CCR COMPLIANCE

FLY ASH BASIN CLOSURE PLAN

Prepared for:

Louisiana Generating LLC, a subsidiary of NRG
Big Cajun II
10431 Cajun II Road
New Roads, LA 70760

Prepared by:

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List of Acronyms

ASTM	American Society for Testing and Materials
CB&I	CB&I Environmental and Infrastructure
BC II	Big Cajun II Plant
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
cm/sec	centimeters per second
CQA	Construction Quality Assurance
EPA	U. S. Environmental Protection Agency
LAC	Louisiana Administrative Code
LaGen	Louisiana Generating, LLC
LDEQ	Louisiana Department of Environmental Quality
MSL	Mean Sea Level
NGVD	National Geodetic Vertical Datum
NRG	NRG Energy, Inc.
RCRA	Resource Conservation and Recovery Act
LPDES	Louisiana Pollutant Discharge Elimination System
SWMU	Solid Waste Management Units
yd^3	cubic yards
SWPPP	Stormwater Pollution Prevention Plan

Plan Review/Amendment Log §257.102(3)

Date of Review	Reviewer Name	Amendment Required (YES/NO)	Sections Amended and Reason

CCR Regulatory Requirements

USEPA CCR Criteria 40 CFR 257.102	NRG Big Cajun II Power Plant Fly Ash Basin Closure Plan
§257.102(b)(1) stipulates: *(b) Written closure plan—(1) Content of the plan. The owner or operator of a CCR unit must prepare a written closure plan that describes the steps necessary to close the CCR unit at any point during the active life of the CCR unit consistent with recognized and generally accepted good engineering practices. The written closure plan must include, at a minimum, the information specified in paragraphs (b)(1)(i) through (vi) of this section.*	Section 4.0
§257.102(b)(1)(i) stipulates: *(i) A narrative description of how the CCR unit will be closed in accordance with this section.*	Section 4.1
§257.102(b)(1)(iii) stipulates: *(iii) If closure of the CCR unit will be accomplished by leaving CCR in place, a description of the final cover system, designed in accordance with paragraph (d) of this section, and the methods and procedures to be used to install the final cover. The closure plan must also discuss how the final cover system will achieve the performance standards specified in paragraph (d) of this section.*	Section 4.2

USEPA CCR Criteria 40 CFR 257.102	NRG Big Cajun II Power Plant Fly Ash Basin Closure Plan
§257.102(b)(1)(iv) stipulates: *(iv) An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.*	Section 3.5
§257.102(b)(1)(v) stipulates: *(v) An estimate of the largest area of the CCR unit ever requiring a final cover as required by paragraph (d) of this section at any time during the CCR unit's active life*	Section 3.6

USEPA CCR Criteria 40 CFR 257.102	NRG Big Cajun II Power Plant Fly Ash Basin Closure Plan
§257.102(b)(1)(vi) stipulates: *(vi) A schedule for completing all activities necessary to satisfy the closure criteria in this section, including an estimate of the year in which all closure activities for the CCR unit will be completed. The schedule should provide sufficient information to describe the sequential steps that will be taken to close the CCR unit, including identification of major milestones such as coordinating with and obtaining necessary approvals and permits from other agencies, the dewatering and stabilization phases of CCR surface impoundment closure, or installation of the final cover system, and the estimated timeframes to complete each step or phase of CCR unit closure. When preparing the written closure plan, if the owner or operator of a CCR unit estimates that the time required to complete closure will exceed the timeframes specified in paragraph (f)(1) of this section, the written closure plan must include the site-specific information, factors and considerations that would support any time extension sought under paragraph (f)(2) of this section.*	Sections 8.0 and 9.0

USEPA CCR Criteria 40 CFR 257.102	NRG Big Cajun II Power Plant Fly Ash Basin Closure Plan
§257.102(d) stipulates: *(d) Closure performance standard when leaving CCR in place – (1) The owner or operator of a CCR unit must ensure that, at a minimum, the CCR unit is closed in a manner that will:* *(i) Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate or contaminated run-off to the ground or surface waters or to the atmosphere;* *(ii) Preclude the probability of future impoundment of water, sediment or slurry;* *(iii) Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system during the closure and post-closure care period;* *(iv) Minimize the need for further maintenance of the CCR unit; and* *(v) Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.*	Section 7.0

USEPA CCR Criteria 40 CFR 257.102	NRG Big Cajun II Power Plant Fly Ash Basin Closure Plan
§257.102(d)(3)(i)(A)-(D) stipulates: *(3) Final cover system. If a CCR unit is closed by leaving CCR in place, the owner or operator must install a final cover system that is designed to minimize infiltration and erosion, and at a minimum, meets the requirements of paragraph (d)(3)(i) of this section, or the requirements of the alternative final cover system specified in paragraph (d)(3)(ii) of this section.(i) The final cover system must be designed and constructed to meet the criteria in paragraphs (d)(3)(i)(A) through (D) of this section. The design of the final cover system must be included in the written closure plan required by paragraph (b) of this section.* *(A) The permeability of the final cover system must be less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than 1 × 10−5 cm/sec, whichever is less.* *(B) The infiltration of liquids through the closed CCR unit must be minimized by the use of an infiltration layer that contains a minimum of 18 inches of earthen material.* *(C) The erosion of the final cover system must be minimized by the use of an erosion layer that contains a minimum of six inches of earthen material that is capable of sustaining native plant growth.* *(D) The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.*	Sections 4.2 and 5.0

USEPA CCR Criteria 40 CFR 257.102	NRG Big Cajun II Power Plant Fly Ash Basin Closure Plan
§257.102(i) stipulates: *(i) Deed notations. (1) Except as provided by paragraph (i)(4) of this section, following closure of a CCR unit, the owner or operator must record a notation on the deed to the property, or some other instrument that is normally examined during title search. (2) The notation on the deed must in perpetuity notify any potential purchaser of the property that: (i) The land has been used as a CCR unit; and (ii) Its use is restricted under the post-closure care requirements as provided by §257.104(d)(1)(iii).*	Section 9.5

USEPA CCR Criteria 40 CFR 257.102	NRG Big Cajun II Power Plant Fly Ash Basin Closure Plan
§257.102(3) stipulates: *(3) Amendment of a written closure plan. (i) The owner or operatory may amend the initial or any subsequent written closure plan developed pursuant to paragraph (b)(1) of this section at any time.* *(ii) The owner or operator must amend the written closure plan whenever:* *(A) There is a change in the operation of the CCR unit that would substantially affect the written closure plan in effect; or* *(B) Before or after closure activities have commenced, unanticipated events necessitate a revision of the written closure plan.* *(iii) The owner or operator must amend the closure plan at least 60 days prior to a planned change in the operation of the facility or CCR unit, or no later than 60 days prior to a planned change in the operation of the facility or CCR unit, or no later than 60 days after an unanticipated event requires the need to revise an existing written closure plan. If a written closure plan is revised after closure activities have commenced for a CCR unit, the owner or operator must amend the current closure plan no later than 30 days following the triggering event.*	Section 9.1
§257.102(4) stipulates: *(4) The owner or operator of the CCR unit must obtain written certification from a qualified professional engineer that the initial and any amendment of the written closure plan meet the requirements of this Section.*	Section 9.2

1.0 *INTRODUCTION*

CB&I Environmental and Infrastructure, Inc. (CB&I) has prepared the following Closure Plan at the request of Louisiana Generating, LLC (LaGen) (a subsidiary of NRG Energy, Inc. [NRG]) for the Fly Ash Basin located at its Big Cajun II Power Plant (BC II Plant) near New Roads, Pointe Coupee Parish, Louisiana (**Figure 1**). The BC II Plant is a coal-fired and natural gas fired power plant that has been in operation since 1980. The Fly Ash Basin has been deemed to be a regulated coal combustion residue (CCR) unit by the U.S. Environmental Protection Agency (EPA), through the Disposal of Coal Combustion Residuals from Electric Utilities Final Rule (CCR Rule) 40 CFR §257 and §261.

There are five solid waste management units (SWMUs) at the BC II Plant that are operated as industrial surface impoundments in accordance with the Louisiana Department of Environmental Quality (LDEQ), Louisiana Solid Waste Regulations (Louisiana Administrative Code [LAC] Title 33: part VII) under Permit Number P-0108R1 for Facility Identification Number GD-077-0583. Two of the five WMUs are required to comply with the requirements of the CCR Rule, which include the Fly Ash Basin and Bottom Ash Basin. The other three LDEQ-permitted surface impoundments at the BC II Plant that are not subject to the CCR Rule requirements include the Primary Louisiana Pollutant Discharge Elimination System (LPDES) Treatment Pond, Secondary LPDES Treatment Pond, and Rainfall Surge Pond (**Figure 2**).The Closure Plan for the Bottom Ash Basin is under separate cover.

LaGen intends to close the Fly Ash Basin in line with the requirements outlined in §257.102 for CCR units closed in place. The following Plan meets all the closure requirements outlined in the Rule, which are further described in Section 2. LaGen will also be using the necessary steps to close the Basin at any point in the active life of the Basin, based on recognized and good engineering practices.

2.0 *REGULATORY OVERVIEW OF CCR CLOSURE PLAN REQUIREMENTS*

On April 17, 2015, the EPA published the CCR Rule under Subtitle D of the Resource Conservation and Recovery Act (RCRA) as 40 CFR Parts 257 and 261. The purpose of the CCR Rule is to regulate the management of coal combustion residuals in regulated units for landfill and surface impoundments. Section 257.102(b) of the CCR Rule requires owners or operators of a CCR Unit to prepare a written closure plan describing the closure of the CCR unit and schedule for implementation of the plan.

The following citations from the Rule are applicable for the Fly Ash Basin as discussed in this Plan:

§257.102(b)(1) stipulates:

"The owner or operator of a CCR unit must prepare a written closure plan that describes the steps necessary to close the CCR unit at any point during the active life of the CCR unit consistent with recognized and generally accepted good engineering practices. The written closure plan must include, at a minimum, the information specified in paragraphs (b)(1)(i) through (vi) of this section

(i) A narrative description that discusses how the CCR unit will be closed in accordance with §257.102.

(ii) A description of the final cover system and the methods and procedures that will be used to install the final cover are described for the unit, as CCR will be left in-place.

(iii) A description of how the final cover system will achieve performance standards.

(iv) An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.

(iv) An estimate of the largest area of the CCR unit ever requiring a final cover as required by paragraph (d) of this section at any time during the CCR unit's active life.

(v) A schedule for completing all activities necessary for closure of the CCR unit including estimate of the year in which closure activities will be completed, identification of major milestones as coordinating with and obtaining necessary

approvals and permits with other agencies, installation of final cover system, and estimated timeframes to complete each step or phase of CCR unit closure."

Per §257.102(b)(iii) closure performance standard and §257.102(d)(1):

"If the closure of the CCR unit will be accomplished by leaving the CCR in place, a description of the final cover system, designed in accordance with paragraph (d) of this Section, and the methods, procedures and performance standards to be used to install the final cover, the following criteria must be met by the owner or operator:

(i) Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or the atmosphere;

(ii) Preclude the probability of future impoundment of water, sediment or slurry;

(iii) Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system during closure and post-closure period;

(iv) Minimize the need for further maintenance of the CCR unit; and

(v) Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices."

Moreover, the final cover system has been planned in accordance with the following requirements of 257.102(d)(3):

"If a CCR unit is closed by leaving CCR in place the owner or operator must install a final cover system that is designed to minimize infiltration and erosion, and at a minimum, meets the requirements of paragraph (d)(3)(i) of this section, or the requirements of the alternative final cover system specified in paragraph (d)(3)(ii) of this section.

(i) The final cover system must be designed and constructed to meet the criteria in paragraphs (d)(3)(i)(A) through (D) of this section. The design of the final cover system must be included in the written closure plan required by paragraph (b) of this section.

(A) The permeability of the final cover system must be less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than $1x10^{-5}$ centimeters per second (cm/sec), whichever is less.

(B) The infiltration of liquids through the CCR unit must be minimized by the use of an infiltration layer that contains a minimum of 18 inches of earthen material.

(C) The erosion of the final cover system must be minimized by the use of an erosion layer that contains a minimum of 6 inches of earthen material that is capable of sustaining native plant growth.

(D) The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence."

In addition to the above, the Closure Plan must ensure compliance with the closure recordkeeping requirements specified in §257.105(i), the closure notification requirements specified in §257.106(i), and the closure intent requirements specified in §257.107(i). A written certification is provided in Section 11.0 from a qualified professional engineer in the State of Louisiana, to certify that this Closure Plan meets the requirements of the CCR Rule.

3.0 *FLY ASH BASIN OVERVIEW*

Pertinent site information and history related to the installation and operation of the Fly Ash Basin is presented below to provide context for the Closure Plan activities.

3.1 Location, Topography, and Character

The LaGen BC II Plant is located at 10431 Cajun II Road, New Roads, Pointe Coupee Parish, Louisiana. The BC II Plant is situated in Sections 4, 5, and 37 in Township 4 South and Range 11 East. The Fly Ash Basin is located on the southwest end of the surface impoundments west of the BC II Plant and is bordered on the east by the Bottom Ash Basin; on the west by wooded property, a drainage ditch, and agricultural land; on the north by wooded property and agricultural land; and on the south by wooded property and grassy fields, as detailed on **Figures 1 and 2**. The Fly Ash Basin currently being filled has an area of approximately 175 acres. The closure of the Fly Ash Basin will be accomplished by leaving the fly ash in place; therefore, the following Closure Plan was developed to satisfy the CCR Rule requirements for in-place closure §257.102(b)(iii).

The Fly Ash Basin was constructed above natural grade with a base of approximately 30 feet Mean Sea Level (MSL) and a surrounding berm with a designed crest elevation of 40-foot MSL. The existing site topography is depicted on **Figure 3**. The Fly Ash Basin has an approximate capacity of 1,750 acre-feet with a permitted total storage capacity of 3,905,000 cubic yards [yd^3]). The soils underlying the Fly Ash Basin consist of naturally occurring and or recompacted clayey soil that is a minimum of 3 feet thick to over 10 feet thick in some areas. This clay layer acts as a liner which prevents a release into the underlying soil and groundwater.

3.2 Existing Regulatory Permits

The Fly Ash Basin has been granted and is currently operating under a Louisiana Department of Environmental Quality (LDEQ) Solid Waste Permit as an industrial surface impoundment in accordance with the Louisiana Solid Waste Regulations (LAC 33:VII) under Permit Number P-0108R1 and Facility Identification Number GD-077-0583. The Solid Waste Permit renewal was issued by the LDEQ on February 24, 2011 and allows CCR materials generated on-site at the LaGen BC II Plant to be properly disposed of within the boundaries of the Fly Ash Basin. As part of this permit, the Fly Ash Basin has previously approved final grades for closure of the site, as depicted on **Figures 4 and 5**.

3.3 Fly Ash Generation, Recycling, and Disposal

Fly ash has been generated at the BC II Plant since it was constructed and became operational in 1980. Fly ash is generated from the burning of finely pulverized coal in high efficiency boilers.

The fly ash is composed primarily of oxides of silicon, aluminum, calcium, sulfur, and iron and is typically a fine, spherical particle ranging in diameter from 0.5 to 100 microns, which can be used as a soil or aggregate stabilization agent.

Fly ash that is generated at the BC II Plant has historically been recycled (sold for beneficial reuse as a cement additive, for road base, and/or for soil stabilization applications) and/or transported to the Fly Ash Basin for disposal. Recycled fly ash rates depend on the market demand and can affect the life of the Basin due to the variability in the amount of recycled material. Disposal rates therefore vary based on recycling opportunities, which vary between years. When the demand for ash exceeds production, the fly ash in the Basin can be removed and sold.

3.4 Fly Ash Basin Operations

Fly ash that is placed in the Fly Ash Basin for disposal is collected, stored in a silo, and transported by truck in dry powdered form to the Fly Ash Basin. Currently transport trucks discharge their loads of fly ash in the Fly Ash Basin and dozer equipment then spread the fill evenly. The fly ash is hydrated by rainfall and compacted so that it will harden as it dries. Straight hardened fly ash has a theoretical hydraulic conductivity range of 10^{-6} centimeters per second (cm/sec) to 10^{-7} cm/sec; due to the desirable characteristics of the material, the fly ash will be a suitable material to be utilized as a subgrade material prior to placement of the cover for closure of the Basin. Periodic dozing of the fly ash material will occur as needed, within the active area to maintain a relatively uniform height.

Daily cover is not applied in the active area of fly as disposal due to the fly ash being wetted (by rainfall) and hardened, and thereby preventing potential dust generation. Additionally, no intermediate cover is applied to the Basin due to the rapid hardening of the fly ash. Weekly (7-day) inspections and annual reporting are undertaken for the Fly Ash Basin in line with site inspection requirements for CCR units (§257.83[b]: Inspection Requirements for CCR Surface Impoundments) to identify any stability, operational, and/or safety issues which require attention.

During the 2015 annual inspection of the Fly Ash Basin, observations indicated the water level inside the basin was approximately 5 feet below the crest of the levee and approximately two-thirds of the Fly Ash Basin was covered with open water. Rainfall runoff is removed from the Basin by a stormwater runoff collection system. Flood control is managed in accordance with the CCR Rule Inflow Design Flood Control System Plan for the site.

Under current operations, all surface runoff from the Fly Ash Basin is collected and transported by gravity to the Bottom Ash Basin, then to the Rainfall Surge Pond and finally to the Primary and Secondary Treatment Basins for treatment prior to discharge to the Mississippi River. The

Fly Ash Basin process/surface water runoff is directed by an interior drainage swale to a pipe connection into the Bottom Ash Basin. The Bottom Ash Basin process water and surface water, combined with water from the Fly Ash Basin, are directed by an interior swale to a weir located at the northeast corner of the Bottom Ash Basin. A 30-inch diameter pipe carries the combined water by gravity flow to the Rainfall Surge Pond. Water from the Rainfall Surge Pond is then pumped into the Primary Treatment Basin for further treatment. Water flows by gravity from the Primary Treatment Basin to the Secondary Treatment Basin. A pump station moves water from the Secondary Treatment Basin to the Mississippi River discharge point in accordance with the Plant's LPDES permit (Permit No. LA0054135).

Since rainfall runoff will be removed throughout the lifetime of the Fly Ash Basin, it is anticipated that dewatering of the Basin will not be necessary prior to initiating the closure activities. It is assumed that the Fly Ash Basin will be filled to capacity with fly ash at the time of closure. However, any water or free liquids remaining in the Fly Ash Basin that require removal at the time of closure will be directed/pumped to the existing wastewater treatment plant for processing and treatment and then discharged under the Plant's LPDES Permit (Permit No. LA0054135).

3.5 Remaining Site Volume and Life

The total permitted storage capacity of the Fly Ash Basin is 3,905,000 yd^3. Based on a review of the Fly Ash Basin operational data from 2015, the remaining capacity of the Basin is approximately 2,600,000 yd^3 (or 67 percent). The estimated current maximum inventory of CCR ever on-site over the active life of the Fly Ash Basin was determined to be 3,905,000 yd^3 (and 2,585,000 yd^3 for the Bottom Ash Basin). The estimated closure date of the Fly Ash Basin, at a minimum, will be in 2025. As the Fly Ash Basin is filled, this date may change depending on the demand for beneficial reuse versus the disposal rates of fly ash. Accordingly, this closure date will be updated in the future.

3.6 Largest Area Requiring Final Cover

The Fly Ash Basin and adjacent Bottom Ash Basin and other associated non-CCR impoundments at the BC II Plant will be operated so that contemporaneous operation and closure occurs. Therefore the final cover will be constructed in stages in order to maintain compliance. The largest area requiring final cover at any time during the operating period of the Fly Ash Basin is estimated to be approximately 175 acres (plus approximately 66 acres for the Bottom Ash Basin).

4.0 CLOSURE PLAN

As detailed, this Closure Plan has been prepared in accordance with requirements of the CCR Rule and includes a written certification in Section 11.0 from a qualified professional engineer for the State of Louisiana.

4.1 Narrative Description

Closure of the Fly Ash Basin will be accomplished by leaving the CCR material in-place. The method of closure has been designed to minimize maintenance, leachate generation and control run-on and run-off, to ensure the protection of human health and the environment. Construction Quality Assurance (CQA) procedures have been developed to ensure the final cover is designed, constructed, and installed in accordance with recognized standards and accepted good engineering practices as detailed in the following sections.

4.2 Final Cover and Subgrade Overview

The final cover has been designed to meet the following objectives:

- Minimize the potential post-closure infiltration of liquids into the fly ash material
- Minimize the potential for releases of CCR, leachate, or contaminated run-off to the ground or surface waters or the atmosphere
- Provide long-term slope stability to prevent the sloughing or movement of the final cover system during closure and post-closure period
- Minimize the need for further maintenance of the CCR unit

The final cover will be installed on top of a minimum of a 12-inch subgrade layer of compacted and graded fly ash. The ash will be graded to approximately 2.5 feet below the final grade elevations. All final grade elevations for the closed Fly Ash Basin will be adjusted for the amount of ash actually present at the time of closure.

The final cover is comprised, from bottom to top, of the barrier/protective soils, including:

- A minimum of 18 inches of a compacted clay cap layer (24 inches will be used) with a permeability no greater than 1×10^{-5} cm/sec (permeability of 1×10^{-7} cm/sec will be used)
- A minimum 6-inch topsoil erosion control layer that is capable of sustaining vegetation

The top slope of the final cover will be a minimum of 1 percent, with the Basin exterior slopes constructed at a 3 (horizontal) to 1(vertical) slope. The slopes will assure drainage and prevent ponding of water. The positive drainage will serve to minimize the potential for the infiltration of liquids into the CCR unit. The final cover of the Fly Ash Basin will be constructed to the final grades depicted on **Figure 4**. All final contours are being provided for "information purposes only," and are not meant to be used as final design or construction drawings.

If an alternate liner is considered for use in lieu of the prescribed final cover system described above, the regulatory authority will be notified and appropriate permitting will be secured.

4.2.1 Low Permeability Subgrade Construction

Prior to construction of the final cover, a 12-inch subgrade area comprised of compacted fly ash will be prepared and used to support the final cover system and the subgrade will be graded to ensure a uniform subgrade surface.

After the grading and compaction of the subgrade the area will be inspected to ensure the working surface is smooth and free from sharp objects or abrupt changes in grade, and proper sloping allowed for drainage. Upon inspection, the area will be surveyed to confirm the lines and grades specified in the design prior to the commencement of the installation of the final cover. Closure activities for the subgrade will be completed in accordance with the Closure Soils and Liner Quality Control Plan, November 2010, that has been developed for the Fly Ash Basin, a copy of which is included in **Appendix A**.

4.2.2 Final Barrier Cover Soils

The final cover barrier soils include a minimum 24-inch clay cap layer comprised of compacted soil having an approximate permeability of 1 X 10^{-7} cm/sec to minimize infiltration of liquids through the closed CCR unit and a 6-inch erosion control layer that will require soil that is suitable to support the growth of vegetation. A total of approximately 564,668 yd^3 of the 24-inch thick clay cap layer will be required for the final soil cover. The 6-inch thick erosion control layer will require approximately 141,167 yd^3 of suitable material.

The 24-inch clay cap layer will be located above the compacted and graded ash. This immediate placement will prevent the infiltration of water into the underlying ash. The infiltration layer will be constructed from overburden from on-site and/or off-site borrow sources. This layer will be free of large particles or materials. All soils used in soil liner will have minimum geotechnical property values (Plasticity Index, Liquid Limit, Percent Passing 200 Sieve, Percent Passing 1-inch Screen, and Permeability) verified by testing in a soil laboratory. Following the placement of the 24-inch thick compacted clay cap, surveying will be performed to document that the finished soil liner has been constructed to the design lines and grades.

Following the survey, 6-inches of a topsoil cover will be placed over the clay cap layer in accordance with the project plans and specifications. The topsoil will be seeded and mulched to promote vegetation growth to deter erosion and return the area to a more natural appearance.

All final grade elevations for the closed Fly Ash Basin will be adjusted for the amount of ash actually present at the time of closure. The thickness of the final topsoil layer will be verified by surveying the top surface in the same locations completed on the top of subgrade. The thicknesses of all barrier soils are considered to be nominal thicknesses. The average of actual thickness measurements shall be no less than the design thickness.

Quality-control procedures have been developed and will be implemented to ensure that final cover is designed, constructed, and installed properly in accordance with consistent recognized and generally accepted good engineering practices. Closure activities for the clay cap system and vegetated topsoil cover will be completed in accordance with a previously referenced November 2010 Closure Soils and Liner Quality Control Plan (**Appendix A**).

5.0 CONSTRUCTION CONSIDERATIONS

5.1 Equipment

LaGen or its contractor is responsible for providing sufficient equipment to carry out closure operations as designed in a satisfactory manner. Equipment for closure operations of the Fly Ash Basin may include, but not be limited to: tracked dozers, excavators, compactors, haul trucks, drum rollers, and water trucks.

5.2 Phased Construction

The final cover will be placed progressively as each construction phase of the closure activities is completed. Construction of the clay cap cover system, haul road, and fill placement will take place during the time of year with suitable weather for construction. The objective will be to establish the stabilized final surface as quickly as possible after the last receipt of fly ash at the Fly Ash Basin.

5.3 Stormwater Run-On and Run-Off Controls

There are three distinct types of flooding or drainage problems which could potentially affect the BC II Plant in the area surrounding New Roads, Louisiana:

(1) Widespread flooding by the Mississippi River during high water in the spring and summer months

(2) Backwater flooding caused by excessive rainfall draining into low lying areas and backing up into the drainage ways

(3) Flash floods in small streams caused by rainfall of high intensity and short duration

The current design of the Fly Ash Basin and other SWMUs at the BC II Plant and the Mississippi River levee protection system insure that uncontaminated surface runoff will not drain through the operating areas, even in the event of excessive rainfall or any of the three types of floods. After the extreme flood of 1927, Congress adopted a comprehensive plan for flood control in the Mississippi River Alluvial Valley. The project consists of a combination of features including levees along the main channel and its tributaries to retain peak flows; floodways to divert excess flow from the River; and channel improvements such as revetments, dikes, and dredging to increase channel capacity. With the institution of these projects, flooding in this area has been limited to backwater flooding and short-term flooding from high-intensity, short duration rainfall.

Backwater flooding is the most common type of drainage problem in the vicinity of the BC II Plant. The Fly Ash Basin and other SWMUs at the BC II Plant were designed and constructed to prevent uncontaminated runoff or backwater from flowing through the units. The clay dikes which surround the Fly Ash Basin and other SWMUs effectively segregate on-site and off-site runoff. The facility is located within the 100-year flood plain. Dikes were constructed around the solid waste impoundments to a height greater than the 100-year floodplain elevation (approximately 35 feet National Geodetic Vertical Datum [NGVD]) to preclude any contamination of flood waters by the CCR materials. The top of the dike surrounding the Fly Ash Basin has a designed crest elevation of 40 feet MSL, which is approximately 10 feet above grade. All dikes have been seeded with grass, covered with an erosion control fabric, and fertilized following construction. All dikes are sufficient height to prevent off-site drainage and floodwater from being contaminated by CCR materials.

The top of the clay cap and erosion control system for the closed Fly Ash Basin has been designed to facilitate runoff that will be sloped to a series of collection channels. The channels will collect runoff from the top of the mounded erosion control layer and divert it to an interior ditch system adjacent to the existing Basin levees. Riprap lined letdown channels will be used to discharge the runoff down the exterior dikes slopes to natural drainage paths at the discharge points. Additional information on the management of stormwater is included in the CCR Rule Inflow Design Flood Control System Plan.

5.4 Stability

Fly ash is non-organic in nature and is a pozzolanic material, that is, its silicon oxide and aluminum oxide components react with its calcium fraction in the presence of water to form slow hardening cement. The result of this reaction produces a hard, structurally stable compound with very low permeability. As part of the closure process, the upper 12 inches of the fly ash subgrade will be compacted to 95 percent of standard Proctor (ASTM D698). Most of the anticipated settlement will be from compression and will occur shortly after placement of the soil cap and erosion control layers. The final cover system will experience some settlement relative to the base grade settlement due to consolidation. It is expected that the settlement rates will be small and therefore, the amount of settlement will be progressively monitored over time. In the event that non-uniform settlement occurs, minor regrading and repair of the soil cap/erosion control components may be required. The clay cap system and vegetated topsoil erosion control layer will be completed in accordance with a November 2010 Closure Soils and Liner Quality Control Plan (**Appendix A**). These measures along with the internal strength of the fly ash should provide for major slope stability to prevent the sloughing or movement of the final cover system during the closure and post-closure care period and minimize the need for further maintenance of the closed Fly Ash Basin.

5.5 Erosion Control

Erosion control measures such as riprap, and the possible use of erosion control blankets and turf reinforcing mats, will minimize erosion in the interior and perimeter drainage channels of the closed Fly Ash Basin. The maintained vegetated areas of the topsoil layer along with the relatively shallow slope of the top surface of the final cover will also assist in preventing erosion of the clay cover soils. Construction of any erosion control measures including dikes and berms will take place as necessary.

6.0 *OPERATIONS AND MAINTENANCE*

Following closure, maintaining the integrity and effectiveness of the final cover will be performed to prevent and minimize any erosion or stability maintenance to ensure the final cover will not be damaged. The area will be inspected and maintained to control excessive vegetative growth. Repairs will be made as necessary to correct any effects of settlement, subsidence, erosion or other events. It has been estimated that repairs and the replacement of 6 inches of soil will be required on approximately 10 percent or less of the area of the Fly Ash Basin, which is a maximum of approximately 17 acres. Annual reports on the integrity of the final cover will be prepared as part of the CCR Rule inspection requirements. The final cover will be monitored and maintained in accordance with the Post-Closure Plan for the Fly Ash Basin.

7.0 CLOSURE PERFORMANCE STANDARDS

7.1 Minimization of Liquid Infiltration into CCR Waste Mass

The final cover system for the Fly Ash Basin including the compacted subgrade, 24 inches of clay cap (with a permeability of approximately $1x10^{-7}$ cm/sec) and 6 inches of topsoil with vegetative cover will help to minimize the potential infiltration of water into the underlying fly ash. The soil cap will convey stormwater runoff away from the underlying CCR material. The sloping of the clay cap and drainage channels will promote movement of water away from the CCR mass and help to keep the barrier soils drained to prevent pooling.

The final cover layers also assist in controlling, minimizing, and in some cases eliminating, the post-closure infiltration of liquids into the underlying CCR material. This prevents the release of CCR, leachate, or contaminated run-off to the ground or surface waters and the atmosphere, as required by the CCR performance standards.

7.2 Preclusion of Future Impoundment of Water, Sediment, or Slurry

The owner and operator of the Fly Ash Basin does not anticipate the need for future impoundment of water, sediment, or slurry. Therefore the Fly Ash Basin follows the required performance standards.

7.3 Measures to Maintain Slope Stability

In order to maintain slope stability of the final cover, runoff is collected and controlled in highly erodible areas such as the side slopes and graded surface. This is done by grading the final cover to a maximum slope of 3 (horizontal) to 1 (vertical), with a gentle final grade to control slope runoff velocities and volumes. The runoff control plans and shallow slopes prevent erosion, movement, and sloughing of the final cover system, and therefore fulfill the required performance standard.

7.4 Design to Minimize Ongoing Maintenance

The incorporation of slope stability and erosion control measures help to prevent the need for maintenance on the closed Fly Ash Basin. As a result of these measures, less regrading or soil additions to the final cover system will be necessary.

Additionally, the weekly inspections of the Fly Ash Basin will assist in minimizing maintenance. These inspections will help in determining features that will need maintenance in the future, if there are features that can be maintained currently, and may prevent a larger maintenance project in the future.

Both the maintenance prevention measures and the weekly inspections will minimize the requirement for larger maintenance of the closed Fly Ash Basin, and therefore fulfills the required performance standards.

7.5 Engineering Good Practices

The planned quick completion of the phased final cover will prevent large amounts of contact water from being generated. The use of time efficiency, with a high standard for quality, is an example of a good engineering practice and satisfaction of the required performance standards.

8.0 *CLOSURE ACTIVITY SCHEDULE*

The closure of the Fly Ash Basin will be completed according to the following schedule milestones:

- The estimated closure date of the Fly Ash Basin, at a minimum, will be in 2025. As the Fly Ash Basin is filled this date may change depending on the disposal rates of fly ash. This closure date will be updated in the future.

- The regulatory authority will be notified in writing of the intent to close the Fly Ash Basin at least 90 days before closure.

- The final cover installation will be initiated as soon as possible after regulatory approval, based on the time of year with suitable weather for construction.

- Clay cap construction and analytical testing will be conducted in systematic and timely manner. Delays will be avoided in clay cap completion. Construction and testing of the soil will generally not exceed 60 working days from beginning to completion.

- Upon completion of the closure activities, a certified Louisiana Professional Engineer will provide the regulatory authority with a closure certification. This will verify that Fly Ash Basin closure was performed and completed in accordance with the closure plan. The certification will be provided within 30 days of the completion of closure activities.

- It is anticipated that closure activity for the Fly Ash Basin will be completed within 120 days of last receipt of fly ash, pending any factors beyond the facility's control.

- Post-closure monitoring of the cap and run-on/run-off controls will be conducted on a routine schedule to identify any potential stability issues with the cap and appropriate maintenance to be undertaken. A post-closure monitoring plan for the Fly Ash Basin has been detailed in the Post-Closure Plan for the site.

9.0 *RECORD KEEPING/NOTIFICATION REQUIREMENTS*

The BC II Plant maintains a facility operating record consisting of the following documents:

- Copies of the Solid Waste Permit application and all supporting documents.
- Copy of the current operating permit and any subsequent addenda.
- Groundwater sampling and analysis results for the Fly Ash Basin and related permitted basins/impoundments, records of by-product material recycled, major operational problems, complaints or difficulties, records associated with corrective measures, and employee training records.
- A copy of the Storm Water Pollution Prevention Plan (SWPPP) and the SWPPP Record Forms.
- Closer and post-closure plans, as well as closure CQA certification and post-closure inspection documentation.
- Proof of financial assurance.

All records that are relevant within the past 5 years will be maintained at the BC II Plant and/or by LaGen. The records are available to regulatory authority representatives for review upon request.

9.1 Plan Amendments

This Closure Plan will continue to undergo review as the Fly Ash Basin continues to operate. Future amendments to the Plan will be reviewed and recertified by a registered professional engineer and will be placed in the BC II Plant operating record as required per §257.105(i)(4). The amended Plan will supersede and replace any prior versions. Availability of the amended Plan will be noticed to the regulatory authority per §257.106(i) and posted to the publicly accessible internet site per §257.107(i).

A record of Plan reviews/assessments is provided on the first page of this document, immediately following the Table of Contents.

Any subsequent amendment of a written Closure Plan will be prepared as required, such as when:

- There is a change in the operation of the CCR unit that would substantially affect the written closure plan in effect; or

- Before or after closure activities have commenced, unanticipated events necessitate a revision of the written closure plan.

LaGen will amend the Fly Ash Basin Closure Plan at least 60 days prior to a planned change in the operation of the facility or Fly Ash Basin, or no later than 60 days after an unanticipated event requires the need to revise an existing written closure plan. If a written closure plan is revised after closure activities have commenced, LaGen will amend the closure plan no later than 30 days following the triggering event.

9.2 Amended Closure Certification

Any future amendments to the current closure plan will be tracked in the log at the beginning of this document and will be certified by a qualified professional engineer that the amended plan meets the requirements of the applicable portions of the CCR Rule.

9.3 Notice of Intent to Initiate Closure

LaGen will file a Notice of Intent for closure activities no later than the date of initiation of closure of the Fly Ash Basin. The notification will include the certification by a registered professional engineer for the design of the final cover system as required by §257.102(d)(3)(iii).

If required, LaGen may request an extension of an additional 2 years to initiate closure of the Fly Ash Basin, under circumstances when the Fly Ash Basin will continue to accept waste or will start removing CCR for the purpose of beneficial use. It is further noted that extensions of closure timeframes for completing closure of a CCR unit may be extended if the owner or operator can demonstrate that it is not feasible to complete closure of the CCR unit within the required timeframes due to factors beyond the facility's control. If the owner or operator is seeking a time extension beyond the time specified in the written closure plan, specific written documentation, as specified in the CCR Rule, must be provided to justify the basis for additional time beyond that specified in the closure plan. The factors that may support such a demonstration are not included in the current closure plan at this time. If such an extension is needed in the future, the plan will be amended to address this issue at a later date.

9.4 Notice of Completion of Closure

LaGen will complete a Notice of Completion of closure activities within 30 days of completion of closure of the Fly Ash Basin. The notification will include the certification by a registered professional engineer as required by §257.102(f)(3).

9.5 Deed Notation

As per §257.102(i), a notation on the deed to the property, or some other instrument, that is normally examined during a title search will be recorded to notify any potential purchaser of the property that the land has been used as a CCR unit and its use is restricted under the post-closure care requirements provided within §257.104(d)(1)(iii). The following information will be recorded in accordance with the CCR Rule:

- Name and address of the person with knowledge of the contents of the facility
- Prior land use as a CCR unit
- Restrictions of future land use under the post-closure care requirements

9.6 Record Keeping Requirements

The BC II Plant will maintain files of all information related to the closure of the Fly Ash Basin in a written operating record at the BC II Plant as required by the CCR Rule. The files will be retained for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, record, or study. The files for separate CCR units undergoing closure at the Plant will be maintained in one recordkeeping system with files separated by the name or identification number of each CCR unit. It is understood the files may be maintained on microfilm, on a computer, on computer disks, on a storage system accessible by a computer, on magnetic tape disks, or on microfiche.

The CCR Rule also requires that the owner or operator of a CCR unit maintain a publicly accessible Internet site (CCR Web site) that contains specific information related to the CCR unit closure.

In accordance with the CCR Rule, the BC II Plant will place the following information for closure of the Fly Ash Basin, as it becomes available, in the facility's operating record and post it to the CCR Web site (within 30 days of placing the pertinent information in the BC II Plant operating record):

- Written closure plan, and any amendment of the plan (only the most recent closure plan must be maintained in the facility's operating record irrespective of the 5-year time requirement previously specified)
- Written demonstration(s), including the certification requirement for a time extension for initiating closure, as applicable

- Written demonstration(s), including the certification requirement for a time extension for completing closure, as applicable
- Notification of intent to close a CCR unit
- Notification of completion of closure of a CCR unit
- Notification recording a notation on the deed

10.0 *CLOSURE COST ESTIMATE*

The closure cost for the Fly Ash Basin is estimated to be approximately $2,599,800, as of March 2016. This includes preparing the site for construction of the final cover, the cost of the actual final cover, and the implementation of erosion control measures. The closure cost estimate is included in **Appendix B**.

In providing these cost estimates, it is recognized that LaGen does not have control over the costs of labor, equipment, or materials, or over a Contractor's method(s) of determining prices or bidding.

11.0 *PROFESSIONAL ENGINEER CERTIFICATION*

The undersigned registered professional engineer is familiar with the requirements of §257.102 and has visited and examined the BC II Plant Fly Ash Basin or has supervised examination of the Big Cajun II Fly Ash Basin by appropriately qualified personnel. The undersigned registered professional engineer attests that this CCR Closure Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards and meets the requirements of §257.102, and that this Plan is adequate for the Big Cajun II Plant. This certification was prepared as required by §257.102(d)(3)(iii).

Name of Professional Engineer: Glen R. Landry

Company: CBI Environmental, Inc.

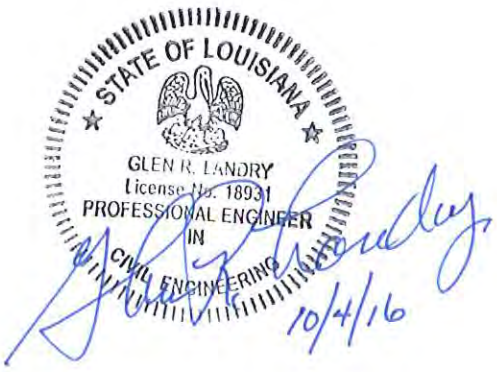
Signature: Glen R. Landry

Date: 10/4/16

PE Registration State: Louisiana

PE Registration Number: 18931

Professional Engineer Seal:



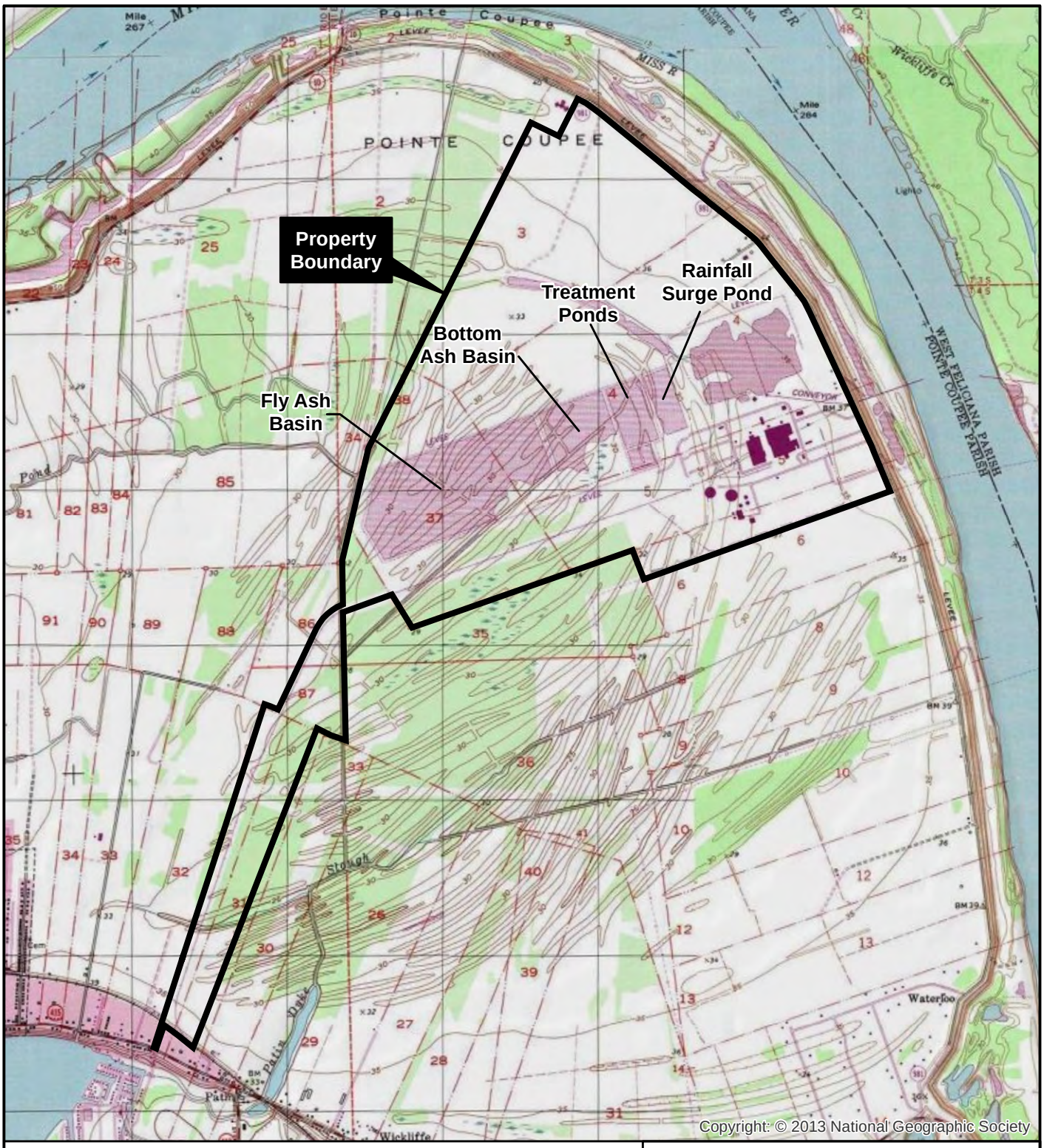
12.0 *REFERENCES*

Environmental Protection Agency, April 2015, Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities, 40 Code of Federal Regulations Parts 257 and 261.

Louisiana Department of Environmental Quality, November 2014, Louisiana Discharge Pollutant Elimination System, Water Discharge Permit No. LA0054135, prepared for Louisiana Generating, LLC, Big Cajun II Power Plant, New Roads, Pointe Coupee Parish, Louisiana.

Shaw Environmental and Infrastructure, Inc. November 2011, Type I Solid Waste Facility Permit Renewal and Modification Application, Permit No. P-0108, Volumes 1 and 2, prepared for Louisiana Generating, LLC, Big Cajun II Power Plant, New Roads, Pointe Coupee Parish, Louisiana.

FIGURES



N

0 1,500 3,000 6,000

Feet

LOUISIANA GENERATING, LLC
BIG CAJUN II POWER PLANT
NEW ROADS, LOUISIANA

BIG CAJUN II POWER PLANT
FLY ASH BASIN CLOSURE PLAN

FIGURE NUMBER 1

SITE LOCATION

CB&I Environmental & Infrastructure, Inc.
4171 Essen Lane
Baton Rouge, Louisiana 70809

PRIMARY TREATMENT PONDS

RAINFALL SURGE POND

MISSISSIPPI RIVER

FLY ASH BASIN

BOTTOM ASH BASIN

INDUSTRIAL WASTE CANAL

COAL STORAGE

STORAGE SILOS

CONVEYOR BELT

ACCESS ROAD

SECONDARY TREATMENT POND

BARGE UNLOADING

BOILER NO. 1

BOILER NO. 3

BOILER NO. 2

LEGEND

1 3	INTERIOR DRAINAGE SWALE
2 5 7	30" DIA. PIPE
4	EXIT WEIR
6	BUTTREFLY VALVE
8	JUNCTION BOX
9	DISCHARGE
10	LIFT STATION
11	CHEMICAL STORAGE
12	DISCHARGE TO PRIMARY TREATMENT
13	AERATOR
14	LIFT STATION TO MISSISSIPPI RIVER

Source: Esri, DigitalGlobe, User Community

N

0 400 800 1,600

Feet

LOUISIANA GENERATING, LLC
BIG CAJUN II POWER PLANT
NEW ROADS, LOUISIANA

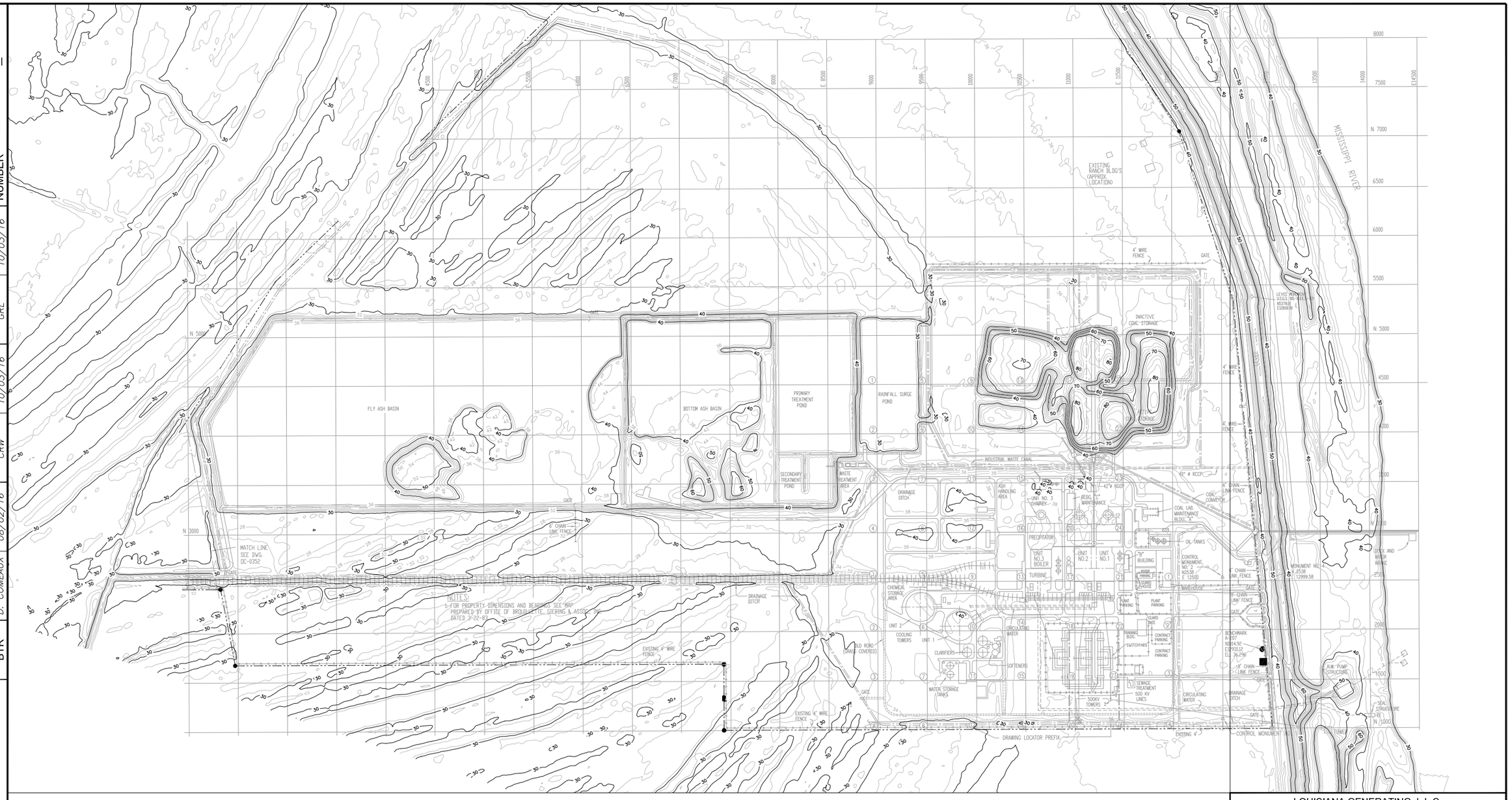
BIG CAJUN II POWER PLANT
FLY ASH BASIN CLOSURE PLAN

FIGURE NUMBER 2

SITE LAYOUT

CB&I Environmental & Infrastructure, Inc.
4171 Essen Lane
Baton Rouge, Louisiana 70809

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
BTR	D. COMEAUX 08/02/16	CRW 10/03/16	GRL 10/03/16	631215151_B01



LEGEND

PROPERTY LINE

30 TOPOGRAPHIC CONTOUR (FEET, NGVD 29) WITH 2-FOOT CONTOUR INTERVAL

PLANT NORTH 3000 TRUE NORTH

SCALE

0 1000 2000 FEET

REFERENCE: Louisiana Oil Spill Coordinator's Office (LOSCO), LiDAR Digital Elevation Map (DEM) of Louisiana, 2009.

LOUISIANA GENERATING, L.L.C.
BIG CAJUN II POWER PLANT
NEW ROADS, LOUISIANA

BIG CAJUN II POWER PLANT
FLY ASH BASIN CLOSURE PLAN

FIGURE NUMBER 3

EXISTING SITE TOPOGRAPHY

CB&I Environmental & Infrastructure, Inc.
4171 Essen Lane
Baton Rouge, Louisiana 70809

OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
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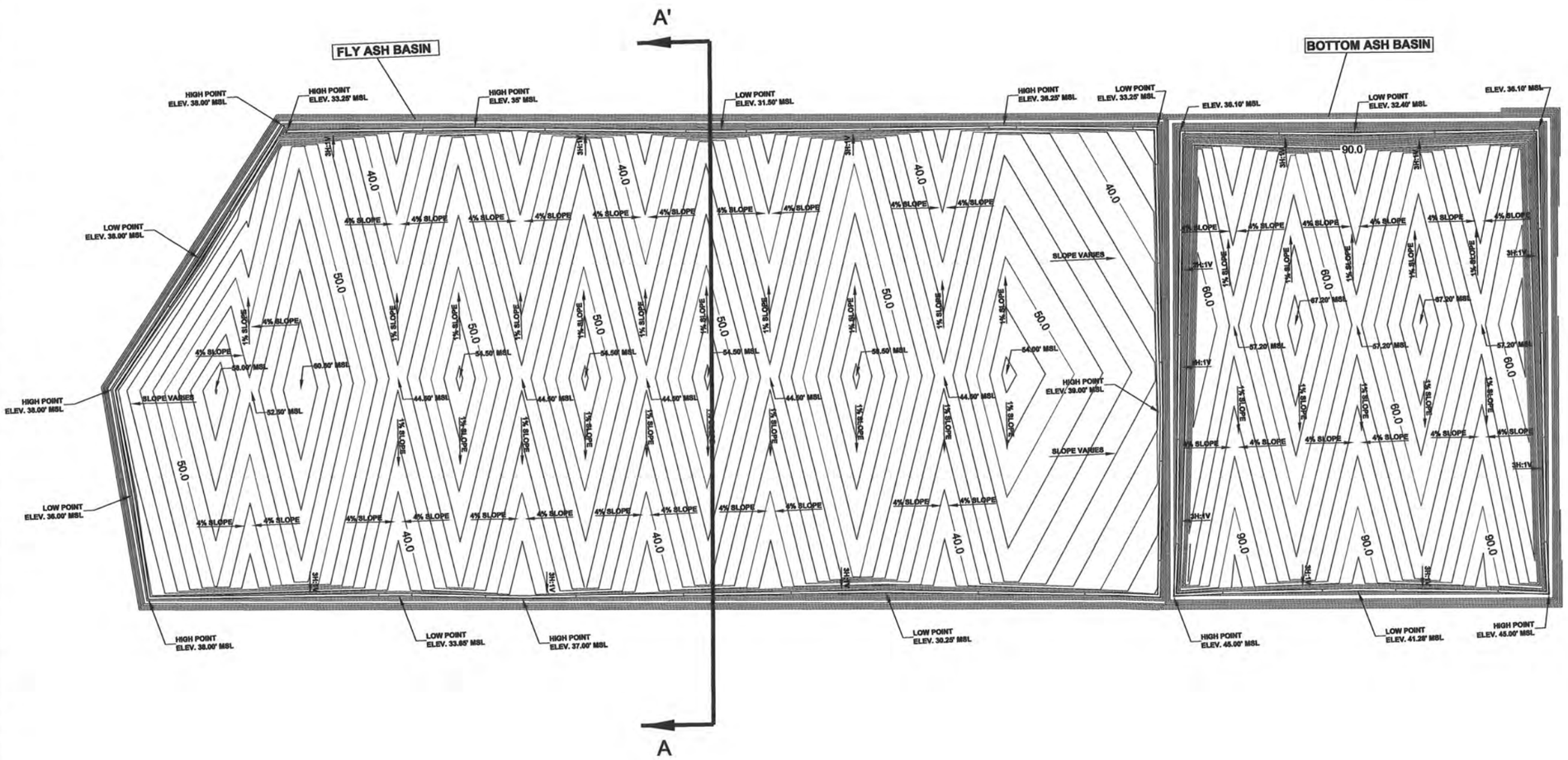
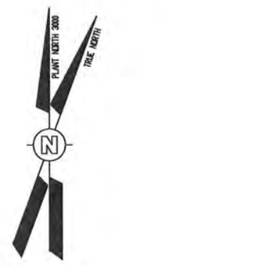


NOTES:

1. DRAWING IS ADAPTED FROM THE FOLLOWING SOURCES:
   a. ASH MANAGEMENT PLAN / POND CLOSURE PLAN, DRAWING NO. SK-1C, BURNS & MCDONNELL, DATED DECEMBER 1998.
   b. SURFACE IMPOUNDMENT CROSS SECTION DRAWING SET, CROSS SECTIONS A-A' THROUGH D-D', C-K ASSOCIATES, DRAWING NOS A05-268 02-06, C-K ASSOCIATES, INC., DATED JANUARY 20, 1994.
2. THIS DRAWING IS INTENDED FOR VISUAL PURPOSES ONLY. ACTUAL DESIGN GRADES IN THE SOLID WASTE STANDARD PERMIT APPLICATION MAY DIFFER FROM SHOWN.
3. ELEVATIONS, GRADES, AND LOCATIONS ARE APPROXIMATE AS SHOWN. THIS DRAWING IS NOT INTENDED FOR CONSTRUCTION PURPOSES.
4. SURFACE IMPOUNDMENTS MAY BE CONSTRUCTED DIFFERENTLY THAN SHOWN.
5. GRADES SHOWN REPRESENT FINAL CAP.
6. THE COMPACTED CLAY LINER SHALL CONSIST OF A MINIMUM THICKNESS OF 2 FEET WITH A PERMEABILTY OF LESS THAN OR EQUAL TO 1X10 -7 CM/SEC.
7. SEE FIGURE 5 FOR SECTION A-A'.

REFERENCE: Louisiana Oil Spill Coordinator's Office (LOSCO), LiDAR Digital Elevation Map (DEM) of Louisiana, 2009.



SCALE

0 500 1000 FEET

LOUISIANA GENERATING, L.L.C.
BIG CAJUN II POWER PLANT
NEW ROADS, LOUISIANA

BIG CAJUN II POWER PLANT
FLY ASH BASIN CLOSURE PLAN

FIGURE NUMBER 4

FLY ASH BASIN PROPOSED CAP FINAL GRADE

CB&I Environmental & Infrastructure, Inc.
4171 Essen Lane
Baton Rouge, Louisiana 70809

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
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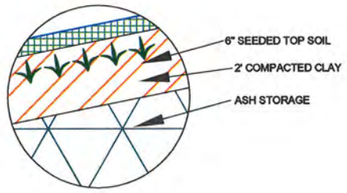
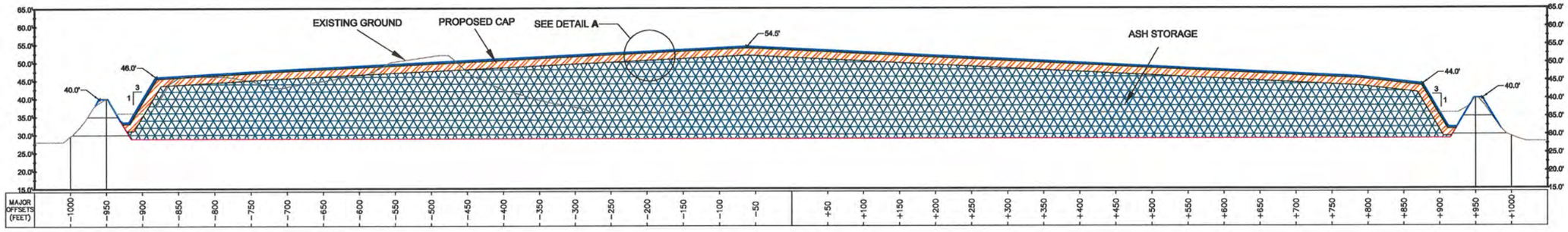


DETAIL A
TYPICAL CAP CONSTRUCTION



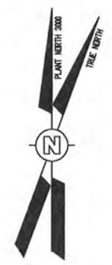
FLY ASH BASIN
SECTION A-A'

NOTES:

1. DRAWING IS ADAPTED FROM THE FOLLOWING SOURCES:
   a. ASH MANAGEMENT PLAN / POND CLOSURE PLAN, DRAWING NO. SK-1C, BURNS & MCDONNELL, DATED DECEMBER 1998.
   b. SURFACE IMPOUNDMENT CROSS SECTION DRAWING SET, CROSS SECTIONS A-A' THROUGH D-D', C-K ASSOCIATES, DRAWING NOS A05-268 02-06, C-K ASSOCIATES, INC., DATED JANUARY 20, 1994.
2. THIS DRAWING IS INTENDED FOR VISUAL PURPOSES ONLY. ACTUAL DESIGN GRADES IN THE SOLID WASTE STANDARD PERMIT APPLICATION MAY DIFFER FROM SHOWN.
3. ELEVATIONS, GRADES, AND LOCATIONS ARE APPROXIMATE AS SHOWN. THIS DRAWING IS NOT INTENDED FOR CONSTRUCTION PURPOSES.
4. SURFACE IMPOUNDMENTS MAY BE CONSTRUCTED DIFFERENTLY THAN SHOWN.
5. GRADES SHOWN REPRESENT FINAL CAP.
6. THE COMPACTED CLAY LINER SHALL CONSIST OF A MINIMUM THICKNESS OF 2 FEET WITH A PERMEABILTY OF LESS THAN OR EQUAL TO 1X10 -7 CM/SEC.
7. SEE FIGURE 4 FOR SECTION LOCATION.

REFERENCE: Louisiana Oil Spill Coordinator's Office (LOSCO), LiDAR Digital Elevation Map (DEM) of Louisiana, 2009.

STATE OF LOUISIANA
GLEN R. LANDRY
License No. 18931
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
10/4/16



LOUISIANA GENERATING, L.L.C.
BIG CAJUN II POWER PLANT
NEW ROADS, LOUISIANA

BIG CAJUN II POWER PLANT
FLY ASH BASIN CLOSURE PLAN

FIGURE NUMBER 5

FLY ASH BASIN PROPOSED CAP CROSS-SECTION A-A'

CB&I Environmental & Infrastructure, Inc.
4171 Essen Lane
Baton Rouge, Louisiana 70809

APPENDIX A

BOTTOM ASH AND FLY ASH BASIN CLOSURE SOILS AND LINER QUALITY CONTROL PLAN

POINTE COUPEE PARISH, LOUISIANA

November 2010

Prepared for:

Louisiana Generating, L.L.C.
Big Cajun II Power Plant
New Roads, Pointe Coupee Parish, Louisiana 70760

Prepared by:

Shaw Environmental & Infrastructure, Inc.
4171 Essen Lane
Baton Rouge, Louisiana 70809

Table of Contents

1.0 Introduction

1.1 Purpose

This Soils and Liner Quality Control Plan (SLQCP) has been prepared to provide the Owner, Design Engineer, Construction Quality Assurance Professional of Record, and the Contractor the means to govern the construction quality and to satisfy the environmental protection requirements under current Louisiana Department of Environmental Quality (LDEQ) Municipal Solid Waste Division Rules. More specifically, the SLQCP addresses the soil components of the liner system.

This SLQCP is divided into the following parts:

- Section 1 - Introduction
- Section 2 - Construction Quality Assurance for Earthwork
- Section 3 - Documentation

1.2 Definitions

Whenever the terms listed below are used, the intent and meaning shall be interpreted as indicated.

ASTM

This means the American Society for Testing and Materials.

Construction Quality Assurance (CQA)

A planned system of activities that provides the Owner and permitting agency assurance that the facility was constructed as specified in the design (EPA, 1986). Construction quality assurance includes observations and evaluations of materials, and workmanship necessary to determine and document the quality of the constructed facility. Construction quality assurance (CQA) refers to measures taken by the CQA organization to assess if the installer or contractor is in compliance with the plans and specifications for a project.

Construction Quality Assurance Professional of Record (POR)

The POR is an authorized representative of the Owner and has overall responsibility for construction quality assurance and confirming that the facility was constructed in general accordance with plans and specifications approved by the permitting agency. The POR must be registered as a Professional Engineer in Louisiana and experienced in geotechnical testing and its

interpretations. Experience and education should include geotechnical engineering, engineering geology, soil mechanics, geotechnical laboratory testing, construction quality assurance, and quality control testing, and hydrogeology. The POR must show competency and experience in certifying like installations, and be approved by the permitting agency, and be presently employed by or practicing as a geotechnical engineer in a recognized geotechnical/environmental engineering organization. The credentials of the POR must meet or exceed the minimum requirements of the permitting agency. Any references to monitoring, testing, or observations to be performed by the POR should be interpreted to mean the POR or CQA monitors working under the POR's direction.

The POR may also be known in applicable regulations and guidelines as the CQA Engineer, Resident Project Representative, or the Geotechnical Professional (GP).

Construction Quality Assurance (CQA) Monitors

These are representatives of the POR who work under direct supervision of the POR. The CQA monitor is responsible for quality assurance monitoring and performing onsite tests and observations. The CQA monitor is on site full-time during construction and reports directly to the POR. The CQA monitor performing daily QA/QC observation and testing shall be NICET-certified in geotechnical engineering technology at level 2 or higher for soils; a CQA monitor with a minimum of four years of directly related experience; or a graduate engineer or geologist with one year of directly related experience. Field observations, testing, or other activities associated with CQA may be performed by the CQA monitor(s) on behalf of the POR.

Contract Documents

These are the official set of documents issued by the Owner. The documents include bidding requirements, contract forms, contract conditions, specifications, contract drawings, addenda, and contract modifications.

Contract Specifications

These are the qualitative requirements for products, materials, and workmanship upon which the contract is based.

Contractor

This is the person or persons, firm, partnership, corporation, or any combination, private or public, who, as an independent contractor, has entered into a contract with the Owner, and who is referred to throughout the contract documents by singular number and masculine gender.

Design Engineer

These individuals or firms are responsible for the design and preparation of the project construction drawings and specifications. Also referred to as "designer" or "engineer."

Earthwork

This is a construction activity involving the use of soil materials as defined in the construction specifications and Section 2.2 of this plan.

Nonconformance

This is a deficiency in characteristic, documentation, or procedure that renders the quality of an item or activity unacceptable or indeterminate. Examples of non-conformances include, but are not limited to, physical defects, test failures, and inadequate documentation.

Operator

The organization that will operate the disposal unit.

Operators Representative

This is the person that is an official representative of the operator responsible for planning, organizing, and controlling the design and construction activities.

Quality Assurance

This is a planned and systematic pattern of procedures and documentation to ensure that items of work or services meet the requirements of the contract documents. Quality assurance includes quality control. Quality assurance will be performed by the POR and CQA monitor.

Quality Control

These actions provide a means to measure and regulate the characteristics of an item or service to comply with the requirements of the contract documents. Quality control will be performed by the contractor.

Closure Certification Report (CCR)

Construction report for the soil liner prepared and sealed by the POR and submitted to the LDEQ.

2.0 Construction Quality Assurance for Earthwork and Drainage Aggregates

2.1 Introduction

This section of the SLQCP addresses the construction of the soil and drainage components of the liner system and outlines the SLQCP program to be implemented with regard to materials selection and evaluation, laboratory test requirements, field test requirements and treatment of problems.

The scope of earthwork and related construction quality assurance includes the following elements:

- Subgrade preparation
- Soil liner stockpile
- Soil liner placement

2.2 Earthwork Construction

The following paragraphs describe general construction procedures to be used for various earthwork components of the Bottom Ash Basin and Fly Ash Basin final clay cap and the proposed perimeter dike vertical expansion for the Bottom Ash Basin. The earthwork construction specifications will contain more detail for specific considerations. The earthwork specifications will include details for compaction of soils, cross sections showing typical slopes, widths, and thicknesses for compacted lifts.

2.2.1 Subgrade

Subgrade refers to the stored bottom ash and fly ash surface.

Prior to beginning cap liner construction, the subgrade area will be prepared as follows:

- The top 12 inches of ash material shall be compacted to a minimum of 95% of maximum dry density as determined by ASTM D 698, and then proof rolled to determine suitability of the subgrade.
- Prior to placement of the clay cap the contractor shall inspect the subgrade for the following:
    - Moisture seeps in the base or side slopes.
    - Side slope or base softening or failure due to moisture seeps.

- Presence of zones of high permeability that could present a pathway to seepage. Zones of high permeability can be fissures or fractures in the base or side slope or pockets of high permeability gravel or rock.

- The operator's engineer shall define the regions of high permeability requiring sealing. The contractor shall seal all regions of high permeability identified by the operator's engineer by over excavating a minimum of 2 feet and backfilling the over excavation with material meeting the requirements for satisfactory clay cover material compacted to a minimum of 95% of maximum dry density as determined by ASTM D 698. This type of work shall be performed in the presence of the operator's engineer.
- The operator's engineer shall define the work required to eliminate moisture seeps and/or repair damage due to moisture seeps.

The CQA monitor will approve the prepared subgrade prior to the placement of cap soil liner. Approval will be based on a review of test information, if applicable, and CQA monitoring of the subgrade preparation.

Surveying will be performed to verify that the finished subgrade is to the lines and grades specified in design with a vertical tolerance of -0.2 feet to +0.0 feet.

2.2.2 Clay cap soil liner

The clay cap soil liner will consist of a minimum 2 feet-thick compacted soil barrier (measured perpendicular to the subgrade surface) that will cover the regraded bottom ash pond and fly ash pond. All soils used in soil liners will have the following minimum values verified by testing in a soil laboratory:

- Plasticity Index equal to or greater than 15 percent but less than 40 percent
- Liquid Limit equal to or greater than 30 percent
- Percent passing the No. 200 mesh sieve equal to or greater than 50 percent
- Percent passing the 1-inch screen equal to 100 percent
- Permeability (hydraulic conductivity) of the clay material shall be a maximum of 1 x 10^{-7} cm/sec

The soil liner material will consist of relatively homogeneous clay, sandy clay, or clayey sand. The soil will be free of debris, rock greater than 3/4 inch in diameter, vegetative matter, frozen materials, foreign objects, and organics.

A permeability test will be conducted for each different sample of borrow soil. The permeability test specimens will be prepared by laboratory compaction to a dry density of approximately 95 percent of the standard Proctor maximum dry density at a moisture content approximately equal

to the optimum moisture content. One Proctor moisture-density relationship and remolded permeability test will be required for each different material that is used to construct the clay cap liner as determined by a change in the liquid limit or plasticity index of more than 10 points. If there are any changes in where the source material is collected then it will also require a Proctor moisture-density relationship and remolded permeability test.

The soil liner material should be placed in maximum 9-inch loose lifts to produce compacted lift thickness of approximately 6 inches. The material will be compacted to a minimum of 95 percent of the maximum dry density determined by standard Proctor (ASTM D 698) at moisture content between the standard Proctor optimum and 5 percentage points above optimum. The CQA monitor, earthwork contractor, and/or Owner shall identify the clay material during excavation, and the clay material will be stockpiled separately, if stockpiling is required.

Because of some variability of the onsite materials, additional stockpile testing will be performed if different physical properties of the borrow soil (color, texture, etc.) are observed by the CQA monitor, and the materials vary by more than ten points in either liquid limit or plasticity index from previously evaluated materials.

The clay materials to be used for liner materials will require processing to achieve the required moisture content for compaction. The physical characteristics of the clay materials shall be evaluated through visual observation before and during construction. To add moisture to the material properly, the clod sizes will first be crushed into manageable sizes of 3/4 inch in diameter or less. Rocks within the liner should be less than 1 inch in diameter and will not total more than 10 percent by weight.

Clod-size reduction may be achieved using a disc harrow or soil pulverizer. In order to efficiently break down the clods and pieces of shale, multiple passes of the processing equipment in two directions are recommended. Water will be applied as necessary to the material and worked into the material with the processing or compacting equipment. If necessary to achieve even moisture distribution or break down clod size, the material will be watered and processed in the stockpile prior to placing in the liner to allow the soil adequate time to hydrate. Water used for the soil liner must be clean and not contaminated by waste or any objectionable material. Collected onsite stormwater may be utilized if it has not come into contact with the solid waste.

The soil liner must be compacted with a pad/tamping-foot (preferable) or prong-foot (sheepsfoot) roller. The lift thickness shall be controlled so that there is total penetration through the loose lift under compaction into the top of the previously compacted lift; therefore, the lift thickness must not be greater than the pad or prong length. This is necessary to achieve adequate bonding between lifts and reduce seepage pathways. Adequate cleaning devices must be in place and maintained on the compaction roller so that the prongs or pad feet do not become clogged with

clay soils to the point that they cannot achieve full penetration during initial compaction. The footed roller is necessary to achieve this bonding and to reduce the individual clods and achieve a blending of the soil matrix through its kneading action. In addition to the kneading action, weight of the compaction equipment is important. The minimum weight of the compactor should be 50,000 pounds, and a minimum of 5 passes are recommended for the compaction process. A pass is defined as one pass (1 direction) of the compactor, not just an axle, over a given area. The recommended minimum of five passes is for a vehicle with front and rear drums. The Caterpillar 815B and 825C are examples of equipment typically used to achieve satisfactory results.

The soil liner shall not be compacted with a bulldozer or any track-mobilized equipment unless it is used to pull a pad-footed roller.

CQA testing of the soil liner will be performed as the liner is being constructed. Testing of the soil liner is addressed in this section.

Soil liner construction and testing will be conducted in a systematic and timely fashion on each lift. Delays will be avoided in liner completion. Construction and testing of the soil liner should generally not exceed 60 working days from beginning to completion. The LDEQ will be notified during construction if delays in excess of 60 days are anticipated. Reasons for any liner construction taking more than 60 days to complete should be fully explained in the Closure Certification Report (CCR) submittal.

Surveying will be performed to observe that the finished soil liner has been constructed to the design lines and grades, within a vertical tolerance of 0.0 feet to +0.2 feet.

The Professional of Record (POR), on behalf of the Owner, shall submit to the LDEQ a Closure Certification Report (CCR) for approval of each soil liner area.

Testing and evaluation of the soil liner during construction will be in accordance with LDEQ standards. The construction methods and test procedures documented in the CCR will be consistent with the SLQCP and LDEQ standards.

The soil liner shall be prevented from losing moisture during the CCR approval process. Preserving the moisture content of the installed soil liner will be dependent on the earthwork contractors means and methods, and is subject to POR approval.

2.2.3 Proposed Earthen Dike Expansion

This section describes the specific inspection and testing required to control, verify, and document satisfactory work performance for the construction of the proposed earthen dike expansion. These requirements are summarized in Table 2.1 which is located below.

Table 2.1
Recommended Tests and Observations on the Proposed Earthen Dike Expansion

TEST/INSPECTION METHODS	MINIMUM FREQUENCY	PURPOSE	ACCEPTANCE CRITERIA
Base (visual only)	-	Assess suitability	As per specification
Lift thickness (visual only)	-	Assure compaction	8 inch loose
Coverage and surface scarifying (visual only)	-	Assure compaction	As per specification
Height and slopes (Surveying and Verification)	-	Assure design requirements	As per specification
Visual-manual procedure (ASTM D-2488)	1 per 2,000 c.y.	Assess material consistency	As per specification
Soil Classification (ASTM D-2487)	1 per 1,000 c.y.	Assess material consistency	As per specification
Atterberg Limits (ASTM D-4318)	1 per 1,000 c.y.	Assess material consistency	-
Grain Size Analysis (ASTM D-422)	1 per 1,000 c.y.	Assess material consistency	As per specification
Specific Gravity (ASTM D-854)	1 per Standard Proctor Curve	Assess material consistency	-
Standard Proctor (ASTM D-698)	1 per 2,000 c.y. or if material varies	Assess material consistency	±2 p.c.f. for density and ±2% for moisture content(one point) of preestablished curve failing which new moisture-density curve shall be established
In-Place Density (ASTM D-2922 or ASTM D-1556)	1 per 500 c.y. or 1 per day	Assess adequacy of compaction effort	98%of maximum dry density
Moisture Content (ASTM D-3017 or ASTM D-2216)	1 per 500 c.y. or 1 per day	Assess adequacy of compaction effort	±2% optimum moisture content

2.2.4 Top soil cover

Top soil cover will be placed over the clay cap soil liner in accordance with the project plans and specifications. The top soil cover shall be free of organics, foreign objects, or other deleterious materials. The physical characteristics of the top soil cover shall be evaluated through visual observation (and laboratory testing if justified by the design requirements) before construction and visual observation during construction. Additional testing during construction will be at the discretion of the CQA monitor.

The thickness of the top soil cover shall be verified with surveying procedures at a minimum of 1 survey point per 5,000 square feet of constructed area by a registered Louisiana surveyor with a minimum 2 reference points.

During construction the CQA monitor will:

- Verify that grade control is performed prior to work.
- Verify that the cover soil for side slopes is pushed from the toe up the slope.
- The POR will coordinate with the project surveyor to perform a thickness verification survey of the top soil cover materials upon completion of placement operations. Verify corrective action measures as determined by the verification survey.

2.3 Construction Testing

2.3.1 Standard Operating Procedures

CQA monitors will perform field and laboratory tests in accordance with applicable standards specified in the project technical specifications. Standard operating procedures for soil testing will be prepared that describe test procedures and methods used by site testing personnel for the following ASTM test methods. In some instances the standard operating procedure will be prepared or modified by the POR during construction.

The following test standards apply as called out in this manual and in the technical specifications:

STANDARD	TEST DESCRIPTION
ASTM D 698	Moisture-density relations of soils and soil-aggregate mixtures, using 5½-lb hammer and 12-inch drop
ASTM D 422	Particle size analysis of soils
ASTM D 1556	Density of soil-in-place by the sand cone method
ASTM D 2167	Density and unit weight of a soil in place by the rubber balloon method

STANDARD	TEST DESCRIPTION
ASTM D 2922	Density of soil and soil-aggregate in place by nuclear methods (shallow depth)
ASTM D 3017	Water content of soil and rock in place by nuclear methods (shallow depth)
ASTM D 2216	Laboratory determination of water (moisture) content of soil, rock, and soil-aggregate mixtures
ASTM D 5084	Method of test for permeability of fine-grained soils
ASTM D 4318	Atterberg limits
ASTM D 1140	Amount of material in soils finer than the No. 200 sieve
ASTM D 2487	Classification of soils for engineering purposes
ASTM D 2488	Description and identification of soils (visual-manual procedure)

2.3.2 Test Frequencies

The LDEQ standards will establish the minimum test frequencies for the soil liner construction quality assurance. The test frequencies for soil liner from the current LDEQ regulations are listed in Table 2.2. Extra testing must be conducted whenever work or materials are suspect, marginal, or of poor quality. Extra testing may also be performed to provide additional data for engineering evaluation. The minimum number of tests is interpreted to mean minimum number of passing tests, and any tests that do not meet the requirements will not contribute to the total number of tests performed to satisfy the minimum test frequency.

Table 2.2
Recommended Tests and Observations on Compacted Clay Liner

PARAMETER	FREQUENCY	TEST METHOD
Moisture density relationship	12/ac./6 in. compacted lift	ASTM D 698
Field Density and Moisture	12/ac./6 in. compacted lift	ASTM D 1556, D 2167 or D 2922; and ASTM D 2216 or ASTM D 3017
Sieve Analysis (passing no. 200)	1 per 100,000 SF with a minimum of 1 per 6 inches	ASTM D 1140
Atterberg Limits (liquid and plastic limit)	1 per acre per lift. 1 per 2000 c.y.	ASTM D 4318
Permeability (Hydraulic Conductivity)	1 per acre per compacted lift. 1 per lift per 750 c.y. [1]	ASTM D 5084 (Falling head, flex wall) Corps of Engineers
Thickness Verification	1 each 5,000 SF with a minimum of 2 reference points by a registered Louisiana surveyor	Survey subgrade and top of clay liner. Additionally, survey top of drainage aggregate or top soil cover layer

1: Multiple requirements may be necessary. Requirement resulting in most frequent testing shall be used.

2.4 Reporting

The POR on behalf of the Owner shall submit to the LDEQ a CCR for approval of each soil liner area. Section 3 describes the documentation requirements.

3.0 Documentation

The quality assurance plan depends on thorough monitoring and documentation of all construction activities. Therefore, the POR and CQA monitor will document that all quality assurance requirements have been addressed and satisfied. Documentation may consist of daily recordkeeping, testing and installation reports, nonconformance reports (if necessary), progress reports, photographic records, design and specification revisions. The appropriate documentation will be included in the CCR. Standard report forms will be provided by the POR prior to construction.

3.1 Preparation of CCR

The POR, on behalf of the Owner, shall submit to the LDEQ a CCR for approval of each soil liner.

Testing, evaluation and submission of the CCRs for the liner system during construction shall be in accordance with LDEQ regulations. The construction methods and test procedures documented in the CCR will be consistent with this SLQCP and the LDEQ regulations.

At a minimum, the CCR will contain:

- A summary of all construction activities.
- A summary of all laboratory and field test results.
- Sampling and testing location drawings.
- A description of significant construction problems and the resolution of these problems.
- As-built record drawings.
- A statement of compliance with the permit SLQCP and construction plans.
- The CCR shall be signed and stamped by a professional engineer(s) registered in the state of Louisiana.

The as-built record drawings will accurately site the constructed location of all work items. The POR will review and verify that as-built drawings are correct. As-built drawings will be included in the CCR as appropriate.

APPENDIX B

Table 1: 2016 Closure/Post-Closure Care Cost Estimates
NRG Big Cajun II Power Plant
New Roads, Louisiana

Item	Activity	UoM	QTY	Unit Cost ($)	Cost (2016) ($)	Total
1.1	Borrow Pit					
	a) Strip 4" Topsoil	CY	89,906.00	$ 1.68	$ 151,012.00	
	b) Excavate, Load, Haul - Topsoil	CY	235,951.00	$ 2.69	$ 635,817.00	
	c) Excavate, Load, Haul - Clay	CY	1,401,665.00	$ 2.73	$ 3,821,181.00	
	d) Permitting/mitigation	LS	1.00	$ 540,802.00	$ 540,802.00	
	Total				**$ 5,148,812.00**	
1.2	Fly Ash Pond					
	a) Ash Grading	CY	141,167.23	$ 0.56	$ 79,563.00	
	b) Clay Cover (2-Ft)	CY	564,668.00	$ 2.35	$ 1,324,449.00	
	c) Topsoil (6-IN)	CY	141,167.23	$ 2.51	$ 354,555.00	
	d) Culverts	LF	600.00	$ 71.95	$ 43,169.00	
	e) Trenching	CY	300.00	$ 13.18	$ 3,954.00	
	f) Riprap	CY	2,050.00	$ 126.77	$ 259,883.00	
	g) Seeding	ACRE	175.00	$ 3,052.73	$ 534,227.00	
	Total				**$ 2,599,800.00**	
1.3	Bottom Ash Pond					
	a) Ash Grading	CY	53,240.21	$ 0.57	$ 30,412.00	
	b) Clay Cover (2-Ft)	CY	212,960.00	$ 2.37	$ 505,699.00	
	c) Topsoil (6-IN)	CY	53,240.00	$ 2.14	$ 113,768.00	
	d) Culverts	LF	200.00	$ 81.84	$ 16,368.00	
	e) Trenching	CY	100.00	$ 9.69	$ 969.00	
	f) Riprap	CY	1,450.00	$ 91.76	$ 133,045.00	
	g) Seeding	ACRE	66.00	$ 3,052.73	$ 201,480.00	
	Total				**$ 1,001,741.00**	
1.4	Primary Treatment Pond					
	a) Dewatering	GAL	8,938,735.00	$ 0.005	$ 43,883.00	
	b) Sediment Stabilization (1-ft)	CY	40,978.00	$ 9.71	$ 397,707.00	
	c) Clay Cover (2-Ft)	CY	81,957.66	$ 2.35	$ 192,647.00	
	d) Topsoil (6-IN)	CY	20,489.42	$ 0.27	$ 5,453.00	
	e) Culverts	LF	75.00	$ 7.36	$ 552.00	
	f) Trenching	CY	40.00	$ 953.13	$ 38,125.00	
	g) Riprap	CY	300.00	$ 194.16	$ 58,249.00	
	h) Seeding	ACRE	25.40	$ 3,052.72	$ 77,539.00	
	Total				**$ 814,155.00**	
1.5	Secondary Treatment Pond					
	a) Dewatering	GAL	4,164,371.00	$ 0.008	$ 33,481.00	
	b) Sediment Stabilization (1-ft)	CY	11,545.00	$ 10.133	$ 116,985.00	
	c) Clay Cover (2-Ft)	CY	22,909.00	$ 3.073	$ 70,410.00	
	d) Topsoil (6-IN)	CY	5,727.00	$ 0.635	$ 3,638.00	
	e) Culverts	LF	50.00	$ 10.320	$ 516.00	
	f) Trenching	CY	20.00	$ 647.450	$ 12,949.00	
	g) Riprap	CY	100.00	$ 147.380	$ 14,738.00	
	h) Seeding	ACRE	7.10	$ 3,052.817	$ 21,675.00	
	Total				**$ 274,392.00**	
1.6	Rainfall Surge Basin					
	a) Dewatering	GAL	6,477,259.00	$ 0.006	$ 35,722.00	
	b) Sediment Stabilization (1-ft)	CY	30,653.00	$ 9.947	$ 304,908.00	
	c) Clay Cover (2-Ft)	CY	61,306.91	$ 2.357	$ 144,485.00	
	d) Topsoil (6-IN)	CY	15,326.00	$ 0.356	$ 5,453.00	
	e) Culverts	LF	75.00	$ 7.360	$ 552.00	
	f) Trenching	CY	40.00	$ 953.125	$ 38,125.00	
	g) Riprap	CY	300.00	$ 133.783	$ 40,135.00	
	h) Seeding	ACRE	19.00	$ 3,052.684	$ 58,001.00	
	I) Clay infill	CY	457,864.00	$ 2.367	$ 1,083,642.00	
	Total				**$ 1,711,023.00**	
1.7	Removal of Wastewater Treatment Plant	LS	1.00	$ 129,728.00	**$ 129,728.00**	
1.8	**Subtotal Closure**				**$ 11,679,651.00**	**$ 11,679,651.00**
2.1	Post Closure Cap Maintenance & Monitoring					
	a) Semi Annual Sampling and Monitoring	EA	60.00	$ 15,973.50	**$ 958,410.00**	
	b) Topsoil Repair/Replace 10% Every 10 Years	EA	3.00	$ 704,010.67	**$ 2,112,032.00**	
	c) Annual Seeding (10% of total Qty/YR)	YR	30.00	$ 68,182.23	**$ 2,045,467.00**	
	d) Annual Mowing (4x/Year)	EA	120.00	$ 15,049.73	**$ 1,805,967.00**	
	Total				**$ 6,921,876.00**	
2.2	Plugging & Abandonment of 15 Monitoring Wells	EA	15.00	$ 2,327.47	**$ 34,912.00**	
2.3	**Subtotal Post Closure**				**$ 6,956,788.00**	**$ 6,956,788.00**
	***Estimated Closure & Post Closure Cost**				$ 18,636,439.00	**$ 18,636,439.00**

* 30 year period, based on a 2% rate of inflation, including cover inspection and cover integrity maintenance as needed.