

Cleveland Street Phase IV Improvements

UPC 110803; CIP 100123

Environmental Assessment

Prepared For:
The Federal Highway Administration

Prepared By:
**The City of Virginia Beach, Virginia
Department of Public Works**

And
Virginia Department of Transportation

AUGUST 2025



U.S DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
AND
VIRGINIA DEPARTMENT OF TRANSPORTATION

ENVIRONMENTAL ASSESSMENT

CLEVELAND STREET PHASE IV

VIRGINIA BEACH, VIRGINIA

FEDERAL PROJECT NO.: STP-5A04(028)

STATE PROJECT NO.: U000-134-859, C501, P101, R201

VDOT UPC: 110803

FROM: WITCHDUCK ROAD

TO: INDEPENDENCE BOULEVARD

SUBMITTED PURSUANT TO 42 U.S.C. 4332(2)(C)

September 18, 2025

DATE

A handwritten signature in blue ink, reading "Amanda L. Heath", is positioned above a horizontal line.

FOR DIVISION ADMINISTRATOR

FEDERAL HIGHWAY ADMINISTRATION

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ACRONYMS

ACS	American Community Survey	NAAQS	National Ambient Air Quality Standards
ADA	American with Disabilities Act of 1990	NEPA	National Environmental Policy Act
ADT	Average Daily Traffic	NHDE	Natural Heritage Data Explorer
APE	Area of Potential Effect	NHPA	National Historic Preservation Act
AST	Above Ground Storage Tank	NLCD	National Land Cover Database
CBG	Census Block Group	NLEB	Northern long-eared bat
CBC	Community Business Core District	NRHP	National Register of Historic Places
CBD	Central Business District	PC	Pollutant Complaint
CD	Collector-distributor	PESU	Tricolored bat
CFR	Code of Federal Regulations	ROW	Right-of-way
CIP	Capital Improvement Program	SGA	Strategic Growth Area
CO	Carbon Monoxide	SYIP	Six-Year Improvement Program
CT	Census Tract	T&E	Threatened and Endangered
CWA	Clean Water Act	TMC	Turning Movement Counts
DHR	Virginia Department of Historic Resources	USACE	U.S. Army Corps of Engineers
DWR	Virginia Department of Wildlife Resources	USDOI	U.S. Department of Interior
EA	Environmental Assessment	USDOT	U.S. Department of Transportation
EDR	Environmental Data Resources	USFWS	U.S. Fish and Wildlife Service
EO	Executive Order	USGS	U.S. Geological Service
EPA	U.S. Environmental Protection Agency	UST	Underground Storage Tank
FEMA	Federal Emergency Management Agency	VaFWIS	Virginia Fish and Wildlife Information Service
FHWA	Federal Highway Administration	V-CRIS	Virginia Cultural Resource Information System
FY	Fiscal Year	VDCR	Virginia Department of Conservation and Recreation
HHS	U.S. Department of Health and Human Services	VDEQ	Virginia Department of Environmental Quality
HRT	Hampton Roads Transit	VDOT	Virginia Department of Transportation
IPaC	Information for Planning and Conservation	VLR	Virginia Landmarks Register
I-64	Interstate-64	VLCF	Virginia Land Conservation Foundation
I-264	Interstate-264	VMRC	Virginia Marine Resource Commission
LCWF	Land and Water Conservation Fund Act of 1965	VMT	Vehicle miles travelled
LOD	Limits of Disturbance	VPD	Vehicles per day
LOS	Level of Service	VMRC	Virginia Marine Resource Commission
MSATs	Mobile Source Air Toxics	VRP	Voluntary Remediation Program
MYLU	Little brown bat	VWP	Virginia Water Protection
NAAQS	National Ambient Air Quality Standards	WERMS	Wildlife Environmental Review Map Service
NEPA	National Environmental Policy Act	WOUS	Waters of the United States

1 PURPOSE AND NEED

The City of Virginia Beach (the City), in coordination with the Virginia Department of Transportation (VDOT) and the Federal Highway Administration (FHWA) as the lead federal agency, is evaluating reconstructing portions of Cleveland Street and Columbus Street in Virginia Beach, Virginia. The project area under evaluation (from west to east) is from the intersection of Cleveland Street and North Witchduck Road to the intersection of Columbus Street and Independence Boulevard (herein referred to as the “project area” or “project corridor”). The proposed Cleveland Street Phase IV Improvements (the “project”) involves reconstructing the existing roadway from a two-lane undivided road to a three-lane undivided road and constructing new bicycle and pedestrian accommodations for a distance of approximately 1.2 miles. Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, and in accordance with FHWA regulations, this Environmental Assessment (EA) is being prepared to analyze the potential social, economic, and environmental effects associated with the improvements being evaluated. The project area under evaluation is shown in **Exhibit 1**.

This chapter presents the Purpose and Need for the proposed project being considered. The following sections describe the project area and existing transportation services; the history of the project area leading to the initiation of the EA; as well as the current and future transportation needs in the project area. The chapter concludes with a purpose statement and a summary of the transportation needs.

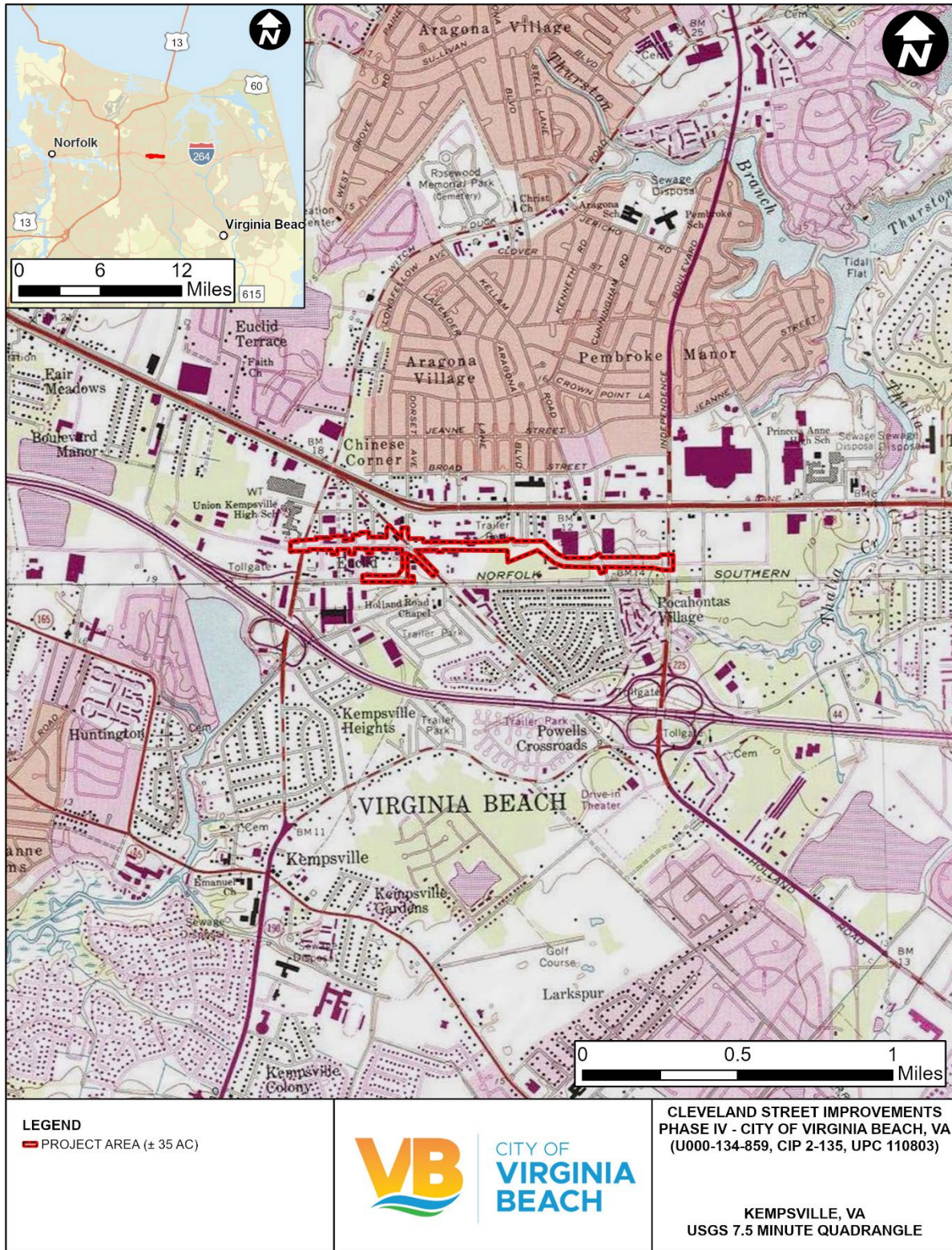


EXHIBIT 1. TOPOGRAPHIC VICINITY OF PROJECT AREA

1.1 Project Area

The project area (from west to east) comprises 1.2 miles of Cleveland Street and Columbus Street in Virginia Beach, Virginia, from the intersection of Cleveland Street and North Witchduck Road to the intersection of Columbus Street and Independence Boulevard. The project area includes portions of the following north-south cross streets where they intersect with Cleveland Street or Columbus Street: Southern Boulevard, Denn Lane, Jersey Avenue, Pennsylvania Avenue, Southgate Avenue, Brian Avenue, Dorset Avenue, Euclid Road, Opal Avenue, Aragona Boulevard, Maynard Avenue, Horace Avenue, Kellam Road, and Corporate Park Lane. The project area and north-south cross streets overlain on a 2023 aerial photograph is depicted on **Exhibit 2**. The project area generally consists of approximately 35 acres and is located in District Four within the City of Virginia Beach and is part of the City's urban center; with Virginia Beach Boulevard to the north, Independence Boulevard to the east, Witchduck Road to the west, and Interstate 264 (I-264) to the south. In the broader vicinity, the project area is between downtown Norfolk and the Virginia Beach oceanfront and is immediately west of Virginia Beach Town Center.

The project area is located within a mixed-use area of Virginia Beach and provides access to a variety of commercial, industrial, and residential facilities. The primary roadways servicing traffic in this area of Virginia Beach include I-264 and Virginia Beach Boulevard for west to east traffic and Witchduck Road and Independence Boulevard for north to south traffic. These roadways account for some of the highest traffic volumes and vehicle crashes in the city and several roadway reconstruction projects have occurred within the past decade to improve traffic and safety. This area of Virginia Beach is also a part of the Central Business District (CBD) zoning and the Central Village District, which are planned as a low-rise commercial and urban-residential area of Virginia Beach. These two districts are areas that have been identified for urban redevelopment through the City's Comprehensive Plan. The Pembroke Strategic Growth Area (SGA) Implementation Plan identifies the development vision as follows:

The vision for the Pembroke SGA is a central urban core with a vertical mix of urban uses; great streets, mobility and transit alternatives; urban gathering places; environmental and neighborhood preservation and enhancement; green buildings; and infrastructure opportunities providing a variety of civic, commercial, artistic and ethnically diverse areas. (City of Virginia Beach, 2024)¹

The project area, CBD, Central Village District, and key roadways for discussion in this EA are depicted on **Exhibit 3**. The project area is a boundary around the proposed roadway improvement corridor that includes all natural, cultural, and physical resources that must be analyzed in the EA. It does not represent the limits of disturbance (LOD) of the project or potential construction impacts.

¹ City of Virginia Beach, "Pembroke SGA." Accessed October 2023: <https://planning.virginiabeach.gov/comp-plan/strategic-growth-areas/pembroke>

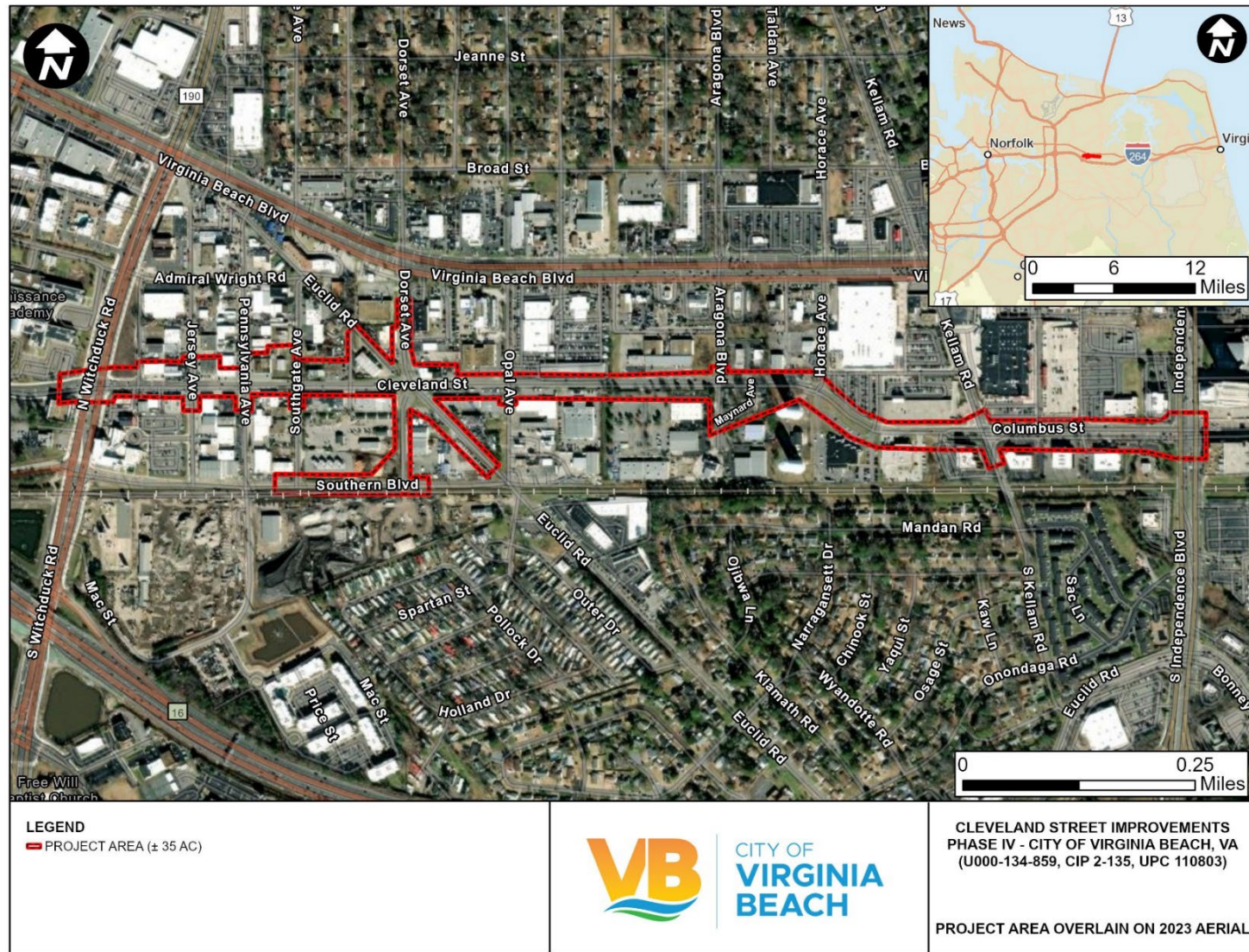


EXHIBIT 2. PROJECT AREA OVERLAIN ON 2023 AERIAL IMAGERY

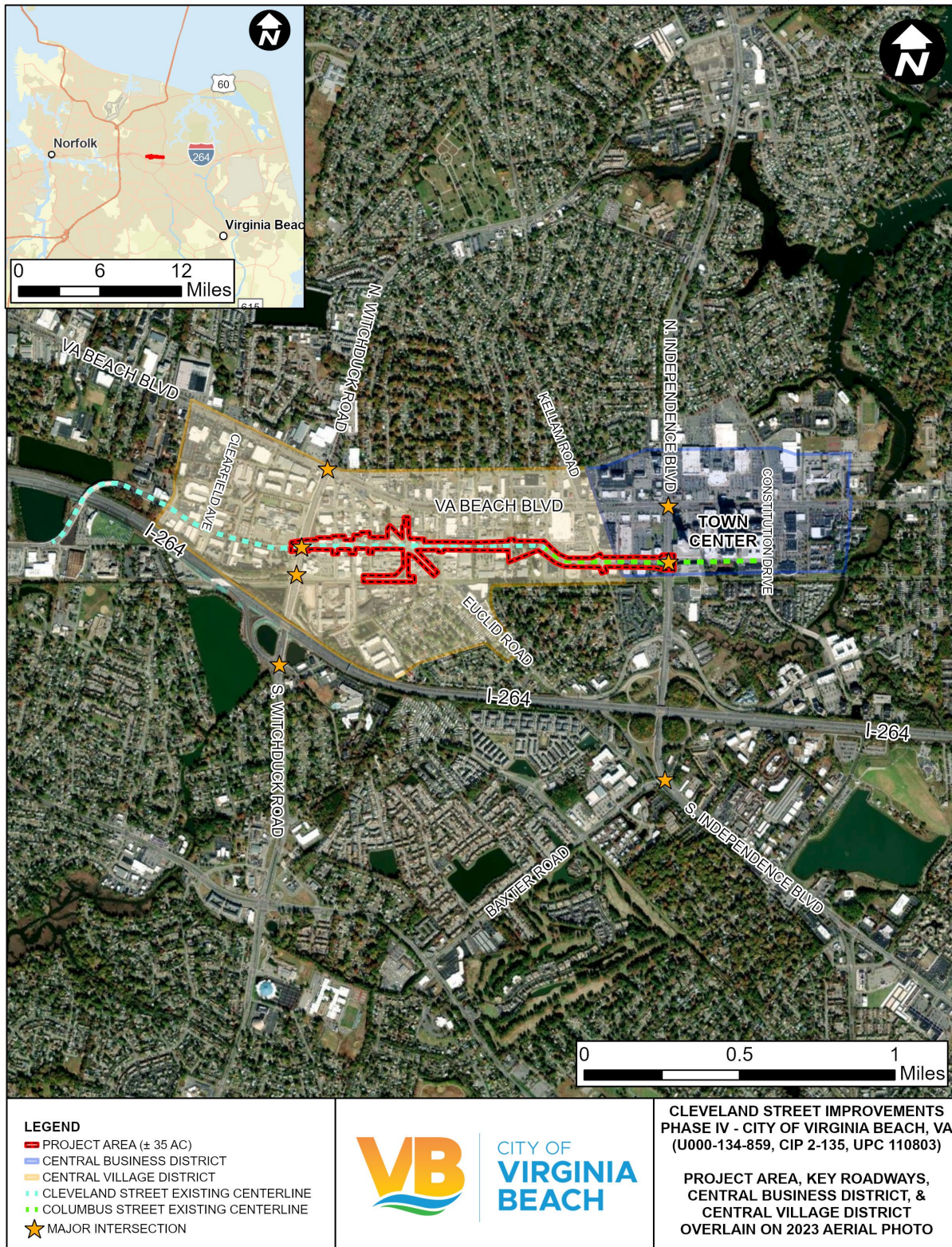


EXHIBIT 3. PROJECT AREA, KEY ROADWAYS, CENRAL BUSINESS DISTRICT, & CENTRAL VILLAGE DISTRICT

The project area is entirely developed with a variety of roadway facilities and commercial and industrial developments along the perimeter. The federal classification of Cleveland Street and Columbus Street is Urban Collector. Collectors are major and minor roads that connect local roads and streets with arterials at lower speeds for shorter distances. Arterial roads are high-capacity roads that deliver traffic from Collector roads to freeways. The City of Virginia Beach identifies the functional classification of Cleveland Street as an Urban Collector from South Witchduck Road to Euclid Road and Columbus Street as an Urban Collector. Witchduck Road is classified as a Minor Arterial and Independence Boulevard is classified as Other Principal Arterial. Euclid Road, Kellam Road, and Dorset Avenue are also classified as Urban Collectors. All other roadways within the project area are not classified.

The only existing residential development within the project area is a mobile home community located southeast of the intersection of Cleveland Street and Aragona Boulevard. The mobile home community contains approximately ten (10) units and is generally located at 4873 Cleveland Street (City of Virginia Beach GPIN 14771485900000). No forest lands or recreational facilities exist within the project area; however, the City is actively pursuing federal grant funding to extend the Virginia Beach Trail which parallels Cleveland Street 600-feet to the south along the former Norfolk Southern railroad.

1.2 Project History and Background

1.2.1 Project Background

The proposed Cleveland Street Phase IV Improvements is a continuation of multiple major transportation improvement investments in the last decade to address the City's, VDOT's, and FHWA's need to improve traffic flow and safety between the Interstate 64 (I-64) and I-264 interchange and Independence Boulevard. This broader area of Virginia Beach experiences high traffic volumes, congestion, and crashes.

One of the primary operational and safety improvements for the I-64 and I-264 interchange was to reduce the number of entering and exiting movements at the Newtown Road and Witchduck Road interchanges. This required modifications to surface streets and the street network within Virginia Beach to provide alternative access to I-264 for traffic destined to and from this area of the city. Cleveland Street Phase IV Improvements is a continuation of the surface street improvements that stem from the larger I-264 improvements. Therefore, the design and nature of this project was developed to provide vital connections directly to or in association with the following constructed or planned roadway projects, as depicted on **Exhibit 4**:

- Cleveland Street Phase IA – This project added pipe culverts underneath the future Greenwich Road flyover and constructed additional parking north of the flyover to offset the future loss of parking for the Urology of Virginia and Chesapeake Regional Surgery Center due to the Cleveland Street Phase II improvements. These improvements were completed in Spring 2015.
- Cleveland Street Phase IB – This project added the fourth leg to the realignment of the Cleveland Street and Clearfield Avenue intersection proposed as part of Cleveland Street Phase II and added additional parking for the adjacent Vlcom and Isoft businesses due to the loss of on-street parking. These improvements were completed in Spring 2018.
- Cleveland Street Phase II – This project realigned and improved the Clearfield Avenue and Cleveland Street intersection, added a new traffic signal, and added new street lighting for the intersection in coordination with the Greenwich flyover bridge construction for the future VDOT I-264 and Witchduck project. These improvements were completed in Spring 2019.
- Cleveland Street Phase IIIA – This project replaced the public water main and rehabilitated the public gravity sewer within Cleveland Street between the east end of the I-264 and Witchduck improvements and the west end of the Witchduck Road Phase II projects. These improvements were completed prior to the Greenwich Road flyover bridge opening to traffic in August 2020 and aimed to complete the corridor improvements west of the Witchduck

Road intersection, with only minor sidewalk and drainage improvements under the future Cleveland Street Phase IIIB project remaining.

- I-64 and I-264 Interchange Improvements (Phase I) – This VDOT administered design-bid-build project improved 2.2 miles of interstate. Project components included the widening of I-64 westbound between the Twin Bridges and I-264 interchange, addition of a new two-lane flyover ramp from I-64 westbound to the existing I-264 eastbound collector-distributor (CD) road, a new two-lane I-264 eastbound CD road, and a new exit ramp from I-64 westbound to the new I-264 eastbound CD road. This project ultimately improved deficiencies in safety, capacity, and geometry of the existing I-64 westbound to I-264 eastbound ramps. This project was completed in Fall 2019.
- Witchduck Road Phase II (Capital Improvement Program (CIP) 2-025) – This locally administered project provided a six-lane divided roadway on a 143-foot to 165-foot variable width right-of-way (ROW) from I-264 to Virginia Beach Boulevard, for about 1/3 mile. The most notable improvement from this project was providing the option for traffic to continue straight from a realigned and improved Southern Boulevard to the I-264 westbound on-ramp or turn left to access the I-264 eastbound on-ramp or point south along Witchduck Road as an alternative to turning left at the Cleveland Street and Witchduck Road intersection. This project began construction in January 2017 and finished construction in Fall 2021.
- I-264 and Witchduck Road Interchange and Ramp Extension (Phase II) – This VDOT administered design-bid-build project included extension of the Phase I 2-lane CD road along I-264 eastbound through the Newtown Road interchange to the Witchduck Road interchange, reconfigured the south side of both the Newtown Road and Witchduck Road interchanges to eliminate weave movements, constructed a new overpass along Greenwich Road on the south side connecting to Cleveland Street on the north side, and completed surface street improvements to Newtown Road, Greenwich Road, Cleveland Street, and Witchduck Road. This project started construction in early 2018 and was completed in Fall 2022.

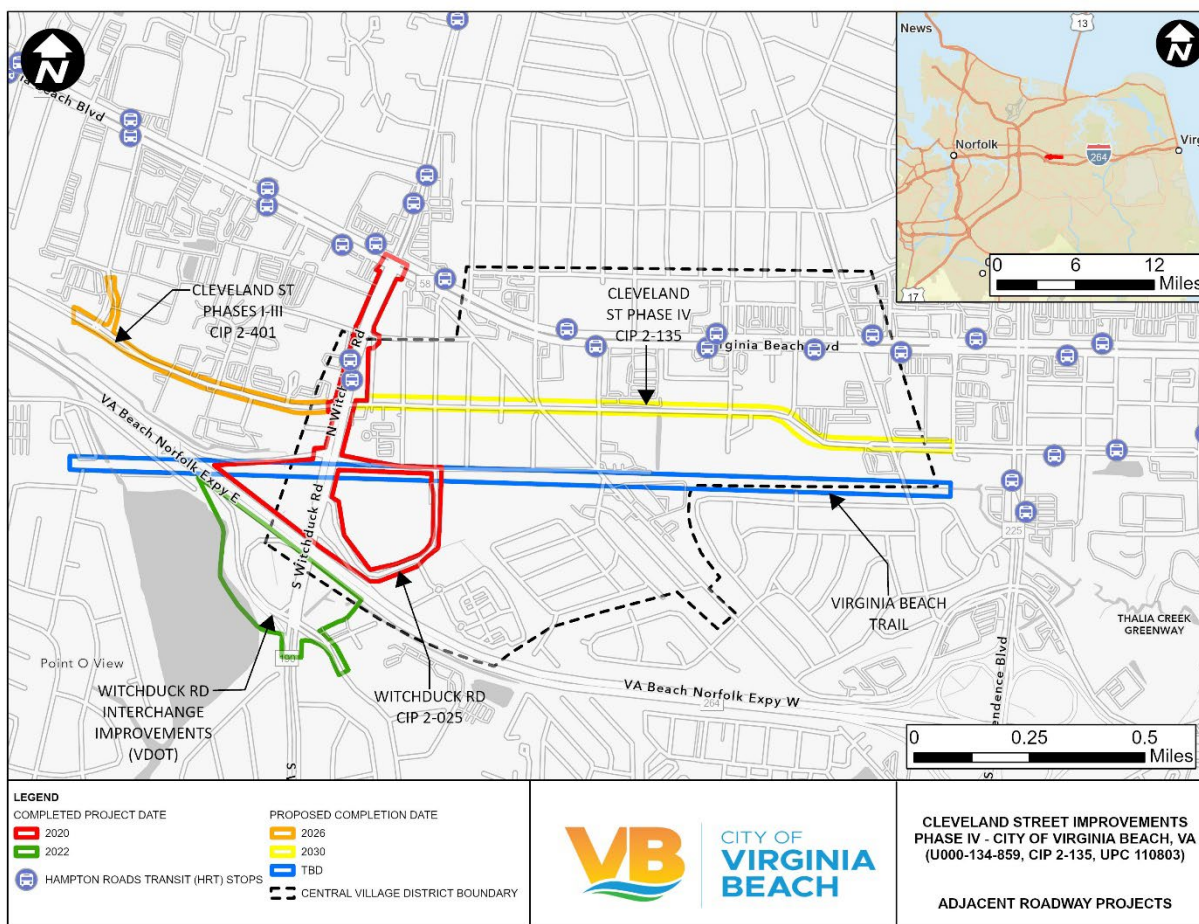


EXHIBIT 4. ADJACENT ROADWAY PROJECTS IN THE VICINITY OF THE PROJECT AREA

In addition to the region's transportation needs, the proposed project is also a critical component of the Pembroke SGA Implementation Plan, which was adopted by the City in 2009 with the intent to redevelop the area as a strong urban core with a variety of uses. The purpose of the Pembroke SGA Implementation Plan was to identify priority land use and roadways for improvement within the Pembroke area of Virginia Beach.

Development in the Pembroke area began in 1967 and in 1973, City Council recognized the Pembroke SGA's potential as a commercial center and rezoned a portion of the area as CBD. This zoning classification ultimately earmarked the CBD for development as a metropolitan center for financial, commercial, professional, and cultural activities. In the 2003 Comprehensive Plan, the City of Virginia Beach identified 12 SGAs which were designated to focus most of the City's future growth at higher densities to avert continued suburban sprawl². When the Pembroke SGA Implementation Plan was published in 2009, it cited the development of a design for improvements to Cleveland Street as a key short-term recommendation³. With both the Witchduck Road Phase II and I-264 and Witchduck projects under construction, the City prioritized funding alternatives for Cleveland Street Phase IV Improvements to ultimately link the Newtown

² City of Virginia Beach, "Strategic Growth Areas" Accessed October 2023: <https://planning.virginiabeach.gov/comp-plan/strategic-growth-areas>

³ City of Virginia Beach, "Pembroke Strategic Growth Area 4 Implementation Plan" Accessed October 2023: <https://s3.us-east-1.amazonaws.com/virginia-beach-departments-docs/planning/Comprehensive-Plan/Strategic-Growth-Areas/Pembroke-SGA-Implementation-Plan.pdf>

SGA and Pembroke SGA and serve as a gateway to the CBD of Town Center. The project was awarded SMART SCALE funds in both 2018 and 2019.

1.2.2 Project History

The City of Virginia Beach applied for and received state and federal funding through Virginia's SMART SCALE program for the Cleveland Street Phase IV Improvements in both 2018 and 2019. Cleveland Street Phase IV Improvements has been a transportation improvement priority for the City since 2008 when it was included in the Pembroke Area Comprehensive Transportation Plan as a desired City project. Since 2008, the project has appeared in multiple iterations of the City of Virginia Beach's CIP, first appearing in Fiscal Year (FY) 2012-2013, and is currently included on the City's CIP for FY 2024-2029. In addition, the project is also included in VDOT's Six-Year Improvement Program (SYIP) for FY 2024 (first appeared in the SYIP in FY 2018) and the 2045 Hampton Roads Long-Range Transportation Plan.

The project design is nearing completion and is scheduled to start construction in 2026 and finish construction in 2030.

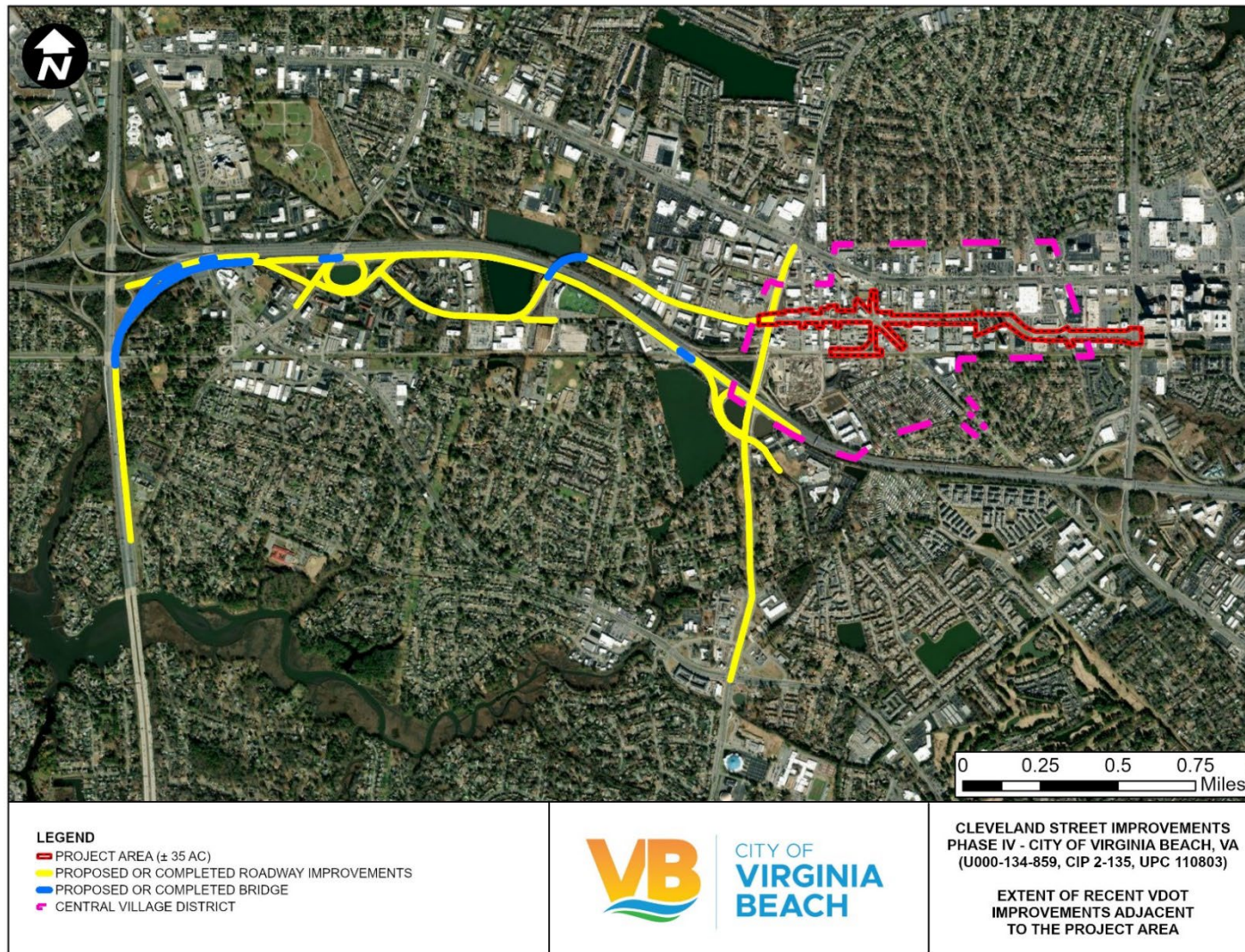
1.3 Needs – Existing Conditions

1.3.1 Improve Roadway Connectivity and Traffic Operations

The project area is situated within the city's urban center and is the only east-west Urban Collector between Virginia Beach Boulevard, Independence Boulevard, Witchduck Road, and I-264. Cleveland Street is a two-lane Urban Collector that in 2022 carried approximately 9,900 vehicles per day (vpd) from Independence Boulevard to Kellam Avenue, 8,100 vpd from Kellam Avenue to Aragona Boulevard, and 3,500 vpd from Dorset Avenue to Witchduck Road.

As mentioned above, the project area is located within the CBD and the Central Village District, which are identified for urban redevelopment through the Pembroke SGA. The Pembroke SGA's vision for the Cleveland Street corridor is a well-defined urban street grid to improve vehicular and pedestrian access through the Central Village District. The proposed project is also the missing link to improve regional network connectivity to I-264, Newtown Road, and Town Center, as depicted on **Exhibit 5**. Completed improvements west of the project corridor include Cleveland Street Phases I-III, Witchduck Road Phase II, I-64 and I-264 Interchange Improvements (Phase I), and I-264 and Witchduck Road Interchange and Ramp Extension (Phase II). Currently, the project area is the only segment of unimproved roadway between Town Center and the Newtown Road SGA. Therefore, the proposed improvements would fill in the missing network gap between Town Center and the Newton Road SGA to ultimately create a three-mile vehicular and pedestrian connection between the two SGAs.

To understand existing traffic patterns throughout the project area, a Traffic Analysis Memorandum, provided in **Appendix A**, was prepared for the project in September 2022 which modeled the existing and future conditions of the project area roadways and intersections. The traffic analysis found vehicle delays and congestion are at unacceptable operational levels at three primary intersections within the project area. Additionally, the existing conditions do not support the ongoing redevelopment within the project area which leads to congestion and delays.

**EXHIBIT 5. FULL EXTENT OF VDOT I-264 CORRIDOR IMPROVEMENTS**

Summary of Existing Roadway Connectivity and Traffic Needs:

- Cleveland Street is the only east-west Urban Collector between Virginia Beach Boulevard, Independence Boulevard, Witchduck Road, and I-264. Improvements would provide motorists with an alternative to Virginia Beach Boulevard or I-264. It should be improved to provide motorists with the option of not taking Virginia Beach Boulevard or I-264.
- Overall intersection operations show vehicles travelling through the project area intersections at unacceptable operational speeds, which impacts travel throughout this region.
- The proposed project is the missing link to improve regional network connectivity to I-264, Newtown Road, and Town Center. Several roadway projects have been completed west of Cleveland Street and this project would connect to and support those improvements and investments made by the City and VDOT.

1.3.2 Bicycle and Pedestrian Accommodations

The City of Virginia Beach has a “complete streets” policy to improve the City’s transportation system by providing safe, attractive travel options for all users that emphasize connectivity and are designed in harmony with adjacent land uses (City of Virginia Beach, 2024). According to the Smart Growth American National Complete Streets Coalition, Complete Streets are streets for everyone. They are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. Complete Streets make it easy to cross the street, walk to shops, and bicycle to work. They allow buses to run on time and make it safe for people to walk to and from train stations.⁴

The project area is not aligned with the City’s Complete Streets policy. The project area does not have a continuous sidewalk network and the existing network contains gaps that require pedestrians to either use the roadway or grass. In addition, the existing sidewalk network does not meet ADA standards and no bicycle infrastructure exists within the project area, except for a negligible amount at the intersection of Cleveland Street and Witchduck Road. The project area’s existing sidewalk network is depicted on **Exhibit 6**.

To understand to quantity of pedestrian crashes that have occurred within the project area, VDOT’s Pedestrian Safety Action Plan was reviewed in January 2024. The review revealed five pedestrian crashes have occurred within the project area between 2016-2020, all resulting in pedestrian injury. Additionally, VDOT’s Pedestrian Safety Action Plan revealed that the portions of Cleveland Street and Columbus Street within the project area score in the top 5% of all scored corridors in the state needing pedestrian safety improvements.

⁴ City of Virginia Beach, “Complete Streets” Accessed March 2024: <https://planning.virginiabeach.gov/comp-plan/master-transportation-plan/complete-streets>

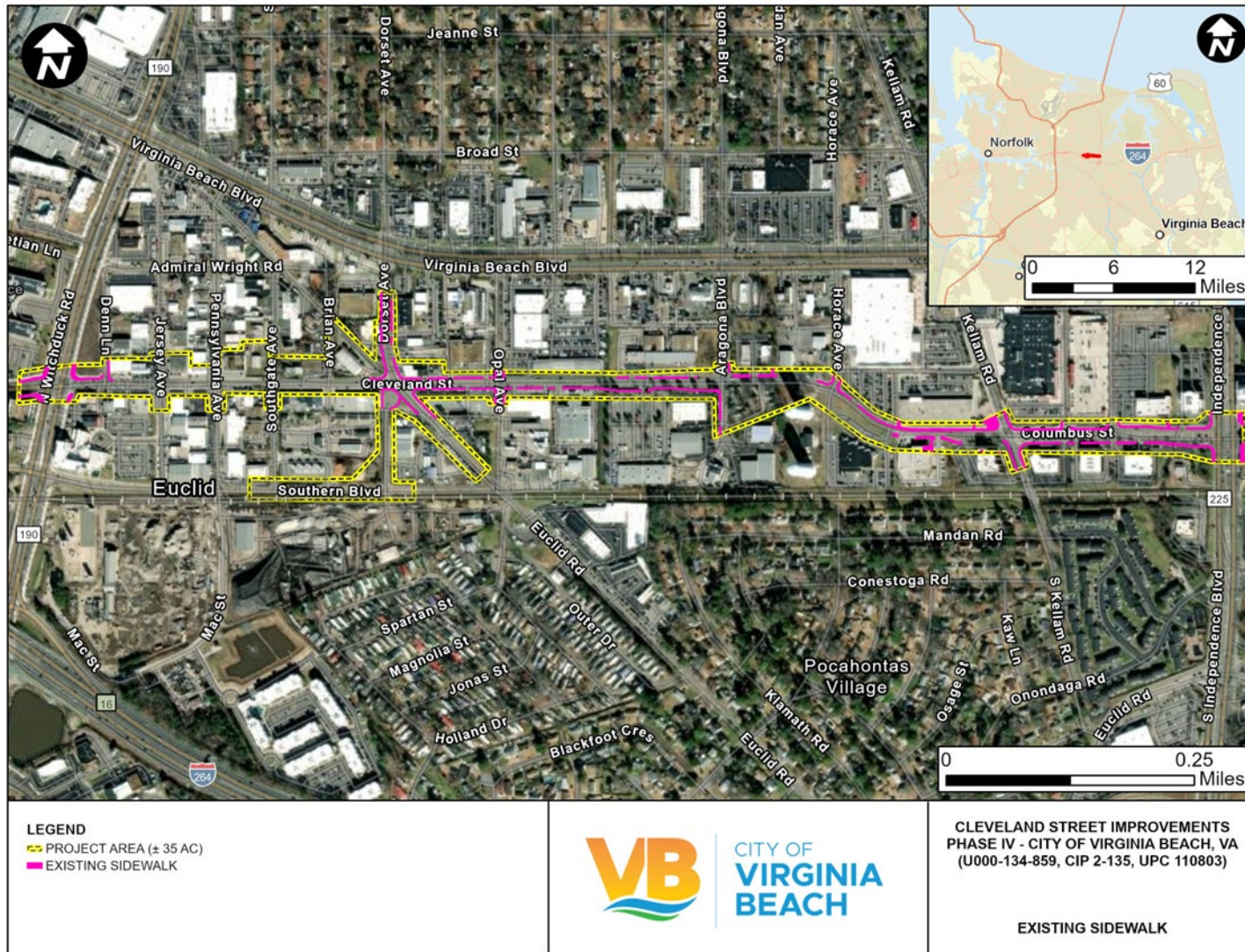


EXHIBIT 6. EXISTING SIDEWALK WITHIN PROJECT AREA

Public input received January 2009 during the development of the Pembroke SGA Implementation Plan stressed a desire to create more walkable neighborhoods and improve access to bicycle and pedestrian systems. Many residents indicated their desire to ride a bicycle, but safety concerns outweighed their desire to ride due to lack of separated bicycle facilities. In addition, a walking audit of the Central Village District was completed in October 2018 in support of the Central Village District Small Area Plan and revealed that most destinations within the Central Village District are within a 10-minute walk of another. However, a lack of adequate sidewalks and organized vehicular access makes it difficult to walk or bike safely⁵.

Exhibit 7 below depicts existing sidewalk conditions and general walking times within the Central Village District and project area based on the walking audit. Existing sidewalk segments were categorized as either having adequate sidewalk or inadequate sidewalk based on criteria such as minimum proposed width or ADA facilities.

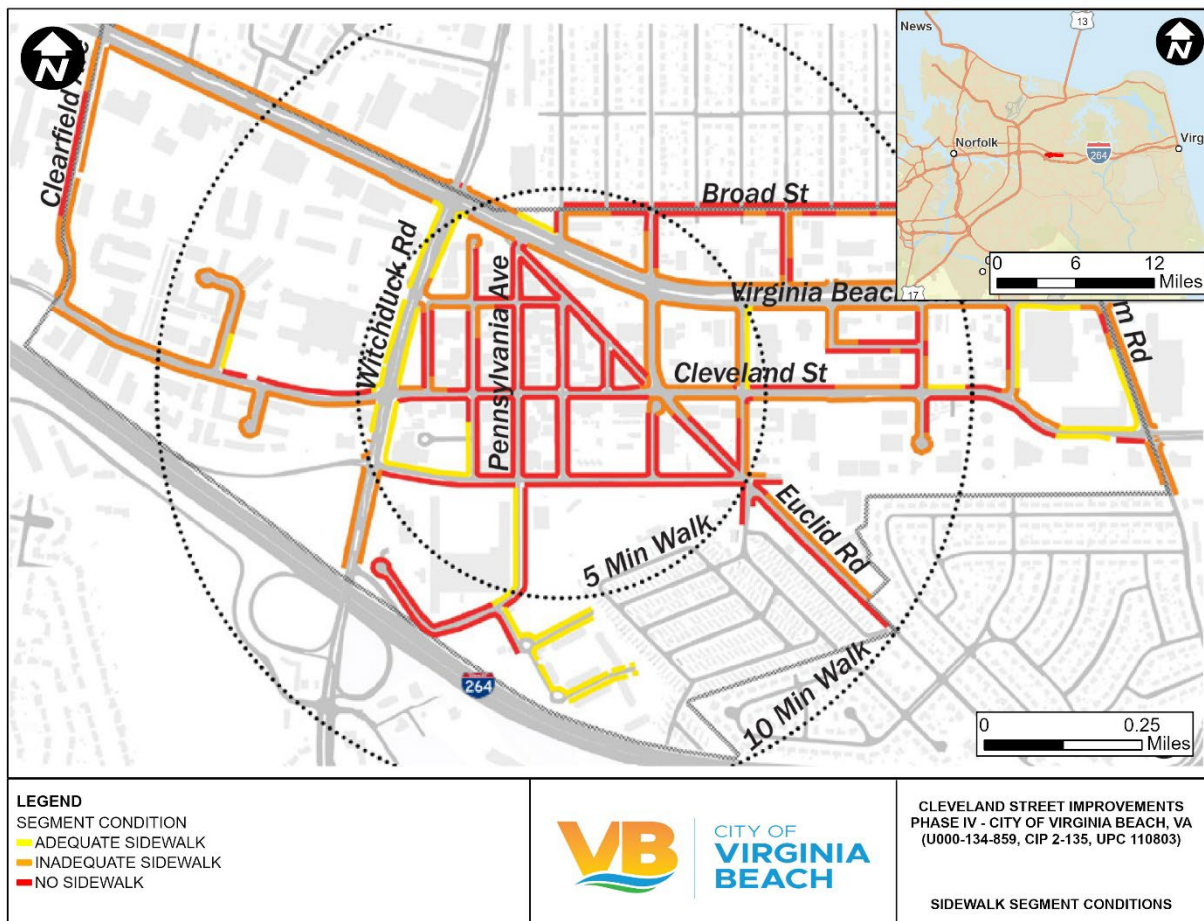


EXHIBIT 7. SIDEWALK SEGMENT CONDITIONS

⁵ City of Virginia Beach, "Central Village District Small Area Plan DRAFT" Accessed October 2023

Summary of Existing Bike and Pedestrian Needs:

- The project area does not have continuous sidewalk and contains gaps that require pedestrians to either use the roadway or grass. Therefore, the project area is not in alignment with the City's Complete Streets policy.
- The sidewalk network does not meet ADA standards.
- There are no bicycle facilities within the project area and public input received January 2009 expressed a desire for walkable neighborhoods with improved access to bicycle and pedestrian accommodations. In addition, many residents indicated their desire to ride a bicycle, but safety concerns outweighed their desire to ride due to lack of separated bicycle facilities.
- VDOT's Pedestrian Safety Action Plan revealed that the portions of Cleveland Street and Columbus Street within the project area score in the top 5% of all scored corridors in the state needing pedestrian safety improvements. This tool also revealed five pedestrian crashes have occurred within the project area between 2016-2020.
- The 2018 walking audit of the Central Village District revealed most destinations are within a 10-minute walk of another; however, lack of adequate sidewalk and organized vehicular access makes it difficult to walk or bike safely.

1.3.3 Public Safety

As part of VDOT's Pedestrian Safety Action Plan, VDOT maintains data on the Top Potential Safety Improvement Segments and Intersections for 2016-2020. This data was reviewed in January 2024 and revealed the following:

- Cleveland Street from its intersection at Dorset Avenue to its intersection at Aragona Boulevard experienced 14 crashes between 2016-2020, four of which resulted in injuries or fatalities. This segment of roadway was ranked #252 in the VDOT Hampton Roads District for safety improvements.
- The portion of Cleveland Street from its intersection with Jersey Avenue to its intersection with Southgate Avenue experienced eight crashes between 2016-2020, three of which resulted in injuries or fatalities. This segment of roadway was ranked #467 in the VDOT Hampton Roads District for safety improvements.
- The intersection of Columbus Street and Kellam Road experienced 18 crashes between 2016-2020, seven of which resulted in injuries or fatalities. This intersection was ranked #361 in the VDOT Hampton Roads District for safety improvements.

Lastly, crash data from VDOT's Crash Analysis Tool was reviewed in January 2024 for crashes that have occurred in the project area since 2015. The crash data revealed approximately 294 crashes have occurred within the project area since 2015. Of those, three resulted in severe injury, 92 resulted in visible injury, three resulted in nonvisible injury, two resulted in fatalities, and 194 resulted in only property damage. VDOT crash data since 2015 is depicted on **Exhibit 8**.

Apart from traffic safety, localized flooding occurs within and around the project area. During the 100-year storm, localized flooding creates impassable road conditions for the following general areas:

- From the Charles Barker Collision Repair Center (approximately 500 feet east of Opal Avenue) to Horace Avenue
- From Horace Avenue to Virginia Beach Boulevard
- From Kellam Road to Virginia Beach Boulevard, and
- From Corporate Park Lane to Independence Boulevard.

Flooding ranges a few inches to over 1.5-feet in the 10-year storm and over two-feet in the 100-year storm. The flooding between the Charles Barker Collision Repair Center and Horace Avenue is largely caused by undersized storm sewer and lack of stormwater storage. The flooding between Corporate Park Lane and Independence Boulevard is caused by a high tailwater from Thalia Creek, a large upstream drainage area with minimal stormwater storage, and low roadway elevations.

Since the Virginia Beach Fire Station #7 is situated between Horace Avenue and Kellam Road, the localized flooding is a hazard for motorists and pedestrians and ultimately renders Virginia Beach Fire Station #7 inaccessible during heavy tailwater conditions. The City of Virginia Beach's Flooding Indicator Map depicted on **Exhibit 9** presents simulated flood levels during the 10-year storm, accounting for 1.5 feet of increased localized flooding.

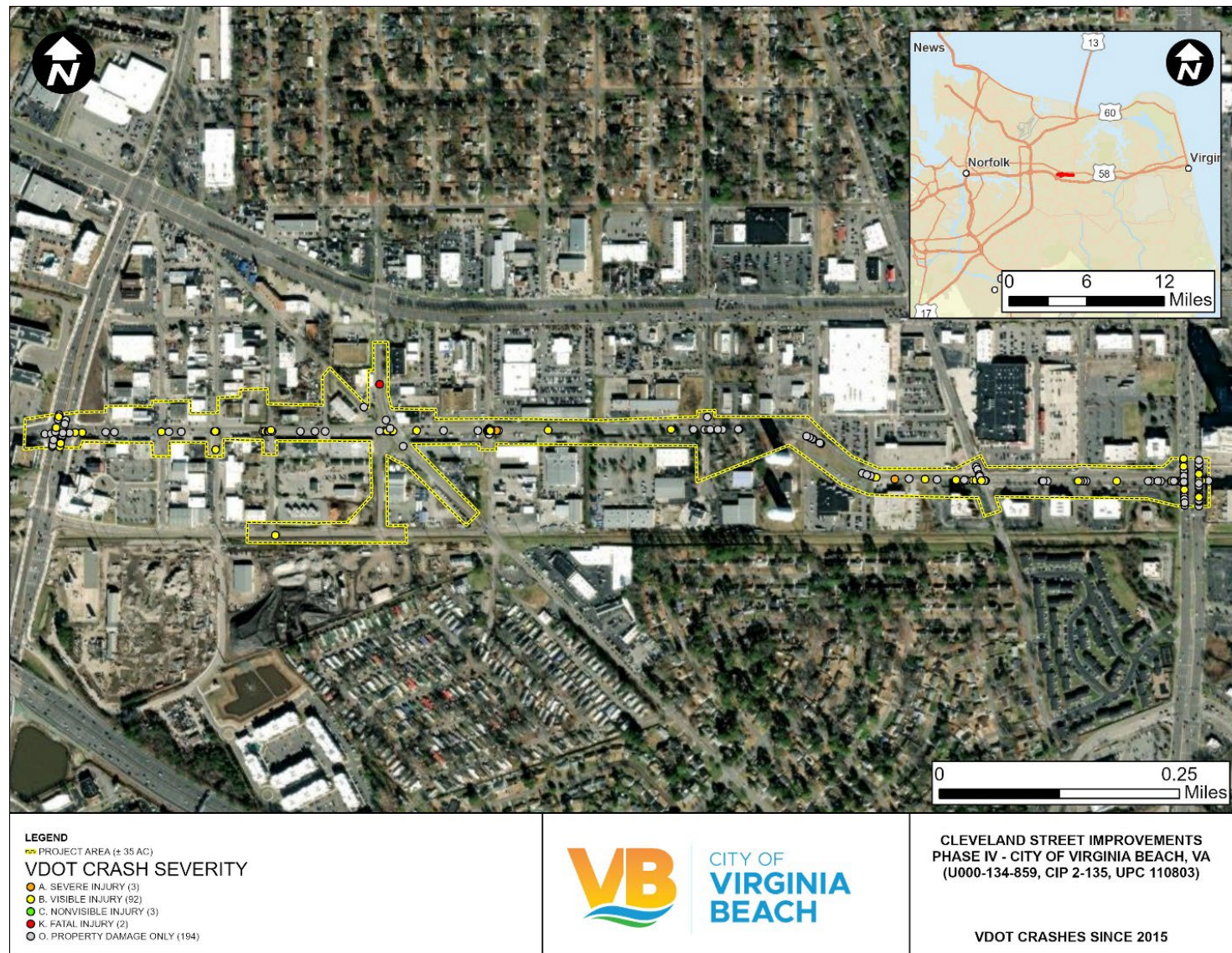


EXHIBIT 8. CRASHES WITHIN PROJECT AREA SINCE 2015

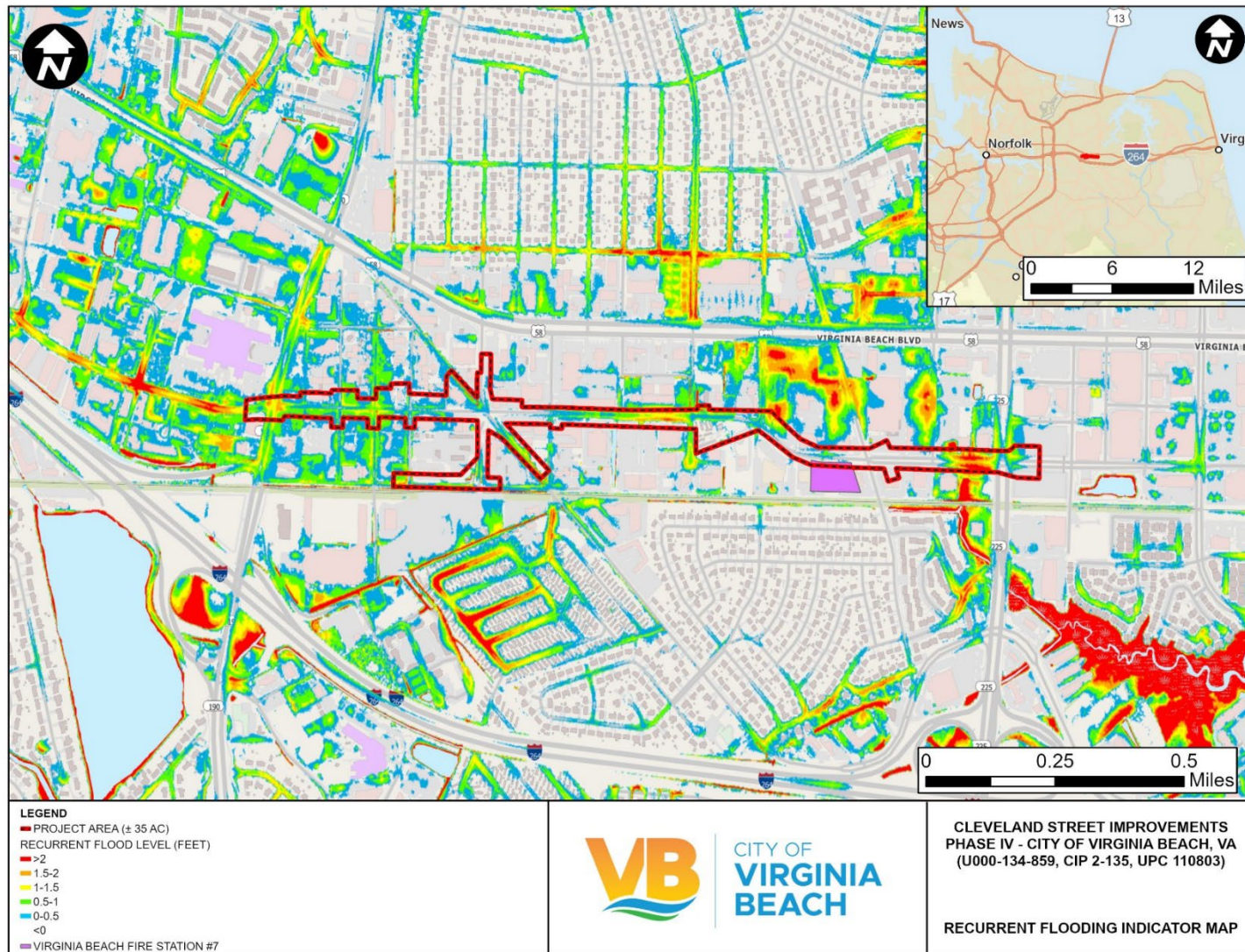


EXHIBIT 9. RECURRENT FLOODING INDICATOR MAP

Summary of Existing Safety Needs:

- VDOT's 2016-2020 Top Potential Safety Improvement Segments and Intersections data revealed the following occurred within the project area between 2016-2020:
 - Cleveland Street from Dorset Avenue to Aragona Boulevard experienced 14 crashes, four resulted in injuries or fatalities. This roadway segment was ranked #252 in the VDOT Hampton Roads District for safety improvements.
 - Cleveland Street from Jersey Avenue to Southgate Avenue experienced eight crashes, three of which resulted in injuries or fatalities. This roadway segment was ranked #467 in the VDOT Hampton Roads District for safety improvements.
 - Cleveland Street from Jersey Avenue to Southgate Avenue experienced eight crashes, three of which resulted in injuries or fatalities. This segment of roadway was ranked #467 in the VDOT Hampton Roads District for safety improvements.
- VDOT's Crash Analysis Tool revealed approximately 294 crashes have occurred within the project area since 2015. Of those, three resulted in severe injury, 92 resulted in visible injury, three resulted in nonvisible injury, two resulted in fatalities, and 194 resulted in only property damage.
- During heavy tailwater conditions, portions of the project area experience localized flooding which prevents access to and from the Virginia Beach Fire Station #7.

1.4 Needs – Future Conditions**1.4.1 Improve Roadway Connectivity and Traffic**

Under future conditions, continual growth in traffic volumes associated with new developments would increase traffic demands on the corridor. The Traffic Analysis Memorandum considered the future (2045) traffic growth and how it would impact operations on the project area roadway and intersections. Based on the results of the analysis, future operational conditions would continue to deteriorate for critical intersections in the project area as volumes increase on the network. This would lead to increased congestion, reduced air quality, and increase the potential for traffic crashes.

The proposed project is also the missing link to improve regional network connectivity to I-264, Newtown Road, and Town Center. As discussed in **Section 1.3.1**, the project area is the only segment of unimproved roadway between Town Center and the Newtown Road SGA. This would ultimately undermine the Pembroke SGA's vision for the Cleveland Street corridor as a well-defined urban street grid that improves vehicular and pedestrian access through the Central Village District.

The project would construct a dedicated center two-way left turn lane which would improve safety and traffic flow by providing a continuous refuge for left-turn movements. This allows through traffic to continue to flow while also reducing the potential for rear end crashes by separating the left turns from the travel lane. The project would also realign Cleveland Street, Dorset Avenue, and Euclid Road to a single-lane roundabout which would create a better network alignment for improved access to I-264, and roundabouts improve safety through removing intersection conflict points and reducing crash severity.

Summary of Future Roadway Connectivity and Traffic Needs:

- Continual growth in traffic volumes associated with new developments would increase traffic demands on the corridor. Future operational conditions would continue to deteriorate for critical roadways and intersections in the project area as volumes increase on the network. This would require improved access management.

- Without improvements, there would be a segment of unimproved roadway between Town Center and the Newton Road SGA with higher amounts of traffic and increased potential for crashes. The conditions of the roadway may motivate the public to continue taking Virginia Beach Boulevard or I-264 as east-west alternatives in high traffic conditions. Improving the roadway and its use would alleviate congestion on those adjacent facilities.
- Increased traffic in the corridor may undermine the Pembroke SGA's vision for Cleveland Street as an urban street grid that improves vehicular and pedestrian access.

1.4.2 Bicycle and Pedestrian Accommodations

As discussed in **Section 1.3.2**, the project area does not align with the City of Virginia Beach's Complete Streets policy. The project area's existing sidewalk network contains gaps that require pedestrians to either use the roadway or grass and is not ADA accessible. As also discussed, the project area contains no bicycle infrastructure. The portions of Cleveland Street and Columbus Street within the project corridor score within the top 5% of all scored corridors in the state needing pedestrian and safety improvements according to VDOT's Pedestrian Safety Action Plan. According to the Pedestrian Safety Action Plan, five pedestrian crashes occurred within the project area between 2016-2020. Therefore, without improved pedestrian or bicycle accommodations, pedestrian and cyclists may continue to use the existing road for travel which would increase the likelihood of pedestrian crashes in future conditions as traffic and congestion increase throughout the project corridor.

Further, the Pembroke SGA Implementation Plan proposes a transition to mixed-uses within the project area, featuring a blend of commercial, multifamily residential, and office uses. The mix of land uses would promote a safe and walkable environment and the live-work opportunities would also create the ability for people to become less automobile reliant. It is anticipated that the future growth and redevelopment of land uses in the areas in and around the Pembroke SGA would increase walking and bicycle demands within the project area. However, without improved pedestrian or bicycle accommodations, the City's future vision of creating a connected, safe, and pedestrian-friendly environment within the project area would not be achievable.

To mitigate pedestrian and cyclist safety concerns, the project would construct continuous five-foot wide (minimum) sidewalk on both sides of the roadway and on-street buffered bike lanes on both sides of Cleveland Street from Witchduck Road to Dorset Avenue. Between Dorset Avenue and Independence Boulevard, all pedestrian and bicycle improvements would transition off street in the form of bike paths, sidewalks, and side paths. These facilities would vary from eight-feet to 12-feet in width and provide the highest level of pedestrian and bicyclist safety being physically separated from vehicular traffic. These facilities would tie into the new pedestrian facilities completed west of the project area and would ultimately complete missing network gap between Town Center and the Newton Road SGA.

Summary of Future Bike and Pedestrian Needs:

- Without improved pedestrian or bicycle accommodations, pedestrian and cyclists may continue to use the existing road for travel which would increase the likelihood of pedestrian crashes in future conditions as traffic and congestion increase throughout the project corridor.
- The project area would remain noncompliant with the City of Virginia Beach's Complete Streets policy.
- The City's vision of creating a connected, safe, and pedestrian-friendly environment within the project area would not be achievable.
- Future growth, redevelopment, and land uses would increase walking and bicycle demands.

1.4.3 Public Safety

The project is necessary to support the City's land use plan created over 20 years ago. A roadway that promotes safety and reliability for all road users is especially important in an urban core area.

There are existing traffic safety issues along the corridor and at intersection termini which would be improved with this project. Without these improvements, the potential for crashes increases due to increased traffic volumes.

In addition, localized flooding would continue to worsen and prevent safe access throughout the project area. The project would upgrade the existing stormwater infrastructure to maintain an accessible route for the motoring public. In addition, the project's stormwater improvements would ensure emergency response is not impacted during inclement weather events.

Summary of Future Public Safety Needs:

- Increased traffic growth could create safety issues at existing high crash locations.
- Existing network does not support long-term land use plan due to lack of multimodal safety.
- Existing road network experiences more intense flooding creating impassable areas along the corridor and impacts emergency response from Fire Station #7 to the surrounding community.
- Simulated flooding of future conditions depict more intense flooding within the corridor which would create impassable conditions, ultimately preventing access to and from the Virginia Beach Fire Station #7.

1.5 Purpose/Summary

This project is intended to improve connectivity and multimodal transportation accommodations between Witchduck Road and Independence Boulevard, through the City's Central Village District. This project is the last piece of a large regional transportation program designed to improve traffic operations and safety for I-264, its interchanges with arterial streets, and transitions to local collectors and local streets. Based on the existing and future needs, the purpose of the proposed project is to:

- Accommodate existing and future transportation connectivity needs by providing adequate transportation infrastructure to maintain safe and efficient traffic flows;
- Complete regional connectivity goals consistent with projects already constructed;
- Provide pedestrian and bicycle accommodations between Witchduck Road and Independence Boulevard;
- Enhance public safety; and
- Improve access management, roadway drainage, and reduce flooding issues.

2 ALTERNATIVES ANALYSIS

This chapter describes the history of the project's design, including the different conceptual alignments considered for development, evaluation criteria, the screening process, and detailed descriptions of the No Build and Build Alternative retained for detailed study in this EA in accordance with FHWA's Technical Advisory T 6640.8A Guidance for Preparing and Processing Environmental and Section 4(f) Documents (FHWA, 1987). While the No Build Alternative does not meet the Purpose and Need for the project, it was retained to serve as a baseline for comparison.

A Build Alternative has been identified for further analysis and is described in the following sections. The Build Alternative was formulated based on a comprehensive evaluation process which incorporated input from the public as well as coordination with local, state, and federal agencies.

2.1 DEFICIENCIES IN PROJECT CORRIDOR

The existing Cleveland and Columbus Street corridor between Witchduck Road and Kellam Road is generally a two-lane roadway within a 60-foot ROW with additional turn lanes at the signalized intersections of Witchduck Road, Dorset Avenue and Euclid Road, and Kellam Road. Between Kellam Road and Independence Boulevard, the corridor widens to a four-lane median divided roadway with turn lanes at the Corporate Park Lane and Independence Boulevard intersections. The project corridor also consists of the following:

- The corridor segment between Witchduck Road and the Dorset Avenue and Euclid Road intersection does not include curb and gutter or defined driveways with parking for the adjacent businesses located off the existing roadway. This segment lacks both adequate stormwater infrastructure and continuous pedestrian facilities.
- The corridor segment between the Dorset Avenue and Euclid Road intersection and Aragona Boulevard includes curb and gutter and driveways leading to parking lots with minimal setback from the existing ROW. This segment includes undersized stormwater infrastructure and a narrow, continuous sidewalk along the south side and segments of narrow sidewalk along the north side.
- The corridor segment between Aragona Boulevard and Independence Boulevard includes a wider ROW with curb and gutter and driveways directing access to the adjacent businesses and parking lots, most of which have minimal setback from the existing ROW.
 - The lack of access management to the existing light industrial and commercial properties within this portion of the corridor presents significant safety challenges between Witchduck Road and the Dorset Avenue and Euclid Road intersection. The lack of continuous bicycle and pedestrian accommodations presents significant safety and mobility challenges.

The alternatives evaluated below were developed to address these challenges while striving to minimize property impacts within a space constrained corridor.

2.2 EVALUATION CRITERIA

The Cleveland Street Phase IV Improvements project proposes to improve an existing roadway corridor between Witchduck Road and Independence Boulevard in Virginia Beach, Virginia. The portion of Cleveland Street and Columbus Street under review are a space constrained corridor (as discussed in **Section 2.1**) and property acquisition would be unavoidable to complete proposed improvements. Therefore, the City of Virginia Beach used property acquisition as an evaluation criterion when considering the conceptual design of different alignments during the planning of the project. The City of Virginia Beach aims to avoid and minimize property impacts to the maximum extent practicable when considering an alternative that fulfills the project's purpose and need.

2.3 ALTERNATIVES DEVELOPMENT AND SCREENING PROCESS

2.3.1 SMART SCALE FY 2018 Conceptual Design

The City of Virginia Beach submitted a successful SMART SCALE application for the Cleveland Street Phase IV Improvements in FY 2018 (approved in May 2017). The SMART SCALE application proposed construction of a four-lane divided roadway within a 90-foot ROW from Witchduck Road to Independence Boulevard. The typical section, as depicted in **Exhibit 10** below, proposed two 11-foot travel lanes in both the eastbound and westbound direction, separated by an eight-foot raised landscaped median with five-foot bike lanes adjacent to the curb and gutter, a four-foot buffer space, and an eight-foot sidewalk along both sides of the roadway (City of Virginia Beach, 2016).

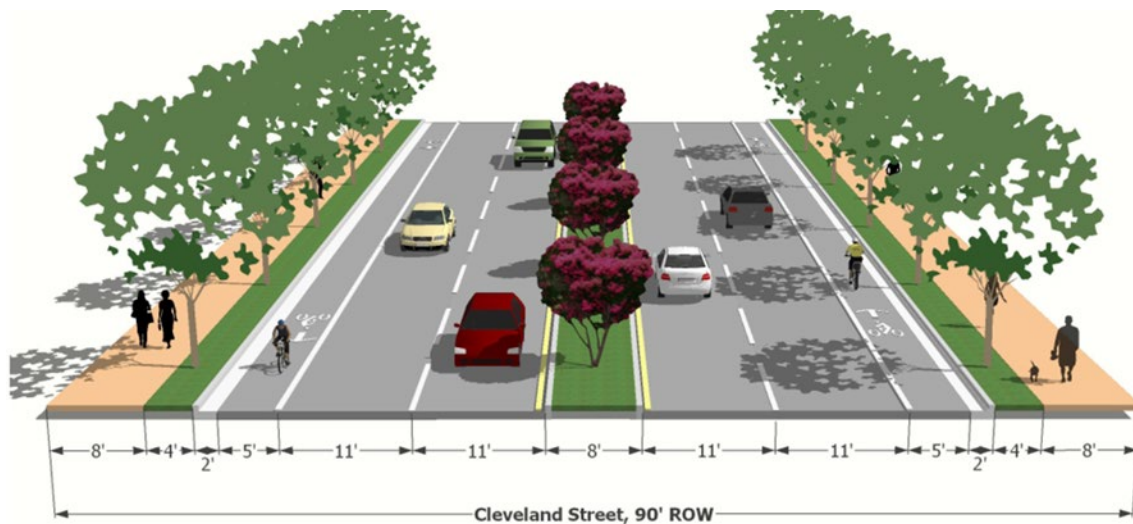


EXHIBIT 10. SMART SCALE FY 2018 CONCEPTUAL DESIGN TYPICAL SECTION

The proposed 90-foot ROW against the centerline of the existing 60-foot ROW would require the full acquisition of twenty-nine (29) parcels. Nine parcels would be acquired due to impact to the existing building and twenty (20) would be acquired due to the loss of existing parking and access to the extent it would warrant full acquisition. For the 20 parcels warranting full acquisition, proposed improvements would directly impact at least half of the existing parking spaces across the parcel frontage of Cleveland Street. In several locations, the proposed improvements are within a few feet of the existing buildings.

The 29 parcels proposed for full acquisition would impact forty-six (46) industrial/commercial tenants and ten (10) residential tenants. The proposed improvements and acquisitions from the SMART SCALE FY 2018 application are depicted on **Exhibit 11** and in **Appendix B**.

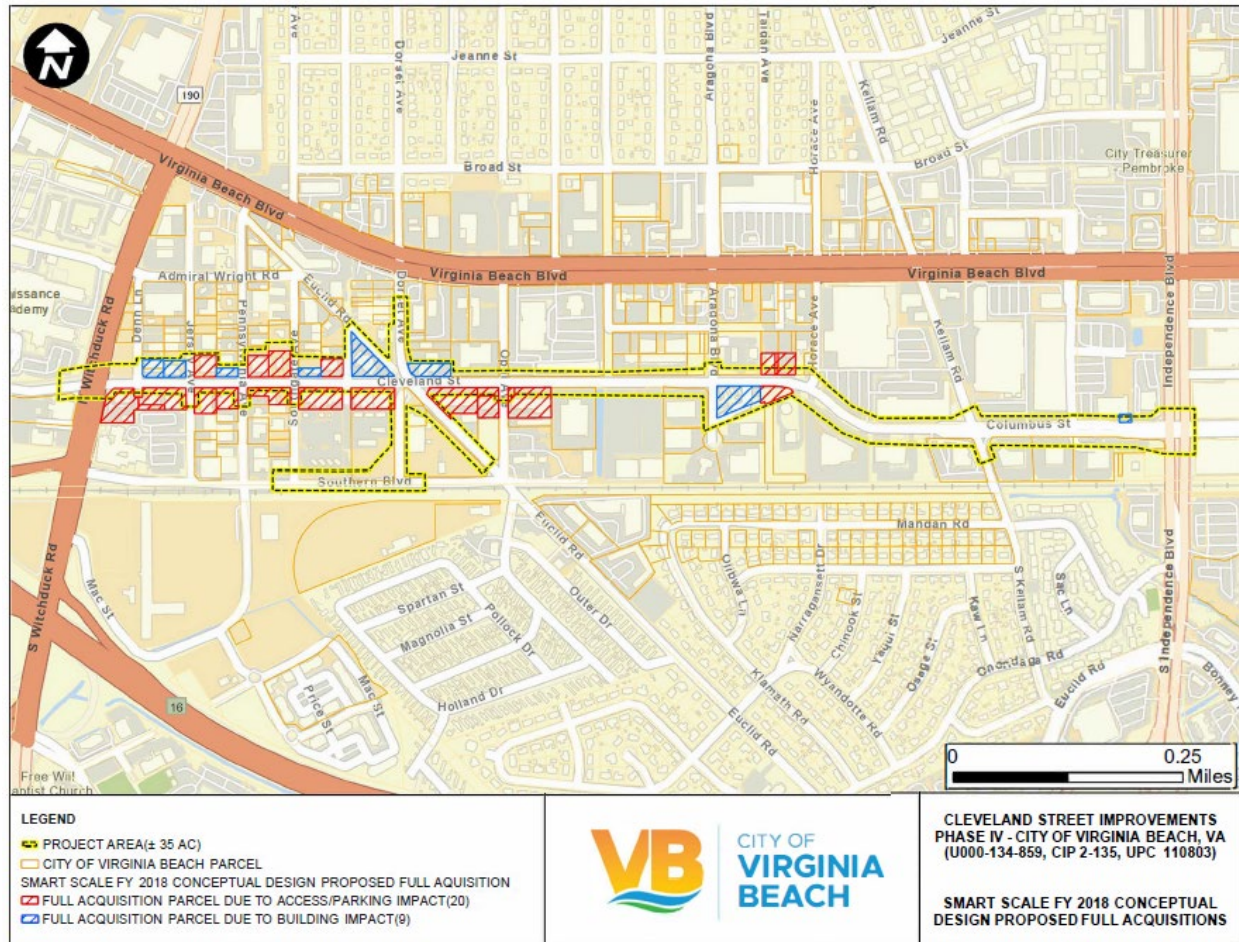


EXHIBIT 11. SMART SCALE FY 2018 CONCEPTUAL DESIGN PROPOSED FULL ACQUISITIONS

A four-lane divided roadway was originally proposed to provide additional capacity in support of the Pembroke SGA and the Central Village District. This conceptual design improves access and safety for vehicles, pedestrians, and cyclists by dividing the roadway and proposing bike lanes, sidewalks, and buffer spaces throughout the corridor. While this alignment would achieve the project's Purpose and Need, the total number of parcels to be fully acquired and the cost burden associated with the acquisition was deemed to be excessive and partially avoidable. Therefore, additional conceptual designs which refined the proposed alignment in the SMART SCALE FY 2018 Conceptual Design were considered to potentially reduce the number of full acquisition parcels.

2.3.2 SMART SCALE FY 2019 Conceptual Design

In an effort to reduce the amount of full acquisition parcels, a conceptual alignment alternative was prepared which shifted the proposed four-lane divided roadway section to the north and south. The shifts north and south still require the proposed lanes to align with the existing lanes at the signalized intersections on either end of the corridor. Ultimately, shifting the proposed 90-foot ROW improvements to the north and south resulted in the same 29 parcels requiring full acquisition. These impacts remain attributed to the proximity of adjacent businesses to the existing roadway and minimal access management to the private parking across the parcel frontage of the corridor. Therefore, the typical section of the proposed corridor was reduced from a four-lane divided roadway, to a three-lane undivided roadway. This reduces the overall corridor width from a 90-foot ROW to a 70-foot ROW and includes the following components:

- Three 11-foot travel lanes, one in each direction and a center turn lane,

- A variable width sidewalk along both sides of the roadway (six-foot min. / 10-foot max),
- A four-foot grass buffer,
- Curb and gutter, and
- An un-buffered four-foot bike lane adjacent to the curb and gutter on both sides of the roadway.

The City of Virginia Beach submitted a successful SMART SCALE application for this alignment in FY 2019 (approved 2018). The proposed typical section for this alignment is depicted in **Exhibit 12** below (City of Virginia Beach, 2017).

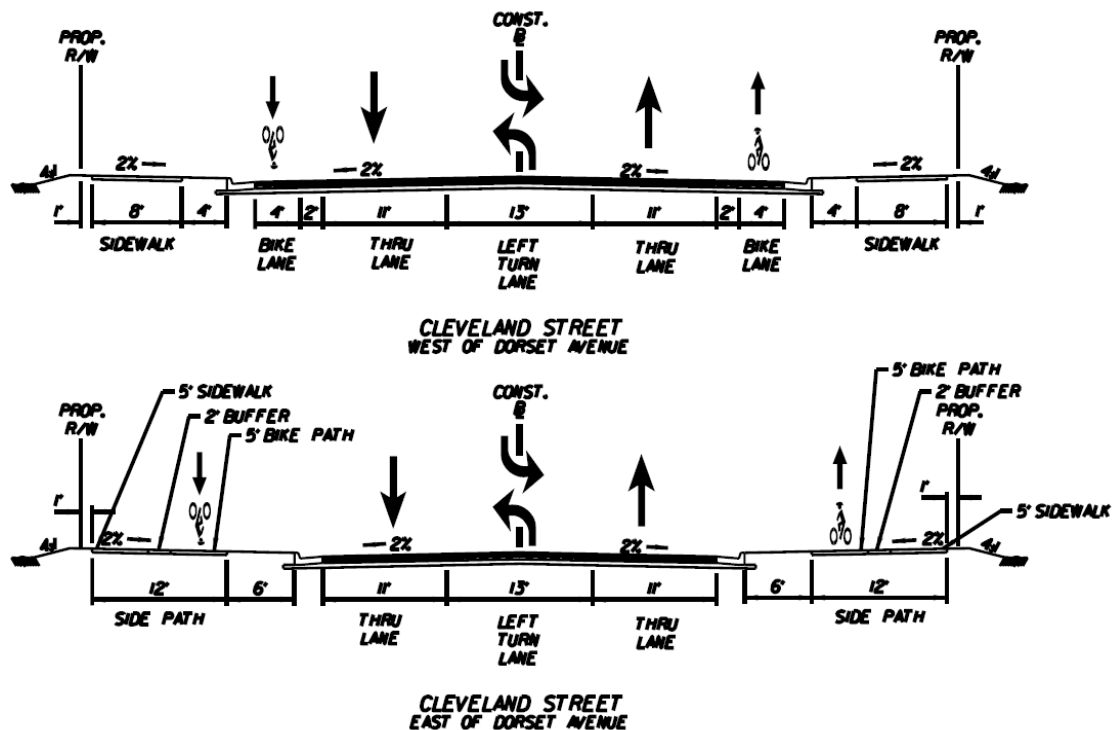


EXHIBIT 12. SMART SCALE FY 2019 CONCEPTUAL DESIGN PROPOSED TYPICAL SECTION

The center turn lane was proposed to allow access to the side streets and adjacent parcels without additional widths necessary for U-turn movements in the previous median divided section. With the reduction of a through travel lane from the typical section proposed in the SMART SCALE FY 2018 application, the evaluated existing and future traffic volumes verify acceptable LOS. Additionally, to reduce delay and congestion at the Cleveland Street intersection with Witchduck Road, replacement of the existing traffic signal with a roundabout at the Dorset Avenue intersection was proposed. This would require improving the connection along Dorset Avenue and Southern Boulevard to realign traffic destined for I-264 and Witchduck Road to the Southern Boulevard intersection at Witchduck Road and the I-264 westbound on-ramp, which were recently improved in Fall 2021.

The reduction in corridor width from the typical section proposed in the SMART SCALE FY 2018 application reduced the total number of full acquisition parcels from 29 to twelve (12). The 12 parcels proposed for full acquisition would consist of 10 parcels with 12 industrial/commercial tenants, one parcel consisting of a mobile home community with 10 residential tenants, and one parcel that is vacant and unoccupied.

The SMART SCALE FY 2019 Conceptual Design was found to meet the project needs to reduce congestion and improve safety within the corridor while also reducing the overall number of full

acquisition parcels. Therefore, the City of Virginia Beach determined the SMART SCALE FY 2019 Conceptual Design was the preferred alternative and was carried forward for detailed design and evaluation. The proposed acquisitions from the SMART SCALE FY 2019 Conceptual Design are depicted on **Exhibit 13** and in **Appendix B**.

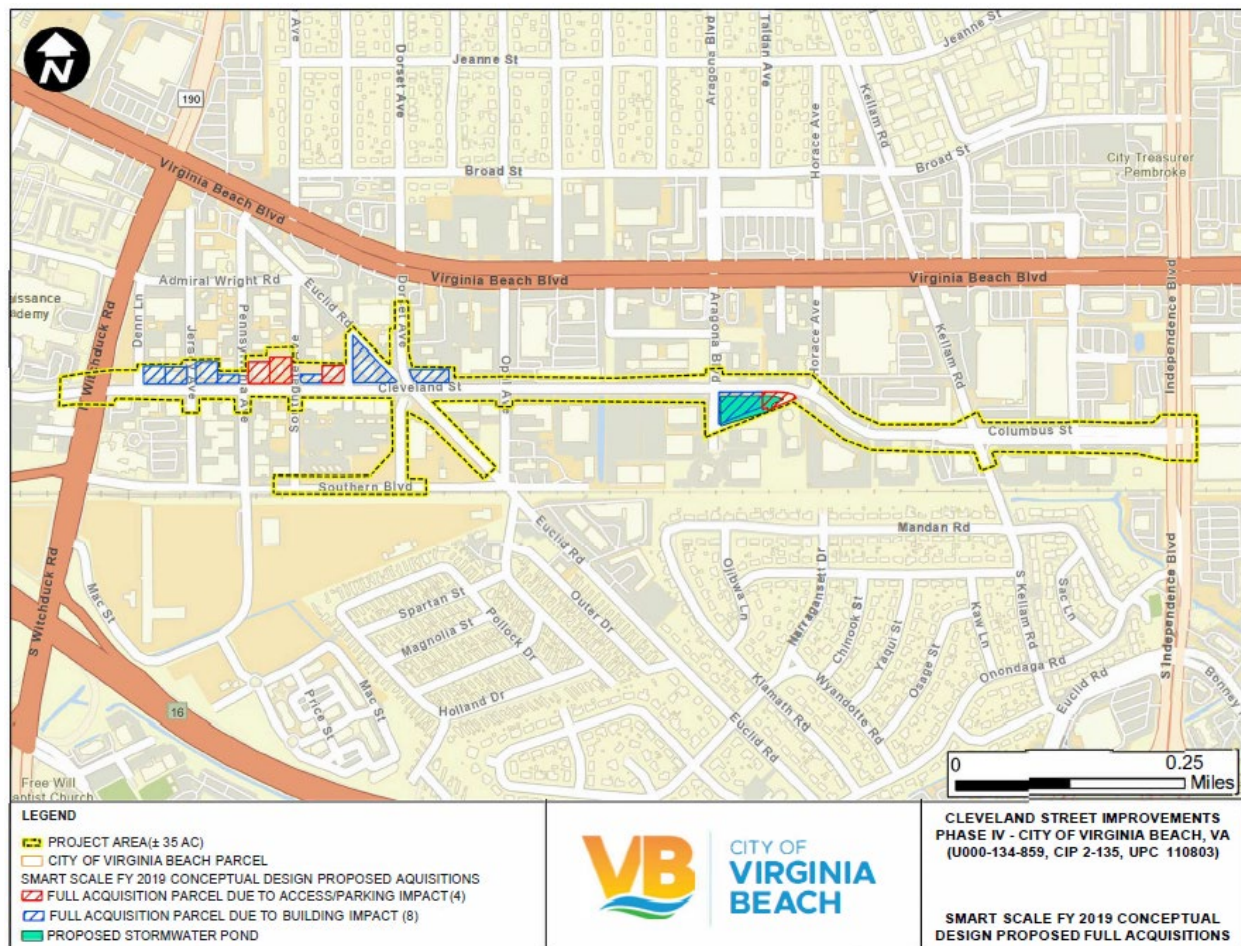


EXHIBIT 13. SMART SCALE FY 2019 CONCEPTUAL DESIGN PROPOSED FULL ACQUISITIONS

The SMART SCALE FY 2019 Conceptual Design improvements were evaluated by VDOT in 2019 to determine if there were any changes in scoring and funding requirements. The improvements were determined acceptable to carry forward into 30% preliminary engineering. Corridor-wide bicycle accommodations on the project were reviewed during 30% preliminary engineering as well. Two-foot-wide buffers were added to the on-street bike lanes between Witchduck Road and the proposed Dorset Avenue roundabout and the on-street bike lanes were relocated out of the road adjacent to the sidewalks east of Dorset Avenue to create side paths accommodating both bicycles and pedestrians.

The changes to the bicycle accommodations along the corridor were proposed to better align the project with the City's Active Transportation Plan (adopted in February 2021). Currently, the lower volume corridor segment between Witchduck Road and Dorset Avenue aligns with an on-street buffered bike lane and an off-road path east of Dorset Avenue, where traffic volumes are higher. The addition of the buffer space to the on-street bike lanes and a wider verge supporting the off-road path results in an increase of four-feet to the proposed 70-foot proposed typical section.

This ultimately results in a 74-foot proposed ROW which requires no additional full acquisition parcels.

2.3.3 SMART SCALE FY 2019 with Mobile Home Avoidance Conceptual Design

FHWA requires the range of reasonable alternatives considered as part of a project be based on: 1) consideration of alternatives that avoid impacts; 2) consideration of the alternatives that minimize impacts; and 3) consideration of the potential mitigation of impacts of each alternative, all while meeting the project purpose and need (FHWA, 2024). Therefore, after the number of full acquisition parcels were reduced as part of the SMART SCALE FY 2019 Conceptual Design development, an additional conceptual design alignment was developed in efforts to avoid direct impacts to the mobile home community parcel (4873 Cleveland Street / GPIN 14771485900000) east of Aragona Boulevard.

In existing conditions, four of the 10 mobile homes positioned on the parcel are located within the “clear zone” (14-feet to 18-feet wide) of Cleveland Street. According to FHWA, a clear zone is an unobstructed, traversable roadside area that allows a driver to stop safely or regain control of a vehicle that has left the roadway. The width of the clear zone is based on risk. Key factors in assessing risk include traffic volumes, speeds, and slopes (FHWA, 2023).

The mobile home community parcel was proposed for full acquisition as part of the FY 2018 SMART SCALE application and subsequent FY 2019 SMART SCALE reevaluation. In the FY 2019 SMART SCALE reevaluation, the proposed roadway improvements would directly impact four of the 10 existing mobile homes across the Cleveland Street frontage, with a fifth mobile home falling within the roadway clear zone which poses a hazard both to motorists and residents. During preliminary engineering design, the existing stormwater infrastructure was identified as deficient to effectively contain simulated flooding throughout the project corridor. Further, one of the major project outfalls was identified the parcel easterly to the mobile homes (GPIN 14772405820000). Therefore, combination of the mobile home parcel and GPIN 14772405820000 was planned to include a stormwater management facility to alleviate roadway flooding and improve water quality.

The alignment to avoid direct impacts to mobile home community parcel begins with the introduction of additional reverse horizontal curves west of the Aragona Boulevard intersection. This would require shifting the proposed roadway improvements north by approximately 17-feet across the mobile home community parcel frontage of Cleveland Street. Once east of mobile home community parcel, a second pair of reverse horizontal curves ties the realigned corridor segment back to the proposed alignment, east of Horace Avenue. This alignment is depicted on **Exhibit 14** and in **Appendix B**.

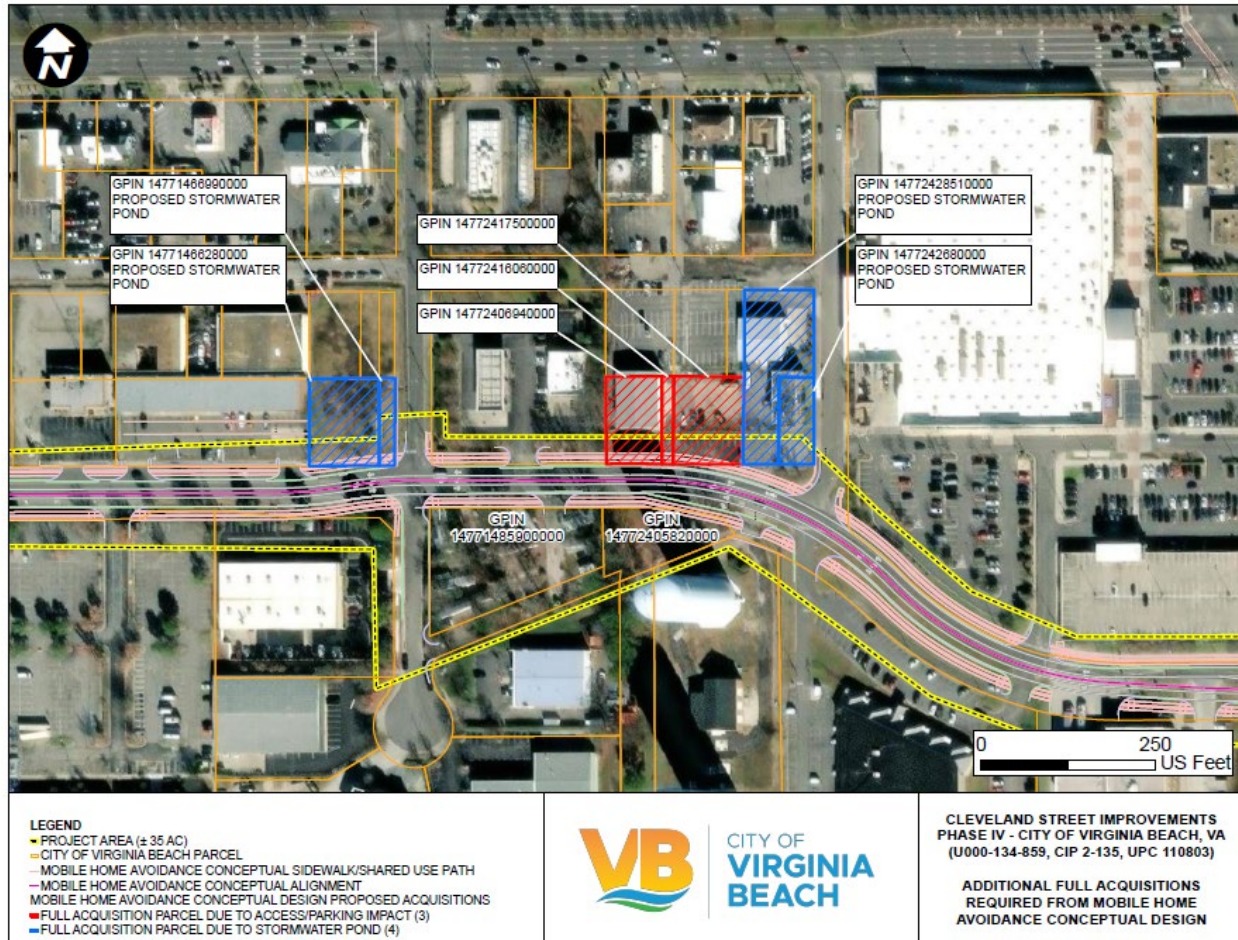


EXHIBIT 14. ADDITIONAL FULL ACQUISITIONS REQUIRED FOR THE MOBILE HOME AVOIDANCE CONCEPTUAL DESIGN

This conceptual design would not require ROW acquisition from the mobile home community parcel or GPIN 14772405820000 but would likely require temporary and permanent easements from the mobile home parcel to facilitate roadway construction and utility relocations.

The northern alignment shift would impact the entirety of the existing parking across the frontage of three parcels (GPINS 1477206490000, 14772416060000, and 14772417500000) on the north side of Cleveland Street between Aragona Boulevard and Horace Avenue. Therefore, full acquisition of these parcels would be anticipated. In addition, to offset the loss of area for the stormwater management facility on the mobile home community parcel, two separate stormwater management facilities would be required to provide the same treatment and storage volume. This would require the total acquisition of four parcels in two separate locations for stormwater management facilities: GPINS 14772428510000 and 14772426880000 (immediately east of GPINS 1477206490000, 14772416060000, and 14772417500000) and GPINS 14771466280000 and 14771466990000 (immediately west of Aragona Boulevard).

Therefore, this alignment between Aragona Boulevard and Horace Avenue would result in the full acquisition of seven parcels to offset the loss of GPINS 14771485900000 and 14772405820000 for stormwater. This would include three commercial businesses which are spread across five parcels and two parcels which are vacant and unoccupied. This conceptual design would ultimately require the full acquisition of 17 parcels across the length of the project corridor, consisting of 15 parcels with 15 industrial and commercial tenants and two parcels that are vacant and unoccupied. The cost burden associated with the acquisition of the seven additional parcels is

estimated to be over two times the cost to acquiring the mobile home community parcel (or an increase of over \$2M when utilizing two times the current City assessed values for acquisition).

Further, the introduction of an additional pair of reverse curves near the existing reverse curves in front of the properties to the east would increase the probability and frequency of roadway departure crashes primarily towards GPINs 14771466990000 and 14771466280000; however, it is possible a partial departure towards the mobile home parcel could also occur.

Additionally, utility relocations are proposed throughout the project area. It is anticipated that improvements would require nighttime construction operations due to their locations within the roadway footprint and would require 18-24 months for completion, while total construction is anticipated to require 36-42 months for completion. Given the anticipated construction duration and complexity, the mobile home community parcel would likely experience construction vibration, dust, and noise combined with other negative construction side effects for a three-year period during the daytime and nighttime. By relocating the owners and tenants of the mobile home, the Build Alternative would minimize construction related impacts and disruptions to the parties involved. Additionally, this would remove the four residences from the roadway clear zone which would eliminate the potential for vehicle collisions and improve the safety of motorists.

Therefore, to avoid acquiring an additional seven parcels and to minimize construction related impacts to the residents of the mobile home community parcel, the SMART SCALE FY 2019 with Mobile Home Avoidance Conceptual Design was not carried forward for detailed design or evaluation.

2.3.4 Virginia Beach Boulevard

As an east-west alternative to Cleveland Street, improving Virginia Beach Boulevard was considered in lieu of reconstructing portions of Cleveland and Columbus Street. Improvements to Virginia Beach Boulevard between Witchduck Road and Independence Boulevard would not address the project Purpose and Need identified in both the existing and future conditions. The Cleveland Street and Columbus Street corridors were identified during previous studies as the logical link between the Newtown and Pembroke SGAs. The limits of the Newtown Road and Pembroke SGA are provided in **Exhibit 15**. This is reflected by the previously completed Greenwich Road flyover bridge, improvements to the Newtown Road, Greenwich Road, and Cleveland Street corridors from VDOT's I-264 and Witchduck Road Interchange and Ramp Extension project, and three prior phases of Cleveland Street improvements by the City of Virginia Beach.

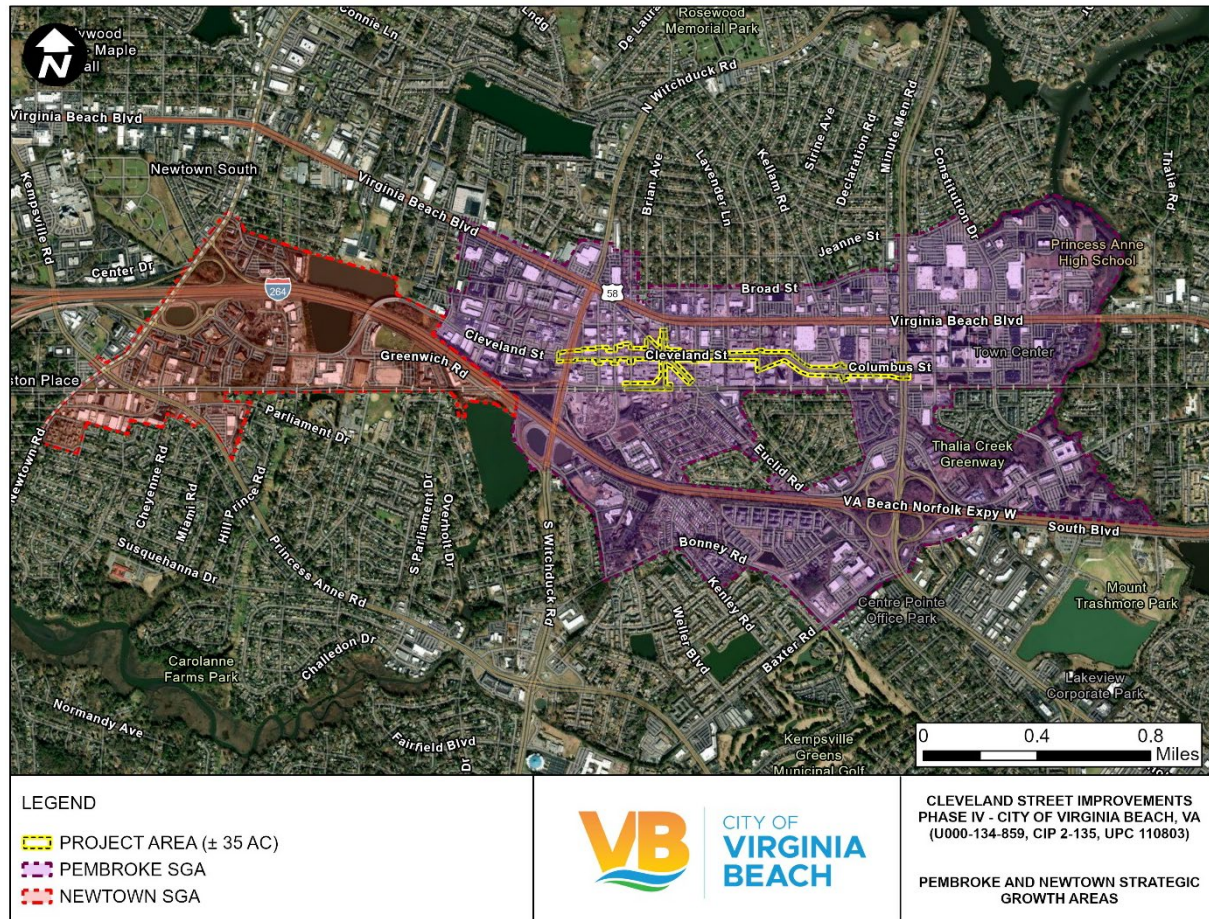


EXHIBIT 15. NEWTOWN & PEMBROKE SGAs

Improvements to Virginia Beach Boulevard would also not address the lack of bike and pedestrian facilities along the Cleveland Street corridor. One of the key recommendations from the City's Pembroke SGA Implementation Plan was to build the length of Cleveland Street and Greenwich Road as a complete street, providing attractive and efficient thoroughfare for all modes of travel (City of Virginia Beach, 2009). From a public safety standpoint, any improvements to Virginia Beach Boulevard would also not address the crash history along the Cleveland Street and Columbus Street corridor, which has seen 294 crashes since 2015 (VDOT, 2024). This crash history can be attributed to poor access management and lack of dedicated turn lanes along much of the corridor that would be addressed by the proposed Build Alternative. As a stand-alone option, improvements to Virginia Beach Boulevard would not be practical nor meet the project Purpose and Need and were therefore not carried forward for additional evaluation or detailed design.

2.3.5 Transportation System Management

According to FHWA, Transportation System Management (TSM) strategies focus on operational improvements which can maintain and even restore the performance of the existing transportation system before additional capacity is needed (FHWA, 2023). TSM strategies increase the number of vehicle trips a roadway facility can provide without increasing the number of through lanes. Examples of TSM strategies include ramp metering, auxiliary lanes, turning lanes, reversible lanes, and traffic signal coordination. TSM also encourages automobile, public, and private transit, ridesharing programs, and bicycle and pedestrian improvements as elements of a unified urban transportation system. As a stand-alone alternative, TSM would not provide the reliable access, connectivity, or safety improvements needed for the project area and would not meet the

Purpose and Need of the project. Therefore, TSM was eliminated as a stand-alone alternative. However, some of these strategies have been implemented as part of the project. The proposed Cleveland Street Phase IV corridor includes pedestrian and bicycle transportation components. Additionally, switching the existing signalized intersection at Dorset Avenue with a roundabout and streamlined connection to Southern Boulevard helps alleviate congestion at the Cleveland Street and Witchduck Road intersection by shifting traffic to the signalized intersection at Southern Boulevard and Witchduck Road. This would provide easier access to the interstate and points south along the Witchduck Road corridor.

2.3.6 Mass Transit

This preliminary concept includes reasonable and feasible transit options such as additional bus services, new buses, stops or lines to supplement the existing Hampton Roads Transit (HRT) system which services the City of Virginia Beach.

Based on a review of the City of Virginia Beach's Public Transportation StoryMap, the project area is situated between four different Virginia Beach bus routes: on Virginia Beach Boulevard, Independence Boulevard, I-264, and Witchduck Road. The review also revealed unsheltered bike stations exist adjacent to the project area on Witchduck Road and Independence Boulevard.

As a stand-alone option, mass transit would not be practicable nor meet the project Purpose and Need of the proposed project and was therefore eliminated as a stand-alone alternative. Mass transit would not improve overall roadway connectivity and traffic within the project corridor or establish bicycle and pedestrian accommodations. However, some of these strategies could be evaluated or implemented as part of future projects.

2.4 SUMMARY OF ALTERNATIVES ELIMINATED FOR FURTHER ANALYSIS

Table 1 details the different conceptual design alignments that were eliminated for further study and the basis for their elimination.

TABLE 1. ALTERNATIVES ELIMINATED FOR FURTHER ANALYSIS

Conceptual Design	Conceptual Design Description	Basis for Elimination
SMART SCALE FY 2018	Four-lane divided roadway within 90-foot ROW	This design proposed full acquisition of 29 parcels resulting in displacement of 46 industrial/commercial tenants and 10 residential tenants. While this alignment would achieve the project's Purpose and Need, the total number of parcels to be fully acquired and the cost burden associated with the acquisition was deemed to be excessive and partially avoidable.
SMART SCALE FY 2019 with Mobile Home Avoidance	Three-lane undivided roadway within 70-foot ROW and includes a roadway shift approximately 17-feet to the north to accommodate an introduction of reverse horizontal curves east of Horace Avenue and west Aragona Boulevard.	The northern shift in this alignment would require seven parcels between Aragona Boulevard and Horace Avenue to be fully acquired to offset the loss of GPINs 14771485900000 and 14772405820000 for stormwater. This would require the full acquisition of 17 parcels across the length of the project corridor (15 parcels with 15 industrial/commercial tenants and two parcels that are vacant and unoccupied). While this alignment would achieve the project's Purpose and Need, the cost burden associated with the acquisition of these parcels is estimated to be over two times the cost of acquiring the mobile home community parcel and relocating the occupants.
Virginia Beach Boulevard Improvements	Improvements to Virginia Beach Boulevard in lieu of reconstructing portions of Cleveland and Columbus Streets.	Does not meet project Purpose and Need as an independent alternative. No improvements would occur to Cleveland Street or Columbus Street, which were both identified as the logical link between the Newton and Pembroke SGAs.

Conceptual Design	Conceptual Design Description	Basis for Elimination
Transportation System Management (TSM)	Operational improvements which maintain and restore the performance of a transportation system before additional capacity is needed.	Does not meet project Purpose and Need as an independent alternative.
Mass Transit Alternative	Reasonable and feasible transit options such as additional bus services, new buses, stops or lines to supplement the existing HRT system.	Does not meet project Purpose and Need as an independent alternative.

2.5 ALTERNATIVES RETAINED FOR FURTHER ANALYSIS

Based on the established Purpose and Need, the No Build and Build Alternative were carried forward for detailed evaluation. Graphics provided in **Appendix B** depict the on-site alternatives discussed in **Sections 2.2.1 – 2.2.3** above. The following sections provide a summary of the alternatives carried forward for further analysis.

2.5.1 No Build Alternative

Under the No Build Alternative, no improvements to the Cleveland Street and Columbus Street corridor would occur. The project corridor would retain the existing infrastructure detailed in **Section 2.1** and would continue to experience traffic and safety issues and would not provide adequate linkage between the Newtown and Pembroke SGAs.

Therefore, the No Build Alternative does not meet the project's Purpose and Need and was not considered a viable alternative. The No Build Alternative has been retained for detailed study and serves as a benchmark for comparison with the Build Alternative. Only planned maintenance improvements, and those proposed independently by the City of Virginia Beach, would occur within the project corridor.

2.5.2 Build Alternative

The proposed Build Alternative implements the SMART SCALE FY 2019 Conceptual Design discussed in **Section 2.2.2** above and would consist of the following elements:

- Roadway Reconstruction/Realignment: Cleveland Street and Columbus Street would be reconstructed from Witchduck Road to Independence Boulevard, for a distance of approximately 1.2 miles. The intersection of Cleveland Street, Dorset Avenue, and Euclid Road would be realigned and reconstructed to a single-lane roundabout which replaces the existing traffic signal. This would improve safety while also providing a better network alignment for Dorset Avenue to Southern Boulevard for improved and more direct access to I-264 which would improve traffic operations.
 - The roadway reconstruction would also manage property access in areas where it is currently unrestricted with the long-term goal of creating an urban grid with continuous block segments along Cleveland Street and Columbus Street. Individual parcel access would be provided to/from the north/south side streets which also improves safety and congestion through improved access management.
- Roadway Improvements: The project would not directly increase vehicle through capacity; however, capacity would be increased by constructing a center, two-way-left turn lane. Currently, left-turn movements are shared with the through movements throughout the corridor. The center left-turn lane would improve safety and traffic flow by providing a continuous refuge for left-turn movements throughout the project area. Sidewalks would be buffered from the vehicle lanes with a four to six-foot-wide landscape area. Existing

overhead utilities would be relocated to a new overhead location and LED streetlights would be provided.

- The proposed improvements would also include replacement of the traffic signal at Kellam Road and the emergency traffic signal at Virginia Beach Fire Station #7, as well as traffic signal modifications at Witchduck Road and Independence Boulevard.
- Pedestrian and Bicycle Improvements: Improved bicycle and pedestrian infrastructure would be introduced with the roadway reconstruction and in accordance with the City's adopted Complete Streets Policy to provide safe and attractive travel options for all users. There is currently no bicycle infrastructure, the sidewalk network does not meet ADA standards, and there are sidewalk gaps that require pedestrians to either use the roadway, grass, or parking lots. The project would construct continuous five-foot wide (minimum) sidewalk on both sides of the roadway. On-street buffered bike lanes would be constructed on both sides of Cleveland Street from Witchduck Road to Dorset Avenue. Between Dorset Avenue and Independence Boulevard, all pedestrian and bicycle improvements would transition off street in the form of bike paths, sidewalks, and side paths. These facilities would vary from eight-feet to 12-feet in width and provide the highest level of pedestrian and bicyclist safety being physically separated from vehicular traffic. These facilities would tie into the recently completed pedestrian facilities to the west over I-264 to Newtown Road and to the east across Independence Boulevard into Town Center, approximately 3-miles in length. There currently is not continuous ADA pedestrian and bicycle infrastructure within the project area.
- Right-of-way Acquisition: The Build Alternative requires 12 parcels to be permanently acquired for right-of-way. The 12 parcels proposed for full acquisition consist of 10 parcels with 12 industrial/commercial tenants; one parcel consisting of a mobile home community with 10 residential tenants, and one parcel that is vacant and not occupied.
 - Partial takes for permanent and temporary easements from most of the parcels fronting the project area would also be required.
- Stormwater Management – The existing stormwater infrastructure is deficient in some areas along the corridor and portions of the project area experience localized flooding. The project would construct a new drainage network with increased storage, upsize some of the existing drainage pipes, and construct a level two wet pond on the parcels easterly adjacent to Aragona Boulevard to manage stormwater and alleviate flooding. Further, the level one wet pond northwest of the intersection of Southern Boulevard and Dorset Avenue would be shifted west to accommodate the alignment shift on Dorset Avenue.

2.5.3 Cost Estimate

Preliminary construction cost estimates for the Build Alternative were estimated using major item costs and anticipated pay items. Actual quantities for many of the cost items were derived from the preliminary design which was performed in MicroStation and OpenRoads Designer using topographic survey and utility designation. Other anticipated pay items not yet available due to the preliminary design nature were estimated based on similar projects and engineering judgement. The estimated construction cost was burdened with a 15% contingency due to the preliminary stage of design. Other project costs such as preliminary engineering and ROW acquisition were also included.

The ROW costs were developed by calculating areas of impact per parcel based on the preliminary design layout using the property lines acquired in the topographic survey and land values taken from available City tax assessments. Costs for ROW acquisition assistance and acquisition administration were determined from similar recent project experiences and included in the overall ROW Acquisition Cost.

All cost estimates were derived from the City of Virginia Beach CIP for FY 2023-2024. **Table 2** below provides a summary of the project cost estimates.

TABLE 2. PRELIMINARY COST ESTIMATE

Cost Estimate Elements	Build Alternative
Preliminary Engineering	\$2,745,508
ROW	\$9,845,933
Construction	\$19,940,100
Contingency	\$3,645,675
Total Project Estimate with Contingency:	\$36,177,216

2.5.4 Ability of Build Alternative to Meet Purpose and Need

The purpose of the Cleveland Street Phase IV Improvements project is to improve roadway connectivity and traffic, establish bicycle and pedestrian accommodations, and improve public safety. This project is part of a phased strategy designed at addressing traffic in the Pembroke Area consistent with the I-64 and I-264 interchange modification, the Pembroke Area SGA plan, and the Central Village Small Area Plan. The Build Alternative proposes to achieve the project needs through the improvements detailed in **Table 3**.

TABLE 3. ABILITY OF BUILD ALTERNATIVE TO MEET PROJECT NEED'S

Project Need	Build Alternative
Improve Roadway Connectivity and Traffic	The project improves corridor traffic flow by adding a continuous two-way left turn lane between Jersey Avenue and Kellam Road. The project would divert corridor traffic volume efficiently to Southern Boulevard, which would improve access to I-264 and Witchduck Road south of the interstate while also reducing congestion at the Witchduck Road and Cleveland Street signalized intersection.
Establish Bicycle and Pedestrian Accommodations	The project constructs continuous five-foot wide (minimum) pedestrian sidewalk on both sides of the corridor from Witchduck Road to Independence Boulevard. The project constructs bicycle improvements consisting of on-street buffered bike lanes on both sides of the corridor from Witchduck Road to Dorset Avenue, off-road side paths on both sides of the corridor from Dorset Avenue to Kellam Road, and a shared-use path on the north side of the corridor from Kellam Road to Independence Boulevard.
Improve Public Safety	The project improves public safety by adding continuous two-way left-turn lane from Jersey Avenue to Kellam Avenue to remove turning maneuvers from the primary travel lanes which reduces rear-end and head-on crashes. The project provides access management to parcels between Witchduck Road and Dorset Avenue reducing conflict points where vehicles would otherwise have to stop, slow down, or disrupt the flow of traffic. The project converts the signalized intersection at Cleveland Street and Dorset Avenue to a roundabout reducing the number of conflict points from 32 to 8 and eliminating severe crashes. The project would remove hazards within the clear zone, including the existing mobile homes, to provide an unobstructed roadside area allowing drivers to stop or recover safely in the event of a roadway departure.

3 AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

This chapter summarizes the existing human and natural environments within the project area and describes potential impacts to environmental resources under the Build Alternative and No Build Alternative. Existing conditions are characterized in each resource section and the potential environmental impacts with implementation of the Build Alternative and No Build Alternative are evaluated. An inventory of the environmental resources within the project area and a discussion of existing conditions are provided in **Table 4**, below. Both beneficial and adverse impacts are discussed as appropriate for each resource. **Table 5** below provides a summary of the environmental consequences with implementation of the Build Alternative and No Build Alternative.

3.1 OVERVIEW

Potential environmental impacts of the Build Alternative were evaluated based on the proposed limits of the project area. The limits of the project area were used for impact evaluation and decision-making purposes during the NEPA process and do not constitute the LOD for the project, which is smaller than the project area. The current LOD is based on 30% design of the project and may fluctuate during future design iterations. Therefore, the project area was conservatively developed and is used for impact evaluation. The project area accommodates three-lanes travelling eastbound and westbound, a roundabout, bicycle and pedestrian facilities, and stormwater management facilities. These improvements would be located within the proposed ROW for the Build Alternative.

TABLE 4. EXISTING CONDITIONS OF ENVIRONMENTAL RESOURCES

Resource		Existing Conditions
Land Use Section 3.2		Land use within the project area is characterized primarily by industrial, commercial, and mixed uses, and the Central Business Core District (CBC), which is a designated growth area by the City of Virginia Beach.
ROW/Relocations Section 3.3		The project area intersects one hundred and seven (107) City of Virginia Beach tax parcels. The City of Virginia Beach owns thirteen of the parcels, one is owned by the U.S. Postal Service, and ninety-three (93) are privately owned.
Socioeconomic Characteristics Section 3.4	Communities and Community Resources Section 3.4.1	Various community resources are located throughout the project corridor, including a mobile home community.
	Population and Housing Section 3.4.2	There is a limited amount of housing available within the project area. The only residential community is the existing mobile home community located east of Aragona Boulevard. Four of the existing mobile homes are within the roadway clear zone, which poses unsafe conditions with the potential for vehicle collisions. No other housing accommodations exist within the project area.
	Income Section 3.4.3	In 2020 and 2022, the median household income of the four block groups within the project area fell below the median household income for Virginia Beach.
Wetlands and WOUS Section 3.5		A wetland delineation of the project area revealed twelve (12) non-jurisdictional roadside ditches and two (2) non-jurisdictional stormwater management facilities are located within the project area. No wetlands or WOUS were identified during the delineation. The United States Army Corps of Engineers (USACE) issued an approved Jurisdictional Determination on June 14, 2024, and stated that the proposed actions do not require USACE authorization.

Resource	Existing Conditions
Water Quality Section 3.6	The western portion of the project area is located within the Eastern Branch of the Elizabeth River watershed and the eastern portion of the project area drains to Thalia Creek, which drains to the Lynnhaven River. The nearest unsegmented riverine to the project area which drains to these features is not classified as an impaired water by the VDEQ. Additionally, existing stormwater infrastructure is deficient in some areas along the corridor and lacks connectivity to efficiently convey the stormwater towards its ultimate outfall.
Floodplains Section 3.7	Portions of the project area are within the 100-year floodplain and the 500-year floodplain. In addition, portions of the project area experience localized flooding which renders portions of the project area inaccessible during heavy tailwater events.
Terrestrial Wildlife and Habitat	The project area is entirely developed and does not contain suitable habitat for terrestrial wildlife.
Threatened and Endangered Species Section 3.8	No habitat or evidence of federal or state threatened or endangered species was identified within the project area.
Air Quality Section 3.9	The EPA Green Book shows the City of Virginia Beach to be designated as an attainment area for all criteria pollutants.
Noise Section 3.10	On September 18, 2023, VDOT confirmed the project is considered a Type III improvement project and therefore does not require further analysis.
Historic Resources Section 3.11	One resource, the Norfolk and Virginia Beach Railroad (DHR ID# 134-5145) is located within the project area and was previously determined eligible for the National Register of Historic Places.
Section 4(f) Resources Section 3.12	The project area contains one Section 4(f) resource: the Norfolk and Virginia Beach Railroad (DHR ID# 134-5145).
Section 6(f) Resources	No areas funded with Land and Water Conservation Funds exist within the project area.
Hazardous Materials Section 3.13	The Limited Hazardous Material Review identified twenty-two (22) Parcels of Interest within the project area and nineteen (19) Parcels of Interest adjacent to the project area.

TABLE 5. SUMMARY OF PROPOSED IMPACTS

Resource		Build Alternative	No Build Alternative
Land Use Section 3.2		No direct impact on land use within the project area. The vital connection between the I-64/I-264 interchange and Independence Boulevard would be completed, which would allow for future redevelopment for the Pembroke SGA.	No direct impact on land use within the project area. Would prevent the City from successfully achieving the vision for the area as described in the Pembroke SGA. Land use within the project area would be limited to change.
ROW/Relocations Section 3.3		13 parcels (4.5 acres) would be acquired. 11 parcels zoned as light industrial and two parcels zoned as Central Business District (CBD) would be converted to public ROW. Of the 13 parcels being fully acquired, 11 of the parcels contain 12 industrial/commercial tenants, one parcel contains a mobile home community with 10 mobile homeowners and an unknown number of tenants requiring relocation, and one parcel is vacant and not occupied. All affected owners would be compensated for the fair market value of the acquired portion of land and/or any structures acquired for construction. The owner of the mobile home parcel would be compensated for the acquired portion of land, while the owners of the mobile homes would be compensated for the value of the mobile home, either as a personal property or real estate payment. Due to the condition of the mobile homes, they would not be relocated. The City would provide relocation assistance to the owners and tenants of the mobile homes, to include moving expenses and replacement housing payments. The acquisition of property and any necessary relocations would be conducted in accordance with applicable Federal laws, regulations and requirements, including but not limited to 23 CFR Part 710 the <i>Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970</i>, as amended and its implementing regulations found in 49 CFR Part 24, and the VDOT Right of Way Manual of Instructions Chapter 6, Section 10 on Mobile Homes.	Would result in no impacts from ROW or relocations.
Socioeconomic Characteristics Section 3.4	Communities and Community Resources Section 3.4.1	The only community within the project area is a mobile home community containing approximately 10 units. The owners and tenants of the mobile homes would be relocated, but would be provided with relocation assistance, further detailed in Section 3.3 below. The Build Alternative is not anticipated to change the overall use or nature of community resources within the project area. Access and safety within the project area would be improved, which would make it easier to travel to the various community resources. Pedestrians and cyclists would also be provided with ADA accessible sidewalks and dedicated bike lanes to access community resources.	The mobile home community would not be relocated. However, as continued and potentially increasing localized flooding continues throughout Virginia Beach, the project area would continue to experience localized flooding. The No Build Alternative would fail to resolve ongoing issues surrounding flooding, and in the long-term, may indirectly impact the community. Localized flooding would make accessing the mobile home community difficult and unsafe for residents and would prevent access to and from the fire station. Further, up to four mobile homes would remain within the roadway clear zone and would remain subject to unsafe conditions with the potential for vehicle collisions.

Resource		Build Alternative	No Build Alternative
			The No Build Alternative is not anticipated to change the overall use or nature of community resources within the project area. Access to community resources would be maintained, but fragmented pedestrian accommodations would remain. Therefore, access to community resources would deteriorate overtime as demands increase on the project corridor and benefits to community resources would not be realized.
	Population and Housing Section 3.4.2	The 10 mobile homeowners and tenants would be relocated, which would result in relocation impacts. The affected owners would be compensated for the value of the mobile home, either as a personal property or real estate payment. Due to the condition of the mobile homes, they would not be relocated. The City would provide relocation assistance to the owners and tenants of the mobile homes, to include moving expenses and replacement housing payments. Given the current housing and rental market and to mitigate for the relocation impacts on the mobile homeowners and tenants, the City is also exploring the possibility of extending any rental assistance subsidy from 42 months as required by FHWA to 60 months. For any mobile homeowners and tenants that request it, the City is willing to manage those rental assistance payments funds over that 60-month period to ensure that displaced persons remain in decent, safe, and sanitary housing for up to five years. The relocation would remove up to four residences from the roadway clear zone and eliminate the potential for vehicle collisions. No other residential populations or housing would be directly impacted. The Build Alternative would improve access and pedestrian safety in this area of the City which would benefit adjacent housing communities.	Would result in no direct impacts to population or housing. However, as continued and potentially increasing localized flooding continues throughout Virginia Beach, the project area would continue to experience localized flooding. The No Build Alternative would fail to resolve ongoing issues surrounding flooding, and in the long-term, may indirectly impact the community. Localized flooding would make accessing the mobile home community difficult and unsafe for residents and would prevent access to and from the fire station. Further, up to four mobile homes would remain within the roadway clear zone and would remain subject to unsafe conditions with the potential for vehicle collisions.
	Income Section 3.4.3	The proposed full acquisition parcels would result in impacts to 12 industrial/commercial tenants. The improvements would result in temporary jobs, as well as improved access and connectivity to the primary employment centers located along Cleveland Street including Walmart Supercenter and Wegmans grocery.	Would result in no impacts to income.
Wetlands and WOUS Section 3.5		Would result in no impacts to wetlands and/or WOUS.	Would result in no impacts to wetlands and/or WOUS.

Resource	Build Alternative	No Build Alternative
Water Quality Section 3.6	Proposed stormwater improvements would subtract 2.11 acres of impervious area, provide a nutrient credit of 0.25 lbs./yr. to the Elizabeth River watershed, and subtract 12.49 acres of impervious area and provide a nutrient credit of 4.24 lbs./yr. to Thalia Creek and exceed the phosphorus removal requirements for stormwater drainage to Thalia Creek by 7.89 lbs./yr. Therefore, long-term water quality in the project area and the Elizabeth River and Thalia Creek watersheds would be improved.	The project area would maintain deficient stormwater infrastructure and existing water quality would be maintained.
Floodplains Section 3.7	Existing stormwater infrastructure would be updated to maintain an accessible route for the motoring public. In addition, the proposed stormwater improvements would ensure emergency response is not impacted during inclement weather events. Necessary requirements would be completed to raise the project area out of the 100-year floodplain, which would have a positive impact on localized flooding throughout the project area and the surrounding community.	No stormwater improvements would occur and therefore, no changes to floodplains would occur. Localized flooding would continue to worsen and prevent safe access throughout the project area. The Virginia Beach Fire Station #7 would be inaccessible during high tailwater conditions, which would occur more frequently in the future due to continued and potentially increasing localized flooding. Hazards to motorists and pedestrians would worsen throughout the project area.
Terrestrial Wildlife and Habitat	Would result in no impacts to terrestrial wildlife and habitat.	Would result in no impacts to terrestrial wildlife and habitat.
Threatened and Endangered Species Section 3.8	Would result in no impacts to threatened or endangered species.	Would result in no impacts to threatened or endangered species.
Air Quality Section 3.9	Would not cause or contribute to a new violation of the NAAQS established by the EPA.	Would not cause or contribute to a new violation of the NAAQS established by the EPA.
Noise Section 3.10	Would not result in noise impacts to the project area.	Would not result in noise impacts to the project area.
Historic Resources Section 3.11	In a letter dated March 21, 2024, the Virginia Department of Historic Resources concurred the project would have no adverse effect on DHR ID# 134-5145.	Would not result in no impacts to historic resources.
Section 4(f) Resources Section 3.12	In a letter dated March 21, 2024, the Virginia Department of Historic Resources concurred the project would have no adverse effect on DHR ID# 134-5145. In a separate letter dated December 10, 2024, FHWA concurred the project would result in <i>de minimis</i> impact to DHR ID#134-5145 pursuant to Section 4(f) of the Department of Transportation Act.	Would not result in impacts to Section 4(f) resources.
Section 6(f) Resources	Would not result in impacts to Section 6(f) resources.	Would not result in impacts to Section 6(f) resources.

Resource	Build Alternative	No Build Alternative
Hazardous Materials Section 3.13	Full or partial acquisitions would be required from fifteen (15) identified Parcels of Concern. Prior to acquisition and construction, Phase I Environmental Site Assessments would be conducted on the parcels proposed for full or partial acquisition. Therefore, no impacts to or from existing hazardous materials sites are anticipated.	No impacts to or from hazardous material sites would result. No improvements or further assessment efforts would be completed for the identified Parcels of Concern.

As noted in **Table 4** and **5**, certain resources do not exist within the project area and have therefore do not have a reasonable possibility for individual or environmental impacts. A discussion of potential impacts resulting from the Build and No Build Alternatives are therefore not included in the following sections. These resources include Terrestrial Wildlife and Habitat and Section 6(f) resources.

3.2 Land Use

In general, the land use within the project area is characterized primarily by industrial, commercial, mixed uses, and the Central Business Core District (CBC), which is a designated growth area by the City of Virginia Beach. The existing land use within the project area is depicted on **Exhibit 16**. Zoning data for the City of Virginia Beach was reviewed using the City's publicly accessible "VBMap."

The western portion of the project area contains a greater density of industrial and commercial properties. All the parcels fronting Cleveland Street from its western terminus to Opal Avenue are zoned as either Light Industrial (I-1) or Heavy Industrial (I-2) and consist of a variety of auto repair shops/garages and mixed uses. Notable mixed uses along this portion of the project corridor include a portion of the Renaissance Academy, which is Virginia Beach's alternative education center for students in grades 6-12, lighting and flooring stores, a screen-printing shop, the West Beach Tavern Restaurant, and a tattoo parlor.

The portion of the project area along Southern Boulevard is bound to the north by industrial uses, such as the Virginia Beach Department of Public Works Euclid Fuel Facility and a Papco fueling plant. To the south, this portion of the project area is bound by the Norfolk and Virginia Beach Railroad, owned by the City of Virginia Beach.

Generally, from Opal Avenue to Kellam Road, land use within the project area transitions from industrial uses to a combination of industrial, Community Business District (B-2), and Central Business District (B-3) zoning. Notable uses in this portion of the project area include car dealerships, a 7-Eleven gas station, a Walmart, two water towers managed by Virginia Beach Public Utilities (the Columbus Street Water Towers), a U.S. Postal Service facility, and the Virginia Beach Fire Station #7. A residential mobile home community is located southeast of the intersection of Cleveland Street and Aragona Boulevard and is zoned as Central Business District (CBD).

East of Kellam Road, land use within the project area transitions solely to CBC zoning and notable uses in this portion of the project area include a Wegmans north of Columbus Street and the Virginia Beach Town Center which is east of the project area's eastern terminus.

No Build Alternative

The No Build Alternative would have no direct impact on land use within the project area. However, the Build Alternative is a critical component of the City's goal of transforming the Pembroke SGA into a central urban core with a vertical mix of urban uses. Therefore, implementation of the No Build Alternative would prevent the City from successfully achieving the vision for the area as described in the Pembroke SGA. Land use within the project area would be limited to change.

Build Alternative

The Build Alternative would not affect the overall land use of the project area. The Build Alternative would permanently affect the 13 parcels proposed for full acquisition; however, the changes would be consistent with the City's comprehensive plan as cited in the Pembroke SGA. No parcels would be rezoned as a part of the Build Alternative and the Build Alternative is not anticipated to change the land use or zoning on adjacent parcels. In the long term, the Build Alternative would complete the vital connection between the I-64 and I-264 interchange and Independence Boulevard, which would allow future redevelopment of the Pembroke SGA.

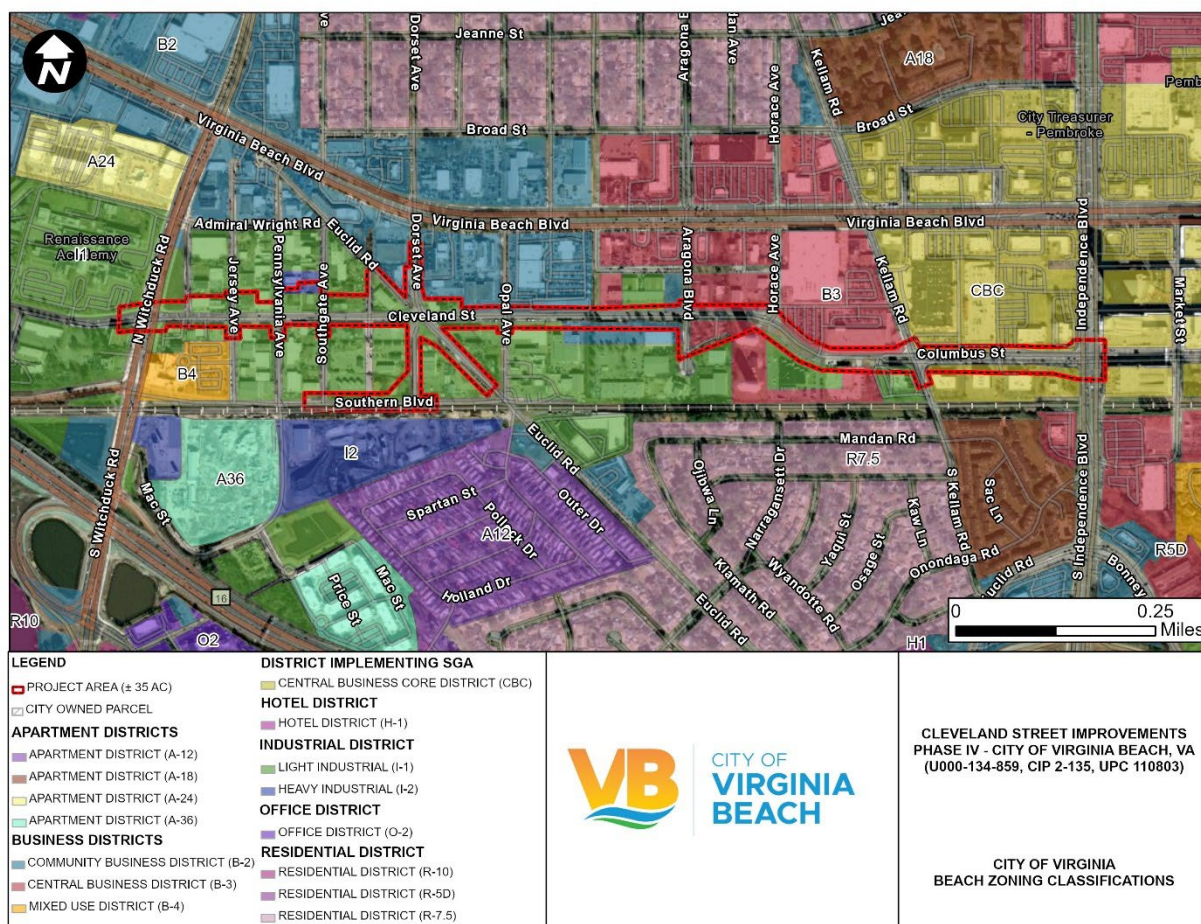


EXHIBIT 16. CITY OF VIRGINIA BEACH ZONING CLASSIFICATIONS

3.3 RIGHT-OF-WAY/RELOCATIONS

Property impacts are classified as either partial or total acquisitions. Total acquisition occurs when a portion of the primary structure is impacted, access is cut off, 50 percent or more of the overall property is acquired, property is bisected by the proposed improvement, or the proposed improvement comes within twenty feet of the primary structure. Partial acquisition occurs when a portion of the parcel is acquired, and that portion does not include a primary structure. The acquisition of property and any necessary relocations would be conducted in accordance with applicable Federal laws, regulations, and requirements, including but not limited to, 23 CFR Part 710, the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970*, as amended and its implementing regulations found in 49 CFR Part 24.

The project area intersects one hundred and seven (107) City of Virginia Beach tax parcels. The City of Virginia Beach owns approximately thirteen of the parcels, one is owned by the U.S. Postal Service, and ninety-three (93) are privately owned. Of the 107 parcels, four appear undeveloped.

Typically, the acquisition of properties or real property interests for federally assisted projects does not occur before the completion of the environmental review process, including NEPA. In some situations, however, the City could acquire property in advance of NEPA or other environmental determinations through a process called early acquisition.

The City of Virginia Beach proceeded with early acquisition of three parcels originally proposed for full acquisition, depicted in **Appendix C**. The three parcels were occupied by the same commercial

business and property owner. The property owner was closing his business and considered renting or selling the parcels. To avoid future tenant relocation, the City acquired the three parcels under 23 CFR 710.501(b)/23 USC 108(c)(1): State-funded Early Acquisition without Federal Credit. FHWA concurred with the early acquisition of the three parcels on February 4, 2025. The Early Acquisition Memorandum is provided in **Appendix C**.

No Build Alternative

The No Build Alternative would not result in any project related construction and would therefore require no ROW acquisition or relocations.

Build Alternative

The Build Alternative would require the full acquisition of 13 privately owned parcels (±4.5 acres) for construction of the roadway, intersection improvements, and stormwater management facilities. **Table 6** below provides a summary of the land use types that would be permanently converted to public ROW with implementation of the Build Alternative. The full ROW impacts would be determined during final design. Property impacts may be minimized as design progresses.

TABLE 6. SUMMARY OF ROW CONVERSION WITH THE BUILD ALTERNATIVE

Zoning Classification	Acres Converted to Public ROW	Number of Parcels Affected by Total Takes
Central Business District (B-3)	1.09	2
Light Industrial (I-1)	3.43	11
Total	4.52	13

While the proposed acquisitions with implementation of the Build Alternative would affect the respective property owners, all affected owners would be compensated for the fair market value of the acquired portion of land and/or any structures acquired for the construction of the Build Alternative. The acquisition of property and any necessary relocations would be conducted in accordance with applicable Federal laws, regulations and requirements, including but not limited to 23 CFR Part 710 the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970*, as amended and its implementing regulations found in 49 CFR Part 24.

The Build Alternative would also affect the residential property owners and tenants within the mobile home community. The mobile home community parcel is owned by a property management company who leases the mobile home lots. The individual mobile home units are privately owned, although there is an unknown number of tenants residing within each unit. The property management company would be compensated for the acquired parcel, while the owners of the mobile homes would be compensated for the value of the mobile home, either as a personal property or real estate payment. Due to the condition of the mobile homes, they would not be relocated. The City would provide relocation assistance to the owners and tenants of the mobile homes, to include moving expenses and replacement housing payments. Given the current housing and rental market, the City is also exploring the possibility of extending any rental assistance subsidy from 42 months as required by FHWA to 60 months to mitigate for impacts to the mobile homeowners and tenants. For any mobile homeowners and tenants that request it, the City is willing to manage those rental assistance payments funds over that 60-month period to ensure that displaced persons remain in decent, safe, and sanitary housing for up to five years. The City's Public Works Real Estate Group would assist the mobile homeowners and tenants to find and secure housing within the Hampton Roads region, with priority being in Virginia Beach. Relocation of the owners and tenants of the mobile homes would be conducted in accordance with the VDOT Right of Way Manual of Instructions Chapter 6, Section 10 on Mobile Homes.

All persons displaced would be treated fairly and consistently so they do not suffer injuries as a result of the project, which is designed for the benefit of the public as a whole. Relocation resources would be available to all residential and business relocatees without discrimination.

3.4 SOCIOECONOMIC CHARACTERISTICS

A Socioeconomic and Land Use Technical Report was prepared for the proposed project by Kimley-Horn & Associates in March 2024. The Report was prepared to analyze the potential social and economic effects associated with the proposed improvements and is provided in **Appendix D**. The Report specifically analyzes effects to existing communities and community resources, population and housing, income, and racial and ethnic characteristics with implementation of the Build or No Build Alternative. The results of the Socioeconomic and Land Use Technical Report are summarized in **Sections 3.4.1 – 3.4.3** below.

3.4.1 Communities and Community Resources

Communities and community resources that provide services to communities and neighborhoods in and around the project area were identified through a combination of locality planning documents, available mapping, aerial photography, and GIS data. A mobile home community with approximately 10 units was identified southeast of the intersection of Cleveland Street and Aragona Boulevard, generally located at 4873 Cleveland Street (City of Virginia Beach GPIN 14771485900000). Additional community resources within the project area were identified and include fire and rescue stations, medical facilities, post offices, places of worship, schools/universities, civic centers, and bike facilities. The Socioeconomic and Land Use Technical Report inventories the existing community resources and communities within the project area, which are depicted on **Exhibit 17**, below.

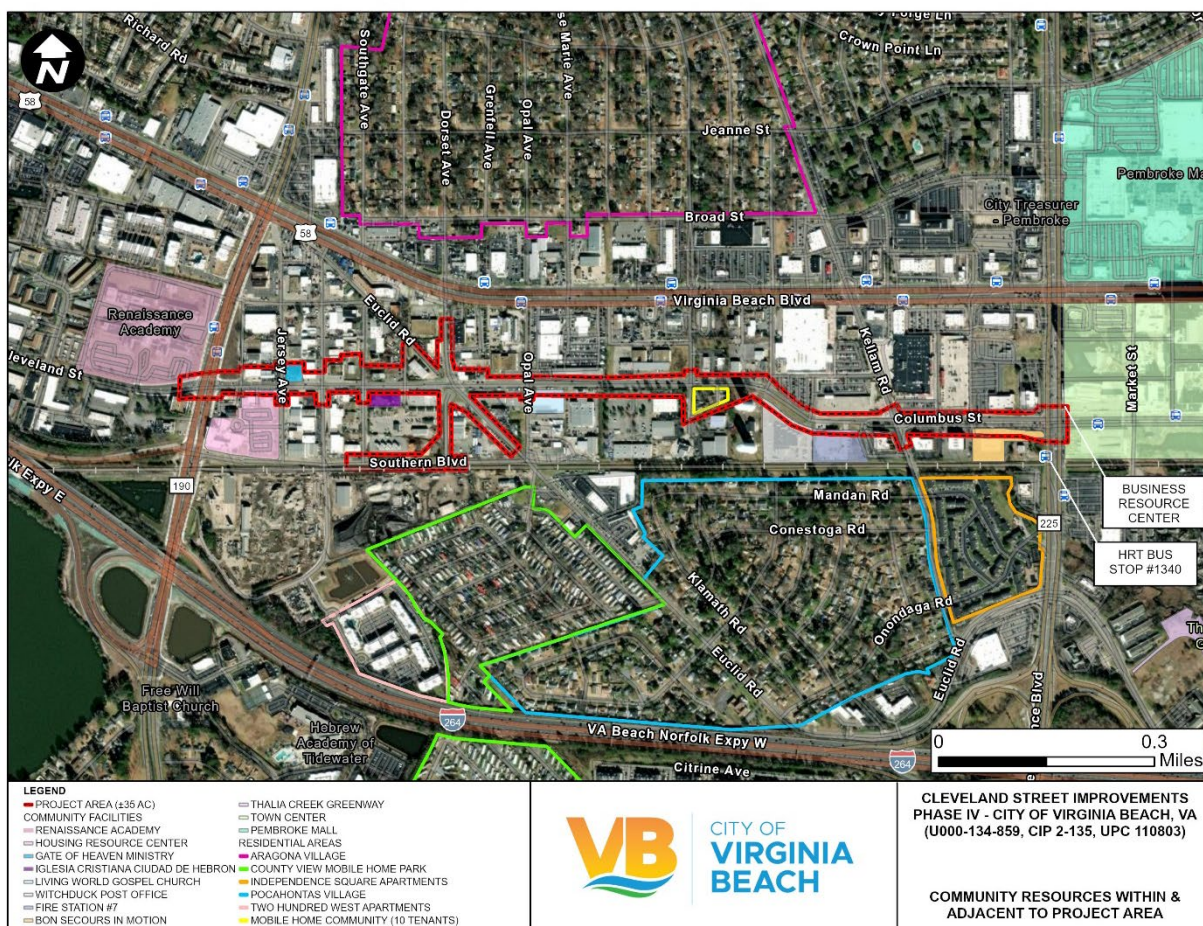


EXHIBIT 17. COMMUNITY RESOURCES WITHIN PROJECT AREA

No Build Alternative

With the implementation of the No Build Alternative, the mobile home community would not be relocated. However, as continued and potentially increasing localized flooding continues throughout Virginia Beach, the project area would continue to experience localized flooding. The No Build Alternative would fail to resolve ongoing issues surrounding flooding, and in the long-term, may indirectly impact the mobile home community. Localized flooding would make access to the mobile home community difficult and unsafe for residents and would prevent access to and from the fire station. Further, up to four mobile homes would remain within the roadway clear zone and would remain subject to unsafe conditions with the potential for vehicle collisions.

The No Build Alternative is not anticipated to change the overall use or nature of community resources within the project area. Existing pedestrian accommodations within the project area are fragmented and prevent safe pedestrian access to the various community facilities within the project corridor. These conditions would remain with implementation of the No Build Alternative, which may discourage pedestrians and cyclists from accessing the project area or its various community resources. Additionally, the project area would remain the only segment of unimproved roadway between Town Center and Newtown Road. Therefore, the City and VDOT's investments west of the project corridor (including Cleveland Street Phases I-III, Witchduck Road Phase II, I-64 and I-264 Interchange Improvements (Phase I), and I-264 and Witchduck Road Interchange and Ramp Extension (Phase II)) would not be supplemented with the pedestrian accommodations and roadway improvements proposed with the Cleveland Street Phase IV Improvements. This would also affect regional network connectivity between I-264, Newtown Road, and Town Center.

Build Alternative

The Build Alternative would require relocation of the owners and tenants of the mobile home community within the project area, which would result in relocation impacts on the owners and tenants. To mitigate for relocation impacts, the owners and tenants would receive relocation assistance from the City, further detailed in **Section 3.3**, above. Since the mobile home community is not a part of a larger residential community, it is not anticipated that the mobile home relocation would result in negative impacts to communities or community cohesion outside of the project area.

The Build Alternative is anticipated to provide the following benefits to the communities adjacent to the corridor:

- Provide continuous and ADA accessible five-foot sidewalk (minimum) on both sides of the roadway. On-street buffered bike lanes would be provided on both sides of Cleveland Street from Witchduck Road to Dorset Avenue, completing a vital pedestrian accommodation between I-264 and Town Center. This would promote bicycle/pedestrian transportation and improve access to the various community resources throughout the project corridor, including the Housing Resource Center, Business Resource Center, and the HRT Bus Stops. This would particularly benefit the homeless population that was noted throughout the project corridor.
 - Input received from the public previously indicated the desire to create more walkable neighborhoods with improved access to bicycle and pedestrian accommodations.
- The project would upgrade the existing stormwater infrastructure to maintain an accessible route for the motoring public and bicycle/pedestrian travelers. In addition, the project's stormwater improvements would ensure emergency response is not impacted during inclement weather events. This would ensure safer access to the Fire Station #7 and support emergency response for the entire community.
- Overall traffic and safety within the corridor would be improved with the installation of a dedicated left-turn lane, which would improve roadway connectivity. Currently, left-turn movements are shared with the through movements throughout the corridor. The center left-turn lane would improve safety and traffic flow by providing a continuous refuge for left-turn movements throughout the project area, which would reduce congestion within the corridor and promote a more walkable environment.
- This would also provide the missing link to the regional connectivity plan associated with the I-64/I-264/Newtown Road, I-264 Witchduck Road, and Greenwich Road Flyover projects and provide a reliable parallel alternative to I-264 and Virginia Beach Boulevard.
 - It should be noted, detours are not anticipated for the majority of construction. A short-term closure of the Dorset Avenue and Cleveland Street intersection may be needed during the final construction phase of the roundabout; however, it is anticipated that two lanes providing two-way traffic would be provided throughout construction and access to adjacent businesses would be maintained. A more detailed construction sequence and maintenance of traffic plan would be prepared to better understand overall traffic and community impacts as design progresses.

Construction of the Build Alternative would require minor amounts of ROW acquisition from some of the community resources; however, the acquisition is not anticipated to affect the overall use or nature of the community resources within the project area.

3.4.2 Population and Housing

For the Population and Housing analysis, demographics to the census block level were obtained using data from the 2020 American Community Survey (ACS) 5-Year Estimates obtained from the

U.S. Census Bureau data tables. If available, data was supplemented with 2022 ACS 5-Year Estimates to provide more recent estimations.

The majority of project area (from North Witchduck Road to Independence Boulevard) is located within Census Tract (CT) 410.02 Census Block Groups (CBG) 1 and 2. The western terminus of the project area is located within CT 406 CBG 2 and the eastern terminus of the project area is located within CT 456.03 CBG 2. The project area's CBGs and CTs are depicted on **Figure 4** in **Appendix D**.

The project area is located in a developed and expanding area of the City of Virginia Beach. As the population grows in Virginia Beach and the surrounding areas, the likelihood is commuter traffic and multi-modal transportation options would increase as well. **Table 7** illustrates the population trends for Virginia Beach, Norfolk, Chesapeake, and Virginia from 2000 to 2020. Chesapeake has seen a larger percent change (17%) in total population between 2000 and 2020 than Virginia Beach (7%) and Norfolk (4%) (U.S. Census Bureau, 2000-2020). As shown in **Table 8**, population projections anticipate Virginia Beach and surrounding areas would continue this pattern of growth, although at a slower pace.

TABLE 7. HISTORIC POPULATIONS

Locality	2000	2010	2015	2020	% Change Between 2000 & 2020
Virginia Beach	425,257	437,994	452,745	459,470	7%
Norfolk	234,403	243,135	246,393	244,300	4%
Chesapeake	199,184	222,986	235,426	242,647	17%
Virginia	7,078,515	8,001,024	8,382,993	8,631,393	17%

Source: 2000-2020 ACS 5-Year Estimates, Population and Housing

TABLE 8. POPULATION PROJECTIONS

Locality	2020	2030	2040	Projected % Change Between 2020 & 2040
Virginia Beach	467,134	482,578	491,054	4%
Norfolk	250,760	257,478	260,509	3%
Chesapeake	253,355	277,475	297,274	14%
Virginia	8,744,273	9,546,958	10,201,530	14%

Source: 2017, University of Virginia, Weldon Cooper Center for Public Service, Virginia Population Projection Data

Table 9 presents housing data for the project area's CBGs (CT 406 CBG 2, CT 410.02 CBGs 1 and 2, and CT 456.03 CBG 2), Virginia Beach, and Virginia. The project area CBGs have an average 90% occupied housing units, which is slightly lower than Virginia Beach (94%) and Virginia's percent occupied housing units at 92%. The average median home value of the project area's CBGs is lower than the City of Virginia Beach's and the Commonwealth of Virginia's average, except for CT 456.03 CBG 2 with a median home value of \$288,600.

There is a limited amount of housing available within the project area. The only residential community is the mobile home community located east of Aragona Boulevard. In existing conditions, four of the existing mobile homes are within the roadway clear zone, which poses unsafe conditions with the potential for vehicle collisions. No residential zoning districts or other housing accommodations exist within the project area.

TABLE 9. PROJECT AREA AND LOCALITIES HOUSING DATA

Census Tract	Block Group	Total Housing Units	Total Occupied Housing Units	Percent Occupied	Owner Occupied	Percent Owner Occupied	Median Home Value
410.02	1	498	463	93%	201	40%	\$229,900
	2	439	423	96%	238	54%	\$25,000
406	2	565	498	88%	287	51%	\$167,700
456.03	2	1,133	933	82%	75	7%	\$288,600
Virginia Beach		190,059	178,353	94%	111,517	59%	\$287,400
Virginia		3,618,247	3,321,218	92%	2,123,771	59%	\$282,800

Source: 2020 ACS 5-Year Estimates, Population and Housing

No Build Alternative

The No Build conditions are consistent with the existing conditions. The No Build Alternative is not expected to directly impact populations or housing. The mobile home community parcel would not be relocated; four of the existing mobile homes would remain in the roadway clear zone and would remain subject to unsafe conditions with the potential for vehicle collisions.

Under the No Build Alternative, the portions of Cleveland Street and Columbus Street within the project area would likely remain in VDOT's top 5% of state corridors needing pedestrian and safety improvements. In addition, during heavy tailwater conditions localized flooding would continue to worsen and prevent safe access throughout the project area, particularly to the Virginia Beach Fire Station #7. Continual growth in traffic volumes associated with new developments would increase traffic demands on the corridor and require improved access management. With implementation of the No Build Alternative, the mobile home community would remain subject to pedestrian safety concerns, traffic safety concerns from being located within the roadway clear zone, and localized flooding. Therefore, while the No Build Alternative does not directly impact the community, it would indirectly impact it by not constructing the needed safety and pedestrian improvements and up to four mobile homes would remain in the roadway clear zone. This would leave portions of the community subject to unsafe conditions with the potential for vehicle collisions.

Build Alternative

With implementation of the Build Alternative, construction of the proposed improvements would occur and require the relocation of the ten residences within the mobile home community parcel. To attempt to avoid and minimize direct impacts to the mobile home community parcel, conceptual alignments were prepared during the project's preliminary design. It was found that total avoidance of the mobile home community would require the full acquisition of an additional seven parcels, including two commercial properties and one office building, for stormwater management and access/parking. The cost for this alternative was estimated to be an increase of over \$2M.

Relocation assistance and measures offered by the City to mitigate for relocation impacts are discussed in **Section 3.3** above. No other residential populations or housing would be directly impacted from the Build Alternative. The Build Alternative would improve access and pedestrian safety in this area of the City which would benefit adjacent housing communities.

3.4.3 Income

Income data from 2020 ACS 5-Year Estimates, *Median Household Income in the Past 12 Months (in 2020 Inflation-Adjusted Dollars)* were used to generate median household income data for each of the CBGs within the project area and the City of Virginia Beach. These values are listed in **Table 10** and serve to supplement the other analyses which are based on 2020 data. In 2020, the median household income of the four block groups within the project area fell below the median household income for Virginia Beach, \$78,136.

The 2022 ACS 5-Year Estimates, *Median Household Income in the Past 12 Months (in 2022 Inflation-Adjusted Dollars)* were available for the project area's CBGs and the City of Virginia Beach. Therefore, to provide a more recent estimation of median household income the 2022 Median Household Income for the project area's CBGs and the City of Virginia Beach are also provided in **Table 10**. In 2022, the median household income of the four block groups within the project area fell below the median household income for Virginia Beach, \$83,245. The project area's CBGs and CTs are depicted on **Figure 4** in **Appendix D**.

TABLE 10. MEDIAN HOUSEHOLD INCOME IN 2020 AND 2022

Census Tract	Block Group	2020 Median Household Income ^A	2022 Median Household Income ^B
406	2	\$59,457	\$65,750
410.02	1	\$46,711	\$54,815
	2	\$38,750	\$44,006
456.03	2	\$61,098	\$77,136
City of Virginia Beach		\$78,136	\$83,245
<i>Sources:</i> A= 2020 ACS 5-Year Estimates, <i>Median Household Income in the Past 12 Months (in 2020 Inflation-Adjusted Dollars)</i> B = 2022 ACS 5-Year Estimates, <i>Median Household Income in the Past 12 Months (in 2022 Inflation-Adjusted Dollars)</i> – for the project area's CBGs and 2022 ACS 5-Year Estimates, <i>Income in the Past 12 Months (in 2022 Inflation-Adjusted Dollars)</i> – for the City of Virginia Beach			

No Build Alternative

While there would not be any direct impacts to employment, travel to work, or income, the No Build Alternative would not improve travel time reliability, nor would there be an improvement to multi-modal accommodations within the Cleveland Street corridor.

Build Alternative

The Build Alternative requires the full acquisition of 13 parcels, which would result in impacts to 12 industrial/commercial tenants. While the Build Alternative would result in full acquisitions with relocations to existing businesses, the proposed improvements would have a lasting benefit to the Cleveland Street corridor. The project would complete a vital connection within the Pembroke SGA and would support the development of the Central Village District. This growth area plan promotes walkable neighborhood centers, interconnected streets and blocks, diversity of land use and easy access to jobs, housing, and recreation by a variety of travel options (City of Virginia Beach, 2009). Furthermore, construction of these improvements would result in temporary jobs, as well as improved access and connectivity to the primary employment centers located along Cleveland Street including Walmart Supercenter and Wegmans grocery.

3.5 WATERS OF THE U.S.

Waters of the United States (WOUS) are wetlands and waters federally regulated by the U.S. Environmental Protection Agency (EPA) and the USACE under the Clean Water Act (CWA). The CWA is the primary Federal legislation that protects the water resources of the United States, such as lakes, rivers, coastal areas, wetlands, and playa lakes. The USACE issues regulatory permits under the authority of Section 404 of the CWA and Section 10 of the Rivers and Harbors Act of 1899. Permits from USACE are required for structures and/or work affecting navigable WOUS and any discharge of dredged or fill material into WOUS.

The Virginia Department of Environmental Quality (VDEQ), under the Virginia State Water Control Law (Chapter 3.1 of the Code of Virginia), has regulatory authority over all State Waters. State Waters are defined as “all water, on the surface and under the ground, wholly or partially within or bordering the Commonwealth or within its jurisdiction, including wetlands.” The Virginia Water Protection (VWP) Permit Program regulates alterations to surface waters, including wetlands,

isolated wetlands, streams, and open water. VWP permits function as independent state permits and as CWA §401 Water Quality Certificates.

In Virginia, the Virginia Marine Resource Commission (VMRC) regulates the use or development of state-owned tidal and non-tidal submerged bottom lands under Title 28.2 of the Code of Virginia.

To identify WOUS or other waters within the project area, a wetland delineation was conducted by environmental scientists in August 2023. The delineation revealed twelve (12) non-jurisdictional roadside ditches and two (2) non-jurisdictional stormwater management facilities located within the project area. The features identified during the wetland delineation are depicted on **Exhibit 18**.

A State Surface Waters Determination from the VDEQ and an Approved Jurisdictional Determination from the USACE were requested in November 2023. In a letter dated November 21, 2023, the VDEQ stated the following:

“Based on the submitted delineation, the features labeled A, B, D, E, F, G, H, I, J, K, L, and N on the above-referenced map are identified as roadside ditches. These features have been determined to be man-made ditches constructed in uplands that receive water solely from ‘artificial’ sources. In accordance with current VWP guidance, these features are not subject to regulation by the VWP Permit Program and a VWP permit or permit coverage **will not** be required for any impacts proposed to these features.

The features labeled C and M on the above-referenced map are identified as stormwater ponds. A VWP permit or permit coverage **will not** be required for any impacts proposed to these features pursuant to 9VAC25-210-60.12, which excludes permitting requirements for impacts to stormwater management facilities that were created on dry land for the purpose of conveying, treating, or storing stormwater.”

Additionally, in a letter dated June 14, 2024, the USACE stated the proposed activities do not require USACE authorization pursuant to Section 404 of the CWA or Section 10 of the Rivers and Harbors Act since the proposed activities do not involve a discharge of dredged or fill material into WOUS.

Documentation of wetland coordination with the VDEQ and USACE is provided in **Appendix E**.

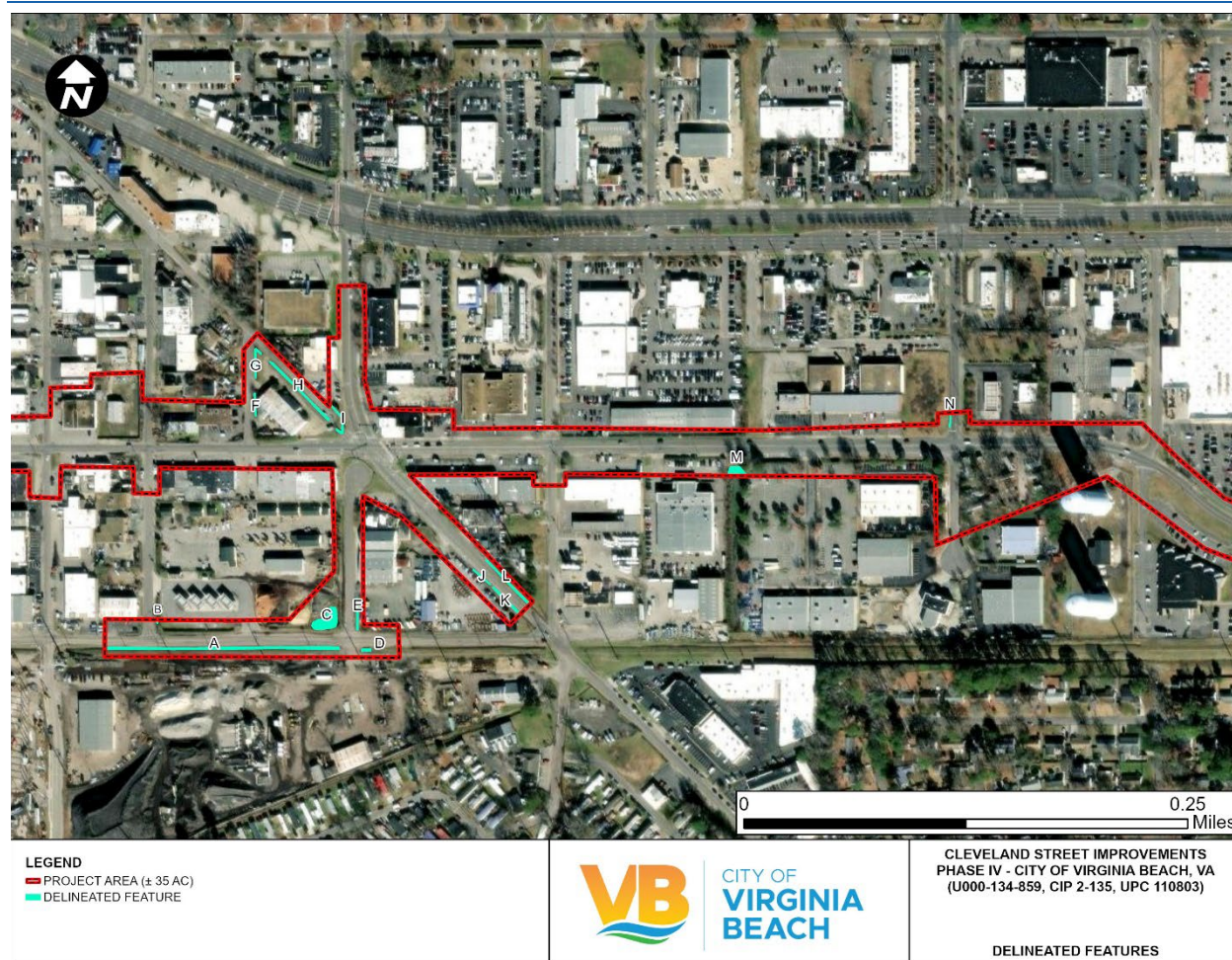


EXHIBIT 18. DELINEATED FEATURES

No Build Alternative

With implementation of the No Build Alternative, construction for the project would not occur and there would be no direct impacts to WOUS.

Build Alternative

Since no WOUS were identified within the project corridor, no impacts to wetlands or WOUS are anticipated with implementation of the Build Alternative.

3.6 WATER QUALITY

In compliance with Sections 303(d), 305(b), and 314 of the Federal Water Pollution Control Act (i.e., 1972 Clean Water Act amended in 1977, or CWA) and the Safe Drinking Water Act, VDEQ has developed a prioritized list of water bodies that currently do not meet state water quality standards (VDEQ, 2022). Water quality standards are set based on the designated use for a given waterbody. All Virginia waters are designated for one of the following primary uses:

- Recreational uses, such as swimming and boating
- The propagation and growth of a balanced, indigenous population of aquatic life, including game fish, which might reasonably be expected to inhabit them
- Wildlife
- The production of edible and marketable natural resources, such as fish and shellfish (VDEQ, 2024)

Virginia's water quality standards (9 VAC 25-260) define the water quality standards needed to support each of these primary uses by establishing numeric physical and chemical criteria. If a water body fails to meet the water quality standards for its designated use, it is considered to be impaired and placed on the 303(d) list, as required by Section 303(d) of the CWA. The 303(d) list is updated on a biennial basis. State waters can be added to or removed from the 303(d) list with each new list publication.

The western portion of the project area is located within the Eastern Branch of the Elizabeth River watershed and the eastern portion of the project area drains to Thalia Creek, which is located within the Lynnhaven River watershed. A review of the VDEQ's 2022 Integrated List of Waters and the VDEQ's Environmental Data Mapper revealed the nearest unsegmented riverine (Assessment Unit ID: VAT-C08R_ZZZ01A00) draining to Thalia Creek was not classified as a 303(d) water in 2022. The nearest unsegmented riverine (Assessment Unit ID: VAT-G15R_EBE01A00) draining to the Eastern Branch of the Elizabeth River was also not a classified as a 303(d) water in 2022.

Additionally, the 30% Drainage Design Narrative and Calculations Package for the project was reviewed to understand the existing stormwater and water quality infrastructure in the project area. The review revealed that the existing stormwater infrastructure is deficient in some areas along the corridor. More specifically, downstream inlets at the intersections of Cleveland Street and North Witchduck Road, Pennsylvania Avenue, Southgate Avenue, and Independence Boulevard are flooding in existing conditions. Additionally, stormwater infrastructure along Pennsylvania Avenue and Southgate Avenue lacks connectivity to efficiently convey the stormwater towards their ultimate outfall, the Elizabeth River.

No Build Alternative

Under the No Build Alternative, no project-related construction would occur, and therefore no changes would occur to water quality. The project area would maintain deficient stormwater infrastructure in some areas along the corridor and existing water quality would be maintained.

Build Alternative

The Build Alternative proposes the following stormwater improvements throughout the project corridor:

- Raise the road profile between Corporate Park Lane and Independence Boulevard to take the area out of the 100-year floodplain.
- Construct a new drainage network with increased storage.
- Upsize some of the existing drainage pipes.
- During preliminary engineering design, one of the major project outfalls was identified on the parcel easterly adjacent to the mobile home community. The Build Alternative would combine the mobile home community parcel and the parcel easterly adjacent (GPINs 14771485900000 and 14772405820000) and construct a level two wet pond to alleviate roadway flooding and improve water quality.
- The level one wet pond northwest of the intersection of Southern Boulevard and Dorset Avenue would be shifted west to accommodate the alignment shift on Dorset Avenue.

The proposed improvements would provide a nutrient credit of 0.25 lbs/yr to the Elizabeth River watershed and would require a post-development total phosphorus load reduction of 4.24 lbs/yr in Thalia Creek. Therefore, the level two wet pond on GPINs 14771485900000 and 14772405820000 was proposed to satisfy the required post-development phosphorus load reduction in Thalia Creek. A preliminary phosphorus removal of 12.13 lb/yr is provided from the level two wet pond, which exceeds the requirements by 7.89 lbs/yr. In addition, the proposed stormwater improvements would ultimately subtract 2.11 acres of impervious area from the Elizabeth River watershed and 12.49 acres of impervious area from Thalia Creek. GPINs 14771485900000 and 14772405820000 would be cleared and converted to green space, which is a contributing factor to the decrease in impervious area.

Therefore, implementation of the Build Alternative would provide updated stormwater infrastructure which would improve long-term water quality in the project area, the Elizabeth River watershed, and Thalia Creek.

3.7 FLOODPLAINS

Several federal directives regulate construction in floodplains to ensure consideration is given to avoidance and mitigation actions which could preserve natural floodplain services. *Executive Order 11988 – Floodplain Management* and other FHWA policy as set forth in 23 CFR § 650, requires federal activities to avoid impacts to floodplains and to avoid direct and indirect support of floodplain development to the maximum extent practicable. The 100-year flood, or base flood, is the area covered by a flood that has a one percent chance of occurring in any given year (the 100-year flood). The 100-year floodplain includes the floodway, which is the area that experiences the deepest water and highest velocities. The 500-year floodplain is the area covered by a flood that has a 0.2 percent chance of occurring in any given year.

A review of the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps 5155310083G and 5155310084G, effective January 16, 2015, revealed the eastern portion of the project area, between Corporate Park Lane and Columbus Street, contains portions of the 100-year floodplain (Zone AE) and has a base flood elevation of 7 feet, and the 500-year floodplain (Shaded Zone X). The remainder of the project area is designated as Unshaded Zone X, or areas within minimal flood hazard. The floodplains within the project area are depicted on **Exhibit 19**.

As discussed in **Section 1.3.3**, localized flooding occurs within and around the project area. During the 100-year storm, localized flooding creates impassable road conditions for the following general areas:

- From the Charles Barker Collision Repair Center (approximately 500 feet east of Opal Avenue) to Horace Avenue
- From Horace Avenue to Virginia Beach Boulevard
- From Kellam Road to Virginia Beach Boulevard, and
- From Corporate Park Lane to Independence Boulevard

Flooding ranges a few inches to over 1.5-feet in the 10-year storm and over 2-feet in the 100-year storm. The flooding between the Charles Barker Collision Repair Center and Horace Avenue is largely caused by undersized storm sewer and lack of stormwater storage. The flooding between Corporate Park Lane and Independence Boulevard is caused by a high tailwater from Thalia Creek, a large upstream drainage area with minimal stormwater storage, and low roadway elevations. These conditions are a hazard for motorists and pedestrians and ultimately render the Virginia Beach Fire Station #7 inaccessible during heavy tailwater conditions.

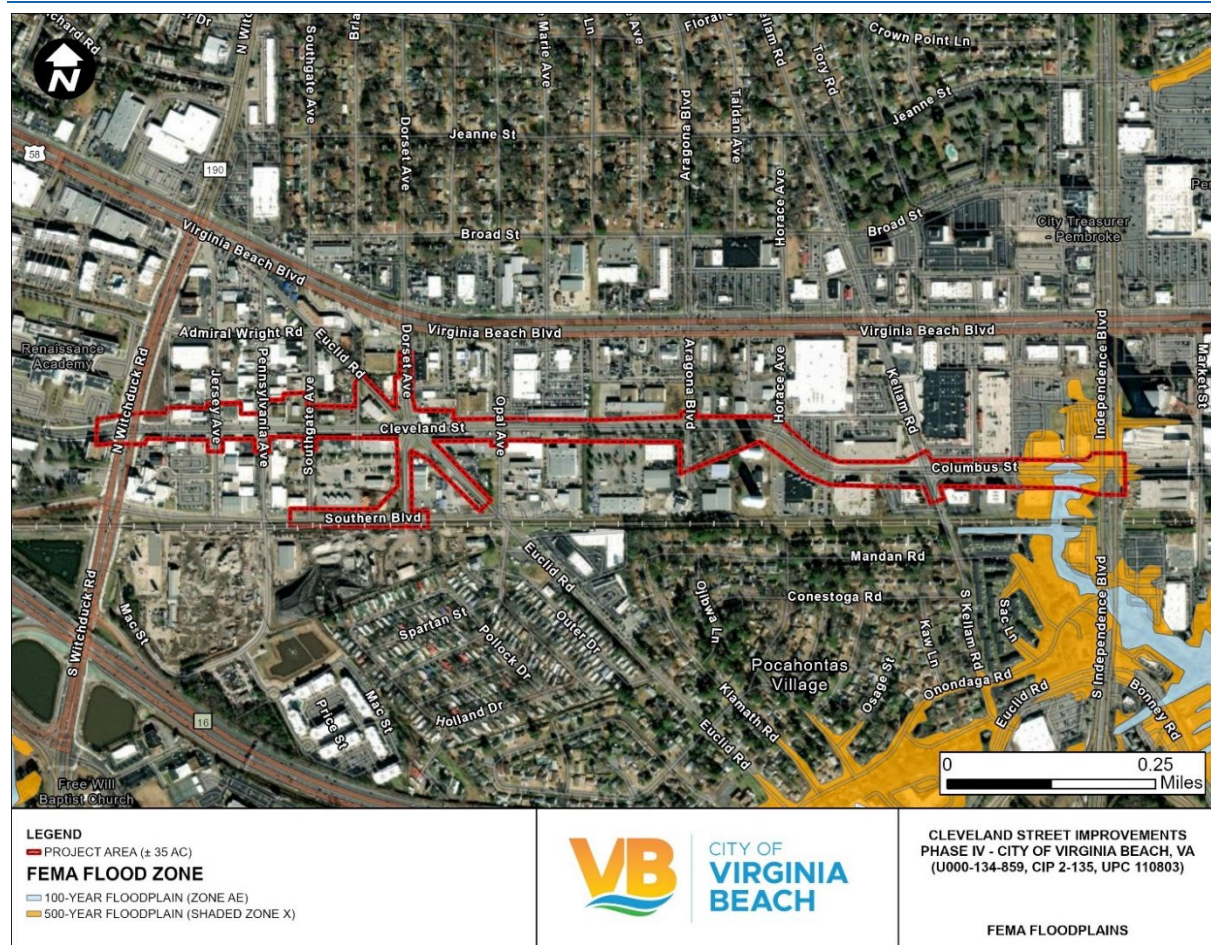


EXHIBIT 19. FLOODPLAINS

No Build Alternative

With implementation of the No Build Alternative, no stormwater improvements would occur and therefore, no changes to floodplains would occur. Localized flooding would continue to worsen and prevent safe access throughout the project area. The Virginia Beach Fire Station #7 would be inaccessible during high tidal conditions, which would occur more frequently in the future due to continued and potentially increasing localized flooding. Hazards to motorists and pedestrians would worsen throughout the project area.

Build Alternative

The Build Alternative proposes the stormwater improvements discussed in **Section 3.6** to mitigate the localized flooding within the project corridor. Ultimately, the Build Alternative would upgrade the existing stormwater infrastructure to maintain an accessible route for the motoring public. In addition, the proposed stormwater improvements would ensure emergency response is not impacted during inclement weather events. Most notably, the Build Alternative would complete necessary requirements to raise the project area out of the 100-year floodplain, which would have a positive impact on localized flooding throughout the project area and the surrounding community.

3.8 THREATENED AND ENDANGERED SPECIES

To characterize the biological resources of the project area and identify known federal and state listed threatened and endangered (T&E) species with potential for occurrences and habitat within the project area, the following methodology was used:

1. Conducted a site visit on August 23, 2023, to document the general habitat/land cover within the project area.
2. Reviewed the USFWS Information for Planning and Conservation (IPaC) tool on August 3, 2023, March 20, 2024, June 19, 2025, and August 13, 2025, for the presence of federal T&E species with the potential to occur within the project area. USFWS was also solicited for project comments on August 16, 2023.
 - a. *Findings:* The Official Species List from USFWS revealed evidence of the following species as having potentially to occur within the project area.
 - i. Northern-long eared bat (*Myotis septentrionalis*, NLEB) – Federally and State Endangered
Although this species was identified as potentially occurring within the project area, the project area was identified as being located outside of the consultation range for this species on DWR's Threatened and Endangered Bats application. Furthermore, all project improvements will take place in a highly developed area in the City of Virginia Beach. Therefore, no impacts to this species or its preferred habitat are anticipated.
 - ii. Tricolored bat (*Perimyotis subflavus*, PESU) - State Endangered
Although this species was identified as potentially occurring within the project area, no known PESU hibernaculum was identified immediately within or within a two-mile radius of the project corridor on DWR's Threatened and Endangered Bats application. Furthermore, all project improvements will take place in a highly developed area in the City of Virginia Beach. Therefore, no impacts to this species or its preferred habitat are anticipated.
 - iii. Monarch Butterfly (*Danaus plexippus*) – Candidate Species
Although the project area was identified as having proposed critical habitat for this species, the project area is located in a highly developed area in the City of Virginia Beach and impacts to this species or its preferred habitat are not anticipated.
 - iv. The FHWA determination key was generated for the project area on June 19, 2025, and August 14, 2025, to determine any potential effects that the project may have on bat species. The project was found to have no effect determination for the NLEB and PESU.
 - b. The USFWS was solicited for comments on any potential effects to threatened and endangered species found within the project area on August 16, 2023. As of October 15, 2023, no comments were received from USFWS. Due to the no effect determinations for the NLEB and PESU generated from the FHWA determination key, further correspondence with USFWS is not anticipated to be required.
3. Reviewed the DWR's Virginia Fish and Wildlife Information Service (VaFWIS) on August 3, 2023, March 20, 2024, and August 12, 2025, and the Wildlife Environmental Review Service (WERMS) on March 20, 2024. VaFWIS and WERMS utilize a two-mile radius around the project area to identify known occurrences of federal or state T&E species. DWR was also solicited for project comments on August 16, 2023, and August 14, 2025.
 - a. *Findings:*
 - i. VaFWIS identified Peregrine Falcon (*Falco peregrinus*) as occurring within a two-mile radius of the project area. This species nests on rocky cliffs or manmade structures such as unfinished bridge piers, bridges, or skyscrapers, and may frequent coastal estuaries to hunt. The project area is located in a highly developed area in the City of Virginia Beach and impacts to this species or its preferred habitat are not anticipated.
 - b. DWR was solicited for comments on any potential effects to threatened and endangered species found within the project area on August 16, 2023, and August 14, 2025. DWR responded on August 14, 2025, stating they are unable to review the project and provide comments due to staffing limitations.

4. Reviewed DWR's NLEB Regulatory Buffer Interactive Tool and the Little brown bat (MYLU) and PESU Habitat Tool on August 3, 2023, and March 20, 2024. DWR's Threatened and Endangered Bats Interactive Tool was reviewed on August 12, 2025.
 - a. *Findings:*
 - i. The NLEB Regulatory Buffer Interactive Tool documented the project area is within the range of year-round presence for the NLEB.
 - ii. The MYLU and PESU Habitat Tool revealed no evidence of hibernacula or maternity roost trees within the project area or a two-mile radius.
 - iii. The project area was identified as being outside of the consultation range for NLEB but within the consultation range for PESU. No evidence of MYLU was identified in the vicinity of the project area.
5. Reviewed VDCR's Natural Heritage Data Explorer (NHDE) to identify natural heritage resources within the project area and a 100-foot buffer and submitted the project to VDCR for comment on August 3, 2023, and August 12, 2025.

Findings: VDCR responded to the request for comments on August 3, 2023, and August 12, 2025, stating "According to the information currently in Biotics, natural heritage resources have not been documented within the submitted project boundary including a 100-foot buffer. In addition, the project area does not intersect any of the predictive models identifying potential habitat for natural heritage resources.... Based on the preliminary screening results for this project, no further correspondence will be sent from this office."
6. Reviewed the Center for Conservation Biology's Mapping Portal on August 3, 2023, March 20, 2024, and August 12, 2025, to identify known bald eagle nests.
 - a. *Findings:* The closest bald eagle nest to the project area is located approximately 1.4 miles southeast along the Eastern Branch of the Elizabeth River. No bald eagle nests were identified within the project area.
7. Reviewed the Center for Conservation Biology's Mapping Portal on August 12, 2025, to identify colonial waterbird bird nesting locations.
 - a. *Findings:* The closest colonial waterbird bird nesting location to the project area is located approximately 1.5 miles northeast along Thalia Creek. No nesting locations were identified within the project area.

Based on the above methodology, no habitat or evidence of federal or state T&E species was identified within the project area. T&E database results are provided in **Appendix F** and agency correspondence is provided in **Appendix G**.

No Build Alternative

With implementation of the No Build Alternative, no construction would occur and there would be no impact to federal or state T&E species.

Build Alternative

Since evidence of T&E species was not identified during the database review and no potentially suitable habitat was identified during the site visit, there would be no impact to T&E species or suitable habitat with implementation of the Build Alternative.

3.9 AIR QUALITY

Under NEPA, federal agencies must consider the effects of their decisions on the environment before making any decisions that commit resources to the implementation of those decisions. Changes in air quality, and the effects of such changes on human health and welfare, are among the effects to be considered. A project-level air quality analysis was performed to assess the potential air quality impacts of the project, document the findings of the analysis, and make the

findings available for review by the public and decision-makers. The Air Quality Technical Report was approved by VDOT in April 2024, and is provided in **Appendix H**.

Pursuant to the Federal Clean Air Act of 1970, the EPA is required to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and welfare. Federal actions must not cause or contribute to any new violation of any standard, increase the frequency or severity of any existing violation, or delay timely attainment of any standard or required interim milestone. EPA designates geographic regions that do not meet the NAAQS for one or more criteria pollutants as “non-attainment areas.” Areas previously designated as non-attainment, but subsequently re-designated to attainment because they no longer violate the NAAQS, are reclassified as “maintenance areas” subject to maintenance plans to be developed and included in a state’s implementation plan.

The project area is located within the City of Virginia Beach. At the time of preparation of the Air Quality Technical Report, the EPA Green Book shows the City of Virginia Beach to be designated as an attainment area for all criteria pollutants (EPA, 2024). Notwithstanding that listing in the EPA Green Book, federal conformity requirements, including specifically 40 CFR 93.114 and 40 CFR 93.115, apply for the project as the area in which it is located is one affected by a recent court decision that reinstates conformity requirements nationwide associated with the 1997 ozone NAAQS that had previously been eliminated with the revocation by EPA of that NAAQS in 2015. Accordingly, there must be a currently conforming transportation plan and program at the time of project approval, and the project must come from a conforming plan and program (or otherwise meet criteria specified in 40 CFR 93.109(b)).

No Build Alternative

The No Build Alternative would not result in construction and therefore no construction related activities would result in emissions. Emissions contributed by current traffic congestion would remain and likely worsen over time as demands increase on the corridor because of population growth and congestion levels. However, it is unlikely the No Build Alternative would result in a future violation of NAAQS.

Build Alternative

The Build Alternative was assessed for potential air quality impacts and compliance with applicable air quality regulations and requirements. All models, methods, protocols, and assumptions applied in modeling and analyses were made consistent with those provided or specified in VDOT’s Project-Level Air Quality Analysis Resource Document (2023). The Air Quality Technical Report indicates the Build Alternative would meet all applicable air quality requirements of NEPA and federal and state transportation conformity regulations. As such, the Build Alternative would not cause or contribute to a new violation of the NAAQS established by EPA. A discussion of specific impacts related to Mobile Source Air Toxics (MSATs) and Carbon monoxide (CO) is included below and discussed in further detail in **Appendix H**.

Mobile Source Air Toxics (MSATs)

FHWA guidance states the following:

EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment⁶. These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter, ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. (FHWA, 2023)⁷

⁶ FHWA, “Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents.” Accessed March 2024: https://www.fhwa.dot.gov/environment/air_quality/air_toxics/

⁷ FHWA, “Transportation & Toxic Air Pollutants.” Accessed March 2024: <https://www.epa.gov/national-air-toxics-assessment>

Following FHWA guidance for projects with low potential impacts based on forecast traffic volumes and other technical criteria, a qualitative assessment of potential MSAT impacts was conducted. Based on the assessment, best available information indicates, nationwide and regional levels of MSATs are expected to decrease in the future due to ongoing fleet turnover and the continued implementation of increasingly more stringent emission and fuel quality regulations. Nonetheless, technical shortcomings of emission and dispersion models and uncertain science with respect to health effects effectively limit meaningful or reliable estimates of MSAT emissions and the effects from the project at this time. While it is possible that localized increases in MSAT emissions may occur as a result of the Build Alternative, emissions would likely be lower than present levels in the design year of this project as a result of EPA's national control programs that are projected (in the FHWA 2023 Guidance) to reduce annual MSAT emissions by 76 percent between 2020 and 2060, while VMT are expected to increase on a national level by 31 percent. Although local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the project area are likely to be lower in the future in nearly all cases.

Carbon Monoxide (CO)

As this project is located within a region in attainment of the CO NAAQS, it is not subject to project-level hot-spot transportation conformity requirements defined by the EPA. To meet applicable NEPA standards, the FHWA-VDOT Programmatic Agreement for Project-Level Air Quality Analysis for Carbon Monoxide was applied to this project. The Cleveland Street Phase IV Improvements qualifies for this programmatic agreement because the project is consistent with the project types and conditions listed in the agreement between FHWA and VDOT. A project-specific qualitative assessment determined that this project would not cause or contribute to a future violation of NAAQS for CO.

3.10 NOISE

The project's 30% design plans were provided to VDOT in August 2023. On September 18, 2023, VDOT confirmed the project is considered a Type III improvement project and therefore does not require further analysis. Correspondence with VDOT and the Noise Scoping Form are provided in **Appendix I**.

No Build Alternative

The No Build Alternative would not result in noise impacts in the project area.

Build Alternative

Noise impacts may temporarily occur during construction of the Build Alternative. Any construction noise impacts that occur because of the roadway construction measures are anticipated to be temporary in nature and would cease upon completion of the project construction phase. The contractor would be required to conform to the construction noise specifications found in VDOT's *2020 Road and Bridge Specifications*, Section 107.16(b.3), "Noise" to reduce the impact of construction noise on the surrounding community.

3.11 HISTORIC RESOURCES

Cultural resources are physical manifestations of culture, specifically archaeological sites, architectural properties, ethnographic resources, and other historical resources relating to human activities, society, and cultural institutions that define communities and link them to their surroundings. The National Register of Historic Places (NRHP) is a listing maintained by the Federal government of prehistoric, historic, and ethnographic buildings, structures, sites, districts, and objects that are considered significant at a national, state, or local level. Cultural resources listed on the NRHP, or determined eligible for listing, have been documented and evaluated according to uniform standards, found in 36 CFR 60.4, and regardless of age, are called *historic properties*. The Virginia Landmarks Register (VLR) is the official list of structures, sites, objects, and districts that

embody the historical and cultural foundations of the nation. The VLR is maintained by the Virginia Department of Historic Resources (DHR).

Section 106 of the National Historic Preservation Act (NHPA) (16 USC § 470) as amended requires that federal agencies allow the Advisory Council on Historic Preservation an opportunity to comment whenever their undertakings may affect resources that are listed, or determined eligible for listing, on the NRHP or VLR. Additionally, prior to the approval of an expenditure of any federal funds for an undertaking that may affect a NRHP or VLR resource, consultation procedures must be initiated with the respective State Historic Preservation Officer in accordance with the NHPA. The Virginia State Historic Preservation Officer is DHR.

Therefore, in accordance with Section 106 of the NHPA, an Architectural Survey for the Cleveland Street Phase IV Improvements project was completed by Commonwealth Heritage Group, LLC (Commonwealth) in September 2023. The purpose of the survey was to determine if architectural resources that are on, eligible for, or potentially eligible for listing in the NRHP are present in the project's Area of Potential Effects (APE). The APE for direct effects for this project consists of the construction limits of disturbance and anticipated construction staging areas, a total of 35.7 acres. The APE for indirect effects is defined as architectural resources on parcels extending into the project area or that are clearly visible from the project area, as shown on **Exhibit 20**.

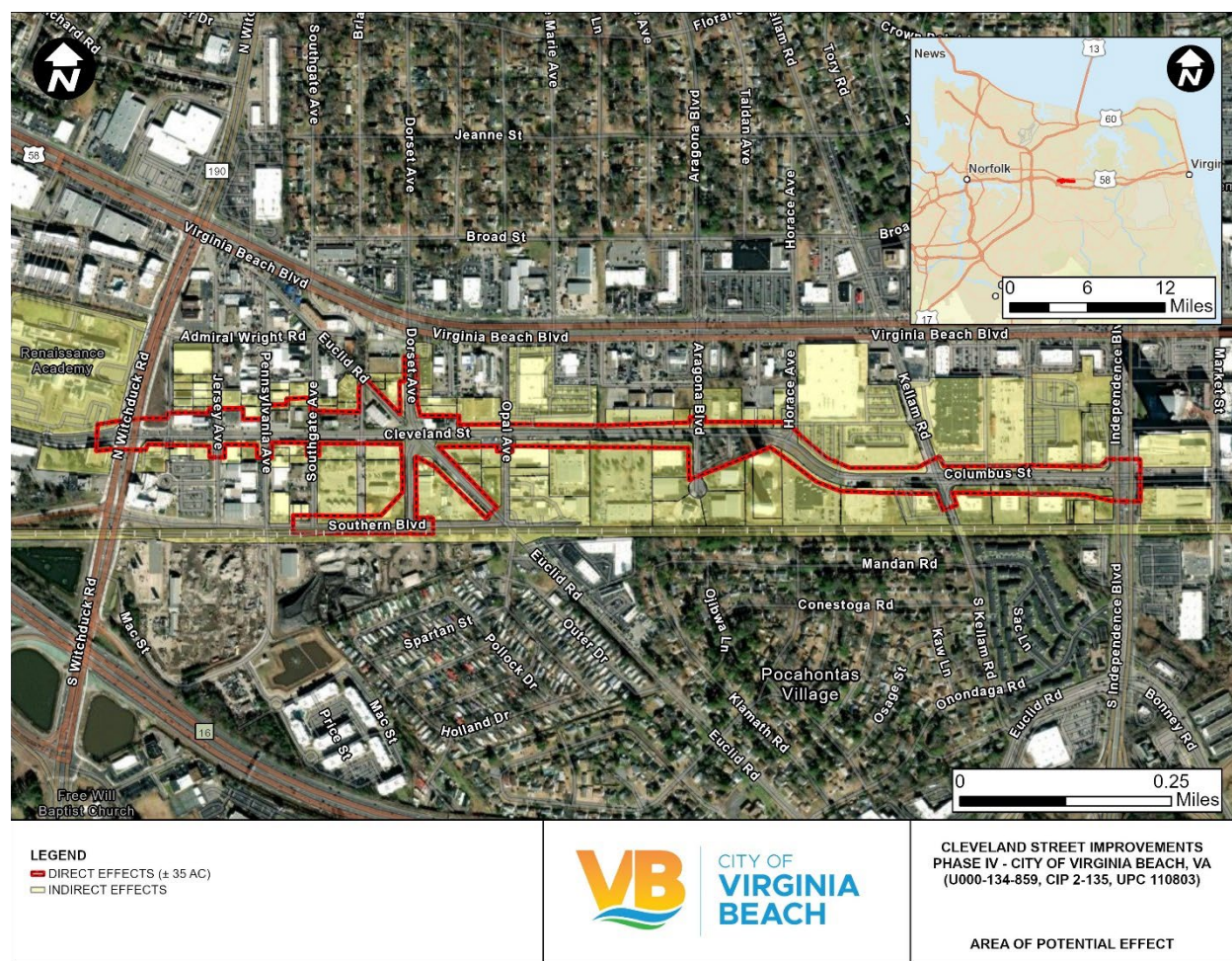


EXHIBIT 20. AREA OF POTENTIAL EFFECTS

Examination of the Virginia Cultural Resources Information System (V-CRIS) indicated there are eight previously recorded architectural resources within the APE, several which were recorded in 2015. The resources include a sculpture, a segment of the Norfolk and Virginia Beach Railroad, a former African American training school, commercial buildings, offices, and warehouses (DHR#s 134-0976, 134-5052, 134-5145, 134-5321, 134-5323, 134-5324, 134-5326, 134-5328). All the resources except for two were previously determined not eligible for the NRHP and were recommended to remain so. The Norfolk and Virginia Beach Railroad (DHR# 134-5145) was determined eligible for the NRHP in 2008 and was recommended to remain eligible. The Princess Anne Training School (DHR# 134-5052) was determined potentially eligible for the NRHP in 2005 but has since been razed. A summary of previously recorded architectural resources within the APE are summarized on Page 6 in **Appendix J**.

The architectural survey revealed 49 newly recorded above-ground architectural resources within the APE. The newly recorded resources include primarily commercial buildings, auto garages or repair shops, and warehouses except for two dwellings, one of which has been converted to an office, a mobile home park, and three municipal utility resources. The newly recorded resources are recorded in V-CRIS as DHR#s 134-6098 through 134-6146. The resources were constructed between 1955 and 1978. All the newly recorded resources were recommended as not eligible for listing in the NRHP. The newly recorded architectural resources identified during the Architectural Survey are summarized on Pages 5 and 6 in **Appendix J**.

In correspondence dated January 24, 2024, DHR concurred the following resources are not eligible for inclusion in the NRHP: 134-0976, 134-5321, 134-5323, 134-5324, 134-5326, 134-5328, and 134-6098 through 134-6146 (inclusive). DHR also concurred the Norfolk and Virginia Beach Railroad (DHR ID #134-5145) should remain eligible for listing in the NRHP. The Architectural Survey and correspondence with DHR are provided in **Appendix J**.

No Build Alternative

The No Build Alternative would not result in any project-related construction and would therefore not result in any Section 106 effects to archaeological or architectural historic properties.

Build Alternative

The portion of the project area located along Southern Boulevard is immediately north of DHR ID# 134-5145. The proposed improvements consist of widening Southern Boulevard by two-feet, constructing sidewalks and installing curb and gutter along the north side of the road (opposite side of the railroad), constructing a two-foot-wide paved shoulder on the south side, and re-grading portions of a roadside ditch located immediately adjacent to Southern Boulevard between the existing road and DHR ID# 134-5145. The ditch would be re-graded from the existing Dorset Avenue intersection up to 650-feet to the west. The Build Alternative would not require ROW acquisition from the parcel on which DHR ID# 134-5145 is located. However, the project would require minor encroachment south of the existing road into the parcel on which DHR ID# 134-5145 is located for construction of the two-foot-wide paved shoulder and to re-grade the existing ditch. The edge of pavement for the existing road is located approximately 25 feet from the railroad centerline and the proposed edge of pavement for the reconstruction would be located approximately 23 feet from the railroad centerline. The ditch centerline would remain in the current location and all re-grading would be limited to the ditch foreslope adjacent to the road. The Architectural Survey Form for DHR ID# 134-5145 describes the railroad line as retaining the rail bed, wood ties, and metal rails. None of these elements would be impacted by the proposed project.

Based on correspondence with DHR dated March 21, 2024, the Cleveland Street Phase IV Improvements project would have no adverse effect on the Norfolk and Virginia Beach Railroad (DHR ID# 134-5145).

3.12 SECTION 4(F) RESOURCES

Section 4(f) of the U.S. Department of Transportation Act of 1966 affords special protection to the following resources:

- Parks and recreational areas of national, state, or local significance that are both publicly owned and open to the public.
- Publicly owned wildlife and waterfowl refuges of national, state or local significance that are open to the public to the extent that public access does not interfere with the primary purpose of the refuge.
- Historic sites of national, state or local significance in public or private ownership, regardless of whether they are open to the public.

Use of a Section 4(f) property occurs when: (1) land is permanently incorporated into a transportation facility; (2) there is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose, or (3) there is a constructive use (the project's impacts are so severe that the protected activities, features, or attributes of an adjacent property are substantially impaired).

A *de minimis* impact is one that, after taking into account all measures to minimize harm (such as avoidance, minimization, mitigation, or enhancement measures), results in a determination that the project will not adversely affect the activities, features, or attributes of the property. A *de minimis* determination requires concurrence from the Official with Jurisdiction (FHWA, 2024). Since the Norfolk and Virginia Beach Railroad (DHR ID# 134-5145) was recommended eligible for inclusion in the NRHP, the Official with Jurisdiction for the proposed use of the DHR ID# 134-5145 is DHR.

DHR was solicited for comments on any potential impacts to the railroad. DHR responded on March 21, 2024, stating that the project will have no adverse effect on the Norfolk and Virginia Beach Railroad. On December 10, 2025, FHWA concurred with the *de minimis* determination pursuant to Section 4(f) of the Department of Transportation Act. Section 4(f) documentation is provided in **Appendix K**.

No Build Alternative

The No Build Alternative requires no ROW acquisition and has no impacts to any Section 4(f) protected properties or resources.

Build Alternative

The Build Alternative would result in a *de minimis* impact to Norfolk and Virginia Beach Railroad. Pursuant to 23 CFR 774.5(b) and 774.7(b), the public would be afforded an opportunity to review and comment on Section 4(f) documentation during the public comment period and public hearing.

3.13 HAZARDOUS MATERIALS

To determine if there are known or suspected hazardous materials and/or petroleum releases within the project area or its immediate vicinity, a Limited Review for Hazardous Material was performed for the project area in February 2024. The Limited Review for Hazardous Material was completed utilizing a state and federal database review conducted by Environmental Data Resources (EDR) dated January 10, 2024, for properties within and adjacent to the project corridor. A site visit was also conducted on August 23, 2023, to identify and photograph land uses which may have adversely impacted the environmental integrity of the site. The site visit was limited to a review of the project corridor and adjacent properties from public thoroughfares. Prior to the site visit, the following GIS database information from the VDEQ was reviewed for the project corridor:

- Registered Tank Facilities
- Petroleum Releases

- Resource Conservation and Recovery Act Corrective Action Sites
- Voluntary Remediation Program Sites
- Small and Large Quantity Hazardous Waste Generators

Following the site visit, review of VDEQ GIS data, and the EDR state and federal database review, parcels within and adjacent to the project area were determined to be a “Parcel of Interest” if the following criteria were met:

- The parcel is a registered above ground storage tank (AST) or underground storage tank (UST) facility,
- A Pollutant Complaint (PC) was filed with the VDEQ for the parcel,
- A spill was reported within the parcel,
- The parcel was listed in the Historic Drycleaners database, or
- The parcel was listed in the Historic Automotive database

The Limited Review for Hazardous Material identified twenty-two (22) Parcels of Interest within the project area and nineteen (19) Parcels of Interest adjacent to the project area. The Limited Review for Hazardous Material is provided in **Appendix L**.

No Build Alternative

Under the No Build Alternative, no project-related construction would occur, and therefore no impacts to or from hazardous material sites would result. No improvements or further assessment efforts would be completed for the identified Parcels of Interest.

Build Alternative

The Build Alternative requires 13 parcels to be permanently acquired for ROW. Of the 13 parcels to be permanently acquired, the following three were identified as Parcels of Interest located within the project corridor:

- Metro Towing and Auto Repair: This site is a registered tank facility and has a closed PC from 2000.
- Mechanical Equipment Sales: This site is an UST facility with a closed PC from 1996 for contamination observed near an UST.
- Mobile Home Community: An individual was reportedly pumping the contents of a septic tank to a storm sewer drain in November 2017.

In addition, the Build Alternative would require partial takes for permanent and temporary easements from the following Parcels of Interest located adjacent to the project corridor:

- Tidewater Kwick Klean: This site was a historic drycleaning facility in 1995.
- Hurst George Transmission & Phillips Automotive: This site is a historic automotive facility for transmission repairs (1987-2006) and is a registered tank facility for USTs and ASTs.
- 7-Eleven: This site is an active fueling station with USTs.
- Bob S Auto Repair: This site is a historic automotive facility for repairing and service (1995).
- Former Allied Technology Group: In March 2008 there was an apparent commercial structure fire. The fire department used foam to suppress the fire and foam entered a City sewer.
- Former HQ Building: This site is a registered tank facility and has a closed PC from 2007.
- Becker WM H & SJ Teitelman and the City of Virginia Beach: This site is a registered tank facility and has a closed PC from 1991.
- US Postal Service: This site is a registered tank facility and has a closed PC from 1994.

- Columbus Street Water Pump Station: This site is a registered tank facility. In December 2020 there was a complaint alleging a flooring and cabinet company located on the west side of the building was illegally spraying chemical polymer finishing and paint on cabinets and flooring products without use of a required spray booth.
- 4933 Cleveland Street: This site has a closed PC from 2017.
- 4971 Cleveland Street: In October 1992 there was apparent dumping of anti-freeze.
- Euclid Maintenance Yard / Virginia Beach Consolidated Fuel Site: This site is a petroleum manufacturer and is a registered tank facility with multiple PCs.

Prior to acquisition and construction, Phase I Environmental Site Assessments would be conducted on the parcels proposed for full or partial acquisition. During that effort, available VDEQ documentation would also be reviewed for the identified Parcels of Interest to better understand the potential, for contaminants of concern to impact the project area. If encountered during construction, impacted soil or groundwater would be handled in accordance with all applicable state regulations. Therefore, no impacts to or from existing hazardous material sites are anticipated with implementation of the Build Alternative.

3.14 CONSTRUCTION IMPACTS

During construction, temporary environmental impacts usually can be controlled, minimized, or mitigated through careful attention to prudent construction practices and methods. Potential temporary construction impacts and preventive practices are summarized below.

3.14.1 Water Quality

During construction, non-point source pollutants could possibly enter groundwater or surface water from storm water runoff. To minimize these impacts, appropriate erosion and sediment control practices would be implemented in accordance with VDOT's most current Road and Bridge Specifications. These specifications also prohibit contractors from discharging any contaminant which may affect water quality. In the event of accidental spills, the contractor is required to immediately notify all appropriate local, state, and federal agencies and to take immediate action to contain and remove the contaminant.

3.14.2 Air

Air quality impacts from construction, consisting of emissions from diesel-powered construction equipment, burning of debris, fugitive dust, and the use of cutback asphalt (particularly during the months of April through October), would be temporary. This project would comply with all applicable local, state, and federal regulations, including the Virginia Environmental Regulation 9 VAC 5-40-5600 et seq. regarding open burning, 9 VAC 5-50-60 et seq. regarding fugitive dust emissions, and 9 VAC 5-40-5490 et seq. regarding cutback asphalt. To control dust, measures would be taken to minimize exposed earth by stabilizing with grass, mulch, pavement, or other cover as early as possible. Other measures would be implemented per VDOT's most current Road and Bridge Specifications to minimize air pollution.

3.14.3 Noise

Land uses that would be sensitive to traffic noise would also be sensitive to construction noise. A method of controlling construction noise is to establish the maximum level of noise that construction operations can generate. In view of this, VDOT has developed and FHWA has approved a specification that establishes construction noise limits. This specification can be found in VDOT's most current Road and Bridge Specifications. The contractor would be required to conform to this specification to reduce the impact of construction noise on the surrounding community.

3.14.4 Solid Waste and Hazardous Materials

All solid waste material resulting from clearing and grubbing, demolition, or other construction operations would be removed from the project and disposed of in an appropriate manner. If

contaminated soils are encountered during construction, VDOT would develop and implement appropriate procedures for their proper management and coordinate the removal, disposal, and/or treatment of the soil, as necessary. If contaminated groundwater is encountered during construction, the City of Virginia Beach would implement appropriate specifications for proper management and treatment of the water, as necessary.

3.14.5 Late Discoveries

During construction, should the discovery of archaeological, paleontological, or rare mineralogical articles occur, work would be suspended immediately. VDOT's Road and Bridge Specifications establish the protocol that would be followed should a "late discovery" occur.

3.15 REASONABLY FORSEEABLE EFFECTS

This section addresses potential reasonably foreseeable effects the Build Alternative could cause within the project corridor and surrounding area.

The Build Alternative would improve local roadway connectivity and traffic, construct and enhance pedestrian and bicycle accommodations, and improve overall safety within the project corridor. These improvements would contribute to the relationship between local roadways and adjoining communities and therefore pedestrian and vehicular traffic may increase within the project area. The existing businesses within the project corridor may benefit from the increased visitation to the project area, which may create positive effects for income and land use redevelopment. Additionally, the Build Alternative would complete the vital connection between the I-64 and I-264 interchange and Independence Boulevard, which would allow future redevelopment of the Pembroke SGA. The proposed improvements would also have positive benefit on adjacent populations, and housing communities by improving safety and access to the various community resources throughout the project area.

Additionally, the Build Alternative would improve housing safety for the mobile home community by removing it from the roadway clear zone. While the Build Alternative requires the acquisition of commercial businesses, it is anticipated to have long-term benefits on income and employment in the broader community by supporting the vision outlined in the Pembroke SGA Implementation Plan.

The Build Alternative may cause temporary effects on air quality and noise during construction but was determined to not cause reasonably foreseeable effects to the surrounding community. To mitigate potential temporary effects on air quality and noise, the contractor would be required to conform to the construction specifications found in VDOT's *2020 Road and Bridge Specifications*, Section 107.16(b.2), "Air" and Section 107.16(b.3), "Noise" to reduce potential air quality and construction noise impacts on the surrounding community.

The Build Alternative would improve water quality and floodplains through the proposed stormwater upgrades. Proposed stormwater improvements would subtract 2.11 acres of impervious area provide a nutrient credit of 0.25 lbs./yr. to the Elizabeth River watershed and subtract 12.49 acres of impervious area and provide a nutrient credit of 4.24 lbs./yr. to Thalia Creek and exceed the phosphorus removal requirements for stormwater drainage to Thalia Creek by 7.89 lbs./yr. Additionally, the Build Alternative would improve water quality and floodplains by further evaluating and remediating hazardous materials/contamination at some of the existing Parcels of Interest within the project area. This would reduce potential contaminated runoff from entering Thalia Creek and the Elizabeth River's stormwater infrastructure.

The Build Alternative would require franchise utility relocations along the corridor. The utility relocations are anticipated to include moving up to twenty-four (24) power poles carrying three-phase power at the intersections of Dorset Avenue and Kellam Road and along the corridor between Opal Avenue and the mobile home parcel. Approximately 10 of the 24 power poles also carry overhead cable, telephone, and fiber optic communication lines that would be relocated with the power poles. Franchise utility easements are proposed along the corridor in areas of these

relocations across those private properties fronting the corridor and not included in the total acquisitions. Public utility impacts would include the removal and replacement of water and sanitary sewer services to the adjacent parcels as well as replacement of aged and undersized sanitary sewer and water mains within the corridor. Additional offsets or relocations of both public and franchise utilities are probable as conflicts with the proposed storm sewer design are identified and resolved.

Based on DHR's finding of no adverse effect, the Build Alternative is not anticipated to impact historic resources or Section 4(f) resources. While the Build Alternative would require commercial and residential relocations, the residential relocations would benefit the mobile home community by removing units from the roadway clear zone. Further, the City would provide relocation assistance to the owners and tenants of the mobile homes, to include moving expenses and replacement housing payments. No reasonably foreseeable effects are anticipated for the residential or commercial relocations since the Build Alternative would provide relocation assistance to residential and commercial businesses in accordance with the Uniform Relocation Assistance and Real Property Acquisitions Policy Act of 1970, as amended.

The Build Alternative is not anticipated to affect natural resources. Adverse impacts to floodplains, historic resources, and Section 4(f) resources would not occur and there would be no long-term impacts on noise or air quality. Existing contamination on the identified Parcels of Interest would be mitigated through future development initiatives. The project would improve local water quality by providing stormwater improvements and would help achieve the City's land use vision for the project area as identified in the Pembroke SGA Implementation Plan.

4 PUBLIC INVOLVEMENT

The environmental document has been prepared in accordance with the *National Environmental Policy Act of 1969* and under FHWA regulations found in 23 CFR 771. As part of the proposed project, initial outreach and coordination was conducted in January 2024 with the owners of the parcels identified for acquisition. A second round of outreach and coordination is planned for Summer 2025. Outreach and coordination efforts are summarized in **Appendix D**.

4.1 Agency Coordination

In the process of preparing this document, local, state, and federal agencies were contacted to obtain pertinent information and to identify key issues regarding potential environmental impacts. The agencies listed below were engaged with during the preparation of the EA, further details are provided in **Appendix M**.

- United States Army Corps of Engineers
- United States Fish and Wildlife Service
- Virginia Department of Conservation and Recreation
- Virginia Department of Environmental Quality (Virginia Water Protection)
- Virginia Department of Historic Resources (State Historic Preservation Officer)
- Virginia Department of Wildlife Resources

4.2 Public Hearing

A public hearing would be held in Fall 2025 to present the preliminary project design and the findings of the EA and to obtain input and comments from the public and interested parties. The EA would be available for public review prior to and at the hearing. There would be a minimum 30-day public comment period following notice of availability of the EA. Any comment received during the public hearing or comment period would become part of the public hearing record and would be taken into consideration as the project develops.

The public would have the opportunity to review and comment on the Draft EA. Any comments or input received from the public would be incorporated into the Final EA.

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