FEASIBILITY STUDY

SOUTH COUNTY BIKE PATH - PHASE 4
CANONCHET FARM EXTENSION

NARRAGANSETT/SOUTH KINGSTOWN BICYCLE FACILITY
RHODE ISLAND CONTRACT NO. 89111

FINAL REPORT

Fay, Spofford & Thorndike, Inc

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Table of Contents

Page

1 STUDY PURPOSE 1

2 HISTORICAL PERSPECTIVE 2

3 EXISTING CONDITIONS 4
3.1 Natural Resources 4
3.2 Topography and Vegetation 5
3.3 Land Uses 9
3.4 Local Roadways 9
3.5 Accidents 11
3.6 Bicycle Suitability 13

4 CONCEPTUAL DESIGN 14
4.1 Design Criteria 14
4.2 Facility Types 14

5 Alternatives 19
5.1 Alternative 1: The Sea View Bike Route 19
5.2 Alternative 2: The Brady Bike Route (corrected) 25
5.3 Alternative 3: The Town's Master Plan Route 27
5.4 Alternative 3A: The Town's Off-Road Bike Path Route 30
5.5 Alternative 4: The Town's Off-Site Bike Path Route 32
5.6 Alternative 5: First Portion of the 2000 FST Study Alternate 3 Route 36
5.7 Alternative 6: Dead-End Spur Combination 39

6 CONSTRUCTION COST ESTIMATE 42

7 EVALUATION OF ALTERNATIVES 45

8 CONCLUSION 48

Appendix A: Alternative Graphics
Appendix B: Applied Bio-Systems, Inc. Report
Appendix C: Public Archaeology Laboratory Report
Appendix D: USFWS Letter – March 1, 2012
Appendix E: RIDOT Interagency Meeting Minutes – October 31, 2013
Appendix F: Traffic Counts
Appendix G: Accident Reports
Appendix H: Bicycle Route Suitability Reports
Appendix I: Cost Estimates

List of Figures

Figure **Page**

Figure 1.1 – Locus Map 2
Figure 2.1 – Trail Alternatives 3
Figure 3.1 – USGS Aerial Map 6
Figure 4.1 – Shared-Use Path / Trail Cross Section 16
Figure 4.2 – Bicycle Route Cross Sections and Plan Views 17
Figure 5.1 – Alternative 1 19
Figure 5.2 – Alternative 2 25
Figure 5.3 – Alternative 3 27
Figure 5.4 – Alternative 3A 30
Figure 5.5 – Alternative 4 32
Figure 5.6 – Alternative 5 36
Figure 5.7 – Alternative 6 39
Figure 5.8 – Photo Location Map 40

List of Tables

Table **Page**

Table 3.1 – Roadway Characteristics 10
Table 3.2 – 3 -Year Crash Summary 12
Table 3.3 – 4-Year Intersection Crash Summary – Town of Narragansett 13
Table 3.4 – Bicycle Suitability Summary Report (Selected Criteria) 14
Table 4.1 – Minimum Usable Roadway Widths 17
Table 5.1 – Trail Alternative Summary Matrix 41
Table 5.1 – Trail Alternative Summary Matrix – cont. 42
Table 6.1 – Trail Alternative Construction Cost 44
Table 6.2 – Use of Retaining Wall along Railroad Berm 45
Table 7.1 – Evaluation of Alternatives 46
Table 7.1 – Evaluation of Alternatives – cont. 47

1 STUDY PURPOSE

The purpose of this study is to evaluate the feasibility of various trail alternatives or spurs to extend the existing William C. O'Neill South County Bike Path to the Canonchet Farm/South County Museum property. Currently the bike path or shared-use path terminates at Mumford Road, opposite the intersection of Riverside Drive in Narragansett. Over the years there have been discussions of varying alternatives for extending the path easterly in the Town of Narragansett. In general, these alternatives pick up at the existing path terminus at Mumford Road following various routes to reach a new terminus at the parking lot at Anne Hoxsie Lane. See Figure 1.1 for a locus map of the area.

The general study area is bordered by Pettaquamscutt Cove to the northwest, Highway 1A (Kingstown Road/ Narragansett Avenue to the south, Beach Street/Boston Neck Road (Route 1A) to the east and residential and open space to the north. Historical documents/studies completed in the past that include background information are the following:

- 1991 FST Feasibility Study for Segments 9 and 10
- Canonchet Farm/South County Museum Spur Feasibility Study; FST, June 2000
- Canonchet Farm Master Plan, August 2010

Other applicable and recent correspondence includes the following:

- Various committee reports, individual letters and assessments
- Miscellaneous correspondence to RIDOT, legislative correspondence and RIDOT and agency correspondence

This study was initiated to continue the planning process for Phase 4 - Canonchet Farm Extension of the South County Bike Path. Correspondence has been received by RIDOT from the Town of Narragansett requesting that RIDOT initiate a detailed feasibility analysis of "one or more potential routes" for an extension of the William C. O'Neill South County Bike Path from its current terminus at Mumford Road as noted above. In addition to FST serving as the lead consultant on this study, Applied Bio-Systems, Inc. (ABS) of South Kingstown serves as a sub-consultant for an assessment of potential environmental and permitting issues associated with each alternate alignment and Public Archaeology Laboratory (PAL) serves as a sub-consultant for investigating potential archeological impacts associated with the alignments.

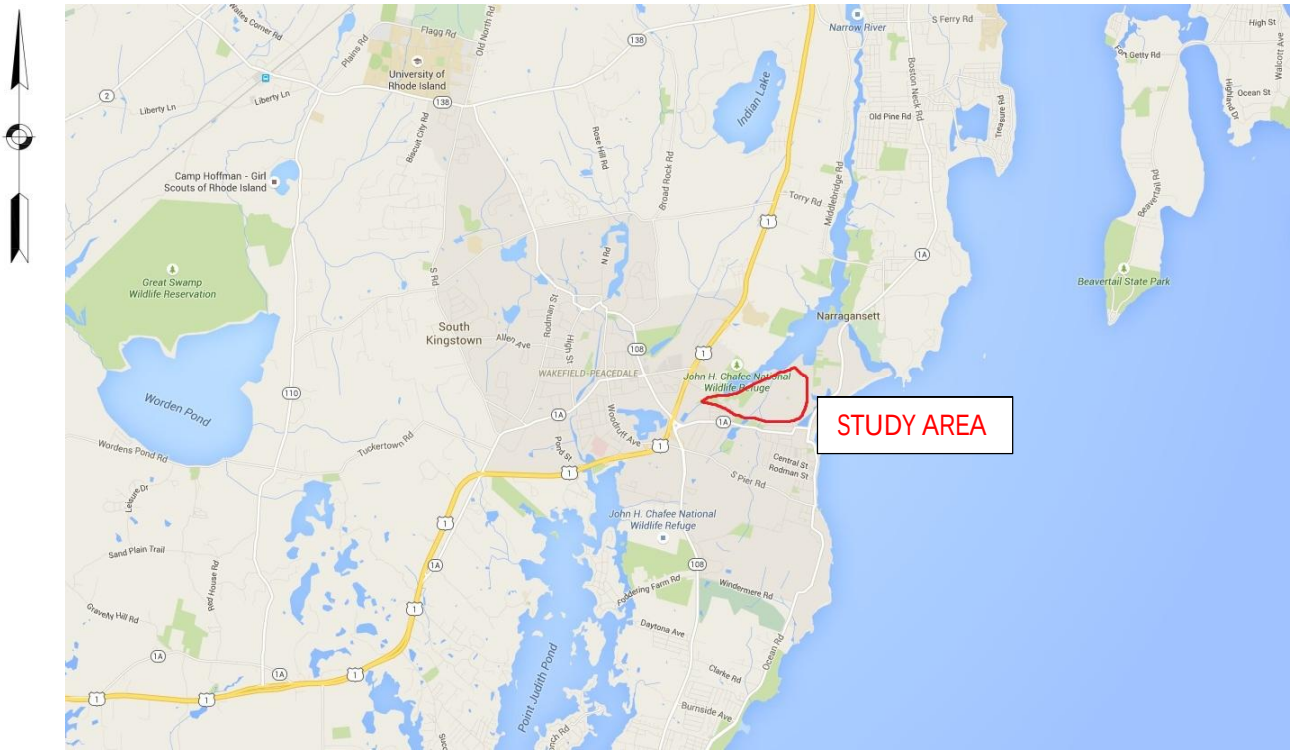


Figure 1.1 – Locus Map
Not to scale
Map from Google 2014

2 HISTORICAL PERSPECTIVE

With issues of funding, investigating avenues for earmarks and project placement in the state Transportation Improvement Program, the planning process for this project has been extended over the years. In addition to the input from various Town officials and Boards, the five (5) alternatives presented in the June 2000 study has been somewhat expanded and modified to now include seven (7) alternatives. These alternatives can be seen in Figure 2.1.

These alternatives are described as follows:

- **Alternative 1 - The Sea View Bike Route** (Town preferred route). The alignment includes portions of the Canonchet Farm property as well as the abandoned Sea View Railroad corridor, which parallels the eastern edge of Pettaquamscutt Cove, a portion of the National Grid utility easement and a segment that crosses a portion of a salt marsh with views of the lower Narrow River;

- **Alternative 2 - The Brady Bike Route** (corrected). This is an alternative to the Sea View Bike Route;

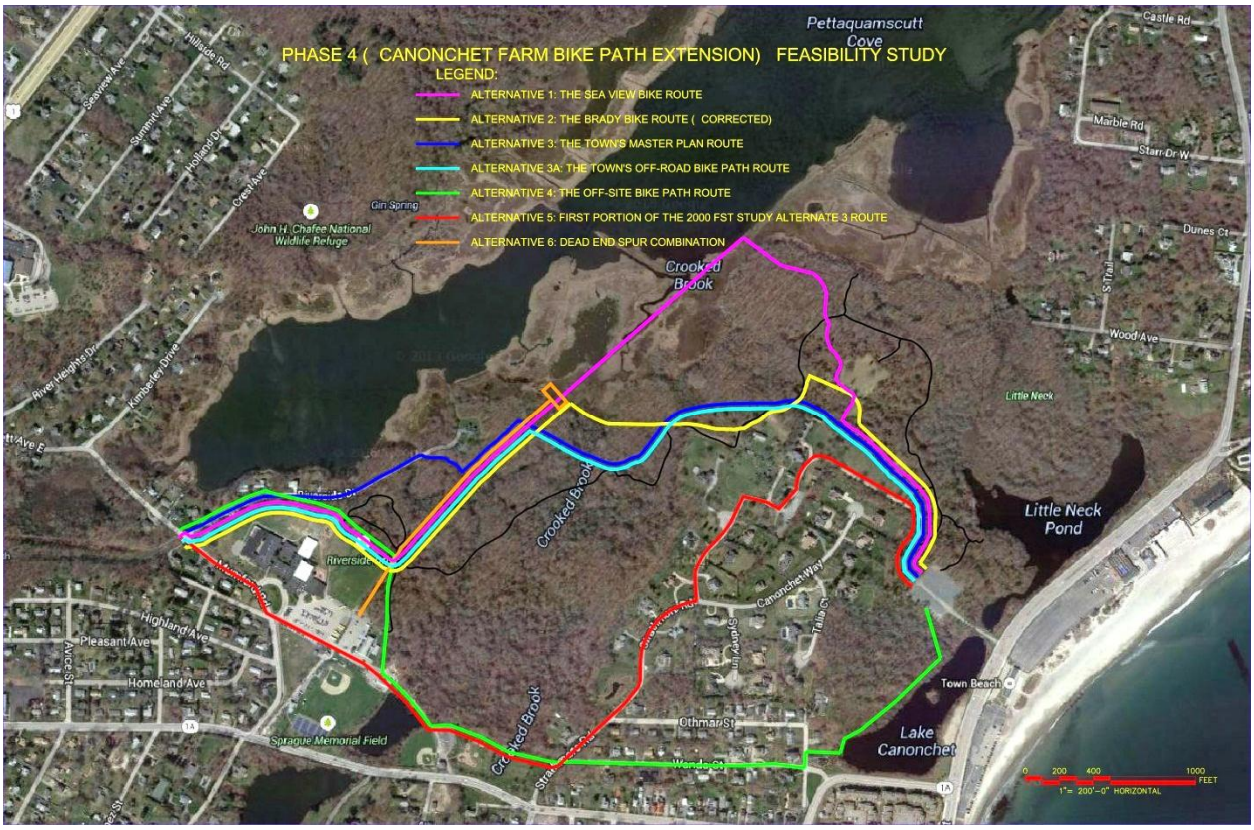


Figure 2.1 – Trail Alternatives
Not to scale
Map from Google 2014

- **Alternative 3 - The Town's Master Plan Bike Route**, identified as "Bike Path Option #1" in the Master Plan. This route emanates from Riverside Drive and aligns inward and around the Canonchet Farm property;

- **Alternative 3A - The Town's Off-Road Bike Path Route**. This route is a combination of the beginning portion of Alternatives 1 & 2 where the alignment runs along the backside of the Narragansett Elementary School and the end portion of Alternative 3 where the alignment crosses the marsh and continues down to the parking lot at Anne Hoxsie Lane;

- **Alternative 4 - The Town's Off-Site Bike Path Route**. The first portion goes around the back side of the Narragansett Elementary School and through a portion of Sprague Park and the next portion follows Wanda Street and runs to the west of Lake Canonchet to the bicycle parking lot at Anne Hoxsie Lane;

- **Alternative 5 - First Portion of the 2000 FST Study Alternative 3 Route**. The next portion of this route follows the subdivision road (Strathmore Road) up to the South County Museum and to the parking lot at Anne Hoxsie Lane; and

- **Alternative 6 - Dead-End Spur Combination** along the southern portion of the former railroad corridor in addition to the Town's Off-Site Bike Path Route or in combination with the subdivision road up to the South County Museum and the parking lot at Anne Hoxsie Lane.

Based on the alternatives previously studied and those explored further herein, it is the intent of this report to summarize the feasibility of the various routes presently under consideration for presentation to the Town of Narragansett for discussion. In the past, members of Town committees have indicated that on-road options are not a preference. However, these on-road routes will remain on the table for comparative alternative analysis and consideration as options for avoiding/minimizing environmental impacts.

Study findings documented in this report are presented to support a decision-making process for identifying a preferred alternative for an eastern extension of the bike path. For each alternative under consideration, this process includes an evaluation of existing conditions and a comparative evaluation of route characteristics including the following:

- Potential environmental impacts
- Key design and constructability-related issues
- Construction cost estimates

Selection of a preferred alternative for Phase 4 of the bike path will require additional coordination between RIDOT, Town departments, Town boards and committees and Town residents. The information presented in this study will also provide the basis for any future funding applications.

3 EXISTING CONDITIONS

The following section presents inventories of existing conditions within the project study area. The evaluation of existing conditions was completed utilizing aerial ortho-photographic mapping, Town and State geographic information system (GIS) data, and field investigations. This inventory includes natural resources, open space and cultural resources, land use and development, and an assessment of local roadways within the study area.

3.1 Natural Resources

The purpose of this section is to document the general types of natural resource areas within the study area and to identify potential environmental issues early in the project development process.

Trail development will require measures to avoid or minimize impacts to natural

resources to support permit applications to regulatory agencies. Potential impacts to these resource areas need to be considered when evaluating alternatives. Location-specific designs aimed at the protection of these resources are critical to enabling a trail to coexist within the diverse natural resource base. As outlined in detail in Appendix B of this report by FST's sub-consultant ABS [1], the existing habitat in the study area is as follows:

- Forested Upland Deciduous
- Forested Wetland (Swamp) Deciduous
- Salt Marsh Habitat
- Freshwater Marsh Habitat
- Riverine/Stream Habitat
- Institutional (Narragansett Elementary School)
- Medium-Low Density Habitat Unit
- High Density Habitat Unit
- Vacant Land Habitat Unit
- Boarding High Density/Medium-Low Density Habitat Unit

Descriptions of these resources can be found in the ABS report in Appendix B.

3.2 Topography and Vegetation

As can be seen on the USGS aerial map in Figure 3.1, the terrain around the Canonchet Farm wetlands area is relatively flat, with considerable lowlands resulting in wetlands and ponds at lower elevations. The only cleared areas adjacent to the Canonchet Farm wetlands are along Riverside Drive and the John H. Chafee National Wildlife Refuge area, around the Narragansett Elementary School and in the fields around the South County Museum property that connect to Anne Hoxsie Lane. The remainder of this area is thickly vegetated with a combination of new and mature growth. Existing narrow walking trails traverse wetlands on the property, which is currently designated by local zoning as public use space. Reference is made to the ABS report in Appendix B which provides details of the vegetation found within the study area.

The Riverside Drive corridor is lined with varying depths of woodland vegetation and open and institutional space (Narragansett Elementary School) to the south on the westerly section of the corridor. Residences mark the north side of this westerly section of the corridor. On this side the John H. Chafee National Wildlife Refuge area has been established by the Department of the Interior. As the corridor transitions to the east, the roadway changes to a gravel drive, narrows and has mature vegetation on both sides of the road. The adjacent cut and fill slopes transition over the length of this corridor and along the edges of the school property.

Since the Town historically has not preferred on-road paths, off-road trail construction will result in the physical alteration of existing vegetative areas within the designated limits of work. Along some alternatives to the east, disturbance will be minimal due to the relative absence of vegetation. In other areas, vegetative disturbances will be more substantial due to the

[1] *Canonchet Spur Natural Resources Alternatives Analysis*; Applied Bio-Systems, Inc.(ABS); October 14, 2015

extent of existing vegetative growth. Additional discussion on natural resources in the study area and potential impacts are also provided in a letter from the U.S. Fish and Wildlife Service dated March 1, 2012 and found in Appendix D. Further discussion on resources area and the regulatory process can be found in minutes from a RIDOT Interagency Meeting on October 31, 2013 included in Appendix E.

Figure 3.1 – USGS Aerial Map
Not to scale
Map from US Geological Survey 2014

Wetland Resources

Under a separate project, wetland resources had been delineated and located by GPS within the Canonchet Farm property by the Southern Rhode Island Conservation District, in coordination with the Town of Narragansett. As noted by ABS in their report, future applications to CRMC will require wetland delineation and survey along the entire length of the selected path route.

Rare Species Habitat

Northern and eastern portions of the study area fall within an RIDEM Natural Heritage Area (NHA), which defines an estimated habitat and range for rare species. Segments of all the alternatives considered as part of this study traverse some of portion of the NHA. Only Alternative 5 does not involve the construction of an off-road path and/or boardwalk within the NHA. Figure 15 of ABS's report shows the NHA limits in the study area with the alignments of the various alternatives.

The Northern Long-eared bat (NLEB) is a recent addition to the Endangered and Threatened Species list as of May 5, 2015. Although winter hibernation occurs in caves, the summer roosting and breeding areas are predominantly in trees with cavities and/or with exfoliating bark. Much of the study area, especially the wooded habitats of Canonchet Farm, could provide potential summer roosting or breeding habitat and in turn can potentially be impacted by all of the Alternatives considered in this study. At this time it is not known if the bat utilizes the project area making it necessary to prove that the bat is "likely absent" from the project area by approved surveys should one of the alternatives be advanced into design. Regardless, consultation with USFWS and RIDEM will be necessary in areas of proposed tree clearing to ensure that there will be no impact to the NLEB.

Another species that may be impacted by Alternatives 1, 2 and 6 is the Salt Marsh Sharp-tailed sparrow, which is known to nest in the Narrow River estuary and within the John H. Chafee National Refuge area designated by the Department of the Interior. This sparrow relies on the high salt marsh meadow habitat for cover/nest building and coordination with the USFWS indicates there is a high potential for this species to be proposed as a candidate for the Endangered Species Act (ESA) listing within the foreseeable future. If this species is placed on the ESA list, then it could impact the continued use of a bike route during the nesting season.

Three state threatened species (least tern, least bittern and sea pink) are also known to occur within the Narrow River Estuary and surrounding wetlands. Alternatives 1, 2 and 6 have the potential to impact these species.

The report prepared by ABS provides additional information on the specific species above and other rare species such as the marsh hawk, American black duck and osprey that are known to occur within the study area. Figure 11 of ABS's report provides a listing of rare species known to occur in the study area and identifies which alternatives have a potential impact.

Wildlife Observations

In Figure 10 of their report ABS provides a summary of wildlife observed during a total of six field inspections covering November and December 2014 as well as April, June and August 2015. As detailed in the report, an extensive variety of birds along with different species of fish, mammals (gray squirrels, deer and rabbits), amphibians (including eastern garter snake, green frog and spotted turtle) and several invertebrates were observed at various times in the study area. Rare species observed in the project area are also identified on Figure 11 of ABS's report.

Coastal Zone

As referenced in the ABS report, a rise in sea level has the potential to impact the Salt Marsh Habitat and adjacent uplands forested areas. During the time of FST field reconnaissance, low tide existed, which permitted access throughout the proposed alignments. During high tides and storm events, the low-lying areas are impacted and will become impassable without some type of boardwalk or elevated facility. The Applied Bio-Systems, Inc. report makes reference to SLAMM (Sea Level Affecting Marshes Model) maps for sea level condition. Refer to Figures 7 & 8 in the ABS report for the impact of a 5-foot sea level rise on the various Alternatives being studied. The Coastal Resources Management Council (CRMC) has jurisdiction over all wetland areas within the project area.

Cultural and Historic Resources

To assist in evaluating the cultural and historical elements in the study area for the various alignment alternatives, Public Archaeology Laboratory (PAL)[2] was utilized as a sub-consultant to conduct an archaeological sensitivity assessment of the general area. Reference is made to the PAL report in Appendix C. The following key points are noted from the report:

- Environmental – the study area encompasses approximately $260^{+/-}$ acres within the Narragansett Bay watershed. This area falls within the Bay Area physiographic context as defined by Rhode Island Historical Preservation and Heritage Commission (RIHPHC). This eco-region consists of small (less than 3 miles) estuaries from the shoreline and was utilized by Pre-Contact Native American populations. Additional points are:
    - The topography varies from low-lying flat wetlands to low rolling upland terrain;
    - The soils are poorly-drained peat, sandy loam and silty loam to moderate to well drained.
- Cultural – Pettaquamscutt Cove (Narrow River) has been the focus of many archaeological investigations since the late 1970's and early 1980's and many sites have been identified. Two of the sites (Sprague I Site -RI 111 and the

[2] *Technical Memorandum –Canonchet Farm Bike Path Extension Feasibility Study*; PAL; July 13, 2015

Campbell Site – RI 114) were recommended for listing in the National Register of Historic Places. Key points are:

  - Review of general historical maps indicate that the study area is outside of the major center of historical development in Narragansett;
  - Both historic sites are north of the project study area; and
  - The 60-foot Sea View Railroad right-of-way (and assets) was sold in 1921 to the Narragansett Lighting Company, now National Grid.

- Topographic – A field review was conducted by PAL and the initial observation noted the lack of human disturbances to the landscape. In addition, various paths lead through the Canonchet Farm property to access different areas of the study area.

  - Vegetation is mostly oak forest with an understory of briars and brambles combined with several open fields in the study area.
  - A former easement of the Sea View Railroad, currently a National Grid right-of-way, is distinctly visible on the western edge of the study area.

- Historic – Rhode Island Historical Cemetery Commission (RIHCC) lists historical cemeteries within the study area.

  - Thomas Mumford Burial Ground (NG008)
  - Hon. William Robinson (NG009)
  - Three Pre-Contact Native American Sites within study Area (RI-104, RI-1037, RI-1789)

- A Phase I archaeological survey would be required along any portion of a selected path route that deviates from existing paved surfaces and/or traverse the upland areas of the study area.

3.3 Land Uses

Land use in the area is generally comprised of open space, the John H. Chafee National Wildlife Refuge area, institutional, recreational, residential, wetlands, vegetated uplands, forested areas and coastal areas.

3.4 Local Roadways

The key roadways in the area are as follows:

- Mumford Road
- Riverside Drive
- Strathmore Road
- Wanda Street
- Anne Hoxsie Lane

- Kingstown Road (Route 1A)

A matrix summary of theses roadway are presented in Table 3.1 and a description is noted below.

Table 3.1 – Roadway Characteristics

Roadway	Functional Classification*	Edge to Edge Width	Condition	Shoulders and Sidewalk	Pavement Markings	Parking Permitted	Drainage	Speed Limit
Mumford	Minor Collector	28.5'-30'	Paved	Yes and no	None	No	Yes	-
Riverside	Local	13'-17'	Paved and gravel	None and CC Berm	None	No	No	-
Strathmore	Local	22'-23'	Paved	None	None	No	No	25
Wanda	Local	25'	Paved	CC Berm	None	Yes	Yes	25
Anne Hoxsie Lane	Local	18'	Gravel	None	None	No	-	-

*Identified by RIDOT

Mumford Road

Mumford Road in the study area is a paved 2-lane minor collector roadway that connects from the South Kingstown town line to an unsignalized intersection at Kingstown Road (Route 1A). At the time of the field reconnaissance, there was no posted speed limit, but historically it has been noted to be 25mph. Mumford Road is 28 ½ feet wide with no sidewalks west of the Narragansett Elementary School and has a right-of-way of 60 feet. Approaching the westerly exit-only school drive, a 5-foot wide concrete sidewalk appears on the north side of the roadway and connects to the sidewalk at Kingstown Road. A drive off Mumford Road provides access to the elementary school, the Sprague Memorial Park/Field, the Community Center Building and the Parks and Recreation maintenance building. Data secured from RIDOT indicates that Mumford Road carried 1,060 vehicles per day during August 2013.

Riverside Drive

Riverside Drive at its intersection with Mumford Road is 26 feet wide but narrows to 17 feet north of the intersection where there is a Cape Cod berm on the west side of the road. Riverside Drive has a right-of-way of 40 feet. On the west side, there is a sign that indicates the area adjacent to Pettaquamscutt Cove is designated as the John H. Chafee National Wildlife Refuge area. In the area near house # 24, the pavement ends (paved distance of approximately $900^{+/-}$) and the remaining section of Riverside Drive is gravel, 13 feet wide with some rutting

observed. On the unpaved section there is a culvert that runs transversely under the roadway, with a head wall partially visible. Utility poles are located on the south side of the roadway.

Strathmore Road

Strathmore Road has a 50 foot right-of-way and is a two-way unmarked roadway that is 22-23 feet wide, with no sidewalks and has a chip seal surface. The roadway runs from Kingstown Road to the south which is signalized, to the entrance of South County Museum Drive to the north. The posted speed limit is 25 mph. Strathmore carried 730 vehicles per day during August 2014.

Wanda Street

Wanda Street is a two-way roadway that is 25 feet wide, has a 50 foot right-of-way and has a Cape Cod berm on both sides of the road and roadside drainage and connects from Strathmore Road to the west to Caswell Street to the east. Both approaches of Wanda Street are under stop sign control. The posted speed limit is 25 mph. Curbside parking is restricted on both sides of the roadway, noting "Parking by permit only, May 15-Sept 15, 9AM-4PM". The August 2014 average daily traffic was recorded to be 288 vehicles per day.

Anne Hoxsie Lane

Anne Hoxsie Lane connects from Boston Neck Road (Route 1A); across a bridge that spans Lake Canonchet to a gravel parking area. The lot serves walking trails to the Canonchet Farm property. Anne Hoxsie Lane is 18 feet wide and is a gravel drive with no sidewalks. During the summer period, there is an attendant present seven (7) days a week from 7AM - 3:30PM collecting parking fees. In August 2014, Anne Hoxsie Lane carried 385 vehicles per day.

Kingstown Road (Route 1A)

Kingstown Road between Mumford Road and Strathmore Road, where it changes to Narragansett Avenue, has two 12-foot lanes and two 8-foot shoulders and has a 60-foot right-of-way. Parking is prohibited on this section of the road, thus allowing the paved shoulders to be used by bicyclists. 'Share the Road' signs are present on the roadway. The posted speed limit is 35 mph.

3.5 Accidents

An accident assessment was conducted of the local roadways within the study area to aid in evaluating each possible alternative for connecting the existing South County Bike Path to the Canonchet Farm property area and Anne Hoxsie Lane. Accident information was supplied by both the RIDOT and the Narragansett Police Department. Data from RIDOT was secured from 2011 to 2013 while data from the Town was secured from 2010 through 2013. The areas of study were:

- Mumford Road to Kingstown Road
- Strathmore Road from Kingstown Road
- Wanda Street from Strathmore Road to Narragansett Avenue
- Kingstown Road/Boston Neck Road from Mumford Road to Narragansett Avenue

From the RIDOT data, the number of accidents at each location over the 3 year time period is listed in Table 3.2. This summary will be helpful when assessing the various alternatives under consideration so that a recommended alignment is not designed through a high accident area. As can be seen, a few accidents occurred in the parking lot at the Narragansett Elementary School, likely due to inattentiveness and the presence of parked vehicles in the lot. Also it can be seen that the greatest number of accidents occurred in the area of the Boston Neck Road/Narragansett Avenue intersection. This includes accidents in the vicinity of the Pavilion parking lots and adjacent driveways, so the actual number of accidents at the intersection itself may be slightly less.

Table 3.2 – 3 -Year Crash Summary

Year	Strathmore Rd/ Kingstown Rd*	Mumford Rd.*			Boston Neck Rd/ Narragansett Ave and vicinity**	Total
		Highland Rd	Parking Lot	Kingstown Rd		
2011	1	1	2	1	10	15
2012					14	14
2013	1				8	9
Total	2	1	2	1	32	38
Average per year	0.7	0.3	0.7	0.3	10.7	12.7
Severity						
Property Damage Only	2	1	2	1		6
Non-Fatal Injury						
Fatal Injury						
Not Reported						
Total	2	1	2	1		6
Type of Accident						
Single Vehicle	1	1		1	11	14
Head-On						
Angle	1				4	5
Rear-End			2		7	9
Sideswipe					4	4
Pedestrian/Bicyclist					2	2
Not Reported						
Total	2	1	2	1	28	34

*Data from RIDOT files for 2011 to 2013

** data identified for both Boston Neck Road and Narragansett Avenue

Data obtained from the Narragansett Police Department is shown in Table 3.3 which is broken down by month along each roadway in the study area for the entire four-year period of 2010-2013. While the number of accidents at each intersection was not identified, it can be seen for the four (4) year period that a total of eleven accidents occurred along Mumford Road.

Table 3.3 – 4-Year Intersection Crash Summary – Town of Narragansett

Month	Roadway*							
	Anne Hoxsie Lane	Boston Neck	Kingstown	Mumford	Narragansett	Othmar	Strathmore	Wanda
Jan		1		2				
Feb								
March				1		1		
April			1				1	
May		2	2	2				1
June	1			2				
July	2	2	1	2	2			
Aug		1	1	1				
Sept		1	2					
Oct								
Nov			2	1	1			
Dec		1						
Totals	3	8	9	11	3	1	1	1

*Town of Narragansett Police Department from 1/1/10 to 12/31/13

3.6 Bicycle Suitability

A component of bicycle suitability now required by RIDOT (effective 7/26/06, Directive DPM 920.06) is to assess the suitability or practicality of a route for use by bicycles on or around the local roadway system. This four page document can be found in the Appendix, with completed reports identified in the Technical Appendix for the following roadways:

- Mumford Road, from Riverside Drive to Kingstown Road (Route 1A)
- Anne Hoxsie Lane, from Route 1A Strathmore Road, from Kingstown Road to Canonchet Way
- Wanda Street, from Strathmore Road to Caswell Road
- Kingstown Road (Route 1A)/Narragansett Road, from Caswell Road to Beach Street

Selected criteria that are considered in this bicycle suitability evaluation include such measures as posted speed limit, average annual daily traffic (AADT), truck percentages, roadway characteristics, sidewalk presence, curbing, on-street parking, traffic control, horizontal and vertical alignment, off-road obstacles, adjacent facilities and land uses to name a few. Based on the completion of these forms, a brief summary is noted in Table 3.4.

Table 3.4 – Bicycle Suitability Summary Report (Selected Criteria)

Roadways					
Item	Mumford	Anne Hoxsie Lane	Strathmore	Wanda	Kingstown
ADT[+]	1,060	400	700	300	8,900
Speed limit	*	*	25	25	35
Travel lanes	2	2	2	2	2-3**
Sidewalks	No	No	No	No	Y
Shoulders	No	No	No	No	Y
Curbing	No	No	No	No	Y
Surface	Asphalt	Gravel	Chip Seal	Chip Seal	Asphalt

*not posted
**three lanes at key intersections;[+]average daily traffic

4 CONCEPTUAL DESIGN

The purpose of this section is to provide an overview of design criteria that need to be considered when designing bicycle and pedestrian facilities.

4.1 Design Criteria

The criteria governing the design of bicycle and pedestrian facilities are based on the following guidelines and regulations:

- *RIDOT Highway Design Manual*, RIDOT, Revised February 2009;
- American Association of State Highway and Transportation Officials *Guide for the Planning, Design and Operation of Pedestrian Facilities*, AASHTO 2004;
- *AASHTO Guide for the Development of Bicycle Facilities*, AASHTO 2012;
- Federal Highway Administration (FHWA) *Designing Sidewalks and Trails for Access Part II of II: Best Practices Design Guide*, FHWA 2001;
- Americans with Disabilities Act Accessibility Guidelines (ADAAG), ADAAG 2010;
- *Manual on Uniform Traffic Control Devices (MUTCD)*, FHWA 2009.

4.2 Facility Types

The applicability of the guidelines and regulations listed above vary depending upon the anticipated funding source and administering agency.

A project can be comprised of different facility types in order to connect users with various destinations in a community. The Rhode Island Department of Environmental Management (RIDEM) and the Rhode Island Highway Design Manual make the following distinction in bicycle, pedestrian and greenway facilities:

- Shared-use path or bike path;
- Sidewalk or walkway;
- Greenway trail;
- Bike lane;
- Bikeway;
- Shared roadway facilities (bicycle lane, bicycle route or shared roadway)

The typical cross section of each facility type is generally governed by the existing right-of-way or property boundaries, location of adjacent environmental resource areas, and types of abutting land uses. Guidelines and criteria for developing bicycle facilities have been presented in the AASHTO Guide for the Development of Bicycle Facilities and the AASHTO Guide for Development for Pedestrian Facilities. RIDOT has adopted both of these documents. Since portions of the William C. O'Neill South County Bike Path have been completed to date, the facility structure has been defined and a cross section has been identified. Given the nature of the area, the terrain and the origin and destination points of the connection and terminus, only two options are plausible, that being the shared-use path or bike path, and the shared road facility. These two cross sections are presented below.

Shared-Use Path / Trail

A shared-use path or trail is a facility for non-motorized uses that is independently aligned and can be used for a variety of purposes including recreation, commuting and local travel. This type of facility is attractive to all ages and skill levels because of the separation from automobile traffic. In addition to bicycling, separate shared-use paths are used extensively for walking, running and in-line skating.

Key Design Criteria

- 10-12 foot surface width (typical);
- 8 foot surface minimum width acceptable in sensitive areas;
- 2 foot shoulders;
- 3 foot minimum clear offset from edge of trail to obstructions (i.e. tree, fence, sign, wall, etc.);
- 5 to 7 foot minimum separation from roadway (less requires suitable physical barrier).

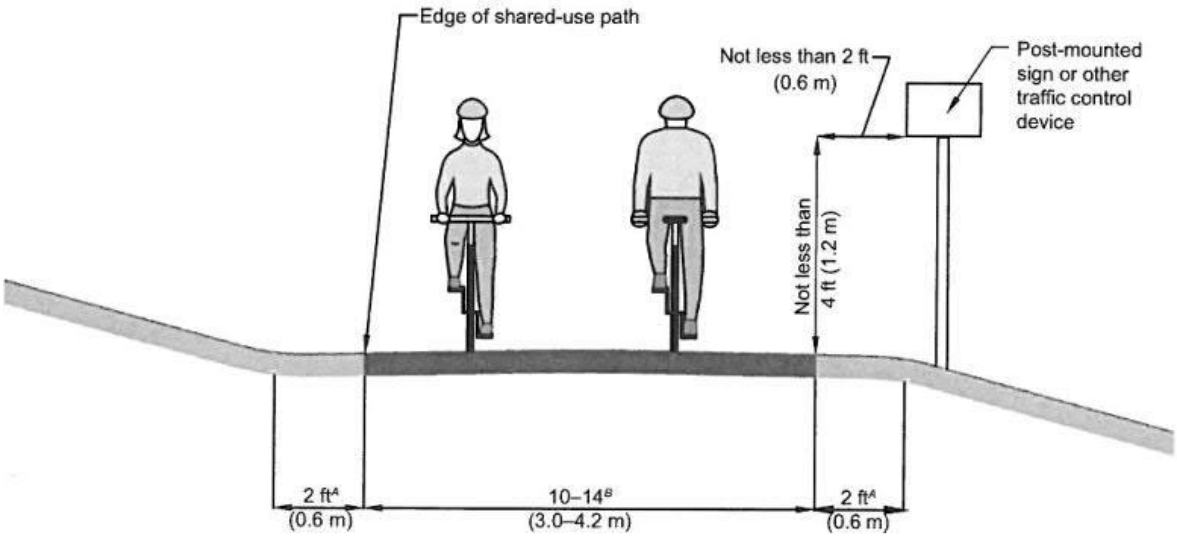


Figure 4.1 – Shared-Use Path / Trail Cross Section

Bicycle Route

A bicycle route refers to joint use of normal roadway travel lanes by both motor vehicles and bicyclists. These facilities are also referred to as shared lanes or a shared roadway. "Share the Road" warning signs or "Bike Route" directional signage are typically installed along these facility segments. These facilities are decided on a case-by-case basis on how to sign them. Similar to bicycle lanes, this type of facility is also used mostly by bicyclists that are experienced in sharing roadways with motor vehicle traffic. They do not attract the variety of users and skill levels that a separated shared-use path normally attracts.

Key Design Criteria:

- Travel lanes at least 14 to 15 feet wide (preferred)
- Recommended for roadways with low speeds and low to moderate traffic volumes
- Grades greater than 5% are undesirable

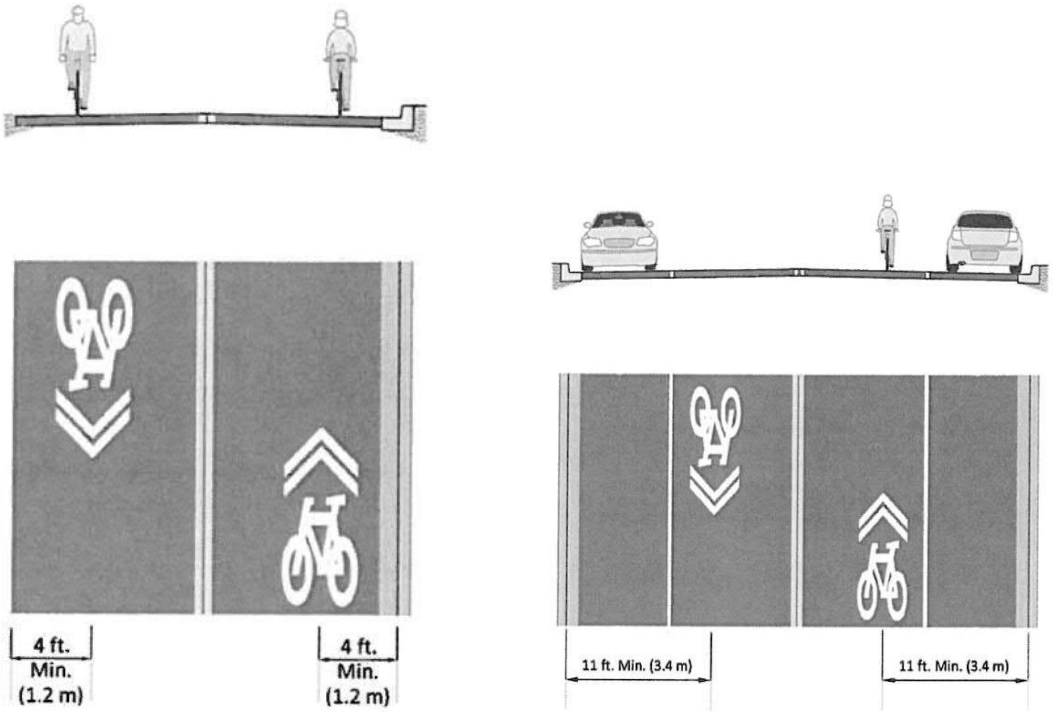


Figure 4.2 – Bicycle Route Cross Sections and Plan Views

Minimum Useable Roadway Widths:

For bike routes on local roadways, Chapter 9 of the RIDOT Highway Design Manual lists Table 9-1 (reproduced as Table 4.1 below) showing the minimum usable roadway widths for various speed limits as the facility relates to roadway average daily traffic.

Table 4.1 – Minimum Usable Roadway Widths

Posted Speed Limit	Average Annual Daily Traffic*		
	Less than 2,000	2,000-10,000	10,000-20,000
Less than 30 mph	12’	15’	16’
30-40	14’	15’	16’
40-50	15’	16’	16’

*Vehicles per day; Note: Widths = Lane plus shoulder

The majority of the roadways in the study area have an average daily traffic of less than 2,000 with posted speed limits of less than 40 mph. Thus the minimum usable roadway width is 12-14 feet.

The constructability of both the shared-use path/trail and the bicycle route represented in the Alternatives is not a deterrent. The existing grades are reasonable, which would require a normal amount of earthwork to achieve the finished grade. The retaining walls to support the path would be a maximum of 11 feet tall. Boardwalks can be built using helical screw piles

which would have a minimal impact footprint per pile (6" to 12") which would require minimal restoration of the wetlands. The boardwalk would be built sequentially like a train track where the equipment is on the recently installed section. Another obstacle for permitting would be wetland shading from the boardwalk. A determination would have to be made as part of the permitting process regarding the distance between the wetland and the bottom of the structure to avoid the shading.

There will be additional maintenance costs for sections of boardwalk compared to paved portions of path. Difficult to estimate, actual costs and the frequency of maintenance can vary considerably and will be influenced by the type of materials selected and quality of the initial construction.

Final design of any of these alternatives under consideration will include features needed to manage the quantity and quality of stormwater runoff. Water quality volume can be used as a measure of treatment requirements needed to meet stormwater standards related to the addition of impervious surfaces such as a paved path for the various alternatives. This is the volume of water associated with 1" of runoff from any given storm, which must be captured and treated.

The bicycle route would require pavement markings and way finding signage.

Within each section, there are a variety of alternatives or a combination of alternatives that could form a recommended alternative to connect to the existing William C. O'Neill South County Bike Path that currently terminates at Mumford Road.

Conceptual alignments of each alternative have been shown earlier in Section 2 (Figure 2.1) and are discussed in the subsequent section in no order of significance.

5 Alternatives

5.1 Alternative 1: The Sea View Bike Route

Figure 5.1 – Alternative 1
Not to scale
Map from Google 2014

The following text describes the alignment and then the design issues associated with the construction of a bicycle and/or pedestrian route within portions of the Canonchet Farm property and the abandoned Sea View Railroad corridor.

Alignment:

- This route starts at the existing terminus of the William C. O'Neill South County Bike Path at the Mumford Road/Riverside Drive intersection and would continue northeast across Mumford Road for approximately $30^{+/-}$ feet and then across Riverside Drive for approximately $45^{+/-}$ feet where it enters the off-road separated shared-use path, opposite house #8 on Riverside Drive. The existing utility poles would be located to the north of the shared-use path.

Photo 1 - Looking across Mumford Road towards Riverside Drive from the existing trail entrance (11-19-14)

- This new shared-use path would then continue along the field perimeter or the tree line, of the Narragansett Elementary School and then continue behind the playground equipment, for a distance of approximately $1{,}300^{+/-}$ feet.

- The alignment would then enter into the woods at the northeast corner of the Narragansett Elementary School property and then continue behind the Community Center Building where it would connect with the abandoned Sea View Railroad corridor, at the intersection of existing walking trails identified as the School Nature Loop.

Photo 2 - Looking at the entrance to the existing walking trails at the corner of the soccer fields at Narragansett Elementary School (11-19-14)

- It would then follow the existing Sea View Railroad bed for a distance of approximately $700^{+/-}$ feet, where it intersects with the existing National Grid easement at utility pole # 575.

- The alignment then continues on the railroad corridor, past a number of utility poles on the south side (numbered in descending order). Approximately $100^{+/-}$ feet after

pole # 571, water now appears on both sides (note: tide conditions were noted to be low during field reconnaissance) with the Crooked Brook now appearing on the north side. This portion within the salt marsh is tidally flooded on a daily basis.

Photo 3 - Looking North at Crooked Brook along Pettaquamscutt Cove (11-5-14)

- The alignment continues on the railroad corridor over two 20" concrete culverts (no head wall), which services Crooked Brook on both sides and is approximately $1{,}200^{+/-}$ feet from the National Grid easement intersection.

Photo 4 - Twin 20" concrete culverts conveying the Crooked Brook under the National Grid Easement (11-5-14)

- The alignment continues past pole # 567 for a distance of approximately $60^{+/-}$ feet, which is approximately $2{,}100^{+/-}$ feet from the National Grid easement intersection, where the alignment curves to the south across the marsh to an upland wooded area, a distance of approximately $280^{+/-}$ feet. During field reconnaissance, surface conditions across the marsh were traversable.

Photo 5 - Looking Southeast from the National Grid Easement toward the upland woods (11-5-14)

- The alignment then runs approximately $500^{+/-}$ feet through the upland wooded area, through a break in the northerly stone wall to the intersection with the existing walking trail.

Photo 6 - Looking Northwest toward Pettaquamscutt Cove at the break in the stone wall (11-5-14)

- The alignment then crosses through a break in a stone wall and crosses a walking trail at approximately a 90-degree angle and continues approximately $270^{+/-}$ feet through the upland wooded area to the upper meadow.

- The alignment then follows around the perimeter of the meadow for approximately $300^{+/-}$ feet, cuts through an opening for approximately $200^{+/-}$ feet and around the perimeter of the Canonchet Farm property to the Anne Hoxsie Lane parking lot for approximately $1{,}150^{+/-}$ feet. The approximate total distance for Alternative 1 is 6,875 feet (1.30 miles).

Photo 7 - Looking Northwest along the perimeter of the cleared meadow (11-5-14)

Photo 8 - Looking Southeast along the perimeter of the South County Museum property (11-5-14)

Design Issues:

- One alternative for the connection or continuation of the bike path for Phase 4 is via Riverside Drive. Presently, the existing path ends at Mumford Road, opposite Riverside Drive. Two options should be considered if this alternative is realized. One option would be to have the new path entrance in the northeast quadrant of Mumford Road/Riverside Drive, with the entrance at the corner of the intersection, diagonally opposite the existing terminus. A new crosswalk, with appropriate signage would be painted across Mumford Road connecting the two paths. A second option for connecting the two paths would be to have a new painted crosswalk across Mumford Road from the existing terminus to the northwest corner of the of Mumford Road/Riverside Drive intersection. In this quadrant, a new landing area should be constructed and a second crosswalk would be created across Riverside Drive to the opposite side (east) of Riverside Drive to a new path entrance on Riverside Drive. Appropriate signage would accompany this option. With a 60 foot right-of-way on Mumford Road and a 40-foot right-of-way on

Riverside Drive, there would be sufficient room to construct such a landing area. A new stop line and stop sign would be placed on Riverside Drive prior to the new crosswalk.

- A small retaining wall would be needed for approximately $650^{+/-}$ feet of the path along the field perimeter or tree line of the Narragansett Elementary School. The topography is such that the path would be located along an embankment and a wall would be necessary adjacent to the path to account for the grade difference. The approximate location of such a wall can be seen in the photo below.

Photo 9 - Looking East along the embankment on the northwest side of the Narragansett Elementary School (8-4-14)

- The portion of path that follows the abandoned Sea View Railroad corridor has an existing railroad berm on which the path would be constructed. This berm is approximately 10-12 feet wide with side slopes of 2:1 down to existing grade. The cross section in this area would have to be widened to accommodate shoulders and guardrail and therefore the limit of grading would extend well beyond the existing toe of slope. A retaining wall can be used to reduce the work limit beyond the existing berm.
- A boardwalk structure would be needed for approximately $1{,}850^{+/-}$ feet of the alignment along the National Grid easement and where the alignment crosses the marsh for approximately $280^{+/-}$ feet to the upland woods, due to the fluctuating water level in this area, which is controlled by the coastal tides.
- This alternative traverses approximately 2,920 LF of wetland resources.
- This proposed trail has the greatest amount of wetland alteration with an area of $13{,}210^{+/-}$ square feet. The majority of the alteration is along the Sea View Railroad Berm with a small total of $150^{+/-}$ square feet from the boardwalk piles.
- Adds approximately 1.6 acres of impervious surface with a water quality volume of 0.13 acre-ft (5,700 cf)

5.2 Alternative 2: The Brady Bike Route (corrected)

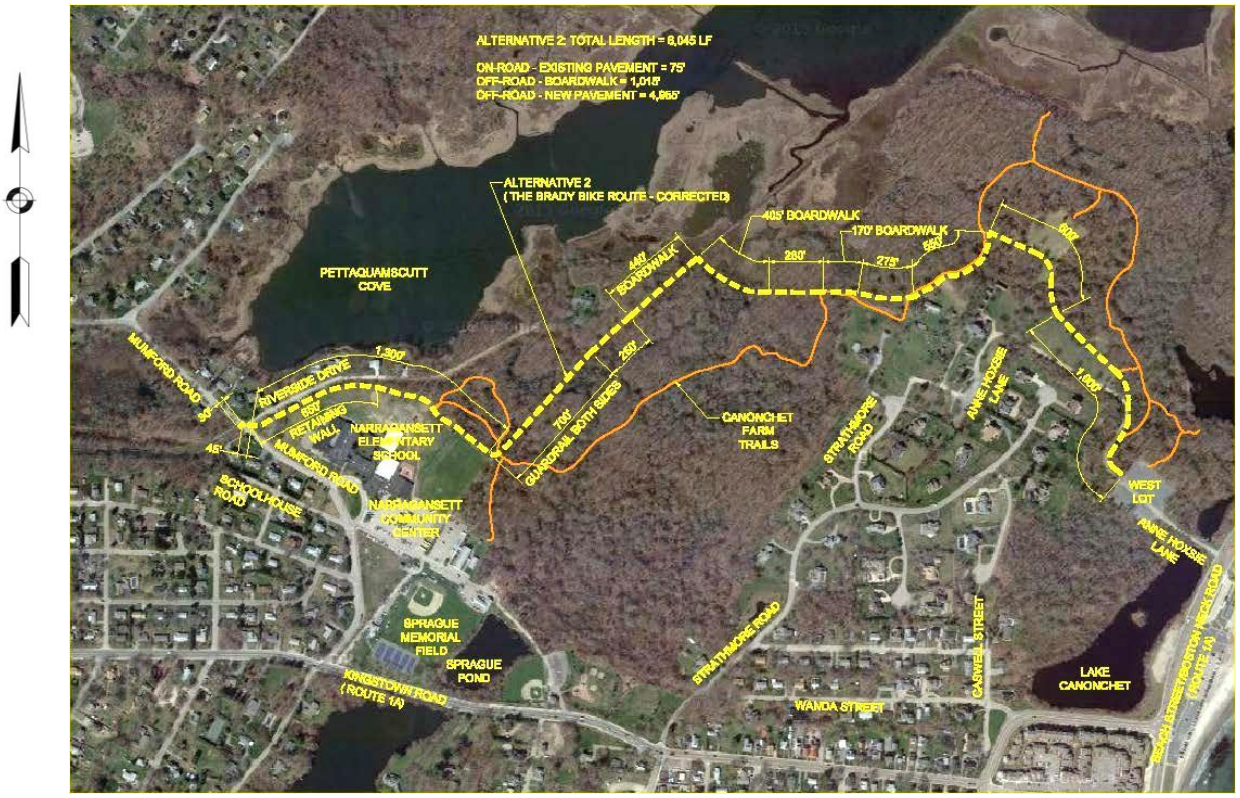


Figure 5.2 – Alternative 2
Not to scale
Map from Google 2014

This is an alternative to the Sea View Bike Route and it is named the Brady Bike Route (corrected).

Alignment:

- Starting at the Mumford Road/Riverside Drive intersection, this route follows the same path into the woods and onto the railroad corridor as the Sea View Bike Route, but the alignment curves into the woods or uplands area across a relatively wet area approximately $50^{+/-}$ feet past pole # 571, which is approximately $700^{+/-}$ feet from the National Grid easement intersection. This crossing point is prior (west) of the Sea View Bike Route crossing and the twin culvert crossing under the existing corridor and travels across the marsh for approximately $405^{+/-}$ feet.

- This route crosses an existing walking trail in two (2) locations, travelling approximately $715^{+/-}$ feet while running parallel to the easterly property line of 8-10 Strathmore Road (parcel # 1-5 of the Town Tax Assessor's Plat B Map). The alignment then runs parallel to the walking trail and stays south of the trail for approximately $550^{+/-}$ feet.

Photo 10 - Looking North toward Pettaquamscutt Cove east of the South County Museum Property (11-5-14)

- The alignment turns south for approximately $600^{+/-}$ feet and then curves around the perimeter of the South County Museum property to the Anne Hoxsie Lane parking lot for approximately $1{,}000^{+/-}$ feet. Approximate total distance for Alternative 2 is 6,045 feet (1.14 miles).

Design Issues:

- As in Alternative 1, a small retaining wall (11' maximum height) would be needed for approximately $650^{+/-}$ feet of the path along the field perimeter or tree line of the Narragansett Elementary School. The topography is such that the path would be located along an embankment and a wall would be necessary adjacent to the path.
- As in Alternative 1, the portion of path that follows the abandoned Sea View Railroad corridor has an existing railroad berm on which the path would be constructed. This berm is approximately 10-12 feet wide with side slopes of 2:1 down to existing grade. The cross section in this area would have to be widened to accommodate shoulders and guardrail and therefore the limit of grading would extend well beyond the existing toe of slope. A retaining wall can be used to reduce the work limit beyond the existing berm.
- A boardwalk structure would be needed for approximately $440^{+/-}$ feet along the National Grid easement. Another two segments of boardwalk of $405^{+/-}$ feet and $170^{+/-}$ feet would be needed where the alignment crosses the marsh to the upland woods, due to the fluctuating water level in this area, which is controlled by the coastal tides.
- This alternative traverses approximately 1,805 LF of wetland resources.
- This alignment has an approximate total wetland alteration of approximately $13{,}131^{+/-}$ square feet of which $71^{+/-}$ square feet is from boardwalk piles and $13{,}060^{+/-}$ square feet is from extending the existing railroad berm. The alterations cover two (2) different land habitats including forested wetland and salt marsh.

- Adds approximately 1.4 acres of impervious surface with a water quality volume of 0.114 acre-ft (5,000 cf)

5.3 Alternative 3: The Town's Master Plan Route

Figure 5.3 – Alternative 3
Not to scale
Map from Google 2014

This route is referred to as Bike Path Option # 1 in the Town's 2008 Master Plan.

Alignment:

- This route starts at the existing terminus of the William C. O'Neill South County Bike Path at the Mumford Road/Riverside Drive intersection and would continue northeast across Mumford Road for approximately $30^{+/-}$ feet and onto Riverside Drive. The alignment then travels east on Riverside Drive for approximately $850^{+/-}$ feet where the pavement ends.

Photo 11 - Looking East along Riverside Drive from the unpaved portion of the road (8-4-14)

- The alignment continues along an unpaved portion of Riverside Drive for a distance of approximately $650^{+/-}$ feet to the National Grid easement. It continues southeast along the easement for approximately $350^{+/-}$ feet where it intersects with the Sea View railroad corridor.

- From the above intersection, the alignment continues along the Sea View railroad corridor lowlands for a distance of approximately $300^{+/-}$ feet, where the alignment travels on boardwalk, across the marsh into uplands area for a distance of approximately $670^{+/-}$ feet.

Photo 12 - Looking Southeast across the marsh toward the upland woods (11-5-14)

- The alignment then curves to the east for approximately $570^{+/-}$ feet on uplands where it meets and crosses the walking path. The alignment then travels approximately $730^{+/-}$ feet to the east including two segments of boardwalk of approximately $250^{+/-}$ feet and $80^{+/-}$ feet in length. The alignment then continues easterly and parallel to the east-most property line of the South County Museum

property (parcel # 1-A of the Town Tax Assessor's Plat B Map) to the Anne Hoxsie Lane parking lot for a total segment distance of approximately $1{,}460^{+/-}$ feet. Approximate total distance for Alternative 3 is 5,610 feet (1.06 miles).

Photo 13 - Looking Northwest towards Anne Hoxie Lane from the parking lot (8-4-14)

Design Issues:

- Riverside Drive would become a shared-use roadway which may require pavement or porous material on the dirt/gravel section to accommodate bicyclists.
- A boardwalk structure of $670^{+/-}$ feet would be needed where the alignment crosses the marsh to the upland woods, due to the fluctuating water level in this area, which is controlled by the coastal tides.
- This alternative traverses approximately 1,350 LF of wetland resources.
- This alignment bisects the forested wetlands in two additional areas, as compared to the previous described alignments that avoid those wetland areas. Regardless, a total of $7{,}770^{+/-}$ square feet of wetland alterations would be expected for this alternative route. A wetland alteration of $7{,}700^{+/-}$ square feet would be needed at the existing railroad berm south of the marsh and $70^{+/-}$ square feet from boardwalk piles.
- There are multiple alternatives of the South County Bike Path Extension. Regardless of the preferred alternative to be constructed, some users may elect to utilize only a portion of the path extension. In this case, if users transport their bicycles to the path in their own vehicles, a parking facility should be considered. For the Strathmore Route and off-site bike route, parking is already provided at Sprague Field, the Narragansett Elementary School and the Community Center parking lot. For use of the Dead-End Spur, the Brady Bike Route (corrected) or the Master Plan Route, some provisions should be considered for a small parking area (2-4 vehicles) along Riverside Drive to accommodate these users. At the northerly terminus, ample parking is provided in the gravel lot at Anne Hoxsie Lane.

- Adds approximately 1.1 acres of impervious surface with a water quality volume of 0.09 acre-ft (3,900 cf)

5.4 Alternative 3A: The Town's Off-Road Bike Path Route

Figure 5.4 – Alternative 3A
Not to scale
Map from Google 2014

This alternative is a combination of the Sea View Bike Route and the Town's Master Plan Route.

Alignment:

- Starting at the Mumford Road/Riverside Drive intersection, this route follows the same path into the woods and onto the railroad corridor as the Sea View Bike Route and the Brady Bike Route would. The alignment would travel approximately $700^{+/-}$ feet to the intersection with the National Grid Easement. From that intersection, the alignment continues along the Sea View railroad corridor lowlands for a distance of approximately $250^{+/-}$ feet, where the alignment travels on boardwalk, across the marsh into uplands area for a distance of approximately $670^{+/-}$ feet.

- The alignment then curves to the east for approximately $570^{+/-}$ feet on uplands where it meets and crosses the walking path. The alignment then travels approximately $730^{+/-}$ feet to the east including two segments of boardwalk of

approximately $250^{+/-}$ feet and $80^{+/-}$ feet. The alignment then continues easterly and parallel to the east-most property line of the South County Museum property (parcel # 1-A of the Town Tax Assessor's Plat B Map) to the Anne Hoxsie Lane parking lot for a total segment distance of approximately $1{,}460^{+/-}$ feet. Approximate total distance for Alternative 3A is 5,755 feet (1.09 miles).

Photo 14 - Looking Northwest back across the marsh from the Upland Woods (11-5-14)

Design Issues:

- As in Alternative 1, a small retaining wall (11' maximum height) will be needed for approximately $650^{+/-}$ feet of the path along the field perimeter or tree line of the Narragansett Elementary School. The topography is such that the path will be located along an embankment and a wall will be necessary adjacent to the path.
- As in Alternative 1, the portion of path that follows the abandoned Sea View Railroad corridor has an existing railroad berm on which the path would be constructed. This berm is approximately 10-12 feet wide with side slopes of 2:1 down to existing grade. The cross section in this area would have to be widened to accommodate shoulders and guardrail and therefore the limit of grading will extend well beyond the existing toe of slope. A retaining wall can be used to reduce the work limit beyond the existing berm.
- A boardwalk structure will be needed where the alignment crosses the marsh to the upland woods due to the fluctuating water level in this area which is controlled by the coastal tides.
- This alternative traverses approximately 1,790 LF of wetland resources.
- This alignment bisects the forested wetlands in two additional areas, as compared to previous described alignments that avoid those wetland areas. Regardless, a total of $13{,}130^{+/-}$ square feet of wetland alterations would be expected for this alternative route. A wetland alteration of $13{,}060^{+/-}$ square feet would be needed at the existing railroad berm south of the marsh and $70^{+/-}$ square feet from boardwalk piles.

- Adds approximately 1.3 acres of impervious surface with a water quality volume of 0.109 acre-ft (4,700 cf)

5.5 Alternative 4: The Town's Off-Site Bike Path Route

Figure 5.5 – Alternative 4
Not to scale
Map from Google 2014

This route is a combination of on-road connections and an off-road shared-use path facility.

Alignment:

- This route starts at the existing terminus of the William C. O'Neill South County Bike Path at the Mumford Road/Riverside Drive intersection and would continue northeast across Mumford Road for approximately $30^{+/-}$ feet and onto Riverside Drive. The alignment travels east on Riverside Drive for approximately $550^{+/-}$ feet where it would enter onto the field perimeter or the tree line of the Narragansett Elementary School, behind the playground equipment, for a distance of $900^{+/-}$ feet.

Photo 15 - Looking Southeast toward the playground behind the Narragansett Elementary School (11-19-14)

- The alignment would then turn south for approximately $650^{+/-}$ feet, running parallel and to the west of the walking trail until it reaches the paved road at the maintenance building on the edge of Sprague Pond.

Photo 16 - Looking Southeast toward the maintenance building at Sprague Memorial Field (11-19-14)

- The alignment continues on the paved road for approximately $70^{+/-}$ feet and then on to a dirt road for another $350^{+/-}$ feet, until it turns east along the perimeter of the playground parking lot for approximately $100^{+/-}$ feet. The alignment then follows the perimeter of the park along the tree line for approximately $660^{+/-}$ feet, of which $130^{+/-}$ feet would be on boardwalk, until it reaches the intersection of Strathmore Road and Wanda Street.

Photo 17 - Looking Southeast along the dirt road adjacent to Sprague Pond (8-4-14)

- The alignment continues east on an on-road portion of the route along Wanda Street for approximately $1,400^{+/-}$ feet to the intersection with Caswell Street and then turns north on Caswell Street for approximately $90^{+/-}$ feet, it then turns east to an off-road section of path for approximately $150^{+/-}$ feet to the edge of Lake Canonchet.

- The alignment continues around the western edge of Lake Canonchet through wetlands on boardwalk for approximately $1,000^{+/-}$ feet, until it turns north through upland woods for approximately $150^{+/-}$ feet to the Anne Hoxsie Lane parking lot. The approximate total distance for Alternative 4 is 6,160 feet (1.17 miles).

Photo 18 - Looking Southwest in Anne Hoxie Lane parking Lot (8-4-14)

Design Issues:

- A culvert that conveys Crooked Brook will have to be maintained under the pavement box.

- The alignment along Lake Canonchet will require culverts at two locations to maintain inlets off of the lake or an elevated boardwalk structure to traverse the entire area.

- This alternative traverses approximately 1,130 LF of wetland resources.

- This alignment has a proposed wetland alteration of approximately $80^{+/-}$ square feet, with most of the alteration occurring along the western bank of Lake Canonchet from boardwalk piles.

- Since Wanda Street has no sidewalks, the roadway would be utilized as a shared-use facility, accommodating bicycles, pedestrians and vehicles in the roadway. One consideration to separate pedestrians from bicycles would be to build a sidewalk on one side of the road. The edge-to-edge width of the roadway is 25 feet, with an over-all right-of-way of 50 feet. Thus conceivably, a cross section in the ROW could consist of the following:

  - 25 foot roadway
  - 4 foot grass strip on one side
  - 5 foot sidewalk on one side

  Wanda Street is primarily a residential street and since the sidewalk could technically be considered, it would not be realized without impacting the area, requiring such issues to be addressed that would include: determination of what side(s) the sidewalk should be placed, relocation of mail boxes, possible relocation of utility poles, drainage considerations, landscaping replication and vegetation impacts and loss of trees.

- The existing dirt path east of the town maintenance building measures approximately 14'. This road will have to be widened to 24' to allow a two-way bicycle route. One portion that is adjacent to Sprague Pond will require a retaining wall and extensive earthwork to accomplish the widening.

- Adds approximately 0.9 acres of impervious surface with a water quality volume of 0.074 acre-ft (3,200 cf)

5.6 Alternative 5: First Portion of the 2000 FST Study Alternate 3 Route

Figure 5.6 – Alternative 5
Not to scale
Map from Google 2014

This route is a combination of on-road connections and an off-road shared-use path facility.

Alignment:

- This route starts at the existing terminus of the William C. O'Neill Bike Path at the Mumford Road/Riverside Drive intersection and would continue southeast and then south along Mumford Road for approximately $750^{+/-}$ feet until it reaches the driveway to the Narragansett Elementary School.

- The alignment continues southeast into the driveway along the back side of the perpendicular parking spaces at the southern edge of the parking lot and along the paved road that bisects the Narragansett Community Center and the park's maintenance building for approximately $760^{+/-}$ feet to the dirt road.

- The alignment continues along the dirt road for another $350^{+/-}$ feet, turns east along the perimeter of the playground parking lot for approximately $100^{+/-}$ feet and then follows the perimeter of the park along the tree line for approximately $660^{+/-}$ feet, of which $130^{+/-}$ feet will be on boardwalk until it reaches the intersection of Strathmore Road and Wanda Street.

Photo 19 - Looking Southeast from Mumford Road into Narragansett Elementary School Parking Lot (11-19-14)

Photo 20 - Looking Northeast along Strathmore Road at Wanda Street (8-4-14)

- The alignment continues north on an on-road section along Strathmore Road for approximately $1,900^{+/-}$ feet to the South County Museum entrance at Anne Hoxsie Lane. The alignment travels along the Anne Hoxsie Lane, through the South County Museum, which is a dirt/gravel road, for approximately $750^{+/-}$ feet to the intersection with a gravel road that leads down approximately $1,100^{+/-}$ feet to the Anne Hoxsie Lane parking lot. Approximate total distance for the Alternative 5 is 6,370 feet (1.21 miles).


Photos 21 & 22 - Looking East into the South County Museum Property (8-4-14)

Photo 23 - Looking Southeast down Anne Hoxie Lane (8-4-14)

Design Issues:

- Mumford Road and the Narragansett Elementary School driveway and access road near the maintenance facility will become shared-use facilities.
- Path along the back side of parking spaces would create a safety concern with drivers backing out.
- A culvert that conveys Crooked Brook would have to be maintained under the pavement or a boardwalk could span the brook.
- Because of the significant on-road section of this alignment, this alternative has the fewest impacts to wetlands at $10^{+/-}$ square feet from boardwalk piles that occur on the north side of Town's recreation land.
- The existing dirt path east of the town maintenance building measures approximately 14'. This road will have to be widened to 24' to allow a two-way bicycle route. One portion that is adjacent to Sprague Pond will require a retaining wall and extensive earthwork to accomplish the widening.

- Adds approximately 0.7 acres of impervious surface with a water quality volume of 0.055 acre-ft (2,400 cf)

5.7 Alternative 6: Dead-End Spur Combination

Figure 5.7 – Alternative 6
Not to scale
Map from Google 2014

This route is to be used in combination with Alternatives 4 or 5.

Alignment:

- This route starts at the south side of the Narragansett Community Center parking lot and proceeds along the abandoned Sea View Railroad corridor for approximately $1{,}100^{+/-}$ feet where it intersects with the existing National Grid easement at utility pole # 575.

- The alignment continues along the existing National Grid easement for approximately $665^{+/-}$ feet where a $415^{+/-}$ feet boardwalk dead-ends into a 25' x 50' boardwalk seating area to view the salt marsh. Approximate total distance for Alternative 6 is 1,790 feet (0.34 miles).

Design Issues:

- As in Alternative 1, the portion of path that follows the abandoned Sea View

Railroad corridor has an existing railroad berm on which the path would be constructed. This berm is approximately 10-12 feet wide with side slopes of 2:1 down to existing grade. The cross section in this area would have to be widened to accommodate shoulders and guardrail and therefore the limit of grading will extend well beyond the existing toe of slope. A retaining wall can be used to reduce the work limit beyond the existing berm.

- This alternative traverses approximately 1,230 LF of wetland resources.
- Anticipated wetland alteration associated with this alignment is 13,090 SF.
- This dead end alignment is the shortest in length of the alternatives listed, but the ratio of usable path to wetland alteration is the highest of the seven (7) alternatives presented. This alignment crosses forested wetland, forested upland and salt marsh. This alignment can be shortened to lessen the wetland impact and alteration.
- Adds approximately 0.4 acres of impervious surface with a water quality volume of 0.036 acre-ft (1,600 cf)

Table 5.1 is an overall general summary of the trail alternatives.

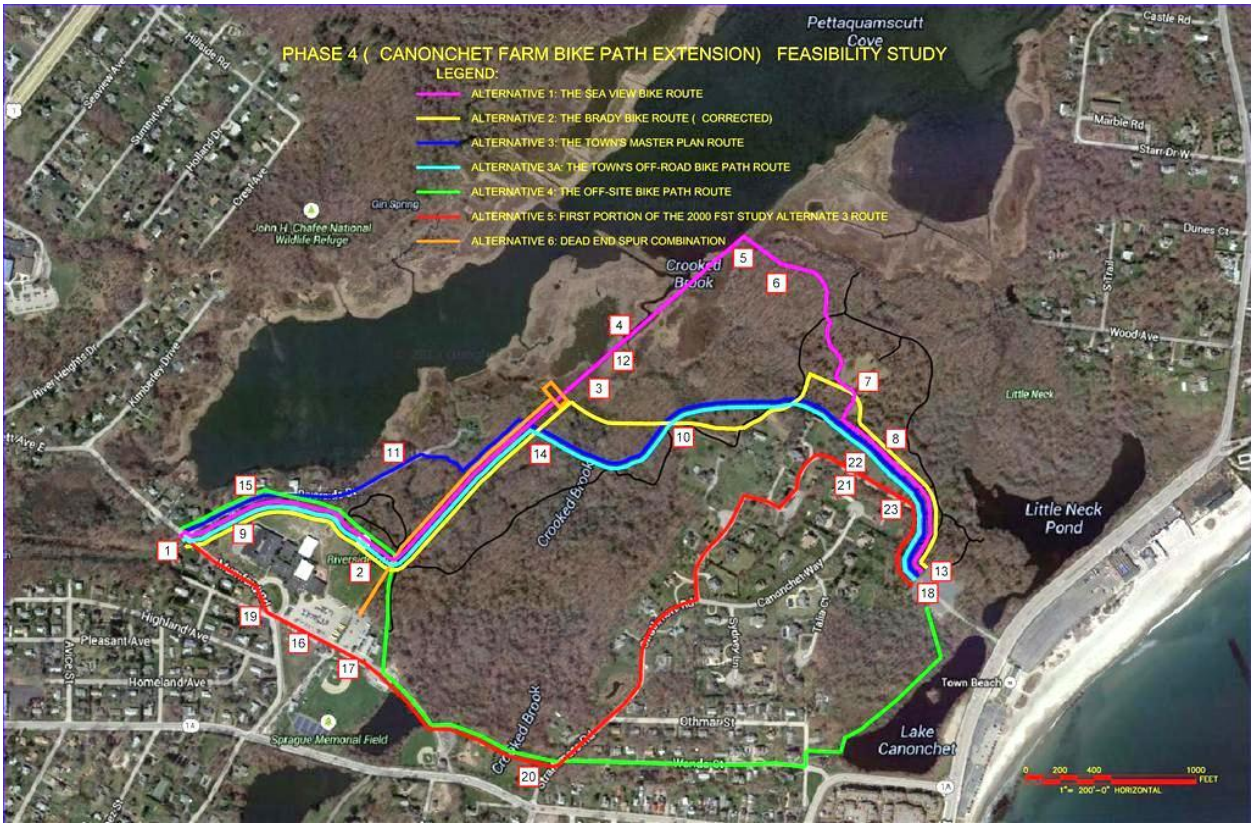


Figure 5.8 – Photo Location Map
Not to scale
Map from Google 2014

Table 5.1 – Trail Alternative Summary Matrix

Alternative Number	Trail Name	Land Use	Approximate Length (FT)	Approximate Length through Biological Wetlands (FT)	Approximate Area of Biological Wetland Alterations (SQ-FT)	Key Design Issues
1	Sea View Bike Route	Forested wetlands and uplands; salt marsh and institutional	6,875 +/-	2,920 +/-	13,210 *(42,880*)*	2,130' Boardwalk and 650' retaining wall required
2	Brady Bike Route (corrected)	Forested wetlands and uplands; salt marsh and institutional	6,045 +/-	1,805 +/-	13,131 *(27,270*)*	1,015' Boardwalk and 650' retaining wall required
3	Town's Master Plan Bike Route	Forested wetlands and uplands	5,610 +/-	1,350 +/-	7,770 *(21,700*)*	650' of Riverside Dr. will require paving; 1,000' boardwalk required
3A	Town's Off-Road Bike Route	Forested wetlands and uplands; institutional	5,755 +/-	1,790 +/-	13,130 *(27,060*)*	1,000' Boardwalk and 650' retaining wall required
4	Town's Off-Site Bike Path Route	Forested wetlands and uplands, freshwater marsh and riverine habitat and institutional	6,160 +/-	1,130 +/-	80 *(15,820*)*	Maintenance of Crooked Brook culvert; 1,000' of boardwalk required along Lake Canonchet

Table 5.1 – Trail Alternative Summary Matrix – cont.

Alternative Number	Trail Name	Land Use	Approximate Length (FT)	Approximate Length through Biological Wetlands (FT)	Approximate Area of Biological Wetland Alterations (SQ-FT)	Key Design Issues
5	First Portion of 2000 FST Study Alternative 3	Residential, institutional, forested upland, freshwater marsh and riverine habitat	6,370 +/-	130 +/-	10 *(1,820*)*	Possible conflicts with parked vehicles; maintenance of Crooked Brook culvert;
6	Dead-End Spur Combo	Forested wetlands and uplands and salt marsh	1,790 +/-	1,230 +/-	13,090 *(20,120*)*	440' Boardwalk required; guardrail required for cross section

* Includes total surface area of boardwalk if it were required

In order to minimize/avoid wetland and floodplain alterations, each alternative considered includes some length of structure or boardwalk to elevate the path. Depending on the height of the structure, wetland alterations may be limited to the area of the piles supporting the path and not the full area of the boardwalk. However, this determination cannot be made with any certainty until additional studies have been completed to allow for a meaningful conversation with regulatory agencies. In order to provide a comparison of how the alterations associated with the boardwalks will affect project cost and permitting, impacts have been presented for both supports only and for the full area of the boardwalk.

6 CONSTRUCTION COST ESTIMATE

The purpose of this section is to provide a budgetary estimate of construction costs for each alternative.

The construction cost estimate is based on:

- Bids received from contractors on other Rhode Island trail projects
- Similar work recently designed by FST

The estimate has been broken down by the 6 major alternatives and presented in tabular

form below. The estimate is based on 2014 construction costs. The estimate will need to be escalated to account for expected increases in the cost of construction before the trail is actually built.

For the purpose of this study, the cost estimate does not include the cost of:

- Land Acquisition (permanent or temporary easements or takings)
- Utility Relocations
- School Equipment Relocations
- Site Amenities (benches, picnic tables, bike racks)
- Landscaping, except for loam and seed
- Wetlands Protection
- Design Consultant Cost
- Post-Construction monitoring and adaptive measures

The costs presented do include an estimate for constructing mitigation for wetlands alterations. Several sources were reviewed to determine a square foot cost for wetland mitigation including studies on mitigation costs in the mid-Atlantic states, current ACOE in-lieu fee payments for participating New England states and bid results from recent projects. This review indicated a large spread in costs with the average costs falling close to $7.50 per square foot. Based on this information, a unit price of $8.00 per square foot was used in developing mitigation costs, which includes design, construction and monitoring but not land acquisition. Alterations to tidal wetlands have been assumed to be compensated at a 2:1 ratio and freshwater wetlands at a 3:1 ratio. Similar to the approximate wetland impacts presented in Table 5.1, costs have been developed for boardwalk alterations limited to support piles and for the full area of the boardwalk.

Table 6.1 – Trail Alternative Construction Cost

Alternative Number	Trail Name	Approximate Length (FT)	Estimated Construction Cost
1	Sea View Bike Route	6,875 +/-	$10,400,000* *($10,915,000**)*
2	Brady Bike Route (corrected)	6,045 +/-	$5,700,000* *($5,937,000**)*
3	Town's Master Plan Bike Route	5,610 +/-	$5,000,000* *($5,313,000**)*
3A	Town's Off-Road Bike Route	5,755 +/-	$5,600,000* *($5,974,000**)*
4	Town's Off-Site Bike Path Route	6,160 +/-	$5,400,000* *($5,805,000**)*
5	First Portion of 2000 FST Study	6,370 +/-	$900,000* *($936,000**)*
6	Dead-End Spur Combo	1,790 +/-	$3,000,000* *($3,084,000**)*

* Estimated construction cost includes cost for boardwalks and mitigation
** Includes construction mitigation cost for boardwalk surface area if it were required

Alternatives 1, 2, 3A and 6 all include alignments along the southern portion of the Sea View Railroad bed. A portion of these alignments are along an elevated berm located within the wetlands. The cost estimate above in Table 6.1 includes 2:1 slopes down from the elevated berm that tie into existing ground. Guard rail on both sides of the trail protect the user from the steep slopes.

As described in earlier sections, a retaining wall can be used to minimize the impact on the wetlands. The estimate shown in the Table 6.2 reflects adding a retaining wall in lieu of the 2:1 slope and a reduction in the fill required. The decrease in the impacts to the wetlands for the various alternatives is also included in the table. This is based on a 6' reduction in width along

the 540 linear feet of berm in the wetlands. The cost of the retaining wall is based on 1,080 linear feet which is 540 linear feet of wall installed on both sides of the path for all four alternatives.

Table 6.2 – Use of Retaining Wall along Railroad Berm

Alternative Number	Trail Name	Approximate Length (FT)	*Estimated Construction Cost	Reduction of Wetland Alteration (SQ-FT)
1	Sea View Bike Route	6,875 +/-	$10,600,000	3,240 +/-
2	Brady Bike Route (corrected)	6,045 +/-	$5,900,000	3,240 +/-
3A	Town's Off-Road Bike Route	5,755 +/-	$5,800,000	3,240 +/-
6	Dead-End Spur Combo	1,790 +/-	$3,200,000	3,240 +/-

* Estimated construction cost includes cost for boardwalks and mitigation

7 EVALUATION OF ALTERNATIVES

The purpose of this section is to provide an evaluation of the feasibility of constructing each alternative.

The evaluation is based on the following criteria:

- Technical Feasibility
- Safety
- Permitting
- Cost
- Aesthetics

Table 7.1 – Evaluation of Alternatives

Alternative Number	Trail Name	Technical Feasibility	Safety	Permitting	Cost	Aesthetics
1	Sea View Bike Route	75' On-Road, 6,800' Off-Road; topography suitable, 2,130' of boardwalk over wetlands and 650' of retaining wall along school embankment	Majority of path off-road with no sharing with vehicles	Alteration occurs in the wetlands; permits will be required from CRMC and Army Corp	***Total** $10,400,000 *($10,915,000**)* **Boardwalk** $6,816,000 **Mitigation** $315,840 *($790,560**)*	Benefit to public with views of Pettaquamscutt Cove and Salt Marsh
2	Brady Bike Route (corrected)	75' On-Road, 5,970' Off-Road; topography suitable, 1,015' of Boardwalk over wetlands and 650' of retaining wall along school embankment	Majority of path off-road with no sharing with vehicles	Alteration occurs in the wetlands, permits will be required from CRMC and Army Corp	***Total** $5,700,000 *(5,937,000**)* **Boardwalk** $3,248,000 **Mitigation** $314,576 *($540,800**)*	Benefit to public with views of Pettaquamscutt Cove and Salt Marsh
3	Town's Master Plan Bike Route	1,530' On-Road, 4,080' Off-Road; topography suitable, 1,000' of Boardwalk over wetlands	On-Road portion on Riverside Dr. where vehicles will be sharing the lanes in both directions	Alteration occurs in the wetlands, permits will be required from CRMC and Army Corp	***Total** $5,000,000 *($5,313,000**)* **Boardwalk** $3,200,000 **Mitigation** $186,480 *($520,800**)*	Benefit to public with views of the Salt Marsh
3A	Town's Off-Road Bike Route	75' On-Road, 5,680' Off-Road; topography suitable, 1,000' of boardwalk over wetlands and 650' of retaining wall along school embankment	Majority of path off-road with no sharing with vehicles	Alteration occurs in the wetlands, permits will be required from CRMC and Army Corp	***Total** $5,600,000 *($5,974,000)* **Boardwalk** $3,200,000 **Mitigation** $313,440 *($649,440**)*	Benefit to public with views of the Salt Marsh

Table 7.1 – Evaluation of Alternatives – cont.

Alternative Number	Trail Name	Technical Feasibility	Safety	Permitting	Cost	Aesthetics
4	Town's Off-Site Bike Path Route	2,650' On-Road, 3,510' Off-Road; topography suitable, 1,130' of boardwalk over wetlands	On-Road portion on Riverside Dr., Maintenance Service Rd. and Wanda St. where vehicles will be sharing the lanes in both directions	Alteration occurs in the wetlands, permits will be required from CRMC and Army Corp	***Total** $5,400,000 *($5,805,000**)* **Boardwalk** $3,616,000 **Mitigation** $2,160 *($379,680**)*	Mostly on-road with some benefit to public with views of Lake Canonchet
5	First Portion of 2000 FST Study Alternative 3	3,860' On-Road, 2,510' Off-Road; topography suitable, 130' of boardwalk over wetlands	On-Road portion on Mumford Rd., School Parking Lot, Maintenance Service Rd. and Strathmore Rd. where vehicles will be sharing the lanes in both directions	Alteration occurs in the wetlands; permits will be required from CRMC and Army Corp	***Total** $900,000 *($936,000**)* **Boardwalk** $416,000 **Mitigation** $240 *($43,680**)*	Mostly on-road and through the South County Museum with little aesthetic value
6	Dead-End Spur Combo	1.790' Off-Road; topography suitable, 440' of boardwalk over wetlands including an overlook area	Entire path off-road with no sharing with vehicles	Alteration occurs in the wetlands; permits will be required from CRMC and Army Corp	***Total** $3,000,000 *($3,084,000**)* **Boardwalk** $1,648,000 **Mitigation** $313,920 *($426,400**)*	Benefit to public with seating/turn around area at the edge of the Salt Marsh

* Total estimate includes cost for boardwalks and mitigation
** Includes construction mitigation cost for full boardwalk area if it were required

As discussed in the ABS report, future sea level rise will impact existing wetland resources and habitat. Rising sea levels also present the potential for sections of a path currently constructed at grade ultimately becoming submerged. It is uncertain at this time how this is to be accounted for in design and permitting. One approach would be to design the project with additional lengths of boardwalk such that the path will remain above the anticipated future sea level elevation. This approach has added construction costs associated with longer sections of boardwalk, which are partially offset with reduced costs for wetland mitigation. Preliminary

costs estimates for accounting for a sea level rise of 5' by providing additional lengths of boardwalk indicate an increase in total construction costs in a range of $2.4 to $4.2 million for the various alternatives. The exception being Alternatives 4 and 5, which are outside the area affected by sea level rise and as a result have no additional cost.

8 CONCLUSION

The evaluation criteria utilized in this study included the technical feasibility of implementing the William C. O'Neill South County Bike Path extension, considerations for safety of path users, identifying key elements of permitting, developing construction costs and noting overall aesthetics of the studied alignments.

In reviewing the Bike Path extension alternatives previously mentioned, it is clear that there is no obvious alternative that surfaces and that has minimal impacts. Based on wetland impacts alone, all seven (7) alternatives have impacts, requiring environmental permitting from both the CRMC and the Army Corps of Engineers. While there are design challenges associated with the various alternatives, initial solutions have been identified to suggest each alternative is technically constructible but at varying costs. The least impact to wetlands would be Alternative 5 which is the First Portion of 2000 FST Study. This alignment would require a short boardwalk over the Crooked Brook along the perimeter of Sprague Memorial Park. However, this alignment would be the least scenic, as the majority of the alignment would be on-road via both Mumford and Strathmore Roads. The route does however connect to the Canonchet Farms and South County Museum property, one of the original objectives of the study project. Safety was considered, as these alignments follow relatively low-volume roads and do not have a high crash occurrence or history, unlike Kingstown Road or Narragansett Avenue, where no alignment is presented.

The shortest on-road sections would be the alignments for Alternative 1, the Sea View Bike Route and Alternative 2, the Brady Bike Route (corrected). These on-road sections would connect the existing terminus of the William C. O'Neill South County Bike Path to the proposed extension. Both of the alignments plus, the Town's Master Plan Route, would provide spectacular views of Pettaquamscutt Cove and the Salt Marsh and are highly aesthetic, but would require lengthy and costly boardwalks over the salt marsh and wetland areas and have more impacts to wetlands than the other alignments assessed in this study.

In summary, there are pros and cons for each alignment and all would need to be thoroughly assessed and evaluated by RIDOT and the Town so that the extension project can be realized within specific time lines allocated for funding. Project implementation should be identified once a preferred route has been selected.

APPENDIX

A. Alternative Graphics

B. Applied Bio-System, Inc. Report

C. Public Archaeology Laboratory Report

D. USFWS Letter – March 1, 2012

E. RIDOT Interagency Meeting Minutes October 31, 2013

F. Traffic Counts

G. Accident Reports

H. Bicycle Route Suitability Worksheets

I. Cost Estimates

Appendix A:

Alternative Graphics

RHODE ISLAND DOT CONTRACT NO. 89111	PHASE 4 - CANONCHET FARM FEASIBILITY STUDY NARRAGANSETT/SOUTH KINGSTOWN BICYCLE FACILITY	DATE: 09-15-15 SCALE: 1"=400'	ALTERNATIVE 1 THE SEA VIEW BIKE ROUTE

FAY, SPOFFORD & THORNDIKE, LLC
ENGINEERS · PLANNERS · SCIENTISTS
5 BURLINGTON WOODS, BURLINGTON, MA 01803

ALTERNATIVE 2: TOTAL LENGTH = 6,045 LF

ON-ROAD - EXISTING PAVEMENT = 75'
OFF-ROAD - BOARDWALK = 1,015'
OFF-ROAD - NEW PAVEMENT = 4,955'

ALTERNATIVE 2
(THE BRADY BIKE ROUTE - CORRECTED)

PETTAQUAMSCUTT COVE

405' BOARDWALK
170' BOARDWALK
440' BOARDWALK
280'
275'
550'
600'
250'
700'
1,300'
650'
1,000'
30'
45'

MUMFORD ROAD
RIVERSIDE DRIVE
RETAINING WALL
GUARDRAIL BOTH SIDES
NARRAGANSETT ELEMENTARY SCHOOL
MUMFORD ROAD
SCHOOLHOUSE ROAD
NARRAGANSETT COMMUNITY CENTER
SPRAGUE MEMORIAL FIELD
SPRAGUE POND
KINGSTOWN ROAD (ROUTE 1A)
CANONCHET FARM TRAILS
STRATHMORE ROAD
ANNE HOXSIE LANE
WEST LOT
ANNE HOXSIE LANE
STRATHMORE ROAD
CASWELL STREET
WANDA STREET
LAKE CANONCHET
BEACH STREET/BOSTON NECK ROAD (ROUTE 1A)

0 400 800 2000 FEET
1"= 400'-0" HORIZONTAL

RHODE ISLAND DOT CONTRACT NO. 89111

PHASE 4 - CANONCHET FARM FEASIBILITY STUDY
NARRAGANSETT/SOUTH KINGSTON BICYCLE FACILITY

DATE: 09-15-15
SCALE: 1"=400'

ALTERNATIVE 2
THE BRADY BIKE ROUTE (CORRECTED)

FAY, SPOFFORD & THORNDIKE, LLC
ENGINEERS · PLANNERS · SCIENTISTS
5 BURLINGTON WOODS, BURLINGTON, MA 01803

0 400 800 2000 FEET

1"= 400'-0" HORIZONTAL

RHODE ISLAND DOT CONTRACT NO. 89111	PHASE 4 - CANONCHET FARM FEASIBILITY STUDY NARRAGANSETT/SOUTH KINGSTOWN BICYCLE FACILITY	DATE: 09-15-15 SCALE: 1"=400'	ALTERNATIVE 3 THE TOWN'S MASTER PLAN ROUTE

FAY, SPOFFORD & THORNDIKE, LLC
ENGINEERS · PLANNERS · SCIENTISTS
5 BURLINGTON WOODS, BURLINGTON, MA 01803

0 400 800 2000 FEET

1"= 400'-0" HORIZONTAL

RHODE ISLAND DOT CONTRACT NO. 89111	PHASE 4 - CANONCHET FARM FEASIBILITY STUDY NARRAGANSETT/SOUTH KINGSTOWN BICYCLE FACILITY	DATE: 09-15-15 SCALE: 1"=400'	ALTERNATIVE 3A THE TOWN'S OFF-ROAD BIKE PATH ROUTE

FAY, SPOFFORD & THORNDIKE, LLC
ENGINEERS · PLANNERS · SCIENTISTS
5 BURLINGTON WOODS, BURLINGTON, MA 01803

ALTERNATIVE 4: TOTAL LENGTH = 6,160 LF

ON-ROAD - EXISTING PAVEMENT = 2,300'
ON-ROAD - NEW PAVEMENT = 350'
OFF-ROAD - BOARDWALK = 1,130'
OFF-ROAD - NEW PAVEMENT = 2,380'

PETTAQUAMSCUTT COVE

MUMFORD ROAD

30'

550'

RIVERSIDE DRIVE

900'

NARRAGANSETT ELEMENTARY SCHOOL

MUMFORD ROAD

SCHOOLHOUSE ROAD

NARRAGANSETT COMMUNITY CENTER

650'

GUARDRAIL BOTH SIDES

CANONCHET FARM TRAILS

STRATHMORE ROAD

ANNE HOXSIE LANE

WEST LOT

150'

ANNE HOXSIE LANE

ALTERNATIVE 4
(THE TOWN'S OFF-SITE BIKE PATH ROUTE)

130' BOARDWALK

240'

290'

STRATHMORE ROAD

1,000'

BOARDWALK

CASWELL STREET

SPRAGUE MEMORIAL FIELD

SPRAGUE POND

350'

100'

KINGSTOWN ROAD (ROUTE 1A)

WANDA STREET

1,460'

LAKE CANONCHET

90'

150'

BEACH STREET/BOSTON NECK ROAD (ROUTE 1A)

0 400 800 2000 FEET

1"= 400'-0" HORIZONTAL

RHODE ISLAND DOT CONTRACT NO. 89111	PHASE 4 - CANONCHET FARM FEASIBILITY STUDY NARRAGANSETT/SOUTH KINGSTON BICYCLE FACILITY	DATE: 09-15-15 SCALE: 1"=400'	ALTERNATIVE 4 THE TOWN'S OFF-SITE BIKE PATH ROUTE

FAY, SPOFFORD & THORNDIKE, LLC
ENGINEERS · PLANNERS · SCIENTISTS
5 BURLINGTON WOODS, BURLINGTON, MA 01803

ALTERNATIVE 5: TOTAL LENGTH = 6,370 LF

ON-ROAD - EXISTING PAVEMENT = 3,510'
ON-ROAD - NEW PAVEMENT = 350'
OFF-ROAD - NEW PAVEMENT = 2,380'
OFF-ROAD - BOARDWALK = 130'

PETTAQUAMSCUTT COVE

MUMFORD ROAD

RIVERSIDE DRIVE

NARRAGANSETT ELEMENTARY SCHOOL

MUMFORD ROAD

750'

SCHOOLHOUSE ROAD

NARRAGANSETT COMMUNITY CENTER

760'

SPRAGUE MEMORIAL FIELD

350'

SPRAGUE POND

KINGSTOWN ROAD (ROUTE 1A)

CANONCHET FARM TRAILS

ALTERNATIVE 5
(FIRST PORTION OF THE 2000 FST STUDY ALTERNATE 3 ROUTE)

130' BOARDWALK

240'

290'

100'

STRATHMORE ROAD

750'

1,100'

ANNE HOXSIE LANE

STRATHMORE ROAD

1,900'

WEST LOT

ANNE HOXSIE LANE

CASWELL STREET

WANDA STREET

LAKE CANONCHET

BEACH STREET/BOSTON NECK ROAD (ROUTE 1A)

0 400 800 2000 FEET

1"= 400'-0" HORIZONTAL

RHODE ISLAND DOT CONTRACT NO. 89111	PHASE 4 - CANONCHET FARM FEASIBILITY STUDY NARRAGANSETT/SOUTH KINGSTON BICYCLE FACILITY	DATE: 09-15-15 SCALE: 1"=400'	ALTERNATIVE 5 FIRST PORTION OF THE 2000 FST STUDY ALTERNATE 3 ROUTE

FAY, SPOFFORD & THORNDIKE, LLC
ENGINEERS · PLANNERS · SCIENTISTS
5 BURLINGTON WOODS, BURLINGTON, MA 01803

0 400 800 2000 FEET

1"= 400'-0" HORIZONTAL

RHODE ISLAND DOT CONTRACT NO. 89111	PHASE 4 - CANONCHET FARM FEASIBILITY STUDY NARRAGANSETT/SOUTH KINGSTON BICYCLE FACILITY	DATE: 09-15-15 SCALE: 1"=400'	ALTERNATE 6 DEAD END SPUR COMBINATION

FAY, SPOFFORD & THORNDIKE, LLC
ENGINEERS · PLANNERS · SCIENTISTS
5 BURLINGTON WOODS, BURLINGTON, MA 01803

Appendix B:

Applied Bio-Systems, Inc. Report

APPLIED BIO-SYSTEMS , Inc.
P.O. BOX 985; WEST KINGSTON, RI 02892
Tel: 401-783-6740
Fax: 401-284-2004
wetlands@absinc.necoxmail.com

Canonchet Spur Natural Resources Alternatives Analysis

I. Methodology: Applied Bio-Systems, Inc. reviewed the most recently revised proposed bike path alignments (October 10, 2014 RIDOT meeting) to evaluate the biological impact on the natural resources from each alternative. Other information used in this review was wetlands mapping, Coastal Resources Management Council (CRMC) regulations, publications and SLAMM maps; RIGIS map layers and six field inspections on 11-12-14, 12-1-14, 4-21-15, 6-12-15, 8-18-15 and 8-28-15 to review the path alignments, wildlife, vegetative habitats and land use. It is expected that the number of wildlife and vegetative species that inhabit the proposed project area is much greater than what was observed. Refer to Appendix for Digital Photos of overall project area and Figure 1 for Photo Points Locations.

II. Natural Resources

Existing Habitat and Land Use Units: The following paragraphs describe the habitat units within the project area for the proposed six (6) bike path alignments including the Dead End Spur Combination (Refer to Figures 2, 3 and 4 for habitat and Land Use Maps). Please Note: The habitat and land use units were classified using
"Rhode Island Ecological Communities Classification" (Enser, 2011) and the RIDEM Land Use Planning (http://maps.edc.uri.edu/ArcGIS/services/Atlas_planningCadastre/Land_Use_200304_NEMO). These habitat units are a compilation of data from these sources and data from RIGIS wetlands (Figure 5) as well as from wetland maps derived from the Town of Narragansett (Figure 4) and on-site field inspections performed by Applied Bio-Systems, Inc. These habitat units as described below and the impacts table (Figure 6) are meant to be interpreted generally due to the nature of this assessment. When data overlapped, Figure 2 (RI Ecological Communities Classification or RIECC) and the wetlands map from the Town of Narragansett (Figure 4) were used as the primary data resource.

Deciduous Woodlands and Forest (Deciduous Forest): The Deciduous Forest Habitat within the alignment of the path is comprised of an upland mixed oak-red oak (*Quercus rubra*) and red maple (*Acer rubrum*) forest. There is a dense understory of green brier (*Smilax rotundifolia*) in portions of this forest. Other vegetative species observed include: grape (*Vitis labrusca*), black cherry (*Prunus serotina*) and prickly dewberry (*Rubus hispidus*). Greater than 80% of the Forest is listed as hardwood. Wildlife observed within this habitat included: blue jay, American crow, American goldfinch, dark-eyed junco, white breasted nuthatch, American robin, northern cardinal, gray catbird, black capped chickadee. Several bird nests and potential nesting cavities were observed within this habitat as well. The mature trees within this habitat may serve as potential roosting and breeding sites for the northern long-eared bat that depend upon trees with exfoliating bark during the spring and summer. This

species has recently been listed as a Federally Threatened species with the United States Fish and Wildlife Service (USFWS). See more information within the Rare Species section. This habitat unit is classified under Upland System.

Forested Swamp: This habitat is comprised of a red maple overstory and relatively open understory. Vegetation observed within the Forested Wetland areas include: winterberry (*Ilex verticillata*), cinnamon fern (*Osmunda cinnamomea*), northern arrowwood (*Viburnum dentatum*), bristly dewberry, red maple, and sensitive fern (*Onoclea sensibilis*). Greater than 80% of the Forest is listed as hardwood. Wildlife observed within the habitat unit included: blue jay and gray squirrel. Flooded areas within the wetland were observed that may provide Vernal Pool habitat for breeding amphibians and reptiles such as wood frog (*Rana sylvatica*), spotted salamander (*Ambystoma maculatum*) and habitat for spotted (*Clemmys guttata*) and other turtles. The mature trees within this habitat may provide roosting and breeding areas for the northern long-eared bat. This habitat unit is classified under Palustrine System as a Forested Mineral Soil Wetland.

Oak Forest: RIECC classifies this habitat type as *"*forest communities dominated by oaks (*Quercus*). Species composition generally dependent on site conditions, especially soil type and hydrology." These communities are a subclass of Deciduous Woodlands and Forests within the Upland System.

Ruderal Forest: This habitat type is classified by RIECC as *"*undifferentiated upland forests, typically even-aged, resulting from succession following removal of native woody cover for agriculture or logging. Soil alteration from agriculture tends to lead to low-diversity forests, often with exotic species in the understory that do not resemble natural forest systems. Generally, a ruderal forest is characterized by a combination of early-successional trees that cannot be identified as natural ecological systems even in an incipient state. (If a forest has sufficient cover of indicator trees for a particular "natural" community, even with a presence of early-successional trees, it is classed as that forest system.) These forests often contain substantial amounts of red maple (Acer), white pine (Pinus), red cedar (Juniperus), aspen (Populus), and gray birch (Betula), with associates of sassafras, (Sassafras), black locust (Robinia), hawthorn (Crateagus), apple (Pyrus), pin cherry (Prunus), and sometimes walnut (Juglans). Where soil disturbance has not been severe, many sites will follow a trajectory towards one of the later successional and more natural forest communities." This habitat unit is classified under Plantation and Ruderal Forests which are a subcategory of Upland Systems.

Ruderal Grassland / Shrubland: The RIECC classifies Ruderal Grassland and Shrubland as *"*anthropogenic communities of herbaceous or mixed herb/shrub vegetation resulting from succession following complete removal of native woody cover." This habitat unit is classified under Upland Systems.

Salt Marsh Habitat: The Salt Marsh area borders the Pettasquamscutt (Narrow) River, a coastal estuary. "The salt marsh is a transitional habitat between land and sea, which is mainly defined by salt marsh grasses and other plants firmly rooted in mud and peat. Most large salt marshes have tidal channels meandering through them, where salt and fresh waters mix with the rise and fall of the tides. Another feature of salt marshes are pannes, which are small pools of trapped water that dot the salt marsh meadows" (U.S. Fish and Wildlife Service). RIECC classifies the Salt Marsh habitat as occurring "on the bay side of barrier beaches and the outer mouth of tidal rivers where salinity is not much diluted by freshwater input. The typical salt marsh profile, from sea to land, features a low regularly flooded marsh strongly dominated by salt marsh cordgrass (*Spartina alterniflora*); a higher irregularly

flooded marsh dominated by saltmeadow cordgrass (S. patens) and saltgrass (Distichlis); low hypersaline pannes characterized by saltwort (Salicornia); and a salt scrub ecotone characterized by marsh elder (Iva), groundsel-tree (Baccharis), and switchgrass (Panicum). Salt marsh "islands" of slightly higher elevation may also support red-cedar. Each of these so-called “zones” of vegetation can be treated as separate community types that can easily be remotely discerned: a. Low Salt Marsh, b. High Salt Marsh, c. Salt Panne, d. Salt Scrub.

Salt marsh / mud flats are important for wading birds such as shorebirds, herons, egrets and dabbling ducks such as the American black duck. This habitat is important for rare birds such as the RI Species of Concern salt marsh seaside sparrow (*Ammodramus maritimus*) and osprey. Both of these bird species are presently listed as a Rhode Island Species of Concern. RI Species of Concern are defined as “native species not considered to be State Endangered or State Threatened at the present time, but are listed due to various factors of rarity and/or vulnerability. Species listed in this category may warrant endangered or threatened designation, but status information is presently not well known (Rhode Island Natural Heritage Program, 2006). In addition, the salt marsh sharp-tailed sparrow nests in the narrow upper reaches of the salt marsh. These nests are being flooded with more frequency, affecting the viability of this avian salt marsh species. It is expected that this species may soon be listed as a RI Species of Concern or Rare. Future sea level rise will most likely have the most impact on this habitat. Please refer to Sea Level Affecting Marshes Model (SLAMM) maps (Ruddock, 2010).

The SLAMM Project – “funded by the National Oceanic and Atmospheric Administration (NOAA) - during its two-year duration with in-kind services provided by the CRMC and The Nature Conservancy, assessed projected wetland response to the impacts of sea level rise out to the year 2100. The results collected from the project will assist the state and local communities in developing adaptive management strategies and practices, conservation efforts, and aid in the design of coastal wetland adaptation projects. Coastal wetlands, especially tidal marshes, are one of the most susceptible ecosystems to the effects of climate change and, specifically, sea level rise. Given projected sea level rise, a considerable percentage of the state’s coastal wetlands will be lost by the end of the century unless upland areas abutting the wetlands are protected or otherwise set aside to allow inland wetland migration in response to sea level rise. Rhode Island faces the quandary of how to best quantify this response, identify potentially affected areas and future coastal wetlands, use that information to develop and apply adaptive management strategies to protect and conserve these abutting uplands, and restore degraded wetlands” (CRMC, 2015).

Future sea level rise will most likely have the greatest impact on this habitat. The invasive common reed (*Phragmites australis*) is predominant in many areas within the salt marsh zone, particularly along the southern boundary of the salt marsh adjacent to the contiguous freshwater wetland. Other plants observed within the Salt Marsh habitats included high tide bush (*Iva frutescens*), salt marsh hay (*Spartina patens*) and sea lavender (*Limonium carolinianum*). Wildlife observed within the salt marsh and tidal zone habitats include: hooded mergansers, American black duck, belted kingfisher, quahog (*Mercenaria mercenaria*), blue-ribbed mussel (*Geukensia demissa*), and others.

Urban / Recreational Grasses: This habitat unit is described by the RIECC as “managed grasslands planted in developed settings for recreation, erosion control, aesthetic, or other purposes. Examples of types that may be distinguished include: a. Lawn, b. Park, c. Golf Course, d. Cemetery, e. Airfield/Runway Margin, f. Highway Median, etc. This unit is classified under the subcategory of

"Developed Land" which is listed under Upland Systems. This habitat is primarily associated with the managed turf of the elementary school and town recreational fields.

Wet Meadow Habitat: This habitat lies contiguous to the Crooked Brook within the Town Recreational land as well as immediately west of the Canonchet Farm property. The Wet Meadow is dominated by wetland vegetative species that include: Joe-Pye weed (*Eutrochium* sp.), multiflora rose (*Rosa multiflora*), soft rush (*Juncus effusus*), raspberry (*Rubus* sp.), and blue flag (*Iris versicolor*). This habitat unit is not classified on the habitat areas map (Figure 2) or the Land Use map (Figure 3) but instead had been identified during field inspections performed by Applied Bio-Systems, Inc. on 11/12/14 and 12/1/14.

Riverine / Stream Habitat: The Crooked Brook, a perennial river, is situated within the Forested Swamp Habitat and Wet Meadow Habitat within the project area. This river flows southerly from the Narrow River and Salt Marsh and exits the Canonchet Farm property through the Town's Municipal Park. Each of the proposed bike path alignments appear to require one crossing over this river in varying locations. This habitat unit is not classified on the habitat areas map (Figure 2) or the Land Use map (Figure 3). However, it is shown on the RIGIS Wetlands and Surface Water Map (Figure 5).

Institutional: This land use is exemplified by the Narragansett elementary school and the Town recreational fields within the project area.

Med. High Density Habitat Unit: This land use type is classified as housing units that located on less than ¼ acre lots. This type is illustrated by the Wanda Street neighborhood within the Off-Site Bike Path Route (green path).

Med. Low Density Unit: This land use type is classified as housing units that are located on 1 to 2 acre lots. This typifies the Strathmore Road neighborhood shown within the First Portion of the 2000 FST Study via Strathmore (red path).

Vacant Land Unit: This land use type is typified by the detention pond for the Strathmore Road neighborhood and the parking lot situated within the Canonchet Farm property which is the endpoint for Alternatives 1 through 5.

Bordering High Density / Med. Low Density Habitat Unit: This habitat classification consists of land that borders and is in-between the high density and medium low density habitats such as Strathmore Road which borders the two habitats.

Endangered Species Act Species List: The wildlife species that are presently federally listed and that USFWS has identified as possibly occurring within the project area or possibly be impacted by the project include: red knot (*Calidris canutus rufa*) and Northern Long-eared Bat (*Myotis septentrionalis*). No critical habitat is listed within the project area. Refer to Figure 17 for the Endangered Species Act Species List for the project area.

Red knot (Calidris canutus rufa): The USFWS lists the red knot (*Calidris canutus rufa*) as Federally Threatened and a possible species either occurring within the project or being impacted by the project. However, this bird has not been known to occur within the Narrow River estuary in this habitat. This bird required intertidal or mudflat habitat. The only suitable habitat within the project area includes the area of mudflat which borders the salt marsh during low tides. This species has not been observed

within this area and is not expected to be impacted by the project. This species is also listed as a RI Species of Greatest Conservation Need. Refer to Figure 18.

Northern Long-eared bat (Myotis septentrionalis): The NLEB is a recent addition to the Endangered and Threatened Species list as of May 5, 2015. The USFWS has recently listed this species as Federally Threatened and a possible species either occurring within the project or being impacted by the project. Because of white-nose syndrome disease the NLEB is threatened throughout the northeast. The USFWS lists the home range and the the Buffer-Zone for the white nose syndrome of the northern long-eared bat (NLEB) as all of Rhode Island. Although winter hibernation occurs in caves, the summer roosting and breeding areas are predominantly in trees with cavities and/or with exfoliating bark such as red maple, shagbark hickory, and dead snags.

Much of the project area, especially the wooded habitats of Canonchet Farm, could provide potential summer roosting or breeding habitat. Since it is not known whether the bat utilizes the project area at this time, it will be necessary to prove that the bat is "likely absent" from the project area by approved surveys such as acoustic surveys and / or mist net capture surveys. Regardless, consultation with USFWS and RIDEM will be necessary in these areas where there will be tree clearing to ensure that there will be no impact to the bat species. This species is also listed as a RI Species of Greatest Conservation Need. Refer to Figure 19 for more information and a range map. Also Figure 20 shows the home range and Buffer-Zone for the white-nose syndrome of the NLEB.

Other Rare Species: The Salt Marsh Sharp-tailed Sparrow is known to nest in the Narrow River estuary and within the U.S. Fish and Wildlife Service (USFWS) John H. Chaffee National Wildlife Refuge (an adjacent property). This current status of the salt marsh sparrow is that of a RI State Species of Greatest Concern for Conservation (see 2015 State Wildlife Plan on RIDEM website: http://www.dem.ri.gov/programs/bnatres/fishwild/swap15.htm. Due to its highly specific nesting requirements and habitat loss of high salt marsh, the sparrow is a potential candidate for the USFWS Federal Listing. This songbird relies on the high salt marsh meadow habitat for cover and nest building (U.S. Fish and Wildlife Service). "Marshes invaded by plants like *Phragmites*, ditched to lower water levels, or shrunk by developers become unsuitable for nesting, and may be abandoned by this small songbird. Extensive, healthy marshlands dominated by grasses are essential for the Salt Marsh Sharp-tailed Sparrow" (Salt Marsh Sharp-Tailed Sparrow). The following is an excerpt from the *USFWS DRAFT ENVIRONMENTAL ASSESSMENT NARROW RIVER ESTUARY RESILIENCY RESTORATION PROGRAM*, October, 2014 (Narrow River EA):

"As high marsh habitat is lost, populations of nesting salt marsh sparrows are expected to decline, with regional impacts on this species of concern. (p. 37). The vegetated surface of the tidal marsh supports the obligate nesting salt marsh sparrow and Virginia rail as well as migratory populations of Nelson's sparrow and Seaside sparrow. All of these species are of highest conservation concern due to their dependence on salt marsh habitats and their limited worldwide distribution. (p. 23)

Current estimates project that 50% of the worldwide distribution of saltmarsh sparrow occur in Connecticut and Rhode Island where they are restricted to saltmarsh habitat, making them exceedingly vulnerable to loss of marsh habitat. The estuary salt marshes provide important nesting habitat for the salt marsh sparrow. These birds nest on the ground and require high marsh for nesting habitat. The salt marsh sparrow is declining in population; the species is listed as "Vulnerable" by the International Union for the Conservation of Nature, and as a species in need of immediate conservation action by

Partners in Flight. The species is particularly susceptible to anthropogenic impacts such as sea level rise, which floods the sparrows' nests, and predator introduction due to suburbanization (cats, raccoons). The abundance of salt meadow in the estuary has historically provided extensive nesting habitat for the salt marsh sparrow; however the relatively low elevations of the estuary marshes, degraded saltmarsh, and expanding pools and pans, have reduced the amount of suitable nesting habitat and increased vulnerability to tidal flooding, causing reduced reproductive success. The Service has been monitoring salt marsh sparrow breeding populations on the Narrow River marshes since 2008. Between 2008-2012, 288 sparrows were caught and banded. The study found that 95% of sparrow nests occurred in areas with at least 30% high marsh vegetation, and determined that 66% of nesting sites exhibited reproductive success. Tidal flooding during storm events or spring high tides was the principal cause of nest failure among salt marsh sparrows. Research throughout this species range has documented a steady decline in nesting habitat and reproductive success for this species. Population viability analyses currently underway predict that sparrows will be unable to breed in tidal marsh habitats without intervention by approximately 2050 given current predictions for sea level rise and assuming that marsh elevations remain stable (p. 23, Field, in press)." Also refer to the RIDEM Wildlife Action Plan of 2015, pages 1-14 and 1-15) for more information. See Figure 21 for range map and more information.

Other state and federal wildlife species of concern include the marsh hawk, American black duck and osprey which all are known to utilize the salt marsh and estuarine habitats of the project area. The American black duck and osprey were observed during several of the wildlife surveys conducted by ABS. These species are on the "Rhode Island and Species of Greatest Conservation Need 2015 Wildlife Action Plan" as a species of greatest concern. Other species listed as a "Rhode Island Species of Greatest Conservation Need" that were observed within the project area includes: spotted sandpiper, Great Egret (Common Egret), least sandpiper, gray catbird, willow flycatcher, great crested flycatcher, Eastern towhee (rufous-sided towhee), American redstart, tree swallow, greater yellowlegs, striped killifish (*Fundulus majalis*) and monarch butterfly (*Danaus plexippus*). The entire project area is listed as a rare species habitat by the Rhode Island Natural Heritage Program. Other species listed as rare and occurring within the Narrow River estuary include: Refer to Rare Species Tables Figures 11, 12 and 13.

Wetlands: The wetlands had been field delineated and located by GPS only within the Canonchet Farm property (unknown date) by the Southern Rhode Island Conservation District in coordination with the Town of Narragansett. These flag locations were not reviewed or verified by CRMC, RIDEM or Applied Bio-Systems, Inc. as part of this review and it appears that many of the wetland flags may be missing. However, from what was observed the wetland flagging does appear to be generally accurate. Any future application to the Coastal Resources Management Council will require wetland delineation and survey along the entire length of the selected path route.

Sea Level Rise: There is potential for future sea level rise to impact the Salt Marsh Habitat and adjacent Forested Wetland Habitats. It is likely that low lying, contiguous Forested Wetland areas will be impacted by salt marsh migration in the future. Also, more inland areas will flood during storm events. Since many areas within the project area are within existing flood zone and wetland habitats, any selected bike alignment may require an elevated board walk, bridges and / or other design alternatives to compensate for increase water elevations. Refer to Sea Level Affecting Marshes Model (SLAMM) maps (Ruddock, 2010).

The US Fish and Wildlife Service cites a report (Watson and others, 2014) in the "Narrow River EA" that the estimated rate of marsh loss in the estuary since 1869 is at 1.5% per decade. Apply this to the

"estuary's current inventory of 174 acres of salt marsh, it can be concluded that the estuary is losing approximately 2.6 acres of salt marsh per decade. At current rates, if no action is taken, the high marsh habitats of the Narrow River Estuary would virtually disappear in less than a century. Certainly, some marsh will persist in estuary for the foreseeable future. However, under the no-action alternative, the high marsh habitat that provides nesting habitat for salt marsh sparrows, and habitat for dozens of other species, will decline and fragment, no longer providing the ecological functions and values now provided by this habitat type. Given the rate of shoreline loss over the past five years, 3.6 acres of saltmarsh loss per decade resulting from shoreline erosion could occur." (USFWS, p. 36)

The Sea View Railroad: The proposed Sea View Bike Route (fuscia), the Dead End Spur (orange), and portions of the Master Plan Bike Route (blue) and the Brady Bike Route (corrected) (yellow) are all proposed along portions of the alignment of the former Sea View Railroad which ended service in 1920. "A long trestle followed the eastern shore of the Narrow River Cove area west of the Canonchet Farm acres" (Prentice, 1983). The only thing left of this railroad bed is a raised wooded trail that is situated between the Forested Wetland and Upland areas along its southern end adjacent to Narragansett Elementary school. Further north, near the approximate intersection with Riverside Drive, the former railroad bed is now wetland habitat with a dominance of common reed (*Phragmites australis*). The portion within the salt marsh is tidally flooded on a daily basis. An electric power line now lies within this former railroad easement.

Environmental Permitting

The following is a description of the permitting steps that will be required for the actual construction of this project once designed. Please refer to Figure 14 for Environmental Permitting Matrix.

National Grid – Because a portion of the existing Seaview Railroad right-of-way is also an electric easement, approval for the proposed project may be necessary from National Grid before proceeding with State and Federal permitting.

Town of Narragansett – Most all of the Canonchet Alternative alignments are within the *Coastal and Freshwater Wetland Overlay District* under the Town of Narragansett Zoning Ordinances. This will be reviewed by the Town Department of Community Development. CRMC requires Town approval as a prerequisite to filing for a CRMC Application.

Coastal Resources Management Council (CRMC) – A Category B Application with the CRMC for Alternatives 1-3 and 6 will be required. Alternatives 4 and 5 will require a Freshwater Wetlands Application with the CRMC. Alternative 5 that includes a boardwalk on the west side of Conanchet Pond will likely require an "Application to Alter" with CRMC. Alternative 4 might require the lesser "Preliminary Determination Application" dependent upon the final design of the project and mitigated impacts to Freshwater Wetlands. Because this project is within 200 feet or in wetlands, both the *Coastal Resources Management Program, as amended* (CRMP) and the *Narrow River Special Area Management Plan, as amended* (NRSAMP) regulations apply to this project. The project is located within a designated Lands of Critical Concern in the NRSAMP primarily because this area is open space with habitat for flora and fauna identified by the RI Natural Heritage Program, large emergent wetland complexes, and USFWS lands (NRSAMP, 920.1B). The entire Lower Cove from Sprague Bridge south is also a CRMC designated Type 1-Conservation Water (CRMP, 200.1). A 200 foot Buffer Zone is required

for all development activities in these areas. A CRMC application for an alignment in any freshwater or coastal wetland will require a Category B. In addition, a Special Exception (CRMP, Section 130) is required. CRMC also will send the submitted application package to the RI Historical Preservation and Heritage Commission for review and comment on any historical and archeological impacts. For Freshwater Wetlands in the Canonchet Farm area, the CRMC's *Rules and Regulations for the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast, as amended* will apply. Under the Freshwater Regulations regulated Riverbank Wetlands and the Area of Land Within 50 Feet are also by definition considered to be Wetland. Also, the Forested Swamp and Wet Meadow within the project area are classified as Tributary Wetlands. The Rhode Island Coastal Resources Management Program states that "Filling, removing, or grading (RICRMP, Section 300.2) is prohibited on any tributary or tributary wetland."

RI Department of Environmental Management (RIDEM) – There are two Permitting entities within RIDEM that will review this project. Both are under the Office of Water Resources. First, a Water Quality Certificate will be required. Design plans will be submitted directly to RIDEM for review although a CRMC Assent will not be issued until a Water Quality Certificate has been issued by RIDEM. The second permit is under the RI Pollutant Discharge Elimination Program System (RIPDES) that is required if the proposed project disturbs an acre or more of land. These are both separate applications to RIDEM.

US Army Corps of Engineers (ACOE) – A Category 1 Level Application is required with the US ACOE when there is less than 5000 square feet of inland waterway and / or wetland fill and associated secondary impacts. Only an application with RIDEM or CRMC is required under this level through the Corps Programmatic General Permitting agreement with the State of Rhode Island. A Level II review or greater will be required for any alternative that is within wetland and requires dredging or filling of wetland soils that totals 5000 square feet to 1 acre waterway and/or wetland fill and secondary impacts. Most Level II applications require Compensatory Mitigation on at least a 1:2 wetland basis. Alignments 1,2,3 and 6 will all require a Level II application with the ACOE and Mitigation.

The US Fish & Wildlife Service (USFWS) and the Environmental Protection Agency (EPA) participate and comment during the ACOE review process. An application can be submitted to ACOE in advance for preliminary information on the level of permitting required. Wetland delineations will be reviewed under the *USACOE Wetland Delineation Manual*, *as amended* with *the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: North central and Northeast, Version 2.0, as amended*.

USFWS Endangered Species Consultation – Since this project has a Federal nexus, a consultation with USFWS is necessary. There is currently an Interim 4(d) rule in effect which allows for certain activities to be exempted from the Incidental Take prohibitions under Section 9 of the ESA, provided that specific conservation measures are undertaken. Even if all of the activities proposed by the project meet the Interim 4(d) criteria, for federal projects, the consultation is still required.

There is a Rangewide Programmatic Informal Consultation, which was entered into between USFWS, FHWA and FRA, for Federal Aid Highway Program and Federal Lands Highway Program projects, including Transportation Enhancements, such as bicycle / pedestrian paths. This agreement provides for an expediated consultation process, however, it may be utilized only for project meeting specific conditions. With respect to removal of suitable forest habitat, the Programmatic Consultation applies

only to projects where proposed tree removal, at any time of year, is confined to areas within 100 feet of the existing edge of pavement along existing roads, or within 100 feet of an existing rail surface.

I. Evaluation of Proposed Bike Path Alternatives:

***Sea View Bike (fuchsia) Alternative 1*:** This bikeway alternative is the longest at approximately +/- 6,875 linear feet in length and is depicted in the color fuchsia on the bike trail map. It has a proposed route starting on Riverside Drive north of the Narragansett Elementary school and then follows easterly to converge with the alignment of the existing path on the abandoned Sea View Railroad right-of-way, now heavily wooded, for nearly half of its proposed course. This proposed trail has the greatest amount of wetland impact with an approximate total of 2,920 linear feet, almost half the entire length of the path. This alignment has the highest proportion of salt marsh impacts of all the alternatives. The remainder of the trail is proposed within the wooded portions of the Canonchet Farm property. The proposed trail is comprised of four land use types: Forested Upland Deciduous, Forested Wetland, Salt Marsh and Institutional Land. Specific wildlife habitats include: Deciduous Upland Forest, Red Maple Wooded Swamp and Salt Marsh. These three habitat types serve as important and valuable wildlife habitat. High habitat value indicators were noted during the site inspections including vernal pools, nesting cavities in trees, and berry producing shrubs. The permanent wetland impacts associated with the bike path include a loss of wildlife habitat, an increase in impervious surfaces, a travel corridor for predators and increased human disturbance.

Soils: The dominant soil types within the Alternative 1 are as follows:
Matunuck mucky peat (Mk); this soil unit is a nearly level, very poorly drained soil located in tidal marshes and subject to tidal inundation. Most areas are in salt marshes. Slopes are dominantly less than 1 percent.
Walpole sandy loam (Wa); a nearly level, poorly drained soil located in depressions and small drainageways of terraces and outwash plains
Pittstown silt loam 0-3 % slopes (PmA); a nearly level, moderately well drained soil unit located on the crests of glacial upland hills and drumlins.

Wildlife: The RI Natural Heritage Program lists the site as a rare species habitat. Wildlife noted within this path alignment include those species which frequent coastal areas and Swamps including: hooded mergansers, belted kingfishers, Cooper's hawk, black duck, cedar waxwing, American robin, red-tailed hawk, white-throated sparrow, black capped chickadee and various shellfish and fish within tidal pools of the salt marsh. The salt marsh sparrow, a Rhode Island Species of Greatest Concern and potential candidate for Federal Listing, will potentially be impacted from this alternative due to the salt marsh habitat loss the proposed bike path will create and the increased human disturbance within the area. If the bird gets listed as a Federally Listed wildlife species then there is the potential that the USWFS may consider the salt marsh habitat of the project area a "critical habitat" and therefore, limit the use of the bike path during nesting season.

Additional wildlife species noted within the trail area from additional surveys conducted in July and August 2015 include: greater yellowlegs, lesser yellowlegs, spotted sandpiper, least sandpiper,fish crow, blue gray gnatcatcher, ruby throated hummingbird, common yellowthroat, monarch butterfly, pearl crescent, peck's skimmer, seaside dragonlet, common green darner, white-tailed deer, striped

killifish and others. Refer to Figure 10 for full list. Other rare species or species of concern that were observed during this time include: osprey, black duck and common egret. As the path continues north along the former railroad trestle it goes through significant Wooded Swamp. This swamp contains open water for various breeding amphibians, reptiles and invertebrates. On April 21, 2015 several spotted turtles were observed along the bank of the trestle bed and the flooded swamp. In addition, spring peepers, green frog and gray tree frog were observed within the wetlands portion of the trail.

This proposed alignment would not be able to utilize the Programmatic Consultation for NLEB, and would require project-specific consultation. It is unclear at this level of project development, if any of these projects would meet the Interim 4(d) Rule criteria for "minimal tree removal." Without bat survey information indicating that the species is "Likely absent" from the project area, significant time of year restrictions on the tree removal and, potentially, on other construction related activities, are anticipated. Depending on whether or not the USFWS determines each alignment to be eligible for the 4(d) Rule Exemptions, such surveys may be required, regardless of conservation measures employed.

Wetlands and Coastal Permitting: The CRMC has jurisdiction over all of the wetland areas within the proposed project area plus an additional 200 feet extended landward from the inland edge of the coastal feature (inland edge of wetland). All of the wetlands (except for a small Special Aquatic Site (SAS) not impacted by the proposed paths but located within the Forested Upland) are contiguous to CRMC designated Type 1 Waters – Conservation Areas. These waters are defined by the CRMC as "(1) water areas that are within or adjacent to the boundaries of designated wildlife refuges and conservation areas, (2) water areas that have retained natural habitat or maintain scenic values of unique or unusual significance, and (3) water areas that are particularly unsuitable for structures due to their exposure to severe wave action, flooding, and erosion" (Coastal Resources Management Council, as amended). The entire project is also under the jurisdiction of the Narrow River Special Area Management Plan (NRSAMP). Filling, removing or grading is prohibited on beaches, dunes, undeveloped barrier beaches, coastal wetlands, cliffs and banks, and rocky shores adjacent to Type 1 and Type 2 waters, and in the Narrow River watershed unless the primary purpose of the alteration is to preserve or enhance the area as a natural habitat for native plants and wildlife (Ernst, Miguel, & Willis, 1999). Any filling of salt marsh is prohibited unless a public benefit is shown in which case then mitigation will be required. Filling, removing, or grading (RICRMP, Section 300.2) is prohibited on any tributary or tributary wetland. Any activity not prohibited herein shall be evaluated against the CRMC's "Rules and Regulations for the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast (Coastal Resources Management Council, as amended). The Freshwater Wetland is classified as a Swamp with an Area of Land within 50 feet extended landward from the wetland edge as additional area within CRMC jurisdiction. Crooked Brook will have a 100 foot Riverbank Wetland extended landward from each river bank as additional area within CRMC jurisdiction. Minimally, U.S. Army Corps of Engineers Level II permitting will be required. It is likely that Compensatory Mitigation will be required under this permitting level. The Town of Narragansett may have additional wetland regulations. Refer to Figure 14 Environmental Permitting Matrix.

This alignment will require approximately 13,210 square feet of wetland alterations and approximately 2,920 linear feet of wetland impacts.

A letter from USFWS dated 3/1/2012, states that "construction of a bike path within an estuarine wetland can limit tidal flow across the surface of the marsh and / or cause a delay in the filling or draining of the marsh surface during normal tidal cycles" (USFWS, 2012). Since the bike path will be constructed within the salt marsh for this segment, this potential impact needs to be mitigated.

Sea Level Rise: There is potential for most of the existing salt marsh to be impacted by future sea level rise (see Figure 8). This proposed path alignment could experience impacts from a rise in sea level. Also, much of the contiguous Forested Wetland (Swamp) may experience additional flooding from storm surges and inland salt marsh migration. Impacts to nesting Salt Marsh Sharp-tailed Sparrow and other rare species which use the Narrow River and the Salt Marsh habitats may be impacted by future sea level rise.

Mitigation: The *RI Coastal Resources Management Program,* Section 300.12 Coastal Wetland Mitigation (as amended) is very clear on the requirements for wetland mitigation when coastal wetland is permanently altered or lost. Coastal Wetlands are defined as salt marsh, brackish wetlands, and freshwater wetlands that border directly on salt and brackish marshes. The minimum compensation requirement is a 2:1 creation or restoration for wetland areas permanently lost or altered. This wetland replacement needs to consist of wetlands of equal or greater area and ecological value.

Alteration to coastal wetland is defined to include, but is not limited to the following: "filling, removing or grading (as defined in Section 300.2, A); dredging and dredged materials disposal (as defined in Section 300.9, A); and any significant cutting or removal of vegetation; and excavation, draining, damming and/or diverting of hydrological flows in a coastal wetland. Furthermore, any activity, including the aforementioned, taking place in an area adjacent to a coastal wetland which impacts the coastal wetland, shall be considered an alteration to coastal wetlands." The wetland mitigation areas need to be accommodated on-site if possible or, if necessary, within an offsite location that is still hydrologically connected to the altered wetland. If the alteration is temporary, the CRMC may only require restoration of the wetland. Please see Figure 6-Land Use Impacts Table for proposed Coastal Wetland alteration square-footage for Swamp, Salt Marsh, and Other Wetland. These figures would be doubled to meet the 2:1 requirement. The US Army Corps of Engineers will have similar requirements.

Brady Bike Route (Corrected) (yellow) Alternative 2: This bikeway alternative is proposed with a total length of 6,045 linear feet and is depicted as the yellow trail. It also has a proposed starting route at Riverside Drive and follows the abandoned railroad right-of-way just as Alternative 1. However, it only encroaches into the salt marsh habitat for 139.58 linear feet before it turns to the east traveling into mostly Forested upland and Forested wetland before eventually reaching the terminus of the path at the Canonchet Farm parking lot. While, there are some impacts to Salt Marsh from this alignment; most of the impacts are within Forested Wetland with an approximate total of wetland impacts of 1,805 linear feet. This trail encompasses four distinct land use habitat types which include: Forested Upland Deciduous, Forested Wetland, Salt Marsh and Institutional Land (school area). Refer to descriptions above.

The permanent wetland impacts associated with the bike path include a loss of wildlife habitat, an increase in impervious surfaces, a travel corridor for predators and increased human disturbance.

Soils: The dominant soil types within this alignment include:

Scarboro mucky sandy loam (Sb); this nearly level, very poorly drained soil is in depressions and drainageways of terraces and outwash plains. Slopes range from 0 to 3 percent but are dominantly less than 1 percent;
Walpole sandy loam (Wa); This nearly level, poorly drained soil is in depressions and small drainageways of terraces and outwash plains
Pittstown silt loam (PmA); 0-3 % slopes. This nearly level, moderately well drained soil is on the crests of glacial upland hills and drumlins
Poquonock loamy fine sand, 3-8% slopes (PsB); this gently sloping, well drained to somewhat excessively drained soil is on side slopes of drumlins and glacial till uplands.

Wildlife: The RI Natural Heritage Program lists the site as a rare species habitat. Wildlife noted within the area of the proposed yellow trail included: American robin, northern cardinal, downy woodpecker, gray catbird, black capped chickadee, blue jay, American goldfinch, American crow, dark eyed junco, white-breasted nuthatch, gray squirrel (*Sciurus carolinensis*)and white-tailed deer (*Odocoileus virginianus*). The salt marsh sparrow, a Rhode Island Species of Greatest Concern and potential candidate for Federal Listing, will potentially be impacted from this alternative due to the salt marsh habitat loss the proposed bike path will create and the increased human disturbance within the area. If the bird gets listed as a Federally Listed wildlife species then there is the potential that the USWFS may consider the salt marsh habitat of the project area a "critical habitat" and therefore, limit the use of the bike path during nesting season.

Additional wildlife species noted within the vicinity of the alignment to this Alternative included: blue-gray gnatcatcher, American redstart, common yellowthroat, red-winged blackbird, yellow billed cuckoo, rufous sided towhee, great crested flycatcher, eastern chipmunk, As the path continues north along the former railroad trestle it goes through significant area of Wooded Swamp. This swamp contains open water for various breeding amphibians, reptiles and invertebrates. Spring peepers, gray tree frog, and green frog were all observed within the surrounding wetlands. On April 21, 2015 several spotted turtles were observed along the bank of the trestle bed and within the flooded swamp. Also, on the area of the alignment where the path enters the pasture portion of Canonchet Farm on the northern end a northern brown snake was observed within the pathway.

This proposed alignment would not be albe to utilize the Programmatic Consultation for NLEB, and would require project-specific consultation. It is unclear at this level of project development, if any of these projects would meet the Interim 4(d) Rule criteria for "minimal tree removal." Without bat survey information indicating that the species is "Likely absent" from the project area, significant time of year restrictions on the tree removal and, potentially, on other construction related activities, are anticipated. Depending on whether or not the USFWS determines each alignment to be eligible for the 4(d) Rule Exemptions, such surveys may be required, regardless of conservation measures employed.

Wetlands and Coastal Permitting: The CRMC has jurisdiction over all of the wetland areas within the proposed project plus an additional 200 foot jurisdiction extended landward from the wetland edge. All of the wetlands (except for a small Special Aquatic Site (SAS) not impacted by the proposed paths but located within the Forested Upland) are contiguous to CRMC designated Type 1 Waters – Conservation Areas. These waters are defined by the CRMC as "(1) water areas that are within or adjacent to the boundaries of designated wildlife refuges and conservation areas, (2) water areas that have retained natural habitat or maintain scenic values of unique or unusual significance, and (3) water areas that are particularly unsuitable for structures due to their exposure to severe wave action,

flooding, and erosion" (Coastal Resources Management Council, as amended). Also, the entire project is within the Narrow River SAMP. Filling, removing or grading is prohibited on beaches, dunes, undeveloped barrier beaches, coastal wetlands, cliffs and banks, and rocky shores adjacent to Type 1 and Type 2 waters, and in the Narrow River watershed unless the primary purpose of the alteration is to preserve or enhance the area as a natural habitat for native plants and wildlife (Ernst, Miguel, & Willis, 1999). Filling, removing, or grading (RICRMP, Section 300.2) is prohibited on any tributary or tributary wetland. Any activity not prohibited herein shall be evaluated against the CRMC's Rules and Regulations for the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast (Coastal Resources Management Council, as amended). The Freshwater Wetland is classified as a Swamp with an Area of Land within 50 feet extended landward from the wetland edge as additional area within CRMC jurisdiction. Crooked Brook will have a 100 foot Riverbank Wetland extended landward from each river bank as additional area within CRMC jurisdiction. Minimally, U.S. Army Corps of Engineers Level II permitting will be required. The Town of Narragansett may have additional wetland regulations. Refer to Figure 14 Environmental Permitting Matrix.

This alignment will require approximately 13,131 square feet of wetland alterations and approximately 1,805 linear feet of wetland impacts.

A letter from USFWS dated 3/1/2012 to Richard Grant, President of the Narrow River Preservation Association, states that "construction of a bike path within an estuarine wetland can limit tidal flow across the surface of the marsh and / or cause a delay in the filling or draining of the marsh surface during normal tidal cycles" (USFWS, 2012). Since the bike path will be constructed within the salt marsh for this segment, this potential impact needs to be mitigated.

Sea Level Rise: As in Alternative 1, there is also valid concern about the effects of future sea level rise within the Salt Marsh and Forested Wetland that may affect flood elevations within the project area. In addition, much of the contiguous Forested Wetland (Swamp) may experience transient flooding from storm surges and impacts from possible salt marsh migration that will become an important habitat feature in the future.

Mitigation: The *RI Coastal Resources Management Program,* Section 300.12 Coastal Wetland Mitigation (as amended) is very clear on the requirements for wetland mitigation when coastal wetland is permanently altered or lost. Coastal Wetlands are defined as salt marsh, brackish wetlands, and freshwater wetlands that border directly on salt and brackish marshes. The minimum compensation requirement is a 2:1 creation or restoration for wetland areas permanently lost or altered. This wetland replacement needs to consist of wetlands of equal or greater area and ecological value.

Alteration to coastal wetland is defined to include, but is not limited to the following: "filling, removing or grading (as defined in Section 300.2, A); dredging and dredged materials disposal (as defined in Section 300.9, A); and any significant cutting or removal of vegetation; and excavation, draining, damming and/or diverting of hydrological flows in a coastal wetland. Furthermore, any activity, including the aforementioned, taking place in an area adjacent to a coastal wetland which impacts the coastal wetland, shall be considered an alteration to coastal wetlands." The wetland mitigation areas need to be accommodated on-site if possible or, if necessary, within an offsite location that is still hydrologically connected to the altered wetland. If the alteration is temporary, the CRMC may only require restoration of the wetland. Please see Figure 6-Land Use Impacts Table for proposed Coastal

Wetland alteration square-footage for Swamp, Salt Marsh, and Other Wetland. These figures would be doubled to meet the 2:1 requirement. The US Army Corps of Engineers will have similar requirements.

Master Plan Bike Route (blue) Alternative 3: This Master Plan Bike Route Alternative utilizes the length of Riverside Drive and the existing abandoned railroad right-of-way for roughly one third of the total roughly +/- 5,610 linear foot length. The rest of the path is proposed within a mix of Forested Wetland and Forested Upland habitat types located within the Canonchet Farm property. This path is similar to the proposed Brady Bike Route (yellow) path with a few minor variations within the wooded landscape. This blue path bisects the Forested Wetland area in two additional areas as compared to the yellow path which avoids those wetland areas. This route also ends at the Canonchet Farm parking lot. The permanent wetland impacts associated with the bike path include a loss of wildlife habitat, an increase in impervious surfaces, a travel corridor for predators and increased human disturbance. This alignment will require approximately 7,770 square feet of wetland alterations and approximately 1,350 linear feet of wetland impacts. Refer to Figure 14 Environmental Permitting Matrix.

Soils: The dominant soil units within this alignment include:
Walpole sandy loam (Wa); a nearly level, poorly drained soil located in depressions and small drainageways of terraces and outwash plains. Other soil units include:
Pittstown silt loam (PmA); 0-3 % slopes. This soil unit is a nearly level, moderately well drained soil located on the crests of glacial upland hills and drumlins.
Scarboro mucky sandy loam (Sb); a nearly level, very poorly drained soil located in depressions and drainageways of terraces and outwash plains. Slopes range from 0 to 3 percent but are dominantly less than 1 percent.
One other dominant soil unit within this path alignment includes: Stissing silt loam (Se); a nearly level, poorly drained soil located on glacial upland hills and drumlins in the southeastern part of the State. Slopes range from 0 to 3 percent. Most of the soil units within this path are hydric soils.

Wildlife: The RI Natural Heritage Program lists the site as a rare species habitat. Wildlife observed within the area of the proposed blue trail is similar to the yellow trail and includes: American robin, northern cardinal, gray catbird, black capped chickadee, blue jay, American goldfinch, dark eyed junco, white-breasted nuthatch, gray squirrel (*Sciurus carolinensis*)and white-tailed deer (*Odocoileus virginianus*).

Additional wildlife species observed along this alignment from these wildlife surveys included: hairy woodpecker, common yellowthroat, blue gray gnatcatcher, eastern wood pewee, northern flicker, American redstart, yellow warbler, eastern garter snake, great crested flycatcher, white-tailed deer, eastern chipmunk, and others. Along the abandoned railroad bed portion of the trail (powerline easement), spring peepers, spotted turtles, spring azure butterfly, gray catbird, common green darner, Refer to full wildlife list in Figure 10.

This proposed alignment would not be albe to utilize the Programmatic Consultation for NLEB, and would require project-specific consultation. It is unclear at this level of project development, if any of these projects would meet the Interim 4(d) Rule criteria for “minimal tree removal.” Without bat survey information indicating that the species is “Likely absent” from the project area, significant time of year restrictions on the tree removal and, potentially, on other construction related activities, are anticipated. Depending on whether or not the USFWS determines each alignment to be eligible for the 4(d) Rule Exemptions, such surveys may be required, regardless of conservation measures employed.

Wetlands and Coastal Permitting: The CRMC has jurisdiction over all of the wetland areas within the proposed project plus an additional 200 feet jurisdiction extended landward from the wetland edge. All of the wetlands (except for a small Special Aquatic Site (SAS) not impacted by the proposed paths but located within the Forested Upland) are contiguous to CRMC designated Type 1 Waters – Conservation Areas. These waters are defined by the CRMC as "(1) water areas that are within or adjacent to the boundaries of designated wildlife refuges and conservation areas, (2) water areas that have retained natural habitat or maintain scenic values of unique or unusual significance, and (3) water areas that are particularly unsuitable for structures due to their exposure to severe wave action, flooding, and erosion" (Coastal Resources Management Council, as amended). Also, the entire project is within the Narrow River SAMP. Filling, removing or grading is prohibited on beaches, dunes, undeveloped barrier beaches, coastal wetlands, cliffs and banks, and rocky shores adjacent to Type 1 and Type 2 waters, and in the Narrow River watershed unless the primary purpose of the alteration is to preserve or enhance the area as a natural habitat for native plants and wildlife (Ernst, Miguel, & Willis, 1999). Filling, removing, or grading (RICRMP, Section 300.2) is prohibited on any tributary or tributary wetland. Any activity not prohibited herein shall be evaluated against the Council's Rules and Regulations for the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast (Coastal Resources Management Council, as amended). The Freshwater Wetland is classified as a Swamp with an Area of Land within 50 feet extended landward from the wetland edge as additional area within CRMC jurisdiction. Crooked Brook will have a 100 foot Riverbank Wetland extended from each river bank as additional area within CRMC jurisdiction. Minimally, U.S. Army Corps of Engineers Level II permitting will be required. The Town of Narragansett may have additional wetland regulations.

Sea Level Rise: Any anticipated sea level rise is not expected to influence this alignment since this path stays completely outside of the salt marsh zone. However, a future rise of sea level may affect this Alternative in the Forested Wetland due to salt marsh migration. Several lower areas of current Forested Wetland may develop into salt marsh habitat in the future and affect potential salt marsh sparrow habitat. The RI Natural Heritage Program lists the project site as a rare species habitat.

Mitigation: The *RI Coastal Resources Management Program,* Section 300.12 Coastal Wetland Mitigation (as amended) is very clear on the requirements for wetland mitigation when coastal wetland is permanently altered or lost. Coastal Wetlands are defined as salt marsh, brackish wetlands, and freshwater wetlands that border directly on salt and brackish marshes. The minimum compensation requirement is a 2:1 creation or restoration for wetland areas permanently lost or altered. This wetland replacement needs to consist of wetlands of equal or greater area and ecological value.

Alteration to coastal wetland is defined to include, but is not limited to the following: "filling, removing or grading (as defined in Section 300.2, A); dredging and dredged materials disposal (as defined in Section 300.9, A); and any significant cutting or removal of vegetation; and excavation, draining, damming and/or diverting of hydrological flows in a coastal wetland. Furthermore, any activity, including the aforementioned, taking place in an area adjacent to a coastal wetland which impacts the coastal wetland, shall be considered an alteration to coastal wetlands." The wetland mitigation areas need to be accommodated on-site if possible or, if necessary, within an offsite location that is still hydrologically connected to the altered wetland. If the alteration is temporary, the CRMC may only require restoration of the wetland. Please see Figure 6-Land Use Impacts Table for proposed Coastal

Wetland alteration square-footage for Swamp, Salt Marsh, and Other Wetland. These figures would be doubled to meet the 2:1 requirement. The US Army Corps of Engineers will have similar requirements.

Off-Site Bike Path Route (green) Alternative 4: The proposed alternative 4 path extends approximately 6,160 total linear feet and is located at the northern boundaries of the elementary school and the municipal recreation fields. Then the bike path route travels along Wanda Street before then turning northeast into the Canonchet Farm property traveling just west of Lake Canonchet before terminating at the Canonchet Farm parking lot. This path travels within Forested Wetland, Forested Upland, Freshwater Marsh and Riverine habitat as well as Institutional and High Density Residential Land Use. This path has a proposed wetland total impact of 1,130 linear feet. Most of the total wetland impact (1,000 linear feet) is located at the section along the western bank of Lake Canonchet situated within the Canonchet Farm property. Another smaller area of wetland impact (approximately 130 linear feet) results from crossing the Freshwater Marsh / Riverine habitat located along the northern side of the town recreational field.

This proposed bike path makes use of the existing network of roads and existing developed areas such as Wanda Street and the municipal owned roadways located within the Narragansett Elementary School and Municipal Park properties. Much of the wildlife habitat areas the path intersects are located along the edge of those habitat units which help to minimize impacts to wildlife. The exception to this would be the impacts to the Forested Wetland habitat which borders the western bank of Lake Canonchet adjacent to Ocean Road within the Canonchet Farm property. That habitat is the most ecologically significant within this pathway. The permanent wetland impacts associated with the bike path include a loss of wildlife habitat, an increase in impervious surfaces, a travel corridor for predators and increased human disturbance.

Soils: The dominant soil units within the proposed alignment include:
Poquonock loamy fine sand, 3-8% slopes (PsB); a gently sloping, well drained to somewhat excessively drained soil unit located on side slopes of drumlins and glacial till uplands;
Walpole sandy loam (Wa), a nearly level, poorly drained soil located in depressions and small drainageways of terraces and outwash plains;
Pittstown silt loam (PmA), 0-3 % slopes, a nearly level, moderately well drained soil unit located on the crests of glacial upland hills and drumlins.
Of these soil units, only the Walpole sandy loam is classified as being a hydric soil.

Wildlife: Wildlife observed within Alternative 4 includes: gray catbird, cedar waxwing, American robin and American crow.

Additional wildlife species observed along this alignment from these wildlife surveys included: American redstart, yellow warbler, white-throated sparrow, white-eyed vireo, barn swallow. Refer to full wildlife list in Figure 10.

This proposed alignment would likely be able to utilize the Programmatic Consultation with the USFWS. This agreement would provide expedited consultation process for projects meeting certain conditions.

Wetlands and Coastal Permitting: The CRMC has jurisdiction over all of the wetland areas within the proposed project area plus an additional 200 foot jurisdiction extended landward from the wetland edge along Lake Canonchet. All of the wetlands are contiguous to CRMC designated Type 1 Waters –

Conservation Areas. These waters are defined by the CRMC as "(1) water areas that are within or adjacent to the boundaries of designated wildlife refuges and conservation areas, (2) water areas that have retained natural habitat or maintain scenic values of unique or unusual significance, and (3) water areas that are particularly unsuitable for structures due to their exposure to severe wave action, flooding, and erosion" (Coastal Resources Management Council, as amended). Also, the entire project is within the Narrow River SAMP. Filling, removing or grading is prohibited on beaches, dunes, undeveloped barrier beaches, coastal wetlands, cliffs and banks, and rocky shores adjacent to Type 1 and Type 2 waters, and in the Narrow River watershed unless the primary purpose of the alteration is to preserve or enhance the area as a natural habitat for native plants and wildlife (Ernst, Miguel, & Willis, 1999). Filling, removing, or grading (RICRMP, Section 300.2) is prohibited on any tributary or tributary wetland. Any activity not prohibited herein shall be evaluated against the Council's Rules and Regulations for the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast (Coastal Resources Management Council, as amended). The Freshwater Wetland is classified as a Swamp with an Area of Land within 50 feet extended landward from the wetland edge as additional area within CRMC jurisdiction. Crooked Brook will have a 100 foot Riverbank Wetland extended landward from each river bank as additional area within CRMC jurisdiction. Minimally, U.S. Army Corps of Engineers Level I permitting will be required. The Town of Narragansett may have additional wetland regulations.

This alignment will require approximately 80 square feet of wetland alterations and approximately 1,130 linear feet of wetland impacts. Refer to Figure 14 Environmental Permitting Matrix.

Mitigation: The *RI Coastal Resources Management Program,* Section 300.12 Coastal Wetland Mitigation (as amended) is very clear on the requirements for wetland mitigation when coastal wetland is permanently altered or lost. Coastal Wetlands are defined as salt marsh, brackish wetlands, and freshwater wetlands that border directly on salt and brackish marshes. The minimum compensation requirement is a 2:1 creation or restoration for wetland areas permanently lost or altered. This wetland replacement needs to consist of wetlands of equal or greater area and ecological value.

Alteration to coastal wetland is defined to include, but is not limited to the following: "filling, removing or grading (as defined in Section 300.2, A); dredging and dredged materials disposal (as defined in Section 300.9, A); and any significant cutting or removal of vegetation; and excavation, draining, damming and/or diverting of hydrological flows in a coastal wetland. Furthermore, any activity, including the aforementioned, taking place in an area adjacent to a coastal wetland which impacts the coastal wetland, shall be considered an alteration to coastal wetlands." The wetland mitigation areas need to be accommodated on-site if possible or, if necessary, within an offsite location that is still hydrologically connected to the altered wetland. If the alteration is temporary, the CRMC may only require restoration of the wetland. Please see Figure 6-Land Use Impacts Table for proposed Coastal Wetland alteration square-footage for Swamp, Salt Marsh, and Other Wetland. These figures would be doubled to meet the 2:1 requirement. The US Army Corps of Engineers will have similar requirements.

First portion of 2000 FST Study via Strathmore (red) Alternative 5:

The Strathmore bike Alternative is approximately +/- 6,370 linear feet in length and total wetland impacts include the fewest at only 130 linear feet or 10 square feet. These wetland impacts result from crossing the Freshwater Marsh and Crooked Brook along the north side of the Town recreation land

(same area as in Alternative 4). The impacts to wildlife habitat are the least with this proposed alignment. This path makes use of the existing road and town developed land for the majority of the path. It follows closely to the proposed alignment of the Off-site bike path (green) except instead of accessing the Canonchet Farm parking lot by crossing a large area of Forested Wetland, this path uses Strathmore Road and the beachside existing Canonchet Farm access road. This greatly reduces the impacts to wildlife habitat and wetland loss while also reducing the total amount of impervious roadway to be constructed. The Land Use Habitats that will be impacted by the proposed path include: Medium High Residential, Bordering Medium High and High Residential, Institutional, Forested Upland, Freshwater Marsh / Riverine Habitats.

Soils: The dominant soil units within the proposed alignment include:
Broadbrook silt loam, 0-3% and 3-8% slopes (BrB). These soil units are gently sloping, well-drained soil is on the side slopes of glacial upland hills and drumlins. Also, another dominant soil unit is classified as Rainbow silt loam, 0-3% and 3 to 8 % slopes (RaB). These soil units are gently sloping, moderately well drained soil is on side slopes of glacial upland hills and drumlins.
The western portion of the proposed path is designed within mainly Institutional Land (Narragansett Elementary) and the corresponding soil classification unit is Udorthents-Urban land complex (UD). This soil complex consists of moderately well drained to excessively drained soils that have been disturbed by cuffing or filling, and areas that are covered by buildings and pavement.

Wildlife: Wildlife species observed within this alignment included: American crow and gray catbird.

Additional wildlife species observed from these latest surveys included: American robin, cedar waxwing, song sparrow, , fish crow, , eastern cottontail, monarch butterfly, green jacket dragonfly, etc. Refer to full wildlife list in Figure 10. The impacts to wildlife habitat are expected to be minimal since the proposed path is located within the existing developed town land and existing roadways.

This proposed alignment would likely be able to utilize the Programmatic Consultation with the USFWS. This agreement would provide expedited consultation process for projects meeting certain conditions.

Wetlands and Coastal Permitting: The CRMC has jurisdiction over all of the wetland areas within the proposed project plus an additional 200 feet jurisdiction extended landward from the wetland edge. . All of the wetlands are contiguous to CRMC designated Type 1 Waters – Conservation Areas. These waters are defined by the CRMC as "(1) water areas that are within or adjacent to the boundaries of designated wildlife refuges and conservation areas, (2) water areas that have retained natural habitat or maintain scenic values of unique or unusual significance, and (3) water areas that are particularly unsuitable for structures due to their exposure to severe wave action, flooding, and erosion" (Coastal Resources Management Council, as amended). Also, the entire project is within the Narrow River SAMP. Filling, removing or grading is prohibited on beaches, dunes, undeveloped barrier beaches, coastal wetlands, cliffs and banks, and rocky shores adjacent to Type 1 and Type 2 waters, and in the Narrow River watershed unless the primary purpose of the alteration is to preserve or enhance the area as a natural habitat for native plants and wildlife (Ernst, Miguel, & Willis, 1999). Filling, removing, or grading (RICRMP, Section 300.2) is prohibited on any tributary or tributary wetland. Any activity not prohibited herein shall be evaluated against the Council's Rules and Regulations for the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast (Coastal Resources Management Council, as amended). The Freshwater Wetland is classified as a Swamp with an Area of Land within 50 feet extended landward from the wetland edge as additional area within CRMC jurisdiction. Crooked

Brook will have a 100 foot Riverbank Wetland extended landward from each river bank as additional area within CRMC jurisdiction. Minimally, U.S. Army Corps of Engineers Level I permitting will be required. The Town of Narragansett may have additional wetland regulations. Refer to Figure 14 Environmental Permitting Matrix.

Mitigation: The *RI Coastal Resources Management Program,* Section 300.12 Coastal Wetland Mitigation (as amended) is very clear on the requirements for wetland mitigation when coastal wetland is permanently altered or lost. Coastal Wetlands are defined as salt marsh, brackish wetlands, and freshwater wetlands that border directly on salt and brackish marshes. The minimum compensation requirement is a 2:1 creation or restoration for wetland areas permanently lost or altered. This wetland replacement needs to consist of wetlands of equal or greater area and ecological value.

Alteration to coastal wetland is defined to include, but is not limited to the following: "filling, removing or grading (as defined in Section 300.2, A); dredging and dredged materials disposal (as defined in Section 300.9, A); and any significant cutting or removal of vegetation; and excavation, draining, damming and/or diverting of hydrological flows in a coastal wetland. Furthermore, any activity, including the aforementioned, taking place in an area adjacent to a coastal wetland which impacts the coastal wetland, shall be considered an alteration to coastal wetlands." The wetland mitigation areas need to be accommodated on-site if possible or, if necessary, within an offsite location that is still hydrologically connected to the altered wetland. If the alteration is temporary, the CRMC may only require restoration of the wetland. Please see Figure 6-Land Use Impacts Table for proposed Coastal Wetland alteration square-footage for Swamp, Salt Marsh, and Other Wetland. These figures would be doubled to meet the 2:1 requirement. The US Army Corps of Engineers will have similar requirements.

This alignment will require approximately 10 square feet of wetland alteration and approximately 130 linear feet of wetland impacts.

The impacts to wildlife habitat are expected to be minimal since the proposed path is located within the existing developed town land and existing roadways.

Dead End Spur Combination (orange): This spur is the shortest at 1,790 linear feet but the ratio of path to wetland is the highest of all alternatives with approximately 1,230 total linear feet of impacts within wetland. This path crosses Forested Wetland, Forested Upland and Salt Marsh Habitats. The majority of the impact is to Forested Wetland. The permanent wetland impacts associated with the bike path include a loss of wildlife habitat, an increase in impervious surfaces, a travel corridor for predators and increased human disturbance.

Wildlife: The RI Natural Heritage Program lists the site as a rare species habitat. Wildlife noted within this path alignment included those species which frequent coastal areas and Swamps including: hooded mergansers, belted kingfishers, Cooper's hawk, black duck, cedar waxwing, American robin, red-tailed hawk, white-throated sparrow, black capped chickadee and various shellfish and fish within tidal pools of the salt marsh. The salt marsh sparrow, a Rhode Island Species of Greatest Concern and potential candidate for Federal Listing, will potentially be impacted from this alternative due to the salt marsh habitat loss the proposed bike path will create and the increased human disturbance within the area. If the bird gets listed as a Federally Listed wildlife species then there is the potential that the

USWFS may consider the salt marsh habitat of the project area a “critical habitat” and therefore, limit the use of the bike path during nesting season.

Additional wildlife species noted within the trail area from these additional surveys included: greater yellowlegs, lesser yellowlegs, spotted sandpiper, least sandpiper,fish crow, ruby throated hummingbird, tree swallow, monarch butterfly, pearl crescent, peck’s skimmer, seaside dragonlet, common green darner, white-tailed deer and others. Refer to Figure 10 for full list. Other rare species or species of concern that were observed during this time include: osprey, black duck and common egret. The southern end of this alignment is located within an area of woods that was being frequented by a perching osprey on a large dead tree. A nearby osprey nest is located within the school fields to the west and the young appear to be using this tree in these woods for perching. Also, large flocks of robins, black-capped chickadees and cedar waxwings were observed within the woods at the southern end of this path. As the path continues north along the former railroad trestle it goes through significant Wooded Swamp. This swamp contains open water for various breeding amphibians, reptiles and invertebrates. On April 21, 2015 several spotted turtles were observed along the bank of the trestle bed and the flooded swamp as well as spring peepers, gray treefrog and green frog.

This proposed alignment would not be able to utilize the Programmatic Consultation for NLEB, and would require project-specific consultation. It is unclear at this level of project development, if any of these projects would meet the Interim 4(d) Rule criteria for “minimal tree removal.” Without bat survey information indicating that the species is “Likely absent” from the project area, significant time of year restrictions on the tree removal and, potentially, on other construction related activities, are anticipated. Depending on whether or not the USFWS determines each alignment to be eligible for the 4(d) Rule Exemptions, such surveys may be required, regardless of conservation measures employed.

Wetland and Coastal Permitting: The CRMC has jurisdiction over all of the wetland areas within the proposed project plus an additional 200 feet jurisdiction extended landward from the wetland edge. All of the wetlands are contiguous to CRMC Type 1 Waters – Conservation Areas. These waters are defined by the CRMC as “(1) water areas that are within or adjacent to the boundaries of designated wildlife refuges and conservation areas, (2) water areas that have retained natural habitat or maintain scenic values of unique or unusual significance, and (3) water areas that are particularly unsuitable for structures due to their exposure to severe wave action, flooding, and erosion” (Coastal Resources Management Council, as amended). Also, the entire project is within the Narrow River SAMP. Filling, removing or grading is prohibited on beaches, dunes, undeveloped barrier beaches, coastal wetlands, cliffs and banks, and rocky shores adjacent to Type 1 and Type 2 waters, and in the Narrow River watershed unless the primary purpose of the alteration is to preserve or enhance the area as a natural habitat for native plants and wildlife (Ernst, Miguel, & Willis, 1999). Also, any filling of salt marsh is prohibited unless a public benefit is shown in which case then mitigation will be required. Filling, removing, or grading (RICRMP, Section 300.2) is prohibited on any tributary or tributary wetland. Any activity not prohibited herein shall be evaluated against the Council’s Rules and Regulations for the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast (Coastal Resources Management Council, as amended). The Freshwater Wetland is classified as a Swamp with an Area of Land within 50 feet extended landward from the wetland edge as additional area within CRMC jurisdiction. Crooked Brook will have a 100 foot Riverbank Wetland extended landward from each river bank as additional area within CRMC jurisdiction. Minimally, U.S. Army Corps of Engineers Level II permitting will be required. The Town of Narragansett may have additional wetland regulations.

A total of 13,090 square feet of alterations are proposed within wetland and 1,230 linear feet of impacts are proposed. Refer to Figure 14 Environmental Permitting Matrix. A total of 30 square feet of alteration is proposed within the Salt Marsh area for the Viewing Platform. However, this can be redesigned so that all wetland alterations stay outside of the Salt Marsh.

A letter from USFWS dated 3/1/2012 to Richard Grant, President of the Narrow River Preservation Association, states that "construction of a bike path within an estuarine wetland can limit tidal flow across the surface of the marsh and / or cause a delay in the filling or draining of the marsh surface during normal tidal cycles" (USFWS, 2012). Since presently, a portion of the bike path for the Viewing Platform has the proposed construction within the salt marsh for this segment, this potential impact would need to be mitigated. However, the platform can be redesigned so that it is constructed outside of the Salt Marsh habitat.

Sea Level Rise There is potential for most of the existing salt marsh to experience a significant future sea level rise (Refer to Figure 8). Therefore, much of the contiguous wooded Swamp may experience additional flooding from storm surges and future inland salt marsh migration.

Mitigation: The *RI Coastal Resources Management Program,* Section 300.12 Coastal Wetland Mitigation (as amended) is very clear on the requirements for wetland mitigation when coastal wetland is permanently altered or lost. Coastal Wetlands are defined as salt marsh, brackish wetlands, and freshwater wetlands that border directly on salt and brackish marshes. The minimum compensation requirement is a 2:1 creation or restoration for wetland areas permanently lost or altered. This wetland replacement needs to consist of wetlands of equal or greater area and ecological value.

Alteration to coastal wetland is defined to include, but is not limited to the following: "filling, removing or grading (as defined in Section 300.2, A); dredging and dredged materials disposal (as defined in Section 300.9, A); and any significant cutting or removal of vegetation; and excavation, draining, damming and/or diverting of hydrological flows in a coastal wetland. Furthermore, any activity, including the aforementioned, taking place in an area adjacent to a coastal wetland which impacts the coastal wetland, shall be considered an alteration to coastal wetlands." The wetland mitigation areas need to be accommodated on-site if possible or, if necessary, within an offsite location that is still hydrologically connected to the altered wetland. If the alteration is temporary, the CRMC may only require restoration of the wetland. Please see Figure 6-Land Use Impacts Table for proposed Coastal Wetland alteration square-footage for Swamp, Salt Marsh, and Other Wetland. These figures would be doubled to meet the 2:1 requirement. The US Army Corps of Engineers will have similar requirements.

IV . Conclusion:

Of the proposed 6 alignment choices for the Canonchet Farm Spur Bikeway, the First portion of 2000 FST Study via Strathmore (Alternative 5) has the least amount of impacts to the Natural Resources. This is the recommended Alternative for minimal biological impact to wildlife, rare species, wetlands and natural habitat.

The CRMC and the U.S. Army Corps of Engineers are least likely to permit the proposed path alignments for the Sea View Bike Route (Alternative 1) and Brady bike Route (Alternative 2) due to the

high amount of wetland and increased wildlife impacts, especially when other alternatives with more minimal impacts are available. A sizable area of Wetland Mitigation will be required. Although the Dead End Spur (Alternative 6) has 13, 090 SF of wetland alteration, it is proposed along the existing railroad alignment and the end point will be shifted to avoid any impact to the coastal wetlands. That alignment will also provide a platform that can be used to provide educational opportunities for both the elementary school and the general public. The permitting agencies including the USFWS will also view these alternatives less favorably due to the rare species habitat that will be impacted.

Any alterations proposed within Type 1-Conservation Area Salt Marsh or tributary wetlands are prohibited by the CRMC regulations under the Narrow River SAMP, but some minimum alterations of wetland may be allowed because of the inherent public benefit of the bicycle path. Addressing the Burden of Proof in Section 130 and a Special Exception will be required. Also, the USFWS may object to any alterations within rare species habitat particularly with the potential Federal and State listing of the salt marsh sharp-tailed sparrow and other species of concern such as American black duck, osprey, marsh hawk and newly listed Federally Threatened species the Northern long-eared bat.

APPENDIX A

DIGITAL IMAGES (photos taken 11-12-14 and 12-1-14)

Photo #1 - Sea View Bike Route- Looking north at start of proposed trail

Photo #2 - Looking north from existing trestle path

Within proposed trail for Sea View, Brady Bike and Dead Spur Alignments

Photo # 3 - Flooded Forested Wetland view east from path
Of proposed trail for Sea View, Brady Bike and Dead Spur Alignments

Photo #4 - View east of path of approximate master plan (blue trail) wetland crossing Where trail runs east from existing trestle trail

Photo # 5 - View east of path of approximate Brady Bike Route (yellow trail) wetland crossing Where trail runs east from existing trestle trail

Photo # 6- View east of path of approximate Sea View Bike Route (fuschai trail) salt marsh crossing Where trail runs east from existing trestle trail

Photo #7 - View of salt marsh habitat from proposed Dead End Spur and Sea View Bike Routes

Photo # 8 - View of proposed Dead End Spur and Sea View Bike Routes (powerline easement) Picture looking east from Salt Marsh

Photo # 9 - View of tidal pool within salt marsh habitat within Dead End Spur and Sea View Bike Route

Photo # 10 - Existing trail system within Canonchet Farm property
Picture taken east of southern junction of red, yellow and orange trail

Photo # 11 - View northwest of Wet meadow / Riverine habitat north of town recreational field Area for potential river crossing for green and red trails.

Photo # 12 - View of western edge of Lake Canonchet where green trail is proposed

Photo # 13 - View north of Forested Wetland Habitat adjacent to proposed yellow and blue trail

Photo # 14 - View west of proposed yellow trail within Forested Upland Habitat

Photo # 15 - Nesting cavities observed within Forested Wetland Habitat

Photo # 16 - Existing walking trail within Canonchet Farm property

Photo # 17 - Special Aquatic Site Wetland adjacent to proposed blue and yellow trail

PHOTO POINTS LOCATION MAP – Figure 1

RI Ecological Communities Classification (HABITAT AREAS) -FIGURE 2

http://maps.edc.uri.edu/arcgis/services/RIDEM/RI_Ecological_Communities_Classification_Phase_One

Red trail (northerly) – Sea View Bike Route

Yellow trail – Brady Bike Route (Corrected)

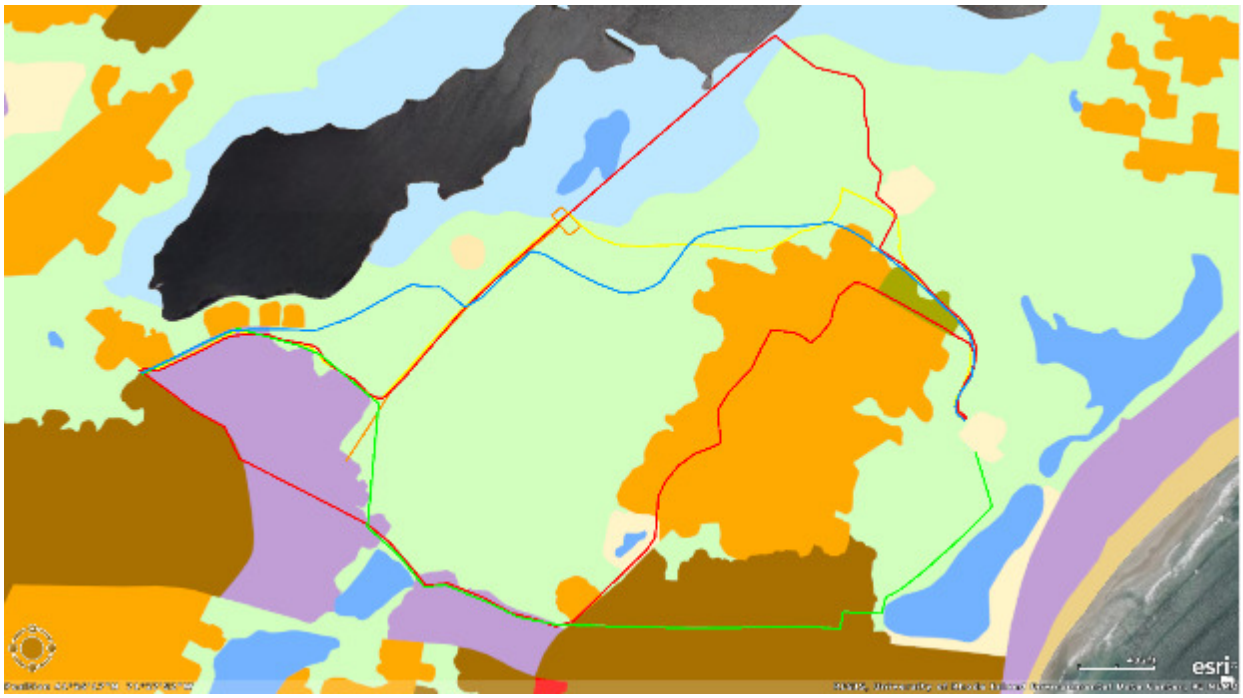
Blue trail – Master Plan Bike Route

Green trail – Off-Site Bike Path Route

Red trail (southerly) – First Portion of 2000 FST Study via Strathmore

Orange trail – Dead End Spur Combination

LAND USE UNITS-FIGURE 3



http://maps.edc.uri.edu/ArcGIS/services/Atlas_planningCadastre/Land_Use_200304_NEMO

Red trail (northerly) – Sea View Bike Route

Yellow trail – Brady Bike Route (Corrected)

Blue trail – Master Plan Bike Route

Green trail – Off-Site Bike Path Route

Red trail (southerly) – First Portion of 2000 FST Study via Strathmore

Orange trail – Dead End Spur Combination

TOWN OF NARRAGANSETT WETLANDS AND BIKE TRAILS -FIGURE 4

RIGIS WETLANDS AND SURFACE WATER -FIGURE 5

http://maps.edc.uri.edu/ArcGIS/services/Atlas_inlandWaters/Surface_Water

http://maps.edc.uri.edu/ArcGIS/services/Atlas_biota/Wetlands

RIGIS, University of Rhode Island Environmental Data Center (URIEDC), Rhode Island Department of Environmental Management (RIDEM)

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Green trail – Off-Site Bike Path Route

Red trail (southerly) – First Portion of 2000 FST Study via Strathmore

Orange trail – Dead End Spur Combination

LAND USE IMPACTS TABLE-Figure 6

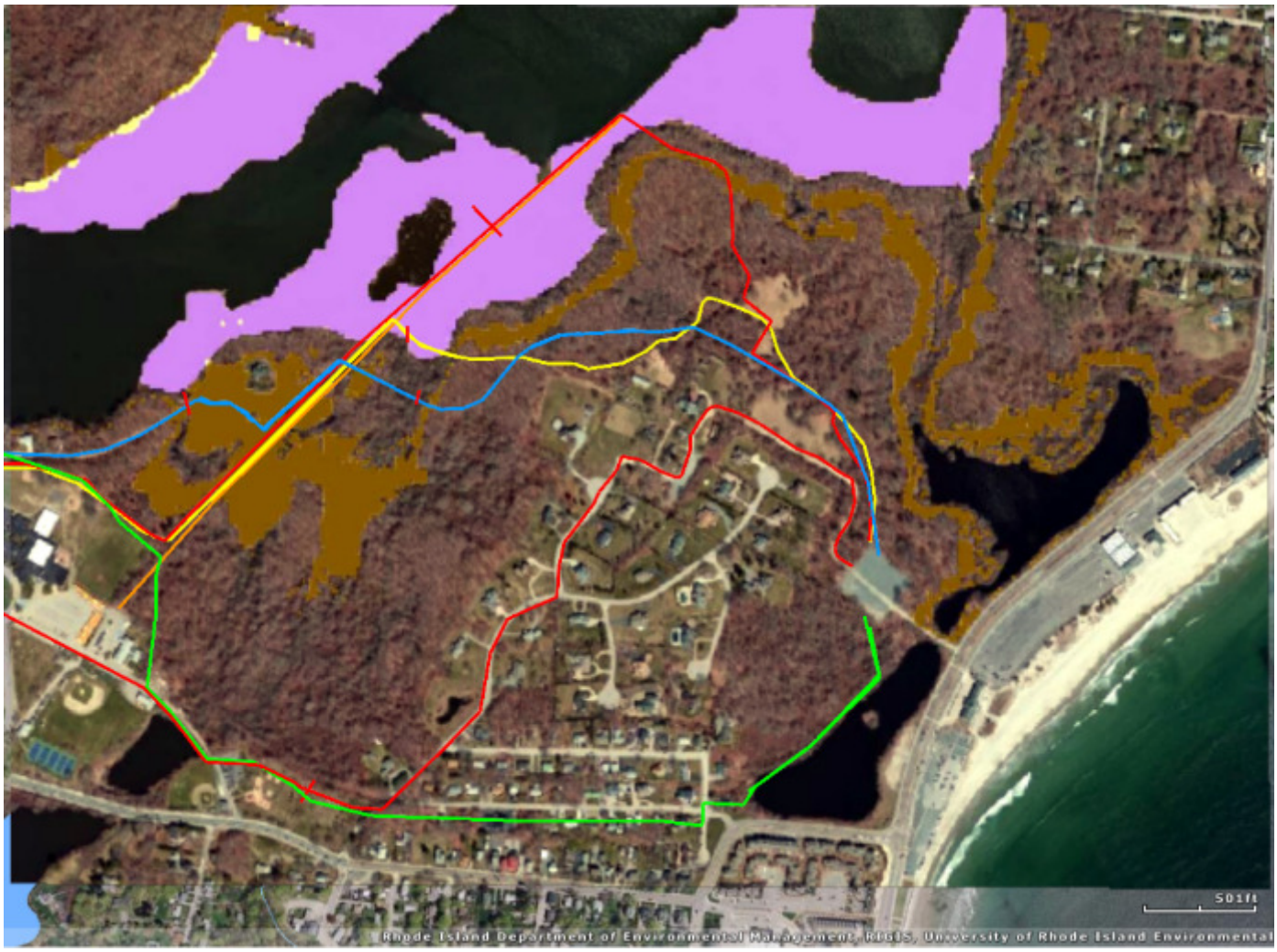
		PRIME NATURAL RESOURCE HABITAT										
	total length (lin. feet)	Forested Habitat (sq. ft.)	Swamp alterations(sq. ft.)	Salt Marsh alterations (sq. ft.)	other wetland alterations (sq. ft.)	total wetland alterations (sq. ft.)	total wetlandimpacts (lin. ft.)	Institutional (sq. ft.)	high density (sq. ft.)	vancant land (sq. ft.)	bordering HD / MD (sq. ft.)	
ALTERNATIVES		Total Forested	Upland Deciduous	Forested Wetland	Salt Marsh	FW Marsh						
1 - seaview bike trail (fuschia)	6,875	79,632	66,572	13,060	150	0	**13,210**	**2,920**	8,976	0	0	0
2 - Brady Bike Route (yellow)	6,045	87,178	74,118	13,060	71	0	**13,131**	**1,805**	7,788	0	0	0
3 - Master Plan Bike Route (blue)	5,610	78,995	71,225	7,770	0	0	**7,770**	**1,350**	0	0	0	0
4 - Off-Site Bike Path Route (green)	6,160	29,176	29,106	70	0	10	**80**	**1,130**	29,898	38,566	0	0
5 - First portion 2000 FST via Strathmore	6,370	20,130	20,130	0	0	10	**10**	**130**	32,384	0	0	15,180
6 - dead end spur (orange)	1,790	25,974	12,914	13,060	30	0	**13,090**	**1,230**	0	0	0	0

most wetland alterations:		
1 -seaview	13,210	square feet includes 150 square feet of salt marsh
2 - brady yellow	13,131	square feet includes 71 square feet of salt marsh
6 - dead end spur	13,090	square feet includes 30 square feet of salt marsh

Approximate square footage amounts of wetland and land use impacts (taken from mapping data online and Fay, Spofford and Thorndike, Inc., Wetlands and BikeTrails map).

Wetland alteration areas are limited to the fill and boardwalk piles not the total surface area of the anticipated boardwalk.

MARSH MIGRATION MODEL (5 foot sea level rise)-FIGURE 7



http://maps.edc.uri.edu/arcgis/services/SeaLevelRise/SLAMM_Results_5Foot

Rhode Island Sea Grant; University of Rhode Island Environmental Data Center (URIEDC); RI Division of Planning; RI CRMC

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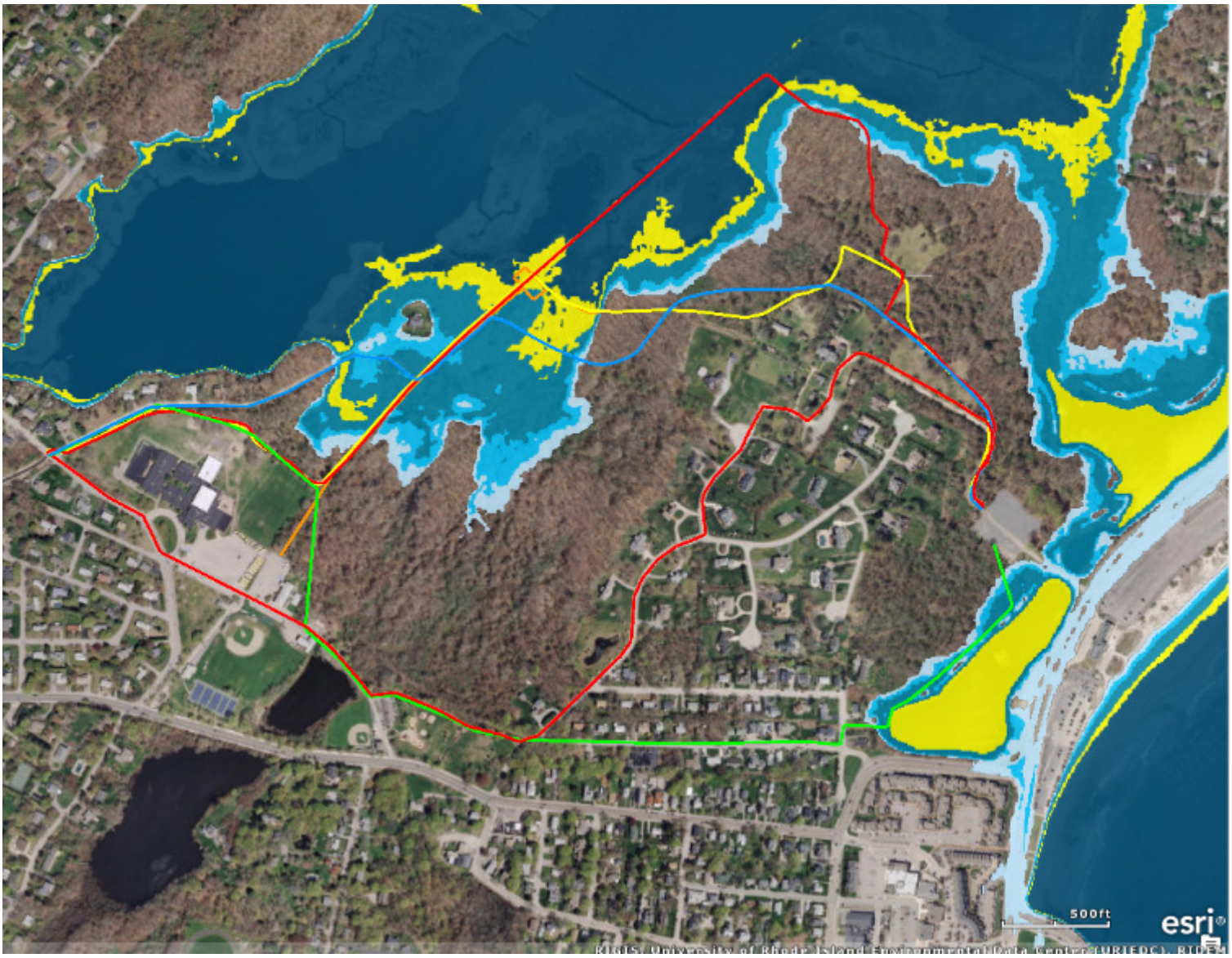
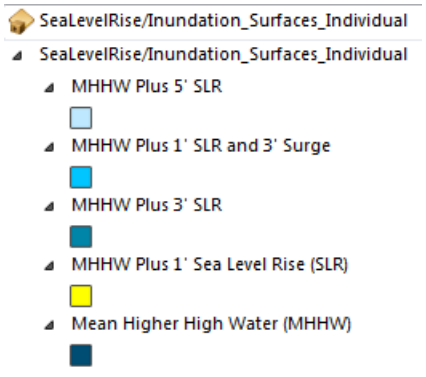
Orange trail – Dead End Spur Combination

PROJECTED SEA LEVEL RISE MAP -FIGURE 8



Map Source: SeaLevelRise/Inundation_Surfaces_Individual MapServer
http://maps.edc.uri.edu/arcgis/services/SeaLevelRise/Inundation_Surfaces_Individual/MapServe



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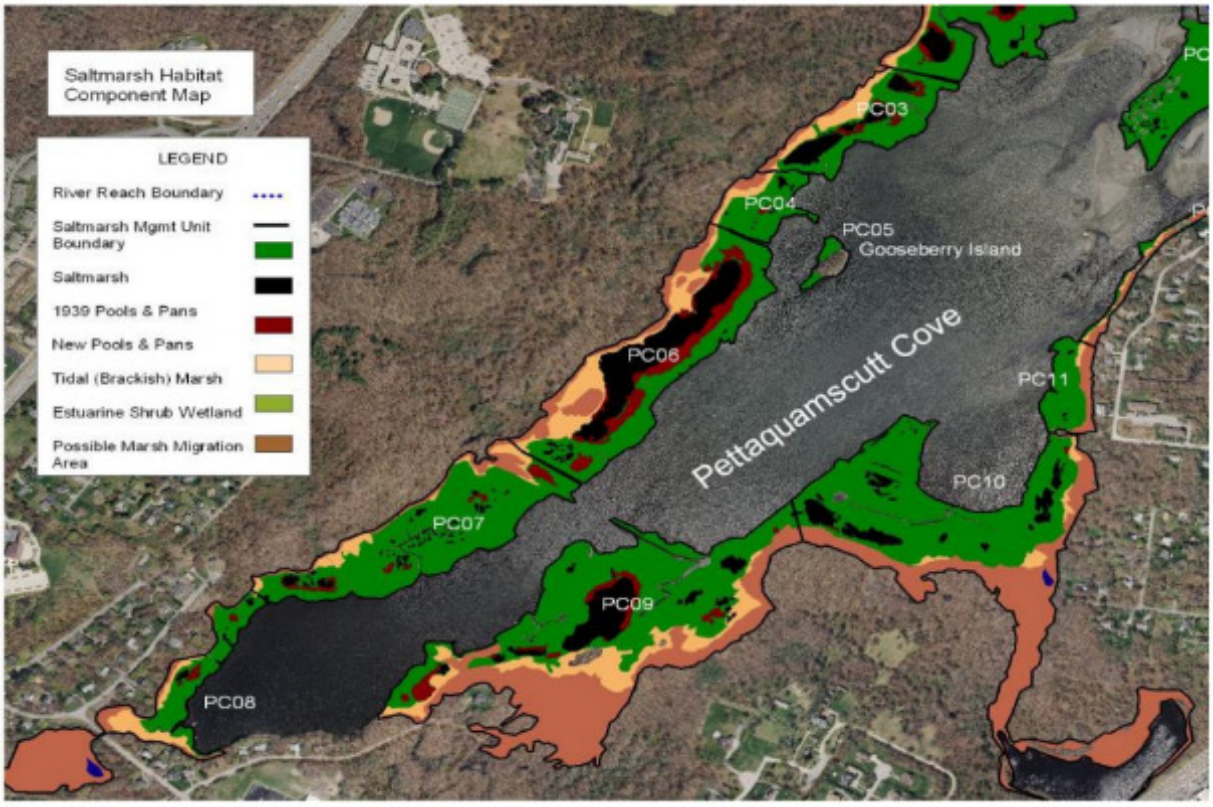
Orange trail – Dead End Spur Combination

POSSIBLE MARSH MIGRATION AREA-FIGURE 9

FIGURE TAKEN FROM (USFWS, 2014)



WILDLIFE OBSERVATIONS - FIGURE 10

OBSERVED WILDLIFE SPECIES						
by Applied bio-Systems, Inc.	**11/12/2014**	**12/1/2014**	**4/21/2015**	**6/12/2015**	**8/18/2015**	**8/28/2015**
Birds						
American crow (*Corvus brachyrhynchos*)	X	X		X		X
American goldfinch (*Carduelis tristis*)	X	X			X	
American redstart (*Setophaga ruticilla*)				X		
American robin (*Turdus migratorius*)	X	X	X	X	X	X
barn swallow (*Hirundo rustica*)				X		
belted kingfisher (*Megaceryle alcyon*)		X				
black duck (*Anas rubripes*)		X				X
black-capped chickadee (*Poecile atricapillus*)	X	X	X	X	X	X
blue gray gnatcatcher (*Polioptila caerulea*)			X			X
blue jay (*Cyanocitta cristata*)	X	X		X	X	X
Canada goose (*Branta canadensis*)		X		X		
cedar waxwing (*Bombycilla cedrorum*)		X		X	X	X
common egret (*Ardea alba*)					X	X
common yellowthroat (*Geothlypis trichas*)				X	X	X
cooper's hawk (*Accipiter cooperii*)		X				
dark-eyed junco (*Junco hyemalis*)	X	X				
double crested cormorant (*Phalacrocorax auritus*)*				X		
downy woodpecker (*Picoides pubescens*)	X	X	X	X	X	
Eastern woodpewee (*Contopus virens*)				X	X	
European starling (*Sturnus vulgaris*)				X		
finch species (*Haemorhous* sp.)				X	X	
fish crow (*Corvus ossifragus*)					X	X
gray catbird (*Dumetella carolinensis*)	X	X		X	X	X
great crested flycatcher (*Myiarchus crinitus*)				X		
greater black backed gull (*Larus marinus*)		X			X	
greater yellowlegs (*Tringa melanoleuca*)						X
hairy woodpecker (*Picoides villosus*)					X	
hooded merganser (*Lophodytes cucullatus*)		X				
house sparrow (*Passer domesticus*)				X		
house wren (*Troglodytes aedon*)				X		
least sandpiper (*Calidris minutilla*)					X	X
lesser yellowlegs (*Tringa flavipes*)						X
mallard (*Anas platyrhynchos*)		X		X		
mourning dove (*Zenaida macroura*)				X	X	
mute swan (*Cygnus olor*)		X		X		
northern cardinal (*Cardinalis cardinalis*)	X	X	X	X	X	
northern flicker (*Colaptes auratus*)				X	X	
osprey (*Pandion haliaetus*)*			X	X	X	X
red-tailed hawk (*Buteo jamaicensis*)		X				
red-winged blackbird (*Agelaius phoeniceus*)			X	X		

WILDLIFE OBSERVATIONS - FIGURE 10 (cont'd)

BIRDS continued	**11/12/2014**	**12/1/2014**	**4/21/2015**	**6/12/2015**	**8/18/2015**	**8/27/2015**
ruby throated hummingbird (*Archilochus colubris*)					X	
rufous sided towhee (*Pipilo erythrophthalmus*)			X	X	X	
song sparrow (*Melospiza melodia*)		X		X	X	
sparrow species		X			X	
spotted sandpiper (*Actitis macularius*)						X
tree swallow (*Tachycineta bicolor*)			X			
tufted titmouse (*Baeolophus bicolor*)			X	X	X	
white-breasted nuthatch (*Sitta carolinensis*)	X		X		X	X
white-eyed vireo (*Vireo griseus*)				X		
white-throated sparrow (*Zonotrichia albicollis*)		X				
willow flycatcher (*Empidonax traillii*)				X		
wren species (*Troglodytes* sp.)		X				
yellow billed cuckoo (*Coccyzus americanus*)				X		
yellow warbler (*Setophaga petechia*)				X		
Fish						
striped killifish (*Fundulus majalis*)		X				X
Mammals						
eastern chipmunk (*Tamias striatus*)				X	X	X
eastern cottontail (*Sylvilagus floridanus*)		X				X
gray squirrel (*Sciurus carolinensis*)	X	X		X		
white-tailed deer (*Odocoileus virginianus*)	X			X	X	X
Amphibians / Reptiles						
eastern garter snake (*Thamnophis sirtalis*)					X	
gray treefrog (*Hyla versicolor*)					X	
green frog (*Rana clamitans*)			X			
northern brown snake (*Storeria dekayi dekayi*)			X			
spotted turtle (*Clemmys guttata*)			X			
spring peeper (*Pseudacris crucifer*)			X			
Invertebrates						
azure (*Celastrina* sp.)			X			
black saddlebag (*Tramea lacerata*)				X		
bluet species (*Enallagma* sp.)				X		
butterfly species				X		
common green darner (*Anax junius*)				X	X	X
crab species		X				
monarch butterfly (*Danaus plexippus*)					X	
mussel (*Geukensia demissa*)		X				
pearl crescent (*Phyciodes tharos*)					X	
peck's skipper (*Polites peckius*)					X	
quahog (*Mercenaria mercenaria*)		X				
seaside dragonlet (*Erythrodiplax berenice*)						X
tenspot (*Libellula pulchella*)						X

* flying overhead

Species in Bold - considered rare, threatened, endangered or special concern species by RIDEM and / or USFWS or RI Species of Greatest Conservation Need 2015 Wildlife Action Plan

POSSIBLE IMPACTED RARE SPECIES-FIGURE 11

Threatened / Endangered / State Wildlife and Plant Species of Concern Known To Occur Within Narrow River Estuary and surrounding wetlands

	Potential Impacts					
	Alternative 1	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Alternative 5**	**Alternative 6**
State Species of Concern or RI Species of Greatest Conservation Need						
American redstart (*Setophaga ruticilla*)	X	X	X	X	X	X
black duck (*Anas rubripes*)	X	X				X
blue winged teal (*Anas discors*)	X	X				X
Canada goose (*Branta canadensis*)	X	X				X
eastern towhee (*Pipilo erythrophthalmus*)	X	X	X	X	X	X
gadwall (*Anas strepera*)	X	X				X
glossy ibis (*Plegadis falcinellus*)	X	X				X
gray catbird (*Dumetella carolinensis*)	X	X	X	X	X	X
great blue heron (*Ardea herodias*)	X	X		X		X
great crested flycatcher (*Myiarchus crinitus*)	X	X	X	X	X	X
great egret (*Ardea alba*)	X	X				X
greater yellowlegs (*Tringa melanoleuca*)						
green winged teal (*Anas carolinensis*)	X	X				X
herring gull (*Larus argentatus*)						
hooded merganser (*Lophodytes cucullatus*)	X	X				X
least sandpiper (*Calidris minutilla*)	X	X				X
monarch butterfly (*Danaus plexippus*)	X	X	X	X	X	X
Northern flicker (*Colaptes auratus*)	X	X	X	X	X	X
osprey (*Pandion haliaetus*)	X	X		X		X
seaside sparrow (*Ammodramus maritimus*)	X	X				X
snowy egret (*Egretta thula*) also USFWS high concern	X	X				X
spotted sandpiper (*Actitis macularia*)	X	X				X
spotted turtle (*Clemmys guttata*)	X	X	X			X
striped killifish (*Fundulus majalis*)	X	X				X
willet (*Tringa semipalmata*)	X					X
willow flycatcher (*Empidonax traillii*)	X	X	X	X	X	X
State Threatened						
least tern (*Sternula antillarum*)	X	X				X
least bittern (*Ixobrychus exilis*)*	X	X				X
sea pink (*Sabatia stellaris*)	X	X				X
Federally Threatened						
Northern Long-Eared Bat (*Myotis septentrionalis*)	X	X	X	X	X	X
species of high conservation concern **						
salt marsh sparrow (*Ammodramus caudacutus*)	X	X				X

Data taken from:

RIDEM Natural Heritage Program, 2006

RI Species of Greatest Conservation Need 2015 Wildlife Action Plan

2014 USFWS Environmental Assessment for the Narrow River Estauary Resiliency Restoration Program

http://www.fws.gov/midwest/endangered/mammals/nlba/

*possible breeder in Narrow River Estuary

**The U.S. Fish and Wildlife Service Partners in Flight Program, has established a national level conservation status for saltmarsh sparrows, ranking the species as a bird of conservation concern (USFWS, 2010).

species in red were observed by ABS staff during wildlife inspections

CONSERVATION STATUS OF SHOREBIRDS-FIGURE 12

FIGURE TAKEN FROM (USFWS, 2014)

Table 4. Conservation status of shorebird species occurring at the lower Narrow River.

(Shorebird Conservation Plan 2001): 1) Species Not at Risk; 2) Species of Low Concern; 3) Species of Moderate Concern; 4) Species of High Concern; 5) Highly Imperiled.

Shorebirds	Scientific Name	Conservation Status [1]	Alpha Code
Black-bellied Plover	*Pluvialis squatarola*	3	BBPL
Semipalmated Plover	*Charadrius semipalmatus*	2	SEPL
Killdeer	*Charadrius vociferus*	3	KILL
Greater Yellowlegs	*Tringa melanoleuca*	3	GRYE
Lesser Yellowlegs	*Tringa flavipes*	3	LEYE
Willet	*Catoptrophorus semipalmatus*	3	WILL
Spotted Sandpiper	*Actitis macularius*	2	SPSA
Ruddy Turnstone	*Arenaria interpres*	4	RUTU
Sanderling	*Calidris alba*	4	SAND
Semipalmated Sandpiper	*Calidris pusilla*	3	SESA
Least Sandpiper	*Calidris minutilla*	3	LESA
Dunlin	*Calidris alpina*	3	DUNL
Short-billed Dowitcher	*Limnodromus griseus*	4	SBDO

CONSERVATION STATUS OF WATERBIRDS-FIGURE 13

FIGURE TAKEN FROM (USFWS, 2014)

Table 5. Conservation status and occurrence of waterbirds in the lower Narrow River.

[1]North American Waterbird Conservation Plan (Kushlan et al. 2002); [2]Rhode Island Natural Heritage Program (2006); [3] International Union for Conservation of Nature (IUCN 2014); [4] Black Duck Joint Venture Strategic Plan 2008-2012.

Waterbirds	Scientific Name	Alpha Code	Occurrence	Conservation Status
Cormorants				
Double-crested Cormorant	*Phalacrocorax auritus*	DCCO	Sp, Su, Fa	[1]Not Currently at Risk
Wading Birds				
Great Blue Heron	*Ardea herodias*	GBHE	Sp, Su, Fa, Wi	[1]Not Currently at Risk; [2]State Concern
Green Heron	*Butorides virescens*	GRHE	Sp, Su, Fa	[1]Low Concern
Great Egret	*Ardea alba*	GREG	Sp, Su, Fa	[1]Not Currently at Risk; [2]State Concern
Snowy Egret	*Egretta thula*	SNEG	Sp, Su, Fa	[1]High Concern; [2]State Concern
Glossy Ibis	*Plegadis falcinellus*	GLIB	Sp, Su, Fa	[1]Low Concern, [2]State Concern
Waterfowl				
Snow Goose	*Chen caerulescens*	SNGO	Wi	[3]Least Concern
Canada Goose	*Branta canadensis*	CAGO	Sp, Su, Fa, Wi	[3]Least Concern
Mute Swan	*Cygnus olor*	MUSW	Sp, Su, Fa, Wi	Invasive
American Black Duck	*Anas rubripes*	ABDU	Sp, Su, Fa, Wi	[3]Least Concern
Mallard	*Anas platyrhynchos*	MALL	Sp, Su, Fa, Wi	[3]Least Concern
Gadwall	*Anas strepera*	GADW	Wi	[2]State Concern
American Wigeon	*Abas americana*	AMWI	Wi	[3]Least Concern
Green-winged Teal	*Anas crecca*	GWTE	Fa, Wi	[2]State Concern
Blue-winged Teal	*Anas discors*	BWTE	Fa	[2]State Concern
Northern Pintail	*Anas acuta*	NOPI	Wi	[3]Least Concern
Canvasback	*Aythya valisineria*	CANV	Wi	[3]Least Concern
Greater Scaup	*Aythya affinis*	GRSC	Wi	[3]Least Concern
Lesser Scuap	*Aythya marila*	LESC	Wi	[3]Least Concern
Bufflehead	*Bucephala albeola*	BUFF	Wi	[3]Least Concern
Common Goldenye	*Bucephala clangula*	COGO	Wi	[3]Least Concern
Hooded Merganser	*Lophodytes cucullatus*	HOME	Wi	[2]State Concern
Red-breasted Merganser	*Mergus Serrator*	RBME	Wi	[3]Least Concern
Common Merganser	*Mergus mergansor*	COME	Wi	[3]Least Concern
Ruddy Duck	*Nomonyx dominicus*	RUDU	Wi	[3]Least Concern
Gulls				
Laughing Gull	*Larus atricilla*	LAGU	Fa, Wi	[1]Not Currently at Risk
Bonaparte's Gull	*Larus philadelphia*	*BOGU*	Fa, Wi	[1]Moderate Concern
Ring-billed Gull	*Larus delawarensis*	*RGBU*	Sp, Su, Fa, Wi	[1]Not Currently at Risk
Herring Gull	*Larus argentatus*	*HEGU*	Sp, Su, Fa, Wi	[1]Low Concern
Great Black-backed Gull	*Larus marinus*	*GBBG*	Sp, Su, Fa, Wi	[1]Not Currently at Risk
Terns				
Common Tern	*Sterna hirundo*	*COTE*	Su, Fa	[1]Low Concern
Forster's Tern	*Sterna fosteri*	*FOTE*	Su, Fa	[1]Moderate Concern
Least Tern	*Sterna antillarum*	*LETE*	Su, Fa	[1]High Concern
Secretive Marsh Birds				
Virginia Rail	*Rallus limicola*	*VIRA*	Su, Fa	[3]Least Concern
Least Bittern	*Ixobrychus exilis*	*LEBI*	Su, Fa	[3]Least Concern

ENVIRONMENTAL PERMITTING MATRIX -FIGURE 14

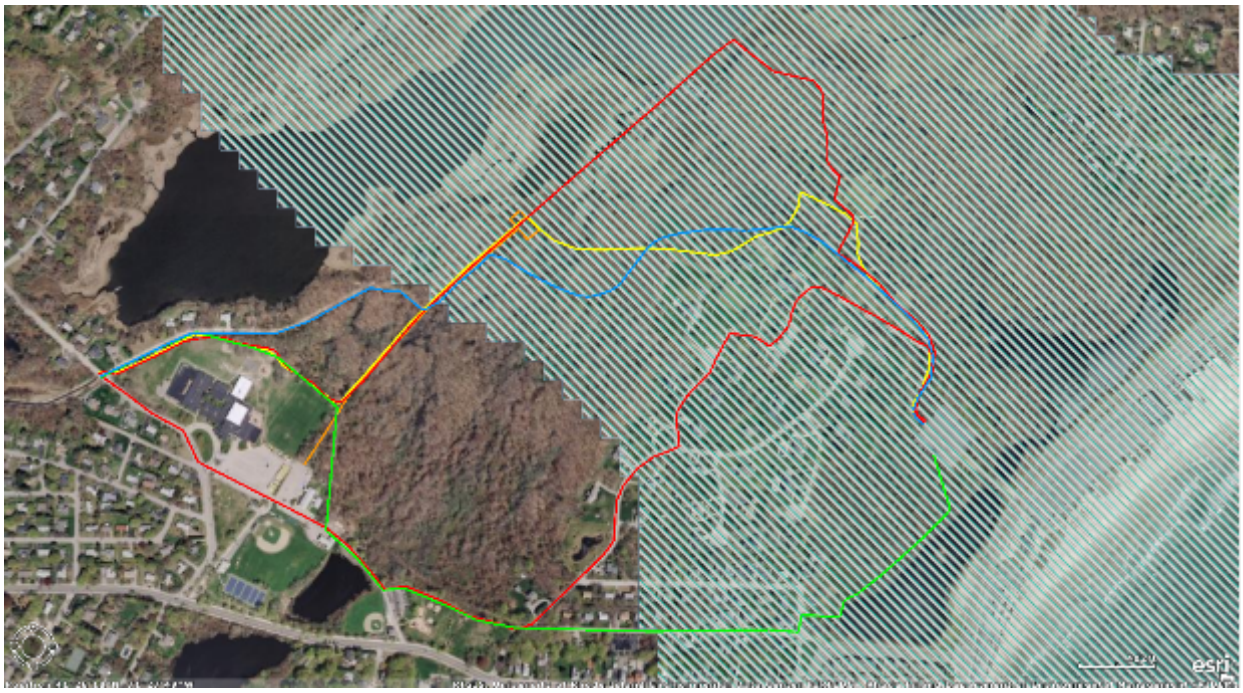
				ACOE-PGP		wetland	floodplain
	CRMC - Cat B	CRMC - NRSAMP	CRMC - FW	ACOE- LEVEL 1	ACOE- LEVEL 2	mitigation	compensation
Alternative 1	X - Prohibited*	X - Prohibited*	X		X	X	X
Alternative 2	X - Prohibited*	X - Prohibited*	X		X	X	X
Alternative 3	X - Prohibited*	X - Prohibited*	X		X	X	X
Alternative 4		X - Prohibited*	X	X		?	
Alternative 5		X - Prohibited*	X	X		?	
Alternative 6	X - Prohibited*	X - Prohibited*	X		X	X	X

Coastal Resources Management Council (CRMC)

United States Army Corps of Engineers (ACOE)

* Filling of wetland is a prohibited activity and will require a Special Exception, part of the requirement is proof of public benefit.

NATURAL HERITAGE AREAS -FIGURE 15



http://maps.edc.uri.edu/ArcGIS/services/Atlas_biota/Natural_Heritage_Areas

RIGIS, University of Rhode Island Environmental Data Center (URIEDC), Rhode Island Department of Environmental Management (RIDEM)

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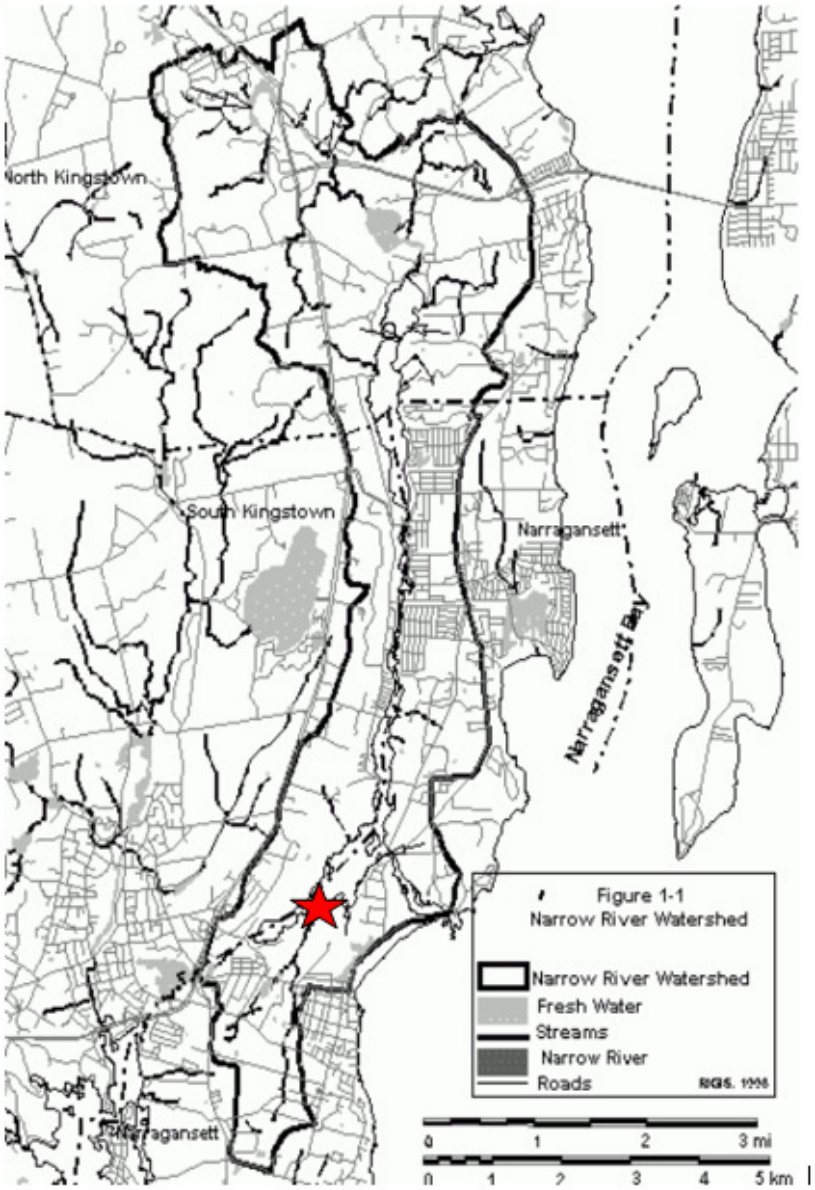
Orange trail – Dead End Spur Combination

NARROW RIVER SAMP -FIGURE 16



Approximate project location

The Narrow River Special Area Management Plan, Coastal Resources Management Council, (Ernst, Miguel, & Willis, 1999)

USFWS ENDANGERED SPECIES ACT SPECIES LIST – FIGURE 17
TAKEN FROM CORRESPONDENCE LETTER DATED 9/29/2015
Consultation Code: 05E1NE00-2015-SLI-2059

United States Department of Interior
Fish and Wildlife Service

Project name: William C. O'Neill South Sounty Bike Path

Endangered Species Act Species List

There are a total of 2 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Birds	**Status**	**Has Critical Habitat**	**Condition(s)**
Red Knot *(Calidris canutus rufa)*	Threatened		
Mammals			
Northern long-eared Bat *(Myotis septentrionalis)*	Threatened		

RED KNOT DISTRIBUTION MAP – FIGURE 18

From Rhode Island Wildlife Action Plan 2015

Rhode Island Wildlife Action Plan Species Profiles

Species of Greatest Conservation Need

Red Knot

Calidris canutus

BIRDS

Intertidal and Mudflat Birds

Image: USFWS

*See map disclaimer in profiles introduction

Distribution & Abundance

The Red Knot is a long-distance migrant that breeding in the high Arctic. Some populations winter in along the coast in the southern United States, whereas another population winters in southern South America. The rapidly declining "rufa" population was recently proposed for listing as a threatened species by the USFWS [final rule pending 2014]. Loss of foraging resources during spring migration at key staging grounds in the Mid-Atlantic states, especially Horseshoe Crab eggs, has exacerbated their recent decline. In Rhode Island, Red Knots are primarily a spring and fall migrant, with birds occasionally wintering here. Northbound migrants first appear by mid-May, with peak numbers between the third week of May and the first week of June, which usually coincides with full or new moon when Horseshoe Crabs deposit eggs in the intertidal zone. Stragglers are occasionally present during the summer. The first fall migrants are evident by mid-July, with peak numbers between the first to third weeks of August. Red Knots use intertidal areas with substrates range in size from sand to cobble, where they often associate with Sanderlings, Semipalmated Sandpipers, Dunlin, and Black-bellied Plovers. This species also forages on small crustaceans on mudflats and the wrack zone on beaches. Red Knots have never been abundant in Rhode Island, but there is evidence of additional declines in recent years. At Napatree Point, where peak numbers are documented in Rhode Island, counts have exceeded 20 birds on only six occasions since 2005, which have all occurred during fall migration except for one occasion. Conservation actions include gaining a clearer understanding of the distribution and abundance of horseshoe crabs in the state, and an assessment of harvesting rates of horseshoe crabs in the state. In addition, steps may need to be taken to minimize human disturbance at key staging sites throughout the state.

Habitat Community: Intertidal Shore, Type: Sand Flat

Status

IUCN Rank: LC. FEDSTAT: PT. FED: FWS. SRANK: S3N. GRANK: G5. RSGCN: 1. Shrbrd: 1. USSCP: HI. AJV BCR: HH. CODES: M. Res/B: 0. GRP: 110. PRIOR: 1. Climate Change Vulnerability: High = by 2030 (Habitat loss)

NORTHERN LONG-EARED BAT DISTRIBUTION MAP – FIGURE 19

From Rhode Island Wildlife Action Plan 2015

Rhode Island Wildlife Action Plan Species Profiles

Species of Greatest Conservation Need

Northern Long-eared Bat

MAMMALS

Bats

Myotis septentrionalis

Image: Charles Brown

*See map disclaimer in profiles introduction

Distribution & Abundance

The status and distribution of this species in Rhode Island is not well understood. Prior to the impacts of White-nose syndrome this species was probably more common and widespread than it is today. Northern Long-eared Bats utilize a wide variety of forest types during the summer. They utilize forest roads and openings in the forest as well as various water bodies such as ponds and streams for foraging for insects and roost in tree cavities and under loose bark. Northern Long-eared Bats were recently discovered hibernating in small numbers in underground bunkers along the south coast.

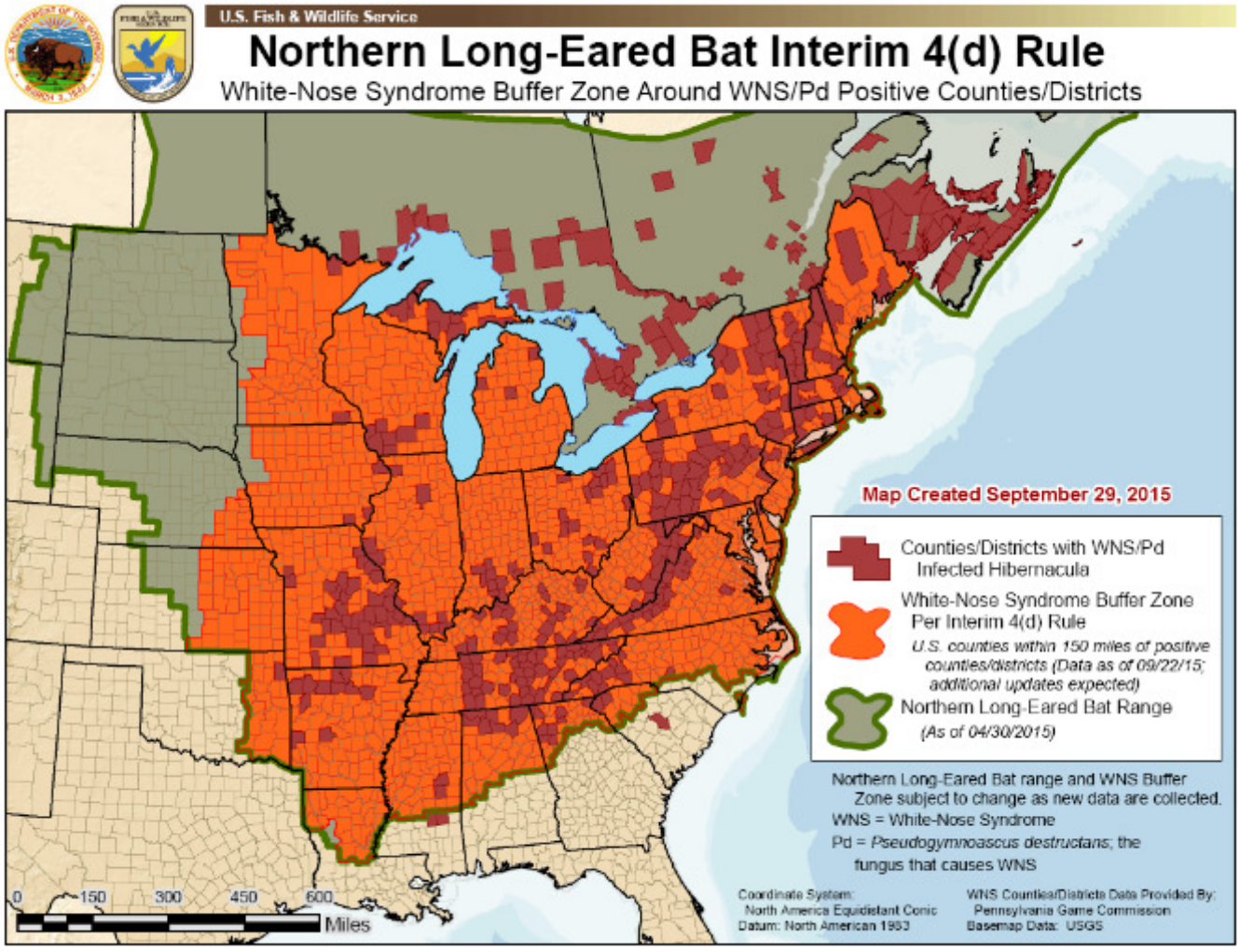
Habitat Community: Mixed Oak/White Pine Forest

Status

IUCN Rank: LC. FEDSTAT: PE. SRANK: S2. GRANK: G4. RSGCN: L-VH. NABats: 1. CODES: M. MIG: 1. GRP: 14. REV: 1. Climate Change Vulnerability: unknown

NLEB – WHITE-NOSE SYNDROM BUFFER ZONE MAP – FIGURE 20

From USFWS http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/WNSBufferZone.pdf



SALT MARSH SPARROW DISTRIBUTION MAP – FIGURE 21

From Rhode Island Wildlife Action Plan 2015

Rhode Island Wildlife Action Plan Species Profiles

Species of Greatest Conservation Need

Saltmarsh Sparrow

BIRDS

Salt Marsh Birds

Ammodramus caudacutus

Image: Peter WC Paton

*See map disclaimer in profiles introduction

Distribution & Abundance

The Saltmarsh Sparrow, a superspecies that was split from Nelson's Sparrow in 1995, has a restricted nesting distribution along the Atlantic Coast from southern Maine to North Carolina . This species winters in coastal marshes from New York (casually from Massachusetts) to Florida. Saltmarsh Sparrows are restricted to salt marshes, where they breed, forage, and stopover during migration. They nest in the high marsh (i.e., marsh inundated on highest tides and dominated by Spartina patens and Juncus gerardii), and forage in the low marsh (i.e., marsh inundated daily by tides that is dominated by Spartina alterniflora) (Diquinzio et al. 2002). Saltmarsh Sparrows are common stopover migrants, where they are only detected in saltmarsh habitat. In Rhode Island they occupy salt marshes throughout the state, but are more likely to be found nesting in larger marshes with patches of high marsh, including islands throughout Narragansett Bay and on Block Island. Although there currently is no strong evidence of a decline in population size of this species in southern New England, recent models developed by Elphick and colleagues (UConn, unpubl. data) suggest this species could become extinct by 2050-2070. Because this species is endemic to saltmarshes in New England, Saltmarsh Sparrows are among the highest conservation priority species for the US Fish and Wildlife Service in the region. Conservation actions in Rhode Island include ensuring that systematic monitoring of the distribution, abundance and reproductive success of this species takes place throughout the state. More importantly, strategies need to be developed to minimize the impact of sea level rise on Saltmarsh Sparrows. A prime example of this is the USFWS restoration of saltmarshes along the Narrow River specifically to create habitat for Saltmarsh Sparrows. In addition, there is a critical need to develop detailed spatially-explicit maps of the spatial distribution of low and high marsh habitats in salt marshes throughout the state. Juvenile Saltmarsh Sparrows are often confused for Nelson's Sparrows in August.

Habitat Community: Brackish Marsh, Type: Brackish Marsh

Status

IUCN Rank: VU. FED: FWS. SRANK: S3B,SZN. GRANK: G4. RSGCN: H-VH. NALCC: X (B). PIF NALCP: Tier I. PIF BCPSN: Tier I A. AJV BCR: HH. CODES: B. Res/B: 1. GRP: 52. PRIOR: 1. Climate Change Vulnerability: High = by 2030 (Habitat loss)

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U.S. Fish and Wildlife Service Rhode Island National Wildlife Refuge Complex DRAFT ENVIRONMENTAL ASSESSMENT NARROW RIVER ESTUARY RESILIENCY RESTORATION PROGRAM October, 2014

U.S. Fish and Wildlife Service, personal letter to Richard Grant, President of the Narrow River Preservation Association, March 1, 2012

Appendix C:

Public Archaeology Laboratory Report

Public Archaeology Laboratory

Technical Memorandum
Canonchet Farm Bike Path Extension Feasibility Study
Narragansett, Rhode Island

Archaeological Sensitivity Assessment
July 13, 2015
PAL No. 3034

Submitted to:

Fay, Spofford and Thorndike
5 Burlington Woods
Burlington, Massachusetts 01803

The Rhode Island Department of Transportation (RIDOT), on behalf of the Town of Narragansett is conducting a feasibility analysis of "one or more potential routes" to extend the William C. O'Neill South County Bike Path from its current terminus at Mumford Road (at Narragansett Elementary School) through Canonchet Farm to the parking lot on Anne Hoxie Lane in Narragansett, Rhode Island. This study is funded by the Federal Highway Administration and therefore must be in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR Part 800). The purpose of the Canonchet Farm Bike Path Study is to identify potential constraints to implementing the project, which may include environmental, social, and cultural factors. Fay, Spofford & Thorndike (FST) is conducting the study to assess the feasibility of constructing the bicycle path. In response to a request from FST, PAL conducted an archaeological sensitivity assessment of the general area encompassing the various bike path alternatives (Study Area) (Figure 1) to identify possible archaeological constraints. Six different routes for a bicycle path are being considered (Figure 2).

- **The Sea View Bike Route** (preferred route by the Town). The alignment starts at Mumford Road and proceeds along Riverside Drive before cutting behind Narragansett Elementary School, then north along the abandoned Sea View Railroad, which parallels the eastern edge of Pettaquamscutt Cove and includes a portion of the National Grid utility easement. The alignment then proceeds east through the Canonchet Farm property to the parking lot off Anne Hoxie Lane.
- **The Brady Route (corrected).** This alternative is very similar to the Sea View Bike Route. The 'corrected' route would not be in conflict with any National Grid utility easement and is not intended to use any of the easement at all, as it would run east and parallel to the National Grid easement before taking a different route through Canonchet Farm to the parking lot off Anne Hoxie Lane.
- **The Town's Master Plan Bike Route.** Identified as "Bike Path Option #1" in the Master Plan, it runs along the entire length of Riverside Drive before cutting east through the Canonchet Farm property to the parking lot off Anne Hoxie Lane.
- T**he Town's Off-Site Bike Path Route**. This alternative runs along Riverside Drive before cutting around the back side of the Narragansett Elementary School and through a portion of Sprague Memorial Park. The next portion of the alternative follows Wanda Street and runs west of Little Neck Pond to the parking lot at Anne

Hoxsie Lane.

- **The 2000 FST Study Alternative 3 Route**. This alternative, developed by FST, runs along Mumford Road past the Narragansett Community Center, through Sprague Memorial Park to Strathmore Road and along Strathmore Road to the South County Museum at Canonchet Farm and to the parking lot at Anne Hoxsie Lane.
- **The Dead-End Spur Combination.** This alternative runs from the Narragansett Community Center along the abandoned Sea View Railroad to a viewing platform. This alternative is proposed to complement the Town's Off-Site Bike Path Route or in combination with the 2000 FST Study Alternative 3 Route.

Project Scope

The objectives of the archaeological sensitivity assessment are to collect sufficient information through research and minimal field observations to characterize the existing conditions (disturbance assessment) and to assess the potential (low, moderate, high) for unrecorded archaeological sites (archaeological sensitivity) within the Study Area. An archaeological property may be Pre-Contact, Post-Contact, or contain components from both periods. Pre-Contact Period archaeology focuses on the remains of indigenous Native American societies as they existed before substantial contact with Europeans and the resulting written records (Little et al. 2000). Post-Contact Period archaeology is the archaeology of sites and structures dating from time periods since significant contact between Native Americans and Europeans (Little et al. 2000).

Archaeological sensitivity is determined by assessing key environmental attributes (proximity to water, well-drained soils, and level topography), the presence of documented cultural resources in and adjacent to the project area, and the degree of disturbance. Typically encountered disturbances within a given project area may include those resulting from agricultural plowing, gravel or soil mining, or previous construction and site preparation activities. Extensive experience indicates that such disturbances can reduce the probability for encountering contextually intact archaeological sites. However, plowing, which can move artifacts from their primary vertical and horizontal contexts and is the most common type of disturbance in New England, does not necessarily compromise the physical integrity of all cultural deposits.

The results of the assessment are used to guide project planning so as to avoid sensitive areas and, if necessary, to guide further archaeological investigations to locate and identify any archaeological resources that may be impacted by the proposed project. The survey methodology employed by PAL closely follows the scope of work set forth in the Rhode Island Historical Preservation and Heritage Commission's (RIHPHC) *Performance Standards and Guidelines for Archaeology in Rhode Island* (RIHPHC 2013).

Research

Preliminary research was conducted to assist with the archaeological sensitivity assessment of the Study Area and to develop predictive statements for the types of archaeological resources that may be present. Several sources of information in PAL's database relative to environmental and Pre- and Post-Contact historic contexts for the Study Area were reviewed, as well as information on

recorded sites from the cultural resource inventories maintained by the RIHPHC. The following sources were reviewed as part of the documentary research for the archaeological sensitivity assessment.

Cultural Resource Management Reports and Published Research

PAL reviewed Cultural Resource Management (CRM) reports and published research conducted in the Study Area and in similar ecological settings. Reviewed archaeological studies included those by Bodor and Franz (2007), Cox (1982), Cox and Thorbahn (1978a, 1978b, 1979a, 1979b, 1982), Cox et al. (1983), Fragola et al. (1997), Harrison et al. (1993a, 1993b), Leveillee and Harrison (1996), Leveillee and Van Couyghen (1990), Morenon (1983), Pagoulatos (1989), Russo and Rainey (1993), Waller (2000), and Waller and Leveillee (2002a, 2002b).

Town Histories and Maps

General histories (Bossy and Keane 2004; Chapin 1919; Cole 1889; Miller 1934; Potter 1835; RIHPC 1978, 1984, 1991) and historical maps and atlases (Beers 1870; Everts and Richards 1895) were examined to assess changes in land use, to locate any documented structures, and to trace the development of transportation networks, an important variable in the location of Post-Contact Period sites within and close to the Study Area.

Environmental Context

Numerous studies conducted by PAL and others in southern New England have demonstrated that certain environmental and topographic settings are strongly associated with the presence of Pre-Contact Period Native American sites. The most productive studies have been those covering large areas encompassing a variety of environmental settings. Analysis of several hundred sites in southern New England found that the highest density and greatest clustering of sites occurred within 300 meters of low ranking streams and large wetlands (Thorbahn 1982). In general, the presence of freshwater was an extremely important consideration for Native Americans in selecting site locations, be they temporary hunting camps or more long-term base camps. Soil composition and drainage characteristics were also important factors. Surveys have shown that relatively flat areas composed of well-sorted, well-drained sand and gravels located along the margins of streams and wetlands always contain evidence of some sort of Native American activity. These same soil characteristics also play a significant role in what types of wildlife habitats are available for exploitation. In summary, Native American sites are most frequently associated with well-drained soils in close proximity to areas of high natural resource potential such as wetlands and water courses.

The Study Area encompasses approximately 300 acres within the Narragansett Bay Watershed which drains the entirety of the eastern and western terrestrial margins of Narragansett Bay. The Study Area is bounded on the west by Pettaquamscutt Cove (Narrow River) and to the east by Canonchet and Little Neck ponds. Further to the east is Rhode Island Sound and the Atlantic Ocean. The Study Area falls within the Bay Area physiographic context consisting of numerous small estuaries extending inland not more than 3 mi (4.8 km) from the Narragansett Bay shoreline, was intensively utilized by Pre-Contact Native American populations. (RIHPC 1986a).

The topography of the Study Area varies between the low-lying flat wetlands to low rolling upland terrain. The soils fall within two main classifications. Poorly drained soils (Pawcatuck mucky peat, Scarboro mucky fine sandy loam, and Stissing silt loam) are found along the margins of the Study Area. The central core of the Study Area is comprised of moderately to well-drained soils (Pittstown silt loam, Broadbrook silt loam, and Rainbow silt loam) (Rector 1981).

Cultural Context

Pettaquamscutt Cove (Narrow River) has been the focus of archaeological investigations since 1978 when the Public Archaeology Laboratory, Brown University conducted a reconnaissance survey for a proposed wastewater system running along the east bank of the river (Cox and Thorbahn 1978b). This study, along with an earlier unsystematic survey by the RIHPHC in 1977 documented seven sites along the river. Two sites, the Sprague I Site (RI 111) and the Campbell Site (RI 114), were recommended as eligible for listing in the National Register of Historic Places (Cox 1982; Cox and Thorbahn 1982). The Sprague I Site is approximately one mile north of the Study Area. The Campbell Site is approximately 2.25 miles north of the Study Area. These early studies formed the basis of a 1983 study by PAL that looked at the basic relationships among human behavior, material culture, and the natural environment (Cox et al. 1983). This survey resulted in the identification of six additional sites, including the Pasani Site (RI 1037) along the western limits of the Study Area. Investigations at the Pasani Site recovered 21 pieces of quartz chipping debris, 3 pieces of argillite chipping debris, 18 pieces of shell, and a Transitional Archaic Period projectile point of quartzite (Cox et al. 1983).

In 1988, the Public Archaeology Program, Rhode Island College conducted a Phase I archaeological survey for the then proposed Canonchet Farms, a residential development in the Study Area (Pagoulatos 1989). This survey identified the Canonchet Prehistoric Site (RI 1789), a multi-component site containing evidence of Late Archaic and Middle and Late Woodland activities. Cultural material included flakes, shatter, cores, bifaces, and triangular, stemmed, and Jack's Reef projectile points. This site may in fact be part of, or associated with RI 104, a scatter of quartz debitage and a scraper identified by the RIHPHC in 1977. A Phase II site examination of RI 1789 was conducted in 1990 (Freedman et al. 1990).

These studies provided data on several unique aspects of Pre-Contact Native American settlement along the Narrow River. Foremost, there is a continuous distribution of Pre-Contact Period Native American sites along the river that exhibit uniformity in terms of spatial and temporal distribution. Essentially, the Narrow River was occupied extensively during the Late Archaic (5000 to 3000 B.P.), and to a lesser degree during the Late Woodland (l000 to 350 B.P.). The Terminal Archaic (3,750 to 2500 B.P.) was a time of very occasional occupations in the river valley. From 5000 to 3000 B.P., there is firm evidence for a severe reduction in the water table and the availability of surface water in streams, ponds and wetlands (Thorbahn l982). Another period of drier conditions and shrinking wetlands may have occurred from 1200 to 600 years ago (Cox and Thorbahn l982). The archaeological evidence suggests that Pre-Contact Period groups only used the Narrow River when they had to, when more productive upland and freshwater wetlands became less dependable during drier conditions and coastal rivers may have served as a refuge.

Approximately 1.8 miles to the southwest, at the head of Point Judith Pond, outside the Study Area, is the Salt Pond Site (RI 110), arguably the most significant Pre-Contact Period archaeological site

in the Northeast. The Rhode Island Historical Society first recorded the site in a published interview with Mr. William B. Cabot in 1929 (RIHS 1929) and the site has been the focus of numerous archaeological investigations since 1986 (Morenon 1987, 1991; Waller and Leveillee 2001, 2006). RI 110 is a village site with structural features, storage and refuse pits, multiple processing areas, and artifacts encompassing a wide range of human activities. The site consists of a domestic core with associated storage areas surrounded by peripheral activity areas. The site was occupied for brief periods beginning in the Late/Transitional Archaic Period (ca. 3600 B.P.) and Middle Woodland Period (ca. 1700 B.P.).

A review of general histories, historic maps, and historic USGS topographic quadrangles indicates that the Study Area was generally outside of the major center of historic development in Narragansett. The Study Area falls within a large tract of land that Rowland Robinson (1654 – 1716) purchased in 1700, from John Winthrop, Jr., the former governor of Connecticut. Rowland's son, William Robinson (1693 – 1751) inherited the property. William, who was Lieutenant Governor of Rhode Island, also acquired the adjacent Thomas Mumford farm, thereby greatly expanding the family's holdings which, at one time extended from present-day Narragansett Pier to Sugar Loaf Hill, west of Wakefield. Robinson was a farmer and in 1751, his holdings included 25 milk cows, 52 heifers, 28 calves, 350 sheep, and 195 lambs. William willed the farm to his son, Sylvester.

In 1863, Governor William Sprague IV, heir to the A. & W. Sprague Company textile manufacturing firm, married Katherine Jane (Kate) Chase, daughter of Treasury Secretary, and later Chief Justice of the United States, Salmon P. Chase. After the Civil War, Sprague brought Kate to Rhode Island. In 1866, Sprague purchased the Robinson Farm, as well as several others (amassing 650 acres), and began construction of a three-story mansard-roofed building that eventually included sixty-three rooms and three four-story towers (Sprague Mansion or Canonchet) (Figure 4). The structure is reported to have incorporated the original brick house (Sylvester Robinson's farmhouse). Sprague's financial and political fortunes rapidly deteriorated with the Panic of 1873, and the death of his father-in-law in the same year. In 1882, the Spragues divorced and Canonchet was sold at auction to cover some of the debts of the A. & W. Sprague Company. At the time, the estate contained approximately 408 aces of "fine farming land". Sprague refused to leave the home. He remarried in 1883, and the estate/farm was sold to the new Mrs. William Sprague (Dora Inez Clavert) (Figure 5). In 1909, the mansion was destroyed in a fire (Bossy and Keene 2004). The site of the mansion is now within the 7-acre campus of the South County Museum, which itself is in the 170-acre Canonchet Farm town park. The 1988 Phase I survey (Pagoulatos 1989) and subsequent Phase II (Freedman et al. 1990) for the proposed Canonchet Farms subdivision identified structural foundations of the Sprague Mansion and carriage house, wells and cisterns, and scattered building materials, and domestic debris (RI 1790).

The Sea View Railroad, an electric-powered passenger train that ran between Narragansett and East Greenwich traversed the western edge of the Study Area. The Sea View Railroad was incorporated in 1887. Trolley service between the Sea View Junction station at South Pier in Narragansett and Saunderstown in North Kingstown began in 1898 with service to Wickford added in 1899, and to East Greenwich in 1900. Trolley service was also extended to Wakefield and Peace Dale in South Kingstown in 1902 over tracks that were owned by the Narragansett Pier Railroad Company. In 1911, the railroad was leased to the Rhode Island Company (owned by the New York, New Haven, and Hartford Railroad Company) and operated as its Sea View Division. On April 15 1921, the railroad's assets were sold at auction after the company defaulted on its mortgage. Nathaniel T.

Bacon bought assets of the railroad including the 60-foot wide Sea View Railroad Corridor. Mr. Bacon granted an easement on the corridor to the Narragansett Electric Lighting Company (present-day National Grid) to install power lines where the trolleys ran (The New England Wireless and Steam Museum 2013).

Results

Research

The archaeological site inventory maintained by the RIHPHC identifies a number Pre-Contact Period Native American archaeological sites along Pettaquamscutt Cove and in the Study Area. Table 1 provides summary information on each of these sites.

Table 1. Pre-Contact Period archaeological sites within 1 mile of the Study Area*.

Site					
Number	**Name**	**Description**	**Period**	**Location**	**Source**
RI 104		Quartz debitage and a scraper		Within Study Area	RIHPC 1977
RI 111	Sprague 1	Quartz and felsite debitage, small stemmed point, fire-cracked rock	Late Archaic	1 mile north of Study Area	Cox 1982; Cox et al. 1983
RI 112	Sprague II	Quartz chipping debris		1 mile north of Study Area	Cox and Thorbahn 1978a
RI 113	Namcock	Quartz and argillite debitage, shell (quahog)		1 mile north of Study Area	Cox and Thorbahn 1978a
RI 928		Hornfels and quartzite debitage		1 mile southeast of Study Area	RIHPC Site Files
RI 1034	Stewart	Quartz debitage		½ mile west of Study Area	Cox et al. 1983
RI 1037	Pasani	Quartz, argillite, and quartzite debitage and point	Transitional Archaic	Within Study Area	Cox et al. 1983
RI 1038	Freeman	Quartz, argillite, quartzite, felsite debitage, bifaces, points	Late Woodland	1 mile north of Study Area	Cox et al. 1983
RI 1789	Canonchet Prehistoric	Quartz, quartzite, felsite, chert argillite debitage, bifaces, points	Archaic, Middle and Late Woodland	Within Study Area	Pagoulatos 1989; Freedman et al. 1990
RI 2291	Goodwill	Quartz, quartzite, argillite, rhyolite debitage, pottery, feature	Woodland	1 mile southwest of Study Area	Waller & Leveillee 2002b

*Distance measured from center of the Study Area

RIHPHC's archaeological site inventory identifies one Post-Contact Period archaeological site, the Sprague Mansion/Robinson House Site (RI 1790), in the Study Area (Figure 5). The Rhode Island Historical Cemetery Commission (RIHCC) Database lists two historical cemeteries in the Study Area (see Figure 5 and Figure 6). The Thomas Mumford Burial Ground (NG008) is located 200 feet north of Kingstown Road, next to the tennis courts in Sprague Memorial Park. The cemetery measures 25 feet by 25 feet and contains 4 gravestones. James N. Arnold visited the lot in 1880 and noted "33 full graves and 23 smaller ones are in this yard with rude stones only" (RIHCC 2015). The Hon. William Robinson Lot (NG009) is located at the corner of Strathmore Road and Anne Hoxsie Lane near the entrance to the South County Museum. The cemetery measures 70 feet by 100 feet and contains 18 graves. In 1880, Arnold described the lot as "on land now belonging to Governor Sprague at Narragansett Pier a short distance west of his mansion in an old Robinson burial yard. Lot walled with a double faced wall in fine condition, inside of lot covered with briars and weeds." Arnold mentioned that many graves had been removed to Riverside Cemetery in Wakefield. (RIHCC 2015).

Walkover Survey

A field review of the Study Area was conducted to document and assess present environmental conditions including the presence of fresh water; drainage characteristics, and the degree of any slopes. The current physical condition is largely defined by the absence of or degree of natural or human disturbances to the landscape. Another purpose of the walkover survey is to document surface indications of archaeological sites. While Pre-Contact Native American sites in New England are most often found belowground, artifact scatters are sometimes exposed on the surface through cultural agents such as pedestrian and vehicular traffic, and natural processes such as erosion. Post-Contact Period archaeological site types that might be visible include stone foundations, stone walls, trash deposits, and associated overgrown orchards, fields, and ornamental plantings.

The field review utilized local streets and the various paths through Canonchet Farm to access different areas of the Study Area. The Study Area consists of a central upland area surrounded by low-lying wetlands with views of and easy access to Pettaquamscutt Cove (Narrow River) (Figure 7). Vegetation is predominantly oak forest with a thick understory of briars and brambles that is in places impenetrable. Several open fields are also located in the Study Area. Stone walls delimiting former agricultural fields traverse the Study Area (Figure 8). The former easement of the Sea View Railroad (currently a utility right-of-way for National Grid) is visible along the western edge of the Study Area. A large, split glacial boulder (erratic) is located just northeast of the parking area off Anne Hoxsie Lane (see Figure 5). The north face of the boulder has been quarried and evidence of the pin and feather method of splitting the rock is present in some of the pieces that were removed and left next to the boulder (Figure 9). This boulder is historically known as "Squaw Rocks" and was described as the location of a great "Indian" massacre (Taylor 1921).

Summary and Recommendations

The Study Area is located in an area of extreme environmental diversity. The physical conditions of the Study Area (level to gently sloping, well-drained soils in close proximity to both fresh and saltwater resources) correlate with those of known Pre-Contact Native American archaeological

sites. Three Pre-Contact Period sites: RI 104, RI 1037 and RI 1789, are located in the Study Area (see Figure 5). Numerous Native American sites are located along the shore of the Pettaquamscutt (Narrow) River. Known Pre-Contact Period archaeological sites date to the Late Archaic Period (ca. 5000 to 3000 B.P.) and the Late Woodland Period (ca. 1000 to 500 B.P.). These sites include small resource processing sites, shell middens, isolated and clustered burials, short duration camp sites and large concentrated villages occupied for substantial periods of time. One Post-Contact Period archaeological site, the Sprague Mansion/Robinson House Site (RI 1790) is located in the Study Area (see Figure 5).

The archaeological sensitivity of undisturbed portions of the Study Area is assessed as high and a Phase I archaeological survey is recommended for any portions of the viable bike path alternatives that deviate from existing paved surfaces and/or traverse the upland areas of the Study Area.

Scope of Services for a Phase I Archaeological Survey

The goal of the Phase I archaeological survey is to investigate through subsurface testing those areas identified as having moderate to high archaeological sensitivity to locate potentially significant archaeological resources that may be eligible for listing in the National Register of Historic Places (National Register). The survey would be conducted in accordance with RIHPHC's *Performance Standards and Guidelines for Archaeology in Rhode Island* (2013) and includes the following tasks.

Coordination/Consultation

Upon authorization to proceed, PAL will coordinate with RIDOT, RIHPHC, and Narragansett Indian Tribal Historic Preservation Office (NITHPO). These offices may provide additional names of interested parties, which PAL may contact for information. PAL will prepare a permit application for RIDOT's signature and transmittal to the RIHPHC for review and approval. All coordination with NITHPO will be conducted through RIDOT's Cultural Resources Unit (CRU).

Research

Relevant source materials will be reviewed to develop a clear understanding of the project area, the proposed project, and associated issues. Cultural resource inventories maintained by the RIHPHC and local historical associations will be reviewed for relevant data on archaeological resources in the project area. Research will encompass a review of local geography, ecology, soils, and Native and Euro-American history to develop cultural contexts and predictive statements. Research will include an examination of primary and secondary documentary sources (town histories, maps, etc.), as well as previous archaeological studies conducted within or near the project area. In addition, efforts will be made to consult with professional and avocational archaeologists, local informants, and tribal authorities for local information on potentially significant cultural resources.

Fieldwork

PAL staff will conduct field investigations consisting of subsurface investigations within areas of proposed disturbance assigned moderate and high archaeological sensitivity. Test pits will be placed in linear transects at a 10-meter interval along the centerline or edge of the proposed path.

All test pits will be excavated by shovel in arbitrary 10-centimeter (cm) levels into sterile subsoil. Excavated soils will be hand-screened through ¼-inch hardware cloth, and all cultural material remaining in the screen will be bagged and tagged by level within each unit. The count and type of all recovered cultural material will be noted. Soil profiles, including depths of soil horizons, colors, and textures, will be recorded for each test pit on standard PAL test pit profile forms. Digital photographs of the general project area will document the existing conditions.

Laboratory Processing and Analyses

Cultural material recovered during the field investigations will be returned to the PAL facility for laboratory processing and cataloging. These activities will include:

- cleaning, identification, and cataloging of any recovered cultural material;
- consideration of spatial distributions of cultural material; and
- map and graphics production.

Cultural material will be cataloged and entered into Re-Discovery Software, Inc.'s *Proficio* (Archaeology Module) archival collections management system. All recovered cultural material, as well as a duplicate of all photographs, field notes, and other paper records generated on archival quality material, will be placed in acid-free polypropylene Hollinger boxes with box content lists and labels printed on acid-free paper. These boxes will be temporarily curated at PAL in accordance with the U.S. Secretary of Interior standards 36 CFR Part 79 and the RIHPHC (1986b) and RIDOT guidelines (RIDOT 2004). PAL serves as a temporary curation facility and all project materials will be transferred to the RIDOT Archaeological Collections Center for permanent curation.

Work Products

Upon completion of the fieldwork portion of the survey, PAL will prepare an *End of Fieldwork* memorandum summarizing the results of the Phase I survey and any recommendations for additional work that may be necessary. PAL will prepare a technical report that provides a more detailed summary of the project, research design, fieldwork methodology, and results and recommendations.

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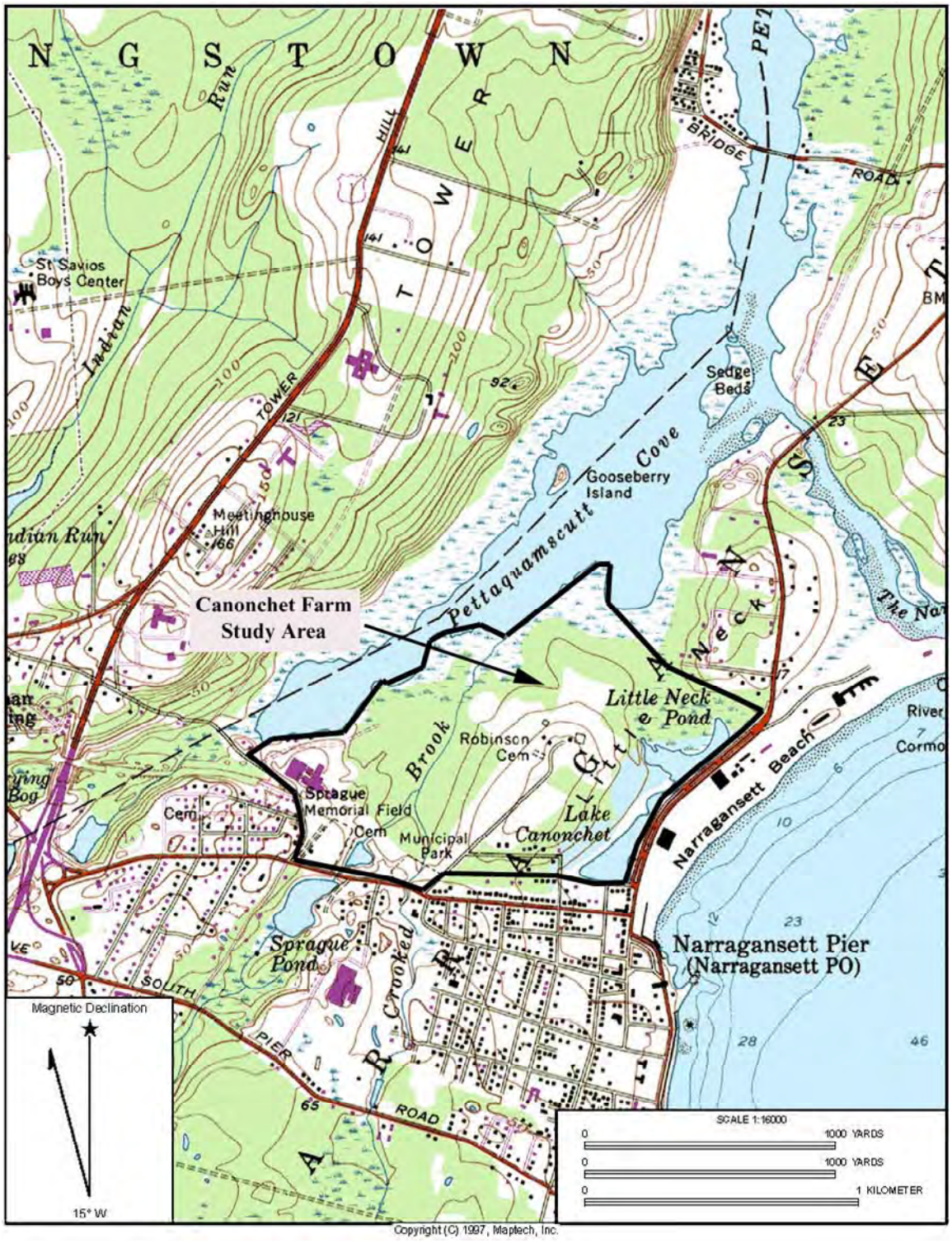


Figure 1. Location of Canonchet Farm Bike Path Extension Feasibility Study Area on the Narragansett Pier, RI, USGS topographic quadrangle.

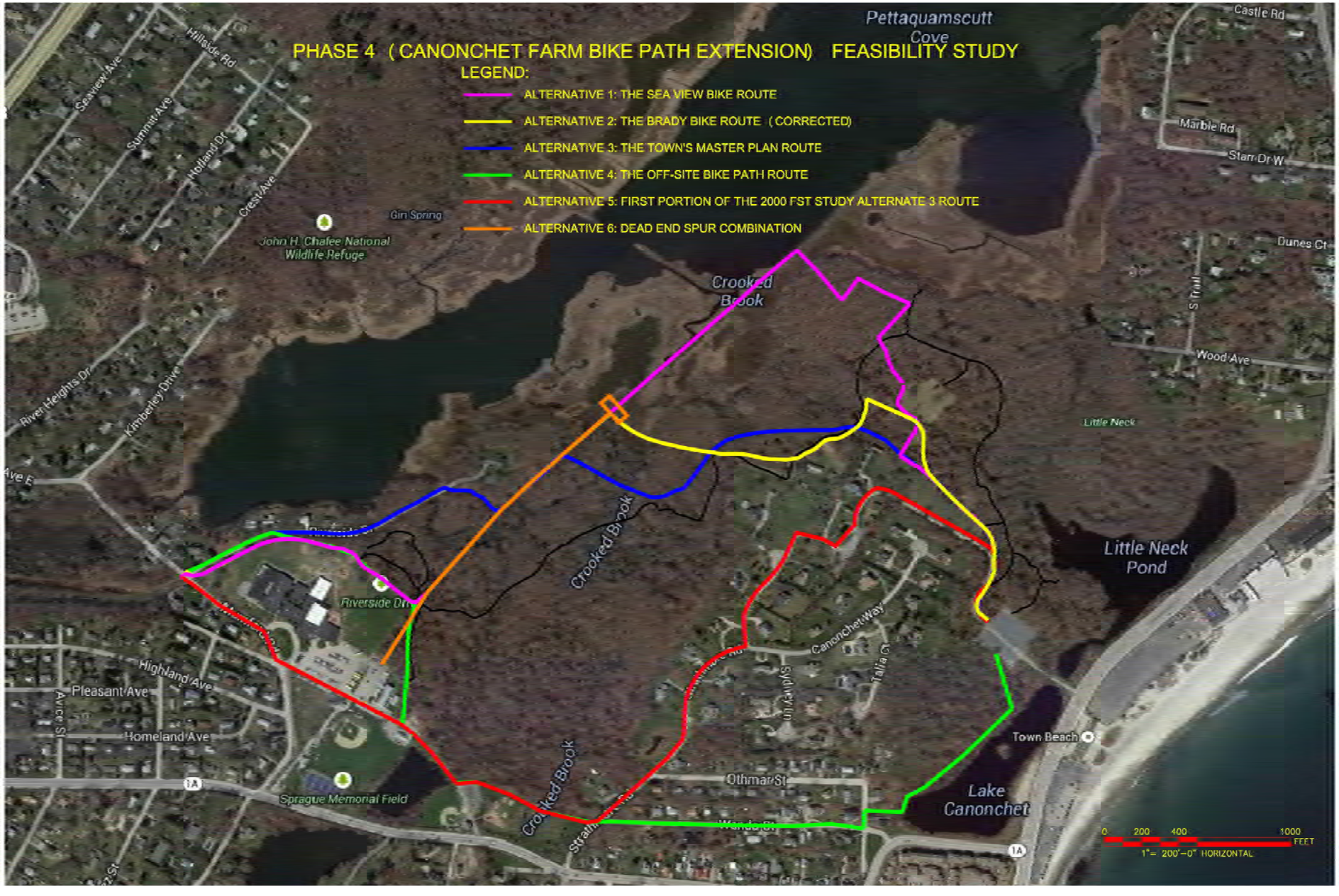


Figure 2. Bike Path Alternatives, Canonchet Farm Bike Path Extension Feasibility Study, Narragansett, Rhode Island (source: Fay, Spofford and Thorndike, Inc. 2014).

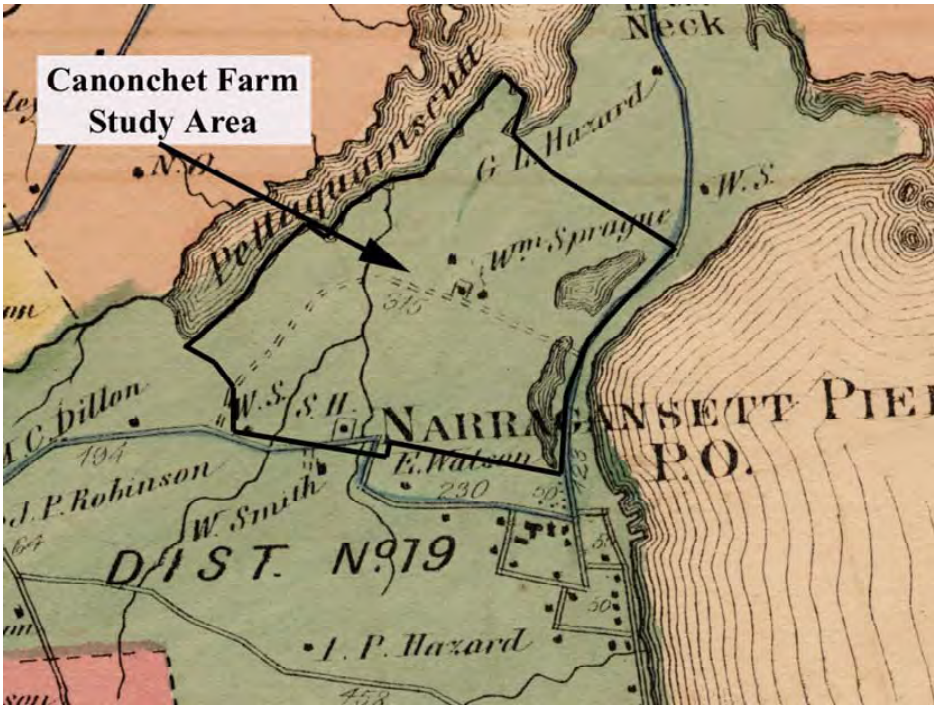


Figure 3. Portion of the 1870 map of South Kingstown showing the location of the Canonchet Farm Bike Path Extension Feasibility Study Area (source: Beers 1870).

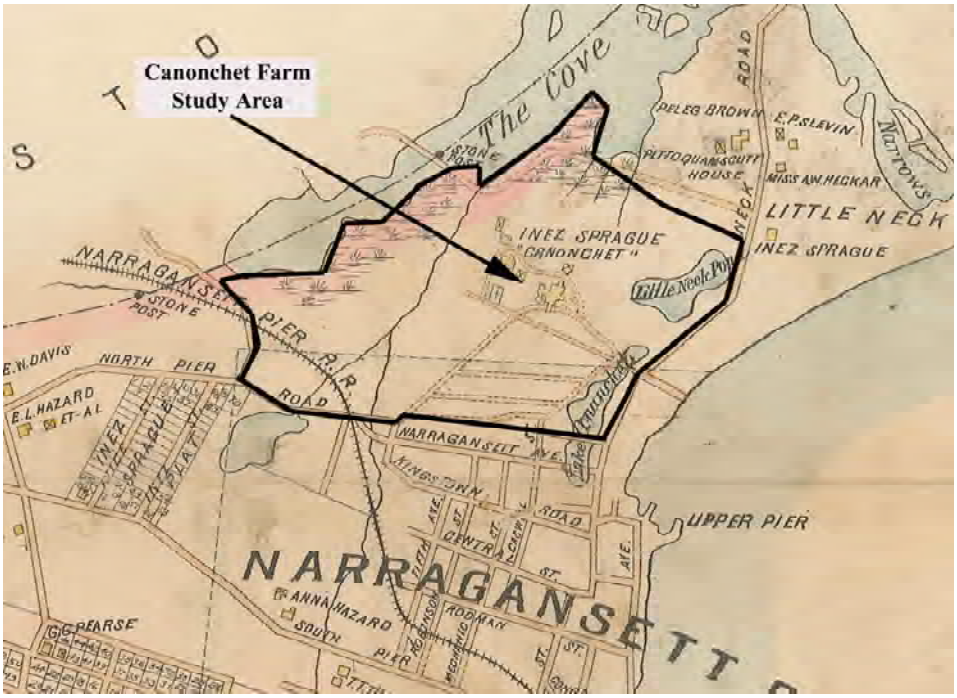


Figure 4. Portion of the 1895 map of Narragansett showing the location of the Canonchet Farm Bike Path Extension Feasibility Study Area (source: Everts & Richards 1895).

Figure 5. Location of cultural resources within the Canonchet Farm Bike Path Extension Feasibility Study Area.

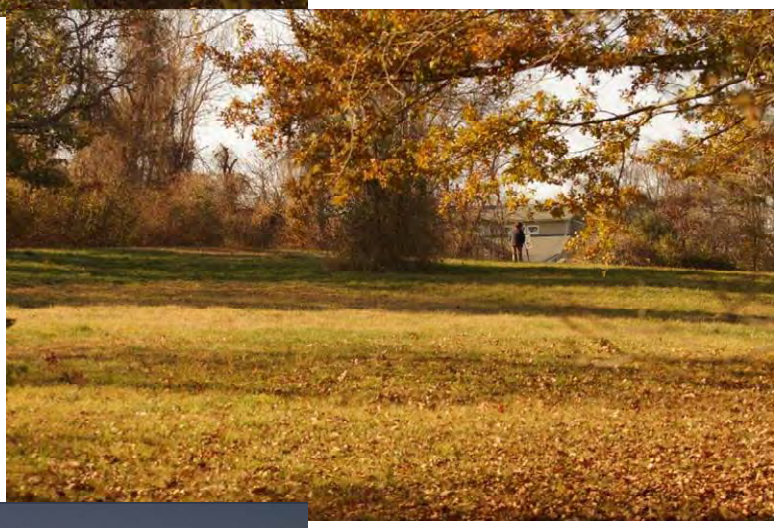
NG008 Thomas Mumford Burial Ground

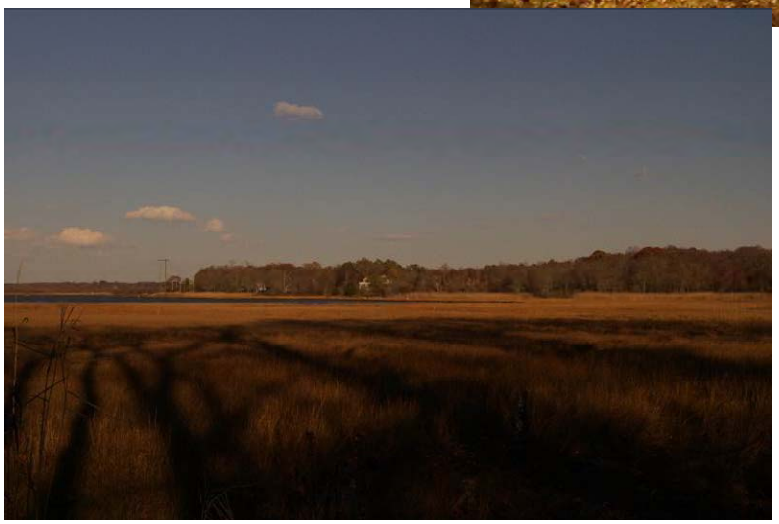
NG009 Hon. William Robinson Lot

Figure 6. Representative photographs of historical cemeteries located in the Canonchet Farm Bike Path Extension Feasibility Study Area.

Upland area.

Open field.





Pettaquamscutt Cove (Narrow River), view looking north.

Figure 7. Representative views of the Canonchet Farm Bike Path Extension Feasibility Study Area.

Figure 8. Representative photographs of stone walls, Canonchet Farm Bike Path Extension Feasibility Study Area.

Figure 9. Glacial erratic known as “Squaw Rocks” and spalls removed using the pin and feather method of rock splitting.

Appendix D:

USFWS Letter – March 1, 2012

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Rhode Island National Wildlife Refuge Complex
50 Bend Rd., Charlestown, RI 02813
Phone (401) 364-9124 Fax (401) 364-0170

Grady Miller, Manager
Town of Narragansett
25 5th Avenue
Narragansett, RI 02882

March 1, 2012

Dear Mr. Miller:

For your information, enclosed please find a copy of correspondence relating to potential effects on natural resources from development of various bike path alternative routes in the Canonchet Farm area.

The western portion of Canonchet Farm does not appear to be well suited for development of a bike path while retaining the natural values of either the estuarine or freshwater wetland complex. All alternatives excepting Alternative C have the potential to affect ecological functioning of the wetland complex, the estuarine wetlands, or both.

We recommend a thorough alternative analysis be conducted including assessment of potential mitigation measures prior to selection of a preferred route. Mapping of wetlands coupled with an in-depth review and analysis by a wetlands ecologist, hydrologist, and conservation biologist would be helpful in discerning whether or not a viable option exists to route a bike path through this area.

The University of Rhode Island has an exceptional group of nationally recognized experts who might be able to lend assistance in this effort. The Rhode Island Natural History Survey could potentially provide the Town with a wealth of information related to the presence of rare plant and animal species in the area.

Should you have any questions on the enclosed information please don't hesitate to contact me directly.

Sincerely,

CHARLES E. VANDEMOER
Refuge Manager
Rhode Island National Wildlife Refuge Complex

Enclosure (1)

Cc: J. Willis, CRMC
S. Church, RIDOT
Dr. P. Paton, URI
Dr. D. Gregg, RINHS
R. Grant, NRPA
Friends of Canonchet Farm

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Rhode Island National Wildlife Refuge Complex
50 Bend Road, Charlestown, RI 02813
Phone (401) 364-9124 Fax (401) 364-0170

Mr. Richard Grant, President
Narrow River Preservation Association
P.O. Box 8
Saunderstown, RI 02874

March 1, 2012

Dear Richard:

Recently you requested our comments on the advisability of constructing a bike path along the old Seaview railroad bed within the Canonchet Farm area in the Town of Narragansett. Various alternative routes have been proposed to carry the bike path from its existing terminus at Mumford Road to Narragansett Town Beach. We reviewed the route to assess potential impacts to the primary natural resources of concern in the area and also compared this route with other proposed alternatives to date.

Please note our comments are based on a very cursory review of the proposed alternatives and only limited field reconnaissance. A wetland inventory[1] was not available, nor were specifics related to construction design of the bike path including mitigation. Data regarding the presence or absence of rare or State listed species is lacking for the area. The information we present therefore, should not be construed as an in-depth analysis of potential impacts, and can only be used as a "broad brush" description of possible effects to be concerned with.

A much more detailed and holistic effects analysis should be completed to identify other possible routes and the environmental consequences of pursing them, prior to selection of a final route.

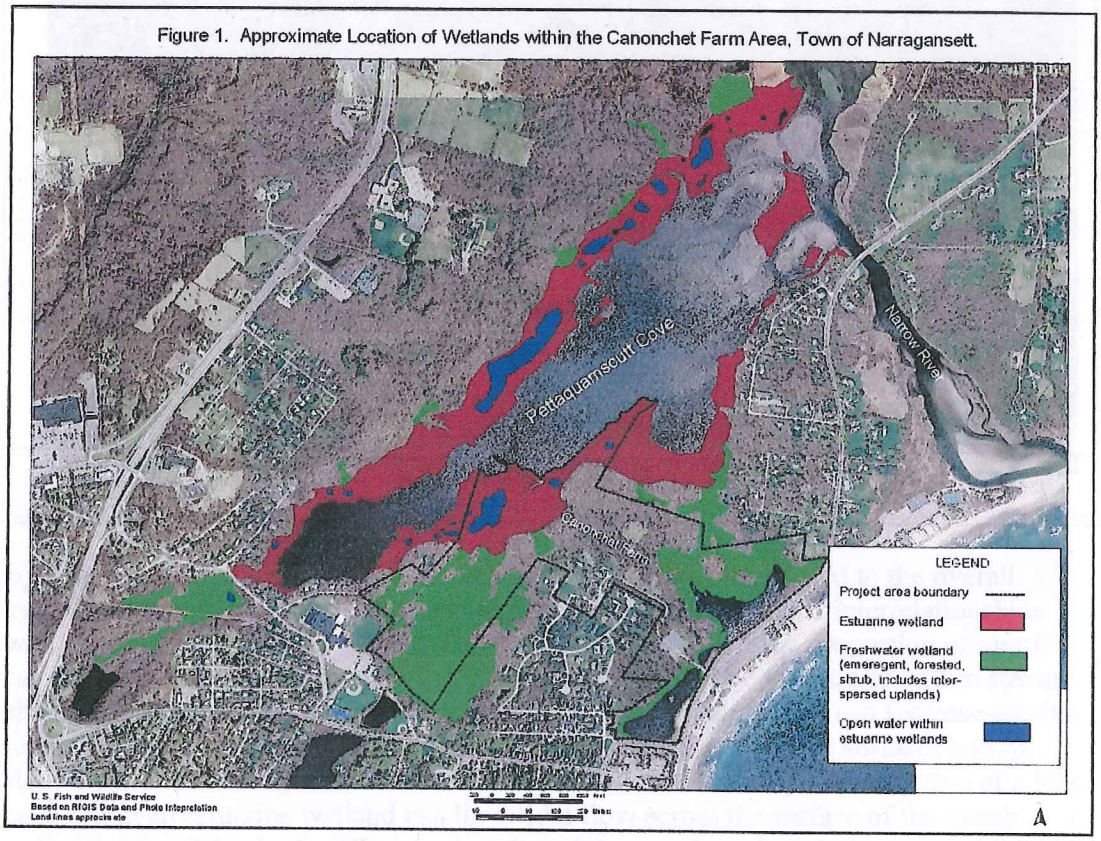
Construction of a bike path is assumed to entail a 12' wide asphalt running surface with 2 foot wide shoulders, 3:1 fill slopes and standard water crossing structures such as CRMP culverts unless described differently by alternative. Clearing width is estimated at 25 feet. Best management practices for erosion control would be applied including the use of standard, cool season non-native seed mixtures for erosion control. Bike path maintenance would include prohibiting the establishment of shrubs and trees on fill slopes. Armoring of the lower fill slopes in alternatives which propose to construct a route within estuarine wetlands is assumed to be needed to protect the facility against high tides and floods.

1/ Wetland extent was estimated based on RIGIS data as modified by limited aerial photo interpretation.

The project area contains the largest freshwater wetland adjacent to Pettaquamscutt Cove (figure 1). This 40 acre area is more aptly called a wetland complex, since it is composed of wetlands associated with smaller streams and seeps with upland habitats interspersed within it. This combination of uplands and wetlands provide ideal habitat for a wide range of species including amphibians, which will use both habitat types in combination during their life cycle. As a major source of water and nutrients for the lower portion of the estuary, changes in water quality can directly influence ecological conditions within the Cove.

Canonchet Farm also contains a substantial portion of the estuarine wetlands (saltmarsh) on the Southeasterly side of the Cove. Saltmarshes are highly susceptible to sea level rise, and also provide habitat for very specialized species, including the saltmarsh sparrow which is only known to nest within saltmarsh habitats. This species is of high conservation concern, second only to piping plover in bird conservation region 30.

Figure 1. Approximate Location of Wetlands within the Canonchet Farm Area, Town of Narragansett.

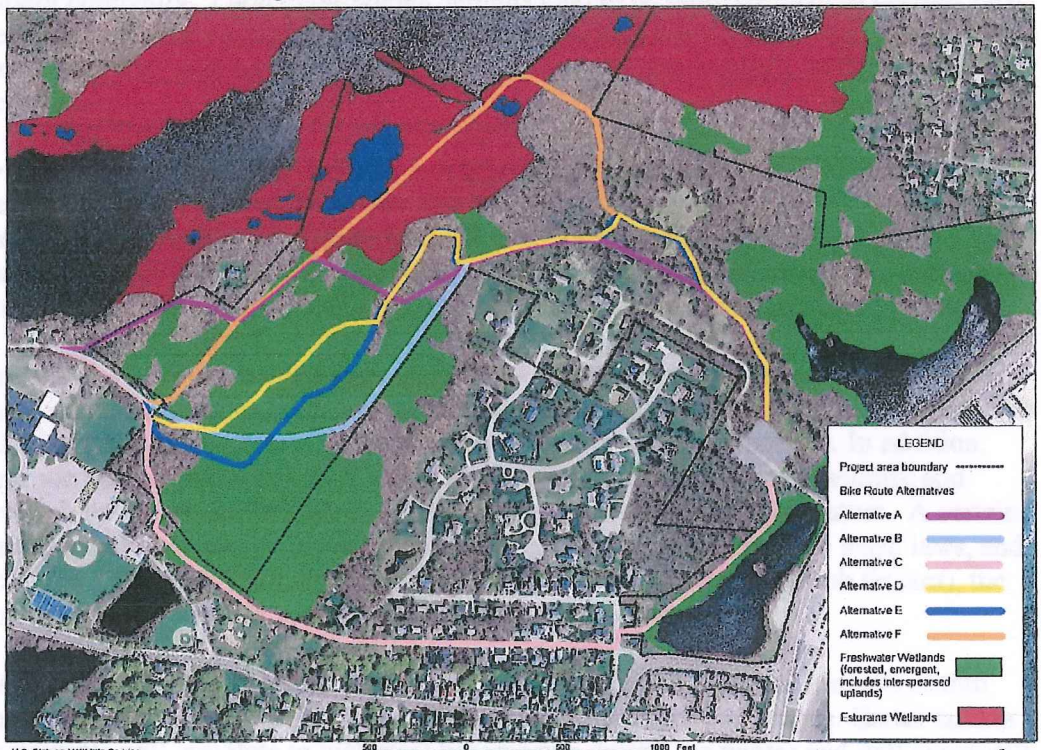


Rating Criteria

The following factors were used to evaluate bike path alternatives (figure 2) as to potential effects on plant and animal community dynamics. These factors were used to compare effects on (a) estuarine wetlands, (b) the freshwater wetland complex in the western portion of the farm, and (c) freshwater wetlands on the western shoreline of the most southerly pond.

Habitat loss. Direct loss of native habitat from construction and maintenance of the path is expected at a rate of 3 acres/mile. Encroachment of shrubs and trees onto fill slopes is assumed to be discouraged; therefore bike path development would be a permanent habitat conversion. Within estuarine and freshwater wetlands, final grade of the path and fill slopes would prevent re-establishment of wetland vegetation.

Figure 2. Alternative Bike Path Routes, Canonchet Farm Area.



Hydrologic functioning. Freshwater wetland types present are related to the overall hydrologic functioning of an area, including restrictions to flow and interrelationships with water table dynamics. During flood or runoff events, a large proportion of runoff can occur as sheet flow through a wetland, which eventually concentrates within stream channels. Restricting flows into culverts or other crossing structures can increase erosive force, and in combination with increased runoff from less permeable surfaces and fill slopes, can substantially alter wetland characteristics and stability. Construction of a bike path within an estuarine wetland can limit tidal flow across the surface of the marsh and/or cause a delay in the filling or draining of the marsh surface during normal tidal cycles.

Human disturbance. Disturbance has been shown to reduce habitat quality for a variety of species, and particularly for those individuals of populations who select for areas away from such disturbance. When walking the proposed route of Alternative F for example, several American black ducks took flight much earlier than those observed to inhabit other portions of the Narrow River where disturbance is greater. This portion of

Pettaquamscutt Cove is generally disturbed much less than other areas. Based on noise attenuation studies undertaken in Southern Rhode Island, human disturbance associated with the bike path use is estimated to have effects up to 400 feet in open environments, and 75-100 feet in forested or shrub dominated environments. Louder noises generated from the bike path in Alternative F in the saltmarsh can be expected to carry well into Pettaquamscutt Cove and across the water.

Habitat contiguity. Larger contiguous habitats tend to be more resilient to change, have greater potential to support larger populations, and help reduce impacts of allowing nest parasite species (such as cowbirds) into the interior of these habitats, or other avian predators.

Community dynamics. The wetland complex in the western portion of the farm is comprised of both wetlands and intermittent uplands interspersed through the area. Species groups such as amphibians, which make use of both wetland and upland areas, can be adversely affected if the amounts of habitats available are changed. The presence of upland sites within a wetland are an important feature of the functioning system.

Predation. Predators, including coyote, skunk, and weasels typically select for routes which allow them easy access into habitats occupied by prey. Construction of bike trails or hiking trails can increase access to habitats used by natural predators. In addition, domestic pets, whether on or off leash, are recognized as predators by wildlife and therefore may have similar effects as increasing access for natural predators. A certain percentage of dogs can be expected to be present off the path even with leash laws, and the easier a habitat is to move through (i.e. open saltmarsh versus a shrub thicket), the more vulnerable wildlife species are which occupy open habitats.

Direct and Indirect Mortality. The bulk of wildlife species show movements within seasonal ranges and in some cases movements between seasonal ranges. Garter snakes for example will gravitate to historical hibernacula during the winter and will eventually disperse during the warmer season's throughout an area. Snapping turtles will move substantial distances in search of preferred nesting sites. Should female snapping turtles seek out fill slopes along a bike path for egg laying, that would expose then to human wildlife conflicts. Snakes, amphibians, and a host of other species can also be susceptible to higher mortality rates along travelled ways, as they move between and among wetland and upland habitats.

Invasive species establishment. Disturbance of soils and increased erosive force in stream channels can provide suitable substrates for establishment of non-native invasive species. Opening the canopy within forest environments can favor establishment of invasive species along the route. Grass species typically used in erosion control is a mixture of cool season, non-native grasses. Altering the amount of tidal flooding within estuarine habitats can alter salinity levels, potentially favoring non-native invasives such as phragmites. More opportunistic wildlife species which readily travel along routes may eat seeds of invasive species and can help spread them throughout an area.

Evaluation

Each bike route alternative was given a ranking between 0 (current conditions) and -5 (substantial adverse effect) for each of the factors listed above and for each of the primary habitat components. In this area, potential impacts to estuarine wetlands were considered more critical than those on the freshwater wetland complex. Impacts to the wetlands along the pond nearest the beach are considered less critical than those impacts in the western wetland complex, primarily because this pond is currently heavily impacted by an invasive species infestation, and its close proximity to sustained heavy human disturbance. Table 1 summarizes the ranking of various alternatives on potential impacts of bike path development.

Table 1. Evaluation summary of various bike path alternatives, Canonchet Farm area.

Broad Community Rating factor	Ranking by Bike Path Alternative Route A	B	C	D	E	F
Estuarine Wetlands						
Plant/animal community	-1	0	0	0	0	-4
Invasive species establish.	0	0	0	0	0	-3
Direct/indirect mortality	0	0	0	0	0	-3
Predator Presence	-1	0	0	0	0	-5
Habitat Contiguity	0	0	0	0	0	-5
Human disturbance	-2	0	0	0	0	-5
Hydrologic function	-1	0	0	0	0	-5
Habitat loss	0	0	0	0	0	-4
SUMMARY	-0.6	0	0	0	0	-4.3
Freshwater Wetland Complex						
Plant/animal community	-2	-4	0	-5	-5	0
Invasive species establish.	-2	-3	0	-5	-5	-1
Direct/indirect mortality	-1	-3	0	-4	-4	-1
Predator Presence	-2	-2	0	-2	-3	0
Habitat Contiguity	-1	-5	0	-5	-4	0
Human disturbance	-1	-3	0	-4	-4	-1
Hydrologic function	-5	-4	0	-3	-4	-1
Habitat loss	-1	-3	0	-4	-5	-1
SUMMARY	-1.9	-3.4	0	-4	-4.3	-0.6
Southern pond wetland						
Plant/animal community	0	0	-2	0	0	0
Invasive species establish.	0	0	-2	0	0	0
Direct/indirect mortality	0	0	-1	0	0	0
Predator Presence	0	0	-2	0	0	0
Community dynamics	0	0	-1	0	0	0
Habitat Contiguity	0	0	0	0	0	0
Human disturbance	0	0	-2	0	0	0
Hydrologic function	0	0	-2	0	0	0
Habitat loss	0	0	-1	0	0	0
SUMMARY	0	0	-1.6	0	0	0
Overall Rating (0 to -5)	*-2.5*	*-3.4*	*-1.6*	*-4*	*-4.3*	*--4.9*

Not surprisingly, the evaluation finds Alternative C would have the least adverse effect, since it avoids estuarine wetlands and the wetland complex. It would impact wetlands along the shoreline of the pond nearest the beach. Alternative F is likely to have substantial adverse effects on estuarine wetlands from habitat loss, disturbance, increased

potential for predation, and alteration of tidal flows which are important for maintenance and the overall health of the estuarine habitat. Much of the estuarine habitat along the southeastern side of Pettaquamscutt Cove could be influenced by this alternative. Alternative F would have reduced effects on the freshwater wetland complex since it uses the Seaview railroad bed for much of the distance within and adjacent to the wetland complex. Alternatives D and E could greatly impact the wetland complex. While much of the bike path could be routed along upland habitats, adjacent wetland sites would still be adversely affected. While Alternative B attempts to skirt wetland habitats, it requires a lengthy crossing of the wetland complex and bisects it.

While none of the alternatives excepting Alternative C appear conducive to protection of these natural resources, it appears that a modified route similar to Alternative A may have fewer impacts on the wetland with adoption of sufficient (and costly) mitigation measures. This assumes that the crossing of the wetland complex near its mouth would be comprised of a lengthy boardwalk or bridge or a series of arches to bridge the wetlands while maintaining opportunities for sheet flow and limiting the concentration of flows within a few crossings.

As sea level rises, it is areas such as this wetland complex and the lower reaches of Mumford Brook which will allow estuarine habitats to migrate inland and remain on the landscape over time. Maintaining the wetland hydrology with several crossings or some type of boardwalk or bridge at this crossing would be important for accommodating this long term trend in habitat change. The degree to which such measures would be possible given financial constraints is unknown.

Summary

The western portion of Canonchet Farm is not well suited for development of a bike path while retaining the natural values of either the estuarine or freshwater wetland complex. Alternative F limits adverse effects to the freshwater wetland complex at the expense of estuarine wetland health. All alternatives excepting Alternative C have the potential to significantly effect ecological functioning of the wetland complex, the estuarine wetlands, or both.

Consequently, a more thorough alternative analysis is recommended including assessment of potential mitigation measures prior to selection of a preferred route. Mapping of wetlands coupled with an in-depth review and analysis by a wetlands ecologist, hydrologist, and conservation biologist would be helpful in discerning whether or not a viable option exists to route a bike path through this area.

Thank you for the opportunity to comment, please feel free to contact me should you have any questions.

Sincerely,

CHARLES E. VANDEMOER
Refuge Manager
Rhode Island National Wildlife Refuge Complex

Appendix E:

RIDOT Interagency Meeting Minutes – October 31, 2013

Fourth Quarter 2013
RIDOT Interagency Meeting Agenda

Meeting Date: Thursday, October 31, 2013
Hosted by RIDOT – RIDOA Conference Room B
Powers Building, Providence, RI

Meeting Time: 10:00 a.m. – 12:00 p.m.

Attendees:

Peter Healey – RIDOT	Charlie Vandemoer – USFWS	Dave Reis - CRMC
Emilie Holland – RIDOT NRU	Carol Shé – NMFS	Tracy Silvia – CRMC
Barry Simpson – RIDOT CRU	Beverly Migliore – DEM/OTCA	Charlotte Taylor – RIHPHC
Jacob Begin – RIDOT CRU	Terry Walsh – DEM/WQC	Project Specific Attendees included
Mike Elliot – ACOE	Nicole Lengyel – DEM F&W	below
Erica Sachs – EPA	Jeff Crawford – DEM OWM	

INTRODUCTIONS

SOUTH COUNTY BIKE PATH – CONTRACT 4

Attendees for this portion of the meeting included Mr. Michael Gannon and Mr. Matt Ouelette, of the RIDOT Road Design section, and Mr. Fred Mosley, of Fay Spofford & Thorndike (FST), the Department's design consultant for this project. Also in attendance were, Ms. Pamela Nolan, Narragansett Town Manager, and Mr. Michael DeLuca, Narragansett's Community Development Director.

A brief project history was presented, including a description of the portions of the bike path which have already been constructed and goals of completing Segment 4. Permitting for Design Contracts 1 & 2 of the bike path was initiated in 1994-1995 (This included Construction Contracts 1, 2, and 3). At that time, all of the documents submitted to various agencies for review included the preferred alignment identified in the 1991 FST feasibility study. This alignment brought the bike path through Sprague Park to an end point at the intersection of Wanda and Caswell Streets. In 2000, FST completed another feasibility study, looking at providing a connection to Cannochet Farm, and identified another route which included a combination of on and off road segments as the preferred route. There are not currently any design plans for Segment 4, however RIDOT has been requested by the Town of Narragansett to complete a Feasibility study of the Sea View Bike Route alignment. This alignment includes portions of the Canonchet Farm property, as well as a portion of the abandoned Sea View Railroad corridor within the Narrow River.

It was noted that, prior to the meeting, ACOE, CRMC, and USFWS visited the site to better understand the alternatives presented in the Town's request.

ACOE provided an over view of their regulatory process (including Clean Water Act (CWA) and Rivers & Harbors Act authority) and indicated that the Town's preferred alternative would likely require an Individual Permit review. Mike Elliott expressed reservation regarding the ability of the Sea View option to meet the ACOE's CWA Section 404.B.1 guidelines for Avoidance and Minimization of impact, due to the availability of other feasible alternatives. It was stated that, in general, minimization of impact could include use of an elevated structure, rather than fill. ACOE bases jurisdiction for fill on the elevation of the HTL, and MHW is used to determine if a structure is within their jurisdiction. Discussion of an elevated structure, versus fill, revealed that, if it was determined that the route was feasible, the ACOE would be looking for a structure that was at least 4' above the surface of the marsh in order to consider it a structure rather than fill (Depending on the width of the structure, the required elevation could be greater). It was noted that the original alignment (1991 FST) would likely be able to receive ACOE authorization through the Programmatic General Permit process (PGP).

There was some discussion of more closely following one of several earlier options from previous feasibility studies, possibly incorporating the Sprague Park area, and including a "spur" along the existing southern portion of the rail bed,

which is considerably more elevated than the northern portion, to provide views of the estuary from a vantage point along the southern shoreline. The spur could potentially include a combination of bike path and pedestrian boardwalk. There was general agreement that this would be an alternative worth looking at in a future feasibility study.

Mr. DeLuca, Narragansett's Director of Community Development, indicated that the Town is supportive of including the bike path on the grounds of the Elementary School, and asked if this would present an obstacle to any of the other review processes. Barry Simpson indicated that incorporating the bike path onto the school property was not likely to affect the Cultural Resources Unit's review process, however use of any park area may involve the Section 4(f) process relating to change in use of a public facility for transportation purposes (USDOT Act).

Tracy Silvia gave an overview of the CRMC regulations which would apply to this project, including both the coastal and freshwater wetland programs. It was noted that any fill or permanent alteration of any wetlands would have a minimum mitigation ratio of 2:1. Mr DeLuca requested clarification on how the area of impact would be calculated for a raised structure. CRMC explained that the area of the piles would be included, and potentially the area beneath the structure if it was no longer able to support the growth of wetland vegetation. Shading created by an elevated structure is considered a permanent impact, and structures which are oriented with an east-west aspect have more severe shading impacts. The Sea View option, and likely other options utilizing the rail bed and/or crossing over the marsh/wetland complex, would require a Special Exception and be subject to demonstrating that impacts had been avoided and minimized. It would be necessary to provide documentation regarding the reasons for which previously identified alternatives are no longer considered feasible.

RIDOT asked about the possibility of exploring opportunities for improving views of the Narrow River from the portion of the bike path proposed to follow riverside drive as a way to help meet this part of the Town's objective. USFWS indicated that it may be possible to consider some type of viewshed improvement on a potion of their property along Riverside drive, subject to the public involvement process. Mr. Vandemoer also cautioned that the salt marsh sparrow (*Ammodramus caudacutus*), a species with a known breeding population on the lower Narrow River is likely to become a candidate for ESA listing within the next several years. This could potentially result in additional regulatory barriers to approval of the Sea View route (ESA Section 7/BA). Also, if the Department were to move forward with this option and the species were to become listed after the path was constructed, there may be implications regarding continued use of the facility if its use is determined to pose a threat to a listed species.

Terry Walsh indicated that the WQC process would be looking at some of the same issues as the ACOE process, as well as the need to address TMDL and stormwater issues, for any selected alternative. She also pointed out that Save The Bay has recently been doing some salt marsh assessments in this area and suggested contacting them to discuss potential mitigation sites.

With respect to compensatory mitigation, in order to produce a feasibility study which may be considered complete, it will be necessary to quantify the amount (ie: area) of mitigation which will be needed in order to satisfy the minimum required ratios. EPA will also be looking for the Department to provide an assessment of the functional impacts proposed by the various alternatives and to articulate a mitigation strategy, even if physical locations are not analyzed until later. While it is not required that actual mitigation locations be identified for the feasibility study, Mr. Vandemoer pointed out that if even general locations are provided, USFWS can evaluate whether or not there may be ESA concerns at those locations. There was a discussion of the existing culvert under the RR bed, and the need to look at hydrologic impacts of utilizing the Sea View alignment. There is a possibility that altering the hydrology of the culvert in some manner could provide a benefit to the salt marsh, which could be included as part of an overall mitigation package. Further study is needed to understand how the hydrology of the system is impacted by the culvert. Dave Reis also mentioned the consideration of other indirect impacts, including issues such as changes in freshwater inputs to the estuary, and invasive species. Charlotte Taylor indicated that there may be archaeological concerns within potions of the Cannonchet Farm property. Jeff Crawford also brought up the possibility of waste issues related to utilization of a former railroad ROW.

CRMC also pointed out that, on a separate project, RIDOT has recently requested relief from the requirement to provide public access on a former rail corridor with an existing electrical line/easement, due to conflicts with utility and RR easements. CRMC questioned whether the Sea View alignment might be subject to similar constraints. Peter Healey explained that the type of electrical line at this location is a lower voltage and would not likely be subject to the same level of restriction in the vicinity. Property ownership and constraints should be part of the feasibility study.

RIDOT's next step will be to produce a feasibility study, and it is apparent that this document will need to include the range of alternatives which have been presented in previous studies, including on-road options. The Town was asked if there are any deed restrictions or ordinances on file for any of the properties previously considered as options for the bike

path. Mr. DeLuca indicated that he was not aware that there were any formal restrictions on bicycle usage on the local roads.

Appendix F:

Traffic Counts

Accurate Counts
978-664-2565

Location : Strathmore Road
Location : South of Wanda Street
City/State: Narragansett, RI

Site Code: 006B0001
006BVOL1

Start Time	18-Aug-14 SB	NB	Tue SB	NB	Wed SB	NB	Thu SB	NB	Fri SB	NB	Sat SB	NB	Sun SB	NB	Week Average SB	NB
12:00 AM	*	*	2	1	0	2	*	*	*	*	*	*	*	*	1	2
01:00	*	*	1	0	2	0	*	*	*	*	*	*	*	*	2	0
02:00	*	*	0	0	0	0	*	*	*	*	*	*	*	*	0	0
03:00	*	*	0	0	0	0	*	*	*	*	*	*	*	*	0	0
04:00	*	*	1	0	0	0	*	*	*	*	*	*	*	*	0	0
05:00	*	*	5	0	4	3	*	*	*	*	*	*	*	*	4	2
06:00	*	*	10	1	14	2	*	*	*	*	*	*	*	*	12	2
07:00	*	*	23	8	26	10	*	*	*	*	*	*	*	*	24	9
08:00	*	*	16	22	24	18	*	*	*	*	*	*	*	*	20	20
09:00	*	*	24	14	35	27	*	*	*	*	*	*	*	*	30	20
10:00	*	*	**33**	**25**	**39**	**28**	*	*	*	*	*	*	*	*	**36**	**26**
11:00	*	*	29	25	35	24	*	*	*	*	*	*	*	*	32	24
12:00 PM	*	*	33	25	34	**31**	*	*	*	*	*	*	*	*	34	**28**
01:00	*	*	23	16	**39**	23	*	*	*	*	*	*	*	*	31	20
02:00	*	*	25	**29**	34	28	*	*	*	*	*	*	*	*	30	28
03:00	*	*	22	14	29	19	*	*	*	*	*	*	*	*	26	16
04:00	*	*	**43**	22	39	22	*	*	*	*	*	*	*	*	**41**	22
05:00	*	*	29	27	13	16	*	*	*	*	*	*	*	*	21	22
06:00	*	*	22	13	18	21	*	*	*	*	*	*	*	*	20	17
07:00	*	*	27	10	23	14	*	*	*	*	*	*	*	*	25	12
08:00	*	*	15	20	20	13	*	*	*	*	*	*	*	*	18	16
09:00	*	*	12	8	8	10	*	*	*	*	*	*	*	*	10	9
10:00	*	*	6	10	3	8	*	*	*	*	*	*	*	*	4	9
11:00	*	*	1	2	3	4	*	*	*	*	*	*	*	*	2	3
Lane Day	0	0	402	292	442	323	0	0	0	0	0	0	0	0	423	307
	0		694		765		0		0		0		0		730	
AM Peak	-	-	10:00	10:00	10:00	10:00	-	-	-	-	-	-	-	-	10:00	10:00
Vol.	-	-	33	25	39	28	-	-	-	-	-	-	-	-	36	26
PM Peak	-	-	16:00	14:00	13:00	12:00	-	-	-	-	-	-	-	-	16:00	12:00
Vol.	-	-	43	29	39	31	-	-	-	-	-	-	-	-	41	28

Comb. Total	0	694	765	0	0	0	0	730

ADT ADT 678 AADT 678

Accurate Counts
978-664-2565

Location : Wanda Street
Location : East of Strathmore Road
City/State: Narragansett, RI

Site Code: 006B002
006BVOL2

Start Time	18-Aug-14 EB	WB	Tue EB	WB	Wed EB	WB	Thu EB	WB	Fri EB	WB	Sat EB	WB	Sun EB	WB	Week Average EB	WB
12:00 AM	*	*	2	2	0	0	*	*	*	*	*	*	*	*	1	1
01:00	*	*	0	0	0	1	*	*	*	*	*	*	*	*	0	0
02:00	*	*	0	0	0	0	*	*	*	*	*	*	*	*	0	0
03:00	*	*	2	0	1	0	*	*	*	*	*	*	*	*	2	0
04:00	*	*	0	1	1	0	*	*	*	*	*	*	*	*	0	0
05:00	*	*	0	2	1	1	*	*	*	*	*	*	*	*	0	2
06:00	*	*	0	3	1	1	*	*	*	*	*	*	*	*	0	2
07:00	*	*	2	3	1	3	*	*	*	*	*	*	*	*	2	3
08:00	*	*	3	13	6	12	*	*	*	*	*	*	*	*	4	12
09:00	*	*	6	7	10	10	*	*	*	*	*	*	*	*	8	8
10:00	*	*	**12**	**20**	**15**	**16**	*	*	*	*	*	*	*	*	**14**	**18**
11:00	*	*	12	12	8	15	*	*	*	*	*	*	*	*	10	14
12:00 PM	*	*	7	12	8	14	*	*	*	*	*	*	*	*	**8**	13
01:00	*	*	3	11	7	12	*	*	*	*	*	*	*	*	5	12
02:00	*	*	6	7	**9**	13	*	*	*	*	*	*	*	*	8	10
03:00	*	*	9	17	6	14	*	*	*	*	*	*	*	*	8	16
04:00	*	*	6	**24**	8	**20**	*	*	*	*	*	*	*	*	7	**22**
05:00	*	*	10	10	7	7	*	*	*	*	*	*	*	*	8	8
06:00	*	*	4	6	5	9	*	*	*	*	*	*	*	*	4	8
07:00	*	*	**11**	13	5	12	*	*	*	*	*	*	*	*	8	12
08:00	*	*	3	6	2	14	*	*	*	*	*	*	*	*	2	10
09:00	*	*	1	5	5	6	*	*	*	*	*	*	*	*	3	6
10:00	*	*	3	5	0	1	*	*	*	*	*	*	*	*	2	3
11:00	*	*	2	2	1	1	*	*	*	*	*	*	*	*	2	2
Lane	0	0	104	181	107	182	0	0	0	0	0	0	0	0	106	182
Day	0		285		289		0		0		0		0		288	
AM Peak	-	-	10:00	10:00	10:00	10:00	-	-	-	-	-	-	-	-	10:00	10:00
Vol.	-	-	12	20	15	16	-	-	-	-	-	-	-	-	14	18
PM Peak	-	-	19:00	16:00	14:00	16:00	-	-	-	-	-	-	-	-	12:00	16:00
Vol.	-	-	11	24	9	20	-	-	-	-	-	-	-	-	8	22

Comb. Total	0	285	289	0	0	0	0	288

ADT ADT 287 AADT 287

Accurate Counts
978-664-2565

Location : Anne Hoxie Lane
Location : West of Boston Neck Road
City/State: Narragansett, RI

Site Code: 006B0003
006BVOL3

Start Time	18-Aug-14 EB	WB	Tue EB	WB	Wed EB	WB	Thu EB	WB	Fri EB	WB	Sat EB	WB	Sun EB	WB	Week Average EB	WB
12:00 AM	*	*	0	0	0	0	*	*	*	*	*	*	*	*	0	0
01:00	*	*	0	0	0	0	*	*	*	*	*	*	*	*	0	0
02:00	*	*	0	0	0	0	*	*	*	*	*	*	*	*	0	0
03:00	*	*	0	0	0	0	*	*	*	*	*	*	*	*	0	0
04:00	*	*	0	0	2	0	*	*	*	*	*	*	*	*	1	0
05:00	*	*	1	1	0	0	*	*	*	*	*	*	*	*	0	0
06:00	*	*	0	0	0	0	*	*	*	*	*	*	*	*	0	0
07:00	*	*	2	**17**	0	17	*	*	*	*	*	*	*	*	1	**17**
08:00	*	*	5	3	1	6	*	*	*	*	*	*	*	*	3	4
09:00	*	*	1	13	4	5	*	*	*	*	*	*	*	*	2	9
10:00	*	*	0	1	1	6	*	*	*	*	*	*	*	*	0	4
11:00	*	*	**22**	5	**26**	**21**	*	*	*	*	*	*	*	*	**24**	13
12:00 PM	*	*	32	22	31	25	*	*	*	*	*	*	*	*	32	24
01:00	*	*	18	22	24	6	*	*	*	*	*	*	*	*	21	14
02:00	*	*	15	4	24	9	*	*	*	*	*	*	*	*	20	6
03:00	*	*	16	**25**	25	10	*	*	*	*	*	*	*	*	20	18
04:00	*	*	**37**	19	**40**	**31**	*	*	*	*	*	*	*	*	**38**	**25**
05:00	*	*	31	22	15	28	*	*	*	*	*	*	*	*	23	25
06:00	*	*	18	20	5	20	*	*	*	*	*	*	*	*	12	20
07:00	*	*	10	2	2	0	*	*	*	*	*	*	*	*	6	1
08:00	*	*	0	0	0	0	*	*	*	*	*	*	*	*	0	0
09:00	*	*	0	0	4	0	*	*	*	*	*	*	*	*	2	0
10:00	*	*	0	0	0	0	*	*	*	*	*	*	*	*	0	0
11:00	*	*	1	1	0	0	*	*	*	*	*	*	*	*	0	0
Lane	0	0	209	177	204	184	0	0	0	0	0	0	0	0	205	180
Day	0		386		388		0		0		0		0		385	
AM Peak	-	-	11:00	07:00	11:00	11:00	-	-	-	-	-	-	-	-	11:00	07:00
Vol.	-	-	22	17	26	21	-	-	-	-	-	-	-	-	24	17
PM Peak	-	-	16:00	15:00	16:00	16:00	-	-	-	-	-	-	-	-	16:00	16:00
Vol.	-	-	37	25	40	31	-	-	-	-	-	-	-	-	38	25

Comb. Total	0	386	388	0	0	0	0	385

ADT ADT 389 AADT 389

NARRAGANSETT, STHW 1A (KINGSTOWN RD)
BTW STHW 108 & OCEAN RD

Average Hourly Traffic (AHT) By Hour Of Day, Day Of Week, And Month

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	AHT	*Tuesday, July 29, 2014*	
12-1 AM	30 *	45 *	45	37	33 *	89	74 *	53	**January 2012**	2000470000
1-2	22	32 *	31	29	36	69	59 *	40		
2-3	16	25 *	20	19	28	40	42 *	27		
3-4	11	10 *	15	17	20	21	17 *	16		
4-5	14	12 *	15	20	18	15	13 *	15		
5-6	37	32 *	32	39	29	30	22 *	31		
6-7	111	96 *	107	105	93	63	48 *	87		
7-8	271	282 *	256	220	208	131	100 *	203		
8-9	432	434 *	360	351	352	211	167 *	320		
9-10	470	436 *	412	426	448	341	275 *	397		
10-11	482	475 *	399	409	448	466	347 *	428		
11-12	487	464 *	422	479	477	628	455 *	488		
12-1 PM	523	477 *	442	511	534	644	502 *	521		
1-2	551	518 *	426	521	533	570	482 *	514		
2-3	541	510 *	445	551	536	514	469 *	509		
3-4	592	558 *	492	550	559	501	425 *	522		
4-5	595	586 *	471	561	606	490	406 *	524		
5-6	494	565 *	393	530	544	352	314 *	444		
6-7	392	455 *	290	401	483	300	236 *	355		
7-8	271	349 *	220	294	369	213	193 *	264		
8-9	216	237 *	175	248	282	188	163 *	212		
9-10	144	186 *	130	188	225	188	131 *	167		
10-11	106	128 *	92	120	205	140	98 *	125		
11-12	71	90 *	64	85	148	108	66 *	89		
ADT	6,879 *	7,002 *	5,754	6,711	7,214 *	6,312	5,104 *	6,351		

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	AHT	*Tuesday, July 29, 2014*	
12-1 AM	30 *	42 *	36 *	50	44 *	117 *	79 *	58	**February 2012**	2000470000
1-2	22 *	33 *	22	40	39	98 *	91 *	49		
2-3	19 *	15 *	16	24	28	44 *	63 *	30		
3-4	8 *	10 *	10	9	15	26 *	26 *	15		
4-5	17 *	18 *	11	16	14	12 *	17 *	15		
5-6	38 *	47 *	39	36	43	35 *	22 *	37		
6-7	129 *	146 *	116	125	121	79 *	52 *	109		
7-8	295 *	371 *	265	292	270	158 *	101 *	247		
8-9	465 *	520 *	424	449	468	291 *	177 *	396		
9-10	523 *	494 *	476	465	494	429 *	308 *	452		
10-11	493 *	484 *	453	497	518	547 *	409 *	483		
11-12	509 *	512 *	475	515	546	665 *	502 *	528		
12-1 PM	545 *	522 *	498	592	578	617 *	575 *	561		
1-2	559 *	568 *	501	587	608	604 *	548 *	567		
2-3	577 *	585 *	531	611	604	555 *	523 *	569		
3-4	651 *	613 *	588	639	660	486 *	496 *	591		
4-5	644 *	617 *	555	633	703	505 *	441 *	585		
5-6	634 *	579 *	525	602	597	450 *	392 *	538		
6-7	487 *	450 *	434	467	501	378 *	284 *	427		
7-8	382 *	311 *	323	357	390	299 *	224 *	326		
8-9	287 *	230 *	228	286	296	260 *	181 *	252		
9-10	218 *	183 *	190	209	288	229 *	150 *	209		
10-11	141 *	124 *	172	149	239	181 *	129 *	164		
11-12	98 *	83 *	90	97	186	148 *	87 *	113		
ADT	7,771 *	7,557 *	6,978 *	7,747	8,250 *	7,213 *	5,877 *	7,321		

NARRAGANSETT, STHW 1A
BTW STHW 108 & OCEAN RD

Average Hourly Traffic (AHT) By Hour Of Day, Day Of Week, And Month

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	AHT	*Tuesday, July 29, 2014*	
12-1 AM	40	46	57	62 *	130 *	125	39 *	71	**March 2012**	2000470000
1-2	25	29	40	40 *	71 *	86	21 *	44		
2-3	16	26	29	34 *	52 *	61	20 *	34		
3-4	9	12	13	24 *	34 *	34	13 *	19		
4-5	10	12	17	15 *	17 *	15	18 *	15		
5-6	40	35	40	34 *	21 *	22	39 *	33		
6-7	139	142	111	111 *	57 *	52	135 *	107		
7-8	337	319	285	247 *	127 *	109	295 *	247		
8-9	503	483	458	410 *	245 *	195	464 *	396		
9-10	527	531	503	529 *	389 *	312	501 *	471		
10-11	488	485	503	511 *	513 *	404	504 *	487		
11-12	518	502	520	578 *	610 *	507	508 *	534		
12-1 PM	548	542	563	588 *	648 *	607	519 *	573		
1-2	592	559	562	615 *	631 *	618	536 *	586		
2-3	623	578	596	636 *	629 *	625	558 *	606		
3-4	627	630	633	660 *	607 *	566	606 *	619		
4-5	650	631	671	674 *	599 *	531	631 *	628		
5-6	625	565	622	668 *	557 *	462	564 *	582		
6-7	501	490	505	588 *	498 *	349	465 *	486		
7-8	377	340	413	451 *	442 *	287	361 *	382		
8-9	276	277	305	357 *	302 *	223	265 *	287		
9-10	204	211	237	279 *	268 *	155	200 *	222		
10-11	150	138	166	240 *	231 *	105	128 *	165		
11-12	84	93	109	191 *	170 *	73	80 *	114		
ADT	7,909	7,676	7,958	8,542 *	7,848 *	6,523	7,470 *	7,708		

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	AHT	*Tuesday, July 29, 2014*	
12-1 AM	40	41	57	53	91	94 *	30 *	58	**April 2012**	2000470000
1-2	34	28	43	47	86	80 *	22 *	49		
2-3	21	25	25	35	55	38 *	18 *	31		
3-4	9	9	12	14	25	19 *	9 *	14		
4-5	20	22	20	19	14	14 *	19 *	18		
5-6	56	57	53	54	36	31 *	52 *	48		
6-7	176	174	171	170	99	83 *	180 *	150		
7-8	390	378	392	343	221	169 *	376 *	324		
8-9	524	543	520	535	361	261 *	557 *	471		
9-10	557	541	531	573	511	467 *	569 *	536		
10-11	575	530	567	564	599	516 *	550 *	557		
11-12	568	559	594	623	695	663 *	604 *	615		
12-1 PM	573	608	618	643	698	714 *	614 *	638		
1-2	604	574	637	680	703	681 *	603 *	640		
2-3	606	612	663	701	668	630 *	658 *	648		
3-4	637	681	745	755	651	625 *	727 *	689		
4-5	643	677	692	706	615	581 *	688 *	657		
5-6	621	632	677	667	507	506 *	609 *	602		
6-7	481	541	572	574	460	412 *	515 *	508		
7-8	394	399	417	441	392	337 *	416 *	399		
8-9	288	314	367	338	284	242 *	296 *	304		
9-10	205	232	225	283	282	173 *	219 *	231		
10-11	145	169	154	253	216	121 *	142 *	171		
11-12	78	95	99	156	148	68 *	86 *	104		
ADT	8,245	8,441	8,851	9,227	8,417	7,525 *	8,559 *	8,462		

NARRAGANSETT, STHW 1A
BTW STHW 108 & OCEAN RD

Average Hourly Traffic (AHT) By Hour Of Day, Day Of Week, And Month

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	AHT	*Tuesday, July 29, 2014*	
12-1 AM	44	45 *	61 *	52 *	132 *	110	51 *	68	**May 2012**	2000470000
1-2	29	41 *	45 *	58 *	130 *	80	39 *	56		
2-3	19	26 *	23 *	35 *	55 *	44	23 *	31		
3-4	9	12 *	13 *	14 *	26 *	18	9 *	14		
4-5	20	15 *	18 *	20 *	20 *	14	21 *	18		
5-6	62	60 *	61 *	63 *	46 *	42	63 *	57		
6-7	181	192 *	180 *	202 *	107 *	87	166 *	160		
7-8	381	374 *	373 *	387 *	229 *	183	335 *	326		
8-9	521	536 *	514 *	508 *	408 *	289	491 *	470		
9-10	540	575 *	581 *	585 *	596 *	515	549 *	560		
10-11	588	554 *	553 *	601 *	698 *	555	594 *	587		
11-12	617	603 *	603 *	633 *	788 *	706	619 *	647		
12-1 PM	654	630 *	674 *	700 *	787 *	694	676 *	682		
1-2	665	639 *	661 *	744 *	751 *	628	668 *	674		
2-3	667	655 *	663 *	792 *	762 *	630	676 *	685		
3-4	700	740 *	734 *	841 *	720 *	638	710 *	721		
4-5	710	709 *	694 *	867 *	709 *	623	679 *	707		
5-6	683	652 *	655 *	786 *	601 *	580	617 *	652		
6-7	514	567 *	557 *	666 *	553 *	485	553 *	551		
7-8	439	420 *	416 *	555 *	497 *	398	430 *	444		
8-9	344	342 *	342 *	440 *	363 *	325	319 *	350		
9-10	232	237 *	237 *	347 *	299 *	224	208 *	249		
10-11	151	146 *	159 *	313 *	262 *	179	126 *	182		
11-12	98	99 *	106 *	214 *	200 *	112	90 *	124		
ADT	8,868	8,869 *	8,923 *	10,423 *	9,739 *	8,159	8,712 *	9,015		

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	AHT	*Tuesday, July 29, 2014*	
12-1 AM	53	60 *	49	61 *	139 *	122	53 *	77	**June 2012**	2000470000
1-2	34	37 *	34	41 *	124 *	83	32 *	56		
2-3	24	24 *	18	23 *	42 *	36	19 *	27		
3-4	12	20 *	14	14 *	18 *	21	11 *	16		
4-5	27	20 *	22	26 *	20 *	19	26 *	23		
5-6	72	69 *	58	73 *	44 *	41	70 *	61		
6-7	195	212 *	188	189 *	127 *	109	202 *	173		
7-8	392	398 *	399	378 *	282 *	233	392 *	352		
8-9	550	567 *	564	545 *	443 *	349	558 *	509		
9-10	630	648 *	662	655 *	604 *	561	654 *	630		
10-11	689	656 *	704	689 *	760 *	629	688 *	689		
11-12	755	688 *	789	730 *	814 *	724	755 *	753		
12-1 PM	760	744 *	806	751 *	809 *	737	778 *	770		
1-2	748	716 *	810	765 *	781 *	716	763 *	758		
2-3	754	806 *	876	757 *	799 *	752	792 *	790		
3-4	806	850 *	922	839 *	805 *	776	866 *	837		
4-5	817	803 *	879	886 *	779 *	745	855 *	824		
5-6	767	742 *	847	805 *	677 *	643	764 *	749		
6-7	626	638 *	706	741 *	654 *	566	639 *	653		
7-8	535	501 *	530	602 *	555 *	473	545 *	535		
8-9	424	416	480	459 *	448 *	378	420 *	432		
9-10	311	324	361	382 *	406 *	277	275 *	333		
10-11	193	183	256	313 *	284 *	161	179 *	224		
11-12	108	133	125	232 *	227 *	107	108 *	149		
ADT	10,282	10,255 *	11,099	10,956 *	10,641 *	9,258	10,444 *	10,420		

NARRAGANSETT, STHW 1A
BTW STHW 108 & OCEAN RD

Average Hourly Traffic (AHT) By Hour Of Day, Day Of Week, And Month

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	AHT	*Tuesday, July 29, 2014*	
12-1 AM	67 *	67 *	64 *	81	140	155 *	85 *	96	**July 2012**	2000470000
1-2	50 *	43 *	43 *	51	149	105 *	50 *	72		
2-3	20 *	23 *	19 *	29	48	53 *	24 *	32		
3-4	18 *	18 *	14 *	16	20	22 *	14 *	17		
4-5	25 *	25 *	30 *	26	25	27 *	25 *	26		
5-6	72 *	76 *	67 *	81	54	50 *	71 *	67		
6-7	192 *	202	202 *	192	156	147 *	201 *	184		
7-8	395 *	419	412 *	412	324	304 *	376 *	376		
8-9	622 *	653	613 *	627	596	476 *	583 *	595		
9-10	737 *	752	762 *	770	853	706 *	734 *	759		
10-11	797 *	797	780 *	822	991	801 *	768 *	824		
11-12	795 *	839	832 *	872	922	840 *	807 *	844		
12-1 PM	799 *	804	824 *	873	866	827 *	778 *	824		
1-2	814 *	809	848 *	865	818	793 *	774 *	816		
2-3	813 *	873	865 *	899	866	827 *	824 *	852		
3-4	835 *	907	864 *	903	882	845 *	850 *	870		
4-5	870 *	897	893 *	930	909	826 *	835 *	879		
5-6	875 *	944	940 *	879	880	826 *	790 *	874		
6-7	803 *	860	855 *	796	858	761 *	713 *	805		
7-8	648 *	730	749 *	703	770	725 *	620 *	705		
8-9	561 *	566	630 *	615	649	659 *	507 *	597		
9-10	389 *	398	447 *	503	561	576 *	360 *	462		
10-11	227 *	237	316 *	353	465	390 *	266 *	322		
11-12	152 *	145	164 *	258	259	181 *	142 *	187		
ADT	11,576 *	12,084 *	12,233 *	12,556	13,061	11,922 *	11,197 *	12,085		

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	AHT	*Tuesday, July 29, 2014*	
12-1 AM	57	63 *	60 *	76 *	144 *	152 *	50 *	82	**August 2012**	2000470000
1-2	33	43 *	40 *	54 *	133 *	109 *	39 *	61		
2-3	25	22 *	23 *	25 *	47 *	54 *	22 *	30		
3-4	15	16 *	13 *	13 *	24 *	26 *	9 *	16		
4-5	26	26 *	30 *	30 *	25 *	23 *	30 *	27		
5-6	64	67 *	61 *	65 *	54 *	46 *	63 *	61		
6-7	192	211 *	209 *	202 *	149 *	114 *	176 *	183		
7-8	408	413 *	417 *	418 *	286 *	209 *	362 *	368		
8-9	626	614 *	602 *	623 *	519 *	369 *	527 *	564		
9-10	698	738 *	717 *	775 *	792 *	518 *	643 *	703		
10-11	767	777 *	780 *	859 *	966 *	628 *	715 *	786		
11-12	806	802 *	812 *	894 *	894 *	758 *	751 *	819		
12-1 PM	786	815 *	812 *	886 *	816 *	723 *	753 *	803		
1-2	784	794 *	824 *	874 *	803 *	672 *	737 *	790		
2-3	847	805 *	834 *	886 *	844 *	698 *	755 *	815		
3-4	860	851 *	869 *	963 *	870 *	698 *	763 *	843		
4-5	851	885 *	877 *	1,011 *	906 *	707 *	867 *	877		
5-6	862	893 *	934 *	999 *	879 *	644 *	810 *	868		
6-7	700	824 *	812 *	861 *	778 *	562 *	735 *	759		
7-8	618	695 *	706 *	796 *	660 *	474 *	614 *	658		
8-9	463	597 *	566 *	629 *	561 *	376 *	459 *	526		
9-10	306	395 *	380 *	475 *	445 *	296 *	275 *	367		
10-11	194	279 *	271 *	377 *	375 *	197 *	184 *	267		
11-12	119	155 *	162 *	271 *	270 *	122 *	120 *	173		
ADT	11,107	11,780 *	11,811 *	13,062 *	12,240 *	9,175 *	10,459 *	11,446		

NARRAGANSETT, STHW 1A
BTW STHW 108 & OCEAN RD

Average Hourly Traffic (AHT) By Hour Of Day, Day Of Week, And Month

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	AHT	*Tuesday, July 29, 2014*	
12-1 AM	52	50	47	53 *	142 *	143 *	56 *	78	**September 2012**	2000470000
1-2	28	34	30	62 *	118 *	106 *	30 *	58		
2-3	14	16	16	27 *	59 *	56 *	15 *	29		
3-4	13	11	10	14 *	27 *	27 *	15 *	17		
4-5	23	23	20	24 *	29 *	27 *	22 *	24		
5-6	59	59	57	65 *	46 *	62 *	54 *	57		
6-7	202	215	193	201 *	126 *	114 *	184 *	175		
7-8	428	452	414	449 *	250 *	207 *	383 *	366		
8-9	606	613	583	597 *	467 *	362 *	554 *	538		
9-10	619	633	583	648 *	655 *	518 *	600 *	606		
10-11	611	620	585	674 *	776 *	644 *	664 *	652		
11-12	659	631	623	715 *	890 *	722 *	698 *	705		
12-1 PM	668	633	635	755 *	856 *	783 *	698 *	717		
1-2	699	661	690	747 *	820 *	736 *	704 *	721		
2-3	714	725	698	787 *	825 *	750 *	741 *	747		
3-4	754	787	772	840 *	834 *	728 *	839 *	792		
4-5	739	771	760	876 *	849 *	725 *	794 *	784		
5-6	691	715	772	781 *	755 *	654 *	729 *	726		
6-7	587	606	620	708 *	673 *	520 *	629 *	617		
7-8	446	428	513	591 *	553 *	471 *	494 *	496		
8-9	347	341	352	422 *	412 *	320 *	326 *	358		
9-10	219	249	269	331 *	370 *	209 *	224 *	265		
10-11	155	161	179	308 *	301 *	161 *	156 *	199		
11-12	80	94	109	229 *	232 *	111 *	85 *	131		
ADT	9,413	9,528	9,530	10,904 *	11,065 *	9,156 *	9,694 *	9,858		

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	AHT	*Tuesday, July 29, 2014*	
12-1 AM	48 *	37 *	40	55 *	125	113	39 *	66	**October 2012**	2000470000
1-2	18 *	28 *	24	42 *	111	85	28 *	49		
2-3	14 *	13 *	17	25 *	63	49	17 *	29		
3-4	7 *	9 *	8	11 *	23	26	10 *	14		
4-5	26 *	19 *	22	20 *	19	18	20 *	20		
5-6	64 *	55 *	57	60 *	37	35	49 *	50		
6-7	209 *	214 *	189	196 *	107	78	181 *	165		
7-8	413 *	419 *	391	419 *	221	155	361 *	334		
8-9	611 *	592 *	575	562 *	397	288	521 *	500		
9-10	606 *	578 *	589	638 *	548	451	584 *	567		
10-11	593 *	560 *	538	607 *	638	544	594 *	581		
11-12	607 *	577 *	594	630 *	732	663	655 *	638		
12-1 PM	668 *	584 *	629	684 *	716	732	655 *	666		
1-2	632 *	579 *	630	684 *	723	670	679 *	657		
2-3	684 *	604 *	660	732 *	699	649	726 *	677		
3-4	751 *	687 *	728	762 *	722	636	807 *	725		
4-5	711 *	671 *	685	757 *	694	560	727 *	683		
5-6	661 *	609 *	696	684 *	582	471	692 *	624		
6-7	510 *	481 *	559	630 *	535	380	542 *	516		
7-8	403 *	336 *	418	470 *	424	316	378 *	389		
8-9	283 *	279 *	310	335 *	307	237	270 *	287		
9-10	204 *	200 *	221	318 *	305	178	193 *	229		
10-11	136 *	136 *	146	239 *	251	121	121 *	162		
11-12	84 *	77 *	80	170 *	200	84	77 *	109		
ADT	8,943 *	8,344 *	8,806	9,730 *	9,179	7,539	8,926 *	8,737		

NARRAGANSETT, STHW 1A
BTW STHW 108 & OCEAN RD

Average Hourly Traffic (AHT) By Hour Of Day, Day Of Week, And Month

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	AHT	*Tuesday, July 29, 2014*	
12-1 AM	64	85	82 *	23 *	150 *	115 *	55 *	74	**November 2012**	2000470000
1-2	45	48	50 *	32 *	96 *	91 *	34 *	53		
2-3	22	32	42 *	21 *	101 *	63 *	15 *	35		
3-4	19	13	24 *	15 *	57 *	38 *	14 *	22		
4-5	11	8	16 *	11 *	29 *	19 *	8 *	12		
5-6	19	20	15 *	26 *	20 *	14 *	23 *	19		
6-7	60	61	47 *	35 *	40 *	35 *	60 *	52		
7-8	213	213	143 *	109 *	95 *	79 *	217 *	173		
8-9	431	397	267 *	210 *	227 *	174 *	413 *	340		
9-10	601	558	424 *	371 *	400 *	286 *	580 *	496		
10-11	590	573	430 *	429 *	531 *	369	607 *	519		
11-12	569	565	402 *	536 *	620 *	549	562 *	547		
12-1 PM	621	578	474 *	614 *	502 *	662	579 *	587		
1-2	642	609	488 *	670 *	674 *	689	623 *	631		
2-3	638	622	453 *	456 *	608 *	618	615 *	591		
3-4	681	645	435 *	708 *	616 *	591	679 *	632		
4-5	731	707	412 *	678 *	647 *	542	734 *	651		
5-6	714	664	415 *	654 *	654 *	487	685 *	620		
6-7	575	547	382 *	506 *	447 *	339	535 *	484		
7-8	440	444	326 *	406 *	400 *	249	427 *	386		
8-9	344	303	270 *	338 *	301 *	222	332 *	301		
9-10	251	272	226 *	269 *	266 *	190	237 *	242		
10-11	200	194	182 *	239 *	243 *	133	172 *	187		
11-12	140	140	117 *	179 *	218 *	93	122 *	137		
ADT	8,621	8,298	6,122 *	7,535 *	7,942 *	6,647 *	8,328 *	7,791		

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	AHT	*Tuesday, July 29, 2014*	
12-1 AM	74 *	81	83	100	136 *	161 *	60 *	98	**December 2012**	2000470000
1-2	32 *	50	40	57	86 *	80 *	38 *	55		
2-3	34 *	31	29	45	73 *	71 *	24 *	44		
3-4	13 *	21	22	23	39 *	41 *	18 *	25		
4-5	8 *	14	8	11	23 *	20 *	9 *	13		
5-6	18 *	15	19	23	19 *	13 *	19 *	18		
6-7	53 *	55	45	58	43 *	24 *	53 *	47		
7-8	185 *	177	170	171	114 *	62 *	150 *	145		
8-9	377 *	367	356	385	227 *	135 *	328 *	308		
9-10	538 *	521	541	521	385 *	208 *	464 *	451		
10-11	586 *	559	574	613	555 *	344 *	516 *	533		
11-12	599 *	594	560	614	657 *	394 *	545 *	565		
12-1 PM	615 *	606	626	650	726 *	503 *	587 *	616		
1-2	611 *	589	629	683	661 *	571 *	596 *	620		
2-3	638 *	622	641	693	628 *	506 *	601 *	618		
3-4	637 *	634	653	701	596 *	466 *	642 *	618		
4-5	685 *	644	707	717	540 *	438 *	664 *	626		
5-6	682 *	654	661	682	504 *	444 *	656 *	609		
6-7	550 *	494	594	583	417 *	385 *	507 *	502		
7-8	394	437	417	464	348 *	256 *	407 *	389		
8-9	335	287	340	351	263 *	237 *	300 *	302		
9-10	242	259	265	303	234 *	181 *	238 *	246		
10-11	190	208	224	289	230 *	148 *	195 *	212		
11-12	142	147	159	228	190 *	101 *	136 *	157		
ADT	8,238 *	8,066	8,363	8,965	7,694 *	5,789 *	7,753 *	7,817		

NARRAGANSETT, STHW 1A
BTW STHW 108 & OCEAN RD

Average Hourly Traffic (AHT) By Hour Of Day, Day Of Week, And Month

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	AHT
12-1 AM	49 *	54 *	57 *	58 *	118 *	125 *	56 *	73
1-2	30 *	37 *	37 *	45 *	98 *	89 *	40 *	53
2-3	20 *	23 *	23 *	28 *	54 *	51 *	25 *	31
3-4	11 *	13 *	14 *	15 *	27 *	26 *	13 *	17
4-5	19 *	17 *	19 *	19 *	21 *	18 *	18 *	18
5-6	50 *	49 *	46 *	51 *	37 *	35 *	45 *	44
6-7	154 *	161 *	145 *	147 *	101 *	82 *	136 *	132
7-8	344 *	352 *	324 *	317 *	216 *	168 *	285 *	288
8-9	524 *	527 *	484 *	480 *	388 *	285 *	443 *	450
9-10	587 *	583 *	564 *	579 *	552 *	445 *	537 *	552
10-11	605 *	589 *	571 *	607 *	664 *	540 *	577 *	594
11-12	624 *	611 *	600 *	654 *	722 *	651 *	620 *	641
12-1 PM	647 *	628 *	633 *	688 *	715 *	688 *	641 *	663
1-2	658 *	634 *	641 *	705 *	709 *	664 *	641 *	665
2-3	675 *	664 *	658 *	706 *	706 *	648 *	660 *	676
3-4	711 *	714 *	700 *	765 *	710 *	632 *	699 *	705
4-5	720 *	716 *	689 *	777 *	711 *	608 *	690 *	702
5-6	691 *	684 *	676 *	732 *	643 *	548 *	633 *	658
6-7	560 *	579 *	573 *	630 *	570 *	458 *	526 *	556
7-8	445 *	449 *	454 *	514 *	482 *	380 *	423 *	448
8-9	347 *	350 *	364 *	404 *	371 *	310 *	318 *	351
9-10	243 *	261 *	266 *	326 *	328 *	243 *	226 *	268
10-11	164 *	175 *	193 *	268 *	274 *	172 *	158 *	198
11-12	104 *	112 *	115 *	194 *	204 *	109 *	100 *	132
ADT	8,982 *	8,982 *	8,846 *	9,709 *	9,421 *	7,975 *	8,510 *	8,915

Tuesday, July 29, 2014

For 2012 - AADT 8,900 2000470000

VEHICLE CLASSIFICATIONS

MUMFORD RD - BTW HIGHLAND ST & SK T/L (COMBINED)

QTD PROJ/LOC #:	800160 - 638	STATION NO:	2000410000
ON STREET:	MUMFORD RD	START DATE:	Wednesday, August 28, 2013
CROSS STREETS:	BTW HIGHLAND ST & SK T/L	VICINITY:	Rhode Island

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
0:00	0	7	2	0	0	0	0	0	0	0	0	0	0	9
1:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
2:00	0	3	0	0	1	0	0	0	0	0	0	0	0	4
3:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
4:00	0	4	2	0	1	0	0	0	0	0	0	0	0	7
5:00	0	13	3	0	1	0	0	0	0	0	0	0	0	17
6:00	0	22	12	0	2	0	0	0	0	0	0	0	0	36
7:00	0	40	15	0	6	0	0	0	0	0	0	0	0	61
8:00	0	38	18	0	4	0	0	0	0	0	0	0	0	60
9:00	0	39	9	0	6	0	0	0	0	0	0	0	0	54
10:00	0	36	13	0	7	0	0	1	0	0	0	0	0	57
11:00	0	36	20	0	5	0	0	0	0	0	0	0	0	61
12:00	0	42	17	0	5	0	0	0	0	0	0	0	0	64
13:00	0	58	19	0	4	0	0	1	0	0	0	0	0	82
14:00	0	48	21	0	11	0	0	0	0	0	0	0	0	80
15:00	0	61	20	0	7	0	0	0	0	0	0	0	0	88
16:00	0	56	28	0	7	1	0	0	0	0	0	0	0	92
17:00	0	52	12	0	8	0	0	0	0	0	0	0	0	72
18:00	0	38	11	0	6	0	0	0	0	0	0	0	0	55
19:00	0	31	6	0	6	0	0	0	0	0	0	0	0	43
20:00	0	20	8	0	1	0	0	0	0	0	0	0	0	29
21:00	0	19	4	0	0	0	0	0	0	0	0	0	0	23
22:00	0	10	3	0	2	0	0	0	0	0	0	0	0	15
23:00	0	11	1	0	0	0	0	0	0	0	0	0	0	12
TOTAL	0	688	246	0	90	1	0	2	0	0	0	0	0	1027
% of Total:	0%	67%	24%	0%	9%	0%	0%	0%	0%	0%	0%	0%	0%	

7 - 9 AM Peak Total:	121		K Factor:	0.17		% Sngl Unt Trcks In AADT	18.00%
12 - 2 PM Peak Total:	146		D Factor:	0.55		% Sngl Unt Trcks In Pk Hr	10.00%
4 - 6 PM Peak Total:	164					% comb Unt Trcks In Pk Hr	0.00%
Peak Hour:	4:00:00 PM					% comb Unt Trcks In AADT	1.00%

FHWA Vehicle Classification Scheme

1	MOTORCYCLES	5	TWO AXLE, SIX TIRE SINGLE UNIT	9	FIVE-AXLE SINGLE TRAILER
2	PASSENGER CARS	6	THREE AXLE, SINGLE UNIT	10	SIX OR MORE AXLE, SINGLE TRAILER
3	FOUR TIRE, SINGLE UNIT	7	FOUR OR MORE AXLE, SINGLE UNIT	11	FIVE OR LESS AXLE, MULTI TRAILER
4	BUSES	8	FOUR OR LESS AXLE, SINGLE TRAILER	12	SIX AXLE, MULTI TRAILER
				13	SEVEN OR MORE AXLE, MULTI-TRAILER

QUALITY TRAFFIC DATA, LLC
241 Boston Post Road West, Marlborough, MA 01752
Ph: 877-852-4355 Fax: 877-877-3698 Info@QualityTrafficData.com

VEHICLE CLASSIFICATIONS

MUMFORD RD - BTW HIGHLAND ST & SK T/L (COMBINED)

QTD PROJ/LOC #:	800160 - 638	STATION NO:	2000410000
ON STREET:	MUMFORD RD	START DATE:	Thursday, August 29, 2013
CROSS STREETS:	BTW HIGHLAND ST & SK T/L	VICINITY:	Rhode Island

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
0:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
1:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
2:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
3:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
4:00	0	3	3	0	0	0	0	0	0	0	0	0	0	6
5:00	0	13	3	0	2	0	0	0	0	0	0	0	0	18
6:00	0	20	9	0	2	0	0	0	0	0	0	0	0	31
7:00	0	48	14	0	4	0	0	0	0	0	0	0	0	66
8:00	0	41	10	0	8	0	0	2	0	0	0	0	0	61
9:00	0	38	17	0	6	0	0	0	0	0	0	0	0	61
10:00	0	47	17	0	6	0	0	1	0	0	0	0	0	71
11:00	1	42	23	0	7	0	0	0	0	0	0	0	0	73
12:00	0	50	24	0	7	0	0	1	0	0	0	0	0	82
13:00	0	56	19	0	10	0	0	0	0	0	0	0	0	85
14:00	0	47	22	0	6	0	0	0	0	0	0	0	0	75
15:00	0	60	19	0	10	0	0	0	0	0	0	0	0	89
16:00	0	54	18	0	9	0	0	0	0	0	0	0	0	81
17:00	1	52	23	0	6	0	0	0	0	0	0	0	0	82
18:00	0	54	15	0	6	0	0	0	0	0	0	0	0	75
19:00	0	30	9	0	2	0	0	0	0	0	0	0	0	41
20:00	0	32	8	0	1	0	0	0	0	0	0	0	0	41
21:00	0	16	4	0	2	0	0	0	0	0	0	0	0	22
22:00	0	9	3	0	1	0	0	0	0	0	0	0	0	13
23:00	0	5	2	0	0	0	0	0	0	0	0	0	0	7
TOTAL	2	730	264	0	95	0	0	4	0	0	0	0	0	1095
% of Total:	0%	67%	24%	0%	9%	0%	0%	0%	0%	0%	0%	0%	0%	

7 - 9 AM Peak Total:	127		K Factor:	0.17		% Sngl Unt Trcks In AADT	18.00%
12 - 2 PM Peak Total:	167		D Factor:	0.55		% Sngl Unt Trcks In Pk Hr	10.00%
4 - 6 PM Peak Total:	163					% comb Unt Trcks In Pk Hr	0.00%
Peak Hour:	3:00:00 PM					% comb Unt Trcks In AADT	1.00%

FHWA Vehicle Classification Scheme

1	MOTORCYCLES	5	TWO AXLE, SIX TIRE SINGLE UNIT	9	FIVE-AXLE SINGLE TRAILER
2	PASSENGER CARS	6	THREE AXLE, SINGLE UNIT	10	SIX OR MORE AXLE, SINGLE TRAILER
3	FOUR TIRE, SINGLE UNIT	7	FOUR OR MORE AXLE, SINGLE UNIT	11	FIVE OR LESS AXLE, MULTI TRAILER
4	BUSES	8	FOUR OR LESS AXLE, SINGLE TRAILER	12	SIX AXLE, MULTI TRAILER
				13	SEVEN OR MORE AXLE, MULTI-TRAILER

QUALITY TRAFFIC DATA, LLC
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$\frac{1027 + 1095}{2} = 1061$

Appendix G:

Accident Reports

Accidents By Street Name

Street / Location Names	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTALS
ANNE HOXSIE LN	0	0	0	0	0	1	2	0	0	0	0	0	3
BOSTON NECK RD	1	0	0	0	2	0	2	1	1	0	0	1	8
KINGSTOWN RD	0	0	0	1	2	0	1	1	2	0	2	0	9
MUMFORD RD	2	0	1	0	2	2	2	1	0	0	1	0	11
NARRAGANSETT AVE	0	0	0	0	0	0	2	0	0	0	1	0	3
OTHMAR ST	0	0	1	0	0	0	0	0	0	0	0	0	1
STRATHMORE ST	0	0	0	1	0	0	0	0	0	0	0	0	1
WANDA ST	0	0	0	0	1	0	0	0	0	0	0	0	1
TOTALS	3	0	2	2	7	3	9	3	3	0	4	1	37

Crashes by City and Intersection with Narrative

Strathmore St., Naragansett - 2011 to 2013

Data Used: Start date: 1/1/2011 End date: 12/31/2013

Filter: Where CrashReport.CrashDate between '01/01/2011' And '12/31/2013' And CrashReport.CityOrTown in ('20') And ((IRFONSTREET like 'STRATHMORE%'))

Crashes by City and Intersection with Narrative

Strathmore St., Naragansett - 2011 to 2013

Data Used: Start date: 1/1/2011 End date: 12/31/2013

Narragansett

Case #	Date	Time	City Code	On Street	Dist.	At Street	Light	Weather	Road	Traffic	Collision Type	Vehicles	Injuries	Fatalities
Referenced to Intersection RI 1 A (KINGSTOWN RD) and STRATHMORE RD														
171158	4/14/2011	1:36 AM	20	STRATHMORE ST	20F/N	NARRAGANSETT AV	Dark - Not Lighted	Fog, Smog, Smoke	Wet	No Controls	Not a Collision Between Two Motor Vehicles in Transport	1	0	0
(501/11-138-AC)		Veh. 1	Passenger Car					Movements Essentially Straight Ahead		Northbound	Other Post, Pole, or Support			

(1) Vehicle 1 (NJ reg YZL38S) was making a left turn from Kingstown Rd onto Strathmore St when the operator (Jospeh Capozzoli) lost control of the vehicle and crashed into a small wooden fence on the westerly side of the street. The vehicle sustained damage to the front of the vehicle and appeared to have a damaged front axle. The vehicle got stuck in the mud and required a tow truck to get out. Capozzoli explained to me that he lost control because he had blown the front passenger side tire. I examined the front passenger side tire and it seemed to be fully intact. I showed Capozzoli the tire and he stated that he must have just lost control. I requested Capozzoli to submit to a series of Standarized Field Sobriety tests and he agreed. Capozzoli passed all three phases. I issued Capozzoli a Municipal citation of Laned Roadway Violation on scene and transported him to 40 Othmar St. The vehicle was towed from the scene from Mike's Towing. There were no reported injuries. Capozzoli was also mailed citations for Leaving the Lane of Travel and Operationg Left of Center. All citations have a Municipal court date of 6-2-11 at 1800 hrs or can be payed in the mail.

272462	8/8/2013	7:28 PM	20	STRATHMORE RD		RI 1 A (KINGSTOWN RD)	Dusk	Clear	Dry	Traffic Control Signal	Angle (Front - to - Side) Opposite Direction	2	0	0
(501/13-440-AC)		Veh. 1	Passenger Car					Turning Right		Southbound	Motor Vehicle in Transport			
		Veh. 2	Passenger Car					Stopped in Traffic		Northbound	Motor Vehicle in Transport			

(1) SUMMATION: On 8/8/13 at 1928 hours I, Ptlm O'Connor responded to the intersection of Kingstown Road and Narragansett Ave for a Motor Vehicle Accident. Upon arrival I observed Vehicle #2 (V#2 2004 Black Toyota Spyder RI/PC MYMR2) facing northbound at the traffic light at Taylor's Garage. Margaret C. Damato, the operator of V#2 was still in the driver seat. I made contact with Damato who stated she was OK but did not want to move her vehicle to show me that she was stopped at the traffic light when she was struck on the driver side by Vehicle #1 (V#1 a 2001 White Ford Focus RI/PC 413280). I quickly photographed the location of V#2 and advised Damato to drive over to the Ice Plant to let traffic flow. Damato responded and provided a signed statement. Damato stated V#1 was traveling East on Kingstown Road taking a right at the traffic light to travel South. Damato stated V#1 took the corner a little to fast and wide striking her vehicle on her side of the double yellow lines. I observed the damage to be minor paint scratches on the driver side near the door, the rear wheel and a bent driver side mirror. I made contact with Benjamin S. Alexander the operator of V#1 who was already parked at the Ice Plant. Alexander had a similar story and did not wish to give a written statement. Jennifer Connell was a passenger in V#1, both were not injured. I observed the damage to V#1 to be minor paint transfer to the driver side front panel near the wheel well and minor damage to the driver side mirror. I spoke to Valerie Alexander who the registered owner of V#1 and is Alexander's mother. I explained that Benjamin would be receiving a citation for Manner of Turning at Intersection and Driving with Expired Registration. I advised Valerie she would need to accompany Benjamin to the court date. She stated she understood. I photographed the damage to both vehicles and included in the report. Both vehicles left the scene without incident. RECOMMENDATION: Alexander was cited for Manner of Turning at Intersection and Driving with Expired Registration. He has a mandatory RITT court date of 9/10/13 at 0830 hours. INJURIES: None

Intersection 014633 Case Total: 2

Narragansett Totals: Cases - 2 Vehicles - 3 Injuries - 0 Fatalities - 0

Grand Totals: Cases - 2 Vehicles - 3 Injuries - 0 Fatalities - 0

Crashes by City and Intersection with Narrative

Mumford Rd., Naragansett - 2011 to 2013

Data Used: Start date: 1/1/2011 End date: 12/31/2013

Filter: Where CrashReport.CrashDate between '01/01/2011' And '12/31/2013' And CrashReport.CityOrTown in ('20') And ((IRFONSTREET like 'MUMFORD%'))

Crashes by City and Intersection with Narrative

Mumford Rd., Naragansett - 2011 to 2013

Data Used: Start date: 1/1/2011 End date: 12/31/2013

Narragansett

Case #	Date	Time	City Code	On Street	Dist.	At Street	Light	Weather	Road	Traffic	Collision Type	Vehicles	Injuries	Fatalities
Referenced to Intersection HIGHLAND ST and MUMFORD RD														
160176	1/18/2011	7:56 AM	20	MUMFORD RD		HIGHLAND AV	Daylight	Rain	Ice/Frost	No Controls	Not a Collision Between Two Motor Ve	1	0	0
(501/11-24-AC)		Veh. 1	Passenger Car					Movements Essentially Straight Ahead		Northbound	Motor Vehicle in Transport			

(1) On 01/18/11, at approx. 0756 hours, I, Ptlm. Gorter was dispatched to Mumford Rd. at Highland Ave. for a reported 1 car MVA. Upon arrival I observed RI registration with it's front end stuck in a snowbank. The operator, Matthew Sorrentino was identified by his RIDL. Sorrentino stated hit some ice and skidded into a snowbank. There was damage to the front end and the vehicle was driven from the scene. There were no reported injuries.

Intersection 013744 Case Total: 1

Referenced to Intersection RI 1 A (KINGSTOWN RD) and MUMFORD RD														
184274	8/2/2011	8:09 PM	20	MUMFORD RD	5F/A	KINGSTOWN RD	Dark - Lighted	Clear	Dry	No Controls	Not a Collision Between Two Motor Vehicles in Transport	1	0	0
(501/11-395-AC)		Veh. 1	Passenger Car					Movements Essentially Straight Ahead		Southbound	Motor Vehicle in Transport			

(1) On 08/02/11 at approximately 2100 hours I, Ptlm O'Brien responded to the intersection of Mumford Rd and Kingstown Rd for a motor vehicle accident. Vehicle 1, RI registration RW-706 operated by Daniel F. Decataldo was traveling south on Mumford Rd approaching Kingstown Rd when the vehicles breaks failed. To avoid a collision with the vehicle in front, Decataldo swerved off the roadway and struck a tree causing front end damage. No injuries were reported. Certified Towing responded and towed the vehicle from the scene.

Intersection 014620 Case Total: 1

Referenced to Intersection [NOT STATED]														
179688	6/23/2011	1:02 PM	20	MUMFORD RD		PARKING LOT	Daylight	Clear	Dry	No Controls	Rear - to - Rear	2	0	0
(501/11-261-AC)		Veh. 1	Passenger Car					Backing		Not On Roadway	Motor Vehicle in Transport			
		Veh. 2	Passenger Car					Parked		Not On Roadway	Motor Vehicle in Transport			

(1) 7-6-11 Investigating officer recieved call from Operator Moskwa. Moskwa indicated she was not parked on the left side of vehicle 2 , but directly behind it. The point of impact was still the same. Moskwa was backing at time of collision. (2) Vehicle 2 was parked and unattended on the ballfield at Narragansett Elementary School. Vehicle 1 was parked on the left side of Vehicle 2. Vehicle 1 began to back out of space and struck Vehicle 2. Contact was Veh. 1 right rear to Veh. 2 left rear. Vehicle 1 sustained scratches to contact area of vehicle. Vehicle 2 sustained a broken left rear lens and scratches to the body. No injuries.

196171	11/4/2011	2:10 PM	20	MUMFORD RD		PARKING LOT	Daylight	Clear	Dry	No Controls	Rear End(Front-to-Rear)	2	0	0
(501/11-584-AC)		Veh. 1	(Sport) Utility Vehicle					Backing		Not On Roadway	Motor Vehicle in Transport			
		Veh. 2	Passenger Car					Parked		Not On Roadway	Motor Vehicle in Transport			

(1) On 11-04-11 at approximately 1420 hrs., Velena Foster filled out an in station accident report form. Foster Stated on 10-28-11 at approximately 1445 hrs. she was leaving the parking lot of the Narragansett Elemntary School. Foster stated she backed into a Mazda Miata. Foster stated she went in the school and notified the owner Gloria Fontaine.

Intersection 000000 Case Total: 2

Narragansett Totals: Cases - 4 Vehicles - 6 Injuries - 0 Fatalities - 0

Grand Totals: Cases - 4 Vehicles - 6 Injuries - 0 Fatalities - 0

Crashes by City and Intersection with Narrative

RI 1A., Naragansett - 2011 to 2013

Data Used: Start date: 1/1/2011 End date: 12/31/2013

Filter: Where CrashReport.CrashDate between '01/01/2011' And '12/31/2013' And CrashReport.CityOrTown in ('20') And ((((IRFONSTREET like 'BEACH%' Or IRFONSTREET like 'BOSTON NECK%' Or IRFONSTREET like 'RI 1A%' Or IRFONSTREET like 'RI 1 A%') And (IRFATSTREET like 'NARRAGANSETT%' Or IRFATSTREET like 'ANN HOXIE%' Or IRFATSTREET like 'BEACH%')) Or ((IRFATSTREET like 'BEACH%' Or IRFATSTREET like 'BOSTON NECK%' Or IRFATSTREET like 'RI 1A%' Or IRFATSTREET like 'RI 1 A%') And (IRFONSTREET like 'NARRAGANSETT%' Or IRFONSTREET like 'ANN HOXIE%' Or IRFONSTREET like 'BEACH%'))))

Crashes by City and Intersection with Narrative

RI 1A., Naragansett - 2011 to 2013

Data Used: Start date: 1/1/2011 End date: 12/31/2013

Narragansett

Case #	Date	Time	City Code	On Street	Dist.	At Street	Light	Weather	Road	Traffic	Collision Type	Vehicles	Injuries	Fatalities
Referenced to Intersection BEACH ST and NARRAGANSETT AV														
222662	6/20/2012	4:40 PM	20	BEACH ST	30F/S	NARRAGANSETT AV	Daylight	Clear	Dry	Traffic Control Signal	Rear End(Front-to-Rear)	2	0	0
(501/12-246-AC)		Veh. 1	Passenger Car					Changing Lanes		Northbound	Motor Vehicle in Transport			
		Veh. 2	Passenger Car					Stopped in Traffic		Northbound	Motor Vehicle in Transport			

(1) VEH 1: RI Reg AY-222, a Aluminum Nissan Altima, operated by Joseph Perry VEH 2: RI Reg RY-133, a Aluminium Toyota Scion, operated by Christopher Bagley Veh 2 was north bound in the right lane of travel on Beach St stopped in traffic at the intersection with Narragansett Ave. Veh 1 was traveling north bound in the right lane of travel, behind Veh 2, attempting to turn into the left lane of travel. The operator of Veh 1 stated he was cut off by an unknown vehicle and had to pull back into the right lane of travel and struck Veh 2. Veh 1 sustained damage to the front driver side fender/bumper area. Veh 2 sustained damage to the rear passenger side bumper/fender area. Both vehicles were driven from the scene. There was no report of injury. Statements were taken from both operators.

263693	5/30/2013	10:07 AM	20	NARRAGANSETT AV	200F/W	BEACH ST	Daylight	Clear	Dry	No Controls	Angle (Front - to - Side) Right Angle (I	2	0	0
(501/13-223-AC)		Veh. 1	Passenger Car					Making U - Turn		Northbound	Motor Vehicle in Transport			
		Veh. 2	Passenger Car					Movements Essentially Straight Ahead		Eastbound	Motor Vehicle in Transport			

(1) SUMMATION: Vehicle 1 was traveling east on Narragansett Ave with Vehicle 2 traveling behind them. As the roadway split into two travel lanes the operator of Vehicle 1 pulled over to the right hand lane and then abruptly made a U turn infront of Vehicle 2. Vehicle 2 subsequently struck Vehicle 1 in the drivers rear tire/door and quarter. Vehicle 1 sustained severe damage to the driverside rear as well as deployment of both side airbags. Vehicle 1 was towed from the scene by Mikes Towing. Vehicle 2 sustained damage to the front bumper/grill/headlights but was driven from the scene RECOMMENDATION: The operator of Vehicle 1 was issued summons# 13501500679 for Laned Roadway Violation. INJURIES: There were no reports of injuries or complaints of pain as a result of this accident.

268497	7/4/2013	5:18 PM	20	NARRAGANSETT AV		BEACH ST	Daylight	Clear	Dry	Traffic Control Signal	Rear End(Front-to-Rear)	2	0	0
(501/13-306-AC)		Veh. 1	Passenger Car					Backing		Eastbound	Motor Vehicle in Transport			
		Veh. 2	Passenger Car					Stopped in Traffic		Eastbound	Motor Vehicle in Transport			

(1) SUMMATION: Vehicle 1 RI Registration UJ-246 operated by register owner Yvonne L. Johnson was northbound on Beach St. stopped in traffic. An unknown vehicle in front of Vehicle 1 was disabled. Vehicle 1 attempted to back up and struck Vehicle 2 RI Registration AY-319 operated by register owner, Holly A. Blasbalg. Vehicle 1 pulled over to the side of the road and Vehicle 2 followed. Vehicle 1 was stopped on a hill and rolled backwards into Vehicle 2. Vehicle 1 did not sustain any damage. Vehicle 2 sustained damage to the front bumper. RECOMMENDATION: none INJURIES: none

Intersection 890134 Case Total: 3

Referenced to Intersection BOSTON NECK RD and NARRAGANSETT AV														
172618	4/18/2011	9:19 AM	20	BOSTON NECK RD		NARRAGANSETT AV	Daylight	Clear	Dry	Traffic Control Signal	Rear End(Front-to-Rear)	2	0	0
(501/11-143-AC)		Veh. 1	Passenger Car					Movements Essentially Straight Ahead		Eastbound	Motor Vehicle in Transport			
		Veh. 2	Passenger Car					Turning Left		Eastbound	Motor Vehicle in Transport			

(1) Veh 2 had been stopped at the redlight on Narragansett Ave waiting to turn onto Boston Neck Rd when he was lightly rearended by Veh 1. Veh 2 sustained damage to the rear bumper area. There was no indication of any damage to Veh 1 and all attempts to speak with the operator have been unsuccessful. There were no reports of injuries or complaints of pain as a result of this accident. Both vehicles were driven from the scene. On 5/11/11 the operator of Veh 1 responded to the lobby of the station to complete her side of the accident. She stated that she was driving on Narragansett Ave when her dog distracted her inside the vehicle which caused her to lightly strike the rear of Veh 2. The operator of Veh 1 stated that she observed a minor dent in the rear license plate of Veh 2 and her vehicle was undamaged. She also stated that there were no injuries or complaints of pain as a result of this accident.

177722	6/6/2011	2:04 PM	20	NARRAGANSETT AV	200F/W	BOSTON NECK RD	Daylight	Clear	Dry	No Controls	Angle (Front - to - Side) Same Directio	2	0	0

Crashes by City and Intersection with Narrative

RI 1A., Naragansett - 2011 to 2013

Data Used: Start date: 1/1/2011 End date: 12/31/2013

Narragansett

Case #	Date	Time	City Code	On Street	Dist.	At Street	Light	Weather	Road	Traffic	Collision Type	Vehicles	Injuries	Fatalities
(501/11-219-AC)		Veh. 1	Passenger Car					Making U - Turn		Eastbound	Motor Vehicle in Transport			
		Veh. 2	Passenger Car					Parked		Eastbound	Motor Vehicle in Transport			

(1) Officer Mark Allsup Reporting Tuesday, 6-06-11 at about 1404 hours, I responded to the area of Narragansett Ave, just west of Boston Neck Rd. I was met by Town employee Steve Rotenberg who had witnessed a Hit & Run accident. The struck vehicle was MA reg. 81ZV92, a 2011 Audi A3 black. The vehicle had fresh scratches on the rear quarter panel of the driver's side. The vehicle was parked and unoccupied. Rotenberg said he was in the area when he saw a blue Nissan (RI QM857) being operated by a young male. This vehicle was in a parking space on the west bound side of Narragansett Ave. Rotenberg said the Nissan pulled out of its space, made a u-turn and struck the black Audi. Rotenberg said he told the male driver, later identified as Jason Parent, that he had just hit a vehicle. Parent said he would pull over, but instead left the scene. A Bolo was sent out for the vehicle and a few minutes later, Officer Grieco had stopped the vehicle on Boston Neck Rd near South Ferry Rd. Rotenberg responded to the traffic stop and positively identified the vehicle and Parent as the operator. Rotenberg filled out a written statement. After taking pictures of the accident scene, I responded to Officer Grieco's location. Parent was identified by his RIDL. Officer Grieco performed an SFST which Parent passed. The vehicle Parent was driving was a blue Nissan, RI QM857. The vehicle had fresh scratches to the passenger's side front fender. There were two female passenger's in the vehicle which were not in the vehicle at the time of the accident, Caitlin Chammat (021693) and Jennifer Fagundes (090392). Parent had picked them up at Narragansett Beach after leaving the scene of the accident. I spoke with Parent and he admitted to striking the Audi and leaving the scene. Parent said he got nervous and that's why he left. Parent filled out a written statement. I informed Parent he would be receiving a summons in the mail for the violation. All subjects were negative NCIC with active RIDLs. (2) Officer Mark Allsup Reporting Vehicle 2 is parked an unattended on the eastbound side of Narragansett Ave, about 200 feet west of Boston Neck Rd. Vehicle 1 is in the same area, on the west bound side of Narragansett Ave. Driver 1 makes a U-Turn from parking space and strikes driver's side of Vehicle 2 with passenger's side of Vehicle 1. Witness to the crash, spoke with Driver 1 and told him he had struck vehicle. Driver 1 drove away from scene and was stopped minutes later by Officer Grieco. Vehicle 2 sustained scratches and dent to rear quarter, driver's side. Vehicle 1 sustained scratches to front passenger's fender. No Injuries. Driver cited for Leaving Scene/Unoccupied Vehicle See Supplemental Narrative

179130	6/16/2011	3:19 PM	20	BOSTON NECK RD	100F/E	NARRAGANSETT AV	Daylight	Clear	Dry	No Controls	Rear - to - Side	2	0	0
(501/11-236-AC)		Veh. 1	Passenger Car					Movements Essentially Straight Ahead		Not On Roadway	Motor Vehicle in Transport			
		Veh. 2	Passenger Car					Backing		Not On Roadway	Motor Vehicle in Transport			

(1) Mary Shunney responded to the station to file an accident report which occurred on 6/11/2011. Shunney stated she was in the parking lot of the Town Beach pulling into a parking space in RI Reg PE-763. Shunney stated another vehicle, RI Reg 54482, was backing out a parking space a few spaces away and backed into the driver side of Shunney's vehicle. Both drivers got out and exchanged information. Shunney's vehicle sustained a small scratch on the bottom of the front driver side fender. Shunney had an estimate done and was quoted $150 to fix the scratch. Shunney stated she had been in touch with the operator of the other vehicle, Kayla Marchese, who stated she would pay for the damage. Unknown if Marchese's vehicle was damaged.

181714	7/3/2011	12:44 PM	20	BOSTON NECK RD	1000F/N	NARRAGANSETT AV	Daylight	Clear	Dry	No Controls	Rear End(Front-to-Rear)	2	0	0
(501/11-295-AC)		Veh. 1	Passenger Car					Stopped in Traffic		Northbound	Motor Vehicle in Transport			
		Veh. 2	Passenger Car					Backing		Northbound	Motor Vehicle in Transport			

(1) Sgt. Brian C. Routhier Reporting: Vehicle #2 RI reg. RO 868 operated by Christopher Rhondes was travelling North in a travel lane of the North Town Beach parking lot. Vehicle #1, RI reg. 651-631 operated by Casondra Cavanaugh was travelling North in a travel lane of the North Town Beach parking lot behind Vehicle #2. Vehicle #2 passed an open parking spot in the lot, stopped and then back up into the front of Vehicle #1. Ms. Cavanaugh stated that she had stopped her vehicle when she was struck by Vehicle #2. Ms. Cavanaugh filled out a hand written statement. Mr. Rhodes came into the station and filled out a handwritten statement that he backed into Vehicle #1 Parking lot attendant Kelly Gardener witnessed the accident and filled out a hand written statement confirming Ms. Cavanaughs statement. Damage to vehicle #1 was scratches and scrapes limited to the front bumper area. Damage to Vehicle #2 was scratches to the rear bumper.

182180	7/16/2011	1:22 AM	20	NARRAGANSETT AV		BOSTON NECK RD	Dark - Lighted	Clear	Dry	Traffic Control Signal	Head-On (Front - to - Front)	2	1	0
(501/11-335-AC)		Veh. 1	Passenger Car					Turning Left		Westbound	Motor Vehicle in Transport			
		Veh. 2	Passenger Car					Movements Essentially Straight Ahead		Southbound	Motor Vehicle in Transport			

Crashes by City and Intersection with Narrative

RI 1A., Naragansett - 2011 to 2013

Data Used: Start date: 1/1/2011 End date: 12/31/2013

Narragansett

Case #	Date	Time	City Code	On Street	Dist.	At Street	Light	Weather	Road	Traffic	Collision Type	Vehicles	Injuries	Fatalities
183113	7/23/2011	11:22 PM	20	BOSTON NECK RD	300F/N	NARRAGANSETT AV	Dark - Lighted	Clear	Dry	No Controls	Not a Collision Between Two Motor Vehicles in Transport	1	0	0

(1) Source of Activity On 7/16/11, at approximately 0122 hrs, Ptlm Edwards and I, Probationary Ptlm O'Connor were dispatched to the intersection of Narragansett Ave and Boston Neck Rd for a motor vehicle accident involving two vehicles. Officer's Observations Upon arrival I made contact with operator of vehicle #1 Silver Honda Accord Coupe, RI registration #YZ779, the operator identified as Nina M Lennon, stated she was not injured. The two passengers of vehicle #1, identified as Jacquelyn R Dinardi and Deborah Kim Hargreaves both stated they were not injured. I then made contact with the operator of vehicle #2 Black Mazda 6, RI registration #921924, identified as John C Sheil who stated he was not injured. Vehicle #1 sustained inoperable front end damage to the whole front of the vehicle. Vehicle #2 sustained inoperable front end damage to the drivers side of the front end. Neither vehicle could be driven from the scene, so two next in lines were needed. All parties came back negative and active. I spoke to the operators of each vehicle. Sheil, the operator of vehicle #2 stated that he was driving south on Boston Neck Rd, when silver Honda didn't yield and turned onto Narragansett Ave across his lane, while he had a green light. Sheil stated that he tried to avoid the collision but he didn't have time. I then spoke with Lennon, the operator of vehicle #1, who stated that she was on Beach St going north and was turning onto Narragansett Ave. Lennon stated that she had a green light and a black Mazda went through the intersection crashing into her vehicle. Lennon's passenger Dinardi was unable to state what happen, only that a black vehicle hit their vehicle. Dinardi did state that her left side is achy and numb, but declined any medical treatment. The other one of Lennon's passengers, Hargreaves stated that they were taking a left onto Narragansett Ave when a black car struck them. Hargreaves stated the black car ran the light. All parties excluding Dinardi reported feeling no pain after the accident. In addition to the two vehicles operators and passengers, there were three CSO's that witnessed the accident. The CSO's filled out witness statements. Jennifer Lopez stated that the Black vehicle (V2) was going southbound on Boston Neck Rd trying to make the light. Lopez stated the vehicle then skidded to a stop impacting the silver car (V1). Perry S Cotter also a CSO, stated the black Mazda (V2) was traveling southbound past Narragansett Beach at a high rate of speed. The Mazda entered the intersection and struck the Silver Honda (V1). Cotter stated that V2 had a red light while V1 had a green light. Cotter stated there were visible skid marks from the vehicle braking from a high rate of speed. The third witness, also a CSO, Amber Wilson stated that the black vehicle (V2) was going southbound on Boston Neck Rd at a high rate of speed attempting to beat the light when a silver car (V1) was traveling northbound and taking a left onto Narragansett Ave, when the black car tried to break and crashed into V1. Neither operator showed signs of intoxication or other impairment. Due to the conflicting statements no citations were issued. Written statements were taken from all parties involved. Vehicle 1 was towed by Certified and Vehicle 2 was towed by Northup s towing. Both operators filled out Motor vehicle inventory report forms.

(501/11-359-AC)	Veh. 1	Passenger Car	Movements Essentially Straight Ahead	Southbound	Traffic Sign / Support

183999	7/30/2011	9:32 AM	20	BOSTON NECK RD		NARRAGANSETT AV	Daylight	Clear	Dry	Traffic Control Signal	Rear End(Front-to-Rear)	3	1	0

(1) Sgt Ryan reporting: On 7-23-11, at 2322 hrs, Dispatch advised patrols that the on-duty Community Service Officer, working at the Narragansett Town Beach, had just observed a vehicle strike the pedestrian crossing sign and destroy it. The CSO advised that the vehicle was traveling at a high rate of speed and continued south on Ocean Rd. The description of the suspect vehicle was a dark green Jeep Cherokee that was "jacked up". The sign had been centered on the crosswalk in front of the south pavilion between the 2 lanes of southbound traffic. I proceeded to the area and observed RI Reg 983746, a green 2000 Jeep Cherokee with a lift kit, traveling south on Ocean Rd by Bass Rock Rd. I turned around and stopped the vehicle by Sakonnet Blvd. I was then informed that the CSO located a small plastic portion of the bumper by the sign. I checked the front bumper of the Jeep and observed that it was missing the corner piece of the bumper on the drivers side. I spoke to the operator/owner, Robert Hubbard, and asked him if he struck the sign by the town beach. He stated that he did and he was trying to get away from a tourist that was tailgating him. He stated that he wanted to pay for the damaged sign. A check of Hubbards vehicle revealed that the registration expired 06/2011 and Hubbard informed me that he does not have insurance on the vehicle. The vehicle was pulled into his driveway at 811 Ocean Rd and he was informed that he would be receiving citations by mail. The pedestrian crossing sign is valued at $200.00.

(501/11-378-AC)	Veh. 1	Passenger Car	Stopped in Traffic	Eastbound	Motor Vehicle in Transport
	Veh. 2	Passenger Car	Stopped in Traffic	Eastbound	Motor Vehicle in Transport
	Veh. 3	Passenger Van	Movements Essentially Straight Ahead	Eastbound	Motor Vehicle in Transport

(1) Source of Activity On 7/30/11 at approximately 0932 hrs, I Probationary Ptlm O'Connor responded to the intersection Narragansett Ave and Kingstown Rd, for a report of a three car motor vehicle accident. Officer's Observations Upon arrival, I made contact with all parties and asked if they were injured and if they need medical attention. All parties declined. All vehicle's could be driven from the scene and I had them pull off the road into the Town Beach, South Lot. I made contact with the owner and operator of V1, a Toyota Camry, bearing RI registration C800, Donald Churnick. Churnick stated he was a little shaken up but ok and may get checked out later by his own physician. Churnick stated that a he was stopped on Narragansett Ave at the light heading onto Boston Neck, when the vehicle behind him was hit by another vehicle, and the vehicle that was stuck, hit his vehicle. (see signed statement) I made contact with the operator of V2, an Acura 3.2 TL, bearing RI registration HM75, Holly E Meyer. Meyer stated she was at the traffic light on Narragansett Ave heading onto Boston Neck Rd when she was rear ended by a Chrysler Town and Country. The impact of the crash sent Meyer's vehicle into V1 the Camry also stopped at the light infront of her. (see signed statement) I made contact with the operator of V3, a Chrysler Town and Country, bearing RI registration QF632, Meredith Lackie. Lackie stated she was driving east towards the traffic light on Narragansett Ave. Lackie stated the light changed from green to yellow. Lackie stated when the light changed to yellow there were a few cars in front of her, Lackie thought the lead car was going to continue through the light. Lackie stated the lead car stopped faster than expected, making the car infront of her stop quickly. Lackie stated she tried to avoid the car directly infront of her but could not. (see signed statement)

184388	8/3/2011	9:52 PM	20	BOSTON NECK RD	500F/S	NARRAGANSETT AV	Dark - Lighted	Clear	Dry	No Controls	Not a Collision Between Two Motor Vehicles in Transport	1	0	0

(501/11-398-AC)	Veh. 1	Passenger Car	Movements Essentially Straight Ahead	Southbound	Other Post, Pole, or Support

(1) Vehicle #1, CA Reg 4LDH205 operated by registered owner, was traveling south on Boston Neck Rd approaching the Town Beach south Pavilion when the reg owner fell asleep at the wheel. The vehicle veered into the center median and continued southbound for approx. 50 yards before striking 2 wooden posts at the cross walk to the pavilion. Vehicle #1 came to rest on top of the wooden post preventing the vehicle from moving. The operator stated he fell asleep coming back from New Bedford MA where he had a very early doctors appointment. No injuries reported at the time of the accident. The highway department was notified about the wooden posts, which were not damaged just knocked over. Northup's Towing responded to the scene to lift the vehicle off the posts and back onto Boston Neck Rd. After the vehicle was removed from the median, it appeared the only damage sustained was a couple small scratches to the front bumper from the green wooden posts. The registered owner stated he would pay to have the posts put back in the ground. No citations issued at the time of the accident.

192589	10/8/2011	3:11 PM	20	BOSTON NECK RD	1000F/S	NARRAGANSETT AV	Daylight	Clear	Dry	No Controls	Rear End(Front-to-Rear)	2	1	0

Crashes by City and Intersection with Narrative

RI 1A., Naragansett - 2011 to 2013

Data Used: Start date: 1/1/2011 End date: 12/31/2013

Narragansett

Case #	Date	Time	City Code	On Street	Dist.	At Street	Light	Weather	Road	Traffic	Collision Type	Vehicles	Injuries	Fatalities
(501/11-538-AC)		Veh. 1	Passenger Car					Slowing		Northbound	Motor Vehicle in Transport			
		Veh. 2	Passenger Car					Movements Essentially Straight Ahead		Northbound	Motor Vehicle in Transport			

(1) Vehicle #1, RI Reg RF-977 operated by the reg owner, was traveling north on Boston Neck Rd in the area of the beach cabanas. Vehicle #2, SC Reg GJQ963 operated by the reg owner, was traveling directly behind vehicle #1 in the right travel lane of Boston Neck Rd. Vehicle #1 had to slow down due to the vehicle in front it turning into the cabana parking lot. As vehicle #1 slowed down, vehicle #2 failed to slow down striking vehicle #1 from behind. Vehicle #1 sustained damage to the rear tailgate area. It should be noted vehicle #1 had previous damage to the rear tailgate prior to the accident. Vehicle #2 sustained damage to the right front of the vehicle. The reg owner of vehicle #1 complained of pain to her back. NFD was requested and responded to the scene. The reg owner of vehicle #1 refused medical treatment and NFD obtained a refusal and cleared the scene. Both vehicles were driven from the scene. The reg owner of vehicle #2 stated he did not have automotive insurance. He was issued citation # 11501501415 for operating a motor vehicle w/o evidence of insurance and interval between vehicles with a mandatory RITT court date of 11/8/2011 at 0830 hrs. Pictures were taken of the scene and witness statements were obtained from both drivers and later attached to the report.

193312	10/15/2011	11:59 AM	20	BOSTON NECK RD		NARRAGANSETT AV	Daylight	Clear	Dry	No Controls	Rear End(Front-to-Rear)	2	0	0
(501/11-552-AC)		Veh. 1	Passenger Car					Backing		Not On Roadway	Motor Vehicle in Transport			
		Veh. 2	Passenger Car					Parked		Not On Roadway	Motor Vehicle in Transport			

(1) On 10/15/11, at approx. 1200 hours, I, Ptlm. Gorter was dispatched to the Narragansett Town Beach parking lot for a reported MVA in the parking lot. Upon arrival I observed RI registration TOCOOL(vehicle 1) and CT registration 472UTJ(vehicle 2) both parked in the lot. Tonia Healy, the operator of vehicle 1 was identified by her RIDL. Healy stated she was backing out of a parking space when she backed into vehicle 2, which was parked and unattended. There was damage to both vehicles and no reported injuries. Both vehicles were driven from the scene.

212440	3/23/2012	3:03 PM	20	BOSTON NECK RD	500F/N	NARRAGANSETT AV	Daylight	Clear	Dry	No Controls	Rear End(Front-to-Rear)	2	0	0
(501/12-96-AC)		Veh. 1	Passenger Car					Turning Right		Northbound	Motor Vehicle in Transport			
		Veh. 2	Passenger Car					Movements Essentially Straight Ahead		Northbound	Motor Vehicle in Transport			

(1) Veh 1: RI Reg 972-565, a gold Nissan Altima, operated by Kerry Ryan Veh 2: RI Reg OD-121, a silver Toyota Matrix, operated by Carol Garcia Veh 1 was traveling north on Boston Neck Rd, preparing to turn right into the lot of the Narragansett Town Beach, South Pavilion, 39 Boston Neck Rd. Veh 2 was traveling directly behind Veh 1. Veh 2 did not stop in time and struck Veh 1. Veh 1 sustained minor damage to the rear bumper, including paint transfer and scratches. Veh 2 had pre-existing damage to the front bumper, making it difficult to determine the damage caused by the accident. There were no reports of injury. Written statements were taken from the involved parties. Both vehicles were driven from the scene.

215096	4/18/2012	7:30 PM	20	BOSTON NECK RD	50F/N	NARRAGANSETT AV	Daylight	Clear	Dry	Traffic Control Signal	Not a Collision Between Two Motor Vehicles in Transport	1	0	0
(501/12-138-AC)		Veh. 1	Passenger Car					Unknown		Northbound	Guardrail Face			

(1) SOURCE OFg cell. Mitchell is being charged with DUI 1st Offense-B.A.C Unknown and Refusal to Submit to a Chemical Test. Mitchell was issued Citation #12501500763 for DUI 1st Offense-B.A.C unknown with a 4th District Court date of 5/1/2012 at 0900 hrs. Mitchell was also issued Citation #12501500764 for Refusal to submit to a chemical test, laned roadway violation and care in starting from stop with a RITT Court date of 4/24/2012 at 0830 hrs. Mitchell was also issued Citation #12501500765 for restriction on backing-improper backing with a RITT Court date of 4/24/2012 at 0830 hrs. Due to his intoxication level, he will be held over night and arraigned in the morning. (2) On 04/18/12 at approx. 1930 hours I, Ptlm Hemmerle was parked in the parking lot across from the town beach south pavilion, during the summer the lot is used as employee parking for the beach, speaking with Ptlm Hoffman. I heard a loud bang and screeching of tires, I observed a gray older vehicle with the hood up against the guard rail on in the north bound lane, with a cloud of dust in the air around it. The vehicle came to rest just north of the intersection of Boston Neck Rd and Narragansett Ave. I exited the lot and was able to get behind the vehicle as it began to travel north on Boston Neck Rd. I activated my emergency lights and sirens, the vehicle eventually came to a stop in the south pavilion parking lot of the town beach. I observed that the vehicle was an older Ford Mustang bearing RI registration BWM68. Ptlm Hoffman arrived on scene as the vehicle stopped. Ptlm Hoffman made contact with the operator, who was identified by his RIDL as Brian Mitchell. Mitchell's words were very slurred as he spoke. When Ptlm Hoffman asked Mitchell to exit the vehicle he stumbled out of it almost completely losing his balance. Ptlm Hoffman put Mitchell through the Standardized Field Sobriety Test, which Mitchell verbally agreed to take. After completing the SFST Ptlm Hoffman took Mitchell into custody. (See Ptlm Hoffman's narraitve). An accident report was also completed. (See 12-138-AC). I waited on scene for the tow. The vehicle was towed by Northup's Towing. After the vehicle was towed I checked the guardrail and observed damage to it where the Mitchell's vehicle had struck it. I then checked the parking lot and located two witnesses. I obtained two witness statements from Pattilou Normand and Jillian Snell. Normand and Snell were sitting in a vehicle parked in the south pavilion lot and gave similar versions of events. They stated that while parked they heard a loud bang and observed a vehicle crashed into the median. They then heard tires "burn out" as the driver attempted to back up from the median. Normand and Snell stated as the vehicle backed out of the median it struck the wall of the south pavilion parking lot. They stated that the vehicle then traveled north with police behind it with emergency lights and sirens activated, before pulling into the parking lot.

221825	6/13/2012	10:58 PM	20	NARRAGANSETT AV	200F/W	BOSTON NECK RD	Dark - Lighted	Rain	Wet	No Controls	Not a Collision Between Two Motor Vehicles in Transport	1	0	0
(501/12-228-AC)		Veh. 1	Pickup					Negotiating a Curve		Eastbound	Other Non-Collision			

Crashes by City and Intersection with Narrative

RI 1A., Naragansett - 2011 to 2013

Data Used: Start date: 1/1/2011 End date: 12/31/2013

Narragansett

Case #	Date	Time	City Code	On Street	Dist.	At Street	Light	Weather	Road	Traffic	Collision Type	Vehicles	Injuries	Fatalities
223674	6/28/2012	4:35 PM	20	BOSTON NECK RD	150F/N	NARRAGANSETT AV	Daylight	Clear	Dry	Other	Rear End(Front-to-Rear)	2	1	0

(1) On 6/13/12 at approximately 2305hrs. I, Ptlm. Kuzman along with other members of NPD were dispatched to the area of 20 Narragansett Ave for a report of a vehicle that had went off the road and was partially in the pond. Upon arrival I observed vehicle#1, RI COMM REG 50898, a 2003 GMC gray Sonoma pickup truck. I observed a male standing next to the vehicle, identified as the operator and registered owner Christopher Vieira. Vieira stated he was not injured and declined medical treatment. Vieira stated he was traveling east on Narragansett Ave when he was negotiating the curve and his vehicle started to slide. The vehicle then slid off the road and the rear end of the vehicle entered the water of the pond this is where vehicle#1 came to rest. Vehicle#1 sustained heavy damage to the rear passenger's side wheel and suspension. Vehicle#1 could not be operated from scene and was towed by Certified Towing. Pictures of the scene were taken and uploaded to this case. I issued Viera Narragansett Pay by Mail Municipal Court Summons (#12501501062) for Laned roadway violations and Driving a MV with expired registration.

(501/12-275-AC)	Veh. 1	Passenger Car	Stopped in Traffic	Southbound	Motor Vehicle in Transport
	Veh. 2	Pickup	Slowing	Southbound	Motor Vehicle in Transport

Case #	Date	Time	City Code	On Street	Dist.	At Street	Light	Weather	Road	Traffic	Collision Type	Vehicles	Injuries	Fatalities
224716	7/5/2012	12:36 AM	20	BOSTON NECK RD	75F/S	NARRAGANSETT AV	Dark - Lighted	Clear	Dry	No Controls	Not a Collision Between Two Motor Vehicles in Transport	1	0	0

(1) Source of Activity On 6/28/12 at approximately 1635 hours, Ptlm Hoffman and I, Ptlm Edwards responded to Boston Neck Rd southbound in front of the Narragansett Town Beach south pavilion for a reported motor vehicle accident with possible injuries. Officer's Observations Once on scene I observed Veh. 1, a blue Hyundai bearing RI passenger registration HB-687, partially in the center median with the rest of the vehicle across the left hand lane of Boston Neck Rd south. I observed Veh. 2, a gray Ford F-150 bearing RI combination registration 60943 approximately 30 feet behind Veh. 1 in the left hand lane of Boston Neck Rd south. I identified the operator of Veh. 1 using her RIDL as Lisa M. West. Lisa was complaining of neck pain so NFD was called to the scene. Sitting in the rear passenger side seat of Veh. 1 was Lily L. West who had no complaints of pain at the time of this report. I identified the operator of Veh. 2 using her RIDL as Sophia N. Scalora. I then identified the passenger of Veh. 2 as Samuel D. Spier. Neither Scalora or Spier had any complaints of pain. Veh. 1 was traveling south on Boston Neck Rd when it came to a stop to allow pedestrians to cross the street. Veh. 2, which was traveling directly behind Veh. 1, was unable to stop in time and struck the rear of Veh. 1 with the front bumper of Veh. 2. Veh. 1 sustained minor damage to the rear bumper. Veh. 2 sustained no damage as a result of the collision. Lisa was examined by NFD but refused transport to SCHER. Both vehicles were able to be driven from scene.

(501/12-303-AC)	Veh. 1	(Sport) Utility Vehicle	Movements Essentially Straight Ahead	Not On Roadway	Other Non-Collision

(1) Soy a physcian of his choice and at his own expense. I advised dispatch the rights had been read on scene. I then timed, dated, and initialed the card. I then conducted an inventory search and located an opened bottle of Bud Light containing a little bit of alcohol left inside. The rest of the car was searched with negative results. Sgt Ryan remained on scene for the tow. Oliver was transported to NPD without incident. Booking: Once at the station I read Oliver his rights for use at station from a department issued form. These rights include the Miranda Right, the right to use the telephone, the right to have a physician or person of his choice administer a chemical test in addition to the one given under my direction, and the right to refuse the chemical test. Oliver made a confidential phone call at approximately 0115 hrs. Oliver signed the Refuse portion of the rights for use at station form at 0119 hrs. Oliver was then placed in male holding cell #1 to await processing. At approximately 0245 hrs, I completed the Alcohol Influence Report with Oliver. Oliver stated he was leaving the beach parking lot, and going home. Oliver stated he did not know how many drinks he had tonight. Oliver stated he started drinking at 2100 hrs at his house and stopped at 0002 hrs. Oliver stated he did not remember where he stopped drinking. Oliver stated he ate three hot dogs and a burger at 2000 hrs. Oliver was processed and secured in male holding cell #1 without incident. Oliver is being charged with DUI-1st Offense BAC Unknown, Obstructing an Officer in Execution of Duty, Refusal to Submit to a Chemical Test, and the Presence of Alcohol Beverage While Operating or Riding in a Motor Vehicle. Oliver was issued 4th District Summons # 12501501181 returnable 07/24/2012 for DUI-1st Offense BAC Unknown and RITT Summons # 12501501182 returnable 07/17/2012 for Refusal to Submit to Chemical Test and Presence of Alcohol Beverage While Operating or Riding in a Motor Vehicle. Oliver was also issued a 4th District Summons for Obstructing a Police Officer During the Execution of Duty. Oliver was positive for a BCI. On 07/07/2012 at approximately 1954 hrs I, Ptlm Lagasse attempted to make contact with Myrus Oliver via ext 217 to inform him that he needed to repond to NPD to provide his insurance information for the Nissan Pathfinder bearing RI reg NG582. A message was left at the phone number provided by Oliver.

Case #	Date	Time	City Code	On Street	Dist.	At Street	Light	Weather	Road	Traffic	Collision Type	Vehicles	Injuries	Fatalities
226533	7/21/2012	3:15 PM	20	BOSTON NECK RD	1200F/N	NARRAGANSETT AV	Daylight	Clear	Dry	No Controls	Not a Collision Between Two Motor Ve	1	1	0

(501/12-364-AC)	Veh. 1	(Sport) Utility Vehicle	Movements Essentially Straight Ahead	Eastbound	Motor Vehicle in Transport

(1) Bicyclist had minor complaints of pain to his left knee and wrist, but declined medical treatment by NFD. According to the bicyclist, he was travelling northbound on Boston Neck Rd. and Veh 1 pulled in front of him causing him to strike the front passengers door. According to the operator of Veh 1, he was turning into the beach parking lot and did not observe the bicyclist approaching him and drove in front of the bicyclist. Veh 1 sustained a small dent to the passenger's front door from the bicycle. The bicycle had minor scrapes to the front handle bars.

Case #	Date	Time	City Code	On Street	Dist.	At Street	Light	Weather	Road	Traffic	Collision Type	Vehicles	Injuries	Fatalities
227536	7/30/2012	11:34 AM	20	BOSTON NECK RD	200F/N	NARRAGANSETT AV	Daylight	Clear	Dry	No Controls	Rear End(Front-to-Rear)	2	2	0

(501/12-388-AC)	Veh. 1	Passenger Car	Changing Lanes	Southbound	Motor Vehicle in Transport
	Veh. 2	Passenger Car	Slowing	Southbound	Motor Vehicle in Transport

(1) Complaints of pain from Operator of Veh 2 and a passenger from Veh 2. According to the operator of Veh 1, she was changing lanes and did not see Veh 2. Operator of Veh 1 stated she rear ended Veh 2. Veh 1 sustained moderate front end damage. Veh 2 sustained heavy rear end damage.

Case #	Date	Time	City Code	On Street	Dist.	At Street	Light	Weather	Road	Traffic	Collision Type	Vehicles	Injuries	Fatalities
227814	8/2/2012	1:31 AM	20	BOSTON NECK RD		NARRAGANSETT AV	Dark - Lighted	Clear	Dry	No Controls	Not a Collision Between Two Motor Vehicles in Transport	1	0	0

(501/12-394-AC)	Veh. 1	Pickup	Turning Right	Eastbound	Other Post, Pole, or Support

Crashes by City and Intersection with Narrative

RI 1A., Naragansett - 2011 to 2013

Data Used: Start date: 1/1/2011 End date: 12/31/2013

Narragansett

Case #	Date	Time	City Code	On Street	Dist.	At Street	Light	Weather	Road	Traffic	Collision Type	Vehicles	Injuries	Fatalities
228165	8/4/2012	11:23 PM	20	BOSTON NECK RD		NARRAGANSETT AV	Dark - Lighted	Clear	Dry	No Controls	Not a Collision Between Two Motor Vehicles in Transport	1	1	0

(1) On 8/2/12 at approximately 0131hrs. I, Ptlm. Kuzman responded to the area of Narragansett Town Beach South Pavilion for a report of a motor vehicle accident. Dispatch advised a vehicle had struck and got stuck on the chain guarding the entry to the parking lot. Once on scene I observed in the entry point to the South Pavilion parking lot vehicle #1, RI COMM REG 63583 a 2009 Black Ford F150. I spoke with the operator of vehicle#1, Katie A. Labore. Labore stated she was trying to pull into the south pavilion parking lot of town beach when she ran into the chain. Labore stated she did not see the chain until it was too late. Vehicle#1 sustained light damage to the front bumper and grille from the chain. Vehicle#1 could be operated from scene. All occupants of vehicle#1 declined medical treatment. The reflector on the chain was damaged as well as the retaining screw from the southern most pole. CSO#4 was on scene and secured the town beach lot. The approximate cost of the damage to the reflector and pole is $50.

(501/12-407-AC)	Veh. 1	Motorcycle	Movements Essentially Straight Ahead	Northbound	Motor Vehicle in Transport

(1) Veh 1- Black 1991 Suzuki GSXR Motorcycle bearing RI MC 15172 On 08-04-12 at approximately 2320 I, Ptlm Wass responded to the area of the Narragansett Town Beach south parking lot for the report of a motor vehicle accident. Upon arrival I observed three motorcycles parked along the sidewalk and a group of males standing around a female lying on the ground. I identified the female as Michelle Fontaine who was wearing a helmet and complaining of back pain. Fontaine stated she was riding as a passenger on a motorcycle when it lost control and she was thrown from the motorcycle and landing on her back. Fontaine was complaining of pain due to scrapes to her lower back, shoulder and both feet. I advised dispatch to send rescue to my location. I then identified the operator of the motorcycle as Thomas Cardente. Cardente stated as he was coming around the corner at the intersection of Boston Neck Rd and Beach St and lost control of the motorcycle. Cardente stated at that time Fontaine was thrown from the back of the motorcycle. Cardente stated he then fell on top of the motorcycle as it hit the ground. Cardente sustained minor scrapes to his knees and wrists. Veh 1 sustained scuffs on the right side as well as a broken taillight. Cardente advised me that the taillight was still operational at this time and was safe to operate in the dark. The windshield of Veh 1 was also cracked and the side view mirrors were broken off. Cardente stated the motorcycle could be driven from scene. Fontaine was transported to SCHER for treatment and Cardente was treated on scene and released. Photographes of the damage to the motorcycle were taken and uploaded to the case.

228688	8/4/2012	5:15 PM	20	BOSTON NECK RD	500F/S	NARRAGANSETT AV	Daylight	Clear	Dry	No Controls	Other	1	0	0

(501/12-406-AC)	Veh. 1	Passenger Car	Leaving Traffic Lane	Northbound	Pedalcycle

(1) Vehicle #1, RI Reg UY-757 operated by Katrina Herold, was traveling north on Boston Neck Rd. Christopher Vanhemelrijck was riding his pedal bike northbound on Boston Neck Rd to the right of vehicle #1. Herold stated she made a left turn into the parking lot of the South Pavilion when she heard a bang. Herold stated she did not see Vanhemelrijck on the bike because it was in her blind spot. Vanhemelrijck stated he was riding next to vehicle #1 when the vehicle cut in front of him turning into the parking lot. Vanhemelrijck struck the passenger side rear quarter panel of the vehicle causing him to fall off his bike. Vanhemelrijck had a couple scrapes on his elbow but stated he was ok. There was no visible damage to either vehicle #1 or the bicycle so both parties left the area.

233514	9/19/2012	1:56 PM	20	BOSTON NECK RD		NARRAGANSETT AV	Daylight	Clear	Dry	Traffic Control Signal	Angle (Front - to - Side) Opposite Direction	2	0	0

(501/12-515-AC)	Veh. 1	Passenger Car	Turning Left	Westbound	Motor Vehicle in Transport
	Veh. 2	Pickup	Movements Essentially Straight Ahead	Southbound	Motor Vehicle in Transport

(1) No injuries reported. According to the operator of Veh 1, she was turning left onto Narragansett Ave. from Boston Neck Rd. and Veh 2 was stopped on the opposite side of the street. Operator of Veh 1 stated as she was turning left Veh 2 struck her rear right side. Operator of Veh 2 stated his light was green and he began travelling south on Boston Neck Rd. when Veh 1 pulled infront of him and he was not able to stop. Veh 1 sustained minor damage to the rear right quarter panel. Veh 2 sustained minor damage to the front right bumper.

233731	9/22/2012	2:44 AM	20	BOSTON NECK RD	500F/S	NARRAGANSETT AV	Dark - Lighted	Fog, Smog, Smoke	Wet	No Controls	Not a Collision Between Two Motor Vehicles in Transport	1	0	0

(501/12-523-AC)	Veh. 1	Passenger Car	Movements Essentially Straight Ahead	Southbound	Motor Vehicle in Transport

(1) Veh 1-2003 white Jeep Liberty bearing MA PC reg 6LH-210 On 09-22-12 at approximately 0244 hours I, Ptlm Wass, was traveling south on Boston Neck Rd in the area of the South Pavilion of the Narragansett Town beach. I observed a female, later identified as Theresa Silva, standing the in right lane of travel attempting to remove a tire from the road way. As a positioned my cruiser closer I could observe that Silva's vehicle was stopped on the side of the road and had been involved in a one vehicle accident. I assured that neither Silva nor her passenger, later identified as Shawna Williams, were injured. Both Silva and Williams stated they did not need medical attention. Silva provided me with a written witness statement. In the statement, Silva explained that she was driving south on Boston Neck Rd when her vehicle lost control and struck a utility pole. I observed Veh 1 and noticed that the right front wheel was detached from the axel, rendering the vehicle inoperable. Veh 1 sustained major damage to the front end including dents and scratches on the wheel well. As Veh 1 struck the utility pole the right front tire was detached from the vehicle. The axel then began to scrape across the pavement until the vehicle came to a rest against the sidewalk. There were no complaints of pain or reports of injury while on scene. Veh 1 was towed from scene and both Williams and Silva were transported to there residence by Ptlm Fitzgerald.

235238	10/1/2012	2:18 PM	20	BOSTON NECK RD		NARRAGANSETT AV	Daylight	Clear	Dry	Traffic Control Signal	Other	2	0	0

(501/12-540-AC)	Veh. 1	Passenger Car	Stopped in Traffic	Northbound	Motor Vehicle in Transport
	Veh. 2	Cargo Van (10K lbs [4,536 kg] or Less)	Backing	Southbound	Motor Vehicle in Transport

Crashes by City and Intersection with Narrative

RI 1A., Naragansett - 2011 to 2013

Data Used: Start date: 1/1/2011 End date: 12/31/2013

Narragansett

Case #	Date	Time	City Code	On Street	Dist.	At Street	Light	Weather	Road	Traffic	Collision Type	Vehicles	Injuries	Fatalities
(1) Vehicle 2 was traveling north on Boston Neck attempting to make a left turn onto Narraganset Ave. As he entered the intersection the traffic light turned red so he stopped. Vehicle 1 was also traveling north on Boston Neck Rd and stopped for the redlight. The operator of Vehicle 2 did not see Vehicle 1 stopped behind him and attempted to back up in order to get out of the intersection. As he backed up the operator of Vehicle 1 beeped her horn to warn him but he backed into her front end. Vehicle 1 sustained minor damage to the front bumper. Vehicle 2 had existing damage to the rear bumper and did not sustain any damage. There were no reports of injuries or complaints of pain as a result of this accident. Both vehicles were driven from the scene.													
268172	7/3/2013	3:11 PM	20	BOSTON NECK RD	300F/S	NARRAGANSETT AV	Daylight	Clear	Dry	Other	Rear End(Front-to-Rear)	2	0	0
(501/13-300-AC)		Veh. 1	Passenger Car					Movements Essentially Straight Ahead		Northbound	Motor Vehicle in Transport			
		Veh. 2	Pickup					Stopped in Traffic		Northbound	Motor Vehicle in Transport			
(1) SUMMATION: On 7/3/13 at approximately 1511 hours, I, Ptlm McGovern, responded to the area of 39 Boston Neck Rd, Narragansett Town Beach South Pavilion, for a motor vehicle accident. Vehicle 1, RI Reg. 867-021, a black 2008 Mazda 3, operated by Alexander Rossi, was traveling north on Boston Neck Rd in the left northbound lane of travel. Vehicle 2, RI CO 40606, a silver 2005 Dodge Dakota, operated by William Giannini was traveling north on Boston Neck Rd in the left northbound lane of travel and directly in front of vehicle 1. Vehicle 2 was stopped at the marked pedestrian cross walk to allow pedestrians to cross. Vehicle 1 failed to stop in time, causing the front end of vehicle 1 to collide with the rear bumper of vehicle 2. Vehicle 1 sustained functional damage to the front bumper and hood. Vehicle 1 did not experience air bag deployment and was operable from the scene. Vehicle 2 sustained minor damage to the rear bumper and was operable from the scene. Vehicle 2 did not experience air bag deployment. Photographs of both vehicles and the location of the accident scene were taken and downloaded to the case. In a verbal statement, Rossi stated that he was unable to stop in time and hit the rear bumper of vehicle 2. In a verbal statement, Giannini stated he was stopped at the crosswalk when the vehicle behind him hit his rear bumper. RECOMMENDATION: None. INJURIES: No injuries were reported.													
270265	7/21/2013	1:40 PM	20	BOSTON NECK RD	300F/S	NARRAGANSETT AV	Daylight	Clear	Dry	No Controls	Sideswipe, Same Direction	2	0	0
(501/13-371-AC)		Veh. 1	Passenger Car					Changing Lanes		Southbound	Motor Vehicle in Transport			
		Veh. 2	Passenger Car					Movements Essentially Straight Ahead		Southbound	Motor Vehicle in Transport			
(1) SUMMATION: Vehicle 2 was traveling south on Boston Neck Rd near the town beach in the left hand lane. Vehicle 1 had been traveling south in the right lane next to Vehicle 2. The oper of vehicle 1 attempted to turn into the left lane because she had driven past the beach entrance. The operator of Vehicle 1 did not see vehicle 2 and subsequently collided into the passengers side of Vehicle 2. Vehicle 2 sustained minor damage to the front right fender/bumper. Vehicle 1 sustained damage to the front left fender/door. Both vehicles were driven from the scene. RECOMMENDATION: none INJURIES: There were no reports of injuries or complaints of pain as a result of this accident.													
271075	7/27/2013	5:43 PM	20	BOSTON NECK RD	500F/S	NARRAGANSETT AV	Daylight	Clear	Dry	No Controls	Angle (Front - to - Side) Right Angle (I	2	0	0
(501/13-400-AC)		Veh. 1	Passenger Car					Movements Essentially Straight Ahead		Eastbound	Motor Vehicle in Transport			
		Veh. 2	Passenger Car					Movements Essentially Straight Ahead		Northbound	Motor Vehicle in Transport			
(1) SUMMATION: Vehicle 1 RI Registration 631-038 operated by Michael E. Robinson was traveling into the entrance of the North Pavilion beach parking lot. Vehicle 1 struck Vehicle 2 PA Registration GYT-0040 operated by James J. Scanlan front driver s side quarter panel. Vehicle 2 was traveling north in the right hand lane of travel on Boston Neck Rd. Robinson verbally stated that a car in the left hand lane of travel waved him through to make the turn into the entrance. Robinson stated it caused a blind spot and he did not see Scanlan traveling in the right hand lane. RECOMMENDATION: none INJURIES: none													
278500	9/28/2013	7:17 PM	20	BOSTON NECK RD	300F/N	NARRAGANSETT AV	Daylight	Clear	Dry	No Controls	Not a Collision Between Two Motor Ve	1	1	0
(501/13-557-AC)		Veh. 1	Passenger Car					Movements Essentially Straight Ahead		Southbound	Utility Pole (Electric / Telephone) / Light Support			
(1) Source of Information On 09-28-2013 at approx 1915 hours, I, K9 Officer Matthew C Riley responded to a motor vehicle accident on Boston Neck Road in front of the Narragansett Town Beach. I was advised that the motor vehicle had left the roadway and struck an utility pole. Officers Observations I noticed Connecticut registration 877-PXD up against a utility pole on south side of Boston Neck Road. An investigation showed that Stewart was operating the motor vehicle south on Boston Neck Road. Stewart appeared to be intoxicated. The operator Mark Stewart was placed under arrest for suspicion of operating a motor vehicle under the influence of intoxicating liquor and or drugs by Ptlm Hoffman. Refer to Case # 13-697-AR for details. Accident Investigation The vehicle left the roadway and struck Verizon pole # 921 head-on. The impact broke the pole in half approx 2 feet from the base of the sidewalk. The pole was being held by two guide wires and it contained three transformers that were sparking. There were no skid marks or any indication that Stewart applied the brakes prior to impact. Photographs were taken of the vehicle and the scene. National Grid Co and Verizon Co responded and installed a new utility pole. National Grid and Verizon transferred all the electrical and telephone hardware from the broken pole to the new pole. The motor vehicle was towed from the scene by Northup s Towing Co Evidence I downloaded all the photographs and attached them to the accident report.													
287165	12/6/2013	10:54 AM	20	BOSTON NECK RD	1M/S	NARRAGANSETT AV	Daylight	Rain	Wet	No Controls	Angle (Front - to - Side) Opposite Dire	2	0	0
(501/13-660-AC)		Veh. 1	Pickup					Entering Traffic Lane		Westbound	Motor Vehicle in Transport			
		Veh. 2	Passenger Car					Movements Essentially Straight Ahead		Northbound	Motor Vehicle in Transport			

Crashes by City and Intersection with Narrative

RI 1A., Naragansett - 2011 to 2013

Data Used: Start date: 1/1/2011 End date: 12/31/2013

Narragansett

Case #	Date	Time	City Code	On Street	Dist.	At Street	Light	Weather	Road	Traffic	Collision Type	Vehicles	Injuries	Fatalities

(1) SUMMATION: Vehicle 1 NY Reg GBV 7830 was attempting to pull out of the south pavilion town beach parking lot. Vehicle 1's view was obstructed by road crew vehicle parked in the area. As Vehicle 1 pulled up a little more, Vehicle 1 struck Vehicle 2 RI Reg 85861, which was travelling northbound. Damage to Vehicle 1 consisted of minor paint transfer to front bumper. Damage to Vehicle 2 consisted of paint transfer and minor body damage to rear passenger side bumper. RECOMMENDATION: Report for Insurance Purposes INJURIES: None

Intersection 400381 Case Total: 28

Referenced to Intersection RI 1 A (BOSTON NECK RD) and BEACH ST

232650	9/11/2012	1:27 PM	20	RI 1 A (BOSTON NECK RD)	500F/N	BEACH ST	Daylight	Clear	Dry	No Controls	Rear End(Front-to-Rear)	2	0	0
(501/12-504-AC)	Veh. 1	Passenger Car						Movements Essentially Straight Ahead		Northbound	Motor Vehicle in Transport			
	Veh. 2	Passenger Car						Movements Essentially Straight Ahead		Northbound	Motor Vehicle in Transport			

(1) Veh 1 was traveling north in the far right lane on Boston Neck Rd with Veh 2 following. Both vehicles were following behind my patrol vehicle. I activated my right turn signal to enter the Canochet Parking lot for the election polls while another vehicle had pulled out at a angle blocking the entrance. I was forced to come to a complete stop to allow the vehicle to exit, at which time I heard a crash come from behind. It was at that time Veh 2 had rear ended Veh 1. Veh 1 sustained only minor scratches to its rear bumper while Veh 2 obtained minor damage to the front end but was still able to safely operate from the scene. There were no injuries to report of at the time of the accident and both vehicles were driven from the scene.

Intersection 400375 Case Total: 1

Narragansett Totals: Cases - 32 Vehicles - 54 Injuries - 9 Fatalities - 0

Grand Totals: Cases - 32 Vehicles - 54 Injuries - 9 Fatalities - 0

Appendix H:

Bicycle Route Suitability Report

STATE OF RHODE ISLAND

DEPARTMENT OF TRANSPORTATION

BICYCLE ROUTE SUITABILITY REPORT

PROJECT: Narragansett/ South Kingstown Bicycle Facility – Contract 3 (Canonchet Farms Study)

CONSULTANT: Fay, Spofford & Thorndike REVIEW DATE: _____

ROUTE NAME & NUMBER: Kingstown Rd (1A) CITY/TOWN: Narragansett

ROADWAY LIMITS: Caswell Street/ Narragansett Ave. to Beach/Ocean Rd.

Technical Paper No. 155 Roadway Classification Urban Principle Arterial

"Guide to Cycling in the Ocean State 2003" Roadway Designation Most Suitable Road

The State Highway noted above is being considered for signage as a "Signed Shared Roadway" in accordance with the criteria set forth in RIDOT DPM No. 920.06. The following information is to be provided to the Deputy Chief Engineer of the Design Section for consideration:

ITEM NO.	DESCRIPTION		COMMENTS NO. (SEE ENDNOTES)
1	Posted Speed Limit		Not Posted
2	85th Percentile Speed (Radar speed study)		Not available
3	Average Annual Daily Traffic (AADT) Volume		8,900
4	Percent Truck Traffic Volume		Not available
5	Number of Travel Lanes		2
6	Width of Travel Lanes		12'
7	Width of Shoulders		5'-7'
8	Delineation of Centerline & Shoulders		Yes
9	Sidewalk		Southeast side
10	Curbing		Vertical Granite
11	On-Street Parking		No
12	Frequency of Curb Cuts	Moderate X	

ITEM NO.	DESCRIPTION			COMMENTS NO. (SEE ENDNOTES)
		Heavy		
		Commercial		
		Residential		**/mile
13	Horizontal Alignment Constraints			No
14	Vertical Alignment Constraints			No
15	Intersections & Corresponding Stopping Sight Distances			
16	Stop Controls Along Roadway			No-Two Signals (Strathmore and Caswell)
17	General Roadway Conditions	Surface		Good
		Potholes		None
		Cracking		None
		Catch Basin Types		
		Sand & Debris		None
18	Are all grates bicycle-safe? (If no, please indicate which ones)	Yes: X	No: _____	
18A	Total Number of Grates: _____			
18B	Location of Grates (list): _____			
19	Off-Road Obstacles	Mailboxes, signs		
		Poles		Yes
		Outcrops		
		Hanging Limbs		Yes
20	Facilities List on Roadway	Parks		Town Beach
		Schools		
		Recreational Fields		
		Historical Districts		

ITEM NO.	DESCRIPTION			COMMENTS NO. (SEE ENDNOTES)
		Commercial Establishments		
21	Expected Bike User Type	A – Advanced	X	3
		B – Basic	X	3
		C – Children	X	3
22	Location of nearest Bike Route/Path as potential link			Connection to William O'neil Bike Path
23	Additional Observations			
24	Accident History (Provide Crash Data for the previous three years according to type, location, injury, roadway surface and time			See Appendix and report

COMMENTS
(Expand/Delete as needed)

2	Two Traffic Signals (Strathmore Road and Caswell Street/Narragansett Ave)
3	All User Types expected.

Based on the information contained in the above "Bicycle Route Suitability Report", the reviewing engineer:

Recommends ( )

Does not recommend ( )

designation of this roadway as a Rhode Island Bicycle Route

Reviewing Engineer:	Date:
Approved Deputy Chief Engineer:	Date:

Approved Chief Engineer:	Date:

STATE OF RHODE ISLAND

DEPARTMENT OF TRANSPORTATION

BICYCLE ROUTE SUITABILITY REPORT

PROJECT: Narragansett/ South Kingstown Bicycle Facility – Contract 3 (Canonchet Farms Study)

CONSULTANT: Fay, Spofford & Thorndike REVIEW DATE:

ROUTE NAME & NUMBER: Kingstown Rd (1A) CITY/TOWN: Narragansett

ROADWAY LIMITS: Mumford Road to Strathmore Road

Technical Paper No. 155 Roadway Classification Urban Principle Arterial

"Guide to Cycling in the Ocean State 2003" Roadway Designation Most Suitable Road

The State Highway noted above is being considered for signage as a "Signed Shared Roadway" in accordance with the criteria set forth in RIDOT DPM No. 920.06. The following information is to be provided to the Deputy Chief Engineer of the Design Section for consideration:

ITEM NO.	DESCRIPTION		COMMENTS NO. (SEE ENDNOTES)
1	Posted Speed Limit		35 mph
2	85th Percentile Speed (Radar speed study)		Not available
3	Average Annual Daily Traffic (AADT) Volume		8,900
4	Percent Truck Traffic Volume		Not available
5	Number of Travel Lanes		2
6	Width of Travel Lanes		12
7	Width of Shoulders		5'-7'
8	Delineation of Centerline & Shoulders		Yes
9	Sidewalk		Both Sides
10	Curbing		Vertical Granite
11	On-Street Parking		No
12	Frequency of Curb Cuts	Moderate X	

ITEM NO.	DESCRIPTION			COMMENTS NO. (SEE ENDNOTES)
		Heavy		
		Commercial		
		Residential		**/mile
13	Horizontal Alignment Constraints			No
14	Vertical Alignment Constraints			No
15	Intersections & Corresponding Stopping Sight Distances			
16	Stop Controls Along Roadway			Yes **(2)**
17	General Roadway Conditions	Surface		Good
		Potholes		None
		Cracking		None
		Catch Basin Types		
		Sand & Debris		None
18	Are all grates bicycle-safe? (If no, please indicate which ones)	Yes: X	No: _____	
18A	Total Number of Grates: 3 per side			
18B	Location of Grates (list): _____			
19	Off-Road Obstacles	Mailboxes, signs		
		Poles		Yes
		Outcrops		
		Hanging Limbs		Yes
20	Facilities List on Roadway	Parks		
		Schools		Narragansett Elementary
		Recreational Fields		Sprague Memorial Field Sprague Park Narragansett Little League

ITEM NO.	DESCRIPTION			COMMENTS NO. (SEE ENDNOTES)
		Historical Districts		
		Commercial Establishments		
21	Expected Bike User Type	A – Advanced	X	3
		B – Basic	X	3
		C – Children	X	3
22	Location of nearest Bike Route/Path as potential link			Connection to William O'Neil Bike Path
23	Additional Observations			
24	Accident History (Provide Crash Data for the previous three years according to type, location, injury, roadway surface and time			See Appendix and report

COMMENTS
(Expand/Delete as needed)

2	Stop at 1A; Stop at Prospect
3	All User Types expected.

Based on the information contained in the above "Bicycle Route Suitability Report", the reviewing engineer:

Recommends ( )

Does not recommend ( )

designation of this roadway as a Rhode Island Bicycle Route

Reviewing Engineer:	Date:

Approved Deputy Chief Engineer:	Date:
Approved Chief Engineer:	Date:

STATE OF RHODE ISLAND

DEPARTMENT OF TRANSPORTATION

BICYCLE ROUTE SUITABILITY REPORT

PROJECT: Narragansett/ South Kingstown Bicycle Facility – Contract 3 (Canonchet Farms Study)

CONSULTANT: Fay, Spofford & Thorndike REVIEW DATE: _____

ROUTE NAME & NUMBER: Kingstown Rd (1A) CITY/TOWN: Narragansett

ROADWAY LIMITS: Strathmore Road to Caswell Street/ Narragansett Ave.

Technical Paper No. 155 Roadway Classification Urban Principle Arterial

"Guide to Cycling in the Ocean State 2003" Roadway Designation Most Suitable Road

The State Highway noted above is being considered for signage as a "Signed Shared Roadway" in accordance with the criteria set forth in RIDOT DPM No. 920.06. The following information is to be provided to the Deputy Chief Engineer of the Design Section for consideration:

ITEM NO.	DESCRIPTION		COMMENTS NO. (SEE ENDNOTES)
1	Posted Speed Limit		25 mph
2	85th Percentile Speed (Radar speed study)		Not available
3	Average Annual Daily Traffic (AADT) Volume		8,900
4	Percent Truck Traffic Volume		Not available
5	Number of Travel Lanes		2
6	Width of Travel Lanes		12
7	Width of Shoulders		None
8	Delineation of Centerline & Shoulders		Yes
9	Sidewalk		Both Sides
10	Curbing		Vertical Granite
11	On-Street Parking		Yes, Both Sides
12	Frequency of Curb Cuts	Moderate X	

ITEM NO.	DESCRIPTION			COMMENTS NO. (SEE ENDNOTES)
		Heavy		
		Commercial		
		Residential		2 every 100 feet
13	Horizontal Alignment Constraints			No
14	Vertical Alignment Constraints			No
15	Intersections & Corresponding Stopping Sight Distances			
16	Stop Controls Along Roadway			Yes (3 side streets)
17	General Roadway Conditions	Surface		Good
		Potholes		None
		Cracking		None
		Catch Basin Types		
		Sand & Debris		None
18	Are all grates bicycle-safe? (If no, please indicate which ones)	Yes: ___X_	No: _____	
18A	Total Number of Grates: _____			
18B	Location of Grates (list): _____			
19	Off-Road Obstacles	Mailboxes, signs		
		Poles		Yes
		Outcrops		
		Hanging Limbs		Yes
20	Facilities List on Roadway	Parks		
		Schools		
		Recreational Fields		
		Historical Districts		

ITEM NO.	DESCRIPTION			COMMENTS NO. (SEE ENDNOTES)
		Commercial Establishments		
21	Expected Bike User Type	A – Advanced	X	3
		B – Basic	X	3
		C – Children	X	3
22	Location of nearest Bike Route/Path as potential link			Connection to William O'Neil Bike Path
23	Additional Observations			
24	Accident History (Provide Crash Data for the previous three years according to type, location, injury, roadway surface and time			See Appendix and report

COMMENTS
(Expand/Delete as needed)

2	Two Traffic Signals (Strathmore Road and Caswell Street/Narragansett Avenue)
3	All User Types expected.

Based on the information contained in the above "Bicycle Route Suitability Report", the reviewing engineer:

Recommends ( )

Does not recommend ( )

designation of this roadway as a Rhode Island Bicycle Route

Reviewing Engineer:	Date:
Approved Deputy Chief Engineer:	Date:

Approved Chief Engineer:	Date:

STATE OF RHODE ISLAND

DEPARTMENT OF TRANSPORTATION

BICYCLE ROUTE SUITABILITY REPORT

PROJECT: Narragansett/ South Kingstown Bicycle Facility – Contract 3 (Canonchet Farms Study)

CONSULTANT: Fay, Spofford & Thorndike REVIEW DATE: _____

ROUTE NAME & NUMBER: Mumford Road CITY/TOWN: Narragansett

ROADWAY LIMITS: Riverside Drive to Kingstown Rd (Route1A)

Technical Paper No. 155 Roadway Classification Non-Classified

"Guide to Cycling in the Ocean State 2003" Roadway Designation Other Road

The State Highway noted above is being considered for signage as a "Signed Shared Roadway" in accordance with the criteria set forth in RIDOT DPM No. 920.06. The following information is to be provided to the Deputy Chief Engineer of the Design Section for consideration:

ITEM NO.	DESCRIPTION	COMMENTS NO. (SEE ENDNOTES)
1	Posted Speed Limit	Not posted
2	85th Percentile Speed (Radar speed study)	Not available
3	Average Annual Daily Traffic (AADT) Volume	1,060
4	Percent Truck Traffic Volume	9%
5	Number of Travel Lanes	2
6	Width of Travel Lanes	14'
7	Width of Shoulders	1' north of Schoolhouse Road 3' south of Schoolhouse Road
8	Delineation of Centerline & Shoulders	Not at time of site visit
9	Sidewalk	None north of school north drive, but exists on east side, south to Route 1A.
10	Curbing	None on west side. Curbing exists from school north drive to Route 1A

ITEM NO.	DESCRIPTION			COMMENTS NO. (SEE ENDNOTES)
11	On-Street Parking			None
12	Frequency of Curb Cuts	Moderate X		
		Heavy		
		Commercial		
		Residential		
13	Horizontal Alignment Constraints			A few minor curves
14	Vertical Alignment Constraints			No
15	Intersections & Corresponding Stopping Sight Distances			
16	Stop Controls Along Roadway			Yes (3 locations)
17	General Roadway Conditions	Surface		Fair
		Potholes		Minor
		Cracking		Yes
		Catch Basin Types		Yes
		Sand & Debris		None
18	Are all grates bicycle-safe? (If no, please indicate which ones)	Yes: X	No: _____	
18A	Total Number of Grates: 3			
18B	Location of Grates (list): _____			
19	Off-Road Obstacles	Mailboxes, signs		
		Poles		Yes
		Outcrops		
		Hanging Limbs		Yes
20	Facilities List on Roadway	Parks		
		Schools		Narragansett Elementary

ITEM NO.	DESCRIPTION			COMMENTS NO. (SEE ENDNOTES)
		Recreational Fields		Sprague Memorial Field
		Historical Districts		
		Commercial Establishments		
21	Expected Bike User Type	A – Advanced	X	3
		B – Basic	X	3
		C – Children	X	3
22	Location of nearest Bike Route/Path as potential link			Connection to William O'Neil Bike Path
23	Additional Observations			
24	Accident History (Provide Crash Data for the previous three years according to type, location, injury, roadway surface and time			See Appendix and report

COMMENTS
(Expand/Delete as needed)

2	All way Stop at Schoolhouse Road, Stop at Route 1A
3	All User Types expected.
7&8	During site visits in 8/14 and 11/14, pavement markings did not exist on Mumford Rd
15	Edge vegetation should be trimming along sections of road to enhance visibility

Based on the information contained in the above "Bicycle Route Suitability Report", the reviewing engineer:

Recommends ( )

Does not recommend ( )

designation of this roadway as a Rhode Island Bicycle Route

Reviewing Engineer:	Date:

ITEM NO.	DESCRIPTION	COMMENTS NO. (SEE ENDNOTES)
	Approved Deputy Chief Engineer:	Date:
	Approved Chief Engineer:	Date:

STATE OF RHODE ISLAND

DEPARTMENT OF TRANSPORTATION

BICYCLE ROUTE SUITABILITY REPORT

PROJECT: Narragansett/ South Kingstown Bicycle Facility – Contract 3 (Canonchet Farms Study)

CONSULTANT: Fay, Spofford & Thorndike REVIEW DATE: _____

ROUTE NAME & NUMBER: Anne Hoxsie Lane CITY/TOWN: Narragansett

ROADWAY LIMITS: Route 1A (Boston Neck Rd) to Parking Lot

Technical Paper No. 155 Roadway Classification Non Classified

"Guide to Cycling in the Ocean State 2003" Roadway Designation Other Road

The State Highway noted above is being considered for signage as a "Signed Shared Roadway" in accordance with the criteria set forth in RIDOT DPM No. 920.06. The following information is to be provided to the Deputy Chief Engineer of the Design Section for consideration:

ITEM NO.	DESCRIPTION		COMMENTS NO. (SEE ENDNOTES)
1	Posted Speed Limit		Not Posted
2	85th Percentile Speed (Radar speed study)		Not available
3	Average Annual Daily Traffic (AADT) Volume		400
4	Percent Truck Traffic Volume		Not available
5	Number of Travel Lanes		2
6	Width of Travel Lanes		9'
7	Width of Shoulders		None
8	Delineation of Centerline & Shoulders		No Pavement Markings
9	Sidewalk		None
10	Curbing		None
11	On-Street Parking		None
12	Frequency of Curb Cuts	Moderate	None

ITEM NO.	DESCRIPTION			COMMENTS NO. (SEE ENDNOTES)
		Heavy		
		Commercial		
		Residential		
13	Horizontal Alignment Constraints			No
14	Vertical Alignment Constraints			No
15	Intersections & Corresponding Stopping Sight Distances			
16	Stop Controls Along Roadway			None
17	General Roadway Conditions	Surface		Gravel
		Potholes		Some depressions
		Cracking		
		Catch Basin Types		
		Sand & Debris		
18	Are all grates bicycle-safe? (If no, please indicate which ones)	Yes: _____	No: _____	No Grates
18A	Total Number of Grates: 0			
18B	Location of Grates (list): _____			
19	Off-Road Obstacles	Mailboxes, signs		
		Poles		
		Outcrops		
		Hanging Limbs		
20	Facilities List on Roadway	Parks		Canonchet Farm Town Beach; attendant present- 7-3:30, 7 days
		Schools		
		Recreational Fields		

ITEM NO.	DESCRIPTION			COMMENTS NO. (SEE ENDNOTES)
		Historical Districts		
		Commercial Establishments		
21	Expected Bike User Type	A – Advanced	X	3
		B – Basic	X	3
		C – Children	X	3
22	Location of nearest Bike Route/Path as potential link			Connection to William O'Neil Bike Path
23	Additional Observations			
24	Accident History (Provide Crash Data for the previous three years according to type, location, injury, roadway surface and time			See Appendix and report

COMMENTS
(Expand/Delete as needed)

3	All User Types expected.

Based on the information contained in the above "Bicycle Route Suitability Report", the reviewing engineer:

Recommends ( )

Does not recommend ( )

designation of this roadway as a Rhode Island Bicycle Route

Reviewing Engineer:	Date:

Approved Deputy Chief Engineer:	Date:
Approved Chief Engineer:	Date:

STATE OF RHODE ISLAND

DEPARTMENT OF TRANSPORTATION

BICYCLE ROUTE SUITABILITY REPORT

PROJECT: Narragansett/ South Kingstown Bicycle Facility – Contract 3 (Canonchet Farms Study)

CONSULTANT: Fay, Spofford & Thorndike REVIEW DATE: _____

ROUTE NAME & NUMBER: Riverside Drive CITY/TOWN: Narragansett

ROADWAY LIMITS: Mumford Road to dead end

Technical Paper No. 155 Roadway Classification Non Classified

"Guide to Cycling in the Ocean State 2003" Roadway Designation Other Road

The State Highway noted above is being considered for signage as a "Signed Shared Roadway" in accordance with the criteria set forth in RIDOT DPM No. 920.06. The following information is to be provided to the Deputy Chief Engineer of the Design Section for consideration:

ITEM NO.	DESCRIPTION		COMMENTS NO. (SEE ENDNOTES)
1	Posted Speed Limit		Not Posted
2	85th Percentile Speed (Radar speed study)		Not available
3	Average Annual Daily Traffic (AADT) Volume		Not available
4	Percent Truck Traffic Volume		Not available
5	Number of Travel Lanes		2
6	Width of Travel Lanes		8 ½ ' on paved section; 6 ½' on gravel section
7	Width of Shoulders		None
8	Delineation of Centerline & Shoulders		No Pavement Markings
9	Sidewalk		None
10	Curbing		Some berm
11	On-Street Parking		None
12	Frequency of Curb Cuts	Moderate X	

ITEM NO.	DESCRIPTION			COMMENTS NO. (SEE ENDNOTES)
		Heavy		
		Commercial		
		Residential		2 per 100'
13	Horizontal Alignment Constraints			No
14	Vertical Alignment Constraints			No
15	Intersections & Corresponding Stopping Sight Distances			
16	Stop Controls Along Roadway			None
17	General Roadway Conditions	Surface		Adequate for paved section
		Potholes		None
		Cracking		Yes
		Catch Basin Types		Cross
		Sand & Debris		None
18	Are all grates bicycle-safe? (If no, please indicate which ones)	Yes: X	No: _____	
18A	Total Number of Grates: 3 and 2 per side			
18B	Location of Grates (list): _____			
19	Off-Road Obstacles	Mailboxes, signs		Yes
		Poles		Yes
		Outcrops		Yes- overhanging vegetation
		Hanging Limbs		Some
20	Facilities List on Roadway	Parks		
		Schools		Narragansett Elementary
		Recreational Fields		Narragansett Elementary
		Historical Districts		

ITEM NO.	DESCRIPTION			COMMENTS NO. (SEE ENDNOTES)
		Commercial Establishments		
21	Expected Bike User Type	A – Advanced	X	3
		B – Basic	X	3
		C – Children	X	3
22	Location of nearest Bike Route/Path as potential link			Connection to William O'Neil Bike Path
23	Additional Observations			
24	Accident History (Provide Crash Data for the previous three years according to type, location, injury, roadway surface and time			See Appendix and report

COMMENTS
(Expand/Delete as needed)

3	All User Types expected.

Based on the information contained in the above "Bicycle Route Suitability Report", the reviewing engineer:

Recommends ( )

Does not recommend ( )

designation of this roadway as a Rhode Island Bicycle Route

Reviewing Engineer:	Date:
Approved Deputy Chief Engineer:	Date:
Approved Chief Engineer:	Date:

STATE OF RHODE ISLAND

DEPARTMENT OF TRANSPORTATION

BICYCLE ROUTE SUITABILITY REPORT

PROJECT: Narragansett/ South Kingstown Bicycle Facility – Contract 3 (Canonchet Farms Study)

CONSULTANT: Fay, Spofford & Thorndike REVIEW DATE: _____

ROUTE NAME & NUMBER: Strathmore Road CITY/TOWN: Narragansett

ROADWAY LIMITS: Kingstown Rd (Route 1A) to Canonchet Way

Technical Paper No. 155 Roadway Classification Non Classified

"Guide to Cycling in the Ocean State 2003" Roadway Designation Other Road

The State Highway noted above is being considered for signage as a "Signed Shared Roadway" in accordance with the criteria set forth in RIDOT DPM No. 920.06. The following information is to be provided to the Deputy Chief Engineer of the Design Section for consideration:

ITEM NO.	DESCRIPTION		COMMENTS NO. (SEE ENDNOTES)
1	Posted Speed Limit		25 mph
2	85th Percentile Speed (Radar speed study)		Not available
3	Average Annual Daily Traffic (AADT) Volume		700
4	Percent Truck Traffic Volume		Not available
5	Number of Travel Lanes		2
6	Width of Travel Lanes		11.5-12.5
7	Width of Shoulders		None
8	Delineation of Centerline & Shoulders		No Pavement Markings
9	Sidewalk		None
10	Curbing		None
11	On-Street Parking		None
12	Frequency of Curb Cuts	Moderate X	

ITEM NO.	DESCRIPTION			COMMENTS NO. (SEE ENDNOTES)
		Heavy		
		Commercial		
		Residential		One per 200 feet
13	Horizontal Alignment Constraints			No
14	Vertical Alignment Constraints			No
15	Intersections & Corresponding Stopping Sight Distances			
16	Stop Controls Along Roadway			Yes, 2. Signal exists @ Kingstown
17	General Roadway Conditions	Surface		Chip seal on some sections
		Potholes		None
		Cracking		Yes-longitudinal and some edge raveling
		Catch Basin Types		
		Sand & Debris		None
18	Are all grates bicycle-safe? (If no, please indicate which ones)	Yes: X	No: _____	
18A	Total Number of Grates: 5 east side; 4 west side			
18B	Location of Grates (list): _____			
19	Off-Road Obstacles	Mailboxes, signs		Yes
		Poles		Yes
		Outcrops		
		Hanging Limbs		Yes
20	Facilities List on Roadway	Parks		
		Schools		
		Recreational Fields		West of Swathmore; north of Kingstown

ITEM NO.	DESCRIPTION			COMMENTS NO. (SEE ENDNOTES)
		Historical Districts		At County Museum
		Commercial Establishments		
21	Expected Bike User Type	A – Advanced	X	3
		B – Basic	X	3
		C – Children	X	3
22	Location of nearest Bike Route/Path as potential link			Connection to William O'Neil Bike Path
23	Additional Observations			
24	Accident History (Provide Crash Data for the previous three years according to type, location, injury, roadway surface and time			See Appendix and report

COMMENTS
(Expand/Delete as needed)

3	All User Types expected.

Based on the information contained in the above "Bicycle Route Suitability Report", the reviewing engineer:

Recommends ( )

Does not recommend ( )

designation of this roadway as a Rhode Island Bicycle Route

Reviewing Engineer:	Date:
Approved Deputy Chief Engineer:	Date:

Approved Chief Engineer:	Date:

STATE OF RHODE ISLAND

DEPARTMENT OF TRANSPORTATION

BICYCLE ROUTE SUITABILITY REPORT

PROJECT: Narragansett/ South Kingstown Bicycle Facility – Contract 3 (Canonchet Farms Study)

CONSULTANT: Fay, Spofford & Thorndike REVIEW DATE: _____

ROUTE NAME & NUMBER: Wanda Street CITY/TOWN: Narragansett

ROADWAY LIMITS: Strathmore Road to Caswell Street

Technical Paper No. 155 Roadway Classification Non Classified

"Guide to Cycling in the Ocean State 2003" Roadway Designation Other Road

The State Highway noted above is being considered for signage as a "Signed Shared Roadway" in accordance with the criteria set forth in RIDOT DPM No. 920.06. The following information is to be provided to the Deputy Chief Engineer of the Design Section for consideration:

ITEM NO.	DESCRIPTION		COMMENTS NO. (SEE ENDNOTES)
1	Posted Speed Limit		25 mph westbound
2	85th Percentile Speed (Radar speed study)		28-30 mph
3	Average Annual Daily Traffic (AADT) Volume		300
4	Percent Truck Traffic Volume		7.5%
5	Number of Travel Lanes		2
6	Width of Travel Lanes		12 ½ '
7	Width of Shoulders		None
8	Delineation of Centerline & Shoulders		No Pavement Markings
9	Sidewalk		None
10	Curbing		None
11	On-Street Parking		None
12	Frequency of Curb Cuts	Moderate X	

ITEM NO.	DESCRIPTION			COMMENTS NO. (SEE ENDNOTES)
		Heavy		
		Commercial		
		Residential		2 per 100'
13	Horizontal Alignment Constraints			No
14	Vertical Alignment Constraints			No
15	Intersections & Corresponding Stopping Sight Distances			
16	Stop Controls Along Roadway			Stop sign at Swathmore and Caswell
17	General Roadway Conditions	Surface		Adequate; chip seal
		Potholes		Some, but repaired
		Cracking		Yes
		Catch Basin Types		Cross
		Sand & Debris		None
18	Are all grates bicycle-safe? (If no, please indicate which ones)	Yes: X	No: _____	
18A	Total Number of Grates: 3 and 2 per side			
18B	Location of Grates (list): _____			
19	Off-Road Obstacles	Mailboxes, signs		Yes
		Poles		Yes
		Outcrops		Yes
		Hanging Limbs		Some vegetation
20	Facilities List on Roadway	Parks		
		Schools		
		Recreational Fields		
		Historical Districts		

ITEM NO.	DESCRIPTION			COMMENTS NO. (SEE ENDNOTES)
		Commercial Establishments		
21	Expected Bike User Type	A – Advanced	X	3
		B – Basic	X	3
		C – Children	X	3
22	Location of nearest Bike Route/Path as potential link			Connection to William O'Neil Bike Path
23	Additional Observations			
24	Accident History (Provide Crash Data for the previous three years according to type, location, injury, roadway surface and time			See Appendix and report

COMMENTS
(Expand/Delete as needed)

3	All User Types expected.

Based on the information contained in the above "Bicycle Route Suitability Report", the reviewing engineer:

Recommends ( )

Does not recommend ( )

designation of this roadway as a Rhode Island Bicycle Route

Reviewing Engineer:	Date:
Approved Deputy Chief Engineer:	Date:
Approved Chief Engineer:	Date:

Appendix I:

Cost Estimates

Alternative 1 - The Sea View Bike Route

Total Length = 6,875 LF

Item Code	Description	QTY		Cost/LF	Total
201.0320	Clearing and Grubbing	4,020	LF	$30.00	$120,600.00
202.0100	Earth Excavation	4,670	LF	$2.50	$11,675.00
202.0700	Common Borrow at Retaining Wall	650	LF	$55.00	$35,750.00
202.0701	Common Borrow at Railroad Berm	700	LF	$16.00	$11,200.00
302.0100	Gravel Borrow Subbase Course	4,670	LF	$9.00	$42,030.00
401.9902	Bituminous Concrete Class 19 (2.5")	4,670	LF	$15.00	$70,050.00
401.9903	Bituminous Concrete Class 4.75 (1.5")	4,670	LF	$12.00	$56,040.00
806.1200	Boardwalk	2,130	LF	$3,200.00	$6,816,000.00
901.9901	Wood Rail Fence	2,050	LF	$50.00	$102,500.00
910.9901	Modular Retaining Wall	650	LF	$280.00	$182,000.00
936.9901	Mobilization and Demobilization	1	LS		$755,022.50
937.0200	Maintenance and Movement Traffic Protection	1	LS		$25,000.00
L01.0102	Loam Borrow 4 Inches Deep	4,670	LF	$10.00	$46,700.00
L02.0102	Residential Seeding (Type 2)	4,670	LF	$4.00	$18,680.00
T15.0110	Guide Signs	1	LS	$2,000.00	$2,000.00
	Permitting	1	LS	$10,000.00	$10,000.00
	Tidal Wetland Mitigation (@ 2:1)	300	SF	$8.00	$2,400.00
	Freshwater Wetland Mitigation (@3:1)	39,180	SF	$8.00	$313,440.00
				Total	$8,621,087.50
	20% Contingency				$1,724,217.50
					$10,345,305.00
				SAY	$10,400,000

Alternative 2 - The Brady Bike Route (Corrected)

Total Length = 6,045 LF

Item Code	Description	QTY		Cost/LF	Total
201.0320	Clearing and Grubbing	4,305	LF	$30.00	$129,150.00
202.0100	Earth Excavation	4,955	LF	$2.50	$12,387.50
202.0700	Common Borrow at Retaining Wall	650	LF	$55.00	$35,750.00
202.0701	Common Borrow at Railroad Berm	700	LF	$16.00	$11,200.00
302.0100	Gravel Borrow Subbase Course	4,955	LF	$9.00	$44,595.00
401.9902	Bituminous Concrete Class 19 (2.5")	4,955	LF	$15.00	$74,325.00
401.9903	Bituminous Concrete Class 4.75 (1.5")	4,955	LF	$12.00	$59,460.00
806.1200	Boardwalk	1,015	LF	$3,200.00	$3,248,000.00
901.9901	Wood Rail Fence	2,050	LF	$50.00	$102,500.00
910.9901	Modular Retaining Wall	650	LF	$280.00	$182,000.00
936.9901	Mobilization and Demobilization	1	LS		$400,573.75
937.0200	Maintenance and Movement Traffic Protection	1	LS		$25,000.00
L01.0102	Loam Borrow 4 Inches Deep	4,955	LF	$10.00	$49,550.00
L02.0102	Residential Seeding (Type 2)	4,955	LF	$4.00	$19,820.00
T15.0110	Guide Signs	1	LS	$2,000.00	$2,000.00
	Permitting	1	LS	$10,000.00	$10,000.00
	Tidal Wetland Mitigation (@ 2:1)	142	SF	$8.00	$1,136.00
	Freshwater Wetland Mitigation (@3:1)	39,180	SF	$8.00	$313,440.00
				Total	$4,720,887.25
	20% Contingency				$944,177.45
					$5,665,064.70
				SAY	$5,700,000

Alternative 3 - The Town's Master Plan Bike Route

Total Length = 5,610 LF

Item Code	Description	QTY		Cost/LF	Total
201.0320	Clearing and Grubbing	3,080	LF	$30.00	$92,400.00
202.0100	Earth Excavation	3,730	LF	$2.50	$9,325.00
302.0100	Gravel Borrow Subbase Course	3,730	LF	$9.00	$33,570.00
401.9902	Bituminous Concrete Class 19 (2.5")	3,730	LF	$15.00	$55,950.00
401.9903	Bituminous Concrete Class 4.75 (1.5")	3,730	LF	$12.00	$44,760.00
806.1200	Boardwalk	1,000	LF	$3,200.00	$3,200,000.00
936.9901	Mobilization and Demobilization	1	LS		$355,122.50
937.0200	Maintenance and Movement Traffic Protection	1	LS		$50,000.00
L01.0102	Loam Borrow 4 Inches Deep	3,730	LF	$10.00	$37,300.00
L02.0102	Residential Seeding (Type 2)	3,730	LF	$4.00	$14,920.00
T15.0110	Guide Signs	1	LS	$3,000.00	$3,000.00
	Permitting	1	LS	$10,000.00	$10,000.00
	Tidal Wetland Mitigation (@ 2:1)	0	SF	$8.00	$0.00
	Freshwater Wetland Mitigation (@3:1)	23,310	SF	$8.00	$186,480.00
				Total	$4,092,827.50
	20% Contingency				$818,565.50
					$4,911,393.00
				SAY	$5,000,000

Alternative 3A - The Town's Off-Road Bike Path Route

Total Length = 5,755 LF

Item Code	Description	QTY		Cost/LF	Total
201.0320	Clearing and Grubbing	4,030	LF	$30.00	$120,900.00
202.0100	Earth Excavation	4,680	LF	$2.50	$11,700.00
202.0700	Common Borrow at Retaining Wall	650	LF	$55.00	$35,750.00
202.0701	Common Borrow at Railroad Berm	700	LF	$16.00	$11,200.00
302.0100	Gravel Borrow Subbase Course	4,680	LF	$9.00	$42,120.00
401.9902	Bituminous Concrete Class 19 (2.5")	4,680	LF	$15.00	$70,200.00
401.9903	Bituminous Concrete Class 4.75 (1.5")	4,680	LF	$12.00	$56,160.00
806.1200	Boardwalk	1,000	LF	$3,200.00	$3,200,000.00
901.9901	Wood Rail Fence	2,050	LF	$50.00	$102,500.00
910.9901	Modular Retaining Wall	650	LF	$280.00	$182,000.00
936.9901	Mobilization and Demobilization	1	LS		$393,505.00
937.0200	Maintenance and Movement Traffic Protection	1	LS		$25,000.00
L01.0102	Loam Borrow 4 Inches Deep	4,680	LF	$10.00	$46,800.00
L02.0102	Residential Seeding (Type 2)	4,680	LF	$4.00	$18,720.00
T15.0110	Guide Signs	1	LS	$2,000.00	$2,000.00
	Permitting	1	LS	$10,000.00	$10,000.00
	Tidal Wetland Mitigation (@ 2:1)	0	SF	$8.00	$0.00
	Freshwater Wetland Mitigation (@3:1)	39,180	SF	$8.00	$313,440.00
				Total	$4,641,995.00
	20% Contingency				$928,399.00
					$5,570,394.00
				SAY	$5,600,000

Alternative 4 - The Town's Off-Site Bike Path Route

Total Length = 6,160 LF

Item Code	Description	QTY		Cost/LF	Total
201.0320	Clearing and Grubbing	3,380	LF	$30.00	$101,400.00
202.0100	Earth Excavation	2,730	LF	$2.50	$6,825.00
202.0701	Common Borrow at Railroad Berm	650	LF	$16.00	$10,400.00
302.0100	Gravel Borrow Subbase Course	2,730	LF	$9.00	$24,570.00
401.9902	Bituminous Concrete Class 19 (2.5")	2,730	LF	$15.00	$40,950.00
401.9903	Bituminous Concrete Class 4.75 (1.5")	2,730	LF	$12.00	$32,760.00
806.1200	Boardwalk	1,130	LF	$3,200.00	$3,616,000.00
901.9901	Wood Rail Fence	1,300	LF	$50.00	$65,000.00
936.9901	Mobilization and Demobilization	1	LS		$405,112.50
937.0200	Maintenance and Movement Traffic Protection	1	LS		$100,000.00
L01.0102	Loam Borrow 4 Inches Deep	2,730	LF	$10.00	$27,300.00
L02.0102	Residential Seeding (Type 2)	2,730	LF	$4.00	$10,920.00
T15.0110	Guide Signs	1	LS	$5,000.00	$5,000.00
	Permitting	1	LS	$10,000.00	$10,000.00
	Tidal Wetland Mitigation (@ 2:1)	0	SF	$8.00	$0.00
	Freshwater Wetland Mitigation (@3:1)	240	SF	$8.00	$1,920.00
				Total	$4,458,157.50
	20% Contingency				$891,631.50
					$5,349,789.00
				SAY	$5,400,000

Alternative 5 - First Portion of the 2000 FST Study Alternate 3 Route

Total Length = 6,370 LF

Item Code	Description	QTY		Cost/LF	Total
202.0100	Earth Excavation	2,730	LF	$2.50	$6,825.00
302.0100	Gravel Borrow Subbase Course	2,730	LF	$9.00	$24,570.00
401.9902	Bituminous Concrete Class 19 (2.5")	2,730	LF	$15.00	$40,950.00
401.9903	Bituminous Concrete Class 4.75 (1.5")	2,730	LF	$12.00	$32,760.00
806.1200	Boardwalk	130	LF	$3,200.00	$416,000.00
936.9901	Mobilization and Demobilization	1	LS		$66,932.50
937.0200	Maintenance and Movement Traffic Protection	1	LS		$100,000.00
L01.0102	Loam Borrow 4 Inches Deep	2,730	LF	$10.00	$27,300.00
L02.0102	Residential Seeding (Type 2)	2,730	LF	$4.00	$10,920.00
T15.0110	Guide Signs	1	LS	$5,000.00	$5,000.00
	Permitting	1	LS	$5,000.00	$5,000.00
	Tidal Wetland Mitigation (@ 2:1)	0	SF	$8.00	$0.00
	Freshwater Wetland Mitigation (@3:1)	30	SF	$8.00	$240.00
				Total	$736,497.50
	20% Contingency				$147,299.50
					$883,797.00
				SAY	$900,000

Alternative 6 - DEAD END SPUR COMBINATION

Total Length = 1,790 LF

Item Code	Description	QTY		Cost/LF	Total
201.0320	Clearing and Grubbing	1,350	LF	$30.00	$40,500.00
202.0100	Earth Excavation	1,350	LF	$2.50	$3,375.00
202.0701	Common Borrow at Railroad Berm	1,100	LF	$16.00	$17,600.00
302.0100	Gravel Borrow Subbase Course	1,350	LF	$9.00	$12,150.00
401.9902	Bituminous Concrete Class 19 (2.5")	1,350	LF	$15.00	$20,250.00
401.9903	Bituminous Concrete Class 4.75 (1.5")	1,350	LF	$12.00	$16,200.00
806.1200	Boardwalk	515	LF	$3,200.00	$1,648,000.00
901.9901	Wood Rail Fence	2,200	LF	$50.00	$110,000.00
936.9901	Mobilization and Demobilization	1	LS		$194,797.50
937.0200	Maintenance and Movement Traffic Protection	1	LS		$50,000.00
L01.0102	Loam Borrow 4 Inches Deep	1,350	LF	$10.00	$13,500.00
L02.0102	Residential Seeding (Type 2)	1,350	LF	$4.00	$5,400.00
T15.0110	Guide Signs	1	LS	$1,000.00	$1,000.00
	Permitting	1	LS	$10,000.00	$10,000.00
	Tidal Wetland Mitigation (@ 2:1)	60	SF	$8.00	$480.00
	Freshwater Wetland Mitigation (@3:1)	39,180	SF	$8.00	$313,440.00
				Total	$2,456,692.50
	20% Contingency				$491,338.50
					$2,948,031.00
				SAY	$3,000,000