3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter presents the existing environmental conditions (affected environment) of the resources in the Study Area Corridors and potential impacts (environmental consequences) of the No-Build and Build Alternatives. The discussion in this chapter is limited to the data, information, and issues that would have a bearing on possible impacts and mitigation measures and on the identification of a preferred alternative. The human and natural environmental resources were first identified to analyze how the proposed alternatives could potentially affect the environment. Issues were identified from input received from the agencies and the public through the scoping process, review of aerial photos and other mapping, desktop research, and field reconnaissance. Potential impacts of the alternatives are provided under each resource heading. Possible mitigation measures for unavoidable adverse impacts are introduced, where applicable.

The Study Area Corridors for detailed evaluation are generally defined as 250 feet on either side of the centerline of I-64, I-564, I-664, VA 164 and proposed new alignments (**Figure 3-1**). Areas around the interchanges included in the Study Area Corridors vary based on the footprint of proposed modifications. For example, where proposed modifications would mainly consist of tying into existing ramps, the footprint of the interchange is smaller; therefore, the area surrounding the interchange included for study is smaller. The area included for study is larger around the footprints of more extensively modified or newly proposed interchanges.

Potential impacts have been calculated using the limit of disturbance (LOD) for the proposed alternatives. The LOD was developed using the proposed pavement width of the mainline alternatives and the selected roadside design option (open section, guardrail section, retaining wall, or sound wall) based on the existing roadside conditions and constraints. The LOD is conservative and accounts for an additional 30 feet beyond the improvements to accommodate drainage, utilities, erosion and sediment control, and construction easements. Additional information on the LOD and the roadside design options are included in the *HRCS Alternatives Technical Report*. Potential impacts were calculated using the LOD and are provided by alternative in this chapter. More detailed impacts are provided by alignment segment in **Appendix A**. Recommendations for potential minimization and mitigation measures for unavoidable adverse impacts are provided for each resource.

Impacts are calculated based on environmental conditions as they exist at the time of this study. Separate projects within the HRCS Study Area Corridors (such as the I-564 Intermodal Connector) that are not yet complete or open to traffic are not considered part of the existing environment. Therefore, impacts quantified in this chapter do not take into account the impacts from these separate projects.

Additional detail, data, and information may be found in the following HRCS technical reports and memoranda:

- *Air Quality Technical Report*
- *Archaeological Assessment*
- *Architectural Survey: Management Summary*
- *Hazardous Materials Technical Memorandum*
- *Indirect and Cumulative Effects Technical Report*
- *Natural Resources Technical Report*
- *Noise Analysis Technical Report*
- *Right-of-Way and Relocation Technical Memorandum*
- *Socioeconomic and Land Use Technical Report*
- *Traffic and Transportation Technical Report*
- *Virginia Institute of Marine Science Technical Report*
- *Visual Resources Technical Memorandum*

Figure 3-1: Study Area Corridors

3.1 LAND USE

Methodology

Existing and potential future land uses within the Study Area Corridors were identified to provide a baseline for analysis of the potential impacts of the alternatives. The most recent available regional land use data compiled by the Hampton Roads Transportation Planning Organization (HRTPO) in 2011 is used in this analysis (HRTPO, 2011). Information on land use was also gathered from local comprehensive and land use plans, aerial photos, input from local and regional planning officials, and field reconnaissance. Area within the existing VDOT right-of-way in the vicinity of NAVSTA Norfolk is currently classified as military use; however, field reconnaissance has determined this land is used for the I-64 right-of-way.

Affected Environment

Hampton Roads is, for the most part, comprised of highly developed, well-established communities and commercial and industrial areas. The comprehensive plans of the six cities traversed by the Study Area Corridors indicate the cities of Hampton, Newport News, Norfolk, and Portsmouth are largely built-out, while the cities of Chesapeake and Suffolk have more undeveloped land. Regardless of the locality, the land in the Study Area Corridors is mostly developed.

As shown in **Table 3-1** and **Figures 3-2a through 3-2f**, current land use in the Study Area Corridors is primarily mixed-use, followed by open space, institutional, industrial, military, residential, and commercial. Transportation facilities are included in the institutional land use category and since this study focuses on highway corridors, the predominance of institutional land use is expected. Land use in the Study Area Corridors is likely more industrial and commercial than the Hampton Roads region as a whole, due to development located near key transportation access nodes (i.e., interstate interchanges) that provide for the efficient movement of goods, and easier access to services by the traveling public.

Table 3-1: Study Area Corridors Land Use (2011)

Land Use Class	Acres	Percent
Residential	160.3	7%
Commercial	68.6	3%
Mixed-Use	1,183.6	50%
Industrial	215.5	9%
Institutional	265.7	11%
Military	180.0	8%
Open Space	292.0	12%

Source: HRTPO (2011).

Environmental Consequences

The **No-Build Alternative** would not result in any project-related construction and would therefore not directly require any right-of-way acquisition. This alternative requires no land use conversion and would have no direct impact on land use. It is assumed that any locality-approved projects and land uses would continue to develop, as planned.

Figure 3-2a: Land Use in the Study Area Corridors

Figure 3-2b: Land Use in the Study Area Corridors

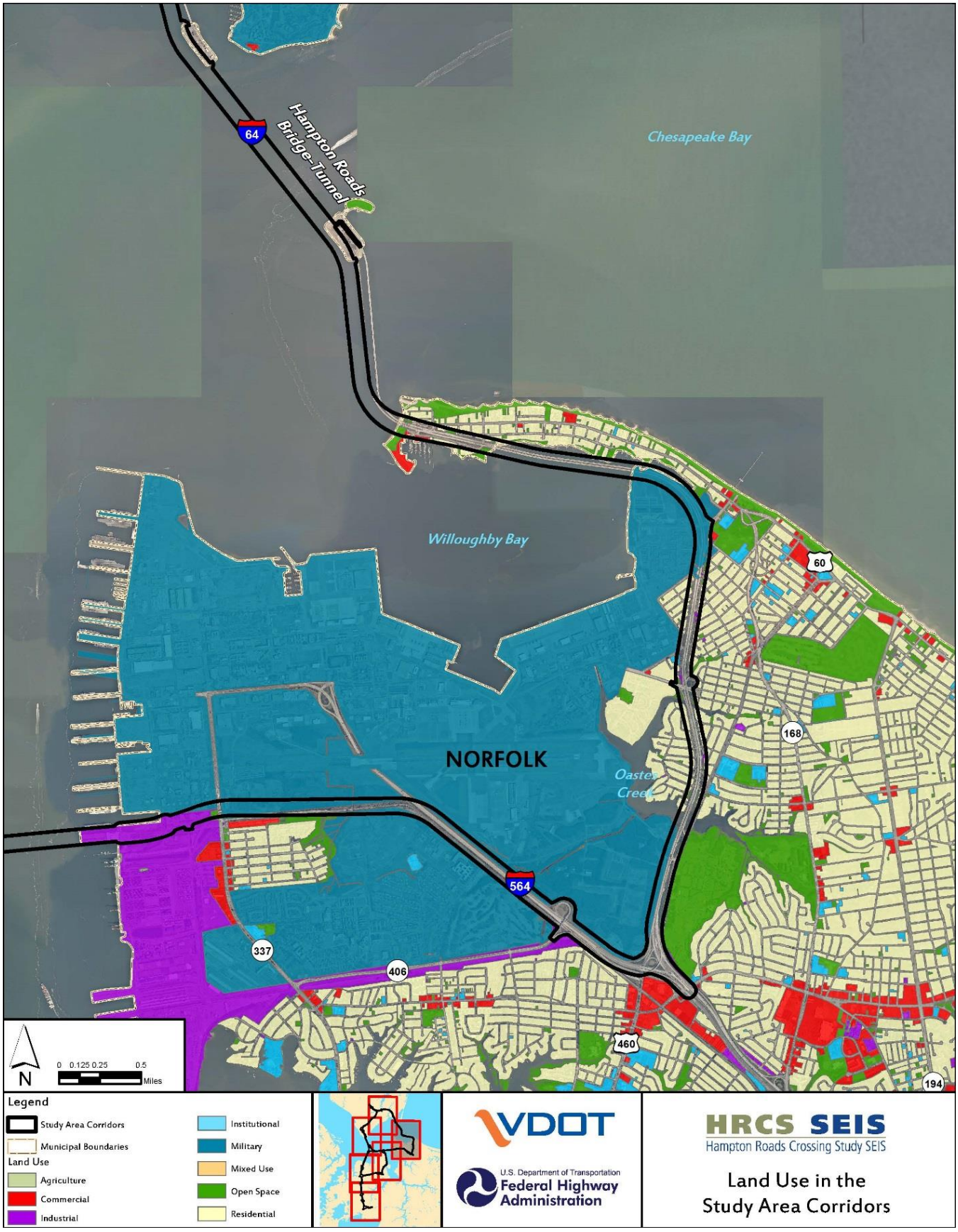


Figure 3-2c: Land Use in the Study Area Corridors

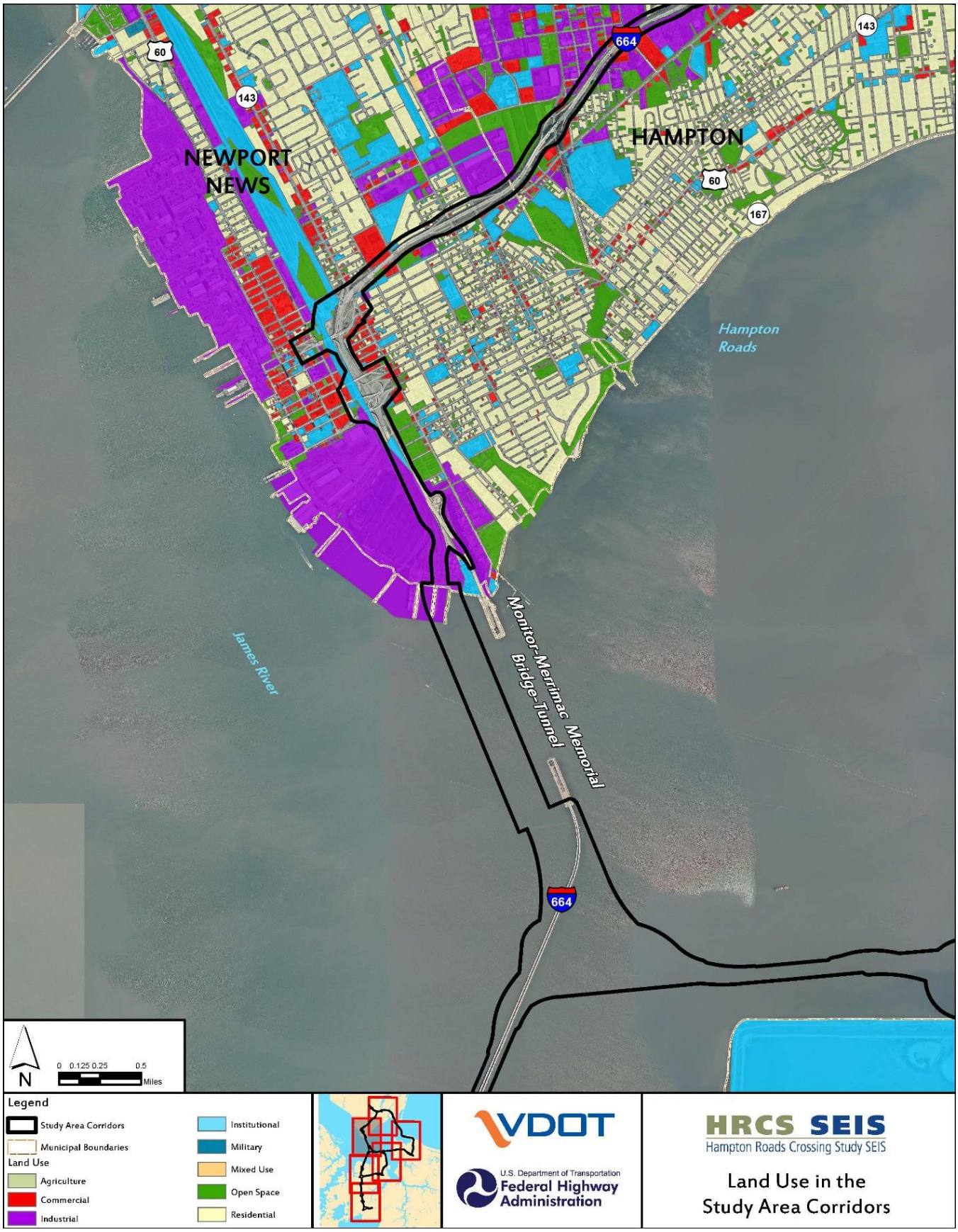


Figure 3-2d: Land Use in the Study Area Corridors

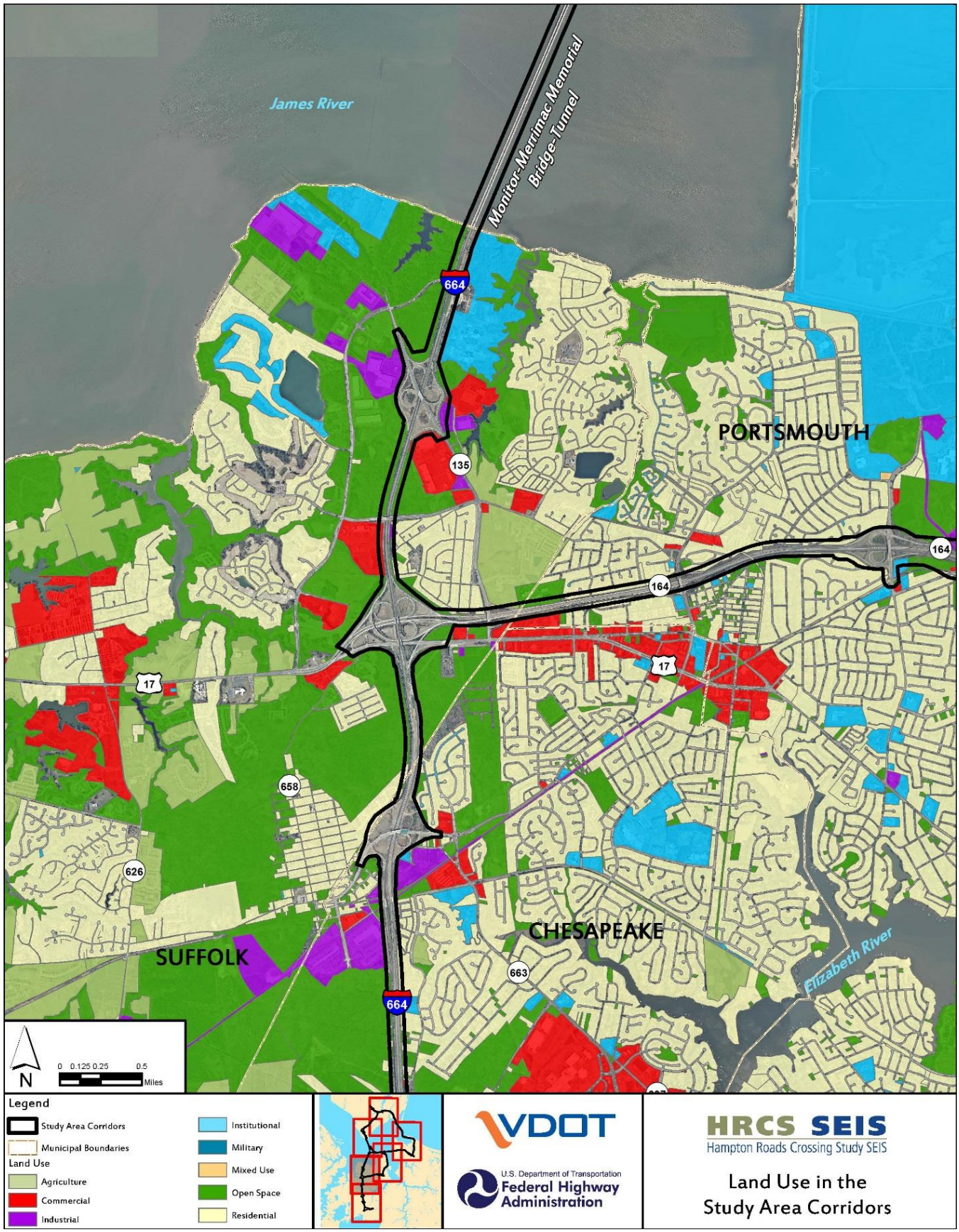
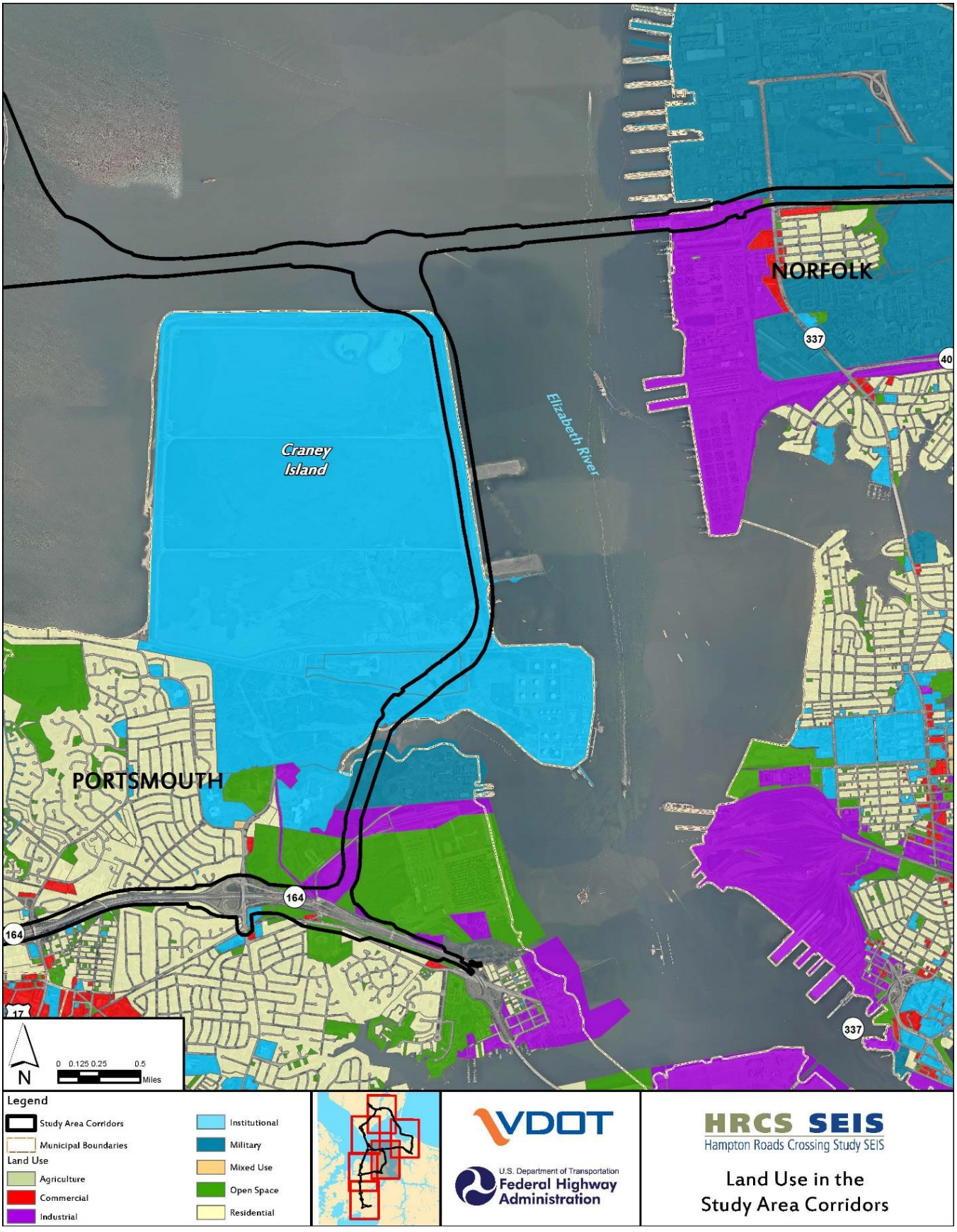


Figure 3-2e: Land Use in the Study Area Corridors

Figure 3-2f: Land Use in the Study Area Corridors



The **Build Alternatives** would each impact many different types of land use (**Table 3-2**). The conversion of land from its present use to transportation use would be a direct impact of construction of the Build Alternatives. Under **Alternative A**, the conversion of land use would be an expansion of adjacent transportation land use, as the improvements primarily expand existing roadways. Alternative A would require the conversion of 27.8 acres of land, the majority of which is designated as military land; however, much of this area is already in a transportation use (see **Figure 3-2b**). Most of the land use conversions under **Alternatives B, C, and D** would occur where new roadway would be constructed (along the eastern side of Craney Island Dredged Material Management (CIDMMA) connecting to VA 164). The remainder of the land use conversion consists of sliver takes along existing roadways and interchanges. **Alternative B** would require the conversion of 260.4 acres of land, the majority of which is institutional. **Alternative C** would require the conversion of 333.0 acres of land, the majority of which is industrial. **Alternative D** would require the conversion of 335.9 acres of land, the majority of which is institutional.

Table 3-2: Land Use Conversion by Build Alternative (acres)

Land Use Class	Alternative A	Alternative B	Alternative C	Alternative D
Residential	0.5	0.6	2.6	2.7
Commercial	1.8	3.1	6.3	7.5
Mixed Use	0	0	0	0
Industrial	0.7	72.1	119.9	112.1
Institutional	2.8	113.3	117.4	119.8
Military*	20.8	47.4	40.4	47.4
Open Space	1.2	23.9	46.4	46.4
TOTAL	**27.8**	**260.4**	**333.0**	**335.9**

Note: Land use coverage does not include water.
**Land within existing I-64 right-of-way in the vicinity of NAVSTA Norfolk is classified by HRTPO as military use (as shown on Figure 3-2b). Therefore, military land use conversion calculations are higher than anticipated.*

Mitigation

No adverse impacts to land use are anticipated; therefore, no mitigation is suggested.

3.2 SOCIOECONOMICS

3.2.1 Communities, Community Facilities, and Military Facilities

Methodology

Data on communities, community facilities, and military facilities was gathered using multiple sources. GIS data was compiled using: the VDOT Comprehensive Environmental Data and Reporting System (CEDAR) database (which is continually updated); data from Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, and Suffolk (2015 and 2016); and information from previous studies including the 2001 HRCS FEIS and ROD; the 2012 HRBT Draft EIS; and the 2003, 2011, and 2013 Re-evaluations of the 2001 FEIS. Online mapping tools were used, where possible, to verify community facilities such as parks and recreation areas. Published planning documents were used to define neighborhood and community boundaries. Finally, the features and facilities were verified in the field, where possible.

Communities, community facilities, and military facilities within the Study Area Corridors are identified in this section, and the potential impacts of the alternatives are assessed. Community facilities include cemeteries, medical facilities, police stations, religious institutions, schools/universities, and park or recreation areas that are open to the public. Potential effects are quantified in terms of the number of potential community facility displacements and qualitatively assessed based on changes to access or use.

Affected Environment

Communities

The Study Area Corridors span six cities on either side of Hampton Roads including: Chesapeake; Hampton; Newport News; Norfolk; Portsmouth; and Suffolk. Chesapeake is in a historically rural and agricultural area that experienced a large population boom at the turn of the century, and continues to be one of the fastest growing cities in the Hampton Roads region.

Hampton is located at the southern tip of the Peninsula and is divided into several planning districts, within which smaller communities and neighborhoods are located. Three large districts (Coliseum Central, Downtown, and Phoebus) and several smaller neighborhoods fall within the limits of the I-64 and I-664 Study Area Corridors.

Similar to Hampton, Newport News is located at the tip of the Peninsula and is divided into different planning districts. Newport News and is largely urban and industrial, with the exception of portions of the Southeast Community, which is largely residential.

Norfolk is characterized by its many distinct communities and neighborhoods as there are more than 125 active neighborhood civic leagues. Norfolk has a strong military presence and is home to the world's largest naval base, Naval Station Norfolk (NAVSTA Norfolk).

Portsmouth is an older, largely built-out city with established neighborhoods and a mature housing stock. The Study Area Corridor within the City's boundaries is limited to properties surrounding VA 164, also known as the "Western Freeway," and the area around CIDMMA and the Virginia International Gateway (VIG) Terminals.

Like Chesapeake, Suffolk is historically a rural and agricultural city that has experienced rapid suburban growth over the past fifty years due to a burgeoning population, greater accessibility, and suburban sprawl. Suffolk is still a predominantly rural area with two major centers of development: the historic downtown core located in central Suffolk and the more recently developed northern core.

Community Facilities

Locations of community facilities discussed in this section are listed in **Table 3-3**. These community resources provide services to communities and neighborhoods in and around the Study Area Corridors. A total of 42 community facilities are located in the Study Area Corridors. The majority are either religious facilities or schools/universities. There are no libraries, fire stations, or post offices within the Study Area Corridors.

Table 3-3: Community Facilities in the Study Area Corridors

Facility	Address	Locality
Cemeteries		
Hampton National Cemetery Phoebus Addition	West County Street	Hampton
Forest Lawn Cemetery	8100 Granby Street	Norfolk
Pentecostal Holiness Church Cemetery	6000 Arthur Avenue	Portsmouth
New Hope Baptist Church Cemetery	5000 Pughsville Road	Chesapeake
Medical Facilities		
Hampton Veterans Affairs Medical Center	100 Emancipation Drive	Hampton
Police Stations		
Chesapeake 4th Precinct – Western Branch	4764 Station House Road	Chesapeake
Newport News South Precinct	3303 Jefferson Ave	Newport News
Religious Facilities		
Kingdom Hall Jehovah's Witness	804 41st Street	Newport News
Alpha and Omega Christian Worship Center	1110 39th Street	Newport News
House of Judah Deliverance Center	3806 Roanoke Avenue	Newport News
Zion Baptist Church	125 West County Street	Hampton
First View Baptist Church	9124 1st View Street	Norfolk
Wesley Memorial United Methodist Church	288 East Little Creek Road	Norfolk
Churchland North Baptist Church	6201 Centenary Drive	Portsmouth
Pentecostal Holiness Church	6000 Arthur Avenue	Portsmouth
The Village Church of Portsmouth	3697 Pepperwood Court	Portsmouth
Alexander Baptist Church	4316 Pamela Court	Chesapeake
Living Waters Christian Fellowship Church	2700 Gum Road	Chesapeake
Believer's Church	4500 Peek Trail	Chesapeake
Schools/Universities		
Hampton High School	1491 West Queen Street	Hampton
Hampton University	100 East Queen Street	Hampton
Willoughby Elementary	9500 4th View Street	Norfolk
Old Dominion University Tri-Cities Higher Education Center	1070 University Boulevard	Portsmouth
Jolliff Middle School	1021 Jolliff Road	Chesapeake
Believer's Day School	4500 Peek Trail	Chesapeake
Old Dominion University Virginia Modeling, Analysis, and Simulation Center	1030 University Boulevard	Suffolk
Booker T. Washington Middle School	3700 Chestnut Avenue	Newport News
Parks		
Riverwalk Street Park	River Street Park	Hampton
Park Place Playground	50th Street	Hampton
Fort Wool	I-64 HRBT	Hampton
Captains Quarters Nature Center and Park	800 Little Bay Avenue	Norfolk
Ebony Heights Park	Tyre Neck Road and Fawkes Street	Portsmouth
Recreation		
Hampton Coliseum	1000 Coliseum Drive	Hampton
Bluebird Gap Farm	60 Pine Chapel Road	Hampton

Facility	Address	Locality
Y.H. Thomas Community Center	1300 Thomas St.	Hampton
The Woodlands Golf Course	9 Woodland Road	Hampton
Willoughby Boat Ramp	1275 Bayville Street	Norfolk
Naval Station Norfolk Baseball Fields	Patrol Road across from Forest Lawn Cemetery	Norfolk
Naval Station Norfolk Baseball Field	Patrol Road just west of I-64/I-564 interchange	Norfolk
Naval Station Norfolk Sewell's Point Golf Course	660 Ruthven Road	Norfolk
Captain Slade Cutter Athletic Park	100 Elementary Drive	Norfolk

Bike Facilities and Recreational Trails

Bike lanes (designated lanes for bicycles), sharrow lanes (roadways marked with street paint where bikes should preferably cycle when sharing a street), bike routes (recommended routes for the safest cycling from point A to point B), and bike and multi-use recreational trails exist within the Study Area Corridors on local streets, or that pass under or over restricted access highways. Chesapeake has one designated bike trail, Hampton has seven bike routes, Newport News has two bike routes, Norfolk has three bike lanes and a sharrow lane, and Portsmouth has one dedicated bike route in the Study Area Corridors. Suffolk does not currently have an existing bike lane or route in the I-664 and VA 164 Study Area Corridors (see the *HRCS Socioeconomic and Land Use Technical Report* for more detail).

Military Facilities

I-64, I-564, I-664, and VA 164 provide for the movement of military personnel and equipment within the region (US Army, 2015a). These roadways are part of the Strategic Highway Network (STRAHNET), which is designated by the US Department of Defense (DoD) in coordination with the Federal Highway Administration (FHWA). STRAHNET, a network of highways which are important to the United States' strategic defense policy, provide defense access, continuity, and emergency capabilities for defense purposes. Military installations accessible by STRAHNET and in the HRCS Supplemental Environmental Impact Statement (SEIS) Study Area Corridors are shown on **Figure 3-3**. They include:

- NAVSTA Norfolk: The world's largest Naval Base currently supporting 75 ships and 134 aircraft. Houses the largest concentration of US Navy forces and is the hub for Navy logistics for the European and Central command theaters of operations.
- Naval Support Activity (NSA) Hampton Roads: Provides logistical, maintenance and administrative support to a collection of Navy and Marine Corps facilities in Hampton Roads that lie outside the region's major bases.
- CIDMMA: Under the operation of the US Army Corps of Engineers (USACE), this is an active civil works project for the management and deposition of dredged material from the Hampton Roads navigation channels.
- US Coast Guard Station-Portsmouth: Part of the US Coast Guard's (USCG) 5th District, ensures the safety and security of the oceans, coastal areas, and marine transportation system within the US Mid-Atlantic region.
- Craney Island US Naval Supply Center: Part of the oldest and largest naval supply center in the world. Handles part of the supply activities and related functions located within the confines of NAVSTA Norfolk, specifically, naval fuel storage operations within the region.

- Joint Staff Suffolk Complex: Contains elements of Navy Cyber Forces, Navy Cyber Defense Operations Command, and Naval Network Warfare Command.

As shown on **Figure 3-3**, NAVSTA Norfolk and NSA Hampton Roads are presently served by I-564, identified as a STRAHNET Interstate Highway, and by STRAHNET connector roadways (VA 337 and VA 406). Portions of these roadways currently bisect the Navy properties.

Environmental Consequences

Communities

The **No-Build Alternative** would not result in any project-related construction and would therefore not directly impact any communities. Continued congestion within the Hampton Roads region would increasingly hamper community mobility.

Construction of the **Build Alternatives** would result in greater transportation mobility and improved congestion relief for the communities within the Hampton Roads region. **Alternative A** would provide congestion relief and increased mobility along I-64 in Hampton and Norfolk. **Alternative B** would provide congestion relief and increased mobility along I-64 in Hampton and Norfolk, I-564, and VA 164 in Suffolk. **Alternative C** would provide congestion relief and increased mobility along I-664 in Hampton and Suffolk, I-564, and the proposed VA 164 Connector. **Alternative D** would improve congestion and mobility for the largest area, along all the existing and proposed roadways in the Study Area Corridors. Residents would have greater range of choice and access to area communities. All of the Build Alternatives are either located along an existing corridor and would not create new physical barriers to inter-community interaction or are located along new alignment that is not within established residential or business communities, thus minimizing the potential for adverse impacts to community connectivity or cohesion. While there would be some relocations associated with the Build Alternatives, those relocations are located along the edges of communities and would not bisect residential areas or create new impediments to travel.

Community Facilities

The **No-Build Alternative** would not result in any project-related construction and would therefore not directly impact any community facilities. However, under this alternative, congestion would continue to worsen along the primary transportation corridors in the Hampton Roads region, resulting in deteriorated accessibility to community facilities.

Construction of any of the **Build Alternatives** would result in greater transportation mobility and improved congestion relief within the Hampton Roads region, to varying degrees. Under each Build Alternative, access to community facilities would be improved. Alternative A would improve congestion and access to community facilities along the I-64 corridor in Hampton and Norfolk. Alternative B would improve congestion and access to facilities along I-64, I-564, and VA 164 in Hampton, Norfolk, and Suffolk. Alternative C would improve congestion and access to community facilities along I-664 in Hampton, Suffolk, and Chesapeake, on I-564 in Norfolk, and along the proposed VA 164 Connector. Alternative D would improve congestion and access to community facilities throughout.

Figure 3-3: Military Facility Locations and the STRAHNET Roadways

Each alternative would impact community facilities; however, the use and functionality of the resources would not be impacted. **Alternative A** would impact 1.4 acres of Hampton University and <0.1 acres of the Willoughby Boat Ramp. **Alternative B** would impact a total of 8.9 acres at three facilities (one school and two park and recreational facilities). **Alternative C** would impact a total of 10.0 acres at four facilities (one religious facility, one school, and two park and recreational facilities). **Alternative D** would have the largest impact to community facilities; 9.8 acres at five facilities (two schools and three park and recreational facilities). Impacts to community facilities are summarized in **Table 3-4**.

Table 3-4: Impacts to Community Facilities (acres)

Facility	No-Build Alternative	Alternative A	Alternative B	Alternative C	Alternative D
Religious Facilities					
Kingdom Hall Jehovah's Witness	0	0	0	0.1	0
Schools/Universities					
Hampton High School	0	0	0	0.7	0.7
Hampton University	0	1.4	1.1	0	1.1
Park and Recreational Facilities					
Park Place Playground	0	0	0	0.2	0.1
Willoughby Boat Ramp	0	<0.1	<0.1	0	<0.1
Fleet Park	0	0	7.8	9.0	7.8

Bike Facilities and Recreational Trails

The **No-Build Alternative** would not result in any project-related construction and would therefore not directly impact any existing recreational trails, bike paths, and bike lanes within the Study Area Corridors. Currently, no bicycle or recreational trails are associated with the use of I-64, I-664, I-564, or VA 164. There would be no long-term impact to any recreational trail, bike paths, or bike lanes under any of the **Build Alternatives**. All of the Build Alternatives cross over existing recreational trails or bike paths located on secondary roads (where no HRCS-related improvements are planned). Short-term impacts to recreational trail, bike paths, or bike lanes could include temporary closures and detours during construction.

Military Facilities

The **No-Build Alternative** would not result in any project-related construction and would therefore not directly impact any military facilities.

Alternative A would impact approximately 22 acres of NAVSTA Norfolk along both I-64 and I-564. However, as shown on **Figure 3-2b**, the land use layers used to calculate this impact show that a large portion of the land designated as "Military" property is located within existing I-64. Therefore, actual impacts to military right-of-way along I-64 is expected to be less. **Alternatives B and D** would result in the same impacts to military facilities: 37 acres of NAVSTA Norfolk, 27 acres of the Craney Island US Naval Supply Center, 87 acres of CIDMMA, and 12 acres of the US Coast Guard Station. **Table 3-5** summarizes the impacts to military facilities resulting from the alternatives. More information on the impacts by alignment segment is provided in **Appendix A**.

Table 3-5: Military Facilities Impacts (acres)

Facility	No-Build Alternative	Alternative A	Alternative B	Alternative C	Alternative D
NAVSTA Norfolk*	0	22	37	42	37
Craney Island US Naval Supply Center	0	0	27	27	27
Craney Island Dredged Material Management Area (CIDMMA)	0	0	87	87	87
US Coast Guard Station-Portsmouth	0	0	12	12	12

** Land within existing I-64 right-of-way in the vicinity of NAVSTA Norfolk is currently classified as a military use. Note that impacts in this table were calculated using parcel data from the localities and this is different from the data used to calculate land use impacts (HRTPO).*

Overall, the reduction in congestion that would result from construction of the Build Alternatives would benefit military operations. Alternative A would improve military connectivity via the I-64 corridor within Hampton and Norfolk. Alternatives B, C, and D would directly improve military connectivity for the region by providing improved local and regional access for military movement missions throughout the Hampton Roads region. Improvements in the I-564 Study Area Corridor and the new capacity along the I-664 Connector, I-564 Connector, and VA 164 Connector would improve connectivity to NAVSTA Norfolk and a number of other military facilities in the area. Improvements to the VA 164 Study Area Corridor and the new capacity along the VA 164 Connector would improve connectivity to the Craney Island US Naval Supply Center, and the US Coast Guard Station – Portsmouth.

Mitigation

Impacts to communities and community facilities are anticipated to be minor. The relocations required by the Build Alternatives would be conducted in accordance with all applicable Federal laws, regulations, and requirements. Relocation resources would be available to all residential and business relocatees without discrimination. There would be no impact to bike paths or recreational trails; therefore, no mitigation efforts would be required. Continued coordination with the US military would be conducted during the development of the Final SEIS, as well as any future design and construction. Impacts to US Coast Guard Station-Portsmouth and the Craney Island US Naval Supply Center are based on the preliminary LOD. If the identified Preferred Alternative includes impacts to these properties, engineering refinements would be evaluated to reduce impacts where possible and further coordination would occur to address facility security needs. Similar efforts may be made for other facilities during final design.

3.2.2 Transportation Facilities

Affected Environment

Limited Access Highways, State Routes, and Local Roads

All of the highways that comprise the Study Area Corridors are limited access facilities. These facilities are summarized in **Table 3-6**. These highways serve a critical transportation function for commuters, interstate and intrastate freight movement, national defense, emergency evacuation, and commercial activities. I-64 crosses the Hampton Roads Harbor via the Hampton Roads Bridge-Tunnel (HRBT) and I-

664 crosses via the Monitor Merrimac Memorial Bridge-Tunnel (MMMBT). Both of these crossings are critical links in the regional transportation network connecting Southside and the Peninsula.

Table 3-6: Limited Access Highways

Highway	Functional Classification	Description
I-64	Interstate	I-64 extends from 1.7 miles west of the I-664 interchange in Hampton to approximately 0.5 miles south of the I-564 interchange in Norfolk, a distance of approximately 14 miles, including the 3.5-mile long HRBT
I-564	Interstate	I-564 is the primary access between NAVSTA Norfolk, NSA Hampton Roads, and the NIT on the west and I-64 on the east, a distance of approximately 3 miles.
I-664	Interstate	I-664 is 20.8 miles in length, beginning at Interchange 1 in Hampton and ending at Interchange 13 in Chesapeake.
VA 164	Other Freeway or Expressway	The Western Freeway extends for 3.4 miles east-west through Portsmouth and Suffolk from Virginia International Gateway Boulevard to I-664.

State routes and local roads which link to the limited access roadways of the Study Area Corridors are summarized in **Table 3-7**.

Table 3-7: Connecting State Routes and Locals Roads

Numerical Designation	Functional Classification	Roadway Name	Connecting Interstate	Interchange/ Exit Number	Locality
US 258	Other Principal Arterial	Mercury Boulevard	I-64	263A/B	Hampton
SR 167/ SR 134	Minor Arterial	LaSalle Avenue/ Armistead Avenue, Rip Rap Road	I-64	265	Hampton
US 60/SR 143	Minor Arterial	Settlers Landing Road	I-64	267	Hampton
SR 169	Minor Arterial	South Mallory Street	I-64	268	Hampton
US 60	Minor Arterial	4th View Street	I-64	273	Norfolk
SR 1070	Major Collector	1st View Street	I-64	Underpass	Norfolk
SR 907	Minor Arterial	Bay Avenue	I-64	274	Norfolk
US 460	Other Principal Arterial	Granby Street	I-64	276/276A	Norfolk
SR 165	Other Principal Arterial	Little Creek Road	I-64	276/276C	Norfolk
SR 337	Other Principal Arterial	Admiral Taussig Boulevard	I-564	Future Exit	Norfolk
SR 406	Other Principal Arterial	International Terminal Boulevard	I-564	Terminal Boulevard	Norfolk
SR 415	Minor Arterial	Power Plant Parkway	I-664	2	Hampton
SR 905	Minor Arterial	Aberdeen Road	I-664	3	Hampton
SR 945/ SR 1020	Major Collector	Chestnut Avenue/Roanoke Avenue	I-664	4	Newport News

Numerical Designation	Functional Classification	Roadway Name	Connecting Interstate	Interchange/ Exit Number	Locality
SR 143	Other Principal Arterial	Jefferson Avenue	I-664	5	Newport News
US 60	Other Principal Arterial	Warwick Boulevard/26th Street	I-664	6	Newport News
---	Ramps	Terminal Avenue	I-664	7	Newport News
SR 135	Minor Arterial	College Drive	I-664	8A/B	Suffolk
SR 133	Major Collector	New Town Point Road	I-664	Overpass	Suffolk
US 17/VA164	Other Freeway/ Expressway	Western Freeway/Western Branch Boulevard	I-664	9A/B	Suffolk
SR 947	Minor Arterial	Pughsville Road/Taylor Road	I-664	10	Chesapeake
SR 337	Minor Arterial	Portsmouth Boulevard	I-664	11A/B	Chesapeake
SR 1036	Major Collector	Dock Landing Road	I-664	12	Chesapeake
US 58	Minor Arterial	Airline Boulevard/West Military Highway	I-664	13A/B	Chesapeake
US 13	Minor Arterial	South Military Highway	I-664	13A/B & 14	Chesapeake
SR 905	Major Collector	Cedar Lane	SR164	Cedar Lane	Portsmouth
SR 947	Major Collector	Town Point Road	SR164	Town Point Road	Portsmouth

Source: Virginia Department of Transportation, 2014.

Transit Routes and Facilities

Public transportation in the region is provided by Hampton Roads Transit (HRT). HRT serves six cities: Chesapeake, Hampton, Newport News, Norfolk, Portsmouth and Virginia Beach. HRT operates a total of 56 local fixed bus routes, eight regional express commuter bus routes, seven major employer shuttles (e.g., Newport News Shipyard) as well as seasonal routes at the Virginia Beach oceanfront. Six of the eight regional express commuter routes utilize the Study Area Corridors (**Table 3-8**). In fiscal year 2015, HRT provided a total of 14.2 million unlinked passenger trips on its fixed route buses which includes the local bus routes, regional commuter express routes, and employer shuttles. Within its fixed route service area, HRT also provides complementary paratransit bus service in compliance with the Americans with Disabilities Act. HRT reported a total of 324,000 trips on its paratransit buses in fiscal year 2015.

Table 3-8: Metro Area Express (MAX) Routes

Route Number	Locality Connection	Route Termini	Study Area Corridors
918/919	Virginia Beach – Norfolk	Silver Leaf Park & Ride to Lafayette River Annex	I-564
922	Chesapeake – Norfolk	Greenbrier Mall to Naval Station Norfolk	I-564
961	Norfolk – Newport News	Downtown Norfolk to Newport News Transit Center	I-64, HRBT, and I-664
965	Newport News - Norfolk	Patrick Henry Mall to Naval Station Norfolk	I-64, HRBT, and I-564
967	Norfolk – Newport News	Military Highway Light Rail Station to Newport News Transit Center	I-664 and MMMBT

Source: Hampton Roads Transit, 2016.

In addition to fixed route and paratransit bus service, HRT operates "the Tide," a light-rail system which extends 7.4 miles from the Eastern Virginia Medical Center complex east through downtown Norfolk to Newtown Road at the border of Virginia Beach. HRT also operates a ferry route on the Elizabeth River between Norfolk and Portsmouth. The Tide and Elizabeth River ferry service do not currently operate within the Study Area Corridors.

Suffolk does not have a contractual agreement with HRT, and therefore operates its own transit system called Suffolk Transit. Suffolk Transit operates six routes within the City, as well as complementary paratransit service in compliance with the Americans with Disabilities Act. The bus routes operate Monday through Friday on one-hour headways.

The HRT Metro Area Express bus service, ("the MAX"), is a commuter express bus service which uses the Study Area Corridors to provide regional express bus service between the Peninsula and Southside. Service is provided to Park and Ride facilities throughout the region, connecting commuters to major employment destinations, such as NAVSTA Norfolk and Northrop Grumman in Newport News. **Table 3-8** summarizes the existing MAX routes which use the Study Area Corridors, and **Figure 3-4** illustrates the route patterns. The MAX is the only public transit option that connects the Peninsula and the Southside.

Local HRT bus routes intersect the Study Area Corridors in Hampton, Norfolk, Portsmouth, and Newport News via minor arterial roadways and/or major and minor collectors to serve local destinations. These local bus routes do not generally utilize I-64, I-664, I-564, or VA 164. One HRT commuter service bus uses I-664 and I-64 to connect Newport News with Williamsburg. In addition to the routes, the Wards Corner Bus Transfer Station is located near the intersection of Granby Street and Admiral Taussig Boulevard in Norfolk, adjacent to the interchange of I-64 and I-564.

Suffolk Transit uses I-664 for approximately 4 miles along the "Gold Route" extending from the Bowers Hill area northbound to Pughsville Road. The "Blue Route" travels along the Hampton Roads Parkway and crosses over I-664 in North Suffolk. All of these bus facilities operate in general purpose lanes and do not experience a travel time advantage over personal vehicles.

Figure 3-4: HRT MAX Routes

Figure 3-5: Port Facilities and Freight Rail Network

Port Facilities

Hampton Roads is home to multiple docking and mooring locations for military, commercial, and recreational watercraft. Two designated shipping lanes pass through the harbor and are federally maintained by the USACE: the Newport News Channel and the Norfolk Harbor Reach Channel (**Figure 3-5)**. The existing depths of the channels are a minimum of 50 feet; however, the Port of Virginia has gained approval to dredge the channels to 55 feet depths. The deeper channels will allow the port facilities to accommodate the largest container ships that pass through the Panama Canal, referred to as Super Post Panamax ships. The harbor and shipping lanes allow commercial shipping lines to access major commercial ports in the region located in Newport News, Norfolk, and Portsmouth. These port facilities are substantial generators of traffic on area roadways resulting from employee work trips and long and short-haul truck traffic on and adjacent to the Study Area Corridors. All of the commercial ports are accessible by roadway, water, and rail to varying degrees.

The Port of Virginia is a public organization overseen by the Virginia Port Authority to market and operate port facilities in the Commonwealth of Virginia. In the Hampton Roads region, the Port of Virginia operates four deep-water marine terminals and an upriver barge terminal. These facilities are summarized in **Table 3-9** and shown in **Figure 3-5**. Outside of the Hampton Roads region, the Port of Virginia also operates the Port of Richmond and Virginia Inland Port located in Warren County. Collectively, Port of Virginia facilities processed 19.7 million tons of cargo in 2015, with an estimated value of $60 billion.

There are three privately-owned port facilities in Hampton Roads that store and transload coal to bulk carrier ships. Kinder Morgan and Dominion Terminal Associates operate port facilities southeast and adjacent to the Newport News Marine Terminal (NNMT) which is owned and operated by the Port of Virginia. Coal is transported to these facilities by CSX where it can be loaded onto ships. Roadway access to these facilities is provided via I-664. Norfolk Southern (NS) operates the Lamberts Point Coal Terminal in Norfolk which is located on the Elizabeth River. Lamberts Point Terminal is accessed by US 460 via I-64/I-564.

The Craney Island Marine Terminal is a facility under development by the Port of Virginia with a scheduled completion year of 2028. The terminal will be an automated container terminal with the capability to handle up to 50 percent of its container volume by rail. The existing Commonwealth Railway Line (shortline railroad) will be extended from VA 164 to CIDMMA. Extension of the rail line will provide access to the terminal for both NS and CSX, and allow for double-stack intermodal rail service. The terminal will be designed to serve Super Post-Panamax class ships and will also have direct access to the interstate highway system.

In addition to commercial and military activities, the harbor provides a safe port and anchorage destination for ships and boats to shelter during storms, and an open area for recreational use. To access the harbor, ships must pass over the HRBT, and to access the western reaches of the James River, they must pass over the MMMBT. Smaller rivers and creeks that feed into Hampton Roads act as harbors as well, including the Hampton River, the Elizabeth River, and the Lower James River.

Military vessels use the harbor to access NAVSTA Norfolk, the Naval Supply Center, the Coast Guard base, and Navy Shipyard in Portsmouth. These military installations are described in further detail in **Section 3.2.1**. The *Ports for National Defense Program* is a program established by the Department of Defense (DoD) to identify and asses the adequacy and responsiveness of defense-important infrastructure at

ports that support DoD deployments. The Program identifies the Port of Virginia facilities as a designated strategic seaport.

Freight Railroad Network

With the regional importance and location of the Port of Virginia, the freight rail network is critical to the local economy and goods movement. The Hampton Roads region is served by two Class I freight railroad operators and three Class III shortline railroads. These railroads serve the port facilities and other businesses along the routes. Goods and natural resources are brought by rail to Hampton Roads to be exported, and imports are distributed nationwide via rail lines that service the marine terminals in Hampton Roads. The freight rail network within and adjacent to the Study Area Corridors is shown in **Figure 3-5**.

Table 3-9: Port Facilities

Port Facility	Owner	Locality	Access	Description
Newport News Marine Terminal (NNMT)	Port of Virginia	Newport News	Road: I-664 Rail: CSX Marine: Newport News Channel	165-acre general cargo terminal supporting Roll-On/Roll-Off, break-bulk, and warehouse operations. Gated entrance.
Norfolk International Terminals (NIT)	Port of Virginia	Norfolk	Road: Hampton Blvd/I-564 Rail: NS Marine: Norfolk Harbor Reach Channel	567-acre container terminal with six 50' deep berths and 14 Super Post Panamax ship-to-shore cranes. Current operations rely primarily on straddle carriers. Gated entrance.
Virginia International Gateway (VIG)	Port of Virginia	Portsmouth	Road: Hampton Blvd/I-564 Rail: CSX and NS Marine: Norfolk Harbor Reach Channel	231-acre container terminal with three 50' deep berths and 8 Super Post Panamax ship-to-shore cranes.
Portsmouth Marine Terminal (PMT)	Port of Virginia	Portsmouth	Road: VA 164/US 58 Rail: CSX, NS and NBPL Marine: Norfolk Harbor Reach Channel	285-acre mixed use terminal with two 43' deep berths and 6 Post Panamax ship-to-shore cranes currently allocated to container operations. Primarily an over-the-road truck terminal.
Pier IX VA Terminal	Kinder Morgan	Newport News	Road: 18th Street Rail: CSX Marine: Newport News Channel	Three-dock marine terminal for the purpose of coal shipping and ground storage with a capacity of 1.4 Million tons.
Dominion Coal Shipping and Ground Storage Facility	Dominion Terminal Associates	Newport News	Road: 18th Street Rail: CSX Marine: Newport News Channel	Coal shipping and ground storage facility with a storage capacity of 1.7 million tons.

Port Facility	Owner	Locality	Access	Description
Lamberts Point Coal Terminal	Norfolk Southern	Norfolk	Road: US 460/I-64 Rail: NS Marine: Norfolk Harbor Reach Channel	NS-served and operated transshipment coal terminal located on the Elizabeth River

Emergency Evacuation Routes

Due to the substantial risk of hurricanes in the region, evacuation of the Hampton Roads region has been extensively analyzed by federal, state, and regional government stakeholders. In the event of a hurricane, the Virginia Department of Emergency Management (VDEM) has designated evacuation routes in the *Virginia Hurricane Preparedness Guide* (2010) for the region which are summarized in **Table 3-10** and shown in **Figure 3-6**. These evacuation routes include the Study Area Corridors of I-64 and I-664.

Table 3-10: Emergency Evacuation Routes

Area	Designated Jurisdictions	Routes
Peninsula	Hampton Newport News	• I-64 • I-664 North • US Route 17 North • US Route 60 West • SR 143
Southside	Suffolk Chesapeake Portsmouth Virginia Beach	• I-64 and I-264 • I-664 MMMBT • US Route 17 North • US Route 58 West • US Route 460 West • SR 10 West
Norfolk and Virginia Beach	Norfolk Virginia Beach	• I-64 operating with reversed eastbound lanes (westbound).

Source: Virginia Hurricane Preparedness Guide (VDEM, 2010).

The HRBT and MMMBT may be overtopped by water during extreme storm events. The HRBT is equipped with storm doors which can be shut to prevent flooding. While this preserves the tunnel structures, it would close off a vital route for evacuees and/or emergency personnel. Another impediment to evacuation is that the Hampton Roads region is low lying, and US 17, US 460, and US 58 are prone to flooding, further exacerbating evacuation conditions even after evacuees make it past the available water crossings.

Norfolk and Virginia Beach residents located north of I-264 are directed to use I-64 and the HRBT in the event of an evacuation. However, because of increased regional population, limited water crossings for large area evacuations, and peak congestion during typical daily use already occurring on designated emergency routes, the ability to effectively evacuate the population is hampered. The study routes and HRBT and MMMBT crossings are known bottlenecks during daily traffic and would be more so during evacuations.

Figure 3-6: Emergency Evacuation Routes

Environmental Consequences

Limited Access Highways, State Routes, and Local Roads

A complete analysis of transportation impacts in the Study Area Corridors is provided in Chapter 2 and the *HRCS Traffic and Transportation Technical Report*.

Transit Routes and Facilities

The **No-Build Alternative** would not result in any project-related construction and would therefore not directly impact any transit routes and facilities. However, under the No-Build Alternative, traffic congestion would continue to worsen on the existing MAX routes within the Study Area Corridors.

All of the **Build Alternatives** would reduce congestion and improve mobility along the roadways included in the Alternative and would therefore improve travel time and reliability for the overlapping MAX routes. As **Alternative A** is the shortest of the Build Alternatives, it would provide the least benefit to existing MAX routes. **Alternative B** contains the same existing MAX routes as Alternative A and therefore, benefits would be same. **Alternative C** would include transit only lanes which would allow existing and future transit to have a competitive travel time advantage over personal vehicle use. **Alternative D** contains the most existing MAX Routes and would therefore provide the greatest length of improvements to MAX routes.

Port Facilities

The **No-Build Alternative** would not result in any project-related construction and would therefore not directly impact any port facilities.

No long-term impacts to the port facilities and terminals are anticipated with the **Build Alternatives**. **Alternatives B, C, and D** would increase access to port facilities on the Peninsula, in Norfolk, and Portsmouth.

Freight Rail Network

The existing freight rail network operations and capacity would not be impacted by the **No-Build Alternative** or any of the **Build Alternatives**.

Emergency Evacuation Routes

Under the **No-Build Alternative**, traffic conditions are expected to worsen which would impact the ability of residents in the region to evacuate using the Study Area Corridors. The **Build Alternatives** would generally improve evacuation in the region and expand capacity on the evacuation routes. **Alternative A** would improve the Norfolk and Virginia Beach evacuation route capacity along I-64. **Alternative B** would improve the Norfolk and Virginia Beach evacuation route capacity along I-64 and would provide an additional connection via the I-564 crossing of the Elizabeth River to connect to the Southside evacuation route (I-664). **Alternative C** would improve capacity along the Peninsula evacuation route (I-664 in Hampton) and along the Southside evacuation route (I-664 in Suffolk, Portsmouth, and Chesapeake). **Alternative D** would provide the greatest capacity improvements to evacuation routes, improving the capacity of each route in the region (Norfolk and Virginia Beach, Peninsula, and Southside).

Mitigation

Under any of the **Build Alternatives**, VDOT would coordinate with HRT and Suffolk Transit to notify the transit agencies, and their passengers, about temporary closures and detours along the Study Area Corridors which could impact travel times on bus routes. VDOT would coordinate with operators of port and terminal facilities (e.g., Port of Virginia) to notify them of temporary closures and detours along the Study Area Corridors which could affect the ability of truck and employee traffic to access the terminals. Since no impact is anticipated to the freight rail network, no mitigation is proposed. Since no permanent impact is anticipated to the designated evacuation routes, no mitigation is proposed. VDOT would coordinate with VDEM to notify the agency of temporary closures and detours along the Study Area Corridors which could affect evacuation routes.

3.2.3 Population and Housing

Methodology

Demographic and housing characteristics are identified based on the American Community Survey (ACS) 5-year (2009-2013) data, available online at American Factfinder. Data was gathered for the Census Block Groups and Traffic Analysis Zones (TAZ) within or adjacent to the Study Area Corridors and compared to similar data for the six cities surrounding the Study Area Corridors, and statewide. Existing conditions were reviewed by the local Cooperating Agencies during the development of this Draft SEIS. The Study Area Corridors contain 66 Census Block Groups, which are referred to as the study Census Block Groups. Direct long-term and short-term impacts to population and housing are assessed by identifying the number of potential relocations for each alternative and assessing the availability of nearby alternative, comparable housing.

Affected Environment

Population

According to ACS 5-year (2009-2013) data, current total resident population in the Study Area Corridors, based on the studied Census Block Groups adjacent to the corridors, is approximately 113,393. **Tables 3-11** and **3-12** present the population within each Study Area Corridor Census Block Group, each locality, and statewide. The most populous Census Block Group (9.01-1), with 13,333 residents is located along I-564 in the military housing area of Camp Allen in Norfolk. The lowest population is found in Census Block Group 751.01-2, with 205 residents, and is located in the College Drive area of Suffolk. The study Census Block Group population is approximately 12 percent of the six cities' total population (968,412) and one percent of statewide population (8,326,289).

Table 3-11: Census Block Groups, Localities, and Statewide Population

Location	Population
Study Area Corridors (adjacent Block Groups) Total	113,393
Chesapeake	225,597
Hampton	136,957
Newport News	181,025
Norfolk	244,090
Portsmouth	95,901

Location	Population
Suffolk	84,842
Virginia	8,326,289

Source: ACS 5-year (2009-2013).

Table 3-12: Population by Census Block Group

Census Block Group	Locality	Population	Census Block Group	Locality	Population
213.01-1	Chesapeake	791	308-2	Newport News	539
214.04-4	Chesapeake	881	3-3	Norfolk	1,120
215.01-1	Chesapeake	2,161	4-1	Norfolk	1,727
215.01-2	Chesapeake	3,106	4-3	Norfolk	1,327
215.01-3	Chesapeake	3,422	5-2	Norfolk	1,384
215.01-4	Chesapeake	2,411	5-3	Norfolk	493
215.02-3	Chesapeake	2,198	5-4	Norfolk	417
215.02-4	Chesapeake	2,972	8-1	Norfolk	1,406
216.01-1	Chesapeake	2,575	8-2	Norfolk	1,021
216.02-3	Chesapeake	3,093	308-3	Newport News	647
103.11-1	Hampton	1,809	9.01-1	Norfolk	4,764
103.13-1	Hampton	416	9.02-1	Norfolk	13,333
105.01-1	Hampton	3,218	11-1	Norfolk	1,607
105.01-2	Hampton	1,733	13-2	Norfolk	1,917
105.02-1	Hampton	2,288	55-1	Norfolk	1,420
105.02-2	Hampton	812	57.01-3	Norfolk	1,578
106.01-1	Hampton	1,026	2130.01-1	Portsmouth	1,305
106.01-2	Hampton	1,432	2130.01-3	Portsmouth	2,658
106.02-2	Hampton	1,384	2130.02-3	Portsmouth	2,413
108-1	Hampton	1,832	2131.01-1	Portsmouth	1,730
108-4	Hampton	768	2131.01-2	Portsmouth	1,591
111-1	Hampton	592	2131.01-3	Portsmouth	2,050
112-3	Hampton	949	2131.03-1	Portsmouth	517
113-2	Hampton	1,238	2131.03-2	Portsmouth	1,098
114-1	Hampton	2,345	2131.03-3	Portsmouth	2,023
301-1	Newport News	2,397	751.01-1	Suffolk	1,640
301-2	Newport News	334	751.01-2	Suffolk	205
301-3	Newport News	1,915	751.01-3	Suffolk	2,061
304-1	Newport News	742	751.02-4	Suffolk	1,406
306-1	Newport News	512	752.04-1	Suffolk	2,843
306-3	Newport News	1,044	752.04-2	Suffolk	1,986
308-1	Newport News	771			

Source: ACS 5-year (2009-2013).

Housing

Table 3-13 presents housing characteristics in the Census Block Groups, localities, and statewide, based on ACS 5-year (2009-2013) data. Approximately 36,000 occupied housing units are in the study Census Block Groups, with the majority (1,416) in Census Block Group 105.01-01 in the Power Plant Parkway area of Hampton. Approximately 48 percent of occupied housing units are owner-occupied and 52 percent renter-occupied, as opposed to most of the cities surrounding the Study Area Corridors, where the rate of home ownership is higher. Only Norfolk has more renters than homeowners. Among the six cities surrounding the Study Area Corridors, there are approximately 390,000 housing units, and 3.4 million housing units statewide.

Table 3-13: Census Block Groups, Localities, and Statewide Housing Characteristics

Location	Total Housing Units	Total Occupied Housing Units	Owner-Occupied	Renter-Occupied
Census Block Groups Total	41,107	35,858	17,197	18,661
Chesapeake	84,403	79,421	57,579	21,842
Hampton	59,746	52,511	31,560	20,951
Newport News	76,637	69,211	35,601	33,610
Norfolk	95,271	85,557	38,066	47,491
Portsmouth	40,833	36,690	20,997	15,693
Suffolk	33,372	30,492	22,373	8,119
Virginia	3,381,332	3,022,739	2,033,102	989,637

Source: ACS 5-year (2009-2013).

Environmental Consequences

Residential property impacts, including number of properties impacted, acreage impacted, and number of residential relocations, are provided for each alternative. The **No-Build Alternative** would not result in any project-related construction and would therefore not directly impact population or housing. **Alternative A** would result in the least impacts to residential properties (24 properties, the majority of which are located along I-64 in Norfolk). **Alternative B** would result in the second greatest number of impacted residential properties, (29 properties), the majority of which are located along I-64 in Norfolk and VA 164 in Suffolk. **Alternative C** would impact 58 residential properties, the majority of which are located along I-664 in Hampton. **Alternative D** would impact the greatest number of residential properties (69 properties). Impacts and relocations are summarized in **Table 3-14**. (More detail is provided in the *HRCS Right-of-Way and Relocation Technical Memorandum.*) More information on the impacts by alignment segment are provided in **Appendix A**.

Table 3-14: Residential Impacts by Alternative

Impact	Alternative A	Alternative B	Alternative C	Alternative D
Number of residential properties impacted	24	29	58	69
Total residential acres impacted	0.5	0.6	1.9	2.1
Residential relocations	9	9	11	20

Note: These are conservative estimates and the actual calculation of relocations is expected to decrease as the project design is advanced and more detailed roadway right-of-way requirements are determined.

The impacts to population and housing resulting from the Build Alternatives would affect the communities in which the relocations are located. All of the proposed relocations are located along existing right-of-way at the periphery of any established community, and would not bisect residential areas or create new impediments to travel through communities.

Mitigation

Currently, there appears to be adequate available housing in the Study Area Corridors given the difference between total housing units and total occupied housing units identified in **Table 3-13**. It should be noted that any alternative considered in this HRCS SEIS could be implemented over many years and the availability of adequate housing could fluctuate. A determination on the availability of adequate housing would be made during detailed design for each Operationally Independent Section (OIS). For the purposes of this analysis, the discussion focuses on current conditions. Additional details are provided in the *HRCS Right-of-Way and Relocation Technical Memorandum*.

VDOT has the ability, and if necessary, is willing to provide housing of last resort, including the purchase of land or dwellings; repair to existing dwellings to meet decent, safe, and sanitary conditions; relocation or remodeling of dwellings purchased by VDOT; or construction of new dwellings. Assurance is given that all displaced families and individuals would be relocated to suitable replacement housing; all replacement housing would be fair housing available to all persons without regard to race, color, religion, sex, or national origin; and all replacement housing would be within the financial means of the displacees. Each person would be given sufficient time to negotiate for and obtain possession of replacement housing. No residential occupants would be required to move from property needed for the Build Alternatives until comparable decent, safe, and sanitary replacement dwellings have been made available to them.

All affected property owners would be compensated for the fair market value of the acquired portion of land and any structures acquired for the construction of the Preferred Alternative. Additionally, any individual, family, business, farm or non-profit organization displaced as a result of the acquisition of real property is eligible to receive reimbursement for the fair market value of property acquired, as well as moving costs. This process is known as relocation assistance. In accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended, 1987), displaced property owners would be provided relocation assistance advisory services together with the assurance of the availability of decent, safe, and sanitary housing. Relocation resources would be made available to all displacees without discrimination.

3.2.4 Economics

Methodology

This economic analysis focuses on potential impacts of the alternatives to income, employment and business in the Study Area Corridors. Specifically, economic data is either collected by Census tracts, Census Block Groups, zip code boundaries, or TAZs that are within or immediately adjacent to the Study Area Corridors. Sources of data are the ACS 5-year (2009-2013) data and the decennial Censuses available online at American FactFinder, or from TAZ data provided by the HRTPO (2013b). Impacts are assessed qualitatively based on the relative number of potential business and residential relocations and the extent of the alternatives' area of effects.

Affected Environment

Income

Table 3-15 summarizes the ACS 5-year (2009-2013) data median household income (in 2013 inflation adjusted dollars) of persons residing in all the study Census Block Groups. **Table 3-16** shows the median household income for the six cities in which the Study Area Corridors are located and statewide. The median household income of the study Census Block Groups ranges from $2,500 to $103,424. The median household income of persons residing in the study Block Groups is $41,683 —less than the six cities crossed by the corridors, and $22,224 (35 percent) less than the statewide median household income.

Table 3-15: 2009-2013 Median Household Income by Study Census Block Group

Census Block Group	Median Household Income[1]	Locality	Census Block Group	Median Household Income[1]	Locality
215.01-3	$91,376	Chesapeake	308-3	$52,500	Newport News
215.01-1	$45,197	Chesapeake	9.02-1	$48,611	Norfolk
213.01-1	$36,964	Chesapeake	4-1	$44,718	Norfolk
214.04-4	$84,375	Chesapeake	3-3	$43,633	Norfolk
215.02-3	$86,557	Chesapeake	13-2	$32,661	Norfolk
215.02-4	$66,088	Chesapeake	9900-0	$0[2]	Norfolk
216.01-1	$83,333	Chesapeake	4-3	$40,586	Norfolk
216.02-3	$63,882	Chesapeake	8-1	$63,561	Norfolk
215.01-2	$103,424	Chesapeake	8-2	$37,377	Norfolk
215.01-4	$40,648	Chesapeake	55-1	$53,866	Norfolk
108-4	$38,750	Hampton	57.01-3	$22,227	Norfolk
103.11-1	$44,875	Hampton	11-1	$36,013	Norfolk
105.01-2	$26,164	Hampton	5-2	$46,713	Norfolk
108-1	$34,515	Hampton	5-3	$52,703	Norfolk
114-1	$2,500	Hampton	5-4	$61,806	Norfolk
105.02-1	$27,054	Hampton	9.01-1	$45,318	Norfolk
106.01-1	$28,369	Hampton	2131.01-3	$42,717	Portsmouth
106.01-2	$23,098	Hampton	2130.02-3	$63,645	Portsmouth
106.02-2	$33,000	Hampton	2131.03-1	$61,250	Portsmouth
105.01-1	$32,367	Hampton	2131.03-2	$65,149	Portsmouth
111-1	$90,625	Hampton	2131.03-3	$53,456	Portsmouth
103.13-1	$35,875	Hampton	2130.01-1	$45,757	Portsmouth
113-2	$38,125	Hampton	2130.01-3	$81,816	Portsmouth
105.02-2	$37,794	Hampton	2131.01-1	$38,591	Portsmouth
112-3	$58,219	Hampton	2131.01-2	$32,351	Portsmouth
301-2	$15,000	Newport News	751.01-0	$0[2]	Suffolk
301-3	$31,830	Newport News	751.01-1	$56,000	Suffolk
306-1	$29,792	Newport News	751.01-2	$91,210	Suffolk
301-1	$13,902	Newport News	751.01-3	$100,566	Suffolk

Census Block Group	Median Household Income[1]	Locality	Census Block Group	Median Household Income[1]	Locality
306-3	$32,031	Newport News	751.02-3	$0[2]	Suffolk
304-1	$15,981	Newport News	751.02-4	$90,650	Suffolk
308-1	$37,917	Newport News	752.04-1	$5,1563	Suffolk
308-2	$25,625	Newport News	752.04-2	$39,922	Suffolk

Source: ACS 5-year (2009-2013).
[1]In 2013 dollars. [2]Zero values are in Census units with no residential areas or over water.

Table 3-16: 2009-2013 Median Household Income

Location	Median Household Income[1]	Location	Median Household Income[1]
Study Block Groups	$41,683	Newport News	$51,027
Virginia	$63,907	Norfolk	$44,747
Chesapeake	$69,743	Portsmouth	$46,166
Hampton	$50,705	Suffolk	$66,085

Source: ACS 5-Year 2009-2013.
[1]In 2013 dollars.

Employment

Major employers in the study Census Block Groups include NAVSTA Norfolk (approximately 45,000 military and 12,000 civilian employees), the Port of Virginia that directly and indirectly supports 40,000 jobs in the region, and Hampton University (1,000 employees) (Hampton Roads Economic Development Alliance, 2015). The cities encompassing the Study Area Corridors are also major area employers. Regionally, other large employers include several additional military installations with approximately 136,000 personnel, Newport News Shipbuilding (24,000 employees), Sentara Healthcare (20,000 employees), Riverside Health System (7,050), NASA Langley Research Center (4,000), Bank of America (3,600 employees), and Old Dominion University (4,000 employees).

Business

A total of 4,775 business establishments are located in zip codes within and adjacent to the Study Area Corridors. Of these, the majority are in the northwestern portion of the Study Area Corridors (Hampton) in zip code 23666 (23 percent). The top five business sectors in the study zip codes are: retail trade (17 percent), health care and social assistance (12 percent), accommodation and food services (12 percent), other services (except public administration) (12 percent), and professional, scientific, and technical services (11 percent). Among the six cities encompassing the Study Area Corridors, there are approximately 20,000 establishments with the majority in retail trade (3,200 or 16 percent). The majority of businesses in the study zip codes have one to four employees (344 establishments or 46 percent), and the largest include two establishments having 250 to 499 employees (0.3 percent).

In the six cities encompassing the Study Area Corridors, 9,330 establishments (47 percent) have from one to four employees and the largest 17 establishments have 1,000 or more employees (less than 1 percent), with the majority of those located in Norfolk.

Environmental Consequences

The **No-Build Alternative** would not result in any project-related construction and would therefore not directly impact income, employment or business.

The proposed **Build Alternatives** would not have a major impact on income or the distribution of business establishments and industry located within the Study Area Corridors. Potential business relocations are provided in **Table 3-17**. There are no business relocations anticipated under **Alternatives A** or **B**. **Alternative C** could require five commercial relocations and **Alternative D** could require four commercial relocations. The majority of the relocations would occur along I-664 in Hampton. Alternative C would result in greater relocations due to the wider footprint of the roadway to accommodate the transit only lanes.

Table 3-17: Commercial Impacts by Alternative

Impact	No-Build Alternative	Alternative A	Alternative B	Alternative C	Alternative D
Number of commercial properties impacted	0	6	10	23	23
Total commercial acres impacted	0	1.3	2.7	4.7	5.5
Commercial relocations	0	0	0	5	4

Note: These are conservative estimates and the actual calculation of relocations is expected to decrease as the project design is advanced and more detailed roadway right-of-way requirements are determined.

Alternative A would improve access to commercial businesses within the Study Area Corridors (along I-64 in Hampton and Norfolk). Alternatives B, C, and D would increase access to port facilities on the Peninsula, in Norfolk, and Portsmouth and would improve access to commercial businesses and interstate highway travel throughout the region.

Mitigation

As with residential relocations, the acquisition of right-of-way and the relocation of commercial properties would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. Assurance is given that relocation resources would be available to all displacees without discrimination. Impacts to business in the Study Area Corridors would be minimized through careful planning during future phases of the study. Ongoing coordination with area businesses, particularly those located adjacent to proposed improvements or detour routes, would occur to prevent or minimize both short- and long-term disruptions.

3.2.5 Environmental Justice

Methodology

The US Environmental Protection Agency (EPA) defines Environmental Justice (EJ) as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." This EJ analysis has been prepared in accordance with the definitions, methodologies, and guidance provided in Executive Order (EO) 12898; the Council on Environmental Quality (CEQ) *Environmental Justice Guidance Under the National Environmental Policy Act* (1997); US Department of

Transportation (USDOT) Order 5610.2(a) *Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (2012 revision); FHWA EJ Order 6640.23A *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (2012); FHWA memorandum *Guidance on Environmental Justice and NEPA* (2011); the FHWA *Environmental Justice Reference Guide* (2015); and FHWA Technical Advisory T6640.8A: *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*.

Executive Order 12898 itself does not define the terms "minority" or "low-income," but these terms have been defined in the USDOT and FHWA EJ Orders as described below, and are used in the EJ analysis:

- Minority Individual – The USDOT and FHWA EJ Orders define a minority individual as belonging to one of the following groups: Black, Hispanic or Latino, Asian American, American Indian and Alaskan Native, or Native Hawaiian and Other Pacific Islander.

- Low-Income Individual – The FHWA and USDOT EJ Orders define a "low-income" individual as a person whose median household income is at or below the Department of Health and Human Services (HHS) poverty guidelines. The 2013 HHS poverty guidelines for persons living in the contiguous 48 states and District of Columbia as presented in **Table 3-18**. While the 2015 HHS poverty guidelines are available, the 2013 guidelines are appropriate to be used for consistent comparison to the latest available American Community Survey (ACS) 2009-2013 *Median Household Income in the Past 12 Months (In 2013 Inflation-adjusted dollars)* data available at the Census Block Group level.

Executive Order 12898 and the USDOT/FHWA EJ Orders are concerned with identifying minority and low-income populations. This analysis was based on the following population definitions:

- Minority Populations – Any readily identifiable groups of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who would be similarly affected by a proposed USDOT/FHWA program, policy, or activity (USDOT and FHWA EJ Orders). For the purposes of this analysis, a minority population is present when: (a) the minority population of the affected area exceeds 50 percent of total population or (b) the minority population percentage in the affected area is "meaningfully greater" than the minority population percentage in the general population or other appropriate unit of geographical analysis (CEQ, 1997). For the purposes of this study, the minority population for a Census Block Group will be found to be "meaningfully greater" than surrounding Block Groups in the study area if its minority population is greater than the value of the Block Group with the lowest percentage of minority population within the Study Area Corridors, plus an additional ten percent of that value.

- Low-Income Population – Any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who would be similarly affected by a proposed USDOT/FHWA program, policy, or activity (USDOT/FHWA EJ Orders). In the EJ analysis, low-income populations were identified where the median household income for a Census Block Group within the Study Area Corridors is at or below the 2013 HHS poverty threshold for a family of four ($23,550).

This methodology has been agreed upon by the EPA, FHWA, and VDOT as appropriate for the identification of minority populations for discussion in NEPA documents.

Table 3-18: Health and Human Services 2013 Poverty Guidelines

Persons in Family/Household	Poverty Guideline [1]
1	$11,490
2	$15,510
3	$19,530
4	$23,550
5	$27,570
6	$31,590
7	$35,610
8	$39,630
For families/households with more than 8 persons, add $4,020 for each additional person	

Source: HHS (2013).

[1]2013 HHS poverty guidelines are used for consistent comparison to the ACS 5-year (2009-2013) Median Household Income in the Past 12 Months (In 2013 Inflation-adjusted dollars) data available at the Census Block Group level used in this analysis.

The study Census Block Groups selected for analysis of direct effects to EJ populations are those within or immediately adjacent to approximately ¼ mile (1,320 feet) of the Study Area Corridor's centerlines (78 total Block Groups).

Affected Environment

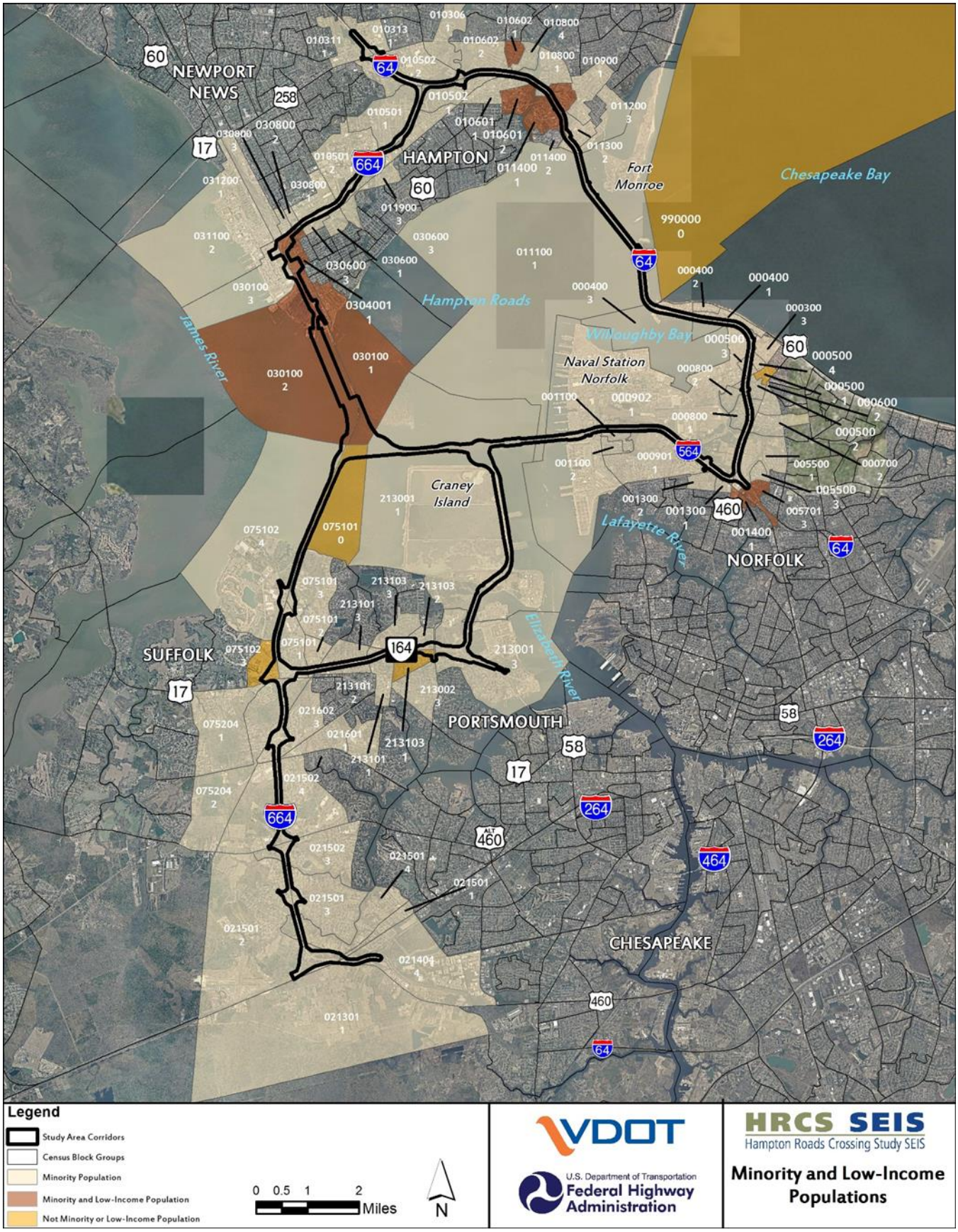
Data on race, minority, and low-income populations is provided in detail in the *HRCS Socioeconomic and Land Use Technical Report*. A total of 76 out of 78 study Census Block Groups meet the definition of a minority population. Of these, 8 meet the definition of both minority and low-income populations (106.01-2, 106.02-1, 114-1, 301-1, 301-2, 304-1, 14-1, and 57.01-3). Minority and Low-Income Populations are shown in **Figure 3-7**.

Minority populations located in Census Block Groups all along I-64 in the cities of Norfolk and Hampton, except the West Ocean View neighborhood of Norfolk. Minority populations are also located along the length of the I-564 Study Area Corridor in Norfolk, and with a few exceptions, along the length of I-664 through the cities of Hampton, Newport News, Suffolk, and Chesapeake. Areas along I-664 that are not classified as having minority populations are located in the Harbour View area of Suffolk. Along VA 164, minority populations are located adjacent to the freeway except in the south part of Towne Point (2141.03-1).

Similar to several Hampton Roads region cities, the most populous race in the study Census Block Groups is black or African American (42.7 percent). This is followed in frequency by white (42.65 percent), Hispanic or Latino (6.4 percent), two or more races (3.0 percent), Asian (3.0 percent), some other race (1.7 percent), American Indian and Alaska Native (0.4 percent), and Native Hawaiian or other Pacific Islander (0.1 percent) races.

Eight of the 78 study Census Block Groups with population meet the definition of a low-income population. All of the low-income populations identified are located in areas that also were documented above as having minority populations. As shown on **Figure 3-7**, low-income populations in the study Census Block Groups are found along I-64 in the Cottage Park neighborhood in Norfolk, Hampton University, and King's Square areas of Hampton. Along I-664, a low-income population resides in the Jefferson area of Newport News.

Figure 3-7: Minority and Low-Income Populations



Environmental Consequences

The **No-Build Alternative** would not result in any project-related construction and would therefore not directly impact low income or minority populations.

The majority of the Census Block Groups adjacent to the **Build Alternatives** contain minority and low-income populations that meet the established threshold for EJ populations. As shown in **Table 3-19**, 67 percent of the Block Groups adjacent to **Alternative A** are EJ Block Groups, 77 percent of those adjacent to **Alternative B** are EJ Block Groups, 83 percent of those adjacent to **Alternative C** are EJ Block Groups and 80 percent of those adjacent to **Alternative D** are EJ Block Groups.

Table 3-19: EJ Block Group Impacts by Alternative

Impact	Alternative A	Alternative B	Alternative C	Alternative D
Number of Block Groups Adjacent to Build Alternatives	12	22	30	44
Block Groups that meet the EJ Threshold	8 (67%)	17 (77%)	25 (83%)	35 (80%)

Total relocations by Block Group are provided in **Table 3-20**. All of the relocations under all of the Build Alternatives are located in Block Groups containing EJ populations (minority and low-income).

Table 3-20: Total Residential Relocations within EJ Block Groups

Block Group	Community or Neighborhood	Alternative A	Alternative B	Alternative C	Alternative D
400-3	Willoughby	8	8	0	8
800-1	Commodore Park	1	1	0	1
10501-2	Park Place	0	0	1	1
10501-1	Hampton Terrace	0	0	9	9
30800-1	Newsome Park	0	0	1	1
Total	**N/A**	**9**	**9**	**11**	**20**

The majority of the residential relocations are located in Block Groups 400-3 and 10501.1. Block Group 400-3 is located in the vicinity of I-64 in the Willoughby area. Widening of I-64 in this location would result in relocation of eight residential properties under Alternatives A and B. Block Group 10501-1 is located in the vicinity of I-664 in Hampton. Widening of I-664 in this location would result in relocation of nine residential properties under Alternatives C and D within the Hampton Terrace community. More information on the impacts by alignment segment are provided in **Appendix A**.

When impacts to EJ populations were identified, the impacts experienced by the affected population were compared to those experienced by others residing in the entire alternative alignment boundary. A disproportionately high and adverse effect on minority and low-income population locations is defined by the FHWA EJ Order as an impact that:

- Would be predominately borne by a minority and/or low-income population, or
- Would be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that would be suffered by the nonminority population and/or non-low-income population.

Per the FHWA Memorandum *Guidance on Environmental Justice and NEPA* (December 16, 2011), the impacts to minority and/or low-income populations were compared with respect to the impacts on the overall population within the project area (US Census Block Groups that intersect with the Build Alternatives). All relocations for each of the Build Alternatives would occur in Census Blocks that meet the definition of Environmental Justice populations. This is not unexpected since 76 of the 78 Block Groups in the Study Area Corridors meet the threshold for Environmental Justice. Furthermore, the ethnicity of individual relocatees has not been determined at this time. Therefore, while 100 percent of the Block Groups that would experience relocations meet the definition of an EJ population, the non-minority population within those same Block Groups range from 0 to 74 percent. This increases the probability that not all relocations would be borne by minorities and the impact would not be disproportionate.

As preliminary design and assessment of impacts advances, consideration of an alternative's impacts to individual minority or low-income persons will receive closer scrutiny. For example, minority or low-income extended families may be located adjacent to each other to assist each other with dependent care. In this type of circumstance, relocation of one household away from another may impose disproportionately high and adverse effects to minority or low-income individuals (see *FHWA's 2015 Environmental Justice Reference Guide* for detailed discussion).

The transportation benefits (e.g., reduced congestion, increased regional accessibility, etc.) would be borne by all users of the facility. The increased capacity of each Build Alternative would reduce congestion along all improved roadways, including those roads within Block Groups containing EJ populations.

Because temporary easements for construction are anticipated to be short-term and would not preclude access to or impact use of properties, potential effects during construction are not considered high or adverse to minority and low-income populations.

Mitigation

Under the Build Alternatives, efforts would be made to relocate impacted residents, businesses, and community facilities within the same community. The displaced would receive fair compensation and relocation assistance, minimizing impacts to community cohesion. Mitigation measures for impacts to neighborhoods and community facilities would include advance and frequent notice before changes in travel patterns, plentiful signage for detours, restrictions on work hours to daytime hours, methods to reduce dust, and construction worker parking in surrounding lots to avoid disrupting existing area parking.

Specific noise mitigation measures would be considered for areas of severe and moderate impact, once a Preferred Alternative is selected. At that time, mitigation measures such as noise barriers and buffer zones would be evaluated in greater detail.

As described in the *HRCS Right-of-Way and Relocation Technical Memorandum*, property acquisition activities would be performed in accordance with the Uniform Relocation Assistance and Real Properties Acquisition Act of 1970 (Uniform Act), as amended. Fair market value would be provided to all property owners as compensation for land acquisition.