

Conservation and Sustainability

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Overview

For the purposes of this Plan, “sustainability” refers to the philosophy of encouraging activities that allow present generations to meet their needs without compromising the ability of future generations to meet their needs. The term “resiliency” refers to the community’s ability to readily recover from sudden changes or adversity.

Much of Madison was built during a time when it was assumed that resources to support growth and development patterns were unconstrained and that major changes were unlikely to occur and that the environment would support such growth. While this still may be the case, it seems prudent to evaluate alternative scenarios and the possible implications of those scenarios. If we are to enhance the character and quality of life for present and future generations, being a sustainable and resilient community – able to adapt to possible future changes – may be especially important.

Moving towards more sustainable and resilient practices will help Madison in the future ...

Resource Protection



Preparation



Sustainable Practices



Regionalism Opportunities



ACCOMPLISHMENTS

Since adoption of the 2000 POCD, Madison has implemented a number of the recommendations from that document:

- established a Conservation Commission,
- the Inland Wetlands Commission increased the review area adjacent to wetlands and watercourses,
- the Planning and Zoning Commission amended the coastal management regulations.

Protect Natural Resources

Natural resources in Madison are important to community character and overall environmental health. Residents also feel strongly about protecting them. In the telephone survey, 91 percent of respondents agreed that Madison should protect natural resources such as aquifers and natural habitats.:

Natural Resources

- Watercourses
- Inland wetlands
- Inland floodplain (“100-year”)
- Slopes exceeding 25 percent
- Public water supply watershed areas (existing and potential)
- Areas of high groundwater availability
- Aquifer protection areas
- Special habitat areas (such as endangered species)

While Madison has established programs and policies for protecting natural resources, there are some emerging issues which should be addressed in the future.

Protecting water quality will continue to be Madison’s most important natural resource preservation priority. Many properties in Madison obtain domestic water from an on-site well and discharge sewage to an on-site septic system. Since even properly functioning health-code compliant septic systems discharge nutrients and pollution to the environment, ensuring that individual systems operate effectively and that the cumulative impacts of multiple systems are understood is extremely important.

Madison should maintain a septic management program where the regular maintenance of individual septic systems is monitored. The Town should also continue educational and other programs to help remind residents about the impacts of discharging pollutants and nutrients and how to prevent it.

Watercourse



Vernal Pool / Wetland Area



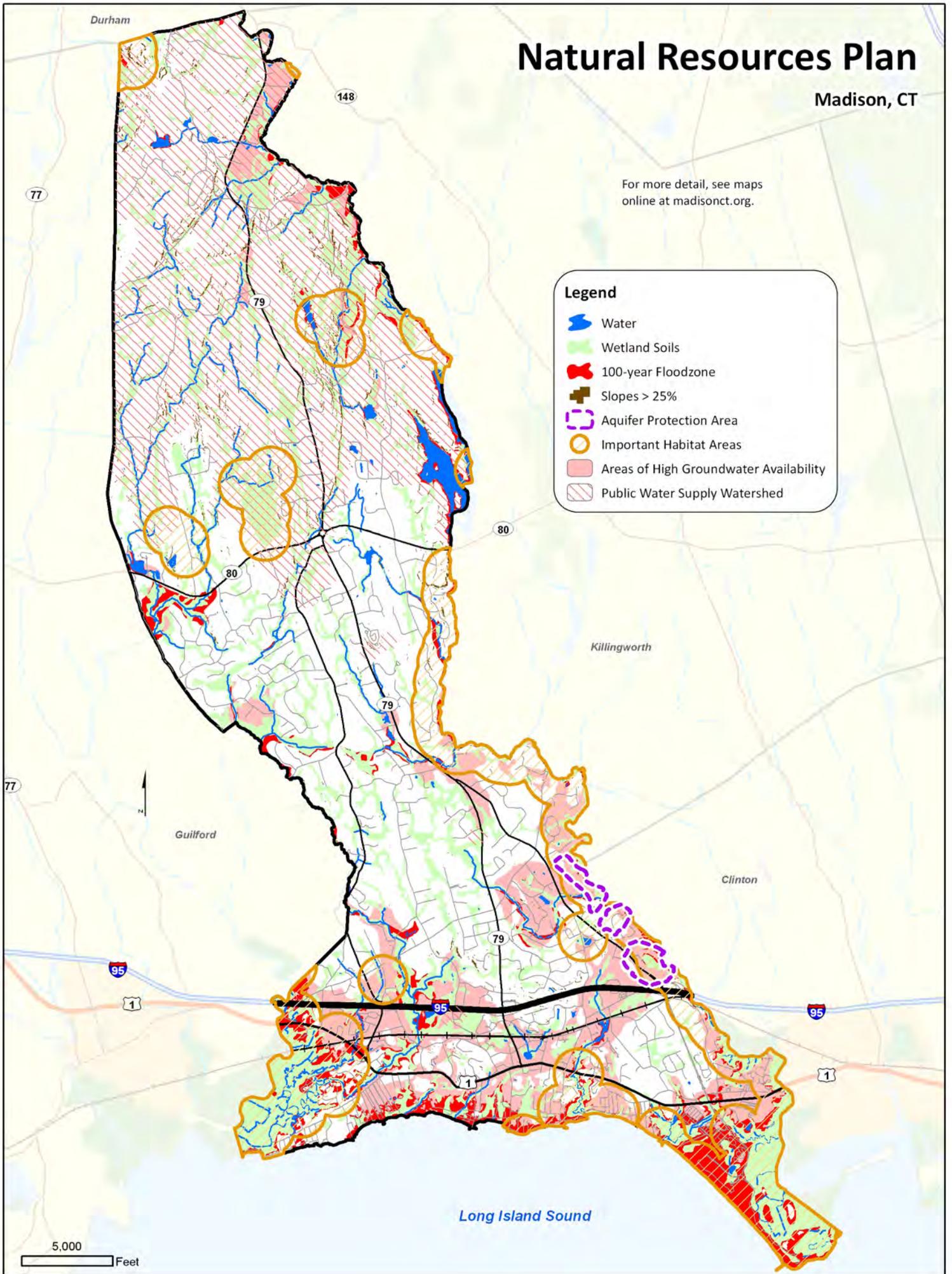
Natural Resources Plan

Madison, CT

For more detail, see maps online at madisonct.org.

Legend

-  Water
-  Wetland Soils
-  100-year Floodzone
-  Slopes > 25%
-  Aquifer Protection Area
-  Important Habitat Areas
-  Areas of High Groundwater Availability
-  Public Water Supply Watershed



Water Quality

While all of the water resources in Madison are important, there are several surface water resources which are truly exceptional:

- The reservoirs of the South Central Regional Water Authority,
- The Hammonasset River, and
- The Neck River.

These resources should continue to be preserved and protected.

A key initiative which the Town should undertake for enhancing water quality protection would be to adopt “low impact development” (commonly referred to as LID) provisions for drainage systems.

Stormwater runoff picks up debris, chemicals, dirt, and other pollutants. If the runoff flows directly into a storm sewer system or a waterbody, any pollutants are discharged ***untreated*** and accumulate in the environment. Polluted stormwater runoff can have adverse effects on plants, fish, animals and people. Some pollutants can affect natural habitats and change ecosystems. Bacteria and other pathogens can wash into swimming areas and create health hazards and even result in beach closures. Some pollutants can poison aquatic life and get into the food chain. Debris (such as plastic bags, six-pack rings, bottles, and cigarette butts) washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.

LID is an ecologically-friendly approach to site development and stormwater management that aims to replace the historic emphasis on structured drainage (curbs, catch basins, pipes, large retention basins, discharges to watercourses) with a more natural approach emphasizing runoff reduction, water infiltration, and pollutant removal.

LID is a marked change from historical approaches to storm drainage which tended to focus on collecting and discharging water as soon as possible from a specific site. While this worked well for that site, we now realize that this approach resulted in downstream flooding, damage to watercourses and brook channels, reduction in groundwater recharge, reduction in base flow in streams, and a reduction in water quality.

Examples of Low Impact Development Techniques

Open Channel



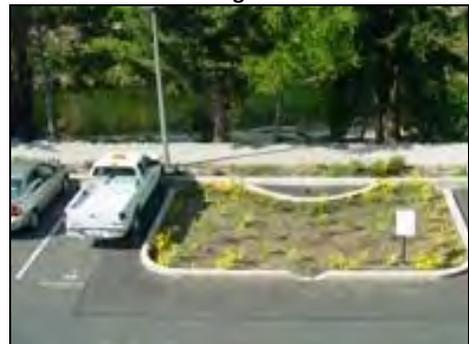
Wet Pond



Infiltration Strip



Parking Island



LID attempts to address issues associated with drainage closer to the point of rainfall (when volumes are lowest) rather than further down the collection and discharge system where it becomes much more difficult (and expensive). In other words, LID addresses these drainage issues by collecting and treating runoff at its source rather than at the end of the pipe.

LID is considered the new paradigm for the management of stormwater. LID focuses on minimizing or eliminating changes to the natural hydrologic cycle; such as maintaining pre-development runoff volumes, and water quality conditions. Where water quality in natural wetlands, streams, and ponds has already been adversely impacted by stormwater discharges, the implementation of LID can lead to improvements in water quality in the future.

Overall, the LID strategies typically employed might fall into three main categories:

- **Minimize Creation Of Runoff** - site planning and design strategies (preserve undisturbed areas, limit tree clearing, work with natural landscape) are used to reduce water runoff volume and prevent stormwater impacts in the first place.
- **If Runoff Is Created, Minimize Runoff Amount** – the amount of impervious coverage connected to the overall drainage system is reduced to decrease the generation of water runoff volume and prevent stormwater impacts.
- **For The Runoff Amount, Mitigate Impacts** – use tools and techniques to reduce or eliminate the impacts associated with water runoff volume and quality.

A final issue for consideration is groundwater quantity. Since Madison relies on groundwater to support local homes and businesses, it makes sense to understand whether groundwater resources are adequate for present and future needs and whether this varies by geographic area.

Continue These Policies:
<p>A. Protect natural resources and water quality.</p> <p>B. Educate and inform residents about protecting natural resources.</p> <p>C. Coordinate conservation efforts with neighboring towns.</p>

Complete These Tasks:
<ol style="list-style-type: none"> 1. Adopt stormwater management programs and regulations and implement “best management practices” such as LID. 2. Undertake a study to help understand whether groundwater resources are adequate for current and future needs (residential, business, irrigation, etc.). 3. Complete mapping of the natural resource inventory being undertaken by the Conservation Commission. 4. Consider adopting Low Impact Development regulations

Water Quality Manual

The Connecticut Department of Energy and Environmental Protection prepared a Stormwater Quality Manual (2004) which provides important guidance on the use of LID techniques and other strategies to protect water quality.



The Manual may be found on-line at:

<http://www.ct.gov/dep/cwp/view.asp?a=2721&q=325704>

REFERENCE

Additional strategies related to coastal areas and coastal resources may be found at page 51 and at page 60.

Protect Coastal Resources

Madison is one of only 24 shoreline communities in Connecticut. Residents are aware that coastal resources are important to community character and overall environmental health and feel strongly about protecting them. In the telephone survey, 95 percent of respondents indicated that Madison should protect coastal resources such as shore lands and salt marshes. Madison will continue to protect coastal resources.

Coastal Resources

- Coastal waters
- Tidal wetlands
- Coastal flood risk due to wave action (“V” zone)
- Coastal flood risk due to water elevation (“A” zone)
- Special habitat areas (such as shellfish beds)

In addition to activities which occur within the coastal area and the coastal boundary, Madison will continue to monitor and manage activities outside of coastal areas which affect resources within coastal areas.

Madison will also monitor and respond to emerging issues such as the implications of possible sea level rise and the reasons for “salt marsh dieback”, a condition where environmental changes are resulting in the death of vegetation in coastal wetland areas

Salt Marsh Dieback



Tropical Storm At Seaview Beach



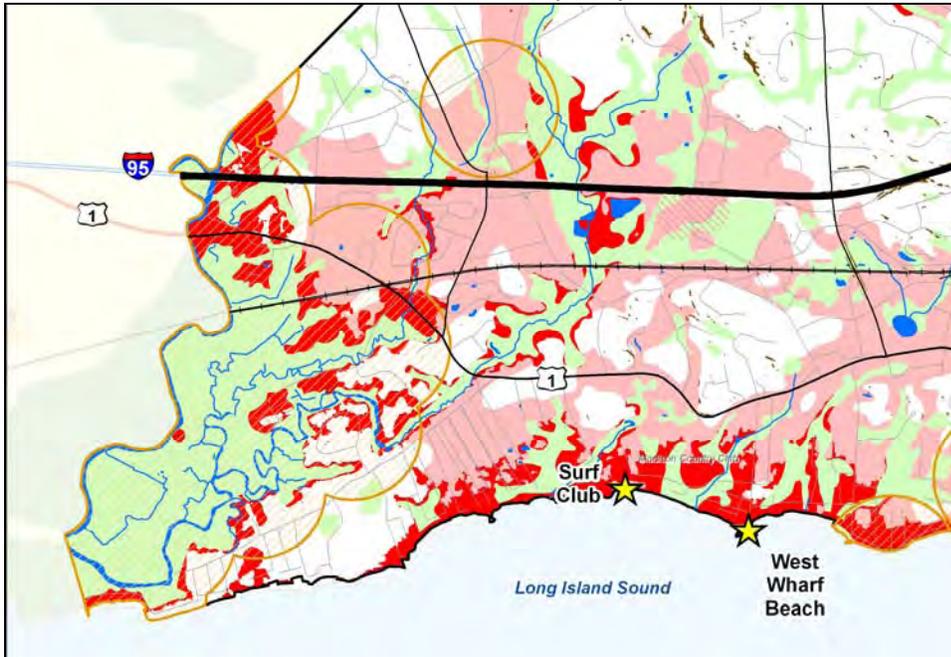
Continue These Policies:

- Protect coastal resources.
- Adhere to Coastal Area Management policies and guidelines.
- Educate and inform residents about protecting coastal resources.
- Work with CT-DEEP, SCRCOG, and other regional partners with regard to coastal resource issues.
- Support efforts to reduce potential pollutants associated with recreational boating.

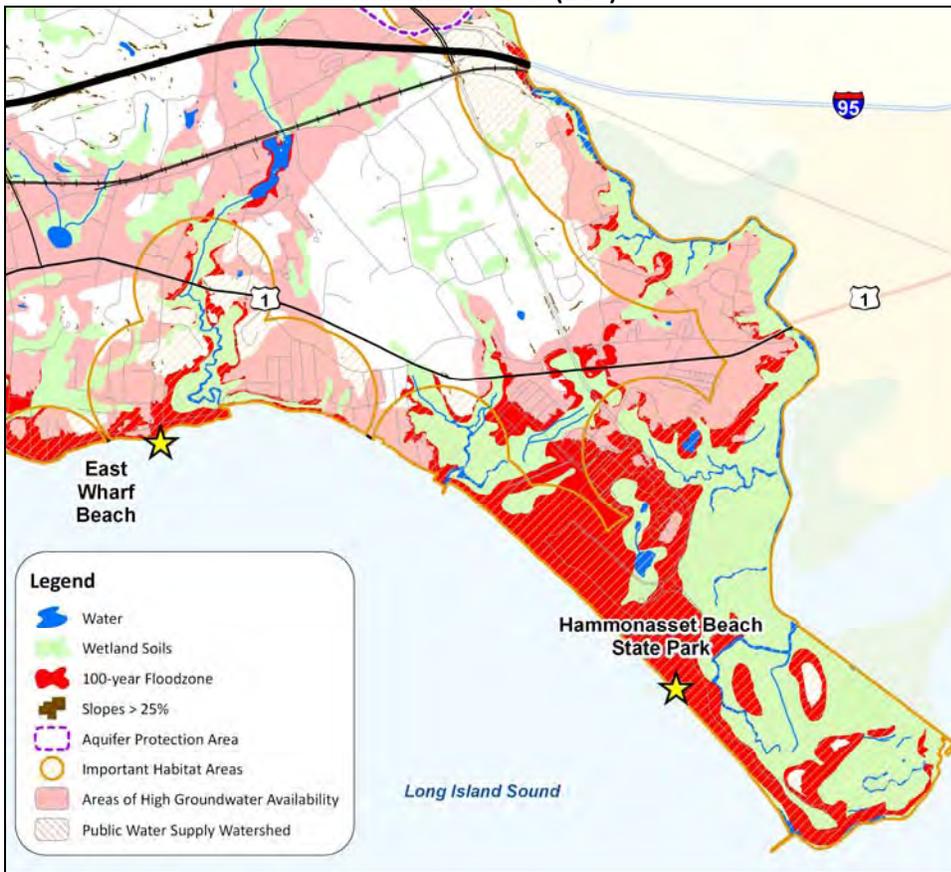
Complete These Tasks:

- Investigate salt marsh dieback in Madison and the effect on coastal resources.
- Complete mapping of coastal resource information.

Coastal Resources (West)



Coastal Resources (East)



REFERENCE

Additional strategies related to coastal areas and coastal resources may be found at page 51 and at page 58.

Encourage Sustainable Practices

Prepare For Possible “Sea Changes”

There are indications of two possible “sea changes” – either of which can have a significant impact on Madison and its shoreline areas. In order to be a sustainable and resilient community, these possible changes need to be factored into the thinking about Madison’s future.

The first possible change is a rise in sea levels. Information suggests that sea levels may be increasing due to global warming and melting of polar icecaps. While the rate of this increase cannot be forecast with certainty, the possible implications for Madison suggest that this trend should not be ignored. In the telephone survey, 73 percent of respondents indicated that Madison should plan for the possible impact of sea level rise.

The second possible change is an alteration in storm frequency and severity. Meteorological agencies suggest that such a change in storm patterns may be occurring. Experience with Storm Irene in 2011 and Storm Sandy in 2012 reminds us that the impacts from a severe storm would be significant.

Either one of these “sea changes” has the potential to have significant impacts. If they happen together, the implications grow exponentially.

Madison needs to have policies and procedures in place to prepare for these possible future events, seek ways to prevent or minimize losses in vulnerable areas, and to respond to events when they happen.

Continue These Policies:

- A. Remain informed and aware of sea level projections and storm projections.
- B. Participate in regional and state programs evaluating the issue of sea level rise and storm impacts.
- C. Seek to prevent or minimize losses in vulnerable areas.

Complete These Tasks:

- 1. As part of the regional hazard mitigation planning process, identify potentially vulnerable areas and prepare response plans.

Coastal Storm Effect



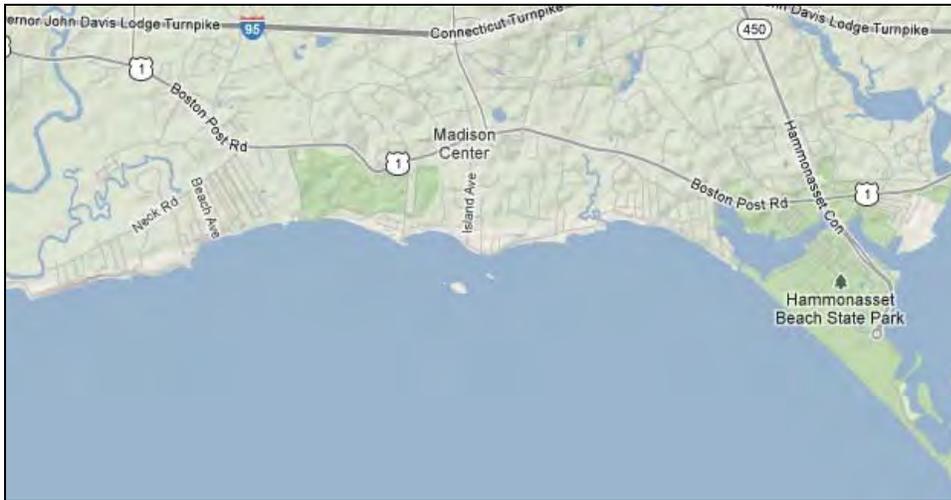
Tim Millhiser

Storm Damage In Madison



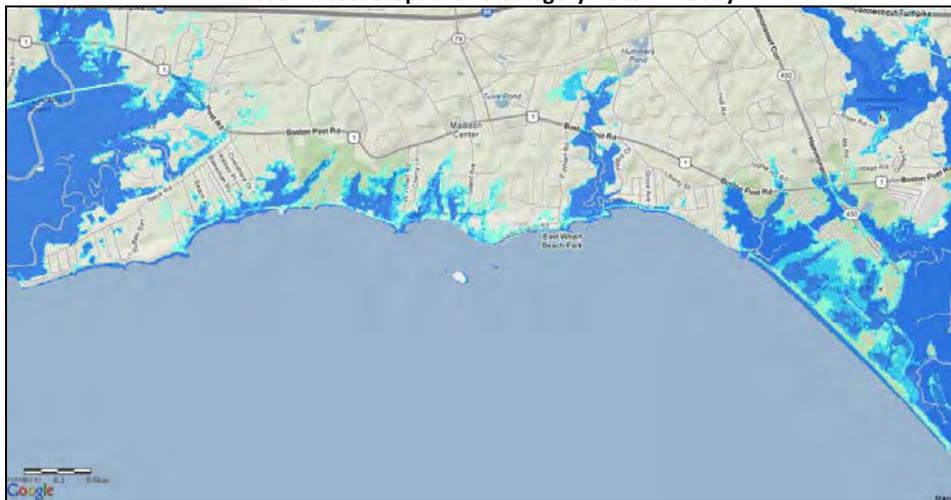
Tim Millhiser

Current Shoreline Area



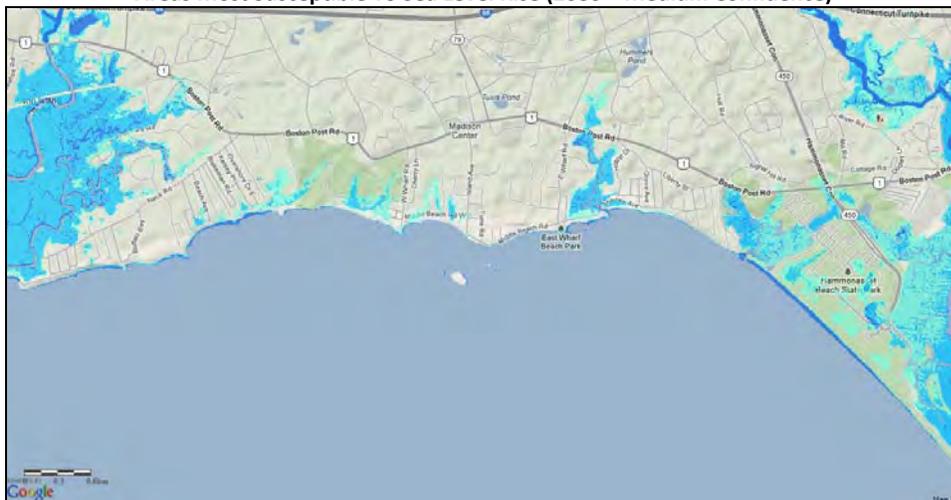
www.coastalresilience.org

Areas Most Susceptible To Category 2 Storm Today



www.coastalresilience.org

Areas Most Susceptible To Sea Level Rise (2080 – Medium Confidence)



www.coastalresilience.org

Conserve Energy And Water

The efficient use of natural resources such as energy and water is important to Madison residents. In the telephone survey, 82 percent of respondents agreed that Madison should do more to promote sustainable activities such as energy efficiency and recycling.

Water Use - The United States has one of the highest rates of personal water consumption in the world (100 gallons of water per person per day for domestic purposes). Simple changes to some everyday activities can reduce most people's domestic water use by 10% or more. Madison should encourage water conservation.

Energy Use - Energy availability and cost are likely to be more significant issues in Madison in the future. This has financial implications for all residents – whether for leading their daily lives or for supporting functions provided by the Town. The Town Energy And Efficiency Committee has been evaluating alternative approaches and made recommendations. Madison should continue these efforts.

Continue These Policies:

- A. Encourage conservation in water use.
- B. Encourage a reduction in energy use.
- C. Support energy efficiency in Town activities and reduction of life-cycle costs.
- D. Encourage recycling and other sustainable strategies.

Complete These Tasks:

1. Implement recommendations from the Town Energy and Efficiency Committee, as appropriate.
2. Implement new conservation technologies, as appropriate, such as installing electric vehicle recharging stations in Madison Center and elsewhere.
3. Educate residents about sustainability concepts.

Water Conservation



Wind Turbine



Electric Vehicle



Continue Emergency Preparedness Planning

One of the lessons for Madison from Storm Irene in 2011, an unusual October 2011 snowstorm, Storm Sandy in 2012, and winter storm Charlotte in 2013 was the value of emergency preparedness planning. In these situations, power was lost to large sections of the community for a week or more. This was quite a challenge until electrical service was restored. During these storms, a number of roads became impassable.

Madison and many public and private organizations were able to respond with emergency shelters, bottled water, and other supplies and services. Residents appreciated this response and were grateful for it.

Madison should continue to review and improve hazard mitigation plans (recurring events, such as flooding) and emergency preparedness plans (single events) in order to be able to respond to these events in the future.

This can also include protecting electrical lines by placing them underground as opportunities present themselves. This should also include establishing “smart grids” to identify the location of circuit interruptions and other problems as soon as possible.

Continue These Policies:	Complete These Tasks:
<ul style="list-style-type: none">A. Regularly update hazard mitigation and emergency response planning.B. Encourage electric system improvements to improve service and reliability.C. Prepare for possible future emergency response needs.D. Continue to work with utility companies and other agencies (such as the Connecticut Department of Utility Control) to promote reliable utility services.	<ul style="list-style-type: none">1. Strengthen the “Reverse 911 system” to access cell phones and other devices to aid in emergency preparedness and response.2. Identify vulnerable infrastructure locations.3. Take pro-active steps to protect local infrastructure and prevent repetitive losses.

Promote Regional Solutions

One strategy for Madison to consider in the future involves considering regional approaches to municipal needs. Regionalism of services or facilities might be a way to help:

- reduce service costs,
- expand service levels,
- create efficiencies of scale,
- provide new services cost effectively,
- increase the ability to implement local plans, and
- save taxpayers money.

Madison already benefits from regional approaches including:

- transit services,
- mutual aid for emergency service personnel,
- probate court,
- energy conservation efforts,
- purchasing of municipal supplies, and
- sharing of specialized public works equipment.

Madison should continue to consider regional approaches in the future.

Continue These Policies:	Complete These Tasks:
A. Consider regional approaches to meeting municipal needs and desires.	1. Establish a town strategy to promote regional solutions and approaches.