
WELCOME AND INTRODUCTION

Welcome to the Mississippi Department of Environmental Quality's (MDEQ) operations course for Class I rubbish disposal site operators. This course offers you an opportunity to fulfill a portion of the requirements of Mississippi state law for Class I rubbish disposal site operator certification and to update your general knowledge of Class I rubbish site regulatory and operational requirements. In developing this rubbish training, MDEQ convened an advisory group consisting of representatives from rubbish site operators in the state, the Mississippi Association of Supervisors, the Mississippi Municipal League, the Mississippi Chapter of the Solid Waste Association of North America, the Mississippi Independent Solid Waste Association, and MDEQ staff. This advisory group created a conceptual training plan and vision that was used by MDEQ and FTN Associates, Ltd. (FTN) of Little Rock, Arkansas, to develop and implement the rubbish operator training course.

The course covers a day and a half with a written examination on the second day. Persons that pass the written examination and meet the minimum education and experience requirements may submit an application to MDEQ for issuance of a certificate of competency for a commercial Class I rubbish site operator. Attendees will also earn up to 10 hours of continuing education units towards your renewal of your operator certification. MDEQ currently provides this training at no registration cost for the participants. MDEQ staff will conduct course instruction. We hope that this course will prove to be beneficial for you and for your facility operations. For many attendees, much of the information that will be covered during the course may be information with which you are already familiar. However, we hope that you will gain new information and understanding related to the importance of proper design, operation, monitoring, and closure of Class I rubbish disposal sites in our state.

Daily course schedules will include refreshments during morning and afternoon breaks; however, lunch will be on your own on both days. You have been provided a course curriculum for your reference and review throughout the training sessions and for future reference in the ongoing operation of your facility. In addition, you have been asked to bring writing pens or pencils

and a calculator for the class exercises and the written examination. If you have not brought writing utensils or a calculator, please see your course moderator to borrow one of these items.

As previously stated, a written examination will be conducted after lunch on day 2 of the course. Instruction during the course will assist participants in preparing for the examination. Participants must answer at least 70% of the examination questions correctly in order to pass the examination. Applicants who pass the examination and comply with the experience and educational requirements may apply to receive a certificate of competency as a Class I rubbish site operator. Participants who score at least 70% will be mailed confirmation of a passing score on the examination along with an MDEQ application form to obtain an operator's certificate of competency. If issued, the certificate of competency will remain valid for 3 years, at which time you must apply for renewal. In addition, any participant who does not score at least 70% on the examination will be allowed to re-take the exam at a later date. Upon request, the participant will be allowed to review the examination; however, a copy of the examination will not be returned to the participant.

For further information on this course and curriculum feel free to contact our agency. Our contact information is below:

Mississippi Department of Environmental Quality
Waste Division
P.O. Box 2261
Jackson, MS 39225

or

515 Amite Street
Jackson, MS 39201

or

Phone: (601) 961-5171
Fax: (601) 961-5785

To access solid waste program resources, visit our website at www.mdeq.ms.gov and click on the "Land" icon at the top. Then select Waste Division.



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1.0 INTRODUCTION TO SOLID WASTE LAWS AND REGULATIONS IN THE STATE OF MISSISSIPPI

1.1 Mississippi Department of Environmental Quality Regulatory Authority and Solid Waste Program Areas

Solid waste management in the state of Mississippi falls primarily under the regulatory authority of the Mississippi Department of Environmental Quality (MDEQ) along with other environmental programs related to the protection of our state's air and water resources. MDEQ reports administratively to the governor of Mississippi. In addition, MDEQ reports to two administrative boards, the Mississippi Commission on Environmental Quality (Commission) and the Mississippi Environmental Quality Permit Board (Permit Board). The Commission is empowered under state law to formulate MDEQ's rules and policies, to enforce the rules and regulations, to conduct studies for using the state's resources, and to discharge duties, powers, and responsibilities as otherwise directed by the state legislature. The seven members of the Commission are appointed by the governor.

The Permit Board is a separate and distinct board from the Commission. The Permit Board's only function is to take action on environmental permits administered through MDEQ. The Permit Board issues, reissues, modifies, denies, transfers, and revokes Mississippi permits and certifications administered under the Clean Water Act, the Clean Air Act, the Resource Conservation and Recovery Act (RCRA), the Mississippi Solid Waste Disposal Act, the Surface Mining Control and Reclamation Act, state mining laws, and state water resource control laws. The membership of the Permit Board is set by statute. Seven members of the Permit Board serve by virtue of the state office they hold. The remaining two members are appointed by the governor and must be a retired professional engineer and a retired water well contractor.

MDEQ administers most of the environmental programs in the state of Mississippi. Many of these programs are administered under the delegatory authority of the United States Environmental Protection Agency (EPA) and under the authority of Mississippi state law. These environmental programs include oversight and protection of air quality, surface water and groundwater resources, and the management of solid and hazardous wastes. This training will

focus on the solid waste management laws and regulations in the state, most specifically on requirements for rubbish wastes.

Within MDEQ, there are several program areas that routinely deal with various aspects of solid waste management. Most of these programs are in the Waste Division at MDEQ. Solid waste program areas include the following:

1. *The Solid Waste Policy, Planning and Programs Branch* – develops regulations and guidance on solid waste management, coordinates and oversees local solid waste planning in the state, administers the state’s waste tire management program, and manages and conducts a variety of other actions that monitor and assess solid waste management conditions and promote proper solid waste in the state.
2. *The Recycling and Waste Reduction Branch* – leads the State’s efforts to promote and grow the recycling and reduction of solid wastes, working with local governments, schools and colleges, industries and businesses, recycling companies, and individual citizens.
3. *The Solid Waste Grants Management and Management Support Branch* – awards and manages solid waste and waste tire assistance grants, solid waste planning grants and other special grants programs and assists the Division with certain administrative and financial management responsibilities.
4. *The Solid Waste Permitting and Certification Branch* – conducts the multimedia review of permit applications and develops recommendations on those applications for all air, water, and waste permits for all solid waste facilities and applications for operator certification in the state of Mississippi.
5. *The Solid Waste Compliance and Enforcement Branch* – conducts multimedia (air, water, and waste) compliance and enforcement activities for solid waste management facilities in the state of Mississippi.
6. *The Hazardous Waste Management Branch* – conducts policy, permitting, compliance and remediation work involving those solid wastes that are hazardous wastes;
7. *The Geotechnical Programs Branch* - manages the State’s Underground Injection Control program and provides geotechnical support services to the solid waste permitting and compliance branches and to the hazardous waste branch.
8. *The Field Services Division*, including the *North Regional Office (NRO)* in Oxford, the *Central Regional Office (CRO)* in Pearl, the *South Regional Office (SRO)* in Biloxi, and the laboratory, also in Pearl. The regional offices are the “eyes and ears” of MDEQ and conduct most of the agencies inspections and investigations for permitted facilities and environmental complaint matters. The laboratory conducts environmental monitoring and sampling activities on behalf of MDEQ.

1.2 Solid Waste Laws and Regulations

Solid waste management in Mississippi is regulated under both federal and state law. The federal government through EPA regulates solid waste management under RCRA. Most of the federal government's oversight under RCRA has historically been directed towards those solid wastes that are "hazardous wastes." Title 40 Code of Federal Regulations (CFR) Parts 257 and 258 are the applicable sections of federal regulations that apply to non-hazardous solid wastes (which includes rubbish). These federal regulations minimally address non-hazardous solid waste management but do contain the technical standards for the design, operation, closure, and post-closure of municipal solid waste landfills. Design and operating standards for rubbish sites and other solid waste management facilities are developed and implemented by MDEQ under the authority of state law and regulations.

1.2.1 State Solid Waste Laws

The primary authority for MDEQ to regulate solid wastes in Mississippi is found in four sections of state law.

1. *Section 17-17-1, et seq. of the Mississippi Code Annotated, also known as the Mississippi Solid Wastes Disposal Law of 1974.* This chapter of the Mississippi statutes was originally adopted by the state legislature in 1974 in the state's initial efforts to regulate solid wastes. The chapter contains the primary areas of the law that apply to solid waste management. Those sections found in this chapter of state law include the authority to MDEQ and the Commission on Environmental Quality to regulate solid waste management activities and the provisions addressing illegal dumping, solid waste permitting, solid waste grants, plastics recycling labels, solid waste planning, waste tire management, lead acid battery recycling, permit applicant disclosure statements, and various other aspects of solid waste management.
2. *Sections 21-27-205 and -211 of the Mississippi Code Annotated.* This section of the law contains the requirements for certification of commercial solid waste landfill and class I rubbish site operators.
3. *Section 49-17-1, et seq. of the Mississippi Code Annotated, also known as the Mississippi Air and Water Pollution Control Law.* This portion of Mississippi law contains the general provisions of law protecting state air and water resources. This

chapter of the law also describes the primary functions of the Commission and the Permit Board.

4. *Section 49-31-1, et seq. of the Mississippi Code Annotated, also known as the Mississippi Multimedia Pollution Prevention Act.* This portion of the statutes contains the goals and actions of the state to address and promote recycling, reuse, and reduction of solid wastes in the state.

There are various other state laws in the Mississippi Code Annotated (the Code) that also address aspects of solid waste management. Sections 97-15-29 through 31 of the Code, also known as Felony Dumping Act/Midnight Dumping Act, define illegal dumping as misdemeanor and felony crime and requires punishment of persons convicted of illegal dumping or littering. Section 19-5-105 and Section 21-19-11 of the Code grant certain authority to local governments to enter private property under certain procedures to clean up the property (including removal of solid wastes) where the property poses a public health hazard. In addition, there are other state environmental laws including the state's Brownfields law, which encourages the redevelopment and use of historic industrial properties; the state's underground storage tank (UST) law, which sets standards for design, monitoring, and clean-up of leaking tanks; the state's oil and gas laws, which establish regulatory authority for oil and gas exploration/production wastes; and the state's wildlife conservation laws.

Under the authority of state and federal law, the Commission has adopted various regulations that apply to protection of the environment. Particular to this course are those regulations that apply to various aspects of solid waste management. The regulations adopted by the Commission are implemented by the staff of MDEQ.

1.2.2 State Solid Waste Regulations

The main body of regulations implemented by MDEQ in oversight of solid waste management is the Mississippi Nonhazardous Solid Waste Management Regulations (11 Miss. Admin. Code Pt. 4, Ch. 1). These regulations set permitting and compliance standards and procedures for the location, design, operation, monitoring, and closure of solid waste management facilities. Those sections of the regulations directly applicable to rubbish site operations that will be the focus of this training class are as follows:

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1. Rule 1.1 of the regulations, which describes applicability, exemptions, and definitions related to solid waste management activities;
 2. Rule 1.2 of the regulations, which describes the requirements for permitting solid waste facilities including rubbish sites;
 3. Rule 1.3 of the regulations, which describes those location or siting criteria for rubbish sites; and
 4. Rule 1.6 of the regulations, which specifically governs the operational conditions of rubbish sites.

There are other regulations that apply to and affect solid waste management conditions. Some portions of these regulations may also be discussed in appropriate sections of the rubbish training curriculum. These regulations include the following:

1. *The Mississippi Waste Tire Management Regulations* (11 Miss. Admin. Code Pt. 4, Ch. 4) – These regulations govern facilities that store, process, and dispose of waste tires in the state of Mississippi.
 2. *The Mississippi Waste Tire Transportation Regulations* (11 Miss. Admin. Code Pt. 4, Ch. 5) – These regulations govern persons who transport or haul tires in the state of Mississippi.
 3. *The Nonhazardous Corrective Action Trust Fund Regulations* (11 Miss. Admin. Code Pt. 4, Ch. 6) – These regulations establish procedures and standards for the distribution and use of funds for corrective actions at historic or abandoned sanitary landfills closed prior to the effective date of federal regulations (1993/1994).
 4. *The Mississippi Grant Regulations for Waste Tire and Solid Waste Assistance Funds* (11 Miss. Admin. Code Pt. 4, Ch. 3) – These regulations govern the process and the criteria by which waste tire and solid waste grant funds are awarded in the state.
 5. *The Evaluation Criteria for Local Solid Waste Management Plans* (11 Miss. Admin. Code Pt. 4, Ch. 2) – These regulations set the standards by which local solid waste management plans are evaluated.
 6. *The Mississippi Regulations for Beneficial Use of Nonhazardous Solid Wastes* (11 Miss. Admin. Code Pt. 4, Ch. 9) – These regulations govern the process by which certain nonhazardous byproducts are evaluated for use in place of products or raw materials.
 7. *The Mississippi Regulations for Certification of Operators of Solid Waste Disposal Facilities* (11 Miss. Admin. Code Pt. 4, Ch. 8) – These regulations govern the process by which the operators of commercial solid waste landfills and commercial rubbish sites are certified in the state of Mississippi.
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8. *The Mississippi Solid and Hazardous Waste Disclosure Regulations* (11 Miss. Admin. Code Pt. 4, Ch. 7) – These regulations govern the information and process by which persons who apply for solid and hazardous waste permits must disclose certain business, financial, and historic operating information about their company and primary officers.
 9. *The Mississippi Air and Water Pollution Control Regulations* (11 Miss. Admin. Code Pt. 2 and 11 Miss. Admin. Code Pt. 6) – There are various sets of additional water and air regulations that govern air and water discharges and emissions. These regulations affect solid waste management because the regulations place parameters on the discharges from solid waste facilities and solid waste storage areas and because increased regulatory controls on various types of water and air discharges increase the amount of solid wastes generated.

In addition to the state solid waste regulations described above, there are other state and federal rules that affect and influence solid waste management in Mississippi. These include the following:

1. *The National Emission Standards for Hazardous Air Pollutants* (NESHAP) – These federal standards contain criteria for various hazardous air pollutants, but the section of the NESHAP that applies to asbestos-containing materials likely affects solid waste management more so than any other portion of the NESHAP.
 2. *The Toxic Substance Control Act* (TSCA) – regulates certain toxic substances but its most common application in solid waste management is related to the management of PCB-containing wastes.
 3. *The Subtitle C of the Resource Conservation and Recovery Act/Mississippi Hazardous Waste Management Regulations* – These regulations govern those solid wastes that are characterized as hazardous wastes. The Mississippi regulations mirror the federal regulations in most instances.
 4. *The Universal Waste Rule* – This federal rule streamlines environmental regulations for the management, collection, and recycling of certain hazardous wastes (including batteries, thermostats, pesticides, and lamps) that traditionally are generated in small quantities by a large number of businesses and industries.
 5. *The Animal Board of Health Rules on Animal Carcass Disposal* – These regulations are found in the Mississippi Board of Animal Health Regulations and primarily govern the disposal of agricultural animal carcasses.
 6. *Adopted Standards for the Regulation of Medical Wastes for Licensed Health Care Facilities* – Administered by the Mississippi State Department of Health’s Licensure and Certification Division, these regulations contain standards for
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- medical waste management at licensed health care facilities, such as hospitals, nursing homes and certain clinics.
 7. *Standards for Oil and Gas Exploration and Production Wastes* – Administered by the Mississippi Oil and Gas Board, these regulations apply to the non-commercial disposal of drilling muds and other exploration/production wastes.
 8. *The Mississippi Department of Transportation Regulations governing Waste Stations along State Highways* – These regulations govern the location of “dumpster” collection points placed on or near state highways.
 9. *Regulations for Control of Radiation in Mississippi* – These regulations are administered by the Division of Radiological Health at the Mississippi State Department of Health and the rules govern sources of radiation in Mississippi including solid wastes that contain radioactivity.

1.2.3 Other Solid Waste Guidance Documents

To assist in the management of solid wastes, MDEQ has developed additional guidance documents, brochures, and memorandums that may help provide information related to various types of solid waste management issues. These documents include:

1. *Architectural Debris Guidance Document* – This document provides guidance on a variety of special wastes found in construction and demolition debris;
 2. *Solid Waste Enforcement Officers: Duties and Procedures* – This document prescribes the duties of those local solid waste officers that receive grant funding from MDEQ;
 3. *Guidance for Developing and for Amending Local Solid Waste Management Plans* – These two guidance documents provide guidance to local governments developing and amending local solid waste plans;
 4. *Guidance for Waste Tire and White Goods Collection Programs* – These two guidance documents provide basic advice and information to local governments for developing collection and recycling programs for waste tires and bulky household appliances;
 5. *Electronic Waste documents and brochures* – Several brochures and guidance documents have been developed by MDEQ and EPA that provide regulatory and assistance information on the management of computers, televisions, and other electronic wastes; and
 6. *MDEQ Medical Waste Fact Sheet* – This document provides guidance on the management of medical wastes in the state of Mississippi and describes the regulatory role of MDEQ and the Mississippi State Department of Health.
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1.2.4 Class I Rubbish Operator Certification Requirements

The Mississippi State Legislature adopted provisions in state law in 2004 that required that after June 30, 2005, operation of a commercial Class I rubbish site in the state was unlawful unless the facility was operated by a person that holds a certificate of competency from the Commission. This section of the law was codified in Mississippi Code Section 21-27-211. The Commission adopted regulations on the standards and procedures for the certificates of competency in April 2005 entitled *Mississippi Regulations for Certification of Operators of Solid Waste Disposal Facilities*. These regulations allowed for an interim certificate of competency to be issued for each rubbish site until such time that a program could be developed to formally certify the operators. In addition, the regulations contained the basic requirements for receiving and maintaining a certificate of competency as a commercial Class I rubbish site operator in the state of Mississippi. The regulations require that an interested person apply for a certificate of competency on an MDEQ application form. The application form must demonstrate that the applicant meets the following criteria:

1. The applicant is a graduate of an accredited high school or has obtained an equivalent GED.
2. The applicant has at least one year of experience in the operation of a rubbish site, other comparable disposal site, or other experience considered and approved by MDEQ as being suitably related. An applicant who has completed additional years of education beyond a high school diploma or GED may receive up to 6 months of credit for any deficiencies in the work experience, provided the education has applicability to solid waste management activities.
3. The applicant has passed a written examination developed and prepared and given by the Commission. If the applicant already possesses state certification for a commercial landfill operator, the applicant still must pass a rubbish operator examination to obtain a certification as a commercial Class I rubbish site operator.

Persons who meet the criteria described above will be issued a certificate of competency as a commercial Class I rubbish site operator. The Commission may deny an application for any person who does not meet the requirements or who falsifies information or submits incomplete

information in the application. If a person is denied certification by the Commission, that person can appeal the denial for further hearing and consideration.

A certificate of competency is valid for **3 years**, unless otherwise revoked or invalidated for just cause. Persons who seek to renew the certificate of competency are requested to submit a renewal application at least 60 days prior to expiration of the certificate. The renewal application must indicate that the operator has obtained at least 24 hours of continuing education units. Persons attending this class will receive 10 hours of units towards renewal. Other opportunities for earning continuing education units will include attending conferences of the Mississippi Chapter of the Solid Waste Association of North America (SWANA); seminars or short courses offered by MDEQ; conferences or online training through the national SWANA organization; rubbish-related training sponsored by others including your employer, the Mississippi Recycling Coalition, the Southeast Recycling Development Council, SWANA Chapters in surrounding states, the Occupational Safety and Health Administration (OSHA), the Mississippi Association of Supervisors (MAS), and the Mississippi Municipal League (MML); and other approved safety, environmental, or management training related to the management of a Class I rubbish site.

1.3 Overview of Solid Waste Terms, Definitions and Information

There are various terms, regulatory exemptions, and facility types that you may encounter during your work in the management and oversight of your rubbish facility and which will also be used during this course. This section will address these basic terms and will provide definitions and better understanding of the types of regulated solid waste facilities and exemptions that exist in Mississippi.

1.3.1 Terms and Definitions

Terms that rubbish operators likely need to be familiar with include the following:

- ***Solid waste*** means any garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic

sewage, solid or dissolved materials in irrigation return flows, or industrial discharges that are point sources subject to permit under 33 CFR 1342, or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923).

- **Hazardous waste** in regulatory terms under RCRA, is a waste that appears on one of the four hazardous wastes lists (F-list, K-list, P-list, or U-list), or exhibits at least one of four hazardous characteristics. Hazardous waste is regulated under RCRA Subtitle C. The universe of hazardous wastes is large and diverse. Hazardous wastes can be liquids, solids, contained gases, or sludges. They can be the byproducts of manufacturing processes or simply discarded commercial products, like cleaning fluids or pesticides. The **characteristics** that a waste must exhibit in order to be regulated as a **hazardous waste** are as follows:

1. **Toxicity** (Toxicity Characteristic Leaching Procedure levels for metals, volatiles, semi-volatiles, and pesticides/herbicides);
2. **Ignitability*** (flashpoint < 140°F);
3. **Corrosivity*** (pH ≤ 2 or ≥ 12.5); and
4. **Reactivity** (cyanide- or sulfide-based or reacts with water).

* *This characteristic does not apply to a solid material.*

- **Municipal solid waste (MSW)**, under state law, is any nonhazardous solid waste resulting from the operation of residential, commercial, governmental, industrial, or institutional establishments except oil field exploration and production wastes and sewage sludge. However, you may also see the term “MSW” used in a more general sense to mean those wastes that originate primarily from the residential garbage collection service conducted by local governments.
- **Rubbish** is a subset of solid wastes defined by statute as any non-putrescible solid wastes (excluding ashes) consisting of both combustible and noncombustible wastes. Combustible rubbish includes paper, rags, carton, wood, furniture, rubber, plastics, yard trimmings, leaves, and similar material. Noncombustible rubbish includes glass, crockery, metal, and like material that will not burn at ordinary temperatures (not less than 1,600°F).

Rule 1.6 of Nonhazardous Solid Waste Management Regulations is more expressive on the types of wastes allowed and/or prohibited for disposal at a Class I rubbish site. The list of the allowable and prohibited wastes for rubbish sites will be discussed later in the course.

- **Putrescible wastes** are those solid wastes that are capable of being decomposed by micro-organisms with sufficient rapidity to cause nuisances from odors or gases.

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- **Industrial wastes** are those solid wastes generated by manufacturing or industrial processes that are not hazardous wastes regulated under Subtitle C of RCRA. Industrial wastes may include following types of wastes:
 1. **Industrial process wastes** include materials that are the direct result of a manufacturing process. Process wastes would include materials such as sawdust, sludges, ashes, wood chips, wood cut-offs, ashes, lime muds, foundry sands, shredder residue, off-spec raw material, and unusable product.
 2. **Extraction or clean-up wastes** include materials such as contaminated soil and debris from spills, leaks, or uncontained discharges. Oftentimes these materials are the result of historic leaks or past actions.
 3. **Miscellaneous wastes** include materials such as floor sweepings, cleaning solvents and solutions, empty containers, packaging materials, and equipment maintenance wastes.

 - **Special waste** is a “non-regulatory” term that is generally used to recognize certain solid waste streams or subsets of a waste stream that require special or extraordinary circumstances or conditions in managing and disposing of the wastes. Special wastes may include the following types of wastes:
 1. Certain components of **architectural debris** such as asbestos, lead-based paint (LBP) debris, fluorescent light bulbs, light ballasts, treated wood products, paint cans and other materials;
 2. **Automotive wastes** such as tires, used oil and filters, and batteries, which usually require special handling conditions;
 3. **Extraction or clean-up wastes** such as contaminated soil and debris from spills, leaks, or uncontained discharges, which also may require special management conditions;
 4. Certain **industrial process wastes**, which may require special handling conditions such as treatment or solidification;
 5. **Medical wastes** such as syringes, vials, blood-soaked materials, pathological wastes, and pharmaceuticals, which must be managed in a manner that prevents the materials from becoming a public health concern; and
 6. **Other special wastes**, which may include empty containers, maintenance wastes, conditionally exempt small quantity generator waste, electronic wastes, universal wastes, animal carcasses, low-level radioactive wastes, and other materials.
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- **Leachate** is a liquid that has passed through or emerged through solid wastes and contains soluble, suspended, or miscible materials removed from such waste.
 - **Aquifer** means a geological formation, a group of formations, or a portion of a formation capable of yielding significant quantities of groundwater to wells or springs.

1.3.2 Exclusions to the Regulations (11 Miss. Admin. Code Pt. 4, Ch. 1)

Certain types of solid wastes or materials are excluded from regulation under Rule 1.1 of the Mississippi Nonhazardous Solid Waste Management Regulations. This exclusion usually means the materials are not considered solid wastes or that the materials are regulated under another set of regulations or by another state or federal agency. The exclusions are listed as follows:

1. Hazardous wastes subject to Subtitle C of RCRA.
2. Domestic sewage or industrial wastewater that passes through treatment works.
3. Solid wastes generated through harvesting crops or raising of animals, which are returned to the soil as a conditioner.
4. Rubbish that is legitimately used, reused or recycled, or reclaimed except for waste that is composted or wastes that may result in endangerment to the environment.
5. Solid wastes that have been determined by MDEQ to be suitable for “beneficial use.”
6. Solid wastes used in legitimate beneficial fill projects.
7. Solid wastes generated in silviculture activities (such as timber harvesting slash and land-clearing debris) whenever such wastes are left onsite.
8. Solid wastes processed on the same property on which wastes are generated in a processing facility owned and operated by the generator.
9. Solid wastes that have been determined by the Permit Board to not constitute an endangerment to the environment or public health and that are disposed of on the site on which they are generated. Such exclusions do not include household garbage or waste disposal of a continuous nature.
10. Mining overburden returned to the mine site.
11. Wastes subject to Underground Injection Well rules.
12. Wastes associated with the exploration and production of crude oil and natural gas, except where such wastes are disposed or managed commercially.

1.3.3 Types of Solid Waste Management Facilities

The Nonhazardous Solid Waste Management Regulations also set location, design, and operating standards for various types of solid waste facilities in the state of Mississippi. Generally solid waste facilities regulated under these rules fall into one of the following categories:

1. *Municipal and Non-Municipal Solid Waste Landfills* – Landfill facilities that receive household garbage, bulk industrial wastes, and other solid wastes that require the landfill to meet more-stringent technical design and location criteria;
2. *Rubbish Disposal Sites (Class I and Class II)* – Landfill facilities that are designed and operated to dispose of Class I or Class II rubbish wastes;
3. *Land Application Facilities* – Facilities that are permitted land areas where solid wastes are incorporated, injected, or otherwise applied to the land surface for soil amendment purposes or biodegradation of the wastes;
4. *Processing and/or Treatment Facilities* – Facilities that sort, shred, grind, bale, treat, or otherwise process solid wastes for disposal or reuse;
5. *Solid Waste Transfer Stations* – Fixed facilities used for the primary purpose of transferring solid waste from one transportation vehicle to another; and
6. *Composting Facilities* – Facilities where solid wastes are biologically decomposed to produce a usable compost product beneficial to plant growth.

1.3.4 Hierarchy of Landfill Classifications

As indicated above, there are four regulated classifications of facilities that dispose of waste by landfilling in the state of Mississippi and one type of fill that is exempt from solid waste regulation. The hierarchy of the classifications of landfills under state regulations is as follows:

1. *Municipal Solid Waste Landfills* – These are facilities that are regulated under federal regulations and are designed to accept mixed household wastes (including household hazardous wastes). In Mississippi, these landfill types can accept most any type of nonhazardous solid waste.
2. *Non-Municipal Solid Waste Landfills* – These are facilities that are designed and permitted to accept certain types of large-volume waste streams usually from one or more large generators. These landfill types include landfills operated solely for disposal of wastes from a single source or a single type of waste (includes industrial and special waste landfills).

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3. *Class I Rubbish Disposal Sites* – These are disposal facilities that are designed and permitted for the disposal of all types of rubbish including construction and demolition debris and other rubbish from various sources.
 4. *Class II Rubbish Disposal Sites* (for more inert types of rubbish) – These types of rubbish disposal sites are permitted to accept only non-polluting types of rubbish (known as Class II rubbish). Class II rubbish includes wastes such as natural vegetative debris and inert materials such as concrete, brick, mortar, and other similar materials.
 5. *Beneficial Fill Sites* – These are small temporary fill sites that use non-soluble, non-decomposable Class II rubbish (such as uncontaminated concrete) to fill an area of less than 2 acres for a duration of less than 120 days. The sites also must not be operated for compensation. Sites that meet these requirements are exempt from the state solid waste regulations.

2.0 SOLID WASTE PLANNING AND PERMITTING PROCEDURES

2.1 Solid Waste Planning Process

It is important that a rubbish site operator have a basic knowledge of solid waste planning requirements placed on local governments in the state and how these requirements may affect their operations. This information is important because the operations of each disposal facility in the state must be specifically recognized by the solid waste management plan of the jurisdiction in which the facility resides. The plan must recognize the type, the size and capacity, the location, the owner/operator, and the service area of the facility. Any new disposal facility or new expansion of an existing facility must be recognized in the plan, or the plan must be formally amended to specifically recognize the new facility or new expansion. This section will briefly describe the requirements on local governments for long-range solid waste planning and the process by which an amendment to a local plan is made to include a new or expanded facility. MDEQ cannot act on a permit application for a new or expanded facility that is not included in the local solid waste plan. MDEQ also cannot issue a permit that is inconsistent with the conditions of the approved, local solid waste plan.

2.1.1 Solid Waste Planning By Local Governments

In the early 1990s, the Mississippi Legislature adopted requirements in state law that each county government in the state of Mississippi must develop a comprehensive 20-year local solid waste management plan for their jurisdiction. This plan may be developed individually for the county or may be developed with other counties in a regional solid waste plan directed by a regional solid waste authority or district. Each municipality in the state must either be a part of the county plan in which the city resides, a part of a regional solid waste plan, or must develop its own individual solid waste plan. The local plan must address various aspects of solid waste management. The components of the plan must include the following:

1. An inventory of the sources, composition, and quantities of waste and projections of waste to be generated over a 20-year period;

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2. Description and plans for managing municipal solid waste including garbage collection and disposal, rubbish disposal, and yard waste and municipal sludge management;
 3. Local provisions for commercial and industrial waste management;
 4. Plans for managing various types of special waste, including construction and demolition wastes, bulk liquid wastes, waste tires, household hazardous wastes, white goods, electronic wastes, certain agricultural wastes, and other special wastes;
 5. A local strategy for achieving 25% waste reduction;
 6. Plans for emergency debris management in the event of a disaster;
 7. Illegal dumping prevention and enforcement plan;
 8. Identification of all solid waste facilities operating in the jurisdiction along with size, location, operational description, and the service area;
 9. Identification of new or expanded facilities and a formal determination of need for such facilities;
 10. Estimation of costs to the local government and the method of financing those costs;
 11. Plans and schedule for meeting any projected shortfall in waste capacity; and
 12. Any other relevant information that the Commission may require.

Prior to development of the local solid waste plan, the local government can apply to MDEQ for a solid waste planning grant. These grants can pay a portion of the costs of developing and adopting the local solid waste plan. The percentage of eligible grant funding is dependent upon the population of the county, city, or regional authority. In preparing the plan, MDEQ recommends convening an advisory group and selecting a contractual planning or engineering firm to help prepare the comprehensive plan. Once a plan is written and developed, the plan must be presented to the public for public comment. After consideration of public comments on the provisions of the plan, the local government should make final adjustments or changes to the plan and should act upon the plan. Upon approval by the local governments involved, the plan is submitted to MDEQ for review. MDEQ reviews the proposed plan, identifies any deficiencies in the plan, and requests those be addressed. Upon completion and approval by MDEQ staff, the final plan is presented to the Commission for action. The Commission's action on the plan is subject to appeal by any aggrieved party. Once the plan is approved by the Commission or the Executive Director, the local

government is responsible for implementing the provisions of the plan in accordance with the approved schedule.

2.1.2 Procedures for a New or Expanded Rubbish Site to Be Added to a Local Solid Waste Plan

If an operator decides to build a new rubbish facility or to expand an existing facility, prior to applying to MDEQ for the necessary permits, the new facility or expansion must first be included in the solid waste plan of the local government in whose jurisdiction the proposed new or expanded rubbish facility is to reside. Similarly, if an operator desires to change the size of a facility's approved service area (identified in the plan) or if the operator desires to upgrade a rubbish site to a different type of landfill (change the types of wastes you dispose of), the operator will also need to request a change to the local solid waste plan. As previously stated, the local government planning entity may be a municipality, county, or regional solid waste authority. In order for the new facility or other proposed change to the plan to receive consideration by the local government, the operator must complete MDEQ's request form to modify the local solid waste plan. The completed request form must be submitted to the local government with all appropriate supporting documentation. MDEQ requests a copy of the submitted form for informational purposes.

The request form to the local government must include the following information:

1. Applicant Information – This information simply includes the name, address, and contact information of the company or organization requesting the planning amendment.
2. Facility Information – This information includes the name and type of solid waste facility; the location of the facility; landowner information; the type of modification request (such as a new facility, expansion of an existing facility or change in service area) or other operational changes; the size of the new or expanded facility; and the proposed service area of the facility. The service area should be expressed either by the specific counties that the facility intends to service or a specified radius from the facility.
3. Demonstration of Need – The request to amend the local plan must also include a demonstration of need. This demonstration should be sufficiently complete to assist the local government in completing its required determination of need on the proposal. The demonstration of need must include the following information:

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- Verification that the proposed facility meets needs identified in the local solid waste plan, taking into account **the quantities of solid waste generated** and **the design capacities of existing facilities** in the area.
 - Certification that the proposed facility complies with local land use and zoning requirements, if any exist. (Note: local governments vary in the manner and time in the process that they make this decision. Some local governments require a zoning decision before the planning review, and others require that the planning decision be made before the zoning decision. MDEQ does not stipulate when this decision must be made; however, the zoning decision must be complete before the local government submits the amendment request to the agency.)
 - Demonstration to the extent possible that the operation of the proposed facility will not negatively impact the waste reduction strategy of the local government.
 - Certification that the proposed service area of the facility is consistent with the local solid waste plan. Essentially this means that a permit applicant must show the local government that the service area proposed for a new or expanded facility is consistent with the needs of the planning area.
 - A description of the extent to which the proposed facility is needed to replace other facilities.

After reviewing the information in an applicant's request, the local government will make a preliminary decision to either move forward with further consideration of the proposal or to deny the proposal. In making its preliminary decision, the local government could ask an applicant for additional information beyond what is included in the request form. They may ask the applicant for environmental information on the site, for operating information on the company, or for other information that will assist them in making a preliminary decision. The local government may also ask that an applicant alter its proposal to amend the plan. This request could include reducing the proposed size of the disposal area to be more consistent with the needs of the community or reducing the size of the service area. If the local government decides to further consider an applicant's proposal, then they must prepare the pages to the plan that would include the proposed facility. The draft pages should have all the relevant information about your facility operations and a demonstration of need. In addition, the local government is required to conduct various types of public notification and participation activities on the proposed change. The local government must

have a public notice of the proposed change published in a local paper twice in successive weeks. The notice should notify the public of a 30-day comment period, describe the procedure for the public to submit comments, and indicate the date and time of a public hearing on the matter. The notice should also include the specific information describing the amendment that is being considered. For new or expanded rubbish facilities, the local government must also notify the adjacent landowners to the property of the proposed new or expanded rubbish facility at the time of publication of the notice. The local government must also notify all adjacent Mississippi counties of the proposed amendment to their solid waste plan. These notifications should include a copy of the public notice with details of the amendment being considered and of the public comment process. It is important to know that most local governments will pass the cost of the planning process on to the applicant. In some instances, they may ask the applicant to have the notices published and to conduct the actual mailing of landowner notices. It is important that the notice process be conducted properly to ensure that the process would be upheld if appealed to the Commission or a court of law.

After the public comment period and public hearing are complete, the local government should examine and fully consider all public comments on the matter. The local government must then make a decision on the matter. This decision may include approval of the amendment as presented, approval of the amendment with changes (most commonly to the size of the disposal area or to the approved service area), or denial of the proposed amendment. The decision of the local government must be memorialized in a formal resolution. It is important to note also that in some instances, a local government may ask that a new or expanded disposal facility pay a host fee to the local government to site a disposal facility in their area. This host fee is typically imposed on any waste brought from outside the host jurisdiction. Such agreements are between the disposal facility owner and the local government and are not approved or considered by MDEQ.

Once the final decision is made, the local government must present this matter to MDEQ along with their determination of need on the matter. MDEQ reviews the documents for deficiencies and asks that any deficiencies are corrected. If the planning request is complete, then the amendment may be approved by an order of the Executive Director of MDEQ on behalf of the Commission. If the matter is controversial and has substantial public opposition, the amendment

would likely be presented to the full Commission for consideration and action. Upon the decision of the Commission, an order is issued approving or denying the amendment. The decisions of the Commission are appealable. Such appeals are first heard by the Commission in an evidentiary hearing. If this evidentiary hearing results in the Commission's decision being upheld, then the matter is appealable to a court of law.

2.2 Class I Rubbish Site Permitting Requirements

A solid waste management permit is required for any solid waste management facility (except for those exclusions previously described). Rubbish sites, like most solid waste management facilities, must have a solid waste management permit in order to operate. The rubbish site owner must obtain permit coverage under either a certificate of coverage issued under the statewide general permit for Class I rubbish sites or under an individual solid waste management permit for the facility. The type of permit coverage (general versus individual) is usually dictated by one of two primary factors:

1. The MDEQ review of the permit application has provided a rationale or basis for the facility permit to have site-specific design, operating, monitoring, or closure conditions. These types of site-specific, individual permitting requirements would have to be incorporated into the conditions of a site-specific individual permit.
2. The local planning process or the permitting process has revealed a significant degree of public concern or opposition to a proposed rubbish facility. Because the issuance of an individual solid waste permit must include a public participation process on the proposed issuance of the permit, MDEQ would likely elect to issue an individual permit to a facility that had such opposition.

2.2.1 MDEQ Permit Application Contents

As stated, prior to applying for a solid waste management permit for a new or expanded Class I rubbish site from the Permit Board, the owner or operator must ensure that the new facility or new expansion is expressly consistent with the local solid waste management plan. If included in the local solid waste plan, the operator of a rubbish site must then complete an application for permit coverage and submit the application to the Solid Waste Permitting and Certifications Branch of the Waste Division at MDEQ. Persons seeking a solid waste management permit or

other associated environmental permits must apply for such permits on forms provided or approved by MDEQ. The application must address the following:

1. General applicant information including the applicant's address, contact information, contact persons, etc.
2. Land ownership information. If the facility is not owned by the applicant, then a signed and certified statement by the landowner must be transmitted with the application acknowledging the landowner understands and agrees with use of the property as a rubbish site.
3. General facility information including the physical address, the legal description, and GPS information.
4. Topographical map depicting property and disposal area boundaries.
5. Description and characterization of the disposal area within the total property area.
6. Demonstration of compliance with all siting and design criteria for the proposed disposal area (to be discussed fully in Sections 3.0 and 4.0 of the curriculum).
7. Adjacent property owner information including a map depicting adjacent land plots and landowners and complete names and addresses of the landowners.
8. Cross-sectional drawings of the rubbish facility depicting boring locations, ground and sub-base elevations, elevation at top of waste, elevation at top of final cover, and side slopes (if higher than 25 ft, the application must include slope stability calculations).
9. Local planning and zoning compliance information. If no zoning laws exist, then a statement to that effect should be submitted by an appropriate representative of the local government.
10. Plan of operation including types and source of rubbish, site security and screening and monitoring provisions, summary of runoff and stormwater controls, narrative of site operations, site equipment and personnel resources, frequency and source of earthen cover, fire prevention plans, and litter control plans.
11. Geologic information including boring logs, permeability tests, groundwater levels, soil buffer confirmation, and certification that the natural liner conditions comply with state requirements (or an alternate liner proposal presented with full engineering details).
12. A closure and post-closure plan describing anticipated closure actions and conditions at the end of the facility life. This includes final cover plans and details and final height elevations.
13. For sites owned by private companies, a company disclosure statement must be filed. If a contract operator will be operating the facility and that contractor is known at the time of permitting, a disclosure statement should also be submitted

for the contract operator. (Note: The review of this information is conducted by the MDEQ Legal Division.)

2.2.2 MDEQ Permit Review Process

MDEQ requests that all permit applications for a project be submitted simultaneously where possible. For instance, a stormwater permit application for a rubbish site should be submitted at the same time as the solid waste permit application. Upon receipt of the applications and disclosure statement (if required), MDEQ will send a letter notifying the applicant that the permit application has been received. Generally, MDEQ will initiate review of permit applications in the order that they are submitted to the agency. The MDEQ staff review will determine any deficiencies in the applications, and a letter of deficiency will be sent to the applicant outlining any conditions that need to be corrected or supplemented in the applications. Oftentimes, a meeting or conference will be held between the permitting staff, the applicant, and the applicant's consulting engineer preparing the applications, to discuss and clarify any deficiencies. Upon receipt and review of the revised permit applications, MDEQ will finalize a decision on the permits. If the decision has been made to issue coverage under a statewide general permit, then a permit decision is made by the Director of the Waste Division at the recommendation of staff and under the delegated authority of the Permit Board. No further public participation process is conducted when a certificate of coverage under a statewide general permit is issued.

However, in considering an individual solid waste management permit, MDEQ is required to conduct a public participation process. Minimally, this means that a public notice must be published in a local newspaper advising the public of a preliminary decision on a permit for the facility and soliciting public comment on the proposed action. If there is sufficient public interest in the area of a proposed rubbish site, MDEQ will conduct a public hearing on the issuance of the permits. Upon completion of the MDEQ public participation process, MDEQ will review and address relevant public comments on the proposed facility. This review could result in changes to the draft permit, additional requests of the permittee, or no action if MDEQ believes the information has been adequately addressed by the permit applicant. The decision on an individual permit may be presented to the full Permit Board or to the Waste Division Director. The Director

would likely only make decisions on individual permits that do not involve public controversy or opposition.

2.2.3 Other Permitting Considerations

1. All permit application forms submitted to MDEQ for issuance, re-issuance, modification, or transfer must be signed by an appropriate representative of the applicant or a duly authorized representative as described in state regulations.
2. It is the responsibility of a permit applicant to possess or acquire sufficient interest in or right to the use of the property for which a permit is issued.
3. The transfer of a solid waste permit must be approved by the Permit Board or the Board's designee *prior* to the transfer of ownership occurring for the facility. An application for transfer of a solid waste permit must be submitted to MDEQ for review and consideration. A permit transfer with no substantial changes to the operation generally does not have to be presented to the local government for approval in the planning process.
4. Any solid waste management facility that does not have a solid waste permit and that is not excluded under a valid exclusion in the regulations is considered an *unauthorized dump*. Any site that is an unauthorized dump is required to be closed under state law. Closure must be accomplished by either removal of the wastes or onsite burial, subject to MDEQ approval. The person(s) responsible for creating such unauthorized dumps is subject to enforcement actions by MDEQ as well as local criminal enforcement agencies.
5. MDEQ can issue emergency authorization for solid waste management facilities in the event of a disaster or other urgent need for public solid waste facilities. However, an urgent need does not include the failure to provide an application to MDEQ in a timely manner.

2.3 Stormwater Management Permits

Rubbish site operators are required to obtain storm water permits for the discharge of storm water to waters of the State. These permits are known as National Pollutant Discharge Elimination System (NPDES) permits. Class I rubbish sites may currently obtain permit coverage under one of two types of general permits: the Industrial Stormwater General Permit for Industrial Activities or an Individual Stormwater Permit. Stormwater permit coverage will no longer be issued under the Statewide General Permit for Land Disposal Sites since that general permit has expired or

under the Baseline Storm Water General Permit or Construction Storm Water General Permit that were previously issued.

- ***Industrial Storm Water Permits*** – Currently, the rubbish site operator may obtain a certificate of coverage under the Industrial Storm Water General Permit. The permit coverage must be maintained throughout the life of the rubbish site, which requires occasional updates with MDEQ. The requirements of this type of permit include submittal of a permit application including an NOI form and a Storm Water Pollution Prevention Plan (SWPPP). Facilities operating under this type of permit are required to maintain the storm water management system in accordance with the SWPPP and to inspect the system at least monthly. Where feasible, the inspections should be conducted after storm events. The facility is required to maintain records of the inspections, but samples from the outfall are not required for submittal to MDEQ unless the facility discharges into a 303(d)-listed impaired waterbody. An annual comprehensive site inspection and SWPPP evaluation is required. An annual report summarizing the monthly inspections and also reporting on the comprehensive inspection and SWPPP evaluation is required to be filed with MDEQ by January 28th for the preceding calendar year.
- ***Individual Storm Water Permit*** – Rubbish site operators have the option of requesting that an individual storm water permit be considered for issuance for their facility. This individual storm water permit typically is requested when the site operator wants to request that certain site-specific criteria be applied to the facility or wants to request an exception to a particular requirement in regulation or the applicable statewide general permit. In certain instances, MDEQ may require an individual storm water permit be issued for a site where circumstances warrant site specific storm water management provisions. The requirements of this type of permit also include submittal of a permit application including an NOI form and an SWPPP. Facilities operating under this type of permit are required to maintain the storm water management system in accordance with the SWPPP and to inspect the system on a frequency required by the individual permit. The facility may also be required to conduct discharge monitoring and to report also on a site specific frequency required by the individual permit. The individual storm water permit is a 5 year permit.

Regardless of the type of permit coverage that a rubbish site currently has or that a site owner may apply for in the future, every site is required to have a SWPPP that describes how storm water will be managed at the site. The approved SWPPP is considered a part of the permit and must be kept on site at all times. The site operator should know the plans and provisions that the approved SWPPP has for storm water management at your site and should comply with the

conditions of the SWPPP. In addition, the operator should update the SWPPP as necessary to reflect any changes in the operations of the site.

MDEQ Permitting Staff may develop a Statewide General Permit for Disposal Sites at some point in the future. If such a general permit is developed, MDEQ will release a public notice and conduct public hearings on the content of the proposed General Permit, prior to its final issuance. Rubbish site operators would be able to review and comment on that draft General Permit.

2.4 Wetland Permits

If the development of a proposed rubbish site will be located in whole or in part in a wetlands area, the site operator may need to request a Section 404 wetlands permit from the United States Army Corps of Engineers (USACE). As part of this process, a Water Quality Certificate must be issued by MDEQ. Additional information on these criteria is covered in Section 3.0, Siting Criteria for Rubbish Sites.

3.0 SITING CRITERIA FOR RUBBISH SITES

3.1 Siting Considerations and Criteria

When selecting a site for any type of waste disposal, a number of factors must be considered from both a practical operating standpoint and a regulatory design standpoint to ensure that the facilities do not pose an unreasonable probability of adverse effects on public health or the environment.

3.1.1 Practical Siting Considerations

As a rubbish site developer considers prospective sites for locating a disposal facility, there are several practical considerations that should be made. Some of these considerations also have a regulatory consideration while others may have no state or local restriction but still must be considered in choosing the best location for a disposal site.

3.1.1.1 Available Land Area

There are no fixed rules concerning the amount of required *available land area* that a facility operator should seek to site a Class I rubbish site. However, it is important to have sufficient land area to be able to meet or exceed all necessary state and local buffer requirements and to be able to operate and expand to meet the current and future disposal needs of the communities that the rubbish facility services. Facilities that are not sited or designed for the long term may find that operations become prohibitively expensive with respect to permitting, site preparation, auxiliary facilities, and completion of the final cover.

3.1.1.2 Local Land Use and Zoning

In evaluating potential locations for a rubbish disposal site, the *land use or zoning designations* for the property should be considered to determine whether the location is appropriate for the operation of a solid waste disposal facility. While many Mississippi counties do not have local land use or zoning ordinances, these local requirements are becoming more common in the state. Even in those counties where local ordinances do not exist, an interested site developer

should be careful not to select property for a disposal site in an area that would not be consistent with such use. Often times, land use issues arise during the solid waste planning process. These issues could lead to denial of the project by the local government, if sufficient opposition to a project develops. Facility operators should be certain that local land use issues can be resolved before proceeding with investing substantial resources in investigating or acquiring the property.

3.1.1.3 Community Facilities and Residential Areas

A rubbish site developer needs to be aware of nearby community facilities such as schools, day-care centers, hospitals, nursing homes, or churches. Even when state or local restrictions for siting near such facilities do not exist, there are other considerations that may make locating near these types of facilities undesirable. In addition, location near large residential areas may also be impractical for the rubbish site, since the owner may have to continually deal with traffic, safety, and potential nuisance conditions during the life of the facility.

3.1.1.4 Other Local Community Interests and Conditions

Other local interests or conditions should also be considered in siting rubbish facilities. Owners/operators should consider the potential impact to a community with respect to noise, odor, dust, windblown debris, aesthetics, vectors, and property values. In addition, conditions related to transportation of wastes to the site should be considered. Local road and bridge weight restrictions as well as other traffic and road safety concerns may apply and should be considered in siting a rubbish facility in an area. To minimize these impacts, disposal facilities are typically sited in more remote locations with adequate buffer zones.

3.1.1.5 Available Soil Cover

Because it is necessary to cover the waste deposited at a rubbish sites at least every two weeks and to provide a final cover layer after completing the cells, *soil conditions* must be evaluated with respect to both quantity and characteristics. If suitable onsite cover material is limited, it would be necessary to import soil materials from offsite. This limitation should be considered in determining if the site is a suitable location, since earthen cover material is a primary cost for site operations.

3.1.1.6 Topography and Surface Water Hydrology

The local topography and surface water hydrology are important in determining the existing natural drainage and runoff characteristics. Conditions with respect to potential flooding must also be identified.

3.1.1.7 Geologic Conditions

The geologic and hydrogeologic conditions of the site are other important factors in locating a rubbish site. Although the potential for groundwater contamination from a rubbish site is expected to be relatively low because of the characteristics of rubbish wastes, information regarding these factors must be evaluated to determine the potential pathways for contaminant migration. The design of the rubbish site must consider the depth to the uppermost aquifer and the type of underlying natural soils to minimize the potential for groundwater contamination.

3.1.2 Regulatory Siting Criteria

The Mississippi Nonhazardous Solid Waste Management Regulations contain various location restrictions for different solid waste facilities, including rubbish sites. *Location or siting restrictions* refer to the location where a rubbish site may be located. Many of these regulatory restrictions mirror the practical considerations that should be considered in siting a rubbish site. Those regulatory restrictions in state regulations that currently apply to siting rubbish sites include restrictions for the following:

1. Floodplains;
2. Wetlands;
3. Unstable areas;
4. Hydrocarbon wells and water wells;
5. Surface water;
6. Surface water drainage areas;
7. Geology;
8. Threatened or endangered species;

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9. Historical and archaeological areas;
 10. Parks and recreational areas;
 11. Forests, wilderness areas, wildlife management areas, and natural areas;
 12. Property line setbacks (buffer zones);
 13. Aesthetics and visibility;
 14. Local government regulations/solid waste management plans; and
 15. Noise factors.

Each of these location restrictions is explained in more detail as follows. Be aware that references in these sections to “new rubbish sites” apply to the permitting of both a completely new site as well as a new expansion to an existing rubbish site. Also, note that if your rubbish site was sited and authorized prior to the effective date of these siting criteria (October 1993 for most), then your site would comply with the setback distances or other siting criteria in effect at the time the site was permitted or authorized (unless your permitted disposal area has been expanded since that time).

3.1.2.1 Floodplains

To locate a rubbish site within the 100-year floodplain, an applicant for a permit must be able to demonstrate that the facility will not restrict the flow of the 100-year flood (or 1%-annual-flood chance), reduce the temporary water storage capacity of the floodplain, or result in washout of wastes. Demonstrations of the location of the rubbish site with respect to delineated special flood hazard areas are usually conducted through the use of the current Flood Insurance Rate Map (FIRM) for the area. If any portion of the rubbish site has been designated as a floodway on the FIRM, the rubbish site owner should obtain a letter of map revision (LOMR) from the Federal Emergency Management Agency (FEMA) stating that the area meets the requirements and has been removed from the floodway. More information on obtaining a LOMR may be found at <http://www.fema.gov/plan/prevent/floodplain/nfipkeywords/lomr.shtm>. A copy of this letter should be provided to MDEQ, generally as part of the application for a solid waste management permit, along with the other demonstrations related to floodplains.

3.1.2.2 Wetlands

A rubbish site may not be located in wetlands (inland or coastal) unless the applicant obtains approval from the applicable federal or state agency. During the site selection process, steps should be taken to identify waters of the US (streams, wetlands, lakes, etc.) within the footprint of the proposed solid waste facility. The use of the site as a rubbish site may be subject to requirements of a Section 404 permit from USACE and the associated Section 401 Water Quality Certification from the state. The applicant should consider alternatives (both onsite and possibly other offsite locations) to impacting any jurisdictional waters within the solid waste facility and take steps to avoid and/or minimize any unavoidable impacts to jurisdictional waters on the site during the planning and permitting process.

If impacts are unavoidable and permits are required, approval for inland wetlands must be obtained from USACE. The state of Mississippi is divided into four USACE districts: (1) Memphis (northwest corner), (2) Vicksburg (majority of state), (3) Nashville (northeast corner), and (4) Mobile (coastal area). Coastal wetlands must also receive approval from the Mississippi Department of Marine Resources. If a permit is necessary from USACE, MDEQ must also issue a Water Quality Certification as a part of the USACE permitting process.

3.1.2.3 Unstable Areas

If a rubbish site is proposed to be located in an unstable area, the permit applicant must demonstrate to MDEQ that engineering measures have been incorporated into the design that insure the integrity of the structural components of the facility will not be disrupted. The factors that must be considered to determine whether an area is unstable include:

- Onsite or local soil conditions that may result in significant differential settling, such as highly compressible soils, wetland areas, or boggy areas;
- Onsite or local geologic or geomorphic conditions, such as seismically active areas; and
- Onsite or local human-made features or events, such as mined areas or large backfilled areas.

3.1.2.4 Hydrocarbon Wells and Water Wells

A new rubbish site may not be located where an active or inactive well would be present beneath the disposal area, unless it can be demonstrated that the well was adequately plugged. For water wells, plugging and closure must be in compliance with the requirements of the Office of Land and Water at MDEQ. For hydrocarbon wells, closure must be in compliance with the requirements of the State Oil and Gas Board.

3.1.2.5 Surface Water

A new rubbish site may not be located within 100 feet of the banks of any river, stream, lake or reservoir, or coastal water.

3.1.2.6 Surface Water Drainage Areas

A new rubbish site may not be located in areas that may result in recurring washout of waste, such as in natural surface water drainage channels.

3.1.2.7 Geology

A Class I rubbish site must be located in a site where there are at least 5 feet of separation between the top of the uppermost aquifer and the bottom of the liner. The top of the uppermost aquifer would be the elevation of the top of a confined aquifer or the seasonally high water table in an unconfined aquifer. The liner must consist of either of the following:

- Adequate naturally occurring, low-permeability, geologic materials below the disposal area and on sidewalls (if applicable). These materials would typically consist of clays, clayey silts, or silty clays. The thickness of the materials should extend at least 5 feet below the disposal area and for sites having sidewalls, 3 feet laterally. (Note: The combined distance from the waste to the uppermost aquifer is 10 feet).
- A constructed or alternate liner, as approved by MDEQ. Constructed liners will be discussed in more detail in Section 4.1 of the curriculum.

3.1.2.8 Threatened or Endangered Species

New rubbish sites may not be located within an area that may affect:

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- A federally listed threatened or endangered (T&E) species, unless in compliance with all statutes, rules, and regulations within the jurisdiction of the United States Fish and Wildlife Service; or
 - A state-listed T&E species, unless in compliance with all statutes, rules, and regulations within the jurisdiction of the Mississippi Department of Wildlife, Fisheries, and Parks.

3.1.2.9 Historical and Archaeological Areas

A new rubbish site may not be located in such a manner as to significantly and adversely impact the cultural resources listed in, or eligible to be listed in, the National Register of Historic Places, unless the impact is appropriately mitigated.

3.1.2.10 Parks and Recreational Areas

A new rubbish site may not be located within 0.5 mile of any of the following areas, without the specific written consent of the person responsible for managing the area:

- A national-, state-, county-, or city-designated park; or
- An outdoor recreational area, such as a golf course or swimming pool, owned by a city, county, or other public agency.

The Permit Board, or the Board's designee, may establish a greater setback distance on a site-specific basis.

3.1.2.11 Forests, Wilderness Areas, Wildlife Management Areas, and Natural Areas

A new rubbish site may not be located within any of the following areas without specific written consent of the person responsible for managing the area:

- National forest lands, national wilderness areas, and national wildlife refuge areas, as designated by the appropriate federal agency; and
 - State wildlife management areas, state game management areas, and state natural areas, as designated by the Mississippi Department of Wildlife, Fisheries, and Parks.
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The Permit Board or the Board's designee may establish a setback distance on a site-specific basis.

3.1.2.12 Property Line Setbacks (Buffer Zones)

A new rubbish site must have at least a 200-foot setback distance between the edge of the actual disposal area and the property line. If there is adequate onsite screening, either natural or artificial, restricting the offsite view of the facility, the setback may be reduced to 150 feet. If a rubbish site was sited and authorized prior to the effective date (October 1993) of this regulatory setback distance, then the site would be expected to comply with the property setback distances in effect at the time the site was permitted or authorized.

3.1.2.13 Aesthetics and Visibility

A new rubbish site must be located such that the actual disposal area is at least 1,000 feet from the edge of the right-of-way of any interstate or primary highway, as designated by the Mississippi State Transportation Commission, except where the rubbish site is:

- Screened by natural objects, planting, fences, or other means so as not to be visible from the main-traveled highway system;
- Located within an area that is zoned for industrial use under authority of law;
- Located within an unzoned industrial area as determined by the Mississippi State Department of Transportation; or
- Not visible from the main-traveled highway system.

3.1.2.14 Local Government Regulations/Solid Waste Management Plans

A new rubbish site must be located such that, on the date the application is submitted, the site does not conflict with regulations or ordinances of local governments, and is consistent with the state-approved local or regional solid waste management plan.

3.1.2.15 Noise Factors

The proposed disposal area of a new rubbish site may not be located within 500 feet from a single-family home unless:

- The owner of the dwelling provides written consent to a smaller distance; or
- The applicant can demonstrate that the site will be located, configured, designed, constructed, and operated such that the noise level at the dwelling that is caused by normal operations is within set limits.

If MDEQ determines the noise levels at the neighboring dwelling occurring from the rubbish site's normal operations will be above the set limits, a setback distance greater than 500 feet may be required.

3.1.2.16 Other Criteria as Determined by the Permit Board

The Permit Board at its discretion may require that a rubbish site meet other restrictions or requirements in state regulations that may not normally be applicable but that may merit special consideration in specific circumstances. Siting criteria that may be applicable to MSW landfills or other types of solid waste facilities can potentially be applied to a rubbish site, particularly if members of the public raise valid concerns about the siting of the rubbish site in relation to one of these other criteria.

For example, there is currently no restriction applicable to the siting of a rubbish site in relation to public drinking water supplies. However, MDEQ would discourage the siting of rubbish disposal facilities in close proximity to such public drinking water supplies and could recommend that the Permit Board require a specific rubbish site be subject to these criteria if necessary. This restriction could prohibit a rubbish site from being located within a specified distance of a public water supply intake structure in a surface water body or of any existing public water supply well. There are also other criteria relative to seismic impact zones, fault areas, public structures and other local interests that could be applied to Class I rubbish sites as well if the Permit Board so directs.

3.2 Recordkeeping of Siting Compliance

Documentation of the compliance or non-applicability of the requirements of the siting criteria section must be retained by the owner at the facility or another approved site until otherwise directed by MDEQ. Documentation must also be made available to MDEQ upon request. Records of the siting criteria compliance for a site are not required to be retained longer than 5 years after the completion of closure/post-closure requirements.

4.0 DESIGN CRITERIA FOR CLASS I RUBBISH SITES

Class I rubbish disposal sites must be developed and constructed according to certain design criteria. These criteria include the bottom liner system, the final cover system, and the facility's storm water management system. A brief explanation of each of these criteria is below.

4.1 Liner System

The two liner system types below may be considered in the design of a Class I rubbish disposal site:

- a. Natural Liner: adequate naturally occurring geologic materials present immediately below the disposal area and on all sidewalls. Such materials shall generally consist of clays, silty clays, clayey silts, or other soils, which are of low permeability (less than 1×10^{-5} cm/sec). The permeability of a soil means the rate at which water (or other liquid) flows through a layer of soil. The thickness of these soils shall extend at least 5 ft below the bottom of the disposal area and at least 3 ft laterally.
- b. Constructed Liner: a constructed liner of re-compacted low-permeable soils or a synthetic liner as approved by MDEQ. The type of alternate liner approved would be dependent on various factors including the specific site geology and the depth to groundwater. A permit applicant that is interested in proposing an alternate liner system generally should conceptually propose and discuss such an alternate design with MDEQ technical staff before proceeding with substantive efforts to design the liner system.

In demonstrating the suitability of natural soil conditions to serve as a natural liner, the rubbish site owner must adequately characterize the underlying geologic conditions at the time a permit application is prepared and must show that the natural conditions will comply with the standards described in Section 3.2.1.7 of the curriculum. This geologic characterization would include conducting a number of soil borings at the site along with soil characterizations including soil permeability tests, grain size distribution analyses, natural moisture content of the soils and the dry unit weight for the liner interval. The number of soil borings conducted at sites will vary based on the proposed disposal acreage and the variation in site soil conditions. This site study should also include a characterization of water table conditions assessing groundwater depth and other conditions at the site.

In some cases, the geologic characterization indicates that only a portion of the site may have suitable natural soils to serve as a liner. This could require that the site liner system include a combination of the natural and constructed liner systems described above. The site may have a liner consisting of naturally occurring soils (as described in paragraph a) approved for those areas of the site where suitable soils exist and a constructed liner system (as described in paragraph b) approved for other areas of that same site where suitable soils do not naturally exist. The constructed liner may be a compacted clay liner, a geomembrane liner, or a geosynthetic clay liner (GCL).

Compacted clay liners are the most commonly constructed bottom liner system for rubbish sites where a natural liner system is not suitable. Compacted clay liners are typically constructed from onsite soils or from soils from a nearby borrow area if suitable soils are not available onsite. The design of the compacted clay liner will depend on the geological and geotechnical data obtained from the investigation performed onsite. Typical soil criteria for a compacted clay liner include:

- Classification of CL, CH, or SC;
- Have plasticity index (PI) greater than 10;
- Have greater than 80% passing the #4 sieve (sand size);
- Have greater than 30% passing the #200 sieve (silt size);
- Maximum clod size of 4 inches in diameter; and
- Meet permeability requirement of 1×10^{-5} cm/sec or less when compacted to a specific density.

If there are not sufficient clayey soils onsite and it is too expensive to haul clayey soils to the site for construction of a compacted clay liner, a synthetic liner may be proposed for use. Typical synthetic liners include a geomembrane liner or a GCL. The synthetic liners typically are much faster to install compared to the compacted soil liners.

The geomembrane liners can be either high-density polyethylene (HDPE) or polyvinyl chloride (PVC). The most common geomembrane liner is a 60-mil thick HDPE material. These

types of liner systems require specialty contractors. Typical design issues to consider for geomembrane liners include:

- Loading on liner due to weight of equipment, waste, and soil;
- Thickness of protective cover soil layer over liner;
- Slope stability issues;
- Uplift forces for exposed liner systems;
- Anchorage of the liner; and
- Pipe penetrations (if any).

A GCL is a synthetic liner manufactured with bentonite clay (very expansive clay) that is either glued to a material or is surrounded by fabric (geotextile). The liner material is very thin (about 4 mm thick) and is very easy to install. The liner performs similar to compacted soil liners due to the swelling of the bentonite clay when it becomes wet. Typical design considerations when using a GCL include:

- GCLs are not widely accepted by regulators;
- Compatibility with leachate and soils, which may increase the permeability of the liner;
- Thickness of protective cover soil layer over liner;
- Slope stability issues;
- Hydrated versus non-hydrated performance;
- Bering capacity when hydrated; and
- Pipe penetrations (if any).

In addition, another important criterion to be considered in the liner design for a Class I rubbish disposal facility is that the disposal area must be located such that the bottom of the liner system is at least 5 ft above the uppermost aquifer. Design details and drawings presented in the permit application for the site must disclose the planned depth of excavation. For sites that utilize a natural liner system, this design excavation must preserve the existing soils that are to be used

as the bottom liner and sidewall liner materials. For all rubbish sites, the design excavation must preserve the 5-ft soil buffer underlying the bottom of the liner system.

Additional details on the liner system will be discussed in Section 5.5, Cell Construction and CQA.

4.2 Final Cover System

The final cover system will be covered more in depth in the discussion on closure and post-closure care in Section 10. Generally the final cover system for a Class I rubbish disposal site must be designed such that the system is at least 2-foot thick and consists of the following layers:

- An *infiltration layer* comprised of 18 inches of earthen material that has a permeability less than or equal to the permeability of the bottom liner system or natural soils, but no greater than 1×10^{-5} cm/sec; and
- An *erosion layer* of 6 inches of earthen material that is capable of sustaining suitable vegetative growth that would prevent erosion of the final cover.

MDEQ may approve an alternate final cover system design if it can be demonstrated that the alternate system is as adequate in protecting the environment as the prescribed system.

The final cover system slopes shall be a maximum of 25% and a minimum of 4%, unless otherwise approved by MDEQ. Drawings of the final height of the rubbish site, the final grade and slopes of the facility, the final cover system, and any other important topographical features shall be submitted to MDEQ in the permit application. Also, depending on the overall height, MDEQ may require slope stability analysis of the proposal design.

4.3 Storm Water Management System

Due to the significant amount of continual earth-moving work and disturbance to the land, along with the variable types of rubbish wastes accepted for disposal, Class I rubbish disposal sites are required to design a storm water management system that adequately protects the environment. The system shall prevent run-on into the active portion of the landfill and shall collect or control runoff to prevent discharge of pollutants into waters of the state.

Typically, a storm water management system will consist of a series of earthen berms and storm water conveyances such as mid-slope swales, letdown structures, perimeter ditches, and detention pond(s). The berms are used to prevent storm water from running into active disposal areas or to contain storm water from running offsite. The swales, ditches, and letdowns are used to convey the collected storm water to a storage facility such as a pond. The pond collects storm water and allows any sediment to settle before it is discharged from the site.

4.3.1 Design of Storm Water Management System Components

The design of the storm water management system includes a hydrological analysis of the entire rubbish disposal site and the system components (ditches, culverts, swales, letdowns, and ponds). Typically, the components are sized based on an anticipated quantity of storm water for when the landfill is completely full, which represents the maximum flow situation.

The design should also consider changes to the system components as the rubbish site is developed and maintenance of the system components during the life of the rubbish site.

4.3.2 Storm Water Management System Components

4.3.2.1 Ditches

Typical storm water ditches include “V”-shaped or flat-bottom (trapezoidal) types. The type of ditch to be used at a rubbish site will depend on the design storm water flow. Typically, the trapezoidal ditch is used in areas of higher flow.

Depending on the anticipated flow and the erodibility of native soils at the site, the ditches can be grass-lined or hard-armored (riprap or concrete). The hard armoring of the ditch is necessary for higher flow velocities or if establishing a good stand of grass is too difficult.

4.3.2.2 Mid-Slope Swales

These ditches are installed on the completed final cover of a rubbish site and are used to convey storm water runoff to letdown structures. They are typically installed every 30 to 40 vertical feet of slope and help reduce flow velocities of the runoff by reducing the slope length, which minimizes erosion of the final cover soils.

The swales can be “tack-on” or bench/terrace type. The tack-on type is the more commonly used swale because it offers the advantage of increased air space and ease of post-settlement adjustment. They usually are designed to have a slope of 3% to 4 % to the letdowns.

4.3.2.3 Letdown Structures

These structures are also installed on the completed rubbish site’s slopes and convey collected storm water from the top of the site and mid-slope swales down to the perimeter ditches around the facility. Flow quantities and velocities are usually very high and therefore they typically are lined with hard or soft armoring (e.g., riprap, concrete, or permanent synthetic material). The outlet of the structures into the perimeter ditch or storm water pond may need an energy dissipation device to reduce erosion problems.

4.3.2.4 Ponds

Storm water collection ponds are used to collect the aggregate storm water runoff from the entire landfill area prior to its release from the site. The general purpose of the pond is to allow any sediment to settle out from the storm water. The design of the pond should include the ability to clean out the collected sediment on a regular basis. The pond should be large enough (length and width) to allow adequate time for the sediment to settle.

5.0 FACILITY PREPARATION

When a new solid waste management facility begins its operations, there are several basic facility components that need to be prepared or constructed prior to receiving solid wastes. These include facility access roads, the storm water drainage features and ponds, and of course the initial disposal area. Similarly, many facilities will need to install fencing or berms around the perimeter of the site to restrict access to the disposal area. Scale houses and/or administrative buildings and maintenance shops are also recommended, especially for larger operations, but may not be necessary or practical for small local government operations. Construction at a solid waste management facility is an ongoing process.

The following sections highlight important information about these common construction activities at the disposal site: storm water management, management of land-clearing debris, general facility components, abandonment of soil borings, and waste cell construction and construction quality assurance (CQA).

5.1 Storm Water Management

As described in Section 4.3, rubbish facilities must control run-on and runoff of storm water from the construction and disposal areas of the site. Prior to construction of a new disposal facility or the expansion of an existing facility, the operator or owner must acquire storm water permit coverage (NPDES) from MDEQ. The permit will allow the operator or contractor to perform earthwork activities in association with the construction of the landfill facility or a new disposal area.

Construction may begin after the construction storm water permit is issued by MDEQ. However, before removal of vegetation or beginning of earthwork operations, the erosion control devices (i.e., silt fences, hay bales, check dams, sedimentation traps, etc.) as identified in the approved SWPPP should be installed.

The responsible party, as identified in the SWPPP, must make periodic inspections of these best management practices (BMPs) in accordance with the permit. The inspections are recorded on a form from the SWPPP and kept on file throughout the duration of the project. Copies of the

storm water permit and SWPPP must be kept onsite in an accessible location for an MDEQ inspector during the project.

5.2 Management of Land-Clearing Debris

After the storm water BMPs are installed, land-clearing operations may begin. The types of equipment used for this process will depend on the size and type of the vegetation to be cleared. Generally, clearing and grubbing of a construction area is conducted by dozer, which pushes the material into manageable piles. Sometimes the dozer has a rake at the back to help with the grubbing process.

The piles of cleared vegetation are typically allowed to dry on-site over a period of time and then may be burned at the site if allowed by local officials and the conditions MDEQ air emissions control regulations. The site owner and developer should pay attention to local fire restrictions or prohibitions and should seek local approval where appropriate. In addition, it is important to note that MDEQ Air Emissions Regulations require the following setback distances for open burning of land-clearing debris:

1. Open burning without a forced- air system must not occur within 500 yards of an occupied dwelling;
2. Open burning using a forced-air system on all fires to improve the combustion rate may be conducted within 500 yards of an occupied dwelling but not within 50 yards of an occupied dwelling; and
3. Burning must not occur within 500 yards of a commercial airport property, private air fields, or marked-off airway approach corridors, unless written approval to conduct the burning is secured from the proper airport authority, owner, or operator.

Any remaining residual materials then must be disposed in a permitted disposal facility (either on or offsite). Where open burning is not an option or is not desirable, the cleared vegetation could be placed in the completed disposal area, or mulched or otherwise reduced and used for landscaping purposes or sent to a composting facility or to an industrial boiler system. Harvestable timber may also be removed and sold for processing. Topsoil that is excavated or removed during site preparation is typically stockpiled onsite for use in the landfill facility construction or for landfill cover during operation.

5.3 Other Facility Components

New disposal facilities will need to construct all-weather access roads, storm water control facilities (ditches and ponds), and perimeter fencing or similar barriers to restrict access to the disposal area. Although optional, an administrative building/scale house and a maintenance shop is recommended, especially for larger commercial operations. Some rubbish disposal facilities also may install truck weight scales at the site to facilitate collection of the proper weight of the waste. Currently, the installation of truck weight scales at Class I rubbish sites in Mississippi is optional.

Typically, the all-weather access roads are constructed from the facility entrance to the active disposal area. The roads may be surfaced with asphalt or compacted gravel and should be capable of supporting traffic during inclement weather conditions. The road is usually 20 feet or more wide and has a drainage ditch on either side to convey storm water to the facility storm water pond.

The size of the scale house and maintenance shop buildings will depend on the needs of the facility and should provide file storage for the facility records, sanitary facilities for the employees, and first aid or emergency equipment. The facility owner should also consider whether shelter should be provided for employees during inclement weather conditions.

As the footprint of the facility expands, additional roads, storm water conveyances, and storm water retention ponds may need to be installed to meet the needs of the site.

5.4 Proper Abandonment of Soil Borings

Prior to disposal of any solid waste, all borings used in the determination of onsite soil conditions for the permit application that will not be used for groundwater monitoring or water supply wells must be properly abandoned and closed in accordance with the requirements of the Office of Land and Water Resources of MDEQ.

5.5 Cell Construction and Construction Quality Assurance

New waste disposal cells should be constructed in accordance with the approved permit application and construction plans for the rubbish disposal site within the permitted disposal area. The construction plans will show the layout of the disposal site, including proposed boundaries,

the excavated depth of the cells, the proposed grade of the bottom and side slopes of the waste cells as well as other design features of the facility. Construction activity will vary based on the approved design and site-specific characteristics of the rubbish site. A rubbish site with an approved design that includes little excavation and that is located at a site with soil conditions suitable for a natural liner may not have substantial earth work to prepare the site for disposal. However, other sites may have a design that proposes to excavate disposal cells to a certain level, to construct side wall liner systems, or to construct all or part of a bottom liner system.

Depending upon the level and type of cell construction activity at a site, the construction of a new waste disposal area may be conducted by a contractor hired by the facility owner or by qualified facility personnel. For a rubbish site that has an approved natural liner design, MDEQ recommends that cell excavation activities be monitored and documented by a project engineer or CQA consultant. This monitoring is needed to ensure that the site excavation activity is conducted in a manner that is consistent with the approved site design. Excavation activities at the disposal cell that exceed the approved design limits would be considered a violation of the solid waste management permit.

Where all or part of the liner must be constructed, CQA certification of the construction of the liner components by an independent licensed professional engineer is required by state regulations. The CQA consultant will monitor the excavation depth of the disposal cell and the construction of bottom or sidewall liner system components, conduct tests (field and laboratory) on the constructed liner components for conformance with the construction documents, survey the bottom liner for verification of grades and depth, and prepare a summary report for submittal to MDEQ detailing the construction activities. The summary report must be submitted to MDEQ at least two weeks prior to the start of disposal activities at the site.

5.5.1 Cell Preparation

The first step of construction of the new disposal area is to stake out the limits of the work and any additional facility features to be constructed (i.e., storm water ditches, ponds, roads, etc.). This can be done by qualified onsite facility personnel or by a contracted surveyor. State

regulations also require that markers be installed at the site on the corners of the total disposal area. The markers must meet the following requirements:

- The markers must be permanent and constructed of concrete posts, metal posts, or weather-resistant wood and should be at minimum of 2 inches in diameter (except for metal posts);
- The markers must be a minimum of 3 ft above grade;
- The markers should be installed in the ground at a sufficient depth to facilitate permanence;
- The markers should be placed prior to the disposal of waste in the cell;
- The markers should be certified by a licensed land surveyor; and
- Any markers damaged during site operations must be promptly repaired and re-established by the owner.

It is important that the site disposal area markers be distinct from other site markers that may mark property lines or other site features.

The next step is to excavate the overburden soils from the new disposal area. The excavated soils typically are stockpiled for use as cover soils, general fill material for facility construction, or for potential liner or cap soils. Sometimes, disposal facilities gradually excavate the next waste disposal area for cover soils as the active disposal area is being filled. This reduces the need to hire an earthwork contractor to excavate a large volume of soils each time a new disposal area is needed. Caution should be exercised in removing these soils from future disposal cells to ensure that the area is not excavated below the permitted liner elevation.

5.5.2 Natural/In Situ Liner Systems

Once the new waste area is excavated to the proposed depth and grades, it should be surveyed to verify its conformance with the approved construction documents. If the approved site design includes a natural bottom liner system that meets or exceeds MDEQ requirements, normally additional liner characterization studies are not required at the time of construction. The original liner characterization in the permit application should have demonstrated natural soil liner conditions. However, there are instances where the geologic conditions at a site are marginal and the approved design may require that additional soil testing and characterization must be done

prior to disposal of wastes in the disposal cell. This additional characterization of the natural liner system will be included as a condition of the facility permit and will describe the actions necessary. Once the cell has been properly excavated and prepared, other facility components (e.g., roads, ditches, ponds) can be constructed.

5.5.3 Constructed Liner Systems

For some rubbish sites, the approved site design includes a constructed bottom liner system or sidewall liner system or a combination of constructed and natural liner systems. The type of constructed liner system (required thickness, permeability standard, etc.) will depend on the onsite geology and the availability of suitable soils for a constructed liner system. For instance, in some locations it may be less expensive to install a synthetic liner system instead of hauling clayey soils to the site. For either option, the bottom of the waste disposal cell is excavated to the proposed subgrade elevations, tested for density and moisture (typically conducted with a nuclear densitometer), and then surveyed for verification of grades and depth. When the subgrade is properly constructed and surveyed, the re-compacted clay liner system is constructed in the bottom and on the side walls of the disposal cell.

Constructed soil bottom liner systems as well as side wall liner components are typically 2-ft thick. The liner system is constructed in four 6-inch lifts, for a total of 24 inches thick, using clayey or low permeability soils. The general construction sequence for compacted clay liners is:

1. Haul, spread, and compact clayey soils across the bottom and side slopes of the disposal cell.
2. Test compacted soils for density and moisture using a nuclear densiometer. Tests are done at a specified rate, usually one test for every 10,000 ft² (100-ft spacing).
3. Adjust moisture of soils depending if they are too wet or too dry. If soil is too wet, it must be aerated using a tractor disc before it is compacted. If the soil is too dry, water is spread across the soils and blended using the tractor disc before it is compacted.
4. After a lift meets the density and moisture requirements, a sample of the completed lift is taken using a Shelby tube sampler. The samples are typically taken at the frequency of one per acre.

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5. If permeability samples meet the project specifications, then the next lift is installed, and the sequence repeats until the entire liner is completed.
 6. A detailed CQA report is prepared by the certifying engineer and submitted to MDEQ for approval prior to the disposal cell being used for waste disposal activities.

A synthetic bottom liner may be approved to be used in place of a natural or constructed soil liner. These types of liners include HDPE and GCLs. Typically synthetic liner systems are installed when onsite soils are inadequate to meet the regulatory requirements and the cost to haul in suitable soils is too expensive. The synthetic liners usually are more expensive to install compared to a soil liner. The HDPE liners will require specialty contractors for installation, but the GCLs can be installed by most earthwork or general contractors.

For synthetic liner installations, the general construction sequence is as follows:

1. Verify that the subgrade meets the project specifications and is surveyed for verification purposes.
2. The synthetic liner is then rolled out across the bottom of the cell and then seamed together using specialty fusion equipment for HDPE liners or bentonite granules for GCLs.
3. After the liner system is tested and approved, through field and laboratory testing, it is covered with a minimum of 2 ft of soil to prevent damage to the underlying liner. The soil used usually is a higher permeable material to facilitate flow of stormwater above the liner.
4. A final verification survey is conducted.
5. A detailed CQA report is prepared by the certifying engineer and submitted to MDEQ for approval prior to the disposal cell being used for waste disposal activities.

6.0 ALLOWABLE AND SPECIAL WASTES FOR RUBBISH SITES

6.1 Allowable Wastes and Exclusion of Unauthorized Wastes

Rubbish site personnel must be trained to recognize acceptable wastes and to be familiar with procedures to prevent disposal of unauthorized wastes. Loads should be visually inspected by a designated operator (or spotter) for the presence of unauthorized wastes. These waste screening practices are discussed in greater detail in Section 7.2. State regulations include a listing of allowable Class I rubbish wastes and unauthorized wastes. It should be noted that neither listing is all-inclusive, but the lists were developed to include the most common types of allowable rubbish and most commonly encountered unauthorized wastes.

Allowable Class I rubbish wastes include:

- Construction and demolition debris such as wood, metal, etc.;
- Brick, mortar, concrete, stone, asphalt;
- Cardboard boxes;
- Natural vegetation, such as tree limbs, stumps, and leaves;
- Appliances (other than refrigerators and air conditioners) for which motors have been removed;
- Furniture;
- Plastic, glass, crockery, and metal, except containers;
- Sawdust, wood shavings, and wood chips; and
- Other similar wastes as approved by MDEQ.

Unauthorized wastes include but are not limited to the following:

- Any acceptable waste that has been contaminated by a pollutant such as a food or chemical, unless it can be demonstrated to MDEQ that such waste has no adverse effect on the environment;
- MSW (household garbage and other food and drink wastes);
- Liquids, sludges, and contaminated soils;
- Paint, paint buckets, oil containers, and chemical containers;

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- Engines, motors, whole tires, and all types of batteries;
 - Toxic or hazardous wastes;
 - Regulated asbestos and asbestos containing material originating from a facility, as defined by NESHAP (40 CFR 61, Subpart M);
 - Medical waste; and
 - Bulk fabric or paper loads, refrigerators, air conditioners, cut or shredded tires, and any metal, glass, plastic, or paper container, unless approved by MDEQ.

Other wastes comparable to the rubbish waste described above may be allowed for disposal at a Class I rubbish site on a case-by-case basis with the approval by MDEQ. The owner or operator must submit information on the waste (analytical data, MSDS sheets, physical characteristics, etc.) to MDEQ in advance of receiving the wastes. MDEQ will evaluate the potential for the waste to leach into the environment, to cause public nuisances or to create compliance issues for the rubbish site and will provide a decision to the facility as to whether or not the waste may be disposed at the rubbish site.

6.2 Special Waste Considerations

Rubbish site operators should be aware that there are certain *special wastes* generated by various local projects or waste collection practices which may require special handling conditions or which may be prohibited from disposal at Class I rubbish sites. For those wastes that are related to construction or demolition type projects, MDEQ has developed an “Architectural Debris Guidance” document, which discusses some of the wastes in more detail. However, the following summaries provide some basic information regarding how some of the more common special wastes should be managed.

1. *Asbestos-containing materials (ACM)* may only be received for disposal at a Class I rubbish site if the material is originating from the construction, demolition, or renovation of a single residential structure consisting of four or less dwelling units. ACM originating from other sources, such as commercial structures or projects involving multiple residential structures, may *not* be accepted for disposal and should be directed to the nearest MSW landfill. It is recommended that, if an ACM from a single residential structure is received, these wastes should be placed at the toe of the active disposal area and covered by the end of the working day with

a suitable amount of soil or other waste materials. Direct compaction of ACM should be avoided.

2. Rubbish wastes coated with ***lead-based paint (LBP)*** may be accepted for disposal at Class I rubbish sites if the material is originating from the demolition of an entire structure. However, LBP “abatement wastes” (for example paint chips, dust, or other contaminated materials resulting from the actual removal of LBP from the structure) may not be accepted at a Class I rubbish site. Typically, LBP abatement wastes must be characterized through chemical analysis and must be disposed at either an MSW landfill or hazardous waste disposal facility based on the analytical results.
3. ***Gypsum wallboard***, also commonly known as sheet rock, drywall, gypsum board, or simply wallboard, is another building material which may be disposed at Class I rubbish sites but may require special disposal conditions. Wallboard is the principal interior wall material used in the United States in new construction and renovation. The disposal of gypsum wallboard can sometimes cause nuisance conditions at the rubbish site. Specifically, when exposed to rain and warm weather or other putrefying landfill conditions, bacteria can begin to convert the gypsum-containing materials into hydrogen sulfide gas, which is characterized by an offensive (rotten egg-like) odor. Therefore, MDEQ requests that rubbish sites that receive large quantities of wallboard or sheetrock place earthen cover as soon as possible over the wallboard wastes to prevent or minimize potential odor problems.
4. ***Fluorescent light bulbs*** should not be disposed of in Class I rubbish sites due to the potential mercury content. Bulbs should typically be managed through EPA’s Universal Waste Program or other programs that encourage generators of these wastes to recycle the bulbs in lieu of disposal. However, individual homeowners may currently dispose of fluorescent bulbs through normal MSW collection for disposal at an MSW landfill.
5. ***Small polychlorinated biphenyl (PCB) capacitors and fluorescent light ballasts*** should not be disposed of in Class I rubbish sites, even if the capacitor or ballast is certified not to contain PCBs. These materials may be disposed of at MSW landfills in small quantities provided the PCB concentration is below hazardous wastes limits and the devices are intact.
6. Typical quantities of ***treated lumber*** (chromated copper arsenate [CCA], creosote, pentachlorophenol [PCP], creosote, etc.) originating from residential homes or other small structures and projects may be accepted for disposal at Class I rubbish sites. Where large volumes of treated materials are involved (for instance, demolition of a commercial piers or a larger number of railroad ties), it is recommended that the materials be directed to an MSW landfill. Treated wood products that are newly manufactured or are off-spec are not suitable for Class I rubbish disposal and MDEQ should be contacted for additional guidance.

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7. **Whole waste tires** may not be disposed of in Class I rubbish sites or other landfills. However, processed waste tires and processed waste tire materials may be disposed provided the rubbish site requests and receives written approval from MDEQ to accept such material. To receive such consideration, the waste tires must be minimally processed into four equal pieces across the tread, into two equal pieces cut parallel with the tread, or chopped/shred into multiple pieces prior to disposal. Additionally, a rubbish disposal facility may not store over 100 whole waste tires without receiving written authorization from MDEQ to operate a waste tire collection site.
 8. **Electronic wastes** such as computers and computer components, televisions, VCR and DVD players, audio-stereo equipment, copiers, telephones and cell phones and other equipment should not be accepted for disposal at Class I rubbish sites. This equipment can contain heavy metals such as lead, mercury, and hexavalent chromium. Waste loads containing these wastes should be refused for disposal or the electronic items must be removed prior to disposal. MDEQ encourages where possible that these items be stored for recycling purposes in a manner that protects the recycling value of the materials.

7.0 STANDARD OPERATING REQUIREMENTS FOR RUBBISH SITES

This section describes some of the basic operating requirements for rubbish sites. Some of these requirements are similar to other classifications of landfills; while other requirements are specific to Class I rubbish disposal sites.

7.1 Equipment and Maintenance Issues

The types of equipment that are used at a rubbish disposal facility are similar for both small and large sites; however the quantity and perhaps the size of the equipment may vary dependent on the incoming waste volume and waste types at the facility. In general, the functions of the equipment are:

- Waste movement and compaction,
- Earth movement and compaction, and
- General support functions.

The waste handling equipment includes dozers and compactors. For smaller facilities, a large dozer may suffice for both the spreading and compacting. For larger facilities, dozers may be used to spread the waste while large specialty compactors are used to break-up and compact the waste material.

The types of earth moving equipment are dependent on a facility's needs and the operator's preferences. The types of equipment include dozers, backhoes, track hoes, dump trucks, tractors with pans, and graders. The equipment is used for a variety of functions including excavating soil, hauling soil, spreading and compacting soil for cover, road building and maintenance, and building and maintaining storm water control features and facilities.

General support equipment includes tractors with bush hogging equipment for cutting grass and other vegetation, pumps for pumping storm water, and general maintenance equipment for maintaining the larger equipment.

Facilities must have the necessary amount of equipment onsite to fulfill the daily operations. The equipment can be purchased, leased, or rented depending on the overall needs of

the facility. The decision to purchase or lease is typically a financial decision. Some facilities purchase used equipment instead of new. While this reduces the capital investment, it may increase maintenance costs over the remaining life of the equipment.

Disposal facilities should employ a sufficient number of equipment operators, spotters, and other personnel to support the daily operations of the site. Operators at the smaller facilities may have to be able to operate all types of site equipment, while the larger facilities may have operators trained for only a specific type of equipment. Facilities should be certain that operators are well trained in the safety requirements of each type of equipment onsite.

Maintenance of the equipment is important for the efficiency and overall safety of the equipment. Facilities should have a maintenance schedule for each piece of equipment at the site. Typically, the equipment manufacturer can supply a recommended maintenance schedule. Failure to maintain the equipment at the required frequency may damage the equipment and increase the equipment maintenance costs and decrease the operating life of the equipment.

7.2 Visual Inspection of Loads

It is the responsibility of the rubbish site operator to ensure that incoming waste loads are adequately screened to prevent the placement and disposal of unauthorized wastes at the rubbish site. Waste screening is an important part of the rubbish site operations and should include the following practices:

1. The rubbish site is required to have a designated, *trained* spotter or spotters to visually inspect each load entering the facility to ensure that any unauthorized wastes are removed from the load where possible. The rubbish site should have a proper number of spotters at the site to adequately screen incoming loads. This number will vary from site to site based on the amount of incoming waste traffic to the site.
2. State regulations require that incoming waste loads with a significant amount of unauthorized wastes be refused disposal at the facility.
3. State regulations require that incidental amounts of unauthorized wastes that are identified after unloading should be removed from the working face and disposed at an authorized disposal facility.
4. Incoming waste loads with bagged wastes (yard wastes, leaves, etc.) should include random inspections of individual bags for unauthorized wastes.

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5. It is recommended that waste screening practices begin with customer education and awareness. Waste screening is most effective when conducted at the point of generation rather than at the disposal site.
 6. It is recommended that rubbish sites maintain an onsite dumpster or other appropriately sized container for placement of garbage and other unauthorized wastes. The dumpster should be removed on a routine basis and its contents disposed at an MSW landfill or other appropriate facility.
 7. It is recommended that rubbish sites have a sign posted at the entrance or along the access road that describes acceptable rubbish and prohibited wastes.

7.3 Waste Placement and Compaction

Waste placement and compaction will vary from site to site. The methods for disposal, spreading, and compaction of the waste will depend on the types, quantities, and frequency of waste disposed at the site. There are, however, some general procedures that are common to all sites and the following sections review those procedures with respect to Class I rubbish sites.

Facilities that properly manage their working face, the compaction of the wastes, the lift thickness, sloping and contouring of the waste, and covering the waste tend to reduce operational and compliance problems and increase the return on the investment for the continued development of the facility.

7.3.1 Working Face Limits

Operators should maintain the smallest practical area or working face for active disposal operations. The size of the working face area will depend on the inflow of wastes to the facility, the types of equipment used at the facility, and the size and topography of the constructed disposal cell. Maintaining the smallest practical area allows easier operation by reducing the amount of waste exposed to storm water contact, wind, vectors, and fire hazards.

There are several factors that influence the determining the appropriate size of the working area for your specific facility. These factors to include in the determination are:

- Daily disposal volume of wastes,
- Types of wastes,
- Quantity and types of disposal vehicles,

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- The quantity and types of operating equipment used at the working face,
 - An appropriate lift thickness for your equipment to achieve proper compaction,
 - Site access and egress conditions, and
 - Site topography.

For instance, if the facility receives less than 10 loads of rubbish a day from small haulers, totaling 50 cubic yards per day, then an appropriate active disposal area would be about 50 feet by 50 feet wide and about 5 feet deep. This area would allow about 470 cubic yards of waste and would allow the operator to work in the area for a total of 2 weeks before it must be covered with soil. But if the facility receives loads all day long, and has times when multiple vehicles are dumping, then the area should be widened for safety purposes.

In either case, the size of the working face should be developed such that the area does not fill too quickly causing the compaction equipment to be unable to achieve proper compaction. If a facility uses a dozer for compaction, then the area should be large enough to allow a typical daily load to fill up between 6 inches to 1 foot. That way, the facility will be able to compact the material enough before the next day's waste load. Depending on the types of waste, a large compactor may be able to exert enough compaction on lifts of waste between 1- to 2-foot thick.

Some facilities change their working faces daily while others will maintain the same area for several weeks. The size, shape, thickness, and duration of the working face are very site specific. However the site operator chooses to manage the working face, it should be done in such a manner to minimize compliance problems for the facility.

7.3.2 Compaction Requirements

Proper compaction of the waste is critical for the long term operation of the disposal facility. The selection of the compaction equipment, the frequency of compaction equipment over the waste, and the depth of waste (lift thickness) depends on the types and quantities of wastes disposed at the facility. Some smaller facilities use large to medium-sized dozers for their compaction equipment, while larger facilities will use specialty compaction equipment to achieve the required compaction of waste.

The density of rubbish waste as it is delivered to the disposal facility will depend on the type of delivery vehicle as well as the type of rubbish. For example, compaction trucks or transfer trailers may be able to achieve a density as high as 1,000 pounds per cubic yard (pcy), while small haulers, pickups, and trailer loads may have as low as 500 pcy.

Once the waste is disposed in the active disposal area, the operator inspects the load to ensure it contains allowable wastes and removes any unauthorized wastes. The operator then spreads and compacts the wastes across the working face. The more passes of the compaction equipment, the higher the compaction of the waste in place. Improving compaction is important for several reasons: it helps conserve disposal volume, it promotes proper storm water runoff, and it helps prevent fires (with fewer voids there is less oxygen in the waste that could fuel a potential fire). Ultimately, a facility should attempt to achieve approximately 800 to 1,000 pcy for compacted in-place density with dozers and about 1,000 to 1,500 pcy with larger compaction equipment.

The frequency and the number of passes by the compaction equipment will depend on the types and the thickness of the waste in the working face. The next section discusses how to determine a proper lift thickness.

7.3.3 Lift Thickness

The term “*lift*” is used to describe the thickness of the waste in a given area. *Lift* can refer to the thickness of the waste within the active and uncovered disposal area (sometimes known as the *working lift*) and it can also refer to the overall thickness of waste across the breadth of a disposal cell (sometimes known as the *overall lift*).

Determining the lift thickness for the active disposal area depends on many factors including:

- Daily volume of waste,
- Types of waste,
- Types of compaction equipment,
- Frequency of compaction of waste, and
- Slope of the working face.

The *working* and *overall lift* thickness will be site-specific, and it may change over time. Lift thickness is an important factor in operation of a rubbish disposal site. The thicker the lift, the less soil is used for cover, which maximizes the disposal volume of the facility and saves in the cost of operation. Many facilities fall prey to wanting to spread the waste out in thin layers (less than 1 ft thick) and then cover this lift with 6 inches of soil. In such a case, the operator has used 33% of his disposal volume for soil cover. Considering the cost for permitting, constructing, and operating a disposal facility, minimizing the amount of soil placed in the rubbish site maximizes the amount of volume used for waste. The thicker the lift of waste, the more space is used for waste instead of soil.

Most equipment manufacturers can provide information on the compaction effort applied by a specific type of equipment and how frequently the compaction equipment should pass the waste to achieve the desired compaction.

How frequently compaction equipment is applied to the working face will also determine the depth of the waste (*working lift* thickness). For instance, some facilities can only spread and compact the waste at the end of each working day, while others have operators and equipment continuously working active disposal area.

Facilities that use dozers for compaction should probably keep the daily *working lift* thickness to less than 1 foot before it is compacted, while facilities with larger compaction equipment could allow the *working lift* to be thick as 2 feet before compaction. However, operators should try to achieve an *overall lift* thickness in the range of 5 to 10 feet before soil cover is required.

7.3.4 Slope and Contouring

Proper sloping and contouring of the disposal area is also important to maximize the amount of air space used for disposal of wastes. For instance, where the working face slope is too steep to properly spread the waste, the amount of compaction effort applied to the waste will be reduced. Conversely, too shallow of a slope will encourage ponding of water in the active disposal area.

The best practical slope for a disposal area will depend on the type of compaction equipment being used. If dozers are used for compaction, then the slope should generally be less than 10%. If large compaction equipment is used, the slopes can be increased to up to a maximum 25%. A minimum of 4% to 5% should be used for the working face to allow for proper drainage of the disposal area.

It is important to remember, as the slope increases, the number of passes over the waste to achieve proper compaction should also increase. Otherwise, the waste will not meet the minimum requirements of compaction.

7.3.5 Cover Requirements

State regulations require that a cover of 6 inches of earthen material be placed over the active disposal area at least once every 2 weeks. It should be noted that this is a *minimum* cover frequency. The site operator should apply an earthen cover to the working face as often as necessary to maintain compliance at the site. In addition, in some instances, the frequency of the cover may be increased on a site-specific basis by MDEQ depending upon operational and siting issues at the facility. This increased cover frequency is usually included as a condition of the facility's solid waste management permit. Placement of earthen cover is an important practice to the operations of a rubbish site. A periodic earthen cover helps with a variety of operating conditions at the rubbish site including the following conditions:

- Prevents and controls windblown and scattered litter from the working face;
- Prevents continual rainwater contact with wastes and inhibits the potential for contaminants to be discharged in the storm water runoff;
- Prevents fire and helps to serve as a fire break within the rubbish site;
- Inhibits the migration of odors and gases from the decay of those organic components in the rubbish; and
- Assists in maintaining proper interior slopes and contours of the working face of the rubbish site.

MDEQ recommends that a rubbish site operator keep written documentation of the application of earthen cover at the site. In addition, MDEQ also recommends that the site operator

maintain a source or stockpile of cover soil readily available for use during inclement weather conditions, equipment failure, absence of site personnel, and other necessary occasions.

Alternative periodic cover materials may only be used at a rubbish site after such cover materials have been presented to and approved by MDEQ. Such alternate materials must be comparable to an earthen cover and must provide a comparable level of performance.

If a disposal area is completed, then the final cover should be installed within 30 days. If an area has not or will not receive waste in more than 12 months, then the area should also receive a final cover. The final cover system will be covered detail in Section 10.0 of the curriculum.

7.4 Storm Water Management Issues

Class I rubbish sites are required to manage storm water run-on and run-off to prevent ponding of water in and over areas of waste disposal. Management of storm water is a critical component to keeping the rubbish site in compliance with its permit. Mismanagement of storm water run-on and run-off from the rubbish site could cause the operator to be in violation of the facility's NPDES permit. This section presents the methods for management of storm water and the types of structures and facilities best to use for rubbish sites.

The facilities typically found at a disposal site for storm water management include ditches, diversion berms, storm water letdowns, mid-slope swales, culverts, and ponds.

7.4.1 Storm Water Run-On

It is critical that the site operator work to minimize the amount of storm water that must be managed through the facilities storm water collection pond(s) and ultimately, the permitted outfall. This is typically achieved by the use of diversion berms and/or ditches installed upgradient of the active landfill operations to direct the flow around and away from the landfill activities.

Diversion berms are also used around the active area to minimize run-on into the waste area. The berms typically are only a couple of feet high and are installed to direct storm water away from the active disposal area.

7.4.2 Storm Water Runoff

Proper management of storm water runoff is imperative for a rubbish site to meet its NPDES permit requirements. All runoff from areas affected by the rubbish site operations must be collected and discharged through the permitted outfall(s) for the facility. Typical runoff facilities include a perimeter ditch around the rubbish site, mid-slope swales and storm water letdowns on the cover system, and storm water pond(s) to allow sediments to settle before discharge from the site. The size and shape of the storm water facilities will depend on the estimated design peak flow from the site.

7.4.3 Erosion Control Measures

Because exposed earthen fill is subject to erosion, temporary and permanent erosion control measures are needed to mitigate the potential for severe erosion and are part of the active maintenance program at the rubbish site.

Temporary erosion control measures are used as necessary to reduce erosion of exposed slopes on waste disposal areas, berms, or stockpiles. Temporary erosion control measures include the following (use will depend on the time of year and the length of time it is anticipated that the soil will remain exposed):

1. Seeding,
2. Tracking slopes perpendicular to the fall line,
3. Covering with mulch,
4. Grass mats,
5. Sediment barriers, and
6. Diversion ditches and storm water letdowns.

Tracking of slopes (bulldozer tracks made perpendicular to the fall line of the slope) is completed as soon as the slope is finished, regardless of the time of year. Mulching of exposed slopes is done during wet weather conditions when seeding is not possible. Diversion ditches and slope drains should be constructed as necessary to prevent surface water flow from eroding

exposed and covered slopes as well as preventing runoff generated on surrounding land from running into the active areas of the rubbish site.

Sediment barriers include hay bales and silt fencing. These barriers require no real engineering design and are placed as needed during operations. They are most frequently placed below disturbed slopes to prevent silt in overland flow from reaching channels or ditches. They are also placed in the drainage channels of the active areas of the site. Sediment shall be removed to keep channels open and the soil replaced at the source as required.

Permanent erosion control measures include seeding, lined (grass, rock, or synthetic) ditches, and rock check dams.

7.4.4 Maintenance of Storm Water Management System

It is very important that the storm water management system at the site is maintained so that it may function properly during a storm event. The following maintenance is recommended, especially after large storm events:

1. Keep all ditches and swales unobstructed;
2. Remove sediment from ditches, swales, sediment basins, and sediment barriers routinely. Sediment controls are most effective when sediment is removed regularly;
3. Inspect and clean check dams and other structures of sediment and other materials that may restrict flow;
4. Periodically inspect the storm water system for damage and repair immediately; and
5. Inspect and clean the storm water system following a major storm event.

7.5 General Site Maintenance

There are some typical site maintenance operations that most rubbish sites must perform. The operations will vary depending on the size of the facility and the facility components. These operations include:

1. Management of windblown litter;
2. Maintenance of facility access roads;

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3. Maintenance of landfill final cover system;
 4. Maintenance of facility buildings; and
 5. Maintenance of facility security system.

7.5.1 Management of Windblown Litter

Rubbish materials must be managed so that the waste does not become windblown or attract vectors. This may be accomplished by using litter fences around the active disposal area, the application of intermediate cover soils, and routine collection of windblown wastes around the rubbish site. Litter must be collected, at a minimum, at the end of each operating day and properly disposed. It is also recommended that rubbish site owners also conduct routine litter collection along the access road to the site and where appropriate on public access roads to collect litter from incoming waste vehicles.

7.5.2 Maintenance of Facility Access Roads

Rubbish sites are required to have all-weather access roads to the active disposal area of the landfill. These roads must be wide enough (at least 20 feet wide) and adequately maintained to provide safe access to the disposal area for both the facility employees and the general public. The roads should be constructed and maintained to prevent rutting and pumping of the underlying soils. Sites should keep an adequate supply of gravel material onsite for road maintenance.

7.5.3 Maintenance of Landfill Final Cover System

If a rubbish disposal facility has portions of the landfill that has final cover installed, the operator should incorporate a general inspection program to ensure that the cover system remains intact. Recommended activities for the inspection program include:

1. Inspect the cover system monthly and after large (0.5-inch or more) rain events;
 2. Inspect storm water drainage devices (mid-slope swales and letdowns) and repair as necessary;
 3. Repair bare areas, rills, and gullies;
 4. Seed areas with poor vegetative cover in the spring and fall; and
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5. Cut grass at least twice per year to promote a thicker stand of grass.

7.5.4 Maintenance of Facility Buildings

If a rubbish site has buildings onsite, it is recommended that the operator develop a routine maintenance program for them. The program should include a scheduled inspection of the buildings to determine if there are any safety issues or general maintenance requirements that need to be addressed. Safety issues should be addressed promptly to reduce the potential for accidents.

7.5.5 Maintenance of Site Security System

Rubbish sites should develop a routine maintenance program of their site security system. The system should be inspected on a routine basis (monthly or quarterly) and repair areas that have been damaged or breached. If security breaches persist, the operator should consider improving the security system to prevent future access to the site.

7.6 Safety Issues

The rubbish disposal site should be maintained in such a manner as to continually provide a safe place to work. This can be accomplished only by consistently thinking and promoting safety first. The rubbish operator should analyze the site job duties, work areas, and procedures from a safety standpoint, and learn to recognize potentially hazardous actions or conditions. When a hazard has been recognized, immediate steps should be taken to eliminate it by corrective action. If corrective action is not possible, guard against the hazard by proper use of warning signs and devices, and by the establishment and maintenance of safety procedures.

The safety hazards associated with rubbish facility operations are many and varied. Accidents may be prevented by using good common sense, applying a few basic rules, and particularly by becoming knowledgeable of the hazards peculiar to a job.

7.6.1 Reporting and Investigation of Accidents and Illnesses

Accidents should be reported promptly to the employee's immediate supervisor for evaluation and/or investigation. Immediate reporting is mandatory, not only to comply with

applicable laws and regulations, but also to ensure that steps are taken to correct the conditions that contributed to the accident. Because every accident includes a sequence of contributing factors, it is possible to avoid a repeat of the first event by recognizing and eliminating these factors. The removal of just a single factor could prevent a recurrence.

7.6.2 Potential Hazards

Solid waste personnel work in all types of weather, with many different types of heavy equipment, and with a variety of materials presenting diverse hazards. For this reason, safety equipment must be used and maintained in a sanitary and reliable condition. Personal protective equipment (for eyes, face, head, hearing, and extremities), protective clothing, respiratory devices, and other protective equipment must be worn whenever hazards of processes or environment are capable of causing injury.

First-aid kits should be accessible to all employees. Safety showers, eye washes, and fire-retardant blankets may also need to be onsite for use in the event of exposure to injurious materials.

7.6.3 Hazard Abatement Procedures

The following procedures, guidelines, and recommendations represent standards in the landfill industry presently in use to mitigate or eliminate the various safety and health hazards that may exist at your rubbish facility.

7.6.4 Traffic Control

To prevent unnecessary traffic in and around the working face, customers should be directed to dump waste only in designated areas. Sometimes, depending on the amount of traffic, separate residential dumping areas are created to prevent accidents with larger hauling vehicles.

7.6.5 Scavenging and Salvaging

Scavenging and salvaging of materials from the disposal area is not permitted in rubbish facilities in Mississippi.

7.6.6 Personal Protective Equipment

Rubbish site personnel typically may work in enclosed cabs of equipment, but if the cabs are open, operators may consider having the personnel use respirators in dusty or windy conditions. Most facilities require personnel to use steel-toed boots with steel shanks during rubbish site operations. Hard hats, protective eye wear, and gloves may be required in certain operations and facilities should have such personal protective equipment (PPE) available if needed.

7.6.7 Operations Safety

Transporting and unloading solid waste is a serious area of safety concern. Uncontrolled dust, differing flows and direction of traffic and operational equipment, and equipment operation angles pose dangers to those in the vicinity of the working face. For these reasons, safeguards should be provided on rubbish site equipment to protect the operator and the vehicle. Rubbish site operating personnel who direct the delivery vehicles must take care to maintain sufficient clearance between the vehicle and the rubbish site equipment. Normal safety precautions will be exercised while operating or working in the vicinity of heavy equipment.

7.6.8 Fire Prevention and Control

Rubbish disposal facilities shall have an adequate fire protection system in the event of a fire. This includes:

- An adequate water supply under pressure at the site,
- An adequate supply of stockpiled soils in close proximity to the active disposal area, or
- Accessibility to an organized fire department that can provide prompt response to the facility if called.

If a fire does occur, the owner or operator should take immediate measures to attempt to extinguish the fire and shall notify MDEQ within 24 hours (or by the end of the next business day) of the outbreak.

In the event that a fire occurs at the site, the rubbish site operator should attempt to control the fire as quickly as possible by:

- Covering it with soil,
- Removing and covering it with soil, or
- Using fire extinguishment equipment where appropriate.

If the fire is not manageable using the above techniques, the local fire department should be contacted for assistance. If a fire becomes uncontrollable even for local fire officials, MDEQ Emergency Response Division may need to be contacted for instructions and assistance.

7.6.9 Emergency Procedures

Rubbish operators should develop a written set of emergency procedures and have these procedures posted in the scale house or administrative building. Each employee should be educated in the procedures and it is recommended that facilities have regularly scheduled safety meetings to review the procedures. This will help in times of an actual emergency.

The written procedures should include steps for handling each type of potential emergency at the facility, important phone numbers, and maps to the nearest emergency facilities.

In addition, if an emergency condition develops that has significant safety and environmental concerns, the Mississippi Emergency Management Agency and the Emergency Response Division at MDEQ should be notified of the emergency conditions.

8.0 RECORDKEEPING AND REPORTING FOR RUBBISH SITES

8.1 Recordkeeping

The Mississippi Code, Annotated, Section 17-17-219 requires the operators of all non-hazardous solid waste disposal facilities (including Class I rubbish sites) to create and maintain written daily records of all solid waste received at the facility for disposal. This requirement is expressed further in Rule 1.6 of the Mississippi Nonhazardous Solid Waste Management Regulations. State law and regulations require, at a minimum, that the operator record the following information for *each* incoming load received:

- The name of the hauler,
- The source of the waste,
- The types of waste received, and
- The weight of solid waste measured in tons.

In recording this information for many incoming loads, the hauler and the source of the waste may be the same. If the source for an incoming waste load is a single business or industry, the name of that business or industry should be recorded. If the source is from multiple residences such as from a municipal collection activity record, then record the name of the city, county or organization collecting the materials.

With respect to recording tonnage, most Class I rubbish sites in the state do not have weight scales available onsite to measure the weight of each load in tons. Consequently, the volume of wastes for each load must be measured or estimated in cubic yards and converted to tons. MDEQ recommends that operators of rubbish sites that do not have weight scales utilize the following table of conversion factors (Table 8.1) to estimate the approximate tonnage of each load of rubbish received. Rubbish site operators do have the option of requiring or allowing for incoming loads to be weighed at offsite certified weight scales. In such cases, the operator should obtain proper written documentation of the weight of the load.

MDEQ has reviewed conversion factors developed by various state and federal government agencies as well as survey information from rubbish sites in the state and has developed the

following recommended conversion factors. Rubbish operators using these conversion factors to estimate tonnage should be aware that the estimated volume and calculated tonnage must be recorded **for each incoming load of rubbish at the time of delivery.**

Table 8.1. Volume to tons conversion factor table.

TYPE OF RUBBISH WASTE	TONS/CUBIC YARDS
LIGHT LANDSCAPING WASTE (leaves, grass clippings and prunings)	0.2
LAND-CLEARING VEGETATIVE DEBRIS (large limbs, stumps, tree trunks)	0.5
LIGHT CONSTRUCTION & DEMOLITION DEBRIS (mixed glass, metal, wood scraps drywall, sawdust, etc.)	0.25
HEAVY CONSTRUCTION & DEMOLITION DEBRIS (concrete, asphalt, brick, demolition rubble, etc.)	1.0

CONVERSION EXERCISE 1:

A roll-off container is brought to the ABC Rubbish Site and is estimated to contain 20 cubic yards of light landscaping waste. Using the Conversion Factors above, determine the estimated weight in tons of the load.

CONVERSION EXERCISE 2:

ABC Construction is remodeling an abandoned residential property. They bring one full 10 cubic yard truck of limb trimmings and landscape waste and one load of demolition waste that contains wood, glass, drywall, insulation scraps and other similar wastes in a full 20 cubic yard roll-off container. Approximately one cubic yard of paint cans and other unauthorized wastes are removed from the roll-off container by the driver and not dumped at the site. Considering these facts and the MDEQ recommended conversions rates, calculate the total estimated weight in tons of the two incoming loads from ABC Construction.

The aforementioned state law requires that these records indicating the type of waste, the name of the hauler, the source of the waste and the weight of waste received (in tons) shall be retained by the facility owner(s) at the site and made available for review and inspection by MDEQ upon request. It is preferred that the records be kept onsite at the facility if an office or other support facility exists where the records can be safely kept. However, if no onsite facility exists to support storage of these and other records for the facility, a file storage area should be designated locally and the onsite operator should have knowledge and access to the records in the event that an MDEQ inspector requests to view the records.

Under certain circumstances, where a rubbish site routinely receives loads of a single stream rubbish material or approved special wastes (such as processed waste tires, fabrics, etc) not described by the conversion factor list above, the operator may work with MDEQ to develop an appropriate conversion factor for that waste stream. Such an alternate conversion factor would need to be based on actual certified weights of representative loads of the material or on other

material information provided by the waste generator. Any alternate conversion factor must be approved by MDEQ prior to use at the rubbish site.

8.2 Reporting

The operator of a rubbish site is also required under state laws and regulations to submit an annual report to MDEQ and to the Mississippi Department of Revenue (formerly the Mississippi State Tax Commission).

The operator of the rubbish site must submit an annual report to MDEQ each year no later than February 28th. The report must include certain information for the facility for the preceding calendar year. At a minimum, the annual report should contain the following information:

1. The total amount of waste managed by the facility during the preceding calendar year, **in tons**.
2. The amount of in-state wastes, in tons, listed by county of origin. This does not mean that each individual source must be listed but that the individual counties of origin should be listed. For example, if your site accepted only wastes from one county, your annual report will only list the source of origin as that county. If your rubbish site received wastes for disposal from surrounding counties, you will need to report the amount of waste from each county with the county of origin listed.
3. The amount of out-of-state waste, in tons, listed by state of origin.
4. The total amount of waste placed for disposal at the facility in tons.
5. The estimated remaining capacity at the facility in terms of acreage or cubic yards and the estimated years of life remaining.
6. An updated disclosure statement, if the owner of the facility or the contract operator of the facility is a private concern. The permittee is responsible for collecting an updated, disclosure statement from a private contract operator and providing that information with the annual report. If all information from the previously submitted disclosure statement is unchanged, a letter stating such may be included in lieu of an updated disclosure statement. Disclosure statements are not required from rubbish sites that are owned and operated by a public entity and consequently updated disclosure statements are also not required.

In January of each year, all solid waste disposal facilities in the state are sent a notice and information from MDEQ to facilitate filing of the annual report. The information from the submitted report is reviewed for consistency with regulations and is compiled by MDEQ into an

annual status report summarizing the management and disposal information for all solid waste management facilities in the state.

In addition to the annual report filed with MDEQ in February, the owner or operator of a commercial rubbish site must file a report with the Mississippi Department of Revenue before July 15th of each year. The operator shall report the total amounts of nonhazardous solid waste managed at the facility during the preceding calendar year and shall at the same time pay to the Department of Revenue one dollar (\$1.00) per ton of solid waste disposed at the rubbish site. Each year between May and June, the Department of Revenue sends its reporting form and fee schedule to each commercial Class I rubbish site in the state of Mississippi.

The disposal fee is not levied on the following types of wastes:

- Oil field exploration and production wastes,
- Sewage sludge, and
- Rubbish which is collected and disposed separately from residential or household waste and which is not managed for compensation.

The first two types of wastes are generally not acceptable for disposal at Class I rubbish sites. The exemption from the fee on certain rubbish waste would apply to any rubbish waste that was accepted for disposal at a rubbish site for which the operator did not charge a disposal fee. For instance, if a rubbish site accepted wastes from a non-profit or charitable group that was cleaning up the road ways or that was demolishing an old structure and the facility did not charge the non-profit group a disposal fee, the rubbish site would also not pay the state disposal fee on that amount of rubbish. If a rubbish site does not charge any person a disposal fee but covers operational costs for the site through a county's or city's operating budget, then the rubbish facility likely would not pay the state disposal fee to the Department of Revenue. However, the rubbish site owner will still need to file the report with the Department of Revenue and will need to explain the conditions of its operations that allow the site to be exempt from fee payment on those rubbish wastes. Be aware that MDEQ does not decide whether your facility owes a fee or not; we only provide the total reported tonnage information to the Department of Revenue. This information may be used by the Department of Revenue to determine or evaluate potential fee amounts. MDEQ may request

information from the Department of Revenue identifying the rubbish sites that paid the fees and identifying the amount of fees that the individual site owners paid.

Fees that are collected by the Department of Revenue are transferred to MDEQ and are used for two primary purposes as designated by state law. A portion of the fee is used by MDEQ to cover the expenses of managing the solid waste management programs at MDEQ. A portion of the fee is also used to fund local government solid waste assistance grants and solid waste planning grants. These grants can be used by local governments for illegal dump clean up, local solid waste enforcement officers, recycling programs, bulky waste collection programs, household hazardous waste collection programs, public education, and other local solid waste management activities.

In addition to the annual tonnage report that is submitted to MDEQ, a rubbish site owner may also have other reporting requirements as a part of the facility's permit conditions, of an administrative compliance order or related to some other condition of their operations. This reporting could include groundwater or surface water monitoring, waste analysis, inspection results, air monitoring or other environmental reporting.

9.0 RECYCLING AND REUSE AT RUBBISH SITES

9.1 Overview of Recycling and Reuse

Mississippi state law encourages and promotes recycling or reuse of solid wastes over disposal of those wastes where possible. However, the desire to facilitate the recycling or reuse of wastes, particularly at disposal sites, has to be balanced with the conditions of the site's permit which clearly requires wastes to be managed in a manner that protects the environment. In addition, actions to recycle or reuse wastes at a rubbish site must be conducted in a safe manner that protects employees and users of the facility from injury.

Recycling is the process by which materials are collected and processed for use back in the manufacture or development of materials for new products. Recycling is somewhat different from the **reuse** of a material in that **reuse** typically involves the beneficial use of the material in a beneficial application other than using it back into the manufacture of similar products. The legitimate reuse and recycling of rubbish waste may be exempt from regulation as a solid waste. However, the interim storage and management of the wastes to facilitate recycling must be conducted in a manner that does not create compliance issues for your rubbish site operations.

There are four basic steps involved in recycling or reuse:

1. Recyclable or reusable materials are collected and separated.
2. Recyclable or reusable materials are processed.
3. Recyclable materials are used in the manufacture of new products or reusable materials are distributed for beneficial reuse.
4. Consumers purchase the goods made with reprocessed materials or end users use the material in a legitimately beneficial manner.

The activity conducted at rubbish sites to facilitate recycling or reuse is consistent with step one above and in some few cases with step two.

9.2 Common Recycling/Reuse Practices at Rubbish Sites

There are several types of materials that are traditionally collected at rubbish sites to facilitate recycling or reuse. These materials are listed below.

- *Metals and White Goods* – Many rubbish sites have collection sites for white goods (large household appliances) and other metals. Incoming white goods need to be managed and stored properly because some of these household items may have refrigerant, PCBs, and other chemicals in the units that need to be removed or collected prior to removal of the metals for recycling.
- *Wood Wastes* – Clean vegetative debris and clean wood is often chipped or composted at rubbish sites and mulch or compost is provided to public agencies or to citizens for their use. Site operators need to properly screen the wood wastes to ensure that treated and painted wood products do not get integrated into the mulching or composting program.
- *Cardboard* – Clean cardboard is sometimes collected and baled onsite or delivered to a local baler for collection and ultimate delivery to a recycler.
- *Tires* – Waste tires are often collected at rubbish sites to comply with state requirements for local waste tire collection programs or to manage individual tires that are intermingled in incoming loads of rubbish wastes. Such collection sites should be maintained to ensure that the tires do not cause mosquito breeding problems. If the sites are maintained or associated with the county's small quantity tire generator program, then the sites also may be eligible for MDEQ grant support or the tires may be able to be disposed through this county collection program if eligible.
- *Concrete* – Concrete crushing operations often can convert broken concrete from demolition projects into aggregate materials that are useful in various construction applications.
- *Asphalt Shingles* – Asphalt shingles may be separated and collected for recycling into hot-mix asphalt production. After collection, the asphalt shingles would be sent to a participating hot-mix asphalt facility and ultimately would be blended with recycled asphalt pavement and introduced into the asphalt plant.

It is important to note that to store or stockpile these types of materials at a rubbish site the site operator needs to be aware of the following types of restrictions:

1. Recycling practices that include diverting materials to a stockpile, composting or processing area, storage area, or other containment area to facilitate recycling of the materials should be clearly described in the facility plan of operation. The sorting of these materials should be done prior to being dumped on the working

face. Generally speaking, rubbish site personnel should not attempt to scavenge or remove wastes from the active working face for recycling purposes. The stockpiles, composting/processing areas, storage areas, or other containment areas for recyclables on the rubbish facility property should also be identified in drawings of the facility operations.

2. All storage, composting, processing, or stockpile areas for waste materials should be covered under the facility SWPPP for the facility, and runoff from these storage areas should be directed through the storm water management system.
3. Storage of recyclables should be accessible but should also be conducted in an area of the site that will not back up incoming traffic or cause other safety issues for facility traffic and operations.
4. Stockpiles, composting/processing areas, and storage areas should be maintained in a suitable manner to prevent fires, litter and windblown wastes, nuisance conditions, uncontrolled runoff of contaminants, and other potential environmental problems. It is recommended that mulch piles and compost piles be limited to approximately 12 feet in height to prevent the potential for spontaneous combustion. In addition, appropriate separation distances should be maintained between mulch piles and compost piles or other combustibles and the disposal area in case an accidental fire occurs.
5. Storage areas could be located over closed areas of the rubbish site as long as the final cover system in that storage area is maintained and protected. Any damage to the final cover should be repaired as necessary. MDEQ should be consulted prior to placing a recyclables stockpile on a closed disposal area.
6. Stockpiles, composting/processing areas, and storage areas should be covered under other proper permits if required. For instance, a waste tire stockpile of 100 or more tires at a rubbish site requires a separate authorization for a waste tire collection site, under the state Waste Tire Management Regulations. Composting sites may require a separate authorization as well. Composting operations up to 2 acres in size may be considered for approval under the Department's pilot composting program.
7. Stockpiles, composting/processing areas, and storage areas should also be maintained in a manner that protects the quality of the recyclable materials. If the recyclable materials are contaminated or allowed to be damaged to a degree that affects their value, then the materials may end up being disposed in a landfill;
8. Stockpiles, composting/processing areas, and storage areas should not be created for materials for which a legitimate market or other end use does not exist. Site owners should not speculatively accumulate materials hoping that a market or reuse opportunity will open up at some point in the future.

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9. If equipment is used onsite to process or collect materials for recycling, the equipment should be properly maintained and properly sized for the work that the site operator is attempting to accomplish.
 10. Distribution of recyclable materials from the site should only be made to persons or companies that will legitimately use or recycle the materials.

10.0 FINAL CLOSURE AND POST-CLOSURE REQUIREMENTS

All rubbish disposal sites must undergo final cover and closure procedures as outlined in Rule 1.6 of the Mississippi Nonhazardous Solid Waste Management Regulations. Depending on how the disposal facility has been designed and operated, the closure of the facility may be conducted in phases or it may occur after the facility achieves its permitted disposal capacity.

10.1 Closure and Post-Closure Regulatory Requirements

In general, the regulatory requirements for the closure of Class I rubbish sites include the following conditions:

1. Within 30 days of completing an area, at least 2 feet of earthen cover shall be applied as final cover over the area. Although not specifically required by state regulations, generally, the final cover system design should include the following layers:
 - a. An *infiltration layer* comprised of 18 inches of earthen material that has a permeability less than or equal to the permeability of the bottom liner system or natural soils, but no greater than 1×10^{-5} cm/sec.
 - b. An *erosion layer* of 6 inches of earthen material that is capable of sustaining native plant growth.

MDEQ may approve an alternate final cover system if it can be demonstrated that the alternate system is as adequate in protecting the environment as the prescribed system.

2. The slopes of the final cover system over the rubbish site shall be constructed to a minimum of 4% and a maximum of 25%, unless otherwise approved by MDEQ.
3. The topography of the final covered rubbish site must not exceed the allowable topography of the approved closure drawings contained in the facility permit application.
4. Following soil placement, a suitable vegetative cover shall be promptly established and maintained over the erosion layer of the cover system. The vegetative cover should be appropriate to the season and growing conditions of the rubbish site at the time of closure. The purpose of the vegetative cover is to prevent erosion of the soil cover that has been placed over the rubbish site.
5. Any erosion occurring on completed areas of the rubbish site during and immediately after closure shall be promptly repaired. In addition, after closure has

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- been completed the site owner has the responsibility to ensure that conditions at the closed rubbish site remain protective of the environment.
 6. When an area of the rubbish site has been deactivated or closed to the receipt of wastes for at least 12 months, this area shall be covered in accordance with the above requirements.
 7. For rubbish sites covered under the Statewide General Permit for Class I Rubbish Sites (#SWGPR1) or a recent individual solid waste permit, compliance with the final closure requirements for the rubbish disposal facility shall be certified by an independent Professional Engineer registered in the State of Mississippi. This certification would include confirmation that the final cover system is constructed with the required thickness of cover and that low permeability materials have been used for the cover.
 8. The owner shall notify MDEQ within 14 days upon completing the final closure of the site.

10.2 Other Closure and Post-Closure Recommendations

In addition to the above regulatory requirements, MDEQ recommends that rubbish operators consider the following additional closure actions:

1. For sites not covered under the Statewide General Permit or under a recent individual solid waste management permit, it is recommended that the site operator have a licensed professional engineer certify the constructed final cover system to ensure that the required thickness of cover has been applied and that low permeability materials have been used for the cover. This certification is particularly important if the site operator has had a contractor conduct the work. The certification ensures that the contractor is providing the operator with the desired results.
2. It is strongly recommended that the owner record a notation on the deed to the facility property or some other instrument that is normally examined during title searches. This should include a notation on a survey plat prepared by a registered land surveyor indicating the location and dimensions of the actual filled area with respect to permanently surveyed benchmarks or section corners. The notation should inform a potential purchaser of the property of the following:
 - a. The land has been used as a disposal facility,
 - b. The name of the disposal facility's owner(s),
 - c. The year the disposal operations started and ended, and
 - d. Potential restricted use of the property.

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3. It is recommended that the owner monitor, inspect, and maintain the site following closure, as the owner is liable/responsible for problems or conditions that might arise. MDEQ suggests that quarterly or semi-annual post-closure inspections occur for at least 5 years after closure. However, that duration should be increased if conditions at or around the closed site warrant continued post-closure maintenance inspection. At a minimum, these post-closure inspections should include:
- a. Repairing and maintaining the integrity of the final cover as necessary to correct the effects of settlement, subsidence, and erosion;
 - b. Preventing runoff and run-on from damaging the cover;
 - c. Mowing vegetation at least annually to control the growth of unwanted vegetation (such as trees) that may interfere with the integrity of the landfill cap; and
 - d. Filling and re-seeding all cracked, eroded, and uneven areas and maintaining the ditches.

If concerns arise during the permitting process, the Permit Board can impose any of the additional closure/post-closure requirements or conditions that are in the “Landfill” section (Rule 1.4) of state regulations to a particular facility in the facility’s solid waste management permit.

11.0 COMPLIANCE AND ENFORCEMENT: MDEQ PROCEDURES AND POLICIES

Much of the course information presented in this training session has focused on the laws and regulations with which operators of rubbish sites and other types of solid waste facilities must comply. This final section of the curriculum will address the manner in which MDEQ addresses compliance issues at facilities and the policies and procedures implemented by the agency in the event that a compliance and/or enforcement action becomes necessary. This information is presented to encourage voluntary compliance with state regulations and in hopes that the need for enforcement actions can be avoided. MDEQ encourages open communication by rubbish site operators with MDEQ staff whenever there is a question or concern about whether a condition or situation may be a violation. It is always our primary desire to assist the site operator to remain in compliance rather than taking an enforcement action after the fact.

The training has previously described the primary laws and regulations in Mississippi that apply to the management of solid wastes and more specifically to the operation of Class I rubbish sites. In addition to the requirements in state regulations for rubbish sites, rubbish sites are also responsible for compliance with the conditions of the facility's solid waste management permit, the facility's storm water management permit and any other environmental permits the facility may be required to obtain. With respect to your solid waste management permit, most of the conditions of that permit are consistent with the requirements of state regulations; however where an operator has an individual permit, it is likely that there are additional site specific conditions in that permit that the site operator must be familiar with. Finally, it is also important to remember that the plan of operation and the design drawings for the facility are incorporated by reference as a condition of the permit. So the facility is required by the permit to also comply with the operating plan and the design plans that were submitted in your application and approved by the Permit Board at the time of the issuance of your permit.

It is the policy of MDEQ to conduct routine, random, and unannounced inspections of Class I rubbish sites in the state primarily through the regional field offices in Oxford, Pearl, and Biloxi. These inspections are conducted at least once per quarter for Class I rubbish sites but can occur more frequently depending upon the size, the nature of the operations, and the history and

visibility of the rubbish facility. Listed below are several violations that are most commonly found at Class I rubbish sites from MDEQ's inspections of rubbish sites:

1. The presence of unauthorized waste in the working face of the rubbish site;
2. Improper waste screening efforts at the rubbish site;
3. Improper confinement of the working face of the rubbish site, meaning that the working face is excessively spread across an area that cannot be reasonably managed and compacted in a normal working day's operations;
4. Improper application of periodic earthen cover, meaning that an earthen cover is not being applied to the working face at least every 2 weeks;
5. Failure to properly install disposal area boundaries and markers and failure to stay within the permitted limits of the rubbish site;
6. Failure to comply with final cover requirements and failure to stay within the permitted height restrictions and sloping requirements for the rubbish site;
7. Offsite migration of odors (typically from sulfur smell from degradation of wallboard); and
8. Disposal of solid wastes outside the permitted boundaries of the rubbish site.

These conditions are not all of the types of violations that MDEQ encounters at rubbish sites; however these are some of the most common occurrences. MDEQ requests that if you encounter a situation at your rubbish site where you have a substantial failure to comply with a state regulation or permit condition that you report this condition to MDEQ with the reasons behind the compliance failure. Violations at Class I rubbish sites and other facilities are detected by MDEQ by several means:

1. Routine inspections of the facility by MDEQ,
2. Records review of the facility's files,
3. Self-reporting by the permittee or site operator,
4. Referral by another division of MDEQ or another state agency, or
5. Public complaints about the operation of the facility.

11.1 General Compliance Procedures

If MDEQ determines through one of these means that your facility appears to be in violation of state requirements, the Solid Waste Compliance Branch will then identify and characterize the type of violation. The violation(s) detected at a site may be a violation of a permit condition, a solid waste regulation or law or another air, water or waste law or regulation. MDEQ classifies the apparent violation by respective media (air, water, solid waste, hazardous waste, or some combination of these) for appropriate enforcement actions.

Once the types of violations have been identified by MDEQ and the appropriate rule citations determined, MDEQ will normally issue a written notice of violation (NOV) letter to the facility owner. This letter will normally come to the permittee rather than a contract operator because the permittee is viewed as the responsible party by MDEQ. The NOV letter will be sent by certified mail and will outline the violations at the site and ask for proper corrective actions to be implemented within a time frame that is particular to the violations involved. The NOV letter will likely also ask for a written response by a set date describing the facility's corrective actions and the measures that will be implemented to prevent recurrence of the violations. If the permittee believes that MDEQ has reached the conclusions of violations incorrectly, the permittee should justify such in their written response letter. Once the permittee has provided a written response and MDEQ has conducted a follow up inspection, MDEQ may determine that the matter has been corrected and close the compliance matter at that time. When the enforcement process ends at this time with a satisfactory review of the permittee's response, the action is known as an "informal enforcement action." A "No Further Action" letter is sent to the facility owner at that time.

However, if the appropriate corrective actions have not been initiated by the facility owner or the violations are severe, willful and egregious, or are repeat violations, then MDEQ may decide to schedule an administrative conference with the operator. The administrative conference will allow the operator to "show cause" as to why the violations occurred and to offer some appropriate remedy at that time. The administrative conference will typically be held at the MDEQ offices in Jackson. The violations found will be discussed in detail with the permittee at the administrative conference. Any possible monetary penalties for violations will also be discussed with the permittee at that time as may be required by the appropriate MDEQ enforcement policy. It should

be noted that where violations occur at a rubbish site or other facility of a federally delegated program to MDEQ (such as water or air programs), then penalty provisions for the violation may be mandatory and MDEQ may have little flexibility in determining whether a site owes a monetary penalty and the amount of the monetary penalty. After the administrative conference, MDEQ will proceed with a formal action. In instances where violations have occurred that may create an imminent threat to human health or the environment, MDEQ may proceed with the issuance of a Unilateral or Administrative Order to the facility. These types of orders are issued by the Executive Director of the MDEQ on behalf of the Commission. Unilateral Orders do not include monetary penalties but are considered formal enforcement actions with a formal citation of the violation and a schedule for correcting the violation.

In instances where violations are continuous or are severe, willful, and egregious, or where a Unilateral Order has been issued and the operator has failed to comply with the order, MDEQ will move forward with a letter to the operator of intent to schedule a hearing before the Commission. However, the letter will typically offer the opportunity to settle the matter in lieu of a Commission Hearing if the operator will agree to certain conditions in an Agreed Order. One condition included in most agreed orders is that a monetary penalty must be paid. The monetary penalty is calculated by the penalty policy for the type of violation or violations that have occurred. For example, if a rubbish site has violations that are both water related and waste related, MDEQ will calculate a combined penalty for those violations from the MDEQ penalty policies for water and solid waste. Generally, the monetary penalty amount calculated and included in an Agreed Order is for a reduced monetary amount to encourage settlement of the enforcement action rather than proceeding to a formal Commission Hearing. A proposed Agreed Order will be sent to the permittee for review and consideration. The permittee has the opportunity to offer comments for consideration on the conditions of the Agreed Order. These comments must be provided to MDEQ in writing by the specified deadline. If the permittee does not have comments or the comments are reviewed and an agreement can be reached, the order should be signed by an authorized representative of the permittee, the signature notarized, and returned to MDEQ for formal execution.

On occasion, the Agreed Order may propose that a portion of the calculated penalty be held as a stipulated penalty under the conditions of the agreed order. This means for example that perhaps half of the penalty would be paid by the facility owner upfront and the other half would be held pending the compliance by the facility owner with the conditions of the Agreed Order. If the facility owner fully complies with the conditions of the Agreed Order within the time frame allowed by the order, the stipulated penalty amount would not be paid by the facility owner. However, if the owner fails to fully comply within the allowed time frame, the owner forfeits the stipulated penalty amount and must then pay the full penalty.

Also, in lieu of the assessment of a full monetary penalty, MDEQ may consider a Supplemental Environmental Project (SEP) proposed by a rubbish site owner cited with a violation. If considered in the settlement of an enforcement matter, a proposed SEP must be a project that the facility owner funds and conducts. The SEP must have a strong connection with the violation and the cost of the SEP must be of equal or greater value to the penalty amount that might otherwise be assessed. Only a portion of a calculated penalty amount may be offset by a proposed SEP. Furthermore, a site owner may not propose an SEP in lieu of compliance with a permit condition or a regulation.

11.2 Considerations in Calculating Monetary Penalties

If through the compliance and enforcement process, it is determined that a monetary penalty will be recommended against a permittee for violations at the rubbish site, there are several considerations that MDEQ makes in determining what that penalty recommendation will be. These considerations include the following:

1. The severity and environmental impacts of the violation;
2. The size of the business, organization, city or town;
3. The willfulness or deliberate natures of the violation;
4. The compliance history of the permittee and whether this matter is a repeat violation; and
5. The money or resources saved by the permittee in refusing or failing to comply.

11.3 Commission Enforcement Hearings

If the permittee and MDEQ cannot reach a settlement on the violations, the matter will be scheduled to be heard before the Commission or in some instances before a designated hearing officer named by the Commission. The Commission hearing will be similar to a court proceeding and the permittee should be represented by appropriate legal counsel. MDEQ will be represented by the legal staff of the agency. Testimony will be presented under oath to the Commission on the violations and all witnesses will be made available for cross examination. Generally all seven members of the Commission will hear the enforcement matter. After a full and complete hearing of the testimony on the alleged violations, a recommendation on the resolution and monetary penalties on the matter will be made by MDEQ legal staff to the Commission. The monetary penalty recommendations made at the Commission Hearing are typically for the full calculated penalty amount (generally more than the penalties calculated in a settlement offer) and do not allow for stipulated penalties to be considered. After hearing the testimony and the recommendation of MDEQ, the Commission will render a decision and will assess penalties if necessary. The Commission can alter the recommendation of MDEQ if it so decides. The ruling of the Commission will be memorialized in a Commission Order that will be sent to the permittee within a few weeks of the hearing. The rulings and decisions of the Commission are appealable to an appropriate court of law. Such an appeal must be made within 30 days of the issuance date of the Commission Order.