



Emergency Action Plan

Virginia Electric and Power Company Bremo Power Station North, West, and East Ash Pond Dam Fluvanna County, Virginia

*Department of Conservation and Recreation (DCR)
Inventory #'s 065020, 060511, 065019*

Submitted to:

Dominion

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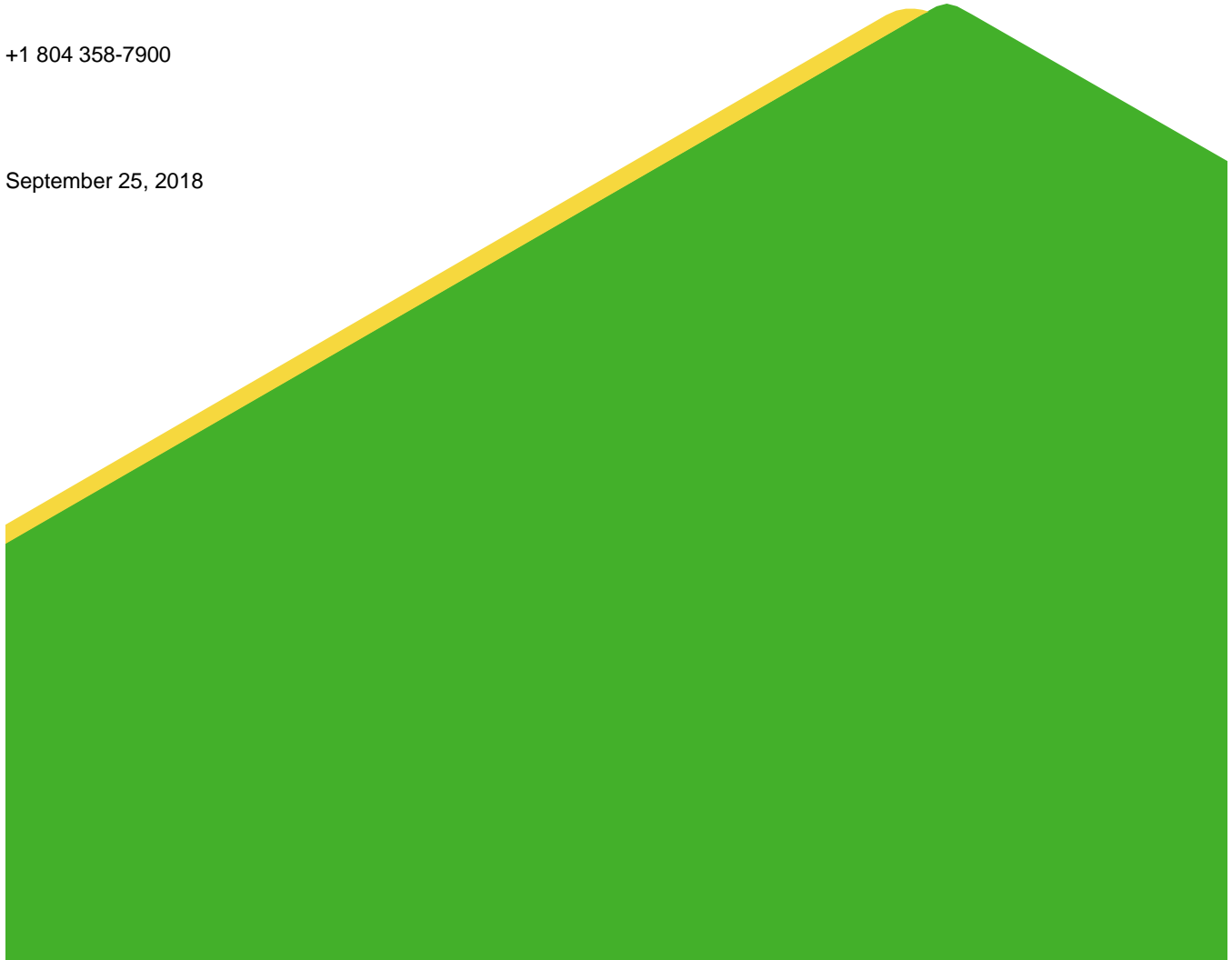


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1.0 BASIC INFORMATION

Name of Impounding Structure: Bremo Power Station – North Ash Pond

Inventory Number: 065020

Hazard Potential Classification, **CCR Regulations:**

Low Significant High (Circle One)

Hazard Potential Classification, **Virginia Dam Safety Regulations:**

Low Significant High (Circle One)

Name of Impounding Structure: Bremo Power Station – West Ash Pond

Inventory Number: 065011

Hazard Potential Classification, **CCR Regulations:**

Low Significant High (Circle One)

Hazard Potential Classification, **Virginia Dam Safety Regulations:**

Low Significant High (Circle One)

Name of Impounding Structure: Bremo Power Station – East Ash Pond

Inventory Number: 065019

Hazard Potential Classification, **CCR Regulations:**

Low Significant High (Circle One)

Hazard Potential Classification, **Virginia Dam Safety Regulations:**

Low Significant High (Circle One)

Name of Owner: Virginia Electric and Power Company, Attn: Michael Winters, P.E.

Address: 5000 Dominion Boulevard Glen Allen, VA 23060

Telephone: (Business) 804-273-2376 (Mobile) 804-347-9451

Name of Dam Operator: William Reed – Station Director

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Telephone: (Business) 434-842-4100 (Mobile) 804-638-0335

Name of EAP Coordinator: Rick Woolard, Sr. Environmental Compliance Coordinator

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Telephone: (Business) 434-581-6225 (Mobile) 804-385-7133

Name of Alternate EAP Coordinator: Michael Winters, P.E.

Address: 5000 Dominion Boulevard Glen Allen, VA 23060

Telephone: (Business) 804-273-2376 (Mobile) 804-347-9451

Name of Alternate Dam Operator: Rick Woolard, Sr. Environmental Compliance Coordinator

Address: Bear Garden Generating Station – 2608 C.G. Woodson Road, New Canton, VA 23123

Telephone: (Business) 434-581-6225 (Mobile) 804-385-7133

Local Emergency Contact: Fluvanna County Sheriff and Fire Department

Address: P.O. Box 113 160 Commons Blvd Palmyra, VA 22963

Telephone: (Business) 434-589-8211*24/7 or local emergency #911

Local Emergency Management Coordinator: Debbie Smith

Address: 132 Main Street P.O. Box 540 Palmyra, VA 22963

Telephone: (Business) 434-591-1910 ext. 1066 (Mobile) 434-270-6321

2.0 EMERGENCY ACTION PLAN OVERVIEW

Three emergency stages, ranked by severity, will be established for the North, West and East Ash Pond Dams.

Emergency Stage Definitions

Stage 1: Non-Emergency – failure is unlikely, and storm development or operational malfunction is slow in advancing to a potential emergency. This stage indicates a situation is developing such that the dam is not in danger of failing, but if it continues failure may be possible.

Stage 2: Potential Failure – storm development or operational malfunction that could result in failure of the dam is quickly accelerating. This stage indicates that a situation is developing that could result in a dam failure.

Stage 3: Imminent Failure – storm development or operational malfunction has reached a point that the failure of the dam has started or is imminent. This stage indicates dam failure is expected or occurring and may result in flooding that will threaten life and/or property downstream of the dam.

Stage 2 conditions include Stage 1 conditions and responsibilities, and Stage 3 conditions include both Stage 1 and Stage 2 conditions and responsibilities.

Table 1 - Emergency Stage Table

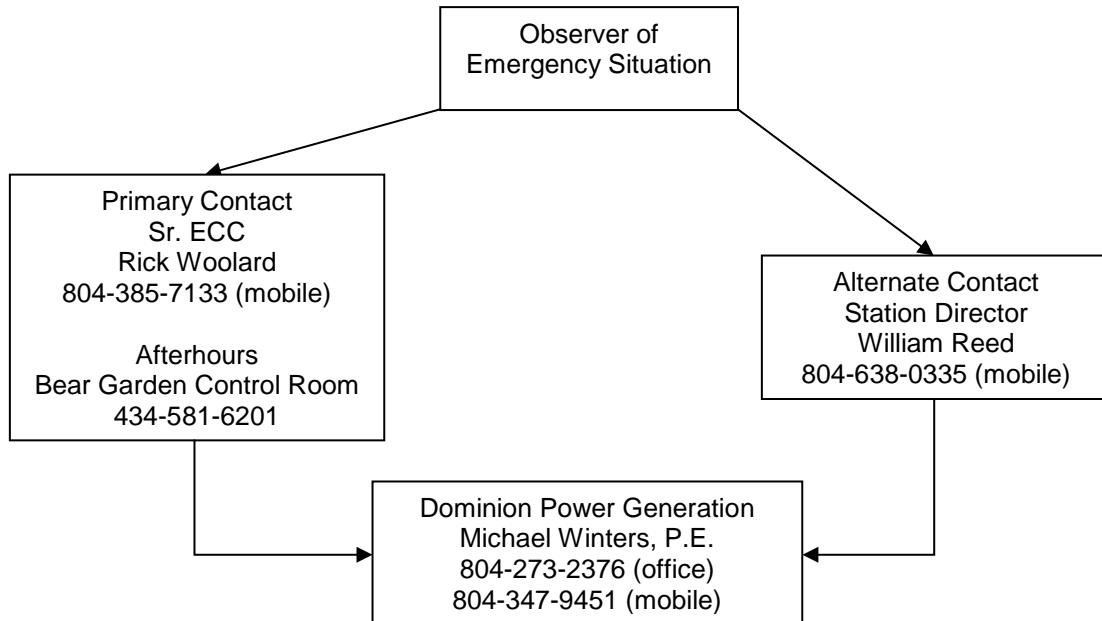
Step 1: Emergency Condition Detection	Event Detection: See Section 6		
Step 2: Emergency Level	Assess Situation: Determine Emergency Level Using Section 6		
	Emergency Stage 1	Emergency Stage 2	Emergency Stage 3
	Non-Emergency Incident Slowly Developing Situation See Definition Above	Potential Dam Failure Situation Quickly Developing Situation See Definition Above	Urgent Dam Failure is Imminent or In Progress See Definition Above
Step 3: Notification and Communication	Stage 1 Notification List See Section 3.1	Stage 2 Notification List See Section 3.2	Stage 3 Notification List See Section 3.3
Step 4: Expected Action	Inspect Dam, Spillway, Level Gauge, and Rain Gauge Every 8 hours Monitor and Listen to Weather Forecasts	Inspect Dam, Spillway, Level Gauge, and Rain Gauge Every 2 hours Notify Emergency Responders	Continuous Inspection of Dam, Spillway, Level Gauge, and Rain Gauge Continuous Contact with Emergency Responders
Step 5: Termination and Follow Up	Termination of Monitoring Conditions at the Dam and Proceed to Evaluate Damages and Plans for Repairs		

Normal methods of detecting potential emergency situations at the dam consist of surveillance monitoring and observing instrument readings. For conditions beyond the normal range of operations, contact the Fluvanna County Emergency Services Coordinator for assistance with evaluation of the conditions.

3.0 NOTIFICATION

3.1 Stage 1 Notification

The following flow chart is to be utilized upon determination of Stage 1 Conditions at the dam:

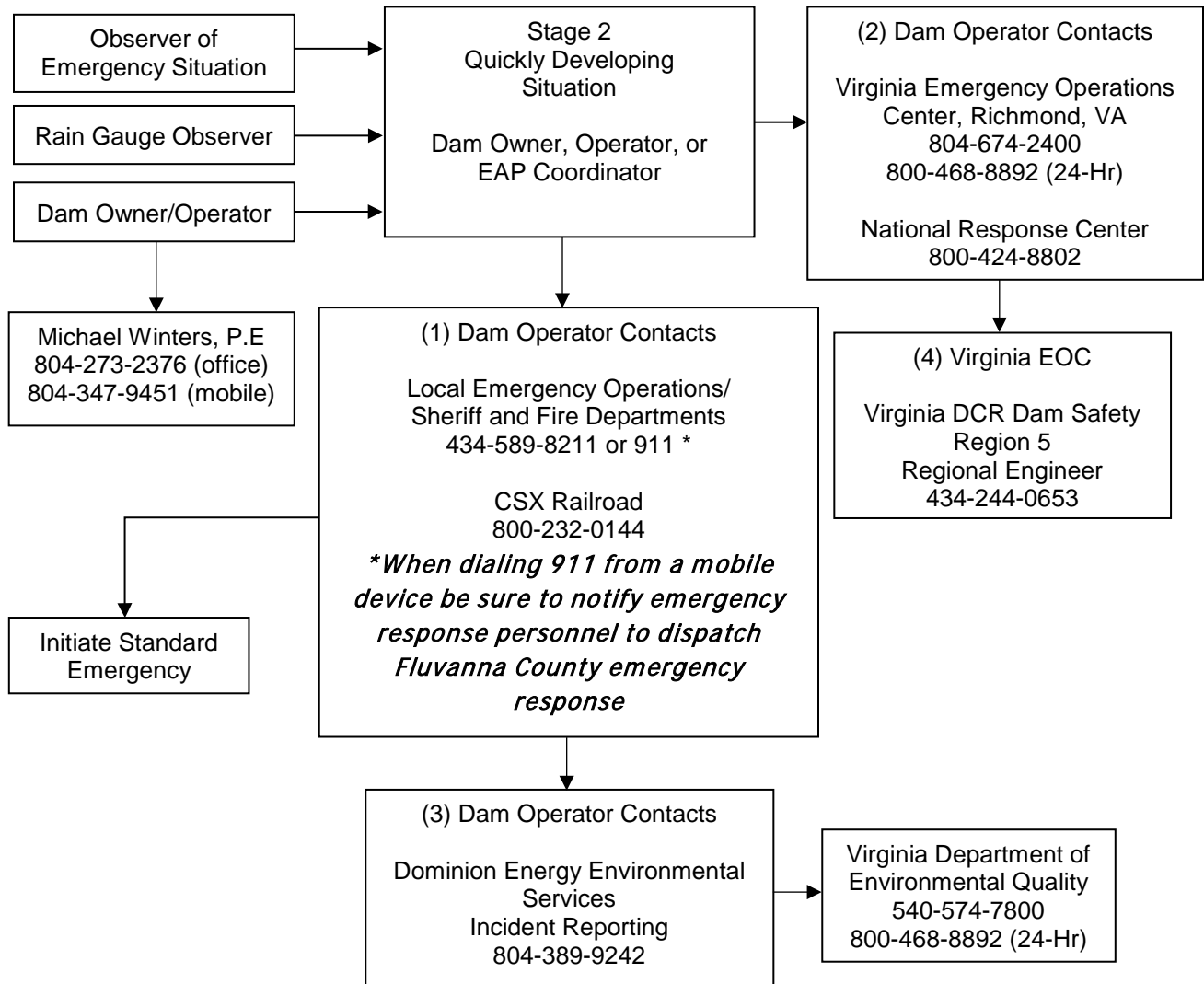


Message from the dam operator to the EAP Coordinator:

I am at the Bremo Power Station evaluating the general conditions at the [insert dam name here] and coordinating with the observer of emergency situation as recommended in the Emergency Action Plan. We are currently at Stage 1. If conditions change, we may move to Stage 2 and perform more frequent evaluations. Otherwise, we will visit and make observations every 8 hours.

3.2 Stage 2 Notification

The following flow chart is to be utilized upon determination of Stage 2 Conditions at each dam:

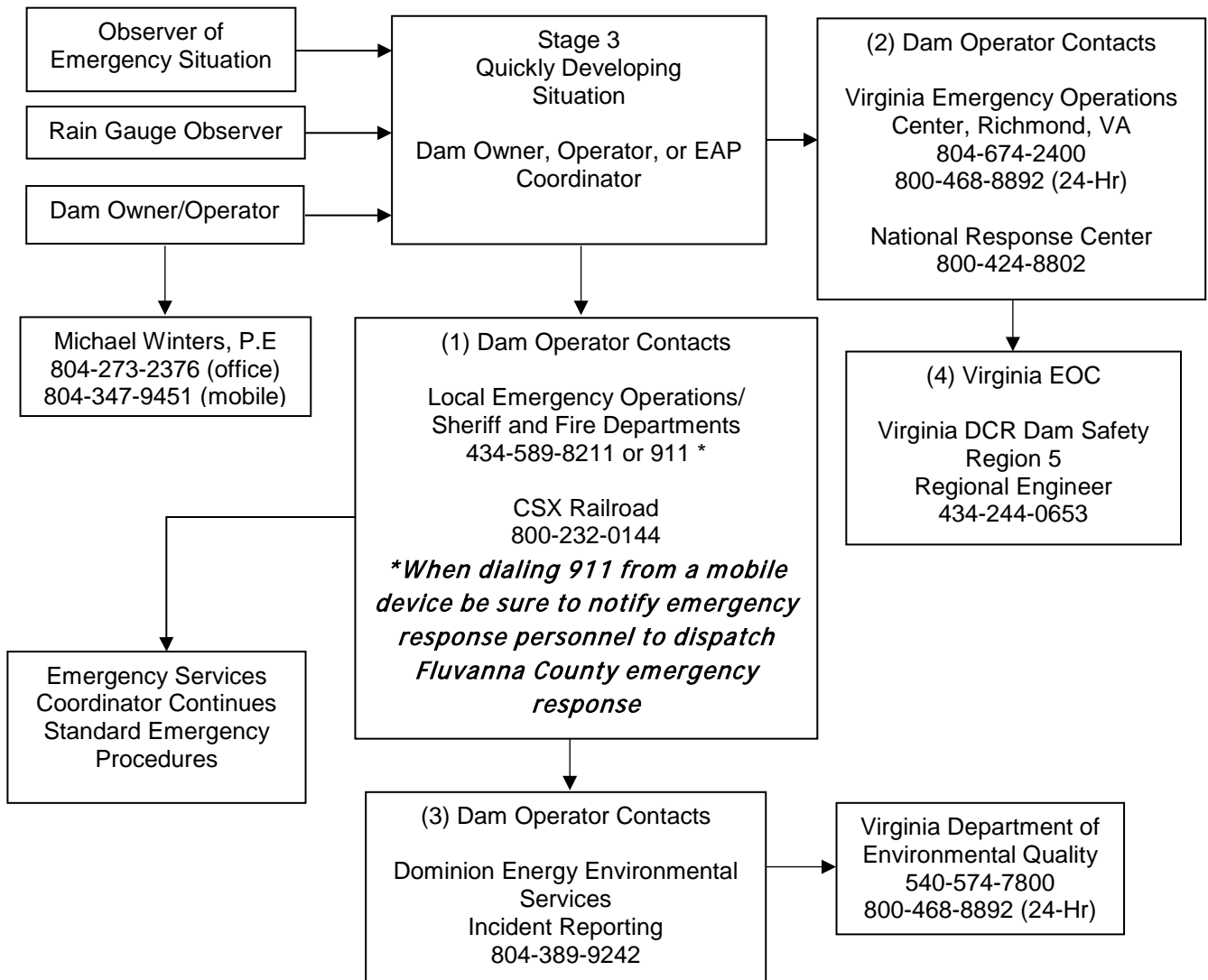


Message from the dam operator to the EAP Coordinator:

I am at [or I have been in contact with the observer at] the Brema Power Station, and conditions at the [insert dam name here] have reached the threshold established in the Emergency Action Plan at which to move to the Stage 2 Emergency Level. Please prepare your personnel in case of an emergency and continue to initiate your standard operating procedures. Someone will be observing the dam every 2 hours.

3.3 Stage 3 Notification

The following flow chart is to be utilized upon determination of Stage 3 Conditions at each dam:



Message from the dam operator to the EAP Coordinator:

I am at [or I have been in contact with the observer at] the Brema Power Station, and conditions at the [insert dam name here] have reached the threshold established in the Emergency Action Plan to move to the Stage 3 Emergency level. Please proceed with the Standard Emergency Procedures. Someone will remain at the dam to monitor continuously until the dam breaks or the water level recedes to safe levels and the Emergency Services Coordinator directs us to terminate our responsibilities.

Note: Standard Emergency Procedures (SEPs) shall include notification of the evacuation team, contacting the National Weather Service (NWS) for rainfall projections, and contacting the State Department of Emergency Management.

4.0 STATEMENT OF PURPOSE

The North, West and East Ash Ponds are designed and operated pursuant to Virginia Department of Conservation and Recreation Dam Safety and US Environmental Protection Agency Disposal of Coal Combustion Residuals (CCRs) from Electric Utilities regulations and generally accepted engineering practices. The purpose of this Emergency Action Plan (EAP) is to provide critical information and a plan of action in the event of an emergency situation at the Brema Power Station North, West and East Ash Ponds, owned and operated by Virginia Electric and Power Company dba Dominion Energy (Dominion). The plan addresses the following:

- Delineation of inundation areas downstream of the dams;
- Procedures for determining when to initiate various emergency response levels;
- Provisions for notification of emergency responders and owners of potentially affected downstream residences and structures;
- Emergency preparedness and exercises; and
- Documentation of evacuation routes.

This plan is intended to meet the requirements of 4VAC50-20-10 et seq. of the Virginia Department of Conservation and Recreation Impounding Structure regulations and 40 CFR 257.73(a)(3) of the Federal Disposal of CCRs from Electric Utilities Final Rule (CCR rule). Under the Virginia Dam Safety regulations, the West Ash Pond is classified as “low hazard” and the North, and East Ash Ponds are classified as a “high hazard”. The North, West and East Ash Pond are classified as a “significant” hazard due to the potential environmental impacts of a failure based on 40 CFR 257.73(a)(2) of the CCR Rule.

5.0 PROJECT DESCRIPTION

5.1 General Vicinity

The Brema Power Station is located in Fluvanna County at 1038 Brema Road, east of Route 15 (James Madison Highway) and north of the James River as shown on Figure 1. The station was converted from a coal-fired power plant to a natural gas-fired power plant in 2014. CCR from past operations was stored in the three on-site CCR surface impoundments (North Ash Pond, West Ash Pond, and East Ash Pond). No newly generated CCR has been placed in these impoundments since the 2014 conversion to a gas-fired plant.

The three (3) CCR surface impoundments are being closed under the CCR rule provisions in 40 CFR 257.102 and relevant sections of the Virginia Solid Waste Management Regulations and Dam Safety Regulations.

5.2 General Description

5.2.1 North Ash Pond Dam

The Brema Station North Ash Pond is located approximately one mile east of Brema Bluff, Virginia, in Fluvanna County and is located approximately 1,000 feet north of the James River. The ash pond impounds CCR from past operations at the Brema Power Station, under DCR Inventory Number 065020. The embankment was constructed as part of the Ash Disposal Pond Phase II construction and was completed in 1983. The dam consists of earthen fill with a clay cutoff key. Table 2 provides details of the dam:

Table 2 - North Ash Pond Berm Details

Year Constructed	1983
Dam Height	99 feet
Crest Length and Width	1,350 feet X 30 feet
Top of Dam Elevation	333
Normal Pool Elevation	320
Principal Spillway Elevation	324.5
Emergency Spillway Crest Elevation	330.5
Principal Spillway Capacity	55 cubic feet per second (CFS)
Emergency Spillway Capacity	4,600 CFS
Normal Reservoir Capacity	155.6 Ac-ft
Maximum Reservoir Capacity	220.1 Ac-ft
Current Spillway Design Flood Capacity (SDF)	100% Probable Maximum Flood (PMF)

5.2.2 West Ash Pond Dam

The Bremono Station West Ash Pond is located approximately one mile east of Bremono Bluff, Virginia, in Fluvanna County and is located approximately 300 feet north of the James River. The 17-acre ash pond impounds CCR from past operations at the Bremono Power Station, under DCR Inventory Number 065011. The dam consists of an earthen embankment. Table 3 provides details of the dam:

Table 3 - West Ash Pond Berm Details

Year Constructed	1978
Dam Height	18 feet
Crest Length and Width	3,485 feet X 15 feet
Top of Dam Elevation	234
Normal Pool Elevation	204
Principal Spillway Elevation	226
Emergency Spillway Crest Elevation	N/A
Principal Spillway Capacity	224 cubic feet per second (CFS)
Emergency Spillway Capacity	N/A
Normal Reservoir Capacity	5.4 Ac-ft
Maximum Reservoir Capacity	421.6 Ac-ft
Current SDF Capacity	100% PMF

5.2.3 East Ash Pond Dam

The Brema Station East Ash Pond is located approximately one mile east of Brema Bluff, Virginia, in Fluvanna County and is located approximately 350 feet north of the James River. The approximately 26.5-acre ash pond impounds CCR from past operations at the Brema Power Station, under DCR Inventory Number 065019. The earthen embankment fill dam, was completed around 1955. Table 4 provides details of the dam:

Table 4 - East Ash Pond Berm Details

Year Constructed	~1955
Dam Height	29 feet
Crest Length and Width	2,700 feet X 15 feet
Top of Dam Elevation	230
Normal Pool Elevation	198
Principal Spillway Elevation	229
Emergency Spillway Crest Elevation	N/A
Principal Spillway Capacity	75 cubic feet per second (CFS)
Emergency Spillway Capacity	N/A
Normal Reservoir Capacity	3.4 Ac-ft
Maximum Reservoir Capacity	347.5 Ac-ft
Current SDF Capacity	100% PMF

6.0 EMERGENCY DETECTION, EVALUATION, AND CLASSIFICATION

The dam owner and/or operator is responsible for operation and maintenance of this dam. The dam operator and the field observer are responsible for monitoring conditions at the dam, spillway, and staff gauge and notifying the Local Government Emergency Services Coordinators when emergency stage conditions are activated.

The dam owner/operator will initiate this EAP based on the water level of the James River at Brema Bluff or, rainfall depth in a 12-hour period, or if conditions at the dam indicate that water levels in the impoundment will rise to the point where there is flow through the principal or emergency spillways. Embankment erosion, appurtenant malfunction, or any of the other conditions described in this section may also dictate initiation of the emergency action. While it is the dam owner's responsibility to initiate this process, the Local Emergency Management Coordinator may contact the dam owner to inform the team that an event is imminent and team members would initiate their duties as required in this EAP.

Depth of flow through the principle and emergency spillways is the best indication of flood conditions and should be used as an indicator of the potential impacts downstream. In the absence of actual flow depth data through the spillways, measured rainfall depths in inches monitored in the contributing watershed may be used to determine the emergency level. Visual observations should be made by a team member so that accurate and up to date information can be provided to the EAP Coordinator.

6.1 Reservoir Pool Level

Reservoir pool level, associated with the flow depth in the emergency spillway, is the prime indicator of flooding conditions at the North, West, and East Ash Pond dams.

Table 5: Reservoir Pool Level Summary

Pond	Condition Level	Pool Level Elevation (feet)	Comments
North Ash Pond	Stage 1	325.5	This is five (5) feet below the level of the emergency spillway and would provide for increased monitoring as pool levels begin approaching the emergency spillway elevation.
	Stage 2	330.5	This is the crest elevation of the emergency spillway and the spillway flow depth would therefore be zero (0) feet, but the spillway would be on the verge of discharging.
	Stage 3	332	This would occur when the pool level would be one (1) foot below the dam crest and would indicate that overtopping of the dam embankment could soon occur.
West Ash Pond	Stage 1	225	This is five (5) feet below the level of the principal spillway and would provide for increased monitoring as pool levels begin approaching the principal spillway elevation.
	Stage 2	230	This is the crest elevation of the principal spillway and the spillway flow depth would therefore be zero (0) feet, but the spillway would be on the verge of discharging.
	Stage 3	232	This would occur when the pool level would be one (1) foot below the dam crest and would indicate that overtopping of the dam embankment could soon occur.
East Ash Pond	Stage 1	224	This is five (5) feet below the level of the principal spillway and would provide for increased monitoring as pool levels begin approaching the principal spillway elevation.
	Stage 2	229	This is the crest elevation of the principal spillway and the spillway flow depth would therefore be zero (0) feet, but the spillway would be on the verge of discharging.
	Stage 3	230 or flow depth in principal spillway is 1.0 ft.	This would occur when the pool level would be one (1) foot below the dam crest and would indicate that overtopping of the dam embankment could soon occur.

6.2 Rainfall Depths

Rainfall depths for various storm durations are another indicator of potential flooding conditions, in addition to the water level of the James River, Bremono. The individual ponds have varying rainfall triggers due to their individual drainage areas and storage capacities.

Table 6: Rainfall Depth Summary

Pond	Condition Level	Limit
North Ash Pond	Stage 1	8 inches in 12 hours
	Stage 2	15 inches in 12 hours
	Stage 3	30 inches in 12 hours (Emergency Spillway)
West Ash Pond	Stage 1	12 inches in 12 hours James River water level: Stage 34 = El 224.61
	Stage 2	18 inches in 12 hours James River water level: Stage 39 = El 229.61
	Stage 3	30 inches in 12 hours James River water level: Stage 41 = El 231.61
East Ash Pond	Stage 1	12 inches in 12 hours James River water level: Stage 34 = El 224.61
	Stage 2	18 inches in 12 hours James River water level: Stage 38 = El 228.61
	Stage 3	30 inches in 12 hours James River water level: Stage 39 = El 229.61

Note: James River, Bremo flood gauge located onsite. In case of a gauge outage reference James River, Scottsville, <https://water.weather.gov/ahps2/hydrograph.php?wfo=rnk&gage=svev2>. Also see Appendix C for Scottsville to Bremo flood gauge equivalency chart.

6.3 Observation Frequency

Dam, spillway, and staff gauge observations shall occur at frequencies determined by the Emergency Stage condition:

- Stage 1 conditions – observations shall occur at eight-hour intervals (Every eight (8) hours)
- Stage 2 conditions – observations shall occur at two-hour intervals (Every two (2) hours)
- Stage 3 conditions – continuous observation

Observers should use caution and be aware of the potential for flooded roads along the route to the dam. Monitoring and surveillance of conditions at the dam will continue under emergency conditions as long as safety is not in question.

Note: In the event that conditions are considered unsafe (i.e. wind speed greater than 40 mph, lightning, tornado etc.) conditions will be documented and dam observations will be postponed until conditions improve.

6.4 Public Roads Downstream

6.4.1 North Ash Pond Dam

The area downstream of the North Ash Pond Dam consists of the East Ash Pond and a CSX railroad line. The railroad line is approximately 850 feet downstream from the toe of the dam. There are no occupied structures or public roads downstream of the dam or in the anticipated inundation zone resulting from an embankment failure.

6.4.2 West Ash Pond Dam

The area downstream of the West Ash Pond Dam consists of a CSX railroad line. The railroad line is approximately 125 feet downstream from the toe of the dam. There are no occupied structures or public roads downstream of the dam or in the anticipated inundation zone resulting from an embankment failure.

6.4.3 East Ash Pond Dam

The area downstream of the East Ash pond dam consists of a CSX railroad line. The railroad line is approximately 150 feet downstream from the toe of the dam. There are no occupied structures or public roads downstream of the dam or in the anticipated inundation zone resulting from an embankment failure.

6.5 Additional Emergency Conditions

The following table is to be used to initiate emergency conditions during events other than those related to precipitation and reservoir pool levels. If any of these conditions are observed, Dominion’s Power Generation Engineering group should be contacted for further discussion, observation, and/or technical direction.

Table 7 - Emergency Conditions

Event	Situation	Emergency Level
Emergency Spillway and Channel	Visual movement of the spillway channel with no flow	1
	Spillway is flowing and erosion/head cutting is observed	3
Sinkholes	Observation of new sinkhole on embankment	1
	Rapidly enlarging sinkhole	3
Embankment Cracking	New cracks in embankment greater than ¼ inch wide without seepage	1
	Cracks in embankment with seepage	1
	Cracks in embankment with rapidly increasing seepage	3
Embankment Movement	Visual movement of the embankment slope	1
	Sudden or rapidly progressing slides of the slopes	3
Vortex in Pond	Whirlpool with discharge downstream	3
Earthquake	Measurable earthquake felt or reported on or within 50 miles of the dam	1
	Earthquake resulting in visible damage to the dam	1
	Earthquake resulting in potential uncontrolled release of water from the dam	3
Security Threat, Sabotage, and Vandalism	Verified bomb threat that, if carried out, could result in damage to the dam	1
	Detonated bomb that has resulted in damages to the dam or its appurtenances	1
	Damage to the dam or appurtenances with no impacts to the functioning of the dam	1
	Damage to the dam or appurtenances that has resulted in seepage flow	1
	Damage to the dam or appurtenances that has resulted in potential uncontrolled water release	3

6.6 Relaxation of Emergency Conditions

Emergency conditions can be rescinded when the following events occur:

- The water level of the James River is below 34ft = El 224.61 for West and East Pond.
- After heavy rains have ended, the water level in the impoundments is below El 325.5, El 225, and El 224ft for the North, West and East Ponds, respectively, and the water level is receding.

In the event of an earthquake, overtopping of the dam, evacuation of inundation areas, or other serious problems resulting in a triggering of emergency conditions, the dam must be inspected by a professional engineer knowledgeable with the dam site.

Termination of emergency conditions occurs when all entities notified of the emergency condition have been communicated with and informed of current non-emergency conditions.

7.0 RESPONSIBILITY UNDER THE EAP

This section is intended to clearly outline the responsibilities of parties involved in all EAP procedures, including notification, surveillance, classification, evacuation, and termination.

7.1 Dam Owner/Operator Responsibilities

- 1) The dam owner/operator IS RESPONSIBLE for notifying the local Emergency Management Coordinator of any problem or potential problem at the dam site.
- 2) The dam owner/operator/EAP Coordinator WILL DETERMINE when Stage 1 conditions are met at the dam and WILL INITIATE dam surveillance accordingly.
- 3) The dam owner/operator/EAP Coordinator WILL DETERMINE when Stage 2 conditions are met at the dam.
- 4) The dam owner/operator/EAP Coordinator WILL DETERMINE when Stage 3 conditions are met at the dam.
- 5) The dam owner/operator WILL BE RESPONSIBLE for operating pumps as needed for the dam to function effectively.
- 6) The dam owner/operator WILL BE RESPONSIBLE for coordinating with local emergency response personnel to restrict traffic access to Bremono Road under Stage 2 and Stage 3 conditions to ensure public safety.

7.2 Responsibility for Notification

- 1) The observer of the emergency situation WILL NOTIFY the dam owner/operator/EAP Coordinator before beginning dam surveillance under Stage 1 conditions.
- 2) The dam owner/operator/EAP Coordinator WILL NOTIFY the 24-hour dispatch center and the local Emergency Management Coordinator when Stage 2 conditions are met, in order to alert them to perform actions required for Stage 2 conditions and to review actions that may be required for the safety and protection of people and property and to mobilize their evacuation team. The dam owner/operator WILL NOTIFY the Regional Dam Safety Engineer and Dominion Power Generation Engineering that Stage 2 conditions have been implemented.
- 3) The dam owner/operator/EAP Coordinator WILL NOTIFY the 24-hour dispatch center and the local Emergency Management Coordinator to initiate warning/evacuation of residents when Stage 3 conditions or imminent dam

failure are probable. The dam owner/operator WILL NOTIFY the Regional Dam Safety Engineer and Dominion Power Generation Engineering that Stage 3 conditions have been implemented.

7.3 Responsibility for Evacuation

There will be no evacuation associated with the implementation of this EAP. There are no occupied structures or publicly travelled roads within the inundation zone associated with evacuation.

7.4 Responsibility for Termination and Follow-Up

- 1) Once the Stage 3 condition has been met, the dam owner/operator/EAP Coordinator will continue to provide the EAP Coordinator with information concerning water level rise, erosion in the emergency spillway, and/or dam overtopping, as provided by the dam/spillway/staff gauge observer. It is particularly important for the EAP Coordinator to know when a breach is occurring to evacuate their rescue personnel. The staff gauge observer will remain at the dam until released from duty by the EAP Coordinator.
- 2) Regional flooding may occur prior to an incident at this dam and could continue for long periods of time. The staff gauge observer needs to have plans for staying or returning to the dam as conditions worsen. The termination responsibility should be handled by the EAP Coordinator.
- 3) Post-flood event discussions should be used to determine strengths and weaknesses in the EAP while the experience is fresh in the minds of those living through it.

7.5 EAP Coordinator Responsibility

The EAP coordinator will be responsible for EAP-related activities, including (but not limited to) preparing revisions to the EAP, establishing training seminars, and coordinating annual face-to-face EAP exercises between representatives of the owner/operator, local emergency responders and additional federal and state agencies. This person will be the EAP contact if any involved parties have questions about the plan.

7.6 Methods for Notification and Warning

The following notification and warning method(s) are to be used during an emergency:

- Telephone/Reverse 911 automated warning systems
- Police/fire/sheriff radio dispatch vehicles with loudspeakers, bullhorns, etc.
- Personal runners from door-to-door alerting residents (as required)
- Radio/television broadcasts for area involved (as required)

8.0 PREPAREDNESS

This section is intended to clearly outline the responsibilities of parties involved in all EAP procedures, including notification, surveillance, classification, evacuation, and termination.

8.1 Surveillance

The dams are unattended and monitored under normal operating conditions for the duration of closure activities.

Bremo Power Station management and staff should monitor the status of weather fronts through the NWS. The NWS maintains a hurricane center that reports on hurricanes, tropical storms & tropical depressions as they travel and affect coastal and inland areas. The web site address is: <http://www.nhc.noaa.gov/>.

The station is not staffed 24/7, however, there are two staff members dedicated to Bremono Power Station Monday through Friday during normal business hours. After hours, the staff from Bear Garden Generating Station are on call to support emergencies. An operator should be dispatched from the on-shift crew to observe the staff gauge during an emergency situation. The staff gauge observer should never put themselves in harm's way. In the event a hurricane or tropical depression occurs with high winds, the staff gauge observer shall use extreme caution while monitoring conditions.

Preplanned access routes should be utilized, given that small streams crossing under state and local roads may flood, preventing safe access. The gauge observers and Dam Safety Region staff should never attempt to cross a road that has flood water crossing it at a depth greater than one-foot unless the vehicle is specially designed for that purpose.

Alternative routes should be chosen for access by foot in the event that a car is unsafe for use. Other alternative means of transportation may be considered.

8.2 Routine Inspections

The North, West and East Ash Pond Dams are inspected every 7 days in accordance with applicable CCR regulations. It is inspected monthly in accordance with the Virginia Dam Owner's Handbook. If any findings trigger an action level, the EAP will be put into place immediately. Any findings in question will be discussed with a Dominion Power Generation Engineer and a resolution determined by the next seven day inspection. Any maintenance needs will be relayed to the grounds contractor or landfill contractor within one calendar week.

8.3 Alternative Systems of Communication

Communications during a major rainfall event may be problematic. Telephone land lines may be used as the first means of communication. Cellular telephones can be used to supplement the land lines. Unfortunately, telephone lines, like electrical lines, are subject to damage by falling trees, so radio communication during these events is normally required.

8.4 Emergency Supplies

Stockpiling of Materials and Equipment: The location of necessary supplies and materials, such as barricades, sand, sandbags, etc. are either stored onsite or readily available through Dominion's emergency response contractors.

Emergency access to supplies and equipment should be planned before any emergency is called. Appendix C lists sources and locations of supplies and equipment that may be required during an emergency along with addresses and telephone numbers of the sources/suppliers.

9.0 INUNDATION ZONE PROPERTY OWNERS AND RESIDENTS

Inundation Maps are presented in Appendix D. CSX Transportation (800-232-0144) is the only property owner located within the dams' anticipated inundation zone resulting from an embankment failure for the Bremono Power Station North, West, and East Ash Pond Dams.

10.0 CERTIFICATION BY DAM OWNER/OPERATOR

I certify that procedures for implementation of this Emergency Action Plan (EAP) have been coordinated with and a copy given to each local Emergency Services Coordinator serving the areas potentially impacted by the dam. Also, that a copy of this EAP has been filed with the Virginia Department of Emergency Management in Richmond and a copy of the Dam Break Inundation Map has been provided to the local government office with plat and plan approval authority or zoning responsibilities as designated by the locality for each locality in which the dam break inundation zone resides; that this plan shall be adhered to during the life of the project; and that the information contained herein is current and correct to the best of my knowledge.



(Signature of Dam Owner/Operator)

This 27TH day of September, 20 18

William Reed, Station Director

(Printed Name)

11.0 CERTIFICATION BY PREPARER

By means of this certification the undersigned Licensed Professional Engineer attests that he/she is familiar with the requirements of 40 CFR 257.73(a)(3) and the Department of Conservation and Recreation (DCR) regulations. This certification also demonstrates that the EAP is prepared in accordance with good engineering practices, including consideration of applicable industry standards, and with the requirements of 40 CFR §257.73; that procedures for required inspections and testing have been established; and the EAP is adequate for the Bremo Power Station North, West, and East Ash Pond.

This certification in no way relieves the owner or operator of a facility/Site of his duty to prepare and fully implement the Plan in accordance to the requirements of 40 CFR §257.73.

(Signature of Preparer)

This 25th day of September, 20 18

Printed Name: Daniel McGrath, P.E.

Title: Senior Consultant

Address: 2108 W. Laburnum Ave, Suite 200

Richmond, VA 23227

Telephone: 804-521-1783

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APPENDIX A

**Analysis of Impounding Structure
Failure Floods**

APPENDIX A
Analyses of Impounding Structure Failure Floods

The structure failure flood for Bremono Power Station North Ash Pond Dam is the Probable Maximum Flood event. A complete hydraulic and hydrologic analysis is presented in the North Ash Pond Dam Alteration Permit Application, prepared by Golder Associates, Inc., dated March 2017.

The structure failure flood for Bremono Power Station West Ash Pond Dam is the 1,000 year flood event. A complete hydraulic and hydrologic analysis is presented in the West Ash Pond Dam Alteration Permit Application, prepared by Golder Associates, Inc., dated March 2016.

The structure failure flood for Bremono Power Station East Ash Pond Dam is the Probable Maximum Flood event. A complete hydraulic and hydrologic analysis is presented in the East Ash Pond Dam Alteration Permit Application, prepared by Golder Associates, Inc., dated March 2017.

APPENDIX B

Plans for Training, Exercising,
Updating, and Posting the
Emergency Action Plan, Distribution
Record/Revision Sheet, and
Supplemental Documents

APPENDIX B
Plans for Training, Exercising, Updating, and Posting the Emergency Action Plan

1. Training

Emergency action planning, generally, will be held once a year for responsible staff personnel.

2. Exercises

- a. Table Top Exercises - Table top exercises will be held, at a minimum, once every six (6) years. This exercise will occur in the year that certification is required.
- b. Drills - A drills will be conducted each year by the owner except when a table top exercise is required.
- c. Annual drills will be conducted to verify lines of communication, phone numbers, personnel roles, and responsibilities. All parties on the Stage II/III notification flowchart are invited and encouraged to attend; however attendance from station personnel is mandatory. Record the invitation of the drill to emergency response representatives and the drill attendance and details in the Training Record.

3. Updating

This EAP will be checked yearly during the drill exercise to determine if names, addresses, and telephone numbers of the people shown in Section 7 are accurate. The document will be updated at any time when a major change is determined to have occurred and noted in the plan's revision log.

If an annual review of the EAP indicates that no amendments are necessary, a note shall be placed in the revision log noting that no changes were made during the annual review.

4. Posting

This document will be on file with:

- Dominion Energy (Dam Owner)
- Fluvanna County Emergency Operations Center
- VA Department of Conservation and Recreation (DCR), Division of Dam Safety
- VA Department of Emergency Management

**EAP Revision Record
 Bremono Power Station Ash Ponds
 Inventory #'s 065020, 065011, 065019**

<u>Revision No.</u>	<u>Date Entered</u>	<u>Changed By</u>	<u>Description of Change</u>
Original	April 2017		
1	November 2017	Golder Associates, Inc.	Updated ECC and various other updates
2	September 2018	Golder Associates, Inc.	Addition of Inactive Ponds per CCR Regulations Update DCR Inventory Numbers
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

**EAP Distribution Record
Bremo Power Station Ash Ponds
Inventory #'s 065020, 065011, 065019**

<u>Copy No.</u>	<u>Organization</u>	<u>Person Receiving</u>
Original		
1		
2		
3		
4		
5		
6		
7		
8		

**Bremo Power Station - North, West and East Ash Ponds Emergency Action Plan
Notification Log**

Contact Name/Agency	Phone Number	Person Notified	Time Notified
Refer to Notification Process on pages 4-6 in the Emergency Action Plan			
Stage 1 Notifications			
1. Rick Woolard/Dominion	804-385-7133		
2. William Reed/Dominion	804-638-0335		
3. Michael Winters/Dominion	804-273-2376		
4. Bear Garden Control Room (Afterhours)	434-581-6201		
Stage 2 Notifications			
1. Michael Winters/Dominion	804-273-2376		
2. Local Emergency Operations/Fluvanna County/Sheriff and Fire Department	434-589-8211 or 911		
3. Local Emergency Management Coordinator (Debbie Smith)	(Business) 434-591-1910 ext. 1066 (Mobile) 434-270-6321		
4. CSX Railroad	800-232-0144		
5. Virginia Department of Emergency Operations Center	804-674-2400 800-468-8892 (24hr)		
6. National Response Center	800-424-8802		
7. Virginia DCR Dam Safety Region 5	434-244-0653		
8. Environmental Incident Reporting/Dominion	804-389-9242		
9. Virginia Department of Environmental Quality	540-574-7800 800-468-8892 (24hr)		
Stage 3 Notifications			
1. Michael Winters/Dominion	804-273-2376		
2. Local Emergency Operations/Fluvanna County/Sheriff and Fire Department	434-589-8211 or 911		
3. Local Emergency Management Coordinator (Debbie Smith)	(Business) 434-591-1910 ext. 1066 (Mobile) 434-270-6321		
4. CSX Railroad	800-232-0144		
5. Virginia Department of Emergency Operations Center	804-674-2400		
6. National Response Center	800-424-8802		
7. Virginia DCR Dam Safety Region 5	434-244-0653		
8. Environmental Incident Reporting/Dominion	804-389-9242		
9. Virginia Department of Environmental Quality	540-574-7800 800-468-8892 (24hr)		

APPENDIX C

Additional Resources

APPENDIX C
Additional Resources

Directory of Additional Personnel with Dam Safety Expertise

In addition to personnel shown elsewhere in this plan, the following list identifies other individuals with expertise in dam safety, design, and construction that may be consulted about taking specific actions at the dam when there is an emergency situation:

Name	Telephone	Responsibility
DCR, Division of Dam Safety	434-244-0653	Dam Safety Regional Engineer
Golder Associates, Inc. Dan McGrath, P.E.	804-521-1783 (office) 804-357-8953 (cell)	Consulting Design Engineer

Supplies and Resources

Equipment Available	Location	Phone Number
Sand/Sand Bags	Luck Stone Buckingham – Virginia Slate Company	804-749-3233 434-581-1131
Rock/Gravel	Luck Stone Buckingham – Virginia Slate Company	804-749-3233 434-581-1131
Pumps/Generators/Lights	Sunbelt Rentals RSC Equipment Rentals Pearson Equipment Co.	804-364-6319 800-222-7777 434-391-1112
Heavy Equipment	Forty-Two Contracting, Inc. Pete Snead	804-377-2270 (o) 804-638-0430 (m)

Personnel Resources/Labor

Company	Contact	Phone Number
Dominion Energy	Rick Woolard	434-581-6225
Laborers	Forty-Two Contracting, Inc. Pete Snead	804-377-2270 (o) 804-638-0430 (m)

Scottsville Flood Gauge	Conversion	Brems Flood Gauge (Approximate)		Brems Gauge Notes:
		Reported Stage (ft)	Scottsville to Brems	
0-10	+ 4	4-14	194.61 to 204.61	Stage 15: Flood stage -- action Stage 16: Bank full stage (left bank) Stage 19: Flood stage -- minor flooding begins Stage 21: Left bank at the gage begins to flood. Stage 22.8: Main street flooded to centerline of road. Stage 23: Flood stage -- moderate flooding begins. Stage 24: Water reaches low ground between homes on Main Street and C&O Railroad Depot. Stage 25: Overflow begins along the right bank. Stage 26.4: Water reaches some homes in the low-lying parts of Brems Bluff and merchants in downtown. Stage 28.2: Hotel Brems is flooded. Stage 30.2: Water reaches the road along the left bank and main line of C&O Railroad at the power plant. Stage 30.5: Water enters Hitters store, downtown Brems Bluff. Stage 32: Water tops rail of mainline track in front of C&O RR Depot. Stage 34: Major flooding begins. Stage 38: 100 yr flood elevation (229). Stage 39: Water enters main floor of power plant. Stage 40: Near record flood begins. Stage 44: Flood of record.
11	+ 4	15	205.61	
12	+ 4	16	206.61	
13	+ 4	17	207.61	
14	+ 4	18	208.61	
15	+ 4	19	209.61	
16	+ 6	22	212.61	
17	+ 6	23	213.61	
18	+ 6	24	214.61	
19	+ 6	25	215.61	
20	+ 6	26	216.61	
21	+ 6	27	217.61	
22	+ 7	29	219.61	
23	+ 7	30	220.61	
24	+ 7	31	221.61	
25	+ 7	32	222.61	
26	+ 8	34	224.61	
27	+ 9	36	226.61	
28	+ 9	37	227.61	
29	+ 9	38	228.61	
30	+ 9	39	229.61	
31	+ 9	40	230.61	
32	+ 9	41	231.61	
33	+ 11	44	234.61	
34	+ 11	45	235.61	
35	+ 11	46	236.61	
36	+ 11	47	237.61	
37	+ 11	48	238.61	
38	+ 12	50	240.61	
39	+ 12	51	241.61	
40	+ 12	52	242.61	
41	+ 13	54	244.61	
42	+ 13	55	245.61	
43	+ 13	56	246.61	
44	+ 14	58	248.61	
45	+ 14	59	249.61	

Values in this table are an approximation and should not be used to replace actual readings.

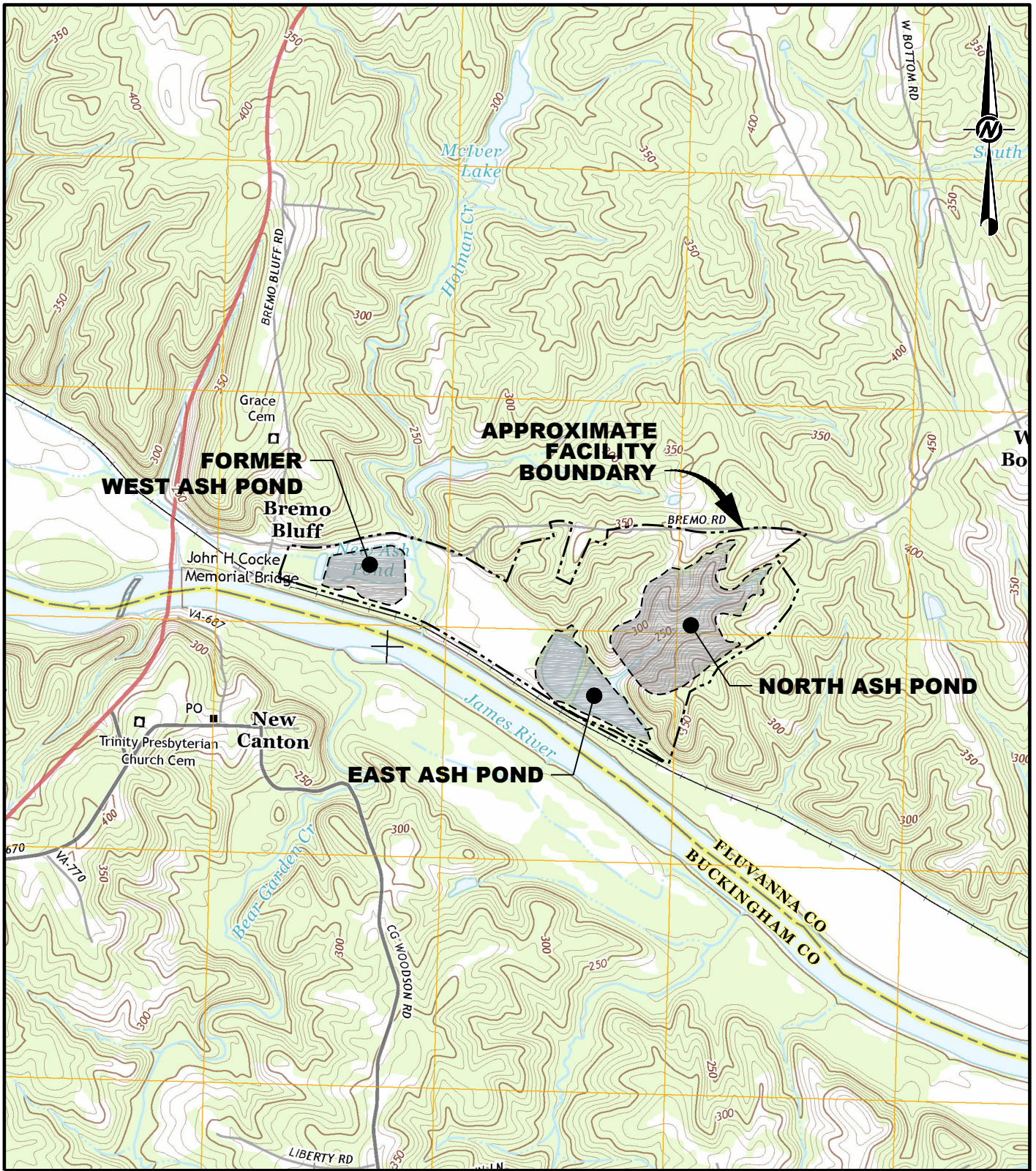
Legend:

- Action Flood Stage
- Minor Flood Stage

- Moderate Flood Stage
- Major Flood Stage

APPENDIX D

Figures



REFERENCE

BASE MAP CONSISTS OF 7.5-MINUTE USGS TOPOGRAPHIC QUADRANGLE NAMED ARVONIA, VIRGINIA, DATED 2013.



CLIENT
DOMINION ENERGY

PROJECT
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

CONSULTANT
YYYY-MM-DD 2018-06-15
DESIGNED ALR
PREPARED SIB
REVIEWED ALR
APPROVED MGW

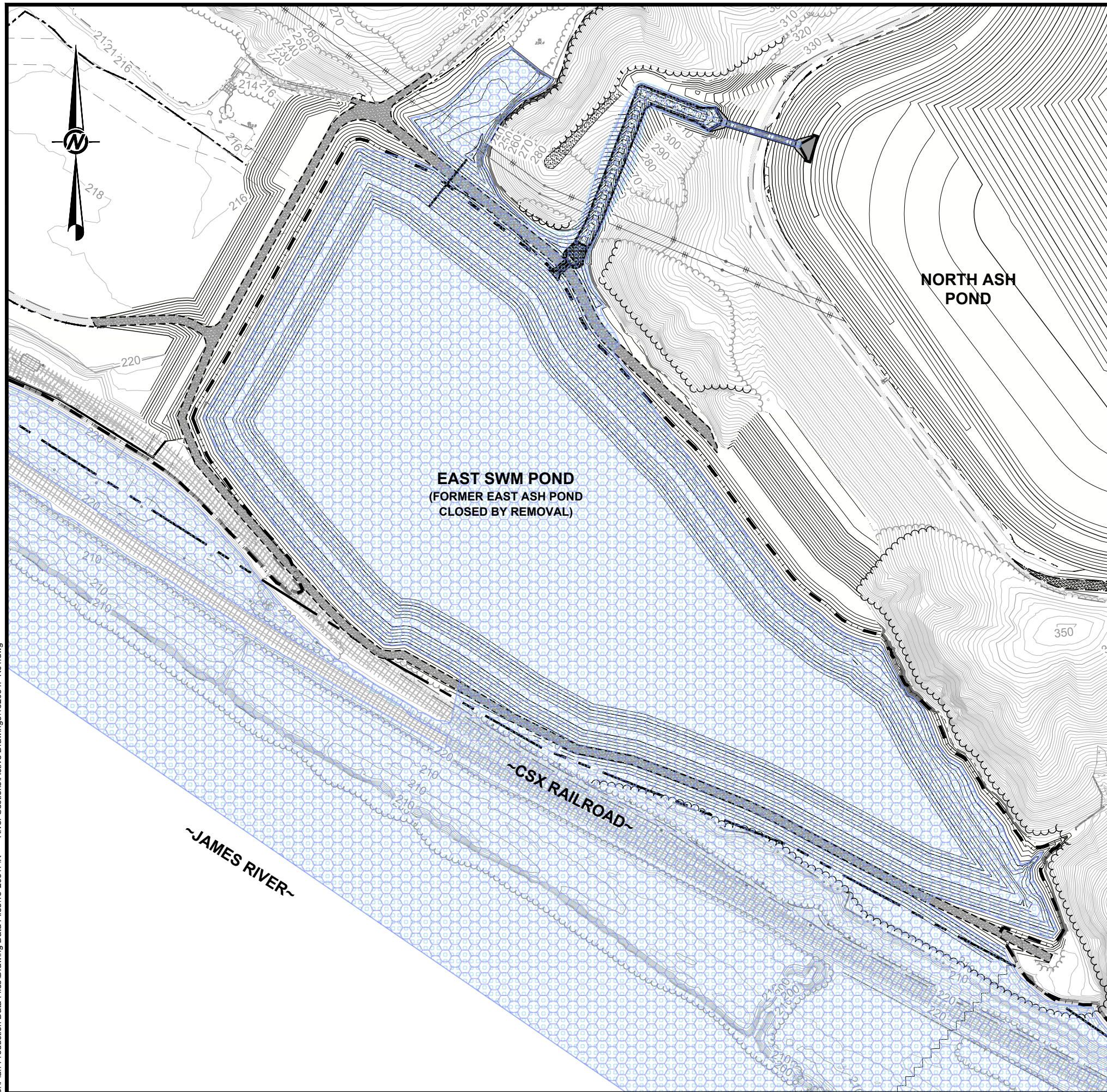
TITLE
SITE LOCATION MAP

PROJECT NO.
17-8975418


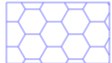
REV.
0

FIGURE
1

G:\Plan Production Data Files\Drawing Data Files\15-20347\K - River Sections\Active Drawings\1520347-K04.dwg

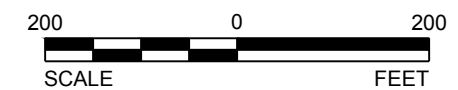


LEGEND

-  PMF BREACH - AREA SUBJECT TO FLOOD FLOW AND VELOCITY
-  PMF NON-BREACH - AREA SUBJECT TO FLOOD FLOW AND VELOCITY
- EXISTING TOPOGRAPHIC CONTOUR (10' INTERVAL)
- EXISTING TOPOGRAPHIC CONTOUR (2' INTERVAL)
- PROPERTY LINE
- PROPOSED TOPOGRAPHIC CONTOUR (10' INTERVAL)
- PROPOSED TOPOGRAPHIC CONTOUR (2' INTERVAL)
- 100 - YR FLOOD PLAIN (ZONE A E)

NOTES

1. MAPPING OF FLOODED AREAS AND FLOOD WAVE TRAVEL TIMES ARE APPROXIMATE. TIMING AND EXTENT OF ACTUAL INUNDATION MAY DIFFER FROM INFORMATION PRESENTED ON THIS MAP.
2. 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. HISTORICAL DATA FOR THE DEVELOPMENT OF THE WEST ASH POND, EAST ASH POND AND NORTH ASH POND.
3. PROPOSED GRADING FOR NORTH AND EAST ASH PONDS PER "CCR SURFACE IMPOUNDMENT CLOSURE PLAN" BY GOLDER ASSOCIATES INC. DATED DECEMBER 2016.
4. 100 - YEAR FLOOD PLAIN ELEVATION (ZONE A E) PER PANEL #51065C0260C.



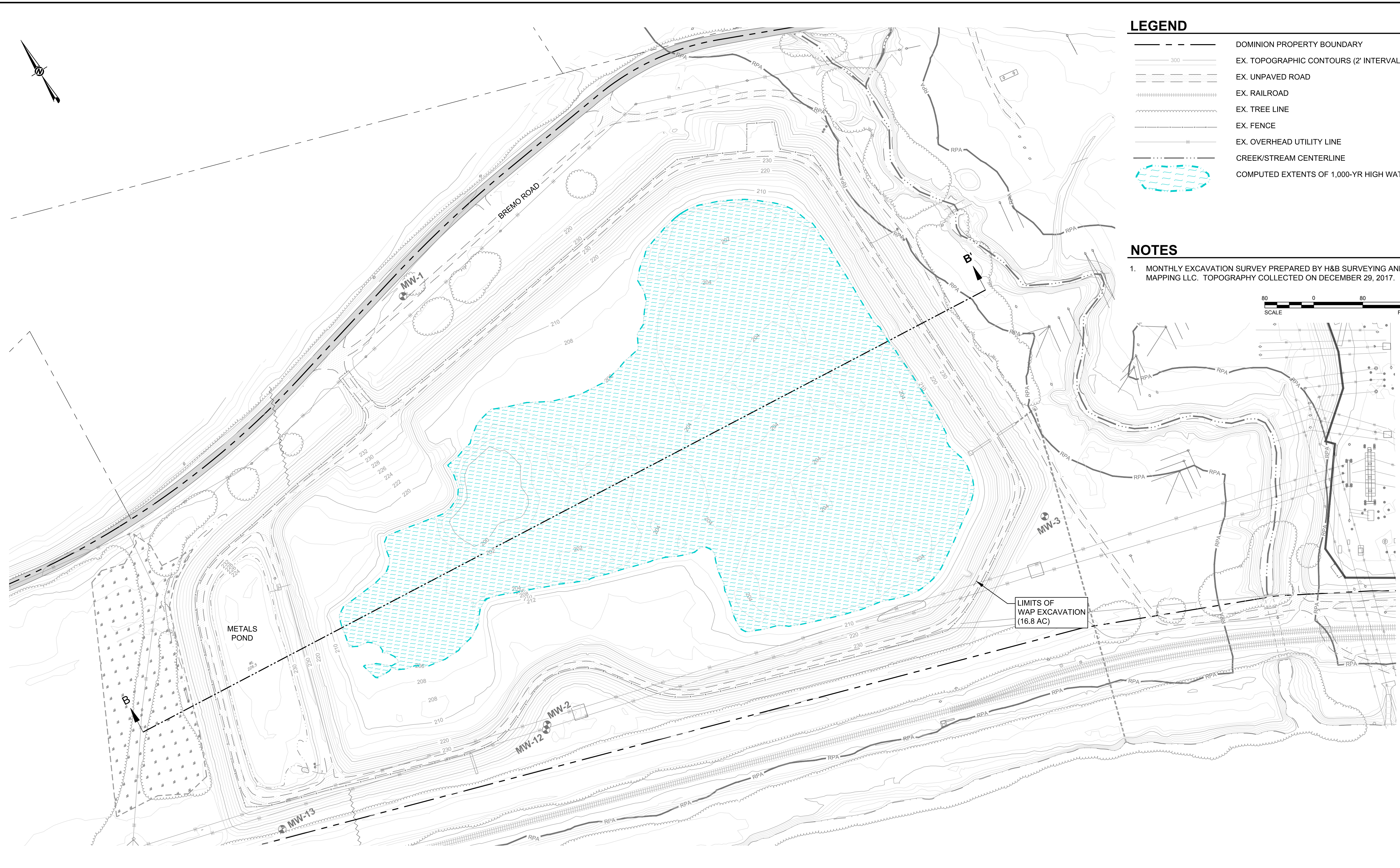
PROJECT
DOMINION
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

TITLE
NORTH ASH POND
DCR INVENTORY #06520
BOTH PMF SCENARIOS

PROJECT No.	15-20347	
FILE No.	1520347-K04	
REV. 0	SCALE	AS SHOWN
DESIGN	DPM	12/17/2015
CADD	SIB	03/02/2017
CHECK	JEK	11/06/2017
REVIEW	DPM	11/06/2017

FIGURE 2

Path: C:\Plant Production Data Files\Drawing Data Files\15-20347QA - Misc Drawings\Civil\3d\Working\1,000 Year Event WAP.dwg



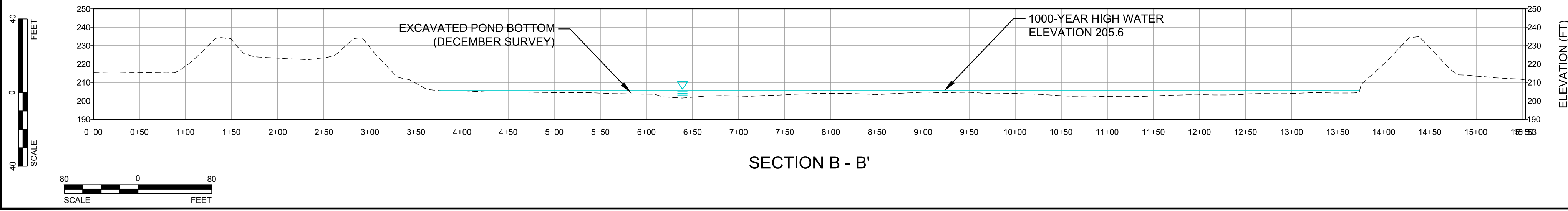
LEGEND	
	DOMINION PROPERTY BOUNDARY
	EX. TOPOGRAPHIC CONTOURS (2' INTERVALS)
	EX. UNPAVED ROAD
	EX. RAILROAD
	EX. TREE LINE
	EX. FENCE
	EX. OVERHEAD UTILITY LINE
	CREEK/STREAM CENTERLINE
	COMPUTED EXTENTS OF 1,000-YR HIGH WATER

NOTES

- MONTHLY EXCAVATION SURVEY PREPARED BY H&B SURVEYING AND MAPPING LLC. TOPOGRAPHY COLLECTED ON DECEMBER 29, 2017.



LIMITS OF WAP EXCAVATION (16.8 AC)

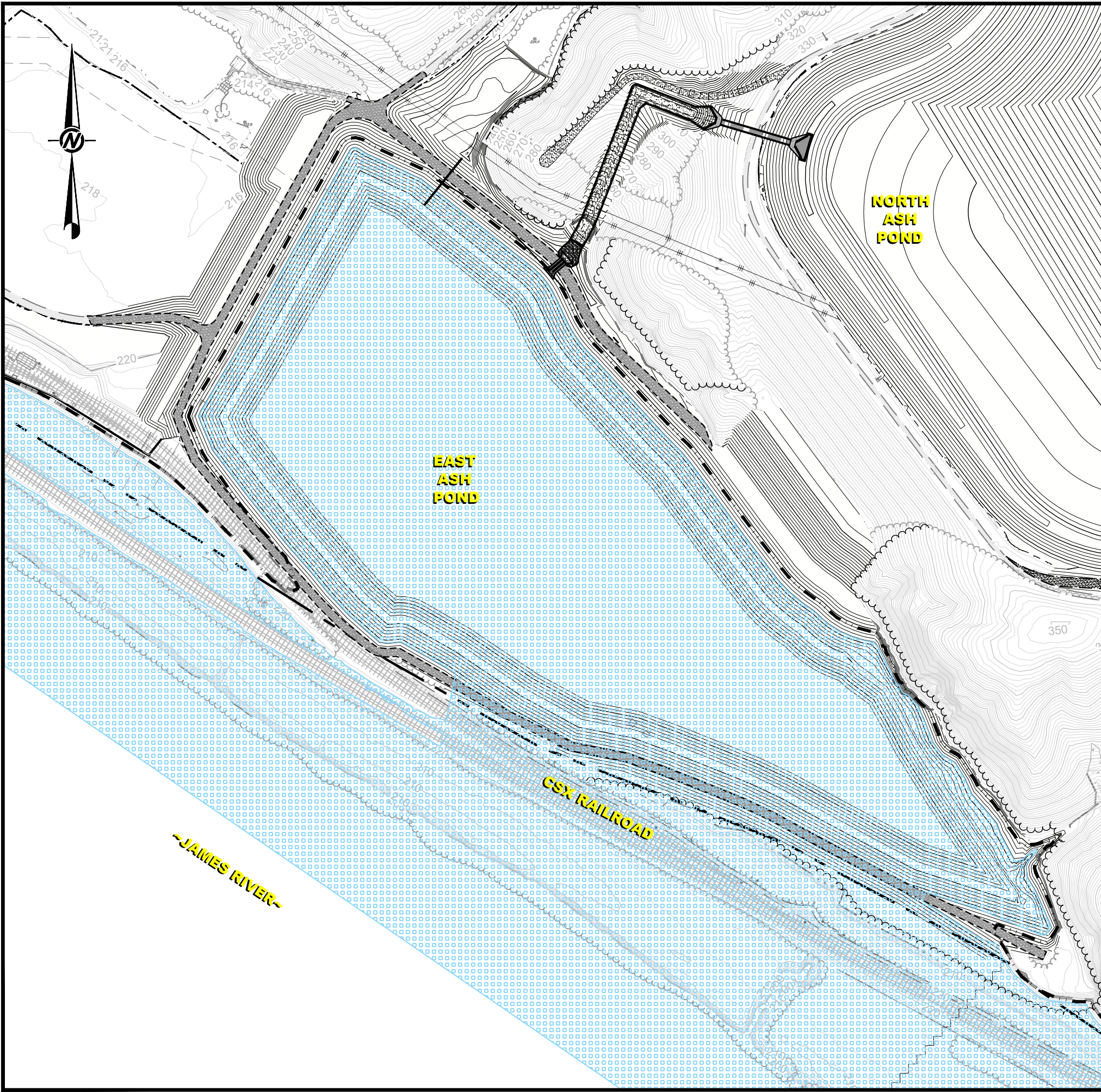


CLIENT DOMINION ENERGY BREMO POWER STATION FLUVANNA COUNTY, VIRGINIA	CONSULTANT GOLDER GOLDER ASSOCIATES INC. 2108 WEST LABURNUM AVENUE SUITE 200 RICHMOND, VA 23227 (804) 358-7900 www.golder.com	PROJECT CCR SURFACE IMPOUNDMENT CLOSURE WEST ASH POND EXCAVATION	TITLE 1000-YEAR EVENT MODELED HIGH WATER ELEVATIONS
		REV. 0	FIGURE NO. 3








REV. MMIDDY DESCRIPTION
 DPM ABR
 DESIGN CADD CHECK REVIEW

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

G:\Plan Production Data Files\Drawing Data Files\15-20347-K - River Sections\Active Drawings\1520347-K East_Updated.dwg

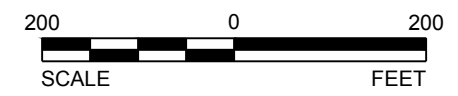


LEGEND

-  AREA SUBJECT TO FLOOD FLOW AND VELOCITY
-  EXISTING TOPOGRAPHIC CONTOUR (10' INTERVAL)
-  EXISTING TOPOGRAPHIC CONTOUR (2' INTERVAL)
-  PROPERTY LINE
-  PROPOSED TOPOGRAPHIC CONTOUR (10' INTERVAL)
-  PROPOSED TOPOGRAPHIC CONTOUR (2' INTERVAL)
-  100 - YR FLOOD PLAIN (ZONE A E)

NOTES

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 - b. BOUNDARY SURVEY PREPARED BY H&B SURVEYING AND MAPPING, LLC DATED 04/27/15.
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3. PROPOSED GRADING FOR NORTH AND EAST ASH PONDS PER "CCR SURFACE IMPOUNDMENT CLOSURE PLAN" BY GOLDER ASSOCIATES INC. DATED DECEMBER 2016.
4. 100 - YEAR FLOOD PLAIN ELEVATION (ZONE A E) PER PANEL #51065C0260C.



DOMINION
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

PROJECT

EAST ASH POND
DCR INVENTORY #00815
PMF BREACH

TITLE

PROJECT No.	15-20347	
FILE	N20347-K East_Updated	
REV. 0	SCALE	AS SHOWN
DESIGN	DPM	01/08/2016
CADD	SIB	02/17/2017
CHECK		
REVIEW		

FIGURE 4



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