test methods for evaluation of solid waste; adoption by reference.

Rule 133. (1) The publication entitled "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," being EPA publication SW-846, 3rd edition, November 1986, and its updates I (July 1992), II (September 1994), 11A (August 1993), IIB (January 1995), and III (June 1997) are adopted by reference in these rules.

(2) The documents listed in subrule (1) of this rule are available from the Superintendent of Documents, Government Printing Office, Washington, DC 20402, at a cost as of the time of adoption of these rules of $319.00, or from the Michigan Department of Environmental Quality, Waste Management Division, P.O. Box 30241, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of $319.00. The documents are available for inspection at the Lansing office of the department.

History: 1993 AACS; 1999 AACS.

R 299.4134 List of hazardous inorganic and organic constituents; adoption by reference.

Rule 134. (1) The list of hazardous inorganic and organic constituents contained in 40 C.F.R. part 258, appendix II, is adopted by reference in these rules.

(2) The regulations setting forth the classification of solid waste disposal facilities and practices are contained in 40 C.F.R. part 257.3-4 and 40 C.F.R. part 257, appendix I, and are adopted by reference in these rules.

(3) The appendices specified in subrules (1) and (2) of this rule are contained in 40 C.F.R. parts 190 to 259, July 1, 1997 edition. The 1997 edition is available from the Superintendent of Documents, Government Printing Office, Washington, DC 20402, at a cost as of the time of adoption of these rules of $22.00, or from the Michigan Department of Environmental Quality, Waste Management Division, P.O. Box 30241, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of $22.00. The regulations are available for inspection at the Lansing office of the department.

History: 1993 AACS; 1999 AACS.

R 299.4135 ASTM standards; adoption by reference.

Rule 135. (1) The following ASTM standards are adopted by reference in these rules:

(a) D422-63(90), test method for particle size analysis of soils.

(b) D698-91, test method for laboratory compaction characteristics of soil using standard effort.

(c) D1557-91, test method for laboratory compaction characteristics of soil using modified effort.

(d) D2434-68)(94), test method for determining permeability of granular soils (constant head).

(e) D2922-96, test method for determining the density of soil and soil aggregate in place by nuclear methods (shallow depth).

(f) D2487-93, classification of soils for engineering purposes (unified soil classification system).

(g) D4318-95a, test method for liquid limit, plastic limit and plasticity index of soils.

(h) D5084-90, test method for hydraulic conductivity of saturated porous materials using a flexible wall permeameter.

(2) The standards listed in subrule (1)(a) to (e) and (h) of this rule are available from the American Society for Testing and Materials, Sales Service, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428, at a cost as of the time of adoption of these rules of $18.00 each. The standard listed in subrule (1)(f) and (g) of this rule is available from the American Society for Testing and Materials, Sales Service, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428, at a cost as of the time of adoption of these rules of $21.00. The standards listed may also be obtained from the Michigan Department of Environmental Quality, Waste Management Division, P.O. Box 30241, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of $18.00 and $21.00 each, respectively. The standards adopted in this rule are available for inspection at the Lansing office of the department.

History: 1993 AACS; 1999 AACS.

R 299.4136 Federal tank and surface impoundment standards; adopted by reference.

Rule 136. (1) The technical standards for tanks contained in 40 C.F.R.§264.193 are adopted by reference in these rules.

(2) The technical standards for surface impoundments contained in 40 C.F.R. §264.221 are adopted by reference in these rules.

(3) The regulations specified in this rule are contained in 40 C.F.R.parts 260 to 265, July 1, 1997 edition. The 1997 edition is available from the Superintendent of Documents, Government Printing Office, Washington, DC 20402, at a cost as of the time of adoption of these rules of $29.00, or from the Michigan Department of Environmental Quality, Waste Management Division, P.O. Box 30241, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of $29.00. The regulations are available for inspection at the Lansing office of the department.

History: 1993 AACS; 1999 AACS.

R 299.4137 Flexible membrane liner specifications; adoption by reference.

Rule 137. (1) The flexible membrane liner specifications contained in the national sanitation foundation document NSF 54-1993 and the PVC geomembrane institute specification PGI 1197 are adopted by reference in these rules.

(2) Copies of NSF 54-1993 may be purchased at a cost as of the time of adoption of these rules of $50.00 from NSF International, 3475 Plymouth Road, Ann Arbor, Michigan 48106, or from the Michigan Department of Environmental Quality, Waste Management Division, P.O. Box 30241, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of $50.00. The document is available for inspection at the Lansing office of the department.

(3) Copies of PGI 1197 may be obtained from the PVC Geomembrane Institute, P.O. Box 4226, Traverse City, Michigan 49685, at no cost, or from the Michigan Department of Environmental Quality, Waste Management Division, P.O. Box 30241, Lansing, Michigan 48909, at no cost. The document is available for inspection at the Lansing office of the department.

History: 1993 AACS; 1999 AACS.

R 299.4138 EPA methods for analysis of total and volatile residue; adoption by reference.

Rule 138. (1) The EPA methods for the analysis of total and volatile residue specified in EPA methods 160.3 and 160.4 of the document entitled "Methods for Chemical Analysis of Water and Wastes, EPA-600," March, 1979 edition, is adopted by reference in these rules.

(2) The test methods listed in subrule (1) of this rule are available from the Michigan Department of Natural Resources, Waste Management Division, P.O. Box 30028, Lansing, Michigan 48909, free of charge. The test methods are available for inspection at the Lansing office of the department.

History: 1993 AACS.

R 299.4139 Standard methods for the examination of water and wastewater; adoption by reference.

Rule 139. (1) The test methods contained in the document entitled "Standard Methods for the Examination of Water and Wastewater," 19th edition, are adopted by reference in these rules.

(2) Copies of the document entitled "Standard Methods for the Examination of Water and Wastewater," 19th edition, may be purchased at a cost of $180.00, plus $12.00 shipping, from the American Public Health Association, 1015 15th Street, NW, Washington, DC 20005, or from the Michigan Department of Environmental Quality, Waste Management Division, P.O. Box 30241, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of $192.00. The test methods are available for inspection at the Lansing office of the department.

History: 1993 AACS; 1999 AACS.

R 299.4140 Definition of PCBs and PCB items; adoption by reference.

Rule 140. (1) The definition of PCBs and PCB items contained in 40 C.F.R. §761.3 is adopted by reference in these rules.

(2) The provisions of 40 C.F.R. §761.3 are contained in 40 C.F.R.parts 700 to 789, July 1, 1997 edition. The 1997 edition is available from the Superintendent of Documents, Government Printing Office, Washington, DC 20402, at a cost as of the time of adoption of these rules of $38.00, or from the Michigan Department of Environmental Quality, Waste Management Division, P.O. Box 30241, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of $38.00. The regulations are available for inspection at the Lansing office of the department.

History: 1993 AACS; 1999 AACS.

R 299.4141 Natural resources conservation service critical area planting guide; adoption by reference.

Rule 141. (1) The natural resources conservation service critical area planting guide is adopted by reference in these rules.

(2) Copies of the document entitled "The Natural Resources Conservation Service Critical Area Planting Guide" may be obtained at no cost from the United States Department of Agriculture, Natural Resources Conservation Service, 1405 South Harrison Street, East Lansing, Michigan 48823, or from the Michigan Department of Environmental Quality, Waste Management Division, P.O. Box 30241, Lansing, Michigan 48909, at no cost. The guide is available for inspection at the Lansing office of the department.

History: 1999 AACS.

PART 2. CERTIFICATION OF LOCAL HEALTH DEPARTMENTS

R 299.4201 Certification procedure.

Rule 201. (1) By July 1 of each year, an uncertified city, county, or district department of health that desires to be considered for certification shall file an application on a form provided by the department.

(2) An application request shall be accompanied by a document that contains the proposed methods, budget, and staffing to be used to carry out the performance requirements of R 299.4203 to R 299.4210. The document shall list the classification of designated authorized representatives to

participate in the program and shall include all other pertinent information that may be deemed necessary by the department.

(3) The minimum qualifications for individuals who have direct supervisory responsibility for the solid waste management program are as follows:

(a) A baccalaureate degree or equivalent experience and training in any of the following:

(i) Sanitary science.

(ii) Public health.

(iii) Engineering.

(iv) Physical, chemical, or biological science.

(v) Natural resources.

(b) Two years of experience in environmental regulatory programs.

(4) The application and related documents shall be used by the director to determine certification eligibility and for negotiation of the performance contract required pursuant to the provisions of R 299.4802.

(5) The department shall, within 2 months after a complete certification application has been submitted, determine the eligibility of the applicant. The applicant shall be notified, in writing, of the department's determination. A health department shall not be certified until the performance contract is signed by the director and the eligible health department. However, health departments that have received certification the year before shall continue to be certified unless otherwise notified pursuant to the provisions of R 299.4202.

(6) Health department certification shall be reviewed each year by the department. Updated information that is relative to certification shall be provided by the health officer, as appropriate, or upon request of the department.

(7) After a determination has been made on the eligibility of a health department for certification, the department and the appropriate local governing entity shall enter into a 1-year contract that establishes the terms under which the health department will be reimbursed for personnel costs. The contract shall include the negotiated grant amount based on the rates for the area and work hours needed to carry out the program specified in R 299.4203 to R 299.4210.

History: 1982 AACS; 1993 AACS.

R 299.4202 Rescission of certification.

Rule 202. (1) Certification may be rescinded by the department upon written request of the certified health department. The department shall notify the health department of its determination within 30 days and, if applicable, the effective date of certification termination.

(2) The department may rescind certification upon determination that a certified health department is not performing satisfactorily. The department shall notify a certified health department of the performance deficiencies. A certified health department may, within 30 days after notification, request a hearing.

(3) A permit or license application fee shall not be collected, nor shall a health department be eligible to receive personnel costs from the state for services, after the certification is terminated.

History: 1982 AACS.

R 299.4203 Certified health department; performance requirements; solid waste disposal areas.

Rule 203. (1) Except as provided in subrules (2) and (3) of this rule, a certified health department shall do all of the following:

(a) At the request of an applicant, provide an advisory analysis of each proposed disposal area within 15 working days of the request. An advisory analysis shall include a site inspection and written report to the applicant regarding the preliminary feasibility of the disposal area as described in R 299.4503. A copy of the advisory analysis shall be provided to the department. Nothing in the advisory analysis shall be considered to constitute an approval or denial for a construction permit or operating license.

(b) Receive all construction permit and operating license application forms and documents.

(c) Immediately forward each application package to the department for review.

(d) Upon the receipt of a construction permit application, obtain information for the proper notification of all parties that is required by section 11510 of the act.

(e) Assist the department in arranging newspaper publication of the required public notice in the vicinity of the proposed undertaking. The certified health department's obligation for such costs shall not be more than ½ of the construction permit application fee that is remitted by the applicant under the act.

(f) Provide a location where the complete construction permit application may be reviewed by the public.

(g) Assist the department in conducting all public hearings relative to an application for a construction permit.

(h) Conduct a site inspection upon receipt of an operating license application to determine compliance with the act and these rules.

(i) Submit a written report of the site inspection and a recommendation for or against license issuance to the department within 15 working days of receipt of the operating license application package. The applicant shall be sent a copy of the recommendation.

(j) Provide the department and the licensee with written recommendations regarding appropriate action on existing facilities, which may include closure, remedial measures, and a compliance schedule.

(k) File an instrument that is prepared by the applicant in the office of the register of deeds of the county in which a sanitary landfill is located that imposes a restrictive covenant upon the land involved at the time of licensing as required by section 11518 of the act and provide the department with a copy of the recorded instrument or a receipt that verifies the proper filing.

(l) Provide a minimum of quarterly, routine, written inspection reports of all disposal areas, unless a more frequent inspection schedule is established by the department. A written notice of deficiencies, together with requirements for their correction, shall be provided to the licensee. Copies of all inspection reports and correspondence shall be provided to the department.

(m) Follow-up inspections of disposal areas shall be conducted when necessary.

(n) Maintain a complete file of transactions relative to the inspection report activities for each disposal area.

(o) Investigate and document all complaints on solid waste disposal areas and dumps. Reports of actions taken shall be provided to the department.

(p) Notify the department of any unresolved problems or violations that continue beyond 90 days of the health department's investigations of complaints.

(q) Be willing and prepared to present documentation and testimony at show cause hearings, formal administrative hearings, or at any other informal or formal legal proceedings.

(r) In cooperation with the department, issue cease and desist orders for unlicensed waste disposal areas or dumps. The department shall be provided with copies of any cease and desist orders that may be issued.

(s) Program enforcement and review responsibilities shall be uniformly applied to the public and private sectors.

(t) Assist in developing and encouraging environmentally sound methods of disposal, including resource recovery and conservation.

(2) A health department that employs a qualified geologist and engineer may apply to the department to review all construction permits and operating license applications for completeness and content. A health department that is certified to conduct a review shall do all of the following:

(a) Review each construction permit and operating license application for completeness and notify the applicant, within 15 working days of receipt of the application, as to the completeness of the application.

(b) Provide the department with a copy of all completeness reviews.

(c) Review complete construction permit applications for compliance with the act and these rules and forward a review report and recommendation for or against issuance of a permit to the department within 45 calendar days of receipt of the complete application package.

(d) Review complete operating license applications, including bonds and construction certification documents, for compliance with the act and these rules and forward a review report and recommendation for or against issuance of a license to the department within 15 working days of receipt of the complete application package.

(e) Conduct inspections to verify that construction of a disposal area is proceeding in accordance with approved plans.

(3) A health department may apply to the department for authorization to conduct other activities that are not specified in subrules (1) and (2) of this rule.

(4) A certified health department is not responsible for inspecting or reviewing applications for disposal areas that are owned or operated by the county within the certified health department's jurisdiction. The department is responsible for conducting the inspections.

(5) A certified health department shall not authorize changes to engineering plans that are approved by the director.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4204 Certified health department; performance requirements; solid waste management planning.

Rule 204. A certified health department shall do all of the following:

(a) Provide an initial review of solid waste management plans and required updated plans developed for the county of jurisdiction. Findings and recommendations shall be provided to the department and the designated planning agency.

(b) Maintain a copy of the county's current solid waste management plan for public review upon request.

(c) During the preparation or update of a solid waste management plan, provide advice and consultation upon request to all of the following:

(i) The planning committee.

(ii) The designated planning agency.

(iii) Municipalities.

(iv) The county.

(v) The private sector.

(vi) Appropriate organizations.

History: 1982 AACS.

R 299.4205 Certified health department; performance requirements; solid waste haulers.

Rule 205. A certified health department shall do all of the following:

(a) Inspect any solid waste transporting units or the overnight storage of such units as often as necessary or upon receipt of a complaint to assure complaince with the act and these rules. Appropriate action shall be taken by the certified health department to assure compliance.

(b) Investigate any reported dumping of solid waste by a hauler other than at an approved disposal area.

(c) Order any solid waste transporting unit out of service if the unit does not comply with the operational requirements of the act and these rules.

(d) Be willing and prepared to present documentation and testimony at any informal or formal legal proceeding on any solid waste hauler or solid waste transporting unit.

History: 1982 AACS.

R 299.4206 Certified health department representatives; performance requirements.

Rule 206. An authorized representative of a certified health department shall do both of the following:

(a) When appropriate, attend solid waste courses, seminars, and in-service training programs.

(b) Keep abreast of developments in the solid waste management and resource recovery field through review of periodicals.

History: 1982 AACS.

PART 3. TYPE III LANDFILLS

R 299.4301 Purpose, scope, and applicability.

Rule 301. (1) The purpose of this part is to establish standards under the act for all type III landfill units. These standards ensure the protection of human health and the environment.

(2) Type III landfills that are new disposal areas shall not be issued an operating license unless the construction permit process specified in the act and R 299.4902 to R 299.4920 has been complied with.

(3) Except as otherwise specifically provided in this part, the standards of this part apply to the owners and operators of all of the following:

(a) New type III landfill units.

(b) Existing type III landfill units.

(c) Vertical and lateral expansions of existing units.

(d) Preexisting type III landfill units. All other solid waste disposal areas and practices that are not regulated under part 111 of the act are subject to the standards contained in parts 2, 4, and 5 of these rules.

(4) Variances to the rules that are applicable to type III landfills may be granted, in writing, by the solid waste control agency under R 299.4108.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4302 Existing industrial waste landfills.

Rule 302. (1) The owner and operator of an industrial waste landfill that has been issued a permit or license under the act on the effective date of these rules may construct, operate, and close the disposal area in accordance with existing permits, licenses, and approved plans if the owner and operator do all of the following:

(a) Comply with the performance standards specified in R 299.4306.

(b) Comply with other portions of the act and these rules applicable to existing disposal areas.

(c) Not later than October 1, 1995, revise existing hydrogeologic monitoring plans, as necessary, to comply with R 299.4905 and submit the plans to the director with the first operating license application that is applied for after this date.

(d) For any unit which is a possible source of groundwater contamination or which is an unmonitorable unit, submit a response action plan under R 299.4319.

(e) Comply with the waste restrictions specified in subrule (2) of this rule.

(2) To be disposed of in an industrial waste landfill that is an existing disposal area, all wastes, except for construction and demolition waste, trees, and stumps, shall have been subjected to the leaching test protocol specified in R 299.4311 and have been approved for disposal at the specific landfill based on a determination by the solid waste control agency that the disposal has a minimal potential for groundwater contamination. Waste that is approved for disposal in an industrial solid waste landfill which is an existing disposal area shall be retested annually, or on a more frequent schedule as specified by the solid waste control agency, to confirm that disposal of the waste presents a minimal potential for groundwater contamination. The owner or operator of an existing industrial waste landfill may petition the director to waive the tests specified in R 299.4311 for new waste or waste previously approved. The director shall approve such a petition if either of the following conditions is met:

(a) The waste is listed as a low-hazard industrial waste or meets the criteria for a low-hazard industrial waste specified in R 299.4122 and the design of the landfill meets the criteria for a low-hazard industrial waste landfill specified in R 299.4307(3)(a) or (4).

(b) The petition demonstrates that the location or design of the landfill minimize the potential for groundwater contamination, and that the concentration of constituents in the waste is not a significant factor.

(3) The owners and operators of existing industrial waste landfill units which are not licensed under the act as type III landfills on the effective date of these rules, but which receive waste under other authority, shall notify the director of the nature and extent of the disposal area not less than 6 months after the effective date of these rules. At any time after such date, the owner or operator of an industrial waste landfill specified in this subrule may be required, by the director, to submit an operating license application. An owner and operator that are required to submit an operating license application under this rule shall be allowed not less than 6 months to submit the application. An operating license application shall include all of the following information:

(a) A waste characterization that is in compliance with R 299.4118.

(b) A hydrogeologic report and monitoring program that is sufficient to comply with R 299.4904 and R 299.4905.

(c) Engineering plans that are sufficient to comply with both of the following:

(i) The final cover requirements of R 299.4304 for all units.

(ii) The design requirements of R 299.4307 for all new units or lateral extensions of existing units.

(d) Information that is required by R 299.4922.

(4) Engineering plans, hydrogeologic evaluations, and the surface water and groundwater monitoring program for industrial waste landfills that are not licensed under the act shall be reviewed by the director to assure compliance with these rules. The owners and operators of landfills that the director determines are not in compliance with these rules may be issued a timetable or schedule of remedial measures that will lead to compliance within a reasonable time period, which shall not be more than 2 years from the date of the determination.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4303 Existing construction and demolition waste landfills.

Rule 303. (1) Construction and demolition waste landfills that are existing disposal areas shall be in compliance with all of the requirements of this part that are not designated as applying to new disposal areas only.

(2) The owner and operator of an existing construction and demolition waste landfill shall comply with the final cover requirements of R 299.4304 for all units that are not certified to be closed within 6 months of the effective date of these rules and with the design requirements of R 299.4307 for any new unit or lateral extension of an existing unit.

(3) The owner and operator of an existing construction and demolition waste landfill are not required to submit revised engineering plans to the director, but shall submit as-built plans as part of the construction certification pursuant to the provisions of R 299.4921.

(4) Not later than October 9, 1994, the owner and operator of a construction and demolition waste landfill shall revise existing hydrogeologic monitoring plans as necessary to comply with R 299.4905 and shall submit such plans to the director with the first operating license application or reapplication that is made after October 9, 1994.

History: 1982 AACS; 1993 AACS.

R 299.4304 Type III landfill final cover design.

Rule 304. (1) The owner and operator of a type III landfill unit shall install a final cover system which is designed to minimize erosion and infiltration to the extent necessary to protect the public health and the environment.

(2) If methane or other decomposition gases will be generated within a type III landfill, the owner and operator shall design and employ a means of ensuring that gases cannot travel laterally from the site or accumulate in structures.

(3) The owner and operator of a type III landfill shall grade portions of the landfill that have received final cover so as to prevent storm water runoff from entering the active portion.

(4) The owner and operator of a type III landfill shall design and operate the landfill so as to bring the active portion up to final grade as soon as possible.

(5) To prevent the ponding of water on completed fill surfaces, the grading contours shall tend to forestall development of local depressions due to post-construction settlement. Slopes of the final cover shall not exceed 1 vertical on 4 horizontal or as necessary to permit the establishment of vegetative cover. The final slope for a type III landfill that is a new disposal area shall not be less than 2%, unless the director approves a final cover that is not designed to minimize infiltration, as provided in subrule (7) of this rule, or otherwise approves a variance under R 299.4108.

(6) Except as provided in subrule (7) of this rule, final cover for type III landfills shall be comprised of an erosion layer underlain by an infiltration layer, as follows:

(a) The infiltration layer shall be comprised of 1 of the following:

(i) A minimum of 2 feet of compacted soil that is in compliance with R 299.4913. For new disposal areas, the compacted soil shall also be protected by at least 2 feet of additional soil.

(ii) A flexible membrane liner that is in compliance with R 299.4915.when properly sloped and protected by at least 2 feet of soil.

(iii) An approved alternative material, when properly sloped and protected, if equivalent protection is provided.

(b) The erosion layer shall consist of a minimum of 6 inches of earthen material that is capable of supporting native plant growth.

(7) The owner and operator of a type III landfill may install a final cover that is not designed to minimize infiltration if the landfill unit meets the design criteria of R 299.4307(3)(b) and the owner and operator demonstrate that infiltration through the final cover will not violate the performance standards of R 299.4306 throughout the postclosure period.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4305 Type III landfill location restrictions.

Rule 305. (1) The requirements of this rule apply to type III landfills that are new disposal areas.

(2) Horizontal isolation distances shall be in compliance with the following provisions, as applicable:

(a) The isolation distances established for a specific landfill shall take into consideration immediate and long-term environmental factors, including all of the following:

(i) Noise.

(ii) Blowing papers.

(iii) Dust.

(iv) Odor.

(v) Vectors.

(vi) Pest animals.

(vii) Equipment vibration.

(b) Unless a variance is obtained under R 299.4108, the active work area for type III landfills that are new disposal areas shall not be located closer than 100 feet to adjacent property lines, road rights-of-way, or lakes and perennial streams or closer than 300 feet to domiciles that exist at the time of issuance of a construction permit. In addition, approval of less than 200 feet of isolation distance requires either a berm which is not less than 8 feet high with a 4-foot fence on top and which is constructed around the perimeter of the active work area or natural screening that offers equivalent protection.Greater isolation distances may be required in any of the following situations:

(i) Geological conditions require it.

(ii) The site is adjacent to special quiet zones, as designated by local or state government.

(iii) The site is near an airport.

(iv) Federal or state regulations apply.

(v) Dewatering will adversely affect adjacent aquifers.

(c) Construction and demolition waste landfills which are new disposal areas and which will accept waste from more than 1 generator shall comply with the location restrictions for type II landfills specified in R 299.4412 to R 299.4418.

(3) A type III landfill shall not be located within a floodplain unless the necessity for such a location can be substantiated through an environmental assessment and unless it can be demonstrated that the fill will not affect upstream or downstream flood stages. To demonstrate that the fill will not affect upstream or downstream flood stages, the owner or operator shall obtain a permit under part 31 of the act.

(4) A type III landfill shall not be located within a wetland unless it meets both of the following requirements:

(a) The location can be substantiated through an environmental assessment which considers alternatives and assures that all potentially negative impacts can be mitigated.

(b) Where applicable, the applicant obtains a permit under part 303 of the act.

(5) The applicant shall demonstrate, as part of the permit application, that operation of the proposed type III landfill will not result in noise exceeding the following levels for specified adjacent land uses when measured

at the common property line nearest the active work area:

Adjacent Use	Maximum Sound Level
Residential	75 dBA.
Commercial	85 dBA.
Industrial and other	90 dBA.

Objectionable noises due to intermittence, beat, frequency, or shrillness shall be muffled so as not to become a nuisance to adjacent users.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4306 Type III landfill water quality performance standard.

Rule 306. (1) The design and siting of type III landfills shall ensure that groundwater at the solid waste boundary will not exceed standards described in the criteria for the classification of solid waste disposal facilities and practices, 40 C.F.R. part 257.3-4 and appendix I of 40 C.F.R. part 257, or that the concentration of substances will not be increased where their existing concentration exceeds the maximum levels established in 40 C.F.R. part 257, appendix I, unless groundwater is unsuitable for human consumption by having more than 10,000 mg/l total dissolved solids.The provisions of 40 C.F.R. part 257.3-4 and 40 C.F.R. part 257, appendix I are adopted by reference in R 299.4134.

(2) The design, siting, and operation of a type III landfill shall ensure that all of the requirements for the protection of surface and groundwater that are contained in part 31 of the act and rules promulgated under part 31 of the act shall be met.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4307 Type III landfills; design standards; natural soil sites; lined sites.

Rule 307. (1) The design standards of this rule apply to both of the following:

(a) New disposal areas for industrial waste.

(b) New units and lateral extensions of existing units at a construction and demolition waste landfill.

(2) Except as required by subrules (5) and (6) of this rule, a type III landfill shall be located and designed with either of the following:

(a) A liner that is in compliance with subrule (4) of this rule.

(b) A natural soil barrier that is in compliance with subrule (3)(a) of this rule.

(c) For low-hazard industrial waste, a means of otherwise preventing groundwater contamination, as provided by subrule 3(b) of this rule.

(3) The following provisions apply with respect to natural soil sites for type III landfills:

(a) A natural soil barrier shall have a maximum demonstrated hydraulic conductivity of 1.0 X 10-7 cm/sec and shall meet the criteria specified in R 299.4912. The director may approve a combination of natural soils with a maximum demonstrated hydraulic conductivity of 1.0 X 10-6 cm/sec having a thickness that provides equivalent protection to 10 feet of 1.0 X 10?7 cm/sec soil. Type III natural clay sites where the clay does not extend to the surface shall include side cutoff walls or other barriers and controls to impede the lateral infiltration of water into the fill and to impede lateral flow of leachate out of the fill interior.

(b) Applications for low-hazard industrial waste landfills at natural soil sites that do not meet the permeability or soil classifications of subdivision (a) of this subrule shall be considered based on the hydrogeologic characteristics of the site, including the permeability and thickness of the soils, the ability of the soils to attenuate leachate, groundwater level, and other factors particular to a specific site. In addition, all of the following requirements apply:

(i) The applicant shall characterize the waste in accordance with R 299.4118 and shall retest the waste annually, or on a more frequent schedule, as specified by the solid waste control agency if the character of the waste is variable.

(ii) In the application, an applicant shall explain the rationale for the design using calculations, if applicable, and professional analyses to show how the proposed design is expected to be in compliance with the performance standards specified in R 299.4306.

(iii) Two thousand feet of horizontal isolation shall exist in the direction of groundwater flow measured from the solid waste boundary to public water supply wells and domestic wells in existence at the time of an advisory analysis.

(iv) One thousand feet of horizontal isolation shall exist in directions lateral to or upgradient of the direction of groundwater flow measured from the solid waste boundary to public water supply wells and off-site domestic wells in existence at the time of advisory analysis.

(v) Based on the hydrogeological evaluation, the director may approve a decrease in the isolation distances specified in paragraphs (ii) to (iv) of this subdivision.

(vi) An applicant shall demonstrate, by technical calculations, considering the design details and operational procedures specific to the site, how run-off from those portions of the landfill that contain solid waste will be managed to comply with R 299.4306.

(4) All of the following may be used as a liner system for type III landfills:

(a) A compacted soil liner which has a minimum thickness of 3 feet and which is in compliance with the specifications of R 299.4913.

(b) A composite liner.

(c) A flexible membrane liner which is in compliance with the specifications of R 299.4915 and which is not less than 30 mils thick, if the liner is installed on stable soil not less than 4 feet thick and which has a hydraulic conductivity that is less than 1.0 X 10-5 cm/sec.

(d) Other liner materials, modified soils, or technologically advanced liner systems, based on data supplied by the applicant regarding the system's durability, permeability, resistance to sunlight and chemicals, and performance in similar applications. The director shall determine the acceptability of the data and proposed design.

(5) New disposal areas for industrial solid waste that do not meet the criteria for low-hazard industrial solid waste contained in R 299.4122 shall, at a minimum, contain a composite liner.

(6) A new unit or a lateral extension of an existing unit at a type III landfill that is an unmonitorable unit shall not be licensed unless the unit contains a leak detection system that is monitored in accordance with the approved hydrogeological monitoring plan. The owner or operator of an unmonitorable unit who installs a leak detection system to monitor the unit shall include in the hydrogeological monitoring plan provisions for monitoring the leak detection system in accordance with R 299.4437.

History: 1982 AACS; 1993 AACS; 1999 AACS; 2005 AACS.

R 299.4308 Type III landfill leachate collection and treatment.

Rule 308. (1) The following type III landfills, except for those established under R 299.4307(3)(b) or R 299.4309, shall have systems to collect and remove leachate:

(a) Industrial waste landfills that are new disposal areas.

(b) New units and lateral extensions of existing units at construction and demolition waste landfills.

(2) Leachate collection systems for type III landfills shall be designed, constructed, and operated to limit the head at the lowest point in the system to not more than 1 foot, excluding the sump. Except as provided in subrule
(1) of this rule, type III landfills shall have leachate collection systems that are in compliance with R 299.4423.

(3) Leachate that is removed shall either be reintroduced into the landfill if it can be demonstrated that such leachate will be absorbed by the landfill or shall be conveyed to a wastewater treatment facility that is capable of treating the leachate to meet appropriate discharge standards specified in a wastewater discharge permit issued under part 31 of the act.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4309 Industrial waste surface impoundments closed as landfills; design standards; testing of wastes.

Rule 309. (1) The requirements of this rule apply to a surface impoundment which receives low-hazard industrial waste sludges or slurries that contain free liquids and which is an impoundment where solid waste will remain after closure. This rule does not apply to landfills that are in compliance with the leachate management requirements of R 299.4308, except as provided in this rule. An industrial waste surface impoundment that is closed as a landfill shall be in compliance with all parts of these rules designated as applying to type III landfills.

(2) In the construction permit application for an industrial waste surface impoundment that is closed as a landfill, the engineer shall explain the rationale for the design, using calculations, if applicable, and professional analyses to show how the proposed design is expected to comply with the groundwater quality performance standards of R 299.4306.

(3) All wastes to be disposed of in an industrial waste surface impoundment that is closed as a landfill, shall have been subjected to the leaching test protocol specified in R 299.4311 and shall be classed as a low-hazard industrial waste.

(4) Free liquids in an industrial waste surface impoundment shall be discharged in accordance with a permit which is issued under part 31 of the act and which considers the effect of the discharge on surface and groundwater.

(5) A surface impoundment shall maintain enough freeboard to prevent any overtopping of the dike by overfilling, wave action, or a storm, but not less than 2 feet at any time. The owner or operator shall level at least once each week to ensure compliance with this subrule.

(6) An earthen dike at a surface impoundment shall have a protective cover, such as grass or rock, to minimize wind and water erosion and to preserve its structural integrity. The owner or operator shall inspect an earthen dike at least once per week to detect any deterioration or failure in the impoundment.

(7) At closure, the owner or operator of a surface impoundment that is closed as a landfill shall do all of the following unless the director determines that such actions are not necessary:

(a) Eliminate free liquids by removing liquid wastes or solidifying the remaining wastes and waste residues.

(b) Stabilize remaining wastes to a bearing capacity that is sufficient to support final cover.

(c) Cover the surface impoundment with a final cover that is in compliance with the requirements of R 299.4304.

(d) Conduct groundwater monitoring and postclosure maintenance in accordance with rules applicable to type III landfills.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4310 Type III landfill location restrictions; groundwater isolation.

Rule 310. (1) Type III landfills that do not have a liner or leachate collection system shall have a permanent minimum clearance of 4 feet from the bottom of the waste to the groundwater level, unless the director authorizes a variance from this requirement under R 299.4108.

(2) Type III landfills that have a liner shall have a permanent minimum clearance of 4 feet from the top of the liner to the groundwater level, unless the director authorizes a variance from this requirement under R 299.4108.

(3) Gravity interception of groundwater to maintain the minimum clearance to groundwater level specified by this rule may be utilized. The pumping of groundwater to control groundwater level is not considered permanent and shall not be utilized.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4311 Leaching tests to evaluate potential for groundwater contamination at unlined industrial waste landfills.

Rule 311. (1) A license applicant for a new low-hazard industrial waste landfill that does not have a liner system meeting the standards of R 299.4307(3)(a) or (4) and a leachate collection system meeting the standards of R 299.4308, or any person who intendS to place new waste in an existing industrial waste landfill that does not have a liner and leachate collection system, shall subject the waste to a leaching test procedure specified in subrule (2) of this rule to assist in the evaluation of

groundwater contamination potential, and the applicant shall demonstrate to the director that such concentration does not pose more than a minimal potential of groundwater contamination. Where actual field data on a waste is available at existing facilities, it shall also be used to assist in the evaluation of groundwater contamination potential. The director shall approve new wastes at an existing industrial waste landfill which does not contain a liner and leachate collection system if the concentration of hazardous substances in the new waste is not significantly greater than wastes previously approved, as demonstrated by a statistical test consistent with R 299.4908 and if the landfill is otherwise in compliance with these rules.

(2) To evaluate the leaching potential of an industrial waste, the person shall analyze representative samples of the waste in accordance with the toxicity characteristic leaching procedure, EPA method 1311, or the synthetic precipitation leaching procedure, EPA method 1312. Samples shall be collected and analyzed in accordance with the publication entitled "Test Methods for Evaluating Solid Waste," SW-846 3rd edition, which is adopted by reference in R 299.4133. As specified in that document, 4 discrete samples shall constitute the minimum number of samples necessary to be considered representative of a waste. If an alternate leach test procedure is proposed, the leaching test procedure shall have been developed by a recognized independent testing association, trade association, professional society, or regulatory agency and shall be documented as to applicability and reproducibility.

(3) Waste that is disposed of in an industrial waste landfill which is an existing disposal area shall be retested to evaluate the potential for groundwater contamination annually or on a more frequent schedule as specified by the solid waste control agency, unless the director approves a petition to discontinue such testing under R 299.4302. Test results shall be submitted to the solid waste control agency.

(4) A waste that is classified as a type III waste may be disposed of in a type II landfill.

(5) The department may specify that a waste be segregated from other wastes in a type III landfill or that other special handling procedures be used.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4312 Rescinded.

History: 1982 AACS; 1993 AACS.

R 299.4313 Type III landfill licensing procedure; construction verification; field notes; application package; inspection by solid waste control agency.

Rule 313. (1) A verification by a registered professional engineer that the construction of a type III landfill unit was in accordance with the approved engineering plans shall accompany all license applications for newly constructed units. Construction records that are specified in R 299.4921 shall accompany the verification.

(2) An operating license application for a new unit that is upgraded to meet the requirements of these rules shall include as-built plans of the unit that are in compliance with the provisions of R 299.4910.

(3) The application package shall be submitted to the solid waste control agency.

(4) The solid waste control agency shall make at least 1 inspection of the landfill after receiving a license application and shall, before license issuance, evaluate the status of compliance with the act and these rules.

History: 1982 AACS; 1993 AACS.

R 299.4314 Rescinded.

History: 1982 AACS; 1993 AACS.

R 299.4315 Type III landfill operating requirements; equipment; supervision; access; unloading of solid waste; control of dust and blowing papers; spreading and compaction; cell volume; hazardous waste, liquids, or sewage; burning; on-site roads; salvaging; insects and rodents; sloping, grading, and drainage; noise levels; monitor well sampling; leachate removal and disposal.

Rule 315. (1) Properly maintained equipment of adequate number, type, and size shall be used in operating a type III landfill pursuant to established engineering practice and these rules. Backup equipment shall be available on the site or suitable arrangements shall be made to provide for such equipment from other sources during equipment breakdown or during peak loads.

(2) A type III landfill operation shall be under the immediate direction of a responsible individual.

(3) Access to a type III landfill shall be limited to those times when an attendant is on duty or when an alternative monitoring device is in use and shall be limited to those persons who are authorized to use the site for the disposal of solid waste. Access to the site shall be controlled by a suitable barrier.

(4) The unloading of solid waste shall be continuously supervised.

(5) Measures shall be provided to control fugitive dust, odors, and other emissions at a type III landfill. These measures shall be sufficient to ensure that the operation of the landfill will not produce any emission that results in a violation of part 55 of the act.

(6) Solid waste at a construction and demolition waste landfill shall be spread so that it can be compacted in layers that are not more than 2 feet deep. Large and bulky items, when not excluded from the site, shall be disposed of in a manner that is approved by the solid waste control agency.

(7) The owner or operator of a type III landfill shall record the quantity of waste that is disposed of in tons or cubic yards. Records of waste disposal shall be used to calculate deposits into the perpetual care fund that are required by section 11525 of the act.

(8) The following wastes shall not be disposed of in a type III landfill:

(a) Materials that would adversely affect the liner.

(b) Household waste.

(c) Hazardous waste, as defined in R 299.9203.

(d) Liquid waste, except for industrial sludges and leachate recirculated under R 299.4308(2).

(9) The burning of trees, stumps, and brush at a type III landfill shall be severely restricted and shall be conducted only in designated areas with the permission of the solid waste control agency and other appropriate authorities. Suitable measures shall be available to extinguish accidental fires.

(10) On-site roads shall be designed and constructed so that traffic flows smoothly and is not interrupted by ordinary inclement weather.

(11) Salvaging at a construction and demolition waste landfill, if allowed by the licensee, shall be organized so that it does not interfere with the prompt sanitary disposal of solid waste or create unsightliness or health hazards. Scavenging is not permitted. White goods and other recyclable metals may be stored for eventual recycling on the site of a construction and demolition waste landfill in a separate area away from the active work area if a nuisance or health hazard does not develop. The period of storage shall not be longer than a period of time that constitutes speculative accumulation.

(12) Conditions unfavorable to the propagation of insects and rodents shall be maintained at a construction and demolition waste landfill by carrying out routine landfill operations promptly and systematically. Supplemental insect and rodent control measures shall be instituted when necessary.

(13) The entire site, including the fill surface, shall be sloped, graded, and provided with drainage facilities to accomplish all of the following purposes:

(a) Minimize run-off onto and into the fill.

(b) Prevent erosion or washing of the fill.

(c) Drain off rainwater falling on the fill.

(d) Prevent the collection of standing water.

(14) Landfill operations shall be conducted in a manner that will not exceed the noise levels specified in R 299.4305(5). The solid waste control agency shall monitor noise levels using weighted decibel measurements, referenced to 20 micropascals, with a type of audio output meter approved by the United States bureau of standards.

(15) A licensee shall have the monitoring wells sampled and analyzed at least quarterly during the landfill's operation. Following the closure of the landfill, semiannual sampling and reporting are required during the 30-year postclosure period. Sampling, preservation, and analysis procedures

shall be approved by the department. Analyses shall be submitted to the department within 30 days of the end of the calendar quarter, in a form and format specified by the department.

(16) A licensee shall remove leachate from a leachate collection sump as frequently as necessary to maintain less than 1 foot of liquid in the leachate collection and removal system and shall check the leachate collection sump at least monthly to assure compliance with this requirement.

(17) The collected leachate shall be disposed of in a manner that does not damage the environment. Disposal options may include conveying the leachate to a publicly owned treatment works upon written approval of the municipality that operates the treatment works or other facility permitted under part 31 of the act. This rule does not preclude the need for any other authorization that is required for the leachate disposal method selected.

History: 1982 AACS; 1993 AACS; 1999 AACS; 2005 AACS.

R 299.4316 Type III landfill operating requirements; daily and interim cover material at construction and demolition waste landfills.

Rule 316. (1) A suitable cover material that is in compliance with the provisions of R 299.4429 shall be placed on all exposed solid waste at a construction and demolition waste landfill by the end of each working day, unless the director approves a variance from this requirement based on a demonstration by the owner or operator that controls on the type of waste received and operation of the landfill will adequately prevent fugitive dust, blowing litter, and other nuisances.

(2) One foot of compacted cover, which may include the 6-inch daily cover, shall be placed on the surface of any lift that will be exposed for a period of 3 months or more before additional lifts are constructed.

History: 1982 AACS; 1993 AACS.

R 299.4317 Type III landfill operating requirements; closure and postclosure care.

Rule 317. (1) The owner or operator of a type III landfill shall place landfill cover materials that are described in R 299.4304 over the entire surface of each portion of the final lift not more than 6 months after the placement of solid waste within that portion.

(2) Erosion control measures shall be instituted during closure and throughout the postclosure period to minimize erosion of the final cover.The measures shall comply with part 91 of the act.

(3) Final cover depths shall be maintained for a period of 30 years after the final cover is certified in accordance with this rule.

(4) All final covered areas shall be seeded and stabilized as soon as practical after placement of final cover. Appropriate seed for the soil type, slope, and moisture condition shall be selected for this purpose. The owner or operator shall regularly inspect seeded areas during and after closure and shall take measures to assure that the vegetation is established and maintained.

History: 1993 AACS; 1999 AACS.

R 299.4318 Type III landfill operating requirements; groundwater monitoring.

Rule 318. (1) The requirements of this rule apply to all type III landfill units, except as provided in subrule (2) of this rule.

(2) The director shall reduce or waive certain groundwater monitoring requirements of this rule if the owner or operator can demonstrate compliance with either of the following provisions:

(a) That there is no potential for migration of hazardous constituents from that type III unit to the uppermost aquifer during the active life of the unit and the 30-year post-closure care period. The demonstration shall be certified by a qualified groundwater scientist and approved by the director and shall be based upon both of the following:

(i) Site-specific field collected measurements, sampling, and analysis of physical, chemical, and biological processes that affect contaminant fate and transport.

(ii) Contaminant fate and transport predictions that maximize contaminant migration and consider impacts on human health and the environment.

(b) That a discharge to the uppermost aquifer will occur, but that such discharge is authorized and monitored under a permit issued pursuant to the provisions of part 31 of the act.

(3) Owners and operators of type III landfill units shall comply with the groundwater monitoring requirements of this rule before waste can be placed in the unit.

(4) Once established at a type III landfill unit, groundwater monitoring shall be conducted throughout the active life and 30-year post-closure care period of that unit.

(5) Groundwater monitoring is required at type III landfill units at all groundwater-monitoring wells defined pursuant to the provisions of R 299.4906. At a minimum, a groundwater monitoring program for a type III landfill shall include monitoring for the following constituents:

(a) The primary inorganic indicators that are listed in the provisions of R 299.4450 or alternate indicators listed in the provisions of R 299.4451 quarterly during the active life of the facility and semiannually during the 30-year post-closure period, except as provided for in subrule (7).

(b) The constituents that are listed in the provisions of R 299.4452, R 299.4453, and R 299.4454, annually during the active life of the facility and the 30-year post-closure period, except as provided in subrule (6) of this rule.

(c) Other constituents required by a construction permit or approved hydrogeologic monitoring plan.

(6) The director shall delete any of the monitoring parameters specified in subrule (5) of this rule for a type III landfill unit if it can be shown that the removed constituents are not reasonably expected to be in or derived from the waste that is contained in the unit in significant concentrations. An owner or operator may demonstrate that a constituent is not expected to be in or derived from the waste in significant concentrations if 1 of the following conditions exists based on all available historical waste characterizations pursuant to the provisions of R 299.4118 or the historical analysis of leachate from not less than 2 samplings:

(a) The constituent and any breakdown products are not and have not been detected at practical quantitation limits approved by the director.

(b) The concentration of the constituent is below the background concentration of the constituent in groundwater.

(c) The concentration of the constituent is below the part 201 generic residential criteria contained in R 299.5744 and R 299.5746, and other constituents will serve as better indicators of leakage from the landfill unit.

(7) The owner and operator of a type III landfill may apply to the director for an appropriate alternative frequency for repeated sampling and analysis for constituents that are specified in subrule (5) of this rule during the active life, including closure, and the 30 year post-closure care period.The alternative frequency during the active life, including closure, shall be not less than semiannually. The alternative frequency shall be based on consideration of all of the following factors:

(a) Lithology of the aquifer and unsaturated zone.

(b) Hydraulic conductivity of the aquifer and unsaturated zone.

(c) Groundwater flow rates.

(d) Minimum distance of travel between waste and the closest downgradient monitoring well screen.

(e) The presence of an alternate monitoring system, such as a secondary collection system.

(8) A minimum of 4 independent samples from each background and downgradient well shall be collected and analyzed during the first sampling event. An alternate background collection schedule may be approved by the department. At least 1 sample from each background and downgradient well shall be collected and analyzed during subsequent sampling events.

(9) If the owner or operator determine, pursuant to a statistical test specified in R 299.4908, that there is a statistically significant increase over background for 1 or more of the constituents or indicators listed in subrule (5) of this rule at any monitoring well at or within the solid waste boundary, or at other monitoring locations required by the director, then the owner and operator shall do all of the following:

(a) Within 14 days of the determination, place a notice in the facility's files that indicates which constituents have shown statistically significant increases from background levels and notify the director.

(b) Within 30 days of the determination, the owner and operator may demonstrate to the director that a source other than a landfill unit or other source at the facility caused the contamination, that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality, or that the increase is authorized by a permit that is issued pursuant to the

provisions of part 31 of the act. A report that documents this demonstration shall be certified by a qualified groundwater scientist, be submitted to the director within 30 days of the determination and be placed in the facility's files. If the director notifies the owner or operator that a successful demonstration has not been made, then within 15 days of the notification by the director the owner and operator shall submit a response action plan to the director as required in R 299.4319. If a successful demonstration is made and documented, the owner or operator shall do the following:

(i) Continue detection monitoring as specified in this rule.

(ii) Determine whether the presence of hazardous constituents in groundwater renders any new units or lateral extensions within the solid waste boundary unmonitorable. If so, the owner and operator shall develop a schedule for submitting revised engineering plans for such lateral extensions or new units that include a leak detection system. The owner or operator of an unmonitorable unit who installs a leak detection system to monitor the unit shall include in the hydrogeological monitoring plan provisions for monitoring the leak detection system in accordance with R 299.4437.

History: 1993 AACS; 2005 AACS.

R 299.4319 Type III landfill operation; response action plan.

Rule 319. (1) The owner and operator of a type III landfill unit that is required to prepare a response action plan shall do all of the following:

(a) Identify possible sources of groundwater contamination.

(b) Identify interim response activities taken or to be taken to control possible sources of contamination.

(c) For a unit that the owner or operator determines is a probable source of contamination, develop and submit a schedule for terminating waste receipt, initiating closure, and redesigning and constructing new units to include a leak detection system or other means of monitoring the unit. If appropriate, the schedule shall be based on all of the following factors:

(i) The concentration of hazardous substances.

(ii) The rate of migration.

(iii) Risks to human health and the environment, including the proximity of drinking water supplies.

(iv) The practicality of initiating closure.

(v) The availability of other disposal locations.

(vi) Other relevant factors.

(2) The director shall approve or deny a response action plan within 60 days of submittal. If the director denies a plan, then the director shall specify schedules for closure and interim response necessary to protect human health and the environment.

(3) If the concentrations of all constituents that are listed in R 299.4318(5), or other applicable hazardous substances, are shown to be at or below background values, using the statistical procedures in R 299.4908, for 2 consecutive sampling events, or other concentrations authorized pursuant to part 201 of the act, then the owner and operator shall notify the director of this finding and may suspend actions under the response action plan.

(4) As part of a response action plan for a type III landfill, the owner or operator shall do both of the following:

(a) Establish groundwater protection standards for all constituents that are determined to be above background in accordance with part 201 of the act.

(b) If necessary, initiate a remedial investigation pursuant to part 201 of the act.

(5) If the concentration of any constituent listed in R 299.4318(5) or other applicable hazardous substance is above background, but all concentrations are below the appropriate cleanup criteria for groundwater established by the department pursuant to section 20120a(1)(a) of the act, then the owner and operator shall do all of the following:

(a) Continue response actions to control the source of contamination.

(b) Continue groundwater monitoring in accordance with R 299.4318.

(c) Characterize the nature and extent of any release by installing additional monitoring wells, as necessary.

(d) If the sampling of wells indicates that hazardous substances have migrated off-site, notify all persons who own the land or reside on the land that directly overlies any part of the impacted area.

(6) If 1 or more hazardous substances are detected at statistically significant levels and are above the appropriate cleanup criteria for groundwater established by the department pursuant to section 20120a of the act in any sampling event, then the owner or operator shall do all of the following:

(a) Continue response actions to control the source of contamination.

(b) Continue groundwater monitoring in accordance with the provisions of R 299.4318.

(c) Characterize the nature and extent of any release by installing additional monitoring wells, as necessary.

(d) If the sampling of wells indicates that hazardous substances have migrated off-site, notify all persons who own the land or reside on the land that directly overlies any part of the impacted area.

(e) Initiate a feasibility study, as specified in part 201 of the act. The feasibility study shall be completed within a reasonable period of time approved by the director.

(7) Based on the results of the feasibility study, the owner and operator shall propose to the director a remedial action plan which is in compliance with the provisions of part 201 of the act.

History: 1993 AACS; 2005 AACS.

PART 4. MUNICIPAL SOLID WASTE LANDFILLS

R 299.4401 Rescinded.

History: 1982 AACS; 1993 AACS.

R 299.4402 Rescinded.

History: 1982 AACS; 1993 AACS.

R 299.4403 Rescinded.

History: 1982 AACS; 1993 AACS.

R 299.4404 Rescinded.

History: 1982 AACS; 1993 AACS.

R 299.4405 Rescinded.

History: 1982 AACS; 1993 AACS.

R 299.4406 Rescinded.

History: 1982 AACS; 1993 AACS.

R 299.4407 Rescinded.

History: 1982 AACS; 1993 AACS.

R 299.4408 Rescinded.

History: 1982 AACS; 1993 AACS.

R 299.4409 Definitions.

Rule 409. As used in this part:

(a) "Airport" means a public-use airport that is open to the public without prior permission and without restrictions within the physical capacities of available facilities.

(b) "Appendix II constituents" or "constituents listed in appendix II" means the constituents listed in the provisions of 40 C.F.R. part 258, appendix II. The provisions of 40 C.F.R. part 258, appendix II, are adopted by reference in R 299.4134.

(c) "Areas susceptible to mass movement" means those areas that are characterized as having an active or substantial possibility of mass movement where the movement of earth material at, beneath, or adjacent to the landfill unit, because of natural or man-induced events, results in the downslope transport of soil and rock material by means of gravitational influence. Areas of mass movement include any of the following:

(i) Landslides.

(ii) Avalanches.

(iii) Debris.

(iv) Slides and flows.

(v) Soil fluctuation.

(vi) Block sliding.

(vii) Rock fall.

(d) "Bird hazard" means an increase in the likelihood of bird/aircraft collisions that may cause damage to the aircraft or injury to its occupants.

(e) "Displacement" means the relative movement of any 2 sides of a fault measured in any direction.

(f) "Fault" means a fracture or a zone of fractures in any material along which strata on one side have been displaced with respect to that on the other side.

(g) "Federal clean water act" means Public Law 92-500, 33 U.S.C. S1251 et seq.

(h) "Federal endangered species act" means Public Law 93-205, 87 U.S.C. S884 et seq.

(i) "Federal marine protection, research and sanctuary act of 1972" means Public Law 92-532, 16 U.S.C. S1431 et seq., as amended.

(j) "Gas condensate" means the liquid that is generated as a result of a gas recovery process at a type II landfill unit.

(k) "Holocene" means the most recent epoch of the quaternary period that extends from the end of the pleistocene epoch to the present.

(l) "Karst terranes" means areas where karst topography, with its characteristic surface and subterranean features, is developed as the result of the dissolution of limestone, dolomite, or other soluble rock. Characteristic physiographic features present in karst terranes include all of the following:

(i) Sinkholes.

(ii) Sinking streams.

(iii) Caves.

(iv) Large springs.

(v) Blind valleys.

(m) "Lithified earth material" means all rock and includes all naturally occurring and naturally formed aggregates or masses of minerals or small particles of older rock that formed by the crystallization of magma or by the induration of loose sediments. This term does not include man-made materials, such as fill, concrete, and asphalt, or unconsolidated earth materials, soil, or regolith that lies at or near the earth's surface.

(n) "Lower explosive limit" means the lowest percent by volume of a mixture of explosive gases in air that will propagate a flame at 25 degrees Celsius and atmospheric pressure.

(o) "Maximum horizontal acceleration in lithified earth material" means the maximum expected horizontal acceleration that is depicted on a seismic hazard map, with a 90% or greater probability that the acceleration will not be exceeded in 250 years, or the maximum expected horizontal acceleration based on a site-specific seismic risk assessment.

(p) "Poor foundation conditions" means those areas where features exist which indicate that a natural or man-induced event may result in inadequate foundation support of the structural components of a type II landfill.

(q) "Seismic impact zone" means an area for which there is a 10% or greater probability that the maximum horizontal acceleration in lithified earth material, expressed as a percentage of the earth's gravitational pull, will be more than 0.10G in 250 years.

(r) "Structural components" means liners, leachate collection systems, final covers, runon and runoff systems, and any other component which is used in the construction and operation of a type II landfill and which is necessary for the protection of human health and the environment.

(s) "Unstable area" means a location that is susceptible to natural or human-induced events or forces which are capable of impairing the integrity of some or all of the landfill structural components that are responsible for preventing releases from a landfill. Unstable areas can include poor foundation conditions, areas that are susceptible to mass movements, and karst terranes.

(t) "Washout" means the carrying away of solid waste by waters of the base flood.

History: 1993 AACS.

R 299.4410 Type II landfill; purpose, scope, and applicability.

Rule 410. (1) The purpose of this part is to establish rules under the act for all municipal solid waste landfill units. Municipal solid waste landfills shall generally be referred to as type II landfills for purposes of this part. These rules ensure the protection of human health and the environment.

(2) The rules of this part apply to owners and operators of new type II landfill units, existing type II landfill units and lateral extensions of existing units, and preexisting type II landfill units, except as otherwise specifically provided in this part. All other solid waste disposal areas and practices that are not regulated under part 111 of this act are subject to the rules contained in parts 1, 3, and 5 of these rules.

(3) The rules of this part do not apply to type II landfill units which have not been issued a construction permit or operating license under the act and which did not receive waste after October 9, 1991.

(4) Type II landfill units which received waste after October 9, 1991, but which stopped receiving waste before October 9, 1993, are exempt from all of the design requirements of this part, except the final cover requirement specified in R 299.4425. The final cover shall be installed within 6 months of the last receipt of wastes. An owner or operator of a type II landfill unit described in this subrule who fails to complete cover installation within the 6-month period shall be subject to all of the requirements of this part, unless otherwise specified.

(5) All type II landfill units that receive waste on or after October 9, 1993, shall be in compliance with all of the requirements of this part unless otherwise specified.

(6) An Owner or operator of A new type II landfill unit, existing type II landfill unit, or lateral extension of an existing unit that disposes of less than 20 tons of municipal solid waste daily, based on an annual average, is exempt from the design requirements of this part if there is no evidence of existing groundwater contamination from the type II landfill unit or lateral expansion if the type II landfill unit serves a community that experiences an annual interruption of not less than 3 consecutive months of surface transportation that prevents access to a regional waste management facility and if both of the following conditions are met:

(a) The owner or operator of a new type II landfill unit, existing type II landfill unit, or lateral extension of an existing unit that meets the criteria shall demonstrate to the director that the criteria have been met and shall place documentation in the operating record that evidences compliance with the criteria.

(b) The owner or operator of a new unit, existing unit, or lateral extension of an existing unit comply with the design requirements for type III landfills specified in R 299.4307.

(7) If the owner or operator of a new type II landfill unit, existing type II landfill unit, or lateral extension of an existing unit has knowledge of groundwater contamination that results from the unit or expansion,

then the owner or operator shall notify the director of the contamination and, thereafter, comply with all of the requirements of this part.

(8) A type II landfill unit that does not satisfy the rules of this part is considered an open dump for purposes of the act and these rules and is prohibited.

History: 1993 AACS; 1999 AACS.

R 299.4411 Type II landfill location restrictions; groundwater isolation.

Rule 411. (1) The requirements of this rule apply to new disposal areas and all units at an existing disposal area that are or have been licensed under the act, including closed units.

(2) A type II landfill shall maintain the following permanent minimum clearances from the top of the primary liner:

(a) Ten feet to natural groundwater level.

(b) Seven feet to a permanently depressed groundwater level.

(3) Gravity interception of groundwater to control groundwater level may be utilized. The pumping of groundwater to control the groundwater level is not considered permanent and shall not be utilized.

(4) The requirements of this rule do not apply to groundwater which is not capable of yielding significant quantities of water that is not an aquifer and which is located above natural soil that is in compliance with the requirements of R 299.4912, if all of the following conditions are met:

(a) The liner system of the landfill extends into the clay or soil barrier.

(b) Where feasible, gravity dewatering of the clay surface is employed.

(c) The design includes a soil dike which is 10 feet wide, which is in compliance with the specifications of R 299.4913, and which is keyed into the lower confining layer.

History: 1993 AACS; 1999 AACS.

R 299.4412 Type II landfill location restrictions; horizontal isolation distances.

Rule 412. (1) The requirements of this rule apply to type II landfills that are new disposal areas.

(2) A type II landfill shall be located and designed to ensure that the isolation distance between the active work area of the landfill and adjacent property is adequate to prevent the creation of nuisance conditions due to any of the following:

(a) Noise in excess of the levels specified in R 299.4431.

(b) Blowing papers.

(c) Dust.

(d) Odor.

(e) Vectors.

(f) Pest animals.

(g) Equipment vibration.

(3) An applicant for a type II landfill construction permit shall submit a management plan for controlling nuisance conditions and their impact on adjoining land uses. The plan shall include recommended isolation distances to prevent nuisances based on the environmental assessment submitted under R 299.4903. However, the director shall require greater isolation distances from adjacent property lines if the director determines that greater isolation is necessary to meet the performance standards of these rules.

(4) The active work area at the facility shall not be located closer than 100 feet to adjacent property lines or road rights-of-way or closer than 300 feet to domiciles that exist at the time an advisory analysis is requested. In addition, the approval of an isolation distance that is less than 200 feet from adjacent property lines or road rights-of-way requires the existence of a berm which is not less than 8 feet high, which has a 4-foot fence on top, and which is constructed around the perimeter of the active work area or the existence of natural screening that offers equivalent protection.

(5) The active work area of a type II landfill shall not be located within the following distances of surface waters:

(a) Within 400 feet of inland lakes and streams, as defined in part 301 of the act, but not including drains, as defined by 1956 PA 40, MCL 280.1. The distance is equivalent to that isolation distance required from natural rivers by part 305 of the act.

(b) Within 2,000 feet of the Great Lakes or Lake St. Clair.

(6) The active work area of a type II landfill shall not be located within the isolation area of a wellhead which is used as a domestic or public water supply, as defined in Act 399, and which is in existence at the time an advisory analysis is requested for the disposal area under section 11510 of the act. Except as provided in subrule (7) of this rule, the isolation area shall be as follows:

(a) The active work area shall be a minimum of 2,000 feet from wells that serve type I and type IIa water supplies, as defined in R 325.10502.

(b) The active work area shall be a minimum distance of 800 feet from wells that serve type IIb and type III public water supplies, as defined in R 325.10502, and from off-site domestic wells. The 800-foot isolation distance to off-site domestic wells does not apply when the domestic well is located on property owned by the facility, provided that adequate monitoring of the domestic well is required by the facility's hydrogeological monitoring plan or an appendix to that plan. This well shall not be removed from the facility's hydrogeological monitoring plan without department approval.

(7) The director shall require an increase or approve a decrease in the isolation area to a public water supply based on the hydrogeological report and Act 399.

(8) The requirements of this rule do not apply to type II landfills that are new disposal areas located within the footprint of the existing disposal areas.

History: 1993 AACS; 1999 AACS; 2005 AACS.

R 299.4413 Type II landfill location restrictions; sensitive areas.

Rule 413. (1) The requirements of this rule apply to type II landfills that are new disposal areas.

(2) A type II landfill shall not be located within either of the following sensitive areas:

(a) A critical dune area that is designated under part 353 of the act.

(b) A high-risk erosion area or environmental area that is designated under part 323 of the act.

(3) A type II landfill shall not be located in a manner that alters or destroys a property which is listed, or is eligible for listing, on the Michigan or national register of historic places.

(4) A type II landfill shall not be located within the range of a threatened or endangered species that is identified under part 365 of the act, unless the applicant demonstrates that the landfill will not have an adverse effect on the threatened or endangered species.

History: 1993 AACS; 1999 AACS.

R 299.4414 Type II landfill location restrictions; airport safety.

Rule 414. (1) Owners and operators of new type II landfill units, existing type II landfill units, and lateral extensions of existing units which are located within 10,000 feet of any airport runway and which are used by turbojet aircraft or within 5,000 feet of any airport runway end which is used by only piston-type aircraft shall demonstrate that the units are designed and operated so that the type II landfill unit does not pose a bird hazard to aircraft.

(2) Owners or operators who propose to site new type II landfill units and lateral extensions of existing units within a 5-mile radius of any airport runway end that is used by turbojet or piston-type aircraft shall notify the affected airport and the federal aviation administration.

(3) The owner or operator of an existing disposal area shall place documentation of the demonstration required pursuant to the provisions of subrule (1) of this rule in the operating record and notify the director that it has been placed in the operating record.

(4) The owner or operator of a new disposal area shall present the demonstration required pursuant to the provisions of subrule (1) of this rule in the construction permit application.

History: 1993 AACS.

R 299.4415 Type II landfill location restrictions; floodplains.

Rule 415. (1) An owner and operator of A new type II landfill unit, existing landfill unit, or lateral extension of an existing unit that is located within a floodplain shall demonstrate all of the following:

(a) The unit will not restrict the flow of the 100-year flood.

(b) The unit will not reduce the temporary water storage capacity of the floodplain.

(c) The unit will not result in washout of solid waste so as to pose a hazard to human health and the environment.

(d) The unit does not encroach upon the floodway and will not increase upstream or downstream flood stages.

(e) The unit has a natural or compacted soil base which is not less than 10 feet thick and which is in compliance with the criteria specified in R 299.4912.

(f) The distance from the normal water line of the water body to the solid waste boundary of the landfill will not be less than 500 feet.

(g) The design of the landfill will include a dike to preclude floodwater inundation with a top elevation that is not less than 5 feet above the 100-year flood elevation.

(2) The owner and operator of a new disposal area that is proposed in a floodplain shall obtain a permit under part 31 of the act and shall substantiate the need for the disposal area through an environmental assessment which considers alternatives and which assures that all potentially negative impacts can be mitigated.

History: 1993 AACS; 1999 AACS.

R 299.4416 Type II landfill location restrictions; wetlands.

Rule 416. A new type II landfill unit and a lateral extension of an existing unit shall not be located in wetlands, unless the owner and operator can demonstrate all of the following to the director:

(a) The owner or operator has obtained a permit under part 303 of the act and, to the extent required under part 303 of the act, has demonstrated that a practicable alternative to the proposed landfill that does not involve wetlands is not available.

(b) Construction and operation of the type II landfill unit will not do any of the following:

(i) Cause or contribute to violations of any applicable state water quality standard.

(ii) Violate any applicable toxic effluent standard or prohibition under section 307 of the federal clean water act.

(iii) Jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of a critical habitat, that is protected under the federal endangered species act of 1973.

(iv) Violate any requirement under the federal marine protection, research, and sanctuaries act of 1972 for the protection of a marine sanctuary.

(c) The type II landfill unit shall not cause or contribute to a significant degradation of wetlands. The owner or operator shall demonstrate the integrity of the type II landfill unit and its ability to protect ecological resources by addressing all of the following factors:

(i) Erosion, stability, and migration potential of native wetland soils, muds, and deposits that are used to support the unit.

(ii) Erosion, stability, and migration potential of dredged and fill materials that are used to support the unit.

(iii) The volume and chemical nature of the waste that is managed in the unit.

(iv) Impacts on fish, wildlife, and other aquatic resources and their habitat from release of the solid waste.

(v) The potential effects of a catastrophic release of waste to the wetland and the resulting impacts on the environment.

(vi) Any additional factors, as necessary, to demonstrate that ecological resources in the wetland are sufficiently protected.

(d) To the extent required under part 303 of the act, that steps have been taken to attempt to achieve no net loss of wetlands, as defined by acreage and function, by first avoiding impacts to wetlands to the maximum extent practicable as required by subdivision (b) of this rule, then minimizing

unavoidable impacts to the maximum extent practicable, and finally offsetting remaining unavoidable wetland impacts through all appropriate and practicable compensatory mitigation actions, such as the restoration of existing degraded wetlands or creation of man-made wetlands.

(e) Sufficient information is available to make a reasonable determination with respect to the demonstrations specified in subdivisions (a) to (d) of this rule.

History: 1993 AACS; 1999 AACS.

R 299.4417 Type II landfill location restrictions; fault areas and seismic impact zones.

Rule 417. (1) New type II landfill units and lateral extensions of existing units shall not be located within 200 feet of a fault that has had displacement in holocene time, unless the owner or operator demonstrates to the director that an alternative setback distance of less than 200 feet will prevent damage to the structural integrity of the unit and will be protective of human health and the environment.

(2) New type II landfill units and lateral extensions of existing units shall not be located in seismic impact zones, unless the owner or operator demonstrates to the director that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site.

(3) The owner or operator of an existing disposal area shall record the demonstrations specified in subrules (1) and (2) of this rule, as applicable, in the operating record and notify the director that the demonstrations have been recorded in the operating record.

(4) The owner and operator of a new disposal area shall include the demonstrations required by this rule in the construction permit application.

History: 1993 AACS.

R 299.4418 Type II landfill location restrictions; unstable areas.

Rule 418. (1) Owners or operators of new units, existing units, and lateral extensions of existing units that are located in an unstable area shall demonstrate that engineering measures have been incorporated into a unit's design to ensure that the integrity of the structural components of the unit will not be disrupted.

(2) An unstable area includes any of the following areas:

(a) An area that is unstable due to the presence of active or inactive karst formations.

(b) An area that is unstable due to the presence of sinkholes that are created by oil and gas drilling or other activities.

(c) An area that is susceptible to mass movement where the downslope movement of soil under gravitational influence occurs.

(d) An area where the groundwater level renders soils in an excavation unstable, unless the application provides engineering controls to prevent such instability.

(e) An area that is otherwise susceptible to natural or human-induced events or forces that are capable of impairing the integrity of some or all of the landfill structural components which are responsible for preventing releases from a landfill.

(3) The owner and operator shall consider all of the following factors, at a minimum, when determining whether an area is unstable:

(a) On-site or local soil conditions that may result in significant differential settlement.

(b) On-site or local geologic or geomorphologic features.

(c) On-site or local human-made features or events, both surface and subsurface.

(4) The owner or operator of an existing disposal area shall record the demonstration specified in subrule (1) of this rule in the operating record and notify the director that it has been recorded in an operating record.

(5) The owner or operator of a new disposal area shall include the demonstration required in subrule (1) of this rule in the construction permit application for the area.

History: 1993 AACS.

R 299.4419 Type II landfill location restrictions; closure of existing units; vertical expansions of existing units.

Rule 419. (1) Existing units that cannot make the demonstrations specified in R 299.4414 pertaining to airports, R 299.4415 pertaining to floodplains, or R 299.4418 pertaining to unstable areas shall close by October 9, 1996, in accordance with R 299.4448 and conduct postclosure activities in accordance with R 299.4449. The deadline for closure required by this rule may be extended up to 2 years if the owner or operator demonstrates both of the following to the director:

(a) There is no alternative disposal capacity.

(b) There is no immediate threat to human health or the environment.

(2) An owner or operator of an existing unit or a preexisting unit that can make the demonstration specified in subrule (1) of this rule may apply for a construction permit for the vertical expansion of the unit if the applicant demonstrates compliance with subrule (5) of this rule.

(3) The director shall approve the vertical expansion of a unit that is in compliance with R 299.4421(1) and (2).

(4) The director shall not approve a vertical expansion of a type II landfill unit that does not comply with R 299.4421(1) and (2), except in either of the following cases:

(a) The unit contains 2 or more liners and has a leak detection system between the liners and a leachate collection system capable of limiting the head on the primary liner, excluding the sump, to less than 1 foot.

(b) The overfill is constructed with a composite liner system that drains leachate from the overfill to a unit which is in compliance with R 299.4421
(1) and (2), and both of the following conditions are met:

(i) The overfilling only occurs over the portion of the existing unit that has slopes of more than 10%, unless either of the following conditions applies:

(A) The existing unit has slopes of more than 4% and the director determines that little or no settlement will occur in the existing unit based on waste thickness, age, degree of compaction, and other factors.

(B) Inert material is used as a wedge to create adequate slopes. Alternatively, the director shall approve the use of low-hazard industrial waste if the liner system of the unit is equivalent to the design required in part 3 of these rules.

(ii) For unmonitorable units, the overfill contains a leak detection system that is in compliance with the leakage control criteria contained in R 299.4422(3).

(5) The director shall approve the vertical expansion of a unit that meets the liner requirements of this rule if the applicant demonstrates that all of the following conditions are met:

(i) The unit is stable and has a foundation, liner system, and leachate collection system that can support the overburden pressure.

(ii) Leachate collection pipes in the unit will maintain a bottom slope of 0.5% or more, toward the sump, after consolidation settlement.

(iii) The applicant submits plans for final cover that are in compliance with the final cover requirements specified in R 299.4425.

(iv) The application is otherwise in compliance with the act and these rules and does not conflict with any remedial action at the facility.

History: 1993 AACS; 1999 AACS.

R 299.4420 Type II landfill design standards; municipal solid waste incinerator ash landfills.

Rule 420. (1) A new unit and a lateral extension of an existing unit at a type II landfill unit that accepts municipal solid waste incinerator ash shall be designed and constructed in accordance with section 11542 of the act, except that a municipal incinerator ash landfill that is an unmonitorable unit shall have a secondary leachate collection system and a flexible membrane liner as part of the secondary liner system.

(2) An existing unit, new unit, and lateral extension of an existing unit at a landfill that accepts municipal solid waste incinerator ash shall be closed with a final cover that is in compliance with section 11542 of the act. Grades of the final cover shall be in compliance with R 299.4425.

(3) An owner and operator of a new unit and a lateral extension of an existing unit at a municipal solid waste incinerator ash landfill shall ensure that all of the following requirements are complied with:

(a) Leachate collection systems that are required by section 11542 of the act are in compliance with R 299.4423.

(b) Secondary leachate collection or leak detection systems that are required by section 11542 of the act are in compliance with R 299.4424.

(c) Compacted clay liners that are required by section 11542 of the act are in compliance with R 299.4913.

(d) Flexible membrane liners that are required by section 11542 of the act are in compliance with R 299.4915.

(4) The director shall approve a process to substantially diminish the toxicity of municipal solid waste incinerator ash or the leachability of the ash, instead of disposal that is required under section 11542(1) of the act, if the applicant for such a process demonstrates all of the following:

(a) That, during storage or processing, ash will be contained within a tank, container, or waste pile that is in compliance with R 299.4124.

(b) The process does not in any way dilute ash constituents as a substitute for adequate treatment.

(c) The process does not create a nuisance.

(d) The process will not produce fugitive dust or other emissions in violation of part 55 of the act.

(e) The waste is tested after processing in accordance with the testing protocol of subrule (5) of this rule.

(5) Municipal solid waste incinerator ash that is processed under section 11542 of the act shall be tested in accordance with the protocol specified in R 299.4118 on a frequency that is adequate to ensure that the criteria specified in subrules (6) and (7) of this rule are met. The applicant shall propose a leaching procedure to simulate native conditions in addition to the leaching procedure specified in R 299.4118.

(6) The director shall approve processed municipal solid waste incinerator ash for recycling or reuse if the processed ash is in compliance with the criteria for inert material that are specified in R 299.4115 to R 299.4117.

(7) The director shall approve processed municipal solid waste incinerator ash for disposal in a type II landfill if the processed ash is in compliance with both of the following provisions:

(a) The ash does not leach constituents in concentrations greater than the toxicity characteristic specified in R 299.9217 based on leaching tests under both acidic and native conditions.

(b) Does not cause any emission that results in a violation of part 55 of the act or otherwise causes unacceptable risks to human health or the environment.

History: 1993 AACS; 1999 AACS.

R 299.4421 Type II landfill design standards; liner systems for new units and lateral extensions of existing units.

Rule 421. (1) All new units and lateral extensions of existing units at a type II landfill shall be constructed with a composite liner and a leachate collection system that is designed and constructed to maintain less than a 1-foot depth of leachate over the liner, excluding the sump. To maintain less than a 1-foot depth of leachate over the liner, leachate collection systems for these units shall be designed and constructed in compliance with the provisions of R 299.4423.

(2) All new units and lateral extensions of existing units that are unmonitorable units shall contain a leak detection system which is in compliance with the provisions of R 299.4424.

(3) Type II landfill units that are either of the following shall be located or designed in accordance with the leakage control criteria of R 299.4422 so that the risks associated with any leakage through the composite liner required by subrule (1) of this rule are minimized:

(a) New disposal areas. Owners and operators of new disposal areas shall demonstrate compliance as part of a construction permit application.

(b) New units and lateral extensions at existing disposal areas that have not received waste before October 9, 1995. New units and lateral extensions of existing units shall not be subject to the standards of R 299.4422 if a complete operating license application is submitted 90 days before October 9, 1995.

(4) The slope of a liner system shall not be more than 1 vertical to 3 horizontal or that necessary to ensure side slope stability. The director shall approve steeper side slopes than 1 to 3 if the owner or operator demonstrates that side slope stability will be maintained.

(5) The upgrading of an existing disposal area in accordance with the provisions of subrules (1) and (2) of this rule does not require department approval. Construction of the landfill shall be certified in accordance with the provisions of R 299.4921 and the certification shall be submitted with as-built plans with the operating license application for the upgraded units.

History: 1993 AACS.

R 299.4422 Type II landfill design standards; leakage control criteria.

Rule 422. (1) A landfill unit that is subject to the requirements of this rule shall be located, designed, and constructed so that the risks posed by leakage through the composite liner required by R 299.4421(1) are minimized. To do so, a landfill unit shall be either of the following:

(a) A monitorable unit which is located over a natural soil barrier and which is in compliance with subrule (2) of this rule so as to restrict the migration of leakage from the unit.

(b) Designed with a double liner system which is in compliance with subrule (3) of this rule and which is capable of detecting and collecting leakage through the primary composite liner.

(2) To meet the leakage control criteria of this rule, a type II landfill unit that is a monitorable unit may, in addition to the composite liner required in R 299.4421, be located over a natural soil barrier that is sufficient to prevent the migration of leakage from the unit to the uppermost aquifer, for as long as use of the site is restricted under section 11518 of the act, in the event of a failure of the composite liner. Any of the following geologic conditions shall be in compliance with location criteria if verified in accordance with the provisions of R 299.4912:

(a) A natural soil barrier that has a maximum demonstrated permeability of 1.0 x 10-7 cm/sec.

(b) A natural soil barrier that has a thickness and permeability that is sufficient to prevent the migration of leakage from the unit to the uppermost aquifer for that time period (TP) specified in section 11518 of the act. An owner or operator may demonstrate the sufficiency of the natural soil barrier by showing that the time of travel (TOT) through the natural soil barrier is as follows:

$$TOT > (t)\, n/(k)$$

where: TOT = TP specified in section 11518 of the act

t = thickness of low permeability soil above the uppermost aquifer

k = maximum permeability of soil

n = soil porosity = 0.5, assuming total porosity equals effective porosity, unless demonstrated otherwise.

(c) A natural soil barrier underlain by an uppermost aquifer that is sufficiently artesian to prevent the vertical migration of contaminants from the site to the uppermost aquifer by advection or dispersion. An owner or operator utilizing such a design shall demonstrate that sufficient controls exist to maintain artesian conditions for that period after closure specified by section 11518 of the act.

(d) Any combination of hydrogeology and innovative design that minimizes the risk of leakage through the primary composite liner at least as effectively as the conditions specified in subdivision (a), (b), or (c) of this subrule.

(3) To meet the leakage control criteria of this rule, a type II landfill unit may contain a double liner system or equivalent system that is capable of detecting leakage through the primary liner. A double liner system shall consist of all of the following components:

(a) A primary composite liner. For monitorable units that have a secondary composite liner, the soil component of the primary liner is optional on the portion of the side slope that is both of the following:

(i) Of a slope greater than or equal to 20%.

(ii) At a vertical elevation not less than 5 feet above the bottom of the side slope.

(b) A secondary collection system or leak detection system which is located immediately below the primary composite liner and which is in compliance with the requirements of R 299.4424.

(c) A secondary composite liner or any of the following alternate systems:

(i) A composite liner that uses, in place of compacted soil, a natural soil barrier which has an equivalent combination of permeability and thickness as 2 feet of 1.0 x 10-7 cm/sec compacted soil.

(ii) A natural soil barrier underlain by an uppermost aquifer that is sufficiently artesian to prevent the vertical migration of contaminants from the site to the uppermost aquifer by advection or dispersion. An owner or operator utilizing such a design shall demonstrate that sufficient controls exist to maintain artesian conditions for that period after closure specified by section 11518 of the act.

(iii) An alternate system which is approved by the director and which prevents the migration of hazardous substances at least as effectively as the other options specified in this subrule.

(4) Existing disposal areas that permit natural soil barriers in place of liners shall be deemed to be in compliance with the location criteria specified in subrule (2) of this rule if the owner and operator verify the presence of such soil in accordance with existing permits and licenses. Owners and operators of existing disposal areas that were not previously permitted as natural clay sites may demonstrate compliance with either the location criteria specified in subrule (2) of this rule or the design criteria specified in subrule (3) of this rule. Owners and operators shall submit certification that demonstrates compliance in accordance with R 299.4912 and R 299.4921 with the operating license application for the unit. An owner or operator may, at the owner's or operator's discretion, submit either the information specified in R 299.4912 or revised engineering plans to the solid waste control agency before or during construction of the unit. The solid waste control agency shall approve or deny the plans within 90 days of submittal.

History: 1993 AACS; 1999 AACS.

R 299.4423 Type II landfill design standards; leachate collection and removal systems.

Rule 423. (1) All new units and lateral extensions of existing units at a type II landfill shall have a leachate collection system that is designed and constructed to maintain less than a 1-foot depth of leachate over the primary liner. To do so, the system shall be designed to do all of the following :

(a) Limit the head at any point in the system, excluding the sump, to not more than 1 foot using the design criteria specified in this rule or alternate criteria demonstrated under subrule (5) of this rule.

(b) Extend across the entire bottom of the system.

(c) Be chemically resistant to the waste that is managed in the landfill and the leachate that is expected to be generated and be of sufficient strength and thickness to prevent collapse under the pressures that are exerted by overlying wastes, waste cover materials, and equipment that is used at the landfill.

(d) Minimize clogging during the active life and postclosure care period.

(e) Drain leachate to sumps using pumps that are of a sufficient size to collect and remove liquids from the sump and prevent liquids from backing up into the drainage layer. Each unit shall have its own sump. The design of each sump and removal system shall provide a method for measuring and recording the volume of liquids removed and the depth of leachate in the sump.

(2) Except as provided in subrule (5) of this rule, a leachate collection system shall consist of a soil drainage layer that is designed to the following requirements:

(a) Is a minimum of 1 foot thick and has a hydraulic conductivity equal to or greater than either of the following:

(i) 1.0 x 10-2 centimeters per second.

(ii) 1.0 X 10-3 centimeters per second, if used in conjunction with a geonet or other synthetic drainage material that has a hydraulic conductivity of 1 centimeter per second.

(b) Is free of any organic material and has less than 5% of the material, by weight, pass the Number 200 sieve.

(c) Is placed on a minimum slope of 2% in directions perpendicular to perforated pipes to promote drainage and prevent ponding above the liner.

(d) Is used in conjunction with perforated pipes that are in compliance with the subrule (3) of this rule.

(e) Is free of angular stones or other debris that may puncture, tear, or otherwise damage any flexible membrane liner adjacent to the drainage layer, unless a geosynthetic is provided over the liner to prevent such puncture.

(f) Is capable of preventing puncture of the liner by waste. To do so, the owner or operator may do any of the following:

(i) Increase the thickness to 2 feet using soil that has a hydraulic conductivity of at least 1.0 x 10-4 cm/sec.

(ii) Install a geosynthetic designed to prevent puncture of the liner.

(iii) Limit the type of waste received in the first =5 feet of the unit.

(3) Except as provided in subrule (5) of this rule, a leachate collection system shall include perforated pipes to aid in drainage. The pipes shall be designed to meet all of the following requirements:

(a) Have a wall thickness that is sufficient to withstand overburden pressures.

(b) Have a diameter that is sufficient to withstand the maximum design flow.

(c) A slope of 1% or more in a direction to intercept liquid flow. In addition, an applicant for a new disposal area shall demonstrate that the bottom slope will be 1% or more after consolidation settlement, except as provided for vertical expansions of a unit in R 299.4419.

(d) Be constructed with sufficient manholes and cleanout risers to allow for the cleaning and maintenance of pipes.

(e) Be spaced not more than 50 feet from the high point of the drainage layer. Perforated pipes may be spaced at greater distances, based on a demonstration under subrule (5) of this rule.

(4) All leachate collection systems shall include a filter layer, if necessary, to prevent clogging. A filter layer shall consist of 1 or both of the following:

(a) A graded, cohesionless soil filter which does not have more than 5%, by weight, that passes the no. 200 sieve and which does not permit the passage of soil particles that are more than 3 inches in any dimension.

(b) A geotextile filter that has both of the following:

(i) A hydraulic conductivity, as determined by ASTM D4491, that is capable of passing the projected inflow.

(ii) An apparent opening size that is in compliance with both of the following criteria:

(A) ?95 of the geotextile < 2 d85 of the soil where the ?95 is the apparent opening size of the geotextile at which 5% or less of the soil particles will pass and where the d85 is the soil particle size at which 85% of the sample is finer.

(B) The opening is designed to minimize the influence of retained particles on the permitivity of the geotextile.

(5) The owner and operator of a type II landfill may propose the use of an alternative drainage system design for a primary leachate collection system if the owner and operator can demonstrate, using mounding calculations and data on liner slope, drainage layer permeability, and flow length, that the alternative system will limit the head on the liner to the same extent as the design specified in subrule (3) of this rule and protect the liner system from waste, ultraviolet light, and other deleterious effects.

(6) A new unit and lateral extension of an existing unit at a type II landfill shall have a system for storing leachate outside the active portion if necessary to maintain compliance with the leachate depth requirements of R 299.4432(1). Tanks that are used to store leachate shall be in compliance with the technical standards of 40 C.F.R. §264.193. Surface impoundments, if used, shall be in compliance with the technical standards of 40 C.F.R.§264.221 and shall be operated in a manner that does not create a nuisance. The provisions of 40 C.F.R. §264.193 and 40 C.F.R. §264.221 are adopted by reference in R 299.4136.

History: 1993 AACS; 1999 AACS.

R 299.4424 Type II landfill design standards; secondary collection systems and leak detection systems.

Rule 424. (1) A secondary collection system shall be designed to operate as a leak detection system.

(2) A secondary collection system shall be capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time through all areas of the top liner that are likely to be exposed to waste or leachate during the active life and postclosure care period. The requirements of this subrule are satisfied by a system that, at a minimum, satisfies all of the following requirements:

(a) Is designed to have a bottom slope of 1% or more. An applicant for a new disposal area shall demonstrate that the bottom slope will be 1% or more after consolidation settlement, except as provided for vertical expansions of a unit in R 299.4419.

(b) Is designed with either of the following:

(i) Granular drainage materials that have a hydraulic conductivity of 1.0 x 10-2 centimeters per second or more and a thickness of 12 inches or more.

(ii) Synthetic or geonet drainage materials which have a hydraulic conductivity of 1 centimeter per second and a layer thickness that is not less than 100 mils or which have other combinations capable of providing a hydraulic transmissivity of 5.0 x 10-4 meters2 per second.

(c) Is designed with materials which are chemically resistant to the waste that is managed in the landfill and the leachate that is expected to be generated and which are of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and equipment used at the landfills.

(d) Is designed and operated to minimize clogging during the active life and postclosure care period.

(e) Is designed with a sump and pumps that are sized to efficiently collect and remove liquids and prevent liquids from backing up into the drainage layer. Each unit shall have its own sump. The design of the sump and the removal system shall provide a method for measuring and recording the liquid volume that is removed.

(3) The director shall approve alternative materials to those specified in subrule (2) of this rule if the owner and operator demonstrate that the alternate design is capable of detecting a primary liner leak at least as effectively.

History: 1993 AACS; 1999 AACS.

R 299.4425 Type II landfill design standards; final cover.

Rule 425. (1) The owner or operator of a type II landfill unit shall install a final cover system which is designed to minimize infiltration and erosion and which is comprised of an erosion layer underlain by an infiltration layer, as specified in this rule.

(2) Except as provided for existing or preexisting units in subrules

(3) and

(4) of this rule, the owner or operator of a type II landfill shall install a final cover system that is comprised of all of the following components:

(a) An infiltration layer that is comprised of a composite liner. The lower soil component of such a composite liner shall consist of either of the following:

(i) A minimum of 18 inches of earthen material that has a permeability which is less than or equal to 1.0 x 10-5 cm/sec, as determined by test methods specified in R 299.4920.

(ii) A bentonite geocomposite liner which is in compliance with R 299.4914 and which is underlain by not less than 18 inches of earthen material to protect the liner from waste and minimize the effect of settlement.

(b) An erosion layer that consists of both of the following:

(i) A soil layer which is not less than 2 feet thick, which is immediately above the composite cover liner, and which is designed to do all of the following:

(A) Provide for the lateral drainage of precipitation off the cover of the landfill. The owner or operator may use permeable soil, geosynthetic drainage material, an alternative equivalent material approved by the director, or a combination to provide the lateral drainage.

(B) Minimize frost penetration into the infiltration layer.

(C) Protect the flexible membrane liner from root penetration, ultraviolet light, and other deleterious effects.

(ii) A minimum of 6 inches of earthen material capable of sustaining native plant growth.

(3) The owner or operator of an existing or preexisting type II landfill unit that does not contain a flexible membrane liner in all or portions of the bottom liner system may install a final cover system previously approved by the director over those portions if the final cover system contains both of the following:

(a) An infiltration layer that is comprised of a minimum of 2 feet of earthen material which has a hydraulic conductivity that is less than or equal to 1.0 x 10-7 cm/sec, as determined by test methods specified in R 299.4920. The earthen material shall meet standards for soil liners specified in R 299.4913.

(b) An erosion layer that consists of a minimum of 6 inches of earthen material which is capable of sustaining native plant growth.

(4) The owner or operator of an existing or preexisting type II landfill unit that does not contain a flexible membrane liner in the bottom liner system may enhance the final cover specified in subrule (3)

of this rule by adding a flexible membrane liner if the erosion layer specified in subrule (2)(b) of this rule is provided. The addition of the layer shall not constitute a vertical expansion.

(5) The director shall approve an alternative final cover design if the owner or operator of the landfill units demonstrates that the cover design includes both of the following components:

(a) An infiltration layer that achieves an equivalent reduction in infiltration as the infiltration layer specified in subrule (2) or (3) of this rule.

(b) An erosion layer that provides equivalent protection from wind and water erosion as the erosion layer specified in subrules (2) and (3) of this rule.

(6) The final cover of a type II landfill shall have either of the following to meet the gas control requirements of R 299.4433:

(a) A permeable soil layer which is not less than 1 foot thick and which is located directly below the infiltration layer that vents landfill gas to gas risers.

(b) Other means of assuring that gases cannot travel laterally from the site or accumulate in structures.

(7) To prevent the ponding of water on completed fill surfaces, the grading contours shall be sufficient to prevent the development of local depressions due to postconstruction settlement. Slopes of the final cover shall not be less than 4% at any location.

(8) Slopes of the final cover shall not exceed those necessary to prevent erosion and maintain slope stability. The final slope shall not be more than 1 vertical to 4 horizontal at any location, except where necessary to install berms for erosion control. If the final slope is more than 15%, then the slope shall include controls that the applicant demonstrates are sufficient to maintain slope stability, prevent erosion, and allow access. The controls shall be sufficient to limit erosion to not more than 2 tons per acre per year after vegetation is established based on the universal soil loss equation or other method approved by the director. The following ground cover estimates may be used in calculating erosion loss:

(a) Up to 95%, if the closure and postclosure plan provides for all of the following:

(i) Topsoil that has an organic matter content of more than 2.5%.

(ii) Fertilization consistent with the natural resources conservation service critical area planting guide.

(iii) Mowing twice annually until the required coverage is achieved.

(b) Up to 90%, if the closure and postclosure plan for the unit provides for both of the following:

(i) Topsoil that has an organic matter content of more than 1.25%.

(ii) Mowing annually until the required coverage is achieved.

(c) Up to 80%, if the organic content or mowing schedule is not specified.

(d) Other estimates approved by the director, if the estimates are supported by measures to establish vegetation specified in the closure and postclosure plan.

(9) All final covered areas shall be stabilized using appropriate shallow-rooted vegetation for the soil type, slope, and moisture conditions present. Seed and mulch rates shall, at a minimum, be consistent with recommendations contained in the United States department of agriculture document entitled "Natural Resources Conservation Service Critical Area Planting Guide." The natural resources conservation service critical area planting guide is adopted by reference in R 299.4141.

History: 1993 AACS; 1999 AACS.

R 299.4426 Type II landfill operation generally.

Rule 426. (1) The owner and operator of a type II landfill shall properly maintain equipment of an adequate number, type, and size to be used in operating the landfill pursuant to established engineering practice and these rules. Backup equipment shall be available on the site or suitable arrangements shall be made to provide for such equipment from other sources during equipment breakdown or during peak loads.

(2) A type II landfill operation shall be under the immediate direction of a responsible individual.

(3) Measures shall be taken to control dust and blowing papers. The entire area shall be kept clean and orderly.

(4) All solid waste shall be compacted to minimize post-closure settlement.

(5) On-site roads at a type II landfill shall be in compliance with both of the following provisions:

(a) Be designed and constructed so that traffic flows smoothly and is not interrupted by ordinary inclement weather.

(b) Be operated to prevent the creation of nuisance conditions from fugitive dust.

(6) The active work area shall be sloped, graded, and provided with drainage facilities to prevent the collection of standing water.

History: 1993 AACS.

R 299.4427 Type II landfill operation; access requirements.

Rule 427. (1) The owner and operator of a type II landfill shall control public access to the landfill and prevent unauthorized vehicular traffic and illegal dumping of wastes by using artificial barriers or natural barriers, or both, as appropriate.

(2) In addition to the controls specified in subrule (1) of this rule, the owner and operator shall limit access as follows:

(a) To those times when an attendant is on duty or when an alternative monitoring device is in use.

(b) To those persons who are authorized to use the site for the disposal of solid waste.

History: 1993 AACS.

R 299.4428 Type II landfill operation; recyclable materials.

Rule 428. (1) The operator of a type II landfill may separate recyclable materials from general refuse without a construction permit for this activity from the director. Procedures for the separation of recyclable materials shall be consistent with the requirements for processing plants that are specified in R 299.4509.

(2) The salvaging of recyclable material, if allowed by the licensee, shall be organized so that it does not interfere with the prompt sanitary disposal of solid waste or create health hazards or unsightliness. Scavenging shall not be permitted.

(3) White goods and other recyclable metals may be stored on-site for recycling in an area that is designated in the operating license, if both of the following conditions are met:

(a) A nuisance or health hazard does not develop.

(b) The materials are stored in 1 of the following areas:

(i) An area that is in compliance with the standards for waste piles specified in R 299.4122.

(ii) A lined portion of the landfill.

(iii) A roll-off box or other container that prevents the discharge of liquids.

(4) Used lead acid batteries may be stored on-site for recycling if they are stored in a vault or on a pad that is in compliance with the provisions of R 299.4124(6).

History: 1993 AACS.

R 299.4429 Type II landfill operation; daily and interim cover material and disease vector control.

Rule 429. (1) Except as provided in subrule (2) of this rule, an owner or operator of a type II landfill unit shall cover disposed of solid waste with 6 inches of earthen material at the end of each operating day or at more frequent intervals, if necessary, to control disease vectors, fires, odors, blowing litter, and scavenging. If clay or other low-permeability material is used as daily cover, then the operator shall scrape back the previous day's cover to allow the free movement of liquids and gases through the landfill.

(2) Alternative materials of an alternative thickness, other than at least 6 inches of earthen material, may be used as daily cover at a type II landfill if the alternative material is approved in the landfill operating license. The following alternative materials shall be approved by the director for use as daily cover if the owner or operator of the type II landfill demonstrates that the alternative material and thickness control disease vectors, fires, odors, blowing litter, and scavenging without presenting a threat to human health or the environment by submitting an operational plan for use of the material in accordance with subrule (3) of this rule:

(a) The following manufactured products, designated as class a daily cover material:

(i) Geotextiles.

(ii) Flexible membrane liners.

(iii) Woven mats.
(iv) Spray on materials, such as foams and emulsions.
(b) The following waste materials, designated as class b daily cover, if 95% of the material is retained on a no. 200 sieve:
(i) Chipped tires.
(ii) Wood chips.
(iii) Ash from the combustion of coal or wood.
(iv) Ground shingles and other roofing material that do not contain friable asbestos.
(v) Alum sludge from the treatment of potable water at municipally owned water treatment facilities.
(vi) Foundry sand.
(vii) Dredge spoils.
(viii) Paper mill sludge.
(c) The following waste materials, designated as class c daily cover, if the operational plan provides for documenting the waste is not hazardous, as defined in part 111 of the act, and does not contain hazardous constituents in concentrations exceeding criteria established by the director for daily cover:
(i) Contaminated soil from a leaking underground storage tank containing petroleum products.
(ii) Auto fluff.
(iii) Materials listed in paragraph (b) of this subrule which have less than 95% of the material retained on a no. 200 sieve.
(iv) Other wastes approved by the director.
(3) An application for an alternative daily cover material specified in subrule (2) of this rule shall include an operational plan for the use of the proposed material. The operational plan shall include all of the following information:
(a) The thickness of cover to be used. Alternative materials shall be placed in 6-inch lifts or in a manner that forms a binding crust or matting over the waste.
(b) The method of placement. Alternative daily cover material shall be placed in a manner that allows the free movement of liquids and gases.
(c) For class C alternate daily cover materials specified in subrule (2) of this rule, procedures for testing the alternative material to ensure that it is not hazardous, as defined by part 111 of the act and does not exceed criteria established by the director for daily cover. Test results on class C daily cover shall be maintained in the operating log.
(d) Documentation that the proposed cover material is either not flammable, or will be used in conjunction with nonflammable material to prevent the spread of fires within the landfill.
(e) Documentation that the proposed cover material is not capable, upon compaction, of producing any emission that results in a violation of part 55 of the act.
(f) The method of storage before use. Alternative material shall be stored in a manner that does not produce fugitive dust or create a nuisance.
(4) The director may grant a temporary waiver from the requirements of subrules (1) and (2) of this rule if the owner or operator demonstrates that there are extreme seasonal climatic conditions that make meeting the requirements impractical.
(5) If an approved daily cover does not meet the performance standards of this rule, then the owner and operator shall modify daily cover application, as necessary, to meet the standards.
(6) To minimize nuisance conditions, the operator of a landfill shall place 1 foot of compacted cover, which may include the 6-inch daily cover, on the surface of any lift that will be exposed for a period of 3 months or more before additional lifts are constructed.
(7) To minimize infiltration, the operator of a landfill may place interim cover on the surface of the landfill and manage runoff from the cover in accordance with R 299.4435. The extent of the interim cover shall be documented in the operating log at least quarterly and shall consist of either of the following:
(a) Not less than 1 foot of low-permeability soil that has a unified soil classification of SC, ML, CL, CL/ML or CH, or another soil type that has a permeability of 1.0 x 10-5 cm/sec or less after compaction. Interim soil cover shall be compacted to the extent necessary to minimize infiltration and prevent leachate discharges through the soil, but need not be compacted to the standards specified in R 299.4913.
(b) A flexible membrane liner.
(8) All daily cover shall be continually maintained unless the removal of daily cover is authorized by the director based upon a demonstration under subrule (2) of this rule.

(9) An owner and an operator of a unit shall prevent or control on-site populations of disease vectors using techniques appropriate for the protection of human health and the environment.

History: 1993 AACS; 1999 AACS.

R 299.4430 Type II landfill operation; prohibited wastes; procedures for excluding the receipt of prohibited waste.

Rule 430. (1) The operator of a type II landfill shall ensure that the unloading of solid waste is continuously supervised by facility personnel upon receipt.

(2) The following wastes shall not be disposed of in a type II landfill:

(a) Regulated hazardous waste.

(b) PCB's or PCB items, as defined in 40 C.F.R. §761.3.

(c) Bulk or noncontainerized liquid waste or waste that contains free liquids, unless the waste is household waste other than septic waste or the waste is leachate or gas condensate that is approved for recirculation under R 299.4432.

(d) Containers that hold liquid waste, unless the container is household waste or is a small container similar in size to that normally found in household waste.

(e) Sewage.

(f) Materials that would adversely affect a liner or leachate collection and removal system.

(g) Asbestos waste, unless the disposal area complies with 40 C.F.R.§61.154.

(h) Empty drums, unless crushed to eliminate voids.

(i) Used lead acid batteries.

(j) Yard clippings, as specified in the act.

(3) The owner and operator of a landfill shall implement a program at the facility for detecting and preventing the disposal of wastes that are prohibited by subrule (1) of this rule. The program shall include all of the following:

(a) Random inspections of incoming loads.

(b) Inspections of suspicious loads.

(c) Records of any inspections.

(d) Training of facility personnel to recognize prohibited waste.

(e) Procedures for notifying all of the following persons if regulated hazardous waste or PCB waste is discovered at the facility:

(i) The generator of the waste.

(ii) The transporter of the waste.

(iii) The director or his or her designee.

(iv) For PCB waste, the EPA regional administrator.

(v) The certified health department, if any.

(4) The definition of PCB waste and PCB items contained in 40 C.F.R.§761.3 is adopted by reference in R 299.4140. The provisions of 40 C.F.R.§61.154 pertaining to asbestos waste are adopted by reference in R 299.4131.

History: 1993 MR 9, Eff. Oct. 8, 1993; 1999 MR 3, Eff. Apr. 12, 1999.

R 299.4431 Type II landfill operation; noise.

Rule 431. (1) Operation of a type II landfill shall not result in noise exceeding the following levels when measured at the common property line nearest the active work area:

(a) For adjacent residential property, 75 dBA.

(b) For adjacent commercial property, 85 dBA.

(c) For adjacent industrial and other property, 90 dBA.

(2) Noise levels may be monitored by the solid waste control agency using weighted decibel measurements, referenced to 20 micropascals, with an audio output meter that is approved by the United States bureau of standards.

(3) Objectionable noises due to intermittence beat, frequency, or shrillness shall be muffled so as not to become a nuisance to adjacent uses.

History: 1993 AACS; 1999 AACS.

R 299.4432 Type II landfill operation; leachate and secondary collection system monitoring; leachate treatment, storage, and disposal.

Rule 432. (1) The owner and operator of a type II landfill shall remove leachate from a disposal unit as frequently as necessary to ensure that the leachate depth on the liner, excluding the sump, is not more than 1 foot, except after a significant storm event. The leachate depth on the liner shall not be more than 1 foot for more than 7 days after a significant storm event. A significant storm event is a storm that generates 0.1 inches or more of rainfall in 24 hours.

(2) The owner and operator shall monitor the leachate collection system and record all of the following:

(a) Leachate depths on a schedule that assures compliance with this subrule.

(b) The monthly volume of leachate pumped from all units.

(c) The quality of leachate generated from the landfill by sampling and analyzing for both of the following:

(i) The primary inorganic indicators listed in R 299.4450 and primary volatile organics listed in R 299.4453 on a quarterly basis during the active life and on an annual basis during the postclosure period.

(ii) Other constituents listed in R 299.4451, R 299.4452, and R 299.4454 on an annual basis during the active life and postclosure period.

(3) The owner and operator of a sanitary landfill that contains a secondary collection system shall do all of the following:

(a) Remove pumpable liquids in the secondary collection system sumps on a frequency that is sufficient to minimize the head on the bottom liner.

(b) During the active life, do both of the following:

(i) Record in the operating record the amount of liquid removed from each system sump at least weekly.

(ii) Calculate and record in the operating record the average daily flow rate, monthly.

(c) During the postclosure period, do both of the following:

(i) Record in the operating record the amount of liquids removed from each secondary collection system sump, at least monthly. If the liquid level in the sump stays below the pump operating level for 2 consecutive months, the amount of liquids in the sumps may be recorded quarterly. If the liquid level in the sump stays below the pump operating level for 2 consecutive quarters, the amounts of liquids in the sumps may be recorded semiannually. If at any time during the postclosure care period the pump operating level is exceeded at units on quarterly or semiannual recording schedules, the owner or operator shall return to the monthly recording of amounts of liquids removed from each sump until the liquid level again stays below the pump operating level for 2 consecutive months.

(ii) Calculate and record in the operating record the average daily flow rate, monthly, unless the owner and operator are on a reduced frequency for recording flow under subparagraph (i) of this paragraph. An owner and operator who qualify for recording flow on a reduced frequency are exempt from calculating an average daily flow rate.

(d) If the average daily flow rate removed from the sump of a secondary collection system during any month averages more than the action flow rates specified in subrule (4) of this rule, do one of the following within 30 days of the end of the month in which the exceedance occurred:

(i) Initiate a liquids management plan to reduce the flow in the secondary collection system and the potential impact of this flow and place this plan in the operating record, and for unmonitorable units, comply with the leak detection requirements of R 299.4437. A liquids management plan may provide for increasing the frequency or rate of leachate removal, the suspension of leachate reintroduction, the application of interim cover to reduce leachate generation, or other actions which are appropriate to reduce the flow rate in the secondary collection system. The owner and operator may discontinue actions under a liquids management plan if the average daily flow rate in a subsequent month no longer exceeds the action flow rate which initiated the action.

(ii) Demonstrate to the director that the flow in the secondary collection system is due to construction or consolidation water from the primary liner and not by excessive leakage from the landfill cell. The demonstration shall be certified by a registered professional engineer. In the event the director denies

this demonstration, the owner and operator shall initiate a liquids management plan within 30 days of the denial.

(iii) For monitorable units which have a natural soil barrier or equivalent geologic protection below the secondary collection system which meets the criteria of R 299.4422(2), continue to remove pumpable liquids on a frequency which minimizes the head on the bottom liner. Landfill cells which meet this criteria are exempt from the liquids management plan requirements of this paragraph.

(4) In order to evaluate the performance of a secondary collection system, the director shall establish an action flow rate for each landfill cell containing such a system in the operating license. For purposes of this rule and R 299.4437, a "landfill cell" means a portion of a landfill unit which contains a separate secondary collection system and sump. The action flow rate shall be equal to the following:

(a) A value of 5 gallons per acre per day, for unmonitorable units with less than 2 feet of compacted clay in the primary liner.

(b) A value of 25 gallons per acre per day, for monitorable units with less than 2 feet of clay in the primary liner.

(c) A value of 50 gallons per acre per day, for unmonitorable units with at least 2 feet of compacted clay in the primary liner.

(d) A value of 200 gallons per acre per day, for monitorable units with at least 2 feet of compacted clay in the primary liner.

(5) The owner and operator of a type II landfill shall inspect all leachate collection pipes on a schedule that assures the proper operation of the leachate collection system. All pipes shall be cleaned or flushed as necessary to assure proper operation.

(6) The owner and operator of a type II landfill shall ensure that all leachate that is generated by the landfill is disposed of in compliance with part 31 of the act. To do so, the owner and operator shall provide for 1 of the following:

(a) On-site treatment and discharge by a facility that is permitted under part 31 of the act or is otherwise approved by the director.

(b) Discharge, by sewer or pipeline, to an off-site publicly owned treatment works or other facility that is permitted under part 31 of the act or is otherwise approved by the director.

(c) Discharge, by pump and haul, to an off-site publicly owned treatment works or other facility that is permitted under part 31 of the act or is otherwise approved by the director.

(7) The owner and operator of a type II landfill that discharges to an off-site publicly owned treatment works or other facility that is permitted under part 31 of the act shall do all of the following:

(a) Secure written permission to discharge to the facility before discharge.

(b) Meet any applicable pretreatment requirements.

(c) If the discharge is by pump and haul, provide, for hauling a volume necessary to comply with subrule (1) of this rule.

(8) The owner and operator may recirculate leachate, liquid from the secondary collection system, or gas condensate back to a disposal unit if the director approves a plan for the recirculation in an operating license.

History: 1993 AACS; 1999 AACS.

R 299.4433 Type II landfill operation; explosive gas control and monitoring.

Rule 433. (1) The owner and operator of a type II landfill shall ensure all of the following:

(a) That the concentration of methane gas generated by the facility is not more than 25% of the lower explosive limit for methane in facility structures, excluding gas control or recovery system components, and the leachate collection system.

(b) That the concentration of methane gas is not more than the lower explosive limit at or beyond the facility property boundary.

(c) That gases generated by the facility do not create a nuisance and are not otherwise in violation of part 55 of the act at the property boundary.

(2) The owner and operator of a type II landfill shall implement a routine methane monitoring program to ensure that the requirements of subrule (1) of this rule are met. The type and frequency of monitoring shall be based on all of the following factors:

(a) Soil conditions.

(b) The hydrogeologic conditions surrounding the facility.
(c) The hydraulic conditions surrounding the facility.
(d) The location of facility structures and property boundaries.
(3) The minimum frequency of methane monitoring shall be quarterly.
(4) If methane gas levels exceeding the limits specified in subrule (1) of this rule are detected from either an active or closed unit, the owner and operator shall do all of the following:
(a) Immediately take all necessary steps to ensure protection of human health and notify the director.
(b) Within 7 days of detection, place, in the operating record, the methane gas levels detected and a description of the steps taken to protect human health.
(c) Within 60 days of detection, implement a remediation plan for the methane gas releases, place a copy of the plan in the operating record, and notify the director that the plan has been implemented. The plan shall describe the nature and extent of the problem and the proposed remedy.
(5) The director may establish alternative schedules for demonstrating compliance under subrule (4) of this rule.
(6) An active gas management system shall be installed at a type II landfill if necessary under subrule (4) of this rule. An active gas management system shall do all of the following:
(a) Include a control system that includes 1 or both of the following:
(i) A system within the unit that is in compliance with subrule (7) of this rule.
(ii) A system outside the unit that is in compliance with subrule (8) of this rule.
(b) Include a collection system for transporting gas to a central point or points for process or disposal.
(c) Include provisions for collecting and draining gas condensate to the leachate collection and removal system.
(d) Prevent the migration of gas out of the unit.
(e) Operate until the waste is stabilized and no longer producing gas in quantities that are in violation of subrule (1) or (4) of this rule.
(7) An active gas control system that is installed within the perimeter of a solid waste disposal unit shall be designed and constructed to do the all of the following:
(a) Function for the active life of the disposal unit and the postclosure period.
(b) Operate safely in hazardous or explosive environments.
(c) Be resistant to corrosion by the constituents of landfill gas.
(d) Withstand all normal landfill conditions, including settlement.
(e) Provide for the collection and draining of gas condensate.
(f) Not adversely affect the integrity of any liner, leachate collection system, or final cover.
(g) Be airtight.
(8) An active gas control system that is located outside the perimeter of the solid waste disposal unit shall consist of either trenches or gas wells which effectively cut off the lateral migration of gas and which extend down to 1 of the following:
(a) A natural soil barrier that is in compliance with R 299.4912.
(b) The seasonal high water table.
(c) The elevation of the liner within the solid waste disposal unit.
(d) Other barriers approved by the director.

History: 1993 AACS; 1999 AACS.

R 299.4434 Type II landfill operation; air criteria.
Rule 434. (1) The owner and operator of a type II landfill shall ensure that the unit is not in violation of any applicable requirements developed under part 55 of the act or the state implementation plan approved or promulgated by the administrator under section 110 of the clean air act, as amended.
(2) The burning of solid waste, except for the infrequent burning of agricultural wastes, silvicultural wastes, land-clearing debris, diseased trees, or debris from emergency cleanup operations, is prohibited at all type II landfills.
(3) The burning of waste specified in subrule (2) of this rule shall be conducted only in designated areas with the permission of the solid waste control agency and other appropriate authorities. Suitable measures shall be available to extinguish accidental fires.

History: 1993 AACS; 1999 AACS.

R 299.4435 Type II landfill operation; run-on and runoff control systems.

Rule 435. (1) The owner and operator of a type II landfill shall design, construct, and maintain both of the following systems:

(a) A run-on control system to prevent flow onto the active portion of the landfill during the peak discharge from a 25-year, 24-hour storm.

(b) A runoff control system from the active portion of the landfill to collect and control at least the water volume that results from a 24-hour, 25-year storm.

(2) The owner and operator of a type II landfill shall manage runoff from the active portion of the landfill that does not have interim cover as leachate in accordance with R 299.4432.

(3) The owner and operator of a type II landfill shall control runoff from the active work area of the landfill and shall institute erosion control measures as necessary to comply with part 91 of the act.

History: 1993 AACS; 1999 AACS.

R 299.4436 Type II landfill operation; surface and groundwater performance requirements.

Rule 436. (1) The operation of a type II landfill unit shall not do any of the following:

(a) Cause a discharge of pollutants into waters of the United States, including wetlands, that is in violation of any of the requirements of the federal clean water act, including the national pollutant discharge elimination system (NPDES) requirements under section 402 of the federal clean water act.

(b) Cause the discharge of a nonpoint source of pollution to waters of the United States, including wetlands, that is in violation of any of the requirements of an areawide or statewide water quality management plan that has been approved under section 208 or 319 of the federal clean water act.

(c) Cause a discharge in violation of part 31 of the act or rules promulgated under part 31 of the act.

(2) The owner and operator of a type II landfill shall conduct a surface water monitoring program approved by the director for any surface water that may receive runoff from the active work area. Monitoring results shall be submitted to the director or his or her designee not more than 30 days after the end of the calendar quarter.

History: 1993 AACS; 1999 AACS.

R 299.4437 Landfill operation; leak detection systems.

Rule 437. (1) For unmonitorable units, the secondary collection system is also a leak detection system. To evaluate the performance of a leak detection system, the director shall establish a response flow rate for each landfill cell that contains a leak detection system in the operating license for the unit. The response flow rate for a leak detection system is determined by the following criteria:

(a) By using a value of 200 gallons per acre per day for A landfill design that has a primary liner which uses 2 feet or more of compacted clay.This flow rate accounts for water from the consolidation of clay or natural groundwater.

(b) By using a value of 25 gallons per acre per day for A landfill design which has A primary liner without 2 feet or more of compacted clay.

(2) If the average daily flow rate removed from the sump of a leak detection system is more than the action flow rate for that cell specified in R 299.4432, the owner and operator shall evaluate the chemical characteristics of liquid in the leak detection system by sampling and analyzing the system in accordance with subrule (6) of this rule and evaluating for the presence of a leak by a statistical test under R 299.4908, a trend analysis, or other means. Before solid waste is placed in any new unit that has a leak detection system, the owner and operator may, at their discretion, establish a baseline concentration of constituents in the secondary collection system based on an analysis of representative samples from the system.

(3) The owner and operator of a landfill shall conduct the response actions required under subrule (5) of this rule if monitoring of the leak detection system determines that both of the following apply to liquid that is removed from the system:

(a) The average daily flow rate is more than the response flow rate that is established for the unit under subrule (1) of this rule.

(b) The liquid contains hazardous substances indicative of leachate from the unit.

(4) The owner and operator of a landfill that has a leak detection system that exceeds the response flow rate may demonstrate to the director that hazardous substance concentrations present are not above the baseline concentration established pursuant to subrule (2) of this rule or that the flow is due to construction or consolidation water from the primary liner and is not due to excessive leakage from the unit. The demonstration shall be certified by a registered professional engineer. Upon director approval of a demonstration, the owner and operator shall be exempt from the response action plan requirements of this rule.

(5) An owner and operator who are required to conduct response actions pursuant to this rule shall take all of the following actions:

(a) Within 7 days of a determination that the response flow rate has been exceeded, notify the director, in writing, that the response flow rate has been exceeded.

(b) Submit a preliminary written assessment to the director within 14 days of a determination that the response flow rate has been exceeded. A preliminary written assessment shall include all of the following information for the landfill cell in which the response flow rate was exceeded:

(i) The amount of liquids removed from the leak detection system.

(ii) The likely sources of liquids, including the depth of leachate in the leachate collection system.

(iii) The possible location, size, and cause of any leaks.

(iv) The short-term actions taken and planned.

(c) Determine, to the extent practicable, the location, size, and cause of any leak.

(d) Determine whether waste receipt should cease or be curtailed, whether any waste should be removed from the landfill cell for inspection, repairs, or controls, and whether or not the unit should be closed.

(e) Determine any other short-term and longer-term actions to be taken to mitigate or stop any leaks.

(f) After a determination that the response flow rate has been exceeded, and for as long as the flow rate in the system exceeds the response flow rate, the owner or operator shall submit to the director, within 30 days of the end of the calendar quarter, a report that summarizes the results of any remedial actions taken and planned.

(g) To make the leak or remediation determinations specified in this subrule, the owner or operator shall do all of the following:

(i) Assess the source of liquids and amounts of liquids by source.

(ii) Conduct a fingerprint, hazardous constituent, or other analysis of the liquids in the system to identify the source of liquids and possible location of any leaks and the hazard and mobility of the liquid.

(iii) Assess the seriousness of any leaks in terms of potential for escaping into the environment or document why the assessments are not needed.

(6) An owner or operator who is required to evaluate the chemical characteristics of a leak detection system under this rule shall sample and analyze for the constituents listed in R 299.4450 to R 299.4454 or the approved hydrogeological monitoring plan, quarterly during the active life and postclosure period, except as provided in subrule (7) of this rule, and shall submit the results of the monitoring and any required notifications and reports to the director not more than 30 days after the end of the calendar quarter.If none of the constituents or their breakdown products are detected in leachate at practical quantitation limits approved by the director for 2 consecutive sampling events, then the owner and operator may reduce the frequency of analysis of the constituents in the leak detection system to annually for as long as the constituents are not detected in the leachate.

(7) The owner or operator of a landfill unit who initiates chemical characterization of a leak detection system or response actions after exceeding an action flow rate or response flow rate may discontinue the action if the average daily flow rate in a subsequent calendar month no longer exceeds the applicable flow rate that initiated the action.

History: 1993 AACS; 1999 AACS.

R 299.4438 Type II landfill operation; recordkeeping requirements.

Rule 438. (1) The owner and operator of a type II landfill unit shall record and retain, near the facility in an operating record or in an alternative location approved by the director, all of the following information as it becomes available:

(a) Any location restriction demonstration that is required under this part.

(b) Inspection records, training procedures, and notification procedures that are required under R 299.4430.

(c) Gas monitoring results from monitoring and any remediation plans that are required under R 299.4433.

(d) Any type II landfill unit design documentation for the placement of leachate or gas condensate in a type II landfill unit as required by these rules.

(e) Any demonstration, certification, finding, monitoring, testing, or analytical data required by these rules for groundwater or secondary collection system monitoring.

(f) Records of the quantity of waste received that are required to determine payments into the perpetual care fund.

(g) Closure and postclosure care plans and any monitoring, testing, or analytical data required by these rules.

(h) Any cost estimates and financial assurance documentation required by these rules.

(i) Test results documenting that class C alternate daily cover material meets criteria established by the director for daily cover.

(2) The owner and operator shall notify the director when the documents specified in subrule (1) of this rule have been placed in or added to the operating record. All information that is contained in the operating record shall be furnished upon request to the director or be made available at reasonable times for inspection by the director.

History: 1993 AACS; 1999 AACS.

R 299.4439 Type II landfill groundwater monitoring and corrective action; applicability.

Rule 439. (1) The requirements of R 299.4440 to R 299.4445 apply to all type II landfill units, except as provided in subrules (2) and (6) of this rule.

(2) An owner or operator of a type II landfill may petition the director to reduce or waive certain groundwater monitoring requirements specified in R 299.4440 to R 299.4445 if the owner or operator can demonstrate that there is no potential for the migration of hazardous constituents from that type II landfill unit to the uppermost aquifer during the active life of the unit and the post-closure care period. This demonstration shall be certified by a qualified groundwater scientist and approved by the director and shall be based upon both of the following:

(a) Site-specific field collected measurements, sampling, and analysis of physical, chemical, and biological processes that affect contaminant fate and transport.

(b) Contaminant fate and transport predictions that maximize contaminant migration and consider impacts on human health and the environment.

(3) The director shall waive sampling and analysis for secondary organic constituents specified in R 299.4454 upon a demonstration by the owner or operator that the criteria of subrule (2) of this rule are met by the following conditions:

(a) The landfill unit will have an active life less than 20 years.

(b) The landfill unit meets both the location criteria of R 299.4422(3) and the design criteria of R 299.4422(4), which provide for a secondary collection system.

(c) The constituents have not been detected in the secondary collection system.

(4) Owners and operators of type II landfill units shall comply with the groundwater monitoring requirements of this part before waste can be placed in the unit.

(5) Once established at a type II landfill unit, groundwater monitoring shall be conducted throughout the active life and 30-year post-closure care period of that unit as specified in R 299.4449.

(6) In addition to the requirements of subrule (4) of this rule, owners and operators of preexisting landfill units shall comply with the groundwater monitoring plan for the unit approved by the director before the effective date of this rule, unless a new plan is approved by the director.

History: 1993 AACS; 2005 AACS.

R 299.4440 Type II landfill groundwater monitoring; detection monitoring program.

Rule 440. (1) Detection monitoring is required at type II landfill units at all groundwater-monitoring wells defined in R 299.4906. At a minimum, a detection-monitoring program for a type II landfill shall include monitoring for all of the following constituents:

(a) The primary indicators listed in R 299.4450, conductivity and pH, at least quarterly during the active life and semiannually during the postclosure period, except as provided for in subrule (5) and (6) of this rule.

(b) The following constituents listed at least semiannually during the active life of the facility and the postclosure period, except as provided in subrules (2) to (6) of this rule:

(i) Heavy metals that are listed in R 299.4452.

(ii) Primary volatile organic constituents listed in R 299.4453.

(iii) Secondary organic constituents listed in R 299.4454.

(2) The director shall waive the sampling and analysis of some or all of the heavy metals specified in R 299.4452 if other inorganic indicator parameters listed in R 299.4450 or R 299.4451 provide a reliable indication of inorganic releases from the unit to groundwater. In determining whether to approve a waiver, the director shall consider all of the following factors:

(a) The types, quantities, and concentrations of constituents in the wastes that are managed at the type II landfill unit.

(b) The mobility, stability, and persistence of waste constituents or their reaction products in the unsaturated zone beneath the type II landfill unit.

(c) The detectability of indicator parameters, waste constituents, and reaction products in the groundwater.

(d) The concentration and variance of monitoring parameters in the groundwater background.

(3) The owner and operator of a type II landfill unit that contains a secondary collection system shall be deemed to have met the criteria of subrule (2) of this rule and may conduct sampling and analysis for primary indicators listed in R 299.4450 in place of the heavy metals listed in R 299.4452 if all of the following conditions are met:

(a) Leachate monitoring shows that the concentration of all of the indicators in leachate is not less than 10 times the concentration in groundwater.

(b) Secondary collection system monitoring shows all of the following:

(i) That the allowable flow rate has not been exceeded.

(ii) That the concentration of 2 or more indicators in the system is not more than the following threshold values for 2 consecutive sampling events:

(A) For chlorides, 250 mg/l.

(B) For iron, 0.3 mg/l.

(C) For sulfates, 250 mg/l.

(D) For total inorganic nitrogen, 10 mg/l.

(E) For total dissolved solids, 500 mg/l.

(F) For other constituents, a value approved by the director.

(iii) That volatile organics listed in R 299.4453 have not been detected in the secondary collection system.

(iv) That the concentration of metals listed in R 299.4452 has not exceeded the part 201 generic residential cleanup criteria contained in R 299.5744 and R 299.5746.

(c) The unit is a monitorable unit.

(d) The concentration of the indicators in groundwater is normally distributed.

(4) The director shall delete any of the monitoring parameters listed in R 299.4452 to R 299.4454 for a type II landfill unit if it can be shown that the removed constituents are not reasonably expected to be in or derived from the waste that is contained in the unit. An owner or operator may demonstrate that a constituent is not expected to be in or derived from the waste if the constituent and any breakdown products are not detectable in leachate at practical quantitation limits approved by the director based on historic analysis of leachate from not less than 2 sampling events.

(5) The owner and operator of a type II landfill may apply to the director for an appropriate alternative frequency for repeated sampling and analysis for pH, conductivity, and the constituents specified in R 299.4450 to R 299.4454, during the active life, including closure, and the postclosure care period. The alternative frequency during the active life, including closure, shall be at least semiannually for pH,

conductivity, and the constituents specified in R 299.4450 and R 299.4451, and at least annually for the constituents specified in R 299.4452 to R 299.4454. The alternative frequency shall be based on consideration of all of the following factors:

(a) The lithology of the aquifer and unsaturated zone.

(b) The hydraulic conductivity of the aquifer and unsaturated zone.

(c) The groundwater flow rates.

(d) The minimum distance of travel between waste and the closest downgradient monitoring well screen.

(e) The presence of an alternative monitoring system, such as a secondary collection system.

(f) The resource value of the aquifer.

(6) The owner or operator of a type II landfill unit shall be deemed to meet the criteria of subrule (5) of this rule and may reduce sampling of the following constituents to the following frequency during the active life and 30-year postclosure period if the following conditions are met as applicable:

(a) The heavy metals listed in R 299.4452 and secondary organic constituents listed in R 299.4454 to annually if the active portions of the unit contain a composite liner underlain by a natural soil barrier in compliance with the leakage control criteria of R 299.4422(2).

(b) For monitorable units which contain a secondary collection system in the active portion, but which are not underlain by a natural soil barrier meeting the criteria of R 299.4422(2), all constituents listed in R 299.4450 to R 299.4454 to the following frequency:

(i) To annually, if the average daily flow rate in the secondary collection system of all landfill cells in the active portion does not exceed the following flow rates during the previous 6 months:

(A) A value of 5 gallons per acre per day for landfill cells that have less than 2 feet of compacted clay in the primary liner.

(B) A value of 50 gallons per acre per day for landfill cells that have not less than 2 feet of compacted clay in the primary liner.

(ii) To semiannually, if the average daily flow rate in the secondary collection system of any landfill cell in the active portion has exceeded the flow rates specified in paragraph (i) of this subdivision in the previous 6 months, but has not exceeded the following action flow rates for the cell during the previous 6 months:

(A) A value of 25 gallons per acre per day for landfill cells that have less than 2 feet of compacted clay in the primary liner.

(B) A value of 200 gallons per acre per day for landfill cells that have not less than at least 2 feet of compacted clay in the primary liner.

(c) For monitorable units that contain a secondary collection system in the active portion underlain by a natural soil barrier meeting the criteria of R 299.4422(2), to annually if the average daily flow rate in the secondary collection system of any landfill cell in the active portion has not exceeded the following flow rates during the previous 6 months:

(i) A value of 25 gallons per acre per day for landfill cells that have less than 2 feet of compacted clay in the primary liner.

(ii) A value of 200 gallons per acre per day for landfill cells that have not less than 2 feet of compacted clay in the primary liner.

(7) If insufficient background data exists to perform statistical analysis, a minimum of 4 independent samples shall be collected and analyzed during the first sampling event. At least 1 sample from each detection monitoring well shall be collected and analyzed during subsequent sampling events. An alternate background collection schedule may be approved by the director. An interim statistical method may be utilized during the period in which background data is collected.

(8) If the owner and operator determine, pursuant to a statistical test specified in R 299.4908, that there is a statistically significant increase over background for 1 or more of the constituents at any monitoring well at the solid waste boundary or at other monitoring locations required by the director, then the owner and operator shall do both of the following:

(a) Within 14 days of the determination, place a notice in the operating record that indicates which constituents have shown statistically significant increases from background levels and notify the director that the notice is placed in the operating record.

(b) Prepare and submit to the director an assessment monitoring plan that is in compliance with R299.4441 and a response action plan that is in compliance with R 299.4442 within 45 days of the

determination, or pursuant to an alternate schedule approved by the director, except as provided in subrule (9) of this rule.

(9) The owner and operator may demonstrate to the director that a source other than a landfill unit caused the contamination or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation or from natural variation in groundwater quality. A report that documents the demonstration shall be certified by a qualified groundwater scientist, be submitted to the director within 30 days of the determination specified in subrule (8) of this rule, and be placed in the operating record. If the director determines that the alternate source demonstration prepared pursuant to this subrule has not been successfully provided, the deficiencies shall be specified to the petitioner in writing and the petitioner granted 15 days to address those deficiencies identified by the director. If a successful demonstration is made and documented, then the owner or operator shall do the following:

(a) Continue detection monitoring as specified in this rule.

(b) Determine whether the presence of hazardous constituents in groundwater renders any new units or lateral extensions within the solid waste boundary unmonitorable. If so, the owner and operator shall develop a schedule for submitting revised engineering plans for such lateral extensions or new units that include a leak detection system.

(10) If the director notifies the owner and operator that a successful demonstration has not been made, then, within 15 days of notification by the director, the owner and operator shall prepare an assessment monitoring program as required in R 299.4441 and submit a response action plan to the director as required in R 299.4442.

History: 1993 AACS; 1999 AACS; 2005 AACS.

R 299.4441 Type II landfill groundwater monitoring; assessment monitoring program.

Rule 441. (1) Assessment monitoring is required at a type II landfill if a statistically significant increase over background has been detected for 1 or more of the constituents listed in R 299.4440.

(2) Within 60 days of the submittal of an assessment monitoring program, and annually thereafter, the owner and operator of a type II landfill shall sample the groundwater for analysis of all constituents listed in R 299.4450 to R 299.4452 and 40 C.F.R part 258, appendix II at an appropriate subset of monitoring wells approved by the director. A minimum of 1 sample from each approved downgradient well shall be collected and analyzed during each sampling event. For any constituent that is detected in the downgradient wells as a result of the complete R 299.4450 to R 299.4452 and appendix II constituent analysis, a minimum of 4 independent samples from each background and downgradient well shall be collected and analyzed to establish background for the constituents. The director shall consider anappropriate subset of wells to be sampled and analyzed for R 299.4450 to R 299.4452 and appendix II constituents during assessment monitoring. The director shall delete any of the R 299.4450 to R 299.4452 and appendix II constituents for a unit if it can be shown, based on leachate data, secondary collection system monitoring, waste classification data, or other data, that the removed constituents are not reasonably expected to be in or derived from the waste contained in the unit or that the constituent is not a reliable indicator parameter.

(3) The director shall specify an appropriate frequency for repeated sampling and analysis for all of the R 299.4450 to R 299.4452 and appendix II constituents for which sampling and analysis are required by this rule during the active life, including closure, and post-closure care of the unit. In specifying the frequency, the director shall consider all of the following factors:

(a) The lithology of the aquifer and unsaturated zone.

(b) The hydraulic conductivity of the aquifer and unsaturated zone.

(c) Groundwater flow rates.

(d) The minimum distance between upgradient edge of the unit and downgradient monitoring well screen.

(e) The nature of any constituents detected in response to this rule.

(4) After obtaining the results from the initial or subsequent sampling events required in subrule (2) of this rule, the owner and operator shall do all of the following:

(a) Within 14 days, place a notice in the operating record that identifies the R 299.4450 to R 299.4452 and appendix II constituents that have been detected and notify the director that this notice has been placed in the operating record.

(b) Within 90 days, and on at least a semiannual basis thereafter, resample all wells specified by the provisions of R 299.4441(2), conduct analyses for all constituents listed in R 299.4450 to R 299.4454 and for those constituents listed in appendix II that are detected in response to the requirements of subrule (2) of this rule and are present at statistically significant levels above background, and record their concentrations in the facility operating record. At least 1 sample from each background and downgradient well shall be collected and analyzed during these sampling events. The director shall consider an alternative monitoring frequency during the active life, including closure, and the post-closure period for the constituents referred to in this subdivision. The alternative frequency for constituents listed in R 299.4452 to R 299.4454, during the active life, including closure, shall be at least annually. The alternative frequency shall be based on consideration of the factors specified in subrule (3) of this rule.

(c) Establish background concentrations for any constituents detected pursuant to this rule where background has not already been established.

(d) Establish groundwater protection standards consistent with section 20120a of the act for all constituents that are detected pursuant to this rule.

(5) If the concentrations of all constituents listed in R 299.4450 to R 299.4454 and all appendix II constituents are shown to be at or below background values, using the statistical procedures in R 299.4908, for 2 consecutive sampling events, then the owner and operator shall notify the director of the finding and may return to detection monitoring.

(6) If the concentration of any constituent listed in R 299.4450 to R 299.4454 or any appendix II constituents are above background values, but all concentrations are below the groundwater protection standard established pursuant to the provisions of subrule (9) of this rule, then the owner and operator shall do all of the following:

(a) Continue assessment monitoring in accordance with this rule.

(b) Characterize the nature and extent of the release by installing additional monitoring wells as necessary.

(c) Install at least 1 additional monitoring well at the facility boundary in the direction of contaminant migration and sample the well in accordance with the provisions of subrule (4) of this rule.

(d) Notify all persons who own the land or reside on the land that directly overlies any part of the plume of contamination if contaminants have migrated off-site as indicated by the sampling of wells in accordance with this rule.

(7) If 1 or more constituent listed in R 299.4450 to R 299.4454 or appendix II constituents are detected at statistically significant levels and are above the groundwater protection standard established pursuant to subrule (9) of this rule, in any sampling event, then the owner or operator shall do all of the following:

(a) Within 14 days of the detection, place a notice in the operating record that identifies the hazardous substances that have exceeded any criteria for groundwater established pursuant to section 20120a of the act.

(b) Notify the director and all appropriate local government officials that the notice has been placed in the operating record.

(c) Continue assessment monitoring in accordance with this rule.

(d) Install at least 1 additional monitoring well at the facility boundary in the direction of contaminant migration and sample the well in accordance with subrule (4) of this rule.

(e) Characterize the nature and extent of the release by installing additional monitoring wells as necessary.

(f) Notify all persons who own the land or reside on the land that directly overlies any part of the plume of contamination if contaminants have migrated off-site as indicated by the sampling of wells in accordance with this rule.

(g) Except as provided by subrule (8) of this rule, initiate an assessment of corrective measures as required by R 299.4443 within 90 days of the detection.

(8) An owner and operator may demonstrate that a source other than a type II landfill unit or other source at the facility caused the contamination or that the statistically significant increase resulted from error in sampling, analysis, or statistical evaluation or from natural variation in groundwater quality. A report that documents the demonstration shall be certified by a qualified groundwater scientist, approved by the director, and placed in the operating record. Until a successful demonstration is made, the owner and operator shall comply with subrules (6) and (7) of this rule. If a successful demonstration is made, the owner and operator shall do the following:

(a) Continue monitoring in accordance with the assessment monitoring program pursuant to this rule. The owner and operator may return to detection monitoring if the hazardous substances are at or below background as specified in subrule (5) of this rule.

(b) Determine whether any new units or lateral extensions of existing units will be unmonitorable. If so, the owner and operator shall develop a schedule for submitting revised engineering plans for such lateral extensions and new units that are in compliance with the provisions of R 299.4422(4), and include a leak detection system.

(c) Not be subject to the response action plan requirements of R 299.4442 or the assessment of corrective measures of R 299.4443.

(9) The owner or operator shall establish a groundwater protection standard for each hazardous substance that is detected in groundwater. The groundwater protection standard shall be as follows:

(a) For constituents for which a maximum contaminant level has been promulgated pursuant to the provisions of section 1412 of the safe drinking water act and has been codified at 40 C.F.R. part 141, the lowest of the following:

(i) The maximum contaminant level for that constituent.

(ii) The applicable cleanup criteria for that constituent for groundwater as established pursuant to section 20120a of the act.

(b) For constituents for which the background level is higher than the maximum contaminant level or applicable cleanup criteria for groundwater, the background concentration.

(c) For constituents for which a maximum contaminant level has not been promulgated, either of the following:

(i) The background concentration for the constituent established from wells in accordance with the provisions of R 299.4906(1).

(ii) The applicable cleanup criteria for that constituent for groundwater established pursuant to section 20120a of the act.

History: 1993 AACS; 2005 AACS.

R 299.4442 Type II landfill groundwater monitoring; response action plan.

Rule 442. (1) The owner and operator of a type II landfill unit that is required to prepare a response action plan shall identify all of the following:

(a) Possible sources of contamination.

(b) Interim response activities taken or to be taken to control possible sources of contamination.

(c) For units that the owner or operator concludes are probable sources of contamination, a schedule for terminating waste receipt, for initiating closure at units, and for redesigning and constructing new units that have leak detection systems. The schedule shall be based on all of the following:

(i) The concentration of hazardous substances.

(ii) The rate of migration.

(iii) Risks to human health and the environment, including the proximity of drinking water supplies.

(iv) The practicality of initiating closure.

(v) The availability of other disposal locations.

(vi) Other relevant factors.

(2) The director shall approve or deny a response action plan within 60 days of submittal. If the director denies a plan, the director shall specify schedules for closure and interim response necessary to protect human health and the environment.

(3) If the concentrations of all hazardous substances are shown to be at or below background values, using the statistical procedures in R 299.4908, for 2 consecutive sampling events, the owner and operator shall notify the director of this finding and may suspend actions under the response action plan.

History: 1993 AACS; 2005 AACS.

R 299.4443 Type II landfill corrective action; assessment of corrective measures.

Rule 443. (1) Within 90 days of finding that any hazardous substances have been detected at a statistically significant level, and exceed the groundwater protection standards defined in R

299.4441, the owner and operator of a type II landfill shall initiate an assessment of corrective measures. Such an assessment shall be completed within a reasonable period of time approved by the director.

(2) The owner and operator shall continue to monitor in accordance with the assessment-monitoring program as specified in R 299.4441.

(3) The assessment or corrective measures shall be in compliance with the requirements for feasibility studies contained in part 201 of the act and shall include an analysis of the effectiveness of potential corrective measures in meeting all of the requirements and objectives of the remedy.The analyses shall address all of the following areas:

(a) The performance, reliability, ease of implementation, and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination.

(b) The time required to begin and complete the remedy.

(c) The costs of remedy implementation.

(d) The institutional requirements, such as state or local permit requirements or other environmental or public health requirements, that may substantially affect implementation of the remedy or remedies.

(4) The owner and operator shall discuss the results of the feasibility study of corrective measures in a public meeting with interested and affected parties before selecting a remedy.

History: 1993 AACS; 2005 AACS.

R 299.4444 Type II landfill corrective action; remedy selection and remedial action plan.

Rule 444. (1) Based on the results of the corrective measures assessment pursuant to R 299.4443, the owner and operator shall propose to the director a remedy that, at a minimum, meets the standards specified in subrule (2) of this rule. The owner and operator shall, within 14 days of selecting a remedy, submit to the director a proposed remedial action plan which is in compliance with part 201 of the act and which describes the selected remedy and how it meets the standards of part 201 of the act. The proposed remedial action plan shall be placed in the operating record.

(2) Remedies that are proposed by an owner or operator shall be in compliance with all of the following provisions:

(a) Be protective of human health and the environment.

(b) Be able to attain the groundwater protection standard as specified in R 299.4441.

(c) Control the source or sources of releases so as to reduce or eliminate, to the maximum extent practicable, further releases of R 299.4450 to R 299.4452 and appendix II constituents into the environment that may pose a threat to human health or the environment.

(d) Be in compliance with standards for the management of wastes as specified in R 299.4445(4).

(3) In selecting a remedy that is in compliance with the standards of subrule (2) of this rule, the owner or operator shall consider all of the following evaluation factors:

(a) The long- and short-term effectiveness and protectiveness of the potential remedy or remedies, together with the degree of certainty that the remedy will prove successful based on a consideration of all of the following:

(i) The magnitude of the reduction of existing risks.

(ii) The magnitude of residual risks in terms of the likelihood of further releases due to waste that remains after the implementation of a remedy.

(iii) The type and degree of long-term management required, including monitoring, operation, and maintenance.

(iv) Short-term risks that might be posed to the community, workers, or the environment during the implementation of a remedy, including the potential threats to human health and the environment that are associated with excavation, transportation, and the redisposal of contaminants.

(v) Time until full protection is achieved.

(vi) The potential for the exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment that is associated with excavation, transportation, redisposal, or containment.

(vii) The long-term reliability of the engineering and institutional controls.

(viii) The potential need for replacement of the remedy.

(b) The effectiveness of the remedy in controlling the source to reduce further releases based on a consideration of both of the following factors:

(i) The extent to which containment practices will reduce further releases.

(ii) The extent to which treatment technologies may be used.

(c) The ease or difficulty of implementing a potential remedy or remedies based on a consideration of all of the following types of factors:

(i) The degree of difficulty that is associated with constructing the technology.

(ii) The expected operational reliability of the technologies.

(iii) The need to coordinate with, and obtain necessary approvals and permits from, other agencies.

(iv) The availability of necessary equipment and specialists.

(v) The available capacity and location of needed treatment, storage, and disposal services.

(d) The practicable capability of the owner or operator, including a consideration of the technical and economic capability.

(e) The degree to which community concerns are addressed by a potential remedy or remedies.

(4) The owner and operator shall specify, as part of the remedial action plan, a schedule for initiating and completing remedial activities. The schedule shall require the initiation of remedial activities within a reasonable period of time approved by the director, taking into consideration the factors set forth in this subrule. The owner or operator shall consider all of the following factors in determining the schedule of remedial activities:

(a) The extent and nature of contamination.

(b) The practical capabilities of remedial technologies in achieving compliance with groundwater protection standards established pursuant to R 299.4441(9) and other objectives of the remedy.

(c) The availability of treatment or disposal capacity for wastes that are managed during implementation of the remedy.

(d) The desirability of utilizing technologies which are not currently available, but which may offer significant advantages over already available technologies in terms of effectiveness, reliability, safety, or ability to achieve remedial objectives.

(e) The potential risks to human health and the environment from exposure to contamination before completion of the remedy.

(f) The resource value of the aquifer, including all of the following information:

(i) The current and future uses.

(ii) The proximity and withdrawal rate of users.

(iii) The groundwater quantity and quality.

(iv) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituent.

(v) The hydrogeologic characteristic of the facility and surrounding land.

(vi) Groundwater removal and treatment costs.

(vii) The cost and availability of alternative water supplies.

(g) The practicable capability of the owner or operator.

(h) Other relevant factors.

(5) The director shall not approve a remedial action plan that relies upon criteria other than the groundwater protection standard specified in the provisions of R 299.4441, unless the owner or operator demonstrates, to the satisfaction of the director, any of the following:

(a) The groundwater is additionally contaminated by substances that have originated from a source other than a unit and those substances are present in concentrations such that cleanup of the release from the unit would not provide a significant reduction in risk to actual or potential receptors.

(b) The constituent or constituents are present in groundwater that is neither of the following:

(i) Currently, or reasonably expected to be, a source of drinking water.

(ii) Hydraulically connected with waters to which the hazardous constituents are migrating or are likely to migrate in a concentration or concentrations that would exceed the groundwater protection standards established pursuant to R 299.4441.

(c) Remediation of the release or releases is technically impracticable.

(d) Remediation results in unacceptable cross-media impacts.

(6) A determination by the director pursuant to subrule (5) of this rule shall not affect the authority of the director to require the owner or operator to undertake source control measures or other measures that may be necessary to eliminate or minimize further releases to the groundwater, to prevent exposure

to the groundwater, or to remediate the groundwater to concentrations that are technically practicable and significantly reduce threats to human health or the environment.

(7) The director shall evaluate proposed remedies utilizing the criteria specified in this rule and part 201 of the act.

History: 1993 AACS; 2005 AACS.

R 299.4445 Type II landfill corrective action; implementation of remedial action plan.

Rule 445. (1) Based on the schedule established pursuant to R 299.4444 for the initiation and completion of remedial activities, the owner and operator shall do all of the following:

(a) Establish and implement a corrective action groundwater-monitoring program that is in compliance with all of the following provisions:

(i) At a minimum, meets the requirements of an assessment-monitoring program pursuant to R 299.4441.

(ii) Indicate the effectiveness of the corrective action remedy.

(iii) Demonstrate compliance with the groundwater protection standard.

(b) Implement the remedial action plan approved pursuant to R 299.4444.

(c) Take any interim response activities which are required by the director or which are otherwise necessary to ensure the protection of human health and the environment. Interim measures shall, to the greatest extent practicable, be consistent with the objectives, and contribute to the performance, of any remedy that may be required pursuant to R 299.4444. All of the following factors shall be considered by an owner or operator in determining whether interim measures are necessary:

(i) The time that is required to develop and implement a final remedy.

(ii) The actual or potential exposure of nearby populations or environmental receptors to hazardous constituents.

(iii) The actual or potential contamination of drinking water supplies or sensitive ecosystems.

(iv) The further degradation of the groundwater that may occur if remedial action is not initiated expeditiously.

(v) The weather conditions that may cause hazardous constituents to migrate or be released.

(vi) The risks of fire or explosion, or the potential for exposure to hazardous constituents as a result of an accident or failure of a container or handling system.

(vii) Other situations that may pose threats to human health and the environment.

(2) An owner or operator may determine, based on information that is developed after the implementation of the remedy has begun or other information, that compliance with the requirements of R 299.4444 is not being achieved through the remedy selected. In such cases, the owner or operator shall implement other methods or techniques that could practicably achieve compliance with the requirements, unless the owner or operator makes the determination specified in subrule (3) of this rule.

(3) If the owner or operator determines that compliance with requirements of R 299.4444(2) cannot be practically achieved with any currently available methods, then the owner or operator shall do all of the following:

(a) Obtain the certification of a qualified groundwater scientist and the approval of the director that compliance with the requirements of R 299.4444(2) cannot be practically achieved with any currently available methods.

(b) Implement alternate measures to control the exposure of humans or the environment to residual contamination as necessary to protect human health and the environment.

(c) Implement alternate measures that are in compliance with both of the following provisions for controlling the sources of contamination or for removing or decontaminating equipment, units, devices, or structures:

(i) Are technically practicable.

(ii) Are consistent with the overall objective of the remedy.

(d) Notify the director within 14 days that a report which justifies the alternative measures before implementing the alternative measures has been placed in the operating record.

(4) All solid wastes that are managed pursuant to a remedy or an interim measure required pursuant to the provisions of R 299.4444 shall be managed in a manner that is in compliance with both of the following provisions:

(a) Is protective of human health and the environment.

(b) Is in compliance with applicable requirements of the act and these rules.

(5) Remedies that are selected pursuant to R 299.4444 shall be considered complete when the owner or operator complies with the groundwater protection standards established pursuant to R 299.4441 at all points within the plume
of contamination and when all actions to complete the remedy have been satisfied. For purposes of these rules, compliance with the groundwater protection standards established pursuant to R 299.4441 has been achieved by demonstrating that concentrations of R 299.4450 to R 299.4452 and appendix II
constituents have not exceeded the groundwater protection standards for a period of 3 consecutive years using the statistical procedures and performance standards specified in R 299.4908 or for an alternative length of time which is approved by the director and which takes into consideration all of the following factors:

(a) The extent and concentration of the releases.

(b) The behavior characteristics of the hazardous constituents in the groundwater.

(c) The accuracy of monitoring or modeling techniques, including any seasonal, meteorological, or other environmental variables that may affect the accuracy.

(d) The characteristics of the groundwater.

(6) Upon completion of the remedy, the owner and operator shall notify the director within 14 days that the remedy has been completed in compliance with the requirements of these rules and has been placed in the operating record. The certification shall be signed by the owner and operator and by a qualified groundwater scientist and shall be approved by the director.

(7) When, upon completion of the certification, the owner or operator determines that the corrective action remedy has been completed in accordance with the requirements of this rule, the owner and operator shall be released from the requirements for financial assurance for corrective action pursuant to the act and these rules.

(8) The owner and operator shall be responsible for obtaining permission to enter off-site property to complete a remedial action plan.

History: 1993 AACS; 2005 AACS.

R 299.4446 Type II landfill engineering plans; closure plans.

Rule 446. (1) Effective October 9, 1993, the owner and operator of a type II landfill shall prepare detailed engineering plans and an engineering report that describes the steps necessary to close all units of the type II landfill at any point during its active life in accordance with the closure performance standards of these rules. The closure plan shall include all of the following information:

(a) An overall description of the methods, procedures, and processes that will be used to close each unit of the landfill in accordance with this rule.

(b) An estimate of the maximum extent of operation that will be open at any time during the active life of the landfill.

(c) An estimate of the maximum inventory of wastes ever on-site over the active life of the landfill.

(d) A description of the final cover, including engineering plans and specifications.

(e) A schedule for completing all activities that are necessary to satisfy the final cover requirements of these rules.

(2) Any modifications to an approved closure plan shall be approved by the director.

(3) A copy of the most recent approved closure plan shall be kept at the facility or at an alternate location that is designated by the owner and operator until closure of the landfill has been certified in accordance with the provisions of R 299.4921 and the owner and operator have been released from the requirements for closure.

History: 1993 AACS.

R 299.4447 Type II landfill engineering plans; post-closure plan.

Rule 447. (1) Effective October 9, 1993, the owner or operator of a type II landfill shall prepare a written post-closure plan that includes, at a minimum, all of the following information:

(a) A description of the monitoring and maintenance activities that are required for each unit, and the frequency at which these activities will be performed.

(b) Name, address, and telephone number of the person or office to contact about the facility during the post-closure period.

(c) A description of the planned uses of the property during the post-closure period. Post-closure use of the property shall not disturb the integrity of the final cover, liner or liners, or any other components of the containment system or the function of the monitoring systems unless necessary to comply with the requirements of these rules. The owner and operator shall not otherwise disturb the final cover, liner, or other component of the containment system or remove any waste unless the director has approved the disturbance based on a demonstration that it will not increase the potential threat to human health or the environment.

(2) The approved post-closure plan shall be placed in the operating record.

History: 1993 AACS.

R 299.4448 Type II landfill operation; partial and final closure.

Rule 448. (1) The owner and operator of a type II landfill shall design and operate the landfill so as to bring the active fill area up to final grade as soon as possible. An owner or operator may partially close a unit or portion of a unit at such time as that portion reaches final grade.

(2) The owner and operator shall close each type II landfill unit in a manner that minimizes all of the following:

(a) Infiltration.

(b) Erosion.

(c) The need for further maintenance.

(d) The post-closure formation and release of leachate and explosive gases to air, groundwater, or surface water to the extent necessary to protect human health and the environment.

(3) Before beginning the partial or final closure of each unit, an owner and operator shall notify the director that a notice of the intent to close the unit has been placed in the operating record.

(4) The owner and operator shall begin final closure activities of each unit not more than 30 days after the date on which the unit receives the known final receipt of wastes or, if the unit has remaining capacity and there is a reasonable likelihood that the unit will receive additional wastes, not more than 1 year after the most recent receipt of wastes..Extensions beyond the 1-year deadline for beginning final closure shall be granted by the director if the owner and operator demonstrate that the unit has the capacity to receive additional wastes and the owner or operator has taken and will continue to take all steps necessary to prevent threats to human health and the environment from the unclosed unit.

(5) The owner and operator of all type II landfills shall complete final closure activities of each unit in accordance with the closure plan within 180 days after the beginning of final closure as specified in subrule (4) of this rule. Extensions of the closure period shall be granted by the director if the owner and operator demonstrate that final closure will, of necessity, take more than 180 days and he or she has taken, and will continue to take, all steps to prevent threats to human health and the environment from the unclosed unit.

(6) Not more than 60 days after the partial or final closure of each type II landfill disposal unit, the owner and operator of such unit shall submit, to the director or his or her designee, certification by a registered professional engineer that verifies that closure has been completed in accordance with the approved closure plan. The certification shall include that information required by R 299.4921.

(7) The post-closure period shall begin on the date that the final closure of a unit is certified, unless the director has reason to believe that final closure has not been in accordance with the act, these rules, or the approved closure plan or that any partial closures have not been maintained in accordance with the provisions of R 299.4449. The director, or his or her designee, shall, within 60 days of receiving a final closure certification, provide the owner or operator with a written statement of the reason or reasons for the director's belief that closure has not been in accordance with the act, these rules, or the approved closure plan.

(8) The approved closure certification shall be placed in the operating record.

History: 1993 AACS.

R 299.4449 Type II landfill operation; post-closure.

Rule 449. (1) After the final closure of each unit, the owner and operator of a type II landfill shall conduct post-closure care for not less than 30 years, which includes all of the following:

(a) Maintaining the integrity and effectiveness of any final cover, including repairs to the cover as necessary to correct the effects of settling, subsidence, erosion, or other events, and preventing run-on and runoff from eroding or otherwise damaging the final cover.

(b) Maintaining, operating, and monitoring the leachate collection system in accordance with the requirements specified in R 299.4423 and R 299.4432.

(c) Monitoring the groundwater in accordance with these rules and maintaining the groundwater monitoring system.

(d) Monitoring all secondary collection systems and leak detection systems in accordance with the requirements of R 299.4432.

(e) Maintaining and operating the gas monitoring and collection system in accordance with the requirements of R 299.4433.

(2) The owner and operator shall not remove any of the following from the facility without the approval of the director or his or her designee:

(a) Waste or waste residues, except leachate, gas, and gas condensate.

(b) The liner.

(c) Contaminated soil.

(3) After completion of the post-closure care period for each disposal unit, the owner and operator shall submit, to the director or his or her designee, certification which is signed by an independent registered professional engineer and which verifies that post-closure care has been completed in accordance with the act, these rules, and the post-closure plan.

(4) The director, or his or her designee, shall, within 60 days of receiving a post-closure certification, provide the owner or operator with a written statement of the reason or reasons for the director's belief that post-closure has not been in accordance with the act, these rules, or the approved post-closure plan. In such case, the post-closure period shall be extended until deficiencies are corrected and a post-closure is recertified.

(5) The approved post-closure certification shall be placed in the operating record.

History: 1993 AACS.

R 299.4450 Type II landfill monitoring; primary inorganic indicators.

Rule 450. (1) All of the following constituents are primary inorganic indicators for purposes of monitoring type II landfills under this part, unless alternate inorganic indicators are approved under subrule (3) of this rule:

(a) Chlorides.

(b) Iron.

(c) Sulfates.

(d) Total inorganic nitrogen.

(e) Total dissolved solids.

(2) To be considered a primary inorganic indicator, both of the following conditions shall be met:

(a) The concentration of the constituent in leachate shall be high enough to ensure detection at the solid waste boundary in the event of a release from the unit.

(b) An appropriate statistical method that meets the requirements of R 299.4908 is available to ensure early detection in the event of a release from the unit.

(3) An owner and operator may, at their discretion, propose 1 or more constituents from R 299.4451 to replace 1 or more indicators listed in subrule (1) of this rule. The director shall approve the use of alternate indicators if the owner and operator demonstrate that the conditions of subrule (2) of this rule are met and the proposed alternates will detect leakage from the unit at least as effectively.

(4) The constituents listed in this rule shall be analyzed in accordance with methods contained in the publication entitled "Standard Methods for the Examination of Water and Wastewater, 19th edition,"

which is adopted by reference in R 299.4139 or by other methods approved by the director or his or her designee.

History: 1993 AACS; 1999 AACS.

R 299.4451 Type II landfill monitoring; alternate indicators.

Rule 451. (1) The following constituents are alternate indicators for purposes of monitoring type II landfills under this part:

(a) Magnesium.
(b) Manganese.
(c) Potassium.
(d) Sodium.
(e) Bicarbonate alkalinity.
(f) Carbonate alkalinity.
(g) Calcium.
(h) Phenolics.
(i) Cyanide.
(j) Total organic carbon.
(k) Chemical oxygen demand.
(l) Boron.

(2) A person may propose constituents other than those listed in this rule as an alternate indicator.

(3) The constituents listed in this rule shall be analyzed by methods specified in the EPA document entitled "Standard Methods for the Examination of Water and Wastewater, 19th edition," which is adopted by reference in R 299.4139, or by other methods approved by the director or his or her designee.

History: 1993 AACS; 1999 AACS; 2005 AACS.

R 299.4452 Type II landfill monitoring; metals.

Rule 452. (1) The constituents in this rule shall be considered heavy metals for purposes of type II landfill monitoring. Samples for the metals from groundwater or secondary collection systems shall be field-filtered before analysis, unless the director determines that filtered samples alone do not accurately measure the concentration of metals in the groundwater or in a secondary collection system at the facility. Samples of leachate shall not be filtered before analysis.

(2) The following metals shall be analyzed in accordance with subrule (3) of this rule:

(a) Antimony.
(b) Arsenic.
(c) Barium.
(d) Beryllium.
(e) Cadmium.
(f) Chromium.
(g) Cobalt.
(h) Copper.
(i) Lead.
(j) Nickel.
(k) Selenium.
(l) Silver.
(m) Thallium.
(n) Vanadium.
(o) Zinc.

(3) The metals listed in this rule shall be analyzed by methods that are contained in the publication entitled "Standard Methods for the Examination of Water and Wastewater, 19th edition," which is adopted by reference in R 299.4139 or by other methods approved by the director or his or her designee.

History: 1993 AACS; 1999 AACS.

R 299.4453 Type II landfill monitoring; primary volatile organic constituents.

Rule 453. (1) The constituents specified in this rule are considered primary volatile organic constituents for purposes of type II landfill monitoring.

(2) The following are halogenated volatile organic constituents:

(a) Bromodichloromethane.

(b) Bromoform; tribromomethane.

(c) Carbon tetrachloride.

(d) Chlorobenzene.

(e) Chloroethane; ethyl chloride.

(f) Chloroform; trichloromethane.

(g) Dibromochloromethane; chlorodibromomethane.

(h) o-Dichlorobenzene; 1,2-dichlorobenzene.

(i) p-Dichlorobenzene; 1,4-dichlorobenzene.

(j) 1,1-Dichloroethane; ethylidene chloride.

(k) 1,2-Dichloroethane; ethylene dichloride.

(l) 1,1-Dichloroethylene; 1,1-dichloroethene; vinylidene chloride.

(m) cis-1,2-Dichloroethylene; cis-1-2-dichloroethene.

(n) Trans-1,2-dichloroethylene; trans-1,2-dichloroethene.

(o) 1,2-Dichloropropane; propylene dichloride.

(p) cis-1,3-dichloropropene.

(q) Trans-1,3-dichloropropene.

(r) Methyl bromide; bromomethane.

(s) Methyl chloride; chloromethane.

(t) Methylene bromide; dibromomethane.

(u) Methylene chloride; dichloromethane.

(v) Methyl iodide; iodomethane.

(w) 1,1,1,2-Tetrachloroethane.

(x) 1,1,2,2-Tetrachloroethane.

(y) Tetrachloroethylene; tetrachloroethene; perchloroethylene.

(z) 1,1,1-Trichloroethane; methyl chloroform.

(aa) 1,1,2-Trichloroethane.

(bb) Trichloroethylene; trichloroethene.

(cc) Trichlorofluoromethane.

(dd) 1,2,3-Trichloropropane.

(ee) Vinyl chloride.

(3) All of the following are aromatic volatile organic constituents:

(a) Benzene.

(b) Ethyl benzene.

(c) Styrene.

(d) Toluene.

(e) Xylenes.

(4) The constituents listed in this rule shall be analyzed using methods that are contained in the publication entitled "Standard Methods for the Examination of Water and Wastewater, 19th edition," which is adopted by reference in R 299.4139, or by other methods approved by the director or his or her designee.

History: 1993 AACS; 1999 AACS; 2005 AACS.

R 299.4454 Type II landfill monitoring; secondary organic constituents.

Rule 454. (1) The constituents specified in this rule are considered secondary volatile organic constituents for purposes of type II landfill monitoring.

(2) All of the following are secondary organic constituents:

(a) Acetone.

(b) Acrylonitrile.
(c) Bromochloromethane.
(d) Carbon disulfide.
(e) 1,2-Dibromo-3-chloropropane; DBCP.
(f) 1,2-Dibromoethane; ethylene dibromide; EDB.
(g) Methyl ethyl ketone; 2-butanone.
(h) 4-Methyl-2-pentanone; methyl isobutyl ketone.
(i) Trans-1,4-dichloro-2-butene.
(j) 2-Hexanone; methyl butyl ketone.

(3) The constituents listed in this rule shall be analyzed using methods that are contained in the publication entitled "Standard Methods for the Examination of Water and Wastewater, 19th edition," which is adopted by reference in R 299.4139 or by other methods approved by the director or his or her designee.

History: 1993 AACS; 1999 AACS.

PART 5. SOLID WASTE TRANSFER FACILITIES AND PROCESSING PLANTS

R 299.4501 Facilities exempted from construction permit and license requirements; operating requirements for facilities exempted; facility classification; facilities licensed before effective date of act.

Rule 501. (1) Transfer facilities are not subject to the construction permit and license requirements of the act if they are in compliance with the criteria of section 11529 of the act.

(2) A solid waste transfer facility that is exempted from licensure as a transfer facility shall be operated in accordance with R 299.4507 in a manner that does not create a nuisance or public health or environmental hazard.

(3) Based on design and type of refuse received, solid waste transfer facilities are classified as follows:

(a) A type A facility is a facility that is designed and operated to receive solid waste primarily from mechanically unloaded vehicles.

(b) A type B facility is a facility that is designed and operated to receive domestic and commercial solid waste from vehicles unloaded by hand.

(4) Transfer facilities and processing plants that are licensed before the effective date of the act are not required to apply for construction permits, except for facility expansion.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4502 Existing transfer facilities and processing plants; review.

Rule 502. Engineering plans and monitoring requirements for existing transfer facilities and processing plants shall be reviewed by the solid waste control agency to assure compliance with these rules. If determined to be deficient, a transfer facility or processing plant may be issued a timetable or schedule of remedial measures that will lead to compliance within a reasonable amount of time but not more than 2 years from the determination of deficiency.

History: 1982 AACS; 1993 AACS.

R 299.4503 Advisory analysis; purpose.

Rule 503. The purpose of the advisory analysis before application is made for a construction permit is to inform the applicant of other permits which may be required for the proposed facility, such as air emissions, water discharge permits, or soil erosion and sedimentation control permits; to provide information on known conditions and other factors which may affect the proposed site; and to discuss the application and submission requirements and procedures.

History: 1982 AACS.

R 299.4504 Construction permits; requirements before issuance.

Rule 504. (1) Before being issued a construction permit, an applicant shall do all of the following:

(a) Submit a hydrogeological report and monitoring program as specified by the director and obtain approval of the report and program.

(b) Submit engineering plans that are prepared and sealed by a registered professional engineer as required by act 299 and obtain approval of the plans. The plans shall include all of the following information:

(i) The specific location of the facility as shown on a vicinity map.

(ii) The location of public roadways, habitable structures, and places of public use on the site and on other properties that are influenced by the project.

(iii) The legal description and site boundaries.

(iv) The means of limiting access, including fencing, gates, natural barriers, or other methods.

(v) Details of an approved method of collecting, storing, and removing liquid wastes that result from the operation of the facility.

(vi) Details, drawings, and specifications of all structures, equipment, and site plans.

(vii) The general layout of equipment and a flow pattern.

(viii) A detailed description and statement, in paragraph form, of the facilities and procedures that are intended to handle salvage and heavy or bulky items, store solid waste, and control dust, odors, and fire.

(ix) The location of existing and proposed utilities that are available to the site.

(x) The method of volume reduction, if used, such as compacting, grinding, compression, or tamping equipment.

(xi) Daily cleanup procedures.

(xii) The types of solid waste to be handled.

(xiii) An explanation of how the facility is consistent with the approved solid waste management plan described in part 7 of these rules.

(xiv) Other details that are required by the director.

(c) Submit an environmental assessment, including all of the following information:

(i) A description of the existing environment.

(ii) The anticipated environmental impact of proposed action.

(iii) Alternatives considered.

(iv) Mitigating measures.

(2) In addition to the requirements of subrule (1) of this rule, an applicant for a processing plant construction permit shall submit all of the following information pertaining to engineering plans:

(a) Drawings and specifications of the site plan, including all of the following:

(i) Existing and proposed drainage patterns.

(ii) Utilities.

(iii) Structures and equipment.

(iv) Streams.

(v) Contours.

(vi) Significant environmental features.

(b) The layout of equipment and the flow pattern of wastes through the processing system.

(c) A detailed statement, in paragraph form, of the equipment, facilities, and procedures to be used in processing wastes to be handled at the plant, including the methods of separation and other processing.

(d) A description of the final disposition of residues, end products, and by-products.

(e) A description of the methods for maintaining noise and vibration at levels that do not create a public nuisance or a health hazard.

(f) Provision for routine maintenance of the plant and equipment.

(3) The owner and operator of a solid waste processing plant shall obtain the necessary air use permits under part 55 of the act before construction.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4505 Special design and location requirements for transfer facilities and processing plants.

Rule 505. (1) All facility containers shall be leakproof and shall be manufactured of rat-proof material.
(2) A type A transfer facility shall consist of a building that has walls and a roof or shall be otherwise enclosed to satisfactorily control dust and papers.
(3) A solid waste transfer facility or processing plant shall not be located in a floodplain or wetland unless it meets all of the following requirements:
(a) The site does not encroach upon the floodway and will not increase upstream or downstream flood stages.
(b) The location can be substantiated through an environmental assessment which considers alternatives and which assures that all potentially negative impacts can be mitigated.
(c) The design will include a dike to preclude floodwater inundation with a top elevation that is not less than 5 feet above the 100-year floodplain.
(d) Where applicable, an applicant shall obtain a permit under parts 31 and 303 of the act.
(4) A solid waste transfer facility or processing plant that is located within 500 feet of a residence shall be obscured by a fence which is not less than 8 feet high and which is 75% screening if the residence is established before a construction permit for the facility is issued.

History: 1982 AACS; 1993 AACS; 1999 AACS.

R 299.4506 Licensing procedure; construction certification.
Rule 506. Certification that construction has followed the plans and specifications required by the construction permit shall be made by a registered professional engineer before an operating license can be issued. Certification shall be submitted by the applicant, together with the license application form, bond, and license fee, to the solid waste control agency.

History: 1982 AACS; 1993 AACS.

R 299.4507 Transfer facility operating requirements; access; container removal; overnight storage; cleaning of facility; large, heavy, and bulky items; salvaging; equipment; containers; routine maintenance; insects and rodents; dust and odor; roads; noise and vibration; burning of solid waste prohibited; accidental fires. Rule 507. (1) Access to a solid waste transfer facility shall be limited to a time when a responsible individual is on duty, unless the director waives this requirement for cause.
(2) A notice that states the hours and days designated to receive solid waste shall be conspicuously posted at the entrance to the property where the facility is located.
(3) Containers shall be removed from a facility at least once per week, or more frequently if necessary, so as not to cause a nuisance or public health hazard, unless a longer period is approved by the director.
(4) Solid waste shall not be stored overnight at the facility, except in closed containers or in approved transporting units.
(5) The solid waste transfer facility shall be cleaned at least once each week that the facility is in use, or more frequently if necessary, so as not to cause a nuisance or public health hazard.
(6) Solid waste shall be confined to the unloading, loading, and handling area.
(7) The solid waste transfer facility shall be kept clean and free of litter.
(8) A large, heavy, or bulky item that cannot be handled in the routine operation of a transfer facility shall be excluded from the facility, unless special provisions are made for handling the item.
(9) Salvaging may be permitted if salvaged material is removed from the site at the end of each business day or is confined to a storage area that is approved by the solid waste control agency.
(10) Equipment which is adequate in size and quantity and which is in an operative condition shall be available at all times. If for any reason the facility is inoperable for more than 24 hours, an alternative method that is approved by the solid waste control agency shall be used to handle solid waste.
(11) A sufficient number of containers shall be available to preclude the storage in the building of excessive solid waste awaiting transfer. The overflow of solid waste from containers is not permitted.
(12) Adequate provision shall be made for the routine operational maintenance of the facility.
(13) Necessary operations of the transfer facility shall be performed in a manner that prevents the harborage and production of insects and rodents. Effective vector control measures shall be provided by the licensee when necessary.

(14) Dust and odor that results from the unloading of solid waste and the operation of the transfer facility shall be reasonably controlled at all times.

(15) The facility shall be easily accessible under all weather conditions, and roads shall be maintained to prevent a mud and dust nuisance.

(16) The operation of the facility shall be carried out in a manner that minimizes noise and vibration nuisance to adjoining property.

(17) Solid waste shall not be burned at the transfer facility.

(18) Solid waste which is burning or which is at a temperature likely to cause fire shall not be accepted in the transfer facility. Highly flammable or explosive materials shall not be accepted.

(19) Upon the request of the solid waste control agency, a licensee shall provide evidence of arrangements for adequate fire protection.

(20) A licensee shall ensure that accidental fires are extinguished.

History: 1982 AACS; 1993 AACS.

R 299.4508 Inspection requirements.

Rule 508. The solid waste control agency shall make not less than quarterly inspections of the facility to insure continued compliance by the licensee. Following each inspection, the solid waste control agency shall submit to the licensee a written report containing any deficiencies and requirements for their correction. This rule does not preclude or exempt the issuance of a citation or notice of violation by a law enforcement officer or the director.

History: 1982 AACS.

R 299.4509 Processing plant operating requirements; plant access storage of solid waste; vector control; plant supervision; dust and odor; roadways; noise and vibration.

Rule 509. (1) Access to a solid waste processing plant shall be limited to times when a responsible individual is on duty. A notice that states the hours designated to receive solid wastes shall be conspicuously posted at the entrance to the property.

(2) The storage of solid waste at a processing plant before processing shall be limited to containers, specially designed structures, or enclosed areas as approved in the license. The type and volume of solid waste stored for processing is limited to the type and volume specified in the construction permit application.

(3) A facility that is developed at the processing plant for the storage of salvaged materials shall be designed to permit periodic cleaning and shall be operated in a manner that does not cause a nuisance or a hazard to health.

(4) Solid waste at a processing plant shall be confined to the unloading, loading, handling, and storage areas.

(5) Solid waste which is burning or which is at a temperature likely to cause fire shall not be accepted in the processing plant.

(6) Favorable conditions for the harborage and production of insects, rodents, and birds shall be prevented. When necessary, supplemental vector control measures shall be initiated immediately by the operator of the processing plant.

(7) A processing plant shall be operated under the close supervision of a responsible individual.

(8) The processing plant attendant shall maintain a daily log of the quantity, composition, and origin of solid waste that is processed. A copy of the daily log that covers the previous 3 years shall be on file and shall be available to the director and to local units of government upon request.

(9) Dust and odors that result from the unloading of solid waste and the operation of a processing plant shall be reasonably controlled at all times.

(10) Roadways on the processing plant property shall be all-weather roads and shall be maintained to prevent a dust nuisance.

(11) The operation of the plant shall be carried out in a manner that prevents noise and vibration nuisance to adjoining property.

History: 1993 AACS.

PART 6. SOLID WASTE TRANSPORTING UNITS

R 299.4601 Construction; maintenance.

Rule 601. (1) The waste-carrying portion of a solid waste transporting unit shall be designed to prevent the accidental discharge of its contents. The solid waste transporting unit shall have a suitable cover which prevents the loss of its contents and which is not easily torn, shredded, or broken under normal use.

(2) A solid waste transporting unit that fails to meet the requirements of these rules shall be repaired or its use shall be discontinued.

(3) A solid waste transporting unit shall be cleaned at intervals frequent enough to maintain the unit in a sanitary condition, as free from disagreeable odor as possible, and so as not to cause a nuisance or vermin attraction. Wastewater generated from the cleaning operation shall be considered sewage and shall be treated accordingly.

History: 1982 AACS.

R 299.4602 Operation.

Rule 602. (1) A solid waste transporting unit's openings shall be closed and doors or covers shall be secured by an adequate latch or restraining mechanism to keep them closed while transporting solid waste which may blow or fall off the vehicle. The driver shall be responsible for the proper positioning of the cover. A special covering shall be used where conditions require the control of odor, vermin, liquids, dust or smoke.

(2) A solid waste transporting unit shall be loaded in a manner that minimizes the spilling of materials.

(3) Where accidental spillage does occur from the solid waste transporting unit, the driver shall be responsible for assuring that the material is picked up as soon as possible and the area suitably cleaned.

(4) Where solid waste is purposely dumped from a solid waste transporting unit due to a hot load or fire, the fire shall be immediately extinguished by the most effective means and the area shall be properly cleaned as soon as reasonably possible.

(5) During the collection process, a solid waste transporting unit shall not be parked in a residential area longer than necessary to collect solid waste, unless it is parked more than 500 feet from adjacent residences. A solid waste transporting unit shall not be parked, stored or established at any location so as to cause a hazard to health or at any residentially zoned location so as to cause a nuisance.

History: 1982 AACS.

PART 7. SOLID WASTE MANAGEMENT PLANS

R 299.4701 Compliance with act and rules.

Rule 701. The solid waste management plans required by section 25 of the act shall comply with the act and all rules promulgated pursuant to the act. Regional and multicounty planning is encouraged. The director shall consider proposals for regional and multicounty plans if the proposals are in conformance with the act.

History: 1982 AACS.

R 299.4702 County solid waste management plan; designation of agency responsible for preparation of plan.

Rule 702. (1) The director shall, within 2 weeks after the effective date of these rules, provide a form to each county on which the county shall indicate the county's intent to prepare or upgrade an existing solid waste management plan and designate an agency responsible for the preparation of the plan. As provided in section 25 of the act, the municipalities within the county may file a notice of intent and designate the agency responsible for the preparation of the plan if the county fails to do so. In either case, the designated planning agency shall have the necessary expertise and the legal, financial, and institutional capabilities to prepare the plan. Designated planning agencies may include, but are not limited to, all of the following:

(a) Regional, county, or municipal planning commissions.

(b) Departments of public works.

(c) Road commissions.

(d) Drain commissioners.

(e) County executives.

(f) Solid waste disposal authorities.

(2) If a county files a notice of intent and the designated planning agency does not follow the work program or comply with the requirements of the act, the director shall review the reasons for nonperformance and may request that the municipalities within the county prepare a solid waste management plan.

(3) If the municipalities within a county file a notice of intent and the designated planning agency does not follow the work program or comply with the requirements of the act, the director shall review the reasons for nonperformance and may request that a regional solid waste management planning agency prepare a solid waste management plan.

(4) If a regional solid waste management planning agency files a notice of intent and does not follow the work program or comply with the requirements of the act, the director shall review the reasons for nonperformance and may prepare a solid waste management plan which shall be final.

(5) One year after the effective date of these rules, the director may, at his or her discretion, assume responsibility for the preparation of a solid waste management plan if the governmental unit that filed a notice of intent does not comply with the requirements of the act and these rules.

History: 1982 AACS.

R 299.4703 Planning committees; formation; membership; responsibilities.

Rule 703. (1) The planning committee shall be formed pursuant to section 26 of the act.

(2) Planning committee membership shall comply with all of the following requirements:

(a) The planning committee shall be formed in accordance with section 26(1) of the act considering the definitions in part 1 of these rules R 299.4103(e), R 299.4104(c), and R 299.4107(h). The 4 representatives appointed to the planning committee as representatives of the solid waste management industry shall, when possible, reside or conduct business within the county.

(b) The 2 representatives appointed to the planning committee from environmental interest groups shall be from organizations that are active within the county.

(c) The 3 general public representatives appointed to the planning committee shall reside within the county.

(d) The other 4 members of the planning committee shall be selected as specified in the act.

(e) Counties preparing a regional or multicounty solid waste management plan may jointly appoint a single planning committee.

(3) The planning committee shall do both of the following:

(a) Assist in the preparation of the plan by providing advice and consultation, which includes all of the following:

(i) Reviewing the designated planning agency's work program.

(ii) Identifying local policies and priorities.

(iii) Insuring coordination and public participation.

(iv) Advising counties or municipalities.

(v) Reviewing work elements.

(vi) Approving the plan.

(b) Assure that the designated planning agency is fulfilling all the requirements of the act and these rules as to both the content of the plan and the public participation. The committee shall notify the planning agency of any deficiencies. If the deficiencies are not worked out to the committee's satisfaction, then it shall inform the director and the governmental unit filing the notice of intent. The director or the governmental unit filing the notice of intent shall resolve any deficiencies.

History: 1982 AACS.

R 299.4704 Work program; preparation and submittal by designated planning agency; review by planning committee; copies.

Rule 704. (1) Within 90 days after the official notification of funding availability to the county for solid waste management planning, as specified in part 8 of these rules, the designated planning agency shall submit a work program as described in R 299.4705.

(2) The designated planning agency shall prepare the work program pursuant to R 299.4705 and shall submit the work program to the planning committee for review.

(3) Concurrently, the designated planning agency shall submit the work program to the regional solid waste management planning agency for its review, comments, and suggestions.

(4) The planning committee shall review the work program and negotiate any changes with the designated planning agency within 15 days of the work program submittal.

(5) Upon review of the work program by the planning committee, the designated planning agency shall submit the work program, comments from the planning committee, and the comments from the regional solid waste management planning agency to the director for review and approval. The director shall have 30 days from receipt to approve or reject the work program.

(6) The designated planning agency shall, upon request, submit copies of the work program to municipalities, appropriate organizations, and adjacent counties.

History: 1982 AACS.

R 299.4705 Work program; contents.

Rule 705. (1) The work program shall include a detailed description of tasks to be performed as needed to prepare the plan. Required plan contents are described in R 299.4711.

(2) The work program shall also include all of the following:

(a) A timetable for the accomplishment of tasks.

(b) A public participation element as described in R 299.4706, including a general schedule of public meetings, hearings, and other activities.

(c) Costs of the individual elements and the total cost of plan preparation.

(d) Detailed staffing needs and responsibilities for plan preparation.

(e) Sources of funding for the local 20% funding required by the act.

History: 1982 AACS.

R 299.4706 Public participation programs.

Rule 706. (1) The designated planning agency shall conduct a public participation program which shall encourage the participation and involvement of the public and municipalities in the development and implementation of the solid waste management plan.

(2) The designated planning agency shall maintain a mailing list of all municipalities, affected public agencies, the private sector, and all interested persons who request information regarding the plan.

(3) Time shall be reserved on the agenda at all public meetings for questions and comments from the general public.

(4) The public meetings shall be scheduled at a time convenient to the general public.

(5) The designated planning agency shall hold public meetings with the planning committee not less than quarterly each year during plan preparation.

(6) If the director prepares the plan, the extent of public participation shall be conducted pursuant to section 30(1)(e) of the act.

(7) The designated planning agency shall maintain at least 1 central repository where all documents related to the plan may be inspected by the public.

(8) Upon request, the designated planning agency shall submit specific tasks as outlined in the work program to all of the following for comment and advice:

(a) The planning committee.

(b) Municipalities.

(c) Appropriate organizations.

(d) The regional solid waste management planning agency.

(e) Adjacent counties.

(f) Certified health departments.

History: 1982 AACS.

R 299.4707 Plan adoption; update procedures.

Rule 707. (1) The designated planning agency shall follow the review procedures as established in section 27(a) to (e) of the act.

(2) The designated planning agency shall allow a period of not less than 3 months for the review and comments on the proposed plan. The exact time limit shall be specified in the work program. After the prescribed review and comment period, all of the comments from the reviewing agencies shall be submitted with the plan to the governmental unit that filed the notice of intent.

(3) The designated planning agency shall conduct a public hearing on the proposed county solid waste management plan before formal adoption by the county, the municipalities, or the state, as required in section 27(f) of the act. Before the public hearing, the planning committee shall review the plan and shall authorize its release for public hearing. After the public hearing, the designated planning agency shall prepare a transcript, a recording, or another complete record of the public hearing proceedings.The record may be copied at cost or may be inspected by the general public upon request.

(4) The designated planning agency shall revise the plan, if necessary, in response to public hearing comments and shall then submit the plan to the planning committee.

(5) After approval by the majority of the planning committee and within 30 days of closing of the public comment period, the plan shall be submitted for formal action to either the county board of commissioners or to the municipalities who voted in favor of preparing the plan.

History: 1982 AACS.

R 299.4708 Formal action.

Rule 708. (1) If the county files a notice of intent under section 25(3) of the act to prepare a solid waste management plan, then formal action has been fulfilled when the plan is approved by the planning committee and then approved by the county board of commissioners.

(2) If the municipalities within a county file a notice of intent under section 25(4) of the act to prepare a solid waste management plan, then formal action has been fulfilled when the plan is approved by the planning committee and then is approved by a majority of those municipalities who voted in favor of filing a notice of intent to prepare a solid waste management plan.

(3) If the plan is disapproved under subrule (1) or (2) of this rule, the plan shall be returned to the planning committee along with the statement of the objections to the plan. The planning committee shall have 30 days to review the objections and return the plan to the county board of commissioners or to the majority of municipalities along with its recommendations. The county board of commissioner or a majority of municipalities who voted in favor of preparing the plan shall approve the plan, either as submitted or with changes and the reasons for the changes, and then shall submit the plan to all municipalities within the county.

(4) Before the plan may be submitted to the director for his or her approval, not less than 67% of the municipalities in the county shall approve the plan.

(5) A plan that is prepared by the regional solid waste management planning agency under section 25(5) of the act shall be approved as follows:

(a) Within 30 days of closing of the public comment period, the regional solid waste planning agency shall submit the plan, together with any modifications and public comments and responses from the public hearing, to the county board of commissioners for their formal action.

(b) After the county board of commissioners has taken formal action, the plan shall be submitted to the governing bodies of all municipalities within the county for their approval.

(c) Not less than 67% of the municipalities shall approve the plan before submittal to the director for his or her approval.

History: 1982 AACS.

R 299.4709 Director's approval.

Rule 709. (1) After 67% approval, the plan shall be submitted to the director for his or her approval. The director shall have 6 months to approve or disapprove the plan.

(2) If, after the plan has been adopted by the county board of commissioners, the majority of the municipalities who voted in favor of preparing the plan or the regional solid waste management planning agency and 67% of all the municipalities in the county do not approve the plan within the required time limit, the director shall prepare a plan for the county, including the municipalities who did not approve the plan, after reviewing the materials prepared by the planning agency and after providing for a meeting with those municipalities who did not approve the plan. The plan prepared by the director shall be final.

(3) A 5-year update of the plan shall be prepared as required in section 25(2) of the act.

(4) An amendment of the plan shall follow the same procedures for review and adoption as the original plan and the updates. However, there is no required submittal date for an amendment, and the cost of the required public notice and required public hearings shall be borne by the person seeking the amendment.

History: 1982 AACS.

R 299.4710 Enforcement.

Rule 710. (1) There are 2 areas of enforcement that are affected by the county solid waste management plans. The first is the issuance of permits and licenses and second is the validity of local ordinances.

(2) Two years after the approval of rules by the legislature or upon the director's approval of a county plan, whichever occurs first, a permit or license shall not be issued for a new facility unless that facility complies and is consistent with an approved solid waste management plan. If an approved solid waste management plan exists, the director shall review the plan and shall insure that the proposed facility complies and is consistent with the plan before a permit or license is issued. In reviewing the application for a new facility, the director shall consult with the designated planning agency to insure that the proposed facility complies with the approved solid waste management plan. If a proposed facility is not consistent or not in compliance with the approved solid waste management plan, then the applicant shall initiate an amendment to the plan if the applicant wishes to obtain a construction permit or operating license. If 2 years after the effective date of these rules an approved plan does not exist, the director shall not issue a permit or license for a new facility.

(3) As stated in section 30(4) of the act, local ordinances which are not consistent with approved solid waste management plans are not enforceable.

History: 1982 AACS.

R 299.4711 Plan format and content.

Rule 711. To comply with the requirements of the act and to be eligible for 80% state funding, county solid waste management plans shall be in compliance with the following general format and shall contain the following elements:

(a) An executive summary, which shall include all of the following:

(i) An overview.

(ii) Conclusions.

(iii) Selected alternatives.

(b) An introduction as follows:

(i) The introduction shall establish the goals and objectives for the prevention of adverse effects on the public health and the environment resulting from improper solid waste collection, transportation, processing, or disposal, including the protection of ground and surface water quality, air quality, and land quality.

(ii) The introduction shall also establish the goals and objectives for the maximum utilization of Michigan's solid waste through resource recovery, including source reduction and source separation.

(c) A data base that includes all of the following:

(i) An inventory and description of all existing facilities where solid waste is being transferred, treated, processed, or disposed of, including all of the following:

(A) Physical location, size, and a delineation of private and public facilities.

(B) A description of solid waste type, volume or weight received, and current capacity.

(C) Deficiencies.

(ii) An evaluation of existing solid waste collection, management, processing, treatment, transportation, and disposal problems by type and volume, including residential and commercial solid waste, industrial sludges, pretreatment residues, municipal sewage sludge, air pollution control residue, and other solid wastes from industrial or municipal sources, but excluding hazardous wastes.

(iii) Demographics of the county:

(A) Current and projected population densities and centers for 5- and 20-year periods.

(B) Identification of current and projected centers of solid waste generation, including industrial wastes for 5- and 20-year periods.

(iv) Current and projected land development patterns and environmental conditions as related to solid waste management systems for 5- and 20-year periods.

(d) Solid waste management system alternatives shall address the problems identified in subdivision (c)(ii) of this rule and shall include both of the following:

(i) Solid waste management components, including all of the following:

(A) Resource conservation including source reduction.

(B) Resource recovery including source separation, materials, energy, and markets.

(C) Volume reduction.

(D) Sanitary landfill.

(E) Collection.

(F) Transportation.

(G) Ultimate disposal area uses, including recreational potential.

(H) Institutional arrangements.

(ii) Development of alternative systems which address all the solid waste management components. Each alternative system shall evaluate public health, economic, environmental, siting, and energy impacts. Capital, operational, and maintenance costs shall be developed for each alternative system.

(e) Plan selection shall be based on all of the following:

(i) An evaluation and ranking of proposed alternative systems, including all of the following:

(A) Technical feasibility for 5- and 20-year periods.

(B) Economic feasibility for 5- and 20-year periods.

(C) Access to land for 5- and 20-year periods.

(D) Access to transportation networks to accommodate the development and operation of solid waste transporting, processing, and disposal facilities for 5- and 20-year periods.

(E) Effects on energy for 5- and 20-year periods; production possibilities and impacts of shortages on solid waste management systems.

(F) Environmental impacts over 5- and 20-year periods.

(G) Public acceptability.

(ii) The selected alternative shall meet all of the following requirements:

(A) Include the basis for selection, a summary of evaluation, and ranking.

(B) Include advantages and disadvantages of the selected plan for all of the following factors:

(1) Public health.

(2) Economics.
(3) Environmental effects.
(4) Energy use.
(5) Siting problems.
(C) Be capable of being developed and operated in compliance with state laws and rules of the department pertaining to the protection of the public health and environment considering the available land in the planning area and the technical feasibility of, and economic costs associated with, the alternative.
(D) Include a timetable for implementing the solid waste management plan.
(E) Be consistent with and utilize population, waste generation, and other planning information prepared under the provisions of section 208 of Public Law 92-500, 33 U.S.C. 1288.
(iii) Site requirements, including the following requirements:
(A) The selected alternative shall identify specific sites for solid waste disposal areas for the 5-year period subsequent to plan approval or update.
(B) If specific sites cannot be identified for the remainder of the 20-year period, the selected alternative shall include specific criteria that guarantee the siting of necessary solid waste disposal areas for the 20-year period subsequent to plan approval.
(C) A site for a solid waste disposal area that is located in one county, but serves another county, shall be identified in both county solid waste management plans.
(f) Management component. Each solid waste management plan prepared pursuant to the act shall contain a management component which identifies management responsibilities and institutional arrangements necessary for the implementation of technical alternatives. At a minimum, this component shall contain all of the following:
(i) An identification of the existing structure of persons, municipalities, counties, and state and federal agencies responsible for solid waste management, including planning, implementation, enforcement, and an assessment of all of the following:
(A) Technical and administrative capabilities.
(B) Financial capabilities.
(C) Legal capabilities.
(ii) An identification of gaps and problem areas in the existing management system which must be addressed to permit implementation of the plan.
(iii) A recommended management system for plan implementation, which shall consist of all of the following elements:
(A) An identification of persons, municipalities, counties, and state and federal agencies assigned responsibilities under the plan, with a precise delineation of planning, implementation, and enforcement responsibilities, including legal, technical, and financial capability for all entities assigned responsibilities.
(B) A process for ensuring the ongoing involvement of and consultation with the regional solid waste management planning agency.
(C) A process for ensuring coordination with other related plans and programs within the planning area, including, but not limited to, land use plans, water quality plans, and air quality plans.
(D) An identification of necessary training and educational programs, including public education.
(E) A strategy for plan implementation, including the acceptance of responsibilities from all entities assigned a role within the management system.
(F) A financial program that identifies funding sources for entities assigned responsibilities under the plan.
(g) Documentation of public participation as follows:
(i) A record of attendance shall be maintained and included in an appendix to the plan.
(ii) Citizen concerns and questions shall be considered and responded to in the plan's appendix.

History: 1982 AACS.

R 299.4712 Municipalities; filing for a separate planning grant.

Rule 712. A municipality that files for a separate planning grant under section 34(1) of the act shall follow the same procedures and rules as a county in the preparation of a solid waste management plan, with the following exceptions:

(a) A municipality shall utilize, consult with, and receive advice from, the planning committee appointed by the county.

(b) A municipality shall consult and coordinate activities with the county designated planning agency.

(c) The county planning committee shall approve or disapprove the work program. If disapproved, the planning committee shall return the work program to the municipality with objections. The municipality shall, within 30 days, resubmit the work program with the necessary revisions.

(d) A municipality shall submit progress reports to the planning committee not less than quarterly.

History: 1982 AACS.

PART 8. GRANTS

R 299.4801 Certified health department grants; eligibility.

Rule 801. (1) Only a health department that is certified under part 2 of these rules is eligible for state grants for the operation of solid waste management programs as provided in the act.

(2) The director shall request grant funds to certified health departments for a 1-year period coinciding with the state fiscal year. Funds shall be committed to certified health departments dependent on the amount appropriated by the legislature and on the amount negotiated with each certified health department as provided in R 299.4802.

(3) All eligible health departments shall receive an equal percentage of their negotiated personnel costs up to 100%, as determined by the available appropriated funds and the total amount of negotiated personnel costs.

History: 1982 AACS.

R 299.4802 Certified health department grants; performance contracts.

Rule 802. (1) A performance contract shall be negotiated with each eligible health department. The performance contract shall determine the reasonable personnel costs necessary for the certified health department to perform a solid waste management program. The reasonable personnel costs include all direct costs attributable to performance agreed to in the contract.

(2) If the director and an eligible health department are unable to reach agreement in contract negotiations carried out pursuant to subrule (1) of this rule, either party may elect not to enter into the contract.

History: 1982 AACS.

R 299.4803 Certified health department grants; recordkeeping; payment schedule; unobligated funds.

Rule 803. (1) To substantiate appropriate expenditure of grant funds and to provide documentation of the level of work effort for future performance contract negotiations, the grantee shall keep records of receipts of grant funds and application fees, costs attributable to the operation of the solid waste management program, and expenditures of grant funds and application fee funds. Such records shall be available for inspection by state auditors during regular business hours without advance notice.

(2) Unless negotiated otherwise, payments shall be made at the end of each 3-month period of operation and upon receipt of a quarterly report of expenditures.

(3) Any unobligated grant funds shall be made available to a health department which is eligible for certification, but which has not received a funding grant.

History: 1982 AACS.

R 299.4804 Solid waste management planning grants; eligibility.

Rule 804. Only a designated planning agency that meets the requirements set forth in part 7 of these rules is eligible to receive a solid waste management planning grant.

History: 1982 AACS.

R 299.4805 Solid waste management planning grants; work program.

Rule 805. (1) For each fiscal year in which funding is available, the director shall prepare an official notice of funding availability for each county for solid waste management planning. The computation for each county shall be done according to the formula established in R 299.4806(1). The official notice shall be sent to each county.

(2) The director shall review each work program prepared pursuant to R 299.4704 and R 299.4705 and shall accept or reject it for grant consideration. A rejected work program shall be returned to the applicant with the reasons for rejection. An applicant shall have 1 month from the date of rejection to revise the work program and to submit it for reevaluation.

(3) A work program that is not submitted within the time periods allowed in R 299.4704 and R 299.4705 or that is rejected after reevaluation as provided by subrule (2) of this rule shall cause the designated planning agency to be excluded from consideration for a grant award. Funds available for preparation of the county plan shall be held for use by the agency designated pursuant to the provisions contained in R 299.4702(2) to (5).

(4) The cost of preparation of the work program is eligible for grant cost sharing if the work program is approved and if a grant is made for preparation of the solid waste management plan.

History: 1982 AACS.

R 299.4806 Solid waste management planning grants; funding formula; funding of municipalities joined together by interlocal agreement; funding of work programs; amendments to plans.

Rule 806. (1) One-half of the appropriated funds for county solid waste planning grants in any 1 state fiscal year shall be equally divided among the counties as fixed grants. One-half of the appropriated funds shall be proportionally divided among the counties as population proportioned grants based upon the most recently adopted department of management and budget population totals. Therefore, the total grant funding available for solid waste management planning in each county is determined by the following formula:

$$1/2A / 83 + 1/2A \times PC/PT$$

where: PC = Current county population.

PT = Total current state population (equal to the total of the 83 county populations).

A = Total appropriated funds.

(2) Municipalities that are joined together by interlocal agreement as provided by section 34(1) of the act shall be funded from the grant funds available to the counties in which they are located in an amount proportional to their population as compared to the total current county population.

(3) Each of the counties affected by inclusion of a municipality in the plan of an adjacent county as provided by section 28(1) of the act shall have its population adjusted to account for the gained or lost population for the purpose of calculation of the grant.

(4) A grant offer for preparation of a county solid waste management plan shall not be more than 80% of the total cost of the plan which is not covered by federal funds.

(5) A work program that is submitted to fund the initiation and completion of an original solid waste management plan required by the act shall receive funding before work programs for updating previously approved plans.

(6) An amendment to an approved solid waste management plan is not eligible for state grant funding.

(7) A work program that is partially funded may be annually updated to reflect the amount of work accomplished, changes in projected project costs for each work element, and the cost of completion of the plan, but may not be changed to revise the scope of the project. An updated work program is eligible for continued funding from each annual appropriation until the full 80% state funding has been granted.

History: 1982 AACS.

R 299.4807 Solid waste management planning grants; payment; grantee portion of total plan cost; recordkeeping; unobligated funds.

Rule 807. (1) Grant payments shall be made quarterly after the grant offer and its terms have been accepted by the grantee. The director may withhold payment if the grantee does not uphold the terms of the grant or does not meet the timetable for the accomplishment of tasks submitted under R 299.4705(2)(a).

(2) The grantee portion of the total plan development cost shall be expended concurrently with the expenditure of state grant funds. The cost of preparation of the work program, if done only with grantee funds, shall be considered an advance payment towards the grantee portion of the total plan preparation cost.

(3) The grantee shall keep records of receipt and expenditure of all funds used in the plan preparation. Such records shall clearly show that the grant is utilized solely on the plan preparation costs as detailed in the approved work program and that the grantee cost contribution is made
and utilized on the project.

(4) Accounting records that are maintained as provided in subrule (3) of this rule shall be available for inspection by the director or his or her authorized representative during regular business hours.

(5) Unobligated grant funds shall be made available to other grantees. Such redistribution shall be proportioned to maximize the output of plan preparation tasks as determined by the director.

History: 1982 AACS.

PART 9. LANDFILL CONSTRUCTION PERMITS AND OPERATING LICENSES

R 299.4901 Advisory analysis; purpose.

Rule 901. The purpose of the advisory analysis before application is made for a landfill construction permit under section 11510 of the act is to do all of the following:

(a) To inform the applicant of other permits that may be required for the proposed disposal area, such as air emission and water discharge permits or soil erosion and sedimentation control permits.

(b) To provide information on known conditions that may affect the proposed site.

(c) To discuss the application and submission requirements and procedures.

(d) To comment on any work plans that are submitted by the applicant to complete the hydrogeological study or other work that is required to complete a construction permit application.

History: 1993 AACS; 1999 AACS.

R 299.4902 Landfill construction permit applications; content.

Rule 902. (1) A construction permit application for a landfill shall include 3 copies of all of the following information:

(a) All of the following general information on a form provided by the director:

(i) The name and location of the facility.

(ii) The name and address of the operator, including the name and telephone number of a contact person for the operator.

(iii) The name and address of the property owner and any mineral rights owners, including a name and telephone number of a contact person for the property owner.

(iv) The type of disposal area and application type proposed.
(v) The type of waste proposed for disposal.
(vi) The number of acres and design capacity applied for. for horizontal and vertical expansions, the application shall also specify existing permitted acreage, design capacity, and capacity remaining.
(vii) The amount of the application fee.
(viii) The signature of the owner and proposed operator.
(b) Construction permit application fees specified by the act.
(c) An environmental assessment that contains the information specified by R 299.4903.
(d) A hydrogeological report that is in compliance with R 299.4904.
(e) A hydrogeological monitoring plan that is in compliance with R 299.4905.
(f) Topographic maps that are in compliance with R 299.4909.
(g) Engineering plans and engineering reports, as specified in R 299.4910.
(h) The operation plans specified in R 299.4911.
(i) The construction quality assurance plans specified in R 299.4916.
(2) To demonstrate consistency with the approved county solid waste management plan, an applicant for a construction permit application for a landfill shall include either of the following with the application:
(a) A letter, resolution, or other document from the body designated in the approved county solid waste management plan that indicates that the proposed disposal area is consistent with the approved county solid waste management plan.
(b) If the county determines that a disposal area is inconsistent with the approved plan, or if the planning agency refuses to provide a document in accordance with subdivision (a) of this subrule, documentation of this finding or refusal and a statement from the owner or operator that describes why he or she believes that the proposed disposal area is consistent with the county plan based on the requirements of the plan.
(3) A construction permit application for any landfill facility that has been determined, by the hydrogeological report under R 299.4904 or otherwise, to be a source or probable source of groundwater contamination shall include a remedial action plan that is in compliance with part 201 of the act and these rules.

History: 1993 AACS; 1999 AACS.

R 299.4903 Landfill environmental assessment; contents.
Rule 903. (1) An environmental assessment for a landfill shall satisfy all of the following requirements:
(a) Document consistency with the county solid waste plan.
(b) Identify necessary state and federal permits.
(c) Document compliance with the location standards specified in these rules.
(d) Demonstrate compliance with the performance standards for surface water, groundwater, and air quality specified in these rules.
(2) An environmental assessment shall contain all of the following information:
(a) A description of the proposed facility, including all of the following:
(i) The type and size of the disposal area.
(ii) The public roads to be used to access the facility.
(iii) The anticipated volume of waste to be received per day.
(iv) The anticipated counties to be served.
(v) The anticipated useful life of the facility.
(b) A description of the existing environment, including all of the following:
(i) The existing topography, land use, and residences that surround the facility, which shall be shown on maps as specified in subrule (3) of this rule.
(ii) Existing air quality, including a wind rose from the closest available station.
(iii) The hydrology, including both of the following records from the nearest available station:
(A) The magnitude of the 24-hour, 25-year storm.
(B) The average annual rainfall.
(iv) The maximum floodplain elevation of surface waters proximate to the facility.

(v) A list of any endangered or threatened species whose range lies within the property boundaries of the facility.

(vi) A list of historic or archaeological sites proximate to the property boundary, including any listed on the state or natural register of historic places.

(vii) A list of any known sites of environmental contamination, proximate to the facility, including sites that are listed under part 201 of the act.

(viii) Identification of any significant public resource within or adjacent to the proposed facility boundary.

(ix) Identification of any airports within 10,000 feet of the facility.

(c) A listing of required governmental permits and licenses that are required for the disposal area and interrelationship with other solid waste
projects.

(d) A statement of the anticipated environmental impacts of the project. The statement shall elaborate on the impact on each component of the environment that is included in the description of the existing environment.

(e) A listing of alternative actions to achieve waste disposal in the county or region, including all of the following:

(i) Alternatives considered.

(ii) Quantitative and qualitative descriptions of each alternative in terms of both positive and negative economic and environmental impacts.

(iii) The alternative of no action.

(f) A summary statement on the unavoidable adverse impacts.

(g) A statement of protective and corrective measures that will be taken to reduce and mitigate adverse impacts to acceptable levels.

(3) In addition to the information specified in subrule (1) of this rule, an environmental assessment shall include all of the following graphic displays and references:

(a) Maps that show the location of the proposed action, if applicable, with respect to communities or features that are readily identifiable as locations in the state. Maps shall be of a reasonable size, preferably 8 by 11 inches, or of a size that can easily be incorporated in a standard statement. A map or maps shall be provided that show the location of the project within the state, within the region, and within the immediate environmental setting of the project.

(b) Maps, diagrams, or photographs that illustrate the relationship of the disposal area to the environmental element or elements being impacted.

(c) References to the literature or other sources of information from which data in the environmental impact statement is taken and upon which conclusions are based.

History: 1993 AACS; 1999 AACS.

R 299.4904 Contents of a hydrogeological report.

Rule 904. (1) The purpose of a hydrogeological report for a landfill is to do all of the following:

(a) To determine existing groundwater quality, including the areal and vertical extent of any groundwater contamination.

(b) To determine background groundwater quality in the uppermost aquifer.

(c) To determine the groundwater level and to determine compliance with the groundwater isolation requirements of these rules and, if necessary, to define engineering modifications to reduce the groundwater level.

(d) To define a proposed groundwater monitoring program.

(e) To define all of the following aquifers:

(i) The uppermost aquifer and aquifers that are hydraulically interconnected to the uppermost aquifer beneath the facility property.

(ii) Any aquifer that is utilized by type I and type IIa public water supplies, as defined in R 325.10502, within 1/2 mile of the proposed active work area.

(iii) Any aquifer that is utilized by type IIb and type III public water supplies, as defined in R 325.10502, within 1,000 feet of the proposed active work area.

(f) To define the areal and vertical extent of the site earth materials under the proposed facility.

(2) Hydrogeological studies shall be prepared by, or under the direction of, a qualified groundwater scientist or geologist.

(3) A determination of hydrogeological conditions shall cover sufficient area to allow for a definition of the potential impact of the landfill on groundwater.

(4) A hydrogeological report for a landfill or other disposal area shall include all of the following:

(a) A determination of the background groundwater quality.

(b) A map of the site and surrounding area which is drawn to scale and which shows all of the following:

(i) The distance to existing wells and the properties in the surrounding area that have potential for groundwater supplies. The map shall identify all soil borings and wells at the facility and within 1/2 mile of the site, including all domestic, municipal, industrial, oil, and gas wells for which copies of logs are available in the public record.

(ii) Existing lakes or ponds.

(iii) Streams, springs, or wetlands.

(iv) The direction of surface drainage and the direction of groundwater movement in the site area.

(v) The locations of borings, observation wells, and other well data used in the report.

(vi) The topography, including predominant topographic features.

(vii) The location of any existing open dump, underground storage tank, or other known or potential source of groundwater contamination.

(c) Observation well records or soil borings to locate and identify aquifers beneath the facility property. All of the following shall be identified:

(i) Depth to the groundwater.

(ii) Aquifer thickness.

(iii) Vertical and horizontal groundwater flow directions.

(iv) Vertical and horizontal flow rates.

(d) A groundwater elevation map which is based on stabilized water level readings, which uses values contoured on an interval of not more than 1 foot, and which is referenced to United States geological survey datum. Data shall be included to determine both of the following:

(i) Groundwater flow direction and possible variations in groundwater flow direction.

(ii) Depth to the groundwater.

(e) Evaluation of site earth materials. The evaluation shall be based on soil boring logs and the results of soil sampling from the borings to define soil and groundwater conditions at the site, including bedrock characteristics, if bedrock exists, within 50 feet of the proposed base of the fill. All of the following procedures shall be utilized in collecting this data:

(i) Soil samples shall be collected by standard soil sampling techniques.Representative uncomposited soil samples shall be tested for by all of the following methods, unless other methods are approved by the director:

(A) The particle size distribution, by both sieve and hydrometer.

(B) For cohesive soils, the Atterberg limits under ASTM D4318-94, which is adopted by reference in R 299.4135.

(C) The classification under the unified soil classification system, under ASTM D2487-93, which is adopted by reference in R 299.4135.

(D) Undisturbed hydraulic conductivity under the methods approved in R 299.4920.

(ii) Boring logs shall include all of the following information:

(A) Soil and rock descriptions.

(B) Methods of sampling.

(C) Sample depth.

(D) Date of boring.

(E) Water level measurements at the time of the boring.

(F) Soil test data.

(G) Boring locations.

(iii) All soil borings that are not converted to observation wells shall be carefully backfilled with bentonite or cement grout, plugged, and recorded under part 625 of the act.

(iv) All elevations shall be referenced to United States geological survey datum.

(f) A series of geologic cross-sections or fence diagrams that pass through representative borings and illustrate all of the following:

(i) Existing topography.
(ii) Soil borings.
(iii) Soil classification.
(iv) Stratigraphy.
(v) Bedrock.
(vi) Wells.
(vii) Stabilized water level readings.
(viii) Proposed site grades.

All of the data specified in this subdivision shall be referenced to a site map that shows the locations of all wells and borings.

(g) The nature, extent, and consequence of any mounding that results from the diversion of infiltration and surface water runoff, both during the active life of the facility and during the postclosure period.

(h) A description of any proposed engineering modifications intended to modify groundwater level.

(i) A determination of the horizontal and vertical flow system, and diagrams that illustrate horizontal and vertical flow directions of groundwater.

(j) A proposed hydrogeologic monitoring plan that is in compliance with

R 299.4905.

(k) A compilation and interpretation of data, maps, and charts based on site conditions to support the conclusions and recommendations of the report.

History: 1993 AACS; 1999 AACS.

R 299.4905 Landfill hydrogeologic monitoring plan.

Rule 905. (1) A hydrogeologic monitoring plan for a landfill shall indicate how the owner and operator proposes to comply with the applicable groundwater monitoring requirements of these rules. The plan shall include monitoring of all of the following components:

(a) A proposed groundwater monitoring well system that is in compliance with the provisions of R 299.4906.

(b) A program for monitoring the leachate and the secondary collection system of a landfill, as specified in R 299.4432, if such a system is required by these rules.

(c) A program for monitoring any surface water that may receive runoff from the active work area.

(2) A hydrogeological monitoring plan shall include all of the following specific information:

(a) The locations to be sampled.

(b) A list of constituents or parameters to be sampled and the frequency of sampling.

(c) Identification of the sampling and analysis procedures to be used for each constituent or parameter proposed. Sampling and analytical procedures shall be designed to ensure monitoring results that provide an accurate representation of groundwater quality at the monitoring wells.The proposed monitoring program shall include procedures and techniques for all of the following:

(i) Sample collection.
(ii) Sample preservation and shipment.
(iii) Analytical procedures, including the method detection limit for the procedure specified.
(iv) Chain of custody control.
(v) Laboratory and field quality assurance and quality control procedures.
(vi) Procedures for preventing cross-contamination in wells during well installation, purging, and sampling.

(d) Statistical procedures for evaluating data that are in compliance with the provisions of R 299.4908.

History: 1993 AACS.

R 299.4906 Landfill groundwater monitoring; systems.

Rule 906. (1) A landfill groundwater monitoring system shall be installed and shall consist of a sufficient number of wells, installed at appropriate locations and depths, to yield groundwater samples from the uppermost aquifer that are in compliance with both of the following provisions:

(a) Represent the quality of background groundwater that has not been affected by leakage from a unit. A determination of background groundwater quality may include sampling of wells that are not hydraulically upgradient of the waste management area where either of the following conditions exist:

(i) Hydrogeologic conditions do not allow the owner or operator to determine that wells are hydraulically upgradient.

(ii) Sampling at other wells will provide an indication of background groundwater quality that is as representative or more representative than that provided by the upgradient wells. In cases where the director has approved the sampling of wells that are not upgradient to determine background groundwater quality, the owner and operator shall maintain 1 or more upgradient wells to verify that the alternate wells are as or more representative.

(b) Represent the quality of groundwater hydraulically downgradient of the solid waste boundary and ensure detection of groundwater contamination in the uppermost aquifer and other groundwater specified by the director. When physical obstacles preclude the installation of groundwater monitoring wells at the solid waste boundary, the downgradient monitoring system shall be installed at the closest practicable distance hydraulically downgradient from the solid waste boundary to ensure detection of groundwater contamination in the uppermost aquifer and other groundwater specified by the director.

(2) The director may approve a multiunit groundwater monitoring system instead of separate groundwater monitoring systems for each type II landfill unit when the facility has several discrete units, if both of the following conditions are met:

(a) Groundwater monitoring wells are not more than 150 meters from the solid waste boundary of each unit and are located on land that is owned by the owner of the unit.

(b) The multiunit groundwater monitoring system is in compliance with the requirements of subrule (1) of this rule and will be as protective of human health and the environment as individual monitoring systems for each unit, based on the following factors:

(i) The number, spacing, and orientation of the units.

(ii) The hydrogeologic setting.

(iii) The site history.

(iv) The engineering design of the units.

(v) The type of waste accepted at the units.

(3) Monitoring wells shall be cased in a manner that maintains the integrity of the monitoring well bore hole. The casing shall be screened or perforated and packed with gravel or sand, where necessary, to enable the collecting of groundwater samples. The annular space between the bore hole and well casing above the sampling depth shall be sealed to prevent the contamination of samples and the groundwater.

(4) The owner and operator shall notify the director that documentation of the design, installation, development, and decommission of any monitoring wells, piezometers, and other measurement, sampling, and analytical devices has been placed in the operating record.

(5) All monitoring wells, piezometers, and other measurement, sampling, and analytical devices shall be designed, operated, and maintained so that they perform to design specifications throughout the life of the monitoring program.

(6) All monitoring wells shall be designed to minimize the time that is necessary to recharge the well, given the hydraulic conductivity of the aquifer.

(7) The number, spacing, and depths of monitoring systems shall be in compliance with all of the following provisions:

(a) Be based upon site-specific technical information, including a thorough characterization of both of the following:

(i) The uppermost aquifer, including all of the following information:

(A) Aquifer thickness.

(B) Groundwater flow rate.

(C) Groundwater flow direction, including seasonal and temporal fluctuations in groundwater flow.

(ii) Saturated and unsaturated geologic units and fill materials that overlie the uppermost aquifer, materials that comprise the uppermost aquifer,
and materials that comprise the confining unit defining the lower boundary of the uppermost aquifer, including all of the following information:

(A) Thicknesses.

(B) Stratigraphy.

(C) Lithology.
(D) Hydraulic conductivities.
(E) Porosities.
(F) Effective porosities.
(b) Be certified by a geologist.
(c) Be approved by the director. Within 14 days of the approval, the owner or operator shall notify the director that the certification and approval have been placed in the operating record.
(8) All wells shall be clearly labeled and shall be properly vented, capped, and locked when not in use. All wells shall be visible throughout the year.
(9) The owner or operator shall not undertake well replacement, plugging, abandonment, or repair without the approval of the director or his or her designee.

History: 1993 AACS; 1999 AACS.

R 299.4907 Landfill groundwater monitoring; sampling and analysis requirements.
Rule 907. (1) The groundwater-monitoring program for a landfill shall include consistent sampling and analysis procedures that are designed to ensure monitoring results that provide an accurate representation of groundwater quality at the background and downgradient wells that are installed in compliance with R 299.4906. The owner or operator shall notify the director that the sampling and analysis program documentation has been placed in the operating record and that the program shall include procedures and techniques for all of the following:
(a) Sample collection.
(b) Sample preservation and shipment.
(c) Analytical procedures.
(d) Chain of custody control.
(e) Quality assurance and quality control.
(2) The groundwater-monitoring program shall include sampling and analytical methods that are appropriate for groundwater sampling and that accurately measure hazardous constituents and other monitoring parameters in groundwater samples. Groundwater samples for metals shall be field-filtered before laboratory analysis, unless filtered samples alone will not accurately measure the concentration of metals in the given geologic setting, such as in permeable soils and karst terrains.
(3) The sampling procedures and frequency shall be protective of human health and the environment.
(4) Analytical methods that are used for groundwater monitoring samples shall be those specified in R 299.4450 to R 299.4454 and shall achieve practical quantitation limits approved by the director.
(5) Groundwater elevations shall be measured in each well immediately before purging each time groundwater is sampled. The owner or operator shall determine the rate and direction of groundwater flow each time groundwater is sampled. Groundwater elevations in wells that monitor the same disposal area shall be measured within a period of time that is short enough to avoid temporal variations in groundwater flow which could preclude an accurate determination of groundwater flow rate and direction.
(6) Groundwater elevations shall be determined by methods that are precise to 1/8 of an inch or 0.01 feet, as measured from the top of the well casing.The top of the well casing shall be related to a permanent reference point using United States geological survey datum.
(7) The owner and operator shall establish background groundwater quality in a hydraulically upgradient or background well or wells for each of the monitoring parameters or constituents that are required in the particular groundwater-monitoring program which applies to the unit, as determined under this part. Background groundwater quality may be established at wells that are not located hydraulically upgradient from the unit if the well meets the requirements of R 299.4906(1)(a).
(8) The number of samples that are collected to establish groundwater quality data shall be consistent with the appropriate statistical procedures that are determined under R 299.4908. For type II landfills, the sampling procedures shall be those specified in R 299.4440 for detection monitoring, R 299.4441 for assessment monitoring, and R 299.4444 for remedial action.
(9) All samples that are obtained shall be representative of the site's groundwater quality. To ensure a representative sample, before a sample for collection and analysis is obtained, each well shall be purged

until dry or until not less than 3 times the amount of water in the well casing has been removed. Groundwater monitoring wells shall be sampled immediately after purging where recovery rates allow. Where detection monitoring wells are pumped dry during purging, samples shall be taken within 24 hours.

(10) If nondedicated pumps or mobile sampling equipment is used, the owner or operator shall use the following procedures to minimize the potential for the cross-contamination of samples:

(a) All groundwater-monitoring wells shall be sampled from upgradient to downgradient, except that monitoring wells that are located in areas of known groundwater contamination shall be sampled in order, from the least contaminated well to the most contaminated well.

(b) Each piece of equipment shall be thoroughly cleaned and rinsed with distilled water before use in each monitoring or detection well.

(c) Other procedures that are approved by the department.

(11) The owner and operator of a landfill shall submit all monitoring results to the director or his or her designee not later than 30 days after the end of the calendar quarter. The data must be submitted in a form and format specified by the department.

(12) The owner and operator of a landfill shall sample and analyze groundwater in accordance with the publication entitled "Test Methods for Evaluating Solid Waste, Physical-Chemical Methods," EPA publication SW-846, 3rd edition, which is adopted by reference in R 299.4133, the publication entitled "Standard Methods for the Examination of Water and Wastewater, 19th edition," which is adopted by reference in R 299.4139, or by other methods approved by the director or his or her designee.

History: 1993 AACS; 1999 AACS; 2005 AACS.

R 299.4908 Landfill groundwater monitoring; statistical procedures.

Rule 908. (1) The owner and operator of a landfill shall evaluate groundwater-monitoring data for each hazardous constituent, except pH and conductivity, using 1 of the following statistical tests:

(a) A parametric analysis of variance (ANOVA) followed by multiple comparisons procedures to identify statistically significant evidence of contamination. The method shall include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent.

(b) An analysis of variance (ANOVA) based on ranks followed by multiple comparisons procedures to identify statistically significant evidence of contamination. The method shall include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent.

(c) A tolerance or prediction interval procedure in which an interval for each constituent is established from the distribution of the background data and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit.

(d) A control chart approach that gives control limits for each constituent.

(e) Another statistical test method that is in compliance with the performance standards of subrule (2) of this rule. The owner or operator shall place a justification for this alternative in the operating record and notify the director of the use of this alternative test. The justification shall demonstrate that the alternative method is in compliance with the performance standards of subrule (2) of this rule.

(2) Any statistical method chosen under subrule (1) of this rule shall be in compliance with all of the following performance standards:

(a) The statistical method used to evaluate groundwater-monitoring data shall be appropriate for the distribution of chemical parameters or hazardous constituents. If the distribution of the chemical parameters or hazardous constituents is shown by the 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 constituents differ, more than 1 statistical method may be needed.

(b) If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentrations or a groundwater protection standard, the test shall be done at a type I error level of not less than 0.01 for each testing period. If a multiple comparisons procedure is used, the type I experiment wise error rate for each testing period shall be not less than 0.05; however, the type I error of not less than 0.01 for individual well comparisons shall

be maintained. This performance standard does not apply to tolerance intervals, prediction intervals, or control charts.

(c) If a control chart approach is used to evaluate groundwater-monitoring data, the specific type of control chart and its associated parameter values shall be protective of human health and the environment. The parameters shall be determined after considering the number of samples in the background database, the data distribution, and the range of the concentration values for each constituent of concern.

(d) If a tolerance interval or a predictional interval is used to evaluate groundwater monitoring data, then the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain shall be protective of human health and the environment. These parameters shall be determined after considering the number of samples in the background database, the data distribution, and the range of the concentration values for each constituent of concern.

(e) The statistical method shall account for data below the limit of detection with 1 or more statistical procedures that are protective of human health and the environment. Any practical quantitation limit (PQL) that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility.

(f) If necessary, the statistical method shall include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

(3) The statistical test chosen shall be specified in the operating record and shall be conducted separately for each hazardous constituent at each well.

(4) The owner or operator shall determine whether or not there is a statistically significant increase over background values for each parameter or constituent required in the particular groundwater-monitoring program that applies to the unit.

(5) In determining whether a statistically significant increase has occurred, the owner or operator shall compare the groundwater quality of each parameter or constituent at each monitoring well that is designated under R 299.4906 to the background value of that constituent, according to the statistical procedures and performance standards specified in this rule.

(6) The owner or operator shall complete the statistical analysis at each monitoring well and submit the results within 30 days of the end of the calendar quarter in which sampling and analysis was conducted.

(7) Nothing in this rule prohibits the department from evaluating monitoring data using statistical procedures it deems appropriate at a given location.

(8) Verification sampling for any exceedance of the statistical limit must be completed within 90 days of the original sampling date.

History: 1993 AACS; 1999 AACS; 2005 AACS.

R 299.4909 Landfill engineering plans; topographic maps.

Rule 909. (1) Engineering plans for a landfill shall include topographic maps that are referenced to United States geological survey datum at a scale of not more than 200 feet to the inch with contour intervals that clearly show the character of the land and land use within 1,500 feet of the solid waste disposal unit or units.

(2) Topographic maps that are required by this rule shall include all of the following:

(a) A legal description of the property included in the application.

(b) Proposed solid waste disposal units.

(c) Structures on the site.

(d) Existing and known proposed utilities.

(e) Borrow areas.

(f) Surface waters, wetlands, or floodplains.

(g) Special drainage devices, if necessary.

(h) On-site roads.

(i) Public access roads.

(j) Fencing and other means of controlling access, such as gates and natural barriers.

(k) The location of all residences.

History: 1993 AACS; 1999 AACS.

R 299.4910 Landfill engineering plans; design plans and engineering reports.

Rule 910. (1) Engineering plans for a landfill shall include detailed engineering plans of the proposed design and an engineering report that details all of the following for each disposal unit:

(a) Soils underlying each liner system, as specified in subrule (2) of this rule.

(b) Compacted soil liners or natural soil that is used in place of a compacted liner, as specified in subrule (3) of this rule.

(c) Bentonite geocomposite or flexible membrane liners, as specified in subrule (4) of this rule.

(d) Primary leachate collection and removal systems, as specified in subrule (5) of this rule.

(e) Secondary leachate collection systems, as specified in subrule (6) of this rule.

(f) Dewatering systems, as specified in subrule (7) of this rule.

(g) Other control systems, as specified in subrule (8) of this rule.

(h) The final cover, as specified in a closure plan that is in compliance with R 299.4446.

(i) Postclosure maintenance and monitoring, as specified in a plan that is in compliance with R 299.4447.

(2) An engineering report on the characteristics of soils underlying any liner shall include all of the following information:

(a) A settlement analysis that estimates total and differential settlement, including immediate settlement, primary consolidation, and secondary consolidation based on maximum loading.

(b) A slope stability analysis.

(c) A performance analysis under varying groundwater conditions.

(d) Calculations that show the potential for bottom heave or blowout.

(3) An engineering report on the soils that are likely to be used for any compacted or natural soil liner shall include all of the following information:

(a) The location and thickness of soils to be used for the compacted or natural soil liner.

(b) Copies of well or boring logs that document the soil deposit.

(c) Data documenting that the soil source is in compliance with the soil classifications specified in R 299.4913.

(d) For compacted soil liners, calculations which show that the volume of the source is sufficient for liner construction.

(4) An engineering report on any bentonite geocomposite or flexible membrane liner to be used shall include all of the following information:

(a) The methods of storage, handling, and installation, including any written instructions from the manufacturer, and procedures for complying with the quality control requirements of R 299.4914 and R 299.4915.

(b) The physical specifications of the liner material.

(c) The ability of liner material and scrim material, where applicable, to maintain physical properties under varying conditions of temperature, pH, ultraviolet radiation, biological attack, and prolonged leachate contact throughout the operating and postclosure life of the landfill.

(5) The engineering plans for a landfill shall contain an engineering report on the design of the leachate collection and removal system. The report shall include all of the following information:

(a) Specifications for the material to be used for the leachate collection system.

(b) The design of the collection pipe, including all of the following information:

(i) Diameter.

(ii) Perforations.

(iii) Slope.

(iv) Spacing.

(v) Leachate compatibility.

(vi) Structural integrity under static and dynamic loadings.

(c) Design features that allow cleaning of drainage pipes within the system.

(d) Procedures to prevent clogging during construction and operation.

(e) Calculations to show that the leachate head will be 1 foot or less above the liner at any point in the system, except the sump.

(f) Provisions to remove obstructions from the system.

(g) Calculations to determine the anticipated volume of leachate to be generated.

(h) Information on the proposed method of disposal for the leachate collected.

(6) An engineering report on a secondary collection or leak detection system shall include the information specified in both of the following provisions:

(a) The information required under subrule (5) of this rule.

(b) The method of detecting, removing, and analyzing any leaks that are detected in the system.

(7) The engineering plans for a landfill shall contain an engineering report for any dewatering systems to be used. The report shall include all of the following information:

(a) Design calculations for the drain pipe diameter, slope, and spacing.

(b) Design features that allow cleaning.

(c) Procedures to prevent clogging during construction and operation.

(d) An evaluation of the structural suitability of underdrain pipe under both static and dynamic loadings.

(8) The engineering plans shall contain information on systems to control all of the following:

(a) Run-on.

(b) Runoff.

(c) Wind dispersal of particulate matter, where applicable.

(d) Gas that is generated within the landfill.

(9) Engineering plans for a landfill shall be prepared and sealed by a professional engineer registered in the State of Michigan.

History: 1993 AACS; 1999 AACS.

R 299.4911 Landfill engineering plans; operation plans and engineering reports.

Rule 911. (1) Engineering plans for a landfill shall include all of the following plans that describe how the facility is to be operated:

(a) A proposed fill progression plan that estimates, for information purposes, fill progression over the active life of the landfill, including the final slopes and elevations of the landfill. The plan shall include the location and description of the permanent survey benchmark to be used for elevation control. An owner or operator who wishes to modify a fill progression plan during the operating life of the landfill shall submit the alternate plan to the department for a consistency review with these rules, such as to ensure that the approved hydrogeologic monitoring plan provides for monitoring the areas intended for construction.

(b) A landscape plan to identify and locate existing vegetation to be retained and proposed vegetation to be used for cover, screening, and other purposes.

(c) Engineering plans that detail leachate collection and removal facilities. If applicable, these plans shall also show any systems to be used for leachate recirculation.

(d) An engineering plan that shows gas management systems, if applicable.

(2) Engineering plans for a landfill shall include engineering reports that describe all of the following:

(a) All equipment to be used at the landfill for construction and operation.

(b) The landfill's personnel requirements, including the duties, training, and authority of the responsible individual who is to direct landfill operations.

(c) Access controls to be used, including all of the following:

(i) Signs.

(ii) Hours of operation.

(iii) Usage rules.

(iv) Natural and artificial barriers.

(v) Traffic control. The description shall include a description of any convenience station at the landfill for smaller vehicles to unload refuse at an area other than the working face.

(d) The methods to be used to control dust and blowing papers from the active fill area.

(e) The methods for the disposal of large or bulky items.

(f) The on-site road design and method of controlling fugitive dust.

(g) The methods to control salvaging, if allowed.

(h) The storage locations of, and the design for, white goods and other recyclable materials.

(i) The procedures for separating recyclable materials from general refuse, if applicable.

(j) The type of daily cover to be used and the source, quantity, and method of placement of the cover.

(k) The process for receiving and unloading solid waste. This description shall include procedures for inspecting loads for hazardous waste.

(l) The procedures for the receipt and disposal of asbestos waste.

History: 1993 AACS; 1999 AACS.

R 299.4912 Landfill construction; natural soil barrier verification.

Rule 912. (1) A natural soil barrier at a landfill that is used to comply with these rules shall be verified in accordance with this rule. Information collected under this rule shall be submitted to the solid waste control agency with either the hydrogeological report or, for existing disposal areas, the construction certification that is submitted under R 299.4921.

(2) An owner or operator shall verify that any natural soil barrier extends to the surface. Natural soil sites where the soil barrier does not extend to the surface shall include compacted side cutoff walls or an equivalent barrier to impede the lateral infiltration of water into the fill and to impede lateral flow of leachate out of the fill interior. The wall or other barrier shall be equivalent in width and permeability as that of the soil barrier required by these rules. Hydraulic head buildup outside the wall shall be limited to the extent necessary to prevent unstable conditions within the wall or liner. The hydraulic head shall be controlled by gravity or, as an alternative, the hydraulic head of groundwater that does not constitute an aquifer may be limited by pumping if the system is part of a sewerage system permitted by the director, or his or her designee, under part 41 of the act.

(3) To use a natural soil barrier, the owner and operator shall demonstrate that the natural soil barrier does both of the following:

(a) Is in compliance with the thickness and hydraulic conductivity requirements of these rules. To demonstrate this, the owner and operator shall obtain soil borings on the grid spacing specified in subrule (4) of this rule and determine all of the following at various depths:

(i) The particle size distribution, by sieve and hydrometer.

(ii) The Atterberg limits, according to ASTM D4318-95a, which is adopted by reference in R 299.4135.

(iii) The classification pursuant to the unified soil classification system, ASTM D2487-93, which is adopted by reference in R 299.4135.

(iv) The hydraulic conductivity of an undisturbed sample by a method specified in R 299.4920.

(b) Provides an adequate subbase for the overlying leachate collection and removal systems by evaluating the subgrade conditions for stability and correcting unstable areas.

(4) An owner and operator shall obtain soil borings on a grid spacing approved by the director based on either of the following:

(a) The homogeneity of soils at the site, as determined by a hydrogeologic report.

(b) Geophysical methods that are proposed under subrule (5) of this rule.

(5) An applicant may utilize geophysical methods to replace or supplement borings specified in subrule (4) of this rule if a plan for such a survey is approved by the director or his or her designee.

History: 1993 AACS; 1999 AACS.

R 299.4913 Landfill construction; compacted soil liners and final covers.

Rule 913. (1) A compacted soil liner shall be constructed to have a saturated, vertically oriented hydraulic conductivity of not more than 1.0 x 10-7 centimeters per second after compaction.

(2) To meet the hydraulic conductivity standard specified in subrule (1) of this rule, the owner and operator shall assure that the soil source is in compliance with both of the following requirements:

(a) Has a classification of SC, CH, CL, CL/ML or ML as determined by the unified soil classification system, ASTM standard D2487-93, unless another classification has been approved as part of a modified soil approved by the director under subrule (3) of this rule.

(b) Has a laboratory hydraulic conductivity that is equal to or less than 1.0 x 10-7 centimeters per second within the density and moisture content range specified for construction as determined by a laboratory study of the relationship between moisture, density, and the hydraulic conductivity of the soil.

(3) The owner and operator of a landfill may use a soil type other than that specified in subrule (2)(a) of this rule if the soil type is used as a component in a modified soil that is prepared in accordance with a

plan approved by the director. The director shall approve a plan for a modified soil if the applicant demonstrates, by laboratory methods or a test pad, all of the following:

(a) The modified soil can be compacted to achieve the hydraulic conductivity specified in subrule (2)(b) of this rule.

(b) Engineering properties of the modified soil are equivalent to those soil types approved in subrule (2) of this rule.

(c) The modified soil will be mixed in a manner that assures consistent properties.

(4) The owner and operator of a landfill shall construct a compacted soil liner and final cover in a manner that satisfies all of the following requirements for each lift being compacted:

(a) The lift thickness is generally not more than 6 inches after compaction.

(b) Each lift is thoroughly and uniformly compacted to that density, and at that moisture content, determined necessary to achieve the required hydraulic conductivity. However, soil shall not be compacted at moisture contents that are less than optimum and shall not be compacted to less than 1 of the following:

(i) 90% of the maximum dry density, as determined by the modified proctor test, ASTM D1557-91.

(ii) 95% of the maximum dry density, as determined by the standard proctor test, ASTM D698-91.

(c) Each lift is integrated into the previous lift by techniques such as scarifying each lift and by using compaction equipment that is capable of penetrating the thickness of each compacted lift, except that such a compactor shall not be used in the first 2 lifts immediately above the synthetic liner, secondary collection system, or other sensitive liner system component.

(d) The liner is constructed so that the bottom liner and sidewall liner or dike will be continuous and completely keyed together at all construction joints.

(5) The owner and operator of a landfill shall protect a compacted soil liner and final cover from detrimental climatic effects during construction by doing all of the following to the extent necessary to maintain compliance with these rules:

(a) Removing all ice and snow during winter construction before placing a lift and not using frozen soil in any part of a liner.

(b) Before the liner is covered by a flexible membrane liner or leachate collection system, recompacting any soil lift that has had its integrity adversely affected by weather.

(c) Ensuring that soil liners and final covers are not subject to significant desiccation cracking by doing 1 of the following:

(i) Sprinkling the liner with water, as necessary.

(ii) Covering or tarping the soil.

(iii) Taking other preventative measures.

(d) If significant desiccation has occurred, by removing or repairing any soil that has experienced desiccation cracking, as necessary, before compacting the next lift or installing the next liner system component.

(6) The owner or operator of a landfill may modify the construction requirements of this rule if he or she demonstrates, to the director or his or her designee, using either of the following methods, that alternate construction techniques will achieve the desired liner permeability:

(a) A laboratory method that is approved by the director.

(b) A test pad that is in compliance with subrule (7) of this rule.

(7) A test pad demonstration shall be in compliance with all of the following provisions:

(a) Replicate the proposed liner by having all of the following dimensions:

(i) A width that is not less than twice that of the proposed roller.

(ii) A length that is not less than twice the width.

(iii) A thickness that is not less than 2 feet.

(b) Use the same materials and construction practices as those proposed for the landfill liner.

(c) Determine the hydraulic conductivity of the test pad using insitu, nondestructive testing.

(8) The owner or operator may propose alternate specifications for hydraulic conductivity and compaction in the sidewalls of the top composite liner of a landfill unit that has 2 composite liners and a secondary collection system. The director shall approve alternate specifications if the specifications are sufficient to maintain allowable flow rates in the secondary collection system.

(9) ASTM test methods D2487-93, D1557-91, and D698-91 are adopted by reference in R 299.4135.

History: 1993 AACS; 1999 AACS.

R 299.4914 Landfill construction; bentonite geocomposite liners.

Rule 914. (1) A bentonite geocomposite liner may be used in place of a compacted clay liner if the combination of its thickness and hydraulic conductivity results in liquid migration through the liner that does not exceed the rate of liquid migration through 2 feet of clay that has a saturated vertical hydraulic conductivity equal to 1.0 x 10-7 centimeters per second.

(2) A bentonite geocomposite liner shall consist of sodium bentonite that is contained on each side by a fabric, geotextile, or flexible membrane liner.

(3) A bentonite geocomposite liner shall be seamed in accordance with the manufacturer's specifications so as to prevent leakage at the seams.

(4) A bentonite geocomposite liner shall not be laid during precipitation events and shall be covered immediately by a flexible membrane liner or other protective cover.

(5) A bentonite geocomposite liner shall be installed in accordance with the manufacturer's specifications and quality assurance quality control plans that are approved by the director.

History: 1993 AACS.

R 299.4915 Landfill construction; flexible membrane liners.

Rule 915. (1) A flexible membrane liner that is required by these rules shall be in compliance with all of the following requirements:

(a) Be of sufficient tensile strength to withstand anticipated stresses without failure.

(b) Be chemically resistant to anticipated wastes and waste leachate based on EPA method 9090. EPA method 9090 is part of the publication entitled "Test Methods for the Evaluation of Solid Waste," EPA publication SW-846, 3rd edition, which is adopted by reference in R 299.4133.

(c) Be sufficiently durable so that the properties of the liner are not significantly impaired by any of the following during the active life of the landfill and the postclosure period:

(i) Exposure to sunlight, precipitation, or anticipated temperature variations.

(ii) Abrasion, shocks, or other mechanical actions.

(iii) Irreversible shrinkage of the liner.

(d) Be of sufficient elasticity to withstand anticipated deformations.

(e) Have a friction angle that is capable of supporting overburden material without slippage on sideslopes, given the angle and length of such slopes.

(f) Be capable of being seamed so that the seam meets the manufacturer’s specifications or other specifications approved by the director.

(2) A landfill shall be designed to avoid penetration of any flexible membrane liner by pipes, sumps, or supports. Where penetrations are proposed, the owner and operator shall demonstrate that subgrade settlement will not cause a liner to fail.

(3) The owner and operator of a landfill shall develop specifications for the design and installation of a flexible membrane liner that are sufficient to meet the requirements of these rules. If applicable to a proposed liner material, the specifications shall meet or exceed the following specifications:

(a) The national sanitation foundation document NSF 54-1993. NSF 54- 1993 is adopted by reference in R 299.4137.

(b) For PVC, the PVC geomembrane institute specification PGI 1197. PGI 1197 is adopted by reference in R 299.4137.

(c) Other specifications approved by the director.

(4) The foundation for a flexible membrane liner shall be prepared by doing all of the following:

(a) By compacting the soil surface to the extent necessary to provide a stable base or else determining that the soils are naturally consolidated to provide a stable base without compaction.

(b) Grading the foundation to a smooth and true line and grade and not deviating more than 0.2 feet from that shown on approved plans.

(c) Removing stones, organic material, roots, or other material that may puncture the liner.

(5) Before installation, flexible membrane liner material shall be stored in a secure area and protected from adverse weather.

(6) Flexible membrane liner shall be deployed to minimize handling.Stress conditions shall be prevented by allowing slack for shrinkage.

(7) The owner and operator of a landfill shall assure that field seams of a flexible membrane liner are made in a manner that ensures all of the following:

(a) That field seams on side slopes are generally installed parallel to the line of maximum slope, when possible.

(b) That the seam area is properly prepared for seaming and is free of moisture, dust, dirt, debris, and foreign material of any kind before seaming.

(c) That field seaming is not done in adverse weather conditions that could impair the quality of the liner, unless protective structures or other methods are used to maintain seam integrity during construction.

(8) The owner and operator of a landfill shall assure that a flexible membrane liner is otherwise installed to assure all of the following:

(a) That any imperfections that are found in a liner or seam are repaired.

(b) That the anchor trench for the liner is excavated to the depth and width shown on approved plans and that the liner is sufficiently anchored within the trench.

(c) That the liner is covered with soil or other material specified in approved plans within 30 days after placement in a manner that protects the liner from degradation, unless the owner and operator demonstrate that the liner material is not subject to degradation by ultraviolet light or other weather conditions.

History: 1993 AACS; 1999 AACS.

R 299.4916 Landfill construction; construction quality assurance program and construction certifications.

Rule 916. (1) A construction quality assurance (CQA) program is required for all new landfill units and lateral extensions of existing units and for the final cover of existing units. The program shall verify that the constructed unit is in compliance with all design criteria and specifications in the construction permit or approved plans. The program shall be developed and implemented under the direction of a CQA officer who is a registered professional engineer.

(2) The CQA program shall address all the following physical components, where applicable:

(a) Foundations.

(b) Dikes.

(c) Low-permeability soil liners.

(d) Flexible membrane liners.

(e) Leachate collection and removal systems and secondary collection systems.

(f) Final cover systems.

(3) Before construction begins on a unit that is subject to the CQA program under subrule (1) of this rule, the owner or operator shall develop a written CQA plan. The plan shall identify steps that will be used to monitor and document the quality of materials and the condition and manner of their installation. The CQA plan shall include all of the following:

(a) Identification of applicable units and a description of how they will be constructed.

(b) Identification of key personnel in the development and implementation of the CQA plan and CQA officer qualifications.

(c) A description of inspection and sampling activities for all unit components that are identified in subrule (2) of this rule, including the observations and tests that will be used before, during, and after construction to ensure that the construction materials and the installed unit components are in compliance with the design specifications. The description shall cover all of the following:

(i) Sampling size and locations.

(ii) Frequency of testing data evaluation procedures.

(iii) Acceptance and rejection.

(iv) Criteria for construction materials.

(v) Plans for implementing corrective measures.

(4) The CQA program shall include observations, inspections, tests, and measurements that are sufficient to ensure all of the following:

(a) The structural stability and integrity of all components of the unit that are identified in subrule (2) of this rule.

(b) Proper construction of all components of the liners, leachate collection and removal system, leak detection system, and final cover system according to permit specifications and good engineering practices and proper installation of all components according to design specifications.

(c) Conformity of all materials used with design and other material specifications under this part.

History: 1993 AACS; 1999 AACS.

R 299.4917 Landfill construction; compacted soil liner and final cover construction records.

Rule 917. (1) A registered professional engineer or other qualified individual shall document the proper construction of all compacted soil liners and final covers in accordance with this rule. Construction records for compacted soil liners and final cover shall include information on all of the following:

(a) The excavation and subgrade, as specified in subrule (2) of this rule.

(b) Each borrow source for liner material or final cover, as specified in subrule (3) of this rule.

(c) Liner compaction, as specified in subrule (4) of this rule.

(d) The hydraulic conductivity of the constructed liner, as specified in subrule (5) of this rule.

(e) Measurements of the final liner slope and thickness.

(f) Test pad data, if any.

(2) The following information on the subgrade shall be documented for any compacted soil liner:

(a) Measurements of the slope and the depth of excavation.

(b) Measurements and observations to ensure that the subgrade surface meets specification.

(3) All of the following information shall be documented for each borrow source:

(a) The location.

(b) A description of the soil.

(c) The relationship between hydraulic conductivity, moisture, and density, as established with laboratory test data as part of an initial design report on the borrow source. The relationship shall be established using either the modified proctor test, ASTM D1557-91, or the standard proctor test, ASTM D698-91.The relationship shall be redetermined if the nature of the source changes so that the required hydraulic conductivity will not be achieved.

(d) Verification that the borrow source is in compliance with the requirements of these rules by testing both of the following every 5,000 cubic yards or when the soil texture changes:

(i) The unified soil classification, ASTM standard D2487-93.

(ii) The moisture-density relationship, by modified proctor, ASTM standard D1557-91, or standard proctor, ASTM standard D698-91, depending on the test used in subdivision (c) of this subrule.

(e) Observation of roots, rocks, rubbish, or off-specification soil that is removed from the source material.

(f) The volume of soil that is placed and compacted from each source.

(4) All of the following information shall be documented with respect to soil compaction:

(a) The type and weight of compaction equipment.

(b) The method of surface preparation.

(c) The method of adjusting soil moisture, if any.

(d) The method of controlling desiccation, if any.

(e) The thickness of each lift, after compaction.

(f) General observations of the number of passes and uniformity of compaction coverage.

(g) Observation of the reduction in clod size.

(h) Documentation of liner repair, including the removal and replacement of frozen or desiccated soil.

(5) All of the following in-place tests shall be obtained for each lift of soil after compaction, with the location of soil samples taken on a grid that is rotated with each lift to maximize coverage, and shall be documented with the construction records:

(a) Soil density and moisture content, by nuclear methods, ASTM standard D2922-96, or other methods approved by the director, with 1 test per acre and a minimum of 3 tests per day of construction or lift of soil.

(b) The undisturbed hydraulic conductivity of the soil liner, with 1 test for every 10,000 cubic yards placed, using a method specified in R 299.4920.Each landfill unit or portion thereof that is constructed at a given time shall have a minimum of 3 tests.

(6) The director shall decrease the frequency of testing that is required by this rule upon a demonstration by the owner or operator that the quality and consistency of the borrow source and construction techniques will assure compliance with the specifications of these rules.

(7) ASTM procedures D422-63(90), D1557-91, D2922-96, and D2487-93 are adopted by reference in R 299.4135.

History: 1993 AACS; 1999 AACS.

R 299.4918 Landfill construction; flexible membrane liner construction records.

Rule 918. (1) A registered professional engineer or other qualified individual shall assure that the proper construction of all flexible membrane liners is documented in accordance with this rule. Construction records for flexible membrane liners shall include all of the following information:

(a) Information on liner panels that are shipped to the site, as specified in subrule (2) of this rule.

(b) Tests on raw materials that are used to manufacture the liner panels, as specified in subrule (3) of this rule.

(c) Tests on factory-fabricated panels and seams, as specified in subrule (4) of this rule.

(d) Documentation on the subgrade for the liner, as specified in subrule (5) of this rule.

(e) Documentation on field installation, as specified in subrule (6) of this rule.

(f) Tests on field seams, as specified in subrule (7) of this rule.

(g) Diagrams that show the location of all destructive tests, deviations from specification, and repairs made.

(2) All of the following information shall be recorded for all liner material that is shipped to the site:

(a) The name of the manufacturer and fabricator.

(b) The name and type of liner.

(c) The thickness of liner.

(d) The batch code.

(e) The date of fabrication.

(f) The physical dimensions.

(g) The panel number.

(h) The location and method of storage at the site.

(3) All of the following information shall be documented on the raw materials that are used to manufacture the synthetic liner:

(a) The origin and identification of the raw materials.

(b) Copies of quality control certificates that are issued by the producer of the raw materials.

(c) Reports of tests that are conducted to verify the quality of the raw materials, such as specific gravity, melt flow index, and percent carbon black.

(4) All of the following quality control testing shall be conducted for any flexible membrane liner that is fabricated at the factory:

(a) Visual inspection for uniformity, damage, and imperfections, including any of the following:

(i) Holes.

(ii) Cracks.

(iii) Thin spots.

(iv) Tears.

(v) Punctures.

(vi) Blisters.

(vii) Foreign materials.

(b) Nondestructive seam testing on all fabricated seams along their full lengths.

(c) At least 1 destructive seam test per fabricated unit.

(5) A registered professional engineer or other qualified individual shall document that the subgrade is properly prepared for the installation of the synthetic liner and is in compliance with all of the following provisions:

(a) Is adequately compacted to the standards of these rules.

(b) If constructed over clay, that the clay is free of roots, standing water, stones, or desiccation cracks which would adversely affect the performance of the liner.

(c) If constructed over sand, that the sand does not contain gravel that is retained on a no. 4 sieve, by testing the subgrade every 1,000 cubic yards placed.

(d) Is rolled to a smooth grade that is consistent with approved plans.

Elevations of the subgrade shall be verified before installation to verify that elevations are within plus or minus 0.2 feet of approved plans.

(6) All of the following shall be documented during the placement of the synthetic liner:

(a) Panel overlap.

(b) Location of panels.

(c) Visual inspection for uniformity, damage, and imperfections, including any of the following:

(i) Holes.

(ii) Cracks.

(iii) Thin spots.

(iv) Tears.

(v) Punctures.

(vi) Blisters.

(vii) Foreign materials.

(7) Both of the following tests shall be conducted and documented on all field seams:

(a) Nondestructive testing on all field seams throughout their lengths according to the manufacturer's specifications or other nondestructive testing method approved by the department.

(b) Destructive testing on at least 1 field-seamed sample per day per seaming crew or machine. The sampling frequency shall be at least 1 test every 500 feet of seam, not including repairs, or an alternative frequency approved by the director. The director shall approve an alternative frequency if that frequency of tests, combined with other factors, ensures compliance with seam specifications.

History: 1993 AACS; 1999 AACS.

R 299.4919 Landfill construction; leachate collection system construction records.

Rule 919. (1) Construction records for leachate collection systems, both above and between liners, shall include documentation of all of the following:

(a) Observations and tests on piping, as specified in subrule (2) of this rule.

(b) Observations and tests on any soil drainage layer, as specified in subrule (3) of this rule.

(c) Observations and tests on any synthetic drainage layer or geotextile, as specified in subrule (4) of this rule.

(d) Inspections of filter layers, as specified in subrule (5) of this rule.

(e) Inspection and testing of sumps and associated equipment, as specified in subrule (6) of this rule.

(2) Construction records for piping shall include documentation of all of the following:

(a) Observations and measurements to ensure that the pipes are placed at locations and in configurations specified in the design.

(b) Observations and tests to ensure that pipe grades are as specified in the design.

(c) Observations and tests to ensure that all pipes are joined together as specified in the design.

(d) Observations to ensure that the placement of any filter materials around the pipe is in compliance with the specifications in the design.

(e) Observations and tests to ensure that backfilling and compaction are completed as specified in the design and that, in the process, the pipe network is not damaged.

(3) Construction records for any soil drainage layer shall include documentation of all of the following:

(a) Observations and tests to ensure that the drainage layer material is of the particle size as specified in the design and is free from excessive amounts of fines or organic materials. Grain size distribution shall be determined every 1,000 cubic yards of material placed.

(b) Tests to verify hydraulic conductivity, as determined by ASTM) D2434-68(94), every 2,500 cubic yards of material placed.

(c) Observations and tests not less than every 200 feet on grid, to ensure that the thickness and coverage of the drainage layer are in compliance with the design specifications.

(d) A survey of the drainage layer to ensure that grades are obtained as specified in the design.

(e) Observation of construction procedures to prevent the transport of fines by runoff into the leachate collection system.

(4) Construction records for any synthetic drainage material or geotextile shall include documentation of all of the following:

(a) Observations to ensure that all synthetic drainage layer or geotextile materials are placed according to the placement plan.

(b) Measurements to ensure that the overlap of all synthetic drainage layer or geotextile material as specified in the design is achieved.

(c) Observations to ensure that the synthetic drainage layer or geotextile materials are free from excessive wrinkles and folds.

(d) Observations to ensure that weather conditions are appropriate for placement of the synthetic drainage layer or geotextile materials and that exposure to rain, wind, and direct sunlight during and after installation is in compliance with the manufacturer's recommendations.

(5) Construction records shall include an inspection of the filter layer placement to ensure that the design specifications, including material specifications, placement procedures, and thickness, are met.

(6) Construction records shall include an inspection and testing of the sump, leachate removal and detection equipment, and any other associated equipment or structures to ensure that the design specifications, including material and equipment specifications, coating specifications, and mechanical and electrical equipment installation specifications, are met.

(7) ASTM procedure D2434-68(94) is adopted by reference in R 299.4135.

History: 1993 AACS; 1999 AACS.

R 299.4920 Landfill construction; hydraulic conductivity testing for cohesive soils.

Rule 920. (1) The hydraulic conductivity of cohesive soils shall be determined by 1 of the following test methods:

(a) ASTM D5084-90, as amended by the procedures specified pursuant to the provisions of subrule (2) of this rule.

(b) A method approved by the department.

(2) Specific procedures for conducting hydraulic conductivity tests on cohesive soils shall be documented in the operating record and submitted with test results. Such procedures shall include all of the following:

(a) The sample size to be used. To minimize the effects of sample deformation, a sample shall have a minimum diameter of 2.5 inches and a length to diameter ratio between 0.5 and 1.0.

(b) Methods of preparing the sample. Methods shall be designed to minimize deformation.

(c) Methods of controlling sample temperature. The temperature of the sample shall be maintained at or near 20 degrees Celsius.

(d) The permeant to be used. An appropriate permeant shall be 1 of the following:

(i) Leachate that is representative of the leachate to be generated.

(ii) A 0.01 N solution of CaSo4, to replicate leachate.

(iii) Other permeants that are representative of site conditions.

(e) Temperature range of the permeant to be used. To avoid the release of dissolved gases, the permeant temperature shall equal or exceed the temperature of the soil sample.

(f) The maximum hydraulic gradient to be used. The maximum hydraulic gradient shall be limited as necessary to prevent sample deformation.

(g) Methods of minimizing sample compaction by the permeameter.

(h) Cross-sectional area of the standpipe.

(i) Confining pressure to be used. Confining pressures shall be maintained between 1 and 5 psi above influent or effluent pressure and shall not exceed the natural overburden pressure.

(j) The method of determining that steady state conditions have been achieved. All tests shall be continued until steady state conditions have been achieved between influent and effluent.

(3) Hydraulic conductivity test results shall be accompanied by data that demonstrate compliance with the procedures specified in subrule (2) of this rule, including all calculations made to determine hydraulic conductivity.

(4) The solid waste control agency shall approve a variance to the procedures specified in subrule (2) of this rule if an applicant shows that, for a given sample, the procedure is not feasible or prudent.

(5) ASTM procedure D5084-90, is adopted by reference in R 299.4135.

History: 1993 AACS.

R 299.4921 Landfill construction; construction certification.

Rule 921. (1) The construction quality assurance officer shall certify that a landfill was constructed in accordance with the CQA plan, these rules, and engineering plans approved by the department. All of the following construction records shall accompany the certification of a new unit or the lateral extension of an existing unit:

(a) A daily activity log, as specified in subrule (3) of this rule.

(b) Records of any natural soil barrier, as specified in R 299.4912.

(c) Compacted soil liner records, as specified in R 299.4917.

(d) Flexible membrane liner records, as specified in R 299.4918.

(e) Leachate collection system records, as specified in R 299.4919.

(f) Final elevations, as documented on as-built plans specified in subrule (4) of this rule.

(g) Diagrams that show the location of all tests on the liner and liner system.

(2) The CQA officer shall certify that a landfill that has reached final grade, or has otherwise closed, has received final cover as specified in these rules, the CQA plan, and engineering plans approved by the department. All of the following construction records shall accompany an engineer's certification of a unit that has received final cover:

(a) A daily activity log, as specified in subrule (3) of this rule.

(b) Soil cover liner records, as specified in R 299.4917.

(c) Flexible membrane cover liner records, as specified in R 299.4918.

(d) Observations and tests of the other layers of the final cover to ensure that the design specifications are met. These activities shall include inspection of the completed cover slope, vegetation, and drainage conduits to ensure that they are in compliance with the specified design.

(e) Final elevations, as documented on as-built plans specified in subrule (4) of this rule.

(3) A daily activity log shall be completed by the on-site construction supervisor for each day of construction. A daily activity log shall include all of the following information:

(a) The name and title of construction supervisor.

(b) The date of activity.

(c) Weather, including maximum and minimum temperatures and amount of precipitation, if any.

(d) The type of activity conducted.

(e) A summary of all quality assurance tests conducted, indicating which tests passed and failed specifications.

(f) Documentation of all repairs made on the liner system.

(4) The CQA officer shall prepare as-built plans to document all elevations of a newly constructed landfill and closed landfill. All elevations shall be referenced to United States geological survey datum. As-built plans shall indicate all of the following information:

(a) The dimensions and maximum and minimum elevations of each cell in each direction. Elevations of each bottom liner component shall be within 0.2 feet of approved plans, if each component meets the minimum thickness requirements of these rules.

(b) The location and elevation of all sumps and gravity pipelines. Elevations of sumps and pipelines shall be within 0.2 feet of approved plans.

(c) The location and elevation of all drainage facilities.

(d) The surface elevations of the final cover. The elevation of the final cover may deviate up to 1 foot above approved plans, if each component meets the minimum thickness requirements of these rules.

(5) An engineer's certification under this rule shall be a statement or declaration that is based on his or her knowledge and review of the construction records that are specified in this rule. The engineer's certification of construction conditions shall not relieve the owner, operator, or any other party from meeting other applicable requirements of the act and these rules.

History: 1993 AACS; 1999 AACS.

R 299.4922 Landfill operating license application; contents.

Rule 922. (1) An applicant for an operating license shall submit all of the following general information on a form provided by the director:

(a) The name and location of the facility and references to all construction permits or approved plans authorizing the facility's construction.

(b) The name and address of the applicant, including the name and telephone number of a contact person.

(c) The name, address, and telephone number of the property owner and any mineral rights owners.

(d) The type of disposal area proposed.

(e) The type of waste proposed for disposal.

(f) An estimate of remaining permitted capacity.

(g) The maximum waste slope in the active portion.

(h) The signature of the applicant and property owner.

(2) An applicant for an operating license shall submit information on the amount of waste received in the previous calendar year or amount projected to be received and the operating license application fee specified in the act associated with that amount, including any information necessary to support a fee adjustment.

(3) An operating license application shall include a restrictive covenant, on a form that is provided by the director, that is in compliance with the act, unless the restrictive covenant for the disposal area has been submitted previously.

(4) An operating license application shall include evidence of financial assurance that is in compliance with the act. Evidence of financial assurance includes all of the following:

(a) a facility summary that provides the acreage and a site map of each of the following:

(i) Active portions not at final grade.

(ii) Constructed areas certified with this application.

(iii) Unconstructed areas with financial assurance.

(iv) Unconstructed areas without financial assurance.

(v) Partially closed areas.

(vi) Closed preexisting units, including the date closed.

(vii) Other closed units.

(viii) Other disposal areas at the facility.

(ix) Isolation and other ancillary areas.

(x) The total facility area.

(b) A calculation of closure and postclosure cost estimates.

(c) Original bonds or documentation that the expiration date of the bond has been extended by not less than 6 months from the date of application.

(d) Evidence of a perpetual care trust fund or escrow account required by the act and the current value of the account.

(e) Documentation necessary to support a financial test, if applicable.

(5) An operating license application shall include information on any proposed operational variance allowed by these rules, including any of the following:

(a) Alternate daily cover.

(b) Leachate recirculation.

(c) Groundwater monitoring.

(d) Other variances.

History: 1993 AACS; 1999 AACS.