



**BRAZOS VALLEY DISPOSAL FACILITY
COLLEGE STATION, BRAZOS COUNTY, TEXAS**

PERMIT APPLICATION

**PART IV
SITE OPERATING PLAN**

Prepared for:

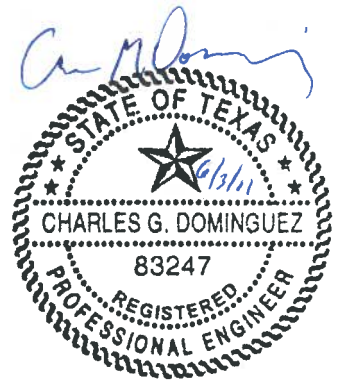
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**Golder Associates Inc.
F-2578**

**INTENDED FOR PERMITTING
PURPOSES ONLY**

May 2011

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LIST OF ACRONYMS

AWC – Alternative Weekly Cover

BER – Ballast Evaluation Report

BG – Brown & Gay Engineers, Inc.

BVR – Brazos Valley Recycling

CFC – Chlorinated Fluorocarbons

CFR – Code of Federal Regulations

CYPY – Cubic Yards Per Year

LFG – Landfill Gas

LM – Landfill Manager

MSW – Municipal Solid Waste

Non-RACM—Non-Regulated Asbestos-Containing Material

OSHA – Occupational Health and Safety Administration

PCBs – polychlorinated biphenyls

RACM – Regulated Asbestos Containing Material

SDP – Site Development Plan

SLER – Soil and Liner Evaluation Report

SOP – Site Operating Plan

TAC – Texas Administrative Code

TCEQ – Texas Commission on Environmental Quality

TPWD – Texas Parks and Wildlife Department

TxDOT – Texas Department of Transportation

USFWD – U.S. Fish and Wildlife Department

1.0 INTRODUCTION

This Site Operating Plan (SOP) provides general operating procedures to be followed by site management and operating personnel for day-to-day operations at the Brazos Valley Disposal Facility throughout the operating life of the site. This SOP is submitted to address the applicable requirements of 30 TAC Chapter 330, Subchapter B, "Permit and Registration Application Procedures," specifically §330.57(a), §330.57(c)(4), and §330.65, and Subchapter D, "Operational Standards for Municipal Solid Waste Landfill Facilities." This SOP, along with the site permit, site development plan, final closure plan, post-closure maintenance plan, landfill gas management plan, and all other required plans and other records, along with all approved amendments, modifications, and temporary authorizations, will be maintained in the site operating record located at the adjacent Brazos Valley Recycling (BVR) offices. The site operating record will be available for site personnel to review and utilize, as needed. The Brazos Valley Disposal Facility will be operated in accordance with the requirements of this SOP and other applicable local, state, and federal regulations. The SOP will be retained during the active life of the site and throughout the post-closure care maintenance period.

All terms used in this SOP are as defined in 30 TAC §330.3, unless otherwise stated.

1.1 Pre-Operation Requirements §330.123

Prior to the initial opening of the facility and prior to commencing operations in a new disposal area, the landfill manager (LM) or designated alternate will provide written notice in the form of a Soil and Liner Evaluation Report (SLER) and a Ballast Evaluation Report (BER), as applicable, detailing the final construction and lining of the new area. The required reports will be submitted to the Texas Commission on Environmental Quality (TCEQ) for review at least 14 days prior to the placing any waste in the new area.

The facility shall not accept solid waste for disposal in a disposal area until the TCEQ has confirmed in writing or verbally that all applicable submissions required by the permit and the TCEQ's regulations have been received and found acceptable for that disposal area, and that construction is in compliance with the permit and the approved site development plan. However, if the TCEQ has not provided a written or verbal response within 14 days of the TCEQ's receipt of the SLER and BER, site personnel may begin placing waste in the disposal area. This provision is not applicable to the initial opening of a municipal solid waste landfill.

1.2 Recordkeeping Requirements §330.125

As noted above, this SOP, site permit, approved site development plan, final closure plan, post-closure maintenance plan, landfill gas management plan, and all other required plans, permit amendments and modifications, temporary authorizations, and other related documents will be maintained in the site operating record located at the adjacent BVR for the life of the facility, including the post-closure care period. The Brazos Valley Disposal Facility and BVR are both operated by CCAA, LLC (CCAA).

In addition to the documents specified above, the following information will also be recorded and retained in the site operating record within seven working days of completion or receipt of any relevant analytical data:

- Location restriction demonstrations;

- Inspection records, training procedures, and notification procedures relating to excluding the receipt of prohibited waste;
- Results from gas monitoring and any remediation plans relating to explosive and other gases, including notices and reports regarding the detection of explosive and other gases above regulatory limits in accordance with the landfill gas contingency plan;
- Demonstrations, certifications, findings, monitoring, testing, and analytical data relating to groundwater monitoring and corrective action;
- Closure and post-closure care plans and any monitoring, testing, or analytical data relating to post-closure requirements;
- Cost estimates and financial assurance documentation relating to final closure and post-closure care;
- Copies of all correspondence and responses relating to the operation of the facility, including written notifications made to the TCEQ, modifications or amendments to the permit, approvals, and other matters pertaining to technical assistance;
- Training records;
- Personnel operator licenses;
- Annual and quarterly solid waste summary reports; and
- Any other document(s) as specified by the approved permit or by the TCEQ.

Upon request, all information contained in the operating record will be furnished to or otherwise made available for inspection by the TCEQ. All plans required for the facility and all information contained within the operating record will be retained for the life of the facility, including the post-closure care period.

The executive director may set alternative schedules for recordkeeping and notification requirements pursuant to 30 TAC §330.125(g).

At a minimum, the LM or at least one manager with supervisory responsibility over the landfill will be licensed pursuant to 30 TAC Chapter 30, Subchapter F (MSW Facility Supervisors). A record of personnel operator licenses, issued in accordance with Subchapter F, will be maintained in the site operating record as required.

In accordance with 30 TAC §335.586(d) and (e), the following training records will be maintained at the facility:

- For each position at the facility related to waste management, the name of the employee filling each position, the job title, written job description, including the requisite skill, education, or other qualifications, and the duties assigned to each position;
- A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position at the facility related to waste management; and
- Records that document that the requisite classroom instruction and/or on-the-job training has been given to, and completed by, facility personnel.

Training records on current personnel will be maintained at the facility until closure of the facility and training records on former employees will be maintained at the facility for at least three years from the date the employee last worked at the facility.

1.2.1 Waste Acceptance Rates

This plan has been prepared to address operating requirements for a range of waste acceptance rates. The plan will account for the inherent uncertainties in predicting long-term waste rates to meet the requirements of 30 TAC §330.125(h) and will allow the facility to self-adjust the provisions in this plan based on actual waste receipt tracking, as discussed below. Specifically, this plan addresses waste acceptance rates between 0 and 175,000 tons per year (tpy) and from >175,000 to 350,000 tpy as shown in Tables 1 and 2. Elements of site operation(s) that are related to the waste acceptance rate (e.g., personnel, equipment, etc.) are shown in this plan in matrix tables (Tables 1 and 2) of requirements versus annual waste receipt tonnage. This approach is consistent with TCEQ Guidance Document "RG-420, Guide for Preparing Site Operating Plans for Municipal Solid Waste Facilities" (dated April 2005).

1.2.2 Waste Acceptance Rate Tracking

The facility will maintain, in the site operating record, records to document the annual waste acceptance rate for the facility. Documentation will include the annual and quarterly solid waste summary reports required by 30 TAC §330.675. In accordance with 30 TAC §330.125(h), if the facility's waste acceptance rate increases, the facility will adjust its operations according to this plan and any changes to this plan that may be made by a permit modification. Specifically, if the actual annual waste acceptance rate, as established by the sum of the previous four quarterly summary reports, exceeds the previous rate at which the site was operating, and the exceedance is not due to a temporary occurrence, the facility will adjust operations with regard to equipment and personnel needed to manage the waste as specified in Sections 2.0 and 3.0 of this plan based on the actual waste receipt changes. If the actual annual waste acceptance rate, as established by the sum of the previous four quarterly summary reports, exceeds the range of waste acceptance rates covered by this plan (i.e., 350,000 tpy), and the exceedance is not due to a temporary occurrence, the facility will file a permit modification within 90 days of the exceedance as established by the sum of the last four quarterly summary reports. The permit modification will propose any needed changes to the plan to manage the increased waste acceptance rate to protect human health and the environment. The facility's estimated waste acceptance rate is not a limiting parameter of the facility's permit, but is tracked to ensure that the facility's operations continue to be adequate when waste acceptance rates increase.

2.0 PERSONNEL §330.127(1)

The site personnel will include, at a minimum, a LM and/or supervisor, one equipment operator, a gate attendant, and at least one laborer for other assigned tasks. The organizational chart (Figure 1) at the end of this section provides the positions and chain-of-command of personnel necessary to operate the facility.

Training requirements for site personnel are discussed in Section 4.1.

2.1 Landfill Manager

The LM will be responsible for overall facility management and will be designated as the contact person for regulatory compliance matters. The LM will provide on-site management of the facility operations and will have the authority and responsibility to reject unauthorized loads, have prohibited materials removed by the transporter and/or assess appropriate surcharges, and have the prohibited material removed by on-site personnel. The LM will be responsible for ensuring compliance of day-to-day operations with applicable regulatory requirements and this SOP. In addition, the LM will oversee all construction activities. The LM will provide adequate staffing to operate the facility in accordance with applicable regulatory requirements and this SOP, and will supervise equipment operators, gate attendants, and laborers, and assign duties as necessary. The LM will be responsible for providing fire protection training to facility employees according to Sections 4.1 and 4.3 of this SOP. The LM will be responsible for inspecting and/or maintaining all equipment and operating systems required under the permit (i.e., methane gas collection system, as applicable). The LM will serve as the emergency coordinator for the facility in cases of emergencies.

The LM must be an experienced personnel manager who is familiar with and has the aptitude to implement operational aspects of solid waste disposal operations, including knowledge of relevant regulations and permit requirements, waste-handling and safe management practices for disposal of municipal solid waste, health and safety, and waste identification. The LM will be licensed pursuant to 30 TAC Chapter 30, Subchapter F.

2.2 Gate Attendant

The gate attendant(s) will be responsible for documenting and measuring incoming waste and collecting appropriate fees. The gate attendant, or the LM, will select loads for waste inspections in accordance with Section 4.2 of this SOP, and direct waste loads to the appropriate disposal area(s). The gate attendant will be trained in safety procedures and the identification of prohibited wastes. If prohibited wastes are observed or suspected, the attendant will not authorize the waste for disposal and will immediately notify the LM of the situation.

The minimum qualifications for gate attendants will be the ability to perform clerical duties and to receive and comprehend in-house training on prohibited waste identification, health and safety response, and recordkeeping.

2.3 Equipment Operator

The equipment operator(s) will operate landfill vehicles and heavy equipment in a safe manner to achieve functions necessary for facility operation. Duties to be performed during the operation of heavy

equipment may include spreading and compacting waste and cover soil in a manner to maximize air space, maintaining access roads, establishing and maintaining stormwater drainage, excavating soils, and performing construction activities in accordance with the Site Development Plan (SDP). The equipment operator(s) will also be responsible for conducting daily inspections of equipment for operational and safety conditions. The equipment operator(s) will visually observe waste loads as they are placed to prevent unloading in un-designated areas and to prevent prohibited wastes from being deposited. The equipment operators will also assist other site personnel in duties as directed by the LM.

The equipment operator(s) must demonstrate appropriate licensure if required and proficiency in operating heavy equipment to the satisfaction of the LM. At a minimum, all equipment operators must be qualified to safely and effectively operate compactors or bulldozers, have the ability to operate other heavy equipment on-site, and have the ability to comprehend on-the-job training in landfill operations, health and safety, and waste identification.

2.4 Laborer

Other site personnel or laborers may be employed from time to time. Site laborers will have responsibilities as directed by the LM. These duties may include on- and off-site litter control; fire protection operations; dust control; inspection and maintenance of gates, perimeter, and litter fences; and other duties as necessary.

Minimum qualifications for site laborers include the ability to safely and effectively operate support equipment, to perform manual labor, and to receive and comprehend on-the-job training in landfill operations, health and safety, and waste identification.

2.5 Staffing Requirements

During night operations, adequate personnel will be scheduled to work in order to handle the work load in a safe manner. The night staff may be a combination of equipment operators, laborers, and gate clerks. Proper lighting of the working faces, the gatehouse, and security gates will address night operation safety issues. The Brazos Valley Disposal Facility will comply with applicable federal, state, or local worker health and safety issues.

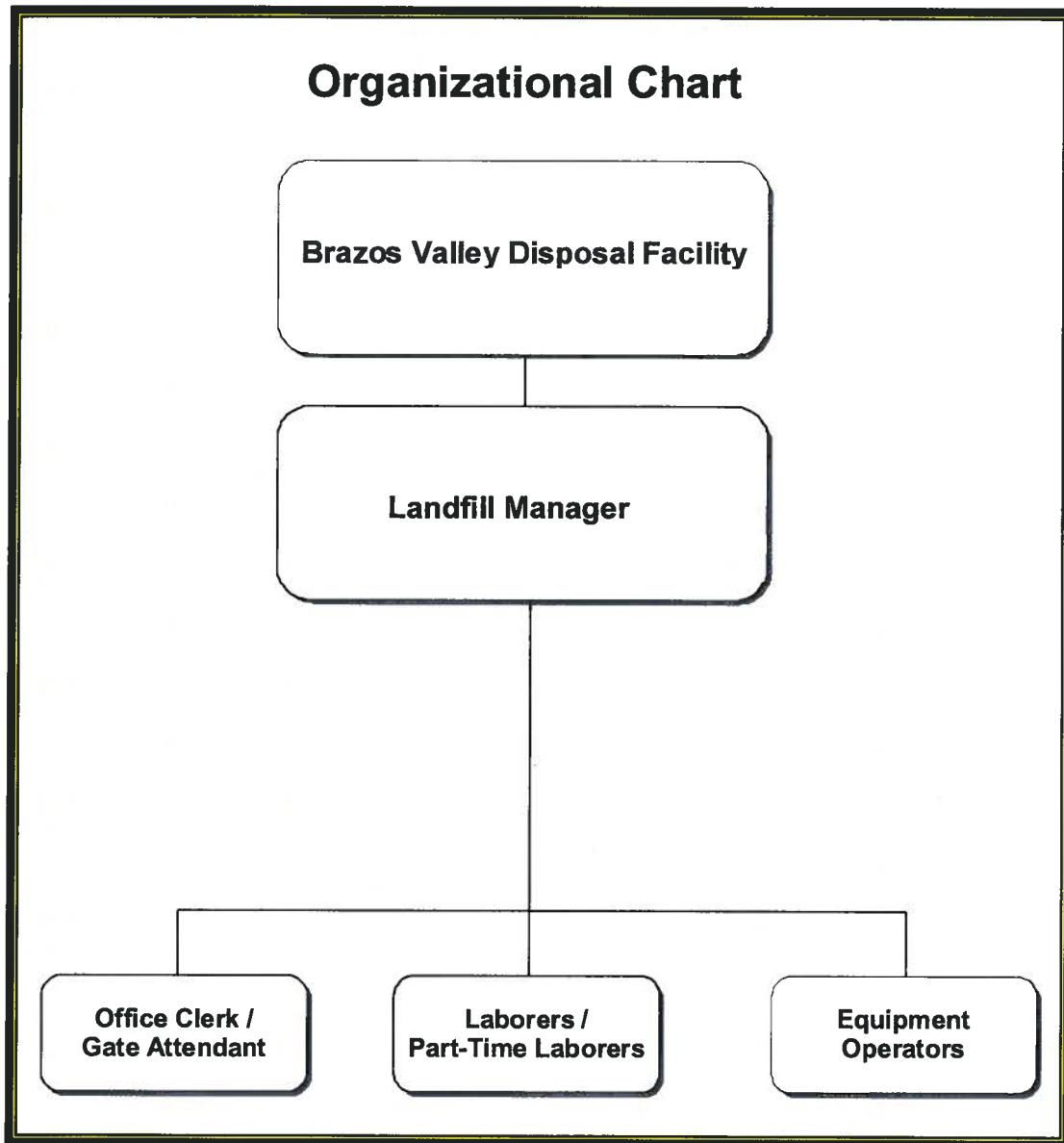
Table 1 provides a list of operation personnel that represents the minimum required to maintain safe and efficient landfill operations for a range of waste acceptance rates. Staffing levels are predetermined based on the expected waste acceptance rates up to 350,000 tons of waste receipts per year.

Table 1. Minimum Facility Staffing Levels

Estimated Waste Acceptance Rate (tpy)	0 to 175,000	> 175,000 to 350,000
Job Function	Number of Personnel	Number of Personnel
Landfill Manager	1	1
Equipment Operators	1	2
Gate Attendants	1	1
Laborers	1	2

Required staff will not necessarily be on-site at the same time (e.g., equipment operators and other staff may work different shift schedules throughout the day). As the waste acceptance rates and hours of operation change, staff members will be added or deleted to match the site requirements and meet the staffing needs provided above in Table 1. Additional staff members will have qualifications for employment commensurate with their duties, and key personnel will meet the minimum qualifications previously presented. The designated level of staffing will be maintained as required by operating conditions to ensure operations will be conducted in compliance with the TCEQ rules and the facility's permit provisions.

Figure 1. Facility Organizational Chart



3.0 EQUIPMENT §330.127(2)

Table 2 lists the minimum number, size, type, and function of the equipment that will be available at the facility for use based on waste acceptance rates and other operational requirements. The equipment actually in use at any given time during operating hours may vary based on operational needs, but, at a minimum, the equipment in Table 2 will be available on-site, according to the facility's waste acceptance rate. During periods of breakdown or maintenance of frontline equipment that affect landfill operations, equivalent back-up equipment will be made available for use from other facilities owned and/or operated by CCAA, or leased, if necessary.

In addition to the equipment listed in Table 2, miscellaneous pickups, vans, and other light utility vehicles, as well as various portable water pumps, instruments, and safety and training equipment, will be on-site as necessary for operational efficiency. A pickup truck or other suitable vehicle will be used to transport site personnel to conduct site duties and collect windblown and spilled litter (both on- and off-site). Portable pumps will be used to pump stormwater from excavations and ponded areas prior to remediation.

Table 2. Equipment List

Estimated Waste Acceptance Rate (tpy)			0 to 350,000
Equipment Type	Typical/Size	Function	Number (Minimum)
Landfill Compactor	CAT 826C or equivalent, or larger	Waste and soil spreading and compaction	1
Bulldozer	CAT D7 or equivalent, or larger	Waste spreading, soil spreading and compaction, transportation of soil for firefighting, construction, and maintenance of on-site roads	1
Excavator	CAT 320 or equivalent	Excavation, loading of soil cover, transportation of soil for firefighting	1
Dump Truck	CAT 725 or equivalent	Transportation of cover soil and soil for fire fighting	1
Water Truck	2,000 gal	Dust control, firefighting, watering cover, and vegetation	1
Stormwater Pump	4" Gas or 6" electric	Remove stormwater runoff from excavations	1

4.0 GENERAL INSTRUCTIONS §330.127(3)

The operating procedures outlined in this SOP will be followed and will be considered a part of the facility's operating record. Landfill operations will be conducted in a professional manner by trained and qualified personnel who will be responsible for placing waste in approved disposal cells using equipment and procedures and standard industry practices to ensure protection of operating personnel, human health, and the environment.

4.1 Personnel Training §330.127(4)

The LM with responsibility for landfill operations will be knowledgeable in properly operating a municipal solid waste landfill and the current operational standards required by the TCEQ. The LM will be an experienced manager/supervisor and will maintain appropriate licensure, as defined in 30 TAC §30.210. It will be the responsibility of the LM to provide training for site personnel in operating the facility in accordance with this SOP, operational standards required by the permit, and applicable TCEQ regulations.

Within six months after the date of their employment or assignment to the facility, or to a new position at the facility, whichever is later, facility personnel must successfully complete an initial program of classroom instruction and/or on-the-job training. The personnel training program will be directed by a person trained in waste management procedures, health and safety, and emergency response will direct the personnel training program, which will include instruction in waste management procedures and contingency plan implementation relevant to each position at the facility. Initial training will vary from employee to employee based on individual responsibilities. At a minimum, the training program will enable facility personnel to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems, including: procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment; communications or alarm systems; responses to fires, spills, explosions, or other emergency situations that may arise; responses to groundwater contamination incidents; and procedures for shutting down operations.

All facility personnel will participate in an annual training program. The annual program will include a review of the initial training program. Additional training will continue, as necessary, through periodic training sessions and on-the-job training. Topics for subsequent training may vary for site personnel based on roles and responsibilities. Training topics will typically include those in Table 3.

Table 3. Training Requirements

Training Topic	Description	Frequency	Personnel
Safety	Standard safety procedures related to site operation and general safety issues (e.g., slips, trips, and falls).	Annually	All
Fire protection, prevention, and evacuation	Procedures to prevent and fight fires and get site visitors and personnel to safety (Section 4.3 of this SOP).	Annually	All
Emergency response	Procedures to follow in the event of an emergency in accordance with site operator's established company procedures.	Annually	All
Litter control and windblown waste pick-up	Procedures and frequency of litter collection (Sections 4.8, 4.11, and 4.15 of this SOP).	As-needed	Equipment Operators, Laborers
Hazardous waste and PCB waste detection and control (waste screening)	Procedures for identifying and managing hazardous and PCB wastes (Section 4.2 of this SOP).	Annually	Equipment Operators, Gate Attendant
Prohibited waste management	Procedures for identifying and managing prohibited wastes (Section 4.2 of this SOP).	Annually	Equipment Operators, Gate Attendant
Random inspection procedures	Procedures for performing random inspections of incoming waste vehicles (Section 4.2.2 of this SOP).	Annually	Equipment Operators, Gate Attendant
Recordkeeping	Requirements for maintaining the site operating record (Section 1.2 of this SOP).	As-needed	Gate Attendant

Additional details regarding personnel training are provided within specific sections in this SOP.

4.2 Prohibited Waste Detection and Prevention Program §330.127(5)

The Brazos Valley Disposal Facility will implement a program for waste screening that minimizes the potential for inadvertent acceptance of prohibited wastes. This proactive policy will minimize the potential that prohibited waste will be received by the site for disposal. Implementing the program will provide protection from the potential dangers that prohibited waste could pose to employees, the public, or the environment through improper management, and serves as a hazardous waste and PCB waste screening mechanism that minimizes the potential of these waste streams to enter the landfill. The program will specifically require that pre-acceptance screening procedures be followed to determine if a particular waste is non-hazardous and to determine the acceptability of the waste pursuant to facility permit conditions, applicable regulations, and operating capabilities. The program will include training site personnel to know in detail what the regulated wastes are, how to perform a random inspection, how to control site access, what training is provided for site personnel, and what procedures are required in the event of identification of regulated wastes.

Procedures to detect and prevent these types of wastes from entering the site include:

- Informing facility customers of prohibited wastes by posting one or more signs at the facility entrance listing prohibited wastes;

- Screening waste streams prior to acceptance;
- Performing random inspections of incoming loads, including compactor vehicles, in accordance with procedures described in Section 4.2.2;
- Rejecting loads that are suspected of containing prohibited waste;
- Ensuring that trained staff observe each load that is disposed of at the facility;
- Maintaining records of all inspections;
- Training appropriate facility personnel responsible for inspecting or observing loads to recognize prohibited waste;
- Notifying the TCEQ, and any local pollution agency with jurisdiction that has requested to be notified, of any incident involving the receipt or disposal of regulated hazardous waste or PCB waste at the facility;
- Remediating any incident involving the acceptance or disposal of prohibited waste at the site in accordance with Section 4.2.5; and
- Ensuring that no free liquids are accepted for disposal.

4.2.1 Prohibited Wastes and Procedures

The following prohibited wastes will not be allowed for disposal at this site:

- Putrescible waste;
- Household waste;
- Regulated hazardous waste, per §330.15(e)(7);
- PCB waste, per §330.15(e)(8);
- Class 1 industrial waste;
- Used oil, per §330.15(e)(2);
- Lead acid storage batteries, per §330.15(e)(1);
- Whole used or scrap tires, per §330.15(e)(4), unless split and quartered or shredded and they do not come from a tire disposer/recycler who is reimbursed from the state Waste Tire Recycling Fund;
- Liquid wastes, per §330.15(e)(6);
- CFC containing materials, per §330.15(e)(5) (except as per Section 4.12 of this SOP);
- Used oil filters from internal combustion engines, per §330.15(e)(3) and 330.171(d);
- Radioactive materials, per §330.15(e)(9); and
- Any other special waste, as defined in 30 TAC §330.3(148), unless otherwise specified in Section 4.5 of this plan.

Site personnel will check for indications of prohibited waste, as detailed below. If site personnel identify indicators that would suggest the possible presence of prohibited waste in an incoming load, the load will not be received for disposal and the LM will be notified. The load will be directed to an area out of the

flow of traffic where trained personnel will inspect the load. If the load is determined to contain prohibited waste, or if there is any suspicion that it may contain a prohibited waste, the load will be rejected and directed back to the generator. Documentation of the inspection will be held in an active inspection folder/book and moved to the site operating record every seven days. The documentation will include the date, time, name of the inspector(s), type of inspection/screening (i.e., suspected prohibited waste), transporter/generator information, and waste information.

4.2.2 Random Inspections and Monitoring of Disposal §330.127(5)(A) & (B)

An equipment operator or spotter at the working face visually inspects all incoming loads. Should any indication of prohibited waste be detected, appropriate landfill personnel conduct a thorough evaluation of the load. The driver is directed to a load inspection area located near the working face over an approved lined area, where the load is discharged from the vehicle. The inspector breaks up the waste pile and inspects the material for any hazardous or prohibited waste. Suspicious wastes are flagged and samples are taken for laboratory analysis. Known prohibited waste is placed back into the vehicle and the driver is instructed to depart the site. Should any regulated hazardous waste be detected, the entire load is refused.

In addition to the above procedure, incoming loads are inspected on a random basis. The LM is responsible for determining the random inspection schedule, but a minimum of five inspections per week will be conducted. The driver of the randomly selected load is notified at the gatehouse and instructed to proceed as outlined in the above section. All incoming loads, including compactor vehicles, are subject to random inspection, except for transporters of waste from transfer stations and the BVR facility, which provide documentation that their load was previously subject to visual inspection and screening prior to arriving at the facility. Compactor vehicles will be handled in accordance with the procedures outlined in Section 4.23. Documentation of the inspections will be held in an active inspection folder/book and moved to the site operating record on a quarterly basis. The documentation will include the following information:

- Date and time of inspection;
- Inspector's name and signature;
- Hauling company name and license plate number;
- Source of waste;
- Contents of load as reported by driver;
- Contents of load as observed by inspector; and
- Approval or disapproval of the load.

This type of documentation will be provided on a random load inspection form. A typical form is included in Appendix A.

The load inspectors wear personal protective equipment that meet or exceed OSHA standards.

4.2.3 Prohibited Waste Training §330.127(5)(C)

Facility personnel will be trained to inspect vehicles and identify regulated hazardous waste, PCB waste, and all other prohibited wastes described above as part of the random load inspection procedures and as

part of the prohibited waste identification training. At a minimum, the gate attendant and equipment operators at the working face will be trained to inspect and identify prohibited waste. Personnel will be trained through classroom training and/or on-the-job training by qualified instructors. Records of employee training on prohibited waste control procedures will be maintained in the facility site operating record. The personnel will be trained to look for the following indicators of prohibited waste:

- Yellow hazardous waste or PCB labels;
- Hazard placards or markings;
- Liquids;
- 55-gallon drums;
- 85-gallon over-pack drums;
- Powders or dusts;
- Odors, heat, or chemical fumes;
- Bright or unusual colored wastes; and
- Sludges.

Gate attendants also will be trained to watch for trucks bringing in waste loads from likely sources of prohibited waste such as microelectronics manufacturers, electronic companies, metal plating industries, automotive and vehicle repair service companies, and dry cleaning establishments.

4.2.4 Notification of Receipt or Disposal §330.127(5)(D)

Upon determination that a waste is a prohibited waste and will not be accepted for disposal, the waste load will be returned to the transporter or generator and/or transported to an approved disposal facility. The TCEQ, and any local pollution agency with jurisdiction that has requested to be notified, will be notified of any incident involving the receipt or disposal of regulated hazardous waste or PCB waste at the facility.

4.2.5 Remediation §330.127(5)(E)

Unknown wastes undergoing analysis are properly segregated and protected against the elements, secured against unauthorized removal, and isolated from other waste and activities.

Known prohibited wastes detected during the inspection are returned immediately to the hauler.

If prohibited waste is identified and cannot be immediately returned to the transporter or generator, remediation procedures will be implemented immediately, including safe temporary storage of the waste until it can be returned to the generator or delivered to an off-site approved disposal facility. Containerized materials will be marked appropriately to identify the type of prohibited waste they contain, such as "Hazardous Waste" or "PCBs." Notification and remediation procedures for any incident involving the receipt or disposal of prohibited waste at the facility will be documented and included in the facility's operating record.

Specific remediation procedures will depend on the type and amount of prohibited waste, and on the disposition of the waste at the time of discovery. The type of prohibited waste will be identified and the

waste will be immediately isolated or otherwise managed to prevent adverse impact to the environment and site personnel. In the event that identifying the prohibited waste is not possible, the LM will notify the TCEQ and seek guidance on how to manage and dispose of the waste properly and as soon as practical.

4.3 Fire Protection Plan §330.129

4.3.1 Fire Protection Standards

Fire protection standards at the site will include: (1) no burning of solid waste, (2) no smoking on the active areas of the landfill or near flammable materials, (3) initiating firefighting activities upon detection of a fire, (4) minimizing conditions conducive to fires through the use of proper compaction and earthen material cover, (5) observing proper precautions when using equipment which may possess the capability of “sparking” or starting a fire, (6) containing and cleaning up fuel spills upon detection, and (7) controlling grass, weeds, brush, and other vegetation adjacent to the landfill to prevent brush fires.

The general procedures to be initiated upon detecting a fire at the landfill are:

1. Evacuate personnel and cease all site activities in the vicinity of the fire;
2. Move equipment or other transportable objects from the vicinity of the fire, if safe to do so;
3. Initiate firefighting procedures (e.g., use fire extinguishers or smother with soil);
4. Notify the LM of the location and extent of the fire; and
5. Notify local fire department if site personnel cannot extinguish the fire.

Specific practices and procedures are discussed in Section 4.3.2 below.

4.3.2 Operating Practices

Employees will be instructed in firefighting methods, including using fire extinguishers and the facility’s firefighting equipment in Table 2 of this SOP. Machinery (all equipment and site vehicles) and all buildings at the site will be equipped with fire extinguishers. A stockpile of earthen material will be maintained on the site within 1,000 feet of the working face, and equipment will be available on highest priority basis for use in placing earthen material to smother any fire that may occur. Specific practices are described below, including those required for each area of the site.

4.3.2.1 Landfill Working Face

The facility’s firefighting equipment will be capable of placing a six-inch layer of earthen material to cover any waste not already covered with six inches of earthen material within one hour of detecting a fire. The stockpile will be sized to contain a sufficient volume of earthen material to cover a potential fire area equivalent to the size of the working face with six inches of earthen material. The following table demonstrates the calculations used to determine the size of the earthen material stockpile for varying sizes of each working face:

Table 4. Earthen Stockpile Sizing for Fire Control

Size of Working Face		Area of Working Face			Total Size of Stockpile
		SF	CF	CY	
L (feet)	W (feet)	L × W	SF × 0.5	CF / 27	CY × 1.15
50	100	5,000	2,500	93	106
100	100	10,000	5,000	185	213
150	100	15,000	7,500	278	320
150	125	18,750	9,375	347	399
150	150	22,500	11,250	417	480
200	150	30,000	15,000	556	639

To calculate the maximum size of the earthen material stockpile for varying sizes of the working face, multiply the working face length (L) by the width (W) to get square feet (SF). Multiply the SF by 0.5 (6" of earthen material or ½ foot) to get cubic feet (CF). Divide CF by 27 to convert to cubic yards (CY). Multiply CY by 1.15 (using a 0.15 factor for compacting loose cubic yards to bank cubic yards) to get the total number of cubic yards of earthen material required to cover a given working face.

If a surface fire at the working face occurs that cannot be quickly extinguished using a fire extinguisher or other means, soil from the stockpile will be loaded onto earth moving equipment and carried to the area, and/or soil stockpiled at the working face as daily cover will be used, and spread to a minimum thickness of six inches as soon as possible following fire detection. A calculation showing the adequacy of the site equipment to place the six inches of soil in one hour is included in Appendix B. If necessary, a water truck will be employed to extinguish the fire. All available site personnel will assist with fire protection measures, unless otherwise directed by the LM.

A truck discovered or perceived to be carrying a load of waste on fire or smoldering will be directed to a portion of the disposal area away from the working face where the load can be unloaded without danger of spreading the fire. The fire will then be extinguished by smothering it with earthen material from the stockpile or using fire extinguishers or other available fire-control methods.

In the event that a fire is detected in the working face, incoming waste may be temporarily rerouted to another portion of the disposal area and a working face established there until the fire is extinguished. If possible, the burning waste will be isolated from other waste to prevent the fire from spreading. Firebreaks may also be cut around the fire, if possible, to prevent spreading. If isolating the burning waste is not possible, or if it is unsafe, efforts will be made to cover the working face with earthen material immediately to smother the fire. If detected soon enough, a small fire may be fought with a handheld fire extinguisher. In the event that additional fire protection/fighting measures are warranted by the LM, emergency assistance may be requested by dialing 911.

Compaction and soil cover, pursuant to Sections 4.20 and 4.21 of this plan, will be utilized for fire prevention/minimization.

4.3.2.2 Vehicle or Equipment

If a fire occurs on facility equipment or a vehicle, the operator will attempt to bring the unit to a stop away from fuel areas, exposed waste material, and other equipment or vehicles. If possible, the operator will shut off the engine and set the brake. Fire suppression may be achieved by fire suppression equipment or otherwise by trained personnel that will attempt to extinguish the fire using fire extinguishers or water. If the fire cannot be extinguished using the above methods, the local fire department will be contacted immediately at 911. Facility personnel will use reasonable measures to contain the fire until the fire department arrives.

All equipment should have fire extinguishers, which should be fully charged and ready for use at all times.

Equipment will be cleaned of caked or combustible materials at a minimum of once per week. Hand tools will be used to dislodge and remove the accumulated materials. Water will not be employed to clean the equipment.

4.3.2.3 Structures

If a fire occurs in a structure, the structure will be evacuated immediately. Site personnel will attempt to extinguish the fire using fire extinguishers. If on-site facility personnel cannot extinguish a fire, the local fire department will be contacted by telephoning 911. Facility personnel will use reasonable measures to contain the fire until the fire department arrives, but will under no circumstances enter a structure that is on fire.

4.3.2.4 Coordination with Local Fire Department

The LM will coordinate with the local Fire Department to offer a tour of the facility and will provide a Site Layout Plan identifying the areas with combustible materials, including the active working face and the diesel and oil storage areas, as applicable.

4.3.2.5 Notification of the TCEQ

If a fire occurs that is not extinguished within 10 minutes of detection, the TCEQ Region office will be contacted immediately after detection, but no later than 4 hours by telephone, and in writing within 14 days with a description of the fire and the response.

4.3.2.6 Fire Extinguishers

The site will be equipped with fire extinguishers or fire suppression systems on equipment of a type, size, and at locations specified by the fire marshal. Each fire extinguisher should be fully charged and ready for use at all times. Each extinguisher will be inspected on an annual basis and recharged as necessary. A qualified service company will perform these inspections, and all extinguishers will display a current inspection tag. Inspection and recharging will be performed following each use. The gatehouse, landfill machinery and equipment, and landfill vehicles will be equipped with fire extinguishers.

4.3.3 Fire Protection Training

Employees will be instructed in controlling small fires, and machinery and buildings at the site will be equipped with fire extinguishers. Employee training of employees will be the responsibility of the LM and will be provided to each new employee as part of the employee training program. A review of fire control measures for all site personnel will be conducted on an annual basis. All fire extinguishers and/or firefighting equipment on-site will be inspected annually, and any equipment found to be defective will be promptly repaired or replaced. At a minimum, each employee will be trained for the following:

- What to look for to minimize or prevent the possibility of fire;
- How to use fire extinguishers and other equipment properly;
- Procedures to follow to smother fires with soil from the stockpile (equipment operators only); and
- When and who to contact in case of emergency situations.

4.4 Access Control §330.131

The proposed Brazos Valley Disposal Facility will share the existing entrance of the adjacent Brazos Valley Recycling operation. The existing entrance to the recycling facility is located directly off of Old Jones Road, north of FM 60, and in between Stewarts Meadow and Lacy Well Road. Direct access to the proposed facility will be Old Jones Road which can be accessed via FM 60. From the Old Jones Road entrance, waste trucks will enter the recycling facility, pass through the existing scale, unload the material inside the recycling facility, and egress through the security gate to the west along Stewarts Meadow or trucks may bypass the recycling facility and go directly to the landfill. After the materials are sorted at recycling facility for processing and recycling, the waste materials that require disposal will be hauled to the Brazos Valley Disposal Facility. Direct entrance to the Brazos Valley Disposal Facility is at the southwest corner of the site through a lockable security gate. An optional new scale and gatehouse may be installed inside the landfill boundary. The entrance to the landfill will be comprised of crushed gravel or stone flexible road base. The weight and/or volume of all vehicles will be recorded. Records of such weights and/or volumes will be kept for a period of 3 years and made available to the TCEQ upon request.

The site entrance will be secured by a gate that is monitored by the gate attendant during normal site operating hours. During extended operating hours (nights and weekends), the gate attendant may be replaced with an operator. Outside operating hours, the gate to the site will be locked. One additional gate will be located on the eastern side of the site accessing Lacy Wells Road. This gate will remain locked at most times and will only be used for emergency vehicles or equipment used during the construction of the facility. Site security measures will be designed to prevent unauthorized persons from entering the site, to protect the facility and its equipment from possible damage caused by trespassers, and to prevent disruption of facility operations caused by unauthorized site entry. Unauthorized entry into the site will be minimized by controlling access to the landfill site with the perimeter fence and gate at the entrance.

Entry to the active portion of the site will be restricted to designated personnel, approved waste haulers, and properly identified persons whose entry is authorized by site management. Visitors will be allowed on the active area only when accompanied by a site representative. Landfill users will be required to stop at the gatehouse and conduct appropriate business transactions prior to proceeding to the disposal area(s). Unauthorized vehicles will not be allowed to proceed past the gatehouse. At this point, the vehicles are screened for waste type, as necessary. If a load is identified or suspected of containing any prohibited

waste, the prohibited waste procedures in Section 4.2 of this SOP will be followed. Signs located along the landfill haul road and access road direct solid waste transportation vehicles to appropriate fill areas. The signs will identify the active working face. These vehicles deposit their loads and depart the site. No private or commercial solid waste vehicles are allowed access to any areas other than the active portion of the landfill. Site personnel provide traffic directions as necessary to facilitate safe movement of vehicles.

From the gatehouse, vehicular access continues by an approximate 30-foot wide access roadway providing two-way traffic around the gatehouse area. This access roadway is an all-weather gravel road section that provides routine access to the operational areas of the facility, while simultaneously providing accessibility to any area of the site for emergency service vehicles (fire, police, ambulance, etc.). Within the site, signs are placed along the landfill haul road and access road at a frequency adequate for users to be able to understand where disposal areas are and which roads are to be used.

All access from the access roadway to the active areas of the site will be provided by one or more temporary roadways. These temporary access roadways will typically be constructed over areas of previous waste placement with intermediate cover (minimum 12-inches) with occasional placement of gravel, crushed rock, or other media as necessary to enhance the passability of the road. The surface condition of these roads will be regularly maintained using on-site earthmoving equipment to eliminate ruts or low spots that may impound water.

In some instances, temporary access roadways and ramps may be required to be located on top of constructed sidewall liners. In these instances, there will be at least 2-feet of soil or road base fill above the liners' protective soil covering. The roadways shall be well defined and under no circumstances will disposal traffic be permitted on areas of unprotected constructed liner.

During wet weather, the condition of the temporary roads will be improved, as necessary. Grading equipment at the site will be used, as necessary, to control or remove mud accumulations along the roads.

All access roads will be maintained in a reasonably dust-free condition by periodically spraying with water from the site water truck. If appropriate, commercial dust-control fluids may be spread on the roadway surface to retard the spread of dust.

In order to prevent the entry of animals and scavenging, and to discourage unauthorized persons from entering the facility, a perimeter fence consisting of a combination of five-foot mesh fence and 3-strand or 4-strand barbed wire will be constructed along all boundaries. The two entrances will be equipped with lockable gates. The perimeter fencing and entrance gates will be inspected once per month for integrity. Maintenance will be performed as needed to correct normal wear and tear. Repairs will be performed by site personnel or by a contractor. If an access control breach is detected, a temporary or permanent repair will be made within 24 hours of detection. The LM will notify the TCEQ regional office, and any local pollution agency with jurisdiction that has requested to be notified, of the access control breach within 24 hours of detection if a permanent repair cannot be completed within 8 hours of detection. The breach will be temporarily repaired within 24 hours of detection and permanently repaired by the time specified in the official breach report to the TCEQ regional office. The LM will notify the TCEQ regional office when a permanent access control breach repair is completed, unless the repair can be made within 8 hours of detection. An example inspection and repair form is included in Appendix C. The site may use this form, any other similar form, or a combination of forms, to record the inspections and repairs as long as the required information is included.

4.5 Unloading of Wastes §330.133

The unloading of waste will be confined to as small an area as practical. The size of the working face will be impacted by the amount of wastes being received and the location of the working face. There may be more than one working face open at any given time, for example while the previous working face is being completed to grade, or when there may be a "hot load" delivered to the working face and another working face is established until the fire is controlled. Additional working faces may also be required to transition to a wet weather disposal area. However, as a general rule, typically there will be only one working face. A trained staff person will be present at each working face that is receiving waste to direct and observe the unloading of solid waste. Each working face in use will have a maximum size of 200 ft × 150 ft.

Waste accepted at the Brazos Valley Disposal Facility is limited to brush, construction-demolition waste, rubbish (trash) that is free of putrescible wastes and free of household waste, inert material, non-regulated asbestos-containing material (non-RACM), Class 3 industrial solid waste, Class 2 industrial solid waste consistent with the limitations established in §330.5(a)(2), man-made inert material, yard waste, scrap tires that have been split and quartered or shredded and do not come from a tire disposer/recycler who is reimbursed from the state Waste Tire Recycling Fund, and dredged material after it has been tested to determine that it is not a special waste. Trained personnel monitor the incoming waste on the trucks and are on duty during regular operating hours at the working face/active disposal area to direct unloading of waste. These personnel are familiar with the rules and regulations governing the various types of waste that can or cannot be accepted into this facility, including knowledge related to unloading waste, restrictions on waste accepted at Type IV facilities, special waste handling, and industrial waste disposal. The personnel also have a basic understanding of Type IV, industrial, and hazardous wastes and their transportation and disposal requirements.

The unloading of waste in unauthorized areas is prohibited. Waste deposited in an unauthorized area will be removed immediately upon discovery and disposed of properly. A trained employee will be present at the gatehouse at all times during operating hours to monitor all incoming loads of waste and to direct traffic to the appropriate unloading area. Trained personnel will also be on duty during regular operating hours to direct and observe the unloading of each load that is disposed at the facility. Staff involved with unloading and/or inspecting waste will have the authority and responsibility to reject unauthorized loads, have prohibited material removed by the transporter or generator, or assess appropriate surcharges. Directional signs will clearly identify an active working face. Solid waste dumping is controlled to prevent disposal in locations other than those specified by site management. Any waste deposited in an unauthorized area is promptly removed and disposed of properly at the current working face. Control is also used to confine the working face to a minimum width, consistent with the rate of incoming waste, while allowing for safe and efficient operation.

Any putrescible or prohibited waste that is not discovered until after it is unloaded shall be immediately removed from the working face and returned to the offending transporter's vehicle. The LM will ensure that the offending transporter removes the rejected waste from the site for proper disposal. In the event the unauthorized waste is not discovered until after the vehicle that delivered it is gone, the waste is placed in suitable collection bins using on-site equipment. An effort is first made to identify the entity that deposited the prohibited waste and have them return to the site and properly dispose of the waste. In the event that identification is not possible, the LM will manage the waste so it is disposed of properly; however, the waste shall not remain on the site in the collection bins for more than 24 hours. Inspections and documentation of prohibited waste will be in accordance with the procedures outlined in Section 4.2.1 of this plan.

A written procedure will be retained on site to ensure that containers with any putrescible wastes are not accepted for disposal. Containers may be accepted for disposal in accordance with Section 4.23 of this plan.

Signs with directional arrows and portable traffic barricades help to restrict traffic to designated disposal locations. Signs are placed along the access route to the current disposal area or other designated disposal areas. In addition, large conspicuous signs are prominently displayed at the site entrance stating that putrescible and household wastes are not acceptable and stating the landfill's requirements for transporters, such as certificates, manifests, and surcharges or other penalties that may be imposed in the event that transporters do not meet the requirements of waste disposal at the facility.

4.5.1 Management of Recyclable Materials

In general, recyclable materials are not expected at the Brazos Valley Disposal Facility since materials will be sorted at the adjacent BVR first and the recyclable materials will be reclaimed at the BVR. In case any additional recyclable materials are reclaimed at the landfill, they will be transferred to the BVR. Processing of materials will not occur within the landfill boundary.

The property is currently being used for a lay down area and storage for the concrete recycling and mulching activities, and portable toilet storage associated with the adjacent recycling center and the portable toilet businesses. The sand mining operation is also still active. These activities will continue to occur within the landfill footprint, but will not interfere with normal disposal activities.

4.6 Facility Operating Hours §330.135

The facility will be authorized for waste acceptance and operation 24 hours per day, 7 days per week. These operating hours include the times when the facility may transport materials on- or off-site, when the on-site waste management activities may be conducted, when heavy equipment may operate, and when the facility may conduct any other activities or operations.

4.7 Site Sign §330.137

A sign will be displayed at the entrance to the site. The sign will measure at least four feet by four feet with letters at least three inches in height stating the name of the site, the type of site, the hours and days of operation, and the MSW permit number issued by the TCEQ. The sign will list one or more emergency 24-hour contact phone numbers that reach key facility staff with the authority to obligate the facility at all times that the facility is closed, and the local emergency fire department phone number. The facility sign will be readable from the facility entrance. Other signs stating rules, operating procedures, and warnings will also be posted in this area.

Within the site, signs are placed along the landfill haul road and access road at a frequency adequate for users to be able to understand where disposal areas are and which roads are to be used.

4.8 Control of Windblown Solid Waste and Litter §330.139

Windblown wastes will be controlled by the following methods:

- Waste transportation vehicles using this facility will be required to use adequate covers or other means of containment. The adequacy of covers or containment of incoming wastes is checked at the facility entrance. A sign is prominently displayed at the facility entrance stating that all loads shall be properly covered, and that a surcharge will be placed on all vehicles without adequate cover;
- Soil cover will be applied as frequently as needed to assist with controlling windblown waste;
- The facility will provide litter control fences of adequate height and width, as necessary, at appropriate locations near the working face and elsewhere. The LM will be responsible for determining the need, type, and placement of litter fences. Litter fences may either be portable, free-standing fences that can be easily moved, as necessary, with equipment, or they may be temporary fences that consist of poles driven into the waste/cover with fencing between them. The latter method may only be utilized in areas where the depth of waste or soil cover is greater than 3-feet to prevent unintentional penetration of the constructed liner system;
- Facility personnel will pick up windblown waste and litter scattered throughout the site, along fences and access roads, and at the gate, once per day on the days the facility is in operation and will return the waste and litter to the active working face of the disposal area(s). A daily log of the pickup of litter and debris will be kept to document compliance with this requirement; and
- Adjacent filled areas will provide protection from the prevailing winds. Earth berms will be used to assist in controlling windblown wastes by providing a windbreak against prevailing winds. Due to the variability of wind direction, the site operators use their discretion in using any additional wind breaks.

4.9 Easements and Buffer Zones §330.141

4.9.1 Easements

No solid waste unloading, storage, disposal, or processing operations will occur within any easement, buffer zone, or right-of-way that crosses the site. No solid waste disposal occurs within 25 feet of the centerline of any utility line or pipeline easement, unless otherwise authorized by the TCEQ. All pipeline and utility easements will be marked with posts extending a minimum of 6 feet above ground surface at intervals that do not exceed 300 feet.

There are three pipeline or utility easements located within or adjacent to the permit boundary and there are no known drainage easements or rights-of-ways. The easements are discussed in detail in the Part I/II report and indicated on Part I/II, Figure 1-5.

4.9.2 Buffer Zones

A minimum separation distance of 50 feet will be maintained between solid waste processing and disposal activities and the property boundary of the facility.

4.10 Landfill Markers and Benchmarks §330.143

Required landfill markers and benchmarks will be maintained so that they are readily visible. Markers that are removed or destroyed will be replaced within 15 days of their removal or destruction. Markers will be repainted, repaired, or replaced as necessary to retain visibility. Landfill markers and benchmarks

will be inspected for damage and visibility on a monthly basis. Landfill markers that no longer meet applicable regulatory requirements will be repainted, repaired, or replaced within 15 days of discovery of the non-compliance. An example site marker inspection and repair form is included in Appendix D. The site may use this form, any other similar form, or a combination of forms, to record the inspections and repairs as long as the required information is included. Records of all inspections will be maintained at the facility.

Landfill markers will consist of durable posts extending at least 6 feet above ground level to clearly identify significant site features such as site boundaries, buffer zones, easements, landfill grid system, SLER areas, and 100 year flood limits, if applicable. In the event a marker falls in a roadway, waterway, or other area incapable of sustaining an above ground marker, an alternate marker may be placed with its offset from its true location noted on the marker. The TCEQ may approve modifications to the marker requirements to accommodate on-site conditions. Guidelines for type, placement, and color coding of markers are outlined below.

- **Site Boundary** - Site boundary markers are painted black. The markers will be placed at each corner of the site and along each boundary line at intervals no greater than 300 feet. Fencing is placed within these markers, as required. In areas where the fence is located on the permit boundary, the fence posts are painted black and used as site boundary markers.
- **Buffer Zone** - Buffer zone markers are painted yellow. The markers are placed along each buffer zone boundary at intervals of no greater than 300 feet.
- **Easements and Right-of-Ways** - Easement and right-of-way markers are painted green. The markers are placed along the boundary and centerline of an easement and along the boundary of a right-of-way, at each corner within the site, and at the intersection of the permit boundary. Where it is impractical to place a marker, the marker is offset from the easement right-of-way and the offset distance will be clearly indicated on the marker.
- **Landfill Grid System** - Grid markers are painted white. The grid system will consist of lettered markers along two opposite sides, and numbered markers along the other two sides. Markers are spaced no greater than 100 feet apart measured along perpendicular lines. Where feasible, intermediate markers are installed where markers cannot be seen from opposite boundaries. Alternately, a 2-inch diameter pipe placed over steel T-posts is used for grid markers. At a minimum, grid markers delineate the area expected to receive waste within the next 3 years. The grid markers are maintained during the active life of the site and throughout the post-closure period.
- **SLER Area** - SLER markers are painted red. The markers are placed so that all areas for which a SLER has been submitted and approved by the TCEQ are readily determinable. Such markers provide site workers with immediate knowledge of the extent of approved disposal areas. These markers are located so that they are not destroyed during operations until operations extend into the next SLER. The location of these markers is tied into the landfill grid system and is reported on each SLER submitted. SLER markers will not be placed inside the evaluated areas. The markers will be spaced at a maximum of 300-foot intervals.
- **100-Year Flood Limits** – Flood limit markers are painted blue. Flood protection markers shall be installed for any area within a solid waste disposal facility that is subject to flooding prior to the construction of a flood protection levee. This area shall be clearly marked by means of permanent posts not more than 300 feet apart or closer if necessary to retain visual continuity.

A permanent benchmark will be installed near the gatehouse. The benchmark will be a bronze survey marker set in concrete with the benchmark elevation and coordinates stamped on it. The elevation will be surveyed from a reliable benchmark tied to the United States Coast and Geodetic Survey system.

4.11 Materials Along the Route to the Site §330.145

The facility management shall make efforts to ensure that vehicles hauling waste to the site are provided with a tarp, net, or other means to properly secure the load in order to prevent the escape of any part of the load by blowing or spilling. These efforts shall include actions such as posting signs, reporting offenders to proper law enforcement officers, adding surcharges, or implementing similar measures. On days when the facility is in operation, the facility is responsible for cleaning up waste materials spilled along and within the right-of-way of public access roads serving the site for a distance of two miles in either direction from the entrance on the part of Old Jones Road used to deliver waste to the site. The responsibility for waste material cleanup shall be on the east and west right-of-ways of the Old Jones Road and the east and west right-of-ways of FM 60 from the intersection of FM 60 and Old Jones Road. Cleanup for the spilled materials is performed once per day at a minimum and more often if the LM deems necessary. The LM or his designee will consult with TxDOT officials as necessary concerning cleanup of state highways and right-of-ways consistent with 30 TAC §330.145.

4.12 Disposal of Large Items §330.147

Large items will typically be directed to the adjacent BVR for recycling, however they may also be disposed of in the landfill. A large item/white goods storage area will be provided based on incoming waste types received for disposal. The LM will monitor the accumulation of large items at least weekly to ensure that the items are removed from the site often enough to prevent the items from becoming a nuisance, to preclude the discharge of pollutants from the area, and to prevent an excessive accumulation of the material at the site. Care is taken during disposal of large items to ensure that: (1) large items are not placed directly on the protective cover, (2) large items are placed such that they do not interfere with continued waste filling, and (3) that other, smaller waste is placed and compacted around them.

The LM is responsible for establishing the location of the large item/white goods storage area and assessing, on at least a monthly basis, whether it needs to be relocated to accommodate other site activities. The area designated for large item/white goods storage will be established in a location appropriate for the stage of development of the facility based on operational considerations.

Refrigerators, freezers, air conditioners, and any other items containing CFC will be handled in accordance with 40 CFR §82.156(f), as amended. Specifically, prior to disposal of these items on-site, facility personnel will verify that the refrigerant has been evacuated from the item. Such verification will include a signed statement from the person from whom the item is obtained that all refrigerant that had not leaked previously has been properly recovered from the item. This statement must include the name and address of the person who recovered the refrigerant and the date the refrigerant was recovered or a contract that refrigerant will be removed prior to delivery. A sign will be posted at the facility notifying haulers and other customers that refrigerant must be properly removed before delivery of a CFC-containing item to the facility.

4.13 Odor Management Plan §330.149

4.13.1 Sources of Odor

Sources of odor at the landfill may include the wastes being delivered to the facility, the open working face, and ponded water. Further, weather conditions can significantly affect the production of odors and the movement of odors away from the source. Since the facility is a Type IV, certain wastes that are normally sources of odor at a landfill, such as putrescible waste, leachate, liquid waste, and composting are not accepted at this facility. Therefore, odor is not expected to be a significant issue.

4.13.2 Odor Control and Source Minimization

The primary objectives for odor control at the landfill are to minimize odor generation and odor emissions. Methods used to achieve these objectives include placing cover materials (refer to Section 4.21 of the SOP), eliminating ponded water (refer to Section 4.22 of the SOP), and controlling gas (refer to Section 4.18 of this SOP).

4.13.3 Odor Response Procedures

Upon identifying an offensive odor at the facility, site personnel will attempt to isolate the source of the odor. Areas to assess include the active working face, the gas probes and/or the gas control system, if applicable. Inspecting the site for areas of ponded water will also be included in the assessment. If an identifiable odor is detected at any of these areas, the LM will be notified and will initiate one or more of the following corrective actions for each area:

4.13.3.1 Working Face

- Increasing the amount of weekly cover. The thickness of the weekly cover may be increased to provide a barrier against odor emanating from the waste mass.
- Reducing size of working face. The size of the working face may be decreased to minimize the amount of exposed waste.
- Operating a misting system. A misting system may be employed at the working face, which uses odor neutralizers to minimize odors.

4.13.3.2 Other Areas

- Removal of ponded water. Ponded water will be removed to prevent accelerated degradation of near-surface waste which may result in odor.
- Spills. Spills of odorous substances or materials will be promptly and properly managed to control odors.

4.14 Disease Vector Control §330.151

The need for extensive vector control (control of rodents, flies, and mosquitoes) will be minimized as a result of the waste materials permitted for disposal at the facility and through the operation method at this site. The waste materials permitted for disposal do not typically attract vectors. But to minimize the

potential problems with vector management, the facility will apply either weekly, intermediate, or final cover to prevent habitation of the landfill by vectors, such as rodents. Birds will be controlled by minimizing the working face and controlling ponded water. These measures, and additional measures that maybe employed to control bird populations at the facility, are included in the Bird Management Plan for the facility, included in Appendix E. Site personnel will perform daily checks for insects and rodents and they will evaluate the situation regularly and will be ready to take additional action should it be required. Professional exterminators will be contacted, if necessary, to eliminate rodents or other pests that may appear at the site. If chemicals are needed for disease vector control, a licensed professional will apply the appropriate chemical at the industry recommended rate, and will use the appropriate health and safety practices to minimize any potential adverse effects. The effectiveness of the treatment will be assessed by observing for the continued presence of vectors, and additional treatments by a professional exterminator will be performed until the problem is resolved.

4.15 Site Access Roads §330.153

The design of the facility provides for secure and reliable accessibility for all site operations as follows:

- Primary access by a controlled facility entry road/area commencing at the Old Jones Road, approximately 1000 feet northwest of its intersection with FM 60.
- Approximate 30-foot wide roadway section comprised of road base material provides the means for ingress and egress.
- The 30-foot wide access roadway will be an all-weather gravel road section that provides routine access to the operational area of the landfill, while simultaneously providing accessibility to any area of the site for emergency service vehicles (fire, police, ambulance, etc.).
- Around the site perimeter, 30-foot wide road will be provided along the southern and eastern perimeter, and 15-foot wide road will be provided along the northern and western perimeter. These roadways will be gravel/road base section that provides for the access to the entire facility.

Stockpiles of gravel, concrete rubble, and similar non-contaminated recycled materials will be maintained or otherwise available to provide and maintain all-weather roads to waste unloading areas designated for wet-weather operation. Proper use of these materials during inclement weather will minimize the amount of mud picked up by tires and wheel wells of waste vehicles, thereby minimizing the transport of mud onto the off-site roadways.

Access roadways shall be re-graded as necessary to minimize depressions, ruts, and potholes. On-site and access roadways will be maintained on a regular basis by grading and placing additional road materials to continuously provide access to the unloading area(s). Grading shall be performed when there is an accumulation of mud on site access roadways or when the roadway conditions require filling of potholes, removal of rocks or other debris, or other maintenance activities. On-site roadways will be inspected quarterly, at minimum. The results of these inspections and any required maintenance will be documented.

After inclement weather events, facility personnel will inspect the surface of Stewarts Meadow, between the landfill and FM 60, and will clean all mud that has been tracked onto the pavement from the facility as needed.

All access roads will be maintained in a reasonably dust-free condition by periodically spraying with water from the site water truck. If appropriate, commercial dust-control fluids may be spread on the roadway surface to retard the spread of dust.

The entrance road and access roadways of the facility are designed to be accessible in adverse weather conditions. All access from the access roadway to the active areas of the site are provided by one or more temporary roadways. These temporary access roadways will typically be constructed over areas of previous waste placement with intermediate cover (minimum 12-inches) with occasional placement of gravel, crushed rock, or other media as necessary to enhance the passability of the road. The surface condition of these roads will be maintained regularly using on-site earthmoving equipment to eliminate ruts or low spots that may impound water.

In some instances, temporary access roadways and ramps may need to be located on top of constructed sidewall liners. In these instances, there will be at least 2-feet of soil or road base fill above the liners' protective soil covering. The roadways shall be well defined and under no circumstances will disposal traffic be permitted on areas of unprotected constructed liner, particularly in inclement weather conditions when damage could easily be incurred to the liner systems.

During wet weather, the condition of these temporary roads will be improved, as necessary. Grading equipment at the site will be used, as necessary, to control or remove mud accumulations along the roads. Site personnel will also monitor the performance of the temporary drainage run-on berms, contaminated water dikes, and the permanent drainage channels with respect to ponding, erosion, and failure. Any areas not functioning as designed will be noted and repaired as the weather and ground conditions permit.

Pickup of litter and debris on and around on-site roads and channels will be conducted on a daily basis on days when the facility is operating.

4.16 Salvaging and Scavenging §330.155

Salvaging of waste materials delivered to the site for disposal or recycling shall not be allowed by the public. Salvaging by site personnel shall not be allowed to interfere with prompt sanitary disposal of solid waste or to create public health nuisances and shall always be associated with recycling operations at the landfill. Any salvaged materials will be considered as potential recycled materials and will be removed from the active area of facility to the recyclable materials area and beneficially reused in adequate frequency to prevent the development of nuisance conditions, to preclude the discharge of any pollutants from the area, and to prevent an excessive accumulation of such materials at the site. Nonhazardous Class 3 industrial wastes and non-RACM from construction/demolition wastes received at the disposal site shall not be salvaged.

Scavenging is prohibited at all times. Site access controls and monitoring by facility personnel will be used to prevent scavenging.

4.17 Endangered Species Protection §330.157

A threatened and endangered species assessment was conducted at the facility. The objective of the assessment was to evaluate the potential for the existence of species and/or their habitat that are considered protected under the Endangered Species Act of 1973 and subsequent amendments and listings in accordance with the requirements of 30 TAC §330.61(n). Based on a field survey and available records, it was concluded that the facility and the operation of the facility is not expected to result in the

destruction or adverse modification of the critical habitat of endangered or threatened species, or cause or contribute to the taking of any endangered or threatened species. A copy of the assessment is included in Part I/II, Appendix A.

4.18 Landfill Gas Control §330.159

Controlling and monitoring of landfill gas (LFG) for the Brazos Valley Disposal Facility will be in accordance with Part III, Attachment 6, Landfill Gas Management Plan. The gas management plan provides for inclusion of applicable documentation in the site operating record and for submittal to the TCEQ. The LM shall ensure that all relevant site personnel implement and adhere to the Landfill Gas Management Plan.

4.19 Oil, Gas, and Water Wells §330.161

The LM will provide written notification to the TCEQ of the location of any and all existing or abandoned on-site water wells, or crude oil, natural gas, or other wells associated with mineral recovery within 30 days of discovery of any such well.

The LM will, within 30 days of discovery of an existing or abandoned on-site water well, provide the TCEQ with written certification that the well has been capped, plugged, and closed in accordance with all applicable rules and regulations of the TCEQ or any other state agency with jurisdiction. Any water well that will be used for supply at the facility may remain in use as long as it is located outside the waste footprint, it is not impacted by landfill operations, it can be demonstrated that well design and installation will prevent any cross-contamination from the waste management unit to the water well production zone and between any water-bearing zones, and there is an approved sampling plan to include frequency and parameters. Any well located within the permit boundary that is proposed to be used to supply water at the facility must be approved by the TCEQ prior to such use.

Within 30 days after plugging any existing or abandoned on-site crude oil, natural gas, or other wells associated with mineral recovery, the LM will provide the TCEQ with written certification that any such wells have been properly capped, plugged, and closed in accordance with all applicable rules and regulations of the Railroad Commission of Texas. Producing crude oil or natural gas wells that do not affect or hamper landfill operations may be operated within the facility if identified in a written notification to the TCEQ.

If any water or other type of well under the jurisdiction of the TCEQ is to be plugged, it will be plugged in accordance with all applicable state requirements and/or any additional requirements imposed by the TCEQ. A copy of the well plugging report required to be submitted to the appropriate state agency will also be submitted to the TCEQ within 30 days after the well has been plugged.

The LM will submit a permit modification to the TCEQ identifying any proposed changes to the liner installation plan as a result of any well abandonment.

4.20 Compaction §330.163

Proper spreading and compaction of wastes are necessary to conserve the useable waste disposal volume and to minimize future settlement in the closed portions of landfill. Waste compaction is accomplished by repeated passage of landfill equipment over the waste material. The discharged waste will be spread, shaped, and compacted by a minimum of three passes of the heavy equipment. Typically the waste

compactors repeated spreading and compaction of the waste minimizes voids, prohibits the creation of habitats for vectors, facilitates rainfall runoff management, and provides for more stable weekly cover placement.

4.21 Landfill Cover §330.165

4.21.1 Soil Management

On-site soils are suitable for weekly and intermediate cover material. Generally, the cover material will be placed in a stockpile located where it does not interfere with vehicular traffic or impede drainage. To prevent the cover material from becoming excessively moist, the stockpile will be maintained with as little surface area exposed to rainfall as possible.

4.21.2 Weekly Soil

Weekly cover of waste is necessary to control disease vectors, windblown waste, odors, fires, and scavenging and promotes runoff from the fill area. At least once weekly, all waste will be covered by at least 6 inches of well-compacted soil cover material that has not been previously mixed with garbage, rubbish, or other solid waste.

The soil used as weekly cover shall have a minimum thickness of 6 inches. To ensure that the weekly cover soil is adequate (i.e., minimizes vectors, promotes contaminated stormwater runoff, minimizes odors, etc.), the following procedures will be followed:

- The weekly cover is sloped to drain;
- The weekly cover is compacted with a minimum of two passes with the dozer to minimize stormwater infiltration;
- The LM documents where weekly cover has been placed and visually inspects during placement that a minimum of 6 inches (compacted thickness) of weekly cover soil has been placed and that no waste is exposed through it. The LM documents, on a weekly basis, the weekly cover placement area and indicates that the thickness and condition has been visually verified in the Cover Application Log (discussed further in Section 4.21.7 of this SOP);
- After each rainfall event, the LM inspects all weekly cover areas for erosion, exposed waste, or other damage, and repairs as necessary. Runoff from damaged or eroded areas is handled as contaminated water until repairs are completed; and
- The LM inspects weekly cover for seeps. The placement of soil berms controls all seepage water from waste below the weekly cover and diverts it to the contaminated water collection area. Contaminated water containment area calculations are included in Part III, Attachment 2.

Inactive areas with 6 inches of weekly cover are inspected weekly for erosion, ponded water, seeps, protruding waste, or other detrimental conditions that may cause contaminated runoff from the weekly cover. After a period of 180 days, an additional 6 inches of earthen material not previously mixed with garbage, rubbish, or other solid waste is placed over the weekly cover for a total of not less than 12 inches of cover. This 12-inch-thick layer of cover soil is classified as "intermediate cover," as described in Section 4.21.4 of this SOP. Once the area becomes active again, the top 6 inches are stripped off for use as daily cover in other areas.

4.21.3 Alternative Weekly Cover

The Brazos Valley Disposal Facility may, when operational conditions warrant, request from the TCEQ the use of alternate weekly cover (AWC), provided that the AWC minimally satisfies the weekly cover requirements of TAC §330.165(d). Examples of AWC systems that may be employed at the facility are: foams, tarps, and geosynthetics. Prior to utilizing any additional AWC at the site, the facility shall submit an alternative weekly cover operating plan to the TCEQ Executive Director for approval, which includes:

- A description of the material to be used and its thickness;
- Its effect on vectors, fires, odors, and control of windblown litter and waste;
- The operational methodology to be employed by the facility when using this AWC;
- The chemical composition of the AWC and the Material Safety Data Sheet(s) for the material; and
- Any other pertinent characteristic, feature, or other factor related to using this AWC.

A part of the alternative weekly cover operational plan will detail the operational conditions wherein the AWC may be used, with any accompanying constraints on using the AWC.

4.21.4 Intermediate Cover

All areas that have received waste but will be inactive for longer than 180 days will be provided with intermediate cover (or final cover). Intermediate cover will include six inches of suitable earthen material that is capable of sustaining native plant growth and will be seeded, sodded, or otherwise stabilized following its application in order to control erosion. In total, intermediate cover will consist of 12 inches or more of suitable earthen material (including the six inches of weekly cover previously placed). Areas of intermediate cover will be graded for proper drainage to prevent ponding of water, and plant growth or other erosion control features will be maintained. Runoff from areas that have received intermediate cover will be treated as clean stormwater.

The LM will document where intermediate cover has been placed and document through visual inspection that a minimum of 12 inches (compacted thickness) of intermediate cover has been placed. This information will be documented in the cover log. The log will specify the date that intermediate cover was accomplished (i.e., 12 inches of cover), how it was accomplished, and the last area covered.

The LM will inspect the intermediate cover at the site on a weekly basis and after a significant rain event (0.5 inches or more) in which runoff occurs.

The TCEQ may grant a temporary waiver from the requirements of placing weekly or intermediate cover in the frequency outlined above if the LM demonstrates that there are extreme seasonal climatic conditions that make meeting these requirements impractical.

4.21.5 Final Cover

Final cover placement will occur in areas of the site filled to capacity. Closure of individual areas will be in accordance with the Part III, Attachment 7, the Final Closure Plan, and will permit ongoing landfilling operations to continue until the time of final closure. The surface will be managed throughout the active life of the site to minimize infiltration of water into the filled areas and to minimize contact with solid waste.

4.21.6 Erosion of Cover

Erosion gullies or washed-out areas deep enough to jeopardize the final or intermediate cover will be repaired within 5 days of detection by restoring the cover material, grading, compacting, and seeding. If additional time is required or the repairs are delayed because of weather conditions, the TCEQ office will be notified for approval of an extension. An eroded area is considered to be deep enough to jeopardize the final or intermediate cover if it exceeds four inches in depth as measured from the vertical plane from the erosion feature and the 90-degree intersection of this plane with the horizontal slope face or surface. The date of detection of erosion of intermediate or final cover and date of completion of repairs, including reasons for any delays, will be documented in the cover log.

During the active life of the site, inspection of intermediate and final cover will be performed on a weekly basis, as specified by the facility's TCEQ Multi-Sector General Stormwater Permit that requires weekly inspections and documentation. During the active life of the site, inspections of intermediate and final cover also will be performed after a significant rain event (0.5 inches or more) in which runoff occurs, as ground conditions allow. The inspections will include any temporary or permanent erosion measures that are in place at the time of the inspection. During the post-closure maintenance period of the site, the final cover will be inspected quarterly. Reports of these inspections will continue to be maintained as part of the site operating record.

After final closure of the facility, the final cover will be inspected, repaired, and documented in accordance with Part III, Attachment 8, the Post-Closure Plan.

4.21.7 Cover Application Log and Inspection Record

Throughout the landfill operation, a cover application log is maintained and is readily available for inspection in accordance with 30 TAC §330.165(h). For intermediate cover and weekly cover, the log specifies the area covered (by use of the grid system), how it was placed, and when it was completed. For final cover, the log shows the final cover area, reports the date the final cover was applied, records the thickness of the final cover applied on that date, and references the final cover certification report for each area. The LM signs beside each entry to certify that the work was accomplished as stated in the log. Repairs are documented in the appropriate cover log.

As discussed in Section 4.21.6, the date of detection of erosion of intermediate or final cover and date of completion of repairs, including reasons for any delays, will also be documented in the cover log.

4.22 Ponded Water Prevention Plan §330.167

Ponding of water over waste-filled areas will be prevented using the following techniques: (i) thorough compaction of waste as described previously in this SOP, to limit differential waste settlement/consolidation; (ii) proper grading of final waste slopes to the elevations shown in Part III, Attachment 7, Closure Plan, which provide for positive surface water drainage without depressions or low spots; (iii) proper grading of interim waste slopes to promote positive water surface drainage; and (iv) installation of upgradient diversion berms to minimize the amount of water entering the disposal area.

Ponded water in areas having intermediate or final cover, water shall be considered "non-contact" (e.g., having no contact with waste or weekly covered waste) and discharged into the facility's stormwater management system in accordance with Part III, Attachment 2 of the SDP. Efforts to keep such water from coming in contact with waste or waste with weekly cover shall include berms, temporary roadways, and other diversionary or conveyance systems associated with the final developed contours per the SDP.

Areas of intermediate and final cover experiencing ponding of water, due to erosion or differential settlement, shall be graded with select fill to minimize the potential for recurring ponding of water. The ponding of water on areas of intermediate and final cover shall be remediated as soon as working conditions permit, provided that the integrity of the cover system has not been violated. Waste fill areas will be inspected on a weekly basis as described in Section 4.21 of this SOP to identify depressions or other potential ponding sites. The waste fill areas will also be inspected after a significant rain event (0.5 inches or more) in which runoff occurs as soon as practicable, but no later than 48 hours after the rain event. In the event ponded water on the landfill is observed, action will be taken to remedy the problem within 7 days. Methods for addressing areas of ponded water include removing accumulated water with a small portable pump and filling the area of ponding with clean soil and re-grading. If necessary to effect repair of ponded areas, water will be removed and managed as uncontaminated water unless the water has come in contact with waste.

Ponded water in the active area of the facility shall be considered as “contact” water and shall be managed in accordance with Attachment 3 of the SDP. Under no circumstances shall such contact water be allowed to accumulate on landfill liners such that the 25-year, 24-hour storm storage potential with freeboard cannot be contained.

During periods of extended wet weather, access to pump and repair areas may be delayed. Efforts will be made to access these areas as soon as practical.

4.23 Waste in Enclosed Containers or Enclosed Vehicles §330.169

Acceptance of waste in enclosed containers or enclosed vehicles at the facility shall be in accordance with the requirements expressed herein. Waste in enclosed containers or enclosed vehicles shall not be accepted at a Type IV landfill unless all of the following conditions have been met:

- The Brazos Valley Disposal Facility shall participate in the funding program to monitor these activities as detailed hereafter;
- Each enclosed container or enclosed vehicle shall have all required approvals and/or permits from the TCEQ in accordance with TAC §330.103 relating to Collection and Transportation Requirements;
- Enclosed containers or enclosed vehicles shall only be accepted at their designated time and on the specified day in accordance with the requirements detailed hereafter, TCEQ permits, or other orders of the TCEQ;
- A TCEQ inspector shall be on site and shall witness the unloading process to ensure that no putrescible waste or household waste is present. Any waste considered non-allowable by the TCEQ inspector shall be removed from the working face and subsequently from the site. The offending transporter is responsible for the proper disposal of this rejected waste. In the event the unauthorized waste is not discovered until after the vehicle that delivered it is gone, the waste is placed in suitable collection bins using on-site equipment. An effort is first made to identify the entity that deposited the prohibited waste and have them return to the site and properly dispose of the waste. In the event that identification is not possible, the LM will manage the waste so it is disposed of properly; however, the waste shall not be allowed to remain on the site in the collection bins for more than 24 hours;

- Each transporter delivering waste in enclosed containers or enclosed vehicles shall, prior to discharging the load, provide to the Brazos Valley Disposal Facility a transporter trip ticket for the route delivered. Trip tickets shall be maintained as part of the operating record;
- Stationary compactors shall be allowed to discharge their wastes at the Brazos Valley Disposal Facility provided that the containers have been permitted by the TCEQ in accordance with §330.7(c) when municipal transporter routes are permitted in accordance with §330.7(c)(2) & (3). The facility shall obtain from the transporter a hauler trip ticket for a municipal transporter route or a stationary compactor, as appropriate, prior to allowing discharge of the material at the landfill. These trip tickets shall be maintained as a part of the operating record.

The TCEQ will determine the approximate annual costs of implementing and maintaining the surveillance and enforcement of all the activities associated with the acceptance of enclosed containers or enclosed vehicles at Type IV landfills. Notification of these costs will be provided to each affected holder of a Type IV landfill permit with notice of public hearing to apportion these costs. The public hearing will be held at a location to be determined by the commission with 20 days advance notice. Notice will be provided to Type IV landfill operators by written notice in regular and certified mail. The public hearing shall be held to establish the total compensation and expenditures required to administer this program and the apportionment of those costs to the Type IV landfill operators to be reimbursed to the commission. Unless other arrangements are made, the apportioned monthly payments will be due by the 10th day of each month.

The apportioned costs to each Type IV landfill may be altered periodically to add or subtract landfills from the program. A 30-day notice will be provided to each participating Type IV landfill and/or proposed additional landfill and a hearing will be held upon request by one of the affected parties or on the commission's own motion.

4.24 Disposal of Special Waste §330.171

Special wastes will not be accepted at the Brazos Valley Disposal Facility, with the exception of those outlined in Section 4.5 of this plan.

4.25 Disposal of Industrial Wastes §330.173

Pursuant to 30 TAC §330.173(i), Class 2 industrial solid waste may be disposed at the Brazos Valley Disposal Facility provided the waste is consistent with the limitations established in 30 TAC §330.5(a)(2). Pursuant to 30 TAC §330.173(j), Class 3 industrial solid waste may be disposed at the Brazos Valley Disposal Facility provided the acceptance of such waste does not interfere with site operation.

4.26 Visual Screening of Deposited Waste §330.175

Visual screening of the landfill site is provided by buffers, trees, shrubs, and fences that block the landfill from the view of the public traveling public roads in the site vicinity.

4.27 Leachate and Gas Condensate Recirculation §330.177

Leachate and gas condensate recirculation will not occur at the Brazos Valley Disposal Facility.

LIST OF APPENDICES

- A. Random Load Inspection Form
- B. Fire Protection Equipment Capacity Calculation
- C. Example Perimeter Fence and Gate Inspection and Repair Record
- D. Example Site Marker Inspection and Repair Record
- E. Bird Management Plan

APPENDIX A
RANDOM LOAD INSPECTION FORM



Random Inspection Form

DATE: _____

TIME: _____

CUSTOMER NAME: _____

ADDRESS: _____

PHONE: _____

GRID: _____

TRUCK #: _____

QUANTITY: _____

COMMENTS/UNACCEPTABLE MATERIAL: _____

INSPECTED BY: _____

COMPANY REPRESENTATIVE

ALL INFORMATION MUST BE COMPLETED

APPENDIX B
FIRE PROTECTION EQUIPMENT CAPACITY CALCULATION



Subject: Fire Protection Equipment Capacity Calculation		
Job No.: 103-94596	Made by: DM	Date: 5/19/2011
Ref: CCAA Type IV	Checked: MX	Sheet: 1 of 9
Landfill SOP	Reviewed: <i>CGD</i>	

OBJECTIVE: Evaluate the adequacy of the on-site equipment to place a 6-inch layer of earthen material on the largest area not already covered within 1 hour of detecting a fire. Evaluate the capacity of the equipment to haul soil from a stockpile 1,000 feet away and for a bulldozer to spread the soil over the open area. The equipment to be evaluated include a CAT 320 excavator, a CAT 725 dump truck, and a CAT D7 bulldozer. The equipment being evaluated is typical and may be replaced with equivalent equipment of a different brand or size.

- ASSUMPTIONS:**
- I) Largest working face for a typical operation is approximately 30,000 square feet (200 feet by 150 feet).
 - II) Volume of working face with 6-inch layer is approximately 639 cubic yards (including a 15% multiplier).
 - III) Distance to earthen material borrow area is 1,000-feet.
 - IV) Time to cover working face is 60 minutes.
 - V) Bulldozer will be used at the working face for spreading

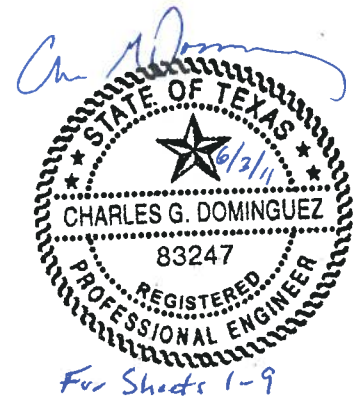
EQUIPMENT: Excavator

SPECS	Bucket Volume (heaped)	1.96 cy
	Load Bucket	0.09 min
	Swing Loaded	0.06 min
	Dump Bucket	0.03 min
	Swing Empty	0.05 min
	Cycle Time per Load	0.23 min

Dump Truck

Dump Capacity:	18.7 cy
Loading Time	2.2 min
Hauling Time (0%grade)	0.6 min
Dumping Time	0.5 min
Return Time (0% grade)	0.5 min

(Assumed)



Golder Associates Inc.
F-2578

INTENDED FOR PERMITTING PURPOSES ONLY

CALCULATIONS: Excavator and Dump Truck
 Cycle Time = Load + Haul + Return
 Cycle Time = 3.8 min

In 60 minutes:
 Number of Loads 15
 Volume of Earthen Material 280.5 cy

Excavator and One (1) Dump Truck
 Total Volume in 60 minutes = 280.5 cy

CAT D7 Bulldozer

- In an emergency fire situation, the bulldozer will push nearby soil already hauled and dumped next to
- Average dozing distance assumed as 100 feet.
- CAT D7 Dozer production = maximum production x correction factors:
- Max production per D7 Dozer = 600 cy/hr
- Loose stockpile, correction factor = 1.20
- Excellent Operator, correction factor = 1.00
- Production = 720 cy/hr

Total Soil handled by the bulldozer = 720 cy/hr



Subject: Fire Protection Equipment Capacity Calculation		
Job No.: 103-94596	Made by: DM	Date: 5/19/2011
Ref: CCAA Type IV Landfill SOP	Checked: MX Reviewed: <i>CGD</i>	Sheet: 2 of 9

CONCLUSION: The on-site equipment is sufficient to place a 6-inch layer of earthen material on the largest working face waste area not already covered within one hour of detecting a fire. During site operations, soil will be stockpiled throughout the day and enough soil is maintained to cover an area of 200 feet by 150 feet. Even if the stockpile does not contain enough soil at the time of a fire, the other site equipment (excavator and dump truck) are capable of an additional hauling 281 cy (~44% of total soil needed) to the working face within one hour. This amount, in addition to that already stockpiled for daily cover, will ensure an adequate amount of soil for fire protection.

REFERENCES: 1. Caterpillar Performance Handbook, Edition 40, January 2010.

Excavators | Specifications



MODEL	320D		320D		320D RR		320D L	
Sourcing	Japan, China, Indonesia, Brazil		Japan		Japan		Japan, China, Indonesia, Brazil	
Flywheel Power	103 kW	138 hp	110 kW	148 hp	103 kW	138 hp	103 kW	138 hp
Operating Weight*	20 300 kg	44,700 lb	20 300 kg	44,700 lb	22 800 kg	50,265 lb	21 500 kg	47,400 lb
Bucket Capacity Range (heaped)	0.45-1.5 m ³	0.59(1.96) yd ³	0.45-1.5 m ³	0.59-1.96 yd ³	0.8-1.5 m ³	1.05-1.96 yd ³	0.45-1.7 m ³	0.59-2.2 yd ³
Engine Model	C6.4 ACERT		C6.4 ACERT		C6.4 ACERT		C6.4 ACERT	
Rated Engine RPM	1800		1800		1800		1800	
No. of Cylinders	6		6		6		6	
Bore	102 mm	4"	102 mm	4"	102 mm	4"	102 mm	4"
Stroke	130 mm	5"	130 mm	5"	130 mm	5"	130 mm	5"
Displacement	6.4 L	391 in ³	6.4 L	391 in ³	6.4 L	391 in ³	6.4 L	391 in ³
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 205 L/min	2 × 54 gpm	2 × 205 L/min	2 × 54 gpm	2 × 205 L/min	2 × 54 gpm	2 × 205 L/min	2 × 54 gpm
Relief Valve Settings:								
Implement Circuits	35 000 kPa	5076 psi	35 000 kPa	5076 psi	35 000 kPa	5076 psi	35 000 kPa	5076 psi
Travel Circuits	35 000 kPa	5076 psi	35 000 kPa	5076 psi	35 000 kPa	5076 psi	35 000 kPa	5076 psi
Swing Circuits	25 000 kPa	3630 psi	25 000 kPa	3630 psi	25 000 kPa	3630 psi	25 000 kPa	3630 psi
Pilot Circuits	3900 kPa	566 psi	3900 kPa	566 psi	3900 kPa	566 psi	3900 kPa	566 psi
Maximum Drawbar Pull	206 kN	46,311 lb	206 kN	46,311 lb	206 kN	46,311 lb	206 kN	46,311 lb
Maximum Travel Speed at Rated RPM	Two Speed Travel Lo: 3.5 km/h 2.2 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 3.5 km/h 2.2 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 3.5 km/h 2.2 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 3.5 km/h 2.2 mph Hi: 5.5 km/h 3.4 mph	
Width of Standard Track Shoe	600 mm	2'0"	600 mm	2'0"	600 mm	2'0"	800 mm	2'8"
Overall Track Length	4075 mm	13'4"	4075 mm	13'4"	4075 mm	13'4"	4450 mm	14'7"
Ground Contact Area with Std. Shoe	4.26 m ²	6600 in ²	4.26 m ²	6600 in ²	4.26 m ²	6600 in ²	4.72 m ²	7320 in ²
Track Gauge	2200 mm	7'3"	2200 mm	7'3"	2200 mm	7'3"	2380 mm	7'10"
Fuel Tank Refill Capacity	410 L	108 U.S. gal	410 L	108 U.S. gal	284 L	75 U.S. gal	410 L	108 U.S. gal
Hydraulic System (includes tank)	260 L	69 U.S. gal	260 L	69 U.S. gal	240 L	63 U.S. gal	260 L	69 U.S. gal

*Operating weight includes coolant, lubricants, full fuel tank, standard shoes, bucket and operator 75 kg (165 lb).
 NOTE: Certain models may not be available in all Sales areas.
 Specifications may also vary by Sales area.
 Contact your Cat dealer for details.

Cycle Time Estimating Charts | Excavators

Cycle Time Estimating Chart

Model		307C	308D CR	308D CR SB	311D LRR	312D, 312D L	315D L	319D L, 319D LN	M312, M313C, M315C, M315D	M315, M316C, M316D	M318C, M318D	M322C, M322D
Bucket Size	L yd ³	280 0.37	220 0.30	220 0.30	450 0.59	520 0.68	520 0.68	800 1.05	610 0.80	750 0.98	900 1.18	1050 1.37
Soil Type		← Packed Earth →						← Sand/Gravel →				
Digging Depth	m ft	1.5 5'0"	1.8 6'0"	1.8 6'0"	1.5 5'0"	1.8 6'0"	3.0 10'0"	3.0 10'0"	3.0 10'0"	3.0 10'0"	3.0 10'0"	3.0 10'0"
Load Bucket	min	0.08	0.09	0.08	0.07	0.07	0.07	0.09	0.05	0.06	0.06	0.08
Swing Loaded	min	0.05	0.03	0.03	0.06	0.06	0.08	0.09	0.05	0.05	0.06	0.06
Dump Bucket	min	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04
Swing Empty	min	0.06	0.06	0.08	0.05	0.05	0.06	0.07	0.04	0.04	0.05	0.05
Total Cycle Time	min	0.22	0.21	0.22	0.21	0.21	0.24	0.28	0.17	0.18	0.20	0.23

4

Cycle Time Estimating Chart

Model		320D	320D RR, 321D CR, 323D	324D	328D LCR	329D	336D	345D	365C L	385C
Bucket Size	L yd ³	800 1.05	800 1.05	1000 1.31	N/A	1100 1.44	1400 1.83	2400 3.0	1900 2.5	3760 5.0
Soil Type		← Hard Clay →								
Digging Depth	m ft	2.3 8	2.3 8	3.2 10	N/A	3.2 10	3.4 11	4.0 13	4.2 14	5.6 18
Load Bucket	min	0.09	0.09	0.09	N/A	0.09	0.09	0.13	0.10	0.19
Swing Loaded	min	0.06	0.06	0.06	N/A	0.06	0.07	0.07	0.09	0.06
Dump Bucket	min	0.03	0.03	0.04	N/A	0.04	0.04	0.02	0.04	0.03
Swing Empty	min	0.05	0.05	0.06	N/A	0.06	0.07	0.06	0.07	0.07
Total Cycle Time	min	0.23	0.23	0.25	N/A	0.25	0.27	0.28	0.30	0.35

N/A = Not Applicable

Articulated Trucks | Specifications



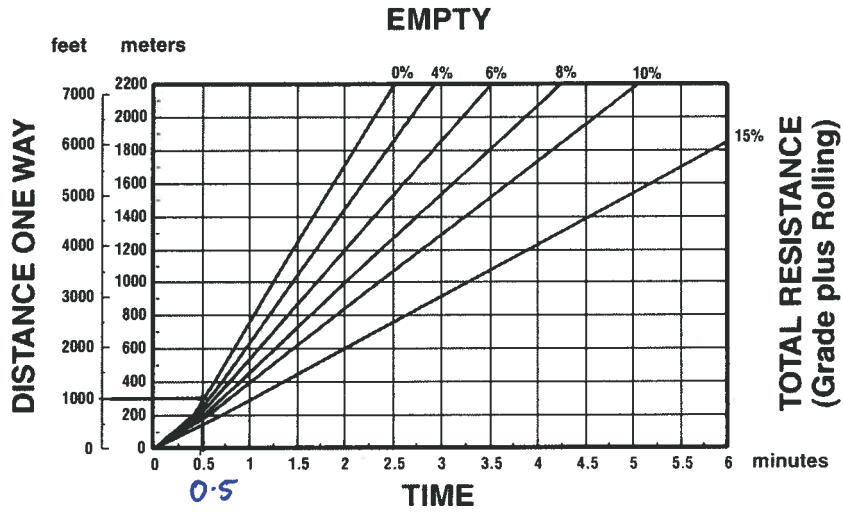
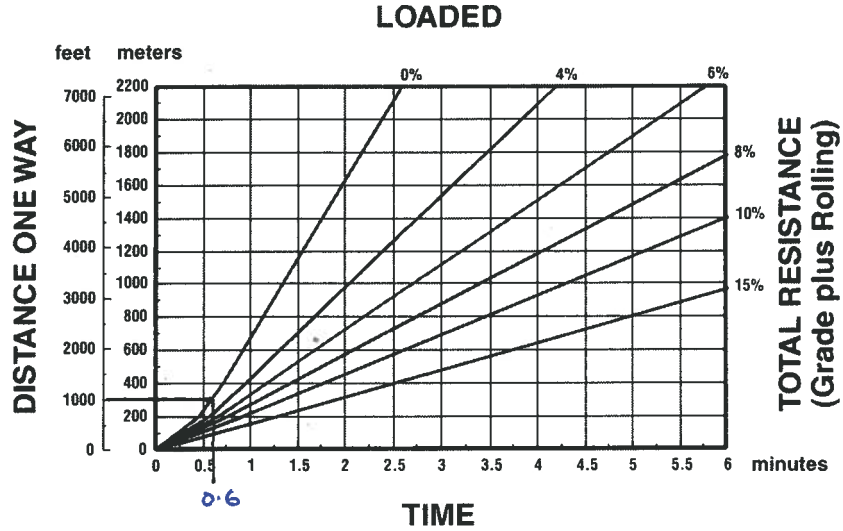
MODEL	725		730		730 Ejector	
Gross Power — SAE J1995	230 kW	309 hp	242 kW	325 hp	242 kW	325 hp
Net Power — SAE J1349	225 kW	301 hp	237 kW	317 hp	237 kW	317 hp
Net Power — ISO 9249	227 kW	304 hp	239 kW	321 hp	239 kW	321 hp
Net Power — EEC 80/1269	227 kW	304 hp	239 kW	321 hp	239 kW	321 hp
Operating Weight (Empty)*	22 260 kg	49,075 lb	22 850 kg	50,376 lb	25 550 kg	56,328 lb
Top Speed (Loaded)	56.8 km/h	35.3 mph	55.3 km/h	34.4 mph	55.3 km/h	34.4 mph
GMW — Gross Machine Weight	45 850 kg	101,082 lb	50 970 kg	112,370 lb	53 670 kg	118,322 lb
Distribution Empty:						
Front		58.5%		57.5%		54.7%
Center		21.7%		21.9%		23.3%
Rear		19.8%		20.6%		22.0%
Distribution Loaded:						
Front		32.8%		31.1%		27.7%
Center		34.1%		34.7%		36.5%
Rear		33.1%		34.2%		35.8%
Max. Capacity**	23.6 t	26 T	28.1 t	31 T	28.1 t	31 T
Struck (SAE)	11.1 m ³	14.5 yd ³	13.1 m ³	17.1 yd ³	13.5 m ³	17.7 yd ³
Heaped (2:1) (SAE)	14.3 m ³	18.7 yd ³	16.9 m ³	22.1 yd ³	16.9 m ³	22.1 yd ³
Engine Model	ACERT C11		ACERT C11		ACERT C11	
No. Cylinders	6		6		6	
Bore	130 mm	5.1"	130 mm	5.1"	130 mm	5.1"
Stroke	140 mm	5.5"	140 mm	5.5"	140 mm	5.5"
Displacement	11.2 L	680 in ³	11.2 L	680 in ³	11.2 L	680 in ³
Tires, Front, Center, Rear	23.5R25 Radials		23.5R25 Radials		750/65 Radials	
Circular Clearance Diameter	15.2 m	49'9"	15.2 m	49'9"	15.4 m	50'5"
Fuel Tank Refill Capacity	355 L	94 U.S. gal	355 L	94 U.S. gal	355 L	94 U.S. gal
General Dimensions (Empty):						
Height to Cab Top	3.44 m	11'3"	3.44 m	11'3"	3.45 m	11'3"
Wheel Base (Front-Center of Bogie)	4.67 m	15'4"	4.67 m	15'4"	4.67 m	15'4"
Overall Length	9.92 m	32'5"	9.92 m	32'5"	9.73 m	31'9"
Loading Height (Empty)	2.76 m	9'1"	2.89 m	9'5"	3.05 m	10'0"
Height at Full Dump	6.41 m	21'1"	6.50 m	21'3"	—	—
Body Length	5.78 m	19'0"	5.84 m	19'2"	5.35 m	17'6"
Width (Operating — Over Mirrors)	3.54 m	11'7"	3.54 m	11'7"	3.54 m	11'7"
Front Tire Tread	2.28 m	7'5"	2.28 m	7'5"	2.28 m	7'5"

*Includes coolant, lubricant and full fuel tank.

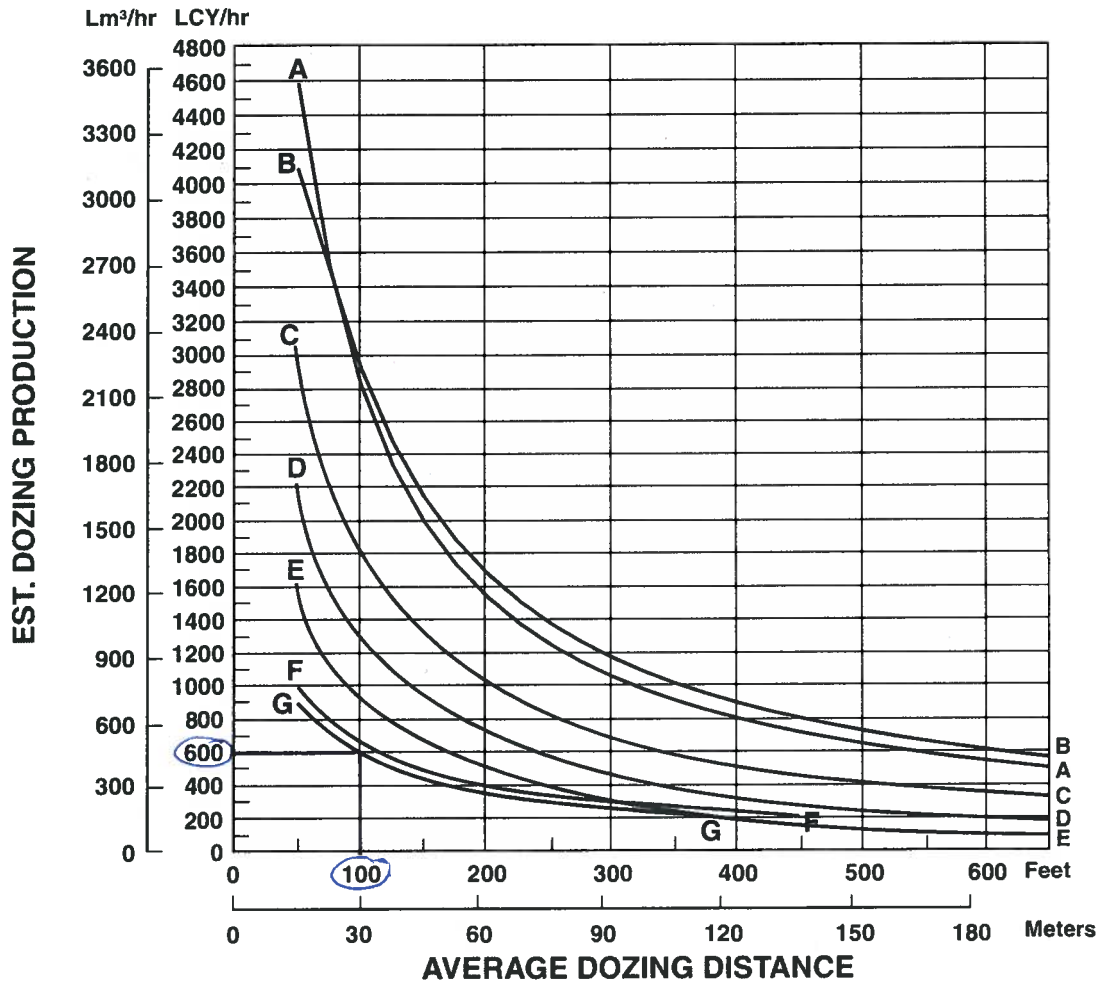
**Rating dependent on optional equipment. Maximum gross weight (empty weight plus payload) should not be exceeded.

725 Travel Time — Loaded/Empty
● 23.5R25 Tires

Articulated Trucks



ESTIMATED DOZING PRODUCTION • Universal Blades • D7G through D11T



KEY

- A — D11T-11U
- B — D11T CD
- C — D10T-10U
- D — D9R/D9T-9U
- E — D8R/D8T-8U
- F — D7R Series 2-7U
- G — D7G-7U

NOTE: This chart is based on numerous field studies made under varying job conditions. Refer to correction factors following these charts.

Bulldozers

**Job Factors
Estimating Production Off-The-Job
● Example Problem**

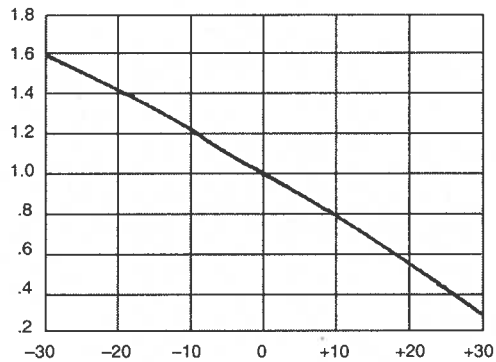
JOB CONDITION CORRECTION FACTORS

	TRACK- TYPE TRACTOR	WHEEL- TYPE TRACTOR
OPERATOR —		
Excellent	1.00	1.00
Average	0.75	0.60
Poor	0.60	0.50
MATERIAL —		
Loose stockpile	1.20	1.20
Hard to cut; frozen —		
with tilt cylinder	0.80	0.75
without tilt cylinder	0.70	—
Hard to drift; "dead" (dry, non-cohesive material) or very sticky material	0.80	0.80
Rock, ripped or blasted	0.60-0.80	—
SLOT DOZING	1.20	1.20
SIDE BY SIDE DOZING	1.15-1.25	1.15-1.25
VISIBILITY —		
Dust, rain, snow, fog or darkness	0.80	0.70
JOB EFFICIENCY —		
50 min/hr	0.83	0.83
40 min/hr	0.67	0.67
BULLDOZER*		
Adjust based on SAE capacity relative to the base blade used in the Estimated Dozing Production graphs.		
GRADES — See following graph.		

*NOTE: Angling blades and cushion blades are not considered production dozing tools. Depending on job conditions, the A-blade and C-blade will average 50-75% of straight blade production.

% Grade vs. Dozing Factor

(-) Downhill
(+) Uphill



ESTIMATING DOZER PRODUCTION OFF-THE-JOB

Example problem:

Determine average hourly production of a D8T/8SU (with tilt cylinder) moving hard-packed clay an average distance of 45 m (150 feet) down a 15% grade, using a slot dozing technique.

Estimated material weight is 1600 kg/Lm³ (2650 lb/LCY). Operator is average. Job efficiency is estimated at 50 min/hr.

Uncorrected Maximum Production — 458 Lm³/h (600 LCY/hr) (example only)

Applicable Correction Factors:

- Hard-packed clay is "hard to cut" material -0.80
- Grade correction (from graph) -1.30
- Slot dozing -1.20
- Average operator -0.75
- Job efficiency (50 min/hr) -0.83
- Weight correction (2300/2650) -0.87

$$\begin{aligned}
 \text{Production} &= \text{Maximum Production} \times \text{Correction Factors} \\
 &= (600 \text{ LCY/hr}) (0.80) (1.30) (1.20) \\
 &\quad (0.75) (0.83) (0.87) \\
 &= 405.5 \text{ LCY/hr}
 \end{aligned}$$

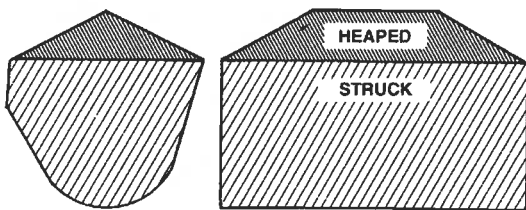
To obtain production in metric units, the same procedure is used substituting maximum uncorrected production in Lm³.

$$\begin{aligned}
 &= 458 \text{ Lm}^3/\text{h} \times \text{Factors} \\
 &= 309.6 \text{ Lm}^3/\text{h}
 \end{aligned}$$

**Wheel Loaders
Integrated Toolcarriers**

**SAE Loader Ratings
Machine Selection**
● Cycle Time Factors

SAE BUCKET RATING



SAE Bucket Capacities

Struck capacity is that volume contained in a bucket after a load is leveled by drawing a straight edge resting on the cutting edge and the back of the bucket.

Heaped capacity is a struck capacity plus that additional material that would heap on the struck load at a 2:1 angle of repose with the struck line parallel to the ground.

SAE J742 (FEB85) specifies that the addition of any auxiliary spill guard to protect against spillage which might injure the operator will not be included in bucket capacity ratings. Buckets with irregular shaped cutting edges (vee edge) the strike plane should be drawn at one-third the distance of the protruding portion of the cutting edge. Cat rock buckets are built with integral see-through rock guards. Cat light material buckets come standard with bolt-on edges. These features which add to actual bucket capacity are included in published ratings.

Dump Height

SAE J732 JUN92 specifies that dump height is the vertical distance from the ground to the lowest point of the cutting edge with the bucket hinge pin at maximum height and the bucket at a 45° dump angle. Dump angle is the angle in degrees that the longest flat section of the inside bottom of the bucket will rotate below horizontal.

SELECTING A MACHINE

Steps in selecting the proper size loader:

1. Determine production required or desired.
2. Determine loader cycle time and cycles per hour.
A machine size must be assumed to select a basic cycle time.

3. Determine required payload per cycle in loose cubic yards and pounds (meters and kilograms).
4. Determine bucket size needed.
5. Make machine selection using bucket size and payload as criteria to meet production requirements.
6. Compare the loader cycle time used in calculations to the cycle time of the machine selected. If there is a difference, rework the process beginning at step 2.

1. Production Required

The production required of a wheel or track loader should be slightly greater than the production capability of the other critical units in the earth or material moving system. For example, if a hopper can handle 300 tons per hour, a loader capable of slightly more than 300 tons should be used. Required production should be carefully calculated so the proper machine and bucket selections are made.

2. Loader Cycle Times

When hauling loose granular material on a hard smooth operating surface, a .45-.55 minute basic cycle time is considered reasonable for Cat articulated loaders with a competent operator. This includes load, dump, four reversals of direction, full cycle of hydraulics and minimum travel.

Material type, pile height, and other factors may improve or reduce production, and should be added to or subtracted from the basic cycle time when applicable.

When hauls are involved, obtain the haul and return portion of the cycle from the estimated travel chart (this section). Add the haul and return times to the estimated basic cycle time to obtain total cycle time.

CYCLE TIME FACTORS

A basic cycle time (Load, Dump, Maneuver) of .45-.55 minutes is average for an articulated loader [the basic cycle for large loaders, 3 m³ (4 yd³) and up, can be slightly longer], but variations can be anticipated in the field. The following values for many variable elements are based on normal operations. Adding or subtracting any of the variable times will give the total basic cycle time.

APPENDIX C

EXAMPLE PERIMETER FENCE AND GATE INSPECTION AND REPAIR RECORD

APPENDIX D

EXAMPLE SITE MARKER INSPECTION AND REPAIR RECORD

SITE MARKER INSPECTION AND REPAIR RECORD

Date: _____

Name of Inspector: _____

Black Site Boundary Markers

Maximum 300-ft intervals and at all corners: (Y/N): _____

Replacement/repair needed? (Y/N): _____

Yellow Buffer Zone Markers

Maximum 300-ft intervals and at all corners: (Y/N): _____

Replacement/repair needed? (Y/N): _____

Green Easement Markers

Maximum 300-ft down centerline and at permit boundary: (Y/N): _____

Replacement/repair needed? (Y/N): _____

White Grid System Markers

100-ft intervals (Y/N): _____

Replacement/repair needed? (Y/N): _____

Red SLER Markers

*Maximum 300-ft intervals and at all corners: (Y/N): _____

Replacement/repair needed? (Y/N): _____

Blue Floodplain Markers

Maximum 300-ft intervals and at all corners: (Y/N): _____

Replacement/repair needed? (Y/N): _____

Discussions and Locations of Maintenance and/or Repairs Made: _____

***SLER Markers required only in area currently being filled**

APPENDIX E
BIRD MANAGEMENT PLAN

BIRD MANAGEMENT PLAN

INTRODUCTION

The presence of birds as scavengers and other vectors at a landfill may develop when putrescible wastes are accepted and landfilled. Waste accepted at the Brazos Valley Disposal Facility is limited to brush, construction-demolition waste, rubbish (trash) that is free of putrescible wastes and free of household waste, inert material, non-regulated asbestos-containing material (non-RACM), Class 3 industrial solid waste, Class 2 industrial solid waste consistent with the limitations established in §330.5(a)(2), man-made inert material, yard waste, scrap tires that have been split and quartered or shredded and do not come from a tire disposer/recycler who is reimbursed from the state Waste Tire Recycling Fund, and dredged material after it has been tested to determine that it is not a special waste. The nature of the permitted waste stream is not conducive to the development of birds or other vectors.

The following various methods for the management of birds at the Brazos Valley Disposal Facility will be utilized as necessary to mitigate problems related to birds. This plan has been developed to address concerns by the Federal Aviation Administration (FAA) due to the proximity of the Easterwood Airport to the Brazos Valley Disposal Facility.

Key facility staff will be familiar with the goals and methods of this plan, which includes both habitat modification and active control techniques.

HABITAT ALTERATION

Habitat alteration involves eliminating or restricting bird access to the basic survival requirements of birds. At landfills, this can often be accomplished by minimizing the surface area of the active landfill face, managing nearby vegetation, and minimizing on-site surface water sources. These methods are discussed in more detail in the following sections.

Minimize Surface Area of Active Face

The facility is designed and operated so as to minimize the surface area where waste is deposited. This will decrease the site's attractiveness to various nuisance birds and facilitate the spatial concentration of active bird control efforts, making them easier to perform and more effective.

Vegetation Management

Birds prefer, and are attracted to, large open areas that are either devoid of vegetation (e.g., paved areas, gravel areas, exposed soil areas, open water areas), or have closely mowed vegetation. These areas provide ideal bird loafing habitat, and any that exist on the site should be minimized. Areas of exposed soil (except active cell areas, roads, and other such necessary areas and features) on the facility property which are presently devoid of vegetation (less than 25-percent plant cover) should be minimized. The goal is to have the site's vegetation tall and dense to the extent practicable. One cutting per year will usually be adequate to prevent the growth of woody vegetation.

The current sand mining operations will continue during the development of the initial landfill disposal cells. The presence of continuous activity in the open sand pits should reduce the presence of birds. Once the mining operations are complete, the open sand pit areas in advance of the landfilling activities will be allowed to re-vegetate naturally.

As facility operations progress, areas that are recently filled and covered, and expected to remain inactive for longer than 180 days, should be vegetated

Surface Water Elimination

Every attempt should be made to avoid, minimize, and/or eliminate non-required surface waters on the site, including ponds, borrow pits, and ponded water. Most such surface waters are attractive to birds as drinking and loafing sites. Grading activities conducted during facility operations should be done in a manner to avoid the creation of surface water bodies.

CONTROL METHODS

As previously mentioned, the nature of the permitted waste stream is not conducive to the development of birds or other vectors and the above habitat modification methods can substantially reduce the attractiveness of a landfill to birds.

Although various artificial or mechanical methods have been developed to influence bird behavior, the tendency for birds to acclimate to them precludes their use as the main means of landfill bird control. Thus, human presence, at least on a periodic basis, is an important part of the bird management program. Once a control program is underway, human presence alone is often enough to move birds from an area. When combined with other methods, such as pyrotechnics, human presence is even more effective. The goal of this part of the program is for the birds to associate the sight of facility staff with danger. To achieve this, it is important to make each encounter with facility staff unpleasant, or better yet dangerous, for the birds. This can be accomplished with the use of pyrotechnics or other methods. In the event that birds do become a nuisance at the facility, the following sections discuss more effective control methods that may be implemented. Given that birds are very adaptable and can acclimate quickly to any harassment method that poses no obvious threat of physical harm to them, it will be important to use a variety of methods and have the ability to switch quickly among them.

Pyrotechnics

A mainstay of most bird control programs is some form of pyrotechnic use. Shellcrackers, "screamers," and "bangers" are most commonly used. These devices are essentially fire-crackers that are projected into the middle of a flock of birds. Screamers and bangers are smaller diameter projectiles which are fired from commercially available .22 caliber starter or blank pistols. It has been found that screamers are particularly effective on birds. Judicious and varied use of several different kinds of pyrotechnics is important to prevent acclimation by the birds. In most situations, the combination of human presence and pyrotechnics will be enough to prevent birds from landing and feeding. These two methods should form the foundation of the bird control program. However, various other methods are also available to supplement these methods.

Bird Distress Calls

Recorded bird distress calls are sometimes used to elicit a sense of alarm or a flight response in birds. The effectiveness of distress or alarm calls can be further enhanced by displaying a dead or decoy bird in a dying or distressed posture while playing the tape. Reactions to distress calls tend to be species-specific (i.e., to elicit the desired response in herring birds, you need to use herring bird distress calls, etc.), and sometimes result in curiosity instead of flight responses in the target birds. In the latter case, shellcrackers or screamers can be used to achieve the desired effect.

Propane Cannons

Propane cannons, which produce loud explosions at regular, pre-set intervals, are often used in bird control, although their regularity often leads to acclimation, and thus reduced effectiveness. Again, they can be useful in combination with other methods.

Visually Frightening Devices

Visually frightening devices, including balloons with painted "eyes," flags, and human or raptor effigies, can provide effective bird control during times of no human presence. They may be effective in some situations, but seldom are when used alone.

Lethal Measures

Lethal measures such as shooting or toxicants are not expected to be necessary to reinforce harassment methods but, if necessary, would require special permits and approvals from several regulatory agencies prior to being used.