Long Range Transportation Plan
Moving Forward RI – Transportation 2040

Environmental Resources Analysis & Consultation

Rhode Island Division of Statewide Planning

October 2020

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Environmental Impacts and Mitigation

Introduction

This section addresses the state's natural resources and broaches the concept of activities that can begin to mitigate any adverse impacts on a system-wide basis.

General Areas of Impact

1. Energy

Transportation contributes significantly to energy consumption and greenhouse gas emissions. Shifts in vehicle technology will increase the state's ability to manage the amount of energy consumed through transportation. It is becoming increasingly important during times of global political instability and climate change to reinvigorate our efforts to drastically reduce our fossil fuel consumption and develop more reliable and renewable energy sources. This concept is important not only for vehicle energy use, but also in transportation operations and facilities (green building design, solar powered detection equipment and signage, LED traffic lights).

The 2015 State Guide Plan Element for energy policy, *Energy 2035*, describes the existing state of Rhode Island's energy system and sets goals and policies to improve energy security, cost-effectiveness, and sustainability in all sectors of energy production and consumption, including transportation. There are many community impacts from the transportation system, although these may be offset to a great extent by mobility and quality of life benefits that are provided. Noise, speed, traffic congestion, solid waste (junk cars, tires, litter), light pollution, and snow removal residue (salt/sand) can all adversely affect communities. To a certain extent these are unavoidable, but special design techniques (cut-off light fixtures, quieter pavements) can mitigate these impacts without compromising safety. Recycling transportation related waste (such as fuel oil) and use of recycled materials in construction (asphalt) is also strongly encouraged.

2. Air Quality

One of the most critical impacts of the transportation system is degraded air quality; air pollution from transportation in the form of tailpipe emissions is the largest emitter of greenhouse gases. Exhaust from cars and trucks contribute pollutants that are regulated by the Clean Air Act (most notable, volatile organic compounds, oxides of nitrogen, carbon monoxide and particulate matter). Through the air quality conformity process, these emissions are well documented and modeled; rules require that transportation plans and projects do not result in further degradation of air quality. Currently, Rhode Island is in attainment for all NAAQS under the Clean Air Act.

The Congestion Mitigation Air Quality Program (CMAQ) exists to improve air quality. The FAST Act added eligible project categories, such as vehicle to infrastructure communications equipment, to its list of eligible projects. Rhode Island uses CMAQ funds to pay for MBTA Commuter Rail operating expenses south of Providence and construction of the Pawtucket/Central Falls Transit Center. In 2016, RIDOT added ferry service between Providence and Newport as a project utilizing CMAQ funding as a demonstration project. The service expanded to include Bristol in 2019. RIDOT continues to operate this

ferry service and may expand operations in future years. Several RIPTA programs rely on CMAQ for funding. These initiatives include new transit signal priority along several bus route corridors (mobility technology), T-Link Bus/Rail Connections, improved commuter and passenger resources, bus stop enhancements, and rolling stock replacement.

3. Water Resources

Water quality suffers due to stormwater runoff from highways that contain fuels, oils, lubricants, salt, sand, microplastics and particles from brake and tire wear. Sand, salt and soil erosion can also contribute large amounts of sediment and silt to runoff waters. Some of this runoff is filtered by natural means or treated in a wastewater facility, but some of it is collected in storm drains and runs untreated directly into water bodies. At a certain level this results in drinking water, public health, and ecological impacts. Given the future of extreme storm events, it is important to remember that uncontrolled stormwater runoff contributes to flooding and streambank erosion.

In 2016 the EPA cited RIDOT by means of a consent decree, stating that not enough stormwater was treated from existing projects. Per consent decree Rhode Island is obligated to increase stormwater treatment, create planning documents, and map and repair drainage. So RIDOT has created an entirely new stormwater and drainage program in order to meet the requirements of the consent decree. Rhode Island must focus on retrofitting discharges to impaired waters by designing and installing green infrastructure or stormwater treatment units (STU's) Since 2017, RIDOT has moved towards a 50% stormwater treatment for all capital projects as a minimum standard in order to accelerate consent decree compliance.

Preventing runoff pollution from road, highway, and bridge construction and operation requires planning, education, inspection, and maintenance. Proper construction of green infrastructure is critical to the effective treatment of polluted runoff and flood control. Finally, green infrastructure requires regular maintenance to ensure that they perform optimally. Once a system has been constructed or improved, responsibility for maintenance should be assumed by the state or the locality.

During construction, runoff must be controlled as it has the potential to pick up even more pollution from construction sites. Erosion, sediment, and runoff control plans that incorporate the most appropriate and cost-effective "best management practices" are essential to effective pollution control. Highway personnel must be educated about the requirements of the erosion/sediment/runoff control plan. Inspection and enforcement authority are necessary to ensure awareness of and compliance with the adopted practices.

Proactively upgrading storm drains and culverts before they fail can also save money in the long term by avoiding the costs of the upstream and downstream impacts of failure, emergency response measures, lost business and tourism due to lack of viable roads and utilities, and environmental cleanups.

Wetlands- Wetlands are now recognized for the many purposes they serve, including provision of habitat, flood storage, and groundwater recharge. There are few highway construction projects undertaken now that will have severe wetland impacts. However, when there are impacts, 2:1 wetland

replacement should be the goal, preferably on-site. It should be noted that it is a desirable goal to achieve a 2:1 mitigation replacement for freshwater wetlands, however 2:1 mitigation replacement for coastal wetlands under the Coastal Resources Management Program is a requirement pursuant at 650-RICR-20-00-1.3.1(L)(5)(a). If that is not possible, off-site receiving areas should be considered. The Rhode Island State Guide Plan Element 155, *Ocean State Outdoors: State Comprehensive Outdoor Recreation Plan* identifies wetland priorities. Additionally, RIDEM is undertaking an effort to map vernal pools in the state, which could also be targeted for off-site mitigation.

4. Wildlife

As most of the state's transportation system predates widespread concern for impacts to wildlife populations from the built landscape, existing infrastructure fragments important habitat and provides few crossing areas for animals. Wildlife impacts include direct mortality from vehicle collisions, and habitat loss, fragmentation, and alteration. Some indirect impacts can extend at least 1,000 meters into adjacent habitats. Impacts are myriad and can include: edge effects (e.g., noise and light pollution) leading to avoidance behavior or displacement by more adaptable species; elimination of pollinator habitat via excessive mowing; genetic isolation of populations; impediments to plants and animals shifting their range to adapt to changing conditions (e.g., marsh migration); invasive species introductions; contaminants in roadway runoff that can pollute nearby wetlands and waterways or draw animals to the road where they risk being struck by a vehicle; and thermal impacts to surface waters from runoff and loss of shading vegetation. These impacts can be significant and cumulative, degrading habitat and reducing or eliminating populations of wildlife over time. Transportation and service corridors are among the top state and regional threats identified in Wildlife Action Plans. Amphibian and reptile Species of Greatest Conservation Need (SGCN) are particularly vulnerable to roadway impacts; the 2015 *Rhode Island Wildlife Action Plan* (RI WAP) estimates that nearly eighty percent are adversely affected.

The most effective way to minimize wildlife collisions on the roadway and maintain ecological connectivity for terrestrial and aquatic wildlife is to provide safe passage. Decades of interdisciplinary research has demonstrated that wildlife underpasses and overpasses, when coupled with fencing that funnels animals to a crossing point, are an effective way of keeping animals off roads and minimizing impacts to both wildlife and humans.

Swerving to avoid animals of all sizes results in crashes, but deer are the most likely species to present a risk to human safety and property. Each year in the United States, about one million deer-vehicle collisions (DVC) result in approximately 200 deaths, 10,000 personal injuries, and $1 billion in property damage, according to the National Highway Traffic Safety Administration. DFW also collects an index of DVC in partnership with Law Enforcement. While a host of deterrent options have been marketed to reduce DVC, the most recent research from USDA suggests that illuminating bars across the fronts of vehicles reduce the potential for deer to stop in the roadway. Other deterrent options have little demonstrated impact, and the current state of the science suggests that wildlife crossings paired with properly installed and maintained fencing are the most effective method of reducing DVCs.

5. Scenic & Historic

In addition to established historic sites and districts, lesser known historic resources include ceremonial stone landscapes which were used by Native American tribes for celebrations and rituals. As they are not identified in the NEPA process, the State should make every effort to identify and protect these sites from development.

Section 106 of the National Historic Preservation Act requires federal agencies to take into consideration the effects of their undertakings on historic properties. In Rhode Island, all transportation projects that are federally funded are subject to review under Section 106. The Section 106 review process seeks to accommodate historic preservation concerns through consultation among the lead federal agency and other parties with an interest for historic properties. This process commences at the early stages of project planning and concludes when all parties reach a consensus. Other parties participating in this process may include: the Advisory Council on Historic Preservation, the State Historic Preservation Office, Tribal Historic Preservation Office(s) and Indian Tribe(s), applicants for federal assistance, local governments, and groups or persons with a demonstrated interest in the project. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize or mitigate any adverse effects on historic properties.

Section 4(f) of the Department of Transportation Act prohibits the USDOT operating administrations from approving any program or project that requires the "use" of any publicly owned parkland, recreation area, or wildlife and waterfowl refuge; or any land from a publicly- or privately-owned historic site listed or eligible for listing on the National Register of Historic Places (collectively, "Section 4(f) properties"), unless there is no feasible and prudent avoidance alternative to the use of the land, and the action includes all possible planning to minimize harm to the Section 4(f) property. A "use" is defined as either permanent incorporation, temporary occupancy, or constructive use.

6. Climate Change and Sea Level Rise

The Rhode Island Coastal Resources Management Council (CRMC) uses the 2017 global sea level rise (SLR) projections from the National Oceanic and Atmospheric Administration (NOAA) that anticipate a worst-case scenario of 8.79 feet in Rhode Island by the year 2100. Sea level is projected to rise another one to four feet by 2100 as a result of both past and future emissions from human activities and will be accompanied by large increases in tidal flood events. Current global temperature observations are aligned with the IPCC RCP 8.5 (worst case scenario) projections, which unless mitigated soon will result in long-term persistent accelerated SLR that will more negatively impact transportation systems.

Tide gauge recordings between 1931 and 2015 in Newport show an average rate of sea level rise of 2.81 mm per year, equivalent to more than ten inches over a century. The SLR rate at Newport tide gauge from 1989-2018 is 4.54 mm/yr indicating a significant acceleration of SLR over the last 30 years. In Providence, the relative sea level trend is 2.36 millimeters/year, based on monthly mean sea level data from 1938 to 2019. Sea level rise has caused an increase in tidal floods associated with nuisance-level impacts, which can damage transportation infrastructure, cause shoreline erosion and road closures, and flood storm drains.

The Division of Statewide Planning has conducted several studies to identify roads and bridges potentially impacted by sea level rise and storm surge. This process identified 175 miles of road centerline exposed to sea level rise, 573 miles of centerline exposed to the combine impacts of sea level rise plus storm surge, ninety bridges exposed to sea level rise, and 148 bridges exposed to the combined impacts of sea level rise and storm surge. RIDOT has undertaken a new project to identify the proper way to prepare state assets for the identified scenarios, but there is a need to set a coordinated state policy. Seventy percent of the exposed road assets were non-federal aid eligible local roads, meaning much work will need to be done by actors at the state and municipal level to prepare for sea level rise.

Billions of dollars of transportation infrastructure is at risk in areas that include freight movement facilities located at the Port of Providence, Port of Galilee, and the Port of Davisville; the downtowns of Newport, Warren, and Barrington; the Woonasquatucket River and Providence River corridors; and all Rhode Island coastal communities. The communities along the south coast of the State are more vulnerable because they are ocean-facing, as opposed to other communities bordering Narragansett Bay. In 2020, the RIDEM permanently closed the access road to Beavertail State Park, a popular park in Jamestown, due to erosion caused by sea level rise; a spokesperson said, "We can't justify spending money on repaving that road to the degree that it would be safe for cars when ultimately the sea and nature are going to have their say."

7. Extreme weather events

The State has seen an increase severe storms, floods, and other extreme weather events. NOAA stated that, in Rhode Island: “Since 1970, annual precipitation has remained above the long-term average, with summer rainfall and extreme precipitation events steadily increasing since the first part of the 21st century. Extreme weather events include severe storms, often accompanied by flooding, and tropical storms and hurricanes. The state’s coastline is highly vulnerable to flood damage from storm events.”

A 2013 report found that climate change could increase the amount of damage caused by hurricanes along the Atlantic Coast in upcoming decades; however, the study did not factor in the impacts of higher sea level or freshwater flooding from increased precipitation. A warming world is anticipated to make precipitation more intense, either in the form of rain or snow. Extreme storms such as Sandy, Irene, Bob and Nemo are memorable to State residents for their severity, but other less-damaging but still-impactful weather events hit the State, such as the devastating floods of 2010. In addition, extreme heat events happen almost yearly: eighty-seven percent of the planet’s hottest temperatures have occurred since the start of 2000.

Risk to the transportation network will increase over time if the frequency of severe storms, floods, and other events increases. Rhode Island is at a crossroads with regard to reducing risks: vulnerabilities can remain static, and risk can increase. But vulnerabilities can be reduced to hold risk at a manageable level in the face of extreme weather events, leading to increased resilience of the transportation network. Tough decisions will need to be made about resilience investment measures around the state in the coming decades.

LRTP Principles to Reduce Transportation System Impacts on the Environment

The following general principles will support the reduction of transportation impacts on the environment:

- **Support Economic Growth through transportation connectivity and choices to attract employers and employees**

  Objective - Reduce Travel Congestion

  Strategy - Form partnerships to promote non-SOV transportation and to engage in mobility service cost-sharing (e.g. mobility hubs, bike and scooter sharing).

  Objective - Improve Regional Connectivity

  Strategy - Improve and expand multi-use trails throughout the state, and work to connect to key destinations and points of interest (leverage the Green Economy Bond).

- **Promote Environmental Sustainability by prioritizing non-single occupancy vehicle focused strategies and investments**

  Objective - Create Network of Open Space, Trails, and Paths

  Strategy - Create dedicated state funding to leverage local funds to expand, improve or create new open spaces connected by trails and paths (e.g. Green Economy Bond).

  Strategy - Actively facilitate inter-governmental and inter-agency planning to connect open spaces, trails and pathways, including provision of technical assistance if needed.

- **Strengthen Communities through the local transportation network to enhance travel, place, and quality of life**

  Strategy - Encourage local governments to adopt and implement smart growth/compact growth policies that can support more connected and mixed land use patterns.

Partnerships, Agreements and Initiatives

Recent legislation, executive orders, regulations, and partnerships provide the opportunities to care for the environment as part of the State's transportation system.

1. Energy

Recognizing that more than one-third of all carbon emissions come from the transportation sector, Rhode Island has twenty-two incentives, laws, and regulations related to alternative fuels and advanced vehicles.

Executive Order 20-01- In 2020, the Governor signed "Advancing a 100% Renewable Energy Future for Rhode Island by 2030," calling for an end to fossil fuel dependence in Rhode Island. By 2030, the state's

electricity will be powered entirely by renewable energy sources. The state is on track to meet her previous call to increase Rhode Island's clean energy supply by ten times before the end of 2020.

Lead by Example- In 2015, Governor Raimondo signed Executive Order 15-17, "State Agencies to Lead by Example in Energy Efficiency and Clean Energy" to coordinate efforts at State agencies to reduce energy consumption and greenhouse gas emissions. As part of this effort, a Clean Energy Grant Incentive Program offers financial incentives for clean, renewable solar energy projects by state agencies and public colleges.

Zero Emissions Vehicles (ZEV)- Rhode Island is one of eight members of a 2014 Multi-State ZEV MOU that is coordinate actions to ensure the successful implementation of state ZEV programs. Collectively, these states have committed to having at least 3.3 million ZEVs on their roadways by 2025. In addition, RIPTA has begun the replacement of class 4- 8 diesel transit buses with new all-electric zero-emission vehicles and construction of associated charging infrastructure.

Alternative Fuel Corridor designations- As part of the FHWA designation process to create a national network of alternative fueling and charging infrastructure along national highway system corridors, I-95 and Route 6 in Rhode Island were designated as "Alternative Fuel Corridors" during the 2016 and 2017 enrollment periods.

2. Air Quality

Congestion Mitigation Air Quality (CMAQ)- The CMAQ Program exists to improve air quality. Rhode Island uses CMAQ funds to pay for MBTA Commuter Rail capital and operating expenses, and transit improvements including, but not limited to, transit signal priority, T-Link, and rolling stock replacement.

Transportation and Climate Initiative- Rhode Island participates in the Transportation and Climate Initiative (TCI), a regional collaboration of twelve Northeast and Mid-Atlantic states and the District of Columbia that seeks to improve transportation, develop the clean energy economy and reduce carbon emissions from the transportation sector. The members agree to explore and develop policies and programs for energy efficiency of regional transportation systems and to reduce emissions. States support the deployment of clean vehicles and fueling infrastructure to maximize the economic opportunities and emissions reductions.

Regional Greenhouse Gas Initiative- The Regional Greenhouse Gas Initiative is a cooperative effort among Rhode Island and nine other Northeast states to cap and reduce CO2 emissions from the power sector. A July 2020 report found that the initiative has been successful in reducing fine particulate matter (PM2.5) emissions and reducing children's health issues such as asthma, preterm births, autism spectrum disorder, and low birthweight.

RI Greenhouse Gas Action Plan- In 2002, the RIDEM and the OER issued a Greenhouse Gas Action Plan, created with over thirty stakeholder groups. Growing concerns of the impact carbon dioxide and other greenhouse gases led to recommendations for reducing greenhouse gas emissions in the state.

Transportation Listening Sessions- The RIDEM, RIOER, and RIDOT – on behalf of the Executive Climate Change Coordinating Council (EC4) – hosted two public listening sessions in April 2018 to hear ideas on how to reduce greenhouse gas emissions from the transportation sector, increase the resilience of transportation-related infrastructure, and design solutions with environmental justice communities in mind.

3. Water Resources

Road-Stream Crossing Assessment Handbook- This RIDOT guidance document (2019) is a decision-making tool to help identify road-stream crossings in Rhode Island that should be prioritized for replacement or upgrade. Improperly designed, outdated, or undersized crossings can be flooding and washout hazards, and failures can cost millions of dollars in property and infrastructure damage. Rhode Island's transportation infrastructure is also aging and vulnerable to the effects of climate change, including more intense and frequent storms, increased inland and coastal flooding, and sea level rise. Undersized stream crossings can also serve as barriers to the passage of fish and other aquatic organisms along a river system. This alters aquatic habitat and disrupts river and stream continuity, putting aquatic populations and even ecosystems at risk. On the other hand, adequately sized stream crossings can provide improved passage for terrestrial organisms which might otherwise cross the roadway and endanger themselves and human drivers through wildlife-vehicle collisions.

RIDOT Linear Stormwater Manual- This 2019 guidance was designed to: provide a clear, predictable and repeatable approach; simplify the relationship between the RIDOT Work Breakdown Structure (WBS) and stormwater design; standardize stormwater infrastructure and maintenance; resolve differing requirements and present general information on stormwater permitting; and define project-level stormwater treatment goals. The manual provides the steps and definitive end points to demonstrate that a stormwater management plan has diligently evaluated and identified an approach for treating stormwater.

As part of a Consent Decree with the US EPA, RIDOT has pledged more than $100 million over a ten-year period to ensure compliance with the Clean Water Act and several remedial measures. This initiative will reduce pollution from stormwater flowing into Narragansett Bay and hundreds of lakes, ponds and rivers throughout Rhode Island. At a minimum, stormwater management systems for new projects are designed to realize the maximum sediment retention possible- with at least eighty percent of suspended solids removed before discharge into a body of water.

STIP- The drainage program in the State Transportation Improvement Program (STIP) includes a comprehensive plan to inspect and inventory Rhode Island's statewide highway drainage systems. The state is responsible for an estimated 25,000 stormwater catch basins, 2,000 outfalls, and 100 structural best management practices (stormwater treatment systems). The inventory results will drive development of the investment plan outlined in the STIP, which will allow the state to meet the requirements of the consent decree and also take a more proactive approach to stormwater management. As storms become more frequent and coastal flooding becomes a growing threat, the

need to inventory, repair, and maintain drainage systems becomes more critical to prevent hazards and deterioration of other transportation infrastructure components.

RI NEMO- Nonpoint Education for Municipal Officials (NEMO) at the University of Rhode Island provides information, education, and assistance to local land use officials on how they can accommodate growth while protecting their drinking water supplies and other valuable water resources through low impact development and green infrastructure.

Complete Streets law- In June 2012, the Rhode Island General Assembly passed the Complete Streets law to integrate multiple transit options into the design and construction of the state's transportation system to provide safe access to all users, regardless of how they are traveling. Since then, several municipalities in Rhode Island have passed their own Complete Streets ordinances to ensure that sidewalks, bicycle lanes, signage, crosswalks, pedestrian signals, bus pull outs, raised crosswalks, and other traffic calming measures are incorporated into street design.

4. Wildlife

"Hot spot" modelling tool- The RIDEM Division of Fish and Wildlife (DFW) is partnering with the University of Rhode Island to develop a tool for road mortality "for amphibians and reptiles using data collected from road segments throughout the state. One early insight from this work is that roads intersecting or adjacent to wetlands are often hot spots. Such sites that also involve a road-stream crossing present an opportunity to design projects that improve both terrestrial and aquatic connectivity. At road-stream crossings, consideration of aquatic organism passage (AOP) is essential. Bridges and culverts designed for AOP and of adequate hydraulic capacity to convey flood water and reduce geomorphic vulnerability provide both ecological and public safety benefits. Particularly in watersheds with cold-water streams, shading vegetation should be retained or restored as much as possible and stormwater from roads and other infrastructure treated before it reaches surface waters. RIDEM's DFW has been working to identify and improve AOP at road-stream crossings and has more recently begun similar coordination for terrestrial passage.

Partnership with RIDEM- RIDOT and RIDEM's DFW and Office of Water Resources have developed a partnership that is essential to meeting the challenges of providing for the safety and mobility of people while conserving wildlife and ecological connectivity. This partnership must be supported and utilized to integrate the Rhode Island Wildlife Action Plan (RI WAP) into public infrastructure planning. For effective, meaningful local and regional conservation, conservation planning needs to be institutionalized and extend beyond the requirements of current regulatory frameworks. This partnership should seek to identify outside and non-traditional funding to accomplish this work.

Rhode Island Wildlife Action Plan- The RI WAP (2015) is a comprehensive plan that provides direction to and coordination of wildlife conservation efforts over the coming decade. Rhode Island is home to almost 900 vertebrate and an estimated 20,000 invertebrate wildlife species that range from the scenic coastline to upland and wetland forests. Included in this natural diversity are a suite of mammals, birds, reptiles and amphibians, fish and invertebrates that the State has identified as species of

greatest conservation need.

5. Scenic & Historic

RI Scenic Roadways Board- The RIDOT Scenic Roadways Board, established in 1991, regulates eight roads in the State that total approximately fifty-two miles. Recognizing that scenic vistas are an important part of the beauty, natural environment, history and culture, and economic development and tourism of Rhode Island, the Board must be informed by RIDOT or any municipality issuing permits to any entity, including utility companies, for construction, repair or alteration projects on a scenic roadway. The Board works closely with municipalities with designated scenic roadways to preserve and protect the scenic features on either side of any scenic roadway. Municipalities are encouraged to include scenic roadways in the natural and cultural resources element of their comprehensive plans and to adopt corridor management strategies for scenic roadways.

6. Climate Change & Sea Level Rise

Resilient Rhody- Rhode Island's first comprehensive climate resilience action strategy, *Resilient Rhody*, was released by Governor Raimondo in July 2018. The goal of the Plan is to identify actions - e.g., projects, policies and legislation, or funding and financing opportunities - that the state can take to better prepare for a changing climate. The implementable actions will better prepare the state and municipalities for the impacts of sea level rise and the increase in extreme weather events. The development of *Resilient Rhody* included statewide stakeholders and numerous "listening sessions" with residents and businesses around the state.

Municipal Resilience Program- The need to work collaboratively with municipalities is a common theme in *Resilient Rhody*: the resulting Municipal Resilience Program (MRP), coordinated by the RI Infrastructure Bank, provides direct support to RI cities and towns to complete a municipal-driven process that identifies priority projects and strategies to improve the municipality's resilience to natural and climate-related hazards. At the end of the MRP process, municipalities are eligible to apply for grants to implement identified projects and provides capital investment resulting in construction. MRP Action Grants are available to each MRP cohort for eligible projects in the year they participate.

EC4- The "Resilient Rhode Island Act" of 2014 established the Executive Climate Change Coordinating Council (EC4) in to help incorporate consideration of climate change impacts into the powers and duties of all state agencies. It also set specific greenhouse gas reduction targets and established two advisory bodies. The EC4 meets monthly and helps state agencies with developing practical solutions for issues of resilience.

STORMTOOLS was created by the RI CRMC for mapping storm inundation, with and without sea level rise, for varying return period storms for Rhode Island's coastal waters. Predictions show water extent and depth for nuisance floods and storm scenarios at a 95% confidence interval. STORMTOOLS provides visualization of potential future impacts on planned and existing transportation projects and infrastructure.

7. Extreme weather events

Updated Stormwater Manual with Low Impact Development Methods: In 2010, the RIDEM and the CRMC developed and adopted a revised stormwater manual that requires low impact development methods to manage stormwater on new construction and redevelopment projects. The new stormwater manual design requirements account for increases in rainfall amount and intensity to help new projects and redevelopment projects adapt to climate change.

Pre-Disaster Mitigation (PDM) Grant Program- This RIEMA program provides funds for hazard mitigation planning and the implementation of mitigation projects prior to a disaster to reduce both risk to the population and structures and reliance on Federal funding from actual disaster declarations. Funding is available on an annual basis (as appropriated). Many Rhode Island municipalities take advantage of these grants to create or update a local hazard mitigation plan.

Port of Providence Resilience Project- This pilot project is facilitating meaningful dialogue about natural hazard impacts on RI's coastal-dependent transportation infrastructure. Waterfront business owners, planners from Providence and East Providence, and representatives from state and federal agencies convene to discuss higher storm surges resulting from increasing storm intensity and frequency that threaten the sustainability of maritime transportation infrastructure in many coastal areas.

8. Summary

In the past ten years, Rhode Island has made huge strides in the area of environmental stewardship and resiliency. It is the intention of the State to continue the progress through innovation, collaboration, data, and best practices.

Project Development Process

1. NEPA

The national commitment to the environment was formalized through the passage of the National Environmental Policy Act (NEPA) of 1969. NEPA establishes a national environmental policy and provides a framework for environmental planning and decision-making by state transportation agencies, including the Rhode Island Department of Transportation (RIDOT). When planning projects or issuing permits, RIDOT is required by NEPA regulations to conduct environmental reviews to consider the potential impacts on the environment by their proposed actions.

Environmental reviews involve an interdisciplinary and interagency process. RIDOT, when serving as the lead agency, works cooperatively with federal and other state agencies during the environmental review process. This coordinated review process includes input from the public, as well as from other agencies, to guarantee that all environmental protections, as well as all other issues are addressed.

Rhode Island is committed to the assessment and avoidance of potential impacts to the social and natural environment when considering approval of proposed transportation projects; the state is also required by NEPA to do this. In addition, RIDOT must also take into account the transportation needs of the public in reaching a decision that is in the best overall public interest.

RIDOT's NEPA project development process is an approach to balanced transportation decision-making that considers those potential impacts. The Council on Environmental Quality (CEQ) regulations (40 CFR §§ 1500-1508) address the basic decision-making framework and action forcing provisions established in NEPA.

Linking Planning and NEPA is an integral part of long range-transportation planning. The principles or essential elements of NEPA decision-making employed by RIDOT during project development include:

- Assessment of the social, economic, and environmental impacts of a proposed action or project
- Analysis of a range of reasonable alternatives to the proposed project, based on the applicants defined purpose and need for the project
- Consideration of appropriate impact mitigation: avoidance, minimization and compensation
- Interagency participation: coordination and consultation
- Public involvement including opportunities to participate and comment
- Documentation and disclosure.

The NEPA project development and decision-making process serves as an umbrella, under which all applicable environmental laws, executive orders, and regulations are considered and addressed prior to the final project decision and document approval.[2] Conclusion of the NEPA process results in a decision that addresses multiple environmental concerns and mitigation requirements. Overall, the NEPA process administered by RIDOT allows transportation officials to make project decisions that balance engineering and transportation needs with social, economic, and natural environmental factors.

The FAST Act expands the effort to combine transportation planning with the National Environmental Protection Act (NEPA) to reduce delay in the environmental review of transportation projects.

2. Transportation Asset Management Plan

RIDOT is committed to reducing its footprint as it carries out its mission to provide for the safe, efficient movement of people and goods. The RIDOT Transportation Asset Management Plan (TAMP) serves as the guide for RIDOT to achieve its mission in:

- Sustainable asset stewardship
- Effective use of resources
- Robust justifications for funding and other decision making

Conclusion

The transportation system provides tremendous benefits to the economy and the quality of life enjoyed by Rhode Islanders. Many programs exist to protect and manage the State's environmental resources so that they can enjoyed by future generations.

This environmental section was reviewed by many professionals at multiple State and federal agencies to comply with federal requirements and to increase awareness of Rhode Island's commitment to

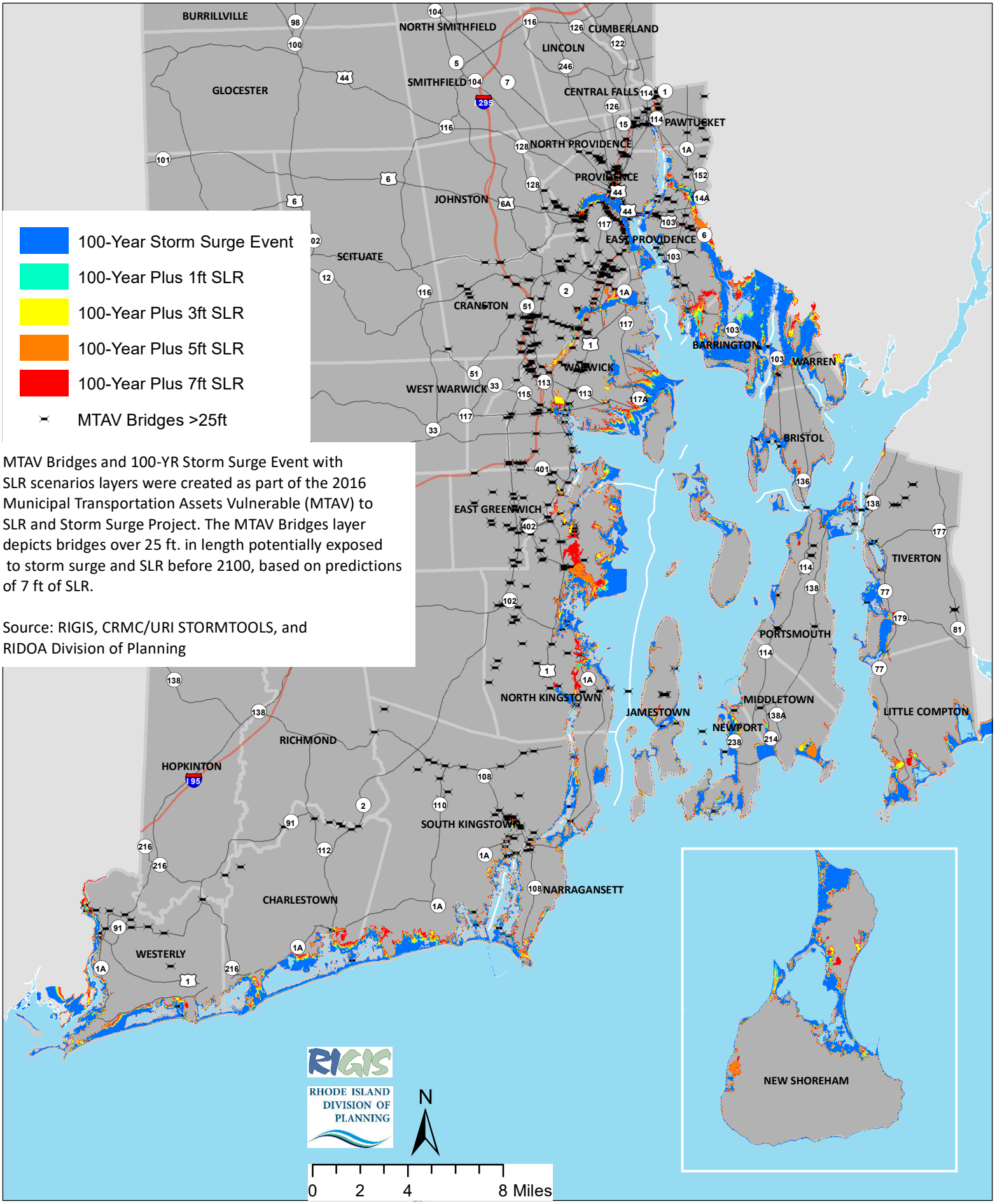
addressing transportation system impacts on the environment. A list of reviewers is available in the LRTP appendices.

APPENDIX A- MAPS

Long-Range Transportation Planning

June 2020

100-YR Storm Surge Event plus Sea Level Rise (SLR) Scenarios as of 2016



MTAV Bridges and 100-YR Storm Surge Event with SLR scenarios layers were created as part of the 2016 Municipal Transportation Assets Vulnerable (MTAV) to SLR and Storm Surge Project. The MTAV Bridges layer depicts bridges over 25 ft. in length potentially exposed to storm surge and SLR before 2100, based on predictions of 7 ft of SLR.

Source: RIGIS, CRMC/URI STORMTOOLS, and RIDOA Division of Planning

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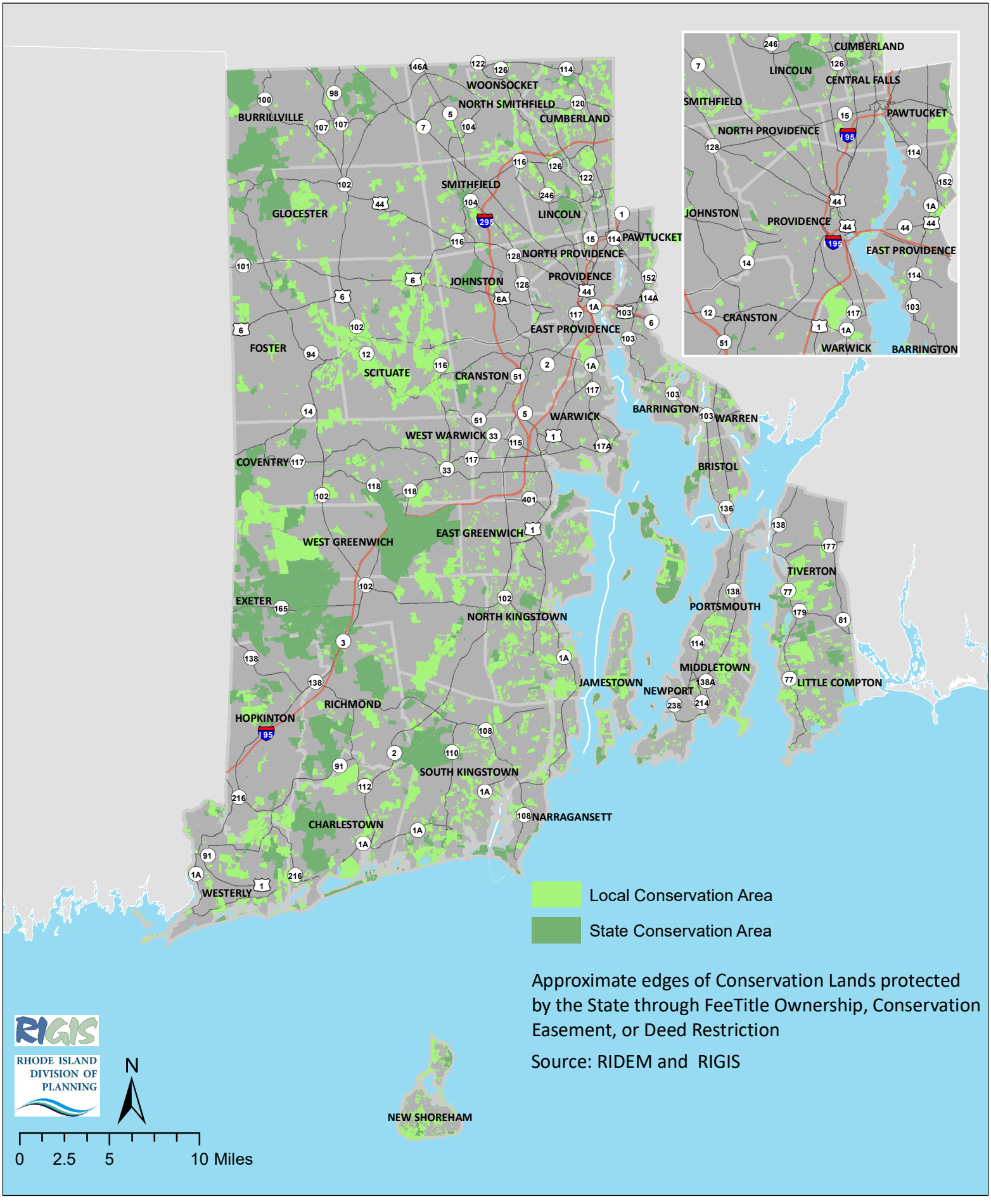
State and Local Conservation Areas as of 2018



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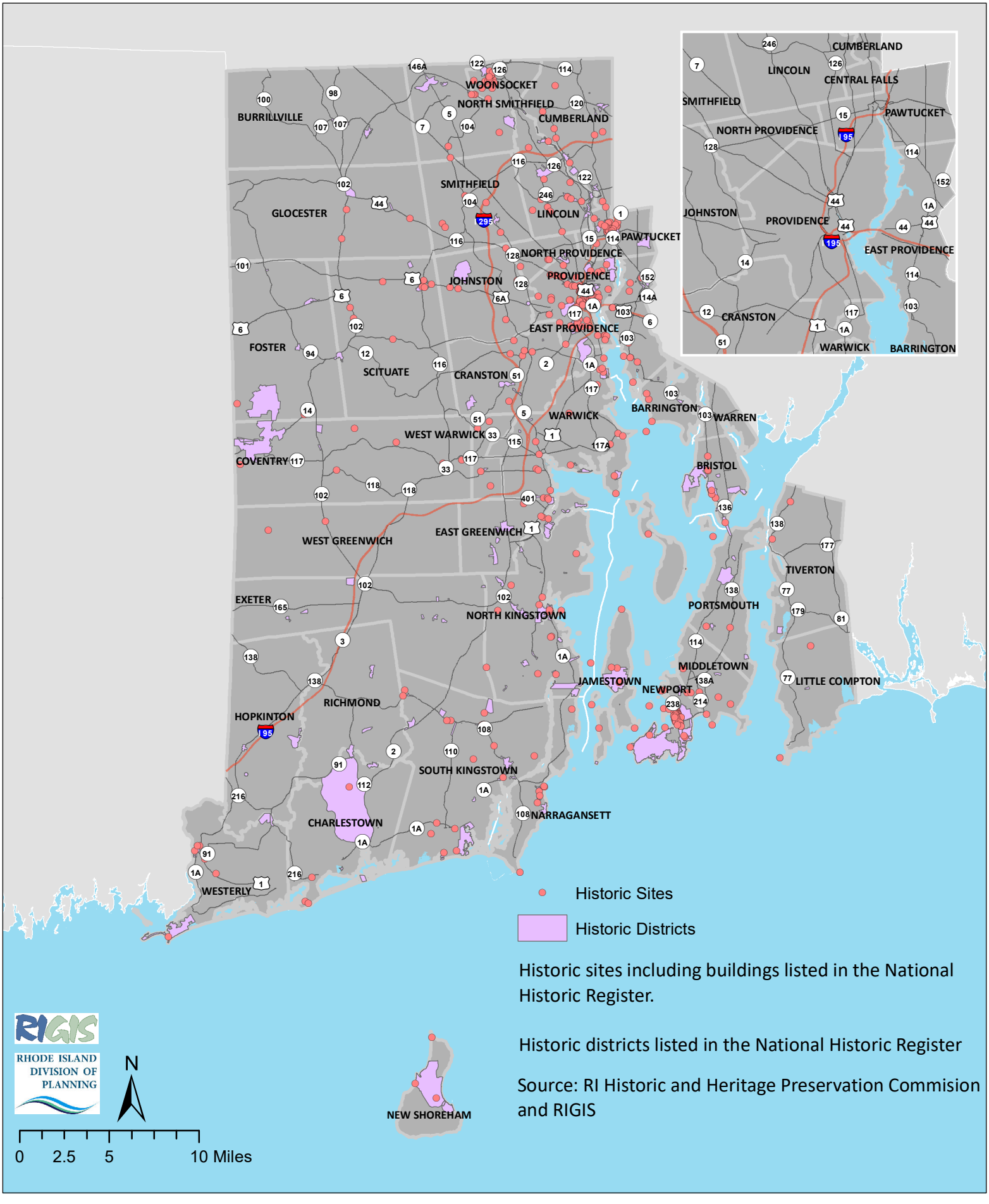
Designated Historic Sites and Districts as of 1995



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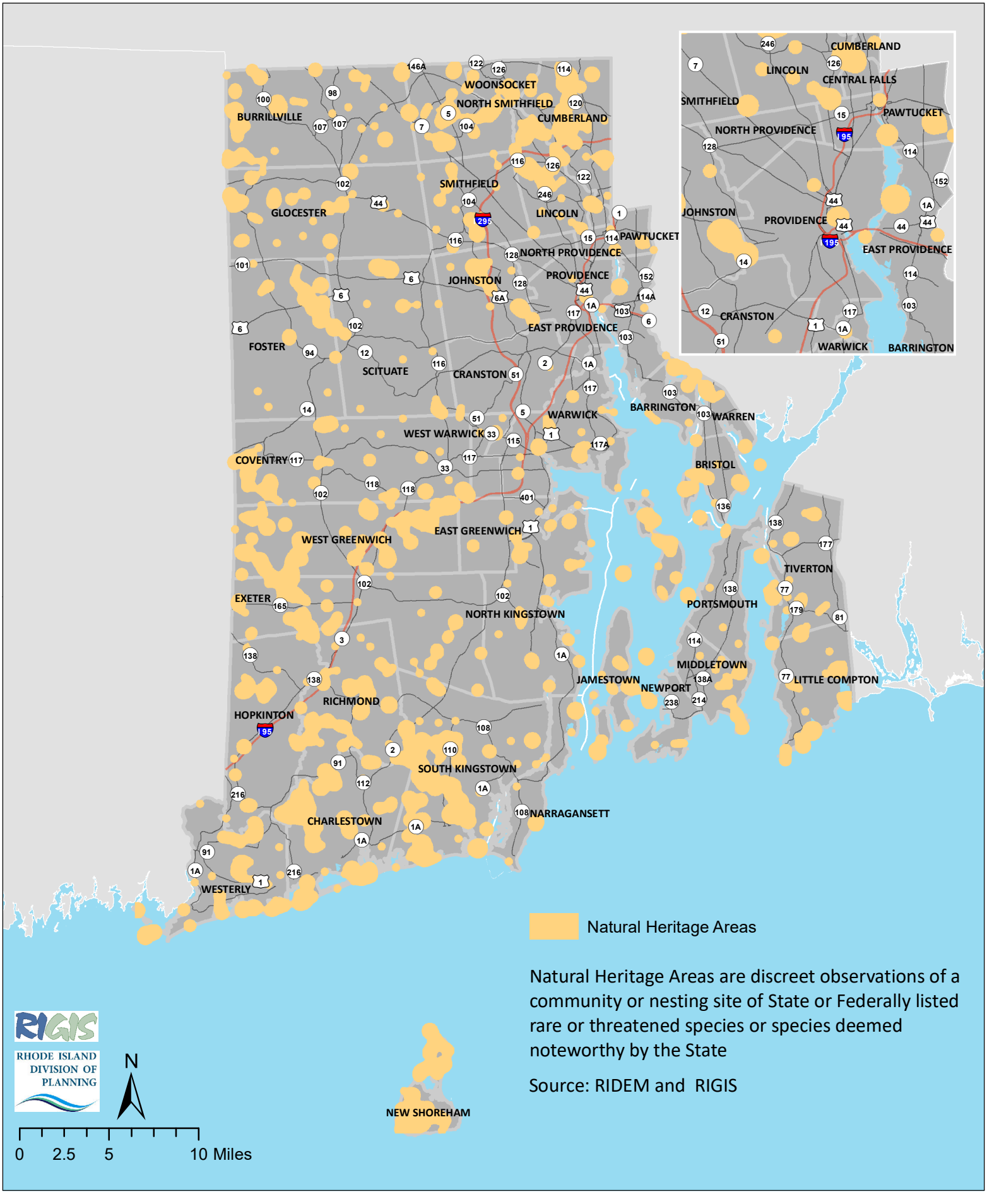
Natural Heritage Areas as of 2019



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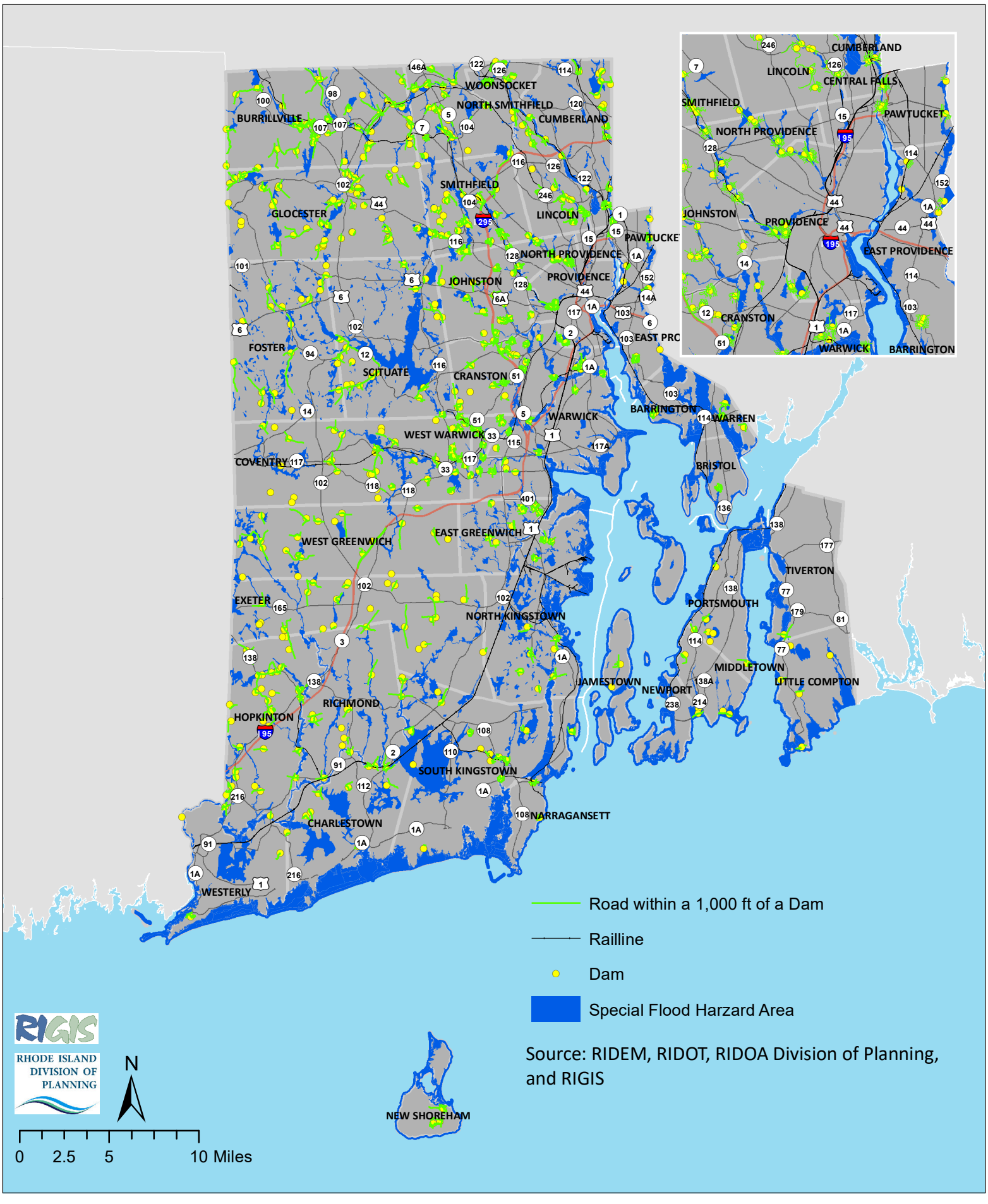
June 2020

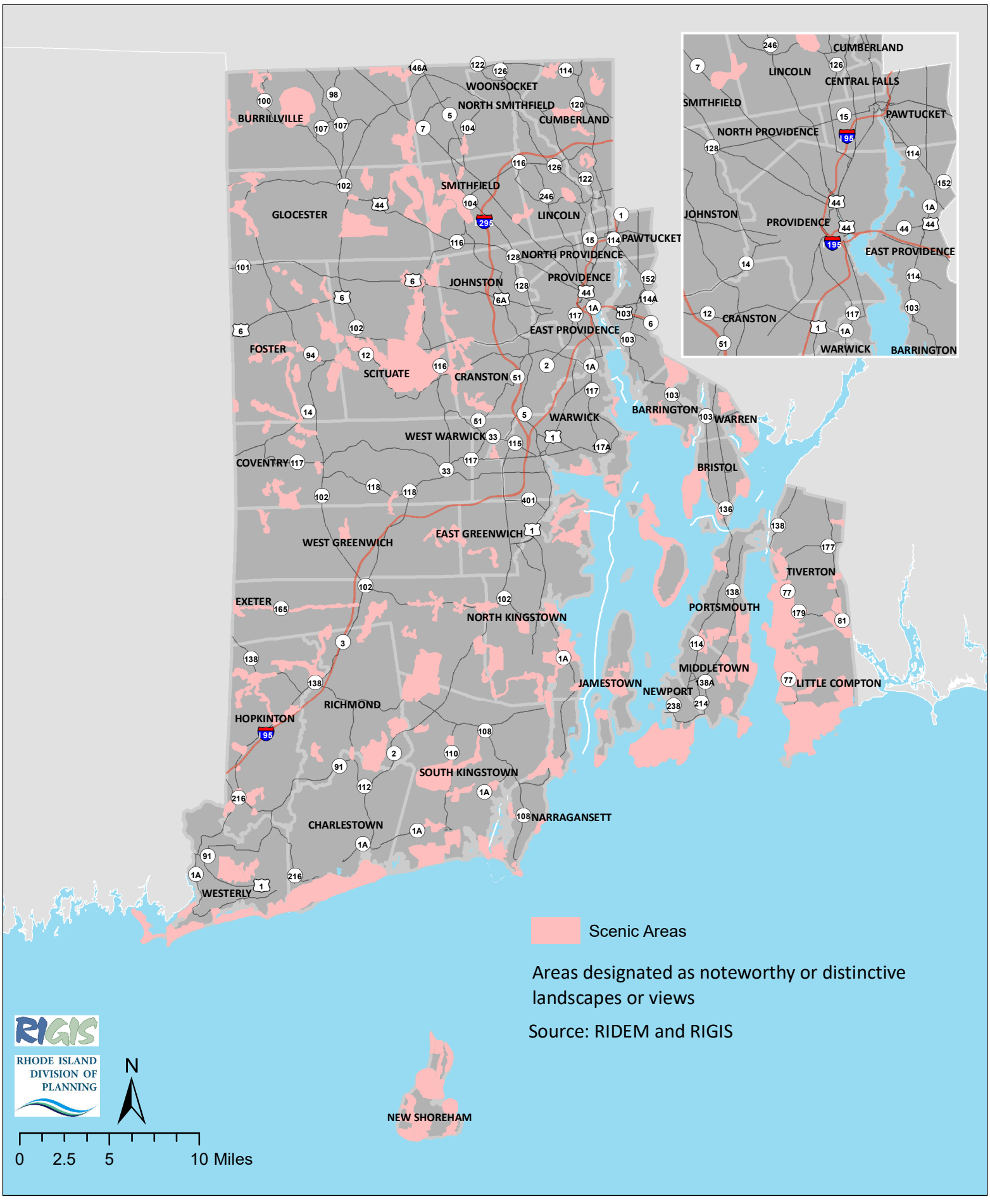
Roadways Vulnerable to Dam Failure



Long-Range Transportation Planning

June 2020

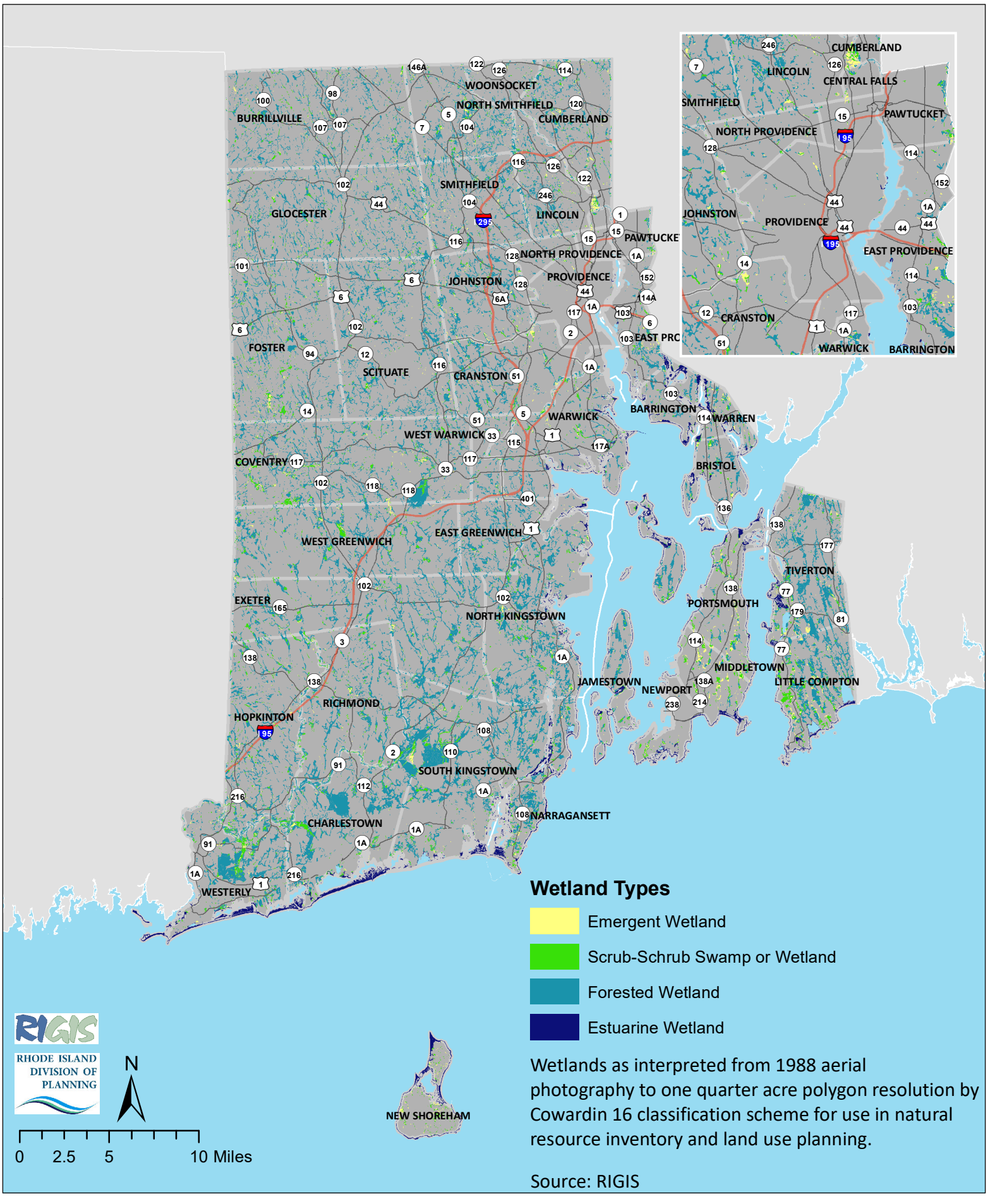
Designated Scenic Areas as of 1989



Long-Range Transportation Planning

June 2020

Wetland Areas by Type from 1988 Wetland Analysis



Wetlands as interpreted from 1988 aerial photography to one quarter acre polygon resolution by Cowardin 16 classification scheme for use in natural resource inventory and land use planning.

Source: RIGIS

APPENDIX B-

LRTP ENVIRONMENTAL ANALYSIS REVIEW DISTRIBUTION LIST

RI LRTP Environmental Analysis Distribution List

- RI Coastal Resources Management Council
- RI Department of Environmental Management
    - Fish and Wildlife Division
    - Air Quality Division
- RI Department of Transportation
    - Cultural Resources Unit
    - Office of Transit
    - Planning and Program Development Division
    - Stormwater Management Program
- RI Historic Preservation and Heritage Commission
- RI Public Transit Authority
- RI Rivers Council
- Narragansett Indian Tribe
- Grow Smart RI
- Save The Bay
- The Audubon Society of RI
- Federal Highway Administration
- Federal Transit Administration
- US Environmental Protection Agency

APPENDIX C-

ENVIRONMENTAL CONSULTATION MEETING AGENDA

Department of Administration
Division of Statewide Planning
www.planning.ri.gov

Moving Forward RI
Rhode Island's 2040 Long Range Transportation Plan (LRTP)

September 23, 2020 @ 10:00 a.m.
Environmental & Air Quality Conformity Consultation Meeting

To join from a computer, tablet or smartphone:
https://zoom.us/j/96336416941?pwd=dDhVSDRJTHNPV0RFVXRYbmpTZHVXQT09
Passcode: 033568
Meeting ID: 963 3641 6941

You can also dial in using your phone
Dial by your location: 646 558 8656 US; or Toll-free 888 788 0099 or 877 853 5247
Meeting ID: 963 3641 6941
Passcode: 033568

1. Call to Order, Introductions
2. Moving Forward RI: Rhode Island's 2040 Long Range Transportation Plan
   - Presentation from RIDSP – *for Information*
3. Environmental Resources Analysis for 2040 Long Range Transportation Plan
   - Presentation from RIDSP – *for Information and Discussion*
4. RIDOT Stormwater Programming
   - Presentation from RIDOT – *for Information*
5. Air Quality Transportation Conformity for 2040 Long Range Transportation Plan
   - Presentation from RIDSP – *for Information and Discussion*
6. Consensus to recommend to the Transportation Advisory Committee and State Planning Council to release the Environmental Analysis and Conformity Report for public comment as part of Moving Forward RI, 2040 LRTP – *for Discussion*
7. Summary and Next Steps
8. Adjourn

APPENDIX D-

ENVIRONMENTAL CONSULTATION MEETING ATTENDANCE LIST

Department of
Administration
Division of Statewide Planning
www.planning.ri.gov

Interagency Environmental Consultation Meeting

Meeting Record
September 23, 2020 at 10:00 am
THIS MEETING WAS TELECONFERENCED VIA ZOOM

Attendance List

Name (Organization)

Brady, Meredith (DOA)
Callaghan, Linsey (DOA)
Groch, Roberta (DOA)
DAlessandro, Michael (DOA)
Greeley, Caitlin (DOA)
Perrone, Mason (DOA)
Bergantino, Benny (DOA)
Warden, Randy (FHWA)
Alexander, Jamik (FHWA)
Sirmin, Leah (FTA)
Garcia, Ariel (EPA)
Eric Rackauskas (EPA)
Cotter, Pamela (DOT)
Moore, Brian (DOT)
Palumbo, Vincent (DOT)
Begin, Jacob (DOT)
Koziol, Andrew (DOT)
Ingle, Sarah (RIPTA)
Zach Agush (RIPTA)
Slattery, Karen (DEM)
Rochefort, Elizabeth (HPHC)
Boyd, Jim (CRMC)
Veronica Berounsky (RI Rivers Council)

APPENDIX E-

ENVIRONMENTAL CONSULTATION MEETING RECORD

Department of Administration
Division of Statewide Planning
www.planning.ri.gov

Interagency Environmental Consultation Meeting

Meeting Record

September 23, 2020 at 10:00 am

THIS MEETING WAS TELECONFERENCED VIA ZOOM

In attendance: Meredith Brady, RIDSP; Linsey J. Callaghan, RIDSP; Roberta Groch, RIDSP; Michael D'Alessandro, RIDSP; Caitlin Greeley, RIDSP; Mason Perrone, RIDSP; Benny Bergantino, RIDSP; Pamela Cotter, RIDOT; Vincent Palumbo, RIDOT; Jacob Begin, RIDOT; Andrew Koziol, RIDOT; Brian Moore, RIDOT; ; Karen Slattery, RIDEM; Sarah Ingle, RIPTA; Zach Agush, RIPTA; Elizabeth Rochefort, HPHC; Jim Boyd, CRMC; Randy Warden, FHWA; Jamik Alexander, FHWA; Leah Sirmin, FTA; Ariel Garcia, EPA; Eric Rackauskas, EPA; Veronica Berounsky, RIRC; recording.

The meeting opened at 10:03 AM. Ms. Callaghan welcomed and thanked everyone for participating in the LRTP Environmental Consultation Meeting. Before moving forward, she requested that everyone introduce themselves.

Presentations (4)

1. RIDSP provided an overview of the LRTP as it is wide ranging on topics and issues dealing with transportation in Rhode Island.
2. RIDSP discussed potential environmental mitigation activities and potential areas to carry out mitigation activities associated with the LRTP's Environmental Analysis.
3. RIDOT presented on its Environmental Analysis Program and Stormwater Program to reduce transportation related run-off pollutants. The presentation was well received and demonstrated the effort required to improve watershed quality in light of the EPA consent decree. Work is ongoing.
4. Lastly, RIDSP discussed the LRTP's Air Quality Transportation Conformity Report. As part of its transportation planning process, the State of Rhode Island completed the transportation conformity process for the LRTP. This report documented that the LRTP meets the federal transportation conformity requirements in 40 CFR Part 93 in with Clean Air Act Regulations.

Comments and Feedback

Ariel Garcia, EPA, requested that, in advance of the 30-day public comment period, RIDSP share with the federal partners, EPA and FTA, a draft version of the Conformity Report. This would provide the opportunity to make minor edits before it goes out for public comment. Mr. D'Alessandro, RIDSP, said he could definitely do that.

Jim Boyd, CRMC, said that it would make sense under the climate change and sea-level rise section of the environmental analysis if a conversation is started to address transportation infrastructure and some of the very significant changes that are expected to occur in the coming decades. More specifically, CRMC feels that the state must start planning now for an eventual retreat from coastal areas if worst case modeling predictions are

accurate. This would require adapting and rethinking of transportation network as existing infrastructure could become inundated over time.

Pam Cotter, RIDOT, added that RIDOT has been working hard with GIS layers and their environmental resiliency tool on sea-level rise and how that is adapted to RIDOT projects.

In conclusion, Meredith Brady, RIDSP, added that technology is growing by leaps and bounds and it is a matter of multipliers not just additions. There are a lot of things that we could not do ten years ago that we can do today, in particular the utilization of the GIS tools and working on getting the State Transportation Improvement Program into an electronic format. The great thing about the LRTP is that while we have to do an update every four to five years, we don't have to wait if something changes.

The group of state and federal agency partners agreed to recommend that the Environmental Analysis and Air Quality Conformity Determination Report be released by the Transportation Advisory Committee (TAC) along with the draft LRTP.

The next steps will be:

- Conformity report circulated for 30-day review along with LRTP beginning on October 9.
- November 9, 2020 closes the 30-day public comment period.
- Any comments received during public review will be summarized and addressed in the public hearing report.
- The TAC will be requested to make a recommendation to the State Planning Council (SPC) in support of the report's findings.
- The SPC will consider the public hearing report and discuss the conformity determination along with the LRTP at their December 10, 2020 meeting where they will be asked to support a resolution on findings.

Meeting adjourned at 11:28 AM.