Green and **R**esilient **I**nfrastructure **P**lanning in Rhode Island

Getting a G.R.I.P. in Coastal Communities

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Sea Grant
Rhode Island

NATIONAL FISH AND WILDLIFE FOUNDATION
NFWF

Topics for Discussion

- Project background

- Examples of tools and methods

- Lessons learned so far

GRIP definition of "GI"

- Incorporates open space

- Limits traditional "grey" conveyance

- Preserves ecology, hydrology of local watersheds

> ➤ *Coastal areas* present unique challenges…

GRIP Objectives and Outcomes

1) Use **pilot sites** to demonstrate site assessment for GI design
   - conceptual designs
   - installation, maintenance guidance

2) Through experiential approach, **build capacity of decision makers** to utilize GI locally
   - training materials
   - workshops

1) Incorporate **GI policy guidance** into local planning documents and processes
   - assessments of local plans, operations
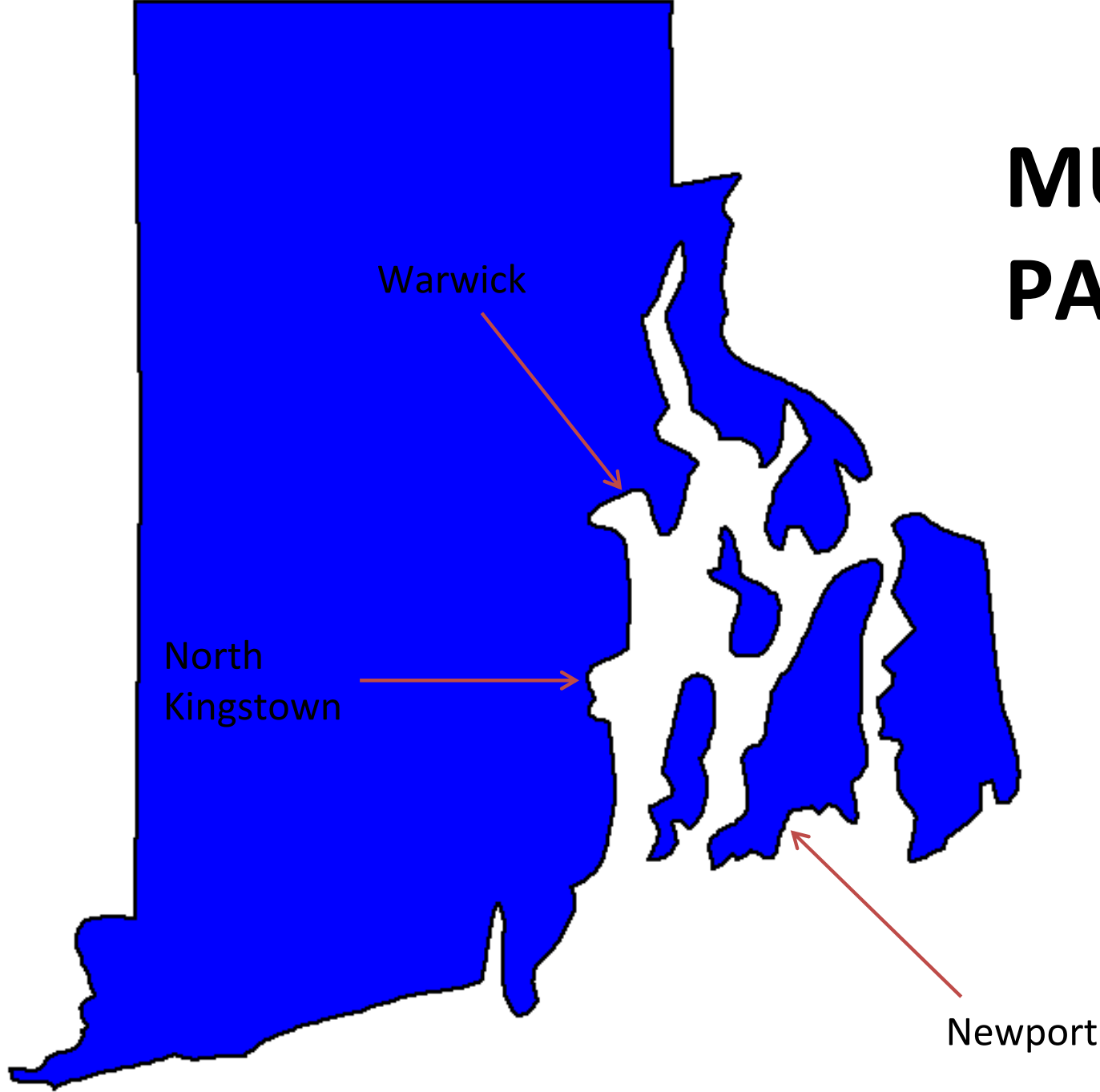   - policy recommendations for decision makers

Project Team

MUNICIPAL PARTNERS

Warwick

North Kingstown

Newport

TOOLS AND METHODS
For Achieving GRIP Objectives

1. Site assessment

2. Experiential design

3. Policy guidance

1. Site assessment process

- What are the local stormwater, coastal issues?

- Are there areas where issues *overlap*?

- What are the challenges now? In the future?

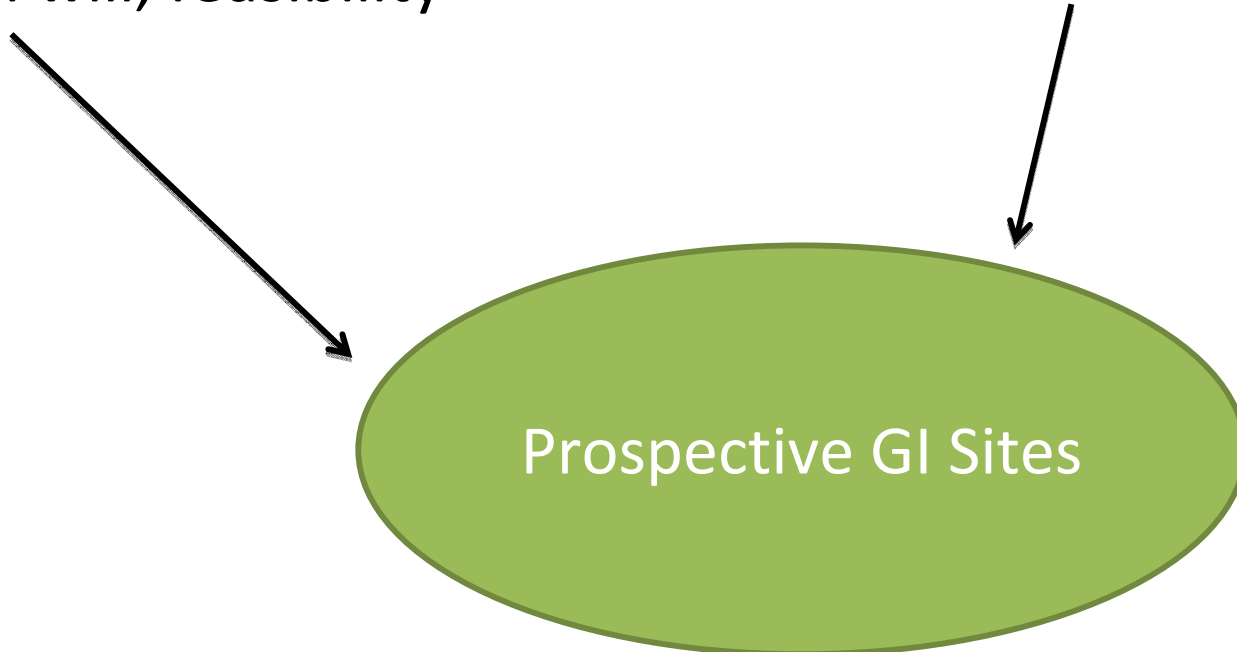➢ What is the best site for a GRIP design?

Early Collaboration

Municipal staff:

- Future vision, current use
- persistent problem areas
- concurrent projects
- political will, feasibility

Scientific and regulatory experts:

- insight on scientific components
- statewide context
- real examples elsewhere

Prospective GI Sites

Oakland Beach

Warwick

Wickford Village
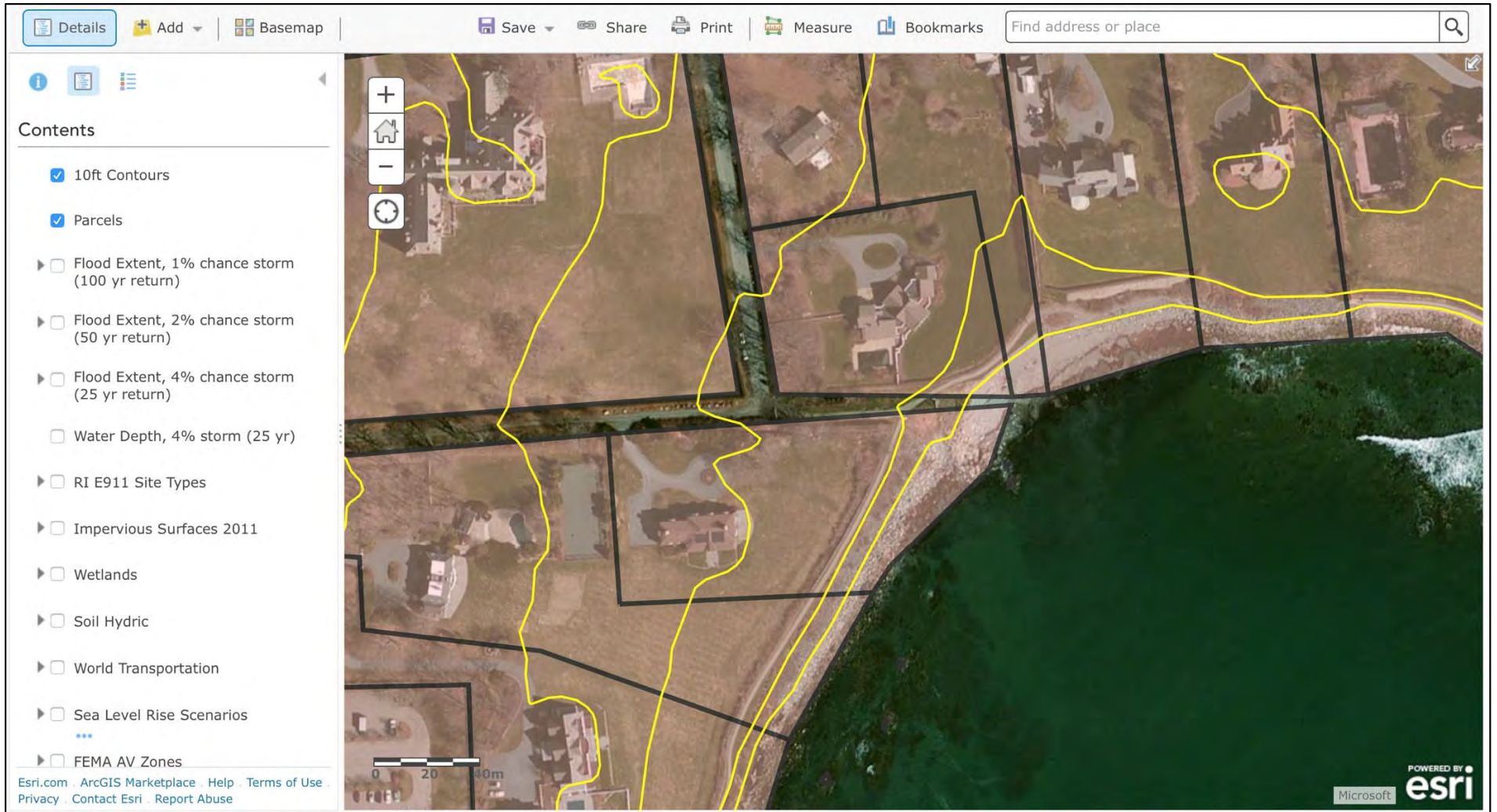
North Kingstown

Marine Avenue

Newport

ArcGIS, Online Maps

- Spatial analysis fundamental to GI:
  - relevant layers at all scales
    - municipal> watershed> site

- Online Maps:
  - easy to access and use
    - only need internet, basic map experience
  - "living" tool, interactive
    - users share, request data as project evolves
    - toggle layers during meetings

Example

Links to online GRIP maps:

[Oakland Beach](#)

[Marine Avenue](#)

[Wickford](#)

Site Visits

- Visualize site issues, opportunities, landscape interaction with rain/sea

- Opportunity to ground truth

- Timing is critical
  - watersheds *in action* (rainfall events)
  - coastal influence (tides, surge)
  - local use of space (based on season, weather)

Examples

Marine Avenue during rain event

Wickford parking lot during extreme tide

Cloudy

vs.

Sunny

Use of Oakland Beach varies
based on seasons, weather

Site Assessment Informs Design

Findings for Oakland Beach:

- Pollution in first flush

- Solid waste from local businesses

- Frequent beach closures

- Water accumulates in parking area

- Threatened by storm surge, extreme tides

- Parking, beach access critical to use
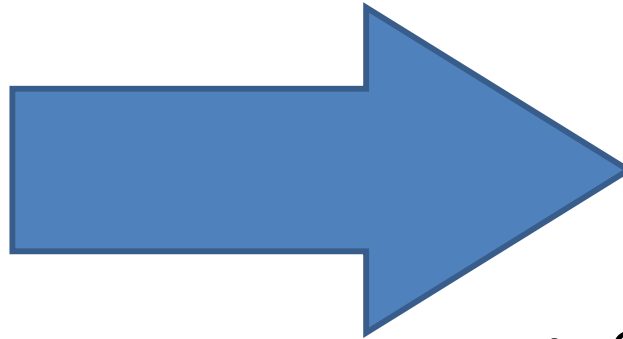
Design Goals

- Capture, treat first 1" rainfall

- Reduce WQ impairment (bacteria, N)

- Consider 3' inundation for design (SLR + surge)

- No net loss of parking spaces, beach access

- Plan for 20 year design life

2. Experiential design method

- How to incorporate interdisciplinary ideas and expertise into designs?

- How to use design process as a tool for building GI capacity?

Workshops for Site Design

Expert discussing GI concepts

Planners explain the Wickford site

Begin with:
- GI concepts, applications
- Discussion of site, design goals

Design Charrettes

Charrette French for "cart"

- *Interdisciplinary* teams form conceptual designs

- Goal of using GI to:
  - reduce issue impacts
  - enhance public use
- Consider
  - tradeoffs, co-benefits of choices

➢ Discuss designs, cart them away

GRIP GAME INSTRUCTIONS

1. BASEMAP - 1" = 40 feet
2. SCALE - rulers provided
3. GAME PIECES & LEGEND
   - some to scale, some not
   - create your OWN!
4. GRIP ONLINE VIEWER & MAPS
5. USE YOUR NOTES FROM EARLIER PRESENTATIONS!
6. ARRANGE GAME PIECES TO ADDRESS GOALS & OBJECTIVES OF PROJECT
7. SECURE PIECES WITH PUTTY & PHOTO YOUR MAP!
8. PRESENT YOUR SOLUTIONS TO THE GROUP.

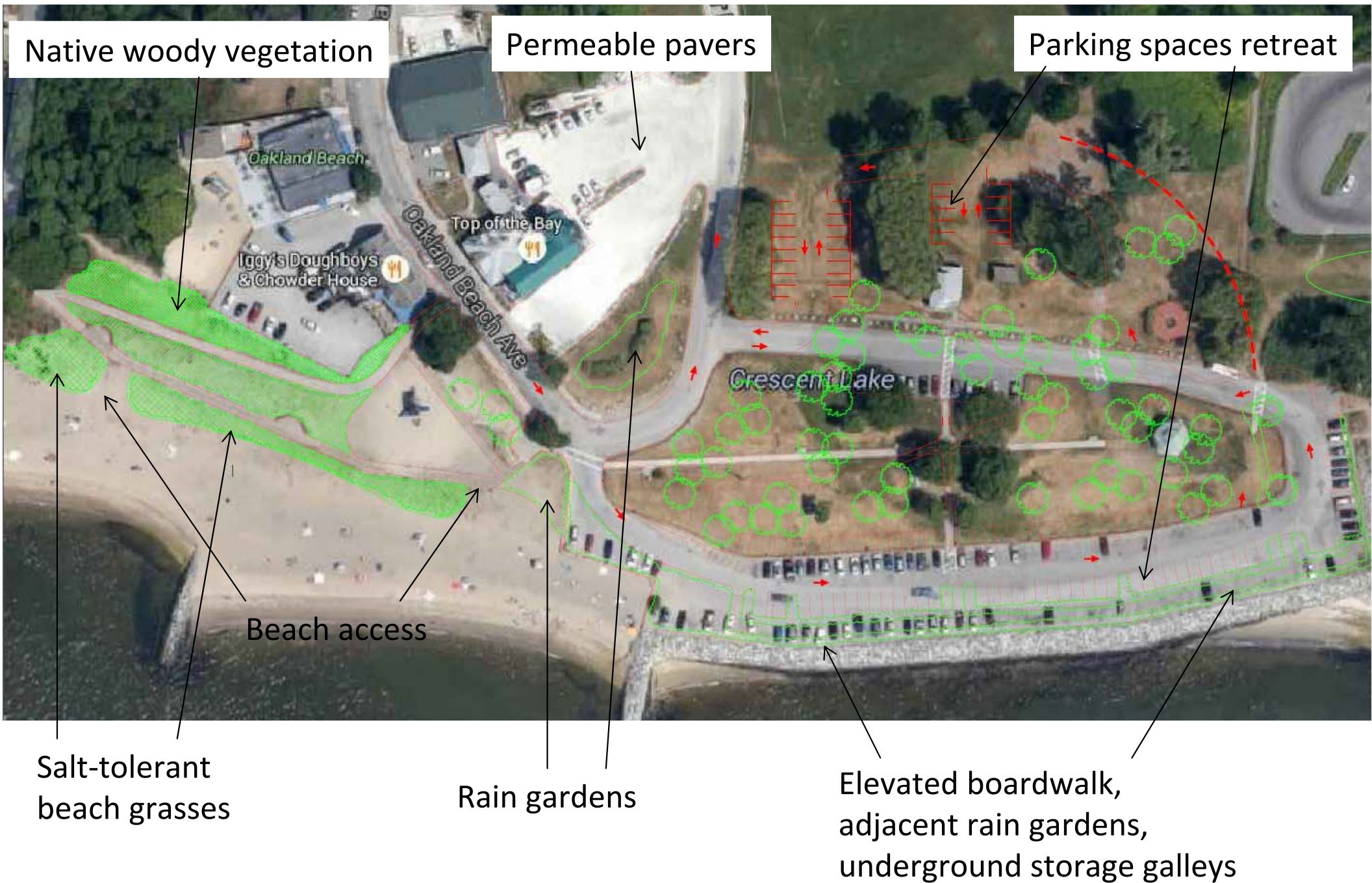
JONAH community center, Oakland Beach

Examples

Involving Students

- Experiential learning for next generation of professionals

- Designs by URI landscape architecture studio

Incorporating Charrette into a Final Design

Native woody vegetation

Permeable pavers

Parking spaces retreat

Salt-tolerant beach grasses

Beach access

Rain gardens

Elevated boardwalk, adjacent rain gardens, underground storage galleys

3. Policy guidance

- What are the *standards* for incorporating GI into local policies, procedures?

- What is the *approach* for identifying gaps, opportunities in local documents?

- What form should guidance take?

Using RI State Manuals

- LID, SW, SESC manuals for *categories* of GI standards
  - (parking, setbacks, conservation subdivisions, etc.)

- Audit local documents for category language (or lack thereof)

➢ Use *gaps* to create guidance
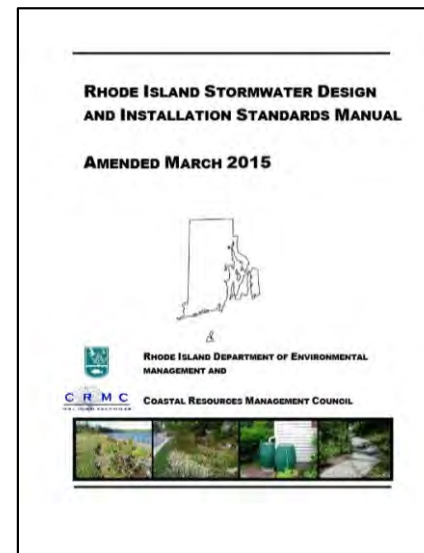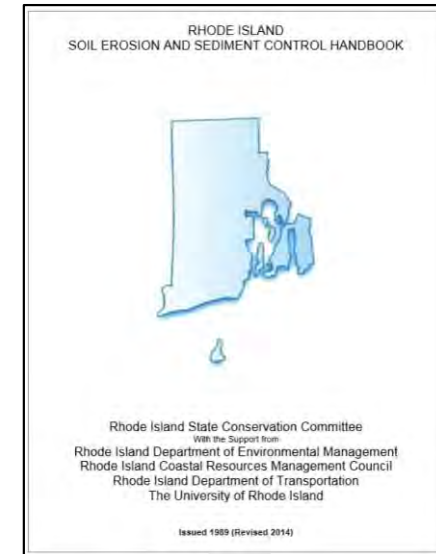
Guidance Format

- Stand-alone model ordinances
- Policy amendments
- Recommend goals and actions for later use

➢ Timing is important
  - When are docs being written, amended?

NEXT STEPS AND LESSONS LEARNED

Next Steps for GRIP

- Synthesize deliverables
  - finalize designs
  - package recommendations

- Work with communities to implement
  - institutionalize in pilots... rest of state

Lessons Learned

- Interdisciplinary team essential

- Take a watershed approach to site design
  - GI as patchwork of solutions
  - find opportunities upland of coastal risks

- Need to *balance* different critical factors
  - ideal environmental goals
  - feasible designs, policy recommendations
  - public use of space

Thank You