



**Save the Sound®**  
Action for our region's environment.

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# **YOUR NATURE-BASED COMMUNITY RESILIENCE SOLUTIONS**

*Climate Adaptation Projects in or Near Your District*



# CREDITS

We thank and acknowledge that most of 18 community resilience projects contained in this report were drawn directly from the Southern Connecticut Regional Framework for Coastal Resilience. This was a joint project managed collaboratively by the South Central Regional Council of Governments, The Nature Conservancy, and the Connecticut Metropolitan Council of Governments. This project was supported by a Hurricane Sandy Coastal Resiliency Competitive Grant, which was funded by the Hurricane Sandy disaster relief appropriation through the U.S. Department of the Interior and administered by the National Fish and Wildlife Foundation.

# INTRODUCTION

It’s becoming starkly evident that our planet’s changing climate poses an existential threat to our homes, our lives, and our futures. In order to ensure that we and our children have safe homes and places of work here in your District for decades to come, we must adapt. While we are lucky to live in coastal Connecticut, we are faced with more frequent coastal storm surge along with increasing frequency of inland flooding from intense rainstorm deluges. We are living into these impacts as climate impacts are now baked into our present and future. Nature has evolved natural resilient systems – marshes, dunes, beaches and oyster reefs – that are important in protecting us from worsening storm surges and flooding.

This short report is your nature-based community resilience solution package. It is a guide to 18 specific potential projects identified in or near your District that we ask you to champion as critical elements of Connecticut’s future climate security. These projects will protect your district’s homes and community spaces from flooding during extreme weather events by utilizing Mother Nature’s own elements – marsh, dune, vegetation and beach – that will benefit people and wildlife 24 hours a day, 7 days a week. Over 40% of these potential projects would provide benefits to residents in New Haven and Bridgeport – communities that are most vulnerable to floods and other adverse effects of climate change. The projects identified contain the promise to provide your communities vibrant green spaces and places while preventing the erosion and destruction of its homes, businesses and natural lands.

We ask you to work with us to make these projects a reality. They require funding to fully evaluate their feasibility, design and engineer them, permit and build them. Please partner with us to attract these resources. When fully engineered, they become “shovel ready”. We need a small cadre of shovel ready projects so your district can attract federal disaster relief after the next major storm. Please partner with us to secure funds to help leverage other state and federal funds to make these projects a reality.

The Regional Resiliency Framework study completed by the South Central Regional Council of Governments (SCRCOG) and TNC identified over 322 community resilience projects in the region from Madison to Bridgeport: <https://maps.coastalresilience.org/connecticut/>. We have focused on 18 nature based solutions.

The need for community resilience project investment is enormous. For a wider scan of 301 additional projects which, when completed, could help secure the livelihoods of tens of thousands of your constituent, explore the Regional Resiliency Framework, cited above.

Short term this requires passage of the Governor’s bonding and legislative package. A total of \$30 million in bonding over the next two years, \$15 million of which was previously directed to DEEP.

A word on what is not included here but can be found in the Regional Resiliency Framework report; popular nature based solutions projects like rain gardens - a flood-preventing green garden collector that simultaneously acts as a public amenity, adding a blossom of plants, trees, and flowers to a neighborhood. They intercept and return polluted storm water to the ground. And by doing so, they help prevent flooding in low-lying areas. The neighborhoods most threatened by floods are urban neighborhoods in cities like New Haven, Stamford, and Bridgeport, which often have some of the poorest Connecticut residents who can’t afford to have their homes destroyed by floods. Opportunity for improving environmental resilience in your district is enormous but it requires funds to get these projects implemented.



PHOTO CREDIT: Susan Rubinsky





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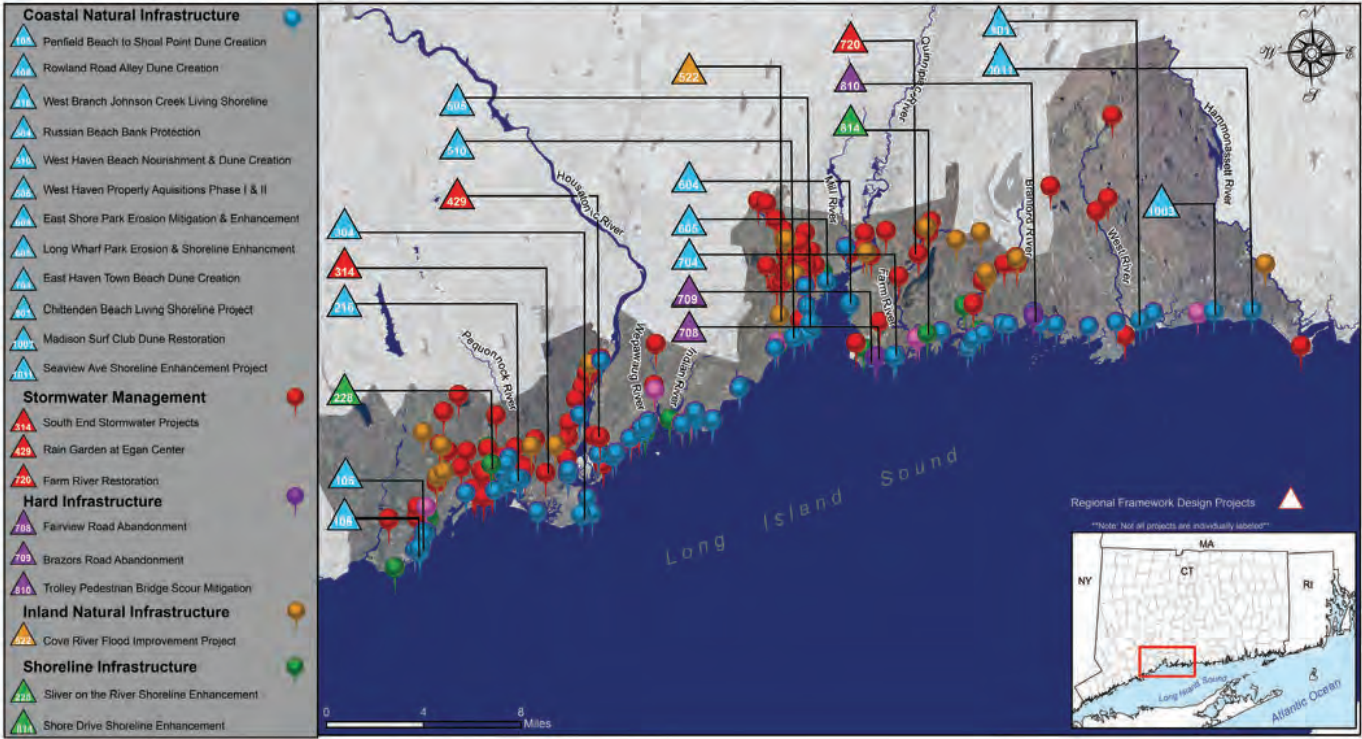
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# MAP OF ALL PROJECTS WITHIN THE SCROG REPORT



*This report highlights only 18 of the 322 projects depicted on this map. The remaining projects can be found within the original SCROG report.*



PHOTO CREDIT: Susan Rubinsky



## LIVING SHORELINE PROJECTS

*Living shorelines use elements of native vegetation to improve a coastal location's ability to withstand hurricanes and heavy storms from the water.*

*These are an alternative to concrete or metal bulkheads and research suggests these solutions provide better protection, are naturally regenerative requiring less maintenance and can better withstand storm impacts. They are living structures that will be home to wildlife.*



Living Shoreline Projects: Guilford to West Haven

Chittenden Beach, Guilford



Credit: Milone and MacBroom

*This region has been devastated by Storm Sandy and more recent storms, leaving a damaged marsh and shoreline.*

A living shoreline consisting of vegetation and dune construction would protect from further erosion and flooding in the extremely low lying area that lies directly inland. Save the Sound and Guilford are seeking support for design studies and surveys to assess project impact and benefit-cost ratio as the next steps in this project. Currently we estimate the cost at \$500k for design and \$2.1 million for construction.

Grass Island, Guilford



Credit: Milone and MacBroom

*Home to marsh, dunes and an iconic coastal cottage visual scene.*

Integrated groins, beach enhancement, and a marsh restoration effort east of the harbor would protect this famous landmark location from sea rise and storm surges that threaten the low-lying area.

Living Shoreline Projects: Guilford to West Haven

Long Cove Tidal Marsh, Guilford



Credit: Milone and MacBroom

*This project would involve removing a blockage in the waterway of the tidal marsh.*

If removed, this would alleviate the consistent flooding problem through the residential neighborhoods along Route 146.

Stony Creek Beach, Branford



Credit: Milone and MacBroom

*This popular beach location has been battered by storm surges in recent years.*

Although tidal vegetation already exists, planting even more in strategic locations along the walls surrounding the beach would help to mitigate erosion and improve the ecological value of the region.



Living Shoreline Projects: Guilford to West Haven

Trolley Pedestrian Bridge, Branford



Credit: TNC

*A critical link in the Shoreline Greenway Trail, erosion is threatening the bridge’s support structure.*

Hybrid approaches such as green infrastructure techniques and potential bio-engineered bank concepts could mitigate future erosion.

Long Wharf Coast, New Haven



Credit: TNC

*This is a critical location, for it lies in a FEMA flood hazard zone.*

While important culvert and sewer infrastructure lay inland, Long Wharf Park also includes a memorial to the service and sacrifice of Vietnam Veterans. Furthermore, it is a rare space where the full diversity of our neighbors come together for a picnic from the best food trucks in the State. Consequently it is a great candidate for a living shoreline project to re-create a marsh fringe, to prevent erosion and bring back wildlife to this special place.

Living Shoreline Projects: Guilford to West Haven

Sandy Point, New Haven Harbor/ West Haven



Credit: longislandsoundstudy.net

*The US Army Corps of Engineers will be completing maintenance navigational channel dredging for the New Haven Harbor to assure its continued commercial use.*

Over 800,000 cubic yards of largely clean dredge materials will be made available through this project. The Corps has identified several potential nature based resilience projects worth exploring that could make use of this material. This includes enhancing Sandy Point’s beach structure and the potential of enhancing tidal marsh behind Sandy Point. This material could also help to supply material for marsh and beach structures as part of the Long Wharf and East Shore Park living shoreline projects along the harbor.

East Shore Park, New Haven



Credit: TNC

*A concept for this project is currently in design and being put through the permitting processes.*

This project would fix drainage, storm water resiliency and coastal erosion issues that threaten the parks’ stability and provide thousands of park visitors 2/3 of a mile of safe shoreline trail access with pocket beaches.



Living Shoreline Projects: Guilford to West Haven

Fire Training Academy Bank Protection, New Haven/West Haven



Credit: Milone and MacBroom

Action is needed in order to stop a corroding parking lot and its adjacent buildings from facing further issues.

At the mouth of the West River, emptying into the New Haven Harbor, there is a corroding parking lot which is adjacent to six large critical facilities that are used for fire training, emergency purposes, storage and parking lots; incorporating bank protection as either a green infrastructure or hybrid solution project would reduce the risk of scour and erosion at this location.

Living Shoreline Projects: Stratford to Bridgeport

Stratford Point Bank, Stratford



Credit: longislandsoundstudy.net

Hybrid solutions are needed to enhance and expand the protection that a successful pilot artifical reef system is achieving in reducing erosion at the Audubon Center at Stratford Point.

An award winning coastal living shoreline project combining oyster ball reefs and marsh planting can be expanded at this popular Audubon center. This can include treating an eroding dune bank.

West Branch Johnson Creek Living Shoreline, Bridgeport



Credit: Milone and MacBroom

The inlet formed by this creek creates a flood hazard resulting in heavy flood damage during Sandy.

A living shoreline project could expand flood absorbing marsh features, reduce erosion and incorporate walking paths and public use for a Bridgeport neighborhood with little access to the water.



Living Shoreline Projects: Stratford to Bridgeport

Yellow Mill Channel Bank Protection, Bridgeport



Credit: Milone and MacBroom

*The west bank of this channel is continuing to erode.*

This erosion threatens two school properties on Waterview Avenue. A hybrid green infrastructure and living shoreline project would secure this region from further erosion.

Vacant Lot Bank Protection, Bridgeport



Credit: Milone and MacBroom

*Erosion is quickly affecting the land on which this vacant lot along with an abandoned house site.*

South of interstate 95 on Wordin Ave, lies an eroding shoreline abandoned lot and house site. Installing a living shoreline with a re-graded bank will protect this and adjacent properties.



## BEACH NOURISHMENT & DUNE ENHANCEMENT

*These popular projects must be carefully designed to maximize their longevity and long term viability. Beach and dunes have been moving and migrating for thousands of years. Attempts to keep dunes in one location fortified with hard structures most often lead to structural failures and unsightly remaining debris. One limitation of this approach is the frequent need to re-nourish beach and dune sand supply after future storms.*



Beach Nourishment and Dune Enhancement Projects

Momauguin Shoreline Softening Project



Credit: TNC

*This heavily developed barrier beach system is vulnerable to both storm surge and erosion.*

This natural barrier beach system began being built upon when the late 1880’s trolley system was constructed along the shore. The dunes were eliminated and dense housing constructed. This altered barrier beach is attempting to retreat inland, causing loss of beach front properties. A hybrid combination of off-shore reefs and partial breakwaters, beach re-nourishment and partial dune replacement should be examined, along with public buy-out options for the most flood prone properties that could allow for increased public access.

West Haven Beach Nourishment



Credit: Milone and MacBroom

*The longest beach in the state has been shrinking in width since the 70s.*

Restoring this beach – the longest in the state and providing many public amenities that has been allowed to shrink in width since the 70s – would involve restoring and building up the original dune structure, while nourishing the existing beach. This is a US Army Corps of Engineers sponsored project.

Beach Nourishment and Dune Enhancement Projects

Stratford Long Beach



Credit: Milone and MacBroom

*Ever since Hurricane Sandy took out a low lying dune, this area has been at risk.*

This parking facility provides public access to nearly 2 miles of open barrier beach. The low lying dune protecting this facility was washed out during Super storm Sandy. Re-nourishing this dune structure along with nourishing this beach would provide temporary protection to this important public access point. We must accept that these barrier beach systems will continue to migrate and roll inland, and that alternative parking locations may ultimately be part of the solution.

Penfield Beach, Fairfield



Credit: Milone and MacBroom

*This beach remains a vulnerable location for flooding the nearby area.*

Three projects are identified in this area to secure inland property from storm surges which sustained heavy damages from hurricane Sandy.



Beach Nourishment and Dune Enhancement Projects

Fairfield Beach, Jennings Beach



Credit: Milone and MacBroom

*An unstable dune ridge protects some, but not all of its nearby properties.*

A dune ridge (not a true and stable dune) was put in place here, and while it protects some property, a more comprehensive flood protection project that incorporates dune enhancements should be evaluated to help protect nearby properties.



## CONCLUSION

*Without State seed money to design and begin implementing these projects, your community will remain vulnerable to flooding being fueled by the climate crisis.*

We must immediately begin coordinating the design and engineering of these projects. The 18 projects identified here are just the tip of the iceberg. We need to be able to leverage federal and state funds together to transform these great ideas into real life, on the ground projects that will protect our families and businesses from the ravages of storm surge and inland flooding.

The Regional Community Resiliency report identified over 322 community resiliency projects in just one coastal region – from Madison to Fairfield. The scope of these projects is overwhelming, and so is the need for action. Save the Sound choose to highlight 18 nature-based coastal resilience projects in this region for immediate implementation. Our educated guess is that approximately \$75 to \$100 million would be required to design, engineer and construct all of these 18 projects. This report does not discuss the large flood prevention, clean water and community greening benefits that these communities would enjoy through widespread installation of raingarden projects, particularly in our urban centers. Bonding \$25 million this legislative session will be a great start in allowing an additional \$25 million in funding would allow towns to plan and install rain gardens, allowing many communities to enjoy the myriad water, flood prevention, aesthetic and cooling benefits. Finally, this report does not discuss the 301 plus additional utility, transportation and public infrastructure adaptation projects that are included in the Regional Community Resiliency Report.

There is no shortage of great projects out there to design with nature to protect your community and build ecological resilience. They are identified. We are asking you to become a champion in transforming great ideas into action on the ground to protect our communities. We want to see these projects rebuild our natural systems, re-build wildlife while protecting our families and assuring a future for us as we face the impending inevitability of climate change.





PHOTO CREDIT: Susan Rubinsky