

LANDFILL PERMIT APPLICATION REQUIREMENTS AND LOCATION, OPERATING AND DESIGN STANDARDS

4.0 Landfill Facility Permit Requirements.

A complete, detailed permit application, containing at a minimum the information required in Sections 4.1 through 4.7, shall be required for the following:

- developing and operating a new landfill facility;
- expanding an existing landfill facility;
- modifying an existing facility's permitted operations; and
- renewing an existing facility permit except when the Short Form application process may be used as outlined in Section 3.0 of these regulations.

The application shall contain narratives, drawings, diagrams, analyses, and calculations necessary to satisfy the requirements of these regulations and demonstrate that the landfill facility will be designed and operated to protect the public health, safety, and welfare at all times.

- 4.1. Owner's Authorization. [Section 11-4-1520(A)(1)] The application for a permit shall include a notarized letter, signed by the property owner that authorizes use of the property for a landfill. This letter is required even if the applicant is the owner of the property.
- 4.2. Property Taxes. [Section 11-4-1520(A)(2)] The application for a permit shall include evidence of payment of real estate property taxes by providing copies of the most recent tax bill and check; or by providing a copy of the most recent tax bill that has been stamped paid by the Cook County Assessor's office. The PIN numbers for all areas of the facility shall also be provided.
- 4.3. Variance in the Nature of a Special Use. [Section 11-4-1520(A)(3)] For new or expanding facilities the application for permit shall contain all reports and information necessary to obtain a Variance in the Nature of a Special Use (Special Use Variance) from the Zoning Board of Appeals (ZBA). If the landfill facility has an existing Special Use Variance, the application shall contain copies of the variance issued by the ZBA and a demonstration that the landfill facility is in compliance with the Special Use Variance and any conditions attached to the variance.
- 4.4. Design Report. The application for permit shall contain a design report for the landfill facility that shall include the following components, in order:
 - 4.4.1. Plot Plan [Section 11-4-1520(A)(4)]. The design report shall contain a plot plan drawing(s) of the landfill facility. This drawing(s) shall be prepared at a legible scale, no smaller than one inch equals 200 feet. The plot plan drawing(s) shall include the following components, at a minimum:

- 4.4.1.1. The landfill facility site boundaries and the location of all facility buildings, access roads, parking areas, and any ancillary structures or features.
- 4.4.1.2. Include topographic contours at a minimum two-foot contour interval of the facility property. In areas of steep relief, a minimum 10 foot contour interval may be used to enhance clarity.
- 4.4.1.3. For new facilities include a minimum buffer zone of 1000 feet around the facility boundary.
- 4.4.1.4. Indicate the limits of waste disposal, waste storage, and/or waste handling areas.
- 4.4.1.5. Indicate all streams, rivers, ponds, lakes, and wetlands.
- 4.4.1.6. Indicate all residence and property zoned as residential within 1000 feet of the property boundary.
- 4.4.1.7. Indicate that extent and composition of the buffer zone required by the City of Chicago Zoning Ordinance.
- 4.4.1.8. Any characteristic or feature that has a location standard established in Section 5.0 of these regulations or any other applicable standards. The plans shall identify the characteristic or feature and indicate the setback distance from the landfill facility boundary.
- 4.4.2. USGS Site Location Map. [Section 11-4-1520(A)(30)] The design report shall contain a USGS 7.5 Minute Quadrangle Map that provides sufficient coverage to include the following:
 - 4.4.2.1. The delineated boundaries of the landfill site.
 - 4.4.2.2. A clearly marked one-mile radius around the entire site to identify features including residential property, streams, rivers, ponds, lakes, wetlands, roads, highways, schools and parks within this one-mile perimeter.
- 4.4.3. Aerial Photograph Drawing(s). [Section 11-4-1520(A)(30)] For new and expanding facilities the design report shall contain an aerial photograph drawing(s) that provides sufficient coverage to include the following:

- 4.4.3.1. The delineated boundaries of the landfill facility and site property.
- 4.4.3.2. A clearly marked ½-mile radius around the entire site to identify features including residential property, streams, rivers, ponds, lakes, wetlands, roads, highways, schools and parks within this ½-mile perimeter.
- 4.4.3.3. Zoning districts clearly delineated with a ½-mile radius of the facility site. The district boundaries and their respective designations shall be clearly marked.
- 4.4.3.4. Any characteristic or feature that has a location standard established in Section 5.0 of these regulations or any other applicable standards. The plans shall identify the characteristic or feature and indicate the setback distance from the landfill facility boundary.
- 4.4.4. General Layout of the Facility. [Section 11-4-1520(A)(5)] The design report shall contain sufficient scale drawings to describe the general layout of the facility. These drawings, at a minimum, shall illustrate the following:
 - 4.4.4.1. A scale no smaller than 1 inch equals 200 feet. The scale shall be represented on each sheet in graphical format.
 - 4.4.4.2. The external layout of buildings and structures.
 - 4.4.4.3. The layout and location of all fixed equipment.
 - 4.4.4.4. The limits of waste disposal, waste storage, and/or waste handling areas.
 - 4.4.4.5. All pertinent features of the stormwater management system.
 - 4.4.4.6. All pertinent features of the wastewater management system.
 - 4.4.4.7. The locations of the primary utilities within and adjacent to the landfill.
 - 4.4.4.8. The locations of the primary water sources and water distribution system components for employee consumption, fire suppression, facility cleaning, and dust control.

- 4.4.4.9. The locations of all fire suppression equipment and flammable material storage areas.
- 4.4.4.10. The locations of all site control features and all screening devices such as fences, gates, and signage.
- 4.4.4.11. The locations and layout of all parking and queuing areas.
- 4.4.4.12. The locations and layout of all employee facilities.
- 4.4.4.13. The location of all first-aid equipment and other emergency supplies and equipment.
- 4.4.5. Survey. [Section 11-4-1520(A)(6)] The design report shall contain a Legal Plat of Survey, prepared by a Professional Surveyor, that depicts the landfill facility boundaries and the boundaries of the disposal unit or units. The landfill site shall have a minimum of two permanent survey monuments. The plat of survey shall illustrate the coordinates of these monuments in state plane coordinates and on-site coordinates. The elevation of each monument shall be determined in mean sea level and Chicago City Datum.
- 4.4.6. Legal Description. [Section 11-4-1520(A)(7)] The design report shall contain legal descriptions, prepared by a Professional Surveyor, that describe the landfill facility boundaries and the boundaries of disposal unit or units. The landfill facility boundaries shall be identical to those provided with the financial security required by Section 11-4-370 of the Chicago Municipal Code. The legal descriptions shall include the area contained within each boundary.
- 4.4.7. Utilities. [Section 11-4-1520(A)(8)] For new and expanding facilities, the design report shall demonstrate that adequate utility capacity is readily available for the operations of the landfill facility. Utilities may include, but are not limited to: electricity, potable water, process water, telephone, and natural gas. The information in the design report regarding utilities shall include:
 - 4.4.7.1. A plan scaled drawing showing the location of all utilities within and adjacent to the landfill facility.
 - 4.4.7.2. Calculations demonstrating what the peak utility demands are for proper operation of the landfill facility. This shall include, but is not limited to, peak water, sewage and gas and/or electrical demands.

- 4.4.7.3. A demonstration that sufficient utility capacity is available to the landfill facility to satisfy the demands calculated in 4.4.7.2. Such documentation may be in the form of an approval letter or permit from the utility provider.
- 4.4.8. Water Sources. [Section 11-4-1520(A)(11)] The design report shall demonstrate that sufficient quantities of water or other appropriate materials for employees consumption, fire protection, dust control, and cleaning are available. For this demonstration, the design report shall include:
 - 4.4.8.1. The locations of each source of water and/or other material.
 - 4.4.8.2. The total amount of water and/or other materials available from each source.
 - 4.4.8.3. The rate at which water and/or other materials can be obtained from each source.
 - 4.4.8.4. A listing of equipment and its specifications that is used to pump, distribute and/or convey water and/or other materials.
- 4.4.9. Site Security. [Section 11-4-1520(A)(13)] The design report shall demonstrate that the landfill facility is secure from unauthorized access at all times. This demonstration shall include at a minimum:
 - 4.4.9.1. A description and specifications of the fences, gates, and other barriers that prevent unauthorized access to the landfill facility.
 - 4.4.9.2. A description of the security measures taken when the landfill facility is opened and closed.
- 4.4.10. Back-up Capacity. [Section 11-4-1520(A)(14)] The design report shall demonstrate that the facility has provisions for the removal, storage, or covering of wastes in the event of an equipment failure or emergency situation. This demonstration shall include at a minimum:
 - 4.4.10.1. Details and calculations demonstrating that provisions exist for the removal, storage, or covering of wastes in the event of an equipment failure or emergency situation.

- 4.4.10.2. A plan for restricting the flow of material into the facility during emergencies, equipment failures, or maintenance including decision criteria for implementing the plan.
- 4.4.10.3. Detailed descriptions of procedures necessary to remove, containerize, or otherwise dispose of waste in the event that disposal in the current operating area is restricted or stopped.
- 4.4.11. Structure and Fixed Equipment. [Section 11-4-1520(A)(17)] The design report shall demonstrate that all structures and fixed equipment are so designed that the landfill facility can be operated as proposed and in a safe manner. This demonstration shall include, but not be limited to:
 - 4.4.11.1. Drawings indicating the layout of structures including fixed equipment.
 - 4.4.11.2. Diagrams of all waste tipping, handling, processing, disposal and loading areas indicating the operating clearance of all fixed and mobile equipment.
 - 4.4.11.3. Calculations of the waste handling capacity of all fixed equipment.
 - 4.4.11.4. Operating and maintenance specifications for all fixed equipment.
- 4.4.12. Devices and Process. [Section 11-4-1520(A)(18)] The design report shall demonstrate that the devices and processes used at the facility are designed so that the facility can be operated as proposed and in a safe manner. This demonstration shall include, but not be limited to:
 - 4.4.12.1. Listings of equipment types, processing or handling capacity, specific uses, manpower requirements, and maintenance requirements for all equipment used at the landfill facility.
 - 4.4.12.2. Detailed calculations used to determine the information provided in Section 4.4.12.1.
- 4.4.13. Disposal Capacity. [Section 11-4-1520(A)(10)] The design report shall demonstrate that sufficient disposal capacity exists to safely handle the amount of waste material intended for the facility. This demonstration shall include, but not be limited to:

- 4.4.13.1. Detailed volumetric diagrams and calculations of all disposal areas including a determination of the total permitted capacity and the remaining capacity.
- 4.4.13.2. Drawings of the maximum horizontal and vertical limits of waste disposal areas.
- 4.4.13.3. A scale plan drawing that clearly illustrates the elevations of the landfill bottom liner (MSL and CCD).
- 4.4.13.4. Representative cross-section drawings of the landfill unit(s).
- 4.4.14. Water Drainage. [Section 11-4-1520(A)(20)] The design report shall demonstrate that adequate systems exist to handle stormwater and wastewater flows from the landfill facility. This demonstration shall include:
 - 4.4.14.1. Drawings, specifications, and design calculations to demonstrate effective control of run-on and run-off from the landfill facility.
 - 4.4.14.2. Copies of the facility's NPDES and MWRD discharge permits or anticipated submittal date, if applicable and/or any other permit issued by the IEPA Bureau of Water.
 - 4.4.14.3. Documentation that any receiving sewer system has sufficient capacity to handle the quantity of stormwater generated by the landfill facility. Such documentation may be in the form of an approval letter or permit from the utility provider.
 - 4.4.14.4. Drawings, specifications, and design calculations to demonstrate effective handling, storage, treatment, and/or disposal of leachate generated by the landfill facility.
 - 4.4.14.5. Demonstration that the landfill facility's wastewater management system is in compliance with Section 7.8 of these regulations.
 - 4.4.14.6. Demonstration that any receiving sewer system has sufficient capacity to handle the quantity of leachate generated by the landfill facility.

4.4.15. Traffic. [Section 11-4-1520(A)(21)] The design report shall demonstrate that traffic generated by the landfill facility will not significantly affect existing traffic flows, and that the points of ingress and egress are designed according to Illinois Department of Transportation (IDOT) standards. For new, expanding, and existing facilities, this demonstration shall include, but not be limited to:

- 4.4.15.1. Calculations of the average and maximum number of vehicles generated by the landfill facility as well as an hourly breakdown of vehicle traffic.
- 4.4.15.2. Diagrams of the points of ingress and egress depicting the layout of the ingress/egress points, sight distances, and improvements necessary to minimize accidents at the ingress/egress points.
- 4.4.15.3. A listing of roads and highways designated for use by traffic generated by the landfill facility.
- 4.4.15.4. A demonstration that traffic generated by the landfill facility will not interfere with the flow of traffic or exceed the intended level of service of any public street or right-of-way.

For new and expanding facilities, this demonstration shall include the components listed in Section 4.4.15.1 through 4.4.15.4, in addition to:

- 4.4.15.5. Traffic counts taken in hourly intervals at all ingress/egress points during the anticipated operating hours of the landfill facility. The entire operating period shall be represented in this traffic count study and shall identify the peak hours of traffic volume occurring in the morning and afternoon. The traffic counts shall include classification of vehicles.
 - 4.4.15.6. A description of the measures taken to reduce the impact of the landfill facility generated traffic on the existing traffic flows.
- 4.4.16. Parking. [Section 11-4-1520(A)(22)] The design report shall demonstrate that sufficient parking exists at the facility. This documentation shall include, but not be limited to:
- 4.4.16.1. A listing of the number of employees at the landfill facility and the corresponding number of parking spaces.

- 4.4.16.2. A layout of all parking areas including short-term truck parking and truck queuing areas. This layout may be shown on the general layout required in Section 4.4.4.
- 4.4.17. Employee Facilities. [Section 11-4-1520(A)(23)] The design report shall contain a description of the employee facilities available at the site. At a minimum, these employee facilities shall include washrooms, toilets, and potable water.
- 4.4.18. Screening. [Section 11-4-1520(A)(25)] The design report shall demonstrate that the screening or fencing of the facility will adequately control noise, dust, blowing litter, and will prevent unauthorized access to the site. This demonstration shall include, but not be limited to:
 - 4.4.18.1. A description of the screening or fencing for the landfill facility.
 - 4.4.18.2. A detailed drawing of the construction of the screening or fencing and the placement around the landfill facility. This drawing may be included in the general layout required in Section 4.4.4.
 - 4.4.18.3. A demonstration that the screening or fencing will control noise, dust, blowing litter, and unauthorized access.
- 4.4.19. Buffer Zone. [Section 11-4-1520(A)(28)] The design report shall describe the buffer zone surrounding the facility and shall demonstrate that it meets the definition of a buffer zone required for a landfill by the Chicago Zoning Ordinance. This demonstration shall include:
 - 4.4.19.1. A description of the buffer zone required for this facility by the Chicago Zoning Ordinance.
 - 4.4.19.2. A drawing clearly depicting the extent of the buffer zone and identifying the applicable characteristics of the buffer zone.
 - 4.4.19.3. An analysis of the effectiveness of the buffer zone.
- 4.4.20. Environmental Assessment. [Section 11-4-1520(A)(29)] For new or expanding facilities, the design report shall include a complete copy of the Environmental Assessment prepared pursuant to the Chicago Zoning Ordinance. The applications shall also include responses and/or additional information related to any recommendations included in the Environmental Assessment.

- 4.4.21. Monitoring Wells. [Section 11-4-1520(C)(1)] The operating plan shall contain the locations of monitoring wells for the facility and specific details concerning the monitoring well construction and locations. This shall include, but not be limited to:
- 4.4.21.1. Drawings indicating the location of all monitoring wells and piezometers for the facility.
 - 4.4.21.2. Construction details for all monitoring wells and piezometers.
 - 4.4.21.3. A demonstration that the location and the horizontal and vertical spacing of well screens is sufficient to detect a release from the landfill. The application shall demonstrate that the well screens are located such that if a release is detected, there is sufficient area and time to implement remediation measures that will minimize or prevent the release's impact beyond the property boundary.
 - 4.4.21.4. A description of monitoring well abandonment procedure which detail any backfilling or sealing including a demonstration that an abandoned well will not serve as a potential contaminant pathway.
- 4.4.22. Hydrogeological Investigation. [Section 11-4-1520(C)(3)] For new and expanding facilities, the design report shall contain the results of a comprehensive hydrogeological investigation of the site and the surrounding area. This investigation shall include, but not be limited to:
- 4.4.22.1. A narrative describing the local and regional hydrogeology for the subject site.
 - 4.4.22.2. Logs of all soil borings taken at the facility. Sufficient site-specific hydrogeological information shall be obtained to verify that hydrogeological conditions will protect the public health, safety and welfare. All borings shall be continuously sampled in accordance with appropriate ASTM testing standards and shall be retained for City inspection until such time as a permit has been issued. Detailed information shall be presented on the boring logs in order to provide an accurate and clear depiction of the site geology extending down to the bottom of the uppermost aquifer or 20 feet below the surface of bedrock, whichever is shallower.

- 4.4.22.3. Sufficient regional geologic information to correlate the on-site data to the surrounding off-site area. Such information shall include logs of boring, well data, and published information and data.
- 4.4.22.4. A minimum of four cross-sections through the site extending 1,000 feet beyond the property boundary and to the bottom of the uppermost aquifer or 10 feet below the tip of bedrock, whichever is shallower. Existing, published information may be used. At least one cross-section shall be perpendicular to the other cross-sections. The cross-sections shall indicate the geologic units under the site, the watertable, the uppermost aquifer's potentiometric surface, the landfill liner, the zone of attenuation, the waste boundary, and the property boundary.
- 4.4.22.5. The results of all soil tests performed on samples taken from borings. All tests shall be conducted according to appropriate ASTM testing standards and results reported according to the same testing standards. Soil tests shall include, but not be limited to:
- Moisture Content - minimum one test for each sample taken from every boring.
 - Ion Exchange Capacity - minimum one test for each boring, including a representative of each unconsolidated material type present on site, conducted in accordance with the American Society of Agronomy Method, using a one normal solution of NH_4 aqueous at pH 7.0 +/- 0.1.
 - Hydraulic Conductivity (permeability) - minimum one test for each boring to include each unconsolidated material found at the site. Vertical and lateral hydraulic conductivity testing shall be performed for in-situ soils. For placed and compacted liners, hydraulic conductivity testing shall be performed on the soil mix to be used for the liner. Samples taken for laboratory hydraulic conductivity testing shall be obtained by thin-walled (Shelby) tubes (minimum 3-inch diameter).
 - Standard and Modified Proctor - minimum one test for each boring to include the materials to be used in the construction of the liner bottom and side slopes as well as each unconsolidated material found at the site.
 - Shear-Strength - minimum one test for each boring to include the materials to be used in the construction of the liner bottom and side slopes as well as each unconsolidated material found at the site.
 - Compressibility - minimum one consolidation test for each boring to include each unconsolidated material found at the site.

- Atterberg Limits - minimum one test for each auger boring including a representative of each unconsolidated material present on site.
- Grain size analysis - minimum one analysis for each boring and each soil type classified in the field.

Sufficient numbers of tests shall be performed to fully characterize each material identified beneath the site down to the bottom of the uppermost aquifer. If insufficient numbers of tests exist, DOE may request additional investigations be performed to characterize the soil materials below the site.

- 4.4.22.6. Four potentiometric surface maps of the uppermost aquifer corresponding to four consecutive quarters of potentiometric surface measurements.
 - 4.4.22.7. An analysis of the rate and direction of the flow of groundwater in the uppermost aquifer.
 - 4.4.22.8. An analysis of the potential contaminant migration pathways that may exist in the geologic structures surrounding the facility.
- 4.4.23. Liner. [Section 11-4-1520(C)(4)] The design report shall contain documentation to demonstrate that the liner system is designed and constructed to prevent contamination of the surrounding environment and meets the minimum standards set forth in Section 7.1 of these regulations. This demonstration shall include, but not be limited to;
- 4.4.23.1. Details and specifications of the liner system including design drawings, construction details, quality assurance testing results, and construction as-built drawings. For existing units, the design report shall contain all information regarding the construction of the liner system. If sufficient information is not available, DOE may place additional conditions on the unit or require the closure of the unit due to uncertainty of the liner integrity.
 - 4.4.23.2. Calculations of the amounts of liner materials required for construction of the liner and demonstration that sufficient quantities are available for construction. Detailed descriptions of each borrow source location shall be provided. This description shall include testing data on each borrow source to demonstrate liner suitability. Such data shall include, at a minimum, Atterberg Limits, moisture content, grain size analysis, modified proctor test results, horizontal

permeability test results, vertical permeability test results, consolidation test results and shear strength test results.

- 4.4.23.3. A comprehensive construction quality assurance plan that provides for certification of materials and construction by a third party independent professional engineer.
- 4.4.23.4. Copies of all liner acceptance reports, permits, and/or correspondence received from the IEPA.
- 4.4.23.5. Input data, results, and an analysis of a water balance model predicting the percolation through the liner system.
- 4.4.24. Cover. [Section 11-4-1520(C)(5)] The design report shall contain information regarding the various cover materials intended for use at the facility. This information shall demonstrate that the cover materials effectively contain the waste and minimize infiltration of stormwater into the landfill. All covers and materials shall meet the minimum standards specified in Section 7.5, 7.6 and 7.7 of these regulations. This demonstration shall include, but not be limited to:
 - 4.4.24.1. Details and specifications of the daily cover material including the quantity of daily cover needed, the quantity of daily cover available, material properties, and placement methods.
 - 4.4.24.2. Details and specifications of the intermediate cover material, the quantity of intermediate cover needed, the quantity of intermediate cover available, material properties, and placement methods. Detailed descriptions of each borrow source location shall be provided including sufficient test data on each borrow source to demonstrate that the material properties are suitable for cover materials.
 - 4.4.24.3. Details and specifications of the final cover system materials including the quantity of materials needed, quantity of materials available, material properties, and placement methods. This shall include a demonstration that the final cover system is capable of resisting damage due to the differential settlement of waste. Detailed descriptions of each borrow source location shall be provided including sufficient test data on each borrow source to demonstrate that the material properties are suitable for cover materials.

- 4.4.24.4. A comprehensive construction quality assurance plan that provides for certification of materials and construction by an independent professional engineer.
- 4.4.24.5. Copies of all Certificates of Closure received from the IEPA.
- 4.4.24.6. Input data, results, and an analysis of a water balance model determining the run-off from the final cover and the infiltration into the landfill over the facility's life.
- 4.4.25. Phasing Plan. [Section 11-4-1520(C)(6)] The design report shall contain a phasing plan and construction schedule for the facility. This plan shall include:
 - 4.4.25.1. Drawings indicating the sequential progression of the landfill development. The drawings shall clearly identify all areas certified closed, currently operational, under construction, or permitted but undeveloped.
 - 4.4.25.2. A construction schedule identifying the anticipated dates of construction, filling, and closure of each phase of the landfill. The construction schedule shall include calculations and a narrative description for each phase of operations.
- 4.4.26. Landfill Grade. [Section 11-4-1520(C)(7)] The design report shall contain a final grading plan and a demonstration that the final slopes are stable and are designed to prevent erosion of the final cover system. This plan and demonstration shall include, but not be limited to:
 - 4.4.26.1. A topographic map of the proposed final contours of the facility. The minimum scale shall be one inch equals 200 feet with a minimum contour interval of five feet. Contour elevations shall reflect both mean sea level and Chicago City Datum.
 - 4.4.26.2. A topographic map of the existing grades at the facility at a minimum scale of one inch equals 200 feet with a minimum contour interval of five feet. The topographic map shall note all areas that have been modified since the pre-development survey of the facility. At a minimum, the topographic map of the facility must be revised every three years. Contour elevations shall reflect both mean sea level and Chicago City Datum.

- 4.4.26.3. An erosion control plan describing the methods used to prevent erosion of the final cover system. This plan shall also include inspection, maintenance, and repair procedures for maintaining the integrity of the final cover system.
- 4.4.26.4. Slope stability demonstration for short and long-term stability under static and seismic conditions. The minimum Factor of Safety under static and seismic conditions shall be 1.5 and 1.3 respectively.
- 4.4.26.5. A demonstration that the maximum elevation of waste placement at the landfill shall not exceed the maximum elevation established in the permit at any time during the life of the facility.
- 4.4.27. Leachate Collection. [Section 11-4-1520(C)(8)] The design report shall include details of a leachate collection system and a demonstration that the system is capable of maintaining a maximum leachate head on the liner of one foot throughout the entire landfill and that the system meets the minimum standards specified in Section 7.2 of these regulations. The design report shall include, but not be limited to:
 - 4.4.27.1. Details and drawings of the leachate collection system.
 - 4.4.27.2. Calculations of the amount of leachate generated throughout the life of the facility and for 30 years after closure.
 - 4.4.27.3. Design calculations demonstrating that the collection system is sufficiently sized to remove the expected amount of leachate generated by the landfill.
 - 4.4.27.4. A demonstration that the collection system is capable of maintaining a maximum leachate head of one foot over the landfill liner. In existing units, a system shall be installed that is capable of removing, on a monthly basis, a quantity of leachate equal to 2 times the leachate generation rate for that unit, until such time as the leachate level is less than one foot over the landfill liner.
 - 4.4.27.5. Drawings, indicating the location, depth, and method of construction of leachate piezometers in the landfill. The landfill shall have sufficient numbers of leachate piezometers or other devices capable of accurately measuring the level of leachate above the liner.

- 4.4.27.6. Design details and capacity of the leachate storage system including secondary containment designs for the storage system.
- 4.4.27.7. A leachate disposal plan including documentation from the conveyance systems owner and disposal facilities that they are capable of conveying and treating the leachate and have sufficient capacity to convey and treat the leachate.
- 4.4.28. Gas Collection. [Section 11-4-1520(C)(9)] The design report shall include a plan for the testing and collection of methane generated within the landfill. This plan shall demonstrate that the system meets the minimum standards specified in Section 7.3 of the regulations and shall contain, but not be limited to:
 - 4.4.28.1. A description and design details of all landfill gas monitoring devices.
 - 4.4.28.2. A comprehensive landfill gas monitoring program including a monitoring schedule, monitoring procedures, and monitoring constituents.
 - 4.4.28.3. A schedule for the construction and startup of an active gas collection system.
 - 4.4.28.4. Drawings, design details, calculations and specifications for an active gas collection system.
- 4.5. Operating Plan. The application for permit shall contain an operating plan for the landfill facility that shall include, at a minimum, the following components, in this order:
 - 4.5.1. Types of Waste. [Section 11-4-1520(A)(9)] The operating plan shall include a detailed description of the types of waste and volumes of each waste type accepted at the facility. It shall also include the waste screening measures employed by the facility to ensure that unauthorized wastes are not accepted. This discussion shall include, but not be limited to:
 - 4.5.1.1. A list of all the types of waste and the daily volumes of each waste type accepted or proposed to be accepted at the landfill facility. The list shall be specific and shall not include terms such as "other", "general", "miscellaneous", or similar terms that are vague in nature. Each item included in the list of waste types shall be accompanied by a description of the materials.

- 4.5.1.2. A description of the service area from which the different types of waste will be accepted.
- 4.5.1.3. A waste screening plan that provides for monitoring and random inspection of waste entering the landfill facility.
- 4.5.1.4. An emergency response plan for the immediate segregation and removal of all unauthorized wastes from the landfill facility.
- 4.5.2. Quantity of Waste. [Section 11-4-1520(A)(10)] The operating plan shall list the quantity of each type of waste specified in Section 4.5.1. that will be handled by the landfill facility on a daily basis. This discussion shall include, but not be limited to:
 - 4.5.2.1. The estimated waste quantities, as the waste enters the gate, shall be provided on a tons per day basis or cubic yards per day basis for each waste type and shall include an average daily quantity and a maximum daily quantity for each waste type. The estimated "gate" and in-place densities shall be included.
 - 4.5.2.2. A demonstration through detailed calculations, flow charts, and operating guidelines that the facility is capable of handling the average and maximum quantities of waste intended for the facility. The demonstration shall consider operating hours, peak periods, peak quantities, processing capacities, number of employees, and other applicable factors.
 - 4.5.2.3. A demonstration that the landfill facility has a system that is capable of determining and recording the actual amount of waste entering the facility.
- 4.5.3. Fire Prevention. [Section 11-4-1520(A)(12)] The landfill facility shall comply with the requirements of the Chicago Municipal Code and all applicable local, State and Federal laws and regulations relating to fire prevention. The operating plan shall include a Fire Prevention and Response Plan. At a minimum, the Fire Prevention and Response Plan shall include:
 - 4.5.3.1. A description of the safety measures employed to prevent fires.
 - 4.5.3.2. The location and handling procedures for flammable liquids and chemicals stored at the landfill facility.

- 4.5.3.4. Details and specifications for a fire detection system for the landfill facility.
- 4.5.3.5. Specifications and locations of all fire suppression equipment including, but not limited to, extinguishers, pumps, hoses, soil stockpiles, etc.
- 4.5.3.5. A description of the responsibilities of all employees in the event of a fire.
- 4.5.4. Emergency Communications. [Section 11-4-1520(A)(15)] The operating plan shall contain a description of an emergency communication system. This description shall include, but not be limited to:
 - 4.5.4.1. A listing of all equipment available for routine communications and emergency communications.
 - 4.5.4.2. A listing of authorities that may be contacted in the event of an emergency situation.
 - 4.5.4.2. A description of the internal chain-of-command in the event of an emergency, including a description of responsibilities.
- 4.5.5. First Aid Equipment. [Section 11-4-1520(A)(16)] The operating plan shall contain a description of the first aid equipment available at the facility. This description shall include:
 - 4.5.5.1. A listing of first aid supplies available at the facility.
 - 4.5.5.2. The location of first aid equipment.
 - 4.5.5.3. The designation of employees that receive Red Cross approved first aid training.
- 4.5.6. Rodent/Vector Control. [Section 11-4-1520(A)(24)] The operating plan shall contain a plan for the effective prevention and control of rodents and vectors. At a minimum, this plan shall include:
 - 4.5.6.1. A minimum of monthly inspections of the entire landfill facility for rodents and other vectors. A record of the most current inspection and eleven previous inspections shall be maintained at the landfill facility.

- 4.5.6.2. A detailed description of all measures employed to prevent infestation by rodents and vectors, including good housekeeping practices used to control rodents and vectors.
- 4.5.6.3. A detailed description of all measures and controls employed (e.g. bait stations and traps) to provide for the control of rodents and vectors
- 4.5.7. Odor Control. [Section 11-4-1520(A)(26)] The operating plan shall provide a plan for the prevention and treatment of malodors from the landfill facility. This plan shall include, but not be limited to:
 - 4.5.7.1. A description of the methods employed at the facility to prevent malodors from migrating off-site, including an assessment of the effectiveness of such methods.
 - 4.5.7.2. A description of the response measures taken once malodors are detected off-site including an assessment of the effectiveness of such measures.
 - 4.5.7.3. A plan for the handling of extremely noxious waste materials.
- 4.5.8. Litter. [Section 11-4-1520(D)(4)] The operating plan shall describe all methods used to curtail windblown materials, including the following:
 - 4.5.8.1. The use of structures, fences, natural barriers, or other devices used to prevent material from blowing off-site.
 - 4.5.8.2. Operational plans for the prevention of material blowing off-site. This may include the use of manual labor pickers, mechanical collection devices, the use of portable fences, or the temporary closure of the facility on windy days.
- 4.5.9. Dust Control. [Section 11-4-1520 (A)(25)]. The operating plan shall describe in detail all methods used to adequately control and minimize any dust emissions occurring both on-site and off-site, including the following:
 - 4.5.9.1. A detailed description of available staffing and all equipment/devices that are maintained on-site and are dedicated for dust control (e.g. location of water sources, water hoses, mechanical street sweepers, water truck, and brooms.)

- 4.5.9.2. Operational plans for the prevention or minimization of dust emissions on-site and off-site. This may include the use of staff, the use of watering devices, water truck, brooms, and mechanical street sweepers.
- 4.5.10. Hours of Operation. [Section 11-4-1520(A)(30)] The operating plan shall specify the hours of operation of the landfill facility. Those facilities requesting authorization for 24-hour per day operations shall provide information justifying the need for said authorization.
- 4.5.11. Groundwater Monitoring Plan. [Section 11-4-1520(C)(2)] The operating plan shall contain a comprehensive groundwater monitoring plan demonstrating that the groundwater monitoring system is capable of detecting a release from the facility. This plan shall include, but not be limited to:
- 4.5.11.1. A listing of constituents monitored at each monitoring point, the maximum allowable predicted concentration (MAPC) for each constituent at each monitoring point, and the applicable groundwater quality standard (AGQS) for each constituent. The MAPCs and AGQSs shall be established in accordance with the applicable state and federal rules and regulations.
 - 4.5.11.2. All documentation used to determine the list of constituents, the maximum allowable predicted concentrations of each constituent at each monitoring point.
 - 4.5.11.3. A listing of constituents monitored in leachate from the landfill.
 - 4.5.11.4. The schedule for sampling all monitoring wells including the constituents monitored during each routine sampling event.
 - 4.5.11.5. Reporting requirements for quarterly groundwater samples. The quarterly monitoring results shall be provided to the Department of Environment. The quarterly submittal shall include a summary table that includes the results of the current monitoring results, results for the three previous monitoring events, the MAPC for the specific well, and the AGQS for each constituent.
 - 4.5.11.6. Procedures for verifying and reporting exceedances of MAPC's or AGQS's including procedures and a schedule for the design and implementation of remedial action in the event of a verified exceedance.

- 4.5.11.7. A requirement that copies of all documents sent to the IEPA related to confirmation of monitored increase, assessment monitoring, assessment of potential groundwater impact, and remedial action be sent to the Department of Environment.
 - 4.5.11.8. A description of the groundwater sampling procedures, including sampling equipment to be utilized.
 - 4.5.12. Erosion Control. [Section 11-4-1520(C)(10)] The operating plan shall demonstrate that erosion at the site is minimized. This demonstration shall include:
 - 4.5.12.1. Descriptions of the methods used to prevent erosion at the site.
 - 4.5.12.2. Drawings, design details, calculations, and specifications of drainage structures at the site. The drainage structures shall be sized and designed to accommodate the 25 year, 24 hour precipitation event without damage to the drainage structures or erosion of the facility.
- 4.6. Closure Plan. [Section 11-4-1520(C)(11)] The application shall contain a closure plan to be implemented when waste activities cease at the landfill facility. The closure plan shall include, but not be limited to:
 - 4.6.1. Closure Plan Activities. The closure plan shall include a listing of activities that will occur when waste related activities cease at the landfill facility including a listing of materials necessary for closure and a schedule for the completion of the closure activities.
 - 4.6.2. Waste Removal Plan. A plan for the removal of all waste material that is not intended to be disposed of at the facility.
 - 4.6.3. Equipment Decommissioning. The closure plan shall include a plan for the decommissioning and cleaning of all equipment and structures at the facility that contacted waste materials.
 - 4.6.4. Construction Quality Assurance Plan. A construction quality assurance plan for the construction of the final cover system and any other structures associated with closure. These shall include a gas management system, leachate collection system, erosion control, and groundwater monitoring system.
 - 4.6.5. Third-Party Procedures. Procedures for the certification of closure by a third-party, independent professional engineer.

- 4.6.6. Aerial Photo. A provision for a color aerial photo of the landfill upon completion of the closure activities including establishment of vegetation on the landfill.
- 4.6.7. Cost Estimates. The closure plan shall include cost estimates for the completion of all closure activities. The cost estimates shall be based on the cost necessary for closure at anytime during the life of the facility and shall not be discounted to current values. The cost estimate should reflect a worst case scenario.
- 4.6.8. Financial Assurance. Documentation that financial assurance is available to complete all closure activities. The financial assurance must be greater than or equal to the closure cost estimate total determined in Section 4.6.7.
- 4.6.9. Post-Closure Activities. A listing of post-closure activities that will occur when closure of the facility is complete including a schedule and cost estimates for the implementation of the proposed post-closure activities.
- 4.6.10. EPA Closure Plan Certification. A copy of the IEPA closure plan certification for the facility.
- 4.7. Additional Requirements. [Section 11-4-1520(A)(30)] The Commissioner may require additional information be submitted if it is determined that the information in the application is insufficient or if the nature of the landfill facility warrants additional information to ensure the facility can be operated as proposed.

5.0 Landfill Location Standards.

All new and expanding landfill facilities seeking permits to operate within the City of Chicago shall be located in accordance with the following requirements. The requirements of this section do not exempt landfill facilities from securing additional approvals and permits as required by local, State, and Federal regulations. In all cases, the proposed facility location shall be such that public health, safety and welfare are protected.

- 5.1. Illinois Environment Protection Act. The landfill shall comply with all applicable setbacks established by the Illinois Environmental Protection Act and regulations adopted thereunder.
- 5.2. Occupied Dwellings. A landfill facility shall not be located within 800 feet any property zoned primarily for residential purposes or any occupied dwelling, unless written permission from the owner is given for a closer distance.
- 5.3. Schools and Hospitals. A landfill facility shall not be located within 800 feet of any property used for a school, hospital, nursing home, or convalescent center, unless written permission from the owner is given for a closer distance.
- 5.4. Lake Michigan. A landfill facility shall not be located within the Lake Michigan and Chicago Lakefront Protection District as specified in Lake Michigan and Chicago Lakefront Protection Ordinance (Chapter 16-4 of the Chicago Municipal Code).
- 5.5. 100-Year Flood Plain. A landfill facility and all ancillary structures, including storage areas, shall not be located within the 100-year flood plain, unless the landfill facility can demonstrate compliance with the Chicago Flood Control Ordinance (Chapter 16-6 of the Chicago Municipal Code) and all other applicable state and federal requirements.
- 5.6. Wetlands. A landfill shall not have a negative impact on wetlands occurring on the subject site or near the subject site in accordance with Section 404 of the Clean Water Act (33 U.S.C. 1344) unless application is made and a permit received from the US Army Corps of Engineers and DOE approves such impact as part of the facility's permit.
- 5.7. Endangered Species. A landfill facility shall not pose a detrimental threat to any endangered species of plant, fish, or wildlife as defined by the Endangered Species Act (16 U.S.C. 1531 et seq.) or the Illinois Endangered Species Protection Act (520 ILCS 10/1 et seq.).
- 5.8. Historic and Natural Areas. A landfill facility shall not pose a detrimental threat to any historic site as listed pursuant to the National Historic Preservation Act (16 U.S.C. 470 et seq.) or the Illinois Historic Preservation Act (20 ILCS 3410/1 et seq.) and designated in

the Chicago Zoning Ordinance, or any natural landmark, as designated by the National Park Service, the Illinois State Historic Preservation Officer, or as a Dedicated Illinois Nature Preserve pursuant to the Illinois Natural Areas Preservation Act (525 ILCS 30/1 seq.).

- 5.9. Airport. A new landfill facility shall not be located within 10,000 feet from the nearest airport runway, unless the applicant can demonstrate that the facility will not violate height restrictions or pose a bird hazard to aircraft.
- 5.10. Waste Boundary Set-Back. The waste disposal boundary of a landfill facility shall be a minimum of 100 feet from the property boundary of the facility.

6.0 Landfill Operating Standards.

Landfills permitted by the Department of Environment shall comply with the following operational requirements:

- 6.1. Permit. The landfill facility shall be operated in accordance with the current permit application on file with the Department of Environment; the current, written permit issued by the Department of Environment; the Standard Conditions contained in the current, written permit; and the Special Conditions contained in the current, written permit. A copy of the permit shall be maintained at the facility and shall be reviewed by the facility site manager. If the current permit application and the current, written permit conflict the current, written permit shall govern.
- 6.2. Hours of Operations. The facility shall only accept waste materials during those hours specified by the permit issued by DOE. In addition to the hours specified in the permit for the acceptance of waste materials, the permit may also specify hourly restrictions on other ancillary operations that occur at the facility.
- 6.3. Vehicles and Equipment. The facility shall have sufficient vehicles and equipment available at all times to process all incoming waste materials.
- 6.4. Litter. The landfill facility shall be operated to prevent wind blown litter outside the facility. At a minimum, all wind blown litter shall be picked up on a daily basis. All vehicles entering and exiting the site shall have devices capable of preventing windblown material. Any vehicle entering the site without sufficient devices to prevent windblown material shall be notified and upon subsequent violations shall be rejected.
- 6.5. Air Quality. The facility shall not adversely impact air quality outside the facility.
- 6.6. Utilities. All necessary utilities shall be available with sufficient capacity to serve the facility and its operations. In the event of a disruption of any utility service, a contingency plan shall exist to provide back-up capacity or to provide procedures for safe operation during the disruption.
- 6.7. Equipment Maintenance. Equipment and vehicles used in facility operations shall undergo routine maintenance. The landfill facility shall develop a maintenance plan for all equipment and vehicles used in the operation. The owner and operator shall prevent the usage of any vehicle or equipment that is in need of repair.
- 6.8. Waste Screening. The facility shall accept only those materials permitted by the Department of Environment and listed in the facility's current, written permit. All waste loads must be screened in accordance with the load checking plan approved by the

Department of Environment. The operator shall monitor for unauthorized waste. Random inspections of a minimum of three loads entering the landfill facility shall be conducted on a weekly basis unless otherwise permitted by the Department of Environment. Any unauthorized wastes shall be immediately segregated and removed from the landfill facility. The operator shall notify the Department of Environment by phone within 24 hours and in writing within two business days of any acceptance of unauthorized wastes documenting the proper removal and disposal of the unauthorized waste.

- 6.9. Fire Prevention and Accident Safety Plan. The landfill facility shall have an approved fire prevention and accident safety plan, shall operate in compliance with the performance standards for fire and explosive hazards, and shall install and maintain fire suppression equipment as specified in the Chicago Zoning Ordinance, the building regulations and applicable fire prevention regulations of the Chicago Municipal Code.
- 6.10. Site Security. The facility shall have all operations screened from view using berms, fences, vegetation, or a combination of these. A fence or natural barrier shall prevent unauthorized access to the site.
- 6.11. Traffic. The landfill facility shall not cause the back up of vehicles onto public roads or rights-of-way at any time. No vehicles used in the operations of the landfill facility shall be parked or wait along public streets or rights-of-way. The landfill facility shall have sufficient parking available for all personnel, visitors, and vehicles used for the operation of the landfill facility.
- 6.12. Rodents/Vectors. The facility shall employ effective vector control and prevention measures in accordance with an approved vector control plan to prevent infestations by rodents and vectors. A minimum of monthly inspections shall be conducted by a vector control specialist of the entire landfill site for rodents and other vectors. A record of the most current inspection and eleven previous inspections shall be maintained at the facility.
- 6.13. Mud Tracking. The landfill shall be operated so as to prevent the tracking of mud onto public roadways. This shall be accomplished with sufficient procedures including but not limited to tire washing equipment and providing all-weather roads within the facility.
- 6.14. Odor Control. The landfill facility shall operate in accordance with an approved odor control plan for the prevention and treatment of malodors from the landfill facility.
- 6.15. Dust Control. The facility shall operate in accordance with an approved dust control plan for the prevention or minimization of dust emissions occurring both on and off-site.

- 6.16. Noise. The landfill shall be operated in accordance with the Chicago Municipal Code as it pertains to noise emissions from the facility.
- 6.17. Daily Cover. For facilities that are open 24 hours, daily cover shall be placed at least once every 24 hours. For all other facilities, daily cover shall be placed at the end of the operating day and shall be in place within one hour of the receipt of the final load of waste.
- 6.18. Recordkeeping. The facility shall maintain an on-site operating record which shall include, at a minimum, information regarding: the date, time and description of emergencies; date and time of vector control activities and inspections; and date and time of receipt of unauthorized waste and action taken.
- 6.19. Sampling Results. The operator of the landfill facility shall submit reports to the Department containing the results of groundwater and leachate samples. The quarterly monitoring results shall be provided to the Department of Environment. The quarterly submittal shall include a summary table that includes the results of the current monitoring results, results for the three previous monitoring events, the MAPC for the specific well, and the AGQS for each constituent. These results shall be submitted within 45 days from the end of each quarter.
- 6.20. Correspondence. The operator shall provide the Department with copies of all correspondence to or from the IEPA, the USEPA and the Army Corp of Engineers including, but not limited to: notices of violation, letters, permit applications, reports, groundwater monitoring reports, and annual reports.
- 6.21. Site Survey. The topographic map of the facility must be revised at least every three years. The map shall note all areas that have been modified since the last survey. Contour elevations shall reflect both mean sea level and Chicago City Datum
- 6.22. Leachate Monitoring. Leachate shall be monitored on an annual basis with results provided to the Department of Environment. A maximum leachate head on the liner of one foot shall be maintained at all times. In existing units, on a monthly basis, a quantity of leachate equal to 2 times the leachate generation rate for that unit shall be removed, until such time as the leachate level is less the one foot over the landfill liner.
- 6.23. Inspections. Permits, reports, and the landfill facility shall be available to the Commissioner or his authorized agent for inspection at all times during normal business hours and upon reasonable notice at other times to ensure compliance with the Municipal Code and these regulations.

- 6.24. Closure. Closure activities shall be initiated no later than 30 days after the date of notification of cessation of waste acceptance. These activities shall be completed in accordance with the facility's approved Closure Plan.

7.0 Landfill Design Standards.

Landfills permitted by the Department of Environment shall comply with the following design standards. Where a minimum standard is specified, the Department may require a higher standard unless sufficient documentation exists to warrant the use of the minimum standard.

- 7.1. Liner Design. Notwithstanding any exemption for existing units provided in 35 Ill. Adm. Code Part 814, all horizontal areas in new and existing units that have not received waste prior to the effective date of these regulations shall be constructed with an earth liner which complies with design standards specified by state and federal regulations and shall comply with the following standards. Horizontal areas which receive waste prior to the effective date of these regulations shall comply with the applicable design standards specified by the state and federal regulations and shall comply with these standards where applicable:
 - 7.1.1. The minimum liner design shall consist of a recompacted clay liner below a flexible membrane liner.
 - 7.1.2. The recompacted clay liner (RCL) shall have a maximum horizontal and vertical permeability of 1×10^{-7} cm/sec. The RCL shall be a minimum of 3 feet in thickness and shall be compacted in lifts that do not exceed 8 inches in loose height and 6 inches in compacted height. The surface between lifts shall be scarified to promote bonding between lifts.
 - 7.1.3. The flexible membrane liner (FML) shall consist of a minimum 60 mil of high density polyethylene. The FML shall be chemically resistant to the leachate generated by the landfill. The FML shall be constructed in a manner that prevents tearing or puncturing the FML.
 - 7.1.4. The liner system shall be covered with the granular leachate drainage layer prior to placement of waste in the unit.
 - 7.1.5. The liner shall not be exposed to frost damage during winter months. Liner exposed during winter months shall be removed and reconstructed or recertified that the liner was not damaged. A 5 foot layer of waste or an alternative insulating material approved by DOE shall provide sufficient insulation from frost damage during winter months.
 - 7.1.6. If the liner is below the potentiometric surface of any geologic unit at the site, the liner shall be designed and constructed to resist hydrostatic uplift.

- 7.1.7. The liner shall be constructed on a foundation that is capable of providing a minimum factor of safety against bearing capacity failure of 2.0 under static conditions and 1.5 under seismic conditions.
- 7.1.8. The liner side slopes shall be designed and constructed to achieve a minimum safety factor against failure of 1.3 under static conditions and 1.0 under seismic conditions.
- 7.2. Leachate Collection System Design. The landfill shall be equipped with a leachate collection system (LCS) that is capable of effectively controlling the level of leachate in the landfill. Notwithstanding any exemptions of existing units provided in 35 Ill. Adm. Code Part 814, all horizontal areas in new and existing units that have not received waste prior to the effective date of these regulations shall be constructed with an LCS which complies with design standards. Horizontal areas which receive waste prior to the effective date of these regulations shall comply with the applicable design standards specified by the state and federal regulations and shall comply with these regulations where applicable.
 - 7.2.1. In new units, the LCS shall consist of a system of pipes embedded in a minimum 12 inch granular drainage layer placed directly above the landfill liner. The LCS shall be designed so that the leachate head on the liner is less than 12 inches. The drainage layer shall consist of rounded granular material with a hydraulic conductivity of 1×10^{-3} cm/sec or greater. Leachate pipes shall resist the loading due to equipment and the waste above and shall facilitate the clean out of the pipe.
 - 7.2.2. In existing units, if no LCS exists, the landfill shall be equipped with a retrofit system to remove and collect leachate from the landfill. The retrofit LCS shall be capable of removing, on a monthly basis, a quantity of leachate equal to 2 times the leachate generation rate for that unit, until such time as the leachate level is less than one foot over the landfill liner.
 - 7.2.3. The landfill shall be equipped with a minimum of 4 leachate piezometers to measure the leachate depths at various representative locations in the landfill.
 - 7.2.4. All leachate collection pipes, tanks, and loading areas located outside the waste boundary shall be equipped with secondary containment to contain spills or leaks.

- 7.3. Gas Detection/Collection System Design. All landfills shall be equipped with a gas collection system to effectively collect and properly dispose of gas generated at the landfill. The gas detection/collection system shall comply with all applicable state and federal regulation and in addition, shall comply with the following standards.
- 7.3.1. The gas detection system shall be capable of detecting methane concentrations greater than 50 percent of the lower explosive limit in air below the ground surface and in ambient air at the property boundary.
 - 7.3.2. Gas from the landfill shall not migrate off-site in such a manner that causes methane concentrations higher than 50 percent of the lower explosive limit of methane in ambient air or greater than 25 percent of the lower explosive limit in buildings and structures. Gas shall be collected and conveyed to a central storage and processing area. The use of single point wellhead flares on the landfill is prohibited except as a temporary measure.
 - 7.3.3. Whenever practicable, collected gas shall be used for beneficial purposes such as generating electricity, firing boilers, or powering equipment.
 - 7.3.4. Emission from any gas processing facility shall meet all applicable local, state and federal standards.
 - 7.3.5. Gas condensate shall be collected and disposed of or treated as leachate.
- 7.4. Monitoring Wells. Monitoring wells and piezometers shall be constructed in accordance with IEPA standards. All wells and piezometers shall be equipped with locking covers to prevent tampering. Monitoring wells shall be constructed and developed in accordance to IEPA regulations and applicable state laws.
- 7.5. Daily Cover. The landfill shall place daily cover over the active face at the end of each operating day. Daily cover shall meet the following standards:
- 7.5.1. Daily cover shall consist of a minimum of 6 inches of clean soil placed over the active face at the end of each operating day.
 - 7.5.2. Alternative materials may be used if written approval from DOE is obtained.
 - 7.5.3. Daily cover left in place shall allow for the free flow of liquids within the landfill.

- 7.6. Intermediate Cover. The landfill shall place intermediate cover over all areas that have not received waste in more than 30 days. Intermediate cover shall meet the following standards:
- 7.6.1. Intermediate cover shall consist of a minimum of 12 inches of compacted, clear soil material. This material shall be graded to promote run-off and prevent infiltration.
 - 7.6.2. The intermediate cover shall be inspected and repaired on a weekly basis. Intermediate cover shall be stripped away prior to placement of additional waste or the placement of final cover.
 - 7.6.3. Intermediate cover shall not be left in place for the purpose of becoming part of the final cover low-permeability layer. The intermediate cover material must be stripped from the landfill prior to recompaction as the final cover.
- 7.7. Final Cover. Final cover shall be placed over all areas that have reached the final permitted grades for waste disposal. The final cover shall meet the following standards:
- 7.7.1. Final cover shall be placed as soon as a practicable after reaching the final permitted waste disposal grades.
 - 7.7.2. The final cover shall consist, at a minimum, (from bottom to top) of a low permeability layer, a drainage layer, and a protective layer with vegetation.
 - 7.7.3. The low-permeability layer shall consist of either a minimum of 3 feet of recompacted clay soil material or a minimum of 30 mil geomembrane. The recompacted clay shall be placed in lifts with a maximum compacted thickness of 6 inches and shall achieve a maximum permeability of 1×10^{-7} cm/sec. The geomembrane shall meet or exceed the performance of a recompacted clay low-permeability layer.
 - 7.7.4. The drainage layer shall consist of a granular material or other suitable material. The drainage layer shall prevent the accumulation of precipitation in the final protective layer to provide a safeguard against slope failure in the final protective layer.
 - 7.7.5. The final protective layer shall consist of a minimum of 3 feet of soil material capable of sustaining vegetation. The protective layer shall be placed on top of the drainage layer immediately after installation of the low-permeability layer and the drainage layer. Vegetation shall be established immediately after placement of the final protective layer.

- 7.7.6. The entire final cover system shall be designed to resist slope failure, differential settlement, and sliding. The design shall achieve a factor of safety against these failure modes of at least 1.5 under static conditions and 1.3 under seismic conditions. The stability analysis shall consider seepage forces within the final cover.
- 7.8. Stormwater Control. The landfill will be equipped with a system to control the flow of stormwater run-on and run-off. This system shall meet the following standards:
 - 7.8.1. The stormwater control system and release rate shall be designed in accordance with all applicable City of Chicago, MWRDGC, IEPA, IDOT, USDOT, and USEPA rules and regulations.
 - 7.8.2. Run-on to the landfill property shall be collected and conveyed around the landfill facility.
 - 7.8.3. Stormwater that falls on the landfill facility but does not come in contact with any waste material shall be collected and conveyed to detention and/or settling basins.
 - 7.8.4. The facility shall obtain and comply with an NPDES discharge permit unless exempted from the NPDES permit program.
- 7.9. Interior Roads. Interior roads at the landfill shall be constructed so as to provide all-weather access to the active face of the landfill. The landfill facility shall be equipped with wheel washing and other devices to prevent the tracking of mud onto public roadways.
- 7.10. Fueling Facilities. If equipment and vehicles will be fueled on site, a fueling station shall be constructed that provides secondary containment of petroleum products and other flammable liquids. The fueling station shall be designed and constructed in accordance with the Chicago Municipal Code and shall be approved by the State Fire Marshall's Office and the City of Chicago Fire Department.