

APPENDIX C

# COMMUNITY PROJECT PORTFOLIO

MAY 2022



# COMMUNITY PROJECT PORTFOLIO

A critical component of the Resilient Coastal Communities Program is the identification and prioritization of a series of projects that are intended to address community vulnerabilities to coastal hazards. The enclosed list of projects, which includes infrastructure improvements (structural, non-structural, natural or nature-based solutions, or hybrid options), policy and planning efforts, and asset management actions, has been synthesized from previous local and regional planning efforts, input from the Community Action Team, and feedback from the public.

Included in this Appendix is a summary list of the proposed projects, followed by an individual sheet for each project. Each project sheet summarizes the factors that were considered in the project identification and prioritization process, including:

 <p><b>LOCATION</b></p>	<p>The geographic location and scope of the project.</p>
 <p><b>HAZARD(S) ADDRESSED</b></p>	<p>A summary of the community-specific coastal hazards that impact the project location. This can include flooding, storm surge, wind damage, or other coastal hazards.</p>
 <p><b>TYPE OF SOLUTION</b></p>	<p>A description of whether the project represents infrastructure improvements, policy and planning effort, or an asset management/mapping program.</p> <p> A symbol is used to denote whether the project includes a natural or nature-based solution (NNBS) component.</p>
 <p><b>PROJECT ESTIMATED COST</b></p>	<p>A qualitative analysis of the total project cost, including initial engineering and construction as well as future maintenance (as available). Project cost is shown symbolically ranging from \$ to \$\$\$\$.</p>
 <p><b>POTENTIAL FUNDING SOURCES</b></p>	<p>Recommendations on potential sources to construct or otherwise implement the project, including the Resilient Coastal Communities Program and other federal and state funding sources.</p>
 <p><b>ESTIMATED PROJECT TIMELINE</b></p>	<p>An estimated timeline to complete the project, including notes on any expected delays in the timeline.</p>
 <p><b>PRIORITY RATING</b></p>	<p>A qualitative ranking of the project’s priority in the context of the entire Project Portfolio. Rankings of <b>High</b>, <b>Medium</b>, or <b>Low</b> are provided for each project.</p>

Each project sheet includes a proposed map of the project area and photos of potential sites to be addressed, where available.


## Proposed Project Summary

TOWN OF PINE KNOLL SHORES			RESILIENT COASTAL COMMUNITIES PROGRAM PROJECT PORTFOLIO							UPDATED MAY 2022
Project (Priority #)	Project Title	Description	Location	Anticipated Cost	Funding Status	Needs Addressed	NNBS Opportunity	Source Document	Timeline	Notes/ Project Status
1	Nature-based or Hybrid Stormwater Solutions	Implement nature-based solutions (including infiltration swales, wetland restoration, and other options) to address stormwater issues on Town streets to decrease flooding risk.	Townwide	Varies based on location needs and solution to be implemented.	Not currently funded.	Stormwater Management, Flooding	Yes	Pine Knoll Shores CAT; identified as top priority.	Schedule varies based on individual site needs and solutions to be implemented. Intended as ongoing program.	This project includes the identification and implementation of stormwater improvements and is intended as an on-going effort. The location details for the initial effort to be determined by Town staff but will likely focus on the “tree streets” and other areas not previously covered in the previous East End Stormwater Improvements Project. Where practicable, water table monitoring equipment will be installed as part of a larger (town-wide) monitoring effort.
2	Water Table Monitoring	Purchase and install automated water level gauge(s) to monitor drinking water capacity and water quality.	Townwide; locations TBD	Typical water level gauges range from \$300-\$1300 (each) in cost.	Not currently funded.	Infrastructure Deficiency or Capacity, Climate Change		Pine Knoll Shores CAT; included on public survey.	Schedule to be determined, but intent is to implement as funds are available.	Monitoring gauges may be installed in conjunction with stormwater and other infrastructure improvements as project budgets allow. A comprehensive monitoring program is recommended to coordinate these efforts, monitor the resulting data, and ultimately identify solutions to address system needs.
3	Saltwater Intrusion Monitoring	Install gauges or other equipment to monitor Town drinking water sources for saltwater intrusion.	Townwide; locations TBD	Limited cost expected.	Not currently funded.	Infrastructure Deficiency or Capacity, Climate Change		Pine Knoll Shores CAT; included on public survey.	Schedule to be determined, but intent is to implement as funds are available.	Monitoring gauges may be installed in conjunction with stormwater and other infrastructure improvements as project budgets allow. A comprehensive monitoring program to assess groundwater salinity/saltwater intrusion is recommended to coordinate these efforts, monitor the resulting data, and ultimately identify solutions to address system needs.
4	Comprehensive Shoreline Management Plan	Develop a comprehensive management plan, detailed to the property/parcel level, to determine appropriate solutions that address erosion and decrease the impact of storm surge and wave activity. The plan should consider the construction of tidal breaks or living shorelines along sections of the Bogue Sound as part of the analysis.	Bogue Sound	Cost expected to be low-medium scale and dependent upon level of detail to be provided.	Not currently funded.	Stormwater Management, Flooding, Climate Change	Yes	Pine Knoll Shores CAT; included on public survey.	Long-term need, but can build upon prior efforts.	While the Town has conducted prior living shoreline projects, this effort is intended as a comprehensive look to identify a suite of potential options and the impacts/costs of each. As part of this effort, the Town should facilitate continued cooperation with private property owners and partners such as the NC Coastal Federation to identify solutions and funding sources.

TOWN OF PINE KNOLL SHORES			RESILIENT COASTAL COMMUNITIES PROGRAM PROJECT PORTFOLIO							UPDATED MAY 2022
Project (Priority #)	Project Title	Description	Location	Anticipated Cost	Funding Status	Needs Addressed	NNBS Opportunity	Source Document	Timeline	Notes/ Project Status
5	Proactive Dune Stabilization and Protection Program	Develop a Town-wide dune stabilization program, including the use of fencing and/or plantings.	Ocean shoreline	Cost expected to be low-medium scale and dependent upon level of detail to be provided.	Similar effort underway; proactive program is not currently funded.	Stormwater Management, Flooding, Climate Change	Yes	Pine Knoll Shores CAT; included on public survey.	Long-term need, but can build upon prior efforts.	A similar effort is underway as part of the Town's new Strategic Plan. This effort may include a detailed dune system survey to identify gaps in the dune system and appropriate stabilization methods.
6	Operational Continuity	Explore options to increase data security and to ensure continuity of Town operations in the event that Town facilities are damaged during a storm.	Town Hall, EOC	Dependent upon the scope of the proposed improvements.	Not currently funded.	Disaster Recovery		Pine Knoll Shores CAT; included on public survey.	Long-term need.	
7	Asset Mapping	Evaluate existing Town infrastructure mapping/datasets and update as needed. Identify service needs and opportunities to provide system redundancy in the event of primary system damage.	Townwide	Expected to be low cost, depending upon level of survey effort.	Not currently funded.	Infrastructure Deficiency or Capacity, Disaster Recovery		Pine Knoll Shores CAT; included on public survey.	Long-term need.	Existing mapping is likely adequate for current needs, but a program to incorporate based on future condition assessments and improvements should be considered.

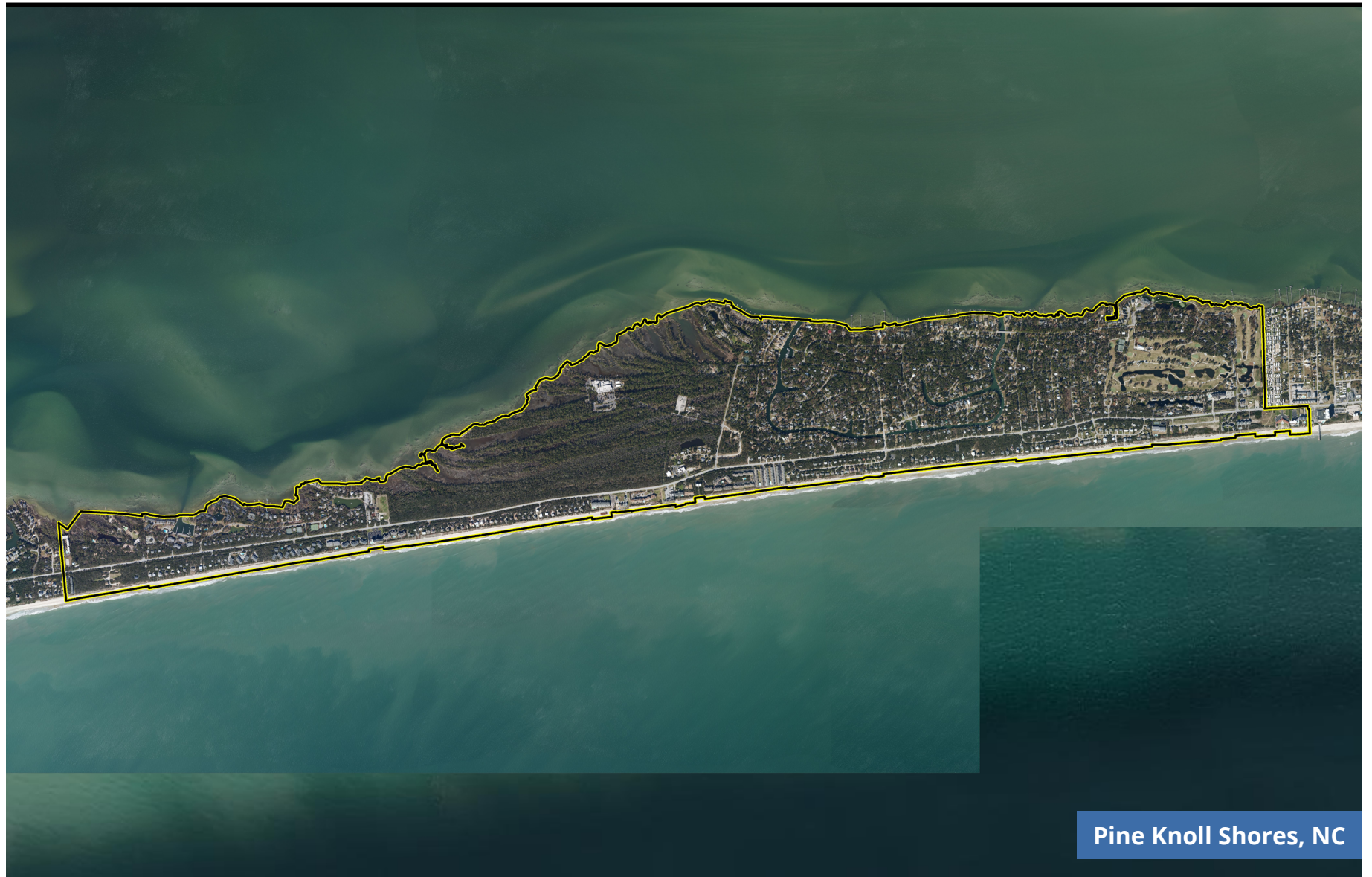




<span style="font-size: 24px; font-weight: bold; margin-right: 10px;">1</span> <span style="font-weight: bold;">NATURE-BASED OR HYBRID STORMWATER SOLUTIONS</span>	
<b>PROJECT DESCRIPTION</b>	Implement nature-based solutions (including infiltrations swales, wetland restoration, and other options) to address stormwater issues on Town streets to decrease flooding risk. The project includes the identification and implementation of stormwater improvements and is intended as an on-going effort. The location details for the initial effort will be determined by Town staff but will likely focus on the “tree streets” and other areas not previously covered by the previous East End Stormwater Improvements Project. Where practicable, water table monitoring equipment will be installed as part of a larger (town-wide) monitoring effort.
<b>LOCATION</b>	Townwide; specific locations to be determined
<b>HAZARD(S) ADDRESSED BY PROJECT</b>	Stormwater Management/Flooding. Existing stormwater infrastructure is impacted by coastal flooding events, including coastal storms and rainfall events. The community experiences storm surge from both the ocean-side and sound-side directions, which can exacerbate flooding issues.
<b>TYPE OF SOLUTION</b> 	Infrastructure Improvements - Construction/replacement of stormwater infrastructure at key locations throughout the community. NNBS options will be implemented as practicable.
<b>PROJECT ESTIMATED COST</b>	Cost varies based on solution implemented and location needs.  <b>Cost Level: \$</b>
<b>POTENTIAL IMPLEMENTATION FUNDING SOURCES</b>	These projects are not currently funded or listed on the Town CIP. Project is eligible for funding under Phases 3 and 4 of the Resilient Coastal Communities Program.  Other Potential funding sources: Federal sources may include NOAA - National Coastal Resilience Fund (NCRF), National Wildlife Federation, and USFWS – National Coastal Resilience Fund. State sources may include NCDEQ Clean Water State Revolving Fund, NCDWR – Water Resources Development Project Grants, NCDEQ American Rescue Plan Act (ARPA), NCDEQ Asset Inventory and Assessment Grant Program, and the Golden Leaf Foundation Flood Mitigation Program.
<b>PROJECT ESTIMATED TIMELINE</b>	Timeline varies based on solution implemented and location needs. Design and construction timeline expected to vary between 3 months and 1 year per site.
<b>PRIORITY RATING</b>	<b>High.</b> Project has been identified as the top priority under the Resilient Coastal Communities Program Phase 2 effort.

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## NATURE-BASED OR HYBRID STORMWATER SOLUTIONS

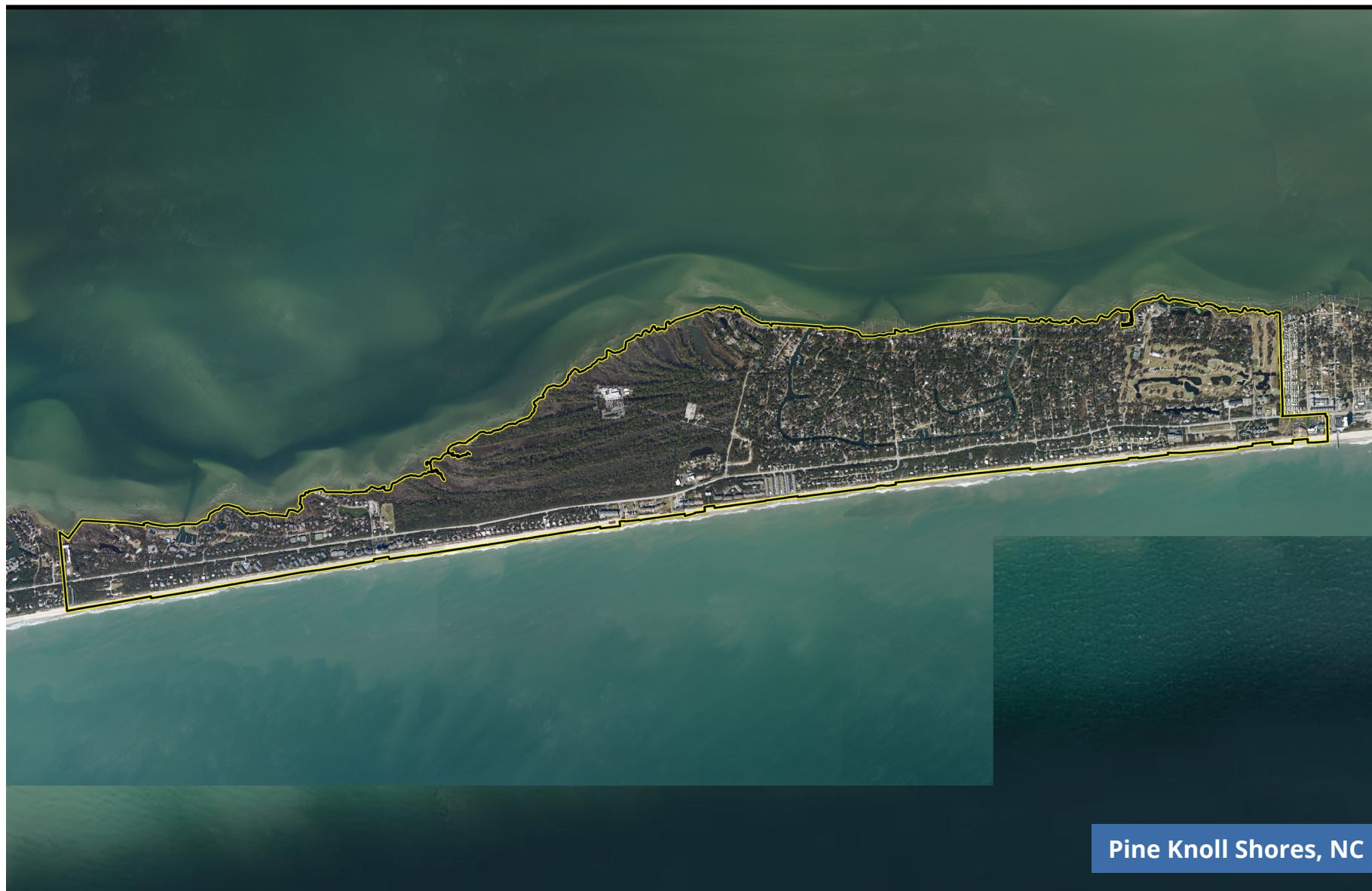


Pine Knoll Shores, NC

2	WATER TABLE MONITORING
<b>PROJECT DESCRIPTION</b>	Purchase and install automated water level gauge(s) to monitor drinking water capacity and water quality. Monitoring gauges may be installed in conjunction with stormwater and other infrastructure improvements as project budgets allow. A comprehensive monitoring program is recommended to coordinate these efforts, monitor the resulting data, and ultimately identify solutions to address system needs.
<b>LOCATION</b>	Townwide; locations to be determined
<b>HAZARD(S) ADDRESSED BY PROJECT</b>	Stormwater Management/Flooding, Infrastructure Deficiency/Capacity. The installation of gauges will enable the Town to identify drinking water capacity and water quality issues and potential infrastructure improvements to address these issues. Previous monitoring efforts have not provided enough data to identify infrastructure needs.
<b>TYPE OF SOLUTION</b>	Monitoring program
<b>PROJECT ESTIMATED COST</b>	Total cost dependent on the number of monitoring gauges to be installed.  <b>Cost Level: \$</b>
<b>POTENTIAL IMPLEMENTATION FUNDING SOURCES</b>	These projects are not currently funded or listed on the Town CIP.  Potential funding sources: Partnerships with non-governmental organizations or university studies may provide opportunities to fund the implementation and short-term monitoring of water level gauges. State sources may include several NCDEQ programs - American Rescue Plan Act (ARPA), Drinking Water State Revolving Fund, Clean Water State Revolving Fund, and Asset Inventory and Assessment Grant Program.
<b>PROJECT ESTIMATED TIMELINE</b>	There is currently no proposed timeframe for the initial installation of gauges but is recommended in the next year in order to begin monitoring. Monitoring would be an ongoing effort.
<b>PRIORITY RATING</b>	<b>High.</b> Project has been identified as the second project priority under the Resilient Coastal Communities Program Phase 2 effort.



## WATER TABLE MONITORING



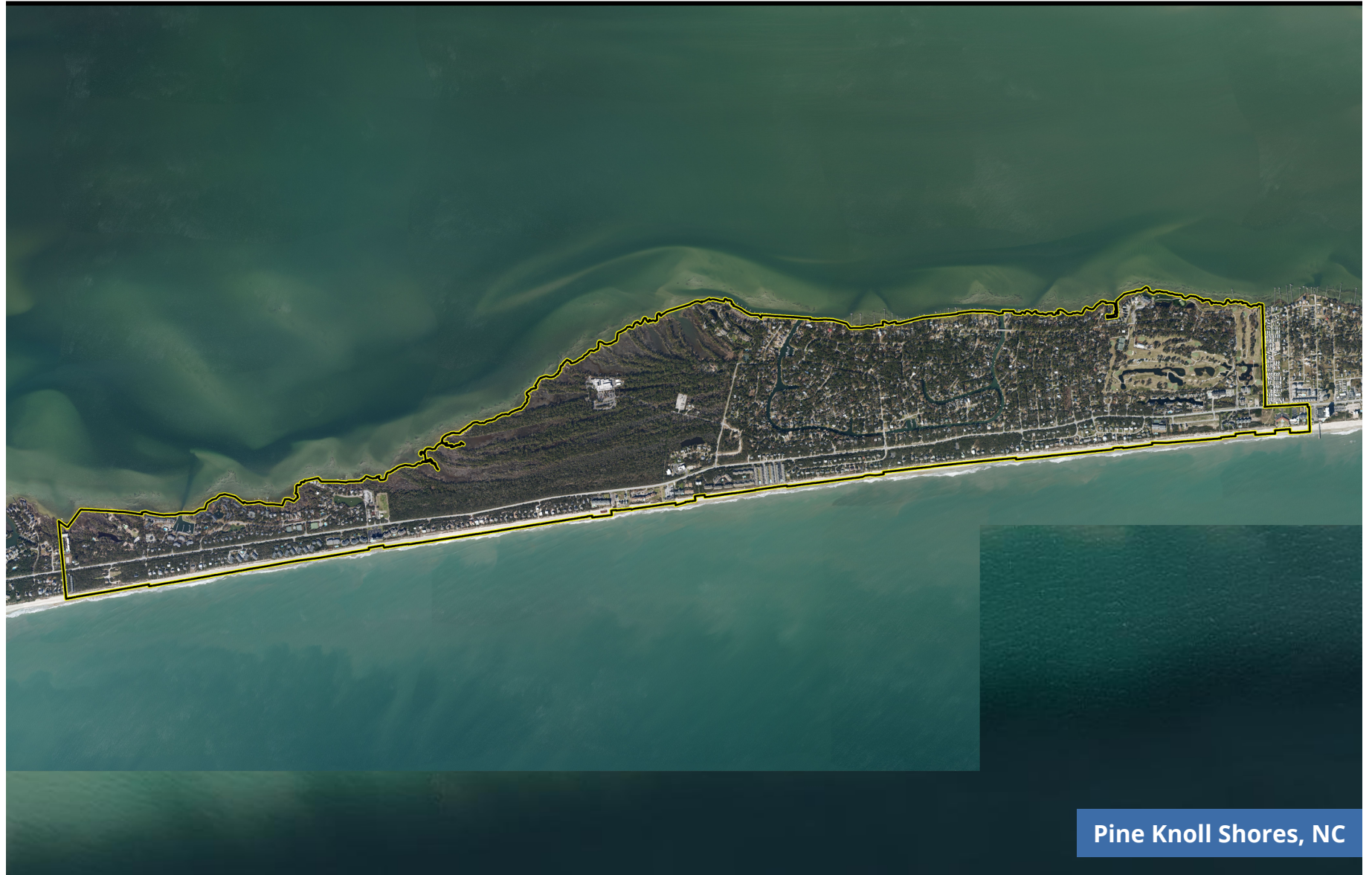
Pine Knoll Shores, NC

3	SALTWATER INTRUSION MONITORING
<b>PROJECT DESCRIPTION</b>	Install gauges or other equipment to monitor Town drinking water sources for saltwater intrusion. Monitoring gauges may be installed in conjunction with stormwater and other infrastructure improvements as project budgets allow. A comprehensive monitoring program to assess groundwater salinity/saltwater intrusion is recommended to coordinate these efforts, monitor the resulting data, and ultimately identify solutions to address system needs.
<b>LOCATION</b>	Townwide; locations to be determined
<b>HAZARD(S) ADDRESSED BY PROJECT</b>	Infrastructure Capacity/Deficiency, Climate Change. The installation of gauges and monitoring equipment will enable the Town to determine whether groundwater is experiencing saltwater intrusion and the potential infrastructure improvements that would be needed if salinity intrusion is detected. Previous monitoring efforts have not provided enough data to identify infrastructure needs.
<b>TYPE OF SOLUTION</b>	Monitoring program
<b>PROJECT ESTIMATED COST</b>	Total cost dependent on the extent of monitoring equipment and sampling protocol to be implemented.  <b>Cost Level: \$\$\$</b>
<b>POTENTIAL IMPLEMENTATION FUNDING SOURCES</b>	This effort is not currently funded or listed on the Town CIP.  Potential funding sources: Partnerships with non-governmental organizations or university studies may provide opportunities to fund the implementation and short-term monitoring of equipment. State sources may include several NCDEQ programs - American Rescue Plan Act (ARPA), Drinking Water State Revolving Fund, Clean Water State Revolving Fund, and Asset Inventory and Assessment Grant Program.
<b>PROJECT ESTIMATED TIMELINE</b>	There is currently no proposed timeframe for the initial installation of gauges but is recommended in the next year in order to begin monitoring. Monitoring would be an ongoing effort.
<b>PRIORITY RATING</b>	<b>High.</b>




3

### SALTWATER INTRUSION MONITORING

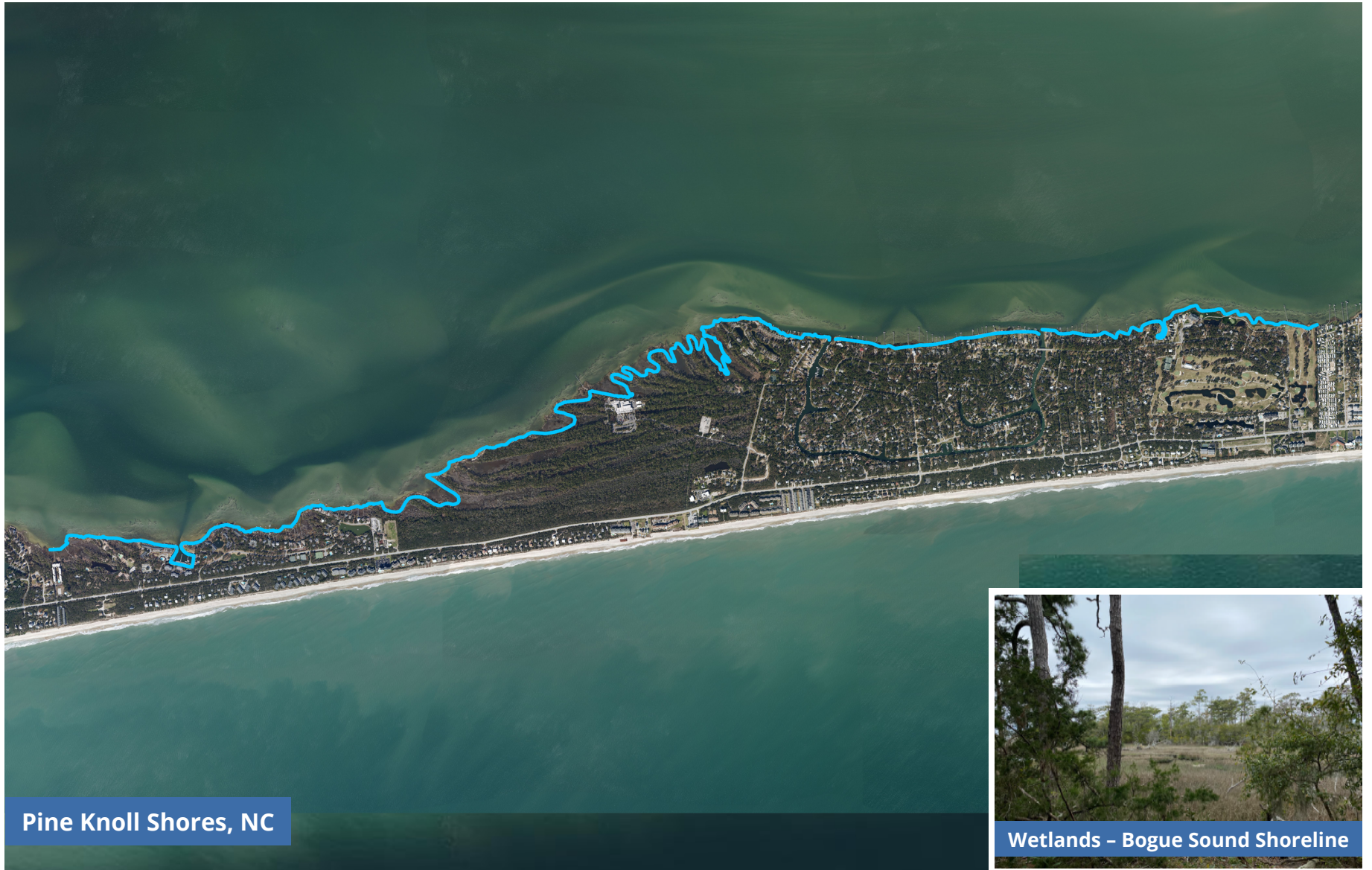


Pine Knoll Shores, NC

4	COMPREHENSIVE SHORELINE MANAGEMENT PLAN
<b>PROJECT DESCRIPTION</b>	<p>Develop a comprehensive management plan, detailed to the property/parcel level, to determine appropriate solutions that address erosion and decrease the impact of storm surge and wave activity. The plan should consider the construction of tidal breaks or living shorelines along sections of the Bogue Sound as part of the analysis.</p> <p>While the Town has conducted prior living shoreline projects, this effort is intended as a comprehensive look to identify a suite of potential options and the impacts/costs of each. As part of this effort, the Town should facilitate continued cooperation with private property owners and partners such as the NC Coastal Federation to identify solutions and funding sources.</p>
<b>LOCATION</b>	<p>Bogue Sound shoreline within Town limits</p>
<b>HAZARD(S) ADDRESSED BY PROJECT</b>	<p>Shoreline/Beach Erosion, Flooding, Climate Change. The program is intended to address flooding due to coastal storm events and storm surge.</p>
<b>TYPE OF SOLUTION</b> 	<p>Plan development. Plan to develop comprehensive list of projects for implementation along the Bogue Sound shoreline.</p>
<b>PROJECT ESTIMATED COST</b>	<p>Project cost dependent upon the scope of effort (public engagement methodology, level of design detail).</p> <p><b>Cost Level: \$\$</b></p>
<b>POTENTIAL IMPLEMENTATION FUNDING SOURCES</b>	<p>This effort is not currently funded or listed on the Town CIP.</p> <p>Potential funding sources: Federal sources may include NOAA – National Coastal Resilience Fund (NCRF), National Wildlife Federation, DOI National Coastal Wetlands Conservation, and USFWS National Coastal Wetlands Conservation Grants. State sources may include NCDCM Planning and Management Grants, NCDEQ Clean Water State Revolving Fund, Golden Leaf Foundation Flood Mitigation Program, and NCDEQ American Rescue Plan Act (ARPA).</p>
<b>PROJECT ESTIMATED TIMELINE</b>	<p>There is currently no proposed timeframe for this plan, and it is considered a long-term need. However, the planning effort can build upon prior efforts.</p>
<b>PRIORITY RATING</b>	<p><b>Medium.</b></p>




COMPREHENSIVE SHORELINE MANAGEMENT PLAN



Pine Knoll Shores, NC

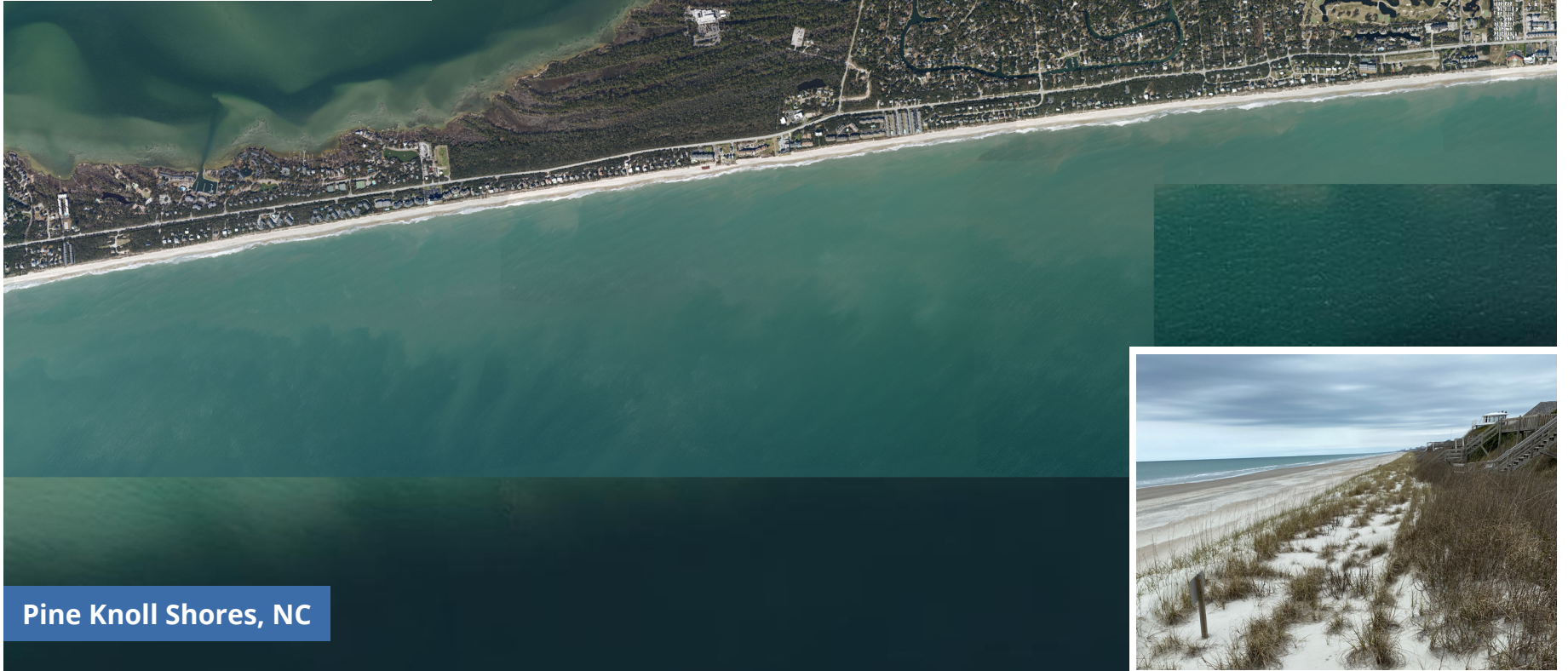
Wetlands - Bogue Sound Shoreline



5	PROACTIVE DUNE STABILIZATION AND PROTECTION PROGRAM
<b>PROJECT DESCRIPTION</b>	Develop a Town-wide dune stabilization program, including the use of fencing and/or plantings. A similar effort is underway as part of the Town’s new Strategic Plan. This effort may include a detailed dune system survey to identify gaps in the dune system and appropriate stabilization methods.
<b>LOCATION</b>	Ocean shoreline within Town limits
<b>HAZARD(S) ADDRESSED BY PROJECT</b>	Stormwater Management/Flooding, Beach Erosion, Climate Change. The program is intended to address flooding due to coastal storm events and storm surge.
<b>TYPE OF SOLUTION</b> 	Plan development. Plan to develop dune protection strategies for implementation along the ocean shoreline.
<b>PROJECT ESTIMATED COST</b>	Project cost dependent upon the scope of effort (survey methodology, level of design detail).  <b>Cost Level: \$\$</b>
<b>POTENTIAL IMPLEMENTATION FUNDING SOURCES</b>	This effort is not currently funded or listed on the Town CIP, though a similar study effort is underway.  Potential funding sources: Federal sources may include NOAA – National Coastal Resilience Fund (NCRF), National Wildlife Federation, DOI National Coastal Wetlands Conservation, and USFWS National Coastal Wetlands Conservation Grants. State sources may include NCDCM Planning and Management Grants, NCDEQ Clean Water State Revolving Fund, and NCDEQ American Rescue Plan Act (ARPA).
<b>PROJECT ESTIMATED TIMELINE</b>	There is currently no proposed timeframe for this plan, and it is considered a long-term need. However, the planning effort can build upon prior efforts.
<b>PRIORITY RATING</b>	<b>Medium.</b>

5

## PROACTIVE DUNE STABILIZATION AND PROTECTION PROGRAM



Pine Knoll Shores, NC

6	OPERATIONAL CONTINUITY
<b>PROJECT DESCRIPTION</b>	Explore options to increase data security and to ensure continuity of Town operations in the event that Town facilities are damaged during a storm.
<b>LOCATION</b>	Town Hall, Emergency Operations Center
<b>HAZARD(S) ADDRESSED BY PROJECT</b>	Disaster Recovery. The project is intended to address the Town’s ability to recover as efficiently as possible from storms and other disaster events.
<b>TYPE OF SOLUTION</b>	Planning effort that may lead to infrastructure improvements and/or policy updates.
<b>PROJECT ESTIMATED COST</b>	Initial planning effort is expected to be low cost.  <b>Cost Level: \$</b>
<b>POTENTIAL IMPLEMENTATION FUNDING SOURCES</b>	This effort is not currently funded or listed on the Town CIP.  Potential funding sources: Federal sources may include FEMA – BRIC, NOAA’s National Coastal Zone Enhancement Program, and EDA – Economic Development and Planning Assistance Program. State sources may include the Rural Grant Programs and the Golden Leaf Foundation. May also be eligible for Federal and State disaster recovery funds.
<b>PROJECT ESTIMATED TIMELINE</b>	There is currently no proposed timeframe for this plan, and it is considered a long-term need.
<b>PRIORITY RATING</b>	<b>Low.</b>



OPERATIONAL CONTINUITY

Pine Knoll Shores, NC

Town Hall

Emergency Operations Center

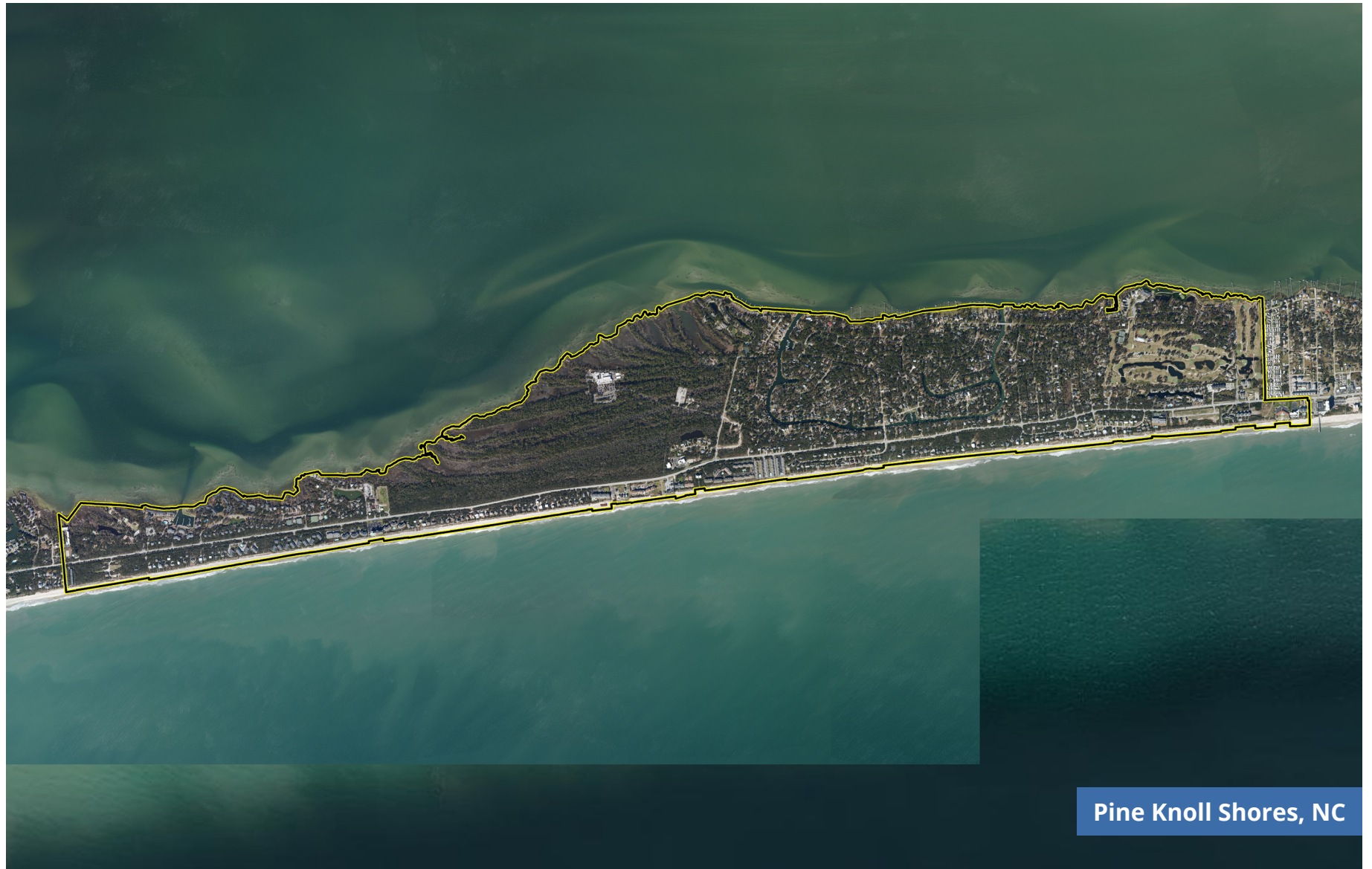


Town Hall

Emergency Services

7	ASSET MAPPING
<b>PROJECT DESCRIPTION</b>	Evaluate existing Town infrastructure mapping/datasets and update as needed. Identify service needs and opportunities to provide system redundancy in the event of primary system damage. While existing Town mapping is likely adequate for current needs, a program to update it based on future condition assessments and improvements should be considered.
<b>LOCATION</b>	Townwide
<b>HAZARD(S) ADDRESSED BY PROJECT</b>	Stormwater Management/Flooding, Infrastructure Capacity/Deficiency, Climate Change. The project is intended to identify and address infrastructure deficiency issues and to enable the Town to recover as efficiently as possible from storms and other disaster events.
<b>TYPE OF SOLUTION</b>	Mapping effort that is intended to lead to future infrastructure improvements.
<b>PROJECT ESTIMATED COST</b>	Mapping effort is expected to be low cost.  <b>Cost Level: \$</b>
<b>POTENTIAL IMPLEMENTATION FUNDING SOURCES</b>	This effort is not currently funded or listed on the Town CIP.  Potential funding sources: Federal sources may include EDA - Investment for Public Works and Economic Development Facilities and FEMA – BRIC. State sources may include the Rural Grant Programs, NCDEQ Clean Water State Revolving Fund, NCDEQ American Rescue Plan Act (ARPA), NCDEQ Asset Inventory and Assessment Grant Program, and Golden Leaf Foundation Flood Mitigation Program.
<b>PROJECT ESTIMATED TIMELINE</b>	There is currently no proposed timeframe for this plan, and it is considered a long-term need.
<b>PRIORITY RATING</b>	<b>Low.</b>





Pine Knoll Shores, NC