

SURFACE IMPOUNDMENT CLOSURE PLAN

Bremo Station – West Ash Pond and East Ash Pond Solid Waste Permit 618 Fluvanna County, Virginia

Prepared for:



Dominion Energy Virginia
120 Tredegar Street
Richmond, Virginia 23219

Prepared by:

Schnabel Engineering
9800 Jeb Stuart Parkway, Suite 100
Glen Allen, Virginia 23059

Schnabel Reference No. 22130437.034

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**Bremo Station – West Ash Pond and East Ash Pond, SWP 618
Surface Impoundment Closure Plan**

CERTIFICATION

This Closure Plan (Plan) for the Bremo Station’s (Station) West Ash Pond (WAP) and East Ash Pond (EAP) was prepared by Schnabel Engineering (Schnabel). The document and Certification/Statement of Professional Opinion are based on and limited to information that Schnabel has relied on from Dominion Energy and others, but not independently verified.

On the basis of and subject to the foregoing, it is my professional opinion as a Professional Engineer licensed in the Commonwealth of Virginia that this document has been prepared in accordance with good and accepted engineering practices as exercised by other engineers practicing in the same discipline(s), under similar circumstances, at the same time, and in the same locale. It is my professional opinion that the document was prepared consistent with the requirements in the United States Environmental Protection Agency’s “Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments” (CCR Rule, 40 CFR §257 Subpart D) as well as the Virginia Department of Environmental Quality’s Virginia Solid Waste Management Regulations (VSWMR, 9VAC20-81).

The use of the word “certification” and/or “certify” in this document shall be interpreted and construed as a Statement of Professional Opinion and is not and shall not be interpreted or construed as a guarantee, warranty, or legal opinion.

James R. DiFrancesco, P.E. _____

Principal / Practice Leader Solid Waste _____

Name

Title

Signature

November 13, 2023 _____

Date



**Bremo Station – West Ash Pond and East Ash Pond, SWP 618
Surface Impoundment Closure Plan**

1.0 CLOSURE PURPOSE

This Closure Plan (Plan) was prepared for the inactive Coal Combustion Residuals (CCR) surface impoundments at the Bremo Station (Station), the West Ash Pond (WAP) and the East Ash Pond (EAP). The Station is owned and operated by Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion Energy) and is located in Bremo Bluff, Virginia at 1038 Bremo Road. The WAP and EAP are regulated under the Virginia Department of Environmental Quality (DEQ) Solid Waste Permit (SWP) 618 and are subject to the closure requirements in the United States Environmental Protection Agency’s “Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments” (CCR Rule, 40 CFR §257 Subpart D) as well as the DEQ’s Virginia Solid Waste Management Regulations (VSWMR, 9VAC20-81). Schnabel Engineering (Schnabel) has prepared this Plan in accordance with the requirements of the CCR Rule and VSWMR on behalf of Dominion Energy.

1.1 Impoundment Information

1.1.1 West Ash Pond

The WAP is approximately 17 acres in size and was used as a water treatment pond to settle and manage low-volume wastewaters, including CCR, until 2014 when the Station converted from a coal-fired power plant to a natural gas-fired power plant, which has since been decommissioned. No new CCR was placed in the WAP after the conversion. The WAP contained approximately 327,000 cubic yards (CY) of CCR prior to the start of excavation activities.

The WAP is regulated under the following permits:

- DEQ SWP 618
- DEQ Virginia Pollutant Discharge Elimination System (VPDES) Permit No. VA0004138
- DEQ VPDES Construction General Permit No. VAR10H875
- Virginia Department of Conservation and Recreation (DCR) Operation and Maintenance Certificate, Inventory No. 06511

1.1.2 East Ash Pond

The EAP is approximately 26.5 acres in size and was used for the storage of CCR generated during the operation of the Station. The pond was placed into service in the 1930’s and was capped with soil fill in the mid-1980’s, except for the eastern portion of the pond which allowed for pass-through of drainage from the adjacent area to the north. The EAP contained approximately 1,800,000 CY of CCR prior to the start of excavation activities.

The EAP is regulated under the following permits:

- DEQ SWP 618
- DEQ VPDES Permit No. VA0004138
- DEQ VPDES Construction General Permit No. VAR10H875
- DCR Operation and Maintenance Certificate, Inventory No. 00815

2.0 CLOSURE TIMEFRAMES

2.1 Closure Criteria

This Plan provides for the closure of the WAP and EAP by removal of CCR.

**Bremo Station – West Ash Pond and East Ash Pond, SWP 618
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Closure is considered complete under 40 CFR 257.102(c) of the CCR Rule when:

1. A Professional Engineer licensed in the Commonwealth of Virginia certifies CCR removal and decontamination, i.e., constituent concentration removal, throughout the CCR unit and any areas affected by releases from the CCR unit; and,
2. Groundwater monitoring concentrations do not exceed the groundwater protection standards established pursuant to 40 CFR §257.95(h) for constituents listed in Appendix IV of the CCR Rule.

Closure is considered complete under DEQ SWP 618 when:

1. A Professional Engineer licensed in the Commonwealth of Virginia certifies CCR has been removed from the CCR unit and the area within the CCR unit has been over-excavated by approximately 6 inches; and,
2. The CCR unit's downgradient groundwater monitoring wells do not exhibit levels in excess of a maximum contaminant limit (MCL) or established groundwater protection standard for any CCR Rule Appendix IV constituent after a minimum of ten sampling events have occurred after CCR material has been verified as removed by a Professional Engineer licensed in the Commonwealth of Virginia.

2.2 Closure Status

At the time of this Plan amendment, all CCR in the WAP and EAP has been removed and temporarily relocated to the North Ash Pond (NAP), an approximately 69-acre surface impoundment at the Station, for storage until a new, captive industrial landfill is built for final CCR storage. The NAP closure will occur in accordance with the Closure Plan for the NAP, the VSWMR, the CCR Rule, and §10.11402.03 of the Virginia Waste Management Act.

In March 2019, CCR removal and decontamination in the EAP was completed, followed by the over-excavation of the area within the CCR unit by a approximately 6 inches in conformance with this Plan and SWP 618. The DEQ provided verification of these activities in a letter dated October 1, 2019, which is included as Attachment 3. The EAP has since been repurposed as a stormwater management pond, the East Stormwater Management Pond, to serve the Station's long-term stormwater management needs.

In January 2020, CCR removal and decontamination in the WAP was completed, followed by the over-excavation of the area within the CCR unit by approximately 6 inches in conformance with this Plan and SWP 618. The DEQ provided verification of these activities in a letter dated April 17, 2020, which is included as Attachment 4. The WAP has since been repurposed as a process water pond in support of the NAP closure activities. Once NAP closure activities are complete, the process water pond will be decommissioned and graded to leave an open vegetated area, as shown in the Closure by Removal Drawings provided in Attachment 1.

In December 2021, the WAP and EAP were working through the Corrective Action process due to groundwater monitoring concentrations; therefore; demonstrations were made for the EAP and WAP to document the need to extend the closure timeframe set forth in the CCR Rule by two years.

At the time of this Plan amendment, groundwater monitoring concentrations for the WAP do not exceed the groundwater protection standards established pursuant to 40 CFR §257.95(h) for constituents listed in

**Bremo Station – West Ash Pond and East Ash Pond, SWP 618
Surface Impoundment Closure Plan**

Appendix IV of the CCR Rule; therefore, certification of closure of the WAP in accordance with the CCR Rule is anticipated by December 2023. The EAP is still in the Corrective Action process under the CCR Rule, this Plan, and SWP 618.

Table 1 below outlines the schedule for closure activities.

Table 1 - Closure Schedule

Activity	Date
EAP CCR Removal Completion	March 2019
DEQ Approval for EAP CCR Removal Completion	October 2019
WAP CCR Removal Completion	January 2020
DEQ Approval for WAP CCR Removal Completion	April 2020
EAP Closure Extension Demonstration	December 2021
WAP Closure Extension Demonstration	December 2021
WAP Closure Certification per the CCR Rule	By December 2023
EAP Closure Certification per the CCR Rule	Based on groundwater monitoring results
WAP Closure Certification per DEQ SWP 618	Based on groundwater monitoring results
EAP Closure Certification per DEQ SWP 618	Based on groundwater monitoring results

3.0 INVENTORY REMOVAL AND DISPOSAL

3.1 Waste Removal and Decontamination

The EAP and WAP are in the process of being closed by the removal of CCR in accordance with the CCR Rule provisions and the VSWMR. The removal of accumulated CCR, such that no residual materials remained visible, followed by the over-excavation of the area within the CCR unit by approximately 6 inches has been completed. CCR removed against embankments involved excavation of the embankment faces to a near-vertical condition, and immediately after CCR removal, over-excavation, and inspection of these areas, fill soil was backfilled and compacted against the embankment to re-establish stable slopes. For decontamination of rock, existing concrete designated to remain, or other similar hard surfaces (e.g., pipes or foundation supports to remain), the surfaces were cleaned to a visually clean condition through pressure washing. Removed CCR and CCR-mixed soils have been consolidated in the NAP for temporary storage.

3.2 Sampling and Testing Program

After removal of the 6-inch over-excavation material, areas within the CCR unit were visually inspected to verify the over-excavation had been achieved. These areas were further inspected by targeted soil cores for visual inspection, dug by hand using a hand auger or similar tool to a depth of at least 6 inches and at a frequency of at least one core per acre.

Verification surveys were prepared by a Commonwealth of Virginia-licensed Land Surveyor and consisted

**Bremo Station – West Ash Pond and East Ash Pond, SWP 618
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of the visually clean CCR removal surface survey and the over-excavation surface survey to verify the approximate 6-inch over-excavation. Certification of the completion of CCR removal in the EAP and WAP was provided by a Commonwealth of Virginia-licensed Professional Engineer and approved by the DEQ (see Attachments 3 and 4, respectively).

Groundwater monitoring will be continued in accordance with the approved Groundwater Monitoring Plan to meet the closure by removal standard set forth in 40 CFR 257.102(c) and SWP 618, as applicable.

3.3 Other Areas

During the evaluation of the nature and extent of CCR in and around the EAP, a thin area of residual CCR material was identified along a portion of the toe of the southern embankment. Additional permits from the Corps of Engineers and Fluvanna County were obtained to authorize removal of materials in this area. The identified materials were removed to a visually clean condition and relocated to the NAP. Verification and documentation of the removal was provided by a Virginia-licensed Professional Engineer and approved by the DEQ (see Attachment 3). After removal and verification, the area was restored with equivalent vegetation, as per the applicable permits.

4.0 CLOSURE OF TREATMENT UNITS AND LAGOONS

There are no supporting leachate or waste treatment surface impoundments or lagoons associated with the EAP or WAP.

5.0 CLOSURE IMPLEMENTATION

5.1 Posting

One sign will be posted at the site entrance to each pond notifying all persons of the final closure and prohibition against further receipt of CCR. Unauthorized access to the site will be controlled by natural barriers, fencing, and locked gates.

5.2 Certification

Within 30 days of closure completion under 40 CFR §257.102(c), a certification statement by a Professional Engineer licensed in the Commonwealth of Virginia will be placed in the operating record and posted on Dominion Energy's publicly accessible website. The certification statement should generally read as follows:

I certify that closure of the [Pond] at the Bremo Station has been completed in accordance with the Closure Plan [Date on the Closure Plan or most recent amendment] and the requirements of 40 CFR §257.102(c).

Within 30 days of closure completion under DEQ SWP 618, a certification statement by a Professional Engineer licensed in the Commonwealth of Virginia will be provided to the DEQ along with supporting documentation as required by this Plan. The certification statement should generally read as follows:

I certify that closure of the [Pond] at the Bremo Station has been completed in accordance with the Closure Plan [Date on the Closure Plan or most recent amendment] for solid waste permit number 618 issued to Dominion Energy, with the exception of the following discrepancies: [To Be Determined]

In addition, a sign(s) was (were) posted on [Date of posting] at the site entrance notifying all persons of the closing [and state other notification procedures if applicable] and barriers [indicate type] were installed at [location] to prevent new waste from being deposited.

A survey plat prepared by [Name] was submitted to Fluvanna County, Virginia on [Date]. A copy of the survey plat is included with this certification.

A notation was recorded on the deed to the property on [Date]. A copy of the revised deed is attached to this certification.

[Signature, date, and stamp of Professional Engineer]

The certification will be posted on Dominion Energy's publicly accessible internet site and placed in the operating record.

5.3 Post-Closure Use

No post-closure use of the WAP area has been proposed at the time of this Plan. The EAP has been repurposed as the East Stormwater Management Pond to serve the site's long term stormwater management needs.

6.0 COST ESTIMATE

The closure and post-removal cost estimate for the WAP and EAP is \$17,112,065. This estimated amount covers the remaining groundwater monitoring and closure certification activities under this Plan.

ATTACHMENT 1

CLOSURE BY REMOVAL DRAWINGS
(BY OTHERS)

DOMINION ENERGY

BREMO POWER STATION

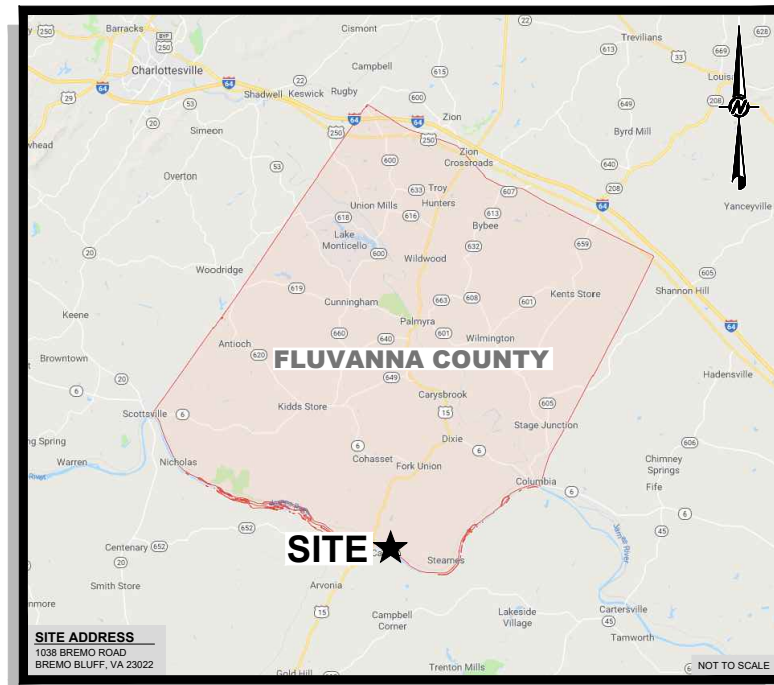
CLOSURE BY REMOVAL PLAN

WEST ASH POND & EAST ASH POND

SOLID WASTE PERMIT No. 618

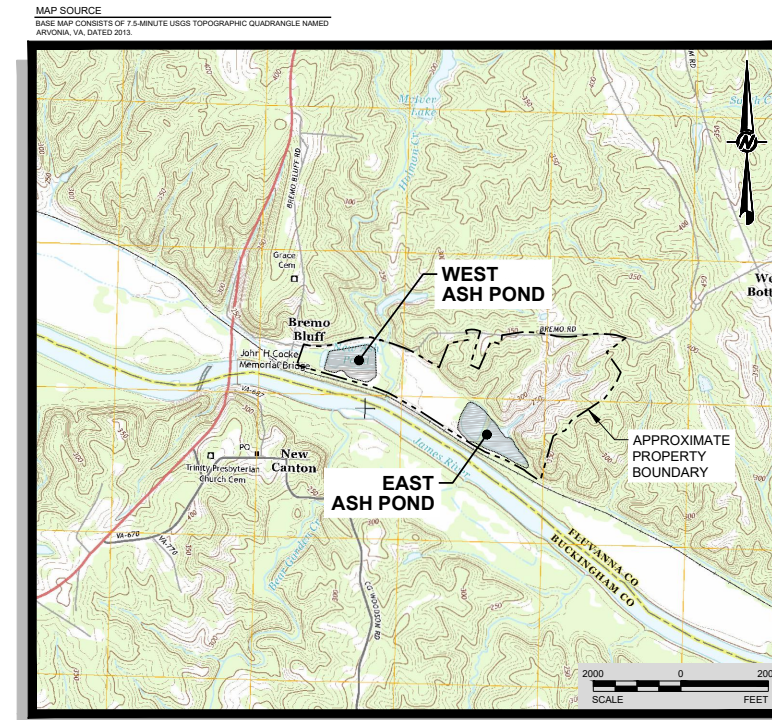
FLUVANNA COUNTY, VIRGINIA

SEPTEMBER 2018



VICINITY MAP

DRAWING No.	DRAWING TITLE
CBR-1	COVER SHEET
CBR-2	WEST ASH POND PRE-CLOSURE TOPOGRAPHY (APPROXIMATE BOTTOM OF POND)
CBR-3	WEST ASH POND CLOSURE BY REMOVAL PLAN
CBR-4	WEST ASH POND CONCEPTUAL FINAL GRADING PLAN
CBR-5	WEST ASH POND CROSS-SECTIONS
CBR-6	EAST ASH POND PRE-CLOSURE TOPOGRAPHY (APPROXIMATE BOTTOM OF POND)
CBR-7	EAST ASH POND CLOSURE BY REMOVAL PLAN
CBR-8	EAST ASH POND CONCEPTUAL FINAL GRADING PLAN
CBR-9	EAST ASH POND CROSS-SECTIONS



SITE LOCATION MAP

PREPARED BY:



GOLDER ASSOCIATES, INC.
MAIN CONTACT: RON DIFRANCESCO, P.E.
2108 W. LABURNUM AVE., SUITE 200
RICHMOND, VIRGINIA 23227
PHONE: (804) 358-7900
EMAIL: RON_DIFRANCESCO@GOLDER.COM

PREPARED FOR:



DOMINION ENERGY
MAIN CONTACT: MIKE GLAGOLA
5000 DOMINION BOULEVARD
GLEN ALLEN, VIRGINIA 23060
PHONE: (804) 273-4547
EMAIL: MICHAEL.A.GLAGOLA@DOMINIONENERGY.COM



CLIENT
DOMINION ENERGY
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

CONSULTANT
GOLDER

GOLDER ASSOCIATES, INC.
2108 WEST LABURNUM AVENUE
SUITE 200
RICHMOND, VA 23227
(804) 358-7900
www.golder.com

PROJECT
CLOSURE BY REMOVAL PLAN
WEST ASH POND & EAST ASH POND
SOLID WASTE PERMIT No. 618

TITLE
COVER SHEET

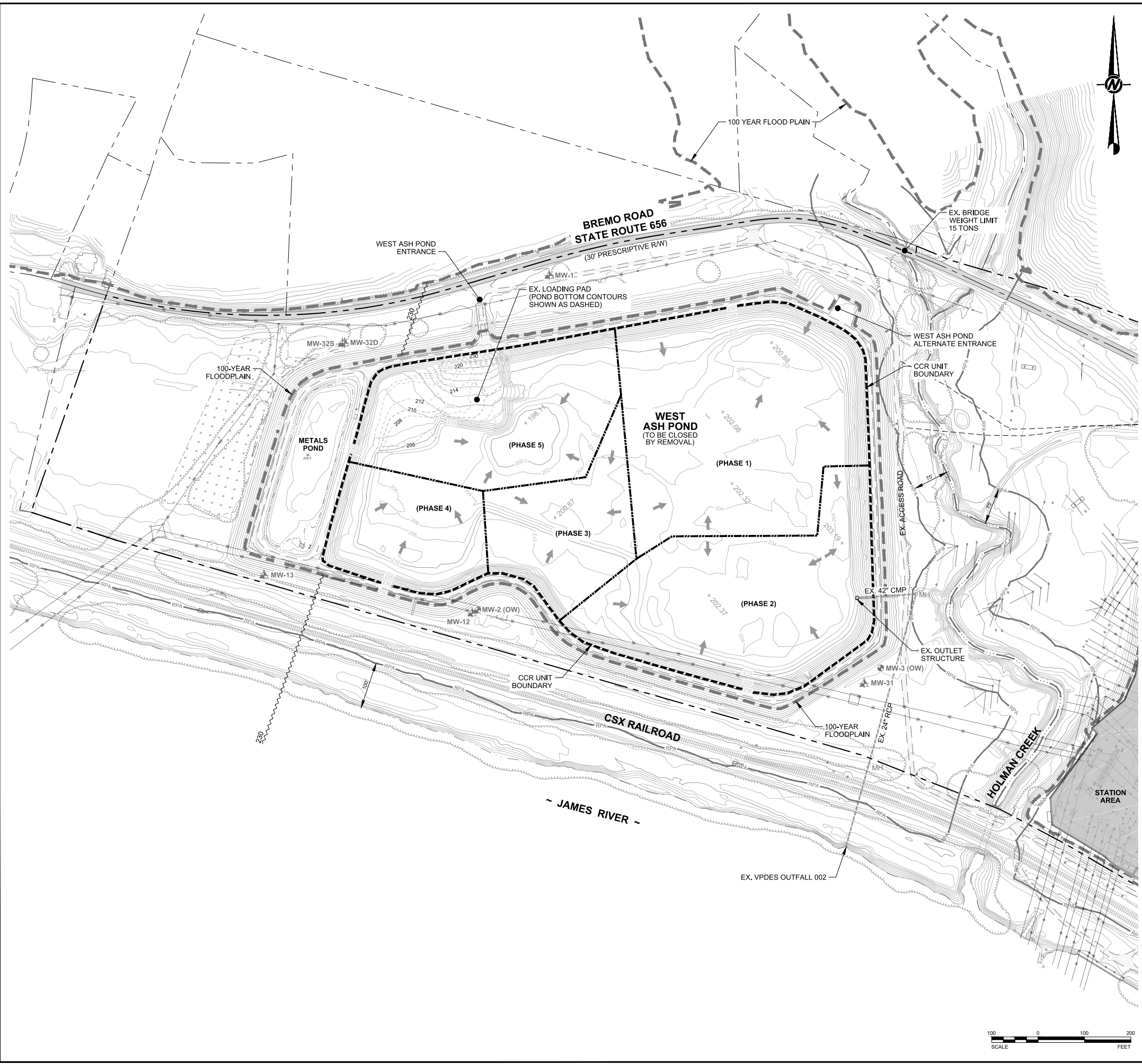
PROJECT NO.
15-20347

REV.	MM/DD/YY	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW
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0	05/07/18	ISSUED FOR PERMIT	JRD	BPG	DPM	JRD

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ARCH D.

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LEGEND

- DOMINION PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- CCR UNIT BOUNDARY
- 300 --- EXISTING TOPOGRAPHIC CONTOURS (2' INTERVALS)
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING RAILROAD
- WETLANDS
- CREEK/STREAM CENTERLINE
- RPA LIMITS OF RIPARIAN PROTECTION AREA (PER FLUVANNA COUNTY ORDINANCE)
- APPROXIMATE EDGE OF SURFACE WATER
- LIMITS OF 100-YR FLOOD PLAIN
- 230 --- BASE FLOOD ELEVATION (100-YEAR, SEE NOTE 4)
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING OVERHEAD UTILITY LINE
- MW-1 --- EXISTING MONITORING WELL LOCATION AND IDENTIFICATION (CCR RULE)
- MW-2 (OW) --- EXISTING OBSERVATION WELL LOCATION AND IDENTIFICATION
- MH --- EXISTING MANHOLE
- --- EXISTING SURFACE WATER FLOW DIRECTION

GENERAL NOTES

1. EXISTING CONDITIONS COMPILED FROM:
 - a. AERIAL TOPOGRAPHIC SURVEY PREPARED BY MCKENZIE SNYDER, INC., DATE OF AERIAL PHOTO: 1/16/15 [CONTROL PREPARED BY H&B SURVEYING & MAPPING (H&B)]
 - b. BOUNDARY SURVEY PREPARED BY H&B SURVEYING AND MAPPING, LLC DATED 04/27/15.
 - c. EXISTING TOPOGRAPHY WITHIN THE LIMITS OF THE WEST ASH POND BASED ON FIELD SURVEY BY H&B SURVEYING AND MAPPING DATED 07/06/17. TOPO REPRESENTS THE BOTTOM OF POND.
2. SITE DATUM: NAD83 / NAVD88
3. WETLAND DELINEATION BY DOMINION ENVIRONMENTAL SERVICES ON 01/30/15 & 02/05/15 AND BY GOLDER ASSOCIATES ON 03/16/15 & 03/25/15. WATERS OF THE U.S. CONFIRMED BY THE USACE DURING JUNE 4, 2015 SITE VISIT.
4. 100 YEAR FLOOD PLAIN DELINEATION BASED ON FLOOD ELEVATION DATA REPRESENTED ON FEMA FLOOD INSURANCE RATE MAP (FIRM), MAP NUMBER 51065C0260C, EFFECTIVE DATE: 05/16/2008.
5. THE MAJORITY OF WATER AND ASH HAS BEEN REMOVED FROM THE WEST ASH POND, AND ONLY MANAGED CONTACT STORMWATER IS PRESENT.



CLIENT
DOMINION ENERGY
BREMO POWER STATION
 FLUVANNA COUNTY, VIRGINIA

CONSULTANT
GOLDER ASSOCIATES INC.
 2108 WEST LABURNUM AVENUE
 SUITE 200
 RICHMOND, VA 23227
 (804) 358-7900
 www.golder.com



PROJECT
CLOSURE BY REMOVAL PLAN
WEST ASH POND & EAST ASH POND
SOLID WASTE PERMIT No. 618

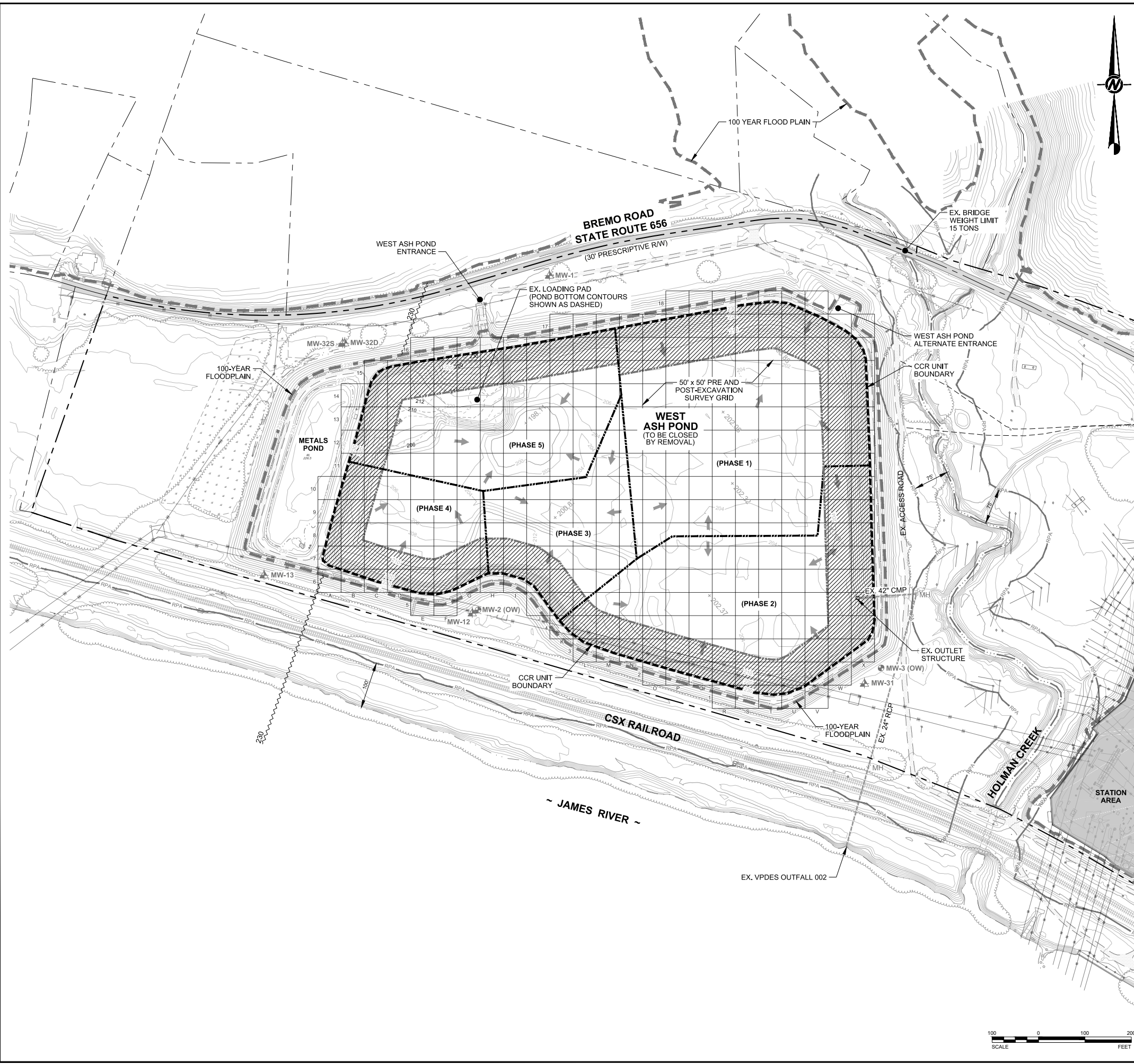
TITLE
WEST ASH POND
PRE-CLOSURE TOPOGRAPHY
(APPROXIMATE BOTTOM OF POND)

PROJECT NO.
 15-20347

REV. 1 2 of 9 DRAWING CBR-2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ARCH D

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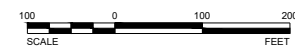


LEGEND

	DOMINION PROPERTY BOUNDARY
	ADJACENT PROPERTY BOUNDARY
	CCR UNIT BOUNDARY
	EXISTING TOPOGRAPHIC CONTOURS (2' INTERVALS)
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EXISTING RAILROAD
	WETLANDS
	CREEK/STREAM CENTERLINE
	LIMITS OF RIPARIAN PROTECTION AREA (PER FLUVANNA COUNTY ORDINANCE)
	APPROXIMATE EDGE OF SURFACE WATER
	LIMITS OF 100-YR FLOOD PLAIN
	BASE FLOOD ELEVATION (100-YEAR, SEE NOTE 4)
	EXISTING TREE LINE
	EXISTING FENCE
	EXISTING OVERHEAD UTILITY LINE
	EXISTING MONITORING WELL LOCATION AND IDENTIFICATION (CCR RULE)
	EXISTING OBSERVATION WELL LOCATION AND IDENTIFICATION
	EXISTING MANHOLE
	EXISTING SURFACE WATER FLOW DIRECTION
	APPROXIMATE CLEAN CLOSURE PHASE LIMITS (SUBJECT TO CHANGE BASED ON FIELD CONDITIONS DURING EXCAVATION AND MAY INCLUDE SUB-PHASES)
	DENOTES APPROXIMATE LIMITS OF CRITICAL AREAS SUBJECT TO BACKFILL FOR ACCESS AND SLOPE STABILITY

- ### GENERAL NOTES
- EXISTING CONDITIONS COMPILED FROM:
 - AERIAL TOPOGRAPHIC SURVEY PREPARED BY MCKENZIE SNYDER, INC., DATE OF AERIAL PHOTO: 1/16/15 [CONTROL PREPARED BY H&B SURVEYING & MAPPING (H&B)]
 - BOUNDARY SURVEY PREPARED BY H&B SURVEYING AND MAPPING, LLC DATED 04/27/15.
 - EXISTING TOPOGRAPHY WITHIN THE LIMITS OF THE WEST ASH POND BASED ON FIELD SURVEY BY H&B SURVEYING AND MAPPING DATED 07/06/17. TOPO REPRESENTS THE BOTTOM OF POND.
 - SITE DATUM: NAD83 / NAVD88
 - WETLAND DELINEATION BY DOMINION ENVIRONMENTAL SERVICES ON 01/30/15 & 02/05/15 AND BY GOLDER ASSOCIATES ON 03/16/15 & 03/25/15. WATERS OF THE U.S. CONFIRMED BY THE USACE DURING JUNE 4, 2015 SITE VISIT.
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- ### CLOSURE BY REMOVAL NOTES
- TOPOGRAPHY SHOWN WITHIN LIMITS OF THE WEST ASH POND, REPRESENTS THE POND BOTTOM BASED ON FIELD SURVEY BY H&B SURVEYING AND MAPPING DATED 07/06/17.
 - PHASED CLOSURE OF THE WEST POND MAY BE SEQUENCED AS NECESSARY TO ADDRESS ISSUES RELATED TO ACCESS AND SLOPE STABILITY, AND TO MINIMIZE CONTACT STORMWATER AREAS. SUB-PHASES MAY BE REQUIRED FOR REGULATORY APPROVAL.
 - ANY AREA CERTIFIED AS ACHIEVING CLOSURE BY REMOVAL IS TO BE PROTECTED FROM CCR AND CONTACT STORMWATER, AND MAY BE FILLED AND/OR RESHAPED AS NEEDED PRIOR TO ACHIEVING FINAL GRADES.
 - ACCUMULATED CCR SHALL BE REMOVED FROM SURFACES WITHIN THE POND LIMITS SUCH THAT NO CCR REMAINS VISIBLE.
 - FOLLOWING VISUAL-CLEAN CONDITIONS, OVER-EXCAVATE THE REMOVAL FOOTPRINT BY AT LEAST SIX INCHES.
 - VISUAL INSPECTION AND TARGETED SUBGRADE VISUAL SAMPLING TO BE OVERSEEN BY OWNER'S ENGINEER REPRESENTATIVE. SAMPLING TO BE PERFORMED AT A FREQUENCY OF AT LEAST ONE TEST PER ACRE. TARGETED SAMPLING TO CONSIST OF HAND-DUG HOLES AT LEAST SIX INCHES DEEP.
 - EXCAVATION OF SLOPES STEEPER THAN 2:1 SHALL BE SEQUENCED SUCH THAT THE SLOPES CAN BE EXCAVATED, INSPECTED, AND BACKFILLED IN THE SHORTEST TIME POSSIBLE. BACKFILL SLOPES WITH CLEAN SOIL FILL AT NO STEEPER THAN 2:1.
 - EXCAVATED CCR AND SOIL-CCR MIXTURES SHALL BE CONSOLIDATED IN NORTH ASH POND OR TAKEN TO AN OFF-SITE DISPOSAL FACILITY AS DIRECTED BY DOMINION.

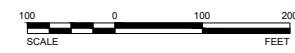
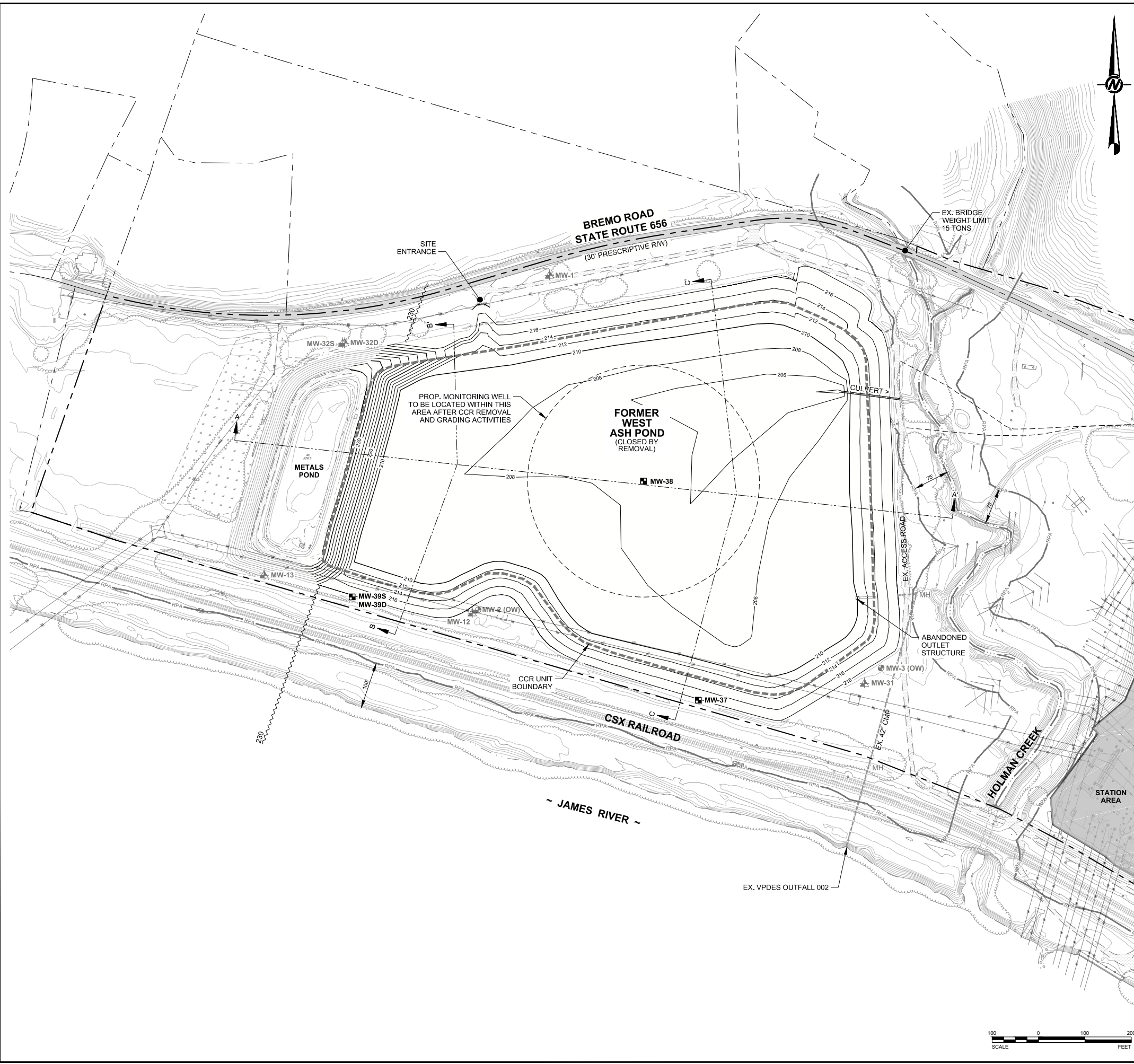


<p>CLIENT DOMINION ENERGY BREMO POWER STATION FLUVANNA COUNTY, VIRGINIA</p> <p>CONSULTANT GOLDER</p>	<p>GOLDER ASSOCIATES INC. 2108 WEST LABURNUM AVENUE SUITE 200 RICHMOND, VA 23227 (804)358-7900 www.golder.com</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">REV.</td> <td style="width: 10%;">3 of 9</td> <td style="width: 10%;">DRAWING</td> <td style="width: 10%;">JRD</td> <td style="width: 10%;">DPM</td> <td style="width: 10%;">BPG</td> <td style="width: 10%;">JRD</td> <td style="width: 10%;">DPM</td> <td style="width: 10%;">JRD</td> <td style="width: 10%;">CHECK</td> <td style="width: 10%;">REVIEW</td> </tr> <tr> <td>1</td> <td>09/14/18</td> <td>RESPONSE TO DEQ TR COMMENTS</td> <td>JRD</td> <td>BPG</td> <td>JRD</td> <td>BPG</td> <td>JRD</td> <td>DPM</td> <td>CADD</td> <td>DESIGN</td> </tr> <tr> <td>0</td> <td>05/07/18</td> <td>ISSUED FOR PERMIT</td> <td>JRD</td> <td>BPG</td> <td>JRD</td> <td>BPG</td> <td>JRD</td> <td>DPM</td> <td>CADD</td> <td>DESIGN</td> </tr> <tr> <td></td> <td></td> <td></td> <td>JRD</td> <td>BPG</td> <td>JRD</td> <td>BPG</td> <td>JRD</td> <td>DPM</td> <td>CADD</td> <td>DESIGN</td> </tr> </table>	REV.	3 of 9	DRAWING	JRD	DPM	BPG	JRD	DPM	JRD	CHECK	REVIEW	1	09/14/18	RESPONSE TO DEQ TR COMMENTS	JRD	BPG	JRD	BPG	JRD	DPM	CADD	DESIGN	0	05/07/18	ISSUED FOR PERMIT	JRD	BPG	JRD	BPG	JRD	DPM	CADD	DESIGN				JRD	BPG	JRD	BPG	JRD	DPM	CADD	DESIGN
REV.	3 of 9	DRAWING	JRD	DPM	BPG	JRD	DPM	JRD	CHECK	REVIEW																																				
1	09/14/18	RESPONSE TO DEQ TR COMMENTS	JRD	BPG	JRD	BPG	JRD	DPM	CADD	DESIGN																																				
0	05/07/18	ISSUED FOR PERMIT	JRD	BPG	JRD	BPG	JRD	DPM	CADD	DESIGN																																				
			JRD	BPG	JRD	BPG	JRD	DPM	CADD	DESIGN																																				
<p>PROJECT CLOSURE BY REMOVAL PLAN WEST ASH POND & EAST ASH POND SOLID WASTE PERMIT NO. 618</p>	<p>TITLE WEST ASH POND CLOSURE BY REMOVAL PLAN</p>	<p>PROJECT NO. 15-20347</p>																																												



IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN ADJUSTED FROM ARCH D

Path: C:\Plan Production Data\Drawings Data\15-20347\CAV1 - EAP and WAP Closure by Removal\Active Drawings\1520347CA_10405.dwg



LEGEND

- DOMINION PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- CCR UNIT BOUNDARY
- 300 --- EXISTING TOPOGRAPHIC CONTOURS (2' INTERVALS)
(FROM AERIAL SURVEY - SEE GENERAL NOTE 1a)
- 210 --- CONCEPTUAL FINAL GRADE CONTOURS
(2' INTERVALS)
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING RAILROAD
- WETLANDS
- CREEK/STREAM CENTERLINE
- RPA LIMITS OF RIPARIAN PROTECTION AREA
(PER FLUVANNA COUNTY ORDINANCE)
- APPROXIMATE EDGE OF SURFACE WATER
- 230 --- BASE FLOOD ELEVATION (100-YEAR, SEE NOTE 4)
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING OVERHEAD UTILITY LINE
- ▲ MW-1 EXISTING MONITORING WELL LOCATION AND
IDENTIFICATION (CCR RULE)
- MW-2 (OW) EXISTING OBSERVATION WELL LOCATION AND
IDENTIFICATION
- MW-38 PROPOSED MONITORING WELL LOCATION AND
IDENTIFICATION
- MH EXISTING MANHOLE

GENERAL NOTES

1. EXISTING CONDITIONS COMPILED FROM:
 - a. AERIAL TOPOGRAPHIC SURVEY PREPARED BY MCKENZIE SNYDER, INC., DATE OF AERIAL PHOTO: 1/16/15 [CONTROL PREPARED BY H&B SURVEYING & MAPPING (H&B)]
 - b. BOUNDARY SURVEY PREPARED BY H&B SURVEYING AND MAPPING, LLC DATED 04/27/15.
2. SITE DATUM: NAD83 / NAVD88
3. WETLAND DELINEATION BY DOMINION ENVIRONMENTAL SERVICES ON 01/30/15 & 02/05/15 AND BY GOLDER ASSOCIATES ON 03/16/15 & 03/25/15. WATERS OF THE U.S. CONFIRMED BY THE USACE DURING JUNE 4, 2015 SITE VISIT.
4. 100 YEAR FLOOD PLAIN DELINEATION BASED ON FLOOD ELEVATION DATA REPRESENTED ON FEMA FLOOD INSURANCE RATE MAP (FIRM), MAP NUMBER 51065C0260C, EFFECTIVE DATE: 05/16/2008.

CONCEPTUAL FINAL GRADING NOTE

1. CONCEPTUAL FINAL GRADING IS SHOWN FOR REFERENCE ONLY AND IS SUBJECT TO CHANGE.

REV.	MM/DD/YY	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW
1	09/14/18	RESPONSE TO DEQ TR COMMENTS	JRD	BPG	DPM	JRD
0	05/07/18	ISSUED FOR PERMIT	JRD	BPG	DPM	JRD



CLIENT
DOMINION ENERGY
BREMO POWER STATION
 FLUVANNA COUNTY, VIRGINIA

CONSULTANT
GOLDER ASSOCIATES INC.
 2108 WEST LABURNUM AVENUE
 SUITE 200
 RICHMOND, VA 23227
 (804) 358-7900
 www.golder.com

PROJECT
CLOSURE BY REMOVAL PLAN
WEST ASH POND & EAST ASH POND
SOLID WASTE PERMIT NO. 618

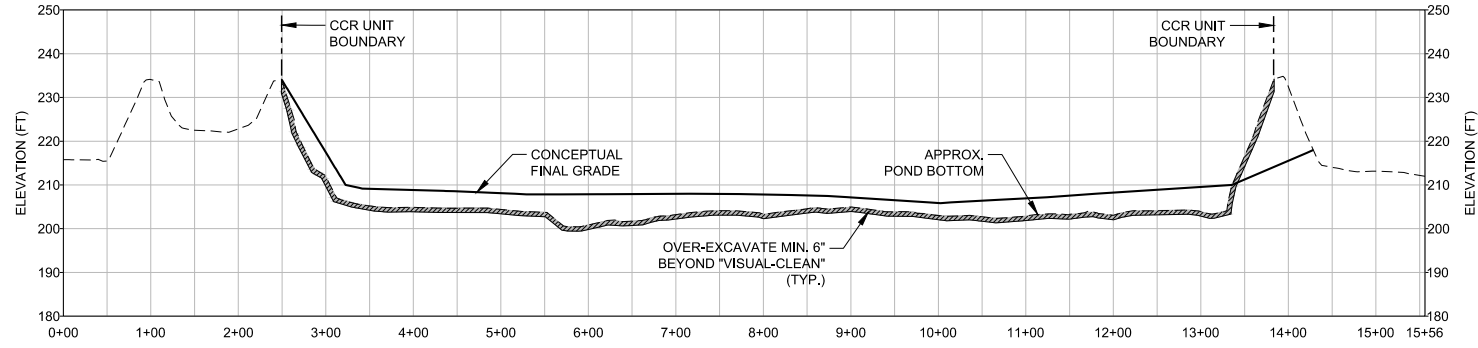
TITLE
WEST ASH POND
CONCEPTUAL FINAL GRADING PLAN

PROJECT NO.
15-20347

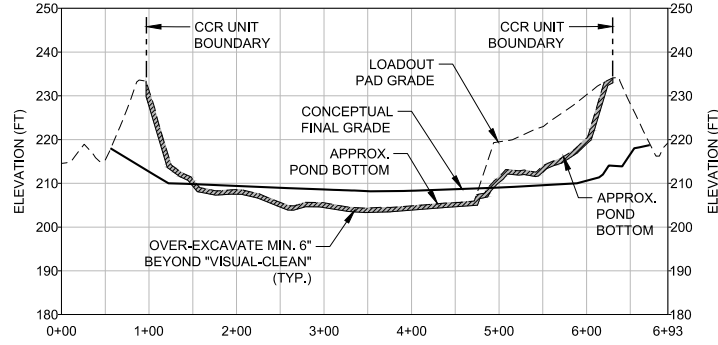
REV. 1 4 of 9 DRAWING **CBR-4**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ARCH D

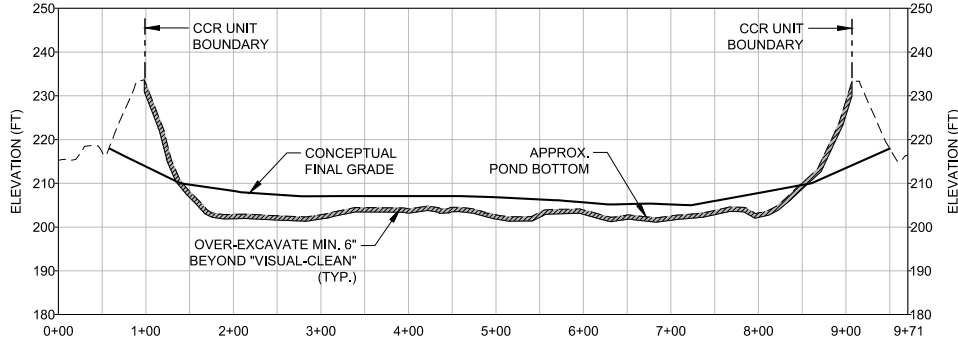
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SECTION A - A'



SECTION B - B'



SECTION C - C'



PROJECT
CLOSURE BY REMOVAL PLAN
WEST ASH POND & EAST ASH POND
SOLID WASTE PERMIT No. 618

TITLE
WEST ASH POND
CROSS-SECTIONS

PROJECT NO.
15-20347

CLIENT
DOMINION ENERGY
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

CONSULTANT
GOLDER ASSOCIATES INC.
2108 WEST LABURNUM AVENUE
SUITE 200
RICHMOND, VA 23227
(804)358-7900
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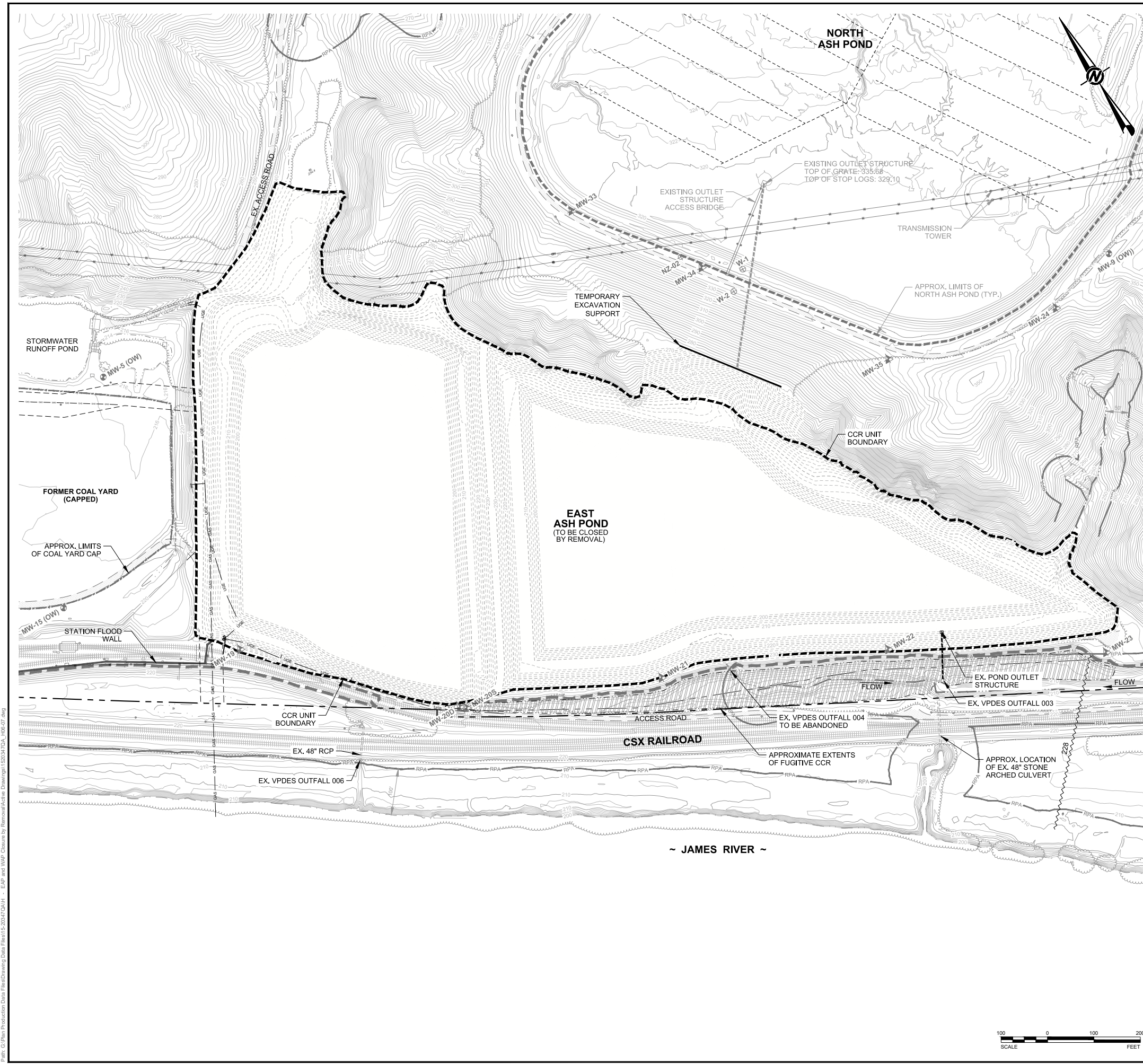
SEAL

1	09/14/18	RESPONSE TO DEQ TR COMMENTS	JRD	BPG	DPM	JRD
0	05/07/18	ISSUED FOR PERMIT	JRD	BPG	DPM	JRD

REV. MIMDDIYY DESCRIPTION

DESIGN CHECK REVIEW

1" IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ARCH/D

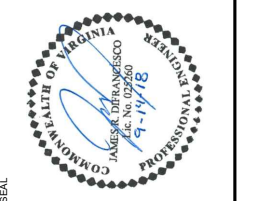


LEGEND

	DOMINION PROPERTY BOUNDARY
	ADJACENT PROPERTY BOUNDARY
	CCR UNIT BOUNDARY
	EXISTING TOPOGRAPHIC CONTOURS (2' INTERVALS) (FROM AERIAL SURVEY - SEE GENERAL NOTE 1a)
	APPROX. POND BOTTOM CONTOURS (2' INTERVALS) (SEE GENERAL NOTE 1c)
	EXISTING UNPAVED ROAD
	EXISTING RAILROAD
	WETLANDS
	CREEK/STREAM CENTERLINE
	LIMITS OF RIPARIAN PROTECTION AREA (PER FLUVANNA COUNTY ORDINANCE)
	APPROXIMATE EDGE OF SURFACE WATER
	LIMITS OF 100-YR FLOOD PLAIN
	BASE FLOOD ELEVATION (100-YEAR, SEE NOTE 4)
	EXISTING TREE LINE
	EXISTING FENCE
	EXISTING OVERHEAD UTILITY LINE
	EXISTING UNDERGROUND ELECTRIC LINE
	EXISTING UNDERGROUND GAS LINE
	EXISTING MONITORING WELL LOCATION AND IDENTIFICATION (CCR RULE)
	EXISTING OBSERVATION WELL LOCATION AND IDENTIFICATION
	EXISTING PIEZOMETER AND IDENTIFICATION
	EXISTING MANHOLE

- ### GENERAL NOTES
- EXISTING CONDITIONS COMPILED FROM:
 - AERIAL TOPOGRAPHIC SURVEY PREPARED BY MCKENZIE SNYDER, INC., DATE OF AERIAL PHOTO: 1/16/15 [CONTROL PREPARED BY H&B SURVEYING & MAPPING (H&B)]
 - BOUNDARY SURVEY PREPARED BY H&B SURVEYING AND MAPPING, LLC DATED 04/27/15.
 - TOPOGRAPHY WITHIN THE LIMITS OF THE EAST ASH POND BASED ON THE APPROXIMATE POND BOTTOM PER HISTORICAL INFORMATION.
 - SITE DATUM: NAD83 / NAVD88
 - WETLAND DELINEATION BY DOMINION ENVIRONMENTAL SERVICES ON 01/30/15 & 02/05/15 AND BY GOLDER ASSOCIATES ON 03/16/15 & 03/25/15. WATERS OF THE U.S. CONFIRMED BY THE USACE DURING JUNE 4, 2015 SITE VISIT.
 - 100 YEAR FLOOD PLAIN DELINEATION BASED ON FLOOD ELEVATION DATA REPRESENTED ON FEMA FLOOD INSURANCE RATE MAP (FIRM), MAP NUMBER 51065C0260C, EFFECTIVE DATE: 05/16/2008.
 - THE MAJORITY OF WATER AND ASH HAS BEEN REMOVED FROM THE EAST ASH POND, AND ASH REMOVAL ACTIVITIES ARE ONGOING.

REV.	MM/DD/YY	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW
1	09/14/18	RESPONSE TO DEQ TR COMMENTS	JRD	BPG	DPM	JRD
0	05/07/18	ISSUED FOR PERMIT	JRD	BPG	DPM	JRD



CLIENT
DOMINION ENERGY
BREMO POWER STATION
 FLUVANNA COUNTY, VIRGINIA

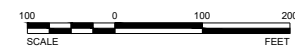
CONSULTANT
GOLDER ASSOCIATES INC.
 2108 WEST LABURNUM AVENUE
 SUITE 200
 RICHMOND, VA 23227
 (804) 358-7900
 www.golder.com

PROJECT
CLOSURE BY REMOVAL PLAN
WEST ASH POND & EAST ASH POND
SOLID WASTE PERMIT NO. 618

TITLE
EAST ASH POND
PRE-CLOSURE TOPOGRAPHY
(APPROXIMATE BOTTOM OF POND)

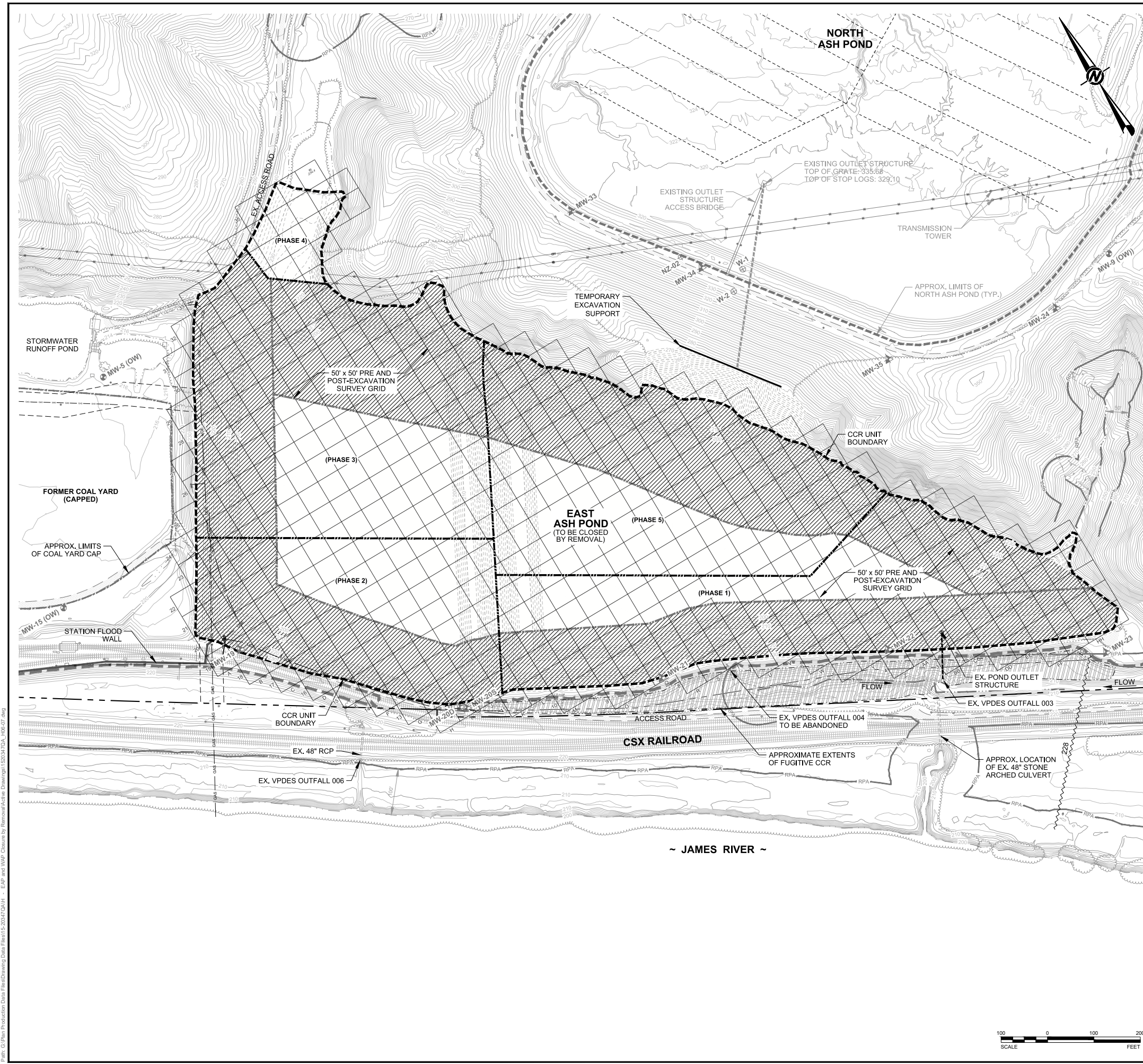
PROJECT NO.
 15-20347

REV. 1 6 of 9 DRAWING **CBR-6**



Path: G:\Plan Production Data\Drawings Data\Files\15-20347\CAH1 - EAP and WAP Closure by Removal\Active Drawings\1520347DIA_106-07.dwg

1 in. = 100 feet. IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN ADJUSTED FROM ARCH D.



LEGEND

	DOMINION PROPERTY BOUNDARY
	ADJACENT PROPERTY BOUNDARY
	CCR UNIT BOUNDARY
	EXISTING TOPOGRAPHIC CONTOURS (2' INTERVALS) (FROM AERIAL SURVEY - SEE GENERAL NOTE 1a)
	APPROX. POND BOTTOM CONTOURS (2' INTERVALS) (SEE GENERAL NOTE 1c)
	EXISTING UNPAVED ROAD
	EXISTING RAILROAD
	WETLANDS
	CREEK/STREAM CENTERLINE
	LIMITS OF RIPARIAN PROTECTION AREA (PER FLUVANNA COUNTY ORDINANCE)
	APPROXIMATE EDGE OF SURFACE WATER
	LIMITS OF 100-YR FLOOD PLAIN
	BASE FLOOD ELEVATION (100-YEAR, SEE NOTE 4)
	EXISTING TREE LINE
	EXISTING FENCE
	EXISTING OVERHEAD UTILITY LINE
	EXISTING UNDERGROUND ELECTRIC LINE
	EXISTING UNDERGROUND GAS LINE
	EXISTING MONITORING WELL LOCATION AND IDENTIFICATION (CCR RULE)
	EXISTING OBSERVATION WELL LOCATION AND IDENTIFICATION
	EXISTING PIEZOMETER AND IDENTIFICATION
	EXISTING MANHOLE
	APPROXIMATE CLEAN CLOSURE PHASE LIMITS (SUBJECT TO CHANGE BASED ON FIELD CONDITIONS DURING EXCAVATION AND MAY INCLUDE SUB-PHASES)
	DENOTES APPROXIMATE LIMITS OF CRITICAL AREAS SUBJECT TO BACKFILL FOR ACCESS AND SLOPE STABILITY

- ### GENERAL NOTES
- EXISTING CONDITIONS COMPILED FROM:
 - AERIAL TOPOGRAPHIC SURVEY PREPARED BY MCKENZIE SNYDER, INC., DATE OF AERIAL PHOTO: 1/18/15 [CONTROL PREPARED BY H&B SURVEYING & MAPPING (H&B)]
 - BOUNDARY SURVEY PREPARED BY H&B SURVEYING AND MAPPING, LLC DATED 04/27/15.
 - TOPOGRAPHY WITHIN THE LIMITS OF THE EAST ASH POND BASED ON THE APPROXIMATE POND BOTTOM PER HISTORICAL INFORMATION.
 - SITE DATUM: NAD83 / NAVD88
 - WETLAND DELINEATION BY DOMINION ENVIRONMENTAL SERVICES ON 01/30/15 & 02/05/15 AND BY GOLDER ASSOCIATES ON 03/16/15 & 03/25/15. WATERS OF THE U.S. CONFIRMED BY THE USACE DURING JUNE 4, 2015 SITE VISIT.
 - 100 YEAR FLOOD PLAIN DELINEATION BASED ON FLOOD ELEVATION DATA REPRESENTED ON FEMA FLOOD INSURANCE RATE MAP (FIRM), MAP NUMBER 51065C0260C, EFFECTIVE DATE: 05/16/2008.

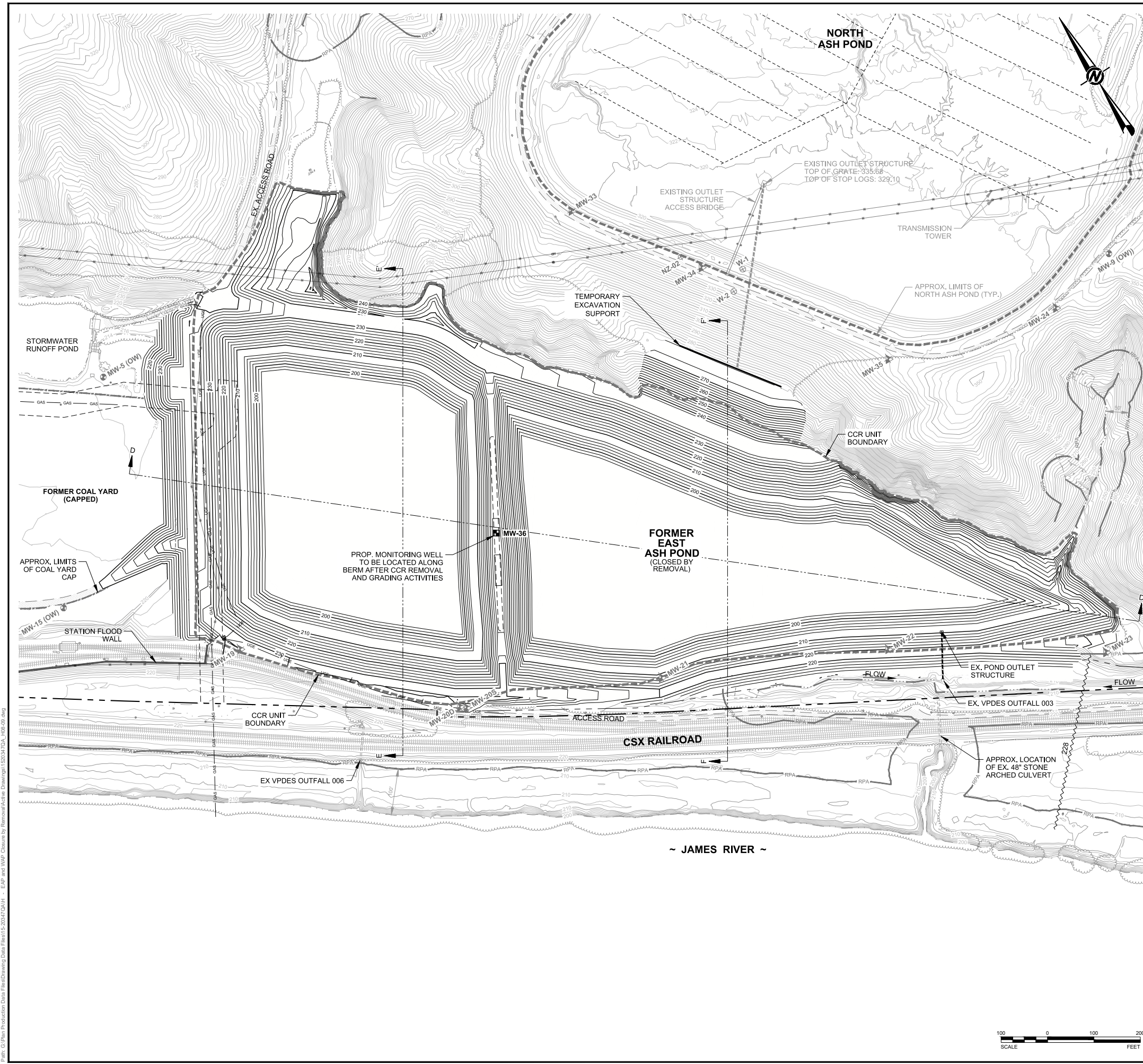
- ### CLOSURE BY REMOVAL NOTES
- TOPOGRAPHY SHOWN WITHIN LIMITS OF THE EAST ASH POND REPRESENTS THE APPROXIMATE BOTTOM BASED ON HISTORIC DRAWINGS AND FIELD INFORMATION. FOR REFERENCE ONLY.
 - PHASED CLOSURE OF EAST ASH POND MAY BE SEQUENCED AS NECESSARY TO SUPPORT CONSTRUCTION AND MAY INCLUDE SUB-PHASES FOR REGULATORY APPROVAL TO SUPPORT ACCESS, SLOPE STABILITY, AND MINIMIZE CONTACT STORMWATER AREAS.
 - ANY AREA CERTIFIED AS ACHIEVING CLOSURE BY REMOVAL IS TO BE PROTECTED FROM CCR AND CONTACT STORMWATER, AND MAY BE FILLED AND/OR RESHAPED PRIOR TO ACHIEVING FINAL GRADES.
 - ACCUMULATED CCR SHALL BE REMOVED FROM SURFACES WITHIN THE POND LIMITS SUCH THAT NO CCR REMAINS VISIBLE.
 - FOLLOWING VISUAL-CLEAN CONDITIONS, OVER-EXCAVATE THE REMOVAL FOOTPRINT BY AT LEAST SIX INCHES.
 - VISUAL INSPECTION AND TARGETED SUBGRADE VISUAL SAMPLING TO BE PERFORMED AT A FREQUENCY OF AT LEAST ONE TEST PER ACRE. TARGETED SAMPLING TO CONSIST OF HAND-DUG HOLES AT LEAST SIX INCHES DEEP.
 - EXCAVATION OF SLOPES STEEPER THAN 2:1 SHALL BE SEQUENCED SUCH THAT THE SLOPES CAN BE EXCAVATED, INSPECTED, AND BACKFILLED IN THE SHORTEST TIME POSSIBLE. BACKFILL SLOPES WITH CLEAN SOIL FILL AT NO STEEPER THAN 2:1.
 - EXCAVATED CCR AND SOIL-CCR MIXTURES SHALL BE CONSOLIDATED IN NORTH ASH POND OR TAKEN TO AN OFF-SITE DISPOSAL FACILITY AS DIRECTED BY DOMINION.

CLIENT	DOMINION ENERGY
PROJECT	CLOSURE BY REMOVAL PLAN WEST ASH POND & EAST ASH POND SOLID WASTE PERMIT NO. 618
TITLE	EAST ASH POND CLOSURE BY REMOVAL PLAN
PROJECT NO.	15-20347
REV.	1
DATE	09/14/18
DESCRIPTION	RESPONSE TO DEQ TR COMMENTS
REV.	0
DATE	05/07/18
DESCRIPTION	ISSUED FOR PERMIT
REV.	MMDDYY
DESCRIPTION	DESIGN CADD CHECK REVIEW

GOLDER ASSOCIATES INC.
2108 WEST LABURNUM AVENUE
SUITE 200
RICHMOND, VA 23227
(804) 358-7900
www.golder.com

GOLDER

Path: G:\Plan Production Data Files\15-20347\CAV1 - EAP and WAP Closure by Removal\Acad Drawing\150347DIA_106-07.dwg
 1:1 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN ADJUSTED FROM ARCHD



LEGEND

	DOMINION PROPERTY BOUNDARY
	ADJACENT PROPERTY BOUNDARY
	CCR UNIT BOUNDARY
	EXISTING TOPOGRAPHIC CONTOURS (2' INTERVALS) (FROM AERIAL SURVEY - SEE GENERAL NOTE 1a)
	CONCEPTUAL FINAL GRADE CONTOURS (2' INTERVALS)
	EXISTING UNPAVED ROAD
	EXISTING RAILROAD
	WETLANDS
	CREEK/STREAM CENTERLINE
	LIMITS OF RIPARIAN PROTECTION AREA (PER FLUVANNA COUNTY ORDINANCE)
	APPROXIMATE EDGE OF SURFACE WATER
	BASE FLOOD ELEVATION (100-YEAR, SEE NOTE 4)
	EXISTING TREE LINE
	EXISTING FENCE
	EXISTING OVERHEAD UTILITY LINE
	EXISTING UNDERGROUND ELECTRIC LINE
	EXISTING UNDERGROUND GAS LINE
	EXISTING MONITORING WELL LOCATION AND IDENTIFICATION (CCR RULE)
	EXISTING OBSERVATION WELL LOCATION AND IDENTIFICATION
	PROPOSED MONITORING WELL LOCATION AND IDENTIFICATION
	EXISTING PIEZOMETER AND IDENTIFICATION
	EXISTING MANHOLE

- ### GENERAL NOTES
- EXISTING CONDITIONS COMPILED FROM:
 - AERIAL TOPOGRAPHIC SURVEY PREPARED BY MCKENZIE SNYDER, INC., DATE OF AERIAL PHOTO: 1/16/15 [CONTROL PREPARED BY H&B SURVEYING & MAPPING (H&B)]
 - BOUNDARY SURVEY PREPARED BY H&B SURVEYING AND MAPPING, LLC DATED 04/27/15.
 - SITE DATUM: NAD83 / NAVD88
 - WETLAND DELINEATION BY DOMINION ENVIRONMENTAL SERVICES ON 01/30/15 & 02/05/15 AND BY GOLDER ASSOCIATES ON 03/16/15 & 03/25/15. WATERS OF THE U.S. CONFIRMED BY THE USACE DURING JUNE 4, 2015 SITE VISIT.
 - 100 YEAR FLOOD PLAIN DELINEATION BASED ON FLOOD ELEVATION DATA REPRESENTED ON FEMA FLOOD INSURANCE RATE MAP (FIRM), MAP NUMBER 51065C0260C, EFFECTIVE DATE: 05/16/2008.

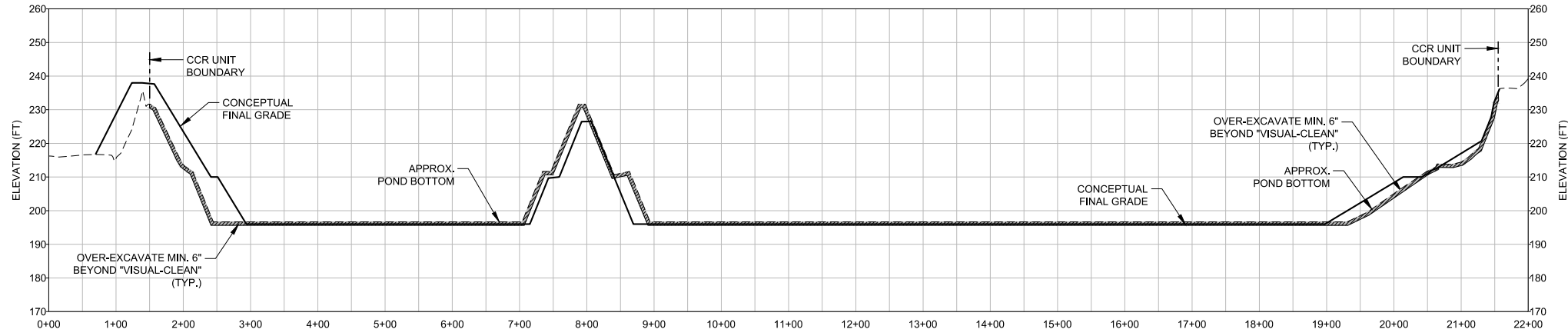
- ### CONCEPTUAL FINAL GRADING NOTE
- CONCEPTUAL FINAL GRADING IS SHOWN FOR REFERENCE ONLY AND IS SUBJECT TO CHANGE.

PROJECT	CLIENT	CONSULTANT	CONTRACT NO.	REV.
15-20347	DOMINION ENERGY BREMO POWER STATION FLUVANNA COUNTY, VIRGINIA	GOLDER ASSOCIATES INC. 2108 WEST LABURNUM AVENUE SUITE 200 RICHMOND, VA 23227 (804)358-7900 www.golder.com	15-20347	1
TITLE	PROJECT NO.	DRAWING	DATE	BY
EAST ASH POND CONCEPTUAL FINAL GRADING PLAN	15-20347	CBR-8	09/14/18	JRD
			05/07/18	JRD
				DPM
				DPM
				JRD
				JRD
				DESIGN
				CADD
				CHECK
				REVIEW

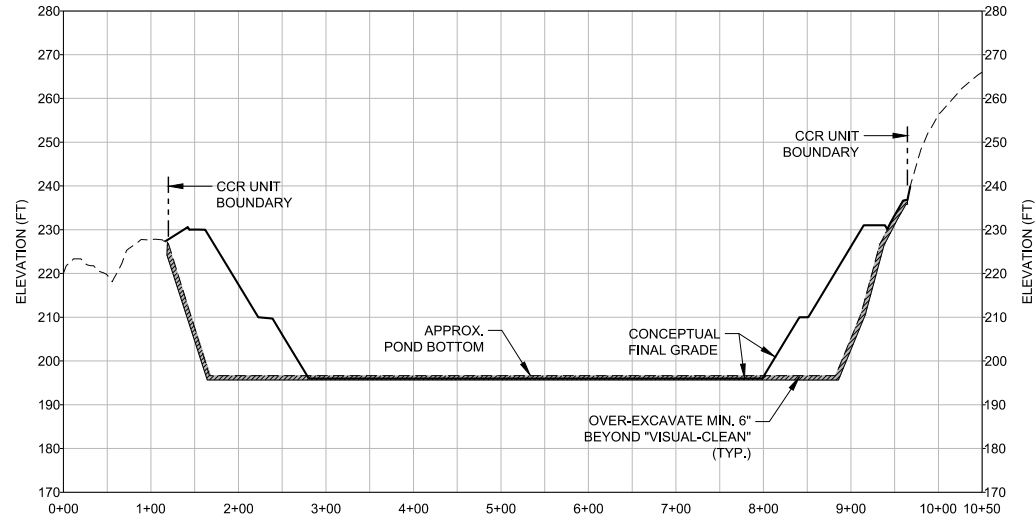


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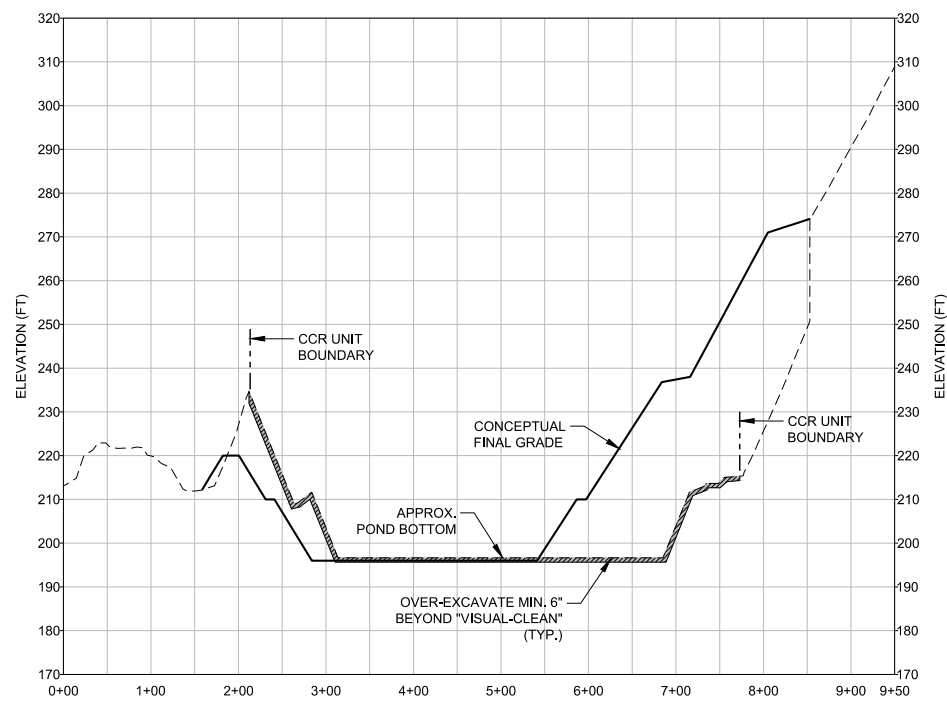
1" IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN ADJUSTED FROM ARCH D.



SECTION D - D'



SECTION E - E'



SECTION F - F'



REV.	MMDDYY	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW
1	09/14/18	RESPONSE TO DEQ TR COMMENTS	JRD	BPG	DPM	JRD
0	05/07/18	ISSUED FOR PERMIT	JRD	BPG	DPM	JRD



CLIENT
DOMINION ENERGY
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

CONSULTANT
GOLDER ASSOCIATES INC.
 2108 WEST LABURNUM AVENUE
 SUITE 200
 RICHMOND, VA 23227
 (804) 358-7900
 www.golder.com

PROJECT
CLOSURE BY REMOVAL PLAN
WEST ASH POND & EAST ASH POND
SOLID WASTE PERMIT No. 618

TITLE
EAST ASH POND
CROSS-SECTIONS

PROJECT NO.
15-20347

Path: G:\Plan Production Data\Drawings Data\Files\15-20347\CAV1 - EAP and WAP Closure by Removal\Active Drawings\1520347CA_1062.dwg

1 in. IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ARCH D

ATTACHMENT 2
COST ESTIMATE
(BY OTHERS)



Solid Waste Disposal Facility Cost Estimate Form

Facility Name:		Bremono Power Station CCR Impoundments				Permit No. SWP		618			
Address:		1038 Bremono Road									
City:		Bremono Bluff			State:		VA		Zip: 23022		
FA Holder:		Dominion Energy Virginia									
Estimate Prepared By:		Golder Associates Inc.									
Indicate the plan versions for which this cost estimate was prepared, identifying the following information for each plan:											
Closure Plan					Post-Closure Care Plan						
Title:		Surface Impoundment Closure Plan			Title:		n/a				
Plan Date:		September 2018	Approved:		June 2019		Plan Date:			Approved:	
Consultant:		Golder Associates Inc.			Consultant:						
Corrective Action Plan					Corrective Action Monitoring Plan						
Title:		n/a			Title:		n/a				
Plan Date:			Approved:			Plan Date:			Approved:		
Consultant:					Consultant:						
Cost Estimate Summary											
Total Closure Cost:		\$6,769,565									
Total Post-Closure Cost:		\$10,342,500									
Total Corrective Action Cost:		\$0									
TOTAL:		\$17,112,065									
References											
Please indicate references used to develop this cost estimate: Unit costs were developed from closure construction bid estimates for Dominion's CCR impoundment facilities, estimates of soil prices in the coastal Virginia area, and other landfill closure bid packages in the consultant's local area.											
Certification by Preparer:											
This is to certify that the cost estimates pertaining to the engineering features and monitoring requirements of this solid waste management facility have been prepared by me and are representative of the design specified in the facility's approved Closure, Post-Closure and Corrective Action Plans. The estimate is based on the cost of hiring a third party and does not incorporate any salvage value that may be realized by the sale of wastes, facility structures, or equipment, land or other facility assets at the time of partial or final closure. In my professional judgment, the cost estimates are a true, correct, and complete representation of the financial liabilities for closure, post-closure care, and corrective action of the facility and comply with the requirements of 9 VAC 20-70 and all other DEQ rules and statutes of the Commonwealth of Virginia.											
Name:		Ron DiFrancesco, P.E.			Signature:						
Title:		Principal and Practice Leader			Date:		7-31-19				
Acknowledgement by Owner/Operator :											
Name:		Robert W. Sauer			Signature:						
Title:		Vice President System Operations			Date:		8/2/19				

Bremo Power Station East Ash Pond Closure Estimate Worksheet

Excavation Components

		Calculation or Conversion	
I. Cover Removal			
a.	Quantity of cover removal	<input type="text" value="0"/> yd ³	
b.	Total cover removal unit cost	<input type="text" value="\$0.00"/> /yd ³	
	Total Cover Removal Cost		a x b \$0
II. Dewatering/Water Treatment/Testing Analysis			
a.	Duration of dewatering/treatment/testing	<input type="text" value="0"/> months	
b.	Total dewatering/treatment/testing unit cost	<input type="text" value="\$0.00"/> /month	
	Total Dewatering/Treatment/Testing Cost		a x b \$0
III. CCR Removal/Disposal			
a.	Quantity of CCR removal	<input type="text" value="0"/> yd ³	
b.	Total CCR removal unit cost	<input type="text" value="\$0.00"/> /yd ³	
c.	Total CCR off-site disposal unit cost	<input type="text" value="\$0.00"/> /ton	
	Total CCR Removal/Disposal Cost		a x (b + c) \$0
IV. Overexcavation Removal/Disposal			
a.	Quantity of overexcavation removal	<input type="text" value="0"/> yd ³	
b.	Total overexcavation removal unit cost	<input type="text" value="\$0.00"/> /yd ³	
c.	Total overexcavation off-site disposal unit cost	<input type="text" value="\$0.00"/> /ton	
	Total Overexcavation Cost		a x (b + (1.2c)) \$0
Excavation Component Subtotal (I + II + III + IV):			\$0

Stabilization Components

V. Slope & Fill			
a.	Quantity of soil needed	<input type="text" value="80,000"/> yd ³	
b.	Total soil unit cost	<input type="text" value="\$25.00"/> /yd ³	
	Total Slope Backfill Cost		a x b \$2,000,000
VI. Vegetative Cover			
a.	Area to be vegetated	<input type="text" value="27"/> acres	
b.	Vegetative cover unit cost	<input type="text" value="\$3,250"/> /acre	
	Total Vegetative Cover Cost		a x b \$87,750
VII. Erosion/Sediment Control			
a.	Duration of erosion/sediment control maintenance	<input type="text" value="6"/> months	
b.	Erosion/sediment control maintenance unit cost	<input type="text" value="\$5,000.00"/> /month	
	Total Silt Fence Removal and Disposal Cost		a x b \$30,000
Stabilization Component Subtotal (V + VI + VII):			\$2,117,750

Miscellaneous Components

VIII. Groundwater Monitoring Well Installation

a. Quantity of wells needed	1		
b. Well installation unit cost	\$50,000.00	/well	
Total Groundwater Monitoring Well Installation Cost			a x b \$50,000

IX. Site Security

Gate or Barrier

a. Number of gates required	1		
b. Gate unit cost	\$1,500.00	/gate	
c. <i>Subtotal gate cost</i>			a x b \$1,500

Closed Sign

d. Number of signs required	1		
e. Sign unit cost	\$1,250.00	/sign	
f. <i>Subtotal sign cost</i>			d x e \$1,250
Total site security cost			c + f \$2,750

X. Mobilization / Demobilization

a. Cost for mobilization/demobilization	\$265,000		
Total mobilization/demobilization cost			TCC x 0.10 \$265,000

Miscellaneous Component Subtotal (VIII + IX + X): **\$317,750**

Closure Cost Subtotal (CCS): (I + ... + X) **\$2,435,500**

Contingency (10%): CCS x 0.10 **\$243,550**

Engineering & Documentation:

Construction QA/QC	\$200,000
Construction Engineering/Surveying/Permitting	\$60,000
Total Engineering & Documentation Costs	\$260,000

Total Closure Cost (TCC): CCS + Contingency + Engineering **\$2,939,050**

Bremo Power Station East Ash Pond Post-Removal Estimate Worksheet

I. Groundwater Monitoring

		Calculation or Conversion	
a. Total number of monitoring wells	10 wells		
b. Total number of sampling events/year	2 events/yr	a x b	20 samples/yr
c. Quantity of additional samples (e.g. QA/QC)	2 samples/event	b x c	4 samples/yr
d. Total samples per year		b + c	24 samples/yr
e. Analysis unit cost (Table 3.1 constituents)	\$1,250.00/sample		
f. Total Analysis cost		d x e	\$30,000.00 /yr
g. GW Monitoring unit cost	\$6,500.00/event		
i. Total sampling cost		f + (g x b)	\$43,000.00 /yr
j. Engineering fees & reports	\$5,000/yr		
Yearly Groundwater Monitoring Cost		i + j	\$48,000 /yr

II. Area Maintenance & Repair

a. Closure Area 27 acres

Mowing & Fertilization

b. Mowing frequency	2 visits/yr		
c. Mowing unit cost	\$500.00/acre/visit		
d. Total mowing cost		a x b x c	\$27,000 /yr
e. Fertilizer frequency	1 visits/yr		
f. Fertilizer unit cost	\$1,000.00/acre/visit		
g. Total fertilizer cost		a x e x f	\$27,000 /yr

Erosion & Repair

h. Area to reseed/year		33% x a	9.0 acres
i. Reseeding unit cost	\$1,200.00/acre		
j. Total reseeding cost		h x i	\$10,800.00 /yr
k. Area of erosion/year		10% x a	2.7 acres
l. Erosion repair unit cost	\$2,500.00/acre		
m. Mobilization/Demobilization	\$500.00/yr		
n. Total cap erosion repair cost		(k x l) + m	\$7,250 /yr
Yearly Area Maintenance & Repair cost		d + g + j + n	\$72,050 /yr

III. BMP Maintenance & Repair

a. BMP cleanout frequency, 1 per	2 years	1 / a	0.50 event/yr
b. BMP cleanout unit cost	\$75,000/event		
c. Mobilization/Demobilization	\$2,500/event		
Yearly BMP Maintenance & Repair		a x (b + c)	\$38,750 /yr

IV. General Inspections

a. General Inspection unit cost	\$2,000/inspection		
b. Number of inspections per year	2		
Yearly General Inspection Cost		a x b	\$4,000 /yr

V. Surface Water Monitoring

		Calculation or Conversion	
a. Total number of monitoring locations	<input type="text" value="1"/> locations		
b. Total number of sampling events/year	<input type="text" value="4"/> events/yr	a x b	4 samples/yr
c. Quantity of additional samples (e.g. QA/QC)	<input type="text" value="0"/> samples/event	b x c	0 samples/yr
d. Total samples per year		b + c	4 samples/yr
e. Analysis unit cost	<input type="text" value="\$1,250.00"/> /sample		
f. <i>Total Analysis cost</i>		d x e	\$5,000.00 /yr
g. Surface Water Monitoring unit cost	<input type="text" value="\$2,500.00"/> /event		
i. <i>Total sampling cost</i>		f + (g x b)	\$15,000.00 /yr
j. Engineering fees & reports	<input type="text" value="\$5,450"/> /yr		
Yearly Surface Water Monitoring Cost		i + j	\$20,450 /yr

Annual Post-Removal Care Cost (APRCC)

I + ... + V \$183,250 /yr

Length of post-removal care (LPRC)

years

Post-Removal Care Cost

(APRCC x LPRC) \$5,497,500

Total Post-Removal Care Cost

\$5,497,500

Bremo Power Station West Ash Pond Closure Estimate Worksheet

Excavation Components

		Calculation or Conversion	
I. Cover Removal			
a.	Quantity of cover removal	<input type="text" value="0"/> yd ³	
b.	Total cover removal unit cost	<input type="text" value="\$0.00"/> /yd ³	
Total Cover Removal Cost		a x b	\$0
II. Dewatering/Water Treatment/Testing Analysis			
a.	Duration of dewatering/treatment/testing	<input type="text" value="1"/> months	
b.	Total dewatering/treatment/testing unit cost	<input type="text" value="\$2,000,000.00"/> /month	
Total Dewatering/Treatment/Testing Cost		a x b	\$2,000,000
III. CCR Removal/Disposal			
a.	Quantity of CCR removal	<input type="text" value="0"/> yd ³	
b.	Total CCR removal unit cost	<input type="text" value="\$0.00"/> /yd ³	
c.	Total CCR off-site disposal unit cost	<input type="text" value="\$0.00"/> /ton	
Total CCR Removal/Disposal Cost		a x (b + c)	\$0
IV. Overexcavation Removal/Disposal			
a.	Quantity of overexcavation removal	<input type="text" value="14,000"/> yd ³	
b.	Total overexcavation removal unit cost	<input type="text" value="\$20.00"/> /yd ³	
c.	Total overexcavation off-site disposal unit cost	<input type="text" value="\$100.00"/> /ton	
Total Overexcavation Cost		a x (b + (1.2c))	\$282,400
Excavation Component Subtotal (I + II + III + IV):			\$2,282,400

Stabilization Components

V. Slope & Fill			
a.	Quantity of soil earthworks	<input type="text" value="80,000"/> yd ³	
b.	Total soil earthworks unit cost	<input type="text" value="\$6.50"/> /yd ³	
Total Slope Backfill Cost		a x b	\$520,000
VI. Vegetative Cover			
a.	Area to be vegetated	<input type="text" value="18"/> acres	
b.	Vegetative cover unit cost	<input type="text" value="\$3,250"/> /acre	
Total Vegetative Cover Cost		a x b	\$58,500
VII. Erosion/Sediment Control			
a.	Duration of erosion/sediment control maintenance	<input type="text" value="6"/> months	
b.	Erosion/sediment control maintenance unit cost	<input type="text" value="\$5,000.00"/> /month	
Total Silt Fence Removal and Disposal Cost		a x b	\$30,000
Stabilization Component Subtotal (V + VI + VII):			\$608,500

Miscellaneous Components

VIII. Groundwater Monitoring Well Installation

a. Quantity of wells needed	1		
b. Well installation unit cost	\$50,000.00	/well	
Total Groundwater Monitoring Well Installation Cost		a x b	\$50,000

IX. Site Security

Gate or Barrier

a. Number of gates required	1		
b. Gate unit cost	\$1,500.00	/gate	
c. <i>Subtotal gate cost</i>		a x b	\$1,500

Closed Sign

d. Number of signs required	1		
e. Sign unit cost	\$1,250.00	/sign	
f. <i>Subtotal sign cost</i>		d x e	\$1,250
Total site security cost		c + f	\$2,750

X. Mobilization / Demobilization

a. Cost for mobilization/demobilization	\$345,000		
Total mobilization/demobilization cost		TCC x 0.10	\$345,000

Miscellaneous Component Subtotal (VIII + IX + X): \$397,750

Closure Cost Subtotal (CCS): (I + ... + X) \$3,288,650

Contingency (10%): CCS x 0.10 \$328,865

Engineering & Documentation:

Construction QA/QC	\$170,000
Construction Engineering/Surveying/Permitting	\$43,000
Total Engineering & Documentation Costs	\$213,000

Total Closure Cost (TCC): CCS + Contingency + Engineering **\$3,830,515**

Bremo Power Station West Ash Pond Post-Removal Estimate Worksheet

I. Groundwater Monitoring

		Calculation or Conversion	
a. Total number of monitoring wells	11 wells		
b. Total number of sampling events/year	2 events/yr	a x b	22 samples/yr
c. Quantity of additional samples (e.g. QA/QC)	2 samples/event	b x c	4 samples/yr
d. Total samples per year		b + c	26 samples/yr
e. Analysis unit cost (Table 3.1 constituents)	\$1,250.00/sample		
f. Total Analysis cost		d x e	\$32,500.00 /yr
g. GW Monitoring unit cost	\$7,250.00/event		
i. Total sampling cost		f + (g x b)	\$47,000.00 /yr
j. Engineering fees & reports	\$5,000/yr		
Yearly Groundwater Monitoring Cost		i + j	\$52,000 /yr

II. Area Maintenance & Repair

a. Closure Area 22 acres

Mowing & Fertilization

b. Mowing frequency	2 visits/yr		
c. Mowing unit cost	\$500.00/acre/visit		
d. Total mowing cost		a x b x c	\$22,000 /yr
e. Fertilizer frequency	1 visits/yr		
f. Fertilizer unit cost	\$1,000.00/acre/visit		
g. Total fertilizer cost		a x e x f	\$22,000 /yr

Erosion & Repair

h. Area to reseed/year		33% x a	7.3 acres
i. Reseeding unit cost	\$1,200.00/acre		
j. Total reseeding cost		h x i	\$8,800.00 /yr
k. Area of erosion/year		10% x a	2.2 acres
l. Erosion repair unit cost	\$2,500.00/acre		
m. Mobilization/Demobilization	\$500.00/yr		
n. Total cap erosion repair cost		(k x l) + m	\$6,000 /yr
Yearly Area Maintenance & Repair cost		d + g + j + n	\$58,800 /yr

III. BMP Maintenance & Repair

a. BMP cleanout frequency, 1 per	2 years	1 / a	0.50 event/yr
b. BMP cleanout unit cost	\$50,000/event		
c. Mobilization/Demobilization	\$2,500/event		
Yearly BMP Maintenance & Repair		a x (b + c)	\$26,250 /yr

IV. General Inspections

a. General Inspection unit cost	\$2,000/inspection		
b. Number of inspections per year	2		
Yearly General Inspection Cost		a x b	\$4,000 /yr

V. Surface Water Monitoring

		Calculation or Conversion	
a. Total number of monitoring locations	<input type="text" value="1"/> locations		
b. Total number of sampling events/year	<input type="text" value="4"/> events/yr	a x b	4 samples/yr
c. Quantity of additional samples (e.g. QA/QC)	<input type="text" value="0"/> samples/event	b x c	0 samples/yr
d. Total samples per year		b + c	4 samples/yr
e. Analysis unit cost	<input type="text" value="\$1,250.00"/> /sample		
f. <i>Total Analysis cost</i>		d x e	\$5,000.00 /yr
g. Surface Water Monitoring unit cost	<input type="text" value="\$2,500.00"/> /event		
i. <i>Total sampling cost</i>		f + (g x b)	\$15,000.00 /yr
j. Engineering fees & reports	<input type="text" value="\$5,450"/> /yr		
Yearly Surface Water Monitoring Cost		i + j	\$20,450 /yr

Annual Post-Removal Care Cost (APRCC)

I + ... + V \$161,500 /yr

Length of post-removal care (LPRC)

years

Post-Removal Care Cost

(APRCC x LPRC) \$4,845,000

Total Post-Removal Care Cost

\$4,845,000

ATTACHMENT 3

**DEQ APPROVAL FOR EAP CCR REMOVAL
COMPLETION**



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY VALLEY REGIONAL OFFICE

Matthew J. Strickler
Secretary of Natural Resources

P.O. Box 3000, Harrisonburg, Virginia 22801
(540) 574-7800 Fax (540) 574-7878
Located at 4411 Early Road, Harrisonburg, VA
www.deq.virginia.gov

David K. Paylor
Director

Amy Thatcher Owens
Regional Director

October 1, 2019

Dennis A. Slade, CHMM
Corporate Waste and Remediation Manager
Virginia Electric and Power Company
d/b/a Dominion Energy Virginia
5000 Dominion Boulevard
Glen Allen, VA 23060

RE: Bremono Bluff Power Station, Solid Waste Permit (SWP) 618
Closure by Removal Construction Report – East Ash Pond
Fluvanna County, Virginia

Dear Mr. Slade:

The Department has reviewed the following documents that were prepared on your behalf by Golder Associate Inc. (Golder) for the East Ash Pond in the Bremono Bluff Power Station, SWP618.

- *Closure by Removal Construction Report – East Ash Pond*, dated May 23, 2019 and received on July 25, 2019.
- A construction quality assurance certification, in accordance with the requirements of 9 VAC 20-81-160.D.4. of the Virginia Solid Waste Management Regulations (VSWMR) signed by Andrew T. North, P.E., of Golder and dated May 23, 2019.
- Bremono Closure By Removal Visual Inspection and Acceptance Memorandum For Record – Former CSX Property signed by Andrew T. North, P.E., of Golder and dated August 28, 2019.

The documentation provided and Department visual site inspection conducted on March 14, 2019 indicates that the Coal Combustion Residuals (CCR) in the East Ash Pond and CSX property have been visually removed and over-excavated in accordance with the Surface

Impoundment Closure Plan, Bremo Power Station-West and East Ash Ponds dated May 11, 2018. In addition, the documentation provided satisfies the facility Permit Condition I.F.9.

A copy of the above-mentioned documents and all record drawings must be retained for SWP 618 until closure of the West and East Ash Ponds has been confirmed by the Department. The remaining closure activities of the West and East Ash Ponds include the completions of the CCR removal in the West Ash Pond and the groundwater monitoring in accordance with the Permit Modules XI and XII.

If you have any questions, please do not hesitate to contact JengHwa Lyang, Solid Waste Permit Writer, at (540) 574-7826 or jenghwa.lyang@deq.virginia.gov.

Sincerely,



Graham H. Simmerman, Jr., P.G.
Regional Land Protection Manager

cc: Kathryn J. Perszyk, DEQ CO
Gregory W. Adamson, DEQ VRO
Laura A. Stuart, P.G., DEQ VRO
JengHwa Lyang, Ph.D., P.E., DEQ VRO
DEQ File – SWP 618

ATTACHMENT 4

**DEQ APPROVAL FOR WAP CCR REMOVAL
COMPLETION**



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY VALLEY REGIONAL OFFICE

P.O. Box 3000, Harrisonburg, Virginia 22801
(540) 574-7800 Fax (540) 574-7878

Located at 4411 Early Road, Harrisonburg, VA
www.deq.virginia.gov

David K. Paylor
Director

Amy Thatcher Owens
Regional Director

Matthew J. Strickler
Secretary of Natural Resources

April 17, 2020

Dennis A. Slade, CHMM
Corporate Waste and Remediation Manager
Dominion Energy Services
5000 Dominion Boulevard
Glen Allen, VA 23060

RE: Bremono Bluff Power Station, Solid Waste Permit (SWP) 618
Closure by Removal Construction Report – West Ash Pond
Fluvanna County, Virginia

Dear Mr. Slade:

The Department has reviewed the following documents that were prepared on your behalf by Golder Associate Inc. (Golder) for the West Ash Pond in the Bremono Bluff Power Station, SWP618.

- *Closure by Removal Construction Report – West Ash Pond*, dated March 25, 2020 and received on April 3, 2020.
- A construction quality assurance certification, in accordance with the requirements of 9 VAC 20-81-160.D.4. of the Virginia Solid Waste Management Regulations (VSWMR) signed by Andrew T. North, P.E., of Golder and dated March 25, 2020.

The documentation provided indicates that the Coal Combustion Residuals (CCR) in the west Ash Pond has been visually removed and over-excavated in accordance with the Surface Impoundment Closure Plan, Bremono Power Station-West and East Ash Ponds dated May 11, 2018. In addition, the documentation provided satisfies the facility Permit Condition I.F.9.

A copy of the above-mentioned documents and all record drawings must be retained for SWP 618 until closure of the West and East Ash Ponds has been confirmed by the Department. The

remaining closure activity of the West and East Ash Ponds include the completion of the groundwater monitoring in accordance with the Permit Modules XI and XII.

If you have any questions, please do not hesitate to contact JengHwa Lyang, Solid Waste Permit Writer, at (540) 574-7826 or jenghwa.lyang@deq.virginia.gov.

Sincerely,

A handwritten signature in black ink, reading "Graham H. Simmerman, Jr." in a cursive script.

Graham H. Simmerman, Jr., P.G.
Regional Land Protection Manager

cc: Kathryn J. Perszyk, DEQ CO
Gregory W. Adamson, DEQ VRO
Laura A. Stuart, P.G., DEQ VRO
JengHwa Lyang, Ph.D., P.E., DEQ VRO
DEQ File – SWP 618