STORMSMART COASTS

Municipal Assistance with Sea Level Rise & Coastal Storm Impacts

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stormsmart coasts
supporting community efforts to manage coastal floodplains
mass.gov/czm/stormsmart

StormSmart Coasts Highlights

1. StormSmart Communities: pilot projects & partnerships for hands-on work in municipalities
2. StormSmart Tools: maps, fact sheets & other technical assistance for communities, landowners & other agencies
3. Climate Preparedness: information & strategies for adaptation to effects of climate change

1. STORMSMART COMMUNITIES

Pilot Projects & Partnerships for Hands-On Work in Municipalities

supporting community efforts to manage coastal floodplains

StormSmart Pilot Projects

- 2009-2011 pilot projects:
  - **Boston** – coastal inundation mapping & regulatory review
  - **Hull** – freeboard incentive & storm surge visualization
  - **Duxbury, Kingston & Plymouth** – coastal hazards awareness
  - **Falmouth** – natural hazards planning
  - **Oak Bluffs** – coastal floodplain zoning bylaw & regs
- 2011-2013 **Scituate, Marshfield & Duxbury** – sea level rise study including inundation depth visualization
- 2012-2013 **Nantucket** – coastal management plan
- 2013 **Salem** – climate vulnerability assessment & adaptation plan

Coastal Community Resilience Pilot Projects

- CZM grant program provides financial ($1 million) & technical resources to advance new & innovative local efforts to increase awareness of climate impacts, identify vulnerabilities & implement measures to increase community resilience
- 19 applications for ~ $2.1 million
- Review criteria included current adaptation efforts, climate issues, StormSmart climate adaptation actions & sea level rise scenarios
- 10 projects selected for FY14-15:
  - Evaluations of sea level rise impacts
  - Plans to relocate, redesign & adapt vulnerable infrastructure & buildings
  - Restoration of beaches & dunes
  - Community outreach to raise awareness, gain input & support

Green Infrastructure for Coastal Resilience Pilot Projects

- CZM grant program provides financial ($1.3 million) & technical resources to advance understanding & implementation of natural approaches to mitigating coastal erosion & flooding problems
- 13 applications for ~ $2.8 million
- Review criteria included potential threats to coastal infrastructure/ natural resources & consideration of sea level rise scenarios
- 9 projects selected for FY14-15:
  - Design & construction of beach & dune nourishment
  - Cultivation & planting of beach grass
  - Demonstration of living shoreline technology

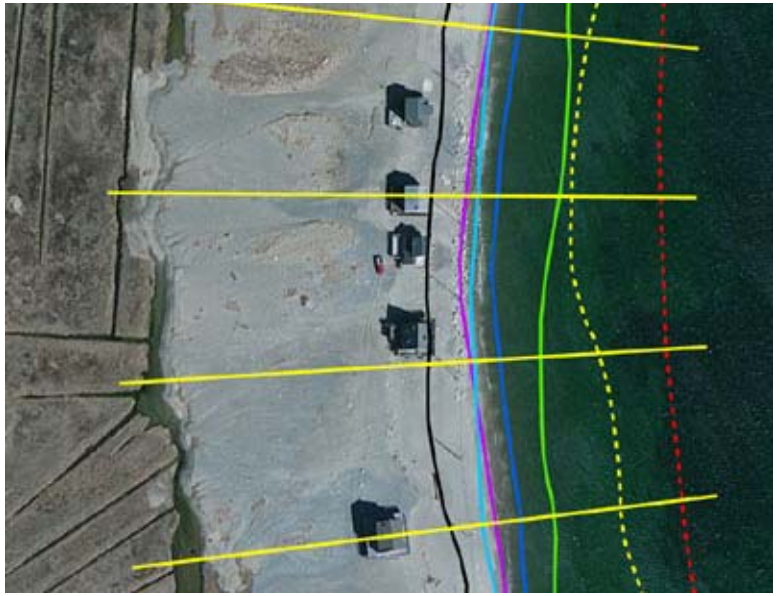
Coordination, Collaboration & Partnerships

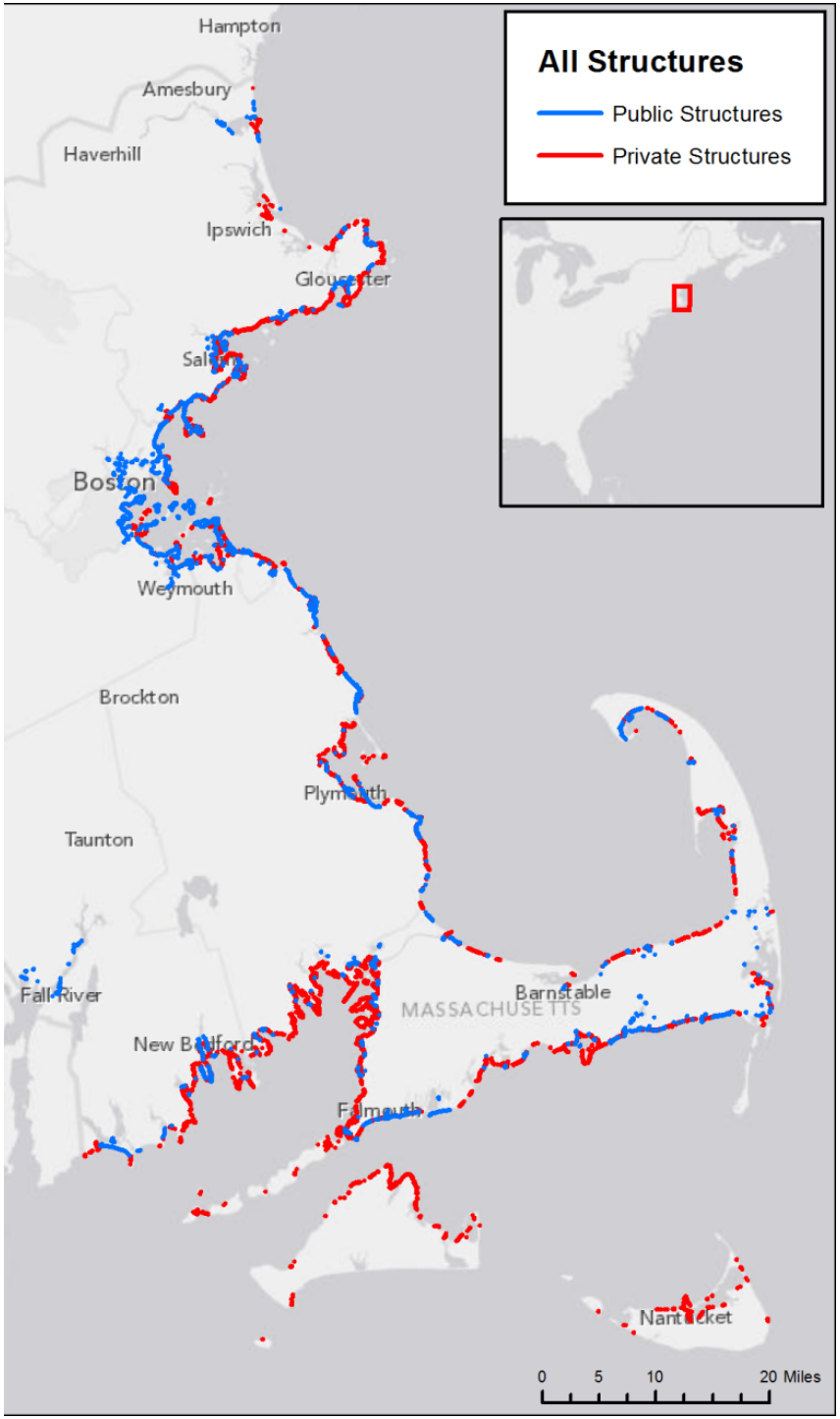
2. STORMSMART TOOLS

Hazard Identification & Best Management Practices

Massachusetts Shoreline Change Project

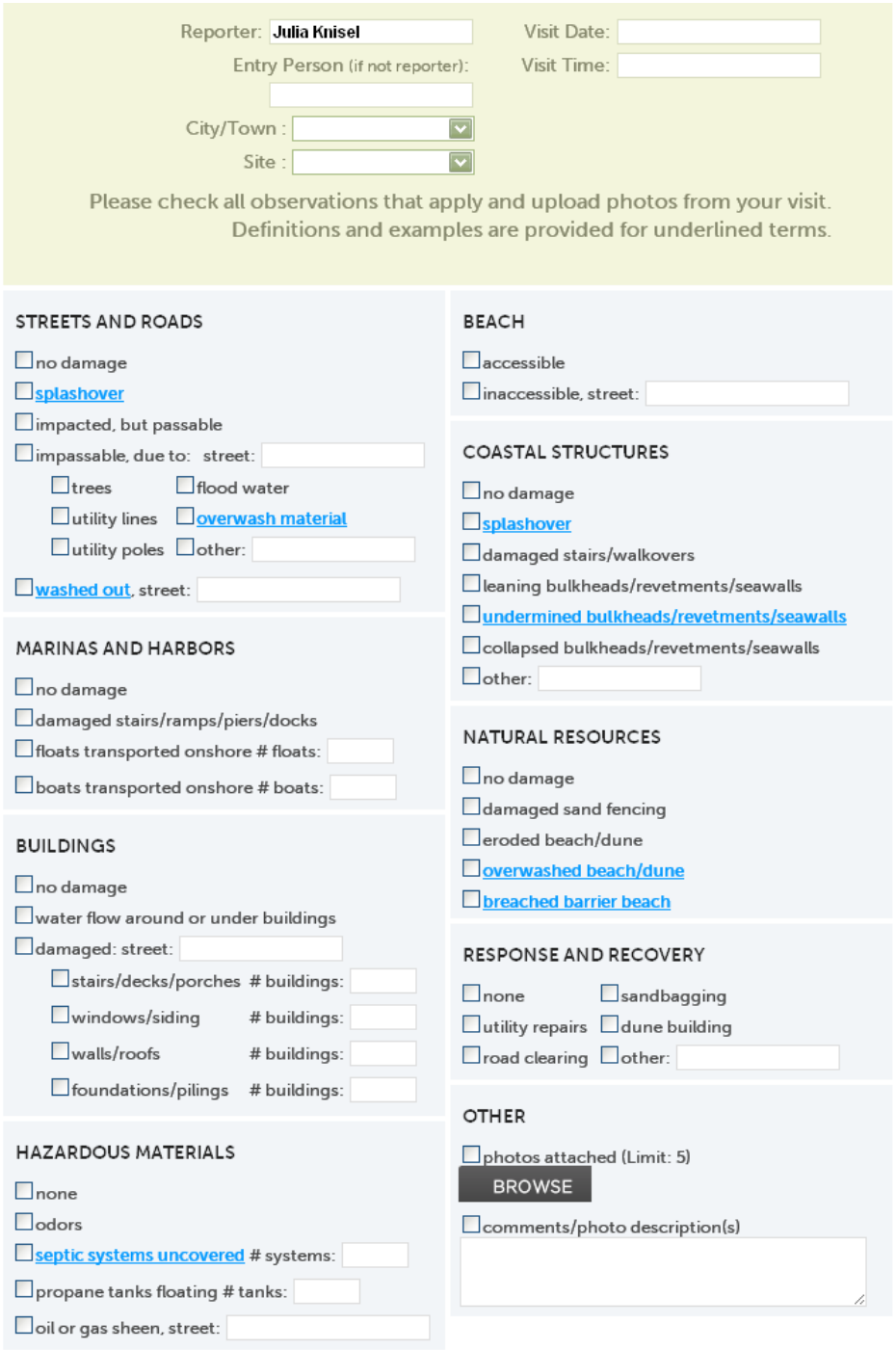
- Collaborative project with USGS
- Used data from historical & modern sources to compile up to 8 shorelines depicting high water lines from 1845 to 2009
- Generated 26,615 transects, every 50 meters alongshore
- Short & long-term shoreline change rates & net shoreline movement calculated for each transect
- Shorelines added as part of project completed in 2013: 2000, 2001 (South Shore) & 2007-2009





Coastal Structures Inventories

Region	Shoreline Length (miles)	Private Structure Length (miles)	Public Structure Length (miles)	Percent Protected
North Shore	160	50	24	**46%**
Boston Harbor	57	12	21	**58%**
South Shore	129	28	29	**44%**
Cape Cod & Islands	615	66	11	**13%**
South Coastal	154	49	7	**36%**
TOTAL	**1,115**	**205**	**92**	**27%**



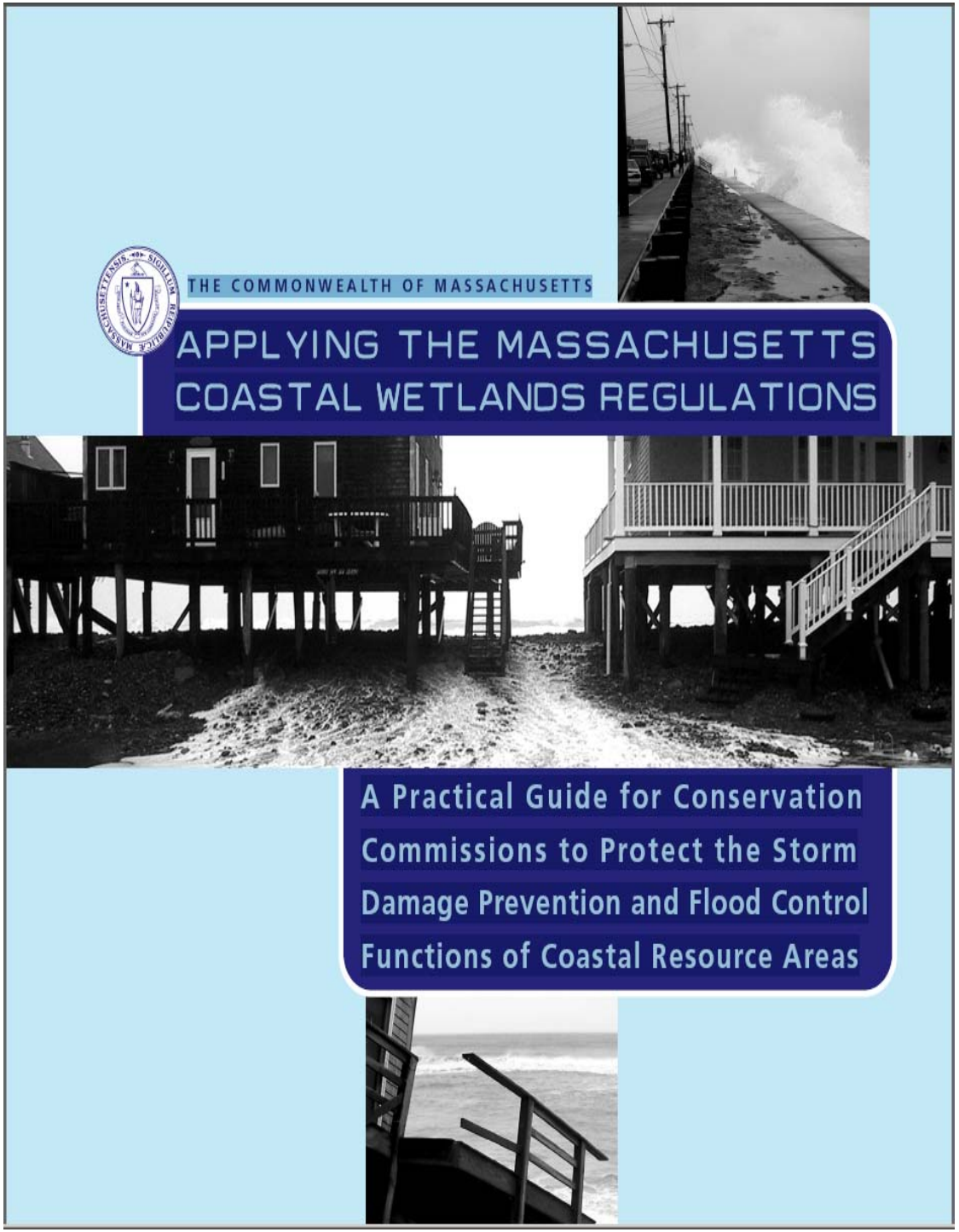
StormReporter

- Web tool that enables rapid delivery & archiving of reports from MA Rapid Response Coastal Storm Damage Assessment Team
- Informs state & federal emergency response & recovery
- Helps National Weather Service refine forecasting
- Project review & planning

StormSmart Properties Fact Sheets

Information for property owners:

- Inform decisions about best management practices for shore protection projects
- What the technique involves
- How it reduces storm damage
- Relative benefits
- Limitations
- Ways to minimize impacts
- Design considerations to maximize effectiveness
- Permitting
- Professional services
- Project timeline
- Maintenance
- Costs
- Additional information/resources



Coastal Manual

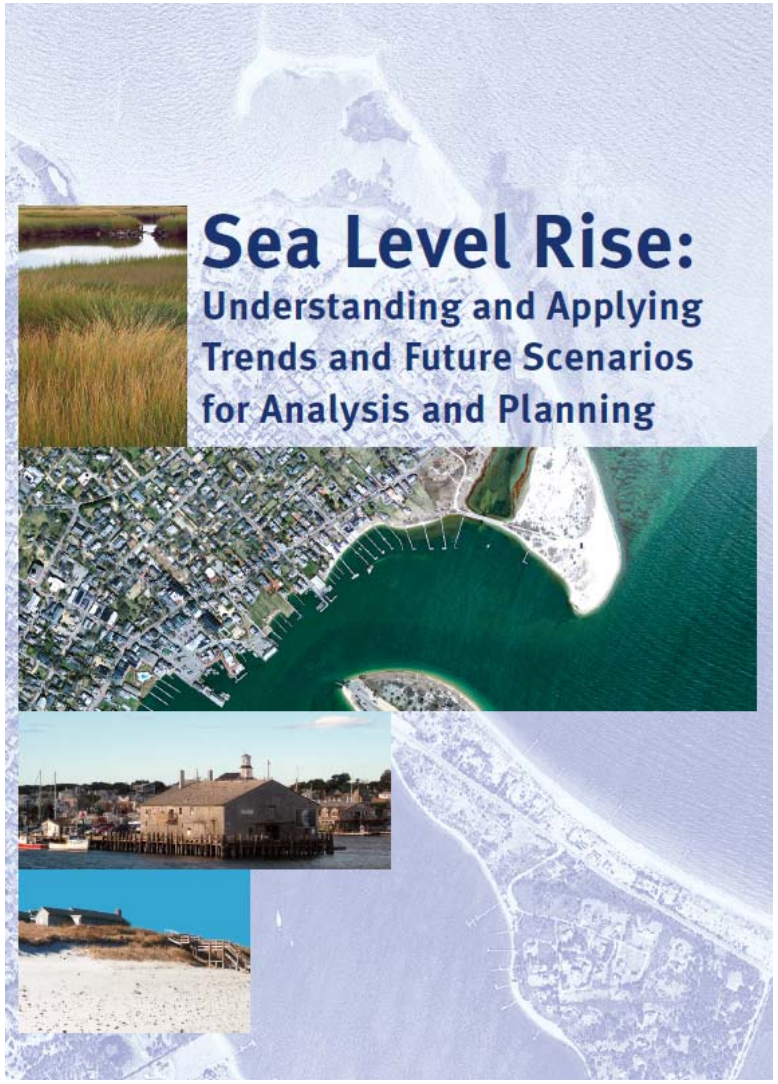
Collaborative Effort between DEP & CZM

- Provide consistent review & interpretation of regulations
- Provide scientifically based technical manual for commissions to rely upon
- Ensure activities protect storm damage prevention & flood control functions
- Ensure public health, safety & welfare are adequately addressed in project designs

3. CLIMATE PREPAREDNESS

State Adaptation Recommendations & CZM Sea Level Rise Guidance

CZM Sea Level Rise Guidance (2013)



- Need for synthesis of current sea level rise trends & application of global scenarios for technical/planning assistance & project review
- Technical review: Rob Thieler, USGS; Kevin Knuuti, USACE; Paul Kirshen, UNH
- Contents:
  - Historic & current sea level rise
  - Global scenarios
  - Coastal vulnerability assessments
  - Applying global scenarios locally
  - Technical resources

Coastal Vulnerability Assessments & Planning

- Factors critical to assessment & planning processes:
  - Technical issues with sea level rise mapping: bathtub vs. dynamic modeling
  - Working with uncertainty: human responses & actions
  - Time periods: 25/50/75 years
  - Risk and adaptive capacity:

	Low Adaptive Capacity	Medium Adaptive Capacity	High Adaptive Capacity
High Impact	HIGH CONSEQUENCES	HIGH CONSEQUENCES	MEDIUM CONSEQUENCES
Medium Impact	HIGH CONSEQUENCES	MEDIUM CONSEQUENCES	LOW CONSEQUENCES
Low Impact	MEDIUM CONSEQUENCES	LOW CONSEQUENCES	LOW CONSEQUENCES

	Higher Likelihood Impacts	Medium Likelihood Impacts	Lower Likelihood Impacts
High Consequence	HIGH RISK	HIGH RISK	MEDIUM RISK
Medium Consequence	HIGH RISK	MEDIUM RISK	LOW RISK
Low Consequence	MEDIUM RISK	LOW RISK	LOW RISK

California Interim Sea-level Rise Guidance Document 2010

For More Information – mass.gov/czm/stormsmart