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Permit No.	Date	Document ID No.
55-04	**November 4, 2008**	**6150**

October 8, 2008

BROWN AND CALDWELL

Mr. Larry Frost
NCDENR - Division of Waste Management
Solid Waste Section – Asheville Regional Office
2090 U.S. Highway 70
Swannanoa, North Carolina 28778

135836

Subject: Updated Operations Plan for the BFI - Lake Norman Construction and Demolition Landfill Facility (Facility Permit No. 55-04)

Dear Mr. Frost:

On behalf of BFI - Lake Norman Landfill, Inc. an Allied Waste Industries, Inc. subsidiary, we are submitting an updated Operations Plan for the Lake Norman C&D Landfill Facility (Facility Permit No. 55-04) for review. We have also forwarded a duplicate of the Operations Plan to the Solid Waste Section Raleigh office. This updated Operations Plan was requested during a recent inspection of the landfill facility by Mooresville regional office field operations branch inspector.

If you have any questions, or need additional information, please don't hesitate to contact Mike Gurley with Allied Waste at (704) 782-2004 ext. 391 or myself at (704) 373-7127.

Sincerely,

BROWN AND CALDWELL

Albert Glenn, P.E.
Senior Engineer

Cc: Mr. Mike Gurley, Allied Waste Industries, Inc.

Enclosures: Updated Operations Plan dated October 2008.

RECEIVED

OCT 14 2008

SOLID WASTE SECTION
ASHEVILLE REGIONAL OFFICE

OPERATIONS PLAN

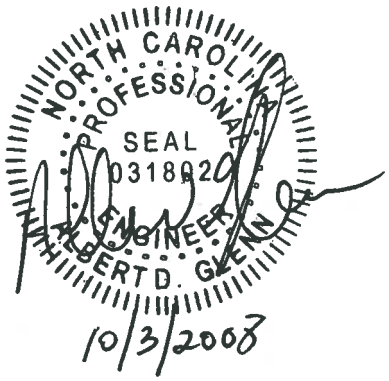
LAKE NORMAN CONSTRUCTION AND DEMOLITION

LANDFILL FACILITY

Prepared for
BFI-Lake Norman Landfill, Inc.
Stanley, North Carolina
October 2008

OPERATIONS PLAN FOR THE LAKE NORMAN CONSTRUCTION AND DEMOLITION LANDFILL FACILITY

Prepared for
BFI – Lake Norman Landfill, Inc.
Stanley, North Carolina
October 2008



BROWN AND CALDWELL
309 East Morehead Street, Suite 160
Charlotte, North Carolina 28202

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1. INTRODUCTION

1.1 General

This document is the Operations Plan (Plan) for the Lake Norman Construction and Demolition Landfill Facility (C&DLF), located in Lincoln County, North Carolina, owned by BFI – Lake Norman Landfill, Inc. The Plan serves as a guide to the landfill operator with respect to routine landfill operations, environmental monitoring, and record-keeping. The facility will not accept municipal solid waste or hazardous waste as defined by the North Carolina Department of Environment and Natural Resources (NCDENR). Based on waste disposal rates of approximately an average 110,000 tons per year and a permitted 200,000 tons per year; and 1,200 lbs. per cubic yard density, the landfill is expected to be in operation until the year 2013 at the average tonnage and 2010 at the permitted tonnage. Equipment and staffing recommendations in this manual are based on these disposal rates and are subject to change in the event of future permit modifications to maximum disposal rates.

1.2 Purpose

The Plan is intended to serve as a site reference and training document. Every employee should be acquainted with the Plan's contents and location at the site. Each section of this Plan is self-contained and easily-updated, and may be used in the field, for training sessions, or self-instruction.

The operations manual addresses the following topics:

- Personnel requirements;
- Entrance procedures and recordkeeping;
- Incoming vehicle inspection;
- Traffic control;
- Landfill operations;
- Equipment requirements;
- Operation and maintenance of environmental controls;
- Inspection and monitoring procedures;
- Contingency and emergency procedures; and
- Safety practices and plan implementation.

This Operations Plan has been prepared in accordance with 15A NCAC 13B .0542. Furthermore, the Plan is based on engineering judgment and reflects generally accepted solid waste landfill techniques.

1.3 Reference Documents

All permitting, design and construction documents should be kept on file with this Plan at the site to supplement this Plan in regard to long-term facility development plans, monitoring requirements, engineering design, site hydrogeology, construction activities, and site closure/post–closure care. Other documents pertinent to facility operations and site development include:

- North Carolina Solid Waste Management Rules, 15A NCAC 13B with current amendments;
- "Construction Plan Application, Construction and Demolition Landfill, Lake Norman Landfill, Inc." prepared by S&ME, Inc. (1998), referred to herein as the "Construction Plan Application," which provides information on site soils, hydrogeology and construction;
- "Application for Permit to Construct Renewal, Lake Norman C&D Landfill." Prepared by ESP Associates, P.A. (2005), referred to herein as the "Application for Permit to Construct Renewal," which provides information on site soils, hydrogeology and construction.;
- "Closure and Post-Closure Plan" prepared by Brown and Caldwell (2008);
- Erosion and Sediment Control Planning and Design Manual, NCDENR, June 2006;
- Erosion and Sediment Control Field Manual, NCDENR, June 2006; and,
- The Landfill's Erosion and Sedimentation Control Plan.

1.4 Regulations

15A NCAC 13B .0531 and all conditions of the operating permit granted by the NCDENR Division of Waste Management, shall take precedence and be complied with by landfill operators if there is an actual or perceived contradiction with the text of this Plan, unless written consent for variance(s) is granted by the Division. The Site Manager should be familiar with the North Carolina Solid Waste Management Rules and the facility permit.

2. SERVICE INFORMATION

2.1 Location

The Lake Norman C&DLF is located on Quarry Lane, west of N.C. Highway 16 in Lincoln County and approximately 1 mile north of Lowesville, North Carolina. The site is generally bounded on the north by Forney Creek, on the east by N.C. Highway 16, and on the south by Quarry Lane. The Lake Norman C&DLF will serve North Carolina.

2.2 Acceptable Wastes

The Lake Norman C&DLF will accept only construction and demolition debris as defined within 15A NCAC 13B .0532; land-clearing and inert debris (LCID) as defined within 15A NCAC 13B .0101; and asphalt. Specifically, the following types of wastes will **not** be accepted:

- Containers such as tubes, drums, barrels, tanks, cans, and bottles unless they are empty and perforated to ensure that no liquid, hazardous or municipal solid waste is contained therein;
- Garbage as defined in G.S. 130A-290(a)(7);
- Hazardous waste as defined in G.S. 130A-290(a)(8), to also include hazardous waste from conditionally exempt small quantity generators;
- Industrial solid waste unless a demonstration has been made and approved by the Division that the landfill meets the requirements of Rule .0503(2)(d)(ii)(A);
- Liquid wastes;
- Medical waste as defined in G.S. 130A-290(a)(18);
- Municipal solid waste as defined in G.S. 130A-290(a)(18a);
- Polychlorinated biphenyl (PCB) wastes as defined in 40 CFR 761;
- Radioactive waste as defined in G.S. 104E-5(14);
- Septage as defined in G.S. 130A-290(a)(32);
- Sludge as defined in G.S. 130A-290(a)(34);
- Special wastes as defined in G.S. 130A-290(a)(40);
- White goods as defined in G.S. 130A-290(a)(44); and,
- Yard trash as defined in G.S. 130A-290(a)(45).

The landfill operator shall be responsible for screening wastes to ensure that hazardous or unacceptable wastes are not disposed in the landfill.

3. PERSONNEL

3.1 Manpower

The Lake Norman C&DLF will provide the appropriate level of staff to address the needs of a 1,000-ton-per-day landfill. If the waste acceptance increases or decreases, the equipment and staff levels will change accordingly (see Appendix A for Manpower and equipment vs. Daily Tonnage Table A-1). In addition, all employees associated with the waste management operations will be properly trained for their respective duties.

3.2 Staff Training

The Lake Norman C&DLF provides on-the-job training for its employees. The training focuses on safety and the performance of environmentally sound landfill operations. Training for each employee will be based on daily responsibilities and duties. Typical training will address the dangers associated with heavy equipment operation, truck traffic, waste unloading, use of personal protective equipment, landfill gas management, and precautions for the management of unacceptable or hazardous wastes such as asbestos. Documentation related to an employee's participation in safety training will be maintained on site.

Certain aspects of the landfill operation require additional training, including, but not limited to, scale operations. This training will include procedures for identifying unacceptable wastes; emergency procedures in the event of a fire, spill or injury; confined space entry; and respirator use and fit testing. Other training will be provided as the need arises. This level of training will be documented with written records.

4. SITE PREPARATION

4.1 Drawings and Specifications

Landfill construction will be performed in conformance with the Construction Plan Application documents and any related conditions imposed by the Division of Waste Management. Summary drawings and specifications for landfill development are contained in the Application for Permit to Construct Renewal and the Closure and Post-Closure Plan. The following information is provided in the documents:

- Clearing and grubbing;
- Topsoil stripping;
- Excavation;
- Berm construction;
- Stormwater Drainage control structures;
- Erosion and Sedimentation Control;
- Access roads and entrance;
- Fencing;
- Groundwater and landfill gas monitoring; and,
- Other design features.

4.2 Construction Quality Assurance

Landfill construction will be performed in accordance with the drawings, technical specifications and construction quality assurance (CQA) plan in the Application for Permit to Construct Renewal and future landfill expansion Permit to Construct Applications. The CQA plan provides information about observing and documenting certain construction activities, and identifies testing procedures and protocols to assess the construction. A copy of the CQA plan is contained in the Application for Permit to Construct Renewal and future landfill expansion Permit to Construct Applications.

5. ROUTINE LANDFILL OPERATIONS

5.1 Hours of Operation

Typical landfill hours for acceptance of waste are:

Table 5.1. Hours of Operation	
Weekdays (Mon-Fri)	7:00 AM to 5:00 PM
Saturdays	7:00 AM to 12:00 PM
Sundays	Closed

Actual hours of operation will be posted at the main entrance to the landfill. The landfill will normally be closed on Sundays and the following holidays:

Table 5.2. Holiday Schedule	
New Year's Day	Labor Day
Memorial Day	Thanksgiving
Fourth of July	Christmas

5.2 Public Use

Receptacles will be provided in a "resident's drop-off area" in which Lincoln County residents may deposit small construction waste and recyclables loads (i.e., those which can be carried by a pick-up truck). A sign posted adjacent to the receptacles will clearly state the waste acceptability limitations. Users of the public receptacles will not be required to report to landfill staff before or after making deposits unless their loads are of questionable nature with respect to size or acceptability.

5.3 Vehicle Inspection Plan

A plan shall be implemented by the Site Manager to prevent the on-site disposal of unauthorized hazardous wastes. The plan shall contain an inspection program to be staffed by personnel who have been trained to recognize unauthorized hazardous wastes. At a minimum, the following shall be included in the inspection program:

- Periodic vehicle inspection of loads at the gate and by operators at the landfill working face documenting all suspicious materials, the hauler, and if possible, the generator;
- Thorough inspection of suspicious loads;
- Training of personnel to recognize regulated municipal solid and hazardous wastes; and
- Establishment of specific procedures for notification of proper authorities if a regulated hazardous waste is discovered.

5.4 Traffic Routing

5.4.1 Site Access

Access to the facility by all vehicles shall be by Quarry Lane off of N.C. Highway 16.

5.4.2 On-Site Traffic Flow

Once vehicles delivering wastes have been weighed, they shall follow signs posted along access road(s) to the correct disposal area of the landfill. Trucks will then proceed to and dispose of waste at the appropriate location. A perimeter road will be built as the landfill phases are constructed. The perimeter road will lead traffic to the appropriate point of access onto the landfill. Internal roads will be built on the landfill to provide access to the working face. These internal roads will be constructed and relocated with the phased progress of landfill operations.

Signs will direct small public vehicles to dispose of their loads of waste into receptacles located in the public drop-off area.

5.4.3 Visitors Parking

Visitors parking will be provided adjacent to the office building.

5.5 Basic Landfilling Procedures

This section describes the procedures that constitute daily landfill operations, the "area method" of landfilling, working face practices, and startup of first, second, and subsequent lifts. The landfill should be operated in accordance with these procedures and as shown on the operations drawings.

5.5.1 Method of Operation

The landfilling technique to be used is the "area method."

Proper location of unloading trucks will facilitate spreading of refuse, compaction, and covering. During construction of the first lift, trucks will be positioned at the top of the lift being developed, although in subsequent lifts, unloading at the toe and pushing uphill may be the preferred method. Lateral confinement of vehicles and refuse is important to avoid wasting cover material. Temporary barricades or flags may be used as daily width markers for guiding equipment operators and for traffic control.

Vehicles transporting refuse and cover material to the working face will be routed over previously filled areas, whenever possible, for additional compaction of refuse and soil. Vehicles shall not be routed over final capped areas unless measures are taken to prevent damage to the cap.

Grade and location stakes can be used to guide filling operations in accordance with the phasing fill plans. Stakes provide a visual landmark for equipment operators as filling progresses. Grade stakes shall be reset or adjusted as needed. Maximum daily lift height will normally be about 10 feet to provide good compaction.

Signs shall also be posed in the operational areas to direct traffic, identify buildings, and to identify certain safety requirements such as "no smoking," speed limits, and stop signs.

Open burning or incineration of solid wastes shall be prohibited except as may be authorized pursuant to 15A NCAC 13B .0542(i)(2). An infrequent burning of land clearing or disaster debris authorized pursuant to 15A NCAC 13B .0542(i)(2) shall be accomplished outside of the limits of all active or closed landfill units.

5.6 Maintenance of On-Site Roads

Filling of Potholes—Potholes should be filled with materials compatible with the road construction material. Potholes should be filled on a routine basis so that they are not allowed to remain open for extended periods of time. New material should be placed in the hole and compacted so that it will have the same density as the road.

Grading—As wet-weather gravel roads become uneven due to traffic-caused rutting or displacement of stone, routine grading and application of gravel will be done to provide a smooth surface and promote drainage.

Filling of Areas Where Settlement Occurs—When wet-weather roads are built on fill areas, settlement of the filled area may cause the slope of a road to change. Areas of a sloped road, where the slope has changed drastically, should be built up with material compatible with the roadway. The buildup should be made by placing a 6-inch layer of the material, compacting it, then placing another layer of material and compacting again. This process should be repeated until the desired elevation is achieved.

Cleaning of Public Access Roads—Proper operation of the landfill should result in little or no debris being found on public roads. However, public roads adjacent to the entrance area shall be inspected daily. If debris from the wheels of vehicles departing the landfill reaches the first state route near the landfill, that road will be cleaned immediately.

Removal of Materials from Landfill Roadways—Any significant accumulation of dirt, brush, or other debris should be removed from the landfill roadways. A program of road cleaning shall be implemented to prevent any buildup. Unpaved roads will be watered as needed to reduce dust.

Maintenance of Roadway Drainage Ditches—Drainage ditches along road beds will be kept free of obstructions. During wet-weather seasons, inspection of all drainage ditches and structures should be made at least once each week, or more frequently if necessary, and debris removed as required.

All roads will be maintained in a passable condition to provide access to the working face during inclement weather. Soft roadway areas will be stabilized as needed by the addition of road base material. If conditions warrant, road salt and/or sand will be deployed to maintain passable conditions.

5.7 Waste Handling and Inspection

Incoming waste will be observed to verify that it is acceptable in content and origin. Accurate and up-to-date records will be maintained for all waste accepted and all landfill operations. The following is a general discussion regarding waste handling procedures, the types of waste which will be accepted at the landfill, and procedures normally implemented to ensure that only authorized waste is disposed of at the landfill.

Landfill employees will be trained on and be required to follow the specific procedures outlined in the programs referenced below and appended to this document:

- Unauthorized Waste Control Program (see Appendix D); and,
- Random Load Inspection Plan (see Appendix D).

5.7.1 Types of Waste

Lake Norman C&DLF will only accept solid waste as described in the facility's operation permit and will not accept wastes as described in Section 2.2 of the Plan.

5.7.1.1 Weighing and Control of Waste Volumes

All landfill users entering the disposal area are to stop at the entrance scale for security check-in. All open topped waste loads shall be inspected for hazardous or otherwise unacceptable wastes by the scales administrator. All other waste loads shall be inspected at the active face by the equipment operators. All trucks delivering waste to the disposal area shall be weighed. Load weights, customers, and charges to all vehicles will be recorded. The Lake Norman C&DLF will promptly repair and/or replace any malfunctioning scales. Vehicles will be directed to the appropriate disposal area by signs. However, verbal or other instructions will be given when necessary.

5.7.1.2 Inspection

Lake Norman C&DLF will follow the procedures for incoming inspection, random load inspection and unauthorized waste response as described in Appendix D, Unauthorized Waste Control Program.

5.8 Litter Control

The level of effort needed to control this problem will be dictated by weather conditions and wind directions. A few of the methods that Lake Norman C&DLF may employ are presented below.

Portable Litter Fence—The most suitable location for litter control fence will be determined on a daily basis, based on the wind's direction. The fence will be placed as close to the active face as practical without disturbing the landfilling operations. Litter will likely occur even with proper litter controls. The following clean-up procedures will be followed on a routine basis:

- Litter Clean-Up From Fences – Litter will be removed from and along litter fences daily; and,
- Clean-Up Along On-Site Roads – Litter occurring along on-site roads will not be allowed to accumulate. This litter will be cleaned up as necessary.

Clean-Up at Entrance Area and Entrance Roads—The site entrance and road leading to the entrance will be inspected each day. These locations will be cleaned of litter as necessary.

Active Face on Interior Slopes—On windy days, the active face may be maintained on interior slopes, sheltered from the wind.

- Much of the potential litter problem may be prevented by following proper techniques at the working face. This will reduce the amount of refuse exposed to the wind;
- When top dumping, refuse should be placed as usual and spread downward; and,
- Compacted waste shall be covered with six inches of suitable soil cover or alternate at least once per week or when disposal area exceeds one-half acre in size.
- **Litter Patrols**—Litter pick-up crews will be deployed as needed to pick up windblown litter that may accumulate along nearby public roads within ½ mile of the main entrance and nearby property.

5.9 Dust Control

Due to the nature of landfill operations, dust has the potential to be generated during dry periods of the year. The following control measures may be employed at the landfill:

- Soil wetting. Periodic watering using a water tank truck will be utilized to control dust originating from paved and unpaved access roads. The main access road to the scale will be paved, while the perimeter roads will be gravel-surfaced. Soil wetting may have to be performed several times during an operating day;

- Application of soil-wetting agents. Soil-wetting agents, such as calcium chloride, may be used to supplement other dust control methods.; and,
- Vegetative cover. Landfill areas or stockpiles not intended for near-term use will be seeded, in accordance with seasonal limitations, to encourage the growth of vegetation and reduce erosion.

Lake Norman C&DLF will employ a street sweeper on an as-needed basis to sweep and clean the entrance road.

5.10 Noise Control

All equipment powered by internal combustion engines will have mufflers installed and maintained in good repair.

5.11 Lighting Controls

Once construction of the Lake Norman C&DLF is complete, the maximum illumination at the property lines of the Lake Norman C&DLF property will be limited to 0.5 foot-candles. Permanent exterior lighting fixtures on the Lake Norman C&DLF property will not exceed 30 feet in height above final grade level. The exterior lighting fixtures will be limited to "shoebox" or similar type capable of shielding the light source from direct view. The temporary working lights utilized on the face of the disposal area are specifically excluded from the limitations contained herein.

5.12 Aesthetics and Vegetative Buffer

The Lake Norman C&DLF will maintain a vegetative buffer in and around the landfill to shield the operations from adjoining property and public roads. Vegetative buffer areas with a minimum width of 100 feet will be maintained between the landfill's permitted areas for waste disposal and adjoining property owners' property. In areas where landfill operations and/or disposal areas would not be so limited, Lake Norman C&DLF will maintain a 200-foot vegetative buffer area. The vegetative buffer area will be established and maintained by Lake Norman C&DLF to create a visual buffer to screen the disposal operations of the landfill. In constructing and operating the landfill, Lake Norman C&DLF will minimize the cutting of existing trees in the vegetative buffer area in order to maintain and enhance the integrity of the buffer. Any portions of the vegetative buffer area from which a materially significant number of trees are removed or die, or for which the visual buffer is insufficient to create a continuous visual screen between the landfill operations and the adjoining properties, will be supplemented by Lake Norman C&DLF by planting and maintaining white pine trees, loblolly pine trees or other non-deciduous trees and shrubs, along with the construction of earthen berms as needed, to create a continuous visual buffer. Any such planted trees needed to maintain or supplement the visual buffer will be no less than 5 feet in height when planted. Where planned activities will disturb the vegetative buffer, seedlings may be planted in advance of working in these areas as long as seedlings have reached 5 feet in height before initiating work. Lake Norman C&DLF will be allowed to access the vegetative buffer area for security, roads, utilities and any actions or activities required by local, state and/or federal regulations.

5.13 Open Burning

Open burning will not be allowed on areas where waste has been disposed or areas being used for active disposal. Burning associated with construction clearing operations will be performed in accordance with all applicable regulations.

5.14 Salvaging

Lake Norman C&DLF will only allow salvaging of recyclable material by authorized personnel. The salvaging will be conducted in a designated area, and performed in a manner that will not interfere with landfill operations or create hazards or nuisance conditions.

5.15 Filling Operation

Lake Norman C&DLF will employ the area method for landfill operations. Using this method, waste is typically unloaded at the base of the active working face in layers 8 to 10 feet in thickness. The unloaded waste will be spread in layers 2 to 3 feet in thickness to enhance compaction. Compactors will then make 3 to 6 passes. The thickness of completed lifts will be 15 to 20 feet.

Filling Procedures—Phasing plans presented in Appendix F, Operation Plan Drawings, provide details for refuse cell development as well as other details associated with landfill development.

Working Face—The working face is that portion of the uncompleted cell on which additional waste is spread and compacted. The working face will be kept as small as feasible based on operational conditions each day. Typically, the working face will be approximately 250 feet in width in order to manage incoming waste vehicles and waste compaction and covering equipment. The length of the vehicle turning area in front of the working face will be approximately 400 feet.

Although the landfill will generally operate with a single working face, there will be occasions when multiple working faces are needed to accommodate physical constraints (e.g., the opening of a new cell, final grading associated with slope closure, etc.).

Dumping—When dumping from toe of slope, waste should be dumped 10 feet from the toe of the working face and pushed up the slope. For safety purposes, a minimum 8- to 10-foot separation should be maintained between refuse trucks. In order to prevent loads of waste from being dumped too far away from the toe, refuse trucks can back toward the toe, following a path created by the equipment pushing refuse into the working face.

When top dumping, waste should also be dumped as near to the edge of the active working face as safe operations permit. Truck separation, as discussed above, should be maintained.

Pushing, Spreading and Compacting—Proper cell construction involves pushing, spreading, and compacting. These functions can be accomplished with a compactor and/or bulldozer.

- Pushing is the action of moving waste from the tipping location into the working face;
- Spreading will be done by either a compactor or bulldozer. The purpose of the spreading action is to distribute waste over the working face in a thin layer (about 2 feet). Higher in-place densities can be achieved by compacting in thin layers; and,
- Good compaction is achieved by operating the landfill compactor up and down the working face after waste has been spread into a thin layer. Proper compaction of the waste will extend landfill life and reduce litter and vector problems. To maximize compaction, the working face should be kept at a maximum slope of three horizontal feet to one vertical foot. The Site Manager or his designee will periodically verify compaction procedures.

5.16 Placement of Waste in State Waters

Lake Norman C&DLF will not deposit solid waste in State waters and will not allow the waste to enter such waters.

5.17 Equipment

Lake Norman C&DLF will provide the equipment needed to perform landfill operations. A list of equipment to be used at the landfill is provided in Appendix A. This list is provided as a general guide only; therefore, the Lake Norman C&DLF will utilize more or less equipment on the site as is necessary.

In the event of equipment failure or break-down, the Lake Norman C&DLF will make arrangements for substitute equipment within 24 hours.

5.18 Compaction and Cover

5.18.1 Waste Compaction and Lift Thickness

Lift heights will be sized to accommodate the incoming waste volume. Given the expected waste volume at the landfill, the typical lift height will be approximately 15 to 20 feet. This will allow the landfill operator to maintain a confined and efficient working face.

5.18.2 Waste Cover

Waste cover comprised of 6 inches of compacted soil or other approved alternative material will be placed on the working face and other exposed waste at the end of each operating week, or when the disposal are exceeds one-half acre in size. If conditions warrant (such as adverse weather or excessive wind), cover will be applied at more frequent intervals. Cover will also serve as a firebreak.

Removal of cover prior to waste placement will only occur during normal weather conditions. Removal of cover will not occur during periods of high winds or heavy precipitation. The cover removed prior to waste placement will be stockpiled adjacent to the working face.

5.18.3 Final Cover

The placement of final cover will follow the estimated schedule provided in the Closure and Post-Closure Plan. An alternate schedule may be approved by the Division. Upon reaching final grade, all areas will be covered with a minimum of 12 inches of intermediate cover soil and then seeded. These areas will be inspected quarterly and after every major storm event for excessive erosion, and will be repaired accordingly. These areas will be maintained until the construction of the closure cap system.

The landfill will be closed with a final cover system in accordance with the Closure and Post Closure Plan. The final cover system construction will be initiated when a closure phase is to final waste grade. The landfill will perform an aerial survey each year and will determine areas that have reached final waste grade elevation.

In the event that areas of the landfill reach final waste elevations in advance of the proposed closure phasing, the landfill shall not have any area greater than 10 acres at final waste grades without final cover or in the process of receiving final cover.

Upon reaching intermediate grade, all internal slopes will be covered with a minimum of 12 inches of cover soil and then seeded. These areas will be inspected quarterly and after every major storm event for excessive erosion, and will be repaired accordingly.

5.18.4 Borrow Areas

Lake Norman C&DLF has access to off-site and on-site borrow areas to handle the waste cover and construction material needs for landfill operations. Borrow areas will have stormwater management and

erosion and sedimentation control plans that have been developed in accordance with NCDENR Division of Land Quality guidelines. Temporary stockpile of borrow soils will be placed at the location designated by the landfill operator and have appropriate erosion controls.

5.18.5 Alternative Daily Cover

Lake Norman C&DLF may employ alternative daily cover materials in lieu of soil. A list of several options and special requirements are provided below.

- Fabric Tarps. Lake Norman C&DLF may employ a geotextile as alternative daily cover(ADC) system. Typically, these cover systems are deployed in panels (of size suited to operation), using landfill equipment. The cover will be deployed on the working face and ballasted with soil or other suitable weight. Prior to commencing operations, the geotextile will be removed to a storage location near the working face. This type of ADC may include, but is not limited to: geotextiles, polyethylene membranes, plastic film, tarps, composite geotextile/plastic membranes, plastic emulsion, etc.;
- Shredded Tires. Lake Norman C&DLF may employ a mixture of shredded tires and soil (or other non-flammable materials) as an alternative daily cover. The mixture will include approximately 50 percent shredded tires and will be produced prior to its use. The maximum tire chip size will be 40 square inches and will not have any dimension exceeding 10 inches. The shredded tire cover mixture will be deployed in a 6-inch thick layer;
- Posi-Shell®. Lake Norman C&DLF may employ Posi-Shell as an ADC. Posi-Shell is a spray-applied cementatious product that forms a hardened shell over waste; and,
- Auto Fluff. Lake Norman C&DLF may employ Auto Fluff as an ADC. Auto Fluff is the discarded material from automobiles once their metal has been recycled.

5.19 Safety and Emergency Response

Lake Norman C&DLF will implement the Safety Plan provided in Appendix B and the Emergency Response Plan provided in Appendix C. The plan generally describes requirements for emergency response, including firefighting procedures:

The emergency response plan contains:

1. A description of the actions landfill personnel shall take in the event of various emergency situations;
2. A description of arrangements made with the local police and fire department which allow for immediate entry into the landfill by their authorized representatives should the need arise, such as in the case of personnel responding to an emergency situation; and
3. A list of names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator for the landfill. This list will be kept up-to-date. Where more than one person is listed, one shall be named as the primary emergency coordinator and the other(s) shall be listed in the order in which they will assume responsibility as alternates.

The plan specifically addresses fire prevention and protection, as well as firefighting procedures in the event of a fire. Certain precautions will decrease the potential for fire at the landfill. These include limiting smoking to designated areas, refusing acceptance of hazardous waste which could possibly have characteristically low flash points, and performing load checking for ignited or "hot" loads of wastes entering on trucks or other vehicles. Minimum setback distances of buildings from fuel tanks, proper fueling procedures, and routine maintenance and preparation of equipment will also contribute to fire prevention

In the event that a fire does develop, immediate steps will be taken to rectify the situation. The steps taken in reaction to a fire depend on the cause and location of the fire. Typical steps include isolation of the burning

material and application of a fire-retarding agent such as soil, water, or other material. Following are three potential situations involving the development of a fire and the appropriate response:

1. If a fire occurs within the waste, affected waste will be removed to a safe distance as soon as possible. If a subsurface fire occurs at the landfill, the material will be dug out or suffocated until the fire is extinguished;
2. If a fire occurs at the working face of the landfill, the materials will be isolated from other combustible materials in a manner which will not cause danger to the employees and which will provide protection against spreading of the fire. Determining the characteristics of the burning material will allow the fire fighter to choose the most appropriate method to douse the flames (i.e., soil, water, or other appropriate methods). If the burning material has not been adequately extinguished, other methods may be required and the local fire department may be contacted; and,
3. If a fire occurs in a load on an incoming truck, it will be detected by the scale attendant or by the equipment operator. The smoldering material will be unloaded to a remote area if possible. After unloading, the burning materials will be extinguished by placing cover material over the surface. If required, the landfill will contact the local fire department.

Each piece of heavy equipment will be equipped with a multi-purpose fire extinguisher. A soil stockpile, which will provide additional aid in extinguishing small fires that are too large to control with fire extinguishers, will be located near the working face of the landfill. Fire extinguishers applicable to the chemicals and operations at the landfill will be strategically placed at accessible locations within each building. Furthermore, a clearance around heaters and light equipment will be maintained in order to prevent the potential for ignition of combustible materials.

The local fire department will be contacted to supply fire and emergency services to the landfill. If necessary, the fire department will be provided with access to any landfill equipment which would help with emergency response. Access throughout the landfill can be achieved on permanent and temporary roadways, or with the assistance of onsite heavy equipment.

5.20 Inspection Plan

5.20.1 Inspection Schedule

Table 5.3. Lake Norman C&DLF Inspection Schedule

Monthly and after large storm events:	Stormwater management and erosion and sedimentation control systems
Quarterly:	Groundwater and landfill gas monitoring wells and final cover system

5.20.2 Incoming Waste

Waste delivered to the landfill will be inspected for unacceptable wastes as discussed in Appendix D.

5.20.3 Stormwater Management

The stormwater management system is comprised of swales, channels, culverts and sediment collection basins. The components of the system will be inspected monthly and following major storm events.

During inspection of the sediment basins, the integrity of the sediment basin and outlet structure, as well as the depth of sediment accumulation, will be checked and recorded. Removal of accumulated sediment will

occur as needed to maintain proper operations. It is recommended that the sediment be removed at least once every 2 years during active waste placement within the drainage area.

5.20.4 Erosion and Sedimentation Controls

Erosion and sedimentation controls will be inspected in conjunction with the inspection of the stormwater management system.

5.20.5 Final Cover Maintenance

Cover maintenance includes both cover soil and vegetation. The inspections performed quarterly will help in assessing the cover condition to verify the integrity of the cap (e.g., check for cracking due to differential settlement, erosion or desiccation), and condition of the vegetation.

Areas of ponding or substantial differential settlement will be checked to determine the cause. If a significant problem with the cover, vegetation, perimeter berms, erosion, or drainage structures is identified, work orders will be issued to correct the problems.

Timing of repairs will be dependent on the nature of the repair. Minor filling to eliminate ponding, and reseeding and fertilizing of disturbed or problem areas can be accomplished with little delay. Major repairs, such as extreme erosion, significant local instability of slopes, or substantial settlement, might require evaluation and design prior to implementing final repairs. Thus, in some cases, final repairs could be delayed. In this case, temporary repairs will be performed until a final solution is determined.

Repair of damages to the final cover resulting from erosion and differential settlement may include backfilling, replanting and stabilizing eroded areas, providing additional drainage facilities to prevent future erosion, refilling depressions, repairing cracks in the cover, and re-vegetating disturbed areas.

Additional detail on maintenance to the environmental control system following partial or final closure of areas can be found in the closure and post-closure plan for the landfill.

5.20.6 Operating Equipment

Equipment used for landfill activities will be inspected daily, before use, to check for visible signs of deterioration or malfunction. In addition, the equipment will be inspected and maintained in accordance with manufacturers' recommendations.

Equipment will be subject to preventive maintenance as recommended by the manufacturer (or landfill internal PM program) and recorded.

Lake Norman C&DLF will maintain equipment in proper working order and will have ready access to temporary replacement equipment in the event of an emergency.

5.20.7 Areas Subject to Spills

Potential areas subject to spills include the 1,500 gallon diesel fuel tank and 55 gallon oil drum storage area. The storage areas will have secondary containment in the event of a spill.

5.20.8 Groundwater and Surface Water Monitoring – 15 NCAC 13B .0543(e)(1)(B)

A site-specific groundwater monitoring program will be maintained for the landfill throughout the post-closure care period in accordance with Lake Norman C&D Landfill Facility's Groundwater and Surface Water Monitoring Plan, as amended and 15 NCAC 13B .0544 and .0545. The program will monitor the groundwater and surface water at the landfill on a semi-annual basis and verify that the landfill is functioning as intended, as well as provide an early warning system in the unlikely event of a release. If contamination is found in the groundwater or surface water, the action required will be determined at that time, based on the extent and concentration of the release. Copies of all required monitoring tests and reports will be provided to the facility's operating record during the landfill's post-closure care period.

A list of groundwater monitoring parameters, sampling frequencies and reporting requirements are provided in the facilities Groundwater Monitoring Plan, as amended. The groundwater monitoring wells identified therein will require sampling during the post-closure care period.

Each time water levels are measured or a groundwater sample is collected, the integrity of the monitoring well will be inspected. A record of each inspection will be made and kept within the landfill facility's operating record. The following will be recorded during each inspection:

- Check well identification and make sure it is clearly marked;
- Check the protective casing for damage or corrosion;
- Check the concrete surface seals for cracks;
- Check the casing lock; and,
- View the well casing and check for damage.

If any damage is detected, the well will be repaired, or if repair is not possible, replaced before the next scheduled sample event.

5.20.9 Landfill Gas Monitoring – 15 NCAC 13B .0543(e)(1)(B)

A site-specific landfill gas monitoring program will be maintained for the landfill throughout the post-closure care period in accordance with Lake Norman C&D Landfill Facility's Landfill Gas Monitoring Plan, as amended and 15 NCAC 13B .0544. The program will monitor the landfill gas at the landfill facility's property boundary to verify that the landfill gas concentrations do not exceed the lower explosive limit (LEL) for methane or other explosive gases. If methane concentrations are detected to exceed the LEL at the facility's property boundary, the facility will immediately take all steps necessary to ensure protection of human health and notify the Division. In addition, within seven days of detection, place in the operating record the methane or explosive gas levels detected and a description of the steps taken to protect human health; and within 60 days of detection, implement a remediation plan for the methane or explosive gas releases, place a copy of the plan in the operating record, and notify the Division of Waste Management that the plan has been implemented. The plan must describe the nature and extent of the problem and the proposed remedy.

5.20.10 Safety Equipment

Lake Norman C&DLF will maintain safety equipment for use by personnel. The safety equipment will be maintained in proper working condition and will be subject to periodic inspection.

- Fire Extinguishers. Fire extinguishers will be provided in landfill operations equipment and in all structures as prescribed by the local fire code. Each will be inspected in accordance with the recommendations of the manufacturer;

- First Aid Kits. First aid kits will be kept in conspicuous locations as designated by Lake Norman C&DLF's site manager. Each kit will be inspected monthly and restocked as may be necessary;
- Personal Protective Clothing. Personal protective clothing such as hard hats, safety vests and protective eye wear will be periodically inspected for wear and replaced as necessary;
- Detection Devices. Devices for monitoring work areas will be maintained in accordance with the recommendations of the manufacturer; and,
- Emergency Lighting. Emergency lights will be inspected and tested in accordance with the recommendations of the manufacturer.

A site safety plan is provided in Appendix B.

6. RECORDS AND REPORTING

Lake Norman C&DLF must maintain records related to the operation of the landfill, including:

- A log of the date, quantity by weight or volume, and origin of waste received at the landfill; and,
- Copies of environmental monitoring reports.

Table 7-1 displays a list of items/events which must be routinely recorded and kept on file or submitted to the Owner or NCDENR. Drawings showing the actual location of all construction elements will also be supplied to the Owner upon completion of each cell.

Table 7.1. Recordkeeping / Submittals

Type of Record	Frequency of Recording	Submitted To	Frequency of Submission
Facility Inspection Reports	See Section 5.20	Kept at landfill	See Section 5.20
Training Records	As needed	Kept at landfill	Upon request
Scale Log Wastes Received	Daily	County / NCDENR	Annually
Waste Load Inspection	Daily	Kept at landfill	Upon request
Load Rejections for Unacceptable Waste	As needed	NCDENR, Kept at landfill	Report to NCDENR within 24 hours
Proof of Financial Assurance	Updated annually	NCDENR, Kept at landfill	Annually
Landfill Gas LEL Detection Reports and Remediation Plans	See Section 5.20.9	NCDENR, Kept at landfill	See Section 5.20.9
Construction (as-built) Drawings	As new elements are completed	Owner, NCDENR, Kept at landfill	As each cell is completed
Climatic	Daily	Kept at landfill	Upon request
Accident Report	After each on-site occurrence	Kept at landfill as required by OSHA	Quarterly
Groundwater and Surface Water Quality Monitoring	Per Water Quality Monitoring Plan		
Post-Closure Inspections	Per Closure–Post Closure Plan		

A standard checklist for facility inspections is to be developed and appropriately updated as cells and facilities are brought on-line. Facility Inspection Records shall be kept for a minimum of 5 years.

A record of observed climatic conditions shall be maintained at the landfill. Such observations need not include detailed statistical data but rather are to present qualitative observations. Climatic conditions shall be recorded daily at the landfill. A rain gauge is to be maintained for determining daily precipitation.

All information contained in the operating record must be furnished upon request to the NCDENR or be made available at all reasonable times for inspection by the NCDENR.

7. CLOSURE AND POST-CLOSURE CARE

Closure and post closure care must be performed in accordance with North Carolina Solid Waste Management Rules and as described in the Closure and Post-Closure Plan.

APPENDIX A

Equipment and Site Personnel Requirements

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A. STAFFING AND EQUIPMENT

The following plan generally describes the number of personnel employed at the site and the equipment to be used on the site. The staffing levels in Table A-1 are based on the assumption that work activities will take place 10 hours per day, 6 days per week.

A.1 Staffing

Qualifications and anticipated duties of the site personnel for the supervision and operation of the Landfill are discussed below. The Landfill will be operated under the direct supervision of a Landfill Operator authorized by the state.

A.1.1 Site Manager

The Site Manager shall be responsible for overall management and supervision of all site activities. This person shall ensure that the Landfill is operated in accordance with all applicable regulations and permit requirements. All site personnel shall report directly or indirectly to the Site Manager.

A.1.2 Operations Manager

This employee will work directly under the Site Manager and will direct all waste placement, earthmoving, and cover operations. This person may also act as an Equipment Operator.

A.1.3 Equipment Operators

Equipment Operators shall be responsible for the operation of the waste-spreading and compaction equipment, as well as other equipment necessary for the operation and maintenance of the Landfill. The number of operators will vary based on the amount of waste accepted at the Landfill and on the extent of any ongoing earthmoving operations. Additional operators and equipment from an outside contractor may be utilized to assist with construction activities.

A.1.4 Mechanics

At least one onsite mechanic will be employed to maintain and repair the Landfill equipment. For major repairs, an outside mechanic may be utilized.

A.1.5 Office Personnel

A sufficient number of office personnel shall be retained on staff (on-site or off-site at another affiliated location) to handle all office duties including customer service, billing, payroll, and sales. A weighmaster (scale operator) will be on staff to operate the scales for incoming and outgoing waste delivery trucks. The weighmaster will direct trucks to the appropriate unloading area, screen open loads, and accept manifests.

A.1.6 Laborers

A sufficient number of laborers shall be retained to perform miscellaneous tasks associated with the construction and maintenance of the Landfill, such as general housekeeping, upkeep and litter collection. Additional laborers may be retained on a temporary basis to address increases in workload.

A.2 Equipment

Landfill construction and routine operations will generally be accomplished with the equipment listed in Table A-1. Equipment capable of performing comparably to the listed equipment is expected to be maintained on site throughout the operational life of the Landfill. Additional equipment will be leased or purchased as necessary. In addition, subcontractors may be hired to perform all or a portion of the Landfill earthwork. The exact number and type of equipment may very depending on tonnage intake, facility maintenance needs, cover placement requirements, and construction.

Daily Tonnage Range (tons/day)	Equipment Type and Use	Minimum Operating Units Recommended	Personnel Type	Minimum Personnel Recommended	Max. Uncovered Area (Working Face Size) (square ft)	Max. Weekly Cover Soil Required (cy)
500-2,500	Water Dispersion equipment	1	Site Manager	1	109,000	2,936
	Dozer (spread refuse and cover, compact waste bin, berm construction)	1	Operations Manager	1		
	Compactor (compaction of waste and cover material)	1	Scale Operator	1		
	Off-Road Truck or Scraper (haul and discharging cover material)	1	Equipment Operator	3		
	Excavator (soil excavation loading)	1	Maintenance Worker	1		
			Laborer/Truck Driver	1		
2,500-5,000	Water Dispersion equipment	1	Site Manager	1	118,000	3,168
	Dozer (spread refuse and cover, compact waste bin, berm construction)	2	Operations Manager	1		
	Compactor (compaction of waste and cover material)	2	Scale Operator	1		
	Off-Road Truck or Scraper (haul and discharging cover material)	2	Equipment Operator	6		
	Excavator (soil excavation loading)	1	Maintenance Worker	1		
			Laborer/Truck Driver	2		
5,000-7,000	Water Dispersion equipment	1	Site Manager	1	127,000	3,400
	Dozer (spread refuse and cover, compact waste bin, berm construction)	3	Operations Manager	1		
	Compactor (compaction of waste and cover material)	3	Scale Operator	1		
	Off-Road Truck or Scraper (haul and discharging cover material)	2	Equipment Operator	8		
	Excavator (soil excavation loading)	1	Maintenance Worker	1		
			Laborer/Truck Driver	2		

Notes:

1. *Dozer, Compactor, Truck, Excavator, (or Loader) and Water Dispersion Equipment sizes will vary to match operating needs. Minimum Operating Units calculations based on smallest make and model of each given class of equipment except for the compactor. Each piece of equipment is matched with one or more operators to meet personnel needs over the daily operating period.*
2. *Larger and/or equivalent equipment may be used in place of those units listed above.*
3. *Other non-major landfill equipment such as a Motor Grader, Utility Pickup Truck, Utility Tractor with Attachments, Tire Splitter, and portable light plant and/or pumps may be used on site for various non-working face activities.*
4. *Daily Covering of wastes is accomplished with a variety of Alternative Daily Covers approved for use at the site. If soil cover is needed, it is readily available from on-site stockpiles. Soil cover will be transported to the working face by Off-Road Truck or Scraper*

Table A-2. Caterpillar D5A Dozer Capacity Calculation

Assumptions					
1. Operating Speed Forward (O_s)	=	4.5 mph	=	396	ft/min
2. Distance from Working Face (L_{wf})	=	65 ft			
3 Minutes worked per Hour (T_w)	=	50 min			
4. Blade Capacity (C_B)	=	5 yd^3			
5. Incoming Waste Density (γ_d)	=	300 lbs/yd^3		0.15	tons/yd3
6. Hours Worked per Day (T_{WD})	=	12 hours			
T_T= Average Trip Time	=	2 x (L_{wf} / O_S)	=	0.33	Min
T_H= Total Trips	=	T_w / T_T	=	152	trips/hr
V_p = Volume Handled per Hour	=	T_H x C_B	=	760	yd3/hr
W_p = Weight Handled per Hour	=	V_p x γ_d	=	114	tons/hr
W_{WD} = Compaced Weight per Day	=	W_p x T_{WD}	=	1,368	tons/day
U2500 = Units for 2500 tons/day	=	2500 tons/day / W_{WD}	=	1	units
U5000 = Units for 5000 tons/day	=	5000 tons/day / W_{WD}	=	2	units
U7500 = Units for 7000 tons/day	=	7000 tons/day / W_{WD}	=	3	units

Table A-3. Caterpillar D6 Dozer Capacity Calculation

Assumptions					
1. Operating Speed Forward (O_s)	=	4.5 mph	=	396	ft/min
2. Distance from Working Face (L_{wf})	=	65 ft			
3 Minutes worked per Hour (T_w)	=	50 min			
4. Blade Capacity (C_B)	=	8.4 yd^3			
5. Incoming Waste Density (γ_d)	=	300 lbs/yd^3		0.15	tons/yd3
6. Hours Worked per Day (T_{WD})	=	12 hours			
T_T= Average Trip Time	=	2 x (L_{wf} / O_S)	=	0.33	Min
T_H= Total Trips	=	T_w / T_T	=	152	trips/hr
V_p = Volume Handled per Hour	=	T_H x C_B	=	1,279	yd3/hr
W_p = Weight Handled per Hour	=	V_p x γ_d	=	192	tons/hr
W_{WD} = Compaced Weight per Day	=	W_p x T_{WD}	=	2,303	tons/day
U2500 = Units for 2500 tons/day	=	2500 tons/day / W_{WD}	=	1	units
U5000 = Units for 5000 tons/day	=	5000 tons/day / W_{WD}	=	2	units
U7500 = Units for 7000 tons/day	=	7000 tons/day / W_{WD}	=	3	units

Table A-4. REX 390C Compactor Capacity Calculations					
Assumptions					
1. Operating Speed Forward (O_s)	=	4 mph			
2. Width of Wheel (W_w)	=	11 ft			
3 Minutes Worked per Hour (T_w)	=	50 min	=	0.8333	hr
4. Passes to Compact Waste (P)	=	5 passes			
5. In-place Density (γ_d)	=	1,200 lbs/yd^3			
6. Compacted Lift Height (H_L)	=	1.75 ft			
7. Factor of Safety (F_s)		2			
8. Hours Worked per Day (T_{WD})	=	12 hours			
L_t = Total Distance Traveled	=	O_s x T_w x 5,280 ft/mile	=	17,599	ft/day
L_C = Length Compacted	=	L_t / P	=	3,520	ft
Ac = Compacted Area	=	L_c x (W_w)	=	38,718	ft^2
V_C = Compacted Volume	=	(A_C x HL) / 27 ft^3/yd^3	=	2,509	yd^3
W_c = Compacted Weight		[(V_c x yd)/,2000 lbs/ton] / F_s	=	753	tons
W_{WD} = Compaced Weight per Day	=	W_c x T_{WD}	=	9,034	tons/day
U2500 = Units for 2500 tons/day	=	2500 tons/day / W_{WD}	=	1	units
U5000 = Units for 5000 tons/day	=	5000 tons/day / W_{WD}	=	1	units
U7500 = Units for 7000 tons/day	=	7000 tons/day / W_{WD}	=	1	units

Table A-5. TEREX 390E Compactor Capacity Calculations

Assumptions					
1. Operating Speed Forward (O_s)	=	4 mph			
2. Width of Wheel (W_w)	=	11 ft			
3 Minutes Worked per Hour (T_w)	=	50 min	=	0.8333	hr
4. Passes to Compact Waste (P)	=	5 passes			
5. In-place Density (y_d)	=	1,200 lbs/yd^3			
6. Compacted Lift Height (H_L)	=	1.75 ft			
7. Factor of Safety (F_s)		2			
8. Hours Worked per Day (T_{WD})	=	12 hours			
L_t = Total Distance Traveled	=	O_s x T_w x 5,280 ft/mile	=	17,599	ft/day
L_C = Length Compacted	=	L_t / P	=	3,520	ft
Ac = Compacted Area	=	L_c x (W_w)	=	38,718	ft^2
V_C = Compacted Volume	=	(A_C x HL) / 27 ft^3/yd^3	=	2,509	yd^3
W_c = Compacted Weight		[(V_c x yd)/,2000 lbs/ton] / F_s	=	753	tons
W_{WD} = Compaced Weight per Day	=	W_c x T_{WD}	=	9,034	tons/day
U2500 = Units for 2500 tons/day	=	2500 tons/day / W_{WD}	=	1	units
U5000 = Units for 5000 tons/day	=	5000 tons/day / W_{WD}	=	1	units
U7500 = Units for 7000 tons/day	=	7000 tons/day / W_{WD}	=	1	units

Table A-6. Volvo A40 Articulated Truck Capacity Calculation

Assumptions					
1. Operating Speed Forward (O_s)	=	15 mph	=	1,320	ft/min
2. Distance from Working Face (L_{wf})	=	1,450 ft			
3. Minutes to Load Truck (TL)	=	2 min			
4. Minutes worked per Hour (T_w)	=	50 min			
5. Bed Capacity (C_B)	=	40 yd^3			
6. Hours Worked per Day (T_{WD})	=	12 hours			
7. Cover Soil for 2500 tons/day (C_{2500})	=	2,370 yd^3			
8. Cover Soil for 5000 tons/day (C_{5000})	=	4,654 yd^3			
9. Cover Soil for 7000 tons/day (C_{7000})	=	6,923 yd^3			
T_T= Average Trip Time	=	2 x (L_{wf} / O_S)	=	2.20	min
T_{LT} = Average Load and Trip Time	=	T_T + T_L	=	4.20	
T_H= Total Trips	=	T_w / T_T	=	12	trips/hr
V_p = Volume Handled per Hour	=	T_H x C_B	=	480	yd3/hr
V_{WD} = Compaced Weight per Day	=	V_p x T_{WD}	=	5,760	tons/day
U2500 = Units for 2500 tons/day	=	2,500 tons/day / V_{WD}	=	1	units
U5000 = Units for 5000 tons/day	=	5,000 tons/day / V_{WD}	=	1	units
U7000 = Units for 7000 tons/day	=	7,000 tons/day / V_{WD}	=	2	units

Table A-7. Working Face Capacity and Facility Queuing Capacity Calculation

Assumptions					
1. Number of Truck Tippers (N_T)	=	3 units			
2. Truck Tipper Cycle Time (T_{CT})	=	9.9 minutes			
3. Truck Capacity (W_T)	=	23 tons			
4. Hours Worked per Day (T_{WD})	=	12 hours			
5. Internal Access Road Length for Queuing (L_Q)	=	7,750 ft			
6. Tractor-Trailer Length (L_{TT})	=	65 ft			
7. Tractor-Trailer Spacing (L_{TS})	=	15 ft			
U_T = Trucks Unloaded Per Hour	=	(60 min/hr / T_{CT}) x N_T	=	18.18	Trucks
W_{PH} = Tons Unloaded Per Hour	=	U_T x W_T	=	418.2	tons/hour
W_D = Tons Unloaded Per Day	=	W_{PH} x T_{WD}	=	5,018	tons/day
N_Q = Number of Queued Trucks	=	L_Q / (L_{TT}+L_{TS})	=	96.88	Trucks
W_Q = Total Amount of Tonnage Queued	=	N_Q x W_T	=	2,228	tons
T_Q = Time to Unload Queued Tonnage	=	W_Q / W_{PH}	=	5.328	hours

Note: WD does not include trucks that are self-unloading and by-pass the truck tippers.

Table A-8 Calculations of Working Face Size and Daily Cover Soil Volume

Assumptions												
1	Incoming Waste density (γ_d)	=	1000	lbs/cy =	0.5	tons/cy		γ_d	=	0.5	tons/cy
2	Waste Lift height (D_w)	=	15	ft				D_w	=	15	ft
3	Daily cover thickness (t)	=	6	inches (compacted)				t_c	=	6	inch
			8	inches (loose)				t_l	=	8	inch
4	Max. Tipping Pad Length (L_{TP})	=	400	ft				D_{WP}	=	400	ft
5	Max. Tipping Pad Width (W_{TP})	=	250	ft				W_{TP}	=	250	ft
6	Area of Tipping Pad ($A_{TP} = W_{TP} \times L_{TP}$)	=	100,000	sf							
A	**For Intake Rate of 500-2500 tons per day**										
	W_{dw} = Daily waste intake rate = upper value of the range								=	2,500	tons/day
	Daily volume of Waste (V_{dw})		W_{dw} / γ_d		=	5000	cy		=	135,000	cubic ft
	Maximum Area without cover (A_w)		$(V_{dw}/D_w) + A_{TP}$						=	109,000	square ft
										2.50	Acres
	Maximum daily surface area of working face (SA_d)		($SA_d = A_w + (2 \times D_w \times A_w^{1/2})$						=	118,905	square ft
	Volume of compacted daily cover soil (V_{dc})		$SA_d \times t_c$ 1ft / 12 inch x 1 cy/ 27 cft						=	2,202	cy/day
	Volume of loose daily cover soil (V_{dcl})		$SA_d \times t_l$ 1ft / 12 inch x 1 cy/ 27 cft						=	2,936	cy/day
	Volume of compacted cover soil requirements for 3 days		$V_{dc} \times 3$						=	6,606	cy/3day
	Volume of loose cover soil requirements for 3 days		$V_{dcl} \times 3$						=	8,808	cy/3day
	Waste to Daily Cover Ratio = V_{dw}/V_{dc} =		2.27						≈	2:1	
B	**For Intake Rates of 2,500-5,000 tons per day**										
	W_{dw} = Daily waste intake rate = upper value of the range								=	5,000	tons/day
	Daily volume of Waste (V_{dw})		W_{dw} / γ_d		=	10000	cy		=	270,000	cubic ft
	Maximum Area without cover (A_w)		$(V_{dw}/D_w) + A_{TP}$						=	118,000	square ft
										2.71	Acres
	Maximum daily surface area of working face (SA_d)		($SA_d = A_w + (2 \times D_w \times A_w^{1/2})$						=	128,305	square ft
	Volume of compacted daily cover soil (V_{dc})		$SA_d \times t_c$ 1ft / 12 inch x 1 cy/ 27 cft						=	2,376	cy/day
	Volume of loose daily cover soil (V_{dcl})		$SA_d \times t_l$ 1ft / 12 inch x 1 cy/ 27 cft						=	3,168	cy/day
	Volume of compacted cover soil requirements for 3 days		$V_{dc} \times 3$						=	7,128	cy/3day
	Volume of loose cover soil requirements for 3 days		$V_{dcl} \times 3$						=	9,504	cy/3day
	Waste to Daily Cover Ratio = V_{dw}/V_{dc} =		4.21						≈	4:1	
C	**For Intake Rate of 5,000-7,000 tons per day**										
	W_{dw} = Daily waste intake rate = upper value of the range								=	7,000	tons/day
	Daily volume of Waste (V_{dw})		W_{dw} / γ_d		=	15000	cy		=	378,000	cubic ft
	Maximum Area without cover (A_w)		$(V_{dw}/D_w) + A_{TP}$						=	125,200	square ft
										2.87	Acres
	Maximum daily surface area of working face (SA_d)		($SA_d = A_w + (2 \times D_w \times A_w^{1/2})$						=	135,815	square ft
	Volume of compacted daily cover soil (V_{dc})		$SA_d \times t_c$ 1ft / 12 inch x 1 cy/ 27 cft						=	2,515	cy/day
	Volume of loose daily cover soil (V_{dcl})		$SA_d \times t_l$ 1ft / 12 inch x 1 cy/ 27 cft						=	3,353	cy/day
	Volume of compacted cover soil requirements for 3 days		$V_{dc} \times 3$						=	7,545	cy/3day
	Volume of loose cover soil requirements for 3 days		$V_{dcl} \times 3$						=	10,060	cy/3day
	Waste to Daily Cover Ratio = V_{dw}/V_{dc} =		5.96						≈	6:1	

APPENDIX B

Safety Plan

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B. SAFETY PLAN

B.1 Emergency Procedures

A. Posting of Procedures – All emergency procedures must be updated as appropriate and after each emergency. All emergency procedures should be posted in the landfill site office, in conspicuous places at the site, and at the gate house.

B. Emergency Contact Information – The name, location, and telephone number of the nearest police, fire department, doctors, medical facilities, and ambulance service should be posted in the office and maintenance buildings. (see Emergency Response Plan, Appendix C)

C. Instructions of Procedures – All new personnel should be instructed on the emergency procedures used at the landfill. All employees should be informed of any changes in emergency procedures.

D. Responsibility of Employee – It is the responsibility of every employee to know and remember his role in each emergency procedure at the site.

B.2 General Safety Procedures

A. Knowledge of Procedures – All employees at the landfill will know the proper procedures for reporting accidents, injuries, and fires.

B. Posting of Information – Landfill rules, roadway limits and speed limits on each road will be clearly posted. Direction of travel and location of curves will be posted. The location of disposal areas should be clearly indicated.

C. Dumping – For safe operations, the dumping area will be only slightly sloped at all times and equipment maintained in good repair.

D. Safety Devices – Proper safety devices, such as roll-over protective cabs, will be installed on all equipment and kept in good repair.

E. Fire Extinguishers – Fire extinguishers will be provided in buildings and on all heavy equipment. Each extinguisher will be appropriate for the types of fires likely and they will be checked or serviced as appropriate. Discharged fire extinguishers will be removed and replaced with fully charged units.

F. Employee Alertness – All employees will be alert for hazards at the landfill. Potential hazards will be reported to the supervisor.

G. Safety Meetings – Safety meetings will be regularly scheduled. Situations that can cause accidents and ways to prevent them will be discussed. Also, the effectiveness of corrective action will be discussed. Records will be maintained including attendance of the safety meetings and the subjects discussed.

H. NO SMOKING near flammable materials, methane extraction facilities, or other designated areas.

B.3 Safety Precautions for Equipment Operators

A. Check Equipment – Check equipment for defects before operating. This can best be done by completing check-out lists prior to starting equipment in the morning. Do not start or operate defective equipment.

B. Use Stepping Points – To prevent slipping, use stepping points and hand holds when mounting and dismounting equipment.

C. Keep Debris From Cab – Keep operator's compartment, stepping points, and hand holds free from oil, grease, mud, loose objects, and solid waste.

D. Look All Ways Before Moving – Protect personnel and other equipment in the area by looking to the front, rear, and sides before moving equipment. If unsure of the surrounding conditions, dismount and inspect area.

E. Control Equipment Properly – The operator should control his equipment only from the driver's seat. Always have equipment under control.

F. Wear Safety Belts and Hard Hats – Always wear seat belts while operating equipment to provide support and security in the operator's compartment. A hard hat will reduce the potential for head injuries and should be worn while outside of any equipment.

G. Do Not Mount Moving Equipment – Never mount or dismount from moving equipment. Wait until the equipment has come to a complete stop and the brake is set before mounting or dismounting.

H. Carry Only Authorized Passengers – Persons other than the operator should not normally be allowed on landfill equipment. If it is necessary to carry a passenger, he should sit in a safe location. The passenger should be performing official duties only.

I. Carry blades and attachments low when equipment is traveling.

J. Check Blind Areas – Never push waste until sure that no person or equipment is in the blind area ahead of the machine, the blade, or the solid waste. If the operator is not sure of the surrounding conditions, he should get off the equipment and personally inspect the area. When operating in reverse, turn around to look in the direction of travel.

K. Maintain Adequate Clearance – When pushing waste, maintain adequate clearance from other vehicles or obstructions to assure that any falling objects will not strike other equipment or persons. Equipment should be kept clear of solid waste vehicles.

L. Operate Up and Down Slope – Avoid sidehill travel to reduce the chance of rolling over.

M. Avoid Excessive Speed – Operating conditions generally determine the speed of heavy equipment. Under no circumstances should heavy equipment be driven at excessive speed or operated recklessly.

N. Move Cautiously Over Bulky Objects – When compacting or traversing bulky items, the operator should proceed with extreme caution to avoid tipping or sudden lurching movements.

O. Constantly Check Work Area – The operator should constantly check the work area for the location of other persons or equipment.

P. NO SMOKING near flammable materials, methane extraction facilities, or other designated areas.

B.4 Safety Equipment

Certain safety equipment is specified for equipment operator protection. It is the responsibility of each employee to be sure his safety equipment is in good repair. Each employee must use his equipment at appropriate times. The proper safety equipment for equipment operators is listed below.

OPERATOR PROTECTIVE EQUIPMENT

Equipment: Each piece of heavy equipment should be provided with:

- Roll-over bars
- Backup warning system
- Fire Extinguisher

Personal: Equipment operators should have available personal protective clothing:

- Ear muffs or ear plugs
- Face shields or goggles

- Dust mask
- Rubber or leather (steel toe) boots
- Work gloves
- Hard hats

B.5 Fire Control Plan

B.5.1 When Fire Occurs

A. Extinguish small fires with fire extinguisher or smother with soil. Do not remain near large fires or explosive materials.
B. Determine location, extent, type, and if possible, cause of fire or explosion.
C. Notify on-site personnel and implement safety and fire control procedures.
D. Notify facility emergency coordinator if the fire cannot be immediately controlled.
E. Notify fire department if necessary. Clearly state:
    1. Location of landfill.
    2. Location of fire or explosion in landfill.
    3. Extent of fire or explosion.
    4. Type of fire or explosion.
    5. Actions now being taken.
    6. Injuries.
        a. Notify Rescue Squad, if necessary.
        b. Notify Health Care Facility, if necessary.
        c. Notify Police Department, if necessary.
        d. Notify Division of Waste Management (Division) verbally within 24 hours and in writing within 15 days.

B.5.2 "Hot Load" Procedures

A "hot load" is a load of burning solid waste in an incoming truck. It may be actively burning, but more likely will just be smoldering. When a "hot load" is discovered in a vehicle, the driver should be directed to dump the material in an area located away from the actual fill face and cleared of vegetation and debris. After the "hot load" is dumped, the equipment operator should spread the material, and then cover it with soil to smother the fire.

After the fire has been extinguished, the material should remain in the cleared area until no evidence of fire remains. At the end of the day, check to make sure no fire or smoldering remains, and then place it into the fill. Notify the Division verbally within 24 hours and provide written notice within 15 days.

B.5.3 Fire Extinguishers

Fire extinguishers should be installed in the following locations:

A. Scale House
B. Maintenance Building
C. Office Building
D. Fuel Storage Area
E. Selected on-site Vehicles and Equipment

B.6 Communications System

Telephone communications will be available at the scale house and office building. Radio, cellular, and/or other types of communication will be available between the scale house, office building, District Manager, General Manager, Operations Manager, lead operator(s), and other key personnel. A CB radio will also be available to communicate with truck drivers.

B.7 Confined Space

A confined space is defined as any space not currently used for human occupancy, having a limited means of exit, which is subject to the accumulation of toxic contaminants, a flammable or oxygen deficient atmosphere, or other hazards such as engulfment or electrical or mechanical hazards should equipment be activated while an employee is in the space. Confined spaces include but are not limited to storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, air pollution control devices, smoke stacks, underground utility vaults, sewers, septic tanks, landfill pump houses, and open top spaces more than four feet deep such as pits, trenches, or vats.

Confined space entry requires special training. At no time is a Lake Norman Construction and Demolition Landfill employee to enter a confined space or a trench without first receiving explicit training and authorization from the Environmental Manager. When entering a confined space, the personnel shall follow all requirements prescribed under OSHA regulations for confined space entry (29 CFR 1910.146) as applicable.

APPENDIX C

Emergency Response Plan

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C. EMERGENCY RESPONSE PLAN

C.1 Emergency Response Procedures

A. Evacuation routes area posted throughout the facility and all personnel are advised during safety meetings as to the shortest route to take from their particular work area. In the event of an emergency that requires the immediate evacuation of the entire building, the decision to evacuate will be made by the Site Manager. Decision to evacuate should be made with considerations of the following factors:

1. Is there immediate danger to life?
2. Can the emergency be safely managed without a complete evacuation?
3. Is there enough time to evaluate the emergency without allowing the situation to become life-threatening?

B. Fire Response

1. A minor fire is a fire that can be extinguished with one fire extinguisher in one minute.
2. Attempt to fight the fire only if you are not endangering yourself.
3. If in an enclosed area and fire is creating heavy smoke, evacuate the area immediately.
4. A major fire is any fire that requires more than one minute or more than one fire extinguisher to extinguish.
5. Contact 911 immediately.
6. Evacuate the immediate area of the fire.
7. If in an enclosed area and fire is creating heavy smoke, evacuate the area immediately, proceed to the employee parking lot and stay there.
8. Notify NCDENR (verbal within 24 hours, written within 15 days).

C. Toxic Agent Release

1. In the event of a toxic agent release, Site Manager or Operations Manager will order the immediate total evacuation of the facility, and should immediately ensure that all personnel move to a point upwind from the site, and begin personnel accountability procedures as soon as practicable.
2. The Site Manager will ensure that the proper emergency authorities are notified of the situation immediately and are aware that there has been a toxic agent release.

- Since there are no chemicals or agents used or stored at the Landfill that pose such a great threat, the primary avenue by which such agent could be released would most likely be one of the following:
- Transport into the facility in a located solid waste vehicle as a result of improper disposal of water from a pick-up point.
- Transport into the facility in a non- Lake Norman Construction and Demolition Landfill Facility vehicle, such as a delivery truck or other vendor vehicle.

C.2 Special Procedures

A. Critical operations requiring shutdown:
   1. The main power to the facility will be shut off by the Site Manager.

B. Removal of Equipment
   1. Equipment that can be moved quickly and safely out of the hazard area will be moved to safe locations around the site.
   2. The responsibility of making the determination of whether or not to move equipment is assigned to the Maintenance Manager or Site Manager.
   3. Decisions to move vehicles should be made with personnel safety as the top priority. No truck or piece of equipment is worth an injury or death, but we should make an effort to remove our equipment to safety only when it is practical. Equipment will only be moved when it is practical and safe to do so.

C.3 Muster Locations

After evacuation of the building is determined to be necessary, all employees must gather in a safe location. This will be the employee parking lot.

C.4 Medical/First Aid

A. Shut down equipment.
B. Determine extent of injuries (location, seriousness).
   1. Apply pressure (compress) to wound to stop severe bleeding.
   2. If victim is not breathing, administer Rescue Breathing and/or CPR, if trained.
   3. DO NOT MOVE VICTIM(S), unlessVictim is still in danger.
   4. Victim can move self without great pain.
C. Have someone TELEPHONE RESCUE squad (911) unless injuries are clearly minor.
   1. Clearly state location
   2. Describe injuries
   3. Stay with and keep victim(s) warm.
D. Notify Facility Emergency Coordinator.
E. Transport victim(s) to a nearby medical center if:
   1. Injury is not serious, but requires medical attention (e.g., broken fingers, minor burns);
   2. Victim(s) can move self without great pain.
F. Applying FIRST AID
   1. Landfill Employees – Minor accidents, such as bee stings, minor cuts and small burns may be treated onsite by an employee with first aid training.
   2. Customers – First aid treatment should not be given to customers who have minor accidents at the site. However, personal information about the victim and a description of the accident should be obtained. The customer should be instructed to go to his/her doctor for examination and treatment, if required.

C.5 Notification of Authorities

A. It is the responsibility of the Site Manager to ensure that all emergency authorities are notified. This notification will be done in the form of a phone call placed from the Lake Norman Construction and Demolition Landfill or cellular phone if available.

B. **Call 911** in an emergency.

C. Emergency phone numbers are posted throughout the Lake Norman Construction and Demolition Landfill.

Unless the occurrence of a contaminant release is clearly due to very unusual circumstances, the landfill operator shall take corrective action to prevent recurrence of the release. Corrective action shall be approved by appropriate state and local agencies and the NCDENR.

A report shall be filed at the landfill by the facility Emergency Coordinator in order to have further reference for inquiries by authorities or Lake Norman Construction and Demolition Landfill personnel. The report should state:

1. Time/date of incident or its discovery.
2. Type of release and effects.
3. Source.
4. Response and effectiveness.
5. Agencies contacted.
6. Corrective actions planned and schedule.

C.6 Procedures after an Accident

A. Accident Investigation – Site Manager will perform a complete investigation of the accident and events leading up to the time of the accident. The investigation should be started as soon as possible after the accident and persons involved in the accident should be interviewed.

B. Determination of Cause – After facts about the accident have been gathered, the Site Manager will make a determination as to the cause(s) of the accident.

C. Filing of Reports – The Site Manager will complete and file the appropriate accident report forms.

D. Corrective Steps – After a thorough investigation and determination of the cause(s) of an accident, the Site Manager will take corrective steps so that the same type of accident will not re-occur. These corrective steps may take the form of repair of faulty equipment, installation of safety equipment, or instruction of personnel in safe operating procedures.

E. Discussion with Employees – If it is determined that the .cause(s) of the accident were related to employee work habits and that remedial safety instructions would be helpful, a meeting will be held with site employees. The accident and corrective measures which should be taken to prevent another accident will be discussed. All employees will be instructed in proper safety procedures to follow.

F. Follow-up – The site Manager will follow-up on corrective measures to make certain that proper safety precautions are being taken. All unsafe practices will be called to the attention of the employees.

C.7 Contact List

Key Personnel

District Manager	Alex Churchill
General Manager	Brad Green
Site Manager	Jeffrey Geiss
Environmental Manager	Mike Gurley

C.8 Emergency Phone List

See Section C-10.

C.9 Critique of Response

After each incident involving the application of an Emergency Procedure, the General Manager will review the response to ascertain efficient application and inform the District Manager of the effectiveness of the response.

C.10 Emergency Response Checklist and Phone Numbers

In case of emergency, all employees are responsible for immediately contacting the appropriate individuals and/or authority listed below. Additionally, following notification, each employee should attempt to record the following information for any accident or emergency. We need to know:

Who (driver, employee, other parties):

What (system type & equipment involved):

When (time of accident):

Where (exact location):

Complete the AIG incident form if possible and then call AIG.

Notify the following as appropriate:

EMERGENCY PHONE NUMBERS		
AGENCY	**EMERGENCY**	**NON-EMERGENCY**
AMBULANCE	911	N/A
SHERIFF'S OFFICE	911	704-694-41878
FIRE DEPARTMENT	911	704-272-7933
STATE POLICE	911	N/A
UTILITY COMPANY Duke Energy	1-800-777-9898	N/A
OIL SPILL, TOXIC CHEMICAL RELEASE POLLUTION	1-800-424-8802	N/A
NCDENR (NC Dept. of Environment and Natural Resources)	919-733-4996	N/A
KEY CONTACTS		
POSITION	**NAME**	**PHONE NUMBER**
AIG INSURANCE		1-888-289-3578
DISTRICT MANAGER	Alex Churchill	704-377-0161
GENERAL MANAGER	Brad Green	704-782-2004 CELL 704-533-3698
ENVIRONMENTAL MANAGER	Mike Gurley	704-782-2004 CELL 704-400-6557
DISTRICT SAFETY MANAGER	Rodney Hopper	704-377-0161
REGIONAL SAFETY / HUMAN RESOURCES	Rodney Hopper	704-377-0161
SITE MANAGER	Jeffrey Geiss	704-822-2004 CELL 704-743-3685

APPENDIX D

Unauthorized Waste Control Program

Use of contents on this sheet is subject to the limitations specified at the end of this document.

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ATTACHMENT: LOAD INSPECTION FORM

D. UNAUTHORIZED WASTE CONTROL

The requirements for an unauthorized waste control program are outlined in 15A NCAC 13B of the North Carolina Solid Waste Management Regulations (NCSWMR). The objective of the program is to prevent unacceptable wastes from being deposited at the facility and to identify those steps required once an unacceptable waste is identified at the facility. The program includes the following components:

- Methods for determining when an incoming load contains unacceptable wastes
- Contingency response steps to take once an unacceptable waste is identified
- Personnel training that is required to implement and maintain the program
- Record keeping requirements
- Reporting requirements

D.1 Incoming Inspections

Informal load checking will be the responsibility of all employees, particularly those that work at the entrance area and those that work at or near the active fill area. Each employee will observe vehicles entering the Landfill for any potentially unauthorized waste and will alert management personnel if any unauthorized wastes are suspected. Through the waste collection programs, there will be several checkpoints:

Curbside checkpoints - The hauler is notified at the Landfill as to which materials are acceptable and which are unacceptable.

Gatehouse checkpoints – Only authorized vehicles and material will be allowed beyond the gatehouse. The gate attendant will refuse entry to any unauthorized vehicles or vehicles observed carrying unauthorized waste.

Active face checkpoints – All incoming loads of waste will be observed by the equipment operators as it is discharged at the active face

Checkpoints during compaction at active face – Material will be inspected by the Landfill compactor operator as it is compacted at the active face.

D.2 Random Load Inspections

In addition to the visual inspections performed by the equipment operator/attendants, a random inspection program shall be implemented to detect and prevent disposal of any of the unauthorized wastes listed in Section 2.2 of the Operations Manual. Inspections conducted as part of this program shall be performed by personnel trained in the following areas: methods for identification and determination of unauthorized wastes, handling procedures for unauthorized wastes, record keeping requirements of the program, and occupational health and safety. Inspection personnel shall also have a thorough understanding of the North Carolina Hazardous Waste Management Regulations (15A NCAC 13A) and the North Carolina Regulated Medical Waste Management Regulations (15 NCAC 13B .1203).

The frequency of the inspections shall be determined by the quantity and type of waste received, the familiarity with the generators and/or transporters, and the occurrences of identified unauthorized waste. Inspections should be performed at the maximum of the following frequencies:

- Once per week; or
- Ten percent of all incoming loads.

The inspections also need to be random. The time of day and day of week shall vary between inspections. The transporter/hauler selected for inspection shall also vary between inspections.

The procedure for the inspection shall be as follows:

- Stop the selected vehicle prior to the working face of the landfill
- Notify the driver of the inspection
- Direct the vehicle to the inspection area. The inspection area may be either a permanently designated location or a temporary location adjacent to the working face.
- If possible, perform a visual observation of the waste prior to unloading. If unauthorized waste is observed, or suspected, the vehicle shall be prohibited from unloading, and shall be directed out of the facility.
- If no unauthorized waste is observed or suspected from the visual observation, or if a visual observation is not possible, the vehicle shall discharge the load at the inspection area. The driver shall remain at the inspection area while the inspection is performed, unless a safety concern requires evacuation of the area. Equipment shall be used to spread and turn the waste to facilitate a visual observation of the load contents. If no unauthorized waste is identified, the waste shall be transferred to the working face for disposal.
- If unauthorized waste is identified in the load, and the unauthorized waste is not a regulated hazardous waste, a regulated medical waste, a regulated toxic waste, a regulated nuclear waste, or a waste which requires special handling, the waste shall be loaded back into the vehicle and removed from the facility.
- If acceptability of the waste can not be determined by visual observation, the waste can either be rejected and loaded back into the vehicle and removed from the facility, or samples of the waste can be taken to determine acceptability. Testing shall be selected based on the reason for the suspicion of unacceptability.
- If the waste is suspected of being a regulated hazardous waste, a regulated medical waste, a regulated toxic waste, or a regulated nuclear waste, site personnel will safely identify the nature of the unauthorized waste. Except for medical waste, wastes within these categories are not to be handled by landfill staff. Upon assessment of the waste, qualified site personnel (medical waste only) or qualified contractors will be contacted to provide direction for temporary handling, isolation, and security. Within 24 hours of discovery, Lake Norman C&D Landfill Facility will orally inform NCDENR of the incident and make every effort to contact a hazardous waste contractor for the proper packaging, removal, and disposal of the unauthorized waste. The NCDENR will be informed in writing within 5 days of the incident of the steps taken to properly dispose of the unauthorized waste. Medical waste can be managed by trained site personnel prior to shipment offsite by a licensed provider.

A copy of the Lake Norman C&D Landfill Facility's Load Inspection Form is attached.

D.3 Response

The appropriate response will be dependent on whether the unauthorized waste is recognized before or after it is deposited at the facility and on the type of unauthorized waste.

D.3.1 Prior to Deposit at Landfill

If an unauthorized waste is identified prior to the waste being deposited at the working face, the landfill operator shall notify the hauler and reject the load. Such loads of unauthorized wastes may be identified during the scale attendant's inspections, during a random load inspection, or by equipment operators prior to the hauler tipping his load at the working face.

D.3.2 After Deposit in Landfill

If the unauthorized waste is identified after the waste has been placed at the working face, and the hauler is still present, and the waste is not hazardous, medically regulated, toxic, or nuclear, the landfill operator shall ensure that the waste is re-loaded onto the haul vehicle and rejected.

D.3.3 Unauthorized Waste Types

The unauthorized wastes described below shall be rejected.

D.3.4 Hazardous, Regulated Medical, Toxic, and Nuclear Wastes

Once an unauthorized waste from any of these categories is identified, the landfill operator shall immediately notify the NCDENR, and site personnel will safely identify the nature of the unauthorized waste. Except for medical wastes, wastes within these categories are not to be handled by landfill staff. Upon assessment of the waste, qualified site personnel (medical waste only) or qualified contractors will be contracted to provide direction for temporary handling, isolation, and security. Within 24 hours of discovery, Lake Norman C&D Landfill Facility will orally inform NCDENR of the incident and make every effort to contact a hazardous waste contractor for the proper packaging, removal, and disposal of the unauthorized waste. The NCDENR will be informed in writing within 5 days of the incident of the steps taken to properly dispose of the unauthorized waste. Medical waste can be managed by trained site personnel prior to shipment offsite by a licensed provider.

D.3.5 Containers (drums not triple-rinsed or not properly opened)

Reject the load and follow the procedures in Section 1.2.2 for possible detection of hazardous waste. If the container does not contain hazardous waste, re-load onto hauler if necessary. If hauler has left the facility, call the company and have them return. Set the containers aside, cover with a tarp is necessary to prevent leaks, and, when available, place the subject containers within an impervious reserve container.

D.3.6 Waste Oil

Reject the load, re-load or direct it to the waste oil recycling area. If any is dumped, place appropriate absorbents, such as cat litter, spill pads, etc. to absorb the material. If hauler has left the facility, call the company and have them return.

D.3.7 Petroleum Contaminated Soils

Reject the load, re-load, or, if hauler has left the facility, call the company and have them return. Push aside the soils and cover with a tarp. For small amounts of wet soils, place in HDPE barrels when available. Call the NCDENR for additional direction.Unauthorized waste control

D.4 Personnel/Training/Equipment

D.4.1 Personnel

Listed below are the descriptions of the key personnel and the skill level required for the daily operation of the facility

A minimum of two site personnel will be certified by the Board of waste Management Facility Operators in accordance with requirements. A certified operator will be onsite whenever the landfill is operating. In the absence of the landfill manager, the alternate certified operator will be in charge.

D.4.2 Landfill Manager / Operations Manager

The landfill manager/operations manager (manager) will be experienced in all aspects of landfill construction, disposal operations, equipment maintenance procedures, environmental compliance, and safety regulations. The landfill manager shall have at least one year of demonstrated management experience in a similar position. The landfill manager will also have the duties of the site safety manager. This will include familiarity with applicable state and federal regulations regarding employee safety. The landfill manager will have the proper educational background, and will be experienced with occupational safety management and employee safety training

D.4.3 Equipment Operators

The equipment operators at the site shall be experienced with the various types of equipment used at the landfill. Upon new employment, the operators shall be instructed on the proper usage of the equipment. The operators will also be experienced in equipment maintenance procedures and special waste disposal practices.

D.4.4 Scale/Gate Attendant

The scale/gate attendant shall be experienced in the operations of the scales used to weigh the incoming waste hauling vehicles. The scale/gate attendant will be trained in the identification of acceptable and unacceptable wastes entering the facility. The attendant will also be knowledgeable of the use of the scale equipment.

D.5 Training

All new employees will be given an orientation program including the following:

- Use of fire extinguishers
- Hearing conservation
- Respirator training and fit testing (if applicable)
- Closed vessel entries (if applicable)
- Emergency response/spill cleanup

- Site rules
- Site emergency procedures
- Unacceptable waste training
- Identification of hazardous and PCB-containing wastes

The following types of training will be provided on a regular basis at the facility to ensure that the facility employees are adequately trained and understand their responsibilities in the event that unauthorized waste is identified.

D.5.1 Annual Safety Training

Annual safety training classes will be given by the landfill manager regarding current safety practices. If an accident has occurred, it will be addressed and thoroughly discussed, so that the accident does not happen again. Outside guests, such as the fire, police, and rescue squad departments will be asked to address the facility employees on safety management practices.

D.5.2 Environmental Compliance Training

Compliance with environmental regulations will be the duty of each person employed at the landfill. Compliance training will be provided to all employees, covering all operations of the landfill. Various topics will include but not be limited to leachate and methane gas control, environmental monitoring, and surface water control.

D.5.3 Waste Identification Training

All employees will be given training in the types of waste accepted at the facility and in recognizing PCBs, hazardous wastes, and all other unauthorized wastes. The training will be initiated before the individual's start date. Training will be updated yearly, whenever the regulations are changed, or when new waste types can be accepted at the facility.

D.6 Record Keeping

All inspections will be documented in writing by the inspector and retained by the Landfill for a minimum of five years. The following information will be logged for each formal inspection which takes place:

- Name of inspector
- Date and time of inspection
- Name of the hauling firm
- Name of the driver
- Vehicle license plate number
- Source of the waste as reported by the driver
- Inspector observations
- Signatures of inspector and driver

Incidents of unauthorized wastes identified during routine inspections records will include, in addition to the above list:

- Description of the waste
- Determination of waste acceptability and methods used for determination
- Description of any response activities associated with unauthorized waste

D.7 Reporting

Immediate verbal notification shall be provided to the NCDENR regional office of the discovery of unauthorized waste that is regulated hazardous waste, a regulated medical waste, a regulated toxic waste, or a regulated nuclear waste. A written submission shall also be provided to the NCDENR within 5 business days. The written submission shall include the date and time of discovery, a description of the unauthorized waste, response activities implemented, and, if known, the ultimate disposal of the unauthorized waste.

LOAD INSPECTION FORM

Date:_____ Time:_____

Hauler Information:

Company Name: _____

Driver's Name: _____

Company Truck #:_____ License Plate #:_____

Source of Waste:_____

Physical Inspection of the Load:

The inspector must check the following:

The load was discharged with in a separate area of the facility and unloading of the entire load's contents was observed. _____

There is no evidence of regulated hazardous wastes (e.g., drums containing hazardous waste labels, PCB wastes, sludges, other industrial process waster) or evidence of other unacceptable materials (e.g., asbestos). _____

There was no evidence of Potentially Infectious Medical Waste (i.e., red-bagged material, syringes, etc.). _____

NOTE: If it is discovered that there is evidence of unacceptable waste materials within the load, such information must be provided in detail on the reverse side, and the site manager must be notified. All action taken to address the situation must also be reported on the reverse side.

_____ _____

Inspector's Name Signature

APPENDIX E

Franchise Agreement

BOARD OF COMMISSIONERS
JERRY W. COCHRANE, CHAIRMAN
THOMAS R. ANDERSON, PE, VICE CHAIRMAN
JAMES BUDDY FUNDERBURK
CARROL MITCHEM
LARRY S. CRAIG

COUNTY MANAGER
STAN B. KISER

COUNTY ATTORNEY
JEFFREY A. TAYLOR

LINCOLN COUNTY

115 WEST MAIN STREET
THIRD FLOOR, CITIZENS CENTER
LINCOLNTON, NORTH CAROLINA 28092
704/736-8473 FAX 704/736-8820

ORDINANCE GRANTING A NONEXCLUSIVE CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL FRANCHISE TO LAKE NORMAN LANDFILL, INC. AND FRANCHISE AGREEMENT BETWEEN LINCOLN COUNTY AND LAKE NORMAN LANDFILL, INC. RELATED TO FRANCHISE

WHEREAS, the Board of Commissioners enacted the Lincoln County Landfill Franchise Ordinance on November 7, 2003; and

WHEREAS, North Carolina General Statutes § 153A-136(a)(3) authorizes counties to regulate the disposal and other disposition of solid wastes by granting franchises to one or more persons for the exclusive right to commercially dispose of solid wastes within the county; and

WHEREAS, Lake Norman Landfill, Inc. ("Lake Norman") is currently operating an approximately 115 acre construction and demolition debris landfill (the "Landfill") within the jurisdiction of Lincoln County; and

WHEREAS, at the time that Lake Norman began operations at the Landfill, the County by affidavit affirmed to the North Carolina Department of Environment and Natural Resources ("DENR") that Lake Norman had all required approvals for operation of the Landfill; and

WHEREAS, Lake Norman wishes to move forward with the next phase of the Landfill pursuant to a new Ordinance Granting a Nonexclusive Construction and Demolition Debris Landfill Franchise to Lake Norman Landfill, Inc.; and

WHEREAS, the Board of Commissioners desires to grant to Lake Norman a nonexclusive franchise for the disposal of construction and demolition debris in Lincoln County; and

WHEREAS, in lieu of host fees, the Board of Commissioners and Lake Norman have agreed to establish a grant program, which will be funded by Lake Norman in accordance with this Franchise and Agreement to be used for grants to non-profit organizations operating in and for the benefit of Lincoln County.

NOW, THEREFORE, THE BOARD OF COMMISSIONERS FOR THE COUNTY OF LINCOLN DOTH ORDAIN:

Section 1. Pursuant to the Lincoln County Landfill Franchise Ordinance and North Carolina General Statutes §§ 130A-294, 153A-121 and 153A-136, Lake Norman is hereby granted a nonexclusive franchise to proceed with an extension of its current permit and/or permitting of the next phase of the Landfill on Quarry Lane in Lincoln County and to operate said Landfill in Lincoln County.

Section 2. Nothing contained in this Agreement shall prohibit Lincoln County from operating a landfill for construction and demolition waste or from granting franchises to other entities to operate such landfills.

Section 3. The term of the Franchise and Agreement will be five years from the date on which Lake Norman's permit renewal is issued.

Section 4. Lake Norman agrees to operate the Landfill in accordance with Conditional Use Permit No. 107 issued by the County to Lake Norman and in compliance with all applicable laws, regulations, rules and governmental orders.

Section 5. The population to be served by the Landfill will consist primarily of commercial contractors who specialize in construction, demolition, and land-clearing activities and haulers who haul materials generated from such activities. The area to be served by the landfill will be the area of approximately 100 miles around the Landfill.

Section 6. It is anticipated that Lake Norman will accept up to approximately 200,000 tons of waste annually. The waste stream that may be accepted by the Landfill will be composed of all waste that may be accepted at permitted construction and demolition debris landfills by applicable North Carolina laws and regulations.

Section 7. The anticipated useful life of the Landfill is approximately 15 years.

Section 8. Beginning on the earlier of a) the date that DENR approves Lake Norman's request for an extension of its existing permit or b) the date that DENR issues a permit renewal to Lake Norman, Lake Norman will have an obligation to pay an annual amount of $50,000.00 for grant funding. Lake Norman will make the first annual payment of $50,000.00 on June 1, 2004. Lake Norman's obligation to fund the grant program will terminate prior to the termination of this Agreement if the Landfill closes or ceases doing business. Lake Norman will not have an obligation to pay the annual payment for any calendar year during which no waste is accepted at the Landfill. In the event that the Landfill should close or cease doing business during a calendar year, a pro rata share of the annual payment will be made as follows: if the Landfill closes or ceases doing business prior to June 1 of the calendar year, Lake Norman will pay a pro rata amount up to $25,000.00 based on the percentage of the year Lake Norman conducts business.

The annual grant payments will be made to the Lake Norman Landfill, Inc. Lincoln County Non-Profit Grant Program. This program will be administered by a committee of seven (7) members, with one member appointed by the Board of County Commissioners from each of the County's five townships, one member selected by the Board of County Commissioners from its own membership, and one member selected by Lake Norman. The committee will establish guidelines for eligibility and application for the grants and administer the program in accordance with those guidelines. The annual application process for grants will begin in January with grant

payments to be made after receipt of the annual payment from Lake Norman. The committee will provide the Board of County Commissioners and Lake Norman with a report of all funds received, grants given and expenses incurred at least annually.

Section 9. The application and fee of $1000.00 have been received.

Section 10. The stated gate rate for the Landfill, which will be effective upon approval of the franchise and has been approved by the County, is $35.00 per ton with applicable volume discounts. Lake Norman shall give notice of any proposed stated gate rate changes to the County at least sixty (60) days prior to the proposed effective date of the rate changes.

Section 11. Lake Norman may assign this Franchise and Agreement or any right accruing under this Franchise and Agreement by giving written notice to the County. In the event of any assignment, the assignee shall receive the rights and assume the liabilities of Lake Norman.

Section 12. This ordinance requires readings and approval at two regular meetings of the Board of Commissioners of Lincoln County, pursuant to and as required by N.C.G.S. § 153A-46, and will become effective following the second reading and approval.

This 5th day of January, 2004.

LINCOLN COUNTY

By: _____
Jerry W. Cochrane
Chairman, Board of Commissioners

ATTEST:

_____
Amy S. Long
Clerk to the Board

LAKE NORMAN LANDFILL, INC.

By: _____
President

ATTEST:

_____
Secretary

APPENDIX F

Operations Plan Drawings

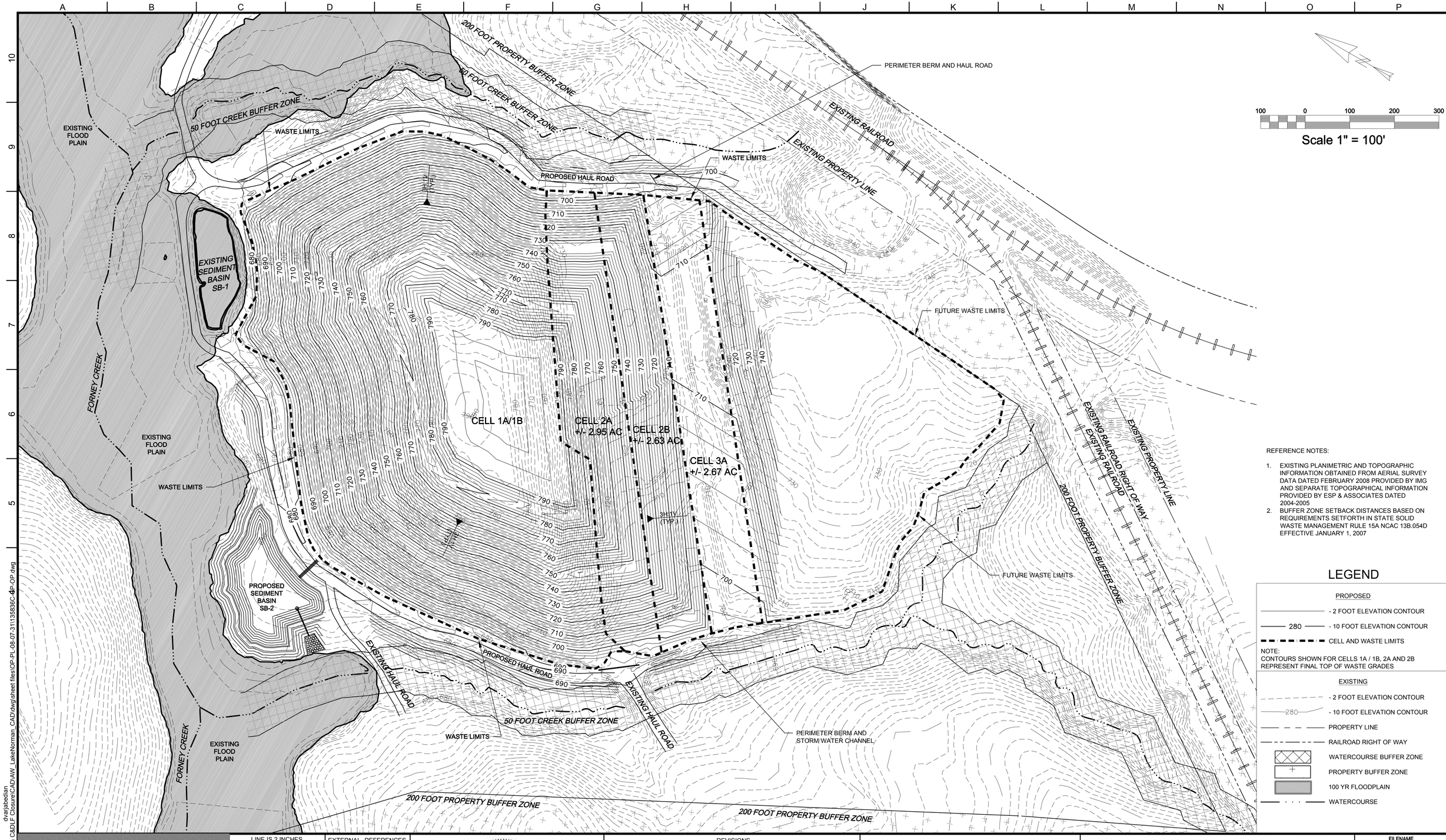
C1 Cell 3A Subgrade

C2 Cell 3B Subgrade

C3 Cell 4A Subgrade

C4 Cell 4B Subgrade

C5 Closure/Top of Waste Grades



REFERENCE NOTES:

1. EXISTING PLANIMETRIC AND TOPOGRAPHIC INFORMATION OBTAINED FROM AERIAL SURVEY DATA DATED FEBRUARY 2008 PROVIDED BY IMG AND SEPARATE TOPOGRAPHICAL INFORMATION PROVIDED BY ESP & ASSOCIATES DATED 2004-2005
2. BUFFER ZONE SETBACK DISTANCES BASED ON REQUIREMENTS SETFORTH IN STATE SOLID WASTE MANAGEMENT RULE 15A NCAC 13B.054D EFFECTIVE JANUARY 1, 2007

LEGEND

PROPOSED

- 2 FOOT ELEVATION CONTOUR
- 280 - 10 FOOT ELEVATION CONTOUR
- CELL AND WASTE LIMITS

NOTE:
CONTOURS SHOWN FOR CELLS 1A / 1B, 2A AND 2B REPRESENT FINAL TOP OF WASTE GRADES

EXISTING

- 2 FOOT ELEVATION CONTOUR
- 280 - 10 FOOT ELEVATION CONTOUR
- PROPERTY LINE
- RAILROAD RIGHT OF WAY
- WATERCOURSE BUFFER ZONE
- PROPERTY BUFFER ZONE
- 100 YR FLOODPLAIN
- WATERCOURSE

BROWN AND CALDWELL

Environmental Engineering and Consulting
309 East Morehead Street, Suite 160, Charlotte, North Carolina 28202 (704) 358-7204

SUBMITTED: _____ DATE: _____
PROJECT MANAGER

APPROVED: _____ DATE: _____
BROWN AND CALDWELL

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: CJM
DRAWN: DCV
CHECKED: ADG
CHECKED:
APPROVED:

EXTERNAL REFERENCES
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NORTH CAROLINA PROFESSIONAL SEAL 23502 ENGINEER ALBERT D. GLENN
10/3/2008

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

BFI - LAKE NORMAN C&D LANDFILL FACILITY
7099 QUARRY LANE, STANLEY, NC

FACILITY PERMIT NUMBER 55-04

OPERATIONS PLAN
CELL 3A SUBGRADE

LAKE NORMAN C&D LANDFILL FACILITY

FILENAME: 135836C-GP-OP
BC PROJECT NUMBER: 135836
SCALE: 1"=100'
DRAWING NUMBER: C1
SHEET NUMBER: 1 OF 5

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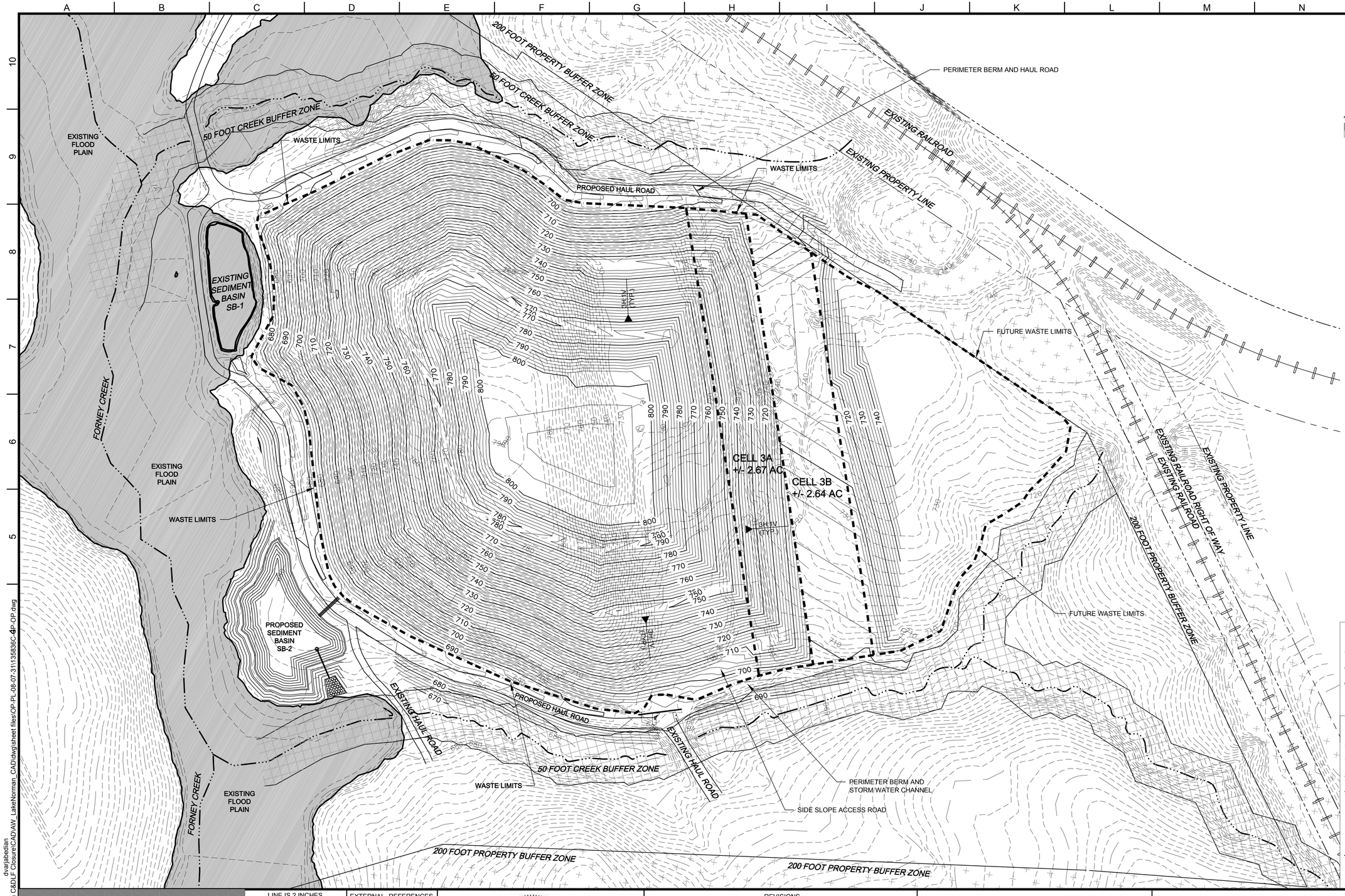

REFERENCE NOTES:

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2. BUFFER ZONE SETBACK DISTANCES BASED ON REQUIREMENTS SETFORTH IN STATE SOLID WASTE MANAGEMENT RULE 15A NCAC 13B.054D EFFECTIVE JANUARY 1, 2007

LEGEND

PROPOSED

- 2 FOOT ELEVATION CONTOUR
280 - 10 FOOT ELEVATION CONTOUR
- CELL AND WASTE LIMITS

NOTE:
CONTOURS SHOWN FOR CELLS 1A / 1B, 2A, 2B AND 3A REPRESENT FINAL TOP OF WASTE GRADES

EXISTING

- 2 FOOT ELEVATION CONTOUR
280 - 10 FOOT ELEVATION CONTOUR
- PROPERTY LINE
- RAILROAD RIGHT OF WAY
- WATERCOURSE BUFFER ZONE
- PROPERTY BUFFER ZONE
- 100 YR FLOODPLAIN
- WATERCOURSE

BROWN AND CALDWELL

Environmental Engineering and Consulting
309 East Morehead Street, Suite 160, Charlotte, North Carolina 28202 (704) 358-7204

SUBMITTED: _____ DATE: _____
PROJECT MANAGER

APPROVED: _____ DATE: _____
BROWN AND CALDWELL

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: CJM
DRAWN: DCV
CHECKED: ADG
CHECKED:
APPROVED:

EXTERNAL REFERENCES
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NORTH CAROLINA PROFESSIONAL SEAL 033402 ENGINEER ALBERT D. GLENN
10/3/2008

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

BFI - LAKE NORMAN C&D LANDFILL FACILITY
7099 QUARRY LANE, STANLEY, NC

FACILITY PERMIT NUMBER 55-04

OPERATIONS PLAN
CELL 3B SUBGRADE

LAKE NORMAN C&D LANDFILL FACILITY

FILENAME: 135836C-GP-OP
BC PROJECT NUMBER: 135836
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DRAWING NUMBER: C2
SHEET NUMBER: 2 OF 5

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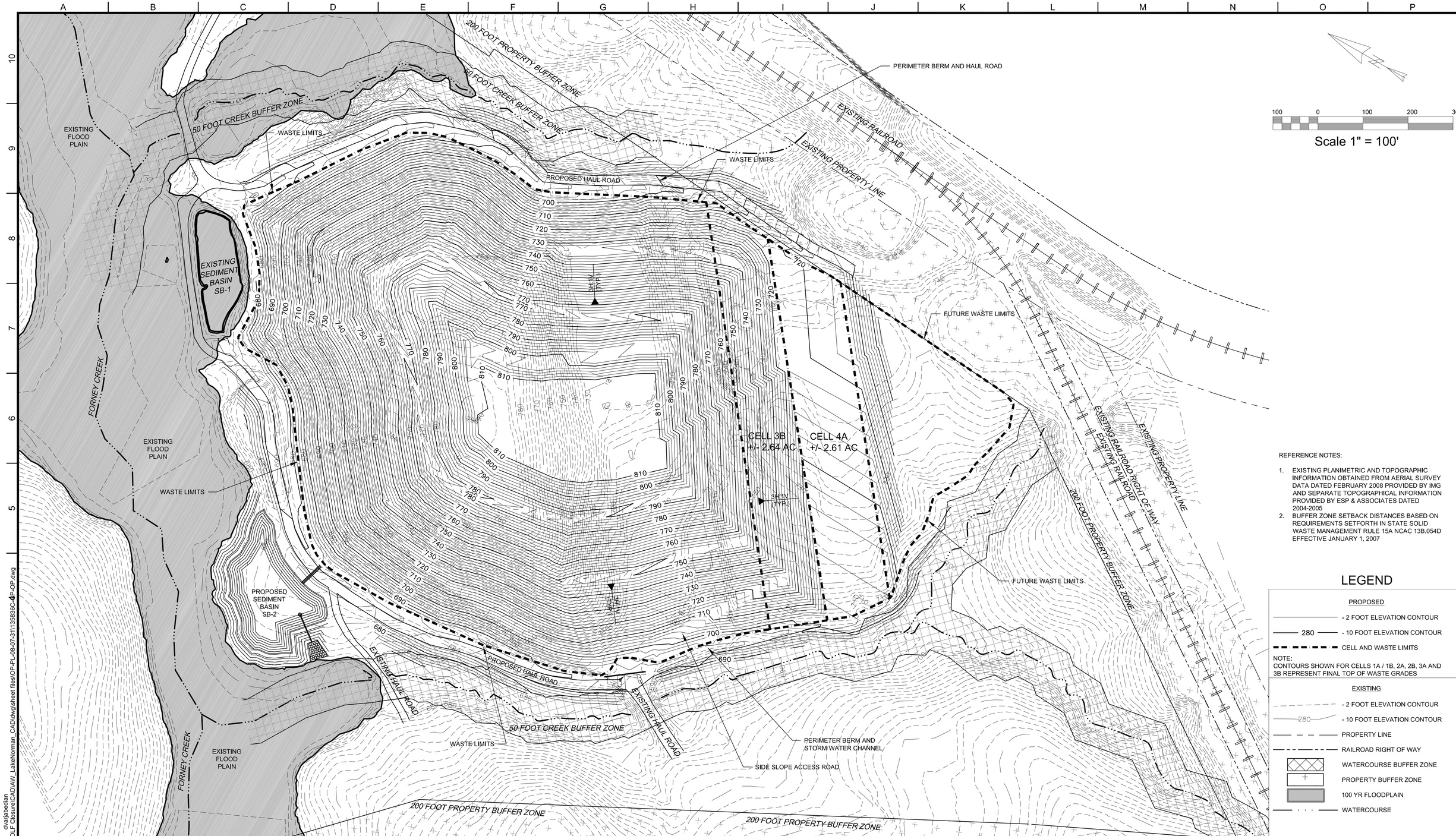

Scale 1" = 100'

REFERENCE NOTES:

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LEGEND

PROPOSED

- 2 FOOT ELEVATION CONTOUR
- 280 - 10 FOOT ELEVATION CONTOUR
- CELL AND WASTE LIMITS

NOTE:
CONTOURS SHOWN FOR CELLS 1A / 1B, 2A, 2B, 3A AND 3B REPRESENT FINAL TOP OF WASTE GRADES

EXISTING

- 2 FOOT ELEVATION CONTOUR
- 280 - 10 FOOT ELEVATION CONTOUR
- PROPERTY LINE
- RAILROAD RIGHT OF WAY
- WATERCOURSE BUFFER ZONE
- PROPERTY BUFFER ZONE
- 100 YR FLOODPLAIN
- WATERCOURSE

BROWN AND CALDWELL
Environmental Engineering and Consulting
309 East Morehead Street, Suite 160, Charlotte, North Carolina 28202 (704) 358-7204

SUBMITTED: _____ DATE: _____
PROJECT MANAGER

APPROVED: _____ DATE: _____
BROWN AND CALDWELL

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

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CHECKED: ADG
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APPROVED:

EXTERNAL REFERENCES
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NORTH CAROLINA PROFESSIONAL SEAL 034402 ENGINEER ALBERT D. GLENN
10/3/2008

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

BFI - LAKE NORMAN C&D LANDFILL FACILITY
7099 QUARRY LANE, STANLEY, NC

FACILITY PERMIT NUMBER 55-04

OPERATIONS PLAN
CELL 4A SUBGRADE

LAKE NORMAN C&D LANDFILL FACILITY

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BC PROJECT NUMBER 135836
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DRAWING NUMBER C3
SHEET NUMBER 3 OF 5

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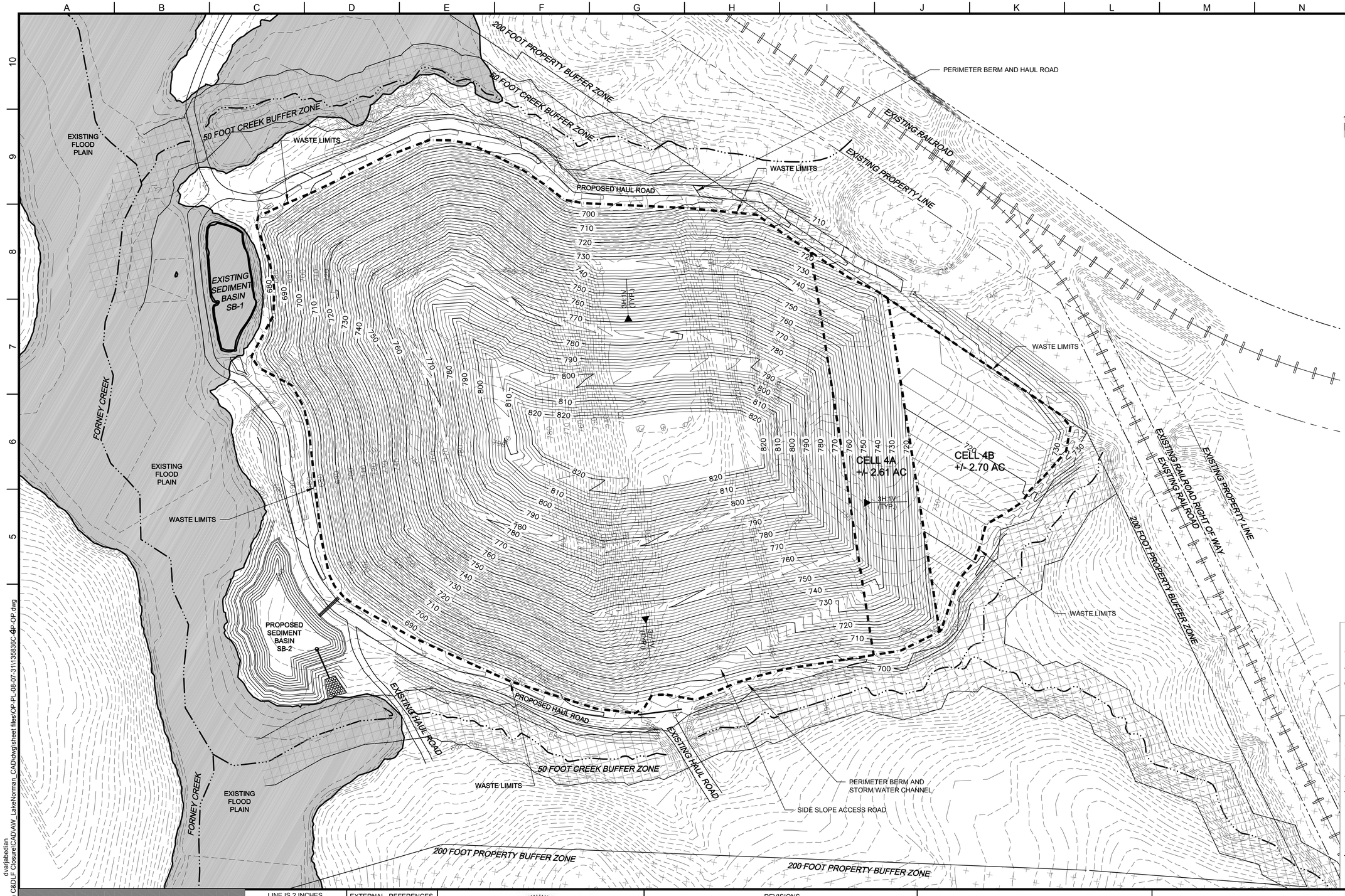

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2. BUFFER ZONE SETBACK DISTANCES BASED ON REQUIREMENTS SETFORTH IN STATE SOLID WASTE MANAGEMENT RULE 15A NCAC 13B.054D EFFECTIVE JANUARY 1, 2007

LEGEND

PROPOSED

- 2 FOOT ELEVATION CONTOUR
- 280 — 10 FOOT ELEVATION CONTOUR
- CELL AND WASTE LIMITS

NOTE:
CONTOURS SHOWN FOR CELLS 1A / 1B, 2A, 2B, 3A, 3B AND 4A REPRESENT FINAL TOP OF WASTE GRADES

EXISTING

- 2 FOOT ELEVATION CONTOUR
- 280 — 10 FOOT ELEVATION CONTOUR
- PROPERTY LINE
- RAILROAD RIGHT OF WAY
- WATERCOURSE BUFFER ZONE
- PROPERTY BUFFER ZONE
- 100 YR FLOODPLAIN
- WATERCOURSE

BROWN AND CALDWELL
Environmental Engineering and Consulting
309 East Morehead Street, Suite 160, Charlotte, North Carolina 28202 (704) 358-7204

SUBMITTED: _____ DATE: _____ PROJECT MANAGER
APPROVED: _____ DATE: _____ BROWN AND CALDWELL

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

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CHECKED: ADG
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APPROVED:

EXTERNAL REFERENCES
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NORTH CAROLINA PROFESSIONAL SEAL 034702 ENGINEER ALBERT D. GLENN
10/3/2008

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

BFI - LAKE NORMAN C&D LANDFILL FACILITY
7099 QUARRY LANE, STANLEY, NC

FACILITY PERMIT NUMBER 55-04

OPERATIONS PLAN
CELL 4B SUBGRADE
LAKE NORMAN C&D LANDFILL FACILITY

FILENAME: 135836C-GP-OP
BC PROJECT NUMBER: 135836
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SHEET NUMBER: 4 OF 5

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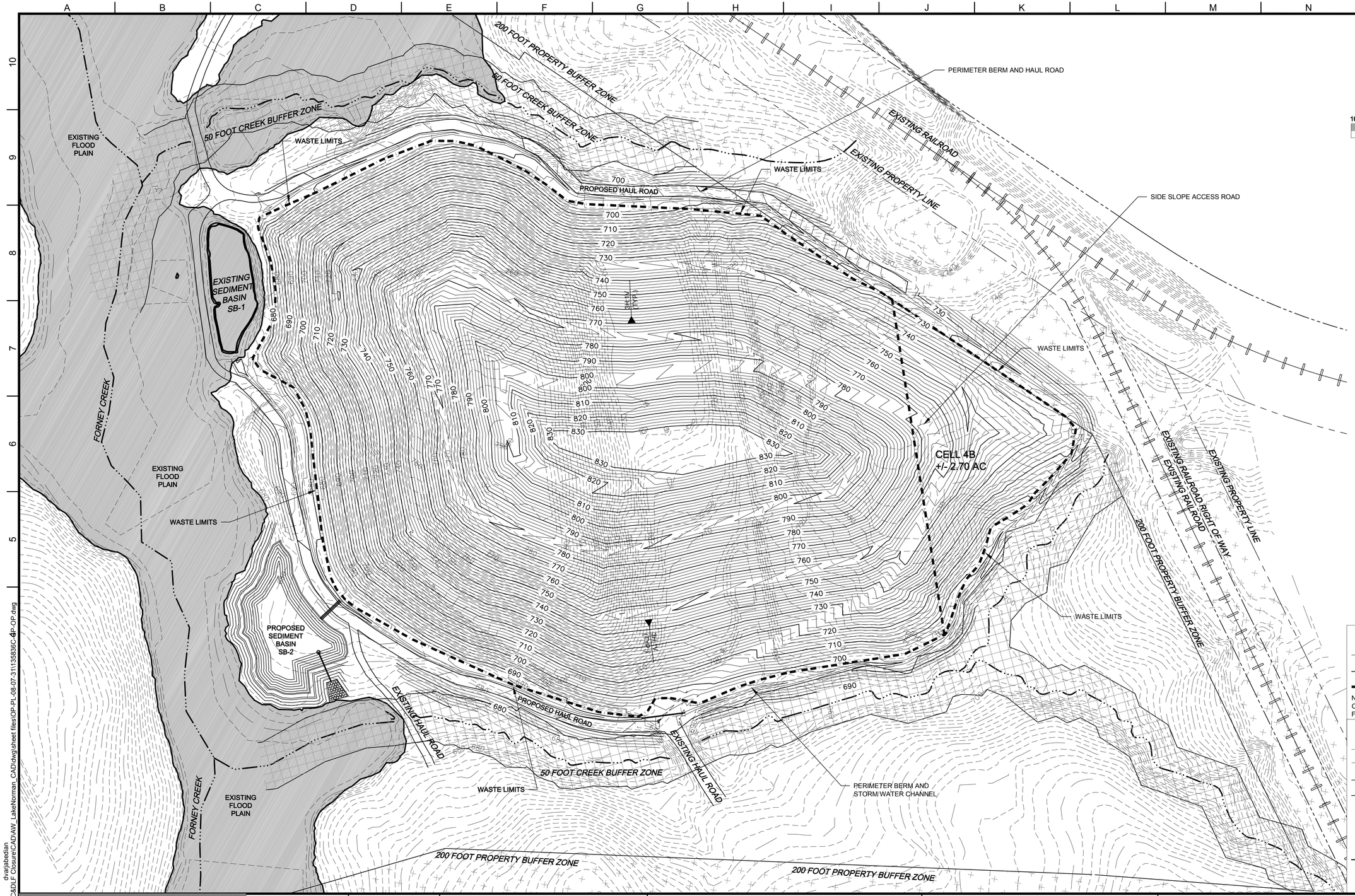

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2. BUFFER ZONE SETBACK DISTANCES BASED ON REQUIREMENTS SETFORTH IN STATE SOLID WASTE MANAGEMENT RULE 15A NCAC 13B.054D EFFECTIVE JANUARY 1, 2007

LEGEND

PROPOSED

- 2 FOOT ELEVATION CONTOUR
- 280 — 10 FOOT ELEVATION CONTOUR
- CELL AND WASTE LIMITS

NOTE:
CONTOURS SHOWN FOR ALL CELLS REPRESENT FINAL TOP OF WASTE GRADES

EXISTING

- 2 FOOT ELEVATION CONTOUR
- 280 — 10 FOOT ELEVATION CONTOUR
- PROPERTY LINE
- RAILROAD RIGHT OF WAY
- WATERCOURSE BUFFER ZONE
- PROPERTY BUFFER ZONE
- 100 YR FLOODPLAIN
- WATERCOURSE

BROWN AND CALDWELL

Environmental Engineering and Consulting
309 East Morehead Street, Suite 160, Charlotte, North Carolina 28202 (704) 358-7204

SUBMITTED: _____ DATE: _____ PROJECT MANAGER

APPROVED: _____ DATE: _____ BROWN AND CALDWELL

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: CJM
DRAWN: DCV
CHECKED: ADG
CHECKED:
APPROVED:

EXTERNAL REFERENCES
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NORTH CAROLINA PROFESSIONAL SEAL 034202 ENGINEER ALBERT D. GLENN
10/3/2008

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

BFI - LAKE NORMAN C&D LANDFILL FACILITY
7099 QUARRY LANE, STANLEY, NC

FACILITY PERMIT NUMBER 55-04

OPERATIONS PLAN
TOP OF WASTE CLOSURE GRADES
LAKE NORMAN C&D LANDFILL FACILITY

FILENAME: 135836C-GP-OP
BC PROJECT NUMBER: 135836
SCALE: 1"=100'
DRAWING NUMBER: C5
SHEET NUMBER: 5 OF 5

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