CLOSURE PLAN
PLANT CRISP ASH POND
CRISP COUNTY POWER COMMISSION
Worth County, Georgia

Prepared for

Crisp County Power Commission

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Rev 2 - November 2018

CERTIFICATION

I certify that the information contained within this Closure Plan was prepared by me or under my direct supervision and meets the requirements of Disposal of Coal Combustion Residuals (CCR) from Electric Utilities; Final Rule (40 C.F.R. Part 257) and the Georgia Environmental Protection Division Solid Waste Management (391-3-4-.10, 391-3-4-.11, and 391-3-4-.12) regulations. For purposes of this document, "certify" and "certification" shall be interpreted and construed to be a "statement of professional opinion." The certification is understood and intended to be an expression of my professional opinion as a Georgia Licensed Professional Engineer, based upon knowledge, information, and belief. The statement(s) of professional opinion are not and shall not be interpreted or construed to be a guarantee or a warranty of the closure activities.

Mehmet Iscimen, P.E.

Name

Signature

PE034164

Georgia P.E. License Number

19 November 2018

Date

17 October 2016

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Latest Revision

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LIST OF ACRONYMS

CCPC	Crisp County Power Commission
CCR	Coal Combustion Residuals
C.F.R.	Code of Federal Regulations
CY	Cubic Yard
GA DNR	Georgia Department of Natural Resources
GA EPD	Georgia Environmental Protection Division
USEPA	United States Environmental Protection Agency
USEPA CCR Rule	USEPA Rule for Disposal of Coal Combustion Residuals from Electric Utilities (40 C.F.R. §257)
MSW	Municipal Solid Waste
MW	Megawatt

1.0 INTRODUCTION

Geosyntec Consultants (Geosyntec) of Kennesaw, Georgia, at the request of Crisp County Power Commission (CCPC), prepared this Closure Plan for the ash impoundment located at CCPC's Plant Crisp. Plant Crisp is located in Warwick, Georgia on the southern end of Lake Blackshear. CCPC has elected to close the surface impoundment by removal of CCR under 40 C.F.R. §257.102(c). *See also* GA DNR Rule 391-3-4-.10(c). In accordance with 40 C.F.R. Part 257, this closure plan provides: (i) A narrative description of how the CCR unit will be closed in accordance with this section; (ii) a description of the procedures to remove the CCR and decontaminate the CCR unit; (iii) estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit; and (iv) a schedule for completing the activities necessary to satisfy the closure criteria in this section, including an estimate of the duration in which the closure activities for the CCR unit will be completed (40 C.F.R. §257.102(b)).

1.1 Site Location and Background

Plant Crisp is a dual-fuel (coal and natural gas) electrical generation facility, with a 12.5 megawatt (MW) capacity coal-fired unit and 5 MW capacity natural gas combustion turbine. Coal Combustion Residuals (CCR) are byproducts of coal combustion. The United States Environmental Protection Agency (USEPA) has determined that CCR constitutes solid waste under Subtitle D of the Resource Conservation and Recovery Act (RCRA) [USEPA Rule for Disposal of Coal Combustion Residuals from Electric Utilities, 80 Fed. Reg. 21302 (Apr. 17, 2015) ("USEPA CCR Rule")], as amended.[1]

Onsite, CCR was disposed into an ash impoundment (or ash pond) using a wet sluicing method. Constructed in the mid-1970s, as an unlined pond [CDM Smith, 2014], the ash pond started to

[1] Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Amendments to the National Minimum Criteria (Phase One, Part One), 83 Fed. Reg. 36,435 (July 30, 2018); Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Extension of Compliance Deadlines for Certain Inactive Surface Impoundments; Response to Partial Vacatur 81 Fed. Reg. 51,838 (Aug. 5, 2016) (addressing prior provisions at 40 C.F.R. §257.100, inactive and active units).

receive sluiced ash in 1976. Due to changes in plant operations and utilization of the natural gas unit, coal burning and resulting ash sluice water generation has been minimal in recent years. [2].

Shown in Figure 1, the electrical generation facility, ash pond, and hydroelectric dam are located on approximately 100 acres of CCPC property near Lake Blackshear and the Flint River. The ash pond itself is approximately 6.1 acres, with embankments on the western and partially southern and northern sides. The maximum embankment height is on the west end and is approximately 22 feet high [Rizzo Associates, 2015]. The Plant Crisp ash pond was classified as a low hazard unit during the EPA's coal combustion residuals impoundment assessment, dated February 2014 and conducted by CDM Smith [CDM Smith, 2014].

1.2 Purpose

Disposal of CCR in landfills and surface impoundments and the safe operation and closure of these facilities are now regulated under the final USEPA CCR Rule, 40 C.F.R. §257, which was published on 17 April 2015 and went into effect on 19 October 2015. The Georgia Environmental Protection Division, which administers solid waste management and disposal provisions in Georgia, developed regulations relating to CCR landfills, surface impoundments, and expansions which will be codified at Georgia Department of Natural Resources Rules, Section 391-3-4-.10 ("GA DNR CCR Rule"). This closure plan has been developed in accordance with the current draft rules and would be modified in the event that any change in the GA DNR CCR Rule requires modification or a different manner of closure and/or solid waste handling.

In accordance with USEPA's CCR Rule, active ash ponds and new ash ponds which will undergo closure must develop a closure plan by 17 October 2016, which was the date upon which this closure plan was first issued. Modifications herein address regulatory changes,

2 Following USEPA amendment to the CCR rule, the surface impoundment is an existing CCR surface impoundment, no longer receiving CCR wastes and slated for closure. Litigation respecting the CCR rules, requirement for active, inactive, and existing surface impoundment resulted in modifications to final rules. See USWAG v. USEPA, No. 15-1219 (Aug. 21, 2018). CCPC's surface impoundment qualified as an inactive impoundment under USEPA' original regulatory provisions.

guidance, state or Georgia Environmental Protection Division ("GA EPD") provisions and guidance.[3] Inactive ash ponds may require a closure plan be prepared no later than April 17, 2018 [40 C.F.R. §257.100(e)(6), 40 C.F.R. §257.102(b)(2)].

For ash ponds which the owner/operator elects to close, or those requiring closure pursuant to 40 C.F.R. Part 257, 40 C.F.R.§ 257.102(b) states that "*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 was certified by a qualified professional engineer and completed on 17 October 2016. The purpose of this document is to provide the written closure plan for the ash pond at Plant Crisp.

In addition to the closure plan, 40 C.F.R. §257.104 outlines the requirements for a written post-closure plan. 40 C.F.R. §257.104(a)(2) states that "*An owner or operator of a CCR unit that elects to close a CCR unit as provided by 40 C.F.R.* §257.*102(c) is not subject to the post-closure care criteria under this section."* Since CCPC will be closing the ash pond under 40 C.F.R. §257.102(c), closure by removal of CCR, post closure care and a written post-closure plan is not required for Plant Crisp Ash Pond Closure. 40 C.F.R. §257.102(c) applies to owners and operators which elect closure by removal, as CCPC has done for the ash pond.

[3] GA EPD has submitted application for authorization of state CCR regulations and program as a State Coal Combustion Residuals Permit Program under the 2016 Water Infrastructure Improvements for the Nation (WIIN) Act, Section 2301.

2.0 CLOSURE PLAN

Criteria for conducting closure of the ash pond are detailed in 40 C.F.R. §257.102. In 40 C.F.R. §257.102(a), two alternatives are presented for closure of CCR units, specifically:

> *Closure of a CCR landfill, CCR surface impoundment, or any lateral expansion of a CCR unit must be completed either by leaving the CCR in place and installing a final cover system or through removal of the CCR and decontamination of the CCR unit.*

CCPC conducted a feasibility assessment and elected "closure by removal of CCR and decontamination of the CCR unit" as the closure method for the unit. CCPC intends to dispose the CCR removed from the ash pond at a local municipal solid waste (MSW) landfill permitted to receive CCR and in accordance with GA DNR Rules. Details of this closure method is presented in Section 2.1.

2.1 Closure by Removal

To remove the CCR and decontaminate the unit, the following steps has been or will be completed (listed in the order of construction):

- Installation of Groundwater Monitoring System in accordance with 40 C.F.R. §257.91.
- Ash Characterization and Vertical Delineation:
  Hand-augers were used to delineate ash thickness within the accessible areas of the ash pond. Total depth of ash at these locations were recorded to create an ash thickness map. Representative samples (combination of ash and underlying base material) were collected and sent to a laboratory for material characterization for landfill disposal. The laboratory testing results were provided to the local landfill for coordination of ash disposal.
- Mobilization and Site Preparation:
  This step includes mobilization of the contractor to the site, installation of erosion and sediment control measures, removal of vegetation present within the CCR unit, and establishing the general site setup.
- Dewatering of Ash Pond Free Liquids:

Currently, the ash pond does not contain a significant amount of free liquids. If there is a build-up of free liquids in the ash pond due to precipitation and/or plant operations, they will be removed prior to the excavation of the CCR. If free liquid removal is necessary, the removed liquids will be analyzed, treated as necessary, and disposed in accordance with applicable state and federal regulations and permits.

- Excavation of CCR:

  Mechanical methods (excavators, front-end loaders, etc.) will be used for excavation. Excavation will be continued until the CCR are removed from the ash pond. A minimum of 6 inches of underlying soils will also be removed.

- Dewatering of CCR:

  If the excavated CCR is too wet to transport and dispose of in a MSW, the moisture content will be reduced by primarily using windrowing method. If windrowing method is not effective to reduce the moisture content to the desired levels, absorbent desiccation or other drying methods may be utilized in addition. Procedures outlined in the Fugitive Dust Control Plan will be used during excavation and dewatering of CCR to mitigate any fugitive dust concerns [Geosyntec, 2016].

- Transport and Disposal of CCR:

  The removed ash, at an acceptable moisture content, will be loaded into conventional haul trucks using mechanical methods and will be transported to a local MSW landfill for disposal. Haul trucks will be equipped with an adequate cover over the CCR for fugitive dust control, a construction entrance/exit will be designed and maintained to eliminate CCR carried offsite on haul truck wheels, and haul trucks will be inspected prior to leaving the site.

- Verification of CCR Removal:

  Visual methods will be used for verification of the CCR removal. An ash pond map using a 100-foot grid spacing will be prepared with unique alphanumeric label for reference and documentation of CCR removal. Observations will be made with reference to the ash pond grid map and will include, but not be limited to, taking photographs and describing soil color. Experience at the Site indicates that there is a

distinct color difference between CCR and the underlying soils that supports reliable visual verification of CCR removal.

- Site Grading and Stabilization:

  Once the CCR removal is complete, the dikes of the ash pond will be lowered or removed, and the site will be graded to provide positive drainage and to mimic the pre-development topography to the extent practical. Native vegetation will be re-established to stabilize the exposed areas and to prevent future erosion. As soon as practical after final grading, the contractor will take necessary steps to establish a protective vegetative cover of acceptable grasses over disturbed areas of the site. These steps shall include seeding, mulching, and any necessary fertilization at a minimum, and may include additional activities such as sodding of steeper slopes and drainage ways if necessary. Temporary erosion control blankets may be used if necessary to provide seedbed protection and prevent wash-out of seed and fertilizer during vegetation establishment.

CCR removal and decontamination of the ash pond will be complete when all visible ash and 6 inches of underlying soils within the CCR unit have been removed, post-removal site grading and stabilization is performed, and per 40 C.F.R. §257.102(c) *"groundwater monitoring concentrations do not exceed the groundwater protection standard established pursuant to 40 C.F.R. §257.95(h) for constituents listed in Appendix IV of the CCR Rule."*

2.2 Groundwater Monitoring

In order to establish groundwater protection standards and in conjuncture with 40 C.F.R. §257.90, CCPC collected baseline groundwater monitoring data with eight independent sampling events from the four proposed groundwater monitoring wells presented in Figure 1. The results were analyzed for Appendix III and IV constituents.[4] Within 90 days after completing the sampling and analysis, the groundwater results were evaluated to determine if

[4] Existing and new surface impoundments are required to comply with the provisions of 40 C.F.R. §257.90(b), groundwater monitoring, no later than 17 October 2017.

there has been a statistically significant increase over background concentrations for any constituent in any well. Appendix III and IV constituents are shown below.

Appendix III – Detection Monitoring Constituents

- Boron
- Calcium
- Chloride
- Fluoride
- pH
- Sulfate
- Total Dissolved Solids (TDS)

Appendix IV – Assessment Monitoring Constituents

- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Fluoride
- Lead
- Lithium
- Mercury
- Molybdenum
- Selenium
- Thallium
- Radium 226 and 228 combined

Following the statistically analysis, CCPC started a detection and assessment monitoring program in accordance with 40 C.F.R. §257.94 and §257.95.

2.3 Estimated Ash Volume and Extents

As presented in Figure 1, the ash pond at Plant Crisp covers approximately 6.1 acres. The extents of the ash are outlined and correspond to the limits of the constructed dikes. The ash limits were further delineated using a limited field investigation. Based on this investigation, approximately 51,100 cubic yards (CYs) of CCR are stored within the ash pond. It is assumed that top 6 inches native soil beneath the CCR will also be removed as part of the "decontamination" process which will produce an additional 5,200 CYs of material to be disposed. In total, 56,300 CYs of ash and underlying soils will be excavated from the ash pond and disposed of at a local MSW landfill.

2.4 Estimated Closure Schedule

The following is an estimated schedule for the closure of the Plant Crisp ash pond by removal of CCRs:

- Notification of Intent to Close
  - Year 1
- Mobilization and Site Preparation
  - Year 1
- Ash Pond Closure Construction
  - Year 1 to Year 3[5]
- Submit a Certification Report Documenting the CCR Removal to GA EPD
  - Upon completion of CCR removal
- Notification of CCR Unit Closure
  - Year 3

[5] Per 40 C.F.R. §257.102 (f), the allowable time frame for Plant Crisp Ash Pond closure is 5 years of commencing closure activities with up to an additional 2 years of an extension, if qualified.

2.5 Deed Notification

40 C.F.R. §257.102(i) states:

> *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).*
>
> *(3) Within 30 days of recording a notation on the deed to the property, the owner or operator must prepare a notification stating that the notation has been recorded. The owner or operator has completed the notification when it has been placed in the facility's operating record as required by §257.105(i)(9).*
>
> *(4) An owner or operator that closes a CCR unit in accordance with paragraph (c) of this section* (i.e., Closure by Removal) *is not subject to the requirements of paragraphs (i)(1) through (3) of this section.*

Since the closure of the unit will be performed in accordance with 40 C.F.R. §257.102(c) (i.e., Closure by Removal), a deed notification is not required in accordance with paragraph (4) of this section.

2.6 Other Considerations and Requirements

- For closure construction activities, the site is considered to be a cut-fill balance site and use of on-site or off-site borrow source is not planned.

- Since closure by removal is selected as the closure method, no specific, low-permeability cover system will be installed. As previously indicated, the site will be re-graded for positive drainage and stabilized for erosion control following removal of the CCRs.

- CCPC will maintain the Closure Plan in the facility's operating record as required by 40 C.F.R. §257.105(i).

- No later than the date CCPC initiates closure of the ash pond, CCPC will prepare a notification of intent to close the ash pond. CCPC will maintain the notification in the facility's operating record as required by 40 C.F.R. §257.105(i)(7).

- Upon completion of the closure of the ash pond, CCPC will obtain a certification from a qualified professional engineer verifying that closure has been completed in accordance with the closure plan and submit a closure report to GA EPD's Director.

- Within 30 days of completion of closure of the ash pond, CCPC will prepare a notification of closure of a CCR unit. The notification will include the certification by a qualified professional engineer. CCPC will maintain the notification in the facility's operating record as required by 40 C.F.R. §257.105(i)(8).

2.7 Facility Contact

The primary contact for Plant Crisp is as follows:

Steve Rentfrow, General Manager
(229-273-3811)
srentfrow@crispcountypower.com
961 Power Dam Road
Warwick, GA 31796

3.0 REFERENCES

CCPC. (2016), "Proposal for Plant Crisp Ash Disposal Area Closure Feasibility Study", e-mail correspondence on August 3, 2016.

CDM Smith. (2014). "Assessment of Dam Safety of Coal Combustion Surface Impoundments – Final Report: Crisp County Power Commission Plant Crisp Warwick, Georgia." Prepared for U.S. Environmental Protection Agency Washington, D.C., Rev. 1, February 2014.

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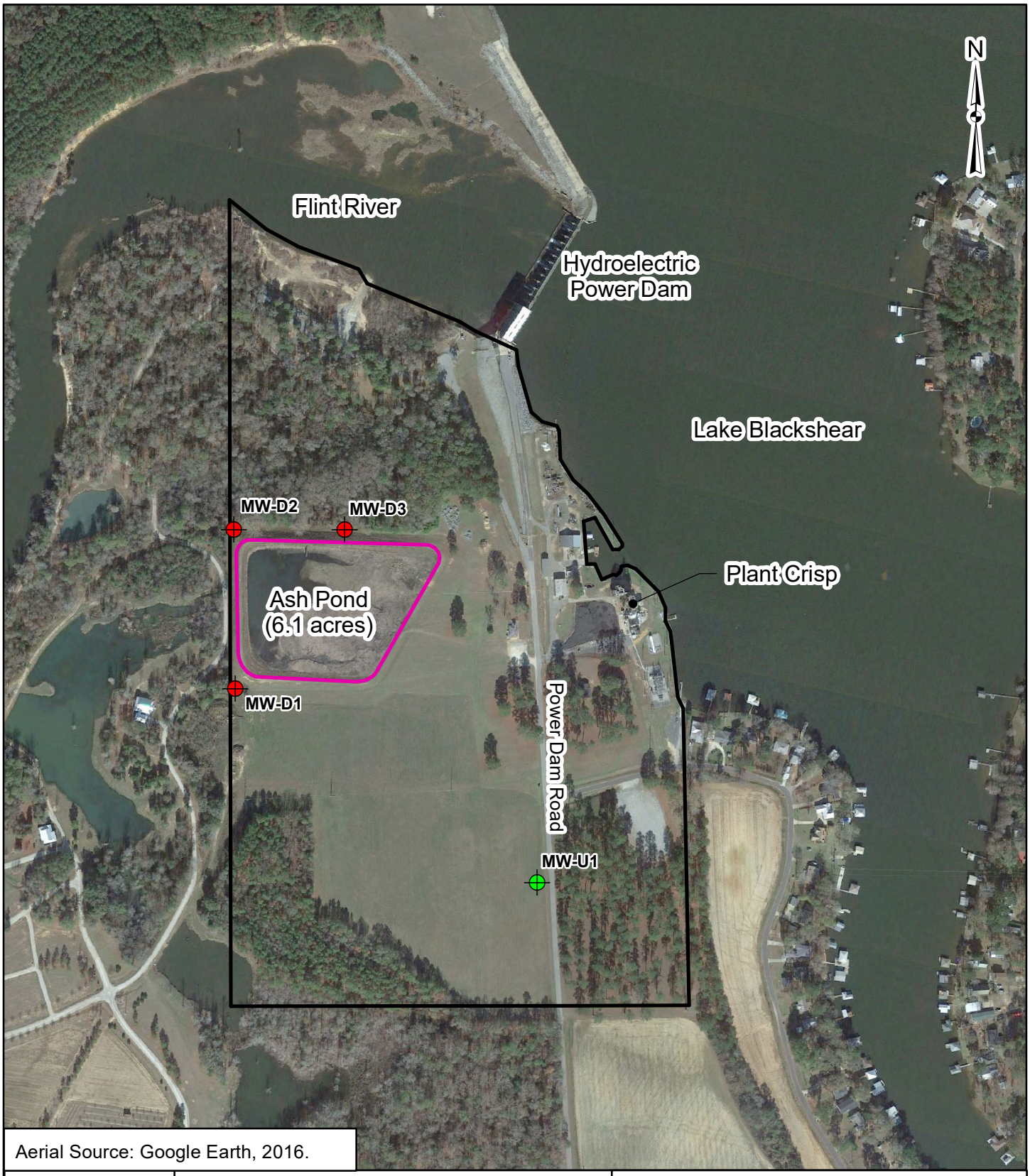
Rizzo Associates. (2015). "Dam Safety Assessment Report Plant Crisp Coal Combustion Waste Impoundment." Submitted to Crisp County Power Commission, 14-5232, Rev. 0, January 2015.

USEPA. (2015). "Subpart D – Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments," Title 40 Code of Federal Regulations, Pt. 257, April 2015.



Aerial Source: Google Earth, 2016.

Legend

- Downgradient Well
- Upgradient Well
- Plant Crisp Property Boundary
- Ash Pond Limits

0 100 200 400 Feet

Plant Crisp Groundwater Well Locations

Crisp County Power Commission
Warwick, Georgia

Geosyntec consultants

KENNESAW, GA

DATE:	Nov 2018
PROJECT NO.	GW6152
DOCUMENT NO.	
FILE NO.	FINALGWPLAN.MXD
FIGURE NO.	1

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