ARC 0355D

ENVIRONMENTAL PROTECTION COMMISSION[567]

Amended Notice of Intended Action

Proposing rulemaking related to sanitary disposal projects and providing an opportunity for public comment

The Environmental Protection Commission (Commission) hereby proposes to rescind Chapter 101, "Solid Waste Comprehensive Planning Requirements"; to adopt a new Chapter 101, "Sanitary Disposal Projects"; and to rescind Chapter 106, "Citizen Convenience Centers and Transfer Stations," Chapter 113, "Sanitary Landfills for Municipal Solid Waste: Groundwater Protection Systems for the Disposal Of Nonhazardous Wastes," Chapter 114, "Sanitary Landfills: Construction and Demolition Wastes," and Chapter 115, "Sanitary Landfills: Industrial Monofills," Iowa Administrative Code.

Legal Authority for Rulemaking

This rulemaking is proposed under the authority provided in Iowa Code sections 455B.304, 455B.304(12), 455B.304(8) and 455B.306(9).

State or Federal Law Implemented

This rulemaking implements, in whole or in part, Iowa Code chapter 455B, Executive Order 10, and 40 CFR Part 258.

Purpose and Summary

Chapters 103, 106, 113, 114, and 115 were reviewed consistent with Executive Order 10 (2023). Proposed Chapter 101 is a consolidation of these six chapters related to sanitary disposal projects and was initially proposed under Notice **ARC 9931C**, IAB 1/7/26. No new programs are being proposed. The chapter will contain the following eight divisions, including one reserved division, with summaries and purposes as follows:

Division I—Landfill-Specific Requirements: Provides general landfill-specific requirements for sanitary disposal projects regulated in Divisions II, III, and IV of Chapter 101.

Division II—Municipal Solid Waste Landfills: Implements Iowa Code chapter 455B, subchapter IV (Solid Waste Disposal) and protects human health and the environment through the implementation of minimum national standards pursuant to the Resource Conservation and Recovery Act for municipal solid waste landfills. Notably, these rules have been promulgated in the Federal Register as part of Environmental Protection Agency's approval of Iowa's program.

Division III—Industrial Landfills: Establishes rules for the siting, designing, and operating of sanitary landfills accepting only industrial solid waste or only construction and demolition debris. As part of this rulemaking, the permit period for industrial landfills was extended to five years, up from three years.

Division IV—Coal Combustion Residuals Landfills: Establishes rules for the siting, designing, and operating of a sanitary landfill accepting only coal combustion residuals.

Division V—Solid Waste Transfer Stations: Establishes rules for the collection, temporary storage, and transfer of solid waste prior to final disposition. This includes the siting, designing, and operating of transfer stations. As part of this rulemaking, the permit period for solid waste transfer stations was extended to five years, up from three years.

Division VI—Solid Waste Incinerator Operator Certification: Provides the criteria for establishing the certification of operators of solid waste incinerators to help ensure the safe and proper management for disposal of waste.

Division VII—Infectious Waste Treatment and Disposal: Reserved.

Division VIII—Financial Assurance: Provides criteria for establishing financial assurance for closure, post-closure care, and corrective action at sanitary disposal projects.

Reason for Amendment of Notice of Intended Action

Notice of Intended Action for this rulemaking was published in the Iowa Administrative Bulletin on January 7, 2026, as **ARC 9931C**. During the public comment period, the Department of Natural Resources (Department), on behalf of the Commission, received comments questioning the stringency of the new rules as they related to the composting of dead animals. These comments prompted a review of the Commission's statutory jurisdiction over the disposal of dead animals. The Commission has determined the Legislature did not intend for the Department to regulate the disposal of dead animals as solid waste (Iowa Code section 159.6(4); Iowa Code chapter 167; and *Pet Memories vs. DNR*, CVCV035362 (Cedar, 2015)). Therefore, the Commission is proposing to remove the provisions of this rule related to the disposal of dead animals. The Commission also determined this change is substantial enough from the original proposed rule to amend the Notice and provide additional opportunity for public comment on this proposed amendment.

Fiscal Impact

This rulemaking has no fiscal impact to the State of Iowa.

Jobs Impact

After analysis and review of this rulemaking, no impact on jobs has been found.

Waivers

Any person who believes that the application of the discretionary provisions of this rulemaking would result in hardship or injustice to that person may petition the Commission for a waiver of the discretionary provisions, if any, pursuant to 567—Chapter 13. Some provisions are minimum standards required by federal law (40 CFR Part 258, Subpart G), and waivers to such provisions shall not be granted unless they are as protective as the applicable minimum federal standard.

Public Comment

Any interested person may submit written comments concerning this proposed rulemaking, which must be received by the Commission no later than 4:30 p.m. on July 1, 2026. Comments should be directed to:

Mike Sullivan
Department of Natural Resources
6200 Park Avenue, Suite 200
Des Moines, Iowa 50321
Email: michael.sullivan@dnr.iowa.gov

Free language assistance: If you speak a non-English language, the Department offers language assistance services free of charge. Contact the Department at EO10_solidwaste@dnr.iowa.gov.

Servicios gratuitos de asistencia lingüística: Si habla un idioma que no sea el inglés, los servicios de asistencia lingüística están disponibles de forma gratuita. Comuníquese con el Departamento al EO10_solidwaste@dnr.iowa.gov.

Public Hearing

Public hearings at which persons may present their views orally or in writing will be held as follows:

June 30, 2026 1 p.m.	Virtual meeting (via Zoom) us02web.zoom.us/j/84398912479 Meeting ID: 843 9891 2479
July 1, 2026 9 a.m.	Virtual meeting (via Zoom) us02web.zoom.us/j/85445302938 Meeting ID: 854 4530 2938

Persons who wish to make oral comments at a public hearing may be asked to state their names for the record and to confine their remarks to the subject of this proposed rulemaking.

Any persons who intend to attend a hearing and have special requirements, such as those related to hearing impairments, should contact the Department and advise of specific needs.

Review by Administrative Rules Review Committee

The Administrative Rules Review Committee, a bipartisan legislative committee which oversees rulemaking by executive branch agencies, may, on its own motion or on written request by any individual or group, review this rulemaking at its regular monthly meeting or at a special meeting. The Committee's meetings are open to the public, and interested persons may be heard as provided in Iowa Code section 17A.8(6).

The following rulemaking action is proposed:

ITEM 1. Rescind 567—Chapter 101 and adopt the following **new** chapter in lieu thereof:

CHAPTER 101
SANITARY DISPOSAL PROJECTS

DIVISION I
LANDFILL-SPECIFIC REQUIREMENTS

567—101.1(455B) Purpose, applicability, and compliance. The purpose of this division is to provide sanitary landfill-specific requirements for sanitary disposal projects regulated in Divisions II, III, and IV of this chapter. All sanitary landfills regulated in Divisions II, III, and IV of this chapter must comply with the provisions of this division and with 567—Chapter 100, except as noted below and in those respective divisions.

101.1(1) Municipal solid waste landfills that did not receive waste after October 9, 1994, shall be governed by the closure permit issued or the rules in place at the time for post-closure activities.

101.1(2) All rules, standards, technical guidance, and other similar legal or technical documents referenced in this division shall be the version of those documents in effect on August 1, 2025, unless otherwise noted in these rules, and except for references to the Iowa Code and Iowa Administrative Code, which shall always be the most recent version unless otherwise noted in these rules.

567—101.2(455B) Farm exceptions. This chapter does not apply to farm waste and farm buildings that are disposed of in compliance with the following requirements.

101.2(1) *Definitions.* For the purpose of this rule:

"Farm buildings" means barns, machine sheds, storage cribs, animal confinement buildings, and homes located on the premises and used in conjunction with crop production or with livestock or poultry raising and feeding operations.

"Farm waste" means machinery, vehicles and equipment used in conjunction with crop production or with livestock or poultry raising and feeding operations, trees, brush and grubbed stumps generated on the same property or ashes from the burning thereof. "Farm waste" does not include agricultural chemicals, fertilizers or manures, or domestic household wastes.

101.2(2) A private agency may dispose of farm waste and farm buildings without first having obtained a sanitary disposal project permit, provided that the disposal is in accordance with 101.2(3), the rules of the department of agriculture and land stewardship, and the following:

a. The farm waste was owned by the private agency and was used on the premises where disposal occurs.

b. Prior to disposal of vehicles, machinery, and equipment, all fluids are drained, including motor oils, motor fuels, lubricating fluids, coolants and solvents, and agricultural chemicals; and all batteries and rubber tires are removed.

c. Prior to disposal of storage or feeding equipment, the equipment is emptied of all contents not otherwise authorized for burial pursuant to these rules.

d. Farm buildings have been emptied of contents not otherwise authorized for burial pursuant to these rules and have been buried on the premises where they were located.

e. All materials drained or removed from farm waste or farm buildings prior to disposal are recycled, reused, or disposed of in accordance with Iowa Code chapters 455B and 459 and the rules implementing that chapter.

f. The farm waste and farm buildings are buried in soils listed in tables contained in the county soil surveys and soil interpretation records (published by the U.S. Soil Conservation Service) as being moderately well drained, well drained, somewhat excessively drained, or excessively drained soils. Other soils may be used if artificial drainage is installed to obtain water-level depth more than two feet below the burial depth of the waste.

g. The lowest elevation of the burial pit is six feet or less below the surface.

h. The farm waste and farm buildings are immediately covered with a minimum of 6 inches of soil and finally covered with a total minimum of 24 inches of soil.

101.2(3) Farm waste and farm buildings must be disposed of in accordance with the following separation distances:

a. At least 100 feet from any private and 200 feet from any public well that is being used or would be used without major renovation for domestic purposes.

b. At least 50 feet from any adjacent property line.

c. At least 500 feet from an existing neighboring residence.

d. More than 100 feet from any body of surface water such as a stream, lake, pond, or intermittent stream, except as provided in 101.2(3)*"f."*

e. Outside the boundaries of a floodplain, wetland, or shoreline area, except as provided in 101.2(3)*"f."*

f. Trees, brush and grubbed stumps generated as a result of clearing, snagging, or maintenance or repair of drainage ditches or outlets may be buried within 100 feet of a surface water and within a floodplain or shoreline area.

567—101.3(455B) Definitions. For the purposes of this division, the definitions in Iowa Code section 455B.301 and 567—Chapter 100 shall be incorporated by reference.

567—101.4(455B) Permits. In addition to the permit requirements in 567—Chapter 100 and as otherwise required by law, the following permit requirements shall apply to all sanitary landfills.

101.4(1) *Operating permits.* An MSWLF, construction and demolition debris, or industrial landfill operating permit shall be issued and may be renewed for a period no longer than five years. A coal combustion residuals landfill operating permit shall be issued and may be renewed for a period no longer than ten years. If an MSWLF adopts research, development, and demonstration (RD&D) provisions pursuant to 101.104(2), an MSWLF operating permit with RD&D provisions shall be issued and may be renewed for a period no longer than three years.

101.4(2) *Closure permits.* An MSWLF or industrial landfill closure permit shall be issued for a period of 30 years. A coal combustion residuals landfill closure permit shall be issued for a period of ten years. A sanitary landfill requires a closure permit until the department determines that post-closure operations are no longer necessary. A request for a closure permit renewal or termination shall be filed at least 180 days before the expiration of the current permit. If the department finds that a sanitary landfill has completed all required post-closure activities and no longer presents a significant risk to human health or the environment, then the department shall issue written notification that a closure permit is no longer required for the facility. If the department extends the post-closure period, then the duration of the subsequent closure permit will be determined on a site-specific basis.

567—101.5(455B) Applications and construction requirements. Unless otherwise authorized by the department, a permit applicant shall submit on a form prescribed by the department, and shall provide

evidence demonstrating how the landfill will comply with the requirements in 567—Chapter 100, the following general requirements, and any requirements specified in the applicable division of this chapter.

101.5(1) *Local siting approval.* Documentation that local siting approval pursuant to Iowa Code section 455B.305A, if applicable, has been obtained.

101.5(2) *Separation from groundwater.* The base of a sanitary landfill unit shall be situated so that the base of the waste within the proposed unit is at least five feet above the high water table unless a greater separation is required to ensure that there will be no significant adverse effect on groundwater or surface waters or a lesser separation is unlikely to have a significant adverse effect on groundwater or surface waters. Artificial means of lowering the high water table are acceptable. The separation of the base of a sanitary landfill unit from the high water table shall be measured and maintained in a manner acceptable to the department.

101.5(3) *Wells.* A sanitary landfill unit shall not be within 1,000 feet of any water well in existence at the time of receipt of the original permit application or application to laterally expand the permitted sanitary landfill unit for the facility. Groundwater monitoring wells are exempt from this requirement. The department may also exempt extraction wells utilized as part of a remediation system from this requirement.

101.5(4) *Floodplains.* New sanitary landfill units or lateral expansions shall not be located in a 100-year floodplain. Existing sanitary landfills located in 100-year floodplains must demonstrate to the department that the unit will not restrict the flow of a 100-year flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste so as to pose a hazard to human health and the environment. The owner or operator must place the demonstration in the operating record and submit a copy of the demonstration to the department. For purposes of this subrule, the definitions for floodplain, 100-year flood, and washout are the same as defined in 40 CFR 258.11.

567—101.6(455B) General operating requirements. In addition to the general operating requirements in 567—Chapter 100, the following shall apply to all sanitary landfills unless otherwise noted.

101.6(1) *Controlled access.* Sanitary landfills will control public access and prevent unauthorized vehicular traffic and illegal dumping of wastes by using artificial barriers, natural barriers, or both, as appropriate to protect human health and the environment.

101.6(2) *Scales and weights.* A scale certified by the Iowa department of agriculture and land stewardship shall weigh all solid waste collection vehicles and solid waste transport vehicles. The owner or operator shall maintain a record of the weight of waste disposed.

101.6(3) *All-weather access to disposal.* A disposal area shall be accessible during all weather conditions when the landfill is open.

101.6(4) *Salvaged and processed materials.* Salvaged and processed materials (e.g., scrap metal, compost, mulch, aggregate, tire chips) from a sanitary landfill shall be managed and stored in an orderly manner that does not create a nuisance or encourage the attraction or harborage of vectors.

101.6(5) *Vector control.* Sanitary landfills shall prevent or control the on-site populations of vectors using techniques appropriate for the protection of human health and the environment.

101.6(6) *Litter control.* Sanitary landfills shall take steps to minimize the production of litter and the release of windblown litter off site of the facility. All windblown litter off site of the facility shall be collected daily unless prevented by unsafe working conditions. On-site litter shall be collected daily unless prevented by working conditions. A dated record of unsafe conditions that prevented litter collection activities shall be maintained by the facility.

101.6(7) *Dust control.* Sanitary landfills shall take steps to minimize the production of dust so that unsafe or nuisance conditions are prevented.

101.6(8) *Mud control.* Sanitary landfills shall take steps to minimize the tracking of mud by vehicles exiting the facility so that slick or unsafe conditions are prevented.

101.6(9) *Leachate and wastewater treatment.* The leachate management system shall be managed and maintained pursuant to the requirements of Divisions II, III, and IV of this chapter. Leachate collection pipes shall be cleaned and inspected as necessary but not less than once every three years. Leachate and wastewater shall be treated as necessary to meet the pretreatment limits, if any, imposed by a publicly owned wastewater treatment works (POTW) or by the effluent discharge limits

established by a National Pollutant Discharge Elimination System (NPDES) permit. Documentation of the pretreatment permit or pretreatment agreement with the POTW or NPDES permit must be submitted to the department. All leachate and wastewater treatment systems shall conform to the department's wastewater design standards.

101.6(10) *Signage.* Facilities open to the public shall have signs or pavement markings indicating on-site traffic patterns.

101.6(11) *Traffic control.* Adequate queuing distance shall be provided for vehicles entering and exiting the property.

567—101.7(455B) Sanitary landfill operator certification. Sanitary landfill operators shall be trained, tested, and certified by a department-approved certification program.

101.7(1) A sanitary landfill operator shall be on duty during all hours of operation of all sanitary landfills, except coal combustion residuals sanitary landfills, consistent with the respective certification.

101.7(2) To become a certified operator, an individual shall complete a basic operator training course that has been approved by the department or an alternative, equivalent training approved by the department and shall pass a departmental examination as specified by this subrule. An operator certified by another state may have reciprocity subject to prior approval by the department.

101.7(3) A sanitary landfill operator certification is valid until June 30 of the following even-numbered year.

101.7(4) The required basic operator training course for a certified sanitary landfill operator shall have at least 20 contact hours and shall address the following areas at a minimum:

a. Description of types of wastes.
b. Interpreting and using engineering plans.
c. Construction surveying techniques.
d. Waste decomposition processes.
e. Geology and hydrology.
f. Landfill design.
g. Landfill operation.
h. Environmental monitoring.
i. Applicable laws and regulations.
j. Permitting processes.
k. Leachate control and treatment.

101.7(5) Alternate basic operator training must be approved by the department. The applicant shall be responsible for submitting any documentation the department may require to evaluate the equivalency of alternate training.

101.7(6) Fees.

a. The fee for each examination is $20.

b. The initial certification fee is $8 for each one-half year of a two-year period from the date of issuance to June 30 of the next even-numbered year.

c. The certification renewal is $24.

d. The penalty fee is $12.

101.7(7) Examinations.

a. The operator certification examinations shall be based on the basic operator training course curriculum.

b. All individuals wishing to take the examination required to become a certified operator of a sanitary incinerator shall complete an operator certification examination application on a form prescribed by the department. A listing of dates and locations of examinations is available from the department upon request. The application form requires the applicant to indicate the basic operator training course taken. Evidence of training course completion must be submitted with the application for certification. The completed application and the application fee shall be sent to the Iowa Department of Natural Resources, 6200 Park Avenue, Des Moines, Iowa 50321. Application for examination must be received by the department prior to the date of examination.

c. A properly completed application for examination shall be valid for one year from the date the application is approved by the department.

d. Upon failure of the first examination, the applicant may be reexamined at the next scheduled examination. Upon failure of the second examination, the applicant shall be required to wait a period of 180 days between each subsequent examination.

e. Upon each reexamination when a valid application is on file, the applicant shall submit to the department the examination fee at least ten days prior to the date of examination.

f. Failure to successfully complete the examination within one year from the date of approval of the application shall invalidate the application.

g. Completed examinations will be retained by the department for a period of one year, after which they will be destroyed.

h. Oral examinations may be given at the discretion of the department.

101.7(8) Certification.

a. All operators who passed the operator certification examination by July 1, 1991, are exempt from taking the required operator training course. Beginning July 1, 1991, all operators are required to take the basic operator training course and pass the examination in order to become certified.

b. Application for certification must be received by the department within 30 days of the date the applicant receives notification of successful completion of the examination. All applications for certification shall be made on a form prescribed by the department and shall be accompanied by the certification fee.

c. Applications for certification by examination that are received more than 30 days but less than 60 days after notification of successful completion of the examination shall be accompanied by the certification fee and the penalty fee. Applicants who do not apply for certification within 60 days of notice of successful completion of the examination will not be certified on the basis of that examination.

d. For applicants who have been certified under other state mandatory certification programs, the equivalency of which has been previously reviewed and accepted by the department, certification without examination will be approved.

e. For applicants who have been certified under voluntary certification programs in other states, the department shall consider certification by reciprocity if the applicant has successfully completed a basic operator training course and an examination generally equivalent to the Iowa examination. The department may require the applicant to successfully complete the Iowa examination.

f. Applicants who seek Iowa certification pursuant to 101.7(8)*"d"* and *"e"* shall submit an application for examination accompanied by a letter requesting certification pursuant to this subrule. Application for certification pursuant to this subrule shall be received by the department in accordance with 101.7(8)*"b"* and *"c."*

101.7(9) Duration and renewal of certification. All certificates shall expire every two years, on even-numbered years, and must be renewed every two years to maintain certification. Application and fee are due prior to expiration of certification.

a. Late application for renewal of a certificate may be made, provided that such late application shall be received by the department within 30 days of the expiration of the certificate. Such late application shall be on forms prescribed by the department and accompanied by the penalty fee and the certification renewal fee.

b. If a certificate holder fails to apply for renewal within 30 days following expiration of the certificate, the right to renew the certificate automatically terminates. Certification may be allowed at any time following such termination, provided that the applicant successfully completes an examination. The applicant must then apply for certification in accordance with 101.7(8).

c. An operator shall not continue to operate a sanitary landfill after expiration of a certificate without renewal thereof.

d. Continuing education must be earned during the two-year certification period. All certified operators must earn eight contact hours per certificate during each two-year period. The two-year period will begin upon issuance of certification.

e. Only those operators fulfilling the continuing education requirements before the end of each two-year period will be allowed to renew their certificates. The certificates of operators not fulfilling the continuing education requirements shall be void upon expiration unless an extension is granted by the department.

f. All activities for which continuing education credit will be granted must be related to the subject matter of the particular certificate to which the credit is being applied.

g. The department may, in individual cases involving hardship or extenuating circumstances, grant an extension of time of up to three months within which the applicant may fulfill the minimum continuing education requirements. Hardship or extenuating circumstances include documented health-related confinement or other circumstances beyond the control of the certified operator that prevent attendance at the required activities. All requests for extensions must be made 60 days prior to expiration of certification.

h. The certified operator is responsible for notifying the department of the continuing education credits earned during the period. The continuing education credits earned during the period shall be shown on the application for renewal.

i. A certified operator shall be deemed to have complied with the continuing education requirements of this subrule during periods that the operator serves honorably on active duty in the military service, for periods that the operator is a resident of another state or district having a continuing education requirement for operators and meets all the requirements of that state or district for practice there, for periods that the person is a government employee working as an operator and is assigned to duty outside the United States, or for other periods of active practice and absence from the state approved by the department.

101.7(10) Discipline of certified operators.

a. Disciplinary action may be taken on any of the following grounds:

(1) Failure to use reasonable care or judgment or to apply knowledge or ability in performing the duties of a certified operator. Duties of certified operators include compliance with rules and permit conditions applicable to sanitary landfill operation.

(2) Failure to submit required records of operation or other reports required under applicable permits or rules of the department, including failure to submit complete records or reports.

(3) Knowingly making any false statement, representation, or certification on any application, record, report or document required to be maintained or submitted under any applicable permit or rule of the department.

b. Disciplinary sanctions allowable are:

(1) Revocation of a certificate.

(2) Probation under specified conditions relevant to the specific grounds for disciplinary action. Additional education or training or reexamination may be required as a condition of probation.

c. The procedure for discipline is as follows:

(1) The department shall initiate disciplinary action. The commission may direct that the department investigate any alleged factual situation that may be grounds for disciplinary action under 101.7(10)*"a"* and report the results of the investigation to the commission.

(2) A disciplinary action may be prosecuted by the department.

(3) Written notice shall be given to an operator against whom disciplinary action is being considered. The notice shall state the informal and formal procedures available for determining the matter. The operator shall be given 20 days to present any relevant facts and indicate the operator's position in the matter and to indicate whether informal resolution of the matter may be reached.

(4) An operator who receives notice shall communicate verbally, in writing, or in person with the department, and efforts shall be made to clarify the respective positions of the operator and department.

(5) The applicant's failure to communicate facts and positions relevant to the matter by the required date may be considered when determining appropriate disciplinary action.

(6) If agreement as to appropriate disciplinary sanction, if any, can be reached with the operator and the commission concurs, a written stipulation and settlement between the department and the operator

shall be entered into. The stipulation and settlement shall recite the basic facts and violations alleged, any facts brought forth by the operator, and the reasons for the particular sanctions imposed.

(7) If an agreement as to appropriate disciplinary action, if any, cannot be reached, the department may initiate formal hearing procedures. Notice and formal hearing shall be in accordance with 567—Chapter 7 related to contested and certain other cases pertaining to license discipline.

101.7(11) Upon revocation of a certificate, application for certification may be allowed after two years from the date of revocation. Any such applicant must successfully complete an examination and be certified in the same manner as a new applicant.

101.7(12) Temporary certification. A temporary operator of a sanitary landfill may be designated for a period of six months when an existing certified operator is no longer available to the facility. The facility must make application to the department, explain why a temporary certification is needed, identify the temporary operator, and identify the efforts that will be made to obtain a certified operator. A temporary operator designation shall not be approved for greater than a six-month period, except for extenuating circumstances. In any event, not more than one six-month extension to the temporary operator designation may be granted. Approval of a temporary operator designation may be rescinded for cause as set forth in 101.7(10). All sanitary landfills, with the exception of coal combustion residuals landfills, shall have at least one sanitary landfill operator trained, tested, and certified by a department-approved program.

567—101.8(455B) Groundwater monitoring and reporting.

101.8(1) The planning, monitoring, and reporting for groundwater monitoring at a sanitary landfill shall be performed by a qualified groundwater scientist.

101.8(2) Monitoring wells must be constructed and cased by a well contractor certified pursuant to 567—Chapter 82 in a manner that maintains the integrity of the monitoring well borehole. This casing must be screened or perforated and packed with gravel or sand, where necessary, to enable collection of groundwater samples. The annular space (i.e., the space between the borehole and well casing) above the sampling depth must be sealed to prevent contamination of samples and the groundwater. Monitoring wells constructed in accordance with the rules in effect at the time of construction shall not be required to be abandoned and reconstructed as a result of subsequent amendments to these rules unless the department finds that the well is no longer providing representative groundwater samples. Figure 1 contains a general diagram of a properly constructed monitoring well.

a. The owner or operator must notify the department that the design, installation, development, and decommission of any monitoring wells; piezometers; and other measurement, sampling, and analytical devices documentation has been placed in the operating record.

b. The monitoring wells; piezometers; and other measurement, sampling, and analytical devices must be operated and maintained so that they perform to design specifications throughout the life of the monitoring program.

c. Each groundwater monitoring point must have a unique and permanent number, and that number must never change or be used again at the sanitary landfill. The types of groundwater monitoring points shall be identified as follows:

(1) Monitoring wells by "MW# (insert unique and permanent number)".

(2) Piezometers by "PZ# (insert unique and permanent number)".

(3) Groundwater underdrain systems by "GU# (insert unique and permanent number)".

d. Monitoring well construction shall comply with the following requirements:

(1) In all phases of drilling, well installation, and completion, the methods and materials used shall not introduce substances or contaminants that may alter the results of water quality analyses.

(2) Drilling equipment that comes into contact with contaminants in the borehole or aboveground shall be thoroughly cleaned to avoid spreading contamination to other depths or locations. Contaminated materials or leachate from wells must not be discharged onto the ground surface or into waters of the state so as to cause harm in the process of drilling or well development.

(3) The owner or operator must ensure that, at a minimum, the well design and construction log information is maintained in the facility's permanent record on a form prescribed by the department and that a copy is sent to the department.

e. Monitoring well casings shall comply with the following requirements:

(1) The diameter of the inner well casing (e.g., Figure 1) of a monitoring well shall be at least two inches.

(2) Plastic-cased wells shall be constructed of materials with threaded and non-glued joints that do not allow water infiltration under the local subsurface pressure conditions and when the well is evacuated for sampling.

(3) Well casing shall provide sufficient structural stability so that a borehole or well collapse does not occur. Flush joint casing is required for small diameter wells installed through hollow stem augers.

f. Monitoring well screens shall comply with the following requirements:

(1) Slot size shall be based on sieve analysis of the sand and gravel stratum or filter pack. The slot size must keep out at least 90 percent of the filter pack.

(2) Slot configuration and open area must permit effective development of the well.

(3) The screen shall be no longer than ten feet in length, except for water table wells, in which case the screen shall be of sufficient length to accommodate normal seasonal fluctuations of the water table. The screen shall be placed five feet above and below the observed water table unless local conditions are known to produce greater fluctuations. Screen length for piezometers shall be two feet or less. Multiple-screened, single-cased wells are prohibited.

g. Monitoring well filter packs shall comply with the following requirements:

(1) The filter pack shall extend at least 18 inches above and 12 inches below the well screen.

(2) The size of the filter pack material shall be based on sieve analysis when sand and gravel are screened. The filter pack material must be 2.5 to 3 times larger than the 50 percent grain size of the zone being monitored.

(3) In stratum that is neither sand nor gravel, the size of the filter pack material shall be selected based on the particle size of the zone being monitored.

h. Monitoring well annular space shall comply with the following requirements:

(1) Grouting materials must be installed from the top of the filter pack up in one continuous operation with a tremie tube.

(2) The annular space between the filter pack and the frostline must be backfilled with bentonite grout.

(3) The remaining annular space between the protective casing and the monitoring well casing must be sealed with bentonite grout from the frostline to the ground surface.

i. Monitoring well heads shall be protected as follows:

(1) Monitoring wells shall have a protective metal casing installed around the upper portion of the monitoring well casing as follows:

1. The inside diameter of the protective metal casing shall be at least 2 inches larger than the outer diameter of the monitoring well casing.

2. The protective metal casing shall extend from a minimum of 1 foot below the frostline to slightly above the well casing top; however, the protective casing shall be shortened if such a depth would cover a portion of the well screen.

3. The protective casing shall be sealed and immobilized with a concrete plug around the outside. The bottom of the concrete plug must extend at least 1 foot below the frostline; however, the concrete plug shall be shortened if such a depth would cover a portion of the well screen. The top of the concrete plug shall extend at least three inches above the ground surface and slope away from the well. Soil may be placed above the plug and shall be at least 6 inches below the cap to improve runoff.

4. The inside of the protective casing shall be sealed with bentonite grout from the frostline to the ground surface.

5. A vented cap shall be placed on the monitoring well casing.

6. A vented, locking cap shall be placed on the protective metal casing. The cap must be kept locked when the well is not being sampled.

(2) All monitoring wells shall have a ring of brightly colored protective posts or other protective barriers to help prevent accidental damage.

(3) All monitoring wells shall have a sign or permanent marking clearly identifying the permanent monitoring well number (MW#).

(4) Run-on shall be directed away from all monitoring wells.

j. Well development is required prior to the use of the monitoring well for water quality monitoring purposes. Well development must loosen and remove fines from the well screen and gravel pack. Any water utilized to stimulate well development must be of sufficient quality that future samples are not contaminated. Any gases utilized in well development must be inert gases that will not contaminate future samples. Following development, the well shall be pumped until the water does not contain significant amounts of suspended solids.

101.8(3) Groundwater monitoring points that are no longer functional must be sealed. Groundwater monitoring points that are to be sealed and are in a future waste disposal area shall be reviewed to determine if the method utilized to seal the monitoring point needs to be more protective than the following requirements. All abandoned groundwater-monitoring points (e.g., boreholes, monitoring wells, and piezometers) shall be sealed by a well contractor certified pursuant to 567—Chapter 82 and in accordance with the following requirements.

a. The following information shall be placed in the operating record on a form prescribed by the department and a copy sent to the department:

(1) The unique, permanent monitoring point number.

(2) The reasons for abandoning the monitoring point.

(3) The date and time the monitoring point was sealed.

(4) The method utilized to remove monitoring point materials.

(5) The method utilized to seal the monitoring point.

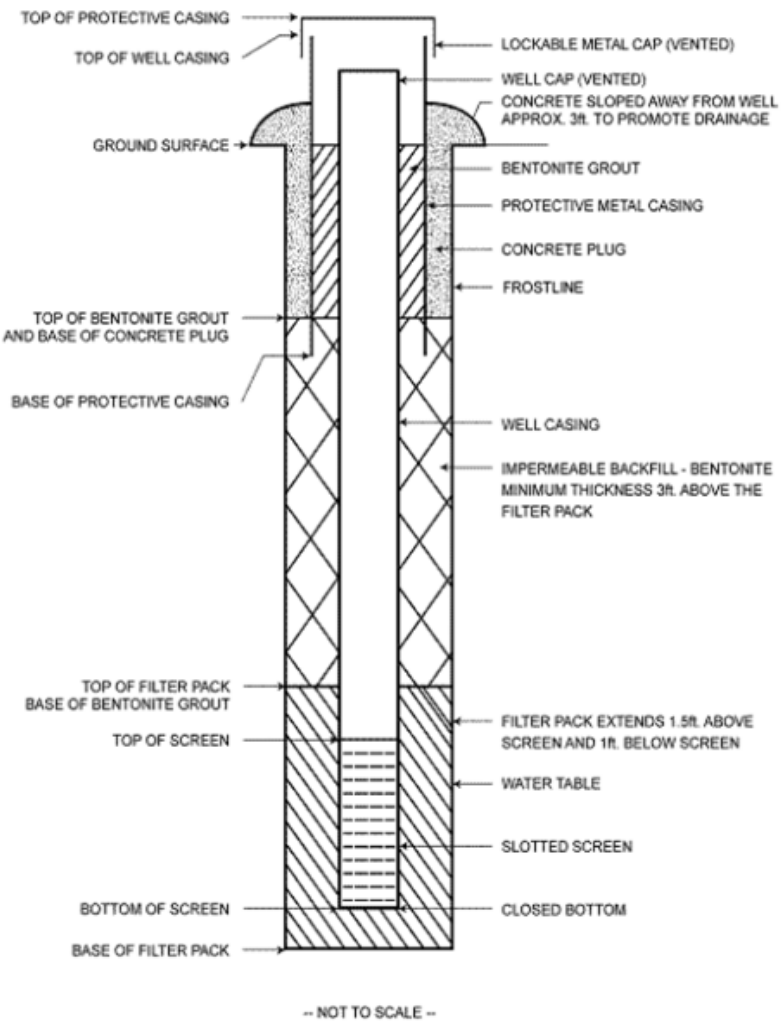
b. The monitoring point materials (e.g., protective casing, casing, screen) shall be removed. If drilling is utilized to remove the materials, then the drilling shall be to the maximum depth of the previously drilled monitoring point. All drilling debris shall be cleaned from the interior of the borehole.

c. The cleared borehole shall be sealed with impermeable bentonite grout via a tremie tube. The end of the tremie tube shall be submerged in the grout while filling from the bottom of the borehole to the top of the ground surface. Uncontaminated water shall be added from the surface as needed to aid grout expansion.

d. After 24 hours, the bentonite grout shall be retopped if it has settled below the ground surface.

101.8(4) Groundwater samples shall not be field-filtered prior to laboratory analysis.

Figure 1 – Typical Monitoring Well Cross-Section



567—101.9(455B) Contingency planning. In addition to the emergency response and remedial action plan (ERRAP) requirements in 567—Chapter 100, all sanitary landfills shall include a contingency plan in their ERRAP detailing specific procedures to be followed in case of equipment breakdown, maintenance downtime, or fire in equipment or vehicles, including methods to be used to remove or dispose of accumulated waste.

567—101.10(455B) Disruption and excavation of sanitary landfills or closed dumps. No person shall excavate, disrupt, or remove any deposited material from any active or discontinued sanitary landfill or closed dump without first having notified the department in writing.

101.10(1) Notification shall include an operational plan stating the area involved, lines and grades defining limits of excavation, estimated number of cubic yards of material to be excavated, sanitary disposal project where material is to be disposed, and estimated time required for excavation procedures.

101.10(2) An excavation shall be confined to an area consistent with the number of pieces of digging equipment and trucks used for haulage.

101.10(3) The disposal of all solid waste resulting from excavation shall be in conformity with Iowa Code chapter 455B and applicable solid or hazardous waste regulations.

567—101.11(455B) Transfer of title. If title of a closed sanitary disposal project is transferred, any future waste exhumation activities, excluding repairs or maintenance activities, are considered to be

operation of the landfill due to the similar environmental effects possible from the two activities due to waste exposure.

These rules are intended to implement Iowa Code section 455B.304 and chapter 455D.

567—101.12 to **101.100** Reserved.

DIVISION II
MUNICIPAL SOLID WASTE LANDFILLS

567—101.101(455B) Purpose. The purpose of this division is to implement Iowa Code chapter 455B, subchapter IV (solid waste disposal), and to protect human health and the environment through the implementation of minimum national standards pursuant to the Resource Conservation and Recovery Act ("RCRA" or "the Act") for all municipal solid waste landfill (MSWLF) units and under the Clean Water Act for MSWLFs that are used to dispose of sewage sludge.

This division details the permitting, siting, design, operating, monitoring, corrective action, reporting, recordkeeping, closure, and post-closure requirements for sanitary landfills accepting municipal solid waste.

567—101.102(455B) Applicability and compliance.

101.102(1) This division shall apply to sanitary landfills that are constructed and operated exclusively for the final deposition of municipal solid waste.

101.102(2) Pursuant to Iowa Code section 455B.305(1), an MSWLF shall not be constructed or operated without first obtaining a permit from the department pursuant to this division, the requirements set forth in 567—Chapter 100, and Division I of this chapter.

101.102(3) The issuance of a permit to an MSWLF pursuant to this division in no way relieves the applicant of the responsibility of complying with all other local, state, or federal statutes; ordinances; and rules or other requirements applicable to the construction and operation of an MSWLF.

101.102(4) Sanitary landfills accepting municipal solid waste must comply with the provisions of this division.

101.102(5) These rules do not pertain to the management and disposal of special wastes. Division VI of this chapter contains rules pertaining to the management and disposal of special wastes.

101.102(6) These rules do not apply to MSWLF units that did not receive waste after October 9, 1994. The closure permit issued or the rules in effect at the time of closure shall govern post-closure activities for such MSWLF units.

101.102(7) This division does not apply to MSWLF units that ceased receiving waste before October 1, 2007, and are not contiguous with MSWLF units that continued to accept waste after October 1, 2007. For the purpose of this subrule, contiguous MSWLF units are those that adjoin, abut, or have a common boundary or edge with one another or that utilize the same groundwater monitoring network system. The permit issued and the rules in effect at the time waste acceptance ceased shall govern post-permit activities for such MSWLF units, except as follows:

a. Financial assurance in accordance with 567—101.114(455B) shall be required.

b. Surface water sampling in accordance with 101.110(3) shall be required.

c. MSWLF units shall perform groundwater sampling for the following parameters:

(1) Routine semiannual water sampling parameters:

1. Chloride.
2. Specific conductance (field measurement).
3. pH (field measurement).
4. Ammonia nitrogen.
5. Iron, dissolved.
6. Chemical oxygen demand.
7. Any additional parameters deemed necessary by the department.

(2) Routine annual water sampling parameters:

1. Total organic halogen.
2. Phenols.
3. Any additional parameters deemed necessary by the department.

d. If the analytical results for a downgradient groundwater monitoring point do not fall within the control limits of two standard deviations above (or below, for pH) the mean parameters, listed in 101.102(7)*"d"*(1) and *"d"*(2), in a corresponding upgradient groundwater monitoring point and it cannot be demonstrated that a source other than an MSWLF unit caused the control limit exceedance, then the owner or operator shall comply with the groundwater assessment monitoring program requirements in 101.110(6) and corrective action requirements in 101.110(7), 101.110(8), and 101.110(9), if necessary.

101.102(8) Compliance with amendments to these rules.

a. Owners or operators of existing MSWLF units that have an approved leachate collection system and a composite liner, or a leachate collection system and an alternative liner modeled at an approved point of compliance, shall not be required to redesign or reconstruct the MSWLF units due to amendments to these rules subsequent to such approval unless the department finds that such units are causing pollution or that continued use of such units will result in a vertical expansion on top of or against the side slopes of a previously filled noncompliant MSWLF unit. Prior to waste placement in the vertical expansion area, revised design plans shall be submitted to include construction of a separatory liner and leachate collection system that comply with all the requirements of 101.107(5) to be placed between the area of vertical expansion and the underlying noncompliant MSWLF unit.

b. Except as authorized by 101.102(8)*"a,"* if any new regulation conflicts with a provision of or an operating procedure prescribed in the engineering plans or the MSWLF permit, the facility shall conform to the new regulation.

101.102(9) Equivalency review procedure.

a. In approving a permit application under this division, the department may authorize, in writing, alternatives to the design requirements in this division only if, and only to the extent that, specific rules in this division expressly state that alternatives may be authorized under this division.

b. An owner or operator requesting an alternative design under this division shall submit a request to the department prepared by an Iowa-licensed professional engineer. The request shall:

(1) Identify the specific rule for which an equivalency alternative is being sought.

(2) Demonstrate through supporting technical documentation, justification and quality control procedures that the requested alternative to the design requirements in the rules of this division will, for the life of operations at the facility, achieve the performance standards in that rule.

c. No equivalency alternative will be approved unless the application affirmatively demonstrates that the following conditions are met:

(1) The request is complete and accurate and the requirements of this subrule have been met.

(2) The proposed alternative will provide protection equivalent to the design requirements in this division for the air, water, or other natural resources of the state of Iowa and will not harm or endanger the public health, safety, or welfare.

101.102(10) All rules, standards, technical guidance, and other similar legal or technical documents referenced in this division shall be the version of those documents in effect on August 1, 2025, unless otherwise noted in these rules, and except for references to the Iowa Code and Iowa Administrative Code, which shall always be the most recent version unless otherwise noted in these rules.

567—101.103(455B) Definitions. The definitions in Iowa Code section 455B.301 and 567—Chapter 100 shall apply to this division.

567—101.104(455B) Permits.

101.104(1) *Applicability.* For purposes of this division, the permit requirements in 567—Chapter 100; Division I of this chapter, and this rule apply.

101.104(2) *Research, development, and demonstration (RD&D) permits.* The director or the director's designee may issue an RD&D permit that overrides the applicable portions of this division

pursuant to 40 CFR 258.4 without issuing a waiver pursuant to 561—Chapter 10. A permit amendment from the department for leachate recirculation only does not require an RD&D permit.

101.104(3) *Notice and public participation in the MSWLF permit issuance and post-permit actions.*

a. For the purposes of this subrule, "post-permit actions" includes permit renewals and requests for the following facility modifications:

(1) Change in an MSWLF facility boundary or an MSWLF unit.

(2) Application for an RD&D permit pursuant to 101.104(2).

(3) Installation of a landfill gas collection system.

(4) Application for a closure permit for an MSWLF unit.

(5) Transfer of an MSWLF permit to a new owner.

(6) Waiver from this division under 567—101.115(455B).

(7) Change in the post-permit land use of the property.

(8) Other significant permit actions that are determined by the department to require public notice and participation. Such actions may include requests to change any of the requirements set forth as special provisions in the permit.

b. Prior to the issuance of approval or denial for an MSWLF permit or post-permit action, public notice shall be circulated in a manner designed to inform interested and potentially interested persons of the permit or post-permit action request. Procedures for the circulation of public notice shall include at least the following:

(1) Upon receipt of the permit application or post-permit action request, the department shall determine whether public notice is required in accordance with this subrule. If public notice is required, then the department shall prepare the public notice that shall be circulated by the owner or operator within the service area of the MSWLF by posting the public notice near the entrance to the MSWLF; and by publishing the public notice in periodicals or, if appropriate, in a newspaper(s) of general circulation.

(2) The public notice shall be posted on the department's webpage.

c. The department shall provide a period of not less than 30 days following the date of the public notice during which time interested persons may submit their written views with respect to the MWSLF permit application or post-permit action request. All written comments submitted during the 30-day comment period shall be retained by the department and considered by the department in the formulation of the department's final determinations. The period for comment may be extended at the sole discretion of the department.

d. The contents of the public notice shall include at least the following:

(1) The name, address, and telephone number of the department.

(2) The name and address of each applicant.

(3) A brief description of each applicant's activities or operations that result in the submittal of the permit application or post-permit action request.

(4) A statement that any person may submit written and signed comments or may request a public hearing, or both, on the proposed permit or post-permit action request. A statement of procedures to request a public hearing pursuant to 101.104(3)*"e"* shall be included.

(5) Locations where copies of the permit application or post-permit action request may be reviewed and the times at which the copies shall be available for public inspection.

e. The applicant or any interested agency, person, or group of persons may request or petition for a public hearing with respect to an MSWLF permit application or post-permit action request. Any such request shall clearly state issues and topics to be addressed at the hearing. Any such request or petition for public hearing must be filed with the department within the 30-day period prescribed in 101.104(3)*"c"* and shall indicate the interest of the party filing such request and the reasons why a hearing is warranted. The department shall hold an informal and noncontested case hearing if there is a significant public interest (including the filing of requests or petitions for such hearing) in holding such a hearing. Frivolous or insubstantial requests for hearing may be denied by the department. Instances of doubt should be resolved in favor of holding the hearing. Any hearing requested pursuant to this subrule

shall be held in the service area of the MSWLF or other appropriate area at the sole discretion of the department.

f. If the department determines that a public hearing is warranted, then the department shall prepare the public notice of the hearing. Public notice of any hearing held shall be circulated at least as widely as was the notice of the permit application or post-permit action request.

g. The contents of public notice of any hearing held pursuant to 101.104(3)*"e"* shall include at least the following:

(1) The name, address, and telephone number of the department;

(2) The name and address of each applicant whose application will be considered at the hearing;

(3) A brief reference to the public notice issued for each permit application and post-permit action request;

(4) Information regarding the time and location for the hearing;

(5) The purpose of the hearing;

(6) A concise statement of the issues raised by the person requesting the hearing;

(7) Locations where copies of the permit application or post-permit action may be reviewed, including the closest department field office, and the times at which the copies shall be available for public inspection; and

(8) A brief description of the nature of the hearing, including the rules and procedures to be followed.

h. The department shall keep a record of the commenters and of the issues raised during the public participation process and shall prepare written responses to all comments received. At the time a final decision is made, the record and copies of the department's responses shall be made available to the public.

567—101.105(455B) Permit applications. Unless otherwise authorized by the department, a permit applicant shall submit on a form prescribed by the department compliance with the requirements in 567—Chapter 100 and Division I of this chapter and the following information:

1. A site exploration and characterization report for the facility that complies with the requirements of 101.106(3).

2. Plans and specifications for the facility, and quality control and assurance (QC&A) plans, that comply with the requirements of 101.107(4).

3. A development and operations (DOPs) plan for the facility.

4. An environmental monitoring plan that complies with the requirements of 567—101.109(455B) and 567—101.110(455B).

5. The project goals and timelines and other documentation as necessary to comply with 101.104(2) and other requirements of the department if an RD&D permit is being requested or renewed.

6. A closure and post-closure plan that complies with the requirements of 567—101.112(455B) and 567—101.113(455B).

567—101.106(455B) Siting and location requirements. This rule applies to new MSWLF units and horizontal expansions of existing MSWLF units. Except for 101.106(2), this rule does not apply to permitted MSWLF units that have been approved prior to October 1, 2007. Information required to document compliance with 567—101.106(455B) shall be consolidated and maintained in a site exploration and characterization report pursuant to 101.106(3).

101.106(1) *Location restrictions.* MSWLFs shall comply with the following location restrictions.

a. Airports.

(1) No new MSWLF shall be constructed or established within six miles of a smaller public airport unless approved or authorized by the Federal Aviation Administration (FAA).

(2) Owners or operators of new MSWLF units, existing MSWLF units, and lateral expansions that are located within 10,000 feet (3,048 meters) of any airport runway end used by turbojet aircraft or within 5,000 feet (1,524 meters) of any airport runway end used by piston-type aircraft only must demonstrate to the FAA and obtain its approval that the units are designed and operated so that the MSWLF unit does not pose a bird hazard to aircraft. The owner or operator must place the

demonstration of this requirement in the operating record and submit to the department a copy of the demonstration approved by the FAA.

(3) Owners or operators proposing to site new MSWLF units or lateral expansions within a five-mile radius of any airport runway end used by turbojet or piston-type aircraft must notify the affected airport and the FAA. A copy of these notifications shall be submitted to the department.

b. Wetlands. New MSWLF units and lateral expansions shall not be located in wetlands unless the owner or operator can make the demonstrations in 40 CFR 258.12 to the department.

c. Fault areas. New MSWLF units or lateral expansions shall not be located within 200 feet (60 meters) of a fault that has had displacement in Holocene time unless the owner or operator demonstrates to the department that an alternative setback distance of less than 200 feet (60 meters) will prevent damage to the structural integrity of the MSWLF unit and will be protective of human health and the environment.

d. Seismic impact zones. New MSWLF units and lateral expansions shall not be located in seismic impact zones unless the owner or operator demonstrates to the department 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. The owner or operator must place the demonstration in the operating record and submit a copy of the demonstration to the department.

e. Unstable areas. Owners or operators of new MSWLF units, existing MSWLF units, or lateral expansions located in an unstable area must demonstrate to the department that engineering measures have been incorporated into the MSWLF unit's design to ensure that the integrity of the structural components of the MSWLF unit will not be disrupted. The owner or operator must place the demonstration in the operating record and submit a copy of the demonstration to the department. The owner or operator must consider the following factors, at a minimum, when determining whether an area is unstable:

(1) On-site or local soil conditions that may result in significant differential settling;

(2) On-site or local geologic or geomorphologic features; and

(3) On-site or local human-made features or human-induced events (both surface and subsurface).

f. Property line setback. An MSWLF unit shall be at least 50 feet from an adjacent property line.

g. Housing and sensitive populations. An MSWLF unit shall not be within 500 feet of an occupied residence, recreational area, child care facility, educational facility, or health care facility in existence at the time of receipt of the original permit application or application to laterally expand the permitted MSWLF unit unless there is a written agreement between the MSWLF owner and such facility. The written agreement shall be filed with the county recorder for abstract of title purposes and a copy submitted to the department.

101.106(2) *Soil and hydrogeologic investigations.* An MSWLF shall have a qualified groundwater scientist, as defined in 567—101.3(455B), conduct a soil and hydrogeologic investigation in accordance with this subrule. The purpose of this investigation is to obtain data to determine potential routes of contaminant migration via groundwater. Such information is vital for completion of the site exploration and characterization report and the hydrologic monitoring system plan and design. This subrule sets forth the minimum requirements for soil and hydrogeologic investigations. An MSWLF shall comply with this subrule unless the department issues written approval due to specific site conditions.

a. Number of borings. A sufficient number of borings shall be made to accurately identify the stratigraphic and hydrogeologic conditions at the site.

b. Depth of borings. Unless otherwise approved by the department in writing, the following requirements shall apply to the depth of borings:

(1) All borings shall be a minimum of 25 feet deep and at least 10 feet below the water table.

(2) At a minimum, half of all borings shall extend 20 feet into the uppermost aquifer, 50 feet below the water table, or 10 feet into bedrock.

(3) At a minimum, one boring shall extend 10 feet into bedrock or 100 feet below the lowest ground surface elevation.

(4) All borings shall be of sufficient depth to correlate strata between borings.

c. Boring method and soil samples.

(1) Continuous samples shall be collected for all borings unless otherwise approved by the department in writing.

(2) Boring logs shall be as detailed as possible in describing each stratum.

(3) Samples shall be clearly marked, preserved, and transported in accordance with laboratory procedures.

(4) The permit applicant shall keep and preserve samples until at least 30 days after the permit is issued.

(5) Soil samples from each stratum shall be tested for falling-head hydraulic conductivity and grain size distribution.

d. Conversion of or plugging borings.

(1) Borings may be converted to piezometers or monitoring wells. However, the conversion of such borings does not guarantee that more piezometers or monitoring wells will not be required in the department-approved hydrologic monitoring system plan and design.

(2) Borings not converted to piezometers or monitoring wells shall be plugged and properly sealed so as not to create pathways for subsurface or surface pollution migration. Borings converted to piezometers or monitoring wells may still need to be partially plugged depending on the depth of the boring. Plugging shall be performed pursuant to 101.110(2).

e. Soil and hydrogeologic investigation description and analysis. A soil and hydrogeologic investigation description and analysis shall be completed and maintained and, at a minimum, shall contain the following:

(1) The boring logs pursuant to 101.106(3)*"c"*(2).

(2) A description of the properties of each soil and bedrock stratum as appropriate, including:

1. Soil texture and classification.
2. Particle size distribution.
3. Mineral composition, cementation, and soil structure.
4. Permeability, including horizontal and vertical permeability, and porosity.
5. Geologic structure, including strike, dip, folding, faulting, and jointing.
6. Previous activities and infrastructure at the site that could affect geology and hydrogeology, such as but not limited to mining, quarry operations, borrow pits, waste disposal, storage tanks, pipelines, utilities, and tile lines.
7. Lenses and other discontinuous units, voids, solution openings, layering, fractures, other heterogeneity, and the scale or frequency of the heterogeneity.
8. Correlation and continuity of strata between borings.

(3) Descriptions of the hydrogeologic units within the saturated zone, including:

1. Thickness.
2. Hydraulic properties, including as appropriate conductivity, transmissivity, storativity, and effective porosity.
3. Concentrations of chemical constituents listed in 40 CFR Part 258, Appendix I, present in the groundwater of hydrogeologic units and the source of those constituents, if known.
4. Role and effect of each hydrogeologic unit as an aquifer, aquitard, or perched saturated zone.
5. The actual or potential use of the aquifers as water supplies.

(4) Plan view maps, and a series of cross sections with two oriented perpendicular and two oriented parallel to the predominant directions of groundwater flow through the MSWLF unit, showing:

1. The extent of soil and bedrock strata.
2. The position of the water table.
3. The position of the uppermost aquifer.
4. Measured values of hydraulic head.
5. Equipotential lines and inferred groundwater streamlines of the water table, and the uppermost aquifer if different from the water table.
6. Location of soil and bedrock borings.
7. Location of piezometers and monitoring points, if any.

(5) A description and evaluation of horizontal and vertical groundwater flow that specifically addresses the following and their significance to the movement of pollutants carried by groundwater:

1. Local, intermediate, and regional groundwater systems.

2. Groundwater recharge and discharge areas within and immediately surrounding the facility, including interactions with perennial and intermittent surface waters and how the facility affects recharge rates.

3. Existing and proposed groundwater and surface water withdrawals.

4. The effects of heterogeneity, fractures, or directional differences in permeability on groundwater movement.

5. Directions of groundwater movement, including vertical components of flow, specific discharge rates, and average linear velocities within the hydrologic strata.

6. Seasonal or other temporal fluctuations in hydraulic head.

7. The effect of existing and proposed MSWLF units.

(6) An analysis of potential impacts on groundwater and surface water quality, and water users, in the event of a theoretical release at the most downgradient portion of each MSWLF unit. The analysis shall at a minimum utilize contaminants and indicator parameters with high mobility in groundwater. This analysis shall include:

1. Assumptions and approximations utilized and why they were utilized.

2. If a model is utilized, a thorough description of models used and each model's capabilities and limitations, including the reliability and accuracy of the models in actual field tests.

3. Projected paths and rates of movement of contaminants found in leachate.

(7) Recommendations for the location of the proposed MSWLF unit and conceptual design based on hydrogeologic information.

101.106(3) *Site exploration and characterization report.* An MSWLF shall develop and submit to the department for review a site exploration and characterization report. At a minimum, the site exploration and characterization report shall detail compliance with the requirements of this rule and contain the following components:

a. A title page and index.

b. A legal description of the site.

c. Proof of the applicant's ownership of the site and legal entitlement to use the site as an MSWLF. If the applicant does not own the site, then proof of legal entitlement to the site must be submitted. Such legal entitlement must include the following:

(1) Provisions that allow continued disposal operations until closure of the facility.

(2) Provisions for the performance of facility closure operations.

(3) Provisions for post-closure care for at least a 30-year period after facility closure.

d. Proof of the applicant's local siting approval pursuant to Iowa Code section 455B.305A, if applicable.

e. Scaled maps or aerial photographs locating the boundaries of the facility and identifying:

(1) North and other principal compass points.

(2) Section lines and other legal boundaries.

(3) Zoning and land use within one-half mile.

(4) Haul routes to and from the facility, including load limits or other restrictions on those routes.

(5) Topography within one-half mile.

(6) Applicable setback distances and location requirements pursuant to this rule, including:

1. Airports within six miles of existing, new, and planned MSWLF units.

2. Floodplains within or adjacent to the facility.

3. Wetlands within or adjacent to the facility.

4. Fault areas within 200 feet of existing, new, and planned MSWLF units.

5. Seismic impact zones within or adjacent to the facility.

6. Unstable areas within or adjacent to the facility.

7. Water wells within 1,000 feet of upgradient existing, new, and planned MSWLF units.

8. Public water wells within one mile of upgradient existing, new, and planned MSWLF units.

9. Boundaries of the existing, new, and planned MSWLF units and the facility property line.

10. Housing and sensitive populations within 500 feet of existing, new, and planned MSWLF units.

f. The bird-aircraft hazard demonstration pursuant to 101.106(2)*"a,"* if applicable.

g. The floodplain demonstration pursuant to 101.106(2)*"b,"* if applicable.

h. The wetlands demonstration pursuant to 101.106(2)*"c,"* if applicable.

i. The fault area demonstration pursuant to 101.106(2)*"d,"* if applicable.

j. The seismic impact zone demonstration pursuant to 101.106(2)*"e,"* if applicable.

k. The unstable area demonstration pursuant to 101.106(2)*"f,"* if applicable.

l. Copies of written agreements with surrounding property owners pursuant to 101.106(2)*"l,"* if applicable.

m. The soil and hydrogeologic investigation description and analysis pursuant to 101.106(3)*"e."*

567—101.107(455B) MSWLF unit design and construction standards. MSWLF units shall be designed and constructed in accordance with this rule.

101.107(1) *Plans and specifications.*

a. Unless otherwise requested by the department, one copy of plans, specifications, and supporting documents shall be provided to the department for review.

b. New MSWLF units shall be constructed in compliance with the rules and regulations in effect at the time of construction. Previous department approval of plans and specifications for MSWLF units not yet constructed shall be superseded by the promulgation of new rules and regulations, after which plans and specifications shall be resubmitted to the department for approval prior to construction and operation.

101.107(2) *MSWLF unit subgrade.* The subgrade for a new MSWLF unit shall be constructed as follows:

a. All trees, stumps, roots, boulders, debris, and other material capable of deteriorating in situ material strength or of creating a preferential pathway for contaminants shall be completely removed or sealed off prior to construction of the MSWLF unit.

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

c. The total settlement or swell of the MSWLF unit's subgrade shall not cause or contribute to failure of the liner and leachate collection system.

d. If the in situ material of the MSWLF unit's subgrade cannot meet the requirements of 101.107(4)*"b"* and *"c,"* then such material shall be removed and replaced with material capable of compliance.

e. The subgrade of an MSWLF unit shall be constructed and graded to provide a smooth working surface on which to construct the liner.

f. The subgrade of an MSWLF unit shall not be constructed in or with frozen soil.

101.107(3) *MSWLF unit liners and leachate collection systems.* The liner and leachate collection system for a new MSWLF unit shall be constructed in accordance with the requirements of this subrule. All active portions must have a composite liner or an alternative liner approved by the department. An MSWLF unit must have a functioning leachate collection system during its active life.

a. Liner systems. An MSWLF unit shall have a liner system that complies with either the composite liner requirements of 101.107(5)*"a"*(1) or an alternative liner system that complies with the requirements of 101.107(5)*"a"*(2). Liners utilizing compacted soil must place the compacted soil in lifts no thicker than eight inches after compaction.

(1) Composite liner systems.

1. A composite liner consists of two components, an upper flexible membrane liner and a lower compacted soil liner.

2. The upper component must consist of a minimum 30 mil flexible membrane liner. Flexible membrane liner components consisting of high-density polyethylene (HDPE) shall be at least 60 mil thick. The flexible membrane liner component must be installed in direct and uniform contact with the lower compacted soil component.

3. The lower component must consist of at least a two-foot layer of compacted soil with a hydraulic conductivity of no more than 1×10^{-7} centimeters per second (cm/sec). The compacted soil must be placed in lifts no thicker than eight inches after compaction.

4. The composite liner must be adequately sloped toward the leachate collection pipes to provide drainage of leachate. Unless alternative design requirements to this performance standard are approved as part of the permit under 101.102(11) (relating to equivalency review procedure), the leachate collection system shall have a slope greater than or equal to 2 percent and not exceeding 33 percent.

(2) Alternative liner systems.

1. The design must ensure that the concentration values listed in Table I of 567—101.107(455B) will not be exceeded in the uppermost aquifer at the relevant point of compliance, as specified pursuant to 101.107(5)*"a"*(2)"2." Alternative liners utilizing compacted soil must place the compacted soil in lifts no thicker than eight inches.

2. The relevant point of compliance specified by the department must be within 50 feet of the planned liner or waste boundary, unless site conditions dictate otherwise, downgradient of the facility with respect to the hydrologic unit being monitored in accordance with 101.110(2)*"a"*(2), and located on land owned by the owner of the MSWLF unit. The relevant point of compliance specified by the department shall be at least 50 feet from the property line of the facility.

3. When approving an alternative liner design, the department shall consider at least the following factors:

- The hydrogeologic characteristics of the facility and surrounding land.
- The climatic factors of the area.
- The volume and physical and chemical characteristics of the leachate.
- The sensitivities and limitations of the modeling demonstrating the applicable point of compliance.
- Practicable capability of the owner or operator.

4. The alternative liner must be adequately sloped toward the leachate collection pipes to provide drainage of leachate. Unless alternative design requirements to this performance standard are approved as part of the permit under 101.102(11) (relating to equivalency review procedure), the leachate collection system shall have a slope greater than or equal to 2 percent and not exceeding 33 percent.

Table I

Chemical	MCL (mg/l)
Arsenic	0.01
Barium	1.0
Benzene	0.005
Cadmium	0.01
Carbon tetrachloride	0.005
Chromium (hexavalent)	0.05
2,4-Dichlorophenoxy acetic acid	0.1
1,4-Dichlorobenzene	0.075
1,2-Dichloroethane	0.005
1,1-Dichloroethylene	0.007
Endrin	0.0002
Fluoride	4.0
Lindane	0.004
Lead	0.05
Mercury	0.002
Methoxychlor	0.1
Nitrate	10.0
Selenium	0.01
Silver	0.05
Toxaphene	0.005
1,1,1-Trichloroethane	0.2
Trichloroethylene	0.005

Chemical	MCL (mg/l)
2,4,5-Trichlorophenoxy acetic acid.	0.01
Vinyl chloride.	0.002

b. Leachate collection system. MSWLF units shall have a leachate collection system that complies with the following requirements:

(1) The leachate collection system shall be designed and constructed to function for the entire active life of the facility and the post-closure period.

(2) The leachate collection system shall be of a structural strength capable of supporting waste and equipment loads throughout the active life of the facility and the post-closure period.

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

(4) If the leachate collection system is not designed and constructed factoring in leachate recirculation or bioreactor operations, the department may prohibit such activities within the MSWLF unit.

(5) The collection pipes shall be of a length and cross-sectional area that allow for cleaning and inspection through the entire length of all collection pipes at least once every three years. The collection pipes shall not be designed or constructed with sharp bends that prevent cleaning or inspection along any section of the collection pipe or that may cause the collection pipe to be damaged during cleaning or inspection.

(6) Leachate collection system designs shall attempt to minimize the potential for clogging due to mass loading.

(7) Unless alternative design requirements are approved as part of the permit under 101.102(11) (relating to equivalency review procedure), the following design requirements shall apply:

1. A geotextile cushion over the flexible membrane liner if the system utilizes such a liner and granular drainage media. A geotextile cushion is not required if the granular drainage media is well rounded and less than 3/8 inch in diameter. The geotextile's mass shall be determined based on the allowable pressure on the geomembrane.

2. Collection pipe(s) at least four inches in diameter at the base of the liner slope(s), surrounded by the high hydraulic-conductivity material listed in 101.107(5)*"b"*(7)"3" below. The collection pipe shall have slots or holes large enough to minimize the potential for clogging from fines conveyed by incoming leachate.

3. One of the following high hydraulic-conductivity materials:

- High hydraulic-conductivity material (e.g., gravel) of uniform size and a fines content of no more than 5 percent by weight passing a #200 sieve. The high hydraulic-conductivity material shall be at least 12 inches in depth and have a hydraulic conductivity of at least 1×10^{-2} cm/sec; or
- A geosynthetic drainage media (e.g., geonet). The transmissivity of geonets shall be tested to demonstrate that the design transmissivity will be maintained for the design period of the facility. The testing for the geonet in the liner system shall be conducted using actual boundary material intended for the geonet at the maximum design normal load for the MSWLF unit and at the design load expected from one lift of waste. At the maximum design normal load, testing shall be conducted for a minimum period of 100 hours unless data equivalent of the 100-hour period is provided, in which case the test shall be conducted for a minimum period of one hour. In the case of the design load from one lift of waste, the minimum period shall be one hour. For geonets used in final covers, only one test shall be conducted for a minimum period of one hour using the expected maximum design normal load from the cover soils and the actual boundary materials intended for the geonet. A granular layer at least 12 inches

thick with a hydraulic conductivity of at least 1×10^{-3} cm/sec shall be placed above the geosynthetic drainage material that readily transmits leachate and provides separation between the waste and liner.

(8) Manholes within the MSWLF unit shall be designed to minimize the potential for stressing or penetrating the liner due to friction on the manhole exterior from waste settlement.

(9) The leachate drainage and collection system within the MSWLF unit shall not be used for the purpose of storing leachate. If leachate is to be stored, it shall be stored in designated storage structures outside of the MSWLF unit.

(10) All of the facility's leachate storage and management structures outside of the MSWLF unit and operations shall have containment structures or countermeasures adequate to prevent seepage to groundwater or surface water. The containment structures and countermeasures for leachate storage shall be at least as protective of groundwater at the liner of the MSWLF unit on a performance basis.

(11) Unless alternative design requirements are approved as part of the permit under 101.102(11) (relating to equivalency review procedure), the leachate storage structures shall be able to store at least seven days of accumulated leachate at the maximum generation rate used in designing the leachate collection system. Such minimum storage capacity may be constructed in phases over time so long as the seven-day accumulation capacity is maintained. The storage facility shall also have the ability to load tanker trucks in case sanitary sewer service is unavailable for longer than seven days.

(12) The leachate collection system shall be equipped with valves or devices similar in effectiveness so that leachate can be controlled during maintenance.

(13) The leachate collection system shall be accessible for maintenance at all times and under all weather conditions.

(14) The permit holder shall annually submit a Leachate Control System Performance Evaluation (LCSPE) Report as a supplement to the facility Annual Water Quality Report, as defined in 101.110(10). The report shall include an evaluation of the effectiveness of the system in controlling the leachate, leachate head levels and elevations, the volume of leachate collected and transported to the treatment works or discharged under any National Pollutant Discharge Elimination System (NPDES) permits, records of leachate contaminants testing required by the treatment works, proposed additional leachate control measures, and an implementation schedule in the event that the constructed system is not performing effectively.

101.107(4) *Quality control and assurance program (QC&A).* MSWLF units shall be constructed under the supervision of a QC&A program to ensure that MSWLF units are constructed in accordance with the requirements of 567—101.107(455B) and the approved plans and specifications. At a minimum, such QC&A program shall consist of the following.

a. The owner or operator shall designate a QC&A officer. The QC&A officer shall be an Iowa-licensed professional engineer. The QC&A officer shall not be an employee of the facility, the construction company or construction contractor. The owner or operator shall notify the department of the designated QC&A officer and provide the department with that person's contact information. The QC&A officer may delegate another person or persons who are not employees of the facility to supervise or implement aspects of the QC&A program.

b. The QC&A officer shall document compliance with 567—101.107(455B), and the approved plans and specifications, for the following aspects of construction:

(1) The MSWLF unit's subgrade.

(2) The liner system, as follows:

1. For a flexible membrane liner, destructive testing of the flexible membrane liner shall be kept to side slopes when continuous seams are utilized. Patches over destructive testing areas shall be checked with nondestructive methods.

2. For the compacted clay component of the liner system, a minimum of five field moisture density tests per eight-inch lift per acre shall be performed to verify that the correct density, as correlated to permeability by a laboratory analysis, has been achieved. Laboratory hydraulic conductivity testing of Shelby tube samples from the constructed soil liner or test pad, field hydraulic conductivity testing of the constructed soil liner or test pad, or other methods approved by the department shall be utilized as a QC&A test.

(3) The leachate collection, conveyance, and storage systems.

(4) Any other aspect of construction as required by the department.

c. A sampling and testing program shall be implemented by the QC&A officer as part of the QC&A program. The sampling and testing program shall:

(1) Verify full compliance with the requirements of 567—101.107(455B) and the approved plans and specifications.

(2) Be approved by the department prior to construction of the MSWLF unit.

(3) Detail how each stage of construction will be verified for full compliance with the requirements of 567—101.107(455B) and the approved plans and specifications.

(4) Be based on statistically significant sampling techniques and establish criteria for the acceptance or rejection of materials and constructed components of the MSWLF unit.

(5) Detail what actions will take place to remedy and verify any material or constructed component that is not in compliance with the requirements of 567—101.107(455B) and the approved plans and specifications.

d. The QC&A officer shall document the QC&A program. Upon completion of the MSWLF unit construction, the QC&A officer shall submit a final report to the department that verifies compliance with the requirements of 567—101.107(455B) and the department-approved plans and specifications. A copy of the final report shall also be maintained by the facility in the operating record. At a minimum, the final report shall include the following.

(1) A title page and index.

(2) The name and permit number of the facility.

(3) Contact information for the QC&A officer and persons delegated by the QC&A officer to supervise or implement an aspect of the QC&A program.

(4) Contact information for all construction contractors.

(5) Copies of daily reports containing the following information:

1. The date.
2. Summary of weather conditions.
3. Summary of locations on the facility where construction was occurring.
4. Summary of equipment, materials, and personnel utilized in construction.
5. Summary of meetings held regarding the construction of the MSWLF unit.
6. Summary of construction progress.
7. Photographs of the construction progress, with descriptions of the time, subject matter, and location of each photograph.
8. Details of sampling and testing program for that day. At a minimum, this report shall include details of where sampling and testing occurred, the methods utilized, personnel involved, and test results.
9. Details of how any material or constructed component that was found not to be in compliance via the sampling and testing program was remedied.

(6) A copy of detailed as-built drawings with supporting documentation and photographic evidence. This copy shall also include a narrative explanation of changes from the original department-approved plans and specifications.

(7) A signed and sealed statement by the QC&A officer that the MSWLF unit was constructed in accordance with the requirements of 567—101.107(455B) and the approved plans and specifications.

101.107(5) *Vertical and horizontal expansions of MSWLF units.* All vertical and horizontal expansions of disposal airspace over existing and new MSWLF units shall comply with the following:

a. Horizontal expansions shall, at a minimum, comply with the following requirements:

(1) Horizontal expansions are new MSWLF units and, at a minimum, shall be designed and constructed in accordance with 101.107(4), 101.107(5) and 101.107(6).

(2) The slope stability of the horizontal expansion between the existing unit and new MSWLF unit shall be analyzed. The interface between two MSWLF units shall not cause a slope failure of either of the MSWLF units.

(3) A horizontal expansion may include a vertical elevation increase of an existing MSWLF unit, pursuant to 101.107(7)*"b,"* if approved by the department.

b. Vertical expansions shall, at a minimum, comply with the following:

(1) A vertical expansion of an MSWLF unit shall not be allowed if the MSWLF unit does not have an approved leachate collection system and a composite liner or a leachate collection system and an alternative liner modeled at an approved point of compliance.

(2) An analysis of the structural impacts of the proposed vertical expansion on the liner and leachate collection system shall be completed. The vertical expansion shall not contribute to the structural failure of the liner and leachate collection system.

(3) An analysis of the impact of the proposed vertical expansion on leachate generation shall be completed. The vertical expansion shall not overload the leachate collection system or contribute to excess head on the liner.

(4) An analysis of the effect of the proposed vertical expansion on run-on, runoff, and discharges into waters of the state shall be completed. The vertical expansion shall not cause a violation of 101.107(8).

(5) The proposed vertical expansion shall be in compliance with the final slopes required at closure pursuant to 101.112(1)*"e."*

101.107(6) *Run-on and runoff control systems.*

a. Owners or operators of MSWLF units must design, construct, and maintain the following:

(1) A run-on control system to prevent flow onto the active portion of the landfill during the peak discharge from a 25-year storm;

(2) A runoff control system from the active portion of the landfill to collect and control at least the water volume resulting from a 25-year 24-hour storm.

b. Runoff from the active portion of the MSWLF unit must be handled in accordance with 101.110(1)*"a."*

567—101.108(455B) Operating requirements. The requirements of this rule shall be consolidated in a DOPs pursuant to 101.108(4).

101.108(1) *Prohibited operations and activities.* For the purposes of this subrule, "regulated hazardous waste" means a solid waste that is a hazardous waste as defined in Iowa Code section 455B.411.

a. Waste screening for prohibited materials. Owners or operators of MSWLF units must implement a program at the facility for detecting and preventing the disposal of regulated hazardous wastes, polychlorinated biphenyls (PCB) wastes, and other prohibited wastes listed in 101.108(1)*"b."* This program must include, at a minimum:

(1) Random inspections of incoming loads unless the owner or operator takes other steps to ensure that incoming loads do not contain regulated hazardous wastes, PCB wastes or other prohibited wastes listed in 101.108(1)*"b"*;

(2) Records of any inspections;

(3) Training of facility personnel to recognize regulated hazardous wastes, PCB wastes and other prohibited wastes listed in 101.108(1)*"b"*; and

(4) Notification of the EPA regional administrator if regulated hazardous wastes or PCB wastes are discovered at the facility.

b. Materials prohibited from disposal. The following wastes shall not be accepted for disposal by an MSWLF.

(1) Waste that is a chemical compound specifically listed by U.S. Environmental Protection Agency (EPA) as a regulated hazardous waste or that is a characteristic hazardous waste pursuant to the following characteristics:

1. Ignitable in that the waste has a flash point of less than 140°F.
2. Corrosive in that the waste has a pH less than 2 or greater than 12.5.
3. Reactive in that the waste is normally unstable, reacts violently with water, forms an explosive mixture with water, contains quantities of cyanide or sulfur that could be released into the air in sufficient quantity to be a danger to human health, or can easily be detonated or exploded.
4. Toxicity characteristic leaching procedure (TCLP) (EPA Method 1311) toxic, in that a TCLP listed chemical constituent exceeds the EPA-assigned concentration standard in 40 CFR Part 261

or the department-assigned concentration standard in Table I of 567—101.107(455B). Waste from a residential building that is contaminated by lead-based paint (i.e., the waste fails the TCLP test for lead only) may be disposed of in an MSWLF unit. The purpose of this exclusion is to help prevent the exposure of children to lead-based paint. Therefore, the meaning of "residential building" in regard to this TCLP exclusion shall be interpreted broadly and include any building that children or parents may utilize as a residence (temporarily or permanently). Such residential buildings include but are not limited to single-family homes, apartment buildings, townhomes, condominiums, public housing, military barracks, nursing homes, hotels, motels, bunkhouses, and campground cabins.

(2) Polychlorinated biphenyl (PCB) wastes with a concentration equal to or greater than 50 parts per million (ppm).

(3) Free liquids, liquid waste and containerized liquids. However, free liquids and containerized liquids may be placed in MSWLF units if:

1. The containerized liquid is household waste other than septic waste. The container must be a small container similar in size to that normally found in household waste;

2. The waste is leachate or gas condensate derived from the MSWLF unit, whether it is a new or existing MSWLF unit or lateral expansion, and is designed with a composite liner and leachate collection system as described in 101.107(5)*"a."* The owner or operator must demonstrate compliance with this subparagraph and place the demonstration in the operating record; or

3. The MSWLF unit is a RD&D project in which the department has authorized the addition of liquids and meets the applicable requirements of 101.104(2).

(4) Septage, which is the raw material, liquids, and pumpings from a septic system, unless treated pursuant to 567—Chapter 68.

(5) Appliances as defined pursuant to 567—Chapter 102, Division VII, unless there is documentation that the appliance has been demanufactured pursuant to 567—Chapter 102, Division VII.

(6) Radioactive waste, excluding luminous timepieces and other items using very small amounts of tritium.

(7) Infectious waste unless managed and disposed of pursuant to 567—Chapter 102, Division VI.

(8) Hot loads, meaning solid waste that is smoking, smoldering, emitting flames or hot gases, or otherwise indicating that the solid waste is in the process of combustion or close to igniting. Ash that has not been fully quenched or cooled is considered a hot load. Such wastes may be accepted at the gate but shall be segregated and completely extinguished and cooled in a manner as safe and responsible as practical before disposal.

(9) Asbestos-containing material (ACM) waste with greater than 1 percent asbestos unless managed and disposed of pursuant to 567—Chapter 102, Division VI.

(10) Grit and bar screenings, grease skimmings, and sewage sludge unless managed and disposed of pursuant to 567—Chapter 102, Division VI.

(11) Waste tires unless each tire is processed into pieces no longer than 18 inches on any side.

(12) Yard waste, except in the circumstances given in Iowa Code section 455D.9(1).

(13) Lead-acid batteries.

(14) Waste oil and materials containing free-flowing waste oil. Materials contaminated with waste oil may be disposed of if no free-flowing oil is retained in the material and the material is not a hazardous waste.

(15) Baled solid waste unless the waste is baled on site after the waste has been visually inspected for prohibited materials.

c. Open burning and fire hazards. No open burning of any type shall be allowed within the permitted boundary of an MSWLF facility. The fueling of vehicles and equipment, and any other activity that may produce sparks or flame, shall be conducted at least 50 feet away from the working face.

d. Scavenging and salvaging. Scavenging shall not be allowed at the MSWLF facility. However, salvaging by MSWLF operators may be allowed by the permitted or other authorized entity.

e. Animal feeding and grazing. Feeding animals municipal solid waste shall not be allowed at an MSWLF facility. The grazing of domestic animals on fully vegetated areas of the MSWLF facility not

used for disposal, including closed MSWLF units, may be allowed by the department so long as the animals do not cause damage or interfere with operations, inspections, environmental monitoring, and other required activities. Hoofed animals shall not be allowed on closed MSWLF units.

101.108(2) *Disposal operations and activities.* MSWLFs shall comply with the following requirements.

a. Survey controls and monuments. Survey controls and monuments shall be maintained as follows.

(1) The property boundary, the permitted boundary, and the boundaries of MSWLF units shall be surveyed and marked by a professional land surveyor at least once prior to closure.

(2) Prior to waste placement, all new MSWLF unit boundaries shall be surveyed and staked by an Iowa-licensed professional engineer or land surveyor.

(3) Survey monuments shall be established and maintained by an Iowa-licensed professional land surveyor to provide vertical and horizontal control.

(4) An Iowa-licensed professional engineer or land surveyor shall check vertical elevations and the progression of fill sequencing.

(5) All survey stakes and monuments shall be clearly marked.

(6) An Iowa-licensed professional engineer or land surveyor shall biennially inspect all survey monuments. Any missing or damaged survey monuments shall be replaced by a professional land surveyor.

b. First lift. The first lift and initial placement of MSW over a new MSWLF unit liner and leachate collection system shall comply with the following requirements.

(1) Waste shall not be placed in the new MSWLF unit until the QC&A officer has submitted a signed and sealed final report to the department pursuant to 101.107(4)*"d"* and that report has been approved by the department.

(2) Construction and earth-moving equipment shall not operate directly on the liner and leachate management system. Waste disposal operations shall begin at the edge of the new MSWLF unit by pushing MSW out over the liner and leachate collection system. Compactors and other similarly heavy equipment shall not operate directly on the leachate collection system until a minimum of four feet of waste has been mounded over the top of the leachate collection system.

(3) Construction and demolitions (C&D) debris waste and materials clearly capable of spearing through the leachate collection system and liner shall not be placed in the first four feet of waste over the top of the leachate collection system. The first four feet of waste shall consist of select waste that is unlikely to damage the liner and performance of the leachate collection system.

(4) The owner or operator must place documentation in the operating record and submit a copy to the department that adequate cover material was placed over the top of the leachate collection system in the MSWLF unit or that freeze/thaw effects had no adverse impact on the compacted clay component of the liner.

c. Fill sequencing. The rate and phasing of disposal operations shall comply with the following requirements.

(1) The fill sequencing shall be planned and conducted in a manner and at a rate that does not cause a slope failure, lead to extreme differential settlement, or damage the liner and leachate collection system.

(2) The fill sequencing shall be planned and conducted in a manner compliant with the run-on and runoff requirements of 101.107(8) and surface water requirements of 567—101.110(455B).

d. Working face. The working face shall comply with the following requirements.

(1) The working face shall be no larger than necessary to accommodate the rate of disposal in a safe and efficient manner.

(2) The working face shall not be so steep as to cause heavy equipment and solid waste collection vehicles to roll over or otherwise lose control.

(3) Litter control devices of sufficient size to help prevent blowing litter shall be utilized at the working face. The operation of the working face shall attempt to minimize blowing litter.

(4) The operation of the working face shall prevent the harborage of vectors and attempt to minimize the attraction of vectors.

(5) Employees at the working face shall be trained to visually recognize universal symbols, markings and indications of prohibited wastes pursuant to 101.108(1)*"b."*

e. Special wastes. Special wastes shall be managed and disposed of pursuant to 567—Chapter 102, Division VI.

f. Cover material and alternative cover material. Alternative cover material of an alternative thickness (e.g., tarps, spray covers) may be authorized if the owner or operator demonstrates to the department that the alternative material and thickness control vectors, fires, odors, blowing litter, and scavenging without presenting a threat to human health and the environment. Cover material or alternative cover material shall be available for use during all seasons in all types of weather. Cover material and alternative cover material shall be utilized as follows.

(1) Daily cover. Six inches of cover material or an approved depth or application of alternative cover material shall be placed and maintained over waste at the end of each operating day, or at more frequent intervals if necessary, to control vectors, fires, odors, blowing litter, and scavenging.

(2) Intermediate cover. At least one foot of compacted cover material or an approved depth or application of alternative cover material shall be placed and maintained over waste in the active portion that has not or will not receive more waste for at least 30 days. At least two feet of compacted cover material or alternative cover material shall be placed and maintained over waste that has not or will not receive waste for at least 180 days. Such active portions shall be seeded if they will not receive waste for a full growing season.

(3) Scarification of cover. To help prevent leachate seeps by aiding the downward flow of leachate, cover material or alternative cover material that prevents the downward flow of leachate and is at least five feet from the outer edge of the MSWLF unit shall be scarified prior to use of that area as a working face. Cover material or alternative cover material that does not impede the downward flow of leachate, as approved by the department, does not require scarification. Scarification may be as simple as the spearing or breaking up of a small area of the cover. Areas of intermediate cover may require removal of some of the cover material or alternative cover material to aid the downward flow of leachate.

(4) Final cover. Final cover over an MSWLF unit that is to be closed shall be constructed and maintained according to the closure and post-closure requirements of 567—101.112(455B) and 567—101.113(455B).

g. Leachate seeps. Leachate seeps shall be contained and plugged upon being identified. Leachate seeps shall not be allowed to reach waters of the state. Soils outside of the MSWLF unit that are contaminated by a leachate seep shall be excavated and then disposed of within the MSWLF unit. Such soils may be used for daily cover material.

h. Leachate recirculation. The department must approve an MSWLF unit for leachate recirculation. The primary goal of the leachate recirculation system is to help stabilize the waste in a more rapid, but controlled, manner. The leachate recirculation system shall not contaminate waters of the state, contribute to erosion, damage cover material, harm vegetation, or spray persons at the MSWLF facility. Leachate recirculation shall be limited to MSWLF units constructed with a composite liner.

i. Differential settlement. Areas of differential settlement sufficient to interfere with runoff and run-on shall be brought back up to the contours of the surrounding active portion. Differential settlement shall not be allowed to cause ponding of water on the active portion.

101.108(3) *Universally approved beneficial use determinations for alternative cover material.* The following alternative cover materials may be beneficially used as daily cover material at MSWLF in the manner and volume specified below. However, MSWLFs shall amend their sanitary landfill permits by notifying the department, and the department field office with jurisdiction over the facility, of their intent to utilize solid by-products pursuant to this rule at least 30 days prior to actual utilization of the by-products as alternative cover material.

a. Asphalt shingles. Asphalt shingles that are certified, consistent with federal regulations (Reference: Appendix E, Subpart E, 40 CFR Part 763, Section 1, Polarized Light Microscopy), as

not containing more than 1 percent asbestos and are ground to an average size of three inches or less in any dimension may be mixed with soil in a 50/50 volume.

b. Compost. One hundred percent cured or finished compost, including compost overs, may be used.

c. Diatomaceous earth. Diatomaceous earth may be mixed with soil in a 50/50 volume.

d. Foundry sand. Foundry sand may be mixed with soil in a 50/50 volume.

e. Glass. Glass that has been ground to an average size of one-half inch or less in any dimension may be mixed with soil in a 10 percent glass and 90 percent soil by volume mixture.

f. Gypsum and gypsum wallboard. Gypsum and gypsum wallboard that have been ground to an average size of three inches or less in any dimension may be mixed with soil in a 50/50 volume.

g. Paper mill sludge. Uncontaminated, dewatered paper mill sludge may be mixed with soil in a 50/50 volume.

h. Sandblasting abrasive. Sandblasting abrasive and residuals may be mixed with soil in a 50/50 volume.

i. Tire chips. Tire chips that are an average size of three inches or less in any dimension may be mixed with soil in a 50/50 volume.

101.108(4) *Beneficial use determination application requirements for alternative cover material.* Unless the alternative cover material beneficial use is approved pursuant to 101.108(3), the applicant shall submit the following application information to the department to amend the MSWLF permit. The department may request that additional information be submitted in order to make a beneficial use determination. The department may also require specific beneficial use determination conditions and issue a temporary beneficial use determination on a trial basis.

If the department finds the application information to be incomplete, then it shall notify the applicant in writing of that fact and of the specific deficiencies and return the application materials to the applicant within 30 days of such notification. The applicant may reapply without prejudice.

a. The name, address, and telephone number of:

(1) Owner of the site where the project will be located.

(2) Applicant for the beneficial use determination.

(3) Official responsible for the operation of the project.

(4) Professional engineer licensed by the state of Iowa and retained for the project, if any. The department may, at its sole discretion, require the applicant to retain a professional engineer for the project or specific parts thereof.

(5) Agency to be served by the project, if any.

(6) Responsible official of agency to be served.

b. A description of the proposed alternative cover material and whether it is to be used as daily, intermediate, or final cover.

c. The chemical and physical characteristics of the alternative cover material.

d. The proposed volume ratio of the alternative cover material(s) to soil or other alternative cover material(s).

e. A demonstration that there is a known or reasonably probable suitability of the alternative cover material as cover material by provision of previous case studies of the alternative cover material being utilized as cover material or information on the ability of the alternative cover material to do the following:

(1) Reduce or maintain current odor levels.

(2) Reduce or deter vectors.

(3) Reduce or maintain the current risk of fire.

(4) Control litter and dust.

(5) Impede the infiltration of liquids and precipitation.

(6) Control landfill gas migration.

(7) Provide a safe and effective working surface.

(8) Provide effective growing media.

(9) Other documentation that the alternative cover material is suitable for cover material.

(10) A demonstration that the proposed use of the alternative cover material will not adversely affect human health or the environment. The demonstration may include but is not limited to a toxicity characteristics leaching procedure (TCLP, EPA Method 1311) analysis of a representative sample of the alternative cover material.

101.108(5) *Beneficial use of alternative cover material and state goal progress.* Alternative cover material placed at no more than the thickness required by MSWLF rules shall be exempt from landfill tonnage measurements used for state goal progress and waste diversion calculations.

101.108(6) *Development and operations plan (DOPs).* An MSWLF unit shall maintain a DOPs. At a minimum, the DOPs shall detail how the facility will operate and how compliance with the requirements of this rule will be maintained. The DOPs shall contain at least the following components:

a. A title page and table of contents.

b. Telephone number and email address of the official responsible for the operation of the facility and an emergency contact person if different.

c. Service area of the facility and political jurisdictions included in that area.

d. Days and hours of operation of the facility.

e. Details of how the site will comply with the prohibited operations and activity requirements of 101.108(1) and any related permit conditions.

f. Details of how the site will comply with the disposal operation and activity requirements of 101.108(2) and any related permit conditions.

g. Details of how the site will comply with the facility operations and activity requirements of 101.108(3), any related permit conditions, and any leachate and wastewater treatment requirements.

567—101.109(455B) Environmental monitoring and corrective action requirements for air quality and landfill gas. MSWLFs shall comply with the following environmental monitoring and corrective action requirements for air quality and landfill gas.

101.109(1) *Air criteria.* Owners or operators of MSWLFs must ensure that the units do not violate any applicable requirements developed under a state implementation plan (SIP) approved or promulgated by the department pursuant to Section 110 of the Clean Air Act.

101.109(2) *Landfill gas.* MSWLFs shall comply with the following requirements for landfill gas. For purposes of this subrule, "lower explosive limit" means the lowest percent by volume of a mixture of explosive gases in air that will propagate a flame at 25°C and atmospheric pressure.

a. Owners or operators of MSWLF units must ensure that:

(1) The concentration of methane gas generated by the facility does not exceed 25 percent of the lower explosive limit for methane in facility structures (excluding gas pipeline, control or recovery system components), and

(2) The concentration of methane gas does not exceed the lower explosive limit for methane at the facility property boundary.

b. Owners or operators of MSWLF units must implement a routine methane-monitoring program to ensure that the standards of 101.109(2)*"a"* are met. Such a program shall include routine subsurface methane monitoring (e.g., at select groundwater wells, at gas monitoring wells).

(1) The type and frequency of monitoring must be determined based on the following factors:

1. Soil conditions;
2. The hydrogeologic conditions surrounding the facility;
3. The hydraulic conditions surrounding the facility;
4. The location of facility structures (including potential subsurface preferential pathways such as but not limited to pipes, utility conduits, drain tiles, and sewers) and property boundaries; and
5. The locations of structures near the outside of the facility to which or along which subsurface migration of methane gas may occur. Examples of such structures include but are not limited to houses, buildings, basements, crawl spaces, pipes, utility conduits, drain tiles, and sewers.

(2) The minimum frequency of monitoring shall be quarterly.

c. If methane gas levels exceeding the limits specified in 101.109(2)*"a"* are detected, the owner or operator must:

(1) Immediately take all necessary steps to ensure protection of human health and notify the department and department field office with jurisdiction over the MSWLF;

(2) Within seven days of detection, place in the operating record and notify the department and department field office with jurisdiction over the MSWLF of the methane gas levels detected and a description of the steps taken to protect human health; and

(3) 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 department and department field office with jurisdiction over the MSWLF that the plan has been implemented. The plan shall describe the nature and extent of the problem and the proposed remedy.

d. The owner or operator shall submit an annual report to the department detailing the gas monitoring sampling locations and results, any action taken, and the results of steps taken to address gas levels exceeding the limits of 101.109(2)*"a"* during the previous year. This report shall include a site map that delineates all structures, perimeter boundary locations, and other monitoring points where gas readings were taken. The site map shall also delineate areas of landfill gas migration outside the MSWLF units, if any. The report shall contain a narrative explaining and interpreting all of the data collected during the previous year. The report shall be due each year at a date specified by the department in the facility's permit.

567—101.110(455B) Environmental monitoring and corrective action requirements for groundwater and surface water. MSWLFs shall comply with the following environmental monitoring and corrective action requirements for groundwater and surface water.

101.110(1) *General requirements for environmental monitoring and corrective action for groundwater and surface water.*

a. MSWLF units shall not:

(1) Cause a discharge of pollutants into waters of the United States, including wetlands, that violates any requirements of the Clean Water Act, including but not limited to NPDES requirements, pursuant to Section 402 of the Clean Water Act.

(2) Cause the discharge of a nonpoint source of pollution into waters of the United States, including wetlands, that violates any requirement of an areawide or statewide water quality management plan that has been approved under Section 208 or 319 of the Clean Water Act.

b. A new MSWLF unit must be in compliance with the groundwater monitoring requirements specified in 101.110(2), 101.110(4), 101.110(5) and 101.110(6) before waste can be placed in the unit unless the department establishes an alternative schedule for demonstrating compliance with:

(1) Subparagraph 101.110(2)*"c"*(3), pertaining to notification of placement of certification in operating record;

(2) Subparagraph 101.110(5)*"c"*(1), pertaining to notification that statistically significant increase (SSI) notice is in operating record;

(3) Subparagraphs 101.110(5)*"c"*(2) and *"c"*(3), pertaining to an assessment monitoring program;

(4) Paragraph 101.110(6)*"b,"* pertaining to sampling and analyzing 40 CFR Part 258, Appendix II, constituents;

(5) Subparagraph 101.110(6)*"d"*(1), pertaining to placement of notice (40 CFR Part 258, Appendix II, constituents detected) in record and notification of placement of notice in record;

(6) Subparagraph 101.110(6)*"d"*(2), pertaining to sampling for 40 CFR Part 258;

(7) Paragraph 101.110(6)*"g,"* pertaining to notification (and placement of notice in record) of SSI above groundwater protection standard;

(8) Numbered paragraph 101.110(6)*"g"*(1)"4" and paragraph 101.110(7)*"a,"* pertaining to assessment of corrective measures;

(9) Paragraph 101.110(8)*"a,"* pertaining to selection of remedy and notification of placement in record;

(10) Paragraph 101.110(9)*"f,"* pertaining to notification of placement in record (certification of remedy completed).

c. Once established at an MSWLF unit, groundwater monitoring shall be conducted throughout the active life and post-closure care period of that MSWLF unit.

101.110(2) *Groundwater monitoring systems.* MSWLFs shall have a groundwater monitoring system that complies with the following requirements:

a. Objectives. A groundwater monitoring system must be installed that meets the following objectives:

(1) Yields groundwater samples from the uppermost aquifer that represent the quality of background groundwater that has not been affected by leakage from a unit. A determination of background quality may include sampling of wells that are not hydraulically upgradient of the waste management area where either:

1. Hydrogeologic conditions do not allow the owner or operator to determine which wells are hydraulically upgradient; or

2. Sampling at other wells will provide an indication of background groundwater quality that is as representative as or more representative than that provided by the upgradient wells.

(2) Yields groundwater samples from the uppermost aquifer that represent the quality of groundwater passing the relevant point of compliance specified by the department under 101.107(5)*"a"*(2)"2." A downgradient monitoring system must be installed at the relevant point of compliance specified by the department under 101.107(5)*"a"*(2)"2" that ensures detection of groundwater contamination in the uppermost aquifer. When physical obstacles preclude installation of groundwater monitoring wells at the relevant point of compliance at existing units, the downgradient monitoring system may be installed at the closest practicable distance, hydraulically downgradient from the relevant point of compliance specified by the department under 101.107(5)*"a"*(2)"2," that ensures detection of groundwater contamination in the uppermost aquifer.

(3) Provides a high level of certainty that releases of contaminants from the site can be promptly detected. Downgradient monitoring wells shall be placed along the site perimeter, within 50 feet of the planned liner or waste boundary unless site conditions dictate otherwise, downgradient of the facility with respect to the hydrologic unit being monitored. Each groundwater underdrain system shall be included in the groundwater detection monitoring program under 101.110(5). The maximum drainage area routed through each outfall shall not exceed ten acres unless it can be demonstrated that site-specific factors such as drain flow capacity or site development sequencing require an alternative drainage area. If contamination is identified in the groundwater underdrain system pursuant to 101.110(5), the owner or operator shall manage the underdrain discharge as leachate in lieu of assessment monitoring and corrective action.

(4) Be designed and constructed with the theoretical release evaluation pursuant to 101.106(3)*"e"*(6) taken into consideration.

b. Long-term, multiphase operations. For those facilities that are long-term, multiphase operations, the department may establish temporary waste boundaries in order to define locations for monitoring wells. The convergence of groundwater paths to minimize the overall length of the downgradient dimension may be taken into consideration in the placement of downgradient monitoring wells provided that the multiphase unit groundwater monitoring system meets the requirements of 101.8(2), 101.8(3), and 101.110(2)*"a"* and *"c"* and will be as protective of human health and the environment as the individual monitoring systems for each MSWLF unit, based on the following factors:

(1) Number, spacing, and orientation of the MSWLF units;

(2) Hydrogeologic setting;

(3) Site history;

(4) Engineering design of the MSWLF units; and

(5) Type of waste accepted at the MSWLF units.

c. Hydrologic monitoring system plan (HMSP). Unless otherwise approved by the department in writing, the number, spacing, and depth of groundwater monitoring points shall be:

(1) Determined based upon site-specific technical information, including but not limited to the soil and hydrogeologic investigation pursuant to 101.106(3) and the site exploration and characterization report pursuant to 101.106(3), that must include thorough characterization of:

1. Aquifer thickness, groundwater flow rate, and groundwater flow direction including seasonal and temporal fluctuations in groundwater flow;

2. Saturated and unsaturated geologic units and fill materials overlying the uppermost aquifer, materials comprising the uppermost aquifer, and materials comprising the confining unit defining the lower boundary of the uppermost aquifer, including but not limited to thicknesses, stratigraphy, lithology, hydraulic conductivities, porosities and effective porosities; and

3. Projected paths and rates of movement of contaminants found in leachate pursuant to 101.106(3)*"e"*(6).

(2) Designed and constructed with a maximum of 300 feet between downgradient groundwater monitoring wells unless it is demonstrated by site-specific analysis or modeling that an alternative well spacing is justified. The convergence of groundwater paths to minimize the overall length of the downgradient dimension may be taken into consideration in the placement of downgradient monitoring wells provided that the groundwater monitoring system meets the requirements of 101.8(2), 101.8(3), and 101.110(2)*"a"* and *"c."*

(3) Certified by a qualified groundwater scientist and approved by the department. Within 14 days of this certification and approval by the department, the owner or operator must notify the department that the certification has been placed in the operating record.

d. Monitoring well maintenance and performance reevaluation plan. A monitoring well maintenance and performance reevaluation plan shall be included as part of the HMSP. The plan shall ensure that all monitoring points remain reliable. The plan shall provide for the following:

(1) A biennial examination of high and low water levels accompanied by a discussion of the acceptability of well location (vertically and horizontally) and exposure of the screened interval to the atmosphere.

(2) A biennial evaluation of water level conditions in the monitoring wells to ensure that the effects of waste disposal or well operation have not resulted in changes in the hydrologic setting and resultant flow paths.

(3) Measurements of well depths to ensure that wells are physically intact and not filling with sediment. Measurements shall be taken annually in wells that do not contain dedicated sampling pumps and every five years in wells containing dedicated sampling pumps.

(4) A biennial evaluation of well recharge rates and chemistry to determine if well deterioration is occurring.

101.110(3) *Surface water monitoring systems.* The department may require an MSWLF facility to implement a surface water monitoring program if there is reason to believe that a surface water of the state has been impacted as a result of facility operations (i.e., leachate seeps, sediment pond discharge) or a groundwater SSI over background has occurred.

a. A surface water monitoring program must be developed that consists of a sufficient number of monitoring points, designated at appropriate locations, to yield surface water samples that provide a representative sample of:

(1) The upstream quality of a surface water of the state if the surface water being monitored is a flowing body of water.

(2) The downstream quality of a surface water of the state if the surface water being monitored is a flowing body of water.

b. Surface water levels must be measured at a frequency specified in the facility's permit, within 1/10 of a foot at each surface water monitoring point immediately prior to sampling, each time surface water is sampled. The owner or operator must determine the rate and direction of surface water flow, if any, each time surface water is sampled. Surface water level and flow measurements for the same surface water of the state must be measured on the same day to avoid temporal variations that could preclude accurate determination of surface water flow and direction.

c. The owner or operator must notify and receive approval from the department for the designation or decommission of any surface water monitoring point and must place that approval in the operating record.

d. A surface water monitoring point shall be designated to maintain sampling at that monitoring point throughout the life of the surface water monitoring program.

e. Each surface water monitoring point must have a unique and permanent number, and that number must never change or be used again at the MSWLF. Surface water monitoring points shall be identified by "SW# (insert unique and permanent number)".

f. The number, spacing, and location of the surface water monitoring points shall be determined based upon site-specific technical information, including:

(1) Water level, including seasonal and temporal fluctuations in water level; and

(2) Flow rate and flow direction, including seasonal and temporal fluctuations in flow.

g. The MSWLF may discontinue the surface water monitoring program if monitoring data indicates that facility operations are not impacting surface water.

101.110(4) *Groundwater sampling and analysis requirements.*

a. The groundwater monitoring program must 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 installed in compliance with 101.110(2). Analyses for a contaminant regulated under this division must be performed by a laboratory certified for the analyte(s) and applicable method pursuant to 567—Chapter 83. The owner or operator must notify the department that the sampling and analysis program documentation has been placed in the operating record, and the program must include procedures and techniques for:

(1) Sample collection;

(2) Sample preservation and shipment;

(3) Analytical procedures;

(4) Chain of custody control; and

(5) Quality assurance and quality control.

b. The groundwater monitoring programs must 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 shall not be field-filtered prior to laboratory analysis.

c. The sampling procedures and frequency must be protective of human health and the environment and consistent with 101.110(5).

d. Groundwater elevations must be measured at a frequency specified in the facility's permit, within 1/100 of a foot in each well immediately prior to purging, each time groundwater is sampled. The owner or operator must determine the rate and direction of groundwater flow each time groundwater is sampled. Groundwater elevations in wells that monitor the same waste management area must be measured within a period of time short enough to avoid temporal variations in groundwater flow that could preclude accurate determination of groundwater flow rate and direction.

e. The owner or operator must establish background groundwater quality in a hydraulically upgradient or background well(s) for each of the monitoring parameters or constituents required in the particular groundwater monitoring program that applies to the MSWLF unit, as determined under 101.110(5)*"a"* or 101.110(6)*"a."* Background groundwater quality may be established at wells that are not located hydraulically upgradient from the MSWLF unit if the wells meet the requirements of 101.110(2)*"a"*(1).

f. The number of samples collected to establish groundwater quality data must be consistent with the appropriate statistical procedures determined pursuant to 101.110(4)*"g."* The sampling procedures shall be those specified under 101.110(5)*"b"* for detection monitoring, 101.110(6)*"b"* and 101.110(6) *"d"* for assessment monitoring, and 101.110(7)*"b"* for corrective action.

g. The owner or operator must specify in the operating record which of the following statistical methods will be used in evaluating groundwater monitoring data for each hazardous constituent. The statistical test chosen shall be conducted separately for each hazardous constituent in each well.

(1) A parametric analysis of variance (ANOVA) followed by multiple comparisons procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent.

(2) An analysis of variance (ANOVA) based on ranks followed by multiple comparisons procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent.

(3) 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.

(4) A control chart approach that gives control limits for each constituent.

(5) Another statistical test method that meets the performance standards of 101.110(4)*"h."* The owner or operator must place a justification for this alternative in the operating record and notify the department of the use of this alternative test. The justification must demonstrate that the alternative method meets the performance standards of 101.110(4)*"h."*

h. The statistical method required pursuant to 101.110(4)*"g"* shall comply with the following performance standards.

(1) 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 one statistical method may be needed.

(2) 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 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 level of not less than 0.01 for individual well comparisons must be maintained.

(3) 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 the number of samples in the background database, the data distribution, and the range of the concentration values for each constituent of concern have been considered.

(4) If a tolerance interval or a prediction interval is used to evaluate groundwater monitoring data, 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 the number of samples in the background database, the data distribution, and the range of the concentration values for each constituent of concern have been considered.

(5) The statistical method shall account for data below the limit of detection (LD) by recording such data at one-half the limit of detection (i.e., LD/2) or as prescribed by the statistical method. Any practical quantitation limit 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.

(6) 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.

i. The owner or operator must determine whether or not there is an SSI over background values for each parameter or constituent required in the particular groundwater monitoring program that applies to the MSWLF unit, as determined under 101.110(5)*"a"* or 101.110(6)*"a."*

(1) In determining whether an SSI has occurred, the owner or operator must compare the groundwater quality of each parameter or constituent at each monitoring well designated pursuant to 101.110(2) to the background value of that constituent, according to the statistical procedures and performance standards specified under 101.110(4)*"g"* and *"h."*

(2) Within 45 days after completing sampling and analysis, the owner or operator must determine whether there has been an SSI over background at each monitoring well.

101.110(5) *Detection monitoring program.*

a. Detection monitoring is required at MSWLF units at all groundwater monitoring wells defined under 101.110(2). At a minimum, a detection monitoring program must include the monitoring for the constituents listed in 40 CFR Part 258, Appendix I, and any additional parameters required by the department on a site-specific basis. An alternative list of constituents may be used if it can be demonstrated that the constituents removed are not reasonably expected to be in or derived from the waste contained in the unit and if the alternative list of constituents is expected to provide a reliable indication of leachate leakage or gas impact from the MSWLF unit.

The department may establish an alternative list of inorganic indicator parameters for an MSWLF unit within 40 CFR Part 258, Appendix I, in lieu of some or all of the heavy metals (constituents 1 through 15 in 40 CFR Part 258, Appendix I) if the alternative parameters provide a reliable indication of inorganic releases from the MSWLF unit to the groundwater. In determining alternative parameters, the department shall consider the following factors.

(1) The types, quantities, and concentrations of constituents in wastes managed at the MSWLF unit;

(2) The mobility, stability, and persistence of waste constituents or their reaction products in the unsaturated zone beneath the MSWLF unit;

(3) The detectability of indicator parameters, waste constituents, and reaction products in the groundwater; and

(4) The concentration or values and coefficients of variation of monitoring parameters or constituents in the groundwater background.

b. The monitoring frequency for all constituents listed in 40 CFR Part 258, Appendix I, or in the alternative list approved in accordance with 101.110(5)*"a"*(1) shall be at least semiannual (i.e., every six months) during the active life of the facility (including closure) and the post-closure period. Where insufficient background data exist, a minimum of five independent samples from each well, collected at intervals to account for seasonal and temporal variation, must be analyzed for the constituents in 40 CFR Part 258, Appendix I, or in the alternative list approved in accordance with 101.110(5)*"a"*(1) during the first year. At least one sample from each well must be collected and analyzed during subsequent semiannual sampling events. The department may specify an appropriate alternative frequency for repeated sampling and analysis for constituents in 40 CFR Part 258, Appendix I, or in the alternative list approved in accordance with 101.110(5)*"a"*(1) during the active life (including closure) and the post-closure care period. The alternative frequency during the active life (including closure) shall be not less than annually. The alternative frequency shall be based on consideration of the following factors.

(1) Lithology of the aquifer and unsaturated zone;

(2) Hydraulic conductivity of the aquifer and unsaturated zone;

(3) Groundwater flow rates;

(4) Minimum distance between upgradient edge of the MSWLF unit and downgradient monitoring well screen (minimum distance of travel); and

(5) Resource value of the aquifer.

c. If the owner or operator determines, pursuant to 101.110(4)*"i,"* that there is an SSI over background for one or more of the constituents listed in 40 CFR Part 258, Appendix I, or in the alternative list approved in accordance with 101.110(5)*"a"*(1) at any monitoring well specified under 101.110(2), then the owner or operator:

(1) Must, within 14 days of this finding, place a notice in the operating record indicating which constituents have shown statistically significant changes from background levels and notify the department that this notice was placed in the operating record.

(2) Must establish within 90 days an assessment monitoring program meeting the requirements of 101.110(6), except as provided in 101.110(5)*"c"*(3).

(3) May demonstrate that a source other than an MSWLF unit caused the contamination or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. A report documenting this demonstration must be certified by a qualified groundwater scientist, approved by the department, and placed in the operating record. If resampling is a part of the demonstration, resampling procedures shall be specified prior to initial sampling. If a successful demonstration to the department is made and documented, the owner or operator may continue detection

monitoring as specified in 101.110(5). If, after 90 days, a successful demonstration is not made, the owner or operator must initiate an assessment monitoring program as required in 101.110(6).

101.110(6) *Assessment monitoring program.*

a. Assessment monitoring is required whenever an SSI over background has been confirmed pursuant to 101.110(5)*"c"* to be the result of a release from the facility.

b. Within 90 days of triggering an assessment monitoring program, and annually thereafter, the owner or operator must sample and analyze the groundwater for all constituents identified in 40 CFR Part 258, Appendix II. A minimum of one sample from each downgradient well shall be collected and analyzed during each sampling event. For any constituent detected in the downgradient wells as a result of the complete 40 CFR Part 258, Appendix II, analysis, a minimum of four independent samples from each well must be collected and analyzed to establish background for the constituents. The department may specify an appropriate subset of wells to be sampled and analyzed for 40 CFR Part 258, Appendix II, constituents during assessment monitoring. The department may delete any of the 40 CFR Part 258, Appendix II, monitoring parameters for an MSWLF unit if it can be shown that the removed constituents are not reasonably expected to be in or derived from the waste contained in the unit.

c. The department may specify an appropriate alternate frequency for repeated sampling and analysis for the full set of 40 CFR Part 258, Appendix II, constituents required by 101.110(6)*"b"* during the active life (including closure) and post-closure care period of the unit. The following factors shall be considered:

(1) Lithology of the aquifer and unsaturated zone;

(2) Hydraulic conductivity of the aquifer and unsaturated zone;

(3) Groundwater flow rates;

(4) Minimum distance between upgradient edge of the MSWLF unit and downgradient monitoring well screen (minimum distance of travel);

(5) Resource value of the aquifer; and

(6) Nature (fate and transport) of any constituents detected in response to this paragraph.

d. After obtaining the results from the initial or subsequent sampling events required in 101.110(6)*"b,"* the owner or operator must:

(1) Within 14 days, place a notice in the operating record identifying the 40 CFR Part 258, Appendix II, constituents that have been detected and notify the department that this notice has been placed in the operating record;

(2) Within 90 days, and on at least a semiannual basis thereafter, resample all wells specified by 101.110(2) and conduct analyses for all constituents in 40 CFR Part 258, Appendix I, or in the alternative list approved in accordance with 101.110(5)*"a"*(1), and for those constituents in 40 CFR Part 258, Appendix II, that are detected in response to the requirements of 101.110(6)*"b."* Concentrations shall be recorded in the facility operating record. At least one sample from each well must be collected and analyzed during these sampling events. The department may specify an alternative monitoring frequency during the active life and the post-closure period for the constituents referred to in this subparagraph. The alternative frequency for constituents in 40 CFR Part 258, Appendix I, or in the alternative list approved in accordance with 101.110(5)*"a"*(1) during the active life shall be no less than annual. The alternative frequency shall be based on consideration of the factors specified in 101.110(6)*"c"*;

(3) Establish background concentrations for any constituents detected pursuant to 101.110(6)*"b"* or 101.110(6)*"d"*(2); and

(4) Establish groundwater protection standards for all constituents detected pursuant to 101.110(6)*"b"* or *"d."* The groundwater protection standards shall be established in accordance with 101.110(6)*"h"* or *"i."*

e. If the concentrations of all 40 CFR Part 258, Appendix II, constituents are shown to be at or below background values, using the statistical procedures in 101.110(4)*"g"* for two consecutive sampling events, the owner or operator must notify the department of this finding and may return to detection monitoring.

f. If the concentrations of any 40 CFR Part 258, Appendix II, constituents are above background values, but all concentrations are below the groundwater protection standard established under 101.110(6)*"h"* or *"i,"* using the statistical procedures in 101.110(4)*"g,"* the owner or operator must continue assessment monitoring in accordance with this subrule.

g. If one or more 40 CFR Part 258, Appendix II, constituents are detected at statistically significant levels above the groundwater protection standard established under 101.110(6)*"h"* or *"i"* in any sampling event, the owner or operator must, within 14 days of this finding, place a notice in the operating record identifying the 40 CFR Part 258, Appendix II, constituents that have exceeded the groundwater protection standard and notify the department and all other appropriate local government officials that the notice has been placed in the operating record. The owner or operator also:

(1) Must, within 90 days of this finding, comply with the requirements in 101.110(6)*"g"*(2) or the following requirements.

1. Characterize the nature and extent of the release by installing additional monitoring wells as necessary until the horizontal and vertical dimensions of the plume have been defined to background concentrations;

2. Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well in accordance with 101.110(6)*"g"*(2);

3. 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 when indicated by sampling of wells in accordance with 101.110(6)*"g"*(1); and

4. Initiate an assessment of corrective measures as required by 101.110(7).

(2) May demonstrate that a source other than an MSWLF unit caused the contamination or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. A report documenting this demonstration must be certified by a qualified groundwater scientist, approved by the department, and placed in the operating record. If a successful demonstration is made, the owner or operator must continue monitoring in accordance with the assessment monitoring program pursuant to 101.110(6) and may return to detection monitoring if the 40 CFR Part 258, Appendix II, constituents are at or below background as specified in 101.110(6)*"e."* Until a successful demonstration is made, the owner or operator must comply with 101.110(6)*"g,"* including initiating an assessment of corrective measures.

h. The owner or operator must establish a groundwater protection standard for each 40 CFR Part 258, Appendix II, constituent detected in the groundwater. The groundwater protection standard shall be:

(1) For constituents for which a maximum contaminant level (MCL) has been promulgated under Section 1412 of the Safe Drinking Water Act (codified) under 40 CFR Part 141, the MCL for that constituent;

(2) For constituents for which MCLs have not been promulgated, the background concentration for the constituent established from wells in accordance with 101.110(2); or

(3) For constituents for which the background concentration is higher than the MCL identified under 101.110(6)*"h"*(1) or health-based concentrations identified under 101.110(6)*"i,"* the background concentration.

i. The department may establish an alternative groundwater protection standard for constituents for which MCLs have not been established. These groundwater protection standards shall be appropriate health-based concentrations that comply with the statewide standards for groundwater established pursuant to 567—Chapter 137.

j. In establishing alternative groundwater protection standards under 101.110(6)*"i,"* the department may consider the following:

(1) The policies set forth by the Groundwater Protection Act;

(2) Multiple contaminants in the groundwater with the assumption that the effects are additive regarding detrimental effects to human health and the environment;

(3) Exposure threats to sensitive environmental receptors; and

(4) Other site-specific exposure or potential exposure to groundwater.

101.110(7) *Assessment of corrective measures.*

a. Within 90 days of finding that any of the constituents listed in 40 CFR Part 258, Appendix II, have been detected at a statistically significant level exceeding the groundwater protection standards defined under 101.110(6)*"h"* or *"i,"* the owner or operator must initiate an assessment of corrective measures. Such an assessment must be completed and submitted to the department for review and approval within 180 days of the initial finding unless otherwise authorized or required by the department.

b. The owner or operator must continue to monitor in accordance with the assessment monitoring program as specified in 101.110(6).

c. The assessment shall include an analysis of the effectiveness of potential corrective measures in meeting all of the requirements and objectives of the remedy as described under 101.110(8), addressing at least the following:

(1) 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;

(2) The time required to begin and complete the remedy;

(3) The costs of remedy implementation; and

(4) 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(ies).

d. Within 60 days of approval from the department of the assessment of corrective measures, the owner or operator must discuss the results of the corrective measures assessment, prior to the selection of a remedy, in a public meeting with interested and affected parties. The department may establish an alternative schedule for completing the public meeting requirement. Notice of public meeting shall be sent to all owners and occupiers of property adjacent to the permitted boundary of the facility, the department, and the department field office with jurisdiction over the facility. A copy of the minutes of this public meeting and the list of community concerns must be placed in the operating record and submitted to the department.

101.110(8) *Selection of remedy.*

a. Based on the results of the corrective measures assessment conducted under 101.110(7), the owner or operator must select a remedy within 60 days of holding the public meeting that, at a minimum, meets the standards listed in 101.110(8)*"b."* The department may establish an alternative schedule for selecting a remedy after holding the public meeting. The owner or operator must submit a report to the department within 14 days of selecting a remedy describing the selected remedy, stating that the report has been placed in the operating record, and explaining how the selected remedy meets the standards in 101.110(8)*"b."*

b. Remedies must:

(1) Be protective of human health and the environment;

(2) Attain the groundwater protection standards specified pursuant to 101.110(6)*"h"* or *"i"*;

(3) Control the source(s) of releases so as to reduce or eliminate, to the maximum extent practicable, further releases of 40 CFR Part 258, Appendix II, constituents into the environment that may pose a threat to human health or the environment; and

(4) Comply with standards for management of wastes as specified in 101.110(9)*"d."*

c. In selecting a remedy that meets the standards of 101.110(8)*"b,"* the owner or operator shall consider the following evaluation factors.

(1) The long-term and short-term effectiveness and protectiveness of the potential remedy(ies), along with the degree of certainty that the remedy will prove successful based on consideration of the following:

1. Magnitude of reduction of existing risks;

2. Magnitude of residual risks in terms of likelihood of further releases due to waste remaining following implementation of a remedy;

3. The type and degree of long-term management required, including monitoring, operation, and maintenance;

4. Short-term risks that might be posed to the community, workers, or the environment during implementation of such a remedy, including potential threats to human health and the environment associated with excavation, transportation, redisposal, or containment;

5. Time period until full protection is achieved;

6. Potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, redisposal, or containment;

7. Long-term reliability of the engineering and institutional controls; and

8. Potential need for replacement of the remedy.

(2) The effectiveness of the remedy in controlling the source to reduce further releases based on consideration of the following factors:

1. The extent to which containment practices will reduce further releases; and

2. The extent to which treatment technologies may be used.

(3) The ease or difficulty of implementing a potential remedy(ies) based on consideration of the following factors:

1. Degree of difficulty associated with constructing the technology;

2. Expected operational reliability of the technology;

3. Necessity of coordination with and obtaining necessary approvals and permits from other agencies;

4. Availability of necessary equipment and specialists; and

5. Available capacity and location of needed treatment, storage, and disposal services.

(4) Practicable capability of the owner or operator, including a consideration of technical and economic capabilities.

(5) The degree to which community concerns, including but not limited to the concerns identified at the public meeting required pursuant to 101.110(7)*"d,"* are addressed by a potential remedy(ies).

d. The owner or operator shall specify as part of the selected remedy a schedule(s) for initiating and completing remedial activities. Such a schedule must require the initiation of remedial activities within a reasonable period of time taking into consideration the factors set forth in 101.110(8)*"d"*(1) through *"d"*(8). The owner or operator must consider the following factors in determining the schedule of remedial activities:

(1) Extent and nature of contamination;

(2) Practical capabilities of remedial technologies in achieving compliance with groundwater protection standards established under 101.110(6)*"h"* or *"i"* and other objectives of the remedy;

(3) Availability of treatment or disposal capacity for wastes managed during implementation of the remedy;

(4) Desirability of utilizing alternative or experimental technologies that are not widely available but that may offer significant advantages over already available technologies in terms of effectiveness, reliability, safety, or ability to achieve remedial objectives;

(5) Potential risks to human health and the environment from exposure to contamination prior to completion of the remedy;

(6) Resource value of the aquifer, including:

1. Current and future uses;

2. Proximity and withdrawal rate of users;

3. Groundwater quantity and quality;

4. The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents;

5. The hydrogeologic characteristics of the facility and surrounding land;

6. Groundwater removal and treatment costs; and

7. The cost and availability of alternative water supplies;

(7) Practicable capability of the owner or operator; and

(8) Other relevant factors.

101.110(9) *Implementation of the corrective action plan.*

a. Based on the schedule established under 101.110(8)*"d"* for initiation and completion of remedial activities, the owner or operator must:

(1) Establish and implement a corrective action groundwater monitoring program that:

1. At a minimum, meets the requirements of an assessment monitoring program under 101.110(6);

2. Indicates the effectiveness of the corrective action remedy; and

3. Demonstrates compliance with groundwater protection standards pursuant to 101.110(9)*"e"*;

(2) Implement the corrective action remedy selected under 101.110(8); and

(3) Take any interim measures necessary to ensure the protection of human health and the environment. Interim measures should, to the greatest extent practicable, be consistent with the objectives of and contribute to the performance of any remedy that may be required pursuant to 101.110(8). The following factors must be considered by an owner or operator in determining whether interim measures are necessary.

1. Time period required to develop and implement a final remedy;

2. Actual or potential exposure of nearby populations or environmental receptors to hazardous constituents;

3. Actual or potential contamination of drinking water supplies or sensitive ecosystems;

4. Further degradation of the groundwater that may occur if remedial action is not initiated expeditiously;

5. Weather conditions that may cause hazardous constituents to migrate or be released;

6. Risk of fire or explosion or potential for exposure to hazardous constituents as a result of an accident or the failure of a container or handling system; and

7. Other factors that may pose threats to human health and the environment.

b. An owner or operator may determine, based on information developed after implementation of the remedy has begun or other information, that compliance with the requirements of 101.110(8)*"b"* is not being achieved through the remedy selected. In such cases, the owner or operator must notify the department and implement other methods or techniques that could practicably achieve compliance with the requirements unless the owner or operator makes the determination under 101.110(9)*"c."* The notification shall explain how the proposed alternative methods or techniques will meet the standards in 101.110(8)*"b,"* or the notification shall indicate that the determination was made pursuant to 101.110(9) *"c."* The notification shall also specify a schedule(s) for implementing and completing the remedial activities to comply with 101.110(8)*"b"* or the alternative measures to comply with 101.110(9)*"c."* Within 90 days of approval by the department for the proposed alternative methods or techniques or the determination of impracticability, the owner or operator shall implement the proposed alternative methods or techniques meeting the standards of 101.110(8)*"b"* or implement alternative measures meeting the requirements of 101.110(9)*"c"*(2) and *"c"*(3).

c. If the owner or operator determines that compliance with requirements under 101.110(8)*"b"* cannot be practicably achieved with any currently available methods, the owner or operator must:

(1) Obtain certification of a qualified groundwater scientist and approval by the department that compliance with requirements under 101.110(8)*"b"* cannot be practicably achieved with any currently available methods.

(2) Implement alternate measures to control exposure of humans or the environment to residual contamination, as necessary to protect human health and the environment.

(3) Implement alternate measures for control of the sources of contamination or for removal or decontamination of equipment, units, devices, or structures that are:

1. Technically practicable; and

2. Consistent with the overall objective of the remedy.

(4) Notify the department within 14 days that a report justifying the alternate measures prior to implementation has been placed in the operating record.

d. All solid wastes that are managed pursuant to a remedy required under 101.110(8), or an interim measure required under 101.110(9)*"a"*(3), shall be managed in a manner that:

(1) Is protective of human health and the environment; and

(2) Complies with applicable RCRA, state, and local requirements.

e. Remedies selected pursuant to 101.110(8) shall be considered complete when:

(1) The owner or operator complies with the groundwater protection standards established under 101.110(6)*"h"* or *"i"* at all points within the plume of contamination that lie beyond the groundwater monitoring well system established under 101.110(2).

(2) Compliance with the groundwater protection standards established under 101.110(6)*"h"* or *"i"* has been achieved by demonstrating that concentrations of 40 CFR Part 258, Appendix II, constituents have not exceeded the groundwater protection standard(s) for a period of three consecutive years using the statistical procedures and performance standards 101.110(4)*"g"* and *"h."* The department may specify an alternative length of time during which the owner or operator must demonstrate that concentrations of 40 CFR Part 258, Appendix II, constituents have not exceeded the groundwater protection standard(s), taking into consideration:

1. The extent and concentration of the release(s);
2. The behavior characteristics of the hazardous constituents in the groundwater;
3. The accuracy of monitoring or modeling techniques, including any seasonal, meteorological, or other environmental variables that may affect accuracy; and
4. The characteristics of the groundwater.

(3) All actions required by the department to complete the remedy have been satisfied.

f. Upon completion of the remedy, the owner or operator must notify the department within 14 days that a certification has been placed in the operating record verifying that the remedy has been completed in compliance with the requirements of 101.110(9)*"e."* The certification must be signed by the owner or operator and by a qualified groundwater scientist and approved by the department.

g. When, upon completion of the certification, the owner or operator determines that the corrective action remedy has been completed in accordance with the requirements under 101.110(9)*"e,"* the owner or operator shall be released from the requirements for financial assurance for corrective action pursuant to 101.114(5).

101.110(10) *Annual water quality reports (AWQR).* The owner or operator shall submit an annual report to the department detailing the water quality monitoring sampling locations and results, assessments, selection of remedies, implementation of corrective action, and results of corrective action remedies to address SSIs, if any, during the previous year. This report shall include a site map that delineates all monitoring points where water quality samples were taken and plumes of contamination, if any. The report shall contain a narrative explaining and interpreting all of the data collected during the previous year. The report shall be due each year on a date set by the department in the facility's permit.

567—101.111(455B,455D) Recordkeeping and reporting requirements. The purpose of the recordkeeping and reporting activities is to verify compliance with this division and to document the construction and operations of the facility. The department can set alternative schedules for recordkeeping and notification requirements as specified in 101.111(1) and 101.111(2), except for the notification requirements in 101.106(2)*"a"* and 101.110(6)*"g"*(1)"3." MSWLFs shall comply with the following recordkeeping and reporting requirements.

101.111(1) *Recordkeeping.* The owner or operator of an MSWLF unit must record and retain near the facility in an operating record or in an alternative location approved by the department the following information as it becomes available.

a. Permit application, permit renewal, and permit modification application materials pursuant to 567—101.105(455B);

b. Site exploration and characterization reports pursuant to 101.106(3);

c. Design and construction plans and specifications, and related analyses and documents, pursuant to 567—101.107(455B). The QC&A final reports, and related analyses and documents, pursuant to 101.107(4)*"d"*;

d. Inspection records, training procedures, and notification procedures required in 567—101.108(455B);

e. Any MSWLF unit design documentation for placement of leachate or gas condensate in an MSWLF unit as required under 101.108(1)*"b"*(3)"2" and "3";

f. Gas monitoring results from monitoring and any remediation plans required by 567—101.109(455B);

g. Any demonstration, certification, finding, monitoring, testing, or analytical data required by 567—101.110(455B);

h. Closure and post-closure care plans and any monitoring, testing, or analytical data as required by 567—101.112(455B) and 567—101.113(455B); and

i. Any cost estimates and financial assurance documentation required by this chapter.

101.111(2) *Reporting.* The owner or operator must notify the department when the documents required in 101.111(1) have been placed in the operating record. All information contained in the operating record must be furnished upon request to the department for inspection.

567—101.112(455B) Closure criteria. MSWLFs shall comply with the following closure requirements.

101.112(1) Owners or operators of MSWLF units must install a final cover system that is designed to minimize infiltration and erosion. The final cover system must be designed and constructed to:

a. Have a permeability less than or equal to the permeability of any bottom liner system (for MSWLFs with some type of liner) or have a permeability no greater than 1×10^{-7} cm/sec, whichever is less;

b. Minimize infiltration through the closed MSWLF by the use of an infiltration layer that contains a minimum of 18 inches of compacted earthen material;

c. Minimize erosion of the final cover by the use of an erosion layer that contains a minimum of 24 inches of earthen material that is capable of sustaining native plant growth;

d. Have an infiltration layer and erosion layer that are a combined minimum of 42 inches of earthen material at all locations over the closed MSWLF unit; and

e. Have a slope between 5 percent and 25 percent. Steeper slopes may be used if it is demonstrated that a steeper slope is unlikely to adversely affect final cover system integrity.

101.112(2) The department may approve an alternative final cover design that includes:

a. An infiltration layer that achieves reduction in infiltration equivalent to the infiltration layer specified in 101.112(1)*"a"* and *"b"*; and

b. An erosion layer that provides protection from wind and water erosion equivalent to the erosion layer specified in 101.112(1)*"c"* and *"d."*

101.112(3) The owner or operator must prepare a written closure plan that describes the steps necessary to close all MSWLF units at any point during the active life in accordance with the cover design requirements in 101.112(1) or 101.112(2), as applicable. The closure plan, at a minimum, must include the following information.

a. A description of the final cover including source, volume, and characteristics of cover material designed in accordance with 101.112(1) or 101.112(2) and the methods and procedures to be used to install the cover;

b. An estimate of the largest area of the MSWLF unit requiring a final cover, as required under 101.112(1) or 101.112(2), at any time during the active life;

c. An estimate of the maximum inventory of wastes on site over the active life of the landfill facility; and

d. A schedule for completing all activities necessary to satisfy the closure criteria in 567—101.112(455B).

101.112(4) The owner or operator must notify the department that the closure plan has been placed in the operating record no later than the initial receipt of waste in a new MSWLF unit.

101.112(5) At least 180 days prior to beginning closure of each MSWLF unit as specified in 101.112(6), an owner or operator must notify the department of the intent to close the MSWLF unit and that a notice of the intent to close the unit has been placed in the operating record. If the MSWLF facility will no longer be accepting MSW for disposal, then the owner or operator must also notify all local governments utilizing the facility and post a public notice of the intent to close and no longer to accept MSW.

101.112(6) The owner or operator must begin closure activities of each MSWLF unit:

a. No later than 30 days after the date on which the MSWLF unit receives the known final receipt of wastes; or

b. If the MSWLF unit has remaining capacity and there is a reasonable likelihood that the MSWLF unit will receive additional wastes, no later than one year after the most recent receipt of wastes. Extensions beyond the one-year deadline for beginning closure may be granted by the department if the owner or operator demonstrates that the MSWLF 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 MSWLF unit.

101.112(7) The owner or operator must complete closure activities of each MSWLF unit in accordance with the closure plan within 180 days following the beginning of closure as specified in 101.112(6). Extensions of the closure period may be granted by the department if the owner or operator demonstrates that closure will, of necessity, take longer than 180 days and that the owner or operator has taken and will continue to take all steps to prevent threats to human health and the environment from the unclosed MSWLF unit.

101.112(8) Following closure of each MSWLF unit, the owner or operator must submit to the department certification, signed by an independent professional engineer registered in Iowa, verifying that closure has been completed in accordance with the closure plan. Upon approval by the department, the certification shall be placed in the operating record.

101.112(9) Following closure of all MSWLF units, the owner or operator must record a notation on the deed to the landfill facility property, or some other instrument that is normally examined during title search in lieu of a deed notification, and notify the department that the notation has been recorded and a copy has been placed in the operating record. The notation on the deed must in perpetuity notify any potential purchaser of the property that:

a. The land has been used as a landfill facility, and

b. Its use is restricted under 101.113(3)*"c."*

101.112(10) The owner or operator may request permission from the department to remove the notation from the deed if all wastes are removed from the facility.

567—101.113(455B) Post-closure care requirements. MSWLFs shall comply with the following post-closure care requirements.

101.113(1) Following closure of each MSWLF unit, the owner or operator must conduct post-closure care. Post-closure care must be conducted for 30 years, except as provided under 101.113(2), and consist of at least the following.

a. Maintaining the integrity and effectiveness of any final cover, including making repairs to the cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and runoff from eroding or otherwise damaging the final cover;

b. Maintaining and operating the leachate collection system in accordance with the requirements in 101.107(5)*"b"* and 101.105(9), if applicable. The department may allow the owner or operator to stop managing leachate if the owner or operator demonstrates that leachate no longer poses a threat to human health and the environment;

c. Monitoring the groundwater in accordance with the requirements of 567—101.110(455B) and maintaining the groundwater monitoring system; and

d. Maintaining and operating the gas monitoring system in accordance with the requirements of 567—101.109(455B).

101.113(2) The length of the post-closure care period may be:

a. Decreased by the department if the owner or operator demonstrates that the reduced period is sufficient to protect human health and the environment and this demonstration is approved by the department; or

b. Increased if the department determines that the lengthened period is necessary to protect human health and the environment.

101.113(3) The owner or operator of all MSWLF units must prepare a written post-closure plan that includes, at a minimum, the following information:

a. A description of the monitoring and maintenance activities required in 101.113(1) for each MSWLF unit and the frequency at which these activities will be performed;

b. Name, address, email, and telephone number of the person or office to contact about the facility during the post-closure period; and

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(s), or any other components of the containment system or the function of the monitoring systems unless necessary to comply with the requirements in this division. The department may approve any other disturbance if the owner or operator demonstrates that disturbance of the final cover, liner, or other component of the containment system, including any removal of waste, will not increase the potential threat to human health or the environment.

101.113(4) The owner or operator must notify the department that a post-closure plan has been prepared and placed in the operating record by the date of initial receipt of waste.

101.113(5) Following completion of the post-closure care period for each MSWLF unit, the owner or operator must submit to the department a certification, signed by an independent Iowa-licensed professional engineer, verifying that post-closure care has been completed in accordance with the post-closure plan. Upon department approval, the certification shall be placed in the operating record.

567—101.114(455B) Financial assurance requirements. The owner or operator of an MSWLF must establish financial assurance for closure, post-closure care and corrective action, if applicable, in accordance with Division VIII of this chapter.

567—101.115(455B) Waiver limitations. Some provisions of this division are minimum standards required by federal law (including but not limited to 40 CFR 258), and waivers to such provisions shall not be granted unless they are as protective as the applicable minimum federal standards.

These rules are intended to implement Iowa Code section 455B.304.

567—101.116 to **101.199** Reserved.

DIVISION III
INDUSTRIAL LANDFILLS

567—101.200(455B) Purpose. The purpose of this division is to implement Iowa Code chapter 455B, subchapter IV (solid waste disposal), for the siting, designing, and operating of a sanitary landfill accepting only industrial solid waste or a sanitary landfill accepting only C&D.

567—101.201(455B) Applicability.

101.201(1) This division shall apply to sanitary landfills that are constructed and operated exclusively for the final deposition of industrial solid waste or C&D, known for purposes of this chapter as industrial landfills.

101.201(2) Pursuant to Iowa Code section 455B.305(1), an industrial landfill shall not be constructed or operated without first obtaining a permit from the department pursuant to this division, the requirements set forth in 567—Chapter 100, and Division I of this chapter.

101.201(3) The issuance of a permit to an industrial landfill pursuant to this division in no way relieves the applicant of the responsibility of complying with all other local; state; or federal statutes, ordinances, and rules or other requirements applicable to the construction and operation of an industrial landfill.

101.201(4) All rules, standards, technical guidance, and other similar legal or technical documents referenced in this division shall be the version of those documents in effect on August 1, 2025, unless otherwise noted in these rules, and except for references to the Iowa Code and Iowa Administrative Code, which shall always be the most recent version unless otherwise noted in these rules.

567—101.202(455B) Definitions. For the purposes of this division, the definitions in 567—Chapter 100 and Iowa Code section 455B.301 shall apply.

567—101.203(455B) Permits. For purposes of this division, the permit requirements in 567—Chapter 100 shall apply.

567—101.204(455B) Permit applications. Unless otherwise authorized by the department, a permit applicant shall submit on a form prescribed by the department the requirements in 567—Chapter 100 and Division I of this chapter, as well as the following information.

101.204(1) A detailed description of the disposal process to be used. The department may request additional details to ensure compliance with all operation requirements.

101.204(2) A table listing the equipment to be used, its design capacities, and expected loads.

101.204(3) A closure/post-closure plan that:

a. Details how and when the facility will be closed in accordance with applicable requirements of this division.

b. Describes the proposed groundwater monitoring plan, leachate control system, and site inspection and maintenance activities necessary to comply with this division.

c. States the name, address, and telephone number of the person or office to serve as a contact with regard to the facility during the post-closure period.

101.204(4) Such other information as may be required by the director.

567—101.205(455B) Soil and hydrogeologic investigations. An industrial landfill shall have a qualified groundwater scientist conduct a soil investigation, hydrogeologic investigation, and evaluation of hydrogeologic conditions. The purpose of these investigations is to obtain data to determine potential routes of contaminant migration via groundwater. Such information is vital for development of the hydrologic monitoring system plan and design. This division sets forth the minimum requirements for this work, including reporting. An industrial landfill shall comply with this division unless the department issues written approval due to specific site conditions.

567—101.206(455B) Soil investigation.

101.206(1) *Soil borings.*

a. Number of borings. A sufficient number of soil borings shall be made to accurately identify the hydrogeologic variations of the landfill site. For new landfill sites, the minimum number of borings required is 10 for landfill sites of less than 10 acres, 20 for landfill sites of 10 to 50 acres, and 20 plus an additional boring for every 10 acres above 50 acres for landfill sites larger than 50 acres. Fewer borings may be needed for existing landfill sites, depending on previous work done at the landfill site. Also, no borings will be required in existing fill areas. The department may require additional borings based on the geological complexity of the landfill site.

b. Depth of borings. All borings must extend a minimum of 25 feet deep and at least 10 feet deep below the water table; however, borings in proposed fill areas shall be terminated 10 feet above the uppermost aquifer or be grouted to provide such separation. At least half the borings located outside the existing or proposed fill area shall extend either 10 feet into the uppermost aquifer, 50 feet below the water table, or 10 feet into bedrock. At least one boring shall extend 10 feet into bedrock or 100 feet below the lowest ground surface elevation.

c. Boring method. Borings shall comply with the applicable portions of this chapter. The preferred boring method is hollow stem auger, although it may be necessary to use other methods at greater depths and in bedrock. When wet drilling methods are used for boring in which monitoring wells or piezometers are installed, the drilling fluid and methods and development procedures shall be approved by and documented with the department.

d. Assurance that soil boring samples have been taken at the landfill site. The soil boring samples must be kept by the permit applicant until the permit is issued and must be made available to the department if the department requests them.

101.206(2) *Soil samples.* Samples shall be collected at five-foot intervals and at every change in stratum. These samples shall be obtained using a split spoon sampler and the procedures of the standard penetration test. A minimum of one undisturbed Shelby tube sample shall be obtained in the uppermost cohesive stratum at or below the lowest depth at which solid waste will be disposed of. Samples shall be clearly marked, preserved, and maintained for future inspection. Samples selected for laboratory analysis shall be properly preserved.

101.206(3) *Laboratory test of discrete soil samples.* Laboratory tests of discrete soil samples shall be conducted to correlate strata between soil borings, obtain permeability data on each stratum, and design monitoring wells.

a. *Hydraulic conductivity tests.* Tests using a constant-head or falling-head permeameter shall be run on a minimum of one sample from each Shelby tube sample. Each sample shall be from a different soil boring representing a different area of the landfill site.

b. *Grain size distribution.* Grain size distribution tests shall be conducted on a minimum of one sample from each distinct stratum.

567—101.207(455B) Hydrogeologic investigation.

101.207(1) *Groundwater level measurements.* The elevation of the water table shall be determined at or near the location of each soil boring that penetrates the water table. The water table may be determined using a completed water table monitoring well, or piezometer. The bottom of a piezometer used to measure water table elevation shall be no more than five feet below the water table. The apparent horizontal groundwater flow direction shall be determined based on water table measurements. Vertical groundwater flow shall then be assessed in at least two profiles approximately parallel to the apparent horizontal flow direction. Vertical groundwater flow shall be assessed using at least two well clusters per profile. Each well cluster shall contain a water table monitoring well or piezometer and additional water level monitoring points based on landfill site conditions as follows.

a. If the water table is in the uppermost aquifer, one additional water level monitoring point shall be located near the base of the aquifer or at least 20 feet below the base of the water table monitoring point. This additional monitoring point may not be required if the aquifer is less than 20 feet thick.

b. If the uppermost aquifer is less than 50 feet below the water table, an additional water level monitoring point shall be located at the top of the aquifer.

c. If the uppermost aquifer is more than 50 feet below the water table, additional water level monitoring points shall be placed at depths of 30 feet and 50 feet below the water table.

d. If required, the one deeper soil boring into bedrock shall be used as a landfill site for one well cluster. Water table monitoring points in this cluster shall correspond to the other well cluster used for a profile. In addition, water level monitoring points shall be placed at the bottom of the boring and, if possible, at the top and bottom of the uppermost aquifer. Groundwater level measurements shall be made after the water levels have stabilized in the monitoring point and at least 24 hours after completion and bailing of the monitoring well or installation of the piezometer. The water level in existing wells shall be observed and recorded prior to bailing. Each set of water level measurements shall be made in as short a time frame as possible not to exceed eight hours.

101.207(2) *In situ permeability tests.* In situ permeability tests shall be conducted on each monitoring well and piezometer in each well cluster.

a. *Pumping test.*

(1) If more than one monitoring point is located in the uppermost aquifer, a pumping test shall be conducted at one or more upper aquifer monitoring points. A pumping test involves pumping at a constant rate from one well while observing water levels in other wells. The pumping rate shall be as high as possible without dewatering the well. Water level measurements in other uppermost aquifer wells shall be measured at frequent intervals near the start of the test and then at progressively longer intervals. Continuous water level recording is preferable.

(2) Water levels in wells not located in the uppermost aquifer shall be recorded throughout the test at regular intervals. Water levels in all wells shall be measured 24 hours prior to the test and just before the test. The test duration shall be at least four hours and continue until a stabilized drawdown condition

is observed. Longer tests may be necessary if other uppermost aquifer monitoring points are slow to respond. Water level readings shall be recorded through the recovery phase of the water table.

b. Bail and slug tests. Monitoring wells and piezometers located in materials with low hydraulic conductivities shall be tested using a bail or slug test. These tests involve rapidly removing or adding a known volume of water to a well and then recording water levels in the well as the well recovers to its original level. Typically, the necessary frequency of measurements will be similar to that required of a pumping test. In materials of very low hydraulic conductivities, less frequent measurements are necessary. In materials of higher hydraulic conductivities, more frequent measurements may be necessary.

101.207(3) *Existing well research.* A reasonable effort to inventory all active, unused, and abandoned water wells within one mile of the facility and the identification of all water wells within three miles of the permitted waste boundary shall be conducted. Well logs, other available information on well construction, static water levels, and usage shall be obtained. The well inventory shall be based on thorough reviews of state and local collections of well logs and, when possible, interviews or surveys of well owners. Also to be included are maps showing the location of soil borings, other field tests and measurements, and existing wells.

567—101.208(455B) Evaluation of hydrogeologic conditions.

101.208(1) Based on soil boring and other available information, a description of the landfill site geology shall be made. This description shall include preparation of geologic cross sections of sufficient number and spacing (no fewer than four at every landfill site) to adequately define all areas of the landfill site and of sufficient detail to adequately depict major stratigraphic and structural trends and reflect geologic structural features in relation to groundwater flow. Each pair of cross sections must be as near to perpendicular as possible to adequately portray the landfill site geology.

101.208(2) A description of the hydrogeologic unit(s) within the saturated zone shall be made, including thickness; depth; hydraulic properties, such as transmissivity and storage coefficient or specific yield; description of the role of each as confining bed, aquifer, or perched saturated zone; and its actual or potential use as a water supply aquifer.

101.208(3) All groundwater flow paths from the landfill site shall be identified, including both horizontal and vertical components of flow. A contour map of the water table shall be presented showing horizontal flow paths. A potentiometric surface map of the uppermost aquifer showing horizontal flow paths shall also be presented, if different from the water table. Vertical flow paths shall be shown in at least two profiles approximately parallel to the direction of horizontal flow. Vertical flow paths shall be determined by water level measurements from clustered wells at different depths if possible. An evaluation of vertical groundwater flow based on the hydrologic properties of the various strata encountered at the landfill site, estimated groundwater flow and recharge rates, and known information on hydraulic head shall also be made.

101.208(4) The seasonal, temporal, and artificially induced variations in groundwater flow shall be evaluated. Temporal variations occur due to natural events, such as rainfall. The addition of tile lines, removal of overburden, or deposition of wastes would constitute artificially induced variations.

101.208(5) Surface water flow paths from the landfill site shall be identified on topographic contour maps.

567—101.209(455B) Monitoring system plan. A hydrologic monitoring system shall be designed to intercept the groundwater and surface water flow paths from the landfill site, including proposed locations and depths for monitoring wells in accordance with monitoring well siting criteria in 567—101.212(455B). The surface water monitoring plan shall include monitoring points on all standing and flowing bodies of water that will receive surface runoff or groundwater discharge from the landfill site. For streams, sampling points upstream and downstream of areas of potential impact from the landfill site shall be selected. The monitoring system plan shall also include sampling protocols and monitoring well maintenance and performance reevaluation procedures.

567—101.210(455B) Sampling protocol. At a minimum, the sampling protocol must include the following.

101.210(1) Order in which monitoring points are to be sampled, all tests and procedures needed at each monitoring point and the order in which these procedures will be carried out, equipment and containers to be used, procedures and precautions for their use, precautions to avoid introducing contaminants from outside sources into monitoring wells or samples, and how equipment must be cleaned between uses;

101.210(2) Procedures for evacuating, if applicable, each monitoring well prior to each water quality sampling;

101.210(3) Procedures for handling field blanks and other quality assurance samples at the facility and in transit to and from the laboratory;

101.210(4) Procedures for sample preservation;

101.210(5) Procedures for sample collection, labeling and handling at the facility and during transport to the laboratory;

101.210(6) Procedures for recording field observations and measurements;

101.210(7) Procedures for records maintenance and data analysis; and

101.210(8) Procedures for sampling surface water monitoring points, including exact sampling locations and depths.

567—101.211(455B) Monitoring well maintenance and performance reevaluation plan.

101.211(1) A monitoring well maintenance and performance reevaluation plan shall be included as part of the hydrologic monitoring system plan. The plan shall ensure that all monitoring points remain reliable.

101.211(2) The plan shall provide for the following.

a. A biennial examination of high and low water levels accompanied by a discussion of the acceptability of well location (vertically and horizontally) and exposure of the screened interval to the atmosphere.

b. A biennial evaluation of water level conditions in the monitoring wells to ensure that the effects of waste disposal or well operation have not resulted in changes in the hydrologic setting and resultant flow paths.

c. Annual measurement of well depths to ensure that wells are physically intact and not filling with sediment.

d. An in situ permeability test to be conducted every five years on monitoring wells to compare test data with those collected originally to determine if well deterioration is occurring or other methods approved by the department.

567—101.212(455B) Monitoring well siting requirements.

101.212(1) *Downgradient monitoring wells.* Downgradient monitoring wells must be located to provide a high level of certainty that releases of contaminants from the landfill site can be promptly detected. Downgradient monitoring wells shall be placed along the landfill site perimeter, within 50 feet of the planned liner or waste boundary unless landfill site conditions dictate otherwise, downgradient of the facility with respect to the hydrologic unit being monitored. For those facilities that are long-term, multiphase operations, the department may establish temporary waste boundaries in order to define locations for monitoring wells. The convergence of groundwater paths to minimize the overall length of the downgradient dimension may be taken into consideration in the placement of downgradient monitoring wells.

101.212(2) *Water table wells.* At least three downgradient water table monitoring wells shall be installed at each facility. The maximum spacing between wells shall be 600 feet.

101.212(3) *Uppermost aquifer monitoring wells.* If different from water table monitoring wells, at least three uppermost aquifer monitoring wells shall be installed at each facility. Uppermost aquifer monitoring wells shall be spaced no more than 600 feet apart. If the uppermost aquifer is located more than 50 feet below the water table, the requirement for three wells may be relaxed, although at least one downgradient uppermost aquifer monitoring well will be required.

101.212(4) *Other downgradient monitoring wells.* Additional downgradient monitoring wells will be required if the water table and uppermost aquifer monitoring wells do not intercept most vertical flow paths from the landfill site. In such situations, monitoring wells shall be placed at the appropriate depths to intercept the remaining flow paths and shall be spaced at no more than 600 feet apart.

101.212(5) *Upgradient monitoring wells.* Upgradient monitoring wells shall not be affected by the landfill site. At least one upgradient monitoring well shall be installed into each stratum being monitored by downgradient monitoring wells. If it is not possible to actually locate a monitoring well upgradient of the landfill site, the well shall be placed as near the landfill site as feasible without being affected by the landfill site.

567—101.213(455B) General requirements.

101.213(1) *Plan requirements.* The plans for industrial landfills shall include the following.

a. The map and aerial photograph of sufficient scale to show all homes, buildings, lakes, ponds, watercourses, wetlands, dry runs, rock outcroppings, roads, and other applicable details including topography and drainage patterns. All wells shall be identified on the map or aerial photograph, and a benchmark shall be indicated.

b. A plot drawing in appropriate scale of the landfill site and the immediately adjacent area showing dimensions, topography with appropriate contour intervals, drainage patterns, known existing drainage tiles, locations where any geologic samples were taken, all water wells with their uses, and present and planned pertinent features including but not limited to roads, fencing, and borrow areas.

c. Detailed engineering drawing of the landfill site showing all initial and permanent roads, buildings, and equipment to be installed; unloading and holding areas; fences and gates; landscaping and screening devices; personnel and maintenance facilities; and sewer and water lines.

d. CCR landfills shall have a soil liner consisting of at least four feet of recompacted soil. The description, source and volume of the material to be used for the landfill liner, including the method of installation, must be provided. The hydraulic conductivity must be $1 \times 10E^{-7}$ cm/sec (0.00028 ft/day) or less as determined by appropriate laboratory analysis. The percent of standard or modified proctor density at moisture contents consistent with expected field conditions and corresponding to a measured hydraulic conductivity equal to or less than $1 \times 10E^{-7}$ cm/sec shall be determined in the laboratory. The soil shall be placed in lifts not to exceed eight inches in thickness. A minimum of one field moisture and density test shall be performed per lift per acre to verify that the moisture and density determined by the laboratory analysis as correlated to permeability has been achieved. Results of field moisture and density tests shall be submitted to the department prior to the placement of solid waste.

e. Alternative liner systems. An alternative liner system may be approved by the director if the design of the liner system is equivalent to the soil liner required in 101.213(1)*"d"* in performance, longevity, and protection of the groundwater, or, based on the specific type of waste to be disposed of, the design of the liner system offers equivalent protection of the groundwater. Undisturbed soil shall not be used as a liner.

f. Diversion and drainage structures designed to prevent ponding, infiltration, inundation, erosion, slope failure, and washout from surface runoff due to a 25-year 24-hour rainfall event.

g. A leachate collection, storage and treatment and disposal system designed to protect the soils, surface water, and groundwater from leachate contamination. This system shall also be designed to operate during the active life of the landfill site and during the post-closure period.

(1) The design and construction of the system must be in accordance with 101.213(10) and be coordinated with the planned phase development of the landfill site and the timing of leachate generation.

(2) The potential for leachate generation shall be evaluated in determining the design for the facility.

(3) The plan must include proposed quality assurance and quality control testing to be performed during installation and operation of the system. This plan shall include procedures that will be followed during installation of the leachate collection system and during normal landfill operations to ensure the system's integrity and design standards.

h. A drawing of the scheme of development shown progressively with time. The methods to be used to ensure compliance with the scheme and to provide vertical and horizontal controls shall be described.

i. Cross-sectional drawings showing progressively with time the original and proposed elevation of excavating, trenching, and fill.

j. An ultimate land use proposal, including intermediate stages, with time schedules indicating the total and complete land use. Final elevations, grades, permanent drainage structures, monitoring or treatment facilities, and permanent improvements of the completed landfill shall be included. Any supporting drawings to the ultimate land use proposal shall be in appropriate scale.

k. Information describing:

(1) Source, volume, and characteristics of cover material;

(2) Area of landfill site in acres.

l. A report consisting of information verifying that the portion of the landfill site to be filled is:

(1) Situated to obviate any predictable lateral movement of significant quantities of leachate from the landfill site to standing or flowing surface water or to shallow aquifers that are in actual use or are deemed to be of potential use as a water resource.

(2) At least 50 feet from the adjacent property line unless there is a written agreement with the owner of the abutting property. The report shall verify that the portion to be filled is at least 50 feet from the adjacent property line. The written agreement shall be filed with the county recorder and shall become a permanent record of the property.

(3) Beyond 500 feet from any existing habitable residence unless there is written agreement with the owner of the residence and the landfill site is screened by natural objects, plantings, or fences or by other appropriate means. The residence must be in existence on the date of application for the original permit from the department. The written agreement shall be filed with the county recorder and recorded for abstract of title purposes and a copy submitted to the department.

m. Such additional data and information as may be deemed necessary by the director to evaluate a proposed industrial landfill.

n. When a new landfill or lateral expansion is located within 200 feet of a fault that has had displacement in Holocene time, the plan must contain a notice that the facility's official files will include demonstration that an alternative setback distance of less than 200 feet will prevent damage to the structural integrity of the landfill site and will be protective of human health and the environment.

o. When a new landfill or a lateral expansion is located in seismic impact zones, the plan must contain a notice that the facility's official files will include the following demonstration: that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in the lithified earth material for the landfill site.

p. When a new landfill or lateral expansion is located in an unstable area, the plan must contain a notice that the facility's official files will include the following demonstration: that engineering measures have been incorporated into the landfill site design to ensure that the integrity of the structural components of the landfill site will not be disrupted. The demonstration must consider the on-site or local soil conditions that may result in significant differential settling, on-site or local geologic or geomorphologic features, and on-site or local human-made features or events (both surface and subsurface). For existing facilities located in an unstable area, the owner or operator must prepare the above demonstration required in this paragraph and notify the director that it has been placed in the facility's official files.

101.213(2) *Operating requirements.* The plan submitted shall detail how the industrial landfill will comply with these requirements.

a. Solid waste shall be unloaded at the working face only when an operator is on duty at that area. Solid waste may be deposited in storage containers inside the facility under the supervision of an attendant or operator.

b. A copy of the permit, engineering plans, and reports shall be kept at the facility at all times.

c. Each landfill site shall be graded and provided with drainage facilities to minimize flow of surface water onto and into the portion of the landfill site being filled and to prevent soil erosion and ponding of water.

d. The finished surface of the landfill site shall be repaired as required, covered with soil, and seeded with native grasses or other suitable vegetation immediately upon completion or promptly in the spring on areas terminated during winter conditions. If necessary, seeded slopes shall be covered with straw or similar material to prevent erosion.

e. Each industrial landfill shall be staked as necessary and inspected annually, or as otherwise specified in the permit, by an Iowa-licensed professional engineer. A brief report by the engineer indicating areas of conformance or nonconformance with the approved plans and specifications shall be submitted to the department by the permit holder within 30 days of the inspections. In specifying alternate inspection frequencies or schedules, the department shall consider the types and quantities of waste disposed of, the rate of development of the landfill site, the degree of control over landfill site development inherent in the design and topography of the landfill site, and the quality of prior operation.

f. If any pockets, seams or layers of sand or other highly permeable material are encountered at the industrial landfill, the permit holder shall promptly notify the department and shall ensure that a professional engineer registered in Iowa has certified that all sands encountered were totally excavated or sealed off properly or otherwise handled as explicitly provided for in the permit before solid waste is disposed of in that area of the landfill site.

g. The total volume of leachate collected for each month shall be recorded, and the elevation and thickness of leachate in the landfill shall be provided to the department in accordance with the schedule specified in the permit.

101.213(3) *Hydrologic monitoring system.* The owner or operator of a solid waste disposal facility shall operate and maintain a hydrologic monitoring system that includes a sufficient number of groundwater monitoring wells and surface water monitoring points to determine the impact, if any, that the sanitary disposal project is having on the groundwater and surface water.

The hydrologic monitoring systems shall enable early detection of the escape of pollutants from an industrial landfill. The hydrologic monitoring system shall be planned, designed, and constructed in accordance with the provisions of 101.213(3) through 101.213(9), and implemented in accordance with the following schedule.

a. A hydrologic monitoring system plan shall be submitted to the department for review and approval with any application for a new permit. Installation of the approved system shall be completed prior to the deposition of solid waste into the landfill.

b. A hydrologic monitoring system plan shall be submitted with applications for permit renewal.

c. Upon notice by the department, a hydrologic monitoring system plan may be required to be submitted within six months of such notification.

d. Completion of installation and operation of the approved plan shall be completed within one year of the date of department approval.

101.213(4) *Hydrologic monitoring system operating requirements.*

a. Operational sampling requirements. All sampling shall be conducted in accordance with an approved sampling protocol, components of which are described in 567—101.210(455B).

b. Groundwater levels. The elevation of water in each monitoring well shall be measured during sampling events and recorded to the nearest 0.01 foot. Level measurements must be made before a well is evacuated for sample collection.

c. Surface water levels. The water level or flow rate of each surface water body sampled shall be measured and recorded at the time of sample collection.

d. First-year water sampling. During the first year of operation of the hydrologic monitoring system, a sample shall be collected quarterly from each groundwater monitoring well and surface water monitoring point. The purpose of this sample is to determine baseline water quality information and enable initial estimation of water quality variability. Each sample shall be analyzed for the following parameters in addition to the parameters listed in 101.213(4)*"e"* and any additional parameter deemed necessary by the department.

(1) Arsenic.
(2) Barium.
(3) Cadmium.
(4) Chromium, total.
(5) Lead.
(6) Mercury.
(7) Magnesium.
(8) Zinc.
(9) Copper.
(10) Benzene.
(11) Carbon tetrachloride.
(12) 1,2-Dichloroethane.
(13) Trichloroethylene.
(14) 1,1,1-Trichloroethane.
(15) 1,1-Dichloroethylene.
(16) Paradichlorobenzene.

e. Routine semiannual water sampling. After the first year, each monitoring point must be sampled semiannually as specified in the facility's operation permit and analyzed for the following parameters.

(1) Chloride.
(2) Specific conductance (field measurement).
(3) pH (field measurement).
(4) Ammonia nitrogen.
(5) Iron, dissolved.
(6) Chemical oxygen demand.
(7) Temperature (field measurement).
(8) Any additional parameters deemed necessary by the department.

f. Routine annual water sampling. One sample per year from each monitoring point collected in a quarter specified in the facility's operation permit must be analyzed for the following parameters.

(1) Total organic halogen.
(2) Phenols.
(3) Any additional parameters deemed necessary by the department.

101.213(5) *Laboratory procedures.* Analyses for a contaminant regulated under this division must be performed by a laboratory certified for the analyte(s) and applicable method pursuant to 567—Chapter 83.

a. All analyses of parameters not covered in the Safe Drinking Water Act (SDWA) must be performed according to methods specified in SW-846 or approved by the United States Environmental Protection Agency. Any analytical method used on non-SDWA parameters deviating from those specified in SW-846 or approved by EPA must be approved by the department.

b. All analyses must be recorded on forms that, in addition to the analytical results, show the precision of the data set, bias, and limit of detection.

101.213(6) *Analysis of sampling data.* For each parameter analyzed during the first year of operation of the hydrologic monitoring system, as listed in 101.213(4)*"d,"* the mean and standard deviation for each upgradient monitoring well shall be determined using the first year of data. For routine semiannual monitoring parameters, as listed in 101.213(4)*"e,"* mean and standard deviation shall be recalculated annually using all available analytical data. If the analytical results for a downgradient monitoring point do not fall within the control limits of two standard deviations above the mean parameter(s) level in a corresponding upgradient monitoring point, the owner or operator shall submit this information to the department within 30 days of receipt of the analytical results. If the analytical results from an upgradient monitoring point do not fall within two standard deviations of the mean parameter(s) level for that monitoring point, the department shall also be notified within 30 days.

101.213(7) *Additional sampling.* The department will determine if additional sampling is warranted after receipt of information indicating a possible release as required in 101.213(6). The department may

require any additional samples to be split and analyzed to determine whether the values obtained outside the control limits were the result of laboratory or sampling error. Any additional analytical results shall be submitted to the department by the owner or operator within seven days of receipt. The department will review the information and determine if additional monitoring or preparation of a groundwater quality assessment plan, in accordance with 101.213(9), is necessary.

101.213(8) *Recordkeeping and recording.*

a. The persons conducting the sampling must record the procedures, measurements, and observations at the time of sampling. The field records must be sufficient to document whether the procedures and requirements specified in the sampling protocol have been followed. The records must also contain the names of the persons conducting the sampling, the time and date each monitoring point was sampled, and the required field measurement or test result. The owner or operator must submit copies of these field records to the department upon request.

b. The owner or operator shall keep records of analyses and the associated groundwater surface elevations for the active life and post-closure period of the facility. These records shall be kept at the landfill site or in the administrative files of the owner or operator and shall be available for review by the department.

c. The owner or operator shall provide the department with copies of the quarterly monitoring analytical results by the dates specified in the facility's operation permit.

d. An annual report summarizing the effect of the facility on groundwater and surface water quality shall be submitted to the department by November 30 each year. The summary is to be prepared by qualified groundwater scientist and incorporated in the November annual engineer inspection report. The contents of this summary are to include the following items.

(1) A narrative describing the effects of the facility on surrounding surface water and groundwater quality and any changes made or maintenance needed in the monitoring network.

(2) Graphs showing concentrations versus time for all monitoring parameters for each well for as long as records exist for that parameter. Control limits (two standard deviations from the initial background value) must be shown in each graph.

(3) Results of activities and tests required by the well maintenance and performance reevaluation plan described in 567—101.211(455B).

101.213(9) *Groundwater quality assessment plan.*

a. If leachate migration occurs, the owner or operator shall develop and submit for approval a specific plan to conduct a groundwater quality assessment study at the facility to determine the rate of migration and the extent and constituent composition of the leachate release. At a minimum, the assessment monitoring plan must contain the following elements.

(1) Discussion of the hydrogeologic conditions at the landfill site with an identification of potential contaminant pathways.

(2) Description of the present detection monitoring system.

(3) A description of the approach the owner or operator will take to substantiate any contention that the contamination may have been falsely indicated.

(4) Description of the investigatory approach used to characterize the rate and extent of leachate migration.

(5) Discussion of the number, location, and depth of wells that will be initially installed, as well as a strategy for installing more wells in subsequent investigatory phases.

(6) Information on well design and construction.

(7) Description of the sampling and analytical program used to obtain and analyze groundwater monitoring data.

(8) Description of data collection and analysis procedures.

(9) Schedule for the implementation of each phase of the assessment study.

b. After the plan has been approved by the department, the owner or operator shall implement the plan according to the schedule in the plan.

c. Within 90 days after the activities prescribed in the groundwater assessment plan have been completed, the owner or operator shall submit a written groundwater quality assessment report to the department.

d. If the department determines that no waste or waste constituents from the facility have entered the groundwater, the owner or operator shall reinstate the routine monitoring program.

e. If the department determines that waste or waste constituents have been released from the facility and have entered the groundwater, the owner or operator shall continue to make the determinations described by the assessment plan and develop a remedial action/mitigation plan to alleviate or reduce contamination to the fullest extent possible.

101.213(10) *Leachate control system and liner design.* New industrial landfills or expansions of existing industrial landfills must have a leachate collection, storage, and treatment and discharge system in place prior to accepting waste. This system shall be operated in conformance with the approved design during the active life of the landfill site and during the post-closure period.

a. Leachate collection system.

(1) The leachate collection system shall be designed to allow not more than one foot of head above the top of the landfill liner. The collection system must include a method for measuring the leachate head in the landfill at the lowest area(s) of the collection system.

(2) The landfill liner must be graded toward the leachate collection pipe at a minimum slope of two percent and not to exceed 10 percent. The side slopes of the landfill liner must be less than 25 percent.

(3) A drainage layer must be placed immediately above the landfill liner. This drainage layer shall consist of a minimum of 1 foot of soil with a coefficient of permeability of 1 x $10E^{-3}$ cm/sec (2.8 ft/day) or greater.

(4) Leachate collection pipe shall be surrounded by a gravel protection and drainage layer.

(5) The collection pipe must be perforated of a sufficient internal diameter to handle the expected flow but not less than four inches in diameter; capable of being cleaned throughout the active life of the landfill site and during the post-closure period; chemically resistant to the wastes and the expected leachate; and of sufficient strength to support maximum static and dynamic loads imposed by the overlying wastes, cover materials, and equipment used during the construction and operation of the landfill site. Documentation shall be submitted that includes methods and specifications for cleaning of the pipes, chemical compatibility of the pipes, and calculations and specifications for pipe strength.

(6) The leachate collection system shall be equipped with valves to enable the flow of leachate from the facility to be shut off during periods of maintenance.

(7) The leachate collection system shall be cleaned out once every three years or more frequently if conditions warrant. A report of the methods and results of the cleanout shall be submitted at the time of permit renewal.

b. Leachate storage system. The leachate storage system must be:

(1) Capable of storing at least seven days' accumulation of leachate;

(2) Constructed of materials that are compatible with the expected leachate; and

(3) Accessible at all times of the year and under all weather conditions.

c. Leachate recirculation. The primary goal of the leachate recirculation system is to help stabilize the waste. The leachate recirculation system shall not contaminate waters of the state, contribute to erosion, damage cover material, harm vegetation, or spray persons. Leachate recirculation shall be limited to areas satisfying the requirements of 101.213(10). The department shall approve areas for leachate recirculation.

d. Construction certification report. Prior to inspection and startup, a construction certification report must be submitted discussing quality assurance and quality control testing done to ensure that all materials and equipment for the leachate control system have been placed in accordance with the approved engineering plans, reports, and specifications. The results of all testing must be included, along with documentation of any failed tests, a description of the procedures used to correct the failures, and results of any retesting performed.

101.213(11) *Closure requirements.* The owner or operator of the industrial landfill must close the landfill site in a manner that minimizes the potential for post-closure release of pollutants to the air, groundwater, and surface waters.

a. A minimum of two permanent surveying monuments must be installed by a registered land surveyor from which the location and elevation of wastes, containment structures, and monitoring facilities can be determined throughout the post-closure period.

b. Contents of final cover.

(1) The final cover of an industrial landfill shall consist of:

1. Not less than two feet of compacted soil. The hydraulic conductivity must be $1 \times 10E^{-7}$ cm/sec or less as determined by appropriate laboratory analysis. The percent of standard or modified proctor density at moisture content consistent with expected field conditions and corresponding to a measured hydraulic conductivity equal to or less than $1 \times 10E^{-7}$ cm/sec shall be determined in the laboratory. The soil shall be placed in lifts not to exceed eight inches in thickness. A minimum of one field moisture and density test shall be performed per lift per acre to verify that the density determined by the laboratory analysis as correlated to the hydraulic conductivity has been achieved. Results of field moisture and density tests shall be submitted to the department. The compacted soil shall be keyed into the bottom liner at the waste cell boundary.

2. Not less than two feet of uncompacted soil, containing sufficient organic matter to support vegetation. The thickness of this soil layer must be at least the root depth of the planned vegetative cover to prevent root penetration into the underlying soil layers. This layer shall be placed as soon as possible to prevent desiccation, cracking, and freezing of the compacted soil layer described in 101.213(11)*"b"*(1)"1."

(2) A layer of compacted soil, incinerator ash, or similar material permitted by the department may be used to prepare the landfill site for placement of the compacted soil layer described in 101.213(11)*"b"*(1)"1." The use of such material will not serve as a replacement for the compacted soil layer described in 101.213(11)*"b"*(1)"1."

(3) Alternate methods and materials may be permitted if shown to provide equivalent or superior performance.

c. The final cover shall be designed and graded to meet the drainage requirements of 101.213(11)*"c."* The final cover must have a minimum slope of 5 percent and shall not exceed a slope of 25 percent. Those portions of existing landfills demonstrating placement of final cover in conformance with previously approved plans and specifications shall not be required to reconstruct the cover to meet either the minimum or maximum slope established by this subrule.

d. The final cover shall be seeded with native grasses or other suitable vegetation as soon as practical upon completion to prevent soil erosion. If seeding must be delayed due to summer or winter conditions, silt fences or other structures shall be used to minimize erosion of the final cover until the next season suitable for planting. The placement of cover in conformance with 101.213(13)*"b"* shall not be delayed due to season and shall be placed as soon as the solid waste has reached its maximum design elevation within the cell. Vegetation type shall be based on density and root depth, nutrient availability, soil thickness, and soil type. Alternatives to vegetative cover may be considered to control erosion and promote runoff.

101.213(12) *Post-closure care.* Industrial landfills shall comply with the following post-closure care requirements for 30 years.

a. The diversion and drainage system must be maintained to approved specifications to prevent run-on and runoff from eroding or otherwise damaging the final cover.

b. The integrity and effectiveness of the final cover must be maintained by making repairs as necessary to correct the effects of settling, subsidence, erosion, or other events. If damage to the compacted soil layer described in 101.213(11)*"b"*(1)"1" occurs, repairs shall be made to correct the damage and return it to its original specifications.

c. The vegetative cover shall be reseeded as necessary to maintain good vegetative growth. Any invading vegetation whose root system could damage the compacted soil layer shall be removed or destroyed immediately.

d. The groundwater monitoring system shall be operated and maintained.

e. The leachate collection, removal and treatment systems shall be operated and maintained.

f. The landfill gas monitoring and collection systems shall be operated and maintained.

g. Semiannual reports shall be submitted to the department. These reports shall contain information concerning the general conditions at the landfill site, groundwater monitoring results, amount of leachate collected and treated, information concerning the landfill gas monitoring and collection system, and other information as may be required by the closure permit. In addition, locations and elevations of all permanent monuments, required in 101.213(11)*"a,"* shall be determined at least once every three years or more frequently in the event of obvious disturbance of the monument. The reports are due by April 30 and October 31 for the preceding six-month period.

h. The permanent surveying monuments required in 101.213(11)*"a"* shall be maintained.

101.213(13) *Landfill gas.* This subrule shall not apply to industrial landfills that do not pose a risk to generating explosive gases.

a. Owners or operators of industrial landfills must ensure that:

(1) The concentration of explosive gases generated by the facility does not exceed 25 percent of the lower explosive limit for methane gas in facility structures (excluding gas control or recovery system components); and

(2) The concentration of methane gas does not exceed the lower explosive limit for methane gas at the facility property boundary.

b. Owners or operators of industrial landfills must monitor quarterly for compliance with 101.213(13)*"a."* An annual report shall be submitted by November 30 summarizing the methane gas monitoring results and any action taken resulting from gas levels exceeding the limits during the previous year.

c. If methane gas levels exceeding the limits specified in 101.213(13)*"a"* are detected, the owner or operator must:

(1) Immediately take all necessary steps to ensure protection of human health and notify the director;

(2) Within seven days after detection, submit to the director a report stating the methane gas levels detected and a description of the steps taken to protect human health;

(3) Within 60 days of detection, implement a plan for remediation of the methane gas releases and send a copy of the remediation plan to the director. The plan shall describe the nature and extent of the problem and the proposed remedy.

567—101.214(455B) Operating requirements.

101.214(1) Open burning shall be prohibited within the permitted boundary.

101.214(2) No free liquids or waste containing free liquids shall be disposed of in an industrial landfill.

101.214(3) Each permit issued by the department will contain facility-specific operating requirements consistent with the type of solid waste and the disposal process.

101.214(4) Closure requirements.

a. The owner or operator shall notify the department in writing at least 180 days prior to closure of the facility or suspension of operations.

b. Notice of closure shall be posted at the facility at least 180 days prior to closure indicating the date of closure and alternative solid waste management facilities. Notice of closure shall also be published at least 180 days prior to closure in a newspaper of local circulation. This notice shall include the date of closure and alternative solid waste management facilities if the facility is open to the public.

c. Implementation of the closure/post-closure plan shall be completed within 90 days of the closure of the facility. The owner and an Iowa-licensed professional engineer shall certify that the closure/post-closure plan has been implemented in compliance with the rules, the closure/post-closure plan, and the permit.

d. Upon completion of closure activities, a construction certification report must be submitted discussing quality assurance and quality control testing done to ensure that all materials for the cap have been placed in accordance with the approved engineering plans, reports, and specifications. The

results of all testing must be included, along with documentation of any failed tests, a description of the procedures used to correct the failures, and results of any retesting performed. In addition, the following documentation shall be submitted: as-built plans showing changes from the original design plans, a copy of the notation filed with the county recorder, and other forms of documentation as required.

567—101.215(455B) Financial assurance requirements. The owner or operator of an industrial landfill pursuant to this division must establish financial assurance for closure, post-closure, and corrective action, if applicable, in accordance with Division VIII of this chapter.

These rules are intended to implement Iowa Code section 455B.304.

567—101.216 to **101.299** Reserved.

DIVISION IV
COAL COMBUSTION RESIDUAL LANDFILLS

567—101.300(455B) Purpose. The purpose of this division is to implement Iowa Code chapter 455B, subchapter IV (solid waste disposal), for the siting, designing, and operating of a solid waste sanitary landfill accepting only coal combustion residuals.

567—101.301(455B) Applicability.

101.301(1) This division shall apply to sanitary landfills that are constructed and operated exclusively for the final deposition of coal combustion residuals, known for purposes of this chapter as CCR landfills.

101.301(2) Pursuant to Iowa Code section 455B.305(1), a CCR landfill shall not be constructed or operated without first obtaining a permit from the department pursuant to this division, the requirements set forth in 567—Chapter 100, and Division I of this chapter.

101.301(3) The issuance of a permit to a CCR landfill pursuant to this division in no way relieves the applicant of the responsibility of complying with all other local, state, or federal statutes, ordinances, and rules or other requirements applicable to the construction and operation of a CCR landfill.

101.301(4) All rules, standards, technical guidance, and other similar legal or technical documents referenced in this division shall be the version of those documents in effect on August 1, 2025, unless otherwise noted in these rules, and except for references to the Iowa Code and Iowa Administrative Code, which shall always be the most recent version unless otherwise noted in these rules.

567—101.302(455B) Definitions. For the purposes of this division, the definitions in 567—Chapter 100 and Iowa Code section 455B.301 shall apply.

567—101.303(455B) Permits. For purposes of this division, the permit requirements in 567—Chapter 100 shall apply.

567—101.304(455B) Permit applications. Unless otherwise authorized by the department, a permit applicant shall submit on a form prescribed by the department the requirements in 567—Chapter 100, Division I of this chapter, and the following information.

101.304(1) A copy of the written agreement under 567—101.306(455B), if any, and documentation that it has been filed with the county recorder.

101.304(2) A topographic map of the site extending a minimum of 300 feet beyond the permitted property, with contour intervals not exceeding 10 feet, that shows the location of existing conditions, including but not limited to structures, wells, lakes, roads, drain tiles, or similar items.

101.304(3) A minimum of three soil borings for sites of ten acres or less with one additional boring for each additional three acres to determine the hydrogeologic conditions and establish the direction of groundwater flow, the depth to groundwater, and potential contaminant pathways throughout the site.

101.304(4) An adequate number of representative groundwater sample results to fully characterize the groundwater quality both temporally and spatially at the site and establish baseline levels for

the following analytical parameters: arsenic, barium, beryllium, cobalt, copper, iron, lead, magnesium, manganese, selenium, zinc, chlorides, and sulfate.

101.304(5) A groundwater monitoring network that includes sufficient upgradient and downgradient monitoring wells that adequately monitor the potential contaminant pathways throughout the life of the site and the post-closure period.

101.304(6) Plans and specifications detailing how the CCR landfill will be constructed, operated, and closed.

101.304(7) An operations plan and a post-closure plan in accordance with the rules and the permit.

567—101.305(455B) Design requirements. In addition to the provisions in 567—100.5(455B,455D) and Division I of this chapter, the design shall include a liner and leachate collection system to protect groundwater and surface water.

567—101.306(455B) Operating requirements. Unless otherwise specified within a permit, a CCR landfill shall be operated in accordance with the provisions of 567—100.9(455B,455D). No wastes shall be deposited within 300 feet of an inhabitable residence or a commercial enterprise unless there is a written agreement with the property owner(s) allowing a lesser distance that has been filed with the local county recorder under the adjoining property or within 50 feet of the property boundary under any circumstances. An operations plan shall be prepared and submitted to the department that includes the following.

101.306(1) An identification of the area(s) to be filled during the period for which a permit is being requested.

101.306(2) The method(s) that will be utilized to prevent illicit municipal or putrescible solid wastes from being deposited as a result of mixing with authorized waste brought to the site.

101.306(3) The frequency, extent, and method of spreading and compacting the waste; the optimum layer thickness; and the size and slope of the operating face.

101.306(4) A description of the operating procedures from the arrival of waste to the site through unloading, placing, and closure to control fugitive dust, erosion, and contact water. If the methods used do not adequately control dust, contact water, and erosion, the department may require site-specific controls including a soil cover.

101.306(5) Detailed procedures for the removal of waste from the CCR landfill for beneficial reuse, if applicable.

101.306(6) Operating procedures for stormwater, contact water, and leachate management systems.

567—101.307(455B) Groundwater monitoring and reporting. Unless otherwise specified within a permit, the groundwater at a CCR landfill shall be monitored and reported in accordance with this rule.

101.307(1) For all new solid waste units, the groundwater monitoring network shall be installed before waste placement.

101.307(2) Quarterly sampling of all monitoring wells and analysis for the parameters specified in 101.304(4) shall commence within one year of initiating waste placement for the purpose of establishing the average baseline concentrations for each well.

101.307(3) Annual sampling of all monitoring wells for the parameters specified in 101.304(4) shall commence within one year of completing the quarterly baseline monitoring.

101.307(4) Additional sampling or a site assessment may be required by the department when there is an exceedance of any primary or secondary Maximum Contaminant Level (MCL), the Health Advisory Level (HAL), or the Drinking Water Standards and Health Advisories of the federal Environmental Protection Agency.

101.307(5) When an MCL or HAL does not exist for a parameter, then the statewide standard for a protected drinking water source shall be used. If no statewide standard exists, then an analysis of available groundwater data for the parameter of concern must be prepared and submitted to the department to determine whether additional sampling or site assessment is required. The analysis shall include a comparison of the most recent sample result to the average of the most recent two years of data or utilize an alternative method approved by the department.

101.307(6) A report of the groundwater monitoring results, including a site inspection, shall be submitted to the department by the end of the first year's operation and annually thereafter.

101.307(7) A minimum of one sample from each monitoring well shall be collected annually during the post-closure period and analyzed for the parameters specified in the permit. The results shall be included in the annual report.

567—101.308(455B) Closure and post-closure requirements. Unless otherwise specified within a permit, a CCR landfill shall close in accordance with the following.

101.308(1) A closure and post-closure plan shall be prepared and submitted to the department and include the actions that will be taken to close the site, final site contours and final cover design, stormwater controls and management, groundwater monitoring and reporting, permanent survey control, annual inspections, and contact information for post-closure monitoring and maintenance.

101.308(2) The final cover shall consist of not less than two feet of compacted soil and one foot of uncompacted soil capable of sustaining the growth of native vegetation. The slope of the final cover after closure shall be not less than 3 percent nor more than 25 percent.

567—101.309(455B) Financial assurance requirements. The owner or operator of a CCR landfill must establish financial assurance for closure, post-closure, and remedial action/mitigation plan, if applicable, in accordance with Division VIII of this chapter.

These rules are intended to implement Iowa Code section 455B.304.

567—101.310 to **101.399** Reserved.

DIVISION V
SOLID WASTE TRANSFER STATIONS

567—101.400(455B) Purpose. The purpose of this division is to implement Iowa Code chapter 455B, subchapter IV (solid waste disposal), for the collection, temporary storage, and transfer of solid waste prior to final disposition.

567—101.401(455B) Applicability. This division applies to all solid waste transfer stations and solid waste collection and transport vehicles. The registration of a solid waste transfer station or issuance of a solid waste transfer station permit by the department in no way relieves the registrant or applicant of the responsibility of complying with all other local, state, or federal statutes, ordinances, and rules or other requirements applicable to the construction and operation of a solid waste transfer station. All rules, standards, technical guidance, and other similar legal or technical documents referenced in this division shall be the version of those documents in effect on August 1, 2025, unless otherwise noted in these rules, and except for references to the Iowa Code and Iowa Administrative Code, which shall always be the most recent version unless otherwise noted in these rules.

567—101.402(455B) Definitions. For the purposes of this division, the definitions in 567—Chapter 100 and Iowa Code section 455B.301 shall apply.

567—101.403(455B) Location restrictions.

101.403(1) *Floodplains.* A solid waste transfer station shall not be located within a 100-year floodplain unless the design includes structures to prevent floodwater inundation from a 100-year flood of any area that comes into contact with solid waste or washwater.

101.403(2) *Inhabitable structure and sensitive populations.* A solid waste transfer station shall not be located within 500 feet of the property line of an educational or health care facility or permanent residence unless screening is utilized to minimize noise and visibility of operations. Such screening shall utilize natural components to the maximum extent possible. This requirement shall not apply if construction of the educational or health care facility or permanent residence began after the department received the solid waste transfer station permit application.

101.403(3) *Property line setback.* A solid waste transfer station building or solid waste receptacle (e.g., dumpster, roll-off box) shall be at least 50 feet from an adjacent property line unless otherwise approved by the department in writing.

567—101.404(455B) Registration in lieu of permit.

101.404(1) *Exemption requirements.* A person may construct and operate a solid waste transfer station without a permit issued pursuant to this division if all of the following criteria apply.

a. The person registers the facility pursuant to this rule;

b. The facility only receives solid waste from citizens and small businesses that do not utilize solid waste collection vehicles or satellite solid waste collection vehicles;

c. Solid waste will not be processed at the facility;

d. The facility will not be used by anyone who has been contracted to do any hauling or disposal of solid waste;

e. Solid waste will not be placed on the ground or tipping floor of a building as part of the facility's operation; and

f. The department has not notified the registrant that a permit pursuant to this division is required to protect human health and the environment.

101.404(2) *Notification requirements.* A person registering a solid waste transfer station pursuant to this rule shall provide the following, on a form prescribed by the department, prior to accepting waste and shall notify the department in writing at least 30 days prior to any operational change.

a. The physical location of the solid waste transfer station.

b. The name, address, email address, and phone number of the site owner.

c. The name, address, email address, and phone number of the responsible official.

d. The solid waste comprehensive planning area of the facility and political jurisdictions included within the facility's service area.

e. The sanitary disposal project(s) designated for final disposal of the collected waste.

f. An emergency response and remedial action plan pursuant to 567—100.14(455B).

g. Proof of the applicant's ownership of the site or legal entitlement to use the site as a solid waste transfer station.

h. Proof that the site complies with local zoning.

i. A closure cost estimate pursuant to 101.413(2) and the documents establishing financial assurance pursuant to Division VIII of this chapter or documentation of a surety bond in the amount of $15,000 pursuant to 101.413(3).

101.404(3) *Inspection prior to startup.* Registrants shall adhere to the inspection requirements of 567—100.7(455B,455D).

101.404(4) *Registration renewal.* A solid waste transfer station registration shall be issued and may be renewed for a period of no longer than five years. Renewal registrations shall be subject to the provisions of all rules of the department in effect at the time of the renewal.

101.404(5) *Operating requirements.* In addition to the provisions of 567—100.9(455B,455D), registered solid waste transfer stations shall comply with the following.

a. Solid waste shall not be accepted from solid waste collection vehicles or loaded into solid waste transport vehicles to facilitate final disposition.

b. All solid waste received shall be loaded into dumpsters, compactors, or roll-off boxes and removed by solid waste collection vehicles to facilitate final disposition.

c. Solid waste receptacles shall not be allowed to overflow, and the waste shall be removed as often as necessary to prevent a nuisance or public health hazard.

101.404(6) *Recordkeeping and reporting requirements.* Registered solid waste transfer stations that directly dispose of solid waste outside of Iowa shall, on a form prescribed by the department, report the information required in 101.404(6)*"a"* through *"c"* to the department quarterly. For registered solid waste transfer stations that directly dispose of solid waste within Iowa, the following records shall be maintained by the owner or operator for a period of three calendar years and be made available at all reasonable times for inspection by the department.

a. Tons of solid waste disposed of.

b. The solid waste comprehensive planning area(s) from which the solid waste originated.

c. Destination of all outgoing solid waste.

101.404(7) *Closure requirements.* In addition to the provisions of 567—100.10(455B,455D), registered solid waste transfer stations shall adhere to the closure requirements in 567—101.411(455B).

567—101.405(455B) Permits. Pursuant to Iowa Code section 455B.305(1), and except as provided 567—101.404(455B), no person shall construct or operate a solid waste transfer station without first obtaining a permit from the department pursuant to this division and 567—Chapter 100.

101.405(1) *Plans.* In addition to the provisions of 567—100.5(455B,455D), a solid waste transfer station permit applicant shall address the following on a form prescribed by the department.

a. Design plan. An engineering design, including applicable approvals from responsible government agencies and public entities, and engineering plans and specifications completed by the professional engineer listed in 567—subparagraph 100.5(1)*"a"*(4) detailing how the site will comply with 567—101.403(455B), 567—101.406(455B), and 567—101.408(455B).

b. Operations plan. A plan of operations detailing how the site will comply with 567—100.9(455B,455D), 567—101.407(455B), and 567—101.410(455B).

101.405(2) *Duration.* A solid waste transfer station permit shall be issued and may be renewed for a period of no longer than five years. Renewal applications shall be subject to the provisions of all rules of the department in effect at the time of the renewal.

567—101.406(455B) Design requirements. Unless registered pursuant to 567—101.404(455B) or otherwise specified within a permit, a solid waste transfer station shall be designed and constructed in accordance with this rule.

101.406(1) *Solid waste transfer station building.* A solid waste transfer station shall include a building inside which all solid waste is unloaded from solid waste collection vehicles and loaded into solid waste transport vehicles.

a. All surfaces that come into contact with solid waste shall be enclosed by walls and a roof satisfactory to:

(1) Minimize dust.

(2) Prevent litter from exiting the building.

(3) Keep precipitation out of the building.

(4) Prevent the attraction or harboring of vectors.

b. All surfaces that come in contact with solid waste or washwater shall be impervious to liquids.

c. The solid waste transfer station building shall have a drainage system that maintains a separation between stormwater and washwater.

d. The solid waste transfer station building shall have a washwater collection system that directs washwater to a storage tank for subsequent disposal, a sanitary sewer system, or equivalent as approved by the department. Unless otherwise approved by the department, storage tanks shall have high-level indicators or gauges.

e. Each area where unloaded solid waste is stored during nonoperating hours shall be clearly marked and include a fire detection system that notifies local emergency responders in case of a fire.

f. If solid waste is to be managed or stored in a surge pit, then effective odor control mechanisms are required and a sprinkler system shall be installed over the area.

g. The solid waste transfer station building shall have adequate indoor and outdoor lighting that minimizes the difference in lighting when entering or exiting the building.

h. The solid waste transfer station building shall have doors at each entrance and exit.

101.406(2) *Other site design requirements.* A solid waste transfer station shall:

a. Provide a secure perimeter fence with lockable gate(s).

b. Use a scale certified by the Iowa department of agriculture and land stewardship. A solid waste transfer station may use a certified scale located off the premises and owned by a separate entity.

c. Provide adequate queuing distance for vehicles entering and exiting the property such that lines of vehicles will not extend onto public streets during peak hours unless approved by the appropriate local or state government authority.

d. Provide signs or pavement markings indicating safe and proper on-site traffic patterns.

567—101.407(455B) Operating requirements. Unless otherwise specified within a permit, a solid waste transfer station shall be operated in accordance with the provisions of 567—100.9(455B,455D) and this rule.

101.407(1) Unless registered pursuant to 567—101.404(455B), all handling, processing, screening, open storage, loading, and similar activities or processes involving solid waste shall be performed inside the solid waste transfer station building.

101.407(2) Truck-to-truck transfer of solid waste that is not incidental solid waste transfer is not allowed outside a solid waste transfer station building. A rear-loading solid waste transport vehicle that does not have any other open access and securely abuts the solid waste transfer station building so that minimal amounts of solid waste escape during loading shall qualify as being inside the building.

101.407(3) Solid waste transfer station operators shall segregate and manage unacceptable wastes and hot loads in accordance with applicable laws and in a manner as safe and responsible as practical.

101.407(4) Solid waste receptacles shall not be allowed to overflow, and the waste shall be removed as often as necessary to prevent a nuisance or public health hazard.

101.407(5) Solid waste transfer stations shall not accept special wastes pursuant to 567—Chapter 102, Division VI.

101.407(6) Washwater management systems, if applicable, shall not be allowed to overflow and shall be inspected monthly and maintained in proper operating condition.

101.407(7) Any breach of a surface that prevents washwater from entering the ground and groundwater shall be repaired within 24 hours to make that surface impervious to liquids. If such repairs cannot be made within 24 hours, the facility shall not allow solid waste or washwater to come into contact with the breached area until repairs are complete. If the facility cannot prevent solid waste or washwater from coming into contact with the breached area, the department may require the facility to shut down until repairs are completed.

101.407(8) Unless registered pursuant to 567—101.404(455B), site access shall be controlled and limited to a time when a solid waste transfer station operator is on site and:

a. Has read, understands, and is able to implement the operational requirements of 567—101.407(455B).

b. Has read, understands, and is able to implement the emergency response and remedial action plan pursuant to 567—100.14(455B).

c. Is able to visually recognize universal symbols and markings and indications of unacceptable materials pursuant to 101.407(9).

101.407(9) All solid waste accepted by a solid waste transfer station shall, at a minimum, be visually inspected by personnel capable of identifying hot loads and hazardous, infectious, radioactive, and other wastes not acceptable for disposal in a sanitary landfill.

567—101.408(455B) Temporary solid waste storage requirements. Unless otherwise specified within a permit, a solid waste transfer station shall comply with the following storage requirements.

101.408(1) *Areas permitted for storage.* Solid waste shall be stored in the following manner.

a. Inside a solid waste transfer station building in a clearly marked designated area;

b. Inside a solid waste transfer station building in a surge pit;

c. Inside a secure solid waste transport vehicle, including intermodal container systems, protected from precipitation and vectors; or

d. Inside dumpsters, compactors, roll-off boxes, and other solid waste receptacles adequate to prevent the accidental discharge of its contents and the attraction or harborage of vectors.

101.408(2) *Storage time requirements.* Solid waste shall be stored no longer than the following periods of time unless shorter storage times are required by the local government authority to prevent a nuisance or public health hazard.

a. Inside a solid waste transfer station building without a surge pit or similar operational structure for not more than four days, excluding Sundays and national holidays.

b. Inside a solid waste transfer station building in a surge pit for not more than seven days, including Sundays and national holidays.

c. Inside a solid waste transport vehicle designated to travel only via roadway for not more than four days, excluding Sundays and national holidays.

d. Inside a solid waste transport vehicle designated to travel via rail or navigable waterway, including intermodal container systems, for not more than seven days, including Sundays and national holidays.

e. Inside dumpsters, roll-off boxes, and other solid waste receptacles at registered solid waste transfer stations for not more than four days, excluding Sundays and national holidays.

567—101.409(455B) Recordkeeping and reporting requirements.

101.409(1) Unless registered pursuant to 567—101.404(455B) or otherwise specified within a permit, a solid waste transfer station shall comply with the following recordkeeping requirements.

a. A solid waste transfer station shall maintain a copy of the following documents on site:

(1) Current operating permit.

(2) Design plan pursuant to 101.405(1)*"a."*

(3) Operations plan pursuant to 101.405(1)*"b."*

(4) Emergency response and remedial action plan pursuant to 567—100.14(455B).

(5) Proof of financial assurance pursuant to 567—101.413(455B).

b. A solid waste transfer station shall maintain records of the following information for a period of three calendar years:

(1) Tons of all solid waste disposed of quarterly.

(2) Destination of all outgoing solid waste.

(3) Washwater management system inspection log, if applicable.

(4) Hot loads and hazardous, infectious, radioactive, or other unacceptable wastes found.

101.409(2) Unless registered pursuant to 567—101.404(455B) and directly disposing of solid waste within Iowa, or otherwise specified within a permit, a solid waste transfer station shall report the following information, on a form prescribed by the department, to the department on a quarterly basis:

a. Tons of solid waste disposed of.

b. The solid waste comprehensive planning area(s) from which the solid waste originated.

c. Destinations of all outgoing solid waste.

567—101.410(455B) Solid waste collection and transport vehicle construction and operation requirements. Unless otherwise specified within a permit, solid waste collection vehicles and solid waste transport vehicles shall comply with the following requirements.

101.410(1) The portion of a solid waste collection or transport vehicle that contains solid waste shall be designed to prevent the accidental discharge of its contents, the attraction or harborage of vectors, and the infiltration of precipitation. This design shall include a suitable cover, where applicable, that is not easily torn, shredded, broken, or otherwise breached under normal use.

101.410(2) Any solid waste collection or transport vehicle that fails to comply the requirements of this rule shall be repaired before it is utilized in the transport or storage of solid waste.

101.410(3) A solid waste collection or transport vehicle's openings shall be securely closed before transport and during solid waste storage so as to prevent the loss of solid waste.

101.410(4) A solid waste transport vehicle shall be loaded with solid waste inside a solid waste transfer station building and in a manner that minimizes the spilling of materials. Solid waste spilled from a solid waste transport vehicle during loading shall be collected as often as necessary to minimize litter, dust, or other fugitive debris.

101.410(5) All solid waste collection and transport vehicles shall be cleaned at intervals frequent enough to prevent the attraction or harborage of vectors, so as not to create a nuisance or public health hazard.

101.410(6) Liquids generated from the cleaning of the areas of solid waste collection or transport vehicles that hold solid waste shall be considered washwater and managed accordingly.

101.410(7) If solid waste is spilled from a solid waste collection or transport vehicle during transport to a solid waste disposal facility, the spilled solid waste shall be collected as soon as possible. The solid waste transfer station shall immediately report the spill to the department and the department field office with jurisdiction over the facility and spill location.

567—101.411(455B) Closure requirements. Unless otherwise specified within a permit, a solid waste transfer station shall be closed in accordance with the provisions of 567—100.10(455B,455D) and this rule. Closure shall not be official until the department has given written certification of the completion of the following activities.

101.411(1) Proper disposal of all solid waste and litter at the site.

101.411(2) Cleaning of all dumpsters, compactors, roll-off boxes, and other solid waste receptacles that will remain on site, including the rinsing of all surfaces that have come in contact with solid waste.

101.411(3) Cleaning the solid waste transfer station building, if applicable, including the rinsing of all surfaces that have come in contact with solid waste or washwater.

101.411(4) Cleaning of all solid waste collection and transport vehicles that will remain on site, including the rinsing of all surfaces that have come in contact with solid waste.

101.411(5) Removal and proper management of all washwater in the washwater management system.

101.411(6) Locking all doors, gates, entrances and exits.

101.411(7) Reporting of the completion of these activities to the local political jurisdictions, the department, and the department field office with jurisdiction over the solid waste transfer station.

567—101.412(455B) Emergency solid waste transfer permit. If a primary sanitary disposal project in a solid waste comprehensive planning area becomes inoperable, the department may issue an emergency solid waste transfer permit for a period of time no longer than necessary for a sanitary disposal project that provides replacement capacity to be constructed and become operational. The department may also issue an emergency solid waste transfer permit for a period of time no longer than necessary for a sanitary disposal project to return to operation or if more solid waste is produced by an extraordinary event (e.g., unforeseen disasters such as storms, fires, floods, tornadoes) than can be managed by a sanitary disposal project. The conditions of an emergency solid waste transfer permit shall be determined by the department and may be used as an alternative to the requirements of this division. The department shall issue an emergency solid waste transfer permit only if the department has determined that solid waste must be transferred from the impacted area(s) in order to protect human health and the environment.

567—101.413(455B) Financial assurance requirements. The owner or operator of a solid waste transfer station must establish financial assurance for the costs of site closure in accordance with the criteria pursuant to this rule and Division VIII of this chapter.

101.413(1) Except as provided in 101.413(3), the owner or operator shall submit a detailed written estimate, in current dollars, certified by an Iowa-licensed professional engineer, of the cost of hiring a third party to properly close the solid waste transfer station in accordance with the closure criteria in 567—101.411(455B).

101.413(2) The detailed written estimate shall account for at least the following factors determined by the department to be minimal necessary costs for site closure.

a. Third-party labor and transportation costs and total tip fees to properly dispose of all solid waste and litter at the facility equal to twice the maximum storage capacity of the facility. If materials are temporarily stored on site in solid waste collection or transport vehicles or waste receptacles, then this estimate shall include disposal costs for the maximum number of solid waste collection or transport vehicles and waste receptacles that can be on site at any one time.

b. The cost of hiring a third party to properly clean and decontaminate all equipment, storage facilities, holding areas and drainage collection systems. This estimate shall include the cost of properly disposing of a one-week volume of washwater from the facility. If the facility utilizes a washwater

storage tank, then this estimate shall assume that the storage tank is full and add that volume to the one-week volume.

c. The cost associated in maintaining financial assurance pursuant to this rule and Division VIII of this chapter.

101.413(3) The owner or operator of a solid waste transfer station that is permitted for or manages no more than 5,000 tons of solid waste annually shall have the option to comply with the financial assurance requirements of this rule and Division VIII of this chapter by executing a surety bond in the sum of $15,000 pursuant to 567—subrule 101.707(2). In electing this option, the owner or operator shall not be required to submit a detailed written cost estimate for site closure pursuant to 101.413(1). This surety bond shall be unique to the solid waste transfer station and shall not be combined or used to meet the financial assurance obligations of any other permitted facility or activity.

These rules are intended to implement Iowa Code section 455B.304.

567—101.414 to **101.499** Reserved.

DIVISION VI
SOLID WASTE INCINERATOR OPERATOR CERTIFICATION

567—101.500(455B) Purpose. The purpose of this division is to implement Iowa Code section 455B.304(12) by providing the criteria for establishing the certification of operators of solid waste incinerators.

567—101.501(455B) Applicability. The requirements of this division apply to all operators of solid waste incinerators. All rules, standards, technical guidance, and other similar legal or technical documents referenced in this division shall be the version of those documents in effect on August 1, 2025, unless otherwise noted in these rules, and except for references to the Iowa Code and Iowa Administrative Code, which shall always be the most recent version unless otherwise noted in these rules.

567—101.502(455B) Solid waste incinerator operator certification. Solid waste incinerator operators shall be trained, tested, and certified by a department-approved certification program.

101.502(1) *Operator on duty.* A solid waste incinerator operator shall be on duty during all hours of operation of a solid waste incinerator, consistent with the respective certification.

101.502(2) *Training course; reciprocity.* To become a certified operator, an individual shall complete a basic operator training course that has been approved by the department or alternative, equivalent training approved by the department and shall pass a departmental examination as specified by this division. An operator certified by another state may have reciprocity subject to approval by the department.

101.502(3) *Biennial certification.* A solid waste incinerator operator certification is valid from the date of issuance until June 30 of the following even-numbered year.

101.502(4) *Basic operator training course.* The required basic operator training course for a certified solid waste incinerator operator shall have at least eight contact hours and shall address the following areas at a minimum.

a. Description of types of wastes;
b. Incinerator design;
c. Interpreting and using engineering plans;
d. Incinerator operations and safety;
e. Combustion controls and monitoring;
f. Applicable laws and regulations;
g. Permitting processes;
h. Incinerator maintenance; and
i. Ash and residue disposal.

101.502(5) *Alternative basic operator training.* Alternative basic operator training must be approved by the department. It shall be the applicant's responsibility to submit any documentation the department may require to evaluate the equivalency of alternative training.

101.502(6) *Fees.*

a. The examination fee for each examination is $20.

b. The initial certification fee is $8 for each one-half year of a two-year period from the date of issuance to June 30 of the next even-numbered year.

c. The certification renewal fee is $24.

d. The penalty fee is $12.

101.502(7) *Examinations.*

a. The operator certification examinations will be based on the basic operator training course curriculum in 101.502(4).

b. All persons wishing to take the examination required to become a certified operator of a solid waste incinerator shall complete an operator certification examination application on a form prescribed by the department. A listing of dates and locations of examinations is available from the department upon request. The application form requires the applicant to indicate the basic operator training course taken. Evidence of training course completion must be submitted with the application for certification. The completed application and the application fee shall be sent to the Iowa Department of Natural Resources, 6200 Park Avenue, Des Moines, Iowa 50321. Application for examination must be received by the department prior to the date of examination.

c. A properly completed application for examination shall be valid for one year from the date the application is approved by the department.

d. Upon failure of the first examination, the applicant may be reexamined at the next scheduled examination. Upon failure of the second examination, the applicant shall be required to wait a period of 180 days before taking a third examination. If the third examination occurs beyond the one year time frame in 101.502(7)*"c,"* a new operator certification examination application is required.

e. Upon each reexamination when a valid application is on file, the applicant shall submit to the department the examination fee prior to the date of examination.

f. Failure to successfully complete the examination within one year from the date of approval of the application shall invalidate the application.

g. Oral examinations may be given at the discretion of the department.

101.502(8) *Certification.*

a. All operators will be required to take the basic operator training course and pass the examination in order to become certified.

b. Application for certification must be received by the department within 30 days of the date the applicant receives written notification of successful completion of the examination. All applications for certification shall be made on a form prescribed by the department and be accompanied by the certification fee.

c. Applications for certification by examination that are received more than 30 days but less than 60 days after notification of successful completion of the examination shall be accompanied by the certification fee and the penalty fee. Applicants who do not apply for certification within 60 days of notice of successful completion of the examination will not be certified on the basis of that examination.

d. For applicants who have been certified under a mandatory certification program in another state, the equivalency of which has been previously reviewed and accepted by the department, certification without examination will be recommended.

e. For applicants who have been certified under voluntary certification programs in another state, certification will be considered. The applicant must have successfully completed a basic operator training course and an examination generally equivalent to the Iowa examination. The department may require the applicant to successfully complete the Iowa examination.

f. Applicants who seek Iowa certification pursuant to 101.502(8)*"d"* or *"e"* shall submit an application for examination accompanied by a letter requesting certification pursuant to this subrule.

Application for certification pursuant to this subrule shall be received by the department in accordance with 101.502(8)*"b"* and *"c."*

101.502(9) *Duration and renewal of certification.* All certificates shall expire every two years, on even-numbered years, and must be renewed every two years to maintain certification. The renewal application and fee are due prior to expiration of certification.

a. Late application for renewal of a certification may be made, provided that such late application shall be received by the department or postmarked within 30 days of the expiration of the certification. Such late application shall be on a form prescribed by the department and accompanied by the penalty fee and the certification renewal fee.

b. If a certificate holder fails to apply for renewal within 30 days following expiration of the certification, the right to renew the certification automatically terminates. Certification may be allowed at any time following such termination, provided that the applicant successfully completes the examination. The applicant must then apply for certification in accordance with 101.502(8).

c. An operator shall not continue to operate a solid waste incinerator after expiration of a certification without renewal thereof.

d. Continuing education credits must be earned during the two-year certification period. All certified operators must earn six contact hours per certification during each two-year period. The two-year period will begin upon issuance of certification.

e. Only those operators fulfilling the continuing education requirements before the end of each two-year period will be allowed to renew their certifications. The certifications of operators not fulfilling the continuing education requirements shall be void upon expiration unless an extension is granted.

f. All activities for which continuing education credit will be granted must be related to the subject matter of the particular certification to which the credit is being applied.

g. The department may, in individual cases involving hardship or extenuating circumstances, grant an extension of time of up to three months within which the applicant may fulfill the minimum continuing education requirements. Hardship or extenuating circumstances include documented health-related confinement or other circumstances beyond the control of the certified operator that prevent attendance at the required activities. All requests for extensions must be made prior to expiration of certification.

h. The certified operator is responsible for notifying the department of the continuing education credits earned during the period. The continuing education credits earned during the period shall be shown on the application for renewal.

i. A certified operator shall be deemed to have complied with the continuing education requirements of this division during periods that the operator serves honorably on active duty in military service, during periods that the operator is a resident of another state or district having a continuing education requirement for operators and meets all the requirements of that state or district for practice there, during periods that the person is a government employee working as an operator and is assigned to duty outside of the United States, or during other periods of active practice and absence from the state approved by the department.

567—101.503(455B) Discipline of certified operators.

101.503(1) Disciplinary action may be taken on any of the following grounds.

a. Failure to use reasonable care or judgment or to apply knowledge or ability in performing the duties of a certified operator. Duties of certified operators include compliance with rules and permit conditions applicable to solid waste incinerator operation.

b. Failure to submit required records of operation or other reports required under applicable permits or rules of the department, including failure to submit complete records or reports.

c. Knowingly making any false statement, representation, or certification on any application, record, report, or document required to be maintained or submitted under any applicable permit or rule of the department.

101.503(2) The following disciplinary sanctions are allowable.

a. Revocation of a certification.

b. Probation under specified conditions relevant to the specific grounds for disciplinary action. Additional education or training or reexamination may be required as a condition of probation.

101.503(3) The procedure for discipline is as follows.

a. The department shall initiate disciplinary action. The commission may direct that the department investigate any alleged factual situation that may be grounds for disciplinary action under 101.503(1) and report the results of the investigation to the commission.

b. A disciplinary action may be prosecuted by the department.

c. Written notice shall be given to an operator against whom disciplinary action is being considered and, as appropriate, to the responsible official of the permitted solid waste incinerator. The notice shall state the informal and formal procedures available for determining the matter. The operator shall be given 20 days to present any relevant facts and indicate the operator's position in the matter and to indicate whether informal resolution of the matter may be reached.

d. An operator who receives notice shall communicate in writing or in person with the department, and efforts shall be made to clarify the respective positions of the operator and department.

e. The applicant's failure to communicate facts and positions relevant to the matter by the required date may be considered when appropriate disciplinary action is determined.

f. If agreement as to appropriate disciplinary sanction, if any, can be reached with the operator and the commission concurs, a written stipulation and settlement between the department and the operator shall be entered into. The stipulation and settlement shall recite the basic facts and violations alleged, any facts brought forth by the operator, and the reasons for the particular sanctions imposed.

g. If an agreement as to appropriate disciplinary action, if any, cannot be reached, the department may initiate formal hearing procedures. Notice and formal hearing shall be in accordance with 561—Chapter 7 related to contested and certain other cases pertaining to licensee discipline.

101.503(4) Upon revocation of a certificate, application for certification may be allowed after two years from the date of revocation. Any such applicant must successfully complete the examination and be certified in the same manner as a new applicant.

567—101.504(455B) Temporary operator designation. A temporary operator of a solid waste incinerator may be designated for a period of six months when an existing certified operator is no longer available to the facility. The facility must make application to the department, explain why a temporary certification is needed, identify the temporary operator, and identify the efforts that will be made to obtain a certified operator. A temporary operator designation shall not be approved for greater than a six-month period except for extenuating circumstances. In any event, not more than one six-month extension to the temporary operator designation may be granted. Approval of a temporary operator designation may be rescinded for cause as set forth in 567—101.503(455B).

These rules are intended to implement Iowa Code section 455B.304(12).

567—101.505 to **101.699** Reserved.

DIVISION VII
RESERVED

DIVISION VIII
FINANCIAL ASSURANCE

567—101.700(455B) Purpose. The purpose of this division is to implement Iowa Code sections 455B.304(8) and 455B.306(9) by providing the criteria for establishing financial assurance for closure, post-closure care, and corrective action at sanitary disposal projects, whichever is applicable.

567—101.701(455B) Applicability.

101.701(1) The requirements of this division apply to all owners and operators of sanitary disposal projects, except owners or operators who are state or federal government entities, whose debts and liabilities are the debts and liabilities of a state or the United States.

101.701(2) This division does not apply to municipal solid waste sanitary landfills regulated pursuant to Division II of this chapter that ceased accepting solid waste by August 24, 1994, nor to industrial sanitary landfills and coal combustion residual sanitary landfills regulated pursuant to Divisions III and IV of this chapter, respectively, that ceased accepting waste by October 31, 2007.

101.701(3) This division does not apply to sanitary disposal projects that are not sanitary landfills and that have completed proper site closure nor to sanitary landfills that have completed post-closure care obligations prior to [the effective date of this rule].

101.701(4) All rules, standards, technical guidance, and other similar legal or technical documents referenced in this division shall be the version of those documents in effect on August 1, 2025, unless otherwise noted in these rules, and except for references to the Iowa Code and Iowa Administrative Code, which shall always be the most recent version unless otherwise noted in these rules.

567—101.702(455B) Definitions. For the purposes of this division, the definitions in 567—Chapter 100 and Iowa Code section 455B.301 shall apply.

567—101.703(455B) Financial assurance for closure of sanitary disposal projects that are not sanitary landfills. The owner or operator of a sanitary disposal project must establish financial assurance for the costs of site closure in accordance with the criteria in this division. The owner or operator must provide continuous coverage for site closure until released from this requirement by demonstrating compliance with the closure criteria expressed within each sanitary disposal project's applicable division. Proof of compliance pursuant to 101.703(1) through 101.703(3) shall be submitted to the department by the owner or operator at the time of application for a permit, and with each renewal thereafter, until the owner or operator is released from this requirement by the department.

101.703(1) The owner or operator shall submit, on a form prescribed by the department, the amount of the financial assurance required and the current value of the financial assurance instrument(s) at the time of submittal as required by Iowa Code section 455B.306(9).

101.703(2) The owner or operator shall submit a copy of the documents establishing the financial assurance instrument(s) in an amount equal to or greater than the amount specified in 567—101.710(455B). Documentation for the instrument(s) used to demonstrate financial assurance shall contain, at a minimum, the items required to be submitted as specified in 567—101.707(455B).

101.703(3) The owner or operator shall submit a detailed written estimate, in current dollars, certified by an Iowa-licensed professional engineer, of the cost of hiring a third party to properly close the sanitary disposal project in accordance with the closure criteria expressed within each sanitary disposal project's applicable division.

a. The cost estimate must equal the cost of closing the sanitary disposal project at any time during its permitted life when the extent and manner of its operation would make closure the most expensive.

b. The costs contained in the estimate for site closure must be accurate and reasonable when compared to the cost estimates used by other similarly situated sanitary disposal projects in Iowa.

c. The owner or operator must, at the time of permit renewal or at the time of application for a permit modification that increases closure costs, whichever occurs first, have an Iowa-licensed professional engineer update the closure cost estimate, and update the amount of financial assurance provided if changes to the closure plan or sanitary disposal project conditions increase the maximum cost of closure at any time during the remaining active life of the site.

d. The owner or operator may reduce the amount of financial assurance for proper closure of the site if the most recent estimate of the maximum cost of closure at any time during the active life of the site is less than the amount of financial assurance currently provided. Prior to the reduction, the owner or operator must submit to the department the justification for the reduction of the closure cost estimate and the updated documentation required by 101.703(1) through 101.703(3) and receive department approval for the reduction.

567—101.704(455B) Financial assurance for closure of sanitary landfills. The owner or operator of a sanitary landfill must establish financial assurance for the costs of site closure in accordance with the criteria in this division. The owner or operator must provide continuous coverage for site closure until released from this requirement by demonstrating compliance with the approved closure plan and the closure permit. Proof of compliance pursuant to 101.704(1) through 101.704(5) shall be submitted to the department by the owner or operator yearly by April 1 and approved by the department.

101.704(1) The owner or operator shall submit, on a form prescribed by the department, the amount of the financial assurance required, the annual financial statement required by Iowa Code section 455B.306(9)*"e,"* and the current value of the financial assurance instrument(s) as required by Iowa Code section 455B.306(9).

101.704(2) The owner or operator shall submit a copy of the documents establishing the financial assurance instrument(s) in an amount equal to or greater than the amount specified in 567—101.710(455B). Documentation for the instruments(s) used to demonstrate financial assurance shall contain, at a minimum, the items required to be submitted as specified in 567—101.707(455B).

101.704(3) The owner or operator shall, except for the allowance granted in 101.704(3)*"c,"* submit a detailed written estimate, in current dollars, certified by an Iowa-licensed professional engineer, of the cost of hiring a third party to close the sanitary landfill in accordance with the approved closure plan and the closure permit.

a. The cost estimate must equal the cost of closing the sanitary landfill at the time the cost estimate is prepared.

b. The costs contained in the estimate for closure must be accurate and reasonable when compared to the cost estimates used by other similarly situated sanitary landfills in Iowa.

c. During the active life of the sanitary landfill, the owner or operator may, for the duration of the permit cycle or five years, whichever is less, have an Iowa-licensed professional engineer adjust the certified closure cost estimate for inflation by using an inflation factor derived from the most recent annual Implicit Price Deflator for Gross Domestic Product published by the United States Department of Commerce. The inflation factor is the result of dividing the latest published annual deflator by the deflator for the previous year. After applying the inflation factor for the duration of the permit cycle, or five years, whichever is less, the owner or operator shall again submit a detailed written estimate, in current dollars, certified by an Iowa-licensed professional engineer pursuant to 101.704(3).

d. The owner or operator must annually or at the time of permit renewal, at the time of application for a permit modification, or due to other requirements that increase closure costs have an Iowa-licensed professional engineer update the detailed written closure cost estimate and update the amount of financial assurance provided if changes to the closure plan or sanitary landfill conditions increase the cost of closure.

e. The owner or operator may reduce the amount of financial assurance for proper closure of the site if the most recent estimate is less than the amount of financial assurance currently provided. Prior to the reduction, the owner or operator must submit to the department the justification for the reduction of the closure cost estimate and the updated documentation required by 101.704(1) through 101.704(5) and receive department approval for the reduction.

f. The estimate submitted to the department must include the site area subject to closure (in acres) and account for at least the following factors determined by the department to be the minimal necessary costs for closure.

(1) Closure and post-closure plan document revisions;
(2) Site preparation, earthwork, and final grading;
(3) Drainage control culverts, piping, and structures;
(4) Erosion control structures, sediment ponds, and terraces;
(5) Final cap construction;
(6) Cap vegetation soil placement;
(7) Cap seeding, mulching, and fertilizing;
(8) Monitoring well, piezometer, and gas control modifications;
(9) Leachate system cleanout and extraction well modifications;

(10) Monitoring well installations and abandonments;
(11) Facility modifications to effect closed status;
(12) Engineering and technical services;
(13) Legal, financial, and administrative services; and
(14) Closure compliance certifications and documentation.

101.704(4) For publicly owned sanitary landfills, the owner or operator shall submit to the department a copy of the owner's or operator's most recent annual audit report in the form prescribed by the office of the auditor of the state of Iowa. In addition to the annual audit report, the owner or operator of a publicly owned sanitary landfill may submit financial institution statements to document the current balance of a trust fund or local government dedicated fund established pursuant to 101.707(1) and 101.707(9) or the closure and post-closure care account(s) pursuant to 567—101.709(455B).

101.704(5) Privately owned sanitary landfills shall submit an affidavit from the owner or operator indicating that a yearly review has been performed by an Iowa-licensed certified public accountant to determine whether the privately owned sanitary landfill is in compliance with this division. The affidavit shall state the name of the Iowa-licensed certified public accountant, the dates and conclusions of the review, and the steps taken to rectify any deficiencies identified by the accountant.

567—101.705(455B) Financial assurance for post-closure care of sanitary landfills. The owner or operator of a sanitary landfill must establish financial assurance for the costs of post-closure care in accordance with the criteria in this division. The owner or operator must provide continuous coverage for post-closure care until released from this requirement by demonstrating compliance with the approved post-closure plan and the closure permit. Proof of compliance pursuant to 101.705(1) through 101.705(5) shall be submitted to the department by the owner or operator yearly by April 1 and approved by the department.

101.705(1) The owner or operator shall submit, on a form prescribed by the department, the amount of the financial assurance required, the annual financial statement required by Iowa Code section 455B.306(9)*"e,"* and the current value of the financial assurance instrument(s) as required by Iowa Code section 455B.306(9).

101.705(2) The owner or operator shall submit a copy of the documents establishing the financial assurance instrument(s) in an amount equal to or greater than the amount specified in 567—101.710(455B). Documentation for the instrument(s) used to demonstrate financial assurance shall contain, at a minimum, the items required to be submitted as specified in 567—101.707(455B).

101.705(3) The owner or operator shall, except for the allowance granted in 101.705(3)*"c,"* submit a detailed written estimate, in current dollars, certified by an Iowa-licensed professional engineer, of the cost of hiring a third party to conduct post-closure care for the sanitary landfill in accordance with the approved post-closure plan and the closure permit.

a. The cost estimate must account for the total cost of conducting post-closure care, as described in the plan, for the entire post-closure care period.

b. The costs contained in the estimate for post-closure care must be accurate and reasonable when compared to the cost estimates used by other similarly situated sanitary landfills in Iowa.

c. During the active life of the sanitary landfill and during the post-closure care period, the owner or operator may, for the duration of the permit cycle or five years, whichever is less, have an Iowa-licensed professional engineer adjust the certified post-closure cost estimate for inflation by using an inflation factor derived from the most recent annual Implicit Price Deflator for Gross Domestic Product published by the United States Department of Commerce. The inflation factor is the result of dividing the latest published annual deflator by the deflator for the previous year. After applying the inflation factor for the duration of the permit cycle, or five years, whichever is less, the owner or operator shall again submit a detailed written estimate, in current dollars, certified by an Iowa-licensed professional engineer pursuant to 101.705(3).

d. The owner or operator must, annually or at the time of application for a permit modification, or due to other requirements that increase post-closure care costs, have an Iowa-licensed professional engineer increase the detailed written post-closure cost estimate and update the amount of financial

assurance provided if changes in the post-closure plan or sanitary landfill conditions increase the cost of post-closure care.

e. The owner or operator may reduce the amount of financial assurance for post-closure care if the most recent estimate of post-closure care is less than the amount of financial assurance currently provided. Prior to the reduction, the owner or operator must submit to the department the justification for the reduction of the post-closure cost estimate and the updated documentation required by 101.705(1) through 101.705(5) and receive department approval for the reduction.

f. The estimate submitted to the department must include the site area subject to post-closure care and account for at least the following factors determined by the department to be the minimal necessary costs for post-closure care.

(1) General site facilities, access roads, and fencing maintenance;
(2) Cap and vegetative cover maintenance;
(3) Drainage and erosion control systems maintenance;
(4) Groundwater to waste separation systems maintenance;
(5) Gas control systems maintenance, if applicable;
(6) Gas control systems monitoring and reports, if applicable;
(7) Groundwater and surface water monitoring systems maintenance;
(8) Groundwater and surface water quality monitoring and reports;
(9) Groundwater monitoring systems performance evaluations and reports;
(10) Leachate control systems maintenance;
(11) Leachate management, transportation, and disposal;
(12) Leachate control systems performance evaluations and reports;
(13) Facility inspections and technical reports;
(14) Engineering and technical services;
(15) Legal, financial, and administrative services; and
(16) Financial assurance, accounting, audits, and reports.

101.705(4) For publicly owned sanitary landfills, the owner or operator shall submit to the department a copy of the owner's or operator's most recent annual audit report in the form prescribed by the office of the auditor of the state of Iowa. In addition to the annual audit report, the owner or operator of a publicly owned sanitary landfill may submit financial institution statements to document the current balance of a trust fund or local government dedicated fund established pursuant to 101.707(1) and 101.707(9), or the closure and post-closure care account(s) pursuant to 567—101.709(455B).

101.705(5) Privately owned sanitary landfills shall submit an affidavit from the owner or operator indicating that a yearly review has been performed by an Iowa-licensed certified public accountant to determine whether the privately owned sanitary landfill is in compliance with this division. The affidavit shall state the name of the Iowa-licensed certified public accountant, the dates and conclusions of the review, and the steps taken to rectify any deficiencies identified by the accountant.

567—101.706(455B) Financial assurance for corrective action at sanitary landfills.

101.706(1) An owner or operator required to undertake corrective action must have a detailed written estimate, in current dollars, certified by an Iowa-licensed professional engineer, of the cost of hiring a third party to perform the required corrective action. The cost estimate must account for the total cost of conducting the activities described in the corrective action plan for the entire corrective action period. The owner or operator must submit to the department for approval the cost estimate and financial assurance documentation prior to implementation of the corrective action remedy. Proof of continued compliance pursuant to 101.706(1) and 101.706(2) shall be submitted to the department by the owner or operator yearly by April 1 and approved by the department.

a. The owner or operator shall submit, on a form prescribed by the department, the amount of the financial assurance required to complete the corrective action remedy and the current value of the financial assurance instrument(s).

b. The owner or operator may, for up to three consecutive years, have an Iowa-licensed professional engineer adjust the certified corrective action cost estimate for inflation by using an inflation factor derived from the most recent annual Implicit Price Deflator for Gross Domestic Product

published by the United States Department of Commerce. The inflation factor is the result of dividing the latest published annual deflator by the deflator for the previous year. After three consecutive years of applying the inflation factor, the owner or operator shall again submit a detailed written estimate, in current dollars, certified by an Iowa-licensed professional engineer pursuant to this subrule.

c. The owner or operator must increase the detailed written corrective action cost estimate and update the amount of financial assurance provided if changes in the corrective action remedy or sanitary landfill conditions increase the maximum cost of corrective action.

d. The owner or operator may reduce the amount of the cost estimate and the amount of financial assurance provided if the cost estimate exceeds the maximum remaining costs of the remaining corrective action. Prior to the reduction, the owner or operator must submit to the department the justification for the reduction of the corrective action cost estimate and the updated documentation required by 101.706(1) through 101.706(2) and receive department approval for the reduction.

101.706(2) The owner or operator of a sanitary landfill required to undertake corrective action must establish financial assurance for the corrective action remedy by one of the instruments prescribed in 567—101.707(455B). The owner or operator must provide continuous coverage for corrective action until released from financial assurance requirements by demonstrating compliance with the following.

a. Upon completion of the corrective action remedy, the owner or operator must submit to the department a certification of compliance with the corrective action plan. The certification must be signed by the owner or operator and by a qualified groundwater scientist.

b. Upon department approval of completion of the corrective action remedy, the owner or operator shall be released from the requirement for financial assurance for corrective action pursuant to 567—101.706(455B).

567—101.707(455B) Allowable financial assurance instruments. The instruments used to demonstrate financial assurance, as required by Iowa Code sections 455B.304(8) and 455B.306(9), must ensure that the funds necessary to meet the costs of closure, post-closure care, and corrective action for known releases will be available whenever the funds are needed. The instruments used shall not be canceled, revoked, disbursed, released, or allowed to terminate without the approval of the department. Owners or operators must choose from options in 101.707(1) through 101.707(9), as provided for in Iowa Code section 455B.301(9)*"c."*

101.707(1) *Trust fund.*

a. An owner or operator may demonstrate financial assurance for closure, post-closure care and corrective action, whichever is applicable, by establishing a trust fund that conforms to the requirements of this subrule. The trustee must be an entity that has the authority to act as a trustee and whose trust operations are regulated and examined by a federal or state agency. The owner or operator must submit to the department a copy of the executed trust agreement.

b. For a trust fund used to demonstrate financial assurance for proper closure at a sanitary disposal project that is not sanitary landfill, there is no pay-in period as defined in 101.707(1)*"c."* Instead, the trust fund shall be in an amount equal to or greater than the amount specified in 101.703(3).

c. Payments into the trust fund must be made annually by the owner or operator over ten years or over the remaining permitted life of the sanitary landfill, whichever is shorter, in the case of a trust fund for closure and post-closure care, or over one-half of the estimated length of the corrective action remedy in the case of response to a known release. This period is referred to as the pay-in period.

d. For a trust fund used to demonstrate financial assurance for closure and post-closure care at a sanitary landfill, the first payment into the fund must be at least equal to the amount specified in 567—101.710(455B) for closure and post-closure care, divided by the number of years in the pay-in period, as defined in 101.707(1)*"c."* The amount of subsequent payments must be determined by the following formula.

$$\text{Next Payment} = \frac{CE - B}{Y}$$

Where:

"CE" is the amount specified in 567—101.710(455B) for closure and post-closure care (updated for inflation or other changes).

"B" is the balance of the trust fund at the close of the previous fiscal year.

"Y" is the number of years remaining in the pay-in period.

e. Unless otherwise authorized by the department, for a trust fund used to demonstrate financial assurance for corrective action at a sanitary landfill, the first payment into the trust fund must be at least equal to one-half of the amount specified in 101.706(1) for corrective action, divided by the number of years in the corrective action pay-in period, as defined in 101.707(1)*"c."* The amount of subsequent payments must be determined by the following formula.

$$\text{Next Payment} = \frac{RB - V}{Y}$$

Where:

"RB" is the most recent estimate of the required trust fund balance for corrective action.

"V" is the current value of the trust fund at the close of the previous fiscal year.

"Y" is the number of years remaining in the pay-in period.

f. The initial payment into the trust fund must be made prior to the initial receipt of solid waste at the sanitary landfill or before the cancellation of an alternative financial assurance instrument, in the case of closure and post-closure care; or no later than 120 days after the selection of the corrective action remedy.

g. The owner or operator, or other person authorized to conduct closure, post-closure care, and corrective action activities, may request reimbursement from the trustee for these expenditures, including partial closure, as they are incurred. The owner or operator must submit to the department documentation of the justification for reimbursement and verification that reimbursement has been received.

h. After the pay-in period has been completed for a sanitary landfill, the trust fund shall be adjusted annually to correct any deficiency of the fund with respect to the updated cost estimates and may be adjusted annually should the balance in the fund exceed the updated cost estimates.

i. The trust fund may be terminated by the owner or operator only if the owner or operator substitutes alternative financial assurance as specified in this rule or if the owner or operator is no longer required to demonstrate financial responsibility in accordance with this division.

101.707(2) *Surety bond guaranteeing payment or performance.*

a. An owner or operator may demonstrate financial assurance for closure and post-closure care by obtaining a payment or performance surety bond, which conforms to the requirements of this subrule. An owner or operator may demonstrate financial assurance for corrective action by obtaining a performance bond, which conforms to the requirements of this subrule. The bond must be effective and all required submissions made to the department prior to the initial receipt of solid waste or before the cancellation of an alternative financial assurance instrument, in the case of closure and post-closure care, or, in the case of corrective action, no later than 120 days after the selection of the corrective action remedy. The owner or operator must submit to the department a copy of the executed surety bond and subsequent proof of continuance in accordance with 567—101.703(455B) through 567—101.706(455B). The surety company issuing the bond must, at a minimum, be among those listed as acceptable sureties on federal bonds in Circular 570 of the U.S. Department of the Treasury.

b. The penal sum of the bond must be in an amount at least equal to the amount specified in 567—101.710(455B) for closure, post-closure care, and corrective action, whichever is applicable.

c. Under the terms of the bond, the surety will become liable on the bond obligation when the owner or operator fails to perform as guaranteed by the bond and also upon notice from the department pursuant to 101.707(2)*"f."*

d. The owner or operator must also establish a standby trust fund. The standby trust fund must meet the requirements of 101.707(1), except the requirements for initial payment and subsequent annual payments specified in 101.707(1)*"c"* through *"f."*

e. Payments made under the terms of the bond will be deposited by the surety directly into the standby trust fund. Payments from the trust fund must be authorized by the trustee pursuant to 101.707(1)*"g."*

f. Under the terms of the bond, the surety may cancel the bond by sending notice of cancellation by certified mail to the owner or operator and to the department 120 days in advance of cancellation. When such notice is provided, the owner or operator shall, within 90 days, provide to the department adequate proof of alternative financial assurance, notice from the surety of withdrawal of the cancellation, or proof of a deposit into the standby trust fund of a sum equal to the amount of the bond. If the owner or operator has not complied with this paragraph within the 90-day time period, this shall constitute a failure to perform and the department shall notify the surety, prior to the expiration of the 120-day notice period, that such a failure has occurred. The provision of funds by the issuer of the surety bond shall be considered an issuance of a loan to the owner or operator, and the terms of that loan shall be governed by the surety bond or subsequent agreement between those parties.

g. The owner or operator may cancel the bond only if alternative financial assurance is substituted prior to cancellation or if the owner or operator is no longer required to demonstrate financial responsibility in accordance with this division.

101.707(3) *Letter of credit.*

a. An owner or operator may demonstrate financial assurance for closure, post-closure care, and corrective action, whichever is applicable, by obtaining an irrevocable standby letter of credit, which conforms to the requirements of this subrule. The letter of credit must be effective and all required submissions made to the department prior to the initial receipt of solid waste or before the cancellation of an alternative financial assurance instrument, in the case of closure and post-closure care, or, in the case of corrective action, no later than 120 days after the selection of the corrective action remedy. The owner or operator must submit to the department a copy of the executed letter of credit, and subsequent proof of continuance in accordance with 567—101.703(455B) through 567—101.706(455B). The issuing institution must be an entity that has the authority to issue letters of credit and whose letter-of-credit operations are regulated and examined by a federal or state agency.

b. A letter from the owner or operator referring to the letter of credit by number, issuing institution, and date, and providing the name and address of the facility and the amount of funds assured, must be included with the letter of credit submitted to the department.

c. The owner or operator must also establish a standby trust fund. The standby trust fund must meet the requirements of 101.707(1), except the requirements for initial payment and subsequent annual payments specified in 101.707(1)*"c"* through *"f."*

d. Payments made under the terms of the letter of credit will be deposited by the issuing institution directly into the standby trust fund. Payments from the trust fund must be authorized by the trustee pursuant to 101.707(1)*"g."*

e. The letter of credit must be irrevocable and issued for a period of at least one year in an amount at least equal to the amount specified in 567—101.710(455B) for closure, post-closure care, and corrective action, whichever is applicable. The letter of credit must provide that the expiration date will be automatically extended for a period of at least one year unless the issuing institution has canceled the letter of credit by sending notice of cancellation by certified mail to the owner or operator and to the department 120 days in advance of cancellation. When such notice is provided, the owner or operator shall, within 90 days, provide to the department adequate proof of alternative financial assurance, notice from the issuing institution of withdrawal of the cancellation, or proof of a deposit into the standby trust fund of a sum equal to the amount of the letter of credit. If the owner or operator has not complied with this paragraph within the 90-day time period, this shall constitute a failure to perform and the department shall notify the issuer of the letter of credit, prior to the expiration of the 120-day notice period, that such a failure has occurred. The provision of funds by the issuer of the letter of credit shall be considered an issuance of a loan to the owner or operator, and the terms of that loan shall be governed by the letter of credit or subsequent agreement between those parties.

f. The owner or operator may cancel the letter of credit only if alternative financial assurance is substituted prior to cancellation or if the owner or operator is no longer required to demonstrate financial responsibility in accordance with this division.

101.707(4) *Insurance.*

a. An owner or operator may demonstrate financial assurance for closure and post-closure care, whichever is applicable, by obtaining insurance that conforms to the requirements of this subrule. The insurance must be effective and all required submissions made to the department prior to the initial receipt of solid waste or before the cancellation of an alternative financial assurance instrument, in the case of closure and post-closure care. At a minimum, the insurer must be licensed to transact the business of insurance or be eligible to provide insurance as an excess or surplus lines insurer in Iowa. The owner or operator must submit to the department a copy of the executed insurance policy and subsequent proof of continuance in accordance with 567—101.703(455B) through 567—101.706(455B).

b. The closure or post-closure care insurance policy must guarantee that funds will be available to close the sanitary disposal project whenever final closure occurs or to provide post-closure care for a sanitary landfill whenever the post-closure care period begins, whichever is applicable. The policy must also guarantee that once closure or post-closure care begins, the insurer will be responsible for the paying out of funds to the owner or operator or other person authorized to conduct closure or post-closure care, up to an amount equal to the face amount of the policy.

c. The insurance policy must be issued for a face amount at least equal to the amount specified in 567—101.710(455B) for closure and post-closure care, whichever is applicable. Actual payments by the insurer will not change the face amount, although the insurer's future liability will be lowered by the amount of the payments.

d. An owner or operator, or any other person authorized to conduct closure or post-closure care, may receive reimbursements for closure or post-closure care expenditures, including partial closure, whichever is applicable. Requests for reimbursement will be granted by the insurer only if the remaining value of the policy is sufficient to cover the remaining costs of closure or post-closure care. The owner or operator must submit to the department documentation of the justification for reimbursement and verification that the reimbursement has been received.

e. Each policy must contain a provision allowing assignment of the policy to a successor owner or operator. Such assignment may be conditional upon consent of the insurer, provided that such consent is not unreasonably refused.

f. The insurance policy must provide that the insurer may not cancel, terminate, or fail to renew the policy, except for failure to pay the premium. The automatic renewal of the policy must, at a minimum, provide the insured with the option of renewal at the face amount of the expiring policy. If there is a failure to pay the premium, the insurer may cancel the policy by sending notice of cancellation by certified mail to the owner or operator and to the department 120 days in advance of cancellation. When such notice is provided, the owner or operator shall, within 90 days, provide to the department adequate proof of alternative financial assurance, notice from the insurer of withdrawal of the cancellation, or proof of a deposit of a sum equal to the amount of the insurance coverage into either the closure and post-closure care account(s) established pursuant to Iowa Code section 455B.306(9)*"b"* or a standby trust fund that meets the requirements of 101.707(1), except the requirements for initial payment and subsequent annual payments specified in 101.707(1)*"c"* through *"f."* If the owner or operator has not complied with this paragraph within the 90-day time period, this shall constitute a failure to perform and shall be a covered event pursuant to the terms of the insurance policy. A failure by the owner or operator to comply with this paragraph within the 90-day time period shall make the insurer liable for the closure and post-closure care of the covered facility up to the amount of the policy limits, which shall be equal to the most recently submitted cost estimates.

g. For insurance policies providing coverage for post-closure care, commencing on the date that liability to make payments pursuant to the policy accrues, the insurer will thereafter annually increase the face amount of the policy. Such increase must be equivalent to the face amount of the policy, less any payments made, multiplied by an amount equivalent to 85 percent of the most recent investment rate or of the equivalent coupon-issue yield announced by the U.S. Treasury for 26-week Treasury securities.

h. The owner or operator may cancel the insurance policy only if alternative financial assurance is substituted prior to cancellation or if the owner or operator is no longer required to demonstrate financial responsibility in accordance with this division.

101.707(5) *Corporate financial test.* An owner or operator that satisfies the requirements of this subrule may demonstrate financial assurance for closure, post-closure care, and corrective action, whichever is applicable, up to the amount specified below.

a. Financial component. The owner or operator must satisfy the requirements of 101.707(5)*"a"*(1) through *"a"*(3) to meet the financial component of the corporate financial test.

(1) The owner or operator must satisfy one of the following three conditions.

1. A current rating for its senior unsubordinated debt of AAA, AA, A, or BBB as issued by Standard & Poor's or Aaa, Aa, A or Baa as issued by Moody's;

2. A ratio of less than 1.5 comparing total liabilities to net worth (net worth calculations may not include future permitted capacity of a subject landfill as an asset); or

3. A ratio of greater than 0.10 comparing the sum of net income plus depreciation, depletion, and amortization, minus $10 million, to total liabilities.

(2) The tangible net worth (excluding future permitted capacity of a subject sanitary landfill) of the owner or operator must be greater than:

1. The sum of the current closure, post-closure care, and corrective action cost estimates, whichever is applicable, and any other environmental obligations, including guarantees covered by a financial test, except as provided in 101.707(5)*"a"*(2)"2." For sanitary landfill owners or operators, this sum shall include an additional $10 million.

2. For sanitary landfill owners or operators, a net worth of $10 million plus the amount of any guarantees that have not been recognized as liabilities on the financial statements, provided that all of the current closure, post-closure care, and corrective action costs and any other environmental obligations covered by a financial test are recognized as liabilities on the owner's or operator's audited financial statements and subject to the approval of the department.

(3) The owner or operator must have located in the United States assets (excluding future permitted capacity of a subject sanitary landfill) amounting to at least the sum of current closure, post-closure care, and corrective action cost estimates, whichever is applicable, and any other environmental obligations covered by a financial test as described in 101.707(5)*"f."*

b. Recordkeeping and reporting requirements. The owner or operator must submit the following records to the department prior to the initial receipt of solid waste or before cancellation of an alternative financial assurance instrument, in the case of closure and post-closure care, or no later than 120 days after the selection of the corrective action remedy.

(1) A letter signed by the owner's or operator's chief financial officer that:

1. Lists all the current cost estimates covered by a financial test, including but not limited to cost estimates required by 567—101.703(455B) through 567—101.706(455B); cost estimates required for municipal solid waste landfills pursuant to 40 CFR Part 258, if applicable; cost estimates required for UIC facilities under 40 CFR Part 144, if applicable; cost estimates required for petroleum underground storage tank facilities under 40 CFR Part 280, if applicable; cost estimates required for PCB storage facilities under 40 CFR Part 761, if applicable; and cost estimates required for hazardous waste treatment, storage, and disposal facilities under 40 CFR Parts 264 and 265, if applicable; and

2. Provides evidence demonstrating that the firm meets the conditions of 101.707(5)*"a."*

(2) A copy of the Iowa-licensed certified public accountant's unqualified opinion of the owner's or operator's financial statements for the latest completed fiscal year. To be eligible to use the financial test, the owner's or operator's financial statements must receive an unqualified opinion from the Iowa-licensed certified public accountant. An adverse opinion or disclaimer of opinion shall be cause for disallowance of this instrument. A qualified opinion related to the demonstration of financial assurance may, at the discretion of the department, be cause for disallowance. If the department does not allow use of the corporate financial test, the owner or operator must provide alternative financial assurance that meets the requirements of 567—101.707(455B).

(3) If the chief financial officer's letter providing evidence of financial assurance includes financial data showing that the owner or operator satisfies 101.707(5)*"a"*(1)"2" or "3" that differs from data in the audited financial statements referred to in 101.707(5)*"b"*(2) or any other audited financial statement or data filed with the U.S. Securities and Exchange Commission, a special report from the owner's or operator's Iowa-licensed certified public accountant to the owner or operator. The special report shall be based on an agreed-upon procedures engagement in accordance with professional auditing standards and shall describe the procedures performed in comparing the data in the chief financial officer's letter derived from the independently audited year-end financial statements for the latest fiscal year with the amounts in such financial statements, the findings of that comparison, and the reasons for any differences.

(4) If the chief financial officer's letter provides a demonstration that the owner or operator has assured for environmental obligations as provided in 101.707(5)*"a"*(2)"2," a report from the Iowa-licensed certified public accountant that verifies that all of the environmental obligations covered by a financial test have been recognized as liabilities on the audited financial statements, that documents how these obligations have been measured and reported, and that verifies that the tangible net worth of the owner or operator is at least the amount of any guarantees provided. For sanitary landfill owners or operators, this sum shall include an additional $10 million.

c. Cease submission of information. The owner or operator may cease the submission of the information required by 101.707(5) only if alternative financial assurance is substituted prior to cancellation or if the owner or operator is no longer required to demonstrate financial responsibility in accordance with this division.

d. Financial test. The owner or operator must satisfy the requirements of the financial test at the close of each fiscal year. If the owner or operator no longer meets the requirements of the corporate financial test, the owner or operator must immediately notify the department in writing and, within 90 days following the close of the owner's or operator's fiscal year, obtain alternative financial assurance that meets the requirements of 567—101.707(455B) and submit the financial assurance documentation to the department for approval.

e. Financial condition. The department may, based on a reasonable belief that the owner or operator may no longer meet the requirements of 101.707(5)*"a,"* require at any time the owner or operator to provide reports of its financial condition in addition to, or including, current financial test documentation as specified in 101.707(5)*"b."* If the department finds that the owner or operator no longer meets the requirements of 101.707(5)*"a,"* the owner or operator must provide alternative financial assurance that meets the requirements of 567—101.707(455B) within 90 days of written notification by the department.

f. Calculation of costs to be assured. When calculating the current cost estimates for closure, post-closure care, corrective action, or the sum of the combination of such costs to be covered, and any other environmental obligations assured by a financial test referred to in 101.707(5), the owner or operator must include cost estimates required for 567—101.703(455B) through 567—101.706(455B) and cost estimates required for the following environmental obligations, if the owner or operator assures them through a financial test: municipal solid waste landfills pursuant to 40 CFR Part 258; UIC facilities under 40 CFR Part 144; petroleum underground storage tank facilities under 40 CFR Part 280; PCB storage facilities under 40 CFR Part 761; and hazardous waste treatment, storage, and disposal facilities under 40 CFR Parts 264 and 265.

101.707(6) *Local government financial test.* An owner or operator that satisfies the requirements of this subrule may demonstrate financial assurance for closure, post-closure care, and corrective action, whichever is applicable, up to the amount specified below.

a. Financial component.

(1) The local government owner or operator must satisfy one of the following conditions.

1. If the owner or operator has outstanding, rated general obligation bonds that are not secured by insurance, a letter of credit, or other collateral or guarantee, the owner or operator must have a current rating of Aaa, Aa, A, or Baa, as issued by Moody's, or AAA, AA, A, or BBB, as issued by Standard & Poor's, on all such general obligation bonds; or

2. The owner or operator must satisfy both of the following financial ratios based on the owner's or operator's most recent audited annual financial statement: a ratio of cash plus marketable securities to total expenditures greater than or equal to 0.05 and a ratio of annual debt service to total expenditures less than or equal to 0.20.

(2) The owner or operator must prepare its financial statements in conformity with Generally Accepted Accounting Principles or Other Comprehensive Bases of Accounting for governments and have its financial statements audited by an Iowa-licensed certified public accountant or the office of the auditor of the state of Iowa. The financial statement shall be in the form prescribed by the office of the auditor of the state of Iowa.

(3) A local government is not eligible to assure its obligations under 101.707(6) if it:

1. Is currently in default on any outstanding general obligation bonds;

2. Has any outstanding general obligation bonds rated lower than Baa as issued by Moody's or BBB as issued by Standard & Poor's;

3. Operated at a deficit equal to 5 percent or more of total annual revenue in each of the past two fiscal years; or

4. Receives an adverse opinion or disclaimer of opinion from the Iowa-licensed certified public accountant or office of the auditor of the state of Iowa auditing its financial statement as required under 101.707(6)*"a"*(2). A qualified opinion related to the demonstration of financial assurance may, at the discretion of the department, be cause for disallowance. If the department does not allow use of the local government financial test, the owner or operator must provide alternative financial assurance that meets the requirements of 567—101.707(455B).

b. Public notice component. The local government owner or operator must include disclosure of the closure and post-closure care costs assured through the financial test in its next comprehensive annual financial report, prior to the initial receipt of solid waste or prior to cancellation of an alternative financial assurance instrument, whichever is later. Disclosure must include the nature and source of closure and post-closure care requirements, the reported liability at the balance sheet date, the estimated total closure and post-closure care cost remaining to be recognized, the percentage of landfill capacity used to date, and the estimated landfill life in years, if applicable. A reference to corrective action costs must be placed in the next comprehensive annual financial report after the selection of the corrective action remedy. For the first year the financial test is used to assure costs at a particular facility, the reference may instead be placed in the facility's operating record until issuance of the next available comprehensive annual financial report if timing does not permit the reference to be incorporated into the most recently issued comprehensive annual financial report or budget. For closure and post-closure care costs at municipal solid waste sanitary landfills, conformance with Governmental Accounting Standards Board Statement 18 assures compliance with this public notice component.

c. Recordkeeping and reporting requirements.

(1) The local government owner or operator must submit to the department the following items.

1. A letter signed by the local government's chief financial officer that lists all the current cost estimates covered by a financial test, as described in 111.707(6)*"d,"* that provides evidence and certifies that the local government meets the conditions of 101.707(6)*"a"*(1) through *"a"*(3) and certifies that the local government meets the conditions of 101.707(6)*"b"* and *"d"*; and

2. The local government's independently audited year-end financial statements for the latest fiscal year, including the unqualified opinion of the auditor who must be an Iowa-licensed certified public accountant or the office of the auditor of the state of Iowa. The comprehensive annual financial report shall indicate compliance with the financial ratios required by 101.707(6)*"a"*(1)"2," if applicable, and the requirements of 101.707(6)*"a"*(2) and 101.707(6)*"a"*(3)"3" and "4."

(2) The items required in 101.707(6)*"c"*(1) must be submitted to the department prior to the initial receipt of solid waste or prior to the cancellation of an alternative financial assurance instrument, in the case of closure and post-closure care, or, in the case of corrective action, not later than 120 days after the selection of the corrective action remedy.

(3) The local government owner or operator may cease the submission of the information required by 101.707(6) only if alternative financial assurance is substituted prior to cancellation or if the owner or operator is no longer required to demonstrate financial responsibility in accordance with this division.

(4) The local government owner or operator must satisfy the requirements of the financial test at the close of each fiscal year. If the owner or operator no longer meets the requirements of the local government financial test, the owner or operator must immediately notify the department in writing and, within 90 days following the close of the owner's or operator's fiscal year, obtain alternative financial assurance that meets the requirements of 567—101.707(455B) and submit the financial assurance documentation to the department for approval.

(5) The department may, based on a reasonable belief that the local government owner or operator may no longer meet the requirements of 101.707(6)*"a,"* require at any time the owner or operator to provide reports of its financial condition in addition to, or including, current financial test documentation as specified in 101.707(6)*"c."* If the department finds that the owner or operator no longer meets the requirements of 101.707(6)*"a,"* the owner or operator must provide alternative financial assurance that meets the requirements of 567—101.707(455B) within 90 days of written notification by the department.

d. Calculation of costs to be assured. The portion of the closure, post-closure care, and corrective action costs for which an owner or operator may assure under this subrule is determined as follows.

(1) If the local government owner or operator does not assure other environmental obligations through a financial test, the owner or operator may assure closure, post-closure care, and corrective action costs that equal up to 43 percent of the local government's total annual revenue.

(2) If the local government owner or operator assures other environmental obligations through a financial test, including those associated with municipal solid waste landfills pursuant to 40 CFR Part 258; UIC facilities under 40 CFR Part 144.62; petroleum underground storage tank facilities under 40 CFR Part 280; PCB storage facilities under 40 CFR Part 761; and hazardous waste treatment, storage, and disposal facilities under 40 CFR Parts 264 and 265, the owner or operator must add those costs to the closure, post-closure care, and corrective action costs it seeks to assure under this subrule. The total that may be assured must not exceed 43 percent of the local government's total annual revenue.

(3) The owner or operator must obtain an alternative financial assurance instrument for those costs that exceed the limits set in 101.707(6)*"d"*(1) and *"d"*(2).

101.707(7) *Corporate guarantee.* An owner or operator that satisfies the requirements of this subrule may demonstrate financial assurance for closure, post-closure care, and corrective action, whichever is applicable, by obtaining a written guarantee.

a. Affiliation. The guarantor must be the direct or higher-tier parent corporation of the owner or operator, a firm whose parent corporation is also the parent corporation of the owner or operator, or a firm with a substantial business relationship with the owner or operator. The guarantor must meet the requirements of the corporate financial test in 101.707(5) and must comply with the terms of the written guarantee. A certified copy of the executed guarantee must be placed in the facility's operating record along with copies of the letter from the guarantor's chief financial officer and the independent certified public accountant's opinion(s). If the guarantor's parent corporation is also the parent corporation of the owner or operator, the letter from the guarantor's chief financial officer must describe the value received in consideration of the guarantee. If the guarantor is a firm with a substantial business relationship with the owner or operator, this letter must describe this substantial business relationship and the value received in consideration of the guarantee.

b. Terms of the written guarantee. The guarantee must be effective and all required submissions made to the department prior to the initial receipt of solid waste or before the cancellation of an alternative financial assurance instrument, in the case of closure and post-closure care, or, in the case of corrective action, no later than 120 days after the selection of the corrective action remedy. The guarantee must provide that:

(1) If the owner or operator fails to perform closure, post-closure care, and corrective action of a facility covered by the guarantee, or fails to obtain alternative financial assurance within 90 days of notice of intent to cancel pursuant to 101.707(7)*"b"*(2) and *"b"*(3), the guarantor will:

1. Perform, or pay a third party to perform, closure, post-closure care, and corrective action as required (performance guarantee); or

2. Establish a fully funded trust fund as specified in 101.707(1) in the name of the owner or operator (payment guarantee).

(2) The guarantee will remain in force for as long as the owner or operator must comply with the applicable financial assurance requirements of this division unless the guarantor sends prior notice of cancellation by certified mail to the owner or operator and to the department. Cancellation may not occur, however, during the 120 days beginning on the date of receipt of the notice of cancellation by both the owner or operator and the department, as evidenced by the return receipts.

(3) If notice of cancellation is given, the owner or operator must, within 90 days following receipt of the cancellation notice by the owner or operator and the department, provide to the department adequate proof of alternative financial assurance, notice from the guarantor of withdrawal of the cancellation, or proof of a deposit into a trust fund pursuant to 101.707(1) of a sum equal to the amount of the corporate guarantee. If the owner or operator fails to comply with the requirements of this subparagraph within the 90-day period, the guarantor must provide that alternative financial assurance prior to cancellation of the corporate guarantee.

c. Recordkeeping and reporting requirements.

(1) The owner or operator must submit to the department a certified copy of the executed guarantee along with the items required under 101.707(5)*"b."*

(2) The owner or operator shall no longer be required to submit the items specified in 101.707(7)*"c"*(1) when proof of alternative financial assurance has been submitted to the department or the owner or operator is no longer required to demonstrate financial responsibility in accordance with this division.

(3) If a corporate guarantor no longer meets the requirements of 101.707(5), the owner or operator must immediately notify the department in writing and, within 90 days of notification, submit to the department proof of alternative financial assurance. If the owner or operator fails to obtain alternative financial assurance within the 90-day time period, the guarantor must provide that alternative financial assurance within the next 30 days.

101.707(8) *Local government guarantee.* An owner or operator that satisfies the requirements of this subrule may demonstrate financial assurance for closure, post-closure care, and corrective action, whichever is applicable, by obtaining a written guarantee provided by a local government or jointly provided by the members of an agency established pursuant to Iowa Code chapter 28E.

a. Financial component. The guarantor must meet the requirements of the local government financial test in 101.707(6) and must comply with the terms of the written guarantee.

b. Terms of the written guarantee. The guarantee must be effective and all required submissions made to the department prior to the initial receipt of solid waste or before the cancellation of an alternative financial assurance instrument, in the case of closure and post-closure care, or, in the case of corrective action, no later than 120 days after the selection of the corrective action remedy. The guarantee must provide that:

(1) If the owner or operator fails to perform closure, post-closure care, and corrective action of a facility covered by the guarantee, or fails to obtain alternative financial assurance within 90 days of notice of intent to cancel pursuant to 101.707(8)*"b"*(2) and *"b"*(3), the guarantor will:

1. Perform, or pay a third party to perform, closure, post-closure care, and corrective action as required (performance guarantee); or

2. Establish a fully funded trust fund as specified in 101.707(1) in the name of the owner or operator (payment guarantee).

(2) The guarantee will remain in force for as long as the owner or operator must comply with the applicable financial assurance requirements of this division unless the guarantor sends prior notice of cancellation by certified mail to the owner or operator and to the department. Cancellation may not occur, however, during the 120 days beginning on the date of receipt of the notice of cancellation by both the owner or operator and the department, as evidenced by the return receipts.

(3) If notice of cancellation is given, the owner or operator must, within 90 days following receipt of the cancellation notice by the owner or operator and the department, provide to the department adequate proof of alternative financial assurance, notice from the guarantor of withdrawal of the cancellation, or proof of a deposit into a trust fund pursuant to 101.707(1) of a sum equal to the amount of the local government guarantee. If the owner or operator fails to comply with the requirements of this subparagraph within the 90-day period, the guarantor must provide that alternative financial assurance prior to cancellation of the local government guarantee.

c. Recordkeeping and reporting requirements.

(1) The owner or operator must submit to the department a certified copy of the executed guarantee along with the items required under 101.707(6)*"c."*

(2) The owner or operator shall no longer be required to submit the items specified in 101.707(8)*"c"*(1) when proof of alternative financial assurance has been submitted to the department or the owner or operator is no longer required to demonstrate financial responsibility in accordance with this division.

(3) If a local government guarantor no longer meets the requirements of 101.707(6), the owner or operator must immediately notify the department in writing and, within 90 days of notification, submit to the department proof of alternative financial assurance. If the owner or operator fails to obtain alternative financial assurance within the 90-day period, the guarantor must provide that alternative financial assurance within the next 30 days.

101.707(9) *Local government dedicated fund.*

a. The owner or operator of a publicly owned sanitary disposal project, or local government serving as a guarantor, may demonstrate financial assurance for closure, post-closure care, and corrective action, whichever is applicable, by establishing a dedicated fund that conforms to the requirements of this subrule. The owner or operator must submit to the department a copy of the executed local government dedicated fund agreement.

b. The fund shall be dedicated by state constitutional provision or local government statute, charter, ordinance, resolution, or order to pay for closure, post-closure care and corrective action, whichever is applicable, arising from the operation of the sanitary disposal project, and shall be funded for the full amount of coverage or funded for part of the required amount of coverage and used in combination with another instrument(s) that provides the remaining coverage.

c. For a local government dedicated fund used to demonstrate financial assurance for proper closure at a sanitary disposal project that is not sanitary landfill, there is no pay-in period as defined in 101.707(9)*"d."* Instead, the local government dedicated fund shall be in an amount equal to or greater than the amount specified in 101.703(3).

d. Payments into the local government dedicated fund must be made annually by the owner or operator over ten years or over the remaining permitted life of the sanitary landfill, whichever is shorter, in the case of a dedicated fund for closure and post-closure care or over one-half of the estimated length of the corrective action remedy in the case of a response to a known release. This period is referred to as the "pay-in period."

e. For a local government dedicated fund used to demonstrate financial assurance for closure and post-closure care at a sanitary landfill, the first payment into the dedicated fund must be at least equal to the amount specified in 567—101.710(455B) for closure and post-closure care, divided by the number of years in the pay-in period, as defined in 101.707(9)*"d."* The amount of subsequent payments must be determined by the following formula:

$$\text{Next Payment} = \frac{CE - B}{Y}$$

Where:

"CE" is the amount specified in 567—101.710(455B) for closure and post-closure care (updated for inflation or other changes).

"B" is the balance of the dedicated fund at the close of the previous fiscal year.

"Y" is the number of years remaining in the pay-in period.

f. Unless otherwise authorized by the department, for a local government dedicated fund used to demonstrate financial assurance for corrective action at a sanitary landfill, the first payment into the dedicated fund must be at least equal to one-half of the amount specified in 101.706(1) for corrective action, divided by the number of years in the corrective action pay-in period, as defined in 101.707(9)*"d."* The amount of subsequent payments must be determined by the following formula:

$$\text{Next Payment} = \frac{RB - V}{Y}$$

Where:

"RB" is the most recent estimate of the required dedicated fund balance for corrective action.

"V" is the value of the dedicated fund at the close of the previous fiscal year.

"Y" is the number of years remaining in the pay-in period.

g. The initial payment into the local government dedicated fund must be made prior to the initial receipt of solid waste at a sanitary landfill or before the cancellation of an alternative financial assurance instrument, in the case of closure and post-closure care, or no later than 120 days after the selection of the corrective action remedy.

h. After the pay-in period has been completed for a sanitary landfill, the dedicated fund shall be adjusted annually to correct any deficiency of the dedicated fund with respect to the updated cost estimates and may be adjusted annually should the balance in the dedicated fund exceed the updated cost estimates.

i. The local government dedicated fund may be terminated by the owner or operator only if the owner or operator substitutes alternative financial assurance as specified in this rule or if the owner or operator is no longer required to demonstrate financial responsibility in accordance with this division.

567—101.708(455B) General requirements.

101.708(1) *Use of multiple financial assurance instruments.* An owner or operator may satisfy the requirements of this division by establishing more than one financial assurance instrument per facility, except that instruments guaranteeing performance rather than payment may not be combined with other instruments. The instruments must be a combination of those instruments outlined in 567—101.707(455B) and 101.709(455B) and must provide financial assurance for an amount at least equal to the current cost estimate for closure, post-closure care, and corrective action, whichever is applicable. The financial test and a guarantee provided by a corporate parent, sibling, or grandparent may not be combined if the financial statements if the two entities are consolidated.

101.708(2) *Use of one financial assurance instrument for multiple facilities.* An owner or operator may satisfy the requirements of this division for multiple sanitary disposal projects by the use of one instrument if the owner or operator ensures that the instrument provides financial assurance for an amount at least equal to the current cost estimates for closure, post-closure care, and corrective action, whichever is applicable, for all sanitary disposal projects covered. Evidence of financial assurance submitted to the department shall include, for each sanitary disposal project, the name, address, and permit number and the amount of funds for closure, post-closure care, and corrective action assured by the instrument.

101.708(3) *Criteria.* The language of the financial assurance instruments listed in 567—101.707(455B) must ensure that the instruments satisfy the following criteria.

a. The financial assurance instrument must ensure that the amount of funds assured is sufficient to cover the costs of closure, post-closure care, and corrective action for known releases, whichever is applicable;

b. The financial assurance instrument must ensure that funds will be available in a timely fashion, not to exceed three months from department notification, when needed;

c. The financial assurance instrument must be obtained by the owner or operator prior to the initial receipt of solid waste, in the case of closure and post-closure care, or, in the case of corrective action, no later than 120 days after the selection of the corrective action remedy, until the owner or operator is released from the financial assurance requirements; and

d. The financial assurance instrument must be legally valid, binding, and enforceable under Iowa law.

101.708(4) *No permit without financial assurance.* The department shall not issue or renew a permit to an owner or operator of a sanitary disposal project pursuant to Iowa Code section 455B.305 until a financial assurance instrument(s) has been submitted to and approved by the department. The department may request that additional information be submitted for review to make a financial assurance compliance decision.

101.708(5) *Request for payment.* The department may request payment from any financial assurance provider for the purpose of completing site closure, post-closure care, and corrective action, whichever is applicable, when the owner or operator declares an economic inability to comply with this division either by sending written notification to the department or through an action such as but not limited to filing for bankruptcy.

101.708(6) *Financial assurance cancellation and permit suspension.*

a. A financial assurance instrument may be terminated by the owner or operator only if the owner or operator substitutes alternative financial assurance, as specified in 567—101.707(455B), prior to cancellation or if the owner or operator is no longer required to demonstrate financial responsibility in accordance with this division.

b. A financial assurance instrument shall be continuous in nature until canceled by the financial assurance provider or until the department gives written notification to the owner or operator and the financial assurance provider that the covered site has demonstrated compliance with the sanitary disposal project's applicable closure, post-closure care, and corrective action requirements. The financial assurance provider shall give at least 120 days' notice in writing to the owner or operator and to the department in the event of any intent to cancel a financial assurance instrument.

c. Within 90 days of receipt of a written notice of cancellation of a financial assurance instrument, the owner or operator must provide the department with proof of alternative financial assurance or a notice from the issuing institution of withdrawal of the cancellation. If a means of continued financial assurance is not provided within the 90-day time frame, the department shall suspend the permit and call upon the financial assurance instrument(s) prior to the expiration of the 120-day notice period.

567—101.709(455B) Closure and post-closure care account(s). Except as provided in 101.709(10), the holder of a permit for a sanitary landfill shall maintain the closure and post-closure care account(s) as part of financial assurance pursuant to Iowa Code section 455B.306(9)*"b."* The accounts shall be specific to a particular facility.

101.709(1) Money in the accounts shall not be assigned for the benefit of creditors, except the state of Iowa.

101.709(2) Money in the accounts shall not be used to pay any final judgment against a permit holder arising out of the ownership or operation of the site during its active life or after closure.

101.709(3) Withdrawal of funds. Except as provided in 101.709(4), money in the accounts may be withdrawn without departmental approval only for the purpose of funding closure, including partial closure, or post-closure care activities that are in conformance with the sanitary landfill's approved closure and post-closure plans. Withdrawals for activities not in conformance with the approved closure and post-closure plans must receive prior written approval from the department. Permit holders using a trust fund established pursuant to 101.707(1) to satisfy the requirements of this rule must comply with the requirements of 101.707(1)*"g"* prior to withdrawal.

101.709(4) Excess funds. If the balance of the closure and post-closure care account(s) exceeds the current cost estimate for closure or post-closure care at any time, the permit holder may withdraw the excess funds so long as the withdrawal does not cause the balance to be reduced below the amount of the current cost estimate.

101.709(5) Proof of establishment of account. A permit holder shall, on a form prescribed by the department, at the time of permit application and renewal, submit a statement of account signed by the permit holder, which indicates that accounts have been established pursuant to 567—101.709(455B).

101.709(6) An account established pursuant to 101.707(1) for a trust fund or 101.707(9) for a local government dedicated fund satisfies the requirements of 567—101.709(455B), and the account must comply with Iowa Code section 455B.306(9)*"b."*

101.709(7) Yearly deposits. Unless otherwise authorized by the department or provided for within this division (i.e., trust fund or local government dedicated fund deposit calculation), deposits into the closure and post-closure care account(s) shall be made yearly in the amount specified in this subrule by the close of the permitted facility's fiscal year. The closure and post-closure care account(s) shall be fully funded at the time of site closure. For active sanitary landfills not using a trust fund or local government dedicated fund as the sole financial assurance instrument, the minimum yearly deposit to the closure and post-closure care account(s) shall be determined using the following formula:

$$\frac{CE - AB}{RPC} \times TR = \text{Yearly Deposit}$$

Where:

"CE" is the current cost estimate of closure and post-closure care costs.

"AB" is the balance of the closure and post-closure care account(s) at the close of the previous fiscal year.

"RPC" is the remaining permitted capacity, in tons, of the sanitary landfill as of the start of the permit holder's fiscal year. RPC may include those areas that have yet to be constructed but have received written design approval from the department. Justification for RPC calculations shall be submitted annually pursuant to 567—101.704(455B) and 567—101.705(455B).

"TR" is the number of tons of solid waste disposed of at the site in the permit holder's prior fiscal year.

For closed landfills, the closure and post-closure care account(s) shall remain fully funded throughout the post-closure period. Any account balance deficiency shall be rectified by the end of the permitted facility's fiscal year in which the account balance deficiency was identified.

101.709(8) The closure and post-closure care account(s) may be commingled with other accounts so long as the amounts credited to each account balance are reported separately, pursuant to 101.704(1) and 101.705(1).

101.709(9) The department shall have full rights of access to all funds existing in a permitted facility's closure and post-closure care account(s), at the sole discretion of the department, if the permit holder fails to undertake closure and post-closure care activities after being directed to do so by a final agency action of the department. These funds shall be used only for the purposes of funding closure and post-closure care activities at the site.

101.709(10) Pursuant to Iowa Code section 455B.306(12), a sanitary landfill owned by an electric generating facility and used exclusively for the disposal of coal combustion residual shall not be required to maintain a closure and post-closure care account(s) but may demonstrate financial assurance in accordance with this division by any of the instruments described in 567—101.707(455B) or by an alternative method acceptable to the department.

101.709(11) Pursuant to Iowa Code section 455B.306(9)*"b,"* industrial sanitary landfills permitted pursuant to Division III of this chapter and non-utility coal combustion residual sanitary landfills permitted pursuant to Division IV of this chapter prior to [the effective date of this rule], and for which closure and post-closure accounts have not been established pursuant to 101.709(5), shall submit proof of establishment within six months of the [the effective date of this rule].

567—101.710(455B) Amount of required financial assurance. A financial assurance instrument established pursuant to and in compliance with 567—101.707(455B) or 567—101.709(455B), if applicable, shall be in the amount of the third-party cost estimates required by 567—101.703(455B) through 567—101.706(455B). With regard to sanitary landfills, the amount of financial assurance may be reduced by the sum of the cash balance in a trust fund or local government dedicated fund established to comply with 567—101.709(455B), plus the current value of investments held by said trust fund or

local government dedicated fund, if invested in one or more of the investments listed in Iowa Code section 12B.10(5).

567—101.711(17A,455A) Waivers. A request for a waiver to this division shall be submitted to the department in writing pursuant to 561—Chapter 10. Some provisions of this division are minimum standards required by federal law (40 CFR Part 258, Subpart G), and waivers to such provisions shall not be granted unless they are as protective as the applicable minimum federal standard.

These rules are intended to implement Iowa Code sections 455B.304(8) and 455B.306(9).

ITEM 2. Rescind and reserve **567—Chapter 106**.

ITEM 3. Rescind and reserve **567—Chapter 113**.

ITEM 4. Rescind and reserve **567—Chapter 114**.

ITEM 5. Rescind and reserve **567—Chapter 115**.