Permit No.	Date	Document ID No.
36-12	**August 11, 2008**	**5499**

CORPORATE EHS SERVICES

Duke Energy Corporation
526 South Church St.
Charlotte, NC 28202

Mailing Address:
EC13K / PO Box 1006
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RECEIVED
August 11, 2008
Solid Waste Section
Asheville Regional Office

APPROVED DOCUMENT
Division of Waste Management
Solid Waste Section
Date **September 2, 2008** By **LY Frost**

August 8, 2008

North Carolina Department of Environment and Natural Resources
Division of Waste Management
Solid Waste Section
Asheville Regional Office
2090 US Highway 70
Swannanoa, N.C. 28778

Attention: Mr. Larry Frost

Subject: Duke Energy – Allen Steam Station
Retired Ash Basin CP Landfill
Permit to Construct Application
Additional Information Request Response

Dear Mr. Frost:

In reply to your Additional Information Request letter dated August 1, 2008 and our earlier meeting on July 30, 2008, attached is Duke Energy's response to those items relative to the subject landfill permit application.

The attached information was provided to Duke Energy by our landfill consultant, S&ME, Inc. S&ME has developed responses to the six items identified in the August 1, 2008 letter as well as to address questions raised during the July 30, 2008 meeting. In particular, the attached Operations Plan has been revised (August 7, 2008) to include additional actions in our Response Action Plan around an Initial Response Leakage Rate. The S&ME response also addresses questions raised during the meeting regarding the impact of liner defects on the action leakage rate calculation and the use of leak detection methods during the liner construction phase.

Please let me know if there are any additional issues or concerns with the application that need further discussion. I can be reached at 980-373-7892. Thank you for the opportunity to meet and discuss these items on July 30. We look forward to continue working with you as this project moves forward.

Sincerely,

Christopher D. Hallman, P.E.
Waste and Remediation Management
Duke Energy Corporate EHS

Attachments – Response Letter from S&ME and revised Operations Plan

cc (letter only): Ted Manes
Ken Daly – S&ME, Inc.
Don Scruggs – Allen SS
Bill McCabe

S&ME

Celebrating 35 Years
1973 • 2008

August 7, 2008

Duke Energy
526 South Church Street
Mail Code: EC13k
Charlotte, North Carolina 28201-1006

Attention: Mr. Chris Hallman

Reference: **Permit to Construct Application Response to NCDENR Items**
Retired Ash Basin (RAB) – Ash Landfill
Duke Energy - Allen Steam Station, Belmont, NC
S&ME Project No. 1356-06-825

Dear Chris:

S&ME, Inc. (S&ME) prepared this letter and related information in support of the Permit to Construct Application for the proposed Retired Ash Basin (RAB) Ash Landfill at Duke Energy's Allen Steam Station. Specifically, this letter provides responses to North Carolina Department of Environment and Natural Resources (NCDENR) "Additional Information Request" letter (NCDENR Document ID No. 5439 - Dated August 1, 2008) received by Duke Energy and S&ME on Monday, August 4, 2008. The items are summarized in this letter (in italics) along with S&ME's responses to those items.

Item 1: *Regarding 15A NCAC 13B .0504(1)(E) (Local Government Approval).*

Response 1: NCDENR concluded that information provided in the June 13, 2008 "Response to Comments" letter (NCDENR Document ID No. 4869) was adequate for the application, and no further response is provided.

Item 2: *Regarding 15A NCAC 13B .0503(2)(a) (Absence of Explosive Gas Narrative in Operations Plan).*

Response 2: Duke Energy and S&ME revised the Operations Plan (attached) in the June 13, 2008 letter to NCDENR to include Section 3.4, titled "Landfill Gas Management". Section 3.4 outlines gas monitoring procedure during active operations along with proposed contingency actions. We understand based on correspondence with Duke Energy that the June 13, 2008 response to this comment letter (NCDENR Document ID No. 4869) is adequate for the application, and no further response is provided.

Item 3: *Regarding 15A NCAC 13B .0104(f) and 15A NCAC 13B .0201(f) (Nuisance Odor from FGD Residue-Hydrogen Sulfide and Sulfur Dioxide Narrative in Operations Plan).*

Response 3: We understand based on correspondence with Duke Energy that the June 13, 2008 revisions to the Operations Plan were adequate for a complete application.

Item 4: *Regarding NPDES Permit Number NC0004979.*

Response 4: Information provided in the June 13, 2008 "Response to Comments" letter (NCDENR Document ID No. 4869) was adequate for a complete application.

Item 5: *Regarding Owner/Operator leachate and leak detection management responsibilities enumerated within the Operations Plan.*

Response 5: Information provided in the June 13, 2008 "Response to Comments" letter (NCDENR Document ID No. 4869) was adequate for a complete application.

Item 6: *Regarding the 500 gpad Action Leakage Rate (ALR) and implementation of a 300 gpad Initial Response Leakage Rate (IRLR) within the Operations Plan.*

Response 6: This is addressed in revisions to the Operations Plan, Sections 3.3 and 3.3.3 (attached).

NCDENR, Duke Energy, and S&ME personnel met on July 30, 2008 to review specific Permit to Construct Application topics. In particular we reviewed and discussed the technical basis for calculating the proposed action leakage rate (ALR) presented in the application. NCDENR personnel raised a question about the influence of the assumed liner system defect frequency of one defect per acre on the ALR. We have considered this question and believe that the ALR would remain the same if more than one defect were assumed. We make this conclusion on the basis that our proposed ALR criteria would be triggered by flow through one (the first) assumed defect and flow through subsequent defects would only add to the triggering flow quantity.

During our July 30, 2008 meeting, we also discussed leak detection methods during liner system construction. NCDENR personnel expressed interest in further consideration of leak detection methods. We noted that we reviewed leak detection methods during permit application preparation and understood that current methods may not be practical for the proposed liner system configuration and design. However, S&ME will further evaluate leak detection feasibility and will provide responses to this item in the near future.

S&ME sincerely appreciates the continued opportunity to be of service to Duke Energy. Please contact us at your convenience if you have any questions.

Respectfully submitted,

S&ME, Inc.

Kenneth R. Daly, P.E.
Senior Project Engineer

William M. Harrison, E.I.
Staff Professional

Jason S. Reeves, P.E.
Senior Engineer

Attachments: Operations Plan, Revised August 6, 2008
Cc: Ted Manes, Duke Energy

OPERATIONS PLAN
RETIRED ASH BASIN (RAB) - ASH LANDFILL
ALLEN STEAM STATION
BELMONT, NORTH CAROLINA

S&ME Project No. 1356-06-825

Prepared for:
526 South Church Street
Charlotte, North Carolina 28202

Prepared by:
S&ME, Inc.
9751 Southern Pine Boulevard
Charlotte, North Carolina 28273

March 11, 2008
Revised August 7, 2008

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1. GENERAL FACILITY OPERATIONS

1.1 Overview

This Operations Plan is part of the Permit to Construct Application for the Retired Ash Basin (RAB) ash landfill at Duke Energy's Plant Allen Steam Station and presents the landfill's operational requirements for: (1) general facility operation; (2) waste handling and landfill sequencing; and (3) leachate and storm water management. This Operations Plan was prepared consistent with requirements of Rules .0505 of 15A NCAC 13B of the North Carolina Solid Waste Management Rules.

The proposed RAB ash landfill is owned by Duke Energy. The operations of the facility will either be overseen by a Duke Energy Operations Manager or subcontracted to an outside company.

1.2 Contact Information

Correspondence and questions concerning the operation of the RAB ash landfill should be directed to the appropriate entity as follows:

- ***OWNER***
  Duke Energy – Allen Steam Station
  253 Plant Allen Road, Belmont, NC 28012
  (704) 829-2423
  Facility Contact: Don Scruggs

- ***STATE REGULATORY AGENCY***
  North Carolina Department of Environment and Natural Resources
  Division of Waste Management, Solid Waste Section
  Asheville Regional Office
  2090 US Highway 70, Swannanoa, NC 28778
  (828) 296-4500
  Regional Engineer: Larry Frost

- ***ENGINEER***
  S&ME, Inc.
  9751 Southern Pine Blvd., Charlotte, NC 28273
  (704) 523-4726
  Project Engineer: Ken Daly, P.E.

1.3 Safety

Landfill operations at the RAB ash landfill were developed considering the health and safety of the facility's operating staff. Duke Energy will provide each of the operating staff with site specific safety training prior to landfill operations and designate safety protocol on-site in accordance to Duke Energy's Safe Work Practices.

1.4 Access and Security Requirements

Access roads to the landfill will be of all weather construction (asphalt and gravel) and maintained in good condition. To prevent unauthorized entry, access to the Duke Energy property is controlled by means of perimeter fencing and a guarded security entrance.

1.5 Signs

Signs providing information on disposal procedures, the permit number, stating that no hazardous or un-permitted waste can be received without written permission from the State Division of Waste Management, Solid Waste Section (Division) and other pertinent information will be posted at the site entrance. Traffic signs and markers will be provided as necessary to promote an orderly traffic pattern to and from the active disposal area and maintain efficient operating conditions.

1.6 Dust Control

Dust generated on haul roads will be controlled through the application of water, road maintenance, and a truck wash. Mud and dirt from the haul and access roads will be removed by washing or with heavy construction equipment. Dust and windblown ash will be controlled through the use of cover soils and interim spray applied coverings such as cement-based coverings (i.e. posi-shell) and hydroseed mulch. Additionally, interim and final covers will be vegetated as soon as practical in order to minimize the blowing of dust on-site.

1.7 Fire Control

No open burning shall be permitted at the RAB ash landfill. Ash is a non combustible material and the threat of fire is minimal. However, if a fire occurs at the landfill the local fire department shall be notified and equipment and stockpiled soil shall be provided to control accidental fires. Any fire that occurs at the landfill shall be reported to the Division within 24 hours and a written notification will be submitted within 15 days by the Operations Manager.

1.8 Training

Due to the diversity and nature of job tasks required at the landfill, personnel should be adequately trained to handle facility operations and maintenance.

The Operations Manager should have a general understanding of all the tasks required for site operations. Individuals performing the various tasks should have adequate training for the specific tasks they are assigned. Duke Energy will establish and provide a site specific training program for facility personnel.

Noteworthy operations and maintenance tasks to be addressed in training include:

- maintaining accurate records of waste loading (quantitative and qualitative);
- operating requirements for storm water segregation from exposed waste areas; and
- operating and maintaining leachate collection system and leak detection system.

1.9 Record Keeping

An operating record will be maintained on-site and will include the following:

- Leak Detection System (LDS) monitoring information;
  - documentation of an approved response action plan from the Division;
  - records of the amount of liquids removed at each sump;
  - notice of exceedence of action leakage rate for sumps (if any);
  - preliminary assessment report for exceedence of action leakage rate (if any);
  - reports documenting remedial actions (if any);
- closure and post-closure LDS monitoring plan and results;
- closure cost estimate and financial assurance documentation; and
- Operations Plan.

The above records will be kept in the operating record for the active life of the landfill and the post-closure care period. Information contained in the operating record must be furnished upon request to the Division or made available for inspection by the Division. Additional records kept on-site will include:

- Facility Permits;
  - solid waste facility permits;
  - National Pollutant Discharge Elimination System (NPDES) storm water discharge permit;
  - Erosion and Sediment Control Plan;
- regulatory agency inspection reports;
- Site Suitability Study;
- employee training program and records;
- internal vehicle maintenance records; and
- site drawings and specifications.

1.10 Erosion and Sedimentation Control

Erosion and sedimentation control features include temporary and permanent sediment basins, rain gutters, road ditches, outlet protection aprons, downchute piping, and direct runoff to perimeter ditches. Prior to landfill closure, sediment basins shall be checked weekly. During post closure, sediment basins shall be checked quarterly and within 24-hours of a 1-inch rainfall event. Sediment shall be removed from each structure to its original dimensions when sediment accumulates to one half of the design depth. The sediment basins, embankments, spillways and outlets shall also be checked for erosion damage. Necessary repairs shall be made as soon as practical. Any trash or debris within the riser structures or outfalls shall be removed.

Prior to closure, channels shall be monitored after each runoff event. Post closure, channels shall be checked after each 1-inch rainfall event. Riprap-lined channel sections and outlet protection aprons shall be checked for washouts. Riprap shall be added to these areas as needed to maintain the integrity of the structure.

Slopes shall be periodically checked for erosion and fertilized in the first year. To aid in fertilization and vegetative establishment, soil samples from the slopes should be analyzed for nutrient content to aid in selection of fertilizers, soil amendments, and vegetation. Slopes shall be fertilized annually. The slopes shall be mowed at least once a year. Damaged areas shall be reseeded, fertilized, and mulched immediately. Seeding, fertilizing and mulching shall be in accordance with the North Carolina Erosion and Sedimentation Control Guidelines.

Vegetative ground cover sufficient to control erosion must be established within 15 working days or 90 calendar days upon completion of any phase of landfill development as per the North Carolina Erosion and Sedimentation Control Guidelines.

The landfill operation shall not cause a discharge of pollutants into waters of the United States, including wetlands, that violates any requirement of the Clean Water Act, including, but not limited to, NPDES requirements, pursuant to Section 402. In addition, under the requirements of Section 404 of the Clean Water Act, the discharge of dredged or fill material into waters of the state that would be in violation of the requirements shall not be allowed by landfill operations.

Operations at the landfill shall not cause the discharge of a non-point source of pollution to waters of the United States, including wetlands, that violates any requirement of an area-wide or statewide water quality management plan that has been approved under Section 208 or 319 of the Clean Water Act, as amended.

2. WASTE HANDLING AND LANDFILL SEQUENCING

2.1 Landfill Capacity

The RAB ash landfill is comprised of two Phases (Phase 1 and Phase2). The landfill phases are divided into cells and the cells are further divided into subcells. Landfill sequencing is further described in Section 2.4 of this Operations Plan. The landfill is estimated to have a storage life of approximately 12 years, based on a projected 500,000 tons per year disposal rate. The disposal rate assumes no beneficial ash reuse.

The landfill capacity was estimated using the proposed grading and closure plans in conjunction with the anticipated annual disposal rates. The gross volume of the landfill, which consists of the airspace between the protective cover soil and the proposed final cover surface, was estimated to be on the order of 2,082,500 cubic yards for Phase 1 and 3,958,200 cubic yards for Phase 2 for a total volume of 6,040,700 cubic yards. The approximate final cover soil volume considering a 3-foot thick cover (2-ft final cover and 1-ft interim cover) over an approximate 50-acre footprint is approximately 242,200 cubic yards. Deducting the approximate final cover soil volume, the airspace available for waste placement (including operational soils) is 5,789,500 cubic yards. Using an assumed in-place waste density of 75 lb/ft^3 (1.01 $tons/yd^3$), the available dry tonnage of waste to be placed in the landfill was estimated to be on the order of 5,856,500 tons.

2.2 Waste Acceptance, Disposal and Screening Requirements

The landfill will only accept combustion products residuals including fly ash, bottom ash, boiler slag, mill rejects, and flue gas desulfurization (FGD) residue generated at the Allen Steam Station. The landfill owner or operator shall notify the Division within 24 hours of attempted disposal of any wastes the landfill is not permitted to receive. Hazardous, liquid, or infectious wastes shall not be disposed of in the landfill.

The proposed landfill will be receiving a relatively consistent and homogeneous waste stream of combustion products residuals generated solely from the Allen Steam Station. Waste will be hauled and disposed of by dedicated and consistent operators from the waste source to the landfill. As hauling and disposal operations are wholly contained within the site, random inspections are not proposed. Rather loads will be monitored continuously through operations. Based on the consistent and homogeneous waste stream it is anticipated that municipal solid waste, hazardous, liquid, or non-permitted wastes will be readily distinguished from the ordinary waste stream.

2.3 Operating Concepts

The primary objective of the RAB ash landfill is to operate safely and efficiently while minimizing leachate generation and controlling storm water. The landfill development will be sequenced in Phases as indicated on Figure 1. The Facility's final closure grading plan is presented on Figure 2. Landfilling operations will generally proceed from the west towards the east by the use of cells. Each cell is divided into smaller subcells. In general, waste

placement will be performed in 10-foot lifts with operations usually being focused within a particular cell area. Subsequent landfilling operations in the cell will generally be limited to an exposed surface area of approximately 2 acres, at the operator's discretion, with waste in other areas covered with daily, intermediate, or final cover as appropriate. Soil diversion berms will be used to collect and divert the non-contact storm water runoff to areas where the runoff will be directed to a sediment basin. When the desired waste elevations are obtained within the cell, waste placement will move to the next cell where the process will be repeated.

2.4 Landfill Sequencing

The general steps for the operation of the landfill are summarized below and are shown on the operations diagrams provided as Figures 1 through 5.

Waste placement shall begin in Cell 1, Subcell 1A as illustrated in Figure 3 and shall progress sequentially, as illustrated in the cross section provided in Figure 4. The first 10-foot lift shall be placed in Subcell 1A; after the first lift is placed in Subcell 1A, the raincover shall be removed from Subcell 1B and the first 10-foot lift shall be placed in Subcell 1B. After the first 10-foot lift of waste is placed across Cell 1, waste placement shall then continue across Cell 1 in 10-foot lifts until the Cell 1 final grades are achieved, as shown on Figure 3.

Once final grades are achieved in Cell 1, waste placement shall begin in Cell 2 following the same general format as Cell 1, where a 10-foot lift is placed in Subcell 2A, then the rain cover is removed from Subcell 2B; then a 10-foot lift is placed into Subcell 2B. Waste placement in Cell 2 shall continue in 10-foot lifts until Phase 1 final grades are achieved. Final grades for Cell 2 shall piggyback onto Cell 1, as shown on Figure 5, for the completion of Phase 1.

2.5 Waste and Cover Material Placement

Prior to waste placement, stakes indicating the limits of waste placement, as shown on the Engineering Plan Drawings, shall be located. The waste shall be compacted as densely as practical using compactors and dozers in approximate 1-foot lifts to achieve a vertical operational lift thickness of 10 feet. Initially, the waste shall be placed from up-gradient to down-gradient. As higher waste elevations are achieved, the waste may be placed from down-gradient to up-gradient on the active face slope, as long as landfill surfaces are graded to allow proper drainage and segregation. A minimum five percent slope shall be graded on the landfill surface to promote surface water runoff. Waste shall not be disposed of in water, and surface water shall not be impounded over or within the waste.

Flue gas desulfurization (FGD) residue will be spread in 6-inch lifts in the center of the operational area. No FGD residue shall be placed within 25 feet of the exterior slopes. Prior to placement of the next fill lift, material should be adequately blended with the other waste. The waste stream was assumed for design to be comprised predominantly of ash. Should the waste stream change at some time during operations, the design slope stability analyses must be reviewed for the changed conditions.

The landfill active face should, at the operator's discretion, generally be approximately a 2-acre area to reduce the amount of exposed waste. Operational soil cover should be applied at least once a week or when the active area reaches approximately a 2-acre area. Operational soil cover shall be a 6-inch thick layer constructed of on-site soil or an approved alternative, such as tarps, spray applied cement based applications (i.e. posi-shell), or spray applied hydroseed mulch. A 12-inch thick interim cover layer shall be placed on areas where final grades have been reached or where waste placement will be inactive for 12 months or more.

2.6 Final Cover

The final cover system for a completed phase will be finished within 180 days following the beginning of closure activities unless otherwise approved by the Division.

The proposed final cover will consist of a compacted interim soil cover, 40-mil LLDPE geomembrane liner, geocomposite drainage layer, an 18-inch thick earthen barrier layer, and a 6-inch earthen vegetative layer. A proposed alternative is to use a 50-mil structured geomembrane with an integral drainage layer overlain with a geotextile. The geomembrane will provide a barrier layer to reduce leachate generation. The vegetative layer will consist of on-site soil suitable for maintaining a grass cover and controlling erosion. Surface water that percolates through the vegetative layer and 18-inch thick earthen barrier layer will drain through the geocomposite drainage layer. The geocomposite will day-light periodically across the cover system and at the toe of the landfill final cover slope to provide drainage.

3. ENVIRONMENTAL MANAGEMENT

3.1 Storm Water Collection and Conveyance

Storm water runoff from the landfill will be directed via a system of rain gutters, road ditches, downchute piping, and direct runoff to perimeter ditches surrounding the landfill limits. The perimeter ditches and southern downchute pipes discharge directly to a sediment basin on the south side of the landfill. Final and interim erosion and sediment control plans are contained within the Permit to Construct Application.

During initial operations of each cell within the non-active subcell, a geomembrane raincover will be used to reduce leachate generation. The collected water can then be pumped into the sediment basin.

The storm water collection and conveyance system shall be checked regularly and maintained such that necessary repairs will be made as early as practical.

3.2 Leachate Collection System (LCS)

The leachate collection system (LCS) consists of a geocomposite drainage layer with a series of lateral collection pipes. The lateral pipes are connected to a header pipe that provides gravity drainage of the leachate to sumps. From the sumps, the leachate is pumped to the active ash basin by forcemain then discharged under the plant's existing NPDES permit.

The general operation required to begin waste placement includes the activation of the LCS. This task is accomplished by removing the sacrificial geomembrane cover to expose the LCS corridor. The opened LCS corridor flows directly into the sumps such that rain water entering the cell will now enter the LCS. The Operations Manager shall document LCS activation within each cell and file the documentation in the facility operation records. The design engineer will be on-site to monitor and document the removal of the sacrificial geomembrane cover and the activation of the LCS in the sump area.

Clean-out pipes have been provided at the ends of the LCS leachate lateral and header pipes. If clogging is suspected, the LCS pipes can be cleaned out by the use of a clean-out snake or high pressure water flushing or monitored with camera equipment.

3.2.1 Maintenance, Record Keeping and Sampling

The maintenance of the leachate management system's physical facilities (consisting of HDPE piping, sumps, and pumps) and records will be performed by or under the direct supervision of Duke Energy.

Leachate will be pumped to the active ash basin on-site then discharged under the plant's existing NPDES permit. Water leaving the active ash basin will be sampled in accordance with the requirements of the plant's NPDES discharge permit.
Periodic equipment maintenance shall be performed as recommended by the equipment manufacturer. Equipment maintenance will consist of checking equipment for corrosion,

leakage, wear, scale build-up, improper functioning, and other improper operations. Appropriate corrective measures shall be taken when equipment is not operating properly.
Each LCS sump shall be equipped with a dedicated pump system. The pump system shall operate automatically based on level switches. The LCS sumps will have a low level cutoff at 0.5 ft and high level run-start activation at 1.5 ft. Additionally, a visual and audible high level alarm shall be in place which will activate at 2 ft. The LCS system control panels will be equipped with audible and visual alarms programmed to identify sump liquid levels. LCS audible and visual alarms will be checked and tested for proper function weekly.

Records shall be maintained documenting the amounts of leachate generated and disposed of at the active ash basin.

Leachate from the LCS system shall be sampled in accordance with the approved monitoring plan. Leachate will be sampled semiannually from dedicated sample ports located on the LCS system. Leachate quality will be analyzed and reported consistent with the requirements of the approved monitoring plan. The following constituents will be analyzed for semi-annually:

Temperature	Arsenic	Barium
Boron	Cadmium	Chloride
Chromium	Copper	Fluoride
Iron	Lead	Manganese
Mercury	Nickel	Nitrate
pH	Selenium	Silver
Sulfate	Zinc	Total Dissolved Solids

3.2.2 Contingency Plan

In the unlikely event that leachate can not be pumped to the active ash basin (i.e. a power outage), leachate flow will be temporarily stored within the landfill until such time that pumping operations to the active ash basin can be restored. Please note that the design provides for redundant electrical supply from the power plant, such that the system will switch to the backup power supply line in the event that primary power is lost. In such an event, the Division shall be notified in writing, within 30 days, about the events and corrective actions taken.

3.3 Leak Detection System (LDS)

A leak detection system (LDS) has been incorporated into the design of the RAB ash landfill. The LDS consists of a secondary 60 mil HDPE liner system overlain by a secondary geocomposite drainage layer connected to LDS sumps. To aid in determining the location of a possible leak source and to reduce the likelihood of premature closure of an entire landfill cell as a consequence of excessive leakage, the LDS of each landfill cell is subdivided into two subcells, each with a dedicated LDS sump. Flow collected in the sumps will be transferred to the active ash basin via the leachate force main.

Each LDS sump shall be equipped with a dedicated pump system. The pump system shall operate automatically based on level switches. The LDS sumps will have a low level cutoff at 0.5 ft and high level run-start activation at 1.5 ft. Additionally, a visual and audible high level alarm shall be in place which will activate at 2 ft.

The LDS has been designed with an Initial Response Leakage Rate (IRLR) of 300 gallons per acre per day and an action leakage rate (ALR) of 500 gallons per acre per day. Should fluid collected in the LDS exceed the IRLR or ALR based on routine flow meter readings, the owner or operator shall take steps as indicated in the facility's Response Action Plan presented in Section 3.3.3.

The management of the leak detection system's physical facilities (consisting of piping and flow meters) and records of monitoring will be performed by or under the direct supervision of Duke Energy.

3.3.1 LDS Maintenance

Periodic equipment maintenance shall be performed as recommended by the manufacturer. Equipment maintenance will consist of checking equipment for corrosion, wear, scale build-up, improper functioning, and other improper operations. Appropriate corrective measures shall be taken when equipment is not operating properly. The LDS system control panels will be equipped with audible and visual alarms programmed to identify sump liquid levels. LCS sump controls will be checked and tested for proper function weekly.

3.3.2 Record Keeping and Monitoring

Flow will be measured at the discharge of each LDS sump by a totalizing flow meter. The facility shall maintain records of monthly flow rate data from each LDS sump from the activation of the cell drainage system and until the waste height reaches approximately 40 ft. From that point, flow rate data shall be collected on a quarterly basis until landfill closure.

During the post-closure care period, semi-annual monitoring is required. If the liquid levels in the sumps stay below the pump high level run-start (no pump flow) for more than 1 year, then flow rates can be recorded annually. However, if at any time during post-closure care the pump high level run-start level is exceeded on the semi-annual or annual schedules, the facility must return to monthly monitoring, until such time as the liquid level remains below the pump high-level run start activation level for two consecutive months.

The purpose of LDS monitoring is to monitor if the leakage rates have been exceeded. Specific leakage rates are identified in Section 3.3. To determine if exceedances of the leakage rates have occurred, the facility must convert monitored data to an average daily flow rate for each sump (in gallons per acre per day, gpad). For example, the average daily flow rate in gpad is equal to the total monthly flow rate divided by the number of days in the month, divided by the area of the cell in acres. If a leakage rate is exceeded,

then the Division must be notified as set forth in the Response Action Plan presented in Section 3.3.3.

3.3.3 Response Action Plan

The purpose of the response action plan is to describe the necessary course of action in the event the Initial Response Leakage Rate (IRLR) and/or the Action Leakage Rate (ALR) are exceeded. If the IRLR is exceeded, steps 1 through 4 will be followed. Should the ALR also be exceeded steps 1 through 6 will be followed. The IRLR and ALR are referenced collectively as "leakage rates" in the following response action plan steps.

The IRLR is 300 gallons per acre per day.

The ALR is 500 gallons per acre per day.

The response action steps include:

Step 1 (IRLR and ALR):
Review physical equipment (pump and flow meter) function and data to confirm flow readings. Review operations to evaluate where operating equipment may have contacted the landfill liner or how landfill operations may have influenced the exceedance.

If the exceedance is confirmed, the cell LDS flow shall be recorded daily. Should the daily monitored LDS flow exceed the IRLR or ALR after the initial exceedance, operational responses may include: the reduction of active face area; grading to provide improved drainage; and/or, the addition of interim soil cover.

Step 2 (IRLR and ALR):
Within 14 days of identifying that a leakage rate has been exceeded, the facility shall contact the Division in writing. Daily LDS flow recording shall continue. Should none of the daily measured LDS flow rates exceed the leakage rate within 14 days of initial identification of the exceedance, monthly LDS flow averaging shall resume.

Step 3 (IRLR and ALR):
Within 30 days of identifying that a leakage rate has been exceeded, the facility shall submit to the Division a written preliminary assessment which shall include at a minimum:

- the amount of the liquid exceedance including initial measurement and daily measurements, if necessary, to date;
- likely sources of the liquids;
- the possible leak location;
- the possible leak size;
- the probable cause of the leak; and
- an outline of the short-term actions being taken and planned.

Step 4 (IRLR and ALR):
To the extent practicable, evaluate the location, size and cause of the leak; and assess the potential for leakage escaping into the environment and its mobility. Leachate quality shall be sampled, including a chemical analysis of LDS fluids, to evaluate potential hazards (pH and RCRA metals).

Step 5 (ALR Only):
When the ALR is exceeded, establish whether or not the unit should be closed or receipt of waste should be curtailed; and conclude whether waste should be removed from the unit for inspection, engineered controls, or repair of the subcell liner and drainage system. Evaluate and prepare to implement what other short-term or long-term measures shall be taken to mitigate or stop any leaks according to the stage (early operations, middle operations, or closed) of landfill development, as detailed in Section 3.3.2, the discussion on LDS flow measurement.

Step 6 (ALR Only):
Within 60 days of identifying that the ALR has been exceeded, submit to the Division the results of the evaluation performed in Step 4, any actions taken according to Step 5, and any further measures planned. For as long as there is an exceedance of the action leakage rate, the owner or operator shall submit monthly reports to the Division summarizing the results of the remedial actions taken and further actions planned.

3.4 Landfill Gas Management

Waste will consist of combustion products residuals including fly ash, bottom ash, boiler slag, mill rejects, and flue gas desulfurization (FGD) residue generated at the Allen Steam Station. The majority of the waste stream (approximately 95% or more) will consist of fly ash. A small portion of the remaining waste stream will consist of FGD residue. Based on the nature of the waste it is not anticipated that methane or hydrogen sulfide gas will be generated or that odor will be an issue. However, Duke Energy proposes to monitor for the presence of these gases throughout active landfill operations as summarized in the following sections.

3.4.1 Monitoring Program

Duke Energy will monitor for the presence of methane and hydrogen sulfide gas on an annual basis during landfill operations. Monitoring will be conducted by sampling/measuring within 12 to 24 inches of the landfill surface with a handheld gas meter. Monitoring shall be conducted continuously while traversing the landfill cell and active face on an approximate 100-foot wide grid pattern.

3.4.2 Record Keeping

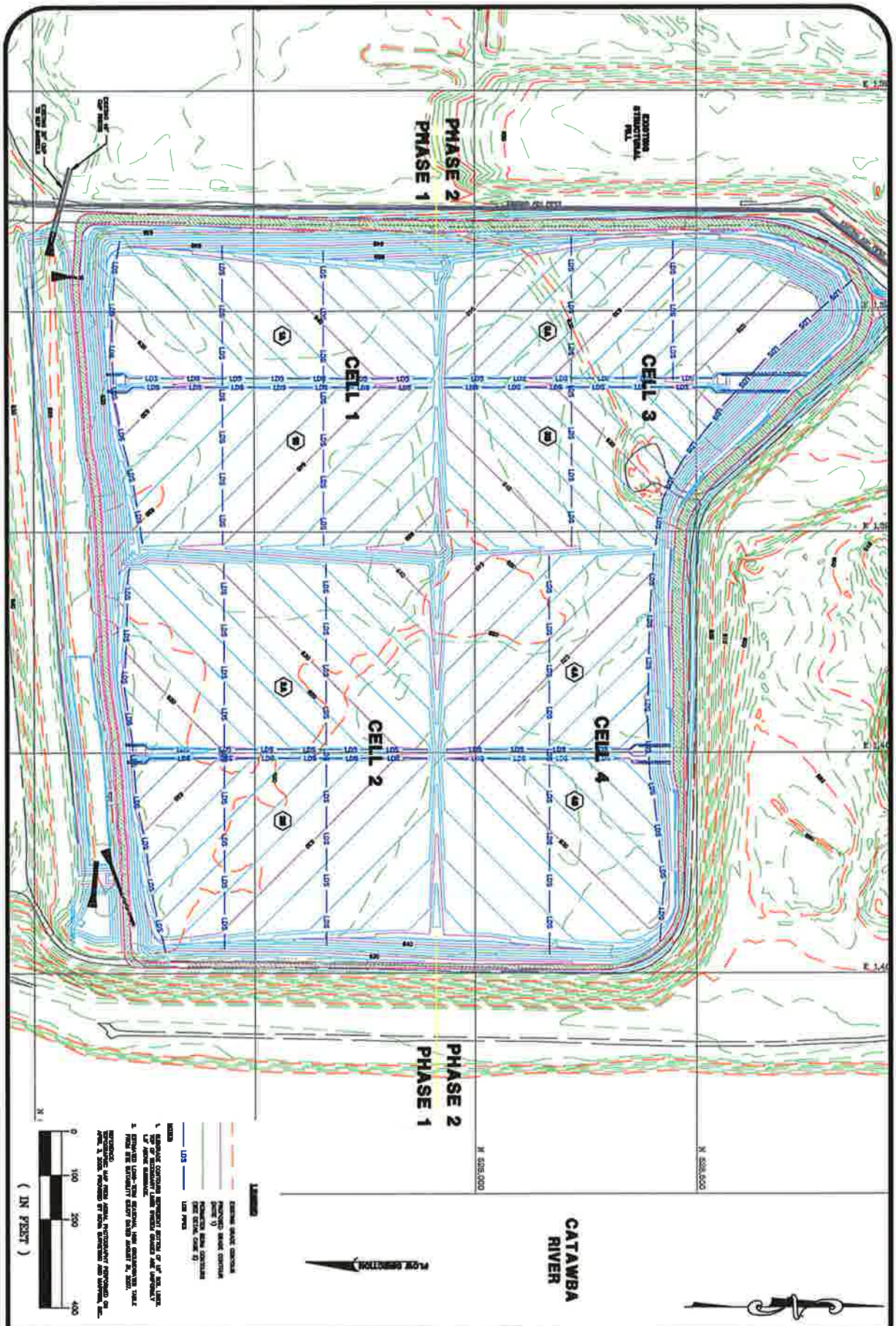
Results of the gas monitoring program will be maintained in the operating record.

3.4.3 Contingency Plan

In the event that methane or hydrogen sulfide gases are detected, appropriate actions will

be taken. In the event that gases are regularly detected during active landfill operations, the final closure and post-closure plan will be developed to address gas. It is anticipated that a minimum response will be to provide a passive gas venting system with the final closure. In the event that odor becomes a concern during operations, landfill operating procedures will be evaluated. Corrective measures may include reducing the active face area and placing additional or more frequent operational soil cover.

FIGURES



FACILITY SUBGRADE GRADING PLAN
RAB ASH LANDFILL

ALLEN STEAM STATION
BELMONT, NORTH CAROLINA

FIGURE NO. 1

S&ME
WWW.SMEINC.COM

SCALE: 1" = 200'	DATE: 3-12-08
PROJECT NO. 1356-06-825	DRAWN BY: ELH
	CHECKED BY:

C:\1356\DUKE ENERGY\06-825 PLANT ALLEN\DWG\EXT LANDFILL\DNG PIECES\03 SUBGRADE .DWG

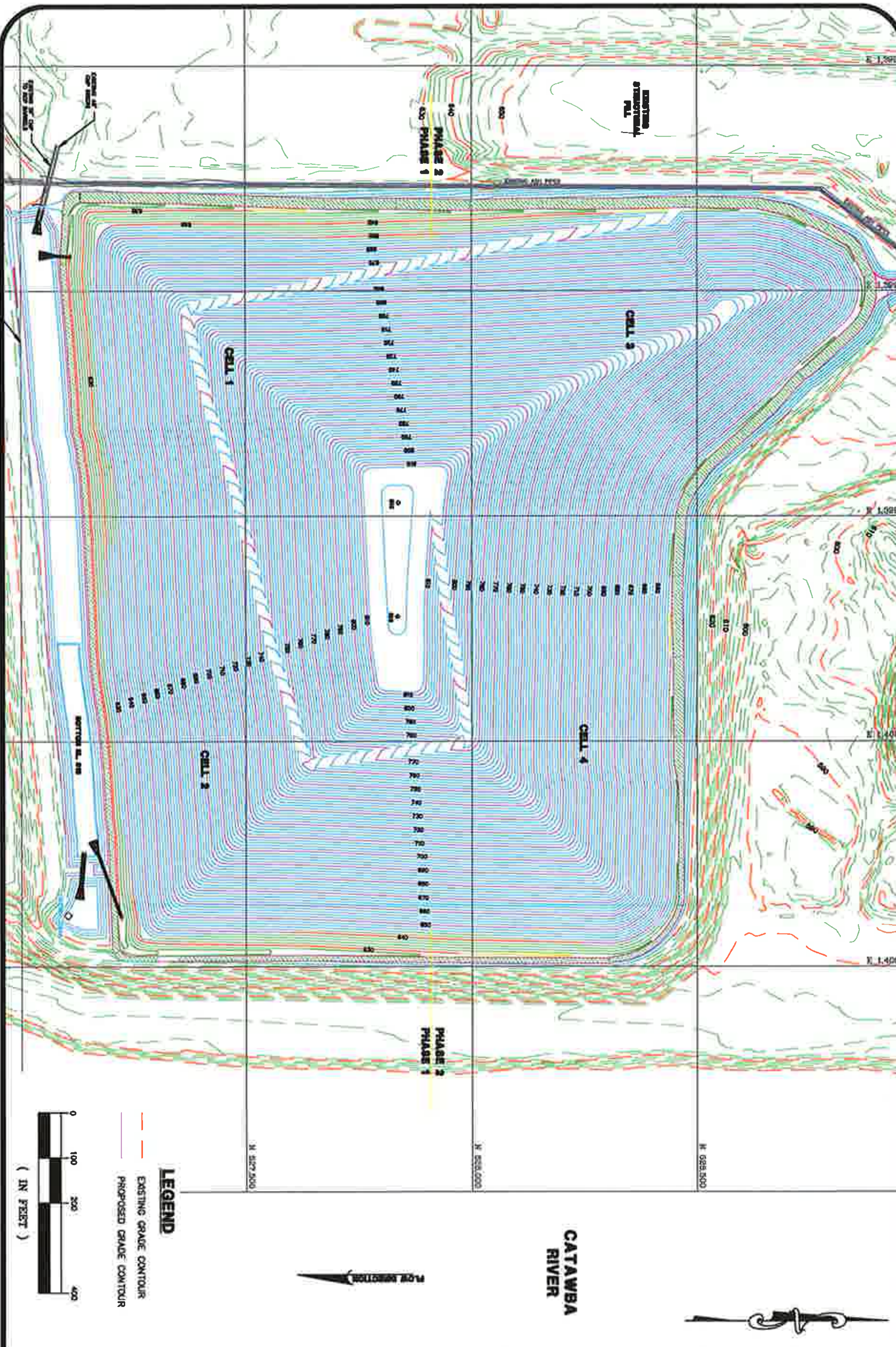
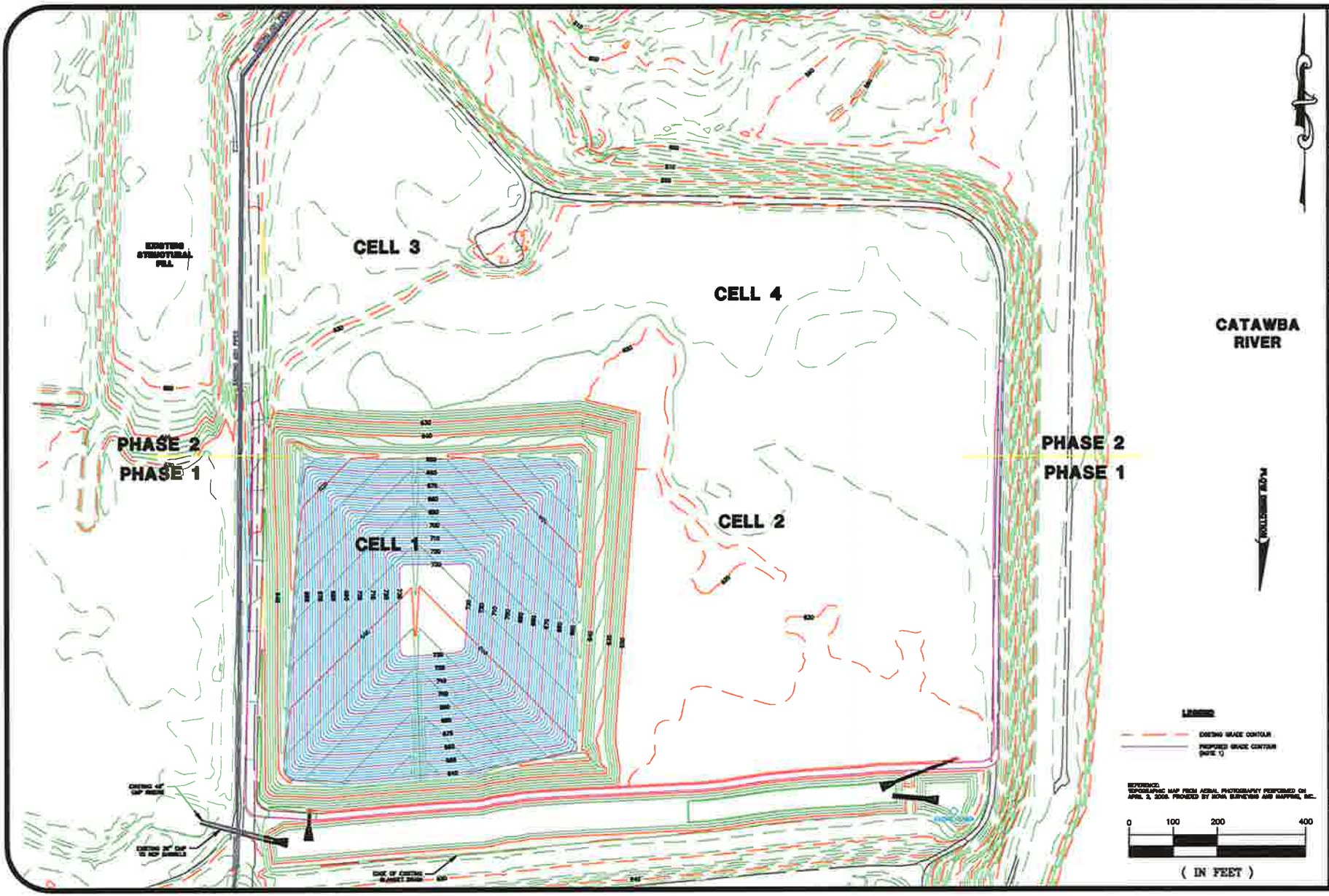


FIGURE NO. 2	FACILITY CLOSURE GRADING PLAN RAB ASH LANDFILL PLANT ALLEN STEAM STATION BELMONT, NORTH CAROLINA	S&ME WWW.SMEINC.COM	SCALE: 1" = 200' PROJECT NO. 1356-06-825	DATE: 3-12-08 DRAWN BY: CLD CHECKED BY:

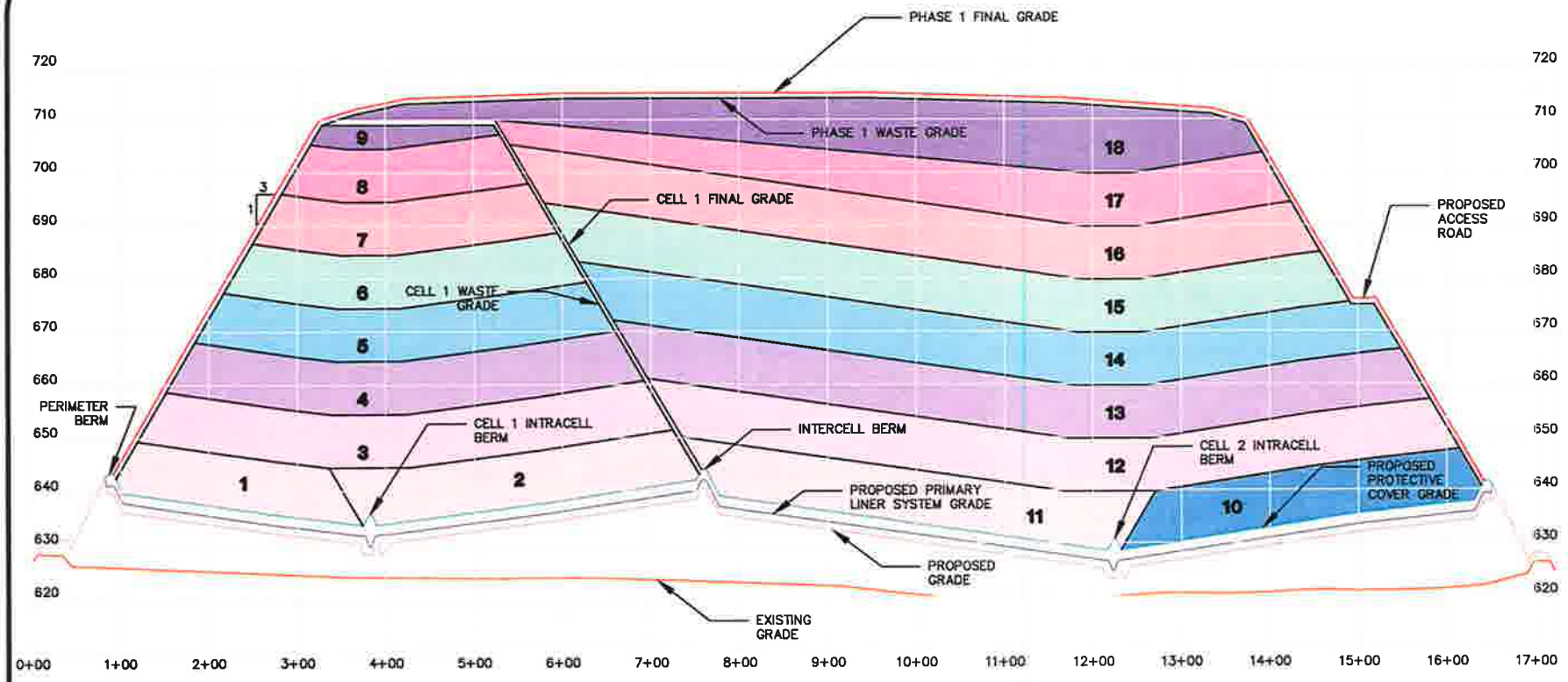


SCALE: 1" = 200'
DATE: 3-12-08
PROJECT NO. 1356-06-825
DRAWN BY: CHR

S&ME

CELL 1 FINAL GRADING PLAN
RAB ASH LANDFILL
ALLEN STEAM STATION

FIGURE NO.
3



CROSS-SECTION AA'

LEGEND

EXISTING GROUND SURFACE

PROPOSED 10' LIFT

VERTICAL GRAPHIC SCALE

(IN FEET)

HORIZONTAL GRAPHIC SCALE

(IN FEET)

DATE: 1/25/08
DRAWN BY: CFS
CHECKED BY:
SCALE: AS SHOWN
PROJECT NO: 1356-06-825

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PHASE I CROSS SECTION
RETIRED ASH BASIN - ASH LANDFILL
DUKE ENERGY – ALLEN STEAM STATION
BELMONT, NORTH CAROLINA

FIGURE NO.
4

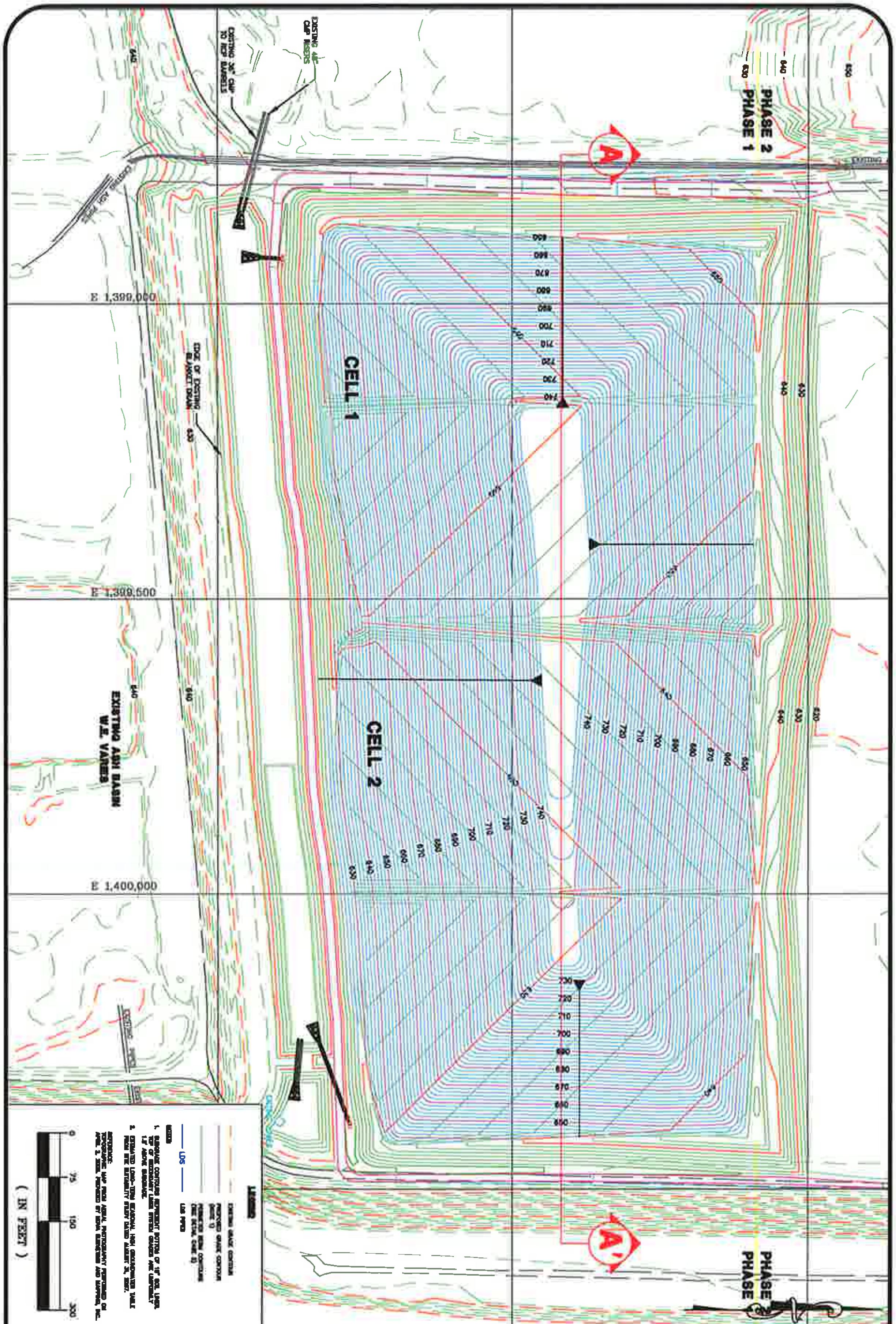

FIGURE NO. 5	PHASE I FINAL GRADING PLAN RAB ASH LANDFILL ALLEN STEAM STATION BELMONT, NORTH CAROLINA	S&ME WWW.SMEINC.COM	SCALE: 1" = 150' PROJECT NO. 1356-06-825	DATE: 3-12-08 DRAWN BY: ELH CHECKED BY: