Transportation Plan – Chesterfield Power Station CCR Removal Project

Prepared for:

Dominion Energy
600 Canal Street
Richmond, VA 23219

Prepared by:

AECOM
4840 Cox Road
Glen Allen, VA 23060

AECOM.com

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Table of Contents

Attachments

Appendices

Figures in Text

Acronyms and Abbreviations

AECOM	AECOM Technical Services, Inc.
CCR	Coal Combustion Residuals
CCR Rule	Federal Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals (CCR) from Electric Utilities; Final Rule (40 CFR 257)
County	Chesterfield County
dBA	Decibels
DEQ	Virginia Department of Environmental Quality
Dominion	Virginia Electric and Power Company dba Dominion Energy Virginia
FFCP	Fossil Fuel Combustion Products Management Facility
HASP	Health and Safety Plan
HB	VA House Bill (HB) 2786
LAP	Lower Ash Pond
LOS	Level of Service
MCY	Million Cubic Yards
MOU	Memorandum of Understanding
OSHA	Occupational Safety and Health Administration
Project	CCR Closure by Removal Project
SB	VA Senate Bill (SB) 1355
Station	Chesterfield Power Station
TMP	Transportation Management Plan
TTC	Temporary Traffic Control
UAP	Upper Ash Pond

1. Executive Summary

Senate Bill 1355 (SB 1355), enacted by the Virginia General Assembly and effective July 1, 2019, outlines requirements for closure of Coal Combustion Residuals (CCR) impoundments located within the Chesapeake Bay watershed. Specifically, the law requires that CCR at these sites be removed and either disposed of in permitted landfills or designated for encapsulated beneficial reuse. The law further requires: "Where closure pursuant to this section requires that CCR or CCR that has been beneficially reused be removed off-site, the owner or operator shall develop a transportation plan in consultation with any county, city, or town in which the CCR units are located and any county, city, or town within two miles of the CCR units that minimizes the impact of any transport of CCR on adjacent property owners and surrounding communities." Va. Code 10.1-1402.03(D). Dominion Energy (Dominion) has worked closely with Chesterfield County (County), and retained AECOM Technical Services, Inc. (AECOM) to develop this Transportation Plan for the CCR Closure by Removal Project (Project) at Dominion's Chesterfield Power Station (Station).

There are two on-site surface impoundments located at the Station: the Lower Ash Pond (LAP) and Upper Ash Pond (UAP), which together contain approximately 15 million cubic yards of CCR. Dominion is proposing to beneficially reuse 7 million cubic yards, which will involve construction of an on-site processing facility followed by distribution to off-site end users. The remaining 8 million cubic yards of CCR will be disposed of in the adjacent permitted Fossil Fuel Combustion Products Management Facility (FFCP), which requires transportation off-site on public roads. Numerous transportation methods—including trucking, rail, and barge—were evaluated for both the off-site beneficial reuse and disposal of CCR. The key findings are summarized below.

- The most feasible means for CCR disposal and transport from the LAP and UAP to the FFCP was determined to be on-road trucking due to the close proximity of the sites.
- The most feasible means for transporting CCR for beneficial reuse was determined to be rail due to the presence of an existing on-site rail system and the ability of end users to receive CCR via rail.
- Dominion concluded that barging would be inefficient and less cost-effective for large-volume movement of CRR and distribution to end users.

In performing this evaluation, AECOM considered truck traffic volumes, routing, pavement and infrastructure improvements, traffic impacts, noise control, dust mitigation and safety. This Transportation Plan also incorporates the additional actions to be taken in connection with Dominion's consultation with Chesterfield County related to preserving access to the County recreational areas adjacent to the Station. These items are discussed in detail in the report and are summarized below.

- Dominion is providing measures to mitigate the impacts of CCR removal trucking operations on traffic operations in the vicinity of the Station. To provide adequate notice to public traffic of the presence of trucks circulating during the CCR removal work, a Transportation Management Plan (TMP) and an Information Signage Plan depicting recommended signage locations to alert the public traffic will be prepared. The TMP and associated documents will be developed as part of the permitting process with Chesterfield County and will be submitted to both Chesterfield County and VDOT for review and approval.
- Given the legislative deadline to complete CCR removal within 15 years, Dominion and the County entered into a Memorandum of Understanding (MOU) in August 2019 intended to preserve access to adjacent recreational facilities owned by Chesterfield County during the Project. Under the MOU, Dominion will provide funding for certain County improvement projects that will create alternative access to the recreational areas, once constructed. This approach will allow the CCR removal to be performed over the 15 year timeframe in a more efficient, cost-effective, and safe manner. As noted above, plans

will be in place to safely manage traffic throughout the Project, and particularly before the County improvement projects are completed.

- Calculations predict that Dominion's proposed fugitive dust and particulate matter control methods will achieve a control efficiency of approximately 98%, exceeding even the most stringent requirements for mitigation. Wheel washing will be employed to remove accumulated material from truck wheels prior to the trucks leaving the property, and Dominion will maintain a program of regular paved roadway cleaning to consistently remove deposits from paved surfaces.
- The project will follow all relevant federal and local regulations regarding noise levels. While the River's Bend community and Henricus Historical Park may experience distant noise during various phases of the project, the approximately one-mile distance from the LAP and UAP to the nearest residences and past experience with construction activity at the Station suggests that noise impacts will be localized to the site. Therefore, it is not anticipated that additional noise control measures will be required. Noise mitigation measures and operating procedures will be finalized once a contractor is selected and work details are agreed upon.
- Consistent with its core value of safety, Dominion has committed to making public roadway improvements identified by an AECOM geotechnical evaluation and pavement investigation prior to work beginning. These efforts will ensure public roadways are kept in a state of good repair and maintained to Virginia Department of Transportation standards for the duration of the Project. For instance, enhancements to Henricus Park Road will include wider travel lanes, paved shoulders, and a shared-use path adjacent to the roadway to separate pedestrian and vehicular traffic.

2. Introduction

This Transportation Plan was developed to comply with Senate Bill (SB) 1355 and House Bill (HB) 2786, which were passed by the 2019 Virginia General Assembly and became law on July 1, 2019. The legislation requires the closure by removal of certain CCR units within the Chesapeake Bay watershed, which includes the UAP and LAP at the Station. Closure by removal will be conducted in accordance with applicable US Environmental Protection Agency (USEPA) and Virginia Department of Environmental Quality (DEQ) regulations and applicable DEQ permits.

The Project includes the closure by removal of the UAP and the LAP. All CCR material will be excavated from the two ponds and either transferred to the on-site, permitted FFCP or beneficially reused. Beneficial reuse may include an on-site processing facility followed by distribution to off-site end users. Any CCR that cannot be either beneficially reused or disposed at the FFCP will be transferred to an off-site permitted industrial waste landfill for disposal.

The location of the Station is shown in Figure 1 (attached), with prominent site features annotated. The LAP area is ~98 acres and currently contains approximately 3 million cubic yards of CCR; the UAP area is ~112 acres and currently contains approximately 12 million cubic yards of CCR. Dominion is proposing to beneficially reuse 45%+/- of the roughly 15 million cubic yards of CCR contained in the two ponds. Following removal of the CCR, the UAP and LAP will be regraded to final closure grades, which may require importing as much as 5 million cubic yards of fill material from off-site sources.

The 2019 legislation also requires, where CCR will be removed off-site, a Transportation Plan to be developed in consultation with any counties, cities, or towns located within a 2-mile radius of the affected CCR units. The Project will require CCR to be transported on public roads for disposal in the Station's FFCP

as well as shipped via rail to end users for beneficial reuse. Dominion has worked closely with the County in developing this Transportation Plan, which includes certain improvements contemplated by the MOU to ensure that access to the County's recreational facilities adjacent to the Station is preserved throughout the Project and that shared use of the public roads during the early years of the Project - prior to completion of the County improvements – is effectively managed to mitigate potential impacts. Dominion retained AECOM Technical Services, Inc. (AECOM) to develop this Transportation Plan for the Project. The required components of the Transportation Plan are defined as follows:

> The transportation plan shall include (i) alternative transportation options to be utilized, including rail and barge transport, if feasible, in combination with other transportation methods necessary to meet the closure timeframe established in subsection C, and (ii) plans for any transportation by truck, including the frequency of truck travel, the route of truck travel, and measures to control noise, traffic impact, safety, and fugitive dust caused by such truck travel. Once such transportation plan is completed, the owner or operator shall post it on a publicly accessible website. The owner or operator shall provide notice of the availability of the plan to the Department and the chief administrative officers of the consulting localities and shall publish such notice once in a newspaper of general circulation in such locality. Va. Code § 10.1-1402.03(D).

3. Alternative Transportation Options

Numerous transportation alternatives were considered in support of the Project, including rail, barge and trucking. As shown in Figure 1, the FFCP and the on-site beneficial reuse processing facility are located in close proximity to the LAP and UAP and are readily accessible via existing roadways (both on-property and off-property). In contrast, the existing rail spur and barge loading facility do not offer feasible means to transport CCR from the ponds to these facilities. Therefore, the most feasible means of transporting CCR from the ponds to the FFCP and to the Beneficial Use processing facility involves trucking on on-property and off-property roads. Roadway upgrades will be made, as needed, to the routes located between the facilities to accommodate the increased traffic and usage.

Following the receipt of CCR at the on-site beneficial reuse processing facility, the CCR will be processed and then distributed off-site to end users. Given the presence of an existing on-site rail system and the ability of the end users to receive the CCR via rail, rail emerged as the primary mode of off-site transportation for the CCR slated for beneficial reuse. During prior studies as well as the RFP process, barging was not considered to be the most viable means of transportation, unless it involved end users in an extended regional/national market.

Moving CCR from the ponds to the FFCP will require a rotation of trucks which are permitted to travel on public roads for an extended duration, beginning in 2021 and extending until the Project's anticipated completion in 2035. There will be continual truck traffic until all CCR has been excavated and removed from the two CCR ponds in accordance with all federal and state requirements. Following the removal of the CCR, the UAP and LAP will be regraded to final closure grades using available on-site and off-site fill materials. It is anticipated that these fill materials will need to be transported by on-road trucks to the LAP and UAP utilizing existing roadways.

The anticipated maximum truck loading through the life of the Project is currently projected at approximately 100 trucks per hour. This maximum truck loading was used in the traffic impact analysis to ensure that the peak impacts were being assessed.

4. Truck Routing and Impact Minimization Measures

The proposed work is anticipated to be executed on as much as 7 days per week as conditions permit. Accounting for weather, holidays, and Henricus Park events, work on the Project is anticipated to occur on an average of 5 days per week. The typical workday will range between 8 and 12 hours depending on the time of year and the available daylight hours, but could exceed this range and require night shift work under certain circumstances. Dominion will continue to coordinate with Chesterfield County regarding Henricus Park events and school bus traffic entering the facility.

The proposed truck routes on public roads between the LAP and UAP and the FFCP and beneficial reuse processing facility are shown on Figure 2 below. In total, five intersections involving public roadways in the vicinity of the Station are anticipated to be affected by the CCR Project. These intersections are shown in Figure 2 below and are as follows:

1. Dominion Entrance at Coxendale Road
2. Coxendale Road at Old Stage Road
3. Coxendale Road at Existing LAP Entrance and Beneficial Use processing facility
4. Henricus Park Road at Coxendale Road
5. Henricus Park Road at LAP Entrance

The planned route between the FFCP and the ponds to the southeast involves trucks departing from the FFCP and accessing Coxendale Road at its intersection with the Dominion Entrance. Truck traffic will continue along Coxendale Road by turning left at its intersection with Old Stage Road south of the Dominion Entrance. Although this route will then intersect with the Existing LAP Entrance and Beneficial Use processing facility, the Ash Pond Entrance Road as shown in Figure 2 will not be used as a primary access for the LAP or UAP for purposes of the Project. Therefore, truck traffic will follow Coxendale Road until reaching Henricus Park Road to the east, then turn right and follow Henricus Park Road to the southeast corner of the Lower Ash Pond for truck access to the haul roads for the Upper and Lower Ash Ponds.

After loading CCR for transport from the UAP and LAP, truck traffic will converge at the haul road from the LAP onto Henricus Park Road. Loaded trucks will continue north on Henricus Park Road until its intersection with Coxendale Road, turning left and heading west to follow the same route used to access the ponds in reverse towards the FFCP. Traffic associated with a beneficial reuse facility is anticipated to follow a similar, but shorter pattern as described above from the ponds. As the Project progresses, additional entrances may be developed to facilitate removal of the CCR.

As shown on Figure 2, truck traffic is not anticipated and will not be permitted to travel along Coxendale Road west of the site and in the direction of the I-95 overpass, in accordance with Virginia Department of Transportation (VDOT) signage establishing the restriction.

Figure 2: Public Intersections Impacted by CCR Removal

AECOM performed a geotechnical evaluation and pavement investigation of existing public roadways that will be utilized along the planned truck route to determine if any enhancements would be required to maintain a state of good repair. Dominion will complete any required enhancements at the beginning of the Project in order to prevent prolonged disruption to public traffic. This geotechnical evaluation/pavement investigation identified roadway segments where the expected truck loading would require a stronger pavement section. AECOM has developed roadway design plans incorporating VDOT standards where possible.

As shown in Figure 3 below, roadway segments to be paved on-site or repaved as part of the public roadway system enhancements include segments of Coxendale Road, the grade crossing of the railroad tracks at the intersection of Coxendale Road with Old Stage Road, and the entirety of Henricus Park Road. As part of the improvements to Henricus Park Road, Dominion will also construct a shared-use path adjacent to Henricus Park Road (refer to Figure 4 below).

Figure 3: Roadway Segments to be Paved by Dominion

The pavement improvements include an area at the western end of the site, with an at grade crossing of the Dominion railroad spur. This section will be upgraded with concrete pavement at the approaches in response to the increase in truck traffic and the projected braking within this area, but no improvements to pavement will be implemented west of this area on Coxendale Road.

A right-turn lane and taper are being added at the existing LAP entrance from Coxendale Road, which will allow Dominion traffic and potential trucks to depart from Coxendale Road with less disruption to through traffic. In addition, the pavement section from approximately the LAP entrance to the Henricus Park Road intersection will be upgraded and replaced.

Finally, the section of the route that will be upgraded will include the reconstruction of Henricus Park Road using a pavement design based on projected truck traffic loading and the anticipated duration of the Project. The roadway will also be widened and feature a shared-use path. Henricus Park Road improvements will include two phases of construction: The first phase will extend from Coxendale Road to the LAP/UAP entrance and will be completed prior to initiating CCR removal activities at the ponds. The second phase will extend from the LAP/UAP entrance to Henricus Park and will not be performed until CCR has been removed sufficiently from the UAP in order to facilitate the shifting of the roadway to the south toward the UAP.

The proposed typical section for the roadway work to be completed for Henricus Park Road is shown below in Figure 4.

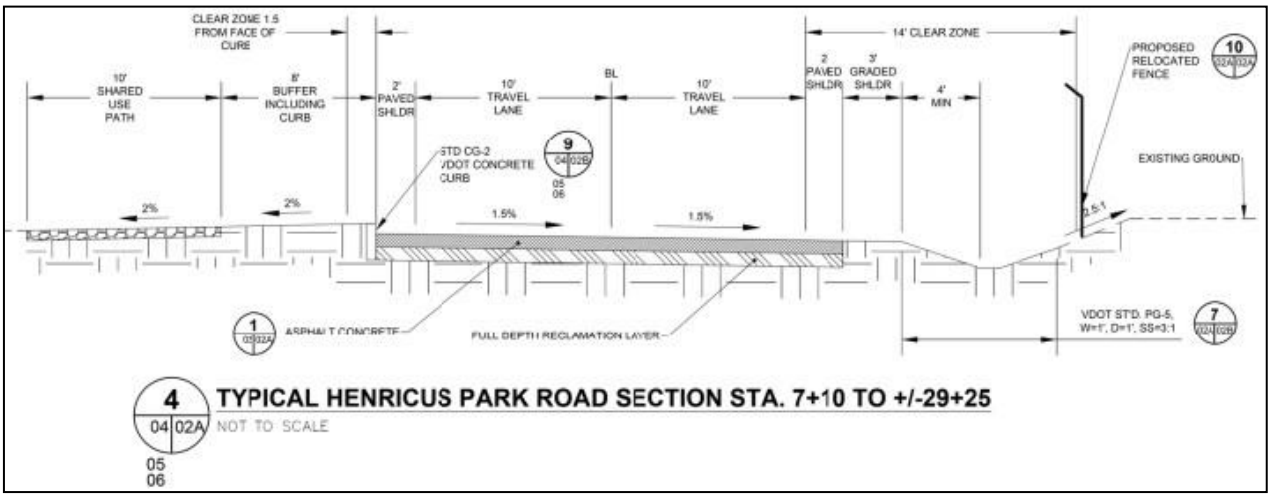


Figure 4: Henricus Park Road Phase 1 Typical Section

Because transportation activities related to the Project are likely to affect the flow of traffic on roads that serve as the single access to Henricus Historical Park, Dutch Gap Conservation Area, and Dutch Gap Boat Launch, Dominion and Chesterfield County developed a Memorandum of Understanding (MOU) that creates a framework for preserving public access to the historical and recreational areas for the duration of the Project. These areas receive over 500,000 visitors per year, and Henricus Historical Park is an educational resource for local schools, with students arriving by bus. The MOU was finalized and signed on August 28, 2019 and is being amended in December 2020.

The MOU allows for existing roadways to be shared between Project operations and public traffic until certain contemplated alternative access improvements are constructed by the County. Dominion will help fund the County improvement projects, which include: a traffic bridge across the James River to reach Henricus Historical Park; relocation of the Dutch Gap Boat Launch; and a new access and pedestrian bridge for recreational visitors to the area. Dominion and the County determined that these improvements would alleviate the potential impacts of longer-term sharing of the public roads while the Project is performed. Once the County improvements are constructed, Dominion anticipates having unimpeded use of Coxendale Road. This will allow Dominion to complete the Project more efficiently and cost-effectively by reducing the efforts necessary to manage public access, safety, traffic, and other interruptions for the entire Project duration.

5. Noise Control Measures

The Project will follow all relevant federal, state, and local regulations on noise levels. The greatest noise impacts are expected to occur on-site during CCR excavation activities at the LAP and UAP. During these activities, private residences and the Henricus Historical Park may experience distant noise. It can be assumed that some Project activities may generate noise in excess of the typical levels generated by Station operations, including:

- Truck traffic associated with hauling CCR and equipment, and
- Heavy earthwork and CCR-handling equipment operation

It is anticipated that future Project-related noise impacts will be localized to the site where the activities listed above are taking place. Noise impacts generally diminish substantially based on distance from the noise-generating source. It is expected that construction activity associated with Project operations would

generally represent a negligible adverse impact beyond a ½-mile radius from the site. As a result, noise control measures are not anticipated to be required for the proposed construction activities. However, operating procedures, potential noise-generating sources and associated mitigation measures will be assessed further once a contractor is selected and work details are agreed upon.

6. Traffic Impact Analysis

AECOM performed a Traffic Impact Analysis on behalf of Dominion to investigate the potential impacts to traffic operations in the vicinity of the Station that could arise with the introduction of truck traffic related to Project activities. This Traffic Impact Analysis Report is included as Appendix A.

Two future scenarios were analyzed for the traffic impact study in order to account for the expected peak truck traffic and an anticipated 5% total increase in traffic volume growth: 1) a 2035 analysis with 82 trucks per hour circulating within the study area and 2) a more conservative 2035 analysis with 100 trucks per hour circulating within the study area. Traffic operations analysis was performed for these two scenarios and the five study area intersections using Synchro software, which is an industry-standard traffic engineering modeling package approved by VDOT and Chesterfield County. The study is based on existing conditions and does not assume the future completion of the projects contemplated by the MOU.

A base network was built using existing roadway geometry that included inputs for lane configuration, stop control, design speed and lane width. Heavy vehicle percentages in the count data were adjusted upward according to truck loading for the Project to generate more accurate results for the specific scenario. For each analysis scenario, Synchro generated projections for delays and Levels of Service (LOS). The LOS is a qualitative representation of factors such as flow rate, delays, and driver comfort that reflect how well a facility is serving the traffic demand relative to available capacity. It is generally accepted that the threshold of acceptable LOS for roadways and intersections is LOS C or better for rural conditions and LOS D or better for urban conditions.

Based upon this analysis, all turning movements at all study area intersections are projected to operate at an acceptable LOS B or better for all analysis scenarios. There are no significant delays or queuing projected anywhere in the study area for any of the trucking scenarios modeled.

Based on the results of operational analysis and the findings of this Traffic Impact Analysis, and coupled with the additional improvement projects contemplated by the MOU described above and other elements of this Transportation Plan, impacts on traffic operations in the vicinity of the Station will be sufficiently mitigated during the Project

7. Safety Considerations

Consistent with the company's core values, Dominion has placed a focus on safety for the personnel working on the Project as well as the public interacting with the Project. Dominion took safety into consideration when investigating and identifying parts of the public roadway network that would not be able to handle the anticipated loading associated with Project truck traffic. Dominion has committed to making public roadway improvements at the beginning of the Project to ensure roadways are maintained to VDOT standards and to prevent prolonged disruption to public traffic due to maintenance or repairs. This improvement effort will ensure that the public roadways remain in good condition and service throughout the trucking operations.

The existing Henricus Park Road that allows for access to Henricus Park is 20 to 22 feet wide with soft

shoulders. The proposed roadway construction shown in Figure 4 above will feature wider travel lanes and paved shoulders (approximately 24 feet wide). The improvements will also include a shared-use path to separate pedestrian and vehicular traffic. The shared-use path will be separated from the roadway by a concrete curb and an 8-foot buffer zone to offer protection between the shared-use path and Henricus Park Road vehicular traffic.

As an added safety improvement to Coxendale Road, a right-turn lane and taper are being added on Coxendale Road at the existing LAP entrance. This improvement will allow traffic utilizing the LAP entrance to divert from Coxendale Road without the need to brake abruptly, as required under existing conditions. The dedicated turn lane will also decrease the impacts to the public through traffic.

8. Transportation Management Plan

In support of the on-road trucking operations described above, a Transportation Management Plan (TMP) will be prepared. The TMP will be consistent with VDOT requirements for roadway design plan sets and will include consideration of maintenance of traffic and roadway signage to promote safe and effective operations for all traffic within the Project's vicinity. The TMP will contain a list of General Notes for contractors working on public roadways in Chesterfield County that is consistent with expectations for the VDOT Chesterfield Residency. These notes describe the work to be performed, provide some guidance and rules and regulations regarding work in and around public roadways and traffic, and reference Temporary Traffic Control (TTC) plans approved for use.

In addition to the TTC plans for work performed in public rights-of-way, an Information Signage Plan depicting recommended signage locations to alert public traffic of the presence of trucks circulating during the CCR Project is also to be prepared. The Informational Signage Plan displays an overview of the area where the truck haul operations will be occurring. The TMP and associated documents will be developed as part of the permitting process with Chesterfield County and will be submitted to both Chesterfield County and VDOT for review and approval.

9. Fugitive Dust Mitigation

The updated Air Quality Permit issued by the Virginia Department of Environmental Quality (DEQ) summarizes the plans and procedures to control fugitive dust associated with Project activities, which includes a Fugitive Dust Control Plan. In accordance with the Fugitive Dust Control Plan, Dominion will employ sound and efficient operating practices with the CCR handling activities, such as optimizing drop and haul distances for trucks being loaded with CCR, employing wheel washing to remove accumulated material from truck wheels prior to the trucks leaving the property, and maintaining a program of regular paved roadway cleaning to consistently remove deposits from paved surfaces.

Per the U.S. Environmental Protection Agency's CCR Rule, Dominion maintains a current version of the Fugitive Dust Control Plan on its website. Dominion will continue to maintain and update the Fugitive Dust Control Plan, as needed, to address changes in the work.

10. Public Outreach Plan

In accordance with SB 1355/HB 2786, Dominion will:

- Make this Transportation Plan available for public review. Dominion will include this Transportation Plan with other CCR documents on its website.
- Publish a notice of the Transportation Plan in the predominant local newspaper (i.e. *Chesterfield Observer*, *Village News* and *Henrico Citizen*) to ensure access via multiple modes of communication.
- Provide notice of the availability of the completed Transportation Plan to state and local authorities, in conjunction with public outreach efforts, prior to commencement of Project activities.

Attachments: Figure 1

LEGEND

- ASH POND BOUNDARY (APPROXIMATE)
- PROPERTY BOUNDARY
- RAILROAD

NOTES

1. BASIS OF BEARINGS: NAD83, VIRGINIA STATE PLANE, SOUTH ZONE.

N

0 500 1000 1500

GRAPHIC SCALE (IN FEET)

AECOM

SEAL

TITLE

SITE LOCATION PLAN

CHESTERFIELD POWER STATION
CLOSURE PLAN - UPPER ASH POND
CHESTERFIELD COUNTY, VIRGINIA

FOR

ISSUED FOR PERMIT

Dominion Energy

SCALE: 1" = 500'	DES: MSR
DWG TYPE:.DWG	DFTR: JBM
JOB NO: 60614683	CHKD: RJB
DATE: 6-05-2020	ENGR: GWL
FILENAME: SITE LOCATION PLAN.DWG	APPD: GWL

DWG SIZE	DRAWING NO.	REVISION
ANSI D 22.0"x34.0"	FIGURE 1	0

0 INCHES 1 2 3 — TENTHS 10 20 30

Appendix A: Traffic Impact Analysis

APPENDIX A: TRAFFIC IMPACT ANALYSIS

Dominion Chesterfield Power Station

Introduction

AECOM has been tasked with providing professional engineering services such as design and permitting support for proposed activities at Dominion's Chesterfield Power Station in Chester, Virginia. One of the proposed operations involves transporting CCR stored at the facility's Upper and Lower Ash Ponds to the adjacent FFCP management facility and to a potential beneficial reuse facility on Dominion property to the northwest of the current pond locations. This will require a rotation of trucks for CCR hauling to circulate between the ponds and the FFCP and beneficial reuse facility for an extended duration until the project is complete.

Purpose and Need

The hauling route for trucks between the ponds and the FFCP and beneficial reuse facility involves adding truck traffic to public roadways. Therefore, a traffic impact analysis is required to determine any potential significant impacts to the existing public roadway network or projected traffic operations. The purpose of this memorandum is to summarize the traffic impact analysis performed by AECOM on behalf of Dominion for review by the Virginia Department of Transportation and Chesterfield County. This analysis is based on existing conditions and does not assume the future completion of the projects contemplated by the MOU.

Study Area

The study area was determined to include any intersection involving public roadways that would be impacted by the CCR haul truck routing. The proposed route between the FFCP and the ponds to the southeast involves trucks departing from the FFCP and accessing Coxendale Road at its intersection with the Dominion Entrance. Truck traffic will continue along Coxendale Road by turning left at its intersection with Old Stage Road south of the Dominion Entrance. Truck traffic will follow Coxendale Road until reaching Henricus Park Road to the east, then turn right and follow Henricus Park Road to the southeast corner of the Lower Ash Pond for truck access to the haul roads for the Upper and Lower Ash Ponds. After loading CCR for transport in the Upper and Lower Ash Ponds, truck traffic will converge at the haul road from the Lower Ash Pond onto Henricus Park Road. Loaded trucks will continue north on Henricus Park Road until its intersection with Coxendale Road, turning left and heading west to follow the same route used to access the ponds in reverse towards the FFCP. Traffic associated with a beneficial reuse facility is anticipated to follow a similar, but shorter pattern as described above from the ponds.

In total, five intersections involving public roadways will be impacted by the proposed CCR hauling operation. These intersections are as follows, and are shown below in **Figure 1**:

1. Dominion Entrance at Coxendale Road
2. Coxendale Road at Old Stage Road
3. Coxendale Road at Existing Lower Ash Pond Entrance and Beneficial Use facility
4. Henricus Park Road at Coxendale Road
5. Henricus Park Road at Proposed Lower Ash Pond Entrance

Figure 1 – Traffic Impact Analysis Study Area

Existing Conditions

The primary roadway utilized for the CCR truck hauling route is Coxendale Road, which is a two-lane roadway in the study area with soft shoulders. The posted speed limit is 35 miles per hour. Henricus Park Road will also comprise part of the truck circulation route and is currently a two-lane roadway with soft shoulders and a posted speed limit of 25 miles per hour. Dominion is proposing improvements to Henricus Park Road before CCR hauling operations begin in order to support the truck traffic, which includes widening and paved shoulders. All study intersections are three-way unsignalized intersections with the minor approaches controlled by stop sign. This includes the proposed Henricus Park Road intersection with a new Lower and Upper Ash Pond Entrance as the westbound approach to the intersection across from the 90-degree right turn on the Henricus Park Road eastbound approach.

For purposes of traffic impact studies, peak hour traffic data is utilized as a basis of traffic operations analysis. A previous traffic study performed in 2015 by consulting firm JMT for a different project utilized traffic data collected at three study area intersections during the AM and PM peak periods. These data were then used to represent existing conditions peak hour traffic data. The JMT study determined that no traffic volume growth had occurred on Coxendale Road in the study area based on comparison to the Average Annual Daily Traffic (AADT) data published by the VDOT Count Program over the prior five years.

This methodology was expanded in AECOM's analysis to include the most recent AADT data published through 2018 in order to determine if growth in the study area occurred that might indicate a need for updated turning movement count data at the study intersections. As shown below in **Table 1**, traffic volume data is still lower in the study area than it was in 2010. The published data has shown a net decrease over time, with a factored count published in 2018 remaining below 2010 levels despite defying the decreasing trend.

Table 1 – Average Annual Daily Traffic Summary

Year	Average Annual Daily Traffic	Percent Trucks and Buses
2010	1300	10%
2011	1300	10%
2012	1100	9%
2013	1000	9%
2014	1100	9%
2015	990	9%
2016	930	9%
2017	910	9%
2018	1200	12%

Data obtained from: https://www.virginiadot.org/info/ct-TrafficCounts.asp

Considering there has been no growth in traffic volumes in the study area over the last nine years of published count data, it was determined that using the 2015 turning movement count data would be satisfactory as a basis for determining the impacts of proposed truck traffic on the study area roadway network. The counts indicated that the AM peak hour was from 6:15 to 7:15 AM and the PM peak was from 3:30 to 4:30 PM.

Future Conditions

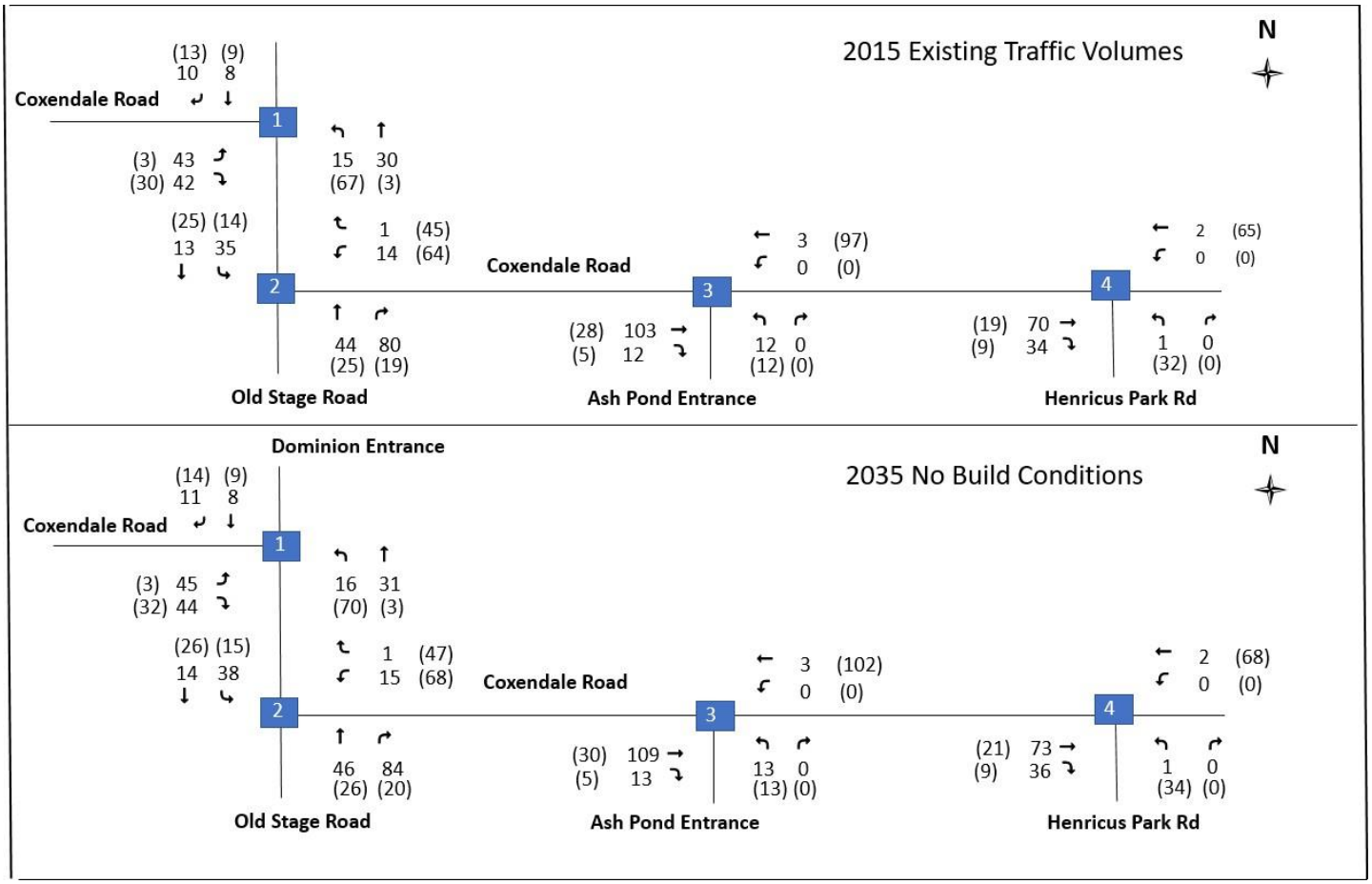
In order to determine future traffic volumes for use in operations analysis, background growth must be projected. Based on the information in Table 1 that demonstrated no growth in approximately a decade, the conservative assumption from the 2015 JMT study to add 5% total background growth to existing condition volumes was also employed for this study.

The JMT study did not include the Henricus Park Road intersection with Coxendale Road in the study area, so peak hour turning movement counts were not available. However, the segment volumes on Coxendale Road at this location are known from the previous count data. To project Henricus Park Road turning movements, a conservative estimate of one-third of Coxendale Road traffic west of the Ash Pond Entrance was projected to originate from or be destined to Henricus Park Road, even though this minor roadway only serves a small park facility to the south of the study area. This is a conservative estimate for an operations analysis because it would involve more public traffic on Henricus Park Road sharing a stop-controlled left-turning movement with the projected Project-related truck traffic, thereby generating a worst-case scenario for delay and Level of Service projections.

It is projected that all hauling activities and associated truck traffic will be completed by 2035. The 2015 JMT study's assumed 5% background growth rate was applied to the existing peak hour turning movement count data to generate projected 2035 'No-Build' (no truck traffic associated with CCR haul operations) traffic volumes for use in operations analysis. The operations analyses for existing and No-Build conditions

were compared to Build condition (with truck traffic associated with CCR haul operations) projected volumes to determine if the Dominion CCR haul operations would have a significant impact on traffic operations in the study area. The projected AM and PM peak hour volumes for existing conditions and 2035 No-Build are shown in **Figure 2** with PM volumes in parentheses, or: 'AM (PM)'**.**

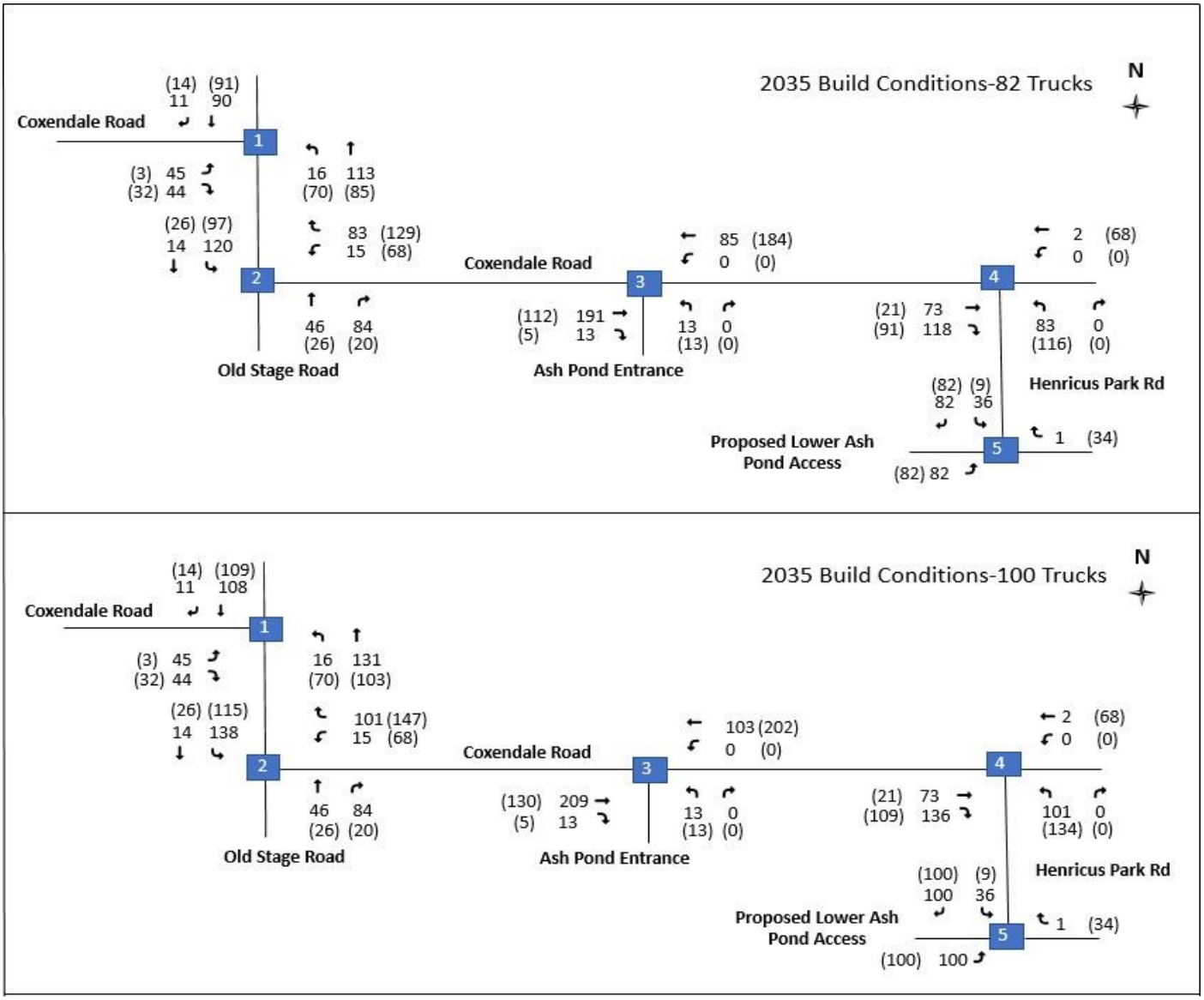
Figure 2 – Peak Hour Turning Movement Counts for Existing and 2035 No-Build Analysis



The anticipated haul truck frequency through the Project's anticipated 2035 completion date is scheduled to vary depending on active projects in the study area. Trucking operations are expected to be the most active in 2025 and the first half of 2026: 30 trucks per hour hauling CCR from the ponds to the FFCP, 33 trucks per hour hauling CCR to a beneficial reuse facility, and 19 trucks per hour hauling fill material from the FFCP to the ponds. Therefore, an hourly truck loading of 82 trucks per hour is projected. To be conservative, this level of truck traffic will be analyzed in the context of the assumed 5% background growth projection by 2035.

Two future traffic operations scenarios were analyzed for this study in order to account for the expected peak of truck traffic and the anticipated background traffic growth: a 2035 analysis with the projection of 82 trucks per hour circulating within the study area, and also a conservative 2035 analysis with 100 trucks circulating to simulate maximum loading and to determine how close the Dominion operations may be to negatively impacting traffic operations in the study area, if at all. The trucks were distributed to the network along the route as previously discussed and added to 2035 No-Build volumes to generate 2035 Build condition volumes for operational analysis. The two 2035 AM and PM Build condition scenario peak hour traffic volume projections are shown in **Figure 3**.

Figure 3 – Peak Hour Turning Movement Counts for 2035 Build Analysis



Traffic Operations Analysis

Traffic operations analysis was performed using Synchro software for the five study area intersections. A base network was built in Synchro using existing roadway geometry that included inputs for lane configuration, stop control, design speed and lane width. In addition to inputting the traffic volumes for each analysis scenario, additional factors such as heavy vehicle percentage and peak hour factor were input. The existing conditions heavy vehicle percentages were based on the 8% heavy vehicle percentage recorded in a count from the 2015 JMT study, and these values were updated in each scenario based on the changes in truck traffic for each Build condition analyzed. The peak hour factor for each turning movement was assumed to be 0.92 to match the JMT study, which did not publish the count data or actual peak hour factors.

For each analysis scenario, Synchro generated projections for delays and Levels of Service (LOS). The LOS is a qualitative representation of factors such as flow rate, delays and driver comfort that reflects how well a facility is serving the traffic demand relative to available capacity. It is generally accepted that the threshold of

acceptable LOS for roadways and intersections is LOS C or better for rural conditions and LOS D or better for urban conditions.

Synchro analysis results were generated and reviewed for each of the four analysis scenarios: Existing Conditions, 2035 No-Build, 2035 Build with 82 Trucks, and 2035 Build with 100 Trucks. The lowest LOS for any turning movement at the study intersections is reported in **Table 2** below—that is, all other turning movements at each intersection are projected to be as good or better than the reported lowest LOS.

Table 2 – Traffic Operations Analysis Results (Synchro, Unsignalized Intersections)

	2015 Existing Conditions		2035 No-Build		2035 Build with 82 Trucks		2035 Build with 100 Trucks	
	AM	PM	AM	PM	AM	PM	AM	PM
Coxendale Road / Dominion Entrance	Eastbound LOS A	Eastbound LOS A	Eastbound LOS A	Eastbound LOS A	Southbound LOS A	Southbound LOS A	Southbound LOS B	Southbound LOS B
Coxendale Road / Old Stage Road	Westbound LOS A	Westbound LOS A	Westbound LOS A	Westbound LOS A	Westbound LOS A	Westbound LOS A	Westbound LOS A	Westbound LOS A
Coxendale Road / Existing Ash Pond Access	Northbound LOS A	Northbound LOS A	Northbound LOS A	Northbound LOS A	Northbound LOS B	Northbound LOS B	Northbound LOS B	Northbound LOS B
Coxendale Road / Henricus Park Road	Northbound LOS A	Northbound LOS A	Northbound LOS A	Northbound LOS A	Northbound LOS B	Northbound LOS B	Northbound LOS B	Northbound LOS B
Henricus Park Road / Proposed Ash Pond Access	Westbound LOS A	Westbound LOS A	Westbound LOS A	Westbound LOS A	Eastbound LOS B	Eastbound LOS B	Eastbound LOS B	Eastbound LOS B

As shown in Table 2, all turning movements at all study area intersections are projected to operate at an acceptable LOS B or better for all analysis scenarios. This includes the 2035 Build condition with 100 trucks that exceeds the projected operation level of 82 circulating trucks per hour at any point between now and 2035. There are no significant delays or queuing projected anywhere in the study area for any of the trucking scenarios modeled.

Conclusions and Recommendations

As indicated by Synchro operational analysis and as displayed in Table 2, there are no operational concerns in the study area under existing and 2035 No-Build conditions. All turning movements operate at LOS A under these conditions. Build condition analysis of the truck traffic scenarios indicates that all turning movements are projected to operate at an acceptable LOS B or better throughout the duration of the project until 2035, when the hauling operations are expected to be complete. LOS B or better was maintained throughout the study area for all movements for the expected operation of 82 trucks per hour, as well as for the conservative 100 truck operations estimate.

Based on the results of operational analysis and the findings of this Traffic Impact Analysis, and coupled with the additional improvement projects contemplated by the MOU and other elements of this Transportation Plan, it is projected that any potential impacts on public traffic operations associated with the Dominion CCR haul trucking operations will be sufficiently mitigated. Even the conservative 100 trucks per hour scenario is not projected to impact operations or deteriorate any turning movement below LOS B in the study area during either AM or PM peak periods. Throughout most of the project schedule, it is estimated that 82 trucks per hour or less will be circulating.