VIRGINIA DEPARTMENT OF TRANSPORTATION PRINCE WILLIAM LAND USE PROJECT REVIEW COMMENT AND RESOLUTION SHEET		TIA NOT REQUIRED	COMMENT CATEGORIES: 1. REQUIREMENT 2. RECOMMENDATION 3. CLARIFICATION
COUNTY PROJECT NUMBER: CPA 2021-00004	DEVELOPER/ENGINEER: MARY ANN GHADBAN / CHRISTOPHER CONSULTANTS	REVIEWER(S): ERIK SPENCER, P.E. ERIK.SPENCER@VDOT.VIRGINIA.GOV	DATE: 03/11/22
PROJECT NAME: PW DIGITAL GATEWAY	REVIEW PHASE & TYPE: 1ST REVIEW, CPA	DISCIPLINE: VDOT	

ITEM NO.	DWG. NO.(1)	COMMENTS	COMMENT CATEGORY	RESPONSE(2) DATE:	FINAL DISPOSITION(3)
		VDOT – Transportation Planning comments:			
1.01	TIA	Page 5: Please provide existing and future No Build and Build link volumes for the study area roadways.	1	The memo has been revised to include volumes for the different scenarios.	
1.02	TIA	Page 6: Please confirm that TAZ 47 was split as shown in the previous memo maps (not 43 as written in this memo).	1	TAZs 43, 44, and 45 were all adjusted (merged and split) to reflect the updated land uses. Additionally, TAZs 46 and 47 were adjusted (merged and split into three TAZs, the third is 731).	
1.03	TIA	Page 7: The centroid connector for TAZ 59 is directly connected to US 29, and it is loading 10,000 daily trips at the future intersection with Battleview/US 29 Alt. This connection does not seem reasonable.	1	This centroid connector was not within our study area and was in the validated model provided to us.	
1.04	TIA	Figures 12 & 15: Some segments of Pageland Ln shows a better V/C ratio for the Build scenario compared to the No-Build scenario. Please clarify.	1	One of the maps was incorrectly pasted into the document, this has been corrected in the revised memo.	

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REVISED SEPTEMBER, 2014

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ITEM NO.	DWG. NO.(1)	COMMENTS	COMMENT CATEGORY	RESPONSE(2) DATE:	FINAL DISPOSITION(3)
1.05	TIA	All the V/C maps: The legend identifies orange as 0.8 to 0.95 and red as >1.0. Please clarify the 0.95 to 1.0 range.	1	All V/C maps were revised to provide clarification on the detailed v/c ratios.	
1.06	TIA	Page 23: Please provide percentages of trips to north, west, south, and east for the select zone analyses (Figures 22 & 23) in a table. We need this information to verify the narrative provided at the end of the paragraph on page 23.	1	This information has been added to the revised memorandum.	
1.07	TIA	From the submitted loaded networks, it appears that you also performed a select link analysis for the Pageland Ln link just north of US 29. Please document that effort and the results obtained from it. We need this information to identify the impact of the development on diverting the pass-through traffic and thus its impact on the parallel roadways.	1	This information has been added to the revised memorandum.	
1.08	TIA	Chapter 536: Please provide a table showing the existing and planned roadways with minor arterial or above functional classification, which have a volume exceeding capacity as a result of this project.	1	A comparison table with all the v/c ratios is included in the revised application.	

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PROJECT NAME: PW DIGITAL GATEWAY	REVIEW PHASE & TYPE: 1ST REVIEW, CPA	DISCIPLINE: VDOT	

ITEM NO.	DWG. NO.(1)	COMMENTS	COMMENT CATEGORY	RESPONSE(2) DATE:	FINAL DISPOSITION(3)
1.09	TIA	"The analysis recommends that the final design of Pageland Road be evaluated to ensure roadway configurations and traffic signal timings are adequate for future use." If it is not the case, please provide a list of mitigation strategies that might be implemented to reduce congestion.	1	Comment acknowledged. The specific mitigations and intersection controls will be determined during rezoning applications.	
		VDOT – Traffic Engineering comments:			
1.10		VDOT Traffic engineering has reviewed the subject comprehensive plan amendment and at this time has no comments on the CPA.	1	Comment acknowledged.	
		VDOT – Preliminary Engineering and Land Use comments:			
1.11		VDOT Preliminary Engineering and Land Use has reviewed the subject comprehensive plan amendment and at this time has no comments on the CPA.	1	Comment acknowledged.	
		VDOT NRO Traffic Operations comments:			

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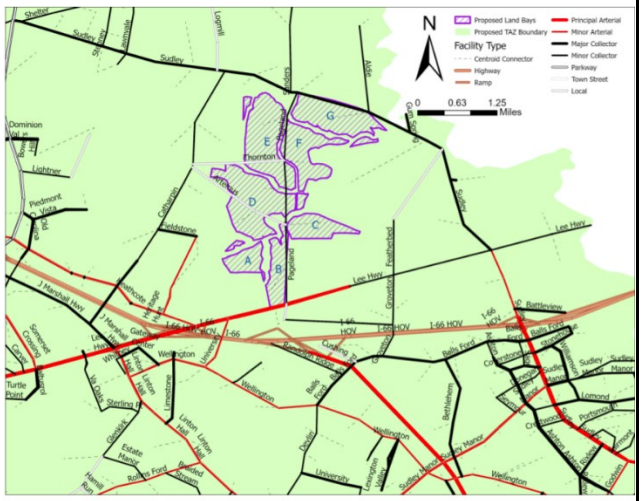
PROJECT NAME: PW DIGITAL GATEWAY	REVIEW PHASE & TYPE: 1ST REVIEW, CPA	DISCIPLINE: VDOT	

ITEM NO.	DWG. NO.(1)	COMMENTS	COMMENT CATEGORY	RESPONSE(2) DATE:	FINAL DISPOSITION(3)
1.12	TIA	Page 4: Figure 2: 2015 Network Facility Types: A portion of Lee Hwy is not identified as "principle arterial" near Sudley Road, Battlefield Park. Why is it not a "principal arterial"? Please explain.  FIGURE 2: 2015 NETWORK FACILITY TYPES	1	This map is based on the current Prince William County Comprehensive Plan which classifies the section of Lee Highway east of Pageland as a 2 lane Major Collector. This is outside of our study area and exists in the validated model provided to us.	

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ITEM NO.	DWG. NO.(1)	COMMENTS	COMMENT CATEGORY	RESPONSE(2) DATE:	FINAL DISPOSITION(3)
1.13	TIA	Page 6: The study used the 2015 traffic data, which is out of date. We suggest using 2019's data for the study. VDOT's 2019 AADT data is available.	1	The model has been validated to 2015 traffic counts and is using the 2015 socioeconomic and network data as an input consistent with the County's model. Using 2019 traffic counts would require a complete validation of the model, which is outside of our scope and would be duplicating effort with a current model validation study that Prince William County is working on.	

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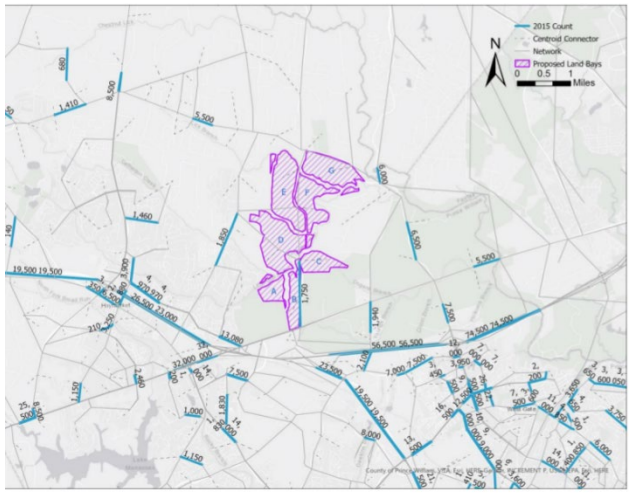
1.14	TIA	The below figure shown on Page 6 does include the data on Lee Hwy, which is a critical primary road and should be included. The 2019 AADT on Lee Hwy is around 20,000 between east of I-66 and Fairfax County line. It appears that the traffic counts on Lee Hwy and Sudley Road shown in the report are significantly lower than VDOT 2019 data.  FIGURE 4: 2015 TRAFFIC COUNT LOCATIONS	1	The model has been validated to 2015 traffic counts and is using the 2015 socioeconomic and network data as an input consistent with the County's model. Using 2019 traffic counts would require a complete validation of the model, which is outside of our scope and would be duplicating effort with a current model validation study that Prince William County is working on.	
1.15	TIA	Page 7: "Base Year Network Performance The volume to capacity ratio maps for 2015 are included in this memo to show the context of roadway performance in the base year. Based on the maps in Figure 6 (AM peak period), Figure 7 (PM peak period), and Figure 8 (daily), the study area has little congestion in the AM peak period, but some congestion on Lee Highway and Sudley Road near Lee Highway in the PM peak period. In the	1	Model data for areas outside of Prince William County are simplified and not for analysis use. The figures have been revised to focus on the study area.	

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PROJECT NAME: PW DIGITAL GATEWAY	REVIEW PHASE & TYPE: 1ST REVIEW, CPA	DISCIPLINE: VDOT	

ITEM NO.	DWG. NO.(1)	COMMENTS	COMMENT CATEGORY	RESPONSE(2) DATE:	FINAL DISPOSITION(3)
		areas to east of the study area and outside Prince William County, there is significant congestion shown in the model."			
1.16	TIA	Figure 6 v/c ratios AM and PM: The segment west of Sudley Road on Lee Hwy experiences heavy congestion in eastbound direction during AM. However, it shows the link v/c < 1.0? Need to check	1	Unfortunately, validation-year traffic counts in that area are scarce. Without knowing the 2015 traffic count for that link, it is difficult to determine if the model is under-assigning traffic or if another reason is causing congestion. The 2015 model is consistent with the County's model.	
1.17	TIA	Figure 11 Future Year No Build AM v/c Ratios: Should check the same segment as mentioned above	1	Please see previous response.	
1.18	TIA	Figure 12 Future Year No Build PM v/c Ratios: Why v/c is less than 1.0 in WB Lee Hwy, but FIGURE 7: 2015 PM V/C RATIOS shows v/c greater than 1:0 on WB Lee Hwy at Sudley Road	1	There are improvements in the future-year no build model network that significantly improve access from this area to I-66. The document has been updated to better describe these improvements.	

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PROJECT NAME: PW DIGITAL GATEWAY	REVIEW PHASE & TYPE: 1ST REVIEW, CPA	DISCIPLINE: VDOT	

ITEM NO.	DWG. NO.(1)	COMMENTS	COMMENT CATEGORY	RESPONSE(2) DATE:	FINAL DISPOSITION(3)
1.19	TIA	In the "Summary and Conclusions" on page 25, it mentions that in the future year, Pageland Road will be approaching congestion, it's recommended to evaluate the intersection configurations and signal timings in the design of Pageland Road. However, it must note that the increased traffic and the impacts on the surrounding roadways, such Lee Hwy and Sudley Road, which are the primary roadways to connect Pageland Road, should be evaluated and mitigation strategies in addition to signal timings are developed/implemented to alleviate the congestion on Lee Hwy and Sudley Road. Please also note even though signal timings will be optimized, if volume exceeds roadway capacity, signals can't reduce the congestion.	1	Comment acknowledged. The rezoning applications for this area will require traffic impact studies (TIS) which will evaluate intersection configurations and provide mitigations.	

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ITEM NO.	DWG. NO.(1)	COMMENTS	COMMENT CATEGORY	RESPONSE(2) DATE:	FINAL DISPOSITION(3)
1.20	TIA	It also says, "One of the things that we noticed during this analysis is all the congestion outside of Prince William County". This statement needs to be checked as some congestion spots, specifically Lee Hwy and Sudley Road, are within the study area.	1	The statement regarding congestion out of the county is due to the nature of this model (which is only for Prince William County), and the memo and maps have been updated to focus on the study area.	
		VDOT – Land Development Comments:			
1.21	CPA	Page 19 of 20, Transportation Chapter: as the improvements to Pageland Lane are contemplated, appropriate access management regulations and standards should be utilized to ensure the safety, integrity and operational characteristics of the grid.	1	Comment acknowledged.	
		Virginia Department of Rail and Public Transportation (DRPT) comments:			
1.22	2	The Project with build and mitigation strategies could enhance multi-modal connections (creating a shared-use bike/ped trail and improving road connectivity to University Blvd Park and Ride lot). DRPT supports the proposed amendment.	1	Comment acknowledged.	

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1.23	22	Please note, DRPT supports the traffic congestion mitigation efforts through road widening to keep v/c below 1.00.	1	Comment acknowledged.	
1.24	68	Please note that the PRTC (OmniRide) Transit Strategic Plan (TDP) Phase 2 was adopted by the Board of Supervisors in 2017 and that OmniRide is currently undergoing Phase 3 of their TSP. We suggest the applicant coordinate with OmniRide on the planned service within in the Town.	1	Comment acknowledged.	
1.25	68	Please note that the Project Pipeline Study NV03: US 29 – Lee Highway is in progress and set to complete by Spring 2022. Incorporate the identified safety improvements and OmniRide commuter assistance programs into the project planning.	1	Comment acknowledged.	
1.26	68	Consider including alternative strategies to connect and reduce traffic congestion surrounding the project area, such as teleworking, commuter services, and Park and Ride lot connectivity	1	Comment acknowledged.	
		Northern Virginia Transportation Authority (NVTA) comments:			

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ITEM NO.	DWG. NO.(1)	COMMENTS	COMMENT CATEGORY	RESPONSE(2) DATE:	FINAL DISPOSITION(3)
1.27	G	Based on review, there does not appear to be a direct conflict between the impacts identified in the report and any of the TransAction or SYP projects.	1	Comment acknowledged.	
1.28	G	In general, NVTA encourages jurisdictions and agencies to consider bike/ped facilities whenever a new roadway is developed or an existing roadway is improved.	1	Comment acknowledged.	

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ITEM NO.	DWG. NO.(1)	COMMENTS	COMMENT CATEGORY	RESPONSE(2) DATE:	FINAL DISPOSITION(3)
1.29	G	There are a few projects in TransAction in the vicinity where project impacts are identified. They are: • Sudley Road Widening from Route 15 to Route 29 • Gum Spring Road Widening from Loudoun County Line to Sudley Road • Add Northbound Lane on Route 29: I-66 to Conway Robinson Memorial State Forest • Route 15 Widening: Haymarket Town Limits to Route 29 • Route 29 Widening: Route 15 to Virginia Oaks Drive We want to bring this to the notice of VDOT and Prince William County staff so that any mitigation activities you plan or make a deal with the developers should include any impact mitigation in the above-mentioned project areas too, to the extent possible.	1	Comment acknowledged.	

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PRINCE WILLIAM COUNTY
DEPARTMENT OF TRANSPORTATION
PROJECT REVIEW
COMMENT AND RESOLUTION SHEET

TIA NOT REQUIRED

COMMENT CATEGORIES:
1. CORRECTIONS
2. RECOMMENDATIONS
3. CLARIFICATIONS

COUNTY PROJECT NUMBER: CPA 2021-00004	DEVELOPER/ENGINEER: GOROVE/SLADE	REVIEWER(S): ELIZABETH SCULLIN ESCULLIN@PWCGOV.ORG	DATE: 2-7-22
TYPE & SUBMITTAL # CPA 2021-00004 – 2ND	PROJECT NAME: PW DIGITAL GATEWAY		

ITEM NO.	DWG. NO.(1)	COMMENTS	COMMENT CATEGORY	RESPONSE(1) (DATE)	FINAL DISPOSITION.(2)
	Tech Memo 12-16-21				
1.01	General	The Figures are too large a scale to display meaningful information. Example – Figure 1 – it is difficult to distinguish the difference between the colors/number of lanes. Figures 6-8 – the graphic should highlight the road network surrounding the proposed CPA rather than showing an approximate 18 square miles. The information for the roadway network in Fairfax County is not germane for this study.		These Figures have been revised.	
1.02	Figure 2 and 2040 Model Runs	It is unclear as to whether Rt. 29 Alternate and Manassas Battlefield Bypass that are in the current Thoroughfare Plan are included in the network. Check the network used in the travel demand model and label these facilities on the graphic.		The future-year network includes these roads, the figures have been updated to clarify this.	
1.03	Figures 6-8, 11-13, and 19-21	These graphics are not meaningful without the actual V/C ratios. A ratio greater than 1.0 doesn't provide a clear indication of the actual V/C.		These have been revised to show the detailed v/c ratios.	
1.04	Volumes and V/C Ratios	The memo must include a table comparing the volumes and v/c ratios for Pageland Lane and the surrounding road		Tables have been added to the memo for the v/c ratios. A full comparison table is included in the appendix.	

(1) To be completed by Applicant/Engineer. Date of Response is required.
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PRINCE WILLIAM COUNTY DEPARTMENT OF TRANSPORTATION PROJECT REVIEW COMMENT AND RESOLUTION SHEET		TIA NOT REQUIRED	COMMENT CATEGORIES: 1. CORRECTIONS 2. RECOMMENDATIONS 3. CLARIFICATIONS
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ITEM NO.	DWG. NO.(1)	COMMENTS	COMMENT CATEGORY	RESPONSE(1) (DATE)	FINAL DISPOSITION.(2)
		network for AM, PM and Daily cases in all scenarios so that the information can be compared and analyzed.			
1.05	Scoping Document	This document scoped by VDOT, PWCDOT and the Applicant's Traffic Engineer requires that model traffic volumes are included in the analysis. These have not been provided in the memo for the model run alternatives. Without this information, it is difficult to determine what traffic is attributable to the proposed development and what traffic is local/regional traffic that would use Pageland Lane in the No Build condition.		The traffic volumes have been added to the revised memo.	
1.06	General	The application states that a shared use path would be included with the widening of Pageland Lane. Note that the DCSM typical section for a minor arterial includes both a shared use path and a sidewalk.		Comment acknowledged.	
1.07	Summary and Conclusions	The memo concludes that Pageland Lane is approaching congestion in 2040 and that the final design of Pageland Lane should be evaluated. Without the volume data and the roadway capacity information, this conclusion cannot be confirmed. The memo doesn't address the impact of the proposed development on the surrounding road network in the County that is showing V/C ratios greater than 1.0, ie Sudley Road, Lee Hwy., Sanders Lane.		Volume data has been added to the revised memo.	

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PRINCE WILLIAM COUNTY DEPARTMENT OF TRANSPORTATION PROJECT REVIEW COMMENT AND RESOLUTION SHEET	TIA NOT REQUIRED	COMMENT CATEGORIES: 1. CORRECTIONS 2. RECOMMENDATIONS 3. CLARIFICATIONS
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ITEM NO.	DWG. NO.(1)	COMMENTS	COMMENT CATEGORY	RESPONSE(1) (DATE)	FINAL DISPOSITION.(2)
1.08	Summary and Conclusions	The memo states that a lot of congestion appears outside of Fairfax County. The County determines roadway capacities that are used within the County in the Travel Demand Model. MWCOG determines roadway capacities for the rest of the region, and therefore the capacities shown on this analysis outside of the County are not a true representation of the V/C ratios.		Comment acknowledged. That statement has been removed and the graphics have been revised to focus on the subject area.	
1.09	Summary and Conclusions	The comment that possible work place changes with increasing teleworking and reduced office trip generation could impact the future year traffic levels and patterns is unfounded. It is assumed for future travel that the peak hours will continue to be at capacity because these are the times that the majority of the people want to travel. The peak periods and time distribution of traffic may change, but the peak hours will remain as the capacity-limiting factor.		Comment acknowledged. The statement has been revised to clarify that the model was not changed to reflect any potential changes.	
1.10	Summary and Conclusions	The results of the 2040 Travel Demand Forecasts include all planned and widened roads in the 2030 Thoroughfare Plan. These include: • Sudley Road – widen to 4 lanes • Lee Hwy – widen to 6 lanes west of Pageland • Rt. 29 Alternate – new 4 lane road		Comment acknowledged. Further phasing and funding will be determined with rezoning applications.	

(1) To be completed by Applicant/Engineer. Date of Response is required.
(2) The PWC reviewer is responsible for the final disposition of all comments.

PRINCE WILLIAM COUNTY DEPARTMENT OF TRANSPORTATION PROJECT REVIEW COMMENT AND RESOLUTION SHEET	TIA NOT REQUIRED	COMMENT CATEGORIES: 1. CORRECTIONS 2. RECOMMENDATIONS 3. CLARIFICATIONS
COUNTY PROJECT NUMBER: CPA 2021-00004	DEVELOPER/ENGINEER: GOROVE/SLADE	REVIEWER(S): ELIZABETH SCULLIN ESCULLIN@PWCGOV.ORG
TYPE & SUBMITTAL # CPA 2021-00004 – 2ND	PROJECT NAME: PW DIGITAL GATEWAY	

ITEM NO.	DWG. NO.(1)	COMMENTS	COMMENT CATEGORY	RESPONSE(1) (DATE)	FINAL DISPOSITION.(2)
		• Manassas Battlefield Bypass – new 4 lane road The planned development must be phased based on the capacity of the roadway network at the build out year of the development. Note that the County does not have the funding to construct these projects and no current grant applications to fund them. The majority of the grant funding opportunities require planning studies which take approximately 18-24 months. Funding requests generally are for 6 years in the future for the initiation of the project; therefore it is unlikely that these improvements could be in place within the next 10 years.			
1.11	Att. #3 – Figure 1	Homeland Security Evacuation Routes – the text refers to "purple" routes but there are no purple routes on the graphic.		The routes shown on the graphic are shown along the road lines. For example, Route 29, Route 28, Route 50 are all among the purple lines shown on the exhibit received from VDOT.	
1.12	Att. #3 – Table 3	The cost estimate is very general and doesn't provide enough detail to verify the costs. It indicates that right of way will have to be purchased in order to widen Pageland Lane. The location of this right of way and quantities must be provided.		The preliminary cost estimate has been revised to include ROW information in the memo. A more detailed cost estimate would be determined during the rezoning applications.	
1.13	General	Note that the travel model runs for this CPA are limited in that the office employment added to the Traffic Analysis Zones (TAZ) in the Digital Gateway Corridor must be		Comment acknowledged.	

(1) To be completed by Applicant/Engineer. Date of Response is required.
(2) The PWC reviewer is responsible for the final disposition of all comments.

PRINCE WILLIAM COUNTY DEPARTMENT OF TRANSPORTATION PROJECT REVIEW COMMENT AND RESOLUTION SHEET	TIA NOT REQUIRED	COMMENT CATEGORIES: 1. CORRECTIONS 2. RECOMMENDATIONS 3. CLARIFICATIONS
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TYPE & SUBMITTAL # CPA 2021-00004 – 2ND	PROJECT NAME: PW DIGITAL GATEWAY	

ITEM NO.	DWG. NO.(1)	COMMENTS	COMMENT CATEGORY	RESPONSE(1) (DATE)	FINAL DISPOSITION.(2)
		removed from other zones to account for the MWCOG Cooperative Forecast demographic control totals. If this is not done, the model balances employment with population/households. It will automatically relocate work trips to fill those jobs created in the DG Corridor by calculating fewer work trips made to all other zones. Given this, this site traffic analysis will likely produce different results than the regional travel model run for the Comp Plan Update which will include recommended land uses from the Planning Office within the MWCOG control totals.			
1.14	General	A graphic that was included with the Scoping Document presented showed a realignment of Pageland Lane and widening the road from two to four lanes. This improvement cannot be considered as part of the CPA because the travel demand model runs did not analyze Rt. 234 North Extended that would parallel Pageland Lane. If the County determines that Rt. 234 North should be included in the Thoroughfare Plan, the County will analyze how Pageland Lane will interface with Rt. 234 North, the width of Pageland Lane and where intersections will be allowed.		Comment acknowledged. The graphic presented in the scope was an old version. A realignment of Pageland is no longer being contemplated with the CPA.	

(1) To be completed by Applicant/Engineer. Date of Response is required.
(2) The PWC reviewer is responsible for the final disposition of all comments.

GOROVE SLADE
Transportation Planners and Engineers

TECHNICAL MEMORANDUM

To:	Peter Gerner	VDOT
	Elizabeth Scullin	Prince William County DOT
From:	Sumedh Khair, EIT	Gorove Slade
	Kayla Ord, PE	
	Chad Baird	
Date:	April 4, 2021	
Subject:	**PW Digital Gateway Corridor (CPA #2021-00004) – Comprehensive Plan Amendment Requirements**	

Contact Information

- Gorove Slade – Traffic Consultants
  - Contact: Chad Baird
  - Address: 12125 Washington Street, Suite 212 Haymarket, VA 20169
  - Email: cab@goroveslade.com
  - Phone: 571-261-9719
- RSG – CUBE Modeler
  - Contact: Andrew Rohne
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- Mary Ann Ghadban – Applicant, on behalf of the owners
  - Email: maryann@maglandbroker.com

Summary of Proposed Amendment

The proposed Comprehensive Plan Amendment will amend the Long-Range Land Use for the subject 2,133 acre area from AE (Agricultural or Estate) + ER (Environmental Resource) to T/F (Technology/Flex) + ER (Environmental Resource). The Plan Amendment was initiated by the Prince William Board of County Supervisors during its July 20, 2021 meeting. An overwhelming majority of the land within the corridor is owned by Applicants and supporters of this CPA effort.

The data center Targeted Industry use envisioned by this CPA will be limited to an overall floor area ratio (FAR) not to exceed 0.30, because of the Corridor's proximity to the Manassas National Battlefield to the east and low density rural uses to the west. Individual sites within the Corridor may be rezoned at higher or lower FARs than the 0.30, so long as the cumulative average within the Corridor remains no more than 0.30 FAR.

Overview of Reasoning and Purpose for Amendment

The CPA seeks to make available, subject to rezoning, a significant amount of additional land for new data center facilities in Prince William County. Data Centers are a Targeted Industry commercial tax base use, which is a critical component of the County's adopted Strategic Plan and Economic Development Initiative, that is now needed because the supply of data center planned and zoned land is quickly being outpaced by increasing demand in Prince William County. Re-classifying the corridor to allow this commercial "employment" use is critical to ensure future economic growth and vitality for Prince William County. Concentrating new additional data centers within the Corridor will allow well-suited Industrial and Employment planned land located elsewhere to remain available for a diversity of other commercial tax base and employment uses.

Final Transportation Recommendations

As summarized in the CUBE model memo (Attachment 1), Pageland Lane between Lee Highway and Sudley Road is planned to be upgraded to a four-lane divided road in order to offset the additional trips being generated by the planned development. As shown in the County's model, a north/south connection is needed in the future with or without the proposed CPA development. Without the CPA, this route could go in a number of different places and create impacts. With the CPA, the Pageland upgrade provides the needed north/south route and will be implemented with less adverse impact to the general area.

Based on the projected volumes and usage, the MA-1 section is recommended for Pageland Lane. This upgrade will be phased over an extended period, to coincide with the timing and location of new data center clusters. The preliminary concept plan is presented in Figure 1. As, a major north-south pedestrian/bicycle trail on the east side is also planned.

Attachments

- Attachment 1 – CUBE Model Study
    - Includes Planning Assumptions, Local Assessment, Needs Assessment, Recommendations,
        - CD with CUBE files included
- Attachment 2 – Signed Scoping Document with Checklist
- Attachment 3 – Supplemental Transportation Information Memorandum
    - Includes Inventory, Cost Estimates, Evacuation Routes, and Chapter 536 Requirements

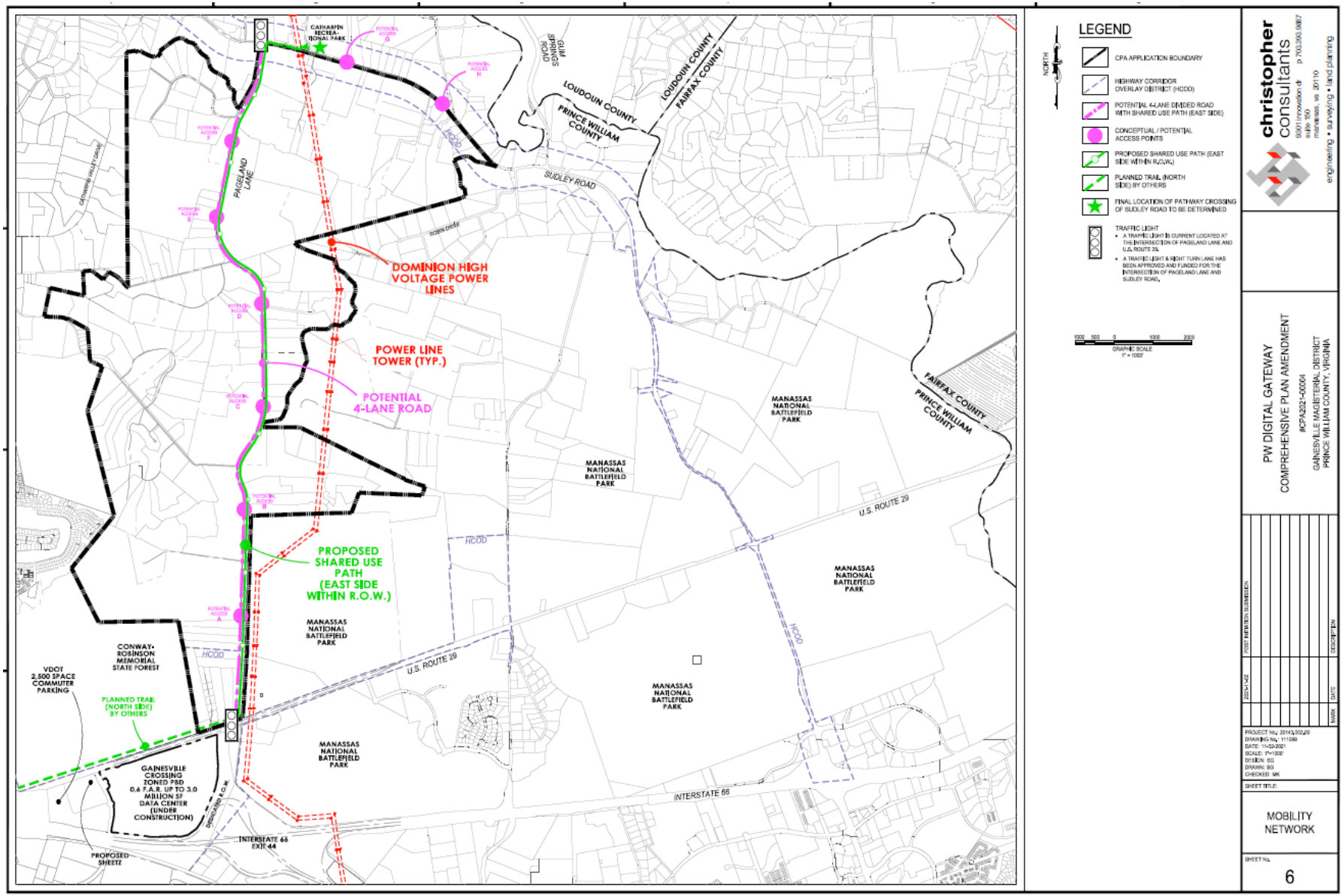


Figure 1: Mobility Network Plan

ATTACHMENT #1
CUBE MODEL

MEMO

TO: Chad Baird, Gorove Slade
Kevin Sitzman, PE, Gorove Slade
Kayla Ord, PE, Gorove Slade

FROM: Jay Evans, PE, AICP, RSG
Andrew Rohne, RSG
Joe Amoroso, RSG

DATE: March 31, 2022

SUBJECT: Digital Gateway – Baseline 2015 and 2040 Modeling

Introduction

This memo provides background and technical information on the initial 2015 and 2040 model year runs that included adjusted TAZ boundaries and land use data within the study area to accommodate analysis using the Prince William County (PWC) Cube Model of the proposed locations of data centers as a part of the Digital Gateway Comprehensive Plan Amendment study. This memo also includes the results of the model runs including the Digital Gateway development, which is the development under study.

For this study, the model was not re-validated since it was provided as a validated model to 2015 traffic counts and socioeconomic and network data inputs. We checked the base year number of lanes in the study area against aerial photography on Google Maps and confirmed the assignment validation.

The Prince William County model is a subarea model that utilizes a detailed highway network for Prince William County and a less detailed network for the surrounding counties that are part of the Metropolitan Washington Council of Governments (MWCOG) model area. This provides for regional transportation context to this model while maintaining a more detailed local model. The roadways outside of Prince William County are simplified and are not a true representation of transportation capacity or use, and as such are not used in this analysis. The future year model inputs include a 2030 highway network that is used in conjunction with 2040 socioeconomic data and land use assumptions. Since there is a highway network and land use assumption difference, we simply refer to the 2030 network + 2040 land use as “future year” in the rest of this document. This future year model network includes some significant improvements just south of the study area, including a bypass to Lee Highway that significantly improves access from the study area to I-66.

The study included four separate scenarios that were run using the Prince William County model. First, after the necessary model modifications were made, a baseline 2015 scenario was run. Second, a future year no-build scenario, which did not include the addition of the proposed development was run. Third, a future year build scenario was run, which included the proposed development and its associated land use characteristics. This included the addition of office employees within the TAZs that contain the proposed data centers that roughly resulted in an additional 27,500 daily trips to align with the proposed site trip generation analysis. Finally, a future year alternative build scenario was run with Pageland Road widened to four total lanes in the development area.

Model Modifications

As discussed in the previous memo, one transportation analysis zone (TAZ) was split (zone 43 was split to zone 43 and 731). As part of this, the model was modified to increase the maximum number of zones by one. Additionally, the code was checked to ensure that the zones in the subarea were not hard coded into the script.

There is a model input file called ‘delta.trp’ that was adjusted to split the values for zone 43 between zones 43 and 731. Prior to this, the values for zone 731 were zero because the zone was unused.

The assignment model was modified to output the volumes for the zones in the Digital Gateway development. This allowed us to be able to see the trips from the development. We used this both as a quality control tool and to investigate the impacts of the development on the surrounding areas. The assignment model was checked to ensure that it was set up to compute volumes properly and was compared to un-modified outputs to ensure the revisions did not alter the behavior of the model.

In addition, all future year scenarios, including the No Build, have updated land use values to accommodate the Innovation Park Small Area Plan (SAP), as provided by Prince William County.

Select zone analyses were added to the model. A select zone analysis for the model TAZs that contain a proposed data center (39-40, 44-46, 58, 731) was added to the model script to better understand the traffic flows to and from the proposed development site. This analysis was performed for each of the model scenario outlined in this memo. See Figure 37, **Error! Reference source not found.** and Figure 38 below.

2015 Model Run

The base year for the PWC mode, 2015, was run with the proposed TAZ boundary and land use adjustments proposed in RSG’s previous memorandum. Figure 1 shows the 2015 number of lanes provided by Prince William County and reflecting the TAZ splits. None of the roadway cross-sections were changed in the 2015 network; changes were

limited to setting up the network with the splits. Figure 2 shows the facility types on the 2015 roadway network. As with the number of lanes, none of the facility types were changed.

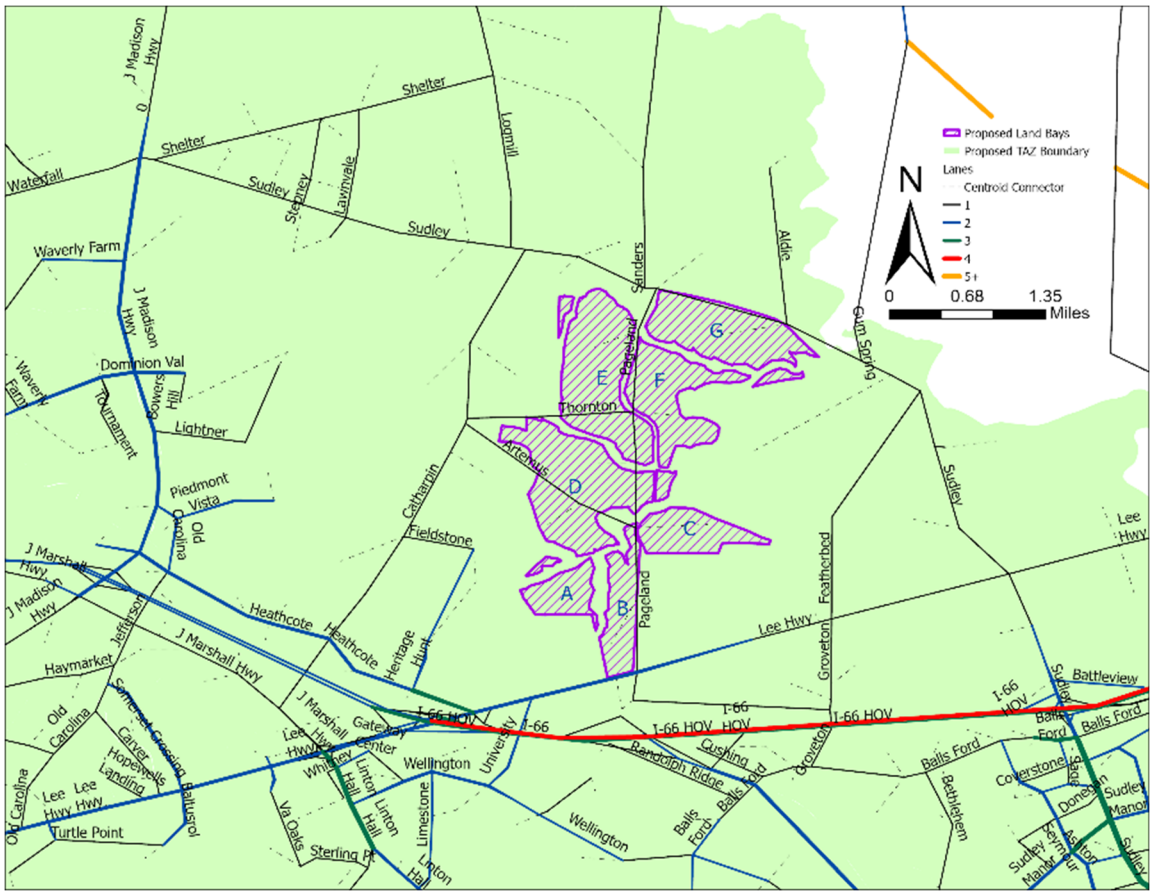


FIGURE 1: 2015 NETWORK DIRECTIONAL LANES

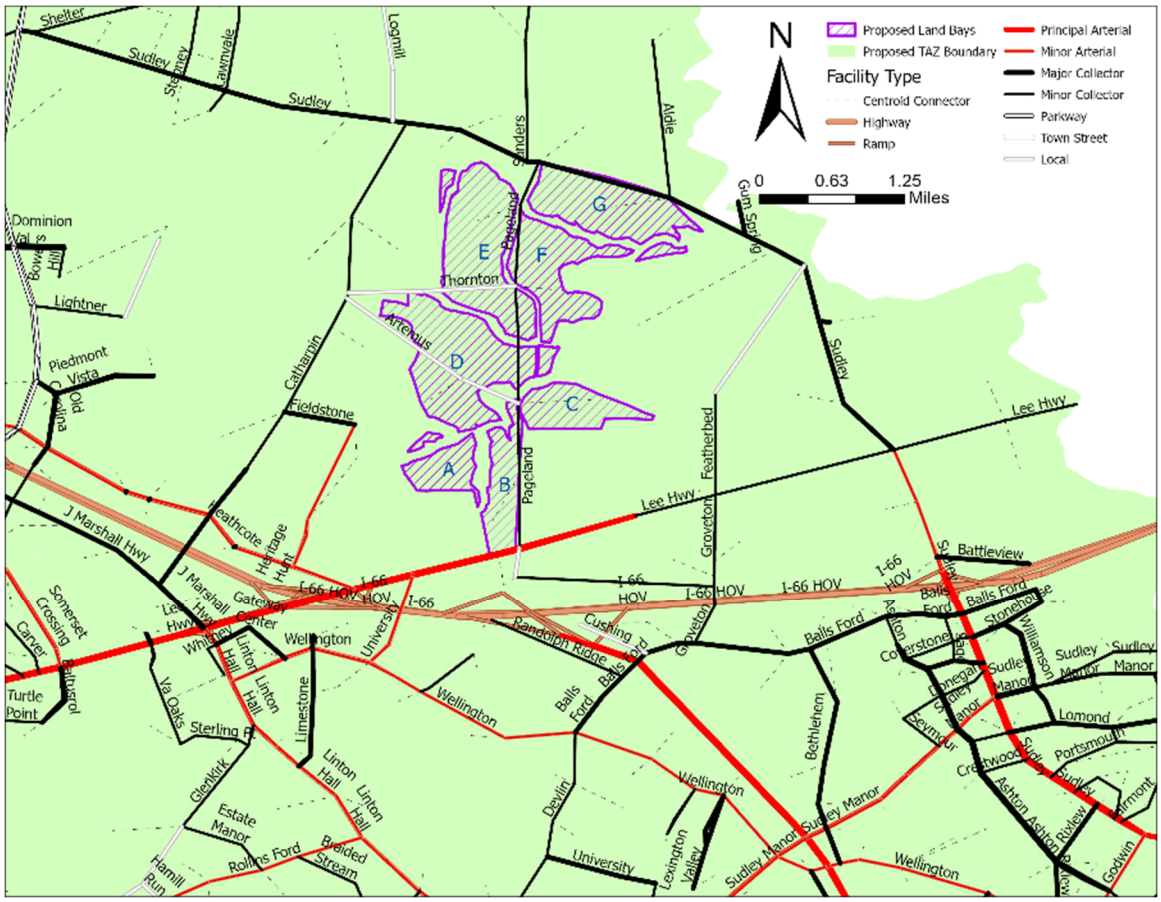


FIGURE 2: 2015 NETWORK FACILITY TYPES

Screenlines

Screenlines were developed to assist in quality control of the volumes assigned by the model and to assist with comparing alternatives. The screenlines are shown in Figure 3.

Table 1 shows differences in total volume aggregated across the five screenlines comparing the original model delivered by Prince William County to the model with the TAZ splits. With the TAZ boundary and land use adjustments, the model changed very little, the greatest change in volume being a 0.36% decrease along SL3.

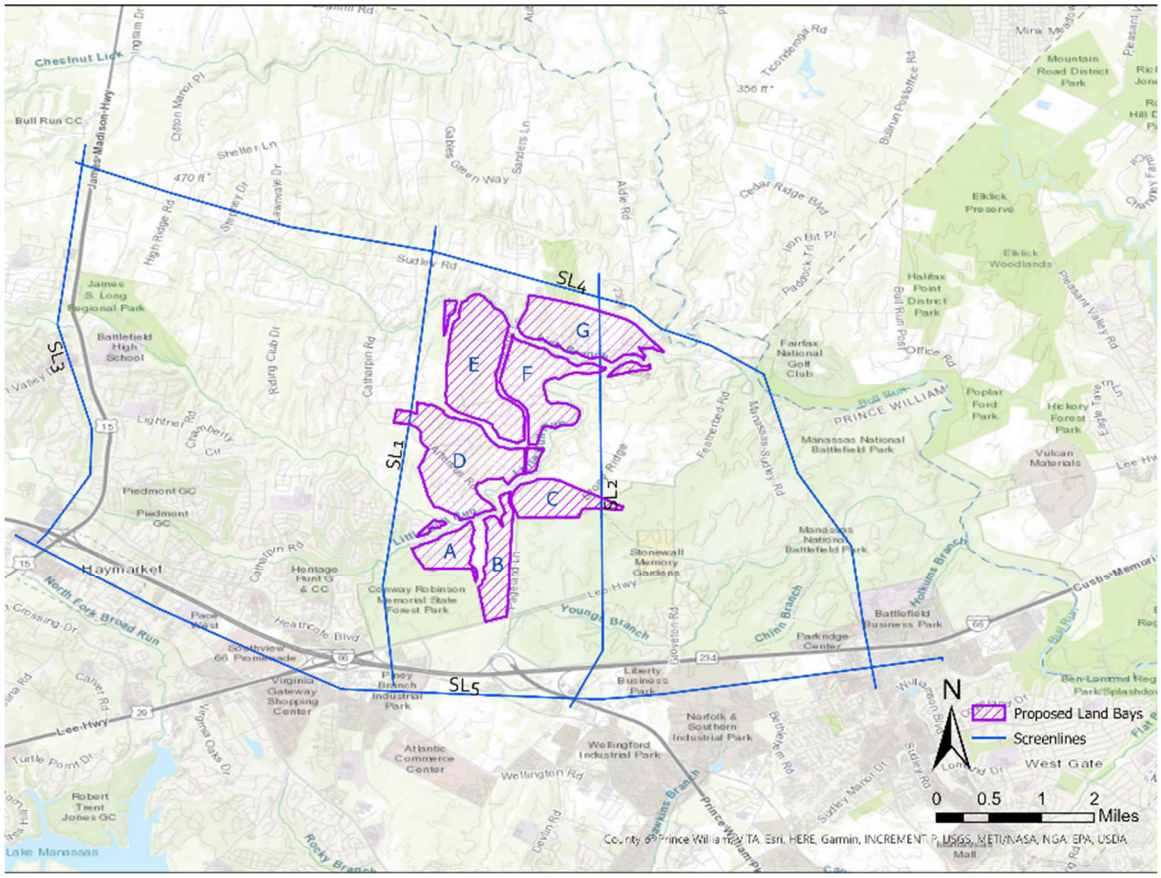


FIGURE 3: SCREENLINES

TABLE 1: 2015 VOLUME DIFFERENCES

SCREENLINE	ORIGINAL TOTAL MODEL VOLUME	ADJUST TOTAL MODEL VOLUME	MEAN ABSOLUTE DIFFERENCE	PERCENT DIFFERENCE
SL1	156,284	155,962	26.83	-0.21%
SL2	185,125	184,803	21.47	-0.17%
SL3	69,030	68,779	20.92	-0.36%
SL4	317,170	317,071	3.54	-0.03%
SL5	161,055	160,992	3.50	-0.04%

Subarea Validation

The validation statistics for the study area were checked to ensure the model was not significantly inaccurate. This validation was limited to checking the model assignment for the updated base-year network against the base-year traffic counts. The traffic counts that were used for this were included as an attribute on the network file provided by Prince William County and are shown in Figure 4. The comparison of the traffic counts

and assigned volumes is shown in Figure 5. The validation is reasonable, with very few points that are outliers that are all over assigned.

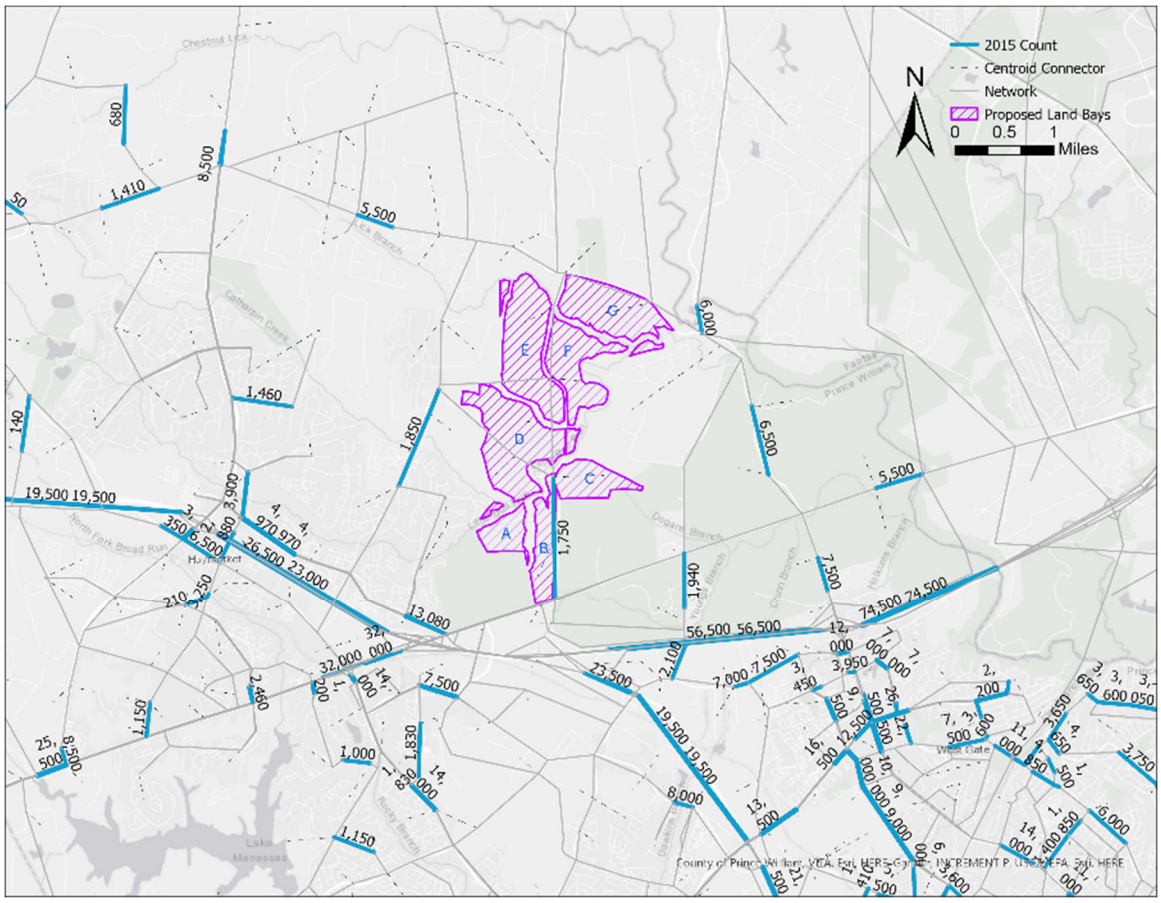


FIGURE 4: 2015 TRAFFIC COUNT LOCATIONS

Select Zone Analysis

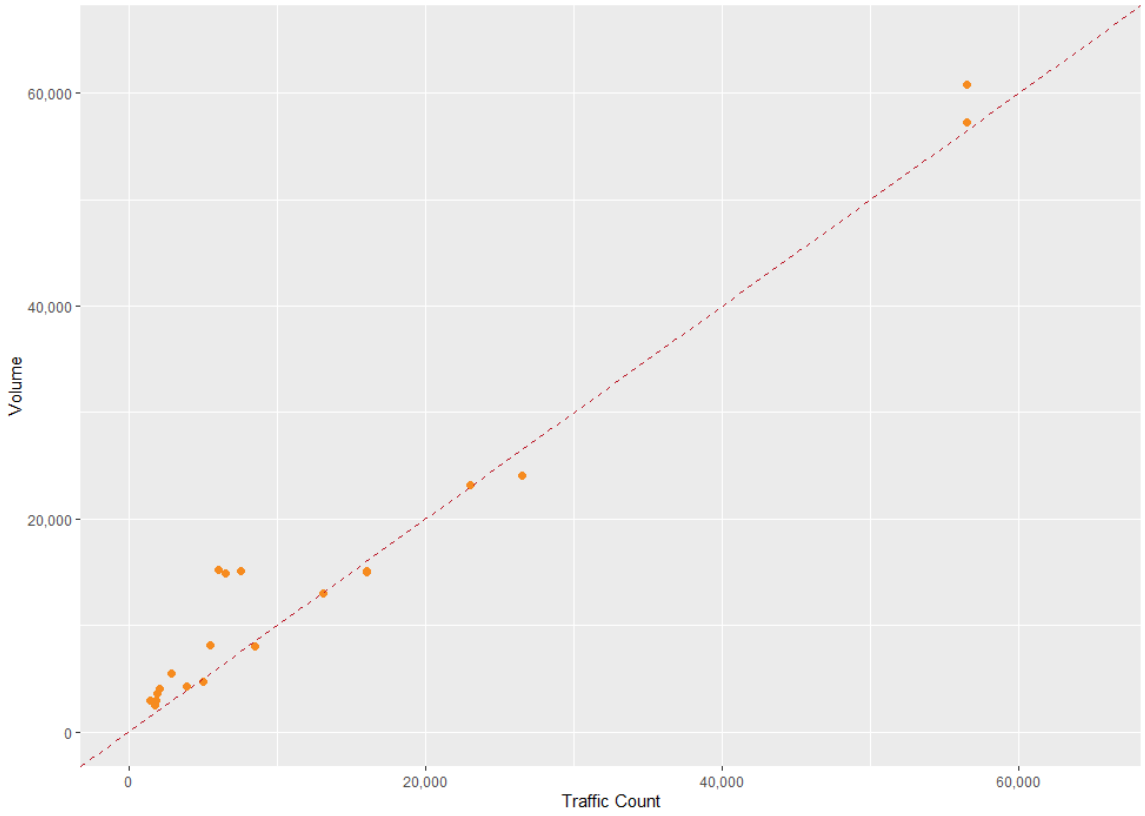


FIGURE 5: 2015 TRAFFIC COUNTS VS. DAILY VOLUMES

Base Year Network Performance

The volume to capacity ratio maps for 2015 are included in this memo to show the context of roadway performance in the base year. Based on the maps in Figure 7 and Figure 8 (AM peak period), Figure 9 and Figure 10 (PM peak period), Figure 11 and Figure 12 (daily), the study area has little congestion in the AM peak period, but some congestion on Lee Highway and Sudley Road near Lee Highway in the PM peak period. In the areas to east of the study area and outside Prince William County, there is significant congestion shown in the model. Table 2 lists the model roadways in the vicinity of the proposed development along with the available traffic counts, model volume, and volume to capacity ratio. Note that few 2015 traffic counts are available

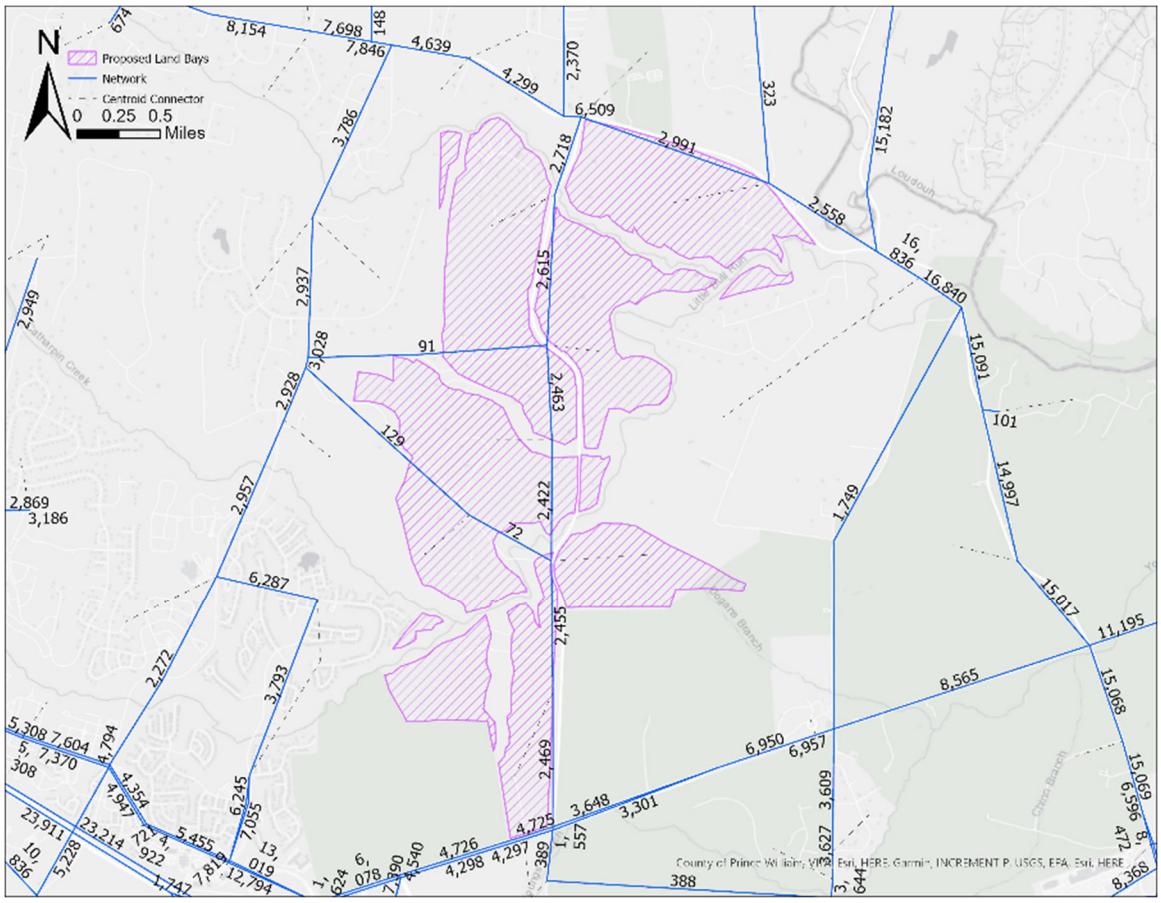


FIGURE 6: 2015 DAILY MODEL VOLUMES

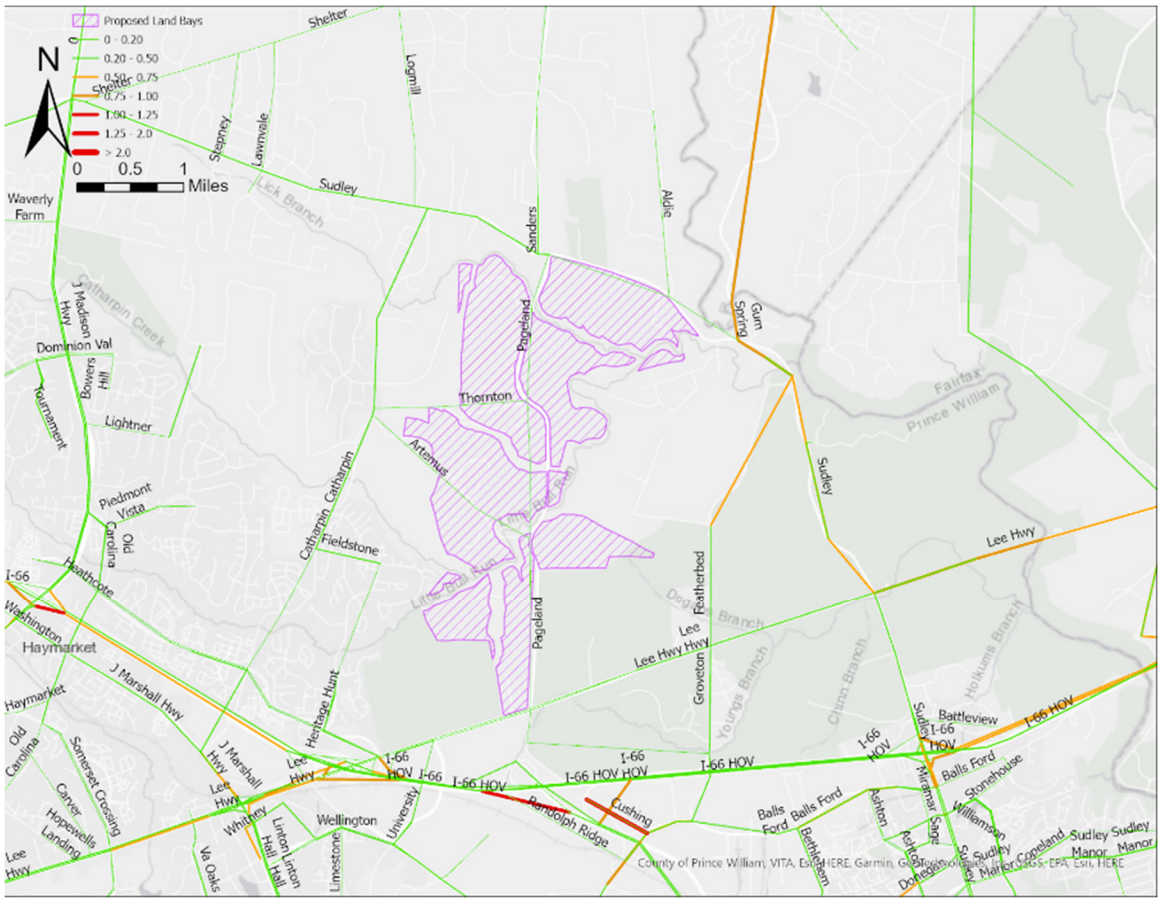


FIGURE 7: 2015 AM V/C RATIOS

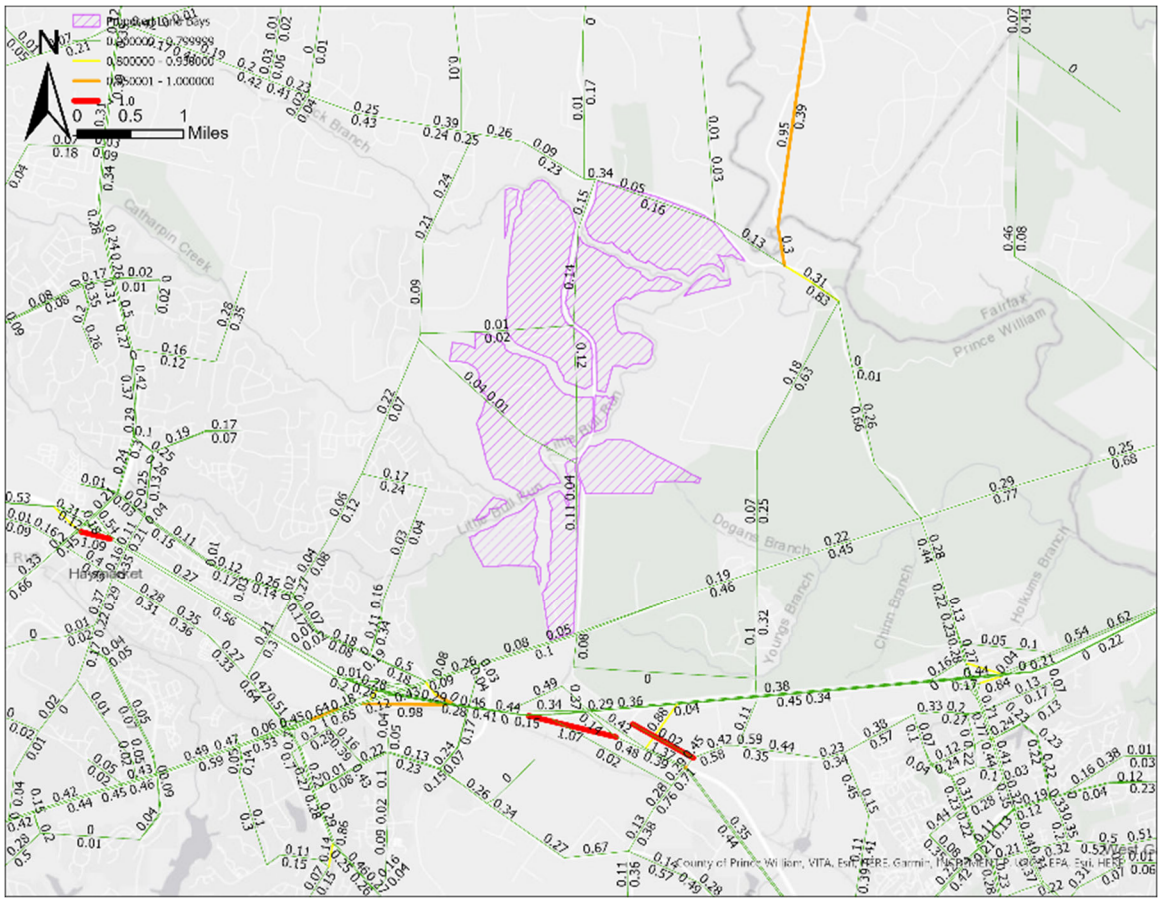


FIGURE 8: 2015 DETAILED AM V/C RATIOS

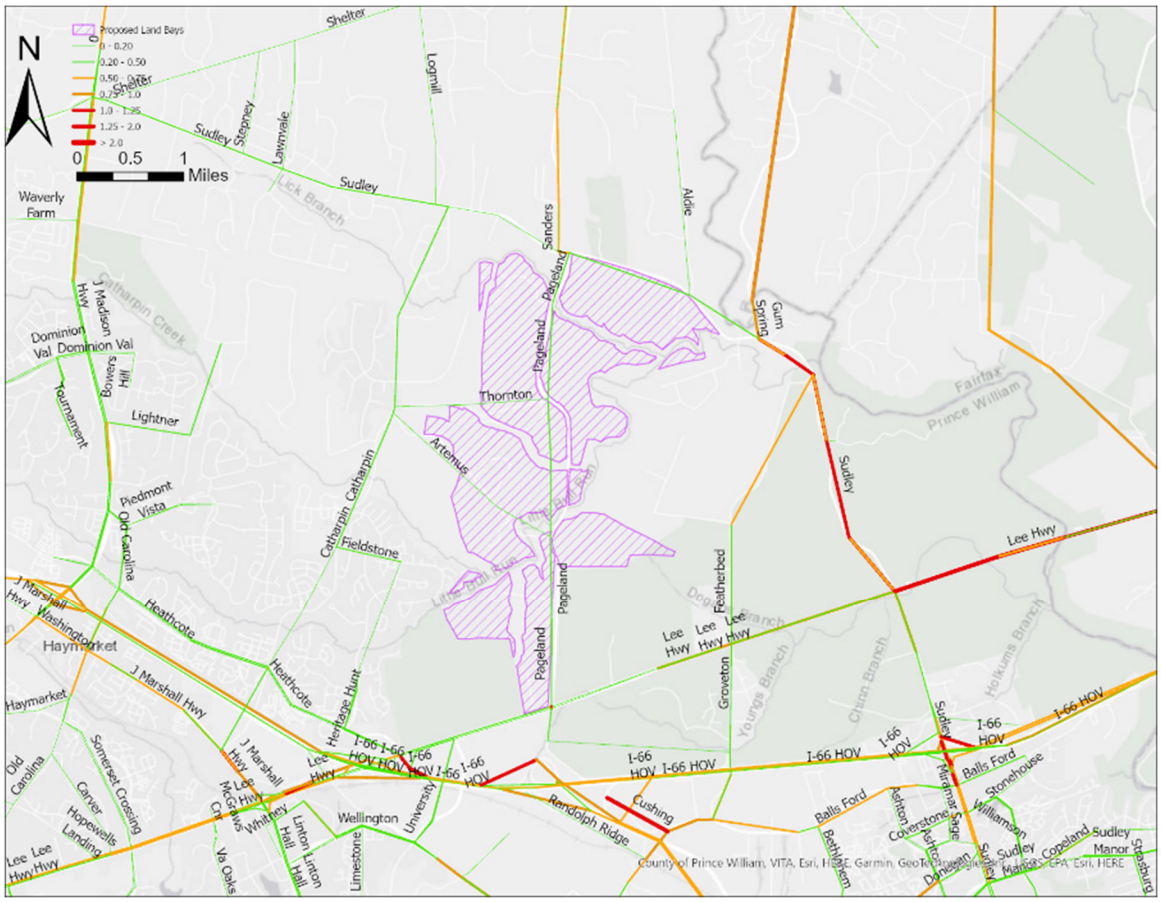


FIGURE 9: 2015 PM V/C RATIOS

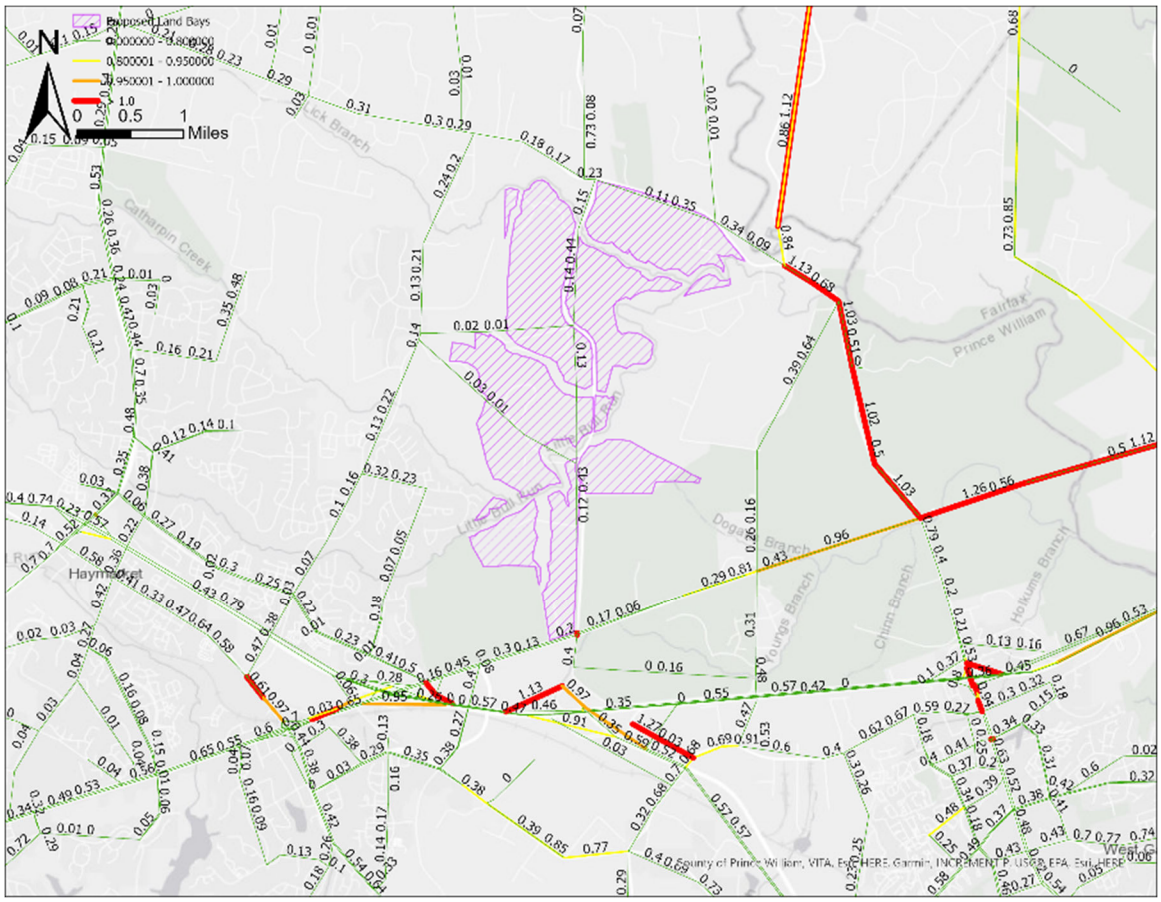


FIGURE 10: 2015 DETAILED PM V/C RATIOS

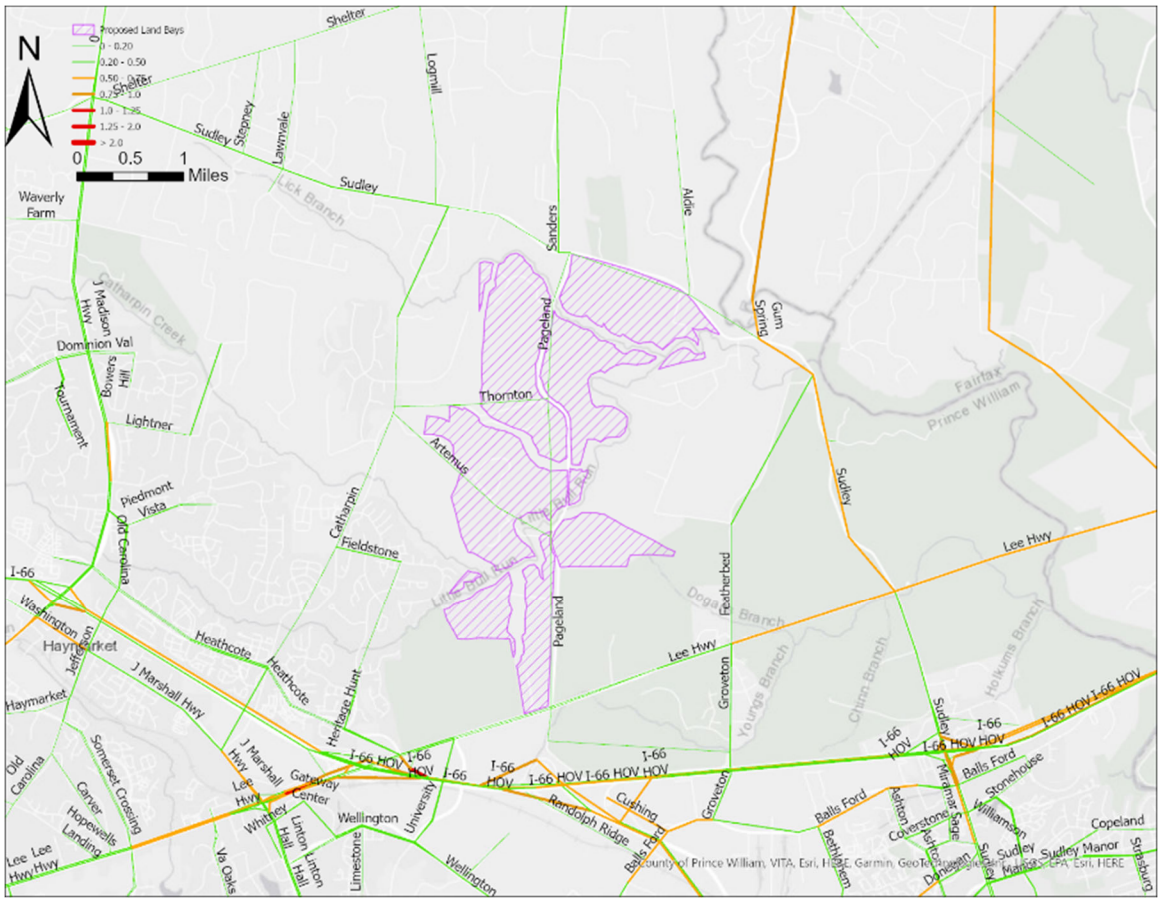


FIGURE 11: 2015 DAILY V/C RATIOS

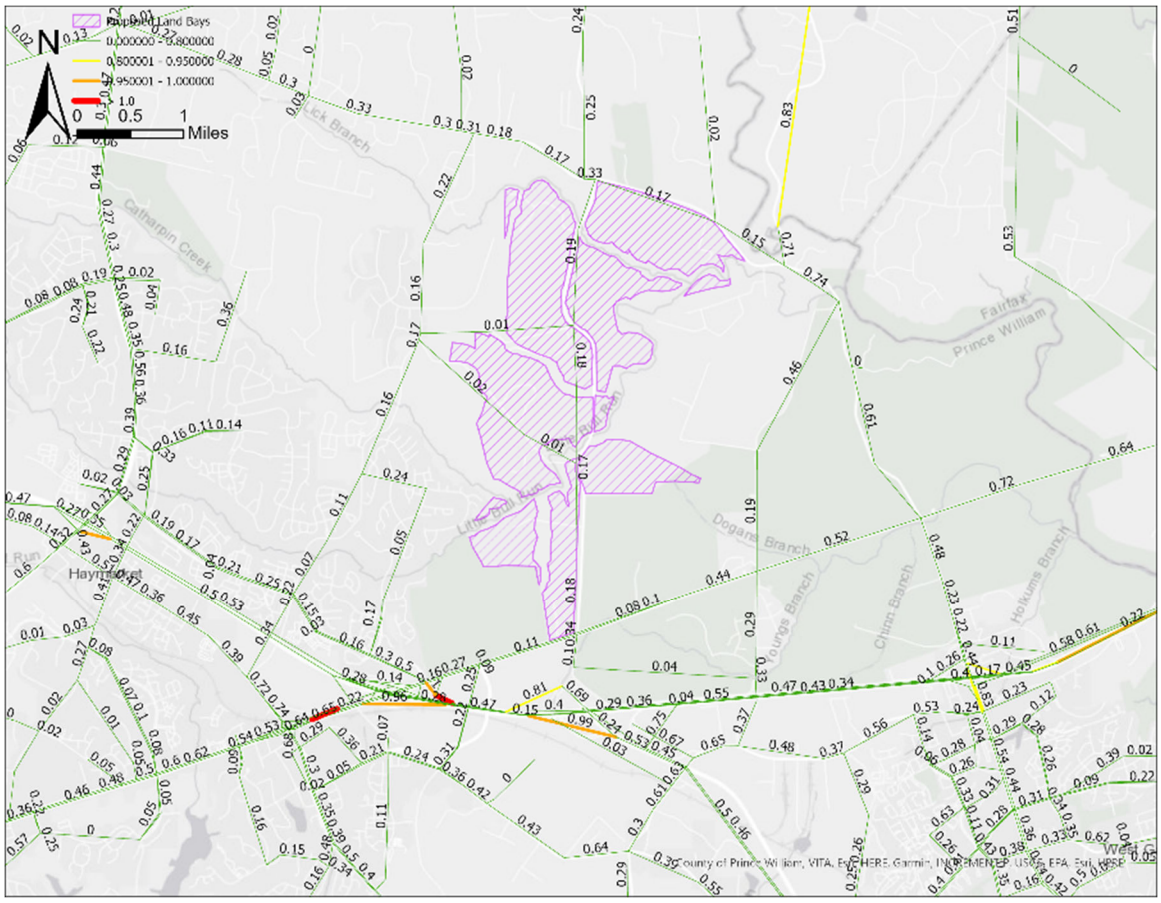


FIGURE 12: 2015 DETAILED DAILY V/C RATIOS

TABLE 2: 2015 LINK ATTRIBUTES

STREET	# LANES	FROM NODE	TO NODE	DAILY VOLUME	AM V/C	PM V/C	DAILY V/C
US-29	2	Pageland	Westbound	4,725	0.0542	0.2048	0.1295
US-29	2	Eastbound	Pageland	4,297	0.0967	0.1266	0.1117
US-29	2	Pageland	Eastbound	3,301	0.0958	0.0603	0.078
US-29	2	Westbound	Pageland	3,648	0.0392	0.1692	0.1042
Sudley	1	Sanders	Pageland	6,509	0.3431	0.2268	0.3272
Sudley	1	Pageland	Sanders	6,509	0.0863	0.6519	0.3272
Sudley	1	Pageland	Eastbound	1,247	0.1649	0.1075	0.1673
Sudley	1	Westbound	Pageland	1,745	0.0455	0.3515	0.1673
Pageland	1	Sudley	Project Access A	2,718	0.1491	0.1462	0.1945

Pageland	1	Project Access A	Sudley	2,718	0.0468	0.436	0.1945
Pageland	1	Project Access B	US 29	2,469	0.1103	0.1247	0.1752
Pageland	1	US 29	Project Access B	2,469	0.0374	0.4283	0.1752

Future Year No-Build Model Run

The Future Year No-Build Model was a model that utilized the future year networks provided by Prince William County and replicated the TAZ splits in the network and socioeconomic data file. This was done as a control to show that the TAZ splits did not change the behavior of the model.

Figure 13 shows the number of directional lanes in the future year network. These are as provided by Prince William County. Figure 14 shows the network facility types. As with the number of lanes, these are as provided by Prince William County.

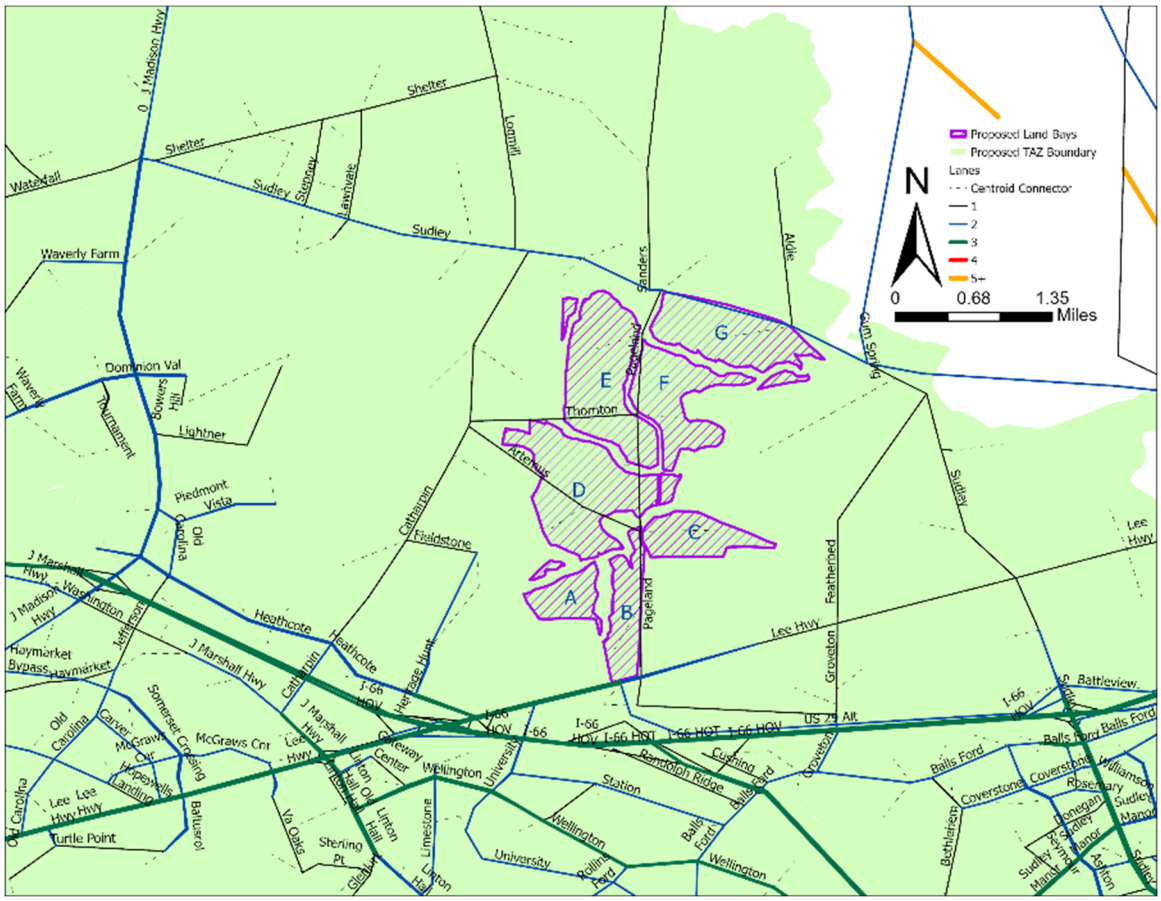


FIGURE 13: FUTURE YEAR NO-BUILD NETWORK DIRECTIONAL LANES

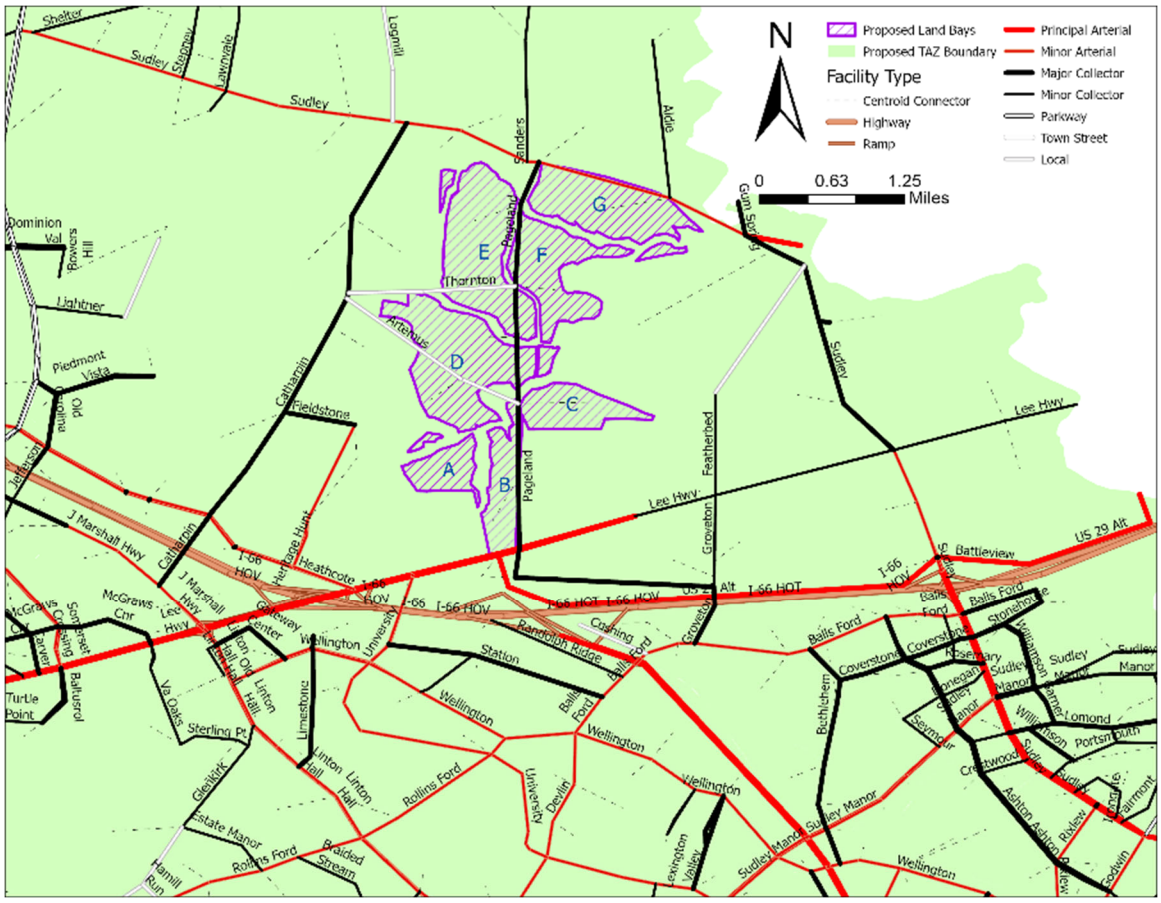


FIGURE 14: FUTURE YEAR NO-BUILD NETWORK FACILITY TYPES

Future Year No-Build Network Performance

Table 3 shows the difference in model volumes aggregated by screenline for the future year. As with the 2015 results, the future year model has changed very little after TAZ boundary and land use adjustments. A map of the five screenlines are shown in Figure 3. The volume to capacity ratio maps are shown in Figure 16 and Figure 17 (AM peak period), Figure 18 and Figure 19 (PM peak period), Figure 20 and Figure 21 (daily). The AM peak and daily congestion is isolated to spots around some of the ramps in the southern portion of the study area. The PM peak congestion does show some congestion at the northern and southern ends of Pageland Road and that Pageland Road will be approaching capacity during the PM peak period. This is primarily due to through traffic from areas to the north accessing I-66 using the existing and planned connections in the current comprehensive plan.

TABLE 3: FUTURE YEAR NO-BUILD VOLUME DIFFERENCES

SCREENLINE	ORIGINAL TOTAL MODEL VOLUME	ADJUSTED TOTAL MODEL VOLUME	MEAN ABSOLUTE DIFFERENCE	PERCENT DIFFERENCE
SL1	243,795	243,616	14.92	-0.07%
SL2	222,407	222,699	22.46	0.13%
SL3	120,791	120,515	23.00	-0.23%
SL4	365,805	366,775	34.64	0.27%
SL5	260,622	261,982	75.56	0.52%

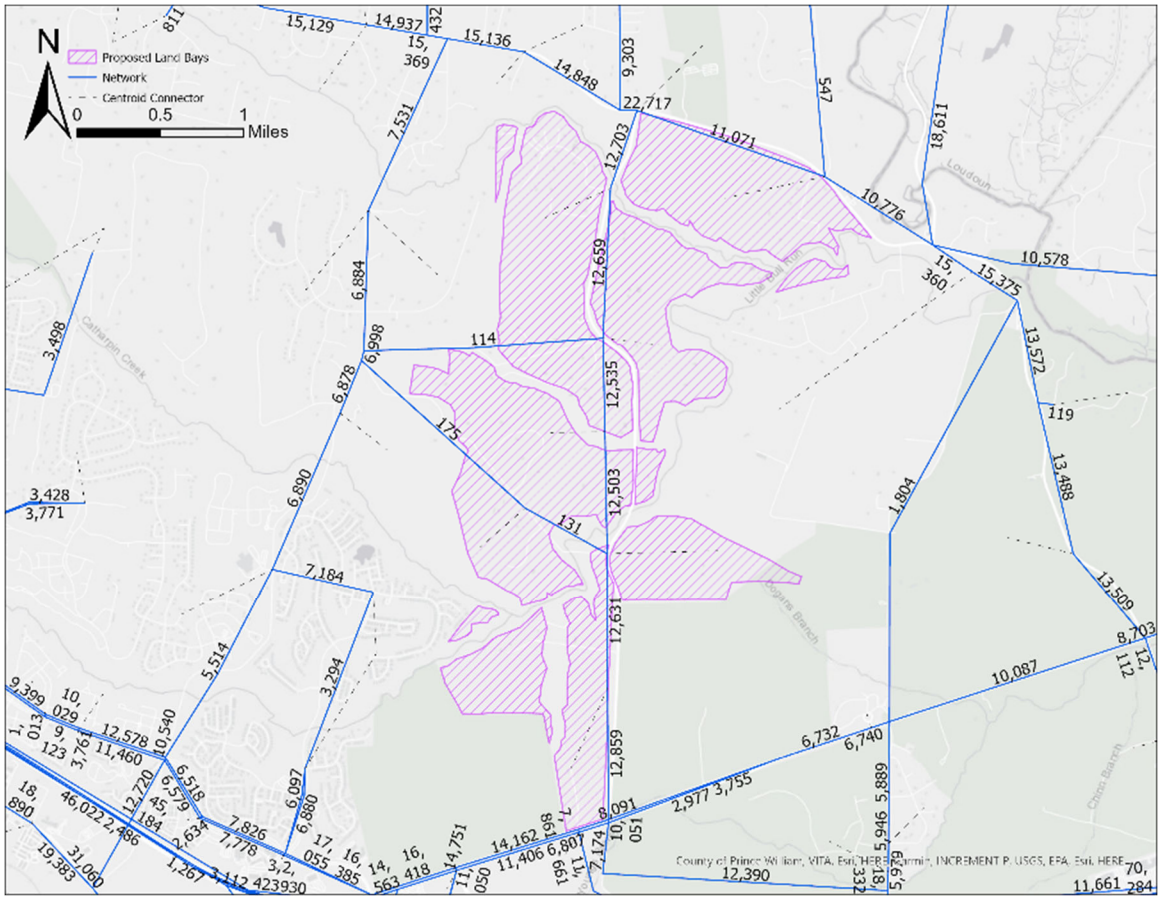


FIGURE 15: 2040 NO BUILD TOTAL VEHICLES PER DAY

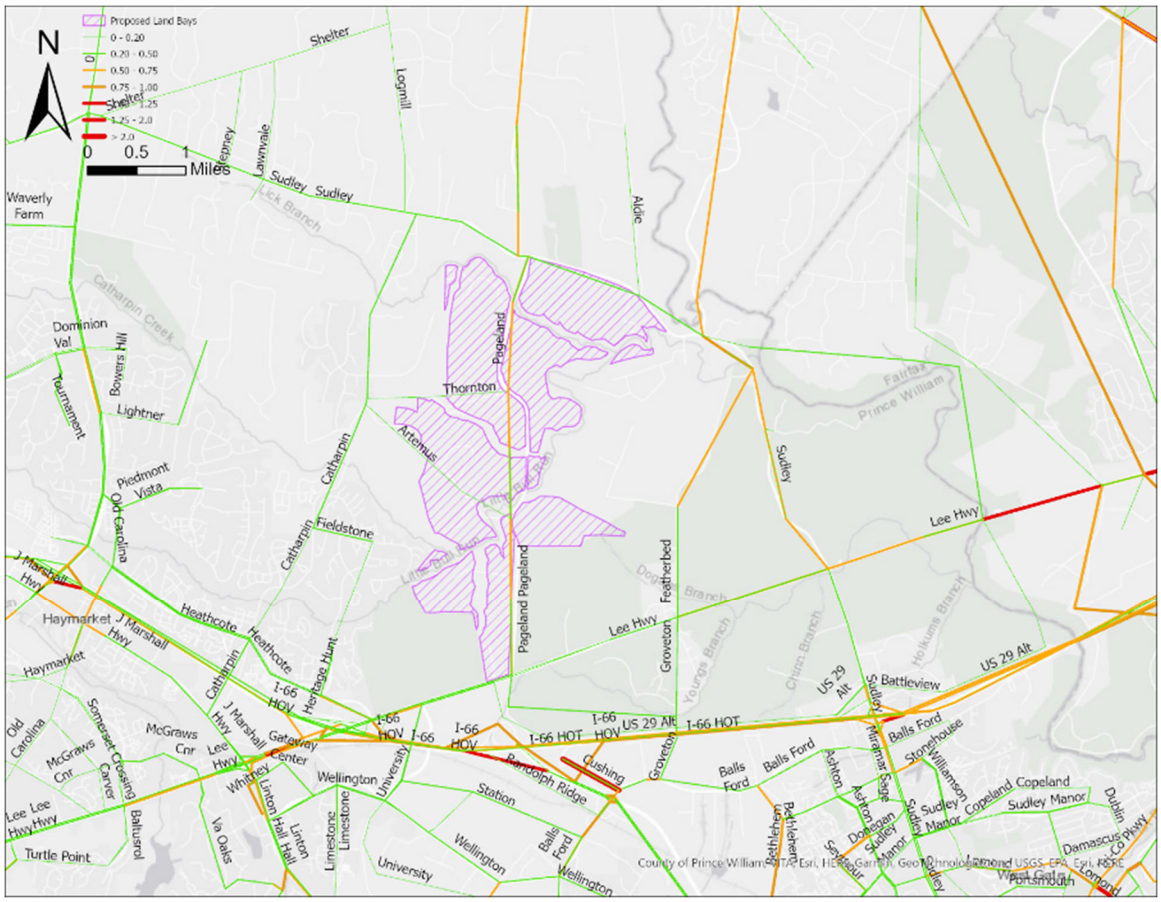


FIGURE 16: FUTURE YEAR NO-BUILD AM V/C RATIOS

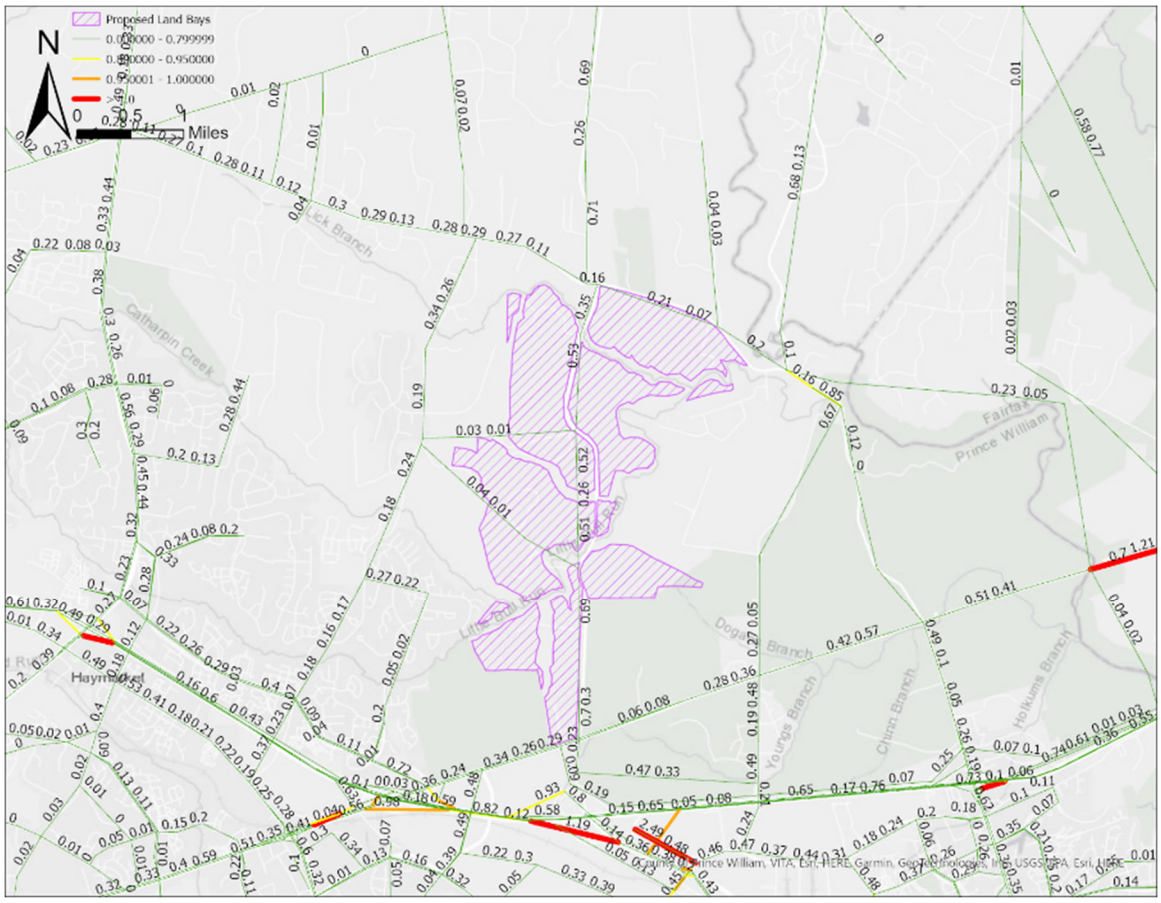


FIGURE 17: FUTURE YEAR NO-BUILD DETAILED AM V/C RATIOS

TABLE 4: 2040 NO BUILD LINK ATTRIBUTES

STREET	# LANES	FROM	TO	DAILY VOLUME	AM V/C	PM V/C	DAILY V/C
US-29	2	Pageland	Westbound	8,091	0.2863	0.3383	0.3123
US-29	2	Eastbound	Pageland	6,087	0.127	0.2408	0.1839
US-29	2	Pageland	Eastbound	2,977	0.0598	0.1172	0.0885
US-29	2	Westbound	Pageland	3,755	0.0773	0.1249	0.1011
Sudley	2	Sanders	Pageland	22,717	0.4299	0.3221	0.444
Sudley	2	Pageland	Sanders	22,717	0.1616	0.8625	0.444
Sudley	2	Pageland	Eastbound	11,071	0.2115	0.1555	0.2325
Sudley	2	Westbound	Pageland	11,071	0.0742	0.4886	0.2325
Pageland	1	Sudley	Project Access A	12,703	0.5298	0.4478	0.6374
Pageland	1	Project Access A	Sudley	12,703	0.3524	1.3187	0.6374
Pageland	1	Project Access B	US 29	12,859	0.7002	0.589	0.6879
Pageland	1	US 29	Project Access B	12,859	0.296	1.1539	0.6879

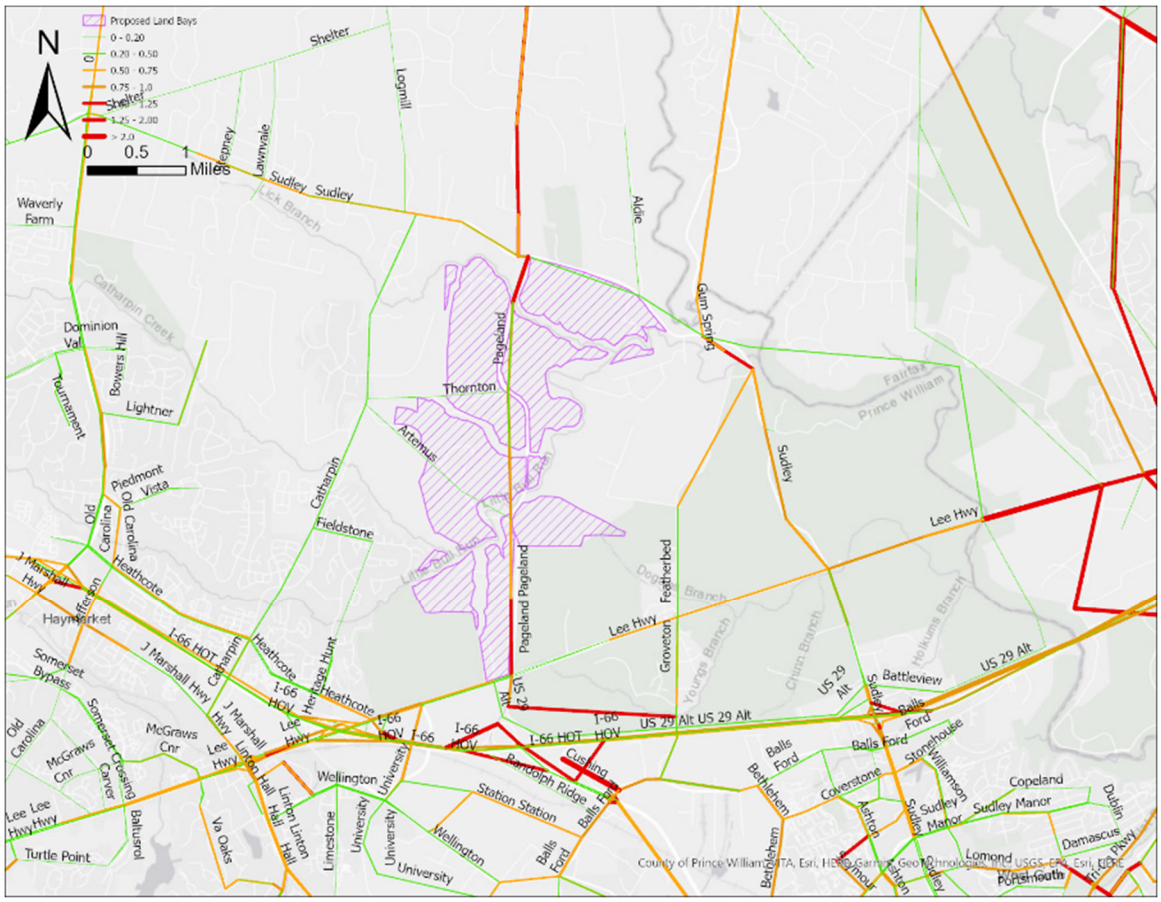


FIGURE 18: FUTURE YEAR NO-BUILD PM V/C RATIOS

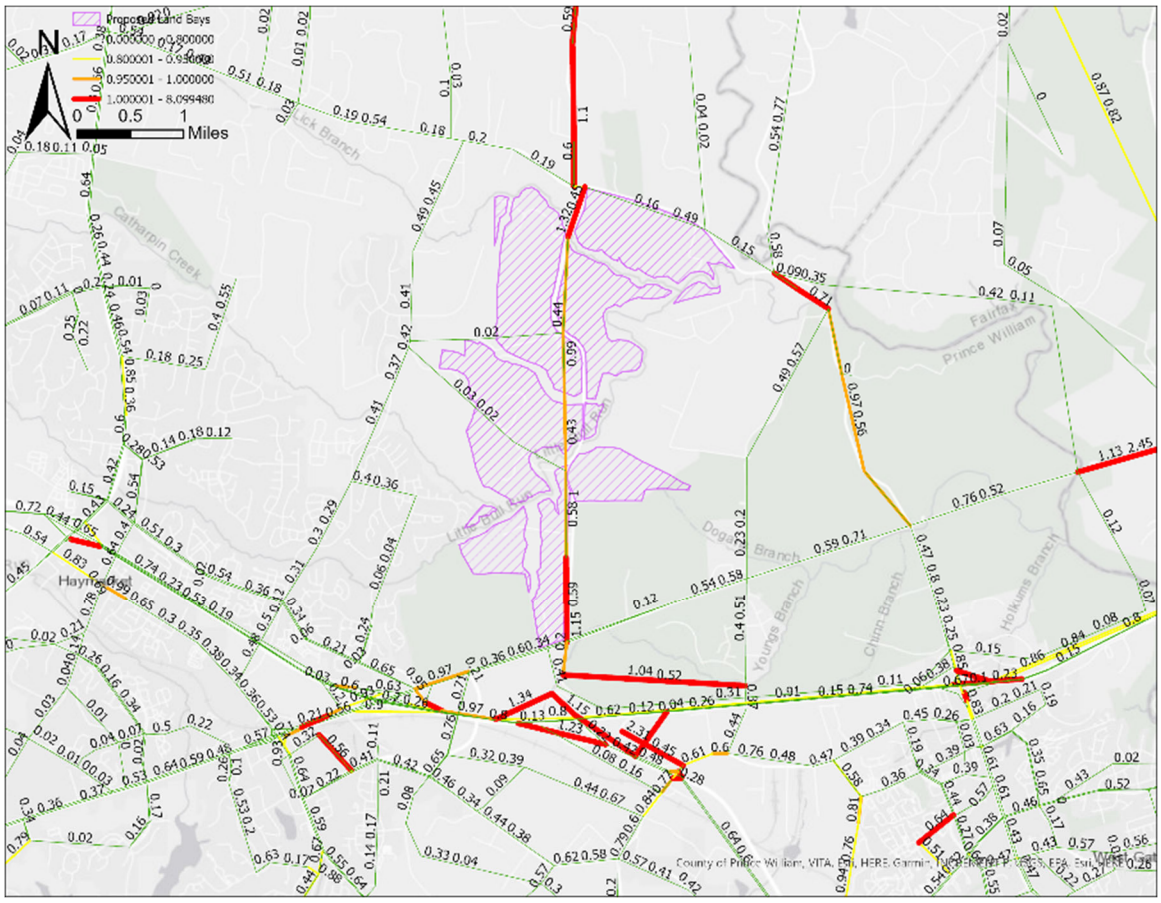


FIGURE 19: FUTURE YEAR NO-BUILD DETAILED PM V/C RATIOS

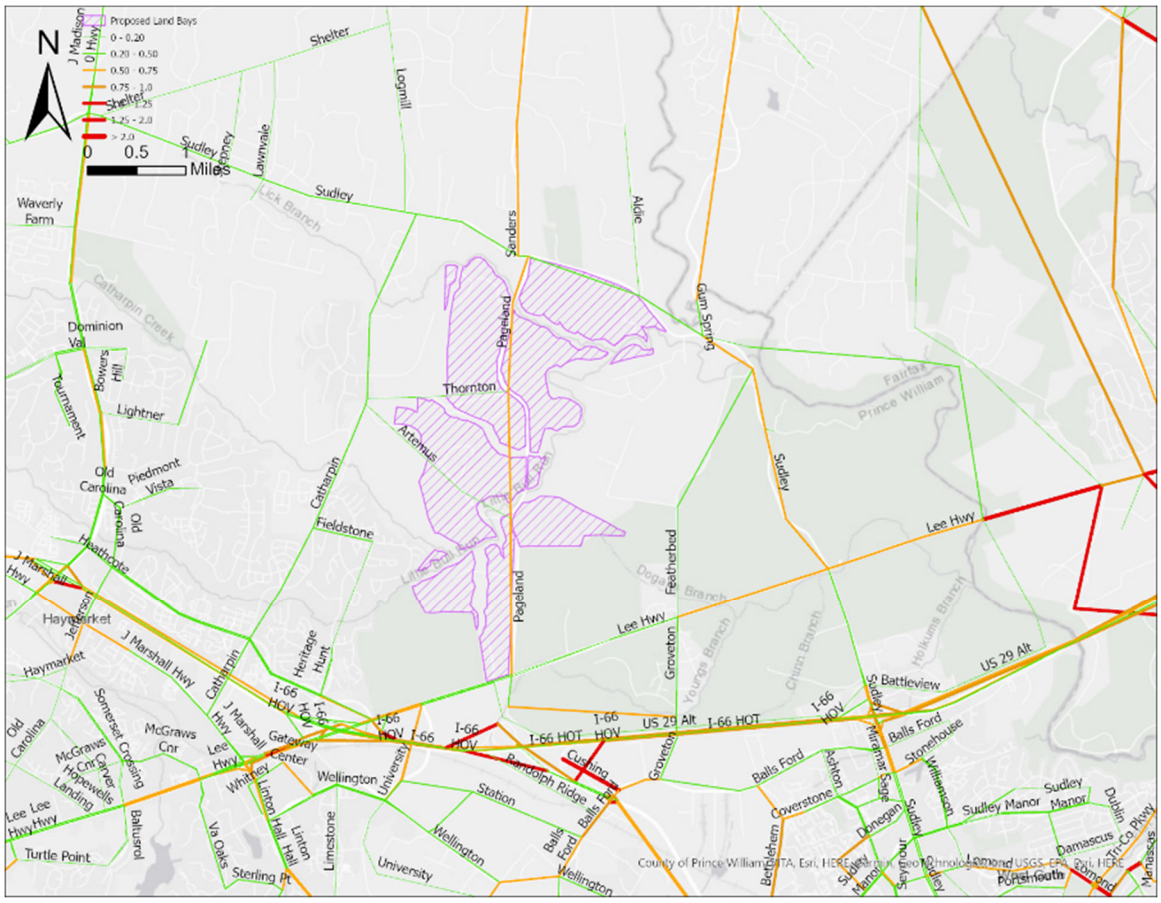


FIGURE 20: FUTURE YEAR NO-BUILD DAILY V/C RATIOS

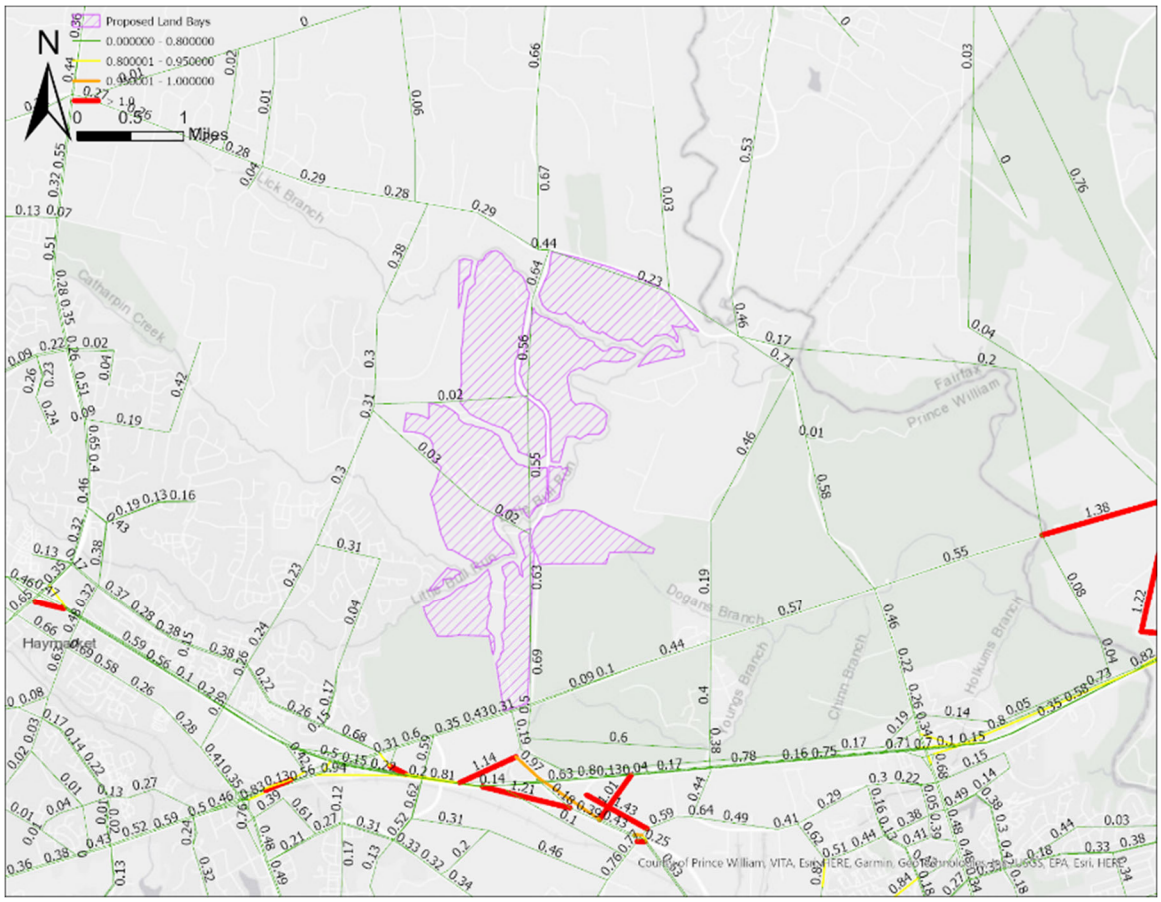


FIGURE 21: FUTURE YEAR NO-BUILD DETAILED DAILY V/C RATIOS

Future Year Build Scenario Model Runs

Two build scenarios included the Digital Gateway development. The first of the two scenarios included the future year roadway network as delivered by Prince William County. The second scenario included the widening of Pageland Road to four lanes to accommodate the additional traffic caused by the development.

Future Year Build Scenario

The Future Year build scenario utilized the Future Year No-Build network assumptions, including the number of lanes shown in Figure 13 and the facility types in Figure 14, so the only change was the socioeconomic data, which included the Digital Gateway employment.

The volume to capacity ratio maps are shown in Figure 23 (AM peak period), Figure 25 (PM peak period), and Figure 27 (daily). Except for one section of Sudley Road, near the intersection of Gum Springs, all volume to capacity (V/C) ratios are under 0.8 for the AM period. For the PM period in the build scenario, Pageland Road is over capacity within the development area. For daily V/C ratios the findings are largely the same as in the

AM period. However, there is an additional roadway section that shows a V/C ratio greater than 0.8, on Pageland Road near the intersection of Artemis Road.

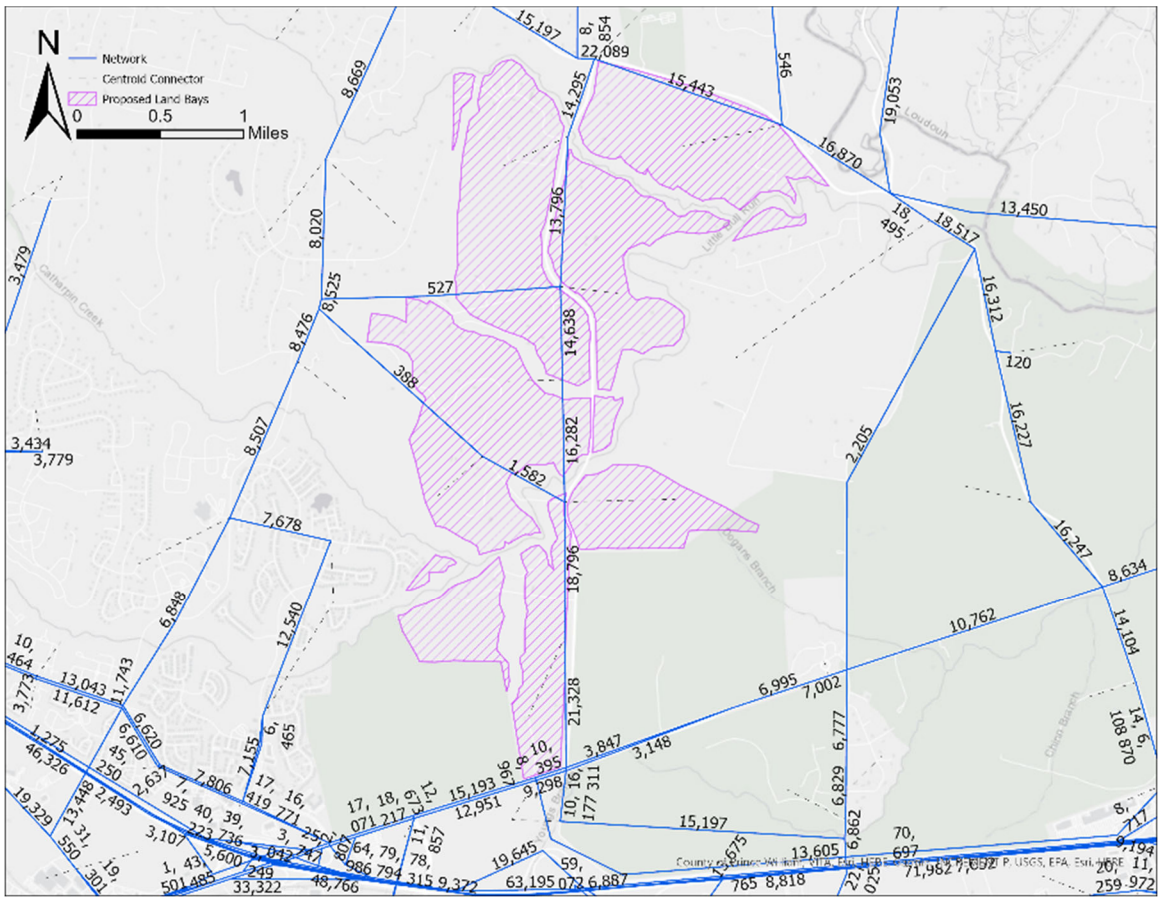


FIGURE 22: 2040 BUILD TOTAL VEHICLES PER DAY

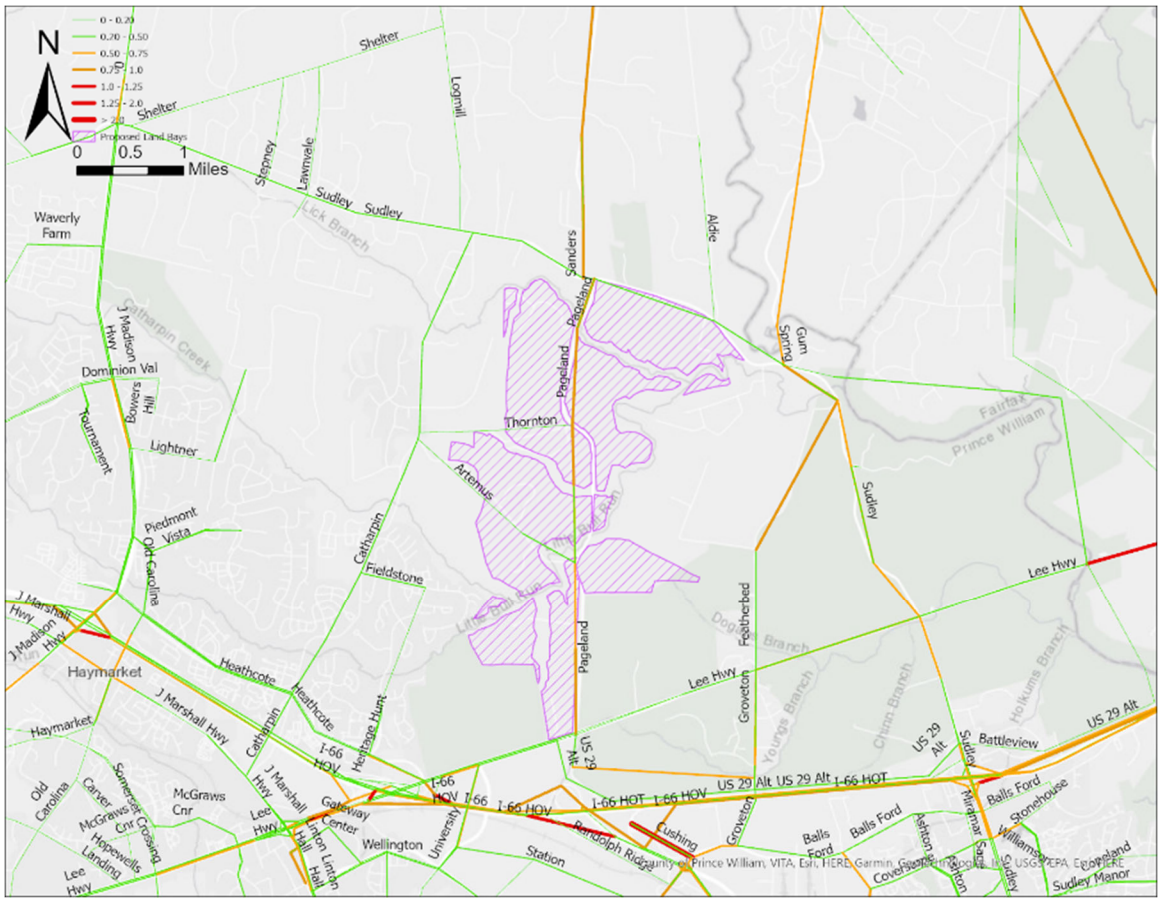


FIGURE 23: FUTURE YEAR BUILD AM V/C RATIOS

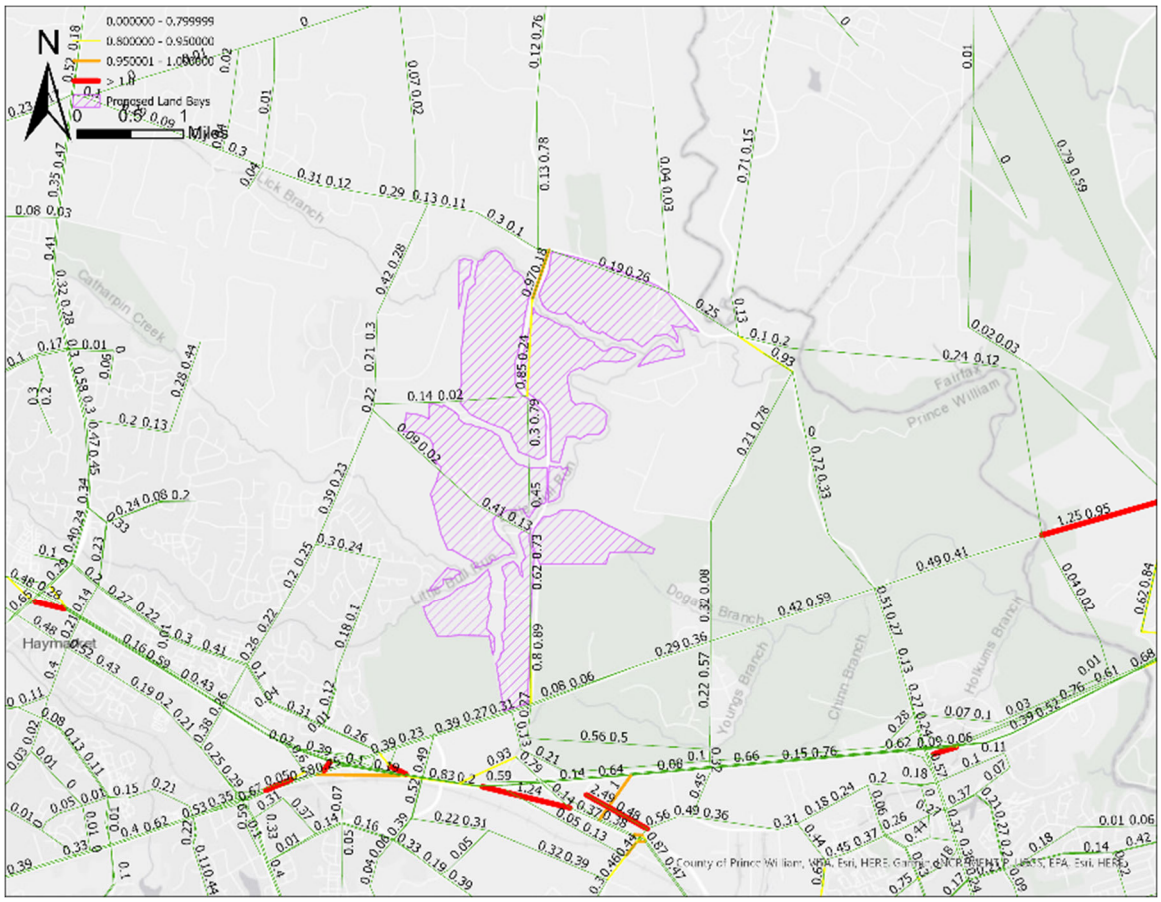


FIGURE 24: FUTURE YEAR BUILD DETAILED AM V/C RATIOS

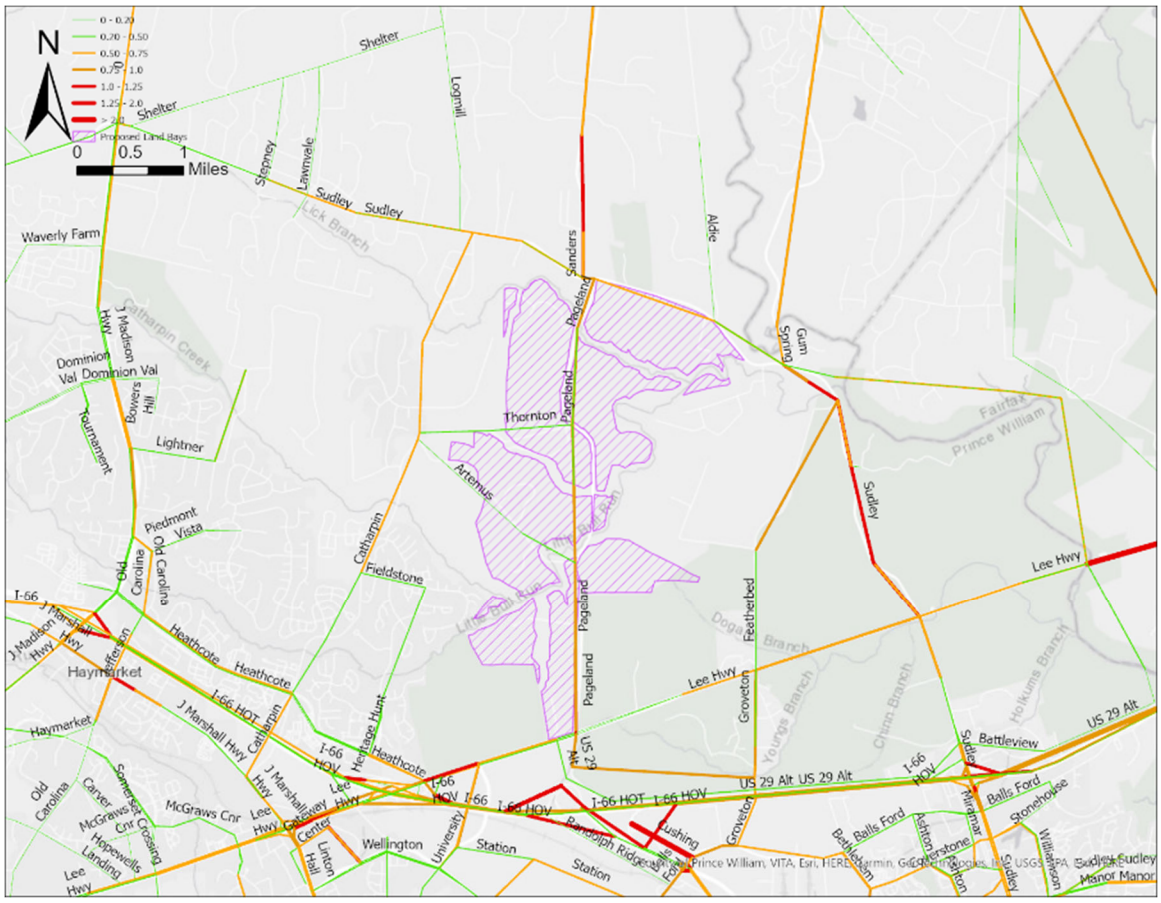


FIGURE 25: FUTURE YEAR BUILD PM V/C RATIOS

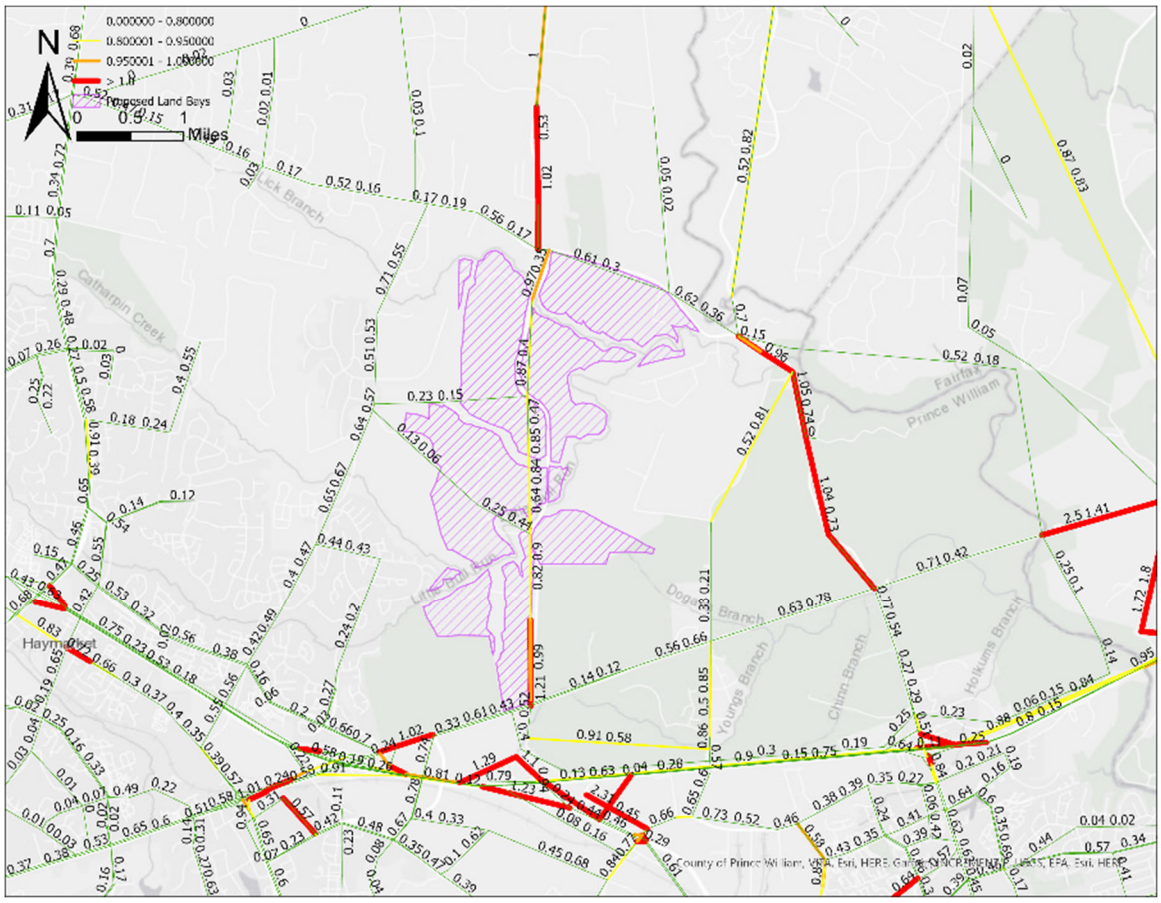


FIGURE 26: FUTURE YEAR BUILD DETAILED PM V/C RATIOS

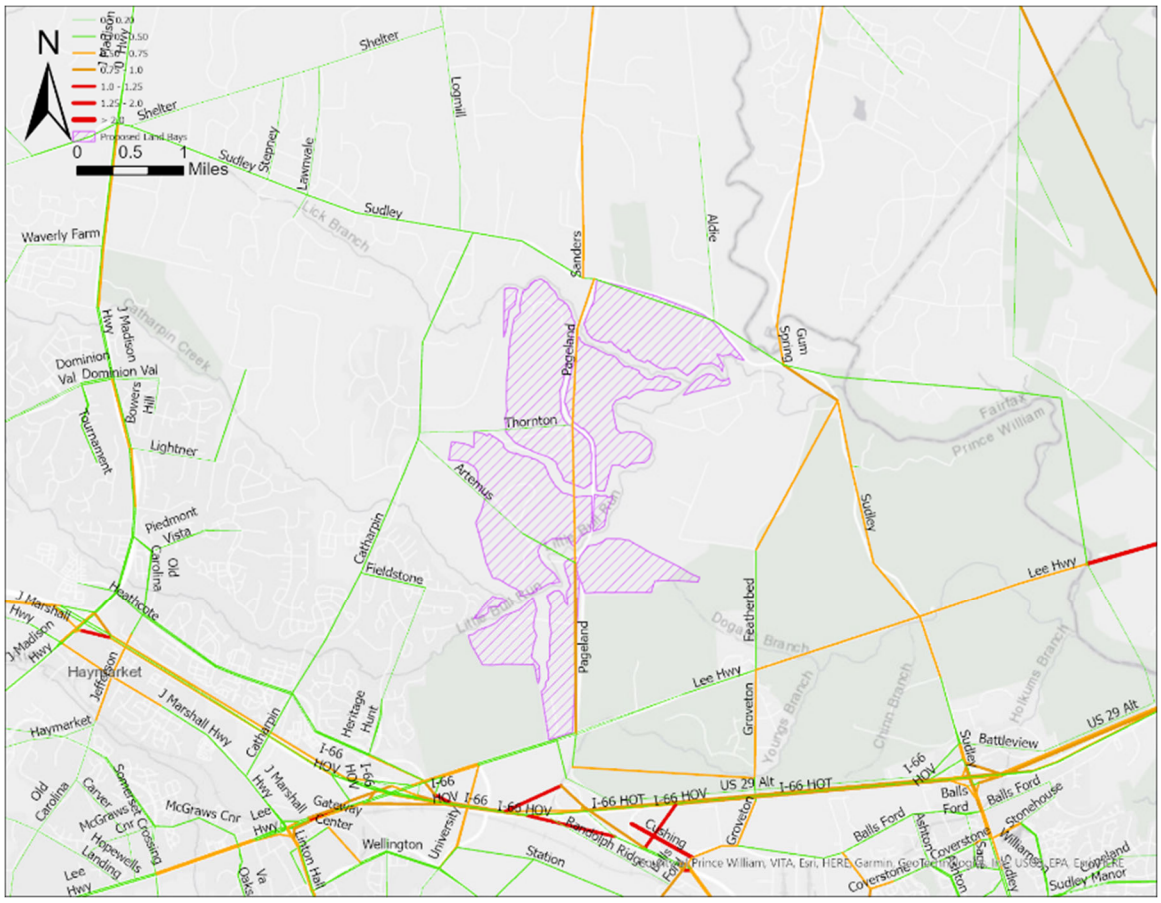


FIGURE 27: FUTURE YEAR BUILD DAILY V/C RATIOS

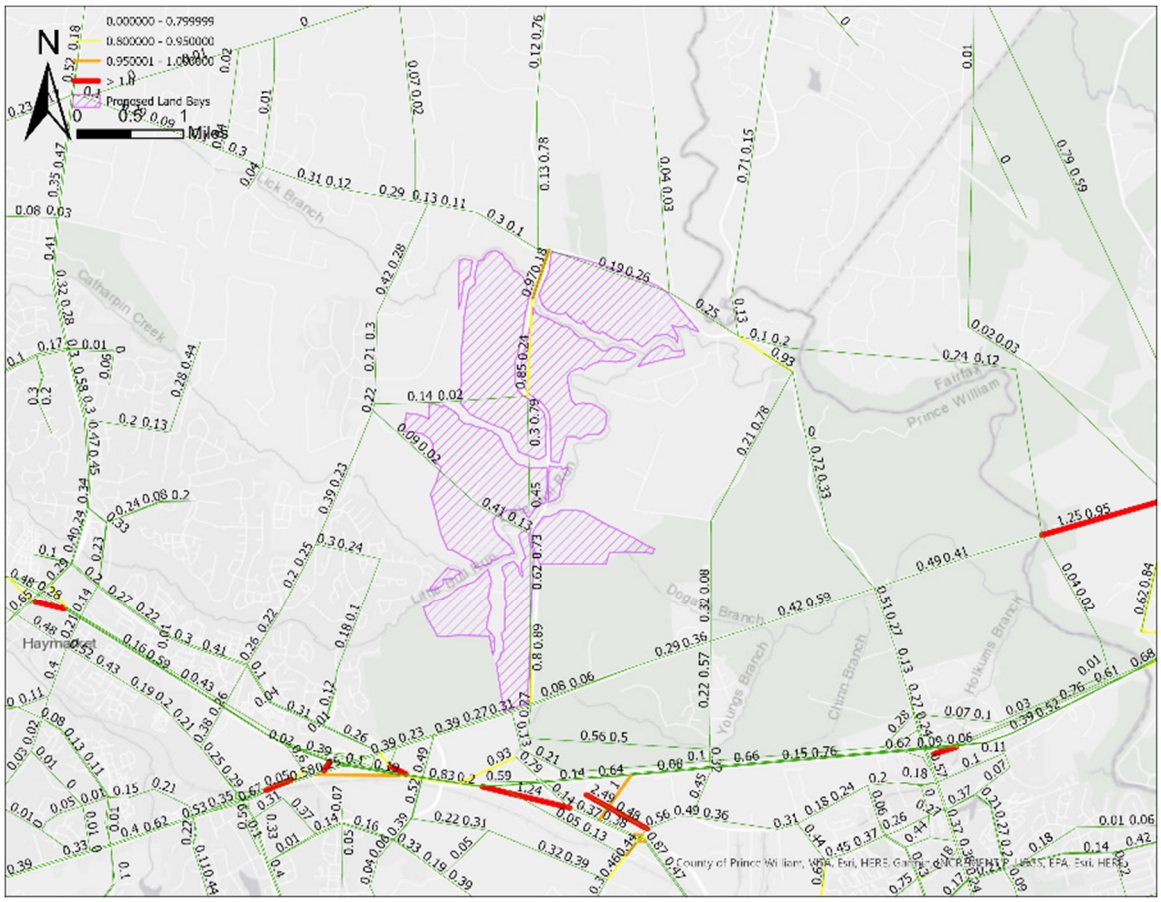


FIGURE 28: FUTURE YEAR BUILD DETAILED DAILY V/C RATIOS

TABLE 5: 2040 BUILD LINK ATTRIBUTES

STREET	# LANES	FROM	TO	DAILY VOLUME	AM V/C	PM V/C	DAILY V/C
US-29	2	Pageland	Westbound	11,445	0.3112	0.4271	0.3692
US-29	2	Eastbound	Pageland	8,539	0.1857	0.2116	0.1986
US-29	2	Pageland	Eastbound	3,529	0.0638	0.1422	0.103
US-29	2	Westbound	Pageland	3,940	0.103	0.1217	0.0995
Sudley	2	Sanders	Pageland	20,966	0.4687	0.2559	0.3989
Sudley	2	Pageland	Sanders	20,966	0.1047	0.7665	0.3989
Sudley	2	Pageland	Eastbound	17,325	0.2623	0.2982	0.3416
Sudley	2	Westbound	Pageland	17,325	0.1945	0.6113	0.3416
Pageland	1	Sudley	Project Access A	14,234	0.9696	0.3528	0.6187
Pageland	1	Project Access A	Sudley	14,234	0.1845	0.9678	0.6187

Pageland	1	Project Access B	US 29	23,274	0.8918	1.2097	0.9648
Pageland	1	US 29	Project Access B	23,274	0.7961	0.9861	0.9648

Future Year Build + Pageland Widening (Minor Arterial)

In addition to the base, no build, and build scenarios ran for the study, an alternate scenario which widens Pageland Road to four total lanes and a facility type of minor arterial within the development area was evaluated. This was ran to align with the County's MA-1 standard. The network facility types are shown in Figure 30.

The V/C ratio maps are shown in Figure 31 and Figure 32 (AM peak period), Figure 33 and Figure 34 (PM peak period) and Figure 35 and Figure 36 (daily). The AM peak period and the PM peak period are largely free of congestion, except for the southern portion of Pageland within the study area.

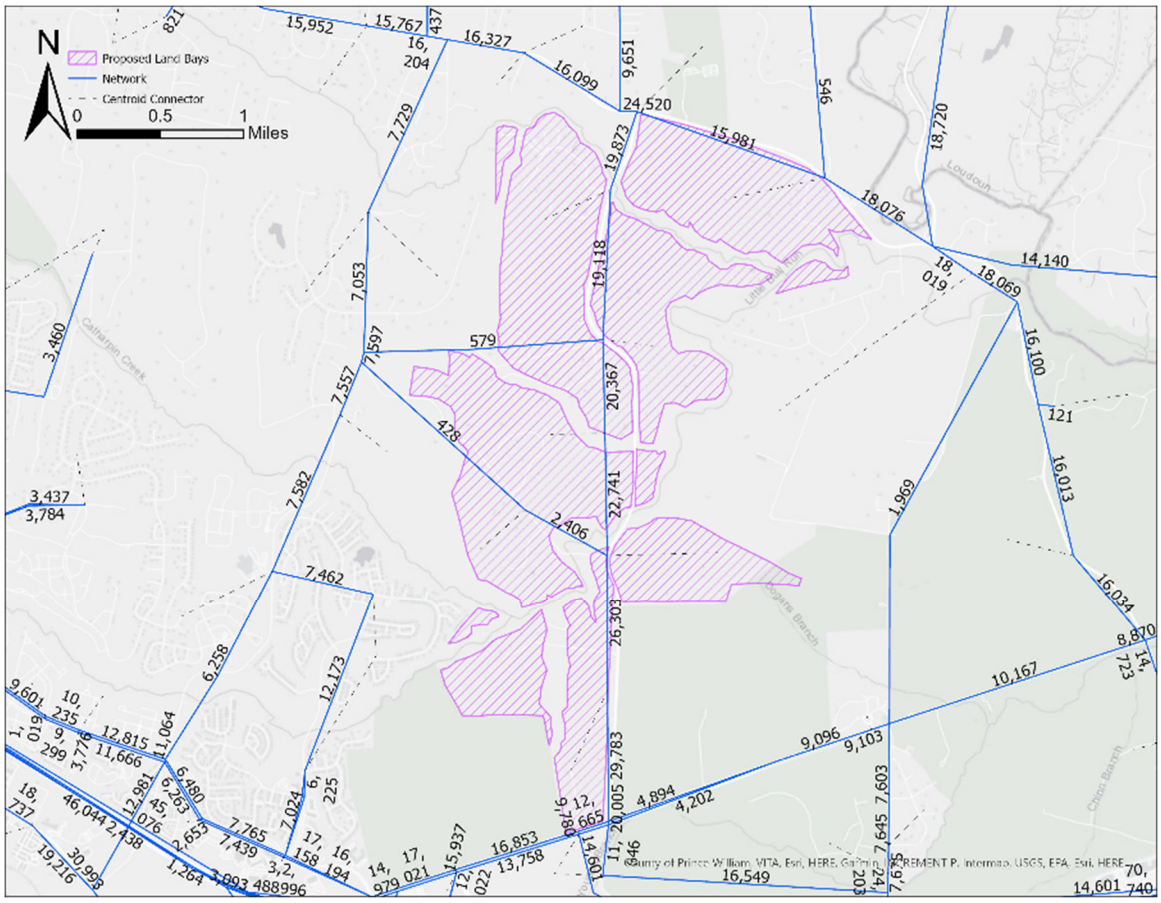


FIGURE 29: 2040 BUILD PAGELAND WIDENING (MA) TOTAL VEHICLES PER DAY

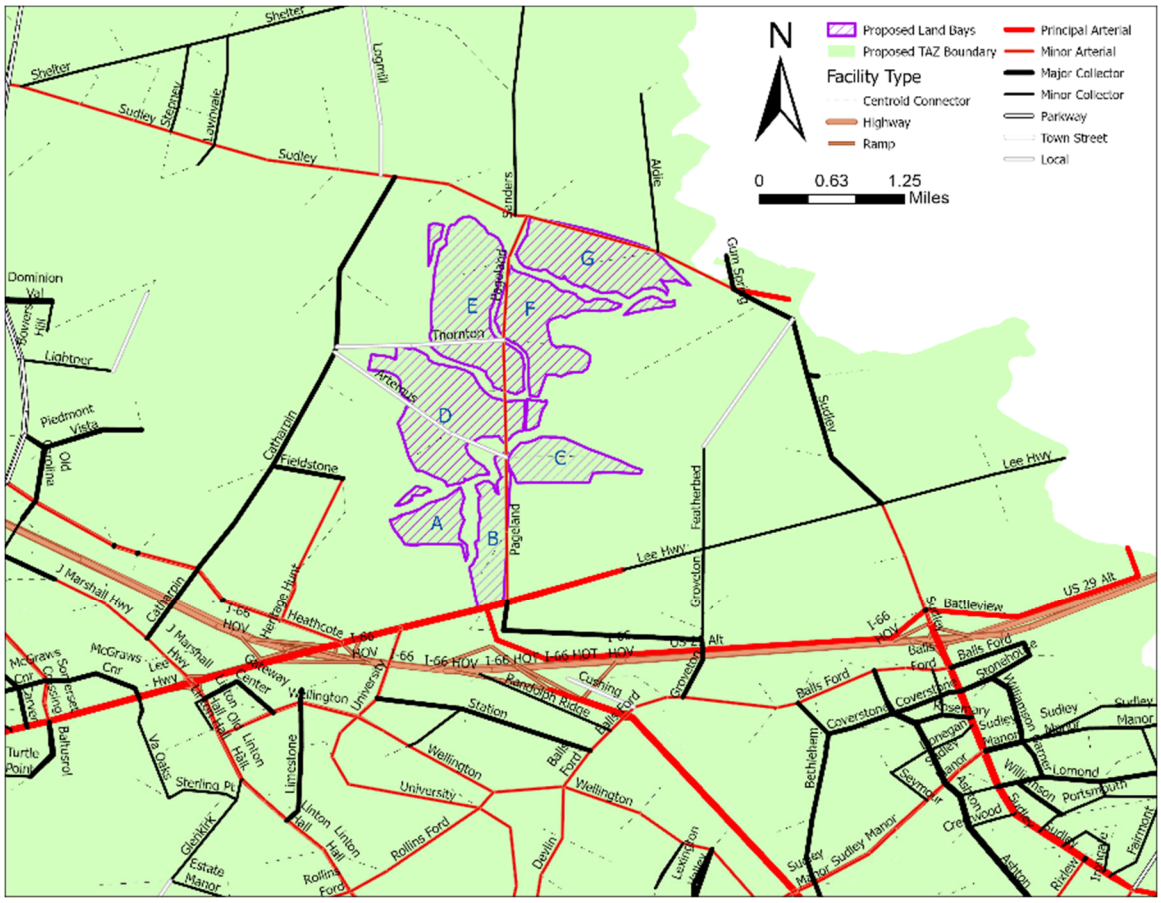


FIGURE 30: PAGELAND WIDENING (MA) NETWORK FACILITY TYPES

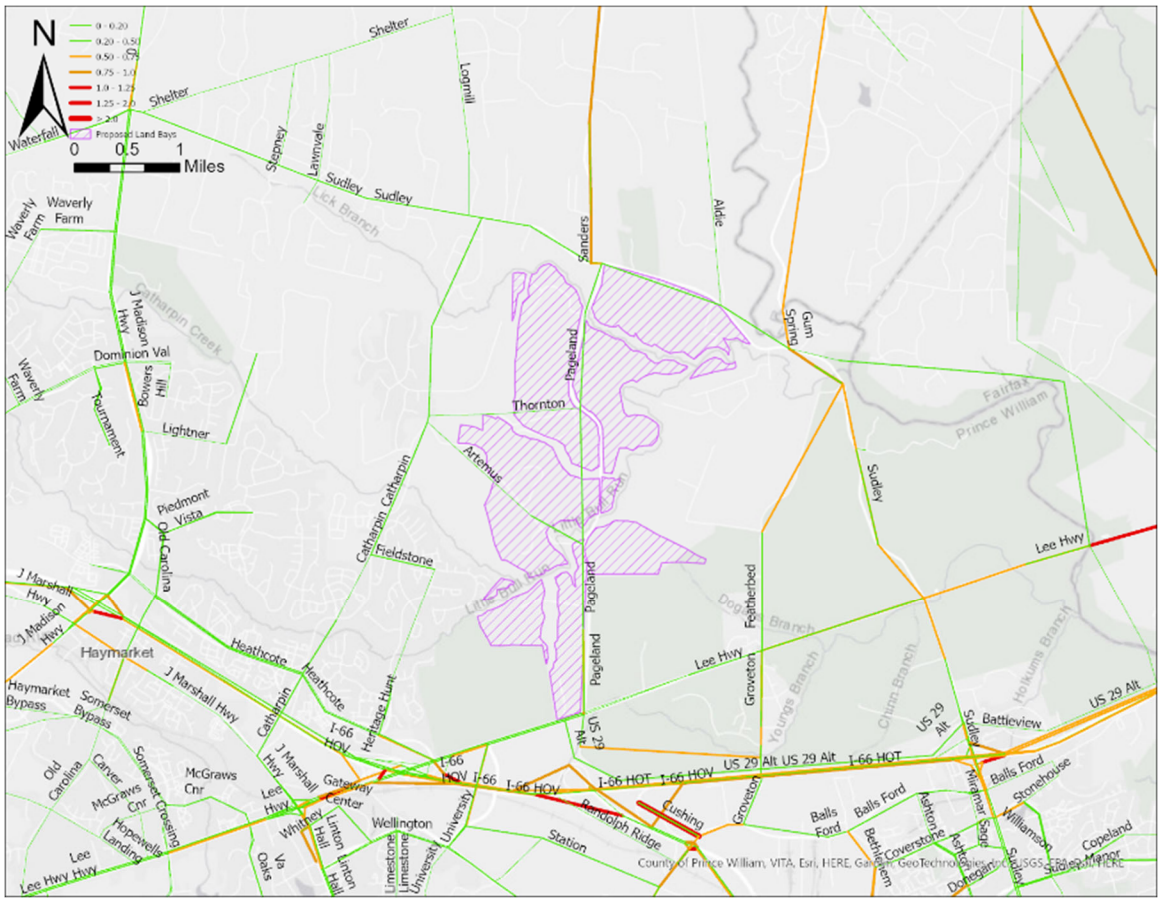


FIGURE 31: PAGELAND WIDENING (MA) AM V/C RATIOS

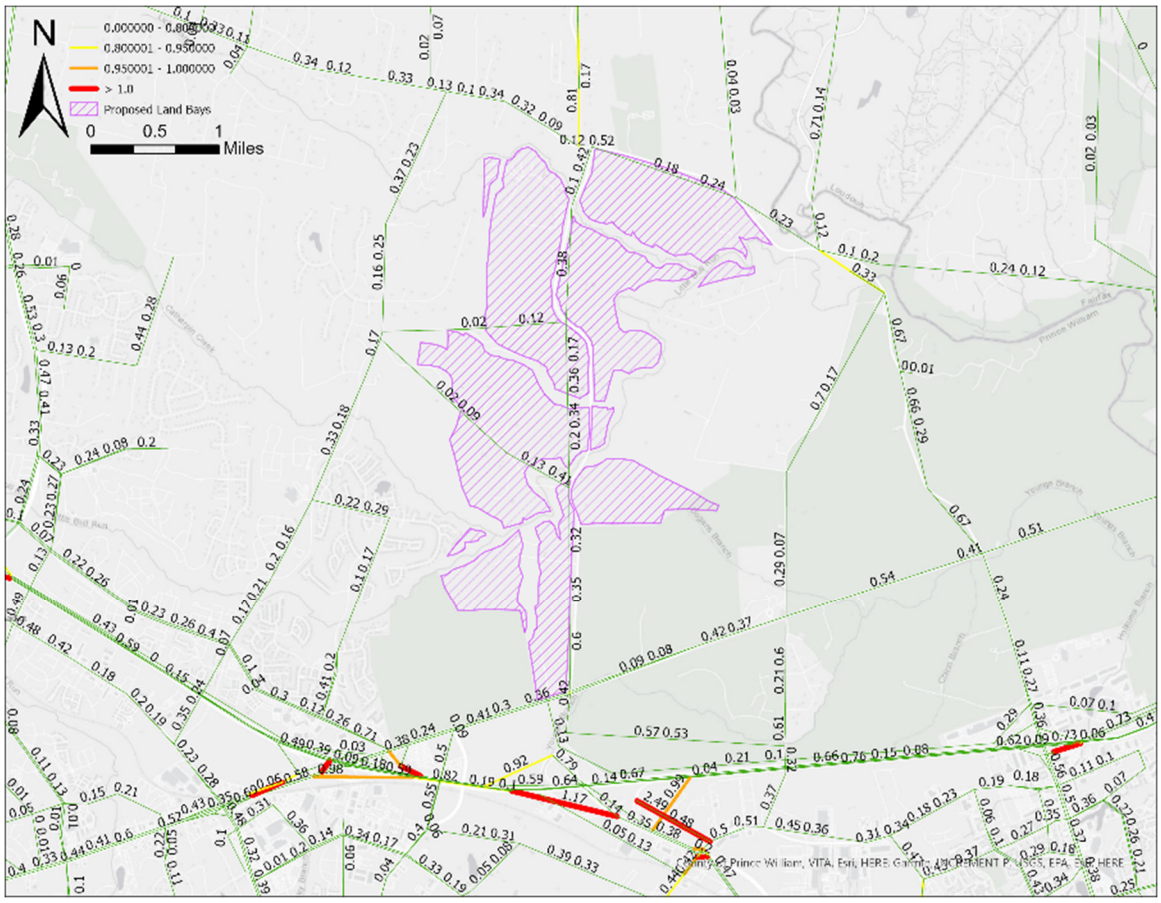


FIGURE 32: PAGELAND WIDENING (MA) DETAILED AM V/C RATIOS

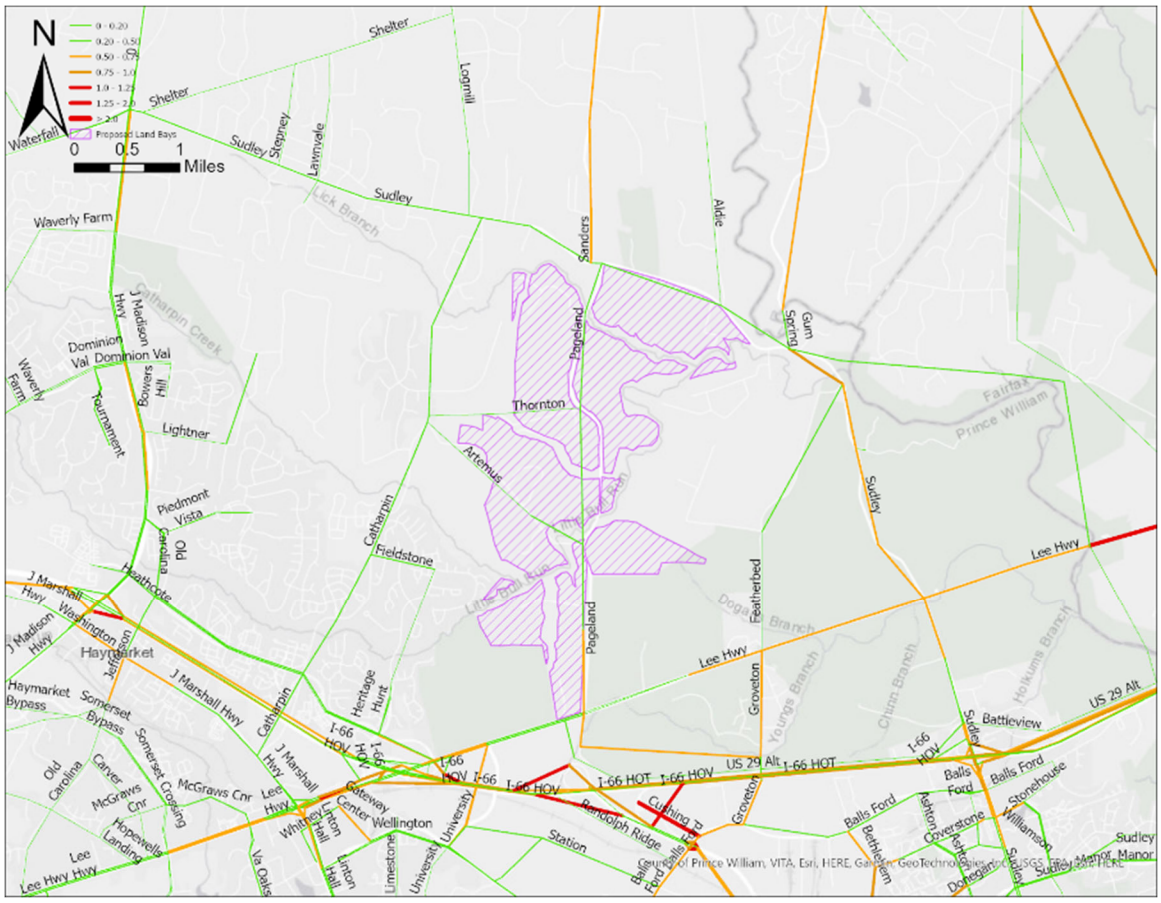


FIGURE 33: PAGELAND WIDENING (MA) PM V/C RATIOS

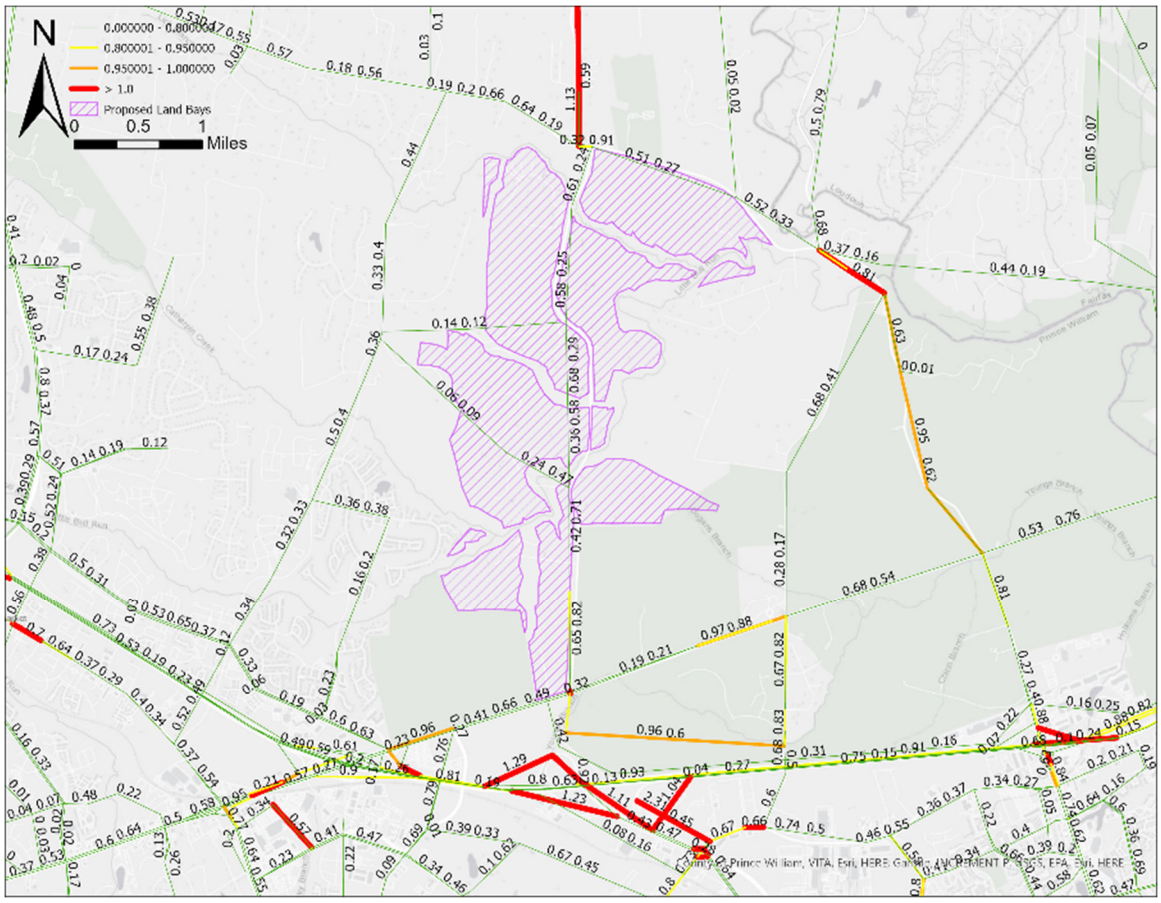


FIGURE 34: PAGELAND WIDENING (MA) DETAILED PM V/C RATIOS

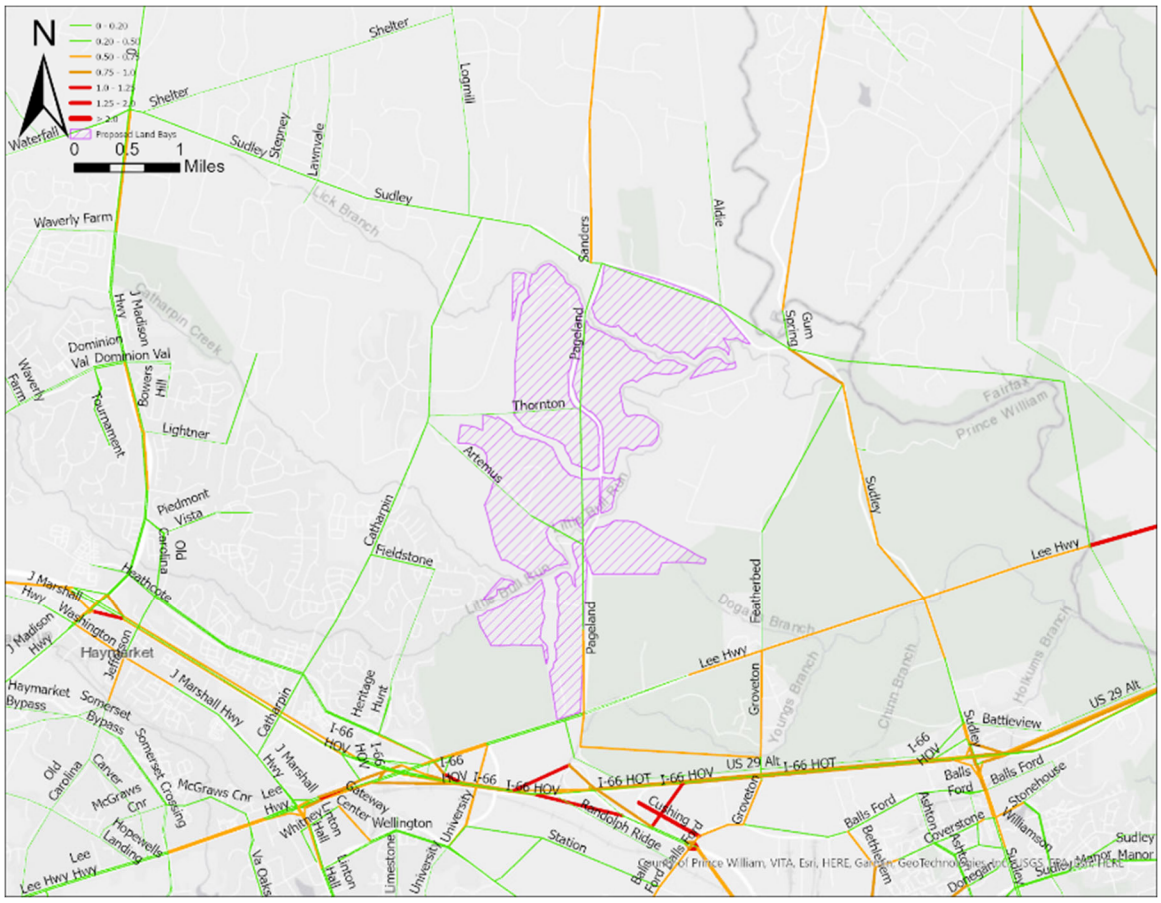


FIGURE 35: PAGELAND WIDENING (MA) DAILY V/C RATIOS

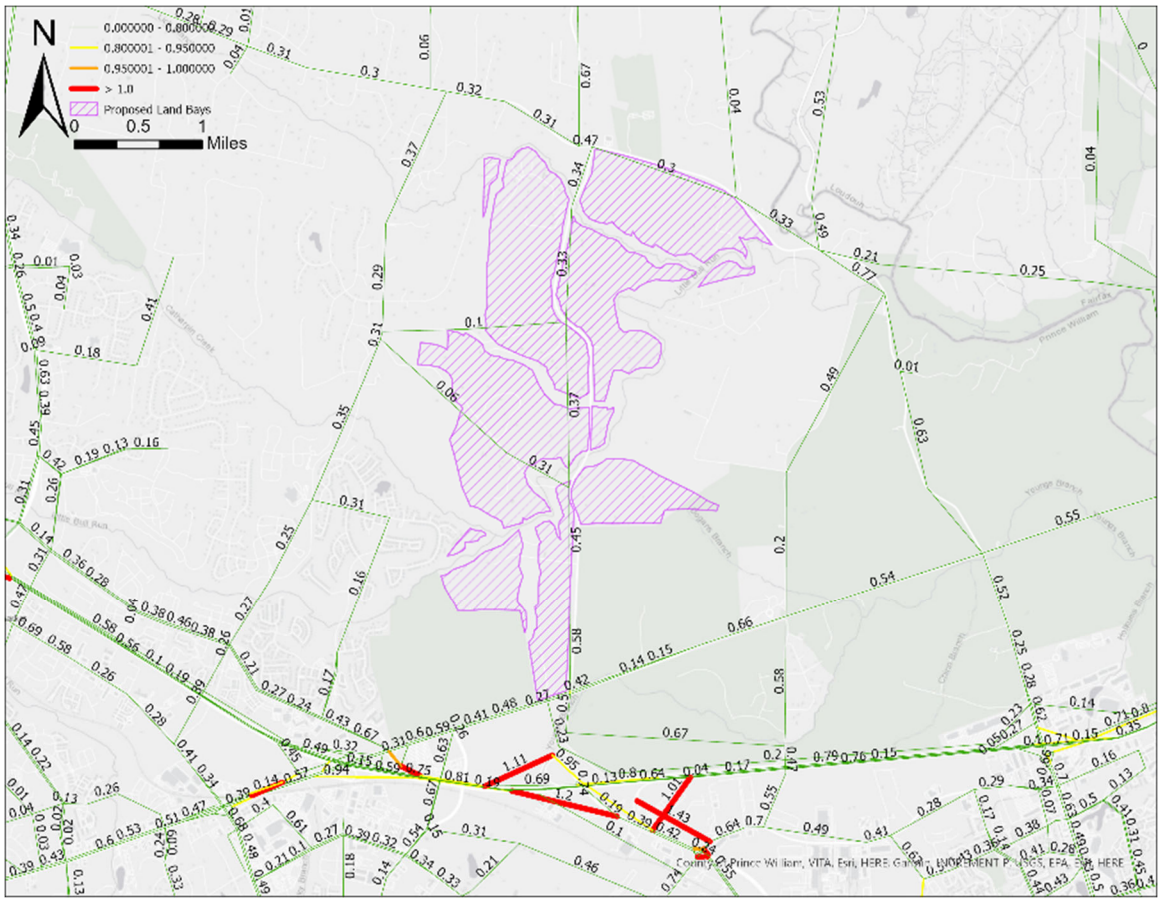


FIGURE 36: PAGELAND WIDENING (MA) DETAILED DAILY V/C RATIOS

TABLE 6: PAGELAND WIDENING (MA) LINK ATTRIBUTES

STREET	# LANES	FROM	TO	DAILY VOLUME	AM V/C	PM V/C	DAILY V/C
US-29	2	Pageland	Westbound	12,216	0.3557	0.4645	0.4101
US-29	2	Eastbound	Pageland	9,829	0.2006	0.2889	0.2448
US-29	2	Pageland	Eastbound	4,501	0.0647	0.1945	0.1296
US-29	2	Westbound	Pageland	4,373	0.0807	0.1603	0.1205
Sudley	2	Sanders	Pageland	22,964	0.5001	0.3081	0.44
Sudley	2	Pageland	Sanders	22,964	0.1159	0.8359	0.44
Sudley	2	Pageland	Eastbound	16,288	0.2471	0.2688	0.3101
Sudley	2	Westbound	Pageland	16,288	0.1847	0.5399	0.3101
Pageland	2	Sudley	Project Access A	17,647	0.5516	0.3026	0.4175
Pageland	2	Project Access A	Sudley	17,647	0.1218	0.6941	0.4175
Pageland	2	Project Access B	US 29	27,352	0.5475	0.7887	0.623
Pageland	2	US 29	Project Access B	27,352	0.4486	0.7201	0.623

Digital Gateway Impact Analysis

The proximity of the Digital Gateway Development to Prince William County/Loudon County boundary prompted questions about the impact of the development on the area to the north of the development, which includes Loudon County. To facilitate this, we ran a select zone analysis for the Digital Gateway Development zones to see where the model assigned traffic. Figure 37 shows the daily traffic volume of the paths from the development zones for the Future Year Build scenario and Figure 38 shows the Future Year Build + Pageland Widening (Minor Arterial). In all three cases, a majority of the traffic uses US 29, Artemus, or Thornton to head west or to uses the planned US 29 bypass facility to head south to either I-66 or other places south. A smaller amount uses Lee Highway to head east (including the traffic using Sudley from the northern part of the development and ultimately ends up on US 29 heading east) or heads north into the northern part of Prince William County or Loudon County.

TABLE 7: DIRECTION OF SITE TRAFFIC

DESTINATION	PERCENT OF SITE TRAFFIC
Loudon County/N Prince William County	8%
East via Sudley (to US 29)	25%
East via US 29	5%
West via US 29, Artemus, Thornton	21%
South	32%
Other roads or internal (within development)	9%

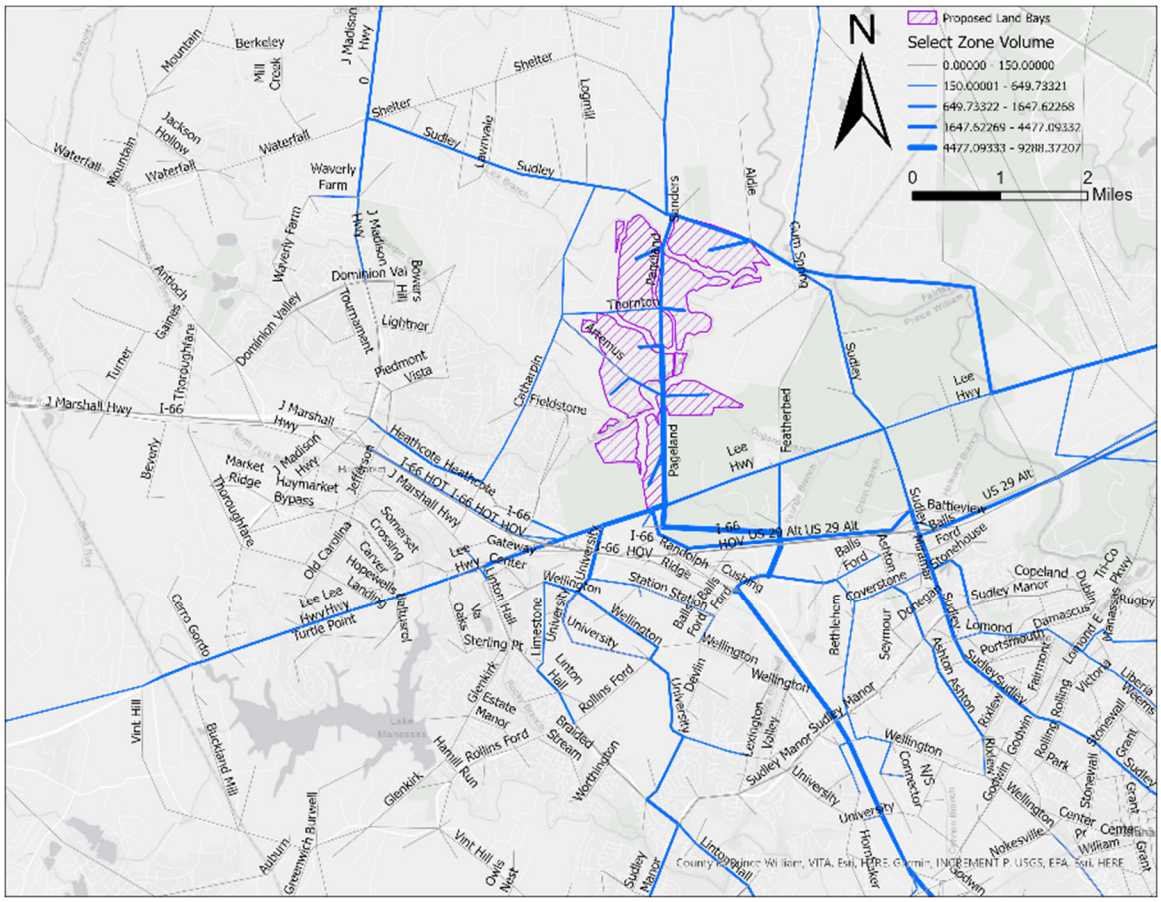


FIGURE 37: FUTURE YEAR BUILD SCENARIO SELECT ZONE DAILY VOLUME PATHS

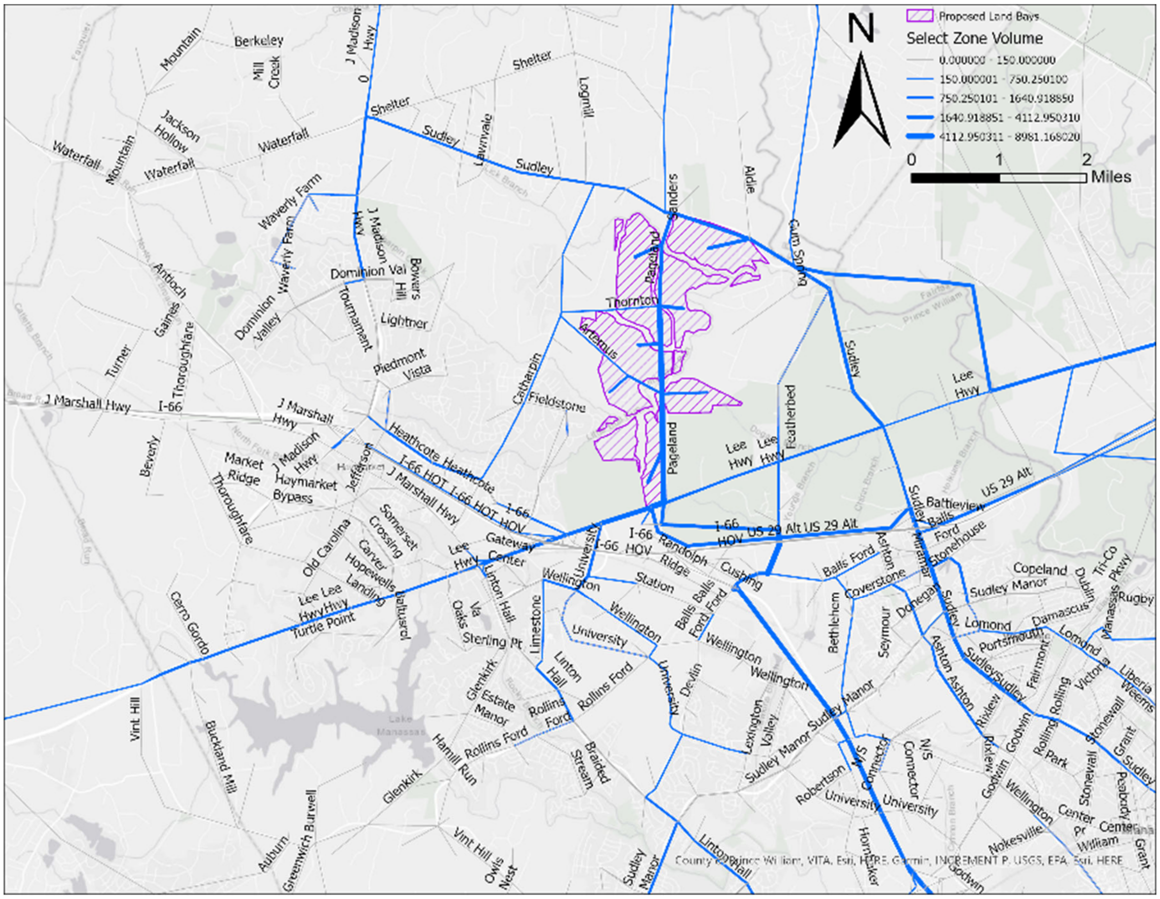


FIGURE 38: PAGELAND WIDENING (MA) SELECT ZONE DAILY VOLUME PATHS

A second analysis was performed using the segment of Pageland immediately north of US 29. The traffic directions coming to or from the south is listed in Table 8. This shows that most of the traffic using Pageland is coming from or going to the south or west. The traffic north of the link is listed in Table 9. The majority of traffic using Pageland ends up in the development, however 34% of the traffic is through traffic and either uses Sudley Blvd or continues north on Pageland.

TABLE 8: PAGELAND SELECT LINK SOUTH

TRAFFIC DIRECTION	PERCENT OF TRAFFIC
US 29 West	42%
US 29 East	8%
South	50%

TABLE 9: PAGELAND SELECT LINK NORTH

TRAFFIC DIRECTION	PERCENT OF TRAFFIC
Into Site	62%
West on Sudley	12%
North on Sanders	22%
East on Sudley	4%

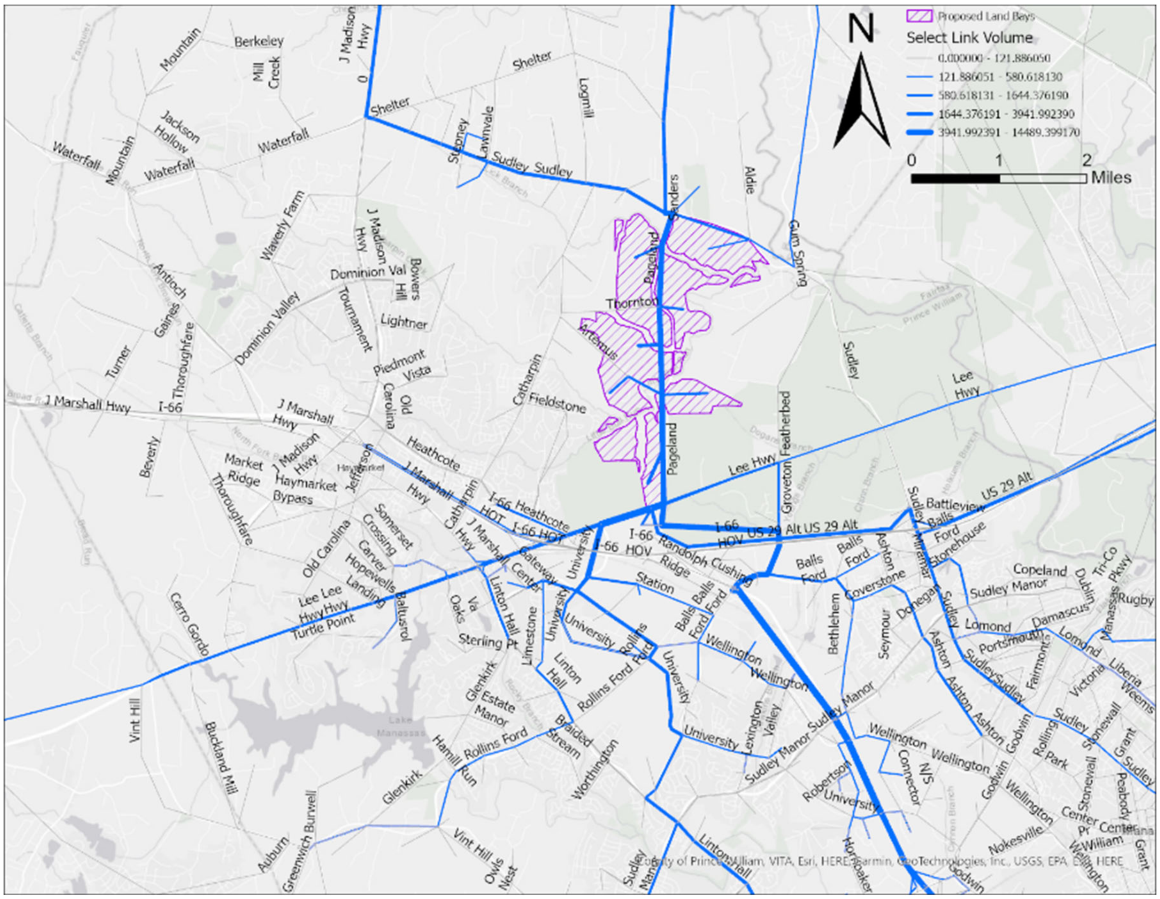


FIGURE 39: PAGELAND WIDENING (MA) SELECT LINK DAILY VOLUME PATHS

Comparison

A comparison of the v/c ratios and volumes is presented in Table 10.

TABLE 10: SCENARIO COMPARISON

Street	# Lanes	From	To	No-Build				2040 Build				2040 Build + Widening + MA-1			
				Daily Volume	AM v/C	PM V/c	Daily V/C	Daily Volume	AM v/C	PM V/c	Daily V/C	Daily Volume	AM v/C	PM V/c	Daily V/C
US-29	2	Pageland	Westbound	8,091	0.2863	0.3383	0.3123	11,445	0.3112	0.4271	0.3692	12,216	0.3557	0.4645	0.4101
US-29	2	Eastbound	Pageland	6,087	0.127	0.2408	0.1839	8,539	0.1857	0.2116	0.1986	9,829	0.2006	0.2889	0.2448
US-29	2	Pageland	Eastbound	2,977	0.0598	0.1172	0.0885	3,529	0.0638	0.1422	0.103	4,501	0.0647	0.1945	0.1296
US-29	2	Westbound	Pageland	3,755	0.0773	0.1249	0.1011	3,940	0.103	0.1217	0.0995	4,373	0.0807	0.1603	0.1205
Sudley	2	Sanders	Pageland	22,717	0.4299	0.3221	0.444	20,966	0.4687	0.2559	0.3989	22,964	0.5001	0.3081	0.44
Sudley	2	Pageland	Sanders	22,717	0.1616	0.8625	0.444	20,966	0.1047	0.7665	0.3989	22,964	0.1159	0.8359	0.44
Sudley	2	Pageland	Eastbound	11,071	0.2115	0.1555	0.2325	17,325	0.2623	0.2982	0.3416	16,288	0.2471	0.2688	0.3101
Sudley	2	Westbound	Pageland	11,071	0.0742	0.4886	0.2325	17,325	0.1945	0.6113	0.3416	16,288	0.1847	0.5399	0.3101
Pageland	1	Sudley	Project Access A	12,703	0.5298	0.4478	0.6374	14,234	0.9696	0.3528	0.6187	17,647	0.5516	0.3026	0.4175
Pageland	1	Project Access A	Sudley	12,703	0.3524	1.3187	0.6374	14,234	0.1845	0.9678	0.6187	17,647	0.1218	0.6941	0.4175
Pageland	1	Project Access B	US 29	12,859	0.7002	0.589	0.6879	23,274	0.8918	1.2097	0.9648	27,352	0.5475	0.7887	0.623
Pageland	1	US 29	Project Access B	12,859	0.296	1.1539	0.6879	23,274	0.7961	0.9861	0.9648	27,352	0.4486	0.7201	0.623

Summary and Conclusions

This study evaluated the impacts of the Digital Gateway development on the future year 2030 highway network using the 2040 land use and socioeconomic data. The analysis found that in the future year, Pageland Road will be approaching congestion and for this reason, we recommend the Pageland Road be widened to a four lane MA-1 standard with final design of Pageland Road be evaluated with subsequent rezoning applications to ensure intersection design and configuration and traffic signal timings (where applicable) are adequate to move traffic, and this is due to the PM peak period only.

This conclusion relies on the construction of the projects included in the future-year network, particularly the SR 29 Bypass, which connects Pageland Blvd to I-66 and significantly improves traffic in this area. The development will have impacts on other area roadways, however those roadways are not forecast to exceed capacity and the widening of Pageland Blvd will improve traffic flow between the area north of the development and I-66 and relieve some traffic on Sudley Rd.

One of the things that we noticed was some spot congestion on a few ramps on I-66 and Prince William Parkway. That said, these did not seem unusual since ramp capacities tend to be generalized and very sensitive to lane geometry and operational design.

One important note must be made to the model validation. The model was calibrated and validated prior to the COVID-19 pandemic. With the workplace changes we are seeing in the short-term, such as increased teleworking and reduced office trip generation, there exists some uncertainty around future year traffic levels and patterns. The model was NOT changed to reflect any potential changes as a result of these potential changes. We do not expect actual future-year volumes to be worse than the model currently forecasts.

ATTACHMENT #2
SIGNED SCOPING DOCUMENT WITH CHECKLIST

VDOT Virginia Department of Transportation	PRE-SCOPE OF WORK MEETING FORM Information on the Project Traffic Impact Analysis Base Assumptions

The applicant is responsible for entering the relevant information and submitting the form to VDOT and the locality no less than three (3) business days prior to the meeting. If a form is not received by this deadline, the scope of work meeting may be postponed.

Contact Information				
Consultant Name: Tele: E-mail:	Chad Baird, Gorove Slade Associates, Inc. 571-248-0992 chad.baird@goroveslade.com			
Developer/Owner Name: Tele: E-mail:	Digital Gateway			
Project Information				
Project Name:	Digital Gateway	Locality/County:	Prince William County	
Project Location: (Attach regional and site-specific location map)	Approximately +/-2,167 acres in northern Prince William County between Route 29 and Sudley Road. Please see Figure 1 for the site area.			
Submission Type	Comp Plan ☒	REZ/SUP ☐	Site Plan ☐	Subd Plat ☐
Project Description: (Including details on the land use, acreage, phasing, access location, etc. Attach additional sheet if necessary)	A comprehensive plan amendment is being proposed to allow additional density for approximately +/-2,167 acres in Prince William County. The currently planned scenario would allow for data centers up to/no more than 0.30 FAR. In order to accommodate this comp plan change, the County's CUBE model will need to be updated to understand the currently planned roadway network limitations and what additional roadway improvements may be needed.			
Proposed Use(s): (Check all that apply; attach additional pages as necessary)	Residential ☐	Commercial ☐	Mixed Use ☐	Other ☒
			Data Center Use CUBE Assumptions Data Center Socioeconomic Factor: Potentially based on ITE and SF. To be coordinated with Prince William County and/or VDOT during the process.	
Total Peak Hour Trip Projection:	Less than 100 ☐	100 – 499 ☐	500 – 999 ☐	1,000 or more ☒

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

Traffic Impact Analysis Assumptions					
Study Period	Existing Year: 2015		Buildout Year: N/A		Planning Year: 2040
Study Area Boundaries (Attach map)	Please see Figure 1				
External Factors That Could Affect Project (Planned road improvements, other nearby developments)	N/A				
Consistency With Comprehensive Plan (Land use, transportation plan)	No, this is for a comprehensive plan amendment. The current comprehensive plan land use for this subject area is primarily agricultural and residential. The proposed comprehensive plan amendment would allow data centers at up to a 0.30 FAR.				
Available Traffic Data (Historical, forecasts)	Prince William County CUBE Model				
Trip Distribution	Accounted for in CUBE Model				
Annual Vehicle Trip Growth Rate: (See Note 3.)	Accounted for CUBE Model	Peak Period for Study (check all that apply)	☐ AM ☐ PM ☐ SAT ☒ Daily		
		Peak Hour of the Adj. (to be used in study)	N/A		
Study Intersections and/or Road Segments (Attach additional sheets as necessary) **(Please refer to attached Figure 2 for area)**	1.	Please see Figure 1 and Figure 2	7.		
	2.		8.		
	3.		9.		
	4.		10.		
	5.		11.		
	6.		12.		
Trip Adjustment Factors	Internal allowance Reduction: N/A ☐ Yes ☐ No		Pass-by allowance Reduction: N/A ☐ Yes ☐ No		
Software Methodology	☐ Synchro ☐ HCS (v.2000/+) ☐ SIDRA ☐ CORSIM ☒ Other CUBE				

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

Traffic Signal Proposed or Affected (Analysis software to be used, progression speed, cycle length)	N/A
Improvement(s) Assumed or to be Considered	Planned Comprehensive Plan Roads
Background Traffic Studies Considered	Cooperative land use forecasts
Plan Submission	☐ Master Development Plan (MDP) ☐ Generalized Development Plan (GDP) ☐ Preliminary/Sketch Plan ☐ Other Plan type (Final Site, Subd. Plan)
Additional Issues to be Addressed	☐ Queuing analysis ☐ Actuation/Coordination ☐ Weaving analysis ☐ Merge analysis ☐ Bike/Ped Accommodations ☐ Intersection(s) ☐ TDM Measures ☒ Other (___Link V/C_____)

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

NOTES on ASSUMPTIONS:

1. The CUBE model will be obtained from Prince William County.
    a. The 2015 Model outputs will be verified.
2. The scenarios to be included in the study are listed below. The 2040 land use is being used for the horizon year, consistent with what is currently in the Prince William County Comprehensive Plan and model.
    a. 2040 No-Build
    b. 2040 Build Scenario (up to/no more than 0.30 FAR Data Centers with current comp plan roads)
    c. 2040 Build – Mitigated Scenario (up to/no more than 0.30 FAR Data Centers with necessary road improvements)
        i. The mitigated scenario will include the road improvements needed to offset the proposed development, which could potentially include the widening of Pageland Road and/or a connection to I-66.
3. The following MOE's will be presented from the CUBE model:
    a. Model traffic volumes on study area roadways
    b. Model volume to capacity (v/c) ratios on study area roadways
4. Screen lines to be coordinated with Prince William County and/or VDOT throughout the process or in a separate document.
5. Methodology needed to address potential zone splits to be coordinated with Prince William County and/or VDOT throughout the process or in a separate document
6. We will follow the attached Comp Plan Amendment checklist
7. Chapter 536 and Evacuation Routes will be included
8. A comparison with the available 2019 data will be included
9. A potential connection to I-66 would fall within the North-South Corridor of Statewide Significance as adopted by the 5/18/2011 CTB resolution.

SIGNED: _____ DATE: 11/12/2021
Applicant or Consultant

PRINT NAME: Chad A. Baird
Applicant or Consultant

SIGNED: _____ DATE: 11/16/21
VDOT Representative

PRINT NAME: Peter Gerner
VDOT Representative

SIGNED: _____ DATE: 11/16/21
Local Government Representative

PRINT NAME: Elizabeth D. Scullin
Local Government Representative

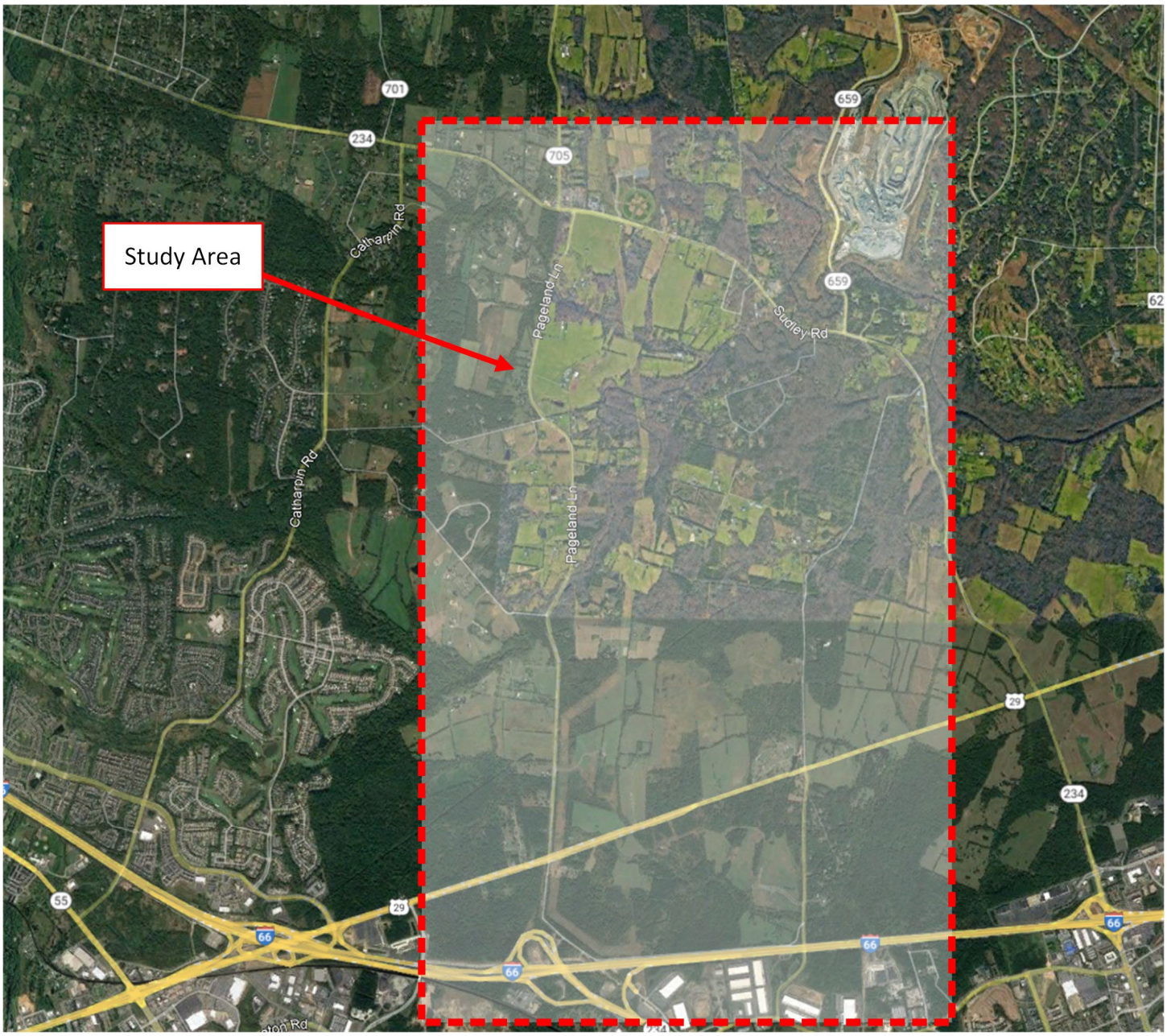
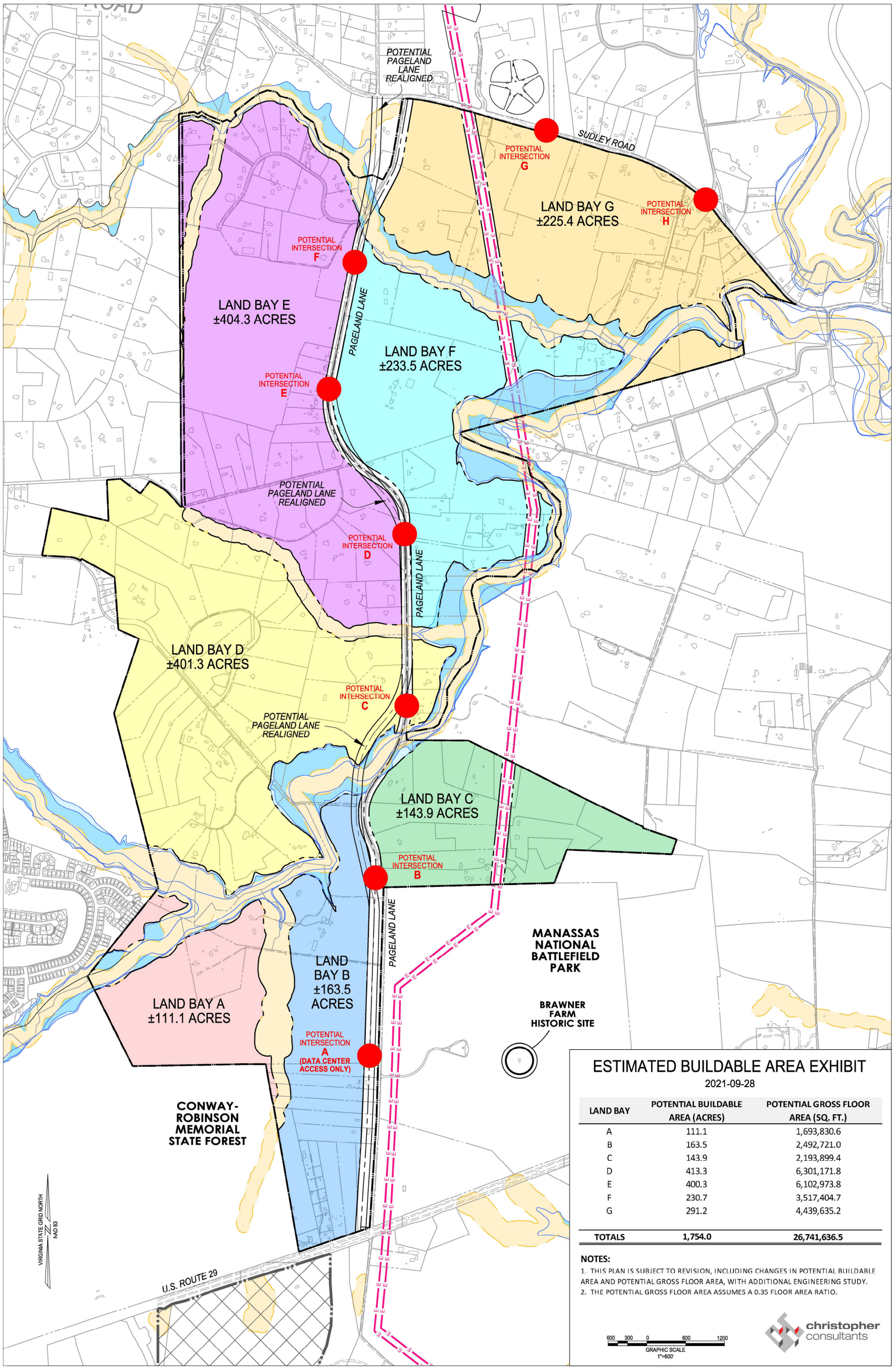


Figure 1: Study Area



LAND BAY	POTENTIAL BUILDABLE AREA (ACRES)	POTENTIAL GROSS FLOOR AREA (SQ. FT.)
A	111.1	1,693,830.6
B	163.5	2,492,721.0
C	143.9	2,193,899.4
D	413.3	6,301,171.8
E	400.3	6,102,973.8
F	230.7	3,517,404.7
G	291.2	4,439,635.2
TOTALS	**1,754.0**	**26,741,636.5**

Figure 2: Site Location (Preliminary Draft – For Information Purposes Only)

Comprehensive Plan or Plan Amendment Package Checklist
Traffic Impact Analysis Regulations: 24VAC30-155-50

For a comprehensive plan or a transportation plan, the locality shall provide:

☐ **A COVER SHEET**, containing:

- ☐ **CONTACT INFORMATION** for the locality, and
- ☐ **SUMMARY OF MAJOR CHANGES** made to the comprehensive plan or transportation plan;

☐ **THE PROPOSED COMPREHENSIVE PLAN OR TRANSPORTATION PLAN** and the following elements:

- ☐ **INVENTORY** – An inventory (written or graphic) of the existing transportation network, which shall include at a minimum all roadways within the Federal Aid system (any roadway classified as a Major or Urban Collector or higher functional classification or is included within the Federal Highway Administration's National Highway System). VDOT District staff can provide assistance regarding which roadways must be included in the inventory.

- ☐ **ASSUMPTIONS** – Planning assumptions directly influence the demand placed on the transportation system. Details on the planning assumptions shall include, but need not be limited to population growth, employment growth, and location of critical infrastructure such as water and sewer facilities.

- ☐ **NEEDS ASSESSMENT** – Written or graphic evaluation of the transportation systems current and projected performance and conditions. This evaluation should compare the existing transportation system with the future land use policies and maps in order to determine how future growth will affect the transportation system.

  The needs assessment will identify specific deficiencies based on current conditions as well as future improvements to serve the quantity, type, location, and density of anticipated development based on the future land use policies and maps.

  It is not necessary to have the identification of specific deficiencies prepared by a transportation professional. It could be a list of transportation facilities that, in the experience of the citizens, Planning Commission, or governing board, are deficient.

- ☐ **RECOMMENDATIONS** – Proposed improvements or additions to transportation infrastructure.

  Recommendations should be specific so that the need, location and nature of the proposed improvements are clear and understandable. The recommendations should address some or all of the needs identified in the needs assessment step, above.

  Proposed transportation additions/improvements consistent with the future land use policies and map.

  Localities are encouraged to include pedestrian, bicycle, transit, rail and other multi-modal recommendations as they deem appropriate.

  - ☐ **MAP** - The transportation plan shall include a map showing road and transportation improvements, taking into account the current and future needs of residents in the locality while considering the current and future needs of the planning district within which the locality is situated.

  - ☐ **COST ESTIMATES** - Recommended improvements shall include any VDOT cost estimates.

☐ **FEES (SEE BELOW)**

For an amendment to a comprehensive plan or transportation plan, the locality shall provide:

- ☐ **A COVER SHEET**, containing:
  - ☐ **CONTACT INFORMATION** for the locality;
  - ☐ **SUMMARY OF PROPOSED AMENDMENT** or amendments to the comprehensive plan or transportation plan; and
  - ☐ **OVERVIEW** of reasoning and purpose for amendments.
- ☐ **APPLICATION FORMS** and documentation presented to or prepared by the local jurisdiction,
- ☐ **ASSOCIATED MAPS OR NARRATIVES** that depict and detail the amendment under consideration,
- ☐ **ANY CHANGES** to the planning assumptions associated with the amendment, and
- ☐ **LOCAL ASSESSMENT** of the potential impact it may have on the transportation system.
- ☐ **ELEMENTS IDENTIFIED ABOVE** (4th checkbox) that VDOT determines are needed in order to review and comment on impacts to state-controlled highways.
- ☐ **FEES (SEE BELOW)**

For a small area plan amendment to a comprehensive plan, the locality shall provide:

- ☐ **A COVER SHEET**, containing:
  - ☐ **CONTACT INFORMATION** for the locality;
  - ☐ **SMALL AREA PLAN DETAILS**:
    - ☐ **LOCATION**;
    - ☐ **HIGHWAYS** and **TRANSIT FACILITIES** adjacent to the site;
    - ☐ **PARCEL NUMBER** or NUMBERS; and
    - ☐ PROPOSAL SUMMARY with development names, size, and proposed zoning.
- ☐ A TRAFFIC IMPACT STATEMENT prepared in accordance with 24VAC30-155-60.
- ☐ A PLAN OF DEVELOPMENT for the area encompassed by the small area plan.

Fees

- ☐ A $1,000 FEE paid by the applicant for the initial or second review of a comprehensive plan, an amendment to the plan, or a small area plan amendment to the comprehensive plan.
- ☐ A $1,000 FEE paid for a third or subsequent submission of a comprehensive plan, plan, or a small area plan amendment that is requested by VDOT on the basis of the failure of the applicant to address deficiencies previously identified by VDOT.

NOTE: NO FEE is charged by VDOT if the comprehensive plan, plan amendment, or **small area plan** amendment is initiated by a locality or public agency.

NO FEE is charged by VDOT to a citizens' organization or neighborhood association that proposes comprehensive plan amendments through its local planning commission or local governing body.

ATTACHMENT #3
SUPPLEMENTAL TRANSPORTATION INFORMATION MEMORANDUM

TECHNICAL MEMORANDUM

To:	Peter Gerner	VDOT
From:	Chad Baird Kayla Ord, PE Sumedh Khair, EIT	Gorove Slade
Date:	April 1, 2022	
Subject:	**PW Digital Gateway Corridor (CPA #2021-00004) – Supplemental Transportation Memo**	

Introduction

This memorandum serves as a supplement to the Comprehensive Plan Amendment application, including the elements required as part of the submission to Virginia Department of Transportation (VDOT) required by the guidelines (24VAC30-155). This memorandum aims to provide supplemental information so that VDOT may evaluate the system of new and expanded transportation facilities, outlined in the transportation plan, that are needed to support the current and planned development of the territory covered by the plan. For the Comprehensive Plan Amendment, the following checklist items are included with this memorandum:

1) Inventory
2) Cost Estimates

In addition to the above items, the memorandum will satisfy the VDOT Chapter 536 requirements and the Homeland Security Evacuation Route requirements.

Inventory

An inventory of the existing transportation network is given below in Table 1, which includes all roadways within the study area, as well as roadways classified within the National Highway System:

Table 1: Inventory of Surrounding Transportation Network

Roadway	RTE #	VDOT Classification	Prince William County Classification	# of Existing Lanes(2021)	Speed Limit (mph)	2019 AADT (vpd)	Road Segment Between:	
Sudley Rd	VA-234N	Major Collector	Minor Arterial	2	50	11,000	76-659 Gum Springs Rd	US 15 James Madison Hwy
Catharpin Rd	SC-676N	Major Collector	Major Collector	2	40	5,200	SR 55 John Marshall Hwy	SR 234 Sudley Rd
Pageland Ln	SC-705N	Major Collector	Major Collector	2	45	6,800	US 29 Lee Hwy	SR 234 Sudley Rd
Gum Spring Rd	SC-659N	Local Road/Not Classified	Local Road	2	45	18,000	SR 234 Sudley Rd	Loudoun County Line
Sanders Ln	SC-705N	Local Road/Not Classified	Local Road	2	45	1,600	SR 234 Sudley Rd	Loudoun County Line
Lee Hwy	US-29	Urban/Rural Minor Arterial	Principal Arterial/Major Collector	4	45	21,000	I-66 E of Gainesville	76-705 Pageland Lane

Chapter 536 Requirements and Evacuation Routes

Chapter 536 Requirements

Per the Chapter 536 Code, the v/c ratio for the higher classification roads are provided. The table below shows the AM, PM, and Daily v/c ratios of the scenarios from the CUBE study (Attachment #1), which include Future Year No Build, Future Year Build, and Future Year Build with Pageland Lane Widened to 4 lanes. It is observed that the v/c Ratios for the recommended MA-1 scenario are all less than 1.00, denoting enough capacity on the roadways.

Table 2: Comparison of V/C Ratios for the Roadways in the Study Area

Street	# Lanes	From	To	No-Build			2040 Build			2040 Build + Widening + MA-1		
				AM v/C	PM V/c	Daily V/C	AM v/C	PM V/c	Daily V/C	AM v/C	PM V/c	Daily V/C
US-29	2	Pageland	Westbound	0.2863	0.3383	0.3123	0.3112	0.4271	0.3692	0.3557	0.4645	0.4101
US-29	2	Eastbound	Pageland	0.127	0.2408	0.1839	0.1857	0.2116	0.1986	0.2006	0.2889	0.2448
US-29	2	Pageland	Eastbound	0.0598	0.1172	0.0885	0.0638	0.1422	0.103	0.0647	0.1945	0.1296
US-29	2	Westbound	Pageland	0.0773	0.1249	0.1011	0.103	0.1217	0.0995	0.0807	0.1603	0.1205
Sudley	2	Sanders	Pageland	0.4299	0.3221	0.444	0.4687	0.2559	0.3989	0.5001	0.3081	0.44
Sudley	2	Pageland	Sanders	0.1616	0.8625	0.444	0.1047	0.7665	0.3989	0.1159	0.8359	0.44
Sudley	2	Pageland	Eastbound	0.2115	0.1555	0.2325	0.2623	0.2982	0.3416	0.2471	0.2688	0.3101
Sudley	2	Westbound	Pageland	0.0742	0.4886	0.2325	0.1945	0.6113	0.3416	0.1847	0.5399	0.3101
Pageland	1	Sudley	Project Access A	0.5298	0.4478	0.6374	0.9696	0.3528	0.6187	0.5516	0.3026	0.4175
Pageland	1	Project Access A	Sudley	0.3524	1.3187	0.6374	0.1845	0.9678	0.6187	0.1218	0.6941	0.4175
Pageland	1	Project Access B	US 29	0.7002	0.589	0.6879	0.8918	1.2097	0.9648	0.5475	0.7887	0.623
Pageland	1	US 29	Project Access B	0.296	1.1539	0.6879	0.7961	0.9861	0.9648	0.4486	0.7201	0.623

Homeland Security Evacuation Routes

As identified by the VDOT Evacuation Study shown in Figure 1 (obtained from the VDOT Safety, Security, & Emergency Management Section), Sudley Rd, Gum Springs Rd and Lee Hwy are identified in purple as Primary Evacuation Routes. These routes are planned to be used in the event of a Homeland Security emergency and serve the study area. In order to assess the potential impacts on evacuation in an emergency event and the potential need for mitigations, Table 2 provides the daily v/c ratios for these 3 primary evacuation routes in the study area to understand their capacity. As shown, all the three roadways are anticipated to operate acceptably, having enough capacity as determined by v/c ratios given in Table 2. Therefore, no mitigations to these evacuation routes are planned.

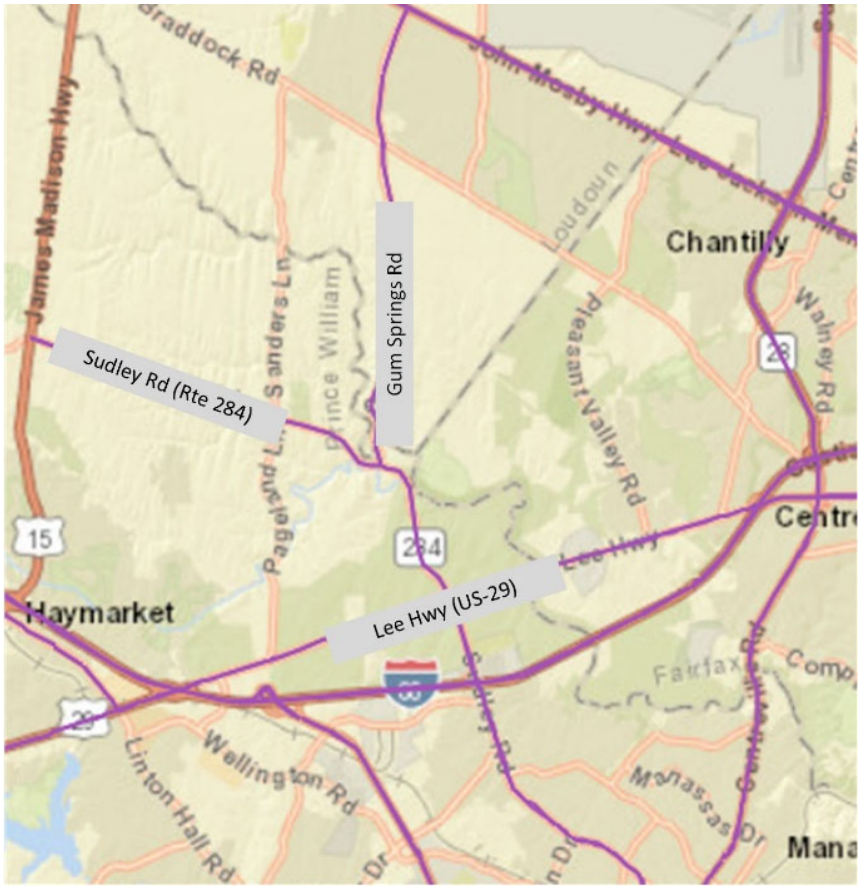


Figure 1: Evacuation Routes Map (VDOT)

Cost Estimate

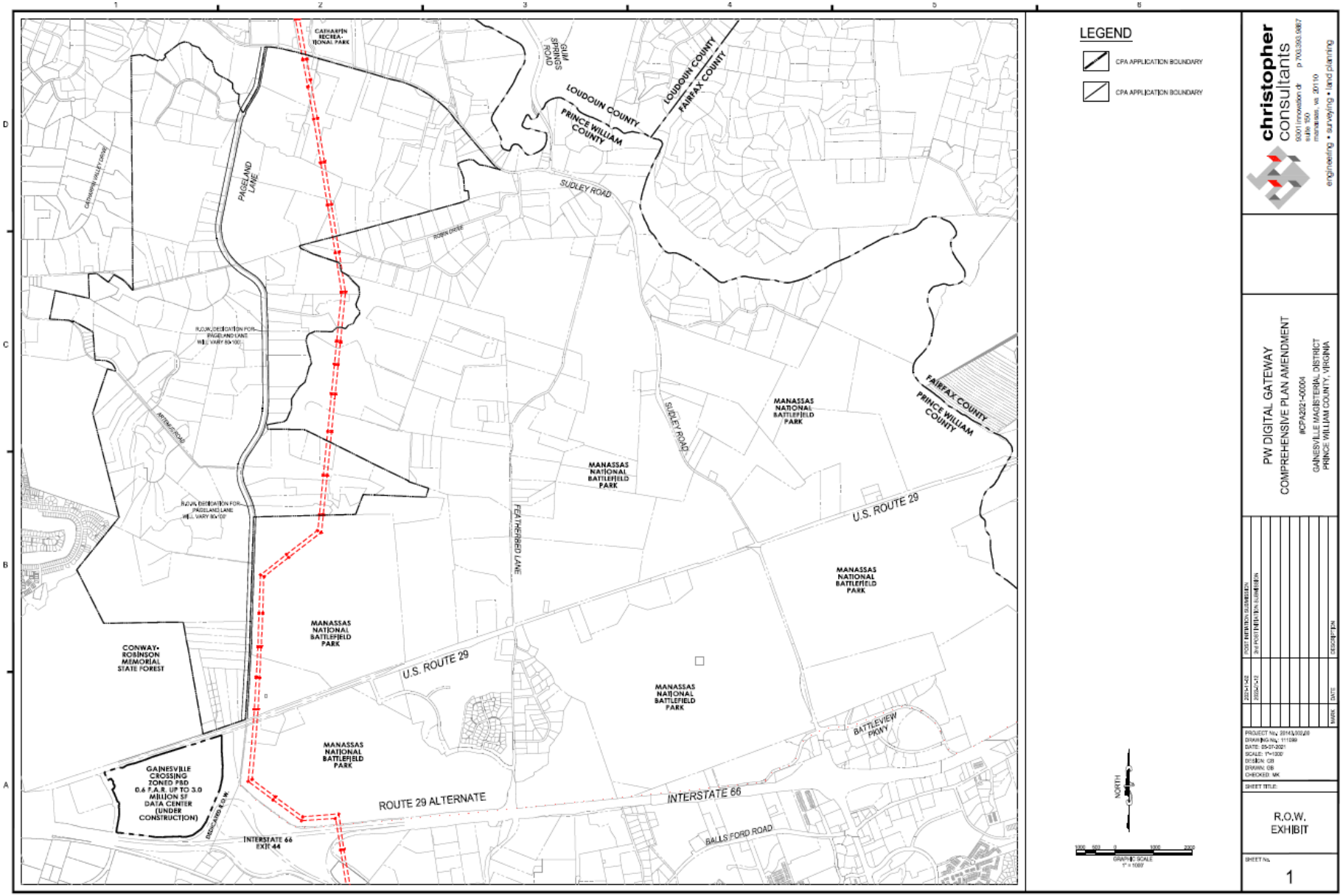
This section provides a preliminary cost estimate for the proposed Pageland Lane widening. As noted, the planned improvement would widen the road to four lanes and include intersections and a pedestrian path on the east side. The preliminary cost estimate is shown in Table 3, and as shown the recommended improvement is anticipated to cost approximately $130M. This assessment includes significant ROW acquisition which is shown in the following figures.

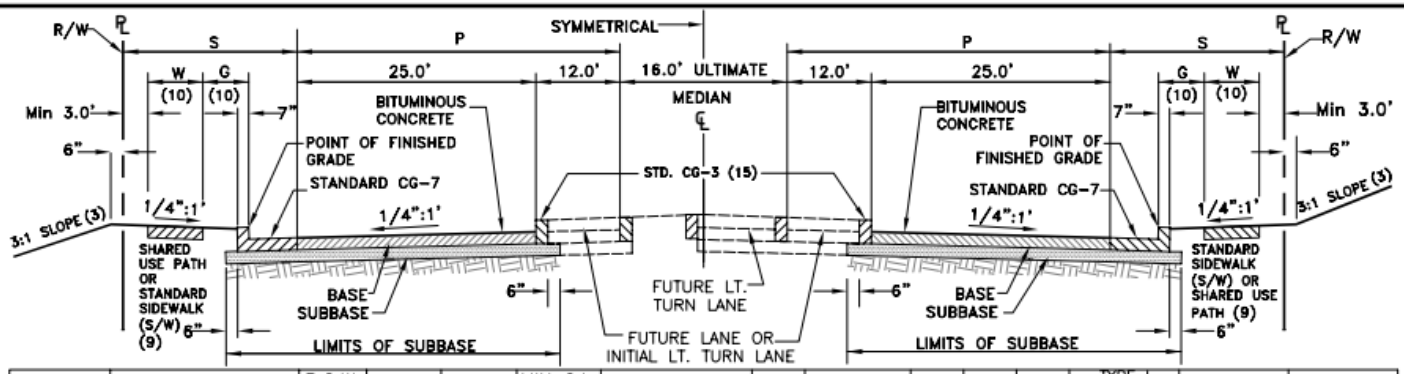
Table 3: Preliminary Cost Estimate

PW Digital Gateway
Prince William County, Virginia
December 16, 2021

PAGELAND LANE	QUANTITY[1]	UNIT	ANTICIPATED COST	BUDGET
MA-1 Typical Section (4 Lanes)	73,920	LANE/FT	$ 750.00	$ 55,440,000.00
Demo of Existing Road	42,000	SY	$ 50.00	$ 2,100,000.00
Major Stream Crossing	3	Crossing	$ 750,000.00	$ 2,250,000.00
New Unsignalized intersections with Turn Lanes	11	Intersections	$ 200,000.00	$ 2,200,000.00
New Major Intersections with Turn Lanes	6	Intersections	$ 600,000.00	$ 3,600,000.00
Existing Signal Modifications	2	Signal	$ 500,000.00	$ 1,000,000.00
New Signals	6	Signal	$ 500,000.00	$ 3,000,000.00
Right-of-Way and Easement Acquisition	60	Acres	$ 500,000.00	$ 30,000,000.00
			Subtotal	$ 99,590,000.00
			30% Contingency[2]	$ 29,877,000.00
			Opinion of Probable Cost	**$ 129,467,000.00**

Notes:
1. Quantities based on the an approximate 3.5 mile 4-lane road and engineering judgement
2. Accounts for utility, and other miscellaneous items


LEGEND
CPA APPLICATION BOUNDARY
CPA APPLICATION BOUNDARY
christopher consultants
engineering • surveying • land planning
PW DIGITAL GATEWAY
COMPREHENSIVE PLAN AMENDMENT
GAINESVILLE MAGISTERIAL DISTRICT
PRINCE WILLIAM COUNTY, VIRGINIA
R.O.W. EXHIBIT
SHEET No.
1
NORTH
GRAPHIC SCALE
CATHARPIN RECREATIONAL PARK
PAGELAND LANE
SUDLEY ROAD
LOUDOUN COUNTY
PRINCE WILLIAM COUNTY
FAIRFAX COUNTY
FEATHERBED LANE
U.S. ROUTE 29
ROUTE 29 ALTERNATE
INTERSTATE 66
INTERSTATE 66 EXIT 44
BALLS FORD ROAD
BATTLEVIEW PKWY
MANASSAS NATIONAL BATTLEFIELD PARK
CONWAY-ROBINSON MEMORIAL STATE FOREST
GAINESVILLE CROSSING ZONED PBD 0.6 F.A.R. UP TO 3.0 MILLION SF DATA CENTER (UNDER CONSTRUCTION)



CATEGORY	TRAFFIC VOLUME (VPD)	R.O.W. WIDTH (ft.)	DESIGN SPEED (mph)	MAX GRADE	MIN C.L. RADIUS (ft.)	MIN. SIGHT DISTANCE (ft.) STOP	MIN. SIGHT DISTANCE (ft.) INTX	P (ft)		S (ft)	G (ft)	W (ft)	TYPE I SUBBASE AGG. BASE (21-B)	BASE (BM-25.0A)	SURFACE (SM-9.5D)
VII	OVER 15,000 W/ RAISED MEDIAN	128 (MIN.) (9)	50	5%	955	425	SEE NOTE 18	37	SIDEWALK	15	5	5	8 in	8 in	2 in
									SHARED USE PATH	23	8	10			

GENERAL NOTES:

1. This street section shall be used when the traffic volume exceeds 15,000 VPD or when the roads are designated minor arterial by the Comprehensive Plan.
2. Slope easements not included in right-of-way.
3. 2:1 slopes will be allowed when soil type supported by soil report is acceptable and when special stabilization is provided in accordance with the Erosion Control ordinance.
4. Stone material shall extend under the curb and gutter a minimum of six (6) inches beyond the back of curb. The aggregate thickness under the curb and gutter shall be that in excess of the depth of the gutter face or a minimum of four (4) inches, whichever is greater.
5. Individual parcels/lots shall not have direct access on this street.
6. Additional right-of-way may be required to accommodate channelization (right/left turn lanes) at major intersections.
7. No parking permitted.
8. Standard landings required at intersections.
9. Sidewalks and/or shared use paths shall be provided in accordance with Section 602.18 and with the County's Comprehensive Plan. Minimum right-of-way dimension shown includes one sidewalk and one shared use path.
10. The width of G and W shall vary depending upon the sidewalk/shared use path and planting requirements. This may require additional right-of-way or easement.
11. Superelevation shall be provided for Category VII street in accordance with the current VDOT Road and Bridge Standards for Urban Roadways.
12. Design speed shall be 50 MPH or in accordance with VDOT standards, whichever is greater.
13. Pavement section shown is standard requirement. Refer to Detail 650.01 for alternative pavement sections.
14. Over 25,000 VPD will require the construction of the 6 Lane Section.
15. Median shall conform to VDOT standards MS-1, MS-1A or MS-2 as appropriate.
16. Underdrains shall be provided.
17. Right-of-way to accommodate all required components of the typical section including, but not limited to turn lanes, sidewalks, shared use paths, buffer areas, street plantings in accordance with Section 802.46 of this manual, and signs.
18. SDL, Sight Distance Left = 625'. SDR, Sight Distance Right = 720' (assuming ultimate 6-lane section and 50 mph design speed). Otherwise, use latest VDOT or AASHTO standards, whichever is more stringent. Intersection sight distance should be based on the ultimate plan and computed in accordance with Chapter 9 of the AASHTO Green Book.

Detail No.				
650.11	MA-1	COUNTY OF PRINCE WILLIAM VIRGINIA	STANDARD TYPICAL SECTION FOR URBAN MINOR ARTERIAL STREETS AS DESIGNATED BY THE COMPREHENSIVE PLAN (6 LANE DIVIDED WITH CURB AND GUTTER)	Date 7/15/14