CCR POST-CLOSURE PLAN
MONTICELLO STEAM ELECTRIC STATION
BOTTOM ASH PONDS
TITUS COUNTY, TEXAS

October 2016

Prepared for:

LUMINANT GENERATION COMPANY, LLC
1601 Bryan Street (EP-27)
Dallas, Texas 75201

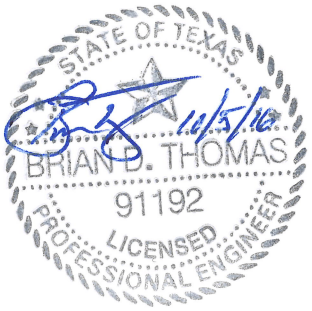
Prepared by:

PASTOR, BEHLING & WHEELER, LLC
5416 Plaza Drive
Texarkana, Texas 75503
Texas Engineering Firm No. 4760

PBW Project No. 5196A

PROFESSIONAL CERTIFICATION

This document and all attachments were prepared by Pastor, Behling & Wheeler, LLC under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that this Post-Closure Plan has been prepared in accordance with the requirements of 40 CFR 257.104 of the CCR Rule.



10/5/16

Brian Thomas, P.E.
Principal Engineer
PASTOR, BEHLING & WHEELER, LLC

TABLE OF CONTENTS

LIST OF FIGURES

1.0 INTRODUCTION

Luminant Generation Company, LLC (Luminant) owns and operates the Monticello Steam Electric Station (MOSES) located approximately nine miles southwest of Mount Pleasant in Titus County, Texas. The power plant and related support areas occupy approximately 1,000 acres on peninsula located between Lake Monticello and Lake Bob Sandlin (Figure 1). The MOSES consists of three coal/lignite-fired units with a combined operating capacity of approximately 1,880 megawatts. Coal Combustion Residuals (CCR) including fly ash, bottom ash, and gypsum are generated as part of MOSES unit operation. The CCRs are transported off-site for beneficial use by third-parties or are placed in mine pits in the Winfield South Mine/G-Ash Area.

The CCR Rule (40 CFR 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by EPA to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. The final CCR Rule was published in the Federal Register on April 17, 2015. The effective date of the CCR Rule was October 19, 2015.

The CCR Rule establishes national operating criteria for existing CCR surface impoundments and landfills, including development of post-closure plans (PCP) for all CCR impoundments and landfills. Pastor, Behling & Wheeler, LLC (PBW) was retained by Luminant to develop this PCP for the Bottom Ash Ponds at the MOSES.

1.1 CCR Impoundment Post-Closure Care Requirements

40 CFR 257.104 of the CCR Rule specifies the post-closure care requirements for existing CCR impoundments that have been closed in accordance with 40 CFR 257.102 of the Rule. Following closure of the impoundment, the owner/operator must conduct post-closure care for the unit, consisting of at least the following:

- Maintaining the integrity and effectiveness of the final cover system, including making repairs to the final cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover; and
- Maintaining the groundwater monitoring system for the unit and monitoring the groundwater in accordance with the requirements of 40 CFR 257.90 through 257.98 of the CCR Rule.

Post-closure care must be conducted for 30 years after the CCR impoundment has been closed. If at the end of the 30-year post-closure care period, groundwater assessment monitoring is being performed at the unit in accordance with 40 CFR 257.95 of the CCR Rule, post-closure care of the unit must continue until the unit has returned to groundwater detection monitoring under 40 CFR 257.95.

Once the post-closure care period has been completed, the owner/operator of the CCR impoundment must prepare a notification verifying that post-closure care has been completed. The notification must include certification by a qualified professional engineer verifying that post-closure care has been completed in accordance with the written closure plan for the unit. The notification must be placed in the facility operating record within 60 days of the completion of post-closure care.

40 CFR 257.104(d) of the CCR Rule specifies that a written PCP must be prepared for each existing CCR unit that describes the post-closure care activities for the unit. The PCP must include, at a minimum, the following information:

- A description of the required post-closure monitoring and maintenance activities and the frequency at which these activities will be performed;
- The name, address, telephone number, and email address of the person or office to contact about the facility during the post-closure care period; and
- A description of the planned uses of the closed unit property during the post-closure period. Post-closure use of the property must not disturb the integrity of the final cover, liner, or any other component of the unit containment system, or the function of the monitoring systems.

If the owner/operator of the unit desires to disturb any of the components of the closure during the post-closure care period, a qualified professional engineer must certify that the disturbance of the final cover, liner, or other component of the containment system, including any removal of CCR, will not increase the potential threat to human health or the environment. The certification must be placed in the facility operating record and the Texas Commission on Environmental Quality (TCEQ) must be notified.

The PCP must be certified by a qualified professional engineer and must document how the PCP has been designed and constructed to comply with the requirements of 40 CFR 257.104.

In accordance with 40 CFR 257.104(d)(2) of the CCR Rule, the initial PCP for an existing CCR unit must be completed and placed in the facility operating record no later than October 17, 2016. The PCP must be amended whenever:

- There is a change in the operation of the unit that would substantially affect the written PCP in effect; or
- After post-closure activities have commenced, unanticipated events necessitate a revision of the written PCP.

The PCP must be amended at least 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 PCP. If the PCP is revised after post-closure activities have commenced for a CCR unit, the PCP must be amended no later than 30 days following the triggering event. The owner or operator of the CCR unit must obtain a written certification from a qualified professional engineer that the initial and any amendment of the PCP meets the requirements of 40 CFR 257.104 of the CCR Rule.

1.2 MOSES Units Subject to PCP Requirements

The CCR Rule defines coal combustion residuals such as fly ash, bottom ash, boiler slag, flue gas desulfurization (FGD) materials (gypsum), and related solids generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers. The PCP requirements of the CCR Rule apply to existing and new CCR impoundments that dispose or otherwise engage in solid waste management of CCR.

The surface impoundments at the MOSES that meet the definition of an existing CCR unit are the Northeast Ash Water Retention Pond (NE Pond), West Ash Settling Pond (West Pond) and the Southwest Ash Settling Pond (SW Pond); collectively referred to as the Bottom Ash Ponds (BAPs). Due to their proximity to each other, the BAPs will be considered one CCR surface impoundment for the purposes of this PCP.

This PCP was prepared for the MOSES BAPs. In accordance with 40 CFR 257.104 of the CCR Rule, the PCP must be amended when future impoundments are constructed at the MOSES.

1.3 Description of BAPs

The BAPs are located approximately 800 feet southeast of the MOSES power plant (Figure 2). The NE Pond and West Pond share an interior embankment and are each approximately 500 feet wide, covering an area of approximately 5.5 acres and 6.6 acres, respectively. The approximately 8 acre SW Pond shares an embankment with the West Pond (north end of SW Pond).

The BAPs receive recovered overflow from bottom ash dewatering bins and other MOSES process wastewater sources. The ponds also act as a surge basin for various water streams in the ash-water system. Recovered sluice water, process waters and storm water runoff from the MOSES ash-water system are pumped to each pond through a series of above grade pipes on the east end. The BAPs are located partially above and partially below grade and all material that enters the ponds is pumped into the impoundments. There are no gravity discharges to the BAPs.

The BAPs are constructed partially above and partially below grade and are surrounded by earthen embankments that extend approximately 10 to 20 feet above grade depending on surrounding topography. The exterior slopes of the embankments are vegetated with grasses and similar vegetation. The south embankment of the Northeast Pond and east embankment of the SW Pond also act as embankments for the MOSES Storm Water Collection Pond, which is not subject to the CCR rule.

The BAPs were originally constructed in 1974 as a two-basin system and were subsequently segregated and relined with a 3-foot thick clay liner in 1990. As-built engineering drawings indicate that the existing 3-foot compacted clay liner was constructed to a maximum permeability of 1×10^{-7} cm/sec (OBG, 2014). The crest elevation of the earthen embankments is approximately 386.5 feet MSL and the design operating fluid/CCR level in the BAPs is approximately 384 feet MSL (approximately 2.5 feet below the crest of the perimeter embankments). Based on an operating elevation of 384 feet MSL, the design operating capacity of the NE Pond, West Pond, and SW Pond are 100, 130, and 145 acre-feet, respectively. The total design operating capacity of the BAPs is approximately 122,200,000 gallons or approximately 375 acre-ft. The BAPs are classified as a low hazard potential impoundment in accordance with the requirements of Section 257.73(a)(2) of the CCR Rule (PBW, 2016).

As described in the CCR Closure Plan prepared for the BAPs, Luminant currently plans to close the NE Pond and West Pond in accordance with Section 257.102(d) of the CCR Rule by leaving CCR in-place and constructing a final cover system over the CCR located within the combined footprint of these two surface impoundments (PBW, 2016A). The SW pond will be closed by removal of CCR. The proposed final grading plan for the final cover system is illustrated in Figure 3. Additional details regarding the final cover system are described in the CCR Closure Plan (PBW, 2016A).

2.0 POST-CLOSURE INSPECTION AND MAINTENANCE PLAN

Monitoring and maintenance activities will be performed to maintain the integrity and effectiveness of the final cover system as specified in 40 CFR 257.104(b)(1). During the post-closure monitoring and maintenance period at the BAPs, the final cover of the closed CCR unit will be inspected at the frequency indicated in Table 1 below:

Table 1 – Post-Closure Care Maintenance

Post-Closure Care Maintenance Item	Frequency of Inspections	Types of Deficiency Conditions to be looked for during inspections
Final Cover Condition	Annually	Inspection for vegetation, erosion, settlement, ponding water, and functionality and the surface water drainage system
Vegetation	Annually	Erosion rills and depressions, vegetative stress
Drainage structures	Annually	Sediment and debris build up, component damage, blockages, erosion, ponding of water in non-designated areas, excessive vegetative growth

Each monitoring and maintenance activity will be documented and include the date, components and items monitored, name of the individual performing the monitoring/maintenance, a description of the deficiencies observed (if any), maintenance/repairs performed (if any), and related information.

At a minimum, maintenance will be performed as needed prior to the next scheduled inspection.

3.0 GROUNDWATER MONITORING

As specified in 40 CFR 257.104(b)(3), groundwater monitoring activities will continue throughout the post-closure care period in accordance with 40 CFR 257.90 through 40 CFR 257.98. All groundwater monitoring wells that are part of the groundwater monitoring network will be monitored and maintained during the post-closure care period in accordance with the Groundwater Sampling and Analysis Plan, which will be finalized and placed in the Operating Record by October 17, 2017.

If at the end of the 30-year post-closure care period, groundwater assessment monitoring is being performed at the unit in accordance with 40 CFR 257.95, post-closure care of the unit must continue until the unit has returned to groundwater detection monitoring under 40 CFR 257.95.

4.0 FACILITY CONTACT INFORMATION

Table 2: Contact Information

Name	Luminant - Environmental Services
Address	1601 Bryan St., Dallas, Texas 75201
Telephone Number	214-875-8654
Email	CCRPostClosurePlan@Luminant.com

5.0 POST-CLOSURE LAND USE

Post-closure use of the property will not disturb the integrity of the final cover, liner system, or any other component of the containment system, or function of the monitoring system in accordance with §257.104(d)(1)(iii) unless necessary to comply with the maintenance requirements of this subpart or as otherwise provided as allowed under this subpart.

Post-closure land use is anticipated to be undeveloped/unchanged and the area will be deed recorded and deed restricted to prevent disturbance of the closed waste management unit.

6.0 NOTIFICATION OF COMPLETION OF POST-CLOSURE CARE PERIOD

No later than 60 days following completion of the post-closure care period, a certification will be prepared by a qualified professional engineer verifying that the post-closure care has been completed in accordance with this Post-Closure Plan.

7.0 REFERENCES

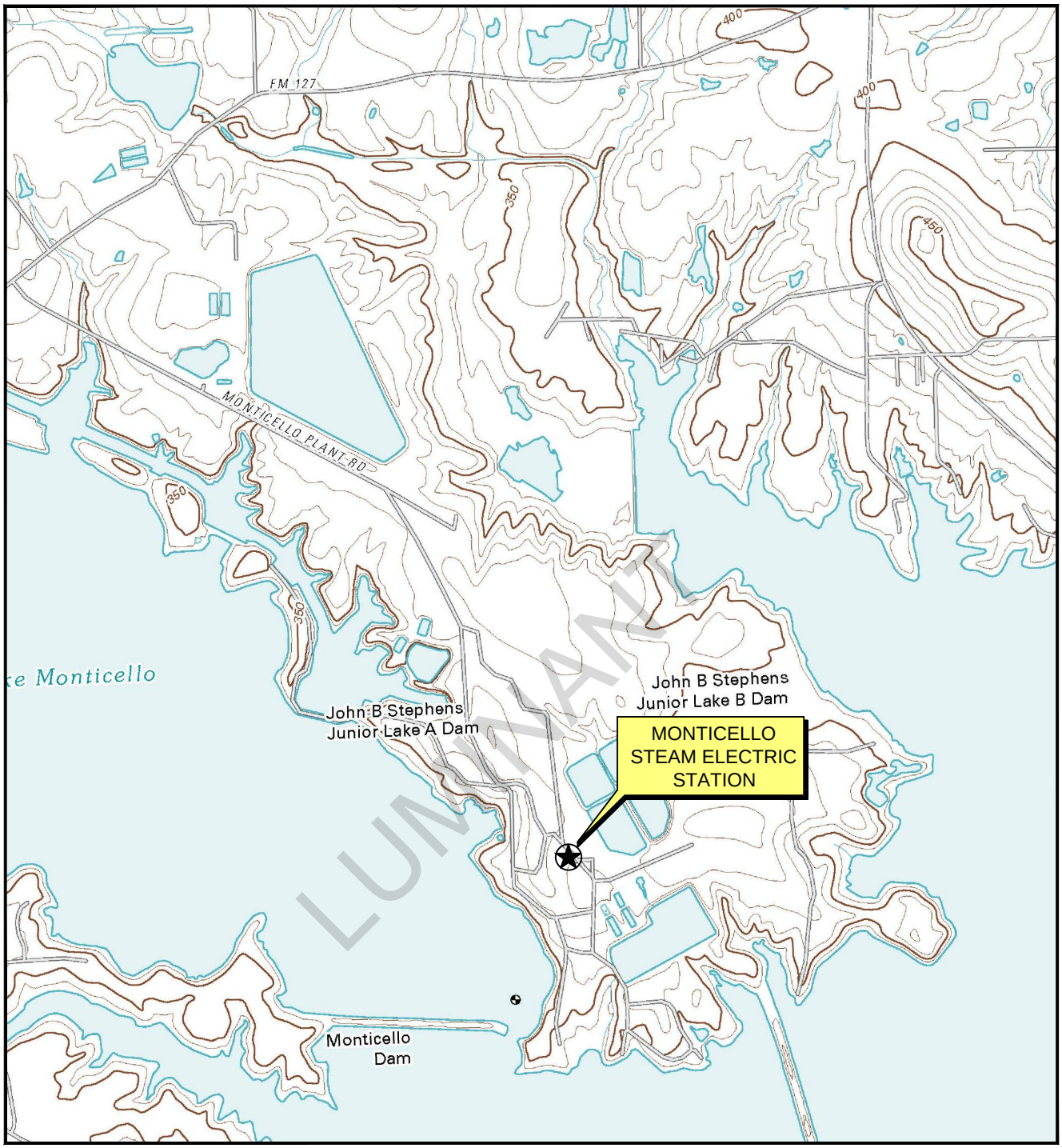
O'Brien & Gere (OBG), 2014. *Dam Safety Assessment of CCW Impoundments, Monticello Steam Electric Station, Mount Pleasant, Texas,* EP-10W000673, June

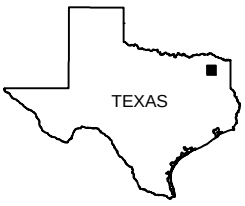
Pastor, Behling, & Wheeler, LLC (PBW), 2016. Hazard Classification Assessment – Monticello Steam Electric Station Bottom Ash Ponds, Titus County, Texas. October.

Pastor, Behling, & Wheeler, LLC (PBW), 2016A. CCR Closure Plan – Monticello Steam Electric Station Bottom Ash Ponds, Titus County, Texas. October.

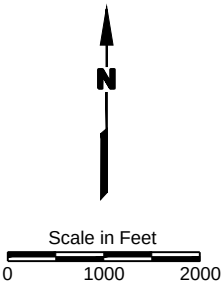
United States Geological Survey (U.S.G.S.), 1983, 7.5-*Minute Series Topographic Map, Fair Play, TX Quadrangle.*

Figures





QUADRANGLE LOCATIONS



SOURCE:
Base map from www.tnris.gov, Monticello, TX 7.5 min. USGS quadrangle dated 2010.

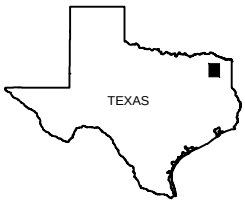
LUMINANT GENERATION COMPANY, LLC
MONTICELLO STEAM ELECTRIC STATION

Figure 1

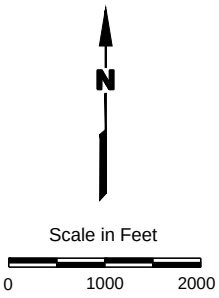
SITE LOCATION MAP

PROJECT: 5196B	BY: AJD	REVISIONS
DATE: SEPT., 2016	CHECKED: BDT	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



PHOTOGRAPH LOCATION



SOURCE:
Imagery from Google Earth, aerial photography dated 12-5-15.

LUMINANT GENERATION COMPANY, LLC

MONTICELLO STEAM ELECTRIC STATION

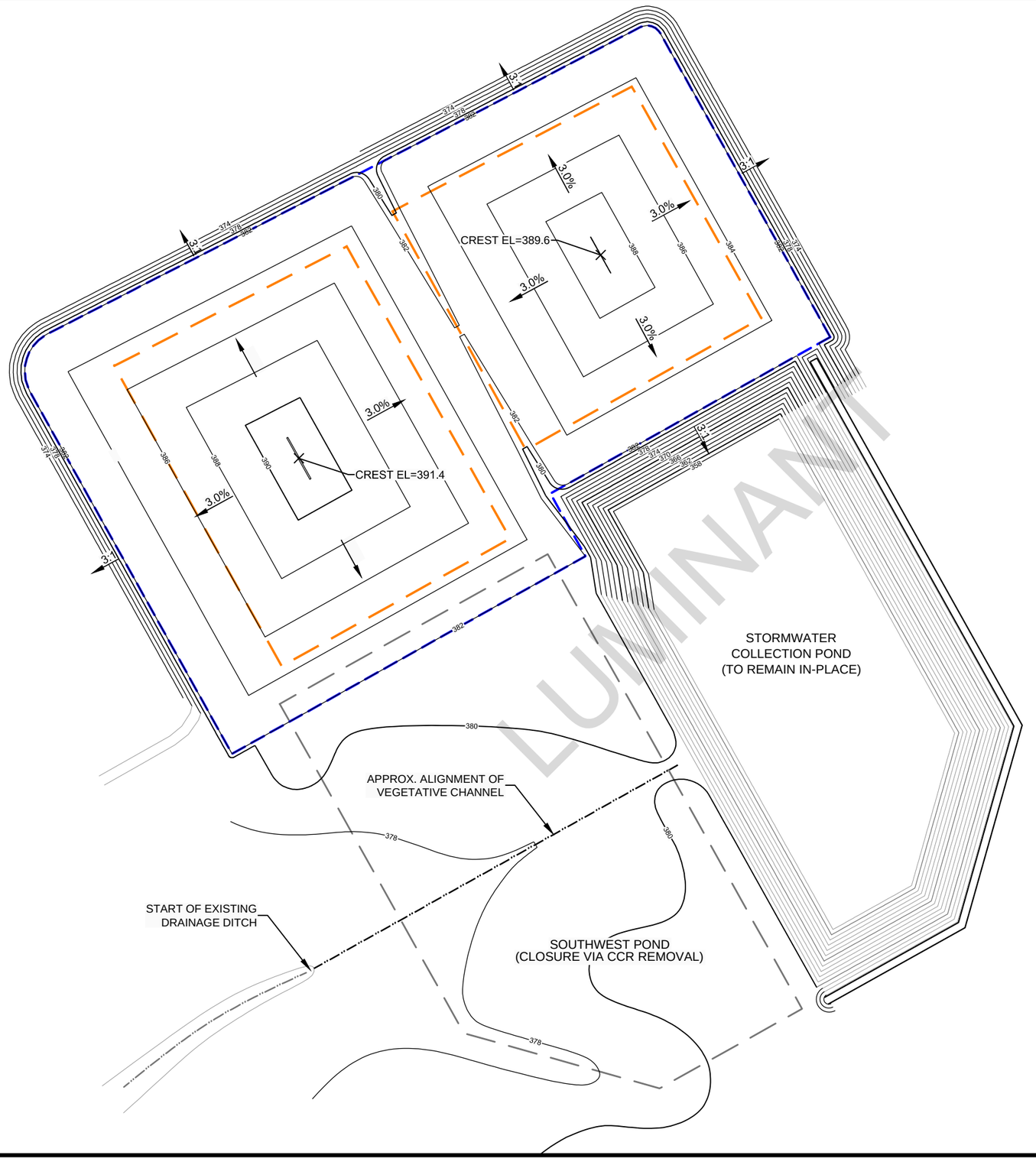
Figure 2

SITE VICINITY MAP

PROJECT: 5196B	BY: AJD	REVISIONS
DATE: SEPT., 2016	CHECKED: BDT	

PASTOR, BEHLING & WHEELER, LLC

CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- Proposed Finished Grade Contour 2 ft Interval
- Proposed Finished Grade Contour 10 ft Interval
- Limits of CAP
- Estimated Limits of CCR (Elev. 375.5)

N

Scale in Feet
0 90 180

LUMINANT GENERATION COMPANY, LLC
MONTICELLO STEAM ELECTRIC STATION

Figure 3

PROPOSED FINAL COVER GRADING PLAN

PROJECT: 5196A	BY: AJD	REVISIONS
DATE: SEPT., 2016	CHECKED: BDT	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS