Environmental Assessment
Raphune Hill Road Improvements
St. Thomas, U.S. Virgin Islands
Environmental Assessment

Raphune Hill Road Improvements
St. Thomas
United States Virgin Islands

Prepared by the
U.S. Department of Transportation
Federal Highway Administration
Eastern Federal Lands Highway Division

In cooperation with the
Virgin Islands Department of Public Works

December 2017

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Date

Prepared pursuant to the Council on Environmental Quality’s regulations for implementing the National Environmental Policy Act (43 CFR 1500)
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Section 1 – Purpose and Need

1.1 Introduction

In this Environmental Assessment (EA), the Eastern Federal Lands Highway Division of the Federal Highway Administration (FHWA), in cooperation with the Government of the Virgin Islands of the United States, Virgin Islands Department of Public Works (VI DPW) presents alternatives for the improvement of Raphune Hill Road (also referred to as Route 38) in Charlotte Amalie. Charlotte Amalie is located on the island of St. Thomas, which is part of the United States Virgin Islands (USVI). The improvements to Raphune Hill Road would start approximately 200 feet east of the Centerline Road (also referred to as Route 313) intersection and would continue eastward for approximately 0.71 miles to Al Cohen’s Plaza. Raphune Hill Road would then transition to existing Weymouth Rhymer Highway. Also, the Route 381 intersection would be relocated 425 feet east of its current location. Figure 1 shows the location of the project. This EA also discloses the potential impacts of the implementation of those alternatives and documents the agencies’ decision-making process.

Figure 1. Location Map
This EA is divided into five sections. Section 1 presents the purpose and need for the action, discusses the location and background of the project, identifies related plans and planning, and provides information regarding the scoping completed as part of the project development process. Section 2 presents the alternatives proposed to meet the purpose and need for the action and discusses alternatives that were dismissed from further consideration. Section 3 provides information regarding the resources present in the study area that would be impacted by the proposed action, and also discloses the impacts of each alternative to the resources. Section 4 documents the public involvement process throughout the development of this EA. Section 5 presents a list of the references.

The Council on Environmental Quality (CEQ) regulations (40 CFR 1500-1508) describe the means for Federal agencies to develop the Environmental Impact Statements (EIS’s) mandated by the National Environmental Policy Act (NEPA) in Section 102. Under the CEQ regulations, an EA should be developed when there is not enough information to decide whether a proposed action may have significant impacts. If an EA concludes that a Federal action will result in significant impacts, the Agency is required to prepare an EIS or alter the action proposed. Otherwise, the Agency is directed to issue a Finding of No Significant Impact (FONSI).

Section 1508.09 of the CEQ regulations states that the purposes of an EA are to:

- Briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or a FONSI.
- Aid an Agency’s compliance with the Act when no EIS is necessary.
- Facilitate preparation of an EIS when one is necessary.

Preparation of an EA is also used to help agencies comply with Section 102(2)E of NEPA, which requires an agency to “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.” It also provides for mitigation for impacts that may otherwise be considered significant.

This EA was prepared to meet the NEPA requirements of FHWA. FHWA’s NEPA regulations are codified at 23 CFR Part 771.

### 1.2 Project Background

The proposed project has evolved from a number of past planning and environmental studies that have proposed improvements to the east-west traffic movement through Charlotte Amalie. In 1984, a Final EIS studied improvements within a 4.3 mile corridor that extended from the vicinity of the Windward Passage Hotel in western Charlotte Amalie east to just beyond the top of Raphune Hill. The alternatives were divided in urban and rural sections. The urban section started at the Windward Passage Hotel and proceeded eastward along the Charlotte Amalie waterfront to W.G. Lewis Sr. Lane (formerly Lovers Lane). The rural section started at the W.G. Lewis Sr. lane and proceeded eastward to the top of Raphune Hill in the vicinity of Weymouth Rhymer Highway.
Nine alternative alignments were evaluated in that Final EIS, of which Alternative A2-B1 was identified as the preferred alignment. Alternative A2, the urban section, proposed to widen the existing two-lane Veterans Drive to a four-lane divided arterial roadway. Alternative B1 proposed to connect with A2 at the Lovers Lane/Long Bay Road/Veterans Drive intersection and continue north along Lovers Lane as a four-lane road. After crossing Sugar Estate Road, Alternative B1 continued on a new alignment, veering eastward on the hillside north of Charlotte Amalie High School and the hospital. Alternative B1 would have terminated at Weymouth Rhymer Highway just beyond the top of Raphune Hill Road (Federal Highway Administration, 1984). Alternative A2-B1 was selected in the Record of Decision.

Local opposition to the amount of harbor filling and visual impacts to the hillside caused FHWA and VI DPW to reexamine Alternative A2-B1. The urban section was broken into two segments for which reevaluations were completed in 1997. The first reevaluation analyzed the urban portion of the project from Windward Passage Hotel to Tolbod Gade. The second reevaluation, completed as the Veteran’s Drive Improvements EA, assessed the remainder of the urban portion of the project from Tolbod Gade to the Long Bay Road and W. G. Lewis Sr. Lane intersection.

Long Bay Road from the intersection of Veterans Drive and W.G. Lewis Sr. Lane to Centerline Road was widened to four lanes in 2012. The improvement of the section of Veterans Drive from Tolbod Gade to the Long Bay Road and W.G. Lewis Sr. Lane intersection is estimated to be completed in 2019.

Reevaluation of the rural section was completed as the Raphune Hill Bypass EA, which was also completed in 1997. This EA determined that Alternative B1 would be very costly, and would cause scars on the hillside above Charlotte Amalie that would detract from the setting of the historic district. The 1997 EA/FONSI selected Alternative D as presented in the 1984 Final EIS for implementation instead of Alternative B1. Under Alternative D, the existing road system would be reconstructed. The new road would have four 12-foot lanes, a four-foot shoulder, curb and gutter, and a design speed of 25 mph (reduced from 35). This alternative was selected because of its reduced right-of-way and relocation impacts, reduced construction costs, public opinion against Alternative B1, and reduced visual impacts to Raphune Hill.

Other improvement projects have been completed to improve the flow of traffic in the project area. In 2012 the intersection of Raphune Hill Road and Centerline Road was widened to allow for more cars to queue in the turning lane. Raphune Hill Road was shifted to the north to provide a turning lane for vehicles turning left onto Centerline Road. This allows vehicles turning left more room to queue without blocking the through travel lane.

A second intersection improvement project at Raphune Hill Road and Centerline Road was completed in 2017. Approximately 450 feet of Centerline Road was widened at its intersection with Raphune Hill Road to create a dedicated right-turn lane. Approximately 300 feet of westbound Raphune Hill Road was widened to expand the dedicated left-turn lane.
The proposed project would make improvements to Raphune Hill Road from the limits of the 2012 and 2017 projects eastward for approximately 0.71 miles to Al Cohen’s Plaza, and would relocate the Raphune Hill Road / Route 381 intersection. The study area consists of lands surrounding the proposed project on which there are private residences as well as human, cultural and natural resources that could potentially be affected by the project.

1.3 Need

The proposed improvements are needed to reduce congestion and improve safety. The need for improvements along the 4.3-mile corridor extending from the vicinity of the Windward Passage Hotel in western Charlotte Amalie, east to just beyond the top of Raphune Hill was first documented in the early 1980’s. This two-lane road is one of the most important and heavily traveled east/west routes on the island, and is classified as a principal arterial. Raphune Hill Road connects Charlotte Amalie to several major shopping centers and links central areas of the island to the eastern end of St. Thomas. The improvements completed at the intersection of Raphune Hill Road and Centerline Road improved traffic operations at this intersection; however, there is still congestion along Raphune Hill Road in both the eastbound and westbound directions.

The existing road is comprised of two asphalt paved travel lanes, approximately nine feet in width. The sharp curves and steep grade of the hill cause traffic to slow, and make it especially difficult for truck and bus traffic. Improvements to the horizontal alignment are needed in order to allow for more consistent travel speeds. On the western end of the corridor, just east of Centerline Road, the average daily traffic (ADT) volume on Raphune Hill Road are forecasted to rise from 36,108 in 2020 to 46,925 in 2040. ADT volumes on Route 381 are forecasted to rise from 619 to 805 over the same time span.

There is currently no sidewalk along Raphune Hill Road, and the road has no paved shoulder, which inhibits pedestrian use. Stormwater runoff from the roadway surface is generally collected into natural channels and by a limited number of roadside ditches and culverts. At the crest of the hill on the north side of Raphune Hill Road, two driveways and Route 381 intersect with Raphune Hill Road. One driveway on the south side of Raphune Hill Road also intersects at the crest of the hill. The steep grade of the road and the configuration of the intersection with multiple roads results in poor sight distance for vehicles traveling on Raphune Hill Road and also for vehicles entering Raphune Hill Road from Route 381 and the private driveways (Figure 2).
At the western end of the project limits, westbound traffic stops at the traffic signal at Centerline Road. Left-turn traffic queues beyond the capacity of the left-turn lane (Figure 3). Turn movements into the Wheatley Shopping Center are also made difficult by the presence of queued traffic.
1.4 Purpose

The purpose of the proposed project is to improve the safety and operation of Raphune Hill Road from its intersection with Centerline Road to near its designation as Weymouth Rhymer Highway (including the intersection of Raphune Hill Road and Route 381), while improving pedestrian access and minimizing impacts to private properties, natural resources and cultural resources along the road corridor. This project would expand roadway capacity to reduce congestion, flatten curves to improve safety, and construct a sidewalk to improve pedestrian access. The objectives that must be met for this project to be considered a success are:

- Designs are consistent with existing and planned segments of Raphune Hill Road adjacent to the project area;
- Designs include provisions for improved pedestrian movements; and
- Designs reduce congestion and meet minimum design standards where practical.

1.5 Scoping

Scoping is an early and open process to: determine important issues, eliminate issues that are not important or relevant, identify relationships to other planning efforts or documents, define a time schedule for document preparation and decision-making; and, define purpose and need, agency objectives and constraints, and the range of alternatives. For further scoping and public participation information, see Chapter 4: Public Involvement and Coordination and Appendix A: Agency Coordination Letters.

A public scoping meeting was held on June 24, 2008 at the Charlotte Kimmelman Center, Roy L. Schneider Hospital in Charlotte Amalie, St. Thomas. Information on the study was provided at the meeting and a comment sheet was distributed to gather information from the public. The public identified several concerns associated with the widening of the existing roadway (Birt, 2008)

Issues identified during the scoping process include:

- The widening of Raphune Hill Road would impact private properties and cause for the loss of property. At least one residence, a multi-family residence, would be impacted.
- Temporary easements would also be necessary in order to construct any improvements to the existing road.
- Raphune Hill Road cannot be closed to traffic during construction. One lane must always be open, and it is preferable to have two lanes open during rush hour. Construction work during the evening may be necessary.
1.6 Related Projects and Plans

2040 USVI Comprehensive Transportation Master Plan
The purpose of the Comprehensive Transportation Master Plan is to present a strategy to improve transportation infrastructure throughout the USVI through the year 2040. This multi-modal transportation plan identifies short- and long-range transportation needs and improvement strategies. The transportation system on the USVI includes roads, bridges, buses, ferries, airports, water ports and trails for walking and cycling. These modes work together to provide mobility within and between each island. Raphune Hill Road was identified along with Veterans Drive as carrying the next highest number of vehicles per day in the Territory, after Alton Adams Sr. Drive in front of the Hospital (PB Americas, Inc., 2009).

Community Advisory Groups identified congested areas, high crash locations, inter-island issues, access issues, missing roadway connections, transit service issues, pedestrian and bicycle access, and parking needs in meetings held in October 2009. Widening Raphune Hill Road/Weymouth Rhymer (Route 38) to four lanes and adding sidewalk and bike path from Centerline Road/Wilma Blyden Road (Route 313) to Donoe Road (Route 39) was identified as a congestion management/relief project (PB Americas, Inc., 2009).
Section 2 – Alternatives

This section describes the process used to develop a range of preliminary design alternatives considered to meet the project needs, and the alternatives carried forward for detailed study. The No Build Alternative was retained (as required by 40 CFR 1502.14) along with two build alternatives: the 3-Lane Alternative and the 4-Lane Alternative. Both the 3-Lane Alternative and the 4-Lane Alternative propose to widen Raphune Hill Road along the existing alignment.

2.1 No Build Alternative

Under the No-Build Alternative, Raphune Hill Road within the study limits would remain in its existing configuration (i.e., two lanes). Regular maintenance, such as pavement overlays and patching, would be performed to preserve the structural integrity of the pavement. The No Build is carried forward to provide a benchmark to compare what would happen to the study area if current and forecasted conditions were to continue.

2.2 Build Alternative: 3-Lane Alternative

Under this Alternative, Raphune Hill Road would be widened from two 9-foot travel lanes to three 11-foot travel lanes (Figure 4). The additional lane would be a climbing lane in the eastbound direction. The roadway would be posted with a 20 mile-per-hour speed limit. A 4-foot vegetated strip and 5-foot wide sidewalk would be constructed adjacent to the westbound lane. Vegetation planted would include ficus shrubs or other native grass, shrub and/or tree species. A 27-inch high guardwall would be constructed to provide a crash barrier on the downhill side of the road. The guardwall would be faced with stone cladding and would include a handrail for pedestrians. The stone would be placed on the road-facing side and top of the wall. The back of the wall, along with the rest of the retaining wall on that side, would be a standard concrete finish.

Most of the driveways along Raphune Hill Road would be reconnected to the new road in the same location; however, in some cases the length of the driveway was altered. Preliminary design plans in Appendix B depict the new alignment and driveway connections.
Storm runoff would be collected in a ditch adjacent to the eastbound lanes and would be collected using drop inlets. Curb and gutter would be installed along the westbound lane and storm runoff would be collected using curb inlets. All of the water collected in the inlets would be conveyed under the road through a storm drain system and conveyed to the bottom of the hill. The storm drain system would connect to the existing system along Centerline Road, which outfalls to Long Bay.

Two utility lines are known to be present in the project area; power and telephone. These utility lines would be relocated as necessary and street lighting, pavement markings and traffic signing would be installed.

The intersection of Raphune Hill Road and Route 381 would be relocated from its current location at the apex of the hill approximately 425 feet to the east to intersect with Estate Road. This would improve the sight distance for turning movements. The intersection would be designed to allow for a traffic signal to be installed in the future; however, this project would only include the installation of traffic signs (including a stop sign on Route 381). Approximately 650 feet of Route 381 would be relocated. The new section of Route 381 would consist of a two-lane road with 11-foot wide travel lanes and a right-turn lane onto westbound Raphune Hill Road. Route 381 would also have a 4-foot vegetated strip and a 5-foot sidewalk on the eastbound side of the road (Figure 5). A crosswalk would be striped across Estate Road and Raphune Hill Road to provide a connection between the sidewalk on Raphune Hill Road and the sidewalk on Route 381.
Three driveways would also be reconfigured. The driveway currently at the top of the hill that accesses the Villa Blanca Hotel and the driveway next to it that accesses a residence/office would be reconfigured to join Route 381 instead of Raphune Hill Road. The driveway located south of Raphune Hill Road would also be realigned so that it intersected with Raphune Hill Road further east of its existing location in order to improve sight distance.

Bus pull-off areas would be provided near the new intersection of Raphune Hill Road and Route 381. The pull-offs would be located immediately after the intersection in each direction.

![Figure 5. Typical Cross Section of Route 381](image)

**Minimization and Mitigation Measures**: Avoidance, minimization, and mitigation measures and Best Management Practices (BMPs) would prevent or minimize potential adverse effects associated with the implementation of the build alternatives. These measures and practices would be incorporated into the project design and construction plans.

**Private Property and Buildings**
- Houses adjacent to Raphune Hill Road would be inspected as part of a condition assessment prior to the start of construction so that it can be determined if any damages to these structures resulted from construction activities.
- Retaining walls would be constructed to minimize the impact footprint of the road to the extent possible.
- Coordination regarding permanent property acquisition, permanent easements, and temporary construction easements would be completed in accordance with the Uniform Relocation Assistance and Real Property Acquisitions Policies.

**Cultural Resources**
- Should construction activities unearth previously undiscovered archeological resources, work would be stopped in the area of any discovery and the FHWA and VI DPW would consult with the State Historic Preservation Officer (SHPO) and the Advisory Council on
Historic Preservation (ACHP), as necessary according to 36 CFR 800.13 Post Review Discoveries.

- Mahogany trees would be planted along the driveway to the Old Mill Site to maintain the existing appearance of the driveway.
- A Memorandum of Agreement would be completed to document the resolution of the adverse impacts to two archeological sites. Coordination completed with the SHPO to date has indicated that archeological data recovery and additional archival research would provide adequate mitigation. A Data Recovery Plan has been drafted and includes research topics to guide the archeological data recovery.

**Stormwater**

- Stormceptors would be installed to treat stormwater run-off. A stormceptor is an inline structural BMP designed to remove suspended solids and hydrocarbons from stormwater.

**Invasive Exotic Species**

- These BMPs would include measures such as: cleaning equipment to limit the introduction and spread of invasive species, use of weed-free seed mixes and mulch and use of a non-persistent cover crop to temporarily stabilize the soil and discourage the establishment of invasive species.

**Federally- and Territorially-Listed Species**

- Conservation measures for the Virgin Island tree boa would be implemented during construction.
- Impacts to the brown throated parakeet’s preferred nesting areas would be avoided to the extent possible. Prior to any clearing, the area will be surveyed for brown throated parakeet nests, and if found, coordination with the Department of Planning and Natural Resources (DPNR) will be completed.

**BMPs**

- Temporary BMPs would be utilized to minimize erosion and sedimentation from ground disturbing activities that expose bare soil, which would otherwise impact water quality. The BMPs would include soil cover (seeding, erosion control blankets, or mulch), perimeter protection (silt fence, fiber rolls), sediment retention (sediment traps or basins), and dust control.
- To preserve the visual character of the area and quality of the viewshed, locally available native vegetation would be used for seeding and for plantings in the vegetated strip.
- Any suitable soil excavated during construction would be stockpiled and reused as needed.
2.3  Build Alternative: 4-Lane Alternative – Preferred Alternative

Under this Alternative, Raphune Hill Road would be widened from two 9-foot travel lanes to four 11-foot travel lanes (Figure 6). The new roadway would be signed for a 20 mile-per-hour speed limit. A 4-foot-wide vegetated strip and a 5-foot wide sidewalk would be constructed adjacent to the westbound lanes (the downhill side).

![Figure 6. Typical Cross Section of the 4-Lane Alternative](image)

Utility relocation, stormwater management, street lighting, pavement markings and traffic signing would all be installed as described for the 3-Lane Alternative.

The intersection of Raphune Hill Road and Route 381 would be relocated as described in the 3-Lane Alternative.

Minimization and mitigation measures would be implemented as described in the 3-Lane Alternative.

2.4  Alternatives Considered But Not Carried Forward

Alternative B1
Alternative B1 from the 1984 Final EIS would start at the intersection of Lovers Lane and Veterans Drive, the existing Lovers Lane would be widened to four lanes to the intersection of Alton Adams Sr. Drive. From that intersection, a new four-lane road would continue northward,
passing approximately 250 feet west of Charlotte Amalie High School. The alignment would then turn east and pass approximately 250 feet north of the school. It would then head east passing about 700 feet north of the hospital at an elevation approximately 150 feet above the hospital. It would then begin an ascent as it swings south, passing below Wintberg Peak where it would reach a maximum elevation of 370 feet. The alignment would then continue southeast and descending until connecting with existing Weymouth Rhymer Highway near the top of Raphune Hill. This alternative was not carried forward because of the substantial environmental impacts of constructing a new four-lane road. A new four-lane road would require a large amount of cutting into the hill-side due to the steep grades and the clearing of a large amount of vegetated area. The improvements to travel time and road network operation could be realized by widening the existing Raphune Hill road with less environmental impact.

**Alternative Configurations for Widening Raphune Hill Road**

Several additional configurations for widening Raphune Hill Road were analyzed. These roadway sections included: widening Raphune Hill Road to four 12-foot lanes with no sidewalk, and widening Raphune Hill Road to four 12-foot lanes with sidewalk on both sides of the road.

**Loop Plan**

Under this alternative, the two-lane roadway of Raphune Hill Road would be retained, but both lanes would be converted to one-way headed westbound and a new two-lane roadway would be built behind the Daily News building that is one-way eastbound (Figure 7). The new roadway would feed into Raphune Hill Road through a widened and realigned Route 381. This alternative would result in an increase in traffic volume capacity compared to the existing two-lane road and a reduction in traffic conflict points. However, this alternative would increase the length of the travel time to residents of Raphune Hill and the response time of emergency services, as they would have to travel around to loop to access the many residences along Raphune Hill Road adding an additional three to five minutes in travel time.

This alternative would result in approximately 4.9 acres of disturbance, with approximately 125,000 cubic yards of excavation and 11,700 cubic yards of fill (assuming no improvements would be made to Raphune Hill Road). Compared to the 4-Lane Alternative, the loop plan would result in 2.9 acres less ground disturbance but would require approximately 84,000 more cubic yards of excavation. The Loop Plan would have profile grade of 14.67% (similar to the 14.14% maximum profile grade of the 3-Lane and 4-Lane Alternatives), and would still require an earth/rock cut of 122 feet would still be required at the top of the hill in order to tie into existing Route 381.
Figure 7. Map of Alternatives
Section 3 – Affected Environment and Environmental Consequences

This section describes the impacts of the alternatives presented in Section 2. These consequences are reported for the No-Build Alternative and the Build Alternatives within the study area, which includes the lands adjacent to Raphune Hill Road and the intersecting roadways. Table 1 summarizes environmental issues and their relevance to the project. The environmental data and findings presented herein were gathered from Federal, Territorial, and local agencies; previous studies; project specific resource surveys, existing literature and websites; aerial photography; geographic information system (GIS) databases; public meeting comments; and site visits to the project area.

3.1 Summary of Environmental Impacts

Each resource or issue relates to a specific aspect of the study area and the surrounding communities, and address Federal and Territorial laws, regulations, and orders.

Table 1. Summary of Environmental Resources/Issues Potentially Impacted by the Build Alternatives

<table>
<thead>
<tr>
<th>Resources/Issue</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Use</td>
<td>The Virgin Islands Zoning Law, adopted in 1972, established 17 categories of land uses into which the lands of the territory are divided. It specifies uses that are allowable in each of the districts. Zoning maps for the territory were adopted at the same time and are administered by DPNR. Land use along the corridor is primarily detached single family houses and some local businesses. Although the population of St. Thomas is expected to increase slightly over the next twenty years (PB Americas, Inc., 2009), land use is not expected to change as a result of the proposed improvements.</td>
</tr>
<tr>
<td>Community Facilities and Services</td>
<td>The following community facilities and services (churches, schools, civic organizations, law enforcement, or emergency services) are located along or near Raphune Hill Road: Schneider Regional Medical Center and Wheatley Shopping Center. Improvements would take into consideration impacts to access to these facilities and services. See Section 3.2 for more details.</td>
</tr>
<tr>
<td>Right-of-Way Acquisition and Relocations</td>
<td>Fifty-one tax parcels are located adjacent to the project area. Of these parcels, most are residences. Widening of the existing roadway would require the acquisition of property along the roadway corridor. Properties would be impacted by permanent acquisitions, permanent easements, and temporary construction easements. See section 3.3 for more details.</td>
</tr>
<tr>
<td>Demographics: Title VI and Environmental Justice</td>
<td>The study area borders the southern boundary of the Northside Subdistrict and the northern boundary of the Charlotte Amalie Subdistrict. The percents of minority owner/occupants for the Northside and Charlotte Amalie Subdistricts are 63.8% and 92.8% respectively, compared with a rate of 84.9% for the Island of St. Thomas. The poverty rates for the Northside and Charlotte Amalie Subdistricts are 14.3% and 10.3% respectively, compared to a rate of 25.2% for the Island of St. Thomas (U.S. Department of Commerce, 2010).</td>
</tr>
</tbody>
</table>
Per Environmental Protection Agency/CEQ Guidance, a low-income community has a greater percentage of persons below poverty compared with the general population or other appropriate geographic area. A minority community has a minority population greater than 50% or “meaningfully greater” than the minority population percentage in the general population or other appropriate geographic area. Under this guidance, the Charlotte Amalie Subdistrict is a minority community, but neither subdistrict is a low-income community. Project activities will not have disproportionate or adverse impacts on minority or low-income populations.

| Topography, Geology, Soils | The island is volcanic in nature and the terrain is generally steep and rugged. The soils over most of St. Thomas are generally not more than one-foot thick and it is coarsely granular due to the presence of clumps of clay and silt particles. Forty percent of the land in the project area consists of slopes and rocks. The more urban part of the study area is primarily housing and paved roads. Not much soil is found due to the hardened bedrock. Other properties include no frost action, no subsidence, high runoff potential, and the possibility of producing acidic conditions through corrosion. These characteristics would be considered in the design of the project (USDA NRCS, 2012). |
| Parks and Recreational Resources | There are no publicly owned parks or recreational areas within the vicinity of the project area. |
| Section 4(f) | In accordance with Section 4(f) of the Department of Transportation Act of 1966 (49 USC 303) and 23 CFR 774, FHWA “may not approve the use of land from a significant publicly owned park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that: (i) there is no feasible and prudent alternative to the use of land from the property; and (II) the action includes all possible planning to minimize harm to the property from such use.” Section 4(f) applies to all archeological sites on or eligible for inclusion on the National Register of Historic Places (NRHP) and which warrant preservation in place. Section 4(f) does not apply if FHWA, after consultation with the SHPO and ACHP, determines that the archeological resources is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place. After consultation with the USVI SHPO, FHWA determined that the archeological resources in the project area were important primarily for data recovery; therefore, the archeological sites were not Section 4(f) resources. No significant publicly owned park, recreation area, or wildlife and waterfowl refuge, or significant historic site is present in the study area; therefore, Section 4(f) is not applicable. |
| Cultural Resources | Pursuant to Section 106 of the National Historic Preservation Act, historic properties that are included in, or eligible for inclusion in, the NRHP and that are located within the proposed project’s area of potential effects (APE) have been identified and evaluated. Archeological investigation of the APE found one previously recorded site associated with Plantation Estate Thomas and another site associated with Plantation Estate Raphune. See Section 3.5 for more details. |
| Waters of the U.S., including Wetlands | Water resources are regulated by the U.S. Army Corps of Engineers and DPNR under provisions of the Clean Water Act. Executive Order 119900, Protection of
Wetlands, mandates that each Federal agency take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance their natural values. No wetlands or waters of the U.S. are located in the study area.

**Floodplains**

There are no floodplains within the project area. A copy of the Federal Emergency Management Agency Flood Insurance Rate Map for the study area is located in Appendix C.

**Water Quality**

No waters would be crossed by the proposed project; however, ground disturbing activities would expose bare soil, increasing the potential for erosion. Widening of Raphune Hill Road would also create new impervious area. See Section 3.5 for more details.

**Air Quality**

The Environmental Protection Agency has set national air quality standards for several common air pollutants and monitors regional attainment of these pollution thresholds. St. Thomas is not currently in non-attainment or out of compliance with Federal standards. In addition, the designated area of the Virgin Island Air Quality Control Region, which includes St. Thomas, has better than the national standards for Total Solid Particulates, sulfur dioxide (SO2), and nitrogen dioxide (NO2). This project would not cause any violation of the National Ambient Air Quality Standards. Emission levels for air pollutants currently monitored in the USVI areas have increased slightly on average over the past five years, but remain well below regulatory limits. St. Thomas has experienced increases in the amount of NO2 and SO2 pollution from 1990 to 2000, which correlates to increased usage of internal combustion engines and electricity generation from coal and oil power plants.

Gasoline-powered vehicles emit hydrocarbons and oxides of nitrogen. Carbon monoxide (CO) is a toxic gas that results primarily from the incomplete combustion of fossil fuels. High concentrations of CO are frequently associated with roadways that experience high vehicular volumes, low travel speeds, and traffic congestion. CO disperses rapidly with distance from the emission source. There are no parks, schools, or other air quality sensitive sites proposed in the vicinity of the project. Congestion would be alleviated by the project resulting in some reduction in mobile source emissions.

**Noise**

A highway traffic noise impact occurs when the predicted, existing or future highway traffic noise levels approach or exceed the noise abatement criteria (NAC), or when the predicted existing or future highway traffic noise levels substantially exceed the existing highway traffic noise level, even though the predicted levels may not exceed the NAC (Federal Highway Administration, 2011). Potential traffic noise impacts associated with the proposed project were assessed in accordance with the procedures and criteria approved by the FHWA.

The study area is located along residential and commercial land uses as well as undeveloped wooded locations. The existing roadway surface is the primary source of noise in the area, and would continue to be a source of noise. A noise study was completed to analyze the impacts of increasing the capacity of the road. See Section 3.6 for more details.
<table>
<thead>
<tr>
<th><strong>Viewscreens and Aesthetics</strong></th>
<th>The roadway is located on a steep hillside. Widening of the road would require large cuts into the hillside and visible retaining walls. The retaining walls would act to minimize the visual impact of grading on the slope adjacent to the proposed roadway widening. See Section 3.7 for more details.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Virgin Islands Coastal Zone Management Program</strong></td>
<td>The entire study area is located within Tier 2 of the USVI coastal zone. Tier 2 covers the interior portions of the three main islands while Tier 1 covers the strips of land along the coast. VI DPW is responsible for reviewing all activities such as earth change, subdivision, and zoning requirements within Tier 2.</td>
</tr>
<tr>
<td><strong>Wildlife and Wildlife Habitat</strong></td>
<td>Habitat within the study area consists of a mixture of developed urban areas (cleared, paved, with commercial businesses or residences) and disturbed dry urban forests. Vegetation present includes the following species: Jerusalem thorn, seagrape, royal poinciana, West Indian mahogany, and gumbo limbo. Wildlife habitat would be impacted by the widening of Raphune Hill Road. See Section 3.8 for more details.</td>
</tr>
<tr>
<td><strong>Threatened and Endangered Species</strong></td>
<td>A total of 14 Federally-listed species have the potential to be present in St. Thomas, but no Federally designated critical habitat is within or adjacent to the project area. A Biological Assessment was completed, and it was determined that the proposed action would have no effect on sea turtles, piping plover, roseate tern, and brown pelican. The project is located within the range of the Virgin Islands tree boa, Thomas’ lidflower, St. Thomas prickly ash, and Wheeler’s peperomia. See Section 3.9 for more details.</td>
</tr>
<tr>
<td><strong>Invasive Exotic Species</strong></td>
<td>Exotic invasive vegetative species in the USVI includes the coral, rubber and dodder vines, tan-tan, guinea grass, casha, neem, sweet lime, and genip (Virgin Islands Department of Agriculture). BMPs to prevent the introduction and spread of invasive species would be implemented. These BMPs would include measures such as: cleaning equipment to limit the introduction and spread of invasive species, use of weed-free seed mixes and mulch and use of a non-persistent cover crop to temporarily stabilize the soil and discourage the establishment of invasive species.</td>
</tr>
<tr>
<td><strong>Hazardous Materials Sites</strong></td>
<td>No known hazardous waste sites are located within the project area. Any hazardous materials encountered during construction would be remediated in accordance with applicable Territorial and Federal regulations. All solid waste material resulting from clearing and grubbing, demolition, or other construction operations would be removed from the project area and disposed of according to regulations.</td>
</tr>
</tbody>
</table>
3.2 Community Facilities and Services

Virgin Islands Transit Service (VITRAN) provides routes that service the southern, eastern, and western portions of the island. These buses serve both the urban and rural areas of St. Thomas. Buses run from Charlotte Amalie and Red Hook once every hour. VITRAN’s observed daily boardings for the Island of St. Thomas were 1,330 (PB Americas, Inc., 2009).

The Schneider Regional Medical Center is located north of the western end of the project limits. Wheatley Shopping Center is located at the western end of the project limits and is accessed along Raphune Hill Road by a driveway that also provides access to a residential area. At the eastern end of the project limits there are several businesses located in commercial buildings. The Seventh Day Adventist Church is also located just beyond the eastern end of the project limits.

Access along Raphune Hill Road and Route 381 would be provided during construction. The 3-Lane Alternative has an additional lane in the eastbound direction, which would allow for easier turn movements and access to facilities and services on the northern side of the road. The 4-Lane Alternative has an additional lane in both directions, which would allow for easier turn movements. Transit services would continue during the construction of the project, and would not change as a result of the project. The 3-Lane and 4-Lane Alternatives would enhance access to the medical center and shopping center. The No Build Alternative would have no impacts to community facilities and services.

3.3 Right-of-Way Acquisition and Relocations

Widening of the road would impact the properties and buildings adjacent to the road. The alignments of 3-Lane and 4-Lane Alternatives were adjusted where possible to minimize impacts to residences. One residence, located in the inside of the hairpin turn of Raphune Hill Road, would have to be acquired and demolished. Fifty-one parcels are located in the project area. A preliminary design of each of the build alternatives has been developed to determine the potential impacts of the proposed action. The 3-Lane Alternative would impact 29 parcels and approximately 110,000 square feet of property. The 4-Lane Alternative would impact 40 parcels and approximately 191,000 square feet of property. The impacts to the parcels may change as the design is finalized. Acquisition of right-of-way and the relocation of displaced residents and facilities would be completed in accordance with the Uniform Relocation Assistance and Real Property Acquisitions Policies of 1970, as amended.

In addition to permanent right-of-way acquisitions, permanent and temporary easements would also be needed under both the 3-Lane and 4-Lane Alternatives. The permanent easement would be needed for structural elements, like soil nails, that extend beyond the road limits into the adjoining property below ground. Temporary easements would be needed for grading and access during construction.

The No Build Alternative would have no right-of-way impacts.
3.4 Cultural Resources

In order to comply with Section 106 of the National Historic Preservation Act of 1966, as amended, and the implementing regulations found in 36 CFR 800, the effects of this undertaking on historic properties, i.e. cultural resources that are listed or eligible for listing in the NRHP were evaluated. Impacts resulting from a project may or may not have an “adverse effect” to the cultural resources. The criteria of adverse effect provide the basis for determining the project’s potential effect on historic properties.

Charlotte Amalie was established in 1672 by the Danish West Indian Company, the first permanent European settlement in USVI. The town had a high number of indentured servants who were forbidden to leave the island without permission. A few years later, the institution of slave labor was established in St. Thomas. As sugar plantations flourished, slave labor expanded as well. Sugar production vastly increased in the late eighteenth and early nineteenth centuries, but quickly declined due to successes on St. Croix.

An archaeological investigation was completed in order to identify the extent of known historic sites in the project area and to identify any previously unknown sites. On the western side of the project area, Estate Thomas was historically established and operated. This area contains evidence from the historic occupation of Plantation Estate Thomas. Where the road crests the Raphune Hill landform, Estate Raphune was established and operated. A Phase I archeological investigation of the APE was completed in 2012, and a Phase II archeological evaluation was completed in 2013. Two archeological sites were identified in the APE. Site Two was defined and is interpreted as deposits from the former slave cabin loci of the Estate Raphune plantation complex. The other site, 12VAm244, is related to the plantation complex of Estate Thomas (Espenshade, 2012).

Although most of site 12VAm244 was destroyed by modern development and the construction of intersection improvements at Centerline Road and Raphune Hill Road, the eastern edge of the site would be adversely affected by either the 3-Lane Alternative or the 4-Lane Alternative. Mitigation for the adverse impacts to this site would be completed through a detailed historical study of the Estate Thomas.

Site Two is recommended as eligible for listing on the NRHP. The site would be adversely affected by either the 3-Lane or the 4-Lane Alternative. Mitigation for the adverse impacts to this site would be completed through an archeological data recovery and additional archival research. The proposed mitigation has been reviewed by the USVI SHPO. Coordination regarding the mitigation would continue to ensure that the adverse impacts are adequately mitigated.

The No Build Alternative would have no cultural resource impacts.
3.5 Water Quality

St. Thomas receives an annual average of 45 inches of rainfall, which is used by vegetation or evaporates. The island is volcanic, and a chain of rugged hills with little vegetation runs east-west. The amount of rainfall in the area increases with the increase in elevation and the leeward aspects receive more rain. There is no well-defined wet or dry season, but the period from September to November generally receives more precipitation than the rest of the year (Espenshade, 2012).

Surface water resources are almost negligible on St. Thomas, as most of the streams are small and generally intermittent. The steep slopes on St. Thomas result in rapid drainage during and immediately following rainfall events. The soils of St. Thomas typically have high permeability until well saturated at which point they become poorly permeable and retain water in the pore spaces between particles, rejecting any excess. The capacity of the soil to hold large volumes of water, together with infrequent major rainstorms and a high evapotranspiration rate, seriously reduces groundwater recharge as well as storm runoff.

The hydrology of the study area has been severely altered by historic and modern disturbance of the landscape. The western slopes of the Raphune Hill landform formerly drained into the marshes of Long Bay. The eastern quarter of the project area drains east via the headwaters of the Turpentine Run drainage. Turpentine Run meets the sea at Mangrove Lagoon (Espenshade, 2012).

The 3-Lane Alternative and 4-Lane Alternative would require approximately 7.2 acres and 7.8 acres of ground disturbance, respectively. During excavation and grading activities, bare soil would be exposed, which increases the potential for erosion. In order to minimize these impacts, erosion and sediment controls would be implemented. These controls would include soil cover (seeding, erosion control blankets, or mulch), perimeter protection (silt fence, fiber rolls), sediment retention (sediment traps or basins), and dust control.

The 3-Lane Alternative and 4-Lane Alternative would create approximately 2.2 acres and 2.7 acres of new impervious area, respectively. Increases in impervious area and traffic volumes increase the amount of pollutants that are washed from the road surface into the receiving waters. Stormwater management measures would be implemented to minimize potential degradation of water quality. Because of the topography and climate, USVI requires the “establishment of vegetation at disturbed sites and vegetated filter strips to treat stormwater runoff” rather than retention structures because of the topography and climate (NOAA). Vegetative controls would reduce discharge volumes.

From the top of Raphune Hill Road west to the intersection with Centerline Road, stormwater would be collected along the road and conveyed down to the bottom of the hill through storm sewer pipes. Opportunities to treat more stormwater through infiltration practices, such as dry swales, would be analyzed during the design process. From the top of Raphune Hill Road east to
the project limits and along Route 381, stormwater would be treated as sheet flow from the road through vegetation. Oil and grit separators (stormceptors) would also be installed where appropriate to improve water quality.

Under the No Build Alternative, stormwater runoff would continue to be collected along the side of the road and discharge to adjacent properties.

### 3.6 Noise

Potential traffic noise impacts associated with the proposed project were assessed in accordance with the procedures and criteria approved by the FHWA and the VI DPW. A noise study was completed in 2013, and can be found in Appendix D. Noise-sensitive noise receptors with design year noise levels that approach or exceed the FHWA Noise Abatement Criteria for Activity Category B (residential) based on the 3-Lane and 4-Lane Alternatives were evaluated for appropriate noise abatement measures and traffic noise mitigation feasibility and reasonableness. Noise abatement measures were considered for all impacted noise receptors. Noise barriers were determined to be the only preliminarily feasible noise abatement measures for this project.

Noise abatement measures were considered for impacted residential noise receptors located on the north side of Raphune Hill Road, in areas where the proposed roadway improvements moved closer to residential properties (3-Lane and 4-Lane Alternatives). Construction of noise barriers within the Raphune Hill Road right-of-way was found to be feasible but not reasonable. Noise abatement measures were considered for impacted residential noise receptors on the west side of Raphune Hill Road in areas where the proposed roadway improvements moved closer to residential properties (3-Lane Alternative only). The residential properties are adjacent to the west side of Raphune Hill Road and have a driveway with direct access to Raphune Hill Road. The placement of a noise barrier was determined not to be feasible because it would restrict pedestrian and vehicular access to Raphune Hill Road. Allowance for pedestrian/vehicular access would result in a non-contiguous and ineffective noise barrier (Parsons Brinkerhoff, Inc, 2013).

Construction activity may cause intermittent fluctuations in noise levels. During the construction of the project, all reasonable measures would be taken to minimize noise impacts from these activities.

The No Build Alternative would have no noise impacts.

### 3.7 Visual

Visual resources are those physical features that make up the visual landscape, including land, water, vegetation, and man-made elements. These elements are the stimuli upon which one’s visual experience is based and include views “of” and “from” the roadway. Visual and aesthetic
resources within the project area include the undeveloped open space. The corridor is primarily a mix of commercial and residential properties.

Aesthetic elements to improve the driver’s view of the roadway include construction of a 4-foot wide vegetated strip and the installation of stone cladding on the guardwall. These elements are incorporated to also create a more pleasant environment for both drivers and pedestrians.

Excavation into the hillside and the placement of fill material on the downhill side would both be necessary in order to widen the existing road. Preliminary geotechnical investigation has indicated that the soil and rock on the westbound side of the road is stable enough to remain as an exposed rock cut. If unstable areas are found during construction, soil nails or other measures to provide a stable slope would be installed. Cut walls on the 3-Lane Alternative would reach up to 18 feet high. For the 4-Lane Alternative, the cut walls would reach up to 31 feet high. The cut walls would be visible to drivers and from locations in Charlotte Amalie. On the eastbound side of the road, a concrete retaining wall would be constructed. The maximum fill wall heights would be 23 feet for the 3-Lane Alternative and 26 feet for the 4-Lane Alternative. The concrete retaining wall would be visible when traveling around curves in the road, and would also be somewhat visible from locations in Charlotte Amalie. It is anticipated that vegetation will grow to screen most of the fill walls and so no aesthetic treatments would be added to the concrete retaining wall.

The No Build Alternative would have no visual resource impacts.

### 3.8 Wildlife and Wildlife Habitat

The habitat type in the study area is primarily dry forest (Figure 8). Vegetation present in the project area includes Jerusalem thorn (*Parkinsonia aculeate*), seagrape (*Coccoloba uvigera*), royal poinciana (*Delonix regia*), West Indian mahogany (*Annona spp., Swietenia mahagoni*), and gumbo limbo (*Bursera simaruba*). Tree species that have biological and/or historical significance include native or naturalized trees such as the gumbo limbo, bay rum (*Pimenta racemosa*), water mapoo (*Pisonia subcordata*), mahogany and royal poinciana. Areas that have been cleared are dominated by acacia. Common mammals in the study area are the mongoose (*Herpestes auropunctatus*), the mouse (*Mus musculus*), and the common rat (*Rattus rattus*). Several species of bats are also present. Common reptiles include species of geckos, anoles, and the iguana. Many bird species are known to occur in USVI. Approximately 30 are common residents or seasonal nesting varieties, while many additional species are rare or migrant species (Federal Highway Administration, 1984).
Figure 8. Vegetation at the Proposed New Route 381 Intersection

The 3-Lane Alternative and 4-Lane Alternative would require clearing of vegetation and grading, which would impact wildlife habitat. An expected 4.3 acres would be cleared and grubbed, mostly for the realignment of Route 381. This area is comprised primarily of trees and shrubs (Figure 8). Approximately 2.4 acres of ground would be re-vegetated once the road has been re-aligned. The area would be re-vegetated with a seed mix, which would likely include Bermuda grass, tall fescue, and Italian ryegrass. Wildlife in the study area would be displaced by both the 3-Lane and 4-Lane Alternatives due to the loss of habitat and noise; however, similar dry forest habitat can be found adjacent to the study area and is common throughout the eastern half of St. Thomas. The No Build Alternative would have no impact on wildlife or wildlife habitat.

3.9 Threatened and Endangered Species

Coordination with the U.S. Fish and Wildlife Service (FWS) was completed, in accordance with the Endangered Species Act of 1973, as amended. A Biological Assessment was completed to identify the possible presence of Federally- and Territorially-listed species in the study area and to assess the potential effects on any present species. A copy of the Biological Assessment can be found in Appendix E. A total of 13 Federally-listed species have the potential to be present in St. Thomas, and no Federally designated critical habitat is within or adjacent to the project area. Table 2 contains a list of the Federally-listed species.
Table 2. Federally-listed Species

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Federal Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leatherback sea turtle</td>
<td><em>Dermochelys coriacea</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Loggerhead sea turtle</td>
<td><em>Caretta caretta</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Hawksbill sea turtle</td>
<td><em>Eretmochelys imbricate</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Green sea turtle</td>
<td><em>Chelonia mydas</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Piping plover</td>
<td><em>Charadrius melodus</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Roseate tern</td>
<td><em>Sternia dougali</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Virgin Islands tree boa</td>
<td><em>Epicrates monensis granti</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Thomas lidflower</td>
<td><em>Calyptranthes thomasiana</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>St. Thomas prickly ash</td>
<td><em>Zanthoxylum thomasioum</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Wheeler’s peperomia</td>
<td><em>Peperomia wheeleri</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Eggers’ century plant</td>
<td><em>Agave eggersiana</em></td>
<td>Candidate for Listing</td>
</tr>
<tr>
<td>marron bacoba</td>
<td><em>Solanum conocarpum</em></td>
<td>Candidate for Listing</td>
</tr>
<tr>
<td>Puerto Rico manjack</td>
<td><em>Cordia rupicola</em></td>
<td>Candidate for Listing</td>
</tr>
</tbody>
</table>

The proposed project would have no effect on sea turtles, as no construction activities are to be done in or directly adjacent to coastal areas. The project would also have no effect on the piping plover or roseate tern, because these are both coastal species.

The Virgin Islands tree boa is considered one of the original inhabitants of USVI. The snake reaches a maximum length of four feet and is active mostly at night. It is found in trees and spends most of its time in a crevice or other shelter coming out occasionally to feed on anole lizards. The tree boa is rarely seen. The snake requires a hot, dry climate and habitat with a dense woodland structure and therefore is found only on the east end of St. Thomas. Lands within the project area contain sufficient canopy cover, soils, and food sources to support the tree boa; however, these areas are not considered to be within the known or acceptable range of the tree boa (Crossroads Environmental Consultants, Inc., 2012).

Tree boa avoidance and minimization measures will be implement and include:

1. Prior to any earth movements or vegetation clearing, the boundaries of the project area, the buffer areas and areas to be protected should be clearly marked in the project plan and in the field.
2. A biologist with experience identifying and locating boas should conduct a survey of all areas to be affected by the proposed project, whenever project activities are within 25 meters of potential boa habitat, to ensure that no boas are present or affected. If the species is present, conservation measures should be developed and implemented to minimize any possible adverse effects to the species and its habitat. Any findings should be reported to the FWS office so they can further assist you in developing sound conservation measures and specific recommendations to avoid, minimize and/or compensate for any impacts to this species.
3. Prior to any use of machinery on the site, the vegetation should be cleared by hand. All personnel involved in site clearing must be informed of the potential presence of the snakes, and the importance of protecting the snakes.

4. Before activities commence each workday during the vegetation clearing phase, the experienced personnel in searching for boas should survey the areas to be cleared that day, to ensure that boas are not found within the work area. If boas are found within the working area, activities should stop at the area where the boas are found until the boas move out of the area on their own. Activities at other work sites, where no boas have been found after surveying the area, may continue. If relocation of the species is necessary, any relocated boas should be transferred by authorized personnel of DPNR to appropriate habitat close to the project site. Any findings should be reported to the Service and to the DPNR Ranger office.

5. Strict measures should be established to minimize boa casualties by motor vehicles or other equipment. That included, before operating or moving equipment and vehicles in staging areas or near potential boa habitats should be thoroughly inspected by the personnel to ensure that no boas are lodged in the standing equipment or vehicles. If boas are found within vehicles or equipment, the DPNR must be notified immediately for proper handling and relocation. Any relocated boas should be transferred to appropriate habitat close to the project site.

6. An outreach/education plan should be implemented to inform land owners and employees about the conservation of protected species, as well as penalties for harassing or harming such species.

FHWA determined that the proposed action, with the implementation of the avoidance and minimization measures, may affect, but is not likely to adversely affect the Virgin Islands tree boa. FHWA also determined that the proposed project may affect, but is not likely to adversely affect the Thomas lidflower, St. Thomas prickly ash, Wheeler’s peperomia, Eggers’ century plant, marron bacoba, or Puerto Rico manjack. None of these plants were observed in the project area during the field survey; however, because not all of the study area was surveyed the absence of these species cannot be confirmed.

By letter dated October 17, 2013, the FHWA requested concurrence from FWS that the proposed project may affect but is not likely to adversely affect the Virgin Islands tree boa, Thomas lidflower, St. Thomas prickly ash, and the Wheeler’s peperomia. The FHWA also determined that the proposed project may affect, but is not likely to adversely affect, three Candidate for Listing species; Eggers’ century plant, marron bacoba and Puerto Rico manjack. The FWS concurred on December 3, 2013 with the determinations and reaffirmed their concurrence on July 7, 2017. A copy of these correspondence can be found in Appendix A.

DPNR maintains a list of territorially listed species under the USVI Indigenous Species Act. This list includes animals and plants considered to be of local or territorial significance and under protection. These species are discussed in the BA. The study area was surveyed for the presence of territorially listed reptiles, amphibians, birds, and plants. The presence of territorial listed species and suitable habitats were not detected within the study area, with the exception
of the brown-throated parakeet (*Aratinga pertinax*). The brown-throated parakeet and several large termite mounds (used by this species for nesting) were observed in areas that would be directly impacted by the 3-Lane and 4-Lane Alternatives. Coordination with DPNR indicated that this species is quite common; however, its protected status has not been changed on the official territorially listed species register. Impacts to preferred nesting areas would be avoided to the extent possible. Prior to any clearing, the area will be surveyed for brown throated parakeet nests, and if found, coordination with DPNR will be completed (Crossroads Environmental Consultants, Inc., 2012).

The No Build Alternative would have no impacts to threatened or endangered species.

### 3.10 Traffic

Traffic data was compiled and collected to determine the existing traffic conditions in the study area, and to project traffic data for out-years. Traffic counts, and the projected traffic volumes for 2020, 2030, and 2040, can be found in Appendix F. One of the factors influencing traffic volumes on the Island of St. Thomas is the number of cruise ships in port each day. When cruise ships are present, a number of tourist-related businesses open for the day, causing an increase in work-based trips on the island. In addition to these work-related trips, tourist related transit traffic, most specifically in the form of the Island’s Safari Buses, increases dramatically and in proportion to the number of ships in port.

Traffic simulation was done to study what a typical weekday rush-hour would look like in the year 2030 for each of the alternatives. For the No-Build Alternative, a number of vehicles would be unable to enter this section of the road under the simulated conditions. This shows that Raphune Hill Road would be highly congested in 2030 and that the traffic demand would exceed the road capacity. However, under the 4-Lane Alternative, the simulation showed that the high level of traffic demand would be accommodated, and all of the vehicles wanting to use the road would be able to do so.
Table 3. Traffic Simulation Results

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Travel Time</th>
<th>Speed (mph)</th>
<th>Delay (seconds per vehicle)</th>
<th>Vehicles Unable to Enter Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Build Alternative</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East</td>
<td>3 minutes, 32 seconds</td>
<td>10.3</td>
<td>100</td>
<td>513</td>
</tr>
<tr>
<td>West</td>
<td>2 minutes, 25 seconds</td>
<td>15.0</td>
<td>32</td>
<td>316</td>
</tr>
<tr>
<td>3-Lane Alternative</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East</td>
<td>2 minutes, 56 seconds</td>
<td>12.4</td>
<td>77</td>
<td>0</td>
</tr>
<tr>
<td>West</td>
<td>1 minute, 58 seconds</td>
<td>18.5</td>
<td>50</td>
<td>237</td>
</tr>
<tr>
<td>4-Lane Alternative</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East</td>
<td>2 minutes, 24 seconds</td>
<td>15.1</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>West</td>
<td>2 minutes, 24 seconds</td>
<td>15.1</td>
<td>11</td>
<td>0</td>
</tr>
</tbody>
</table>

3.11 Cumulative Impacts

The CEQ regulations (40 CFR 1508.7) require the assessment of “cumulative impacts” which are defined as:

*The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.*

In January 1997, the CEQ published a handbook entitled Considering Cumulative Effects Under the National Environmental Policy Act (see [http://ceq.eh.doe.gov/nepa/ccenepa/ccenepa.htm](http://ceq.eh.doe.gov/nepa/ccenepa/ccenepa.htm)). In the introduction to the handbook, the CEQ recognized that, “Evidence is increasing that the most devastating environmental effects may result not from the direct effects of a particular action, but from the combination of individually minor effects of multiple actions over time.”

Cumulative impacts are considered for all alternatives, including the no-build alternative. They were determined by looking at each resource (impact topic), determining which past, present, and future actions would impact the resource for the determined spatial and temporal boundaries, and then combining the impacts of the alternative being considered with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects in the surrounding region.
These cumulative actions are evaluated in the cumulative impact analysis in conjunction with the impacts on particular resources. A project to widen Veterans Drive from west of Hospital Gade to the Lovers Lane Intersection is planned for the near future. The road would be widened to four lanes, realigning a portion of the road and sidewalk into the St. Thomas Harbor, requiring 7.66 acres of fill and 2.63 acres of riprap.

Direct impacts to Cultural Resources, Water Quality, Wildlife and Wildlife Habitat, Threatened and Endangered Species have the potential for cumulative impacts.

**Cultural Resources:** Impacts to Estate Thomas, a site eligible for the NRHP, from the previous widening the Raphune Hill Road intersection with Centerline Road would be mitigated as part of the mitigation for the Raphune Hill Road improvement project. The Veterans Drive project would impact the Charlotte Amalie Historic District, including the Legislature Building (listed on the NRHP) and Fort Christian (National Historic Landmark). Mitigation measures would be incorporated into the Veteran’s Drive project to minimize impacts. This project combined with the Raphune Hill Road Improvements would have a long-term, minor cumulative impact to cultural resources.

**Water Quality:** The St. Thomas Harbor would be highly impacted by the work in Charlotte Amalie, where the widening of Veterans Drive would take place. In-water work from this project would have adverse, short-term water quality impacts. The widening of Veterans Drive will create new impervious area which will increase the amount of stormwater runoff. The combination of this project and the Raphune Hill Road improvements would have temporary, moderate cumulative impacts to water quality.

**Wildlife and Wildlife Habitat:** The widening of Veterans Drive would impact primarily urban land and the harbor and not the dry forest habitat typical of the Raphune Hill study area. The Route 381 intersection improvements are located adjacent to the existing roadway where wildlife habitat is marginal. No other reasonably foreseeable projects are planned in the study area that would have cumulative impacts to wildlife and wildlife habitat.

**Federally-Listed Species:** The Raphune Hill Road improvements would not impact the Federally-listed species identified in the project study area. No other reasonably foreseeable projects are planned in the study area that would have cumulative impacts to Federally-listed species.

The impacts of the proposed improvement of Raphune Hill Road would not rise to a level of significant cumulative impacts.
Section 4 – Coordination

This chapter documents the scoping process for this project and includes the official list of recipients for the document.

4.1 Agency Coordination

As part of the scoping for this project, several agencies were contacted to solicit their input. These agencies included: the University of the Virgin Islands – COOP Extension Service; the University of the Virgin Islands Small Business Development Center; the Virgin Islands DPNR – Coastal Zone Management; the Virgin Islands DPNR – Division of Fish & Wildlife; the Virgin Islands Department of Tourism; the Nature Conservancy; the Virgin Islands State Historic Preservation Office; the Virgin Islands Resource Conservation and Development Council; the Environmental Association of St. Thomas and St. John, and the St. Thomas and St. John Chamber of Commerce.

Section 106 of the National Historic Preservation Act
A Phase I archeological investigation was completed in 2012 and a Phase II archeological evaluation was completed in 2013. Coordination with the VI SHPO indicated that the proposed project would adversely impact the two sites and that the proposed mitigation would adequately mitigate for the adverse impacts to the sites.

Section 7 of the Endangered Species Act
A Biological Assessment was completed for the study area. By letter dated October 17, 2013, the FHWA requested concurrence from FWS that the proposed project may affect but is not likely to adversely affect the Virgin Islands tree boa, Thomas lidflower, St. Thomas prickly ash, and the Wheeler’s peperomia. The FHWA also determined that the proposed project may affect, but is not likely to adversely affect, three Candidate for Listing species: Eggers’ century plant, marron bacoba and Puerto Rico manjack. The FWS concurred with the determination on December 3, 2013. The FHWA coordinated with the FWS on July 28, 2016 and July 7, 2017, and it was determined that the consultation was still valid.

4.2 Public Involvement

Comments from the public were solicited at multiple stages in the project prior to the release of the EA. Public information meetings were held on: June 24, 2008; January 10, 2013; and October 3, 2013. Flyers providing details of the proposed project and contact information for comments were sent to a mailing list of landowners in the project area, attendees of prior meetings and those who have expressed interest in the project. Responses to comments provided regarding the project to date are provided in Appendix G.
This EA will be available for public review from December 12, 2017 through February 2, 2018, and a public meeting will be held on December 19, 2017. During the public comment period, hardcopies of the EA will be available for review at the Virgin Islands Department of Public Works and the Enid M. Baa Public Library located at #20 Dronningens Gade, St. Thomas, VI 00802. An electronic version may also be found at the FHWA, Eastern Federal Lands Highway Division’s website at https://flh.fhwa.dot.gov/projects/vi/raphune/.

4.3 Permits

Coastal Zone Management
The Coastal Zone Management Act (CZMA) was enacted to encourage coastal states, Great Lake States, and United States territories and commonwealths to develop comprehensive programs to manage and balance competing uses and impacts to coastal resources. The project is located in the second tier of the coastal zone and so a CZM permit from DPNR is not required.

Territorial Pollutant Discharge Elimination System (TPDES)
DPNR, as authorized by the Environmental Protection Agency, administers the Virgin Islands Water Pollution Control Act Rules and Regulations (Title 12, Chapter 7, Section 184-26 of the Virgin Islands Rules and Regulations). Stormwater discharges from construction activities that disturb a total of one or more acres of land require a TPDES permit.
Section 5 - References


