

An aerial photograph of a coastal region in Connecticut. A winding river flows through the landscape, which is a mix of green fields, dense trees, and residential areas. In the center, there is a marina with several boats docked. The river eventually leads to a larger body of water on the right side of the image. The overall scene is a blend of natural and developed environments.

# Visual Impacts and Assessments: Coastal Connecticut

Managing Docks and Piers Workshop

May 22, 2007

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# Outline

- Visual Impacts Defined
- Connecticut's Context
- Coastal Management Fellowship Project Intention
- Assessment Methodologies
- State, Regional, and Local Tools for Connecticut





What is Visual  
Impact Assessment?

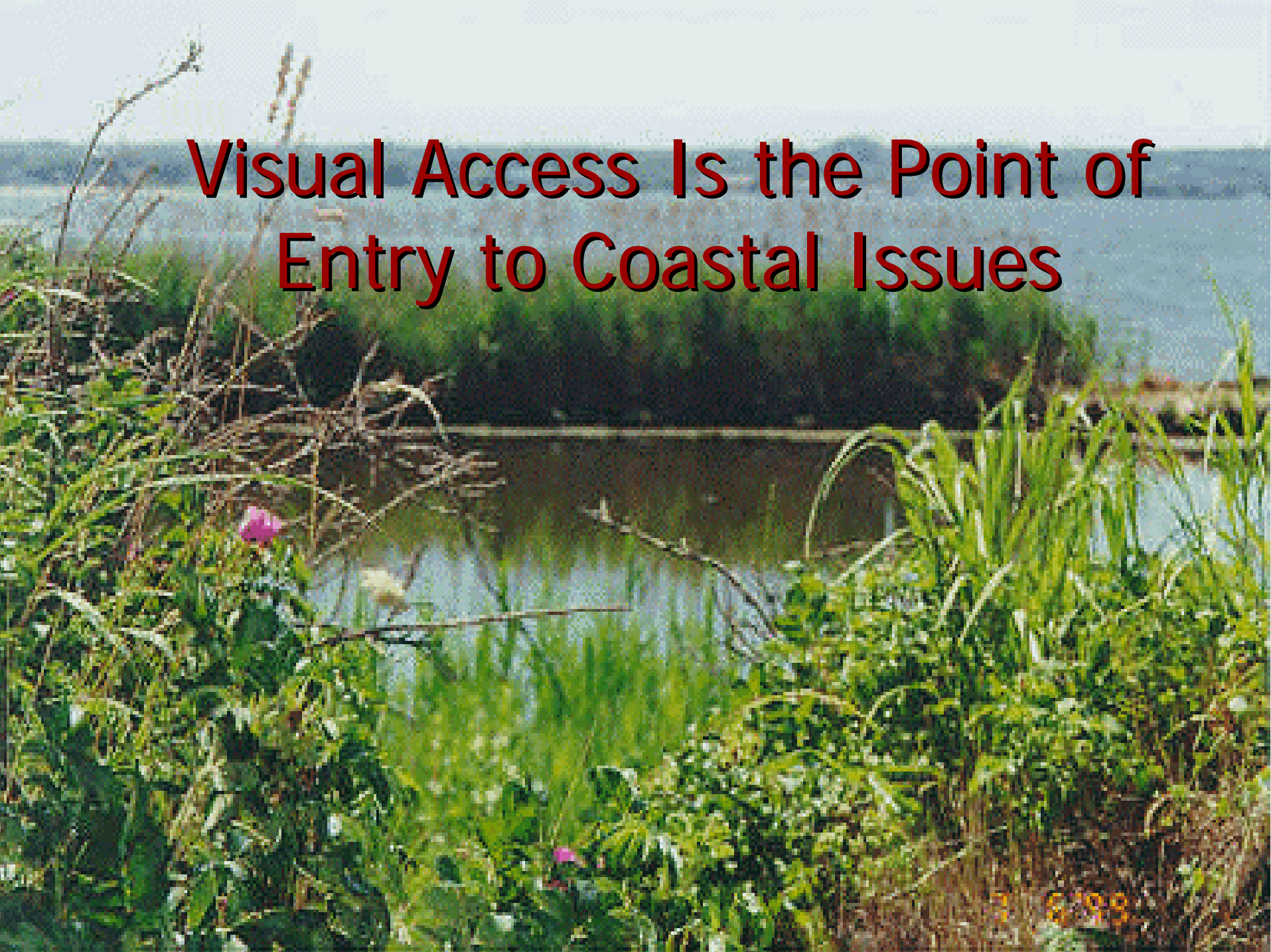
**"Visual impacts can be defined as the changes in appearance of the landscape as a result of developments, and they can be either positive (improvement) or negative (detraction), direct or indirect, temporary or permanent, single or cumulative and can vary in magnitude and significance." <sup>1</sup>**

**Landscape attributes =  
Sense of Place**

1 6'98



# Visual Access Is the Point of Entry to Coastal Issues



7/8/08

# Tear-Downs







Megadocks & Mega Mansions

# People are upset about it . . .



# Legal Authority:

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- Coastal Management Act:
  - The coast is rich in “aesthetic resources”
  - “Adverse impacts on coastal resources” include the “degrading visual quality through significant alteration of the natural features of vistas and view points.”
- CT River Gateway Commission:
  - Zoning standards to preserve the “natural and traditional riverway scene”
- So, how will we implement this?

# Challenges:

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- Must be legally defensible
- CT enabling legislation for local aesthetics is weak
- Strong home rule state
- Needs to be scalable and adaptable to each town
- Must be user-friendly and inexpensive for state permit staff and local planning offices with no GIS training
- Can not be maintained on centralized web system
- No staff committed to update tool after 2007

# Tools for VIA in Connecticut



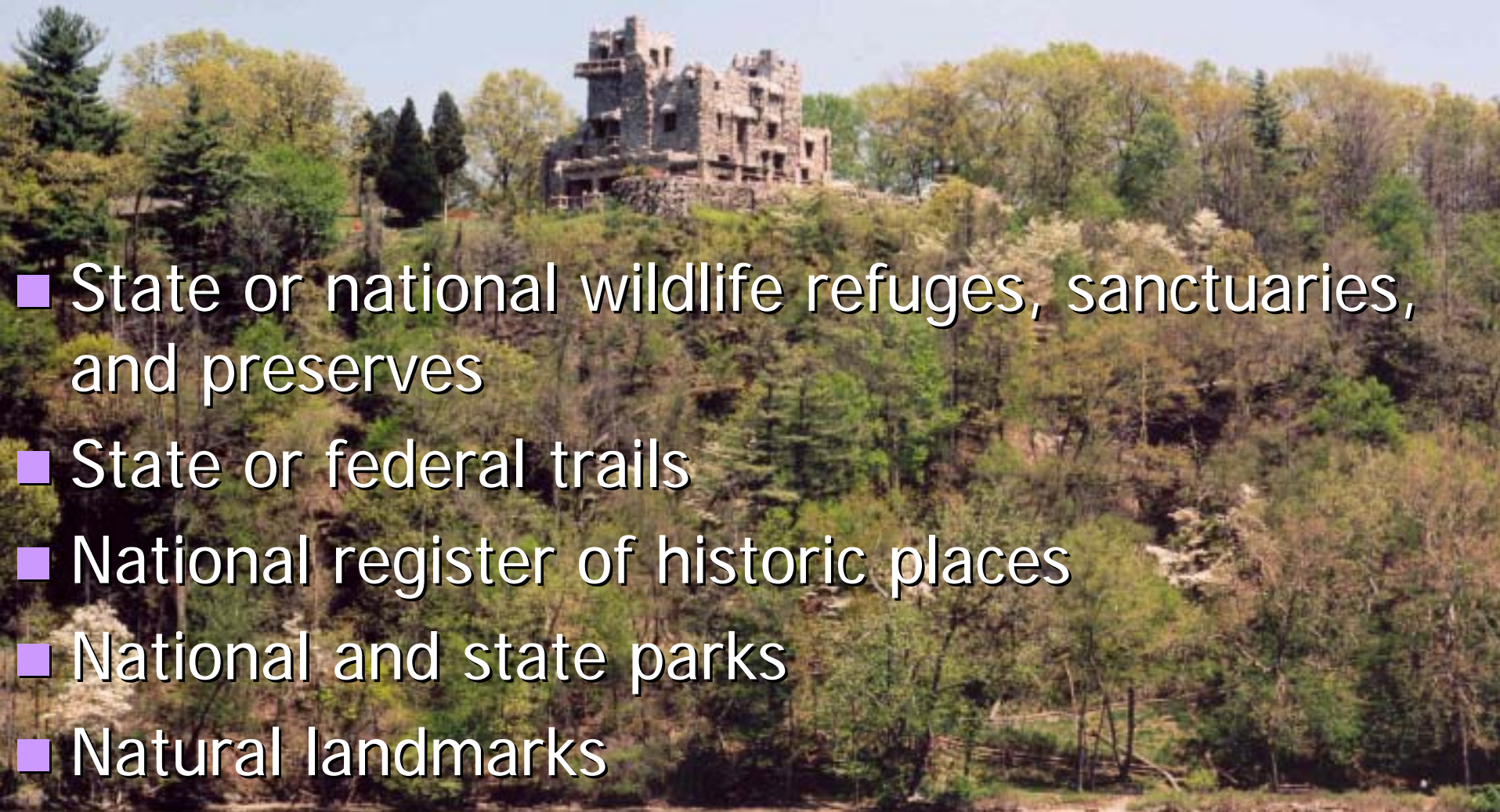
- Paper-based matrices for systematic comparison?
- 2-D GIS layer in Coastal Resources GIS Project
- 3-D case study of portions of the coast to show optimal analysis
- Municipal ordinances and Harbor Management Plans
- Visual simulation tools

# Connecticut's Proposed Policy



- Designates views of statewide concern
- Staff determine if proposal falls within significant viewshed
- Small scale projects use line-of-sight profiles
- Large scale projects must undergo comprehensive visual impact assessment

# Examples of State Scenic Resources



- State or national wildlife refuges, sanctuaries, and preserves
- State or federal trails
- National register of historic places
- National and state parks
- Natural landmarks

# 2-Dimensional GIS Layer of Scenic Viewshed

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- 1970s Long Island Sound Study created a scenic map using nineteen visual criteria, including topographic and shoreline complexities, vegetative diversity, contrast, color, and formation to townscapes
- Viewshed layer will be digitized and incorporated into CT Coastal Resources GIS
- Allows environmental analysts easy access to spatial and attribute data in planning and permitting considerations
- Possibility to hire consultant to update the survey



# 2-D Coastal Resources GIS Project

The screenshot shows a GIS application interface with the following components:

- Menu Bar:** File, Edit, View, Items, Panels, Table of Contents/Legends, DOQs/TOPOs/Charts, Graphics, Help, Instruction Manual.
- Button Bar:** A row of icons for navigation and editing.
- Tool Bar:** A row of icons for map interaction.
- Legend:** A list of themes with checkboxes and color swatches. Active themes are checked and have a raised appearance.
  - Active themes: Annotate, Town Boundaries, Railroads, Roads + Trails, Hydrographic Area, Hydrographic Polygons (with legend items: Bay/Inlet Beach, Causeway, Dam, Fish Hatch, Flats, Intermittent Water, Island, Rocks, Water).
  - Inactive themes: Quad Index, Town Index, DOQ Image Catalog, Quad Image Catalog.
- Map View Window:** A central map showing coastal features like rivers, creeks, and land parcels. A black arrow points from the 'Black Bay River' entry in the table to its location on the map.
- Table of Contents:** A panel on the right displaying a table of hydrographic polygons.
 

Area_sqm	Stream_id	Stream	Length_m
WATER	823	Housatonic River	0
WATER	0		1056
WATER	1912	Whiting River	3946
WATER	650	Ginger Creek	0
WATER	0		911
WATER	0		910
WATER	0		3409
WATER	0		0
WATER	1066	West Branch Farmington River	568
WATER	0		189
WATER	1224	North Brook	0
WATER	650	Ginger Creek	0
WATER	650	Ginger Creek	0
WATER	1953	Wood Creek	2956
WATER	0		845
WATER	0		0
WATER	0		1810
WATER	0		0
WATER	0		0
WATER	149	Black Bay River	0
WATER	0		0
WATER	0		0
WATER	0		0
WATER	1520	Schenob Brook	0

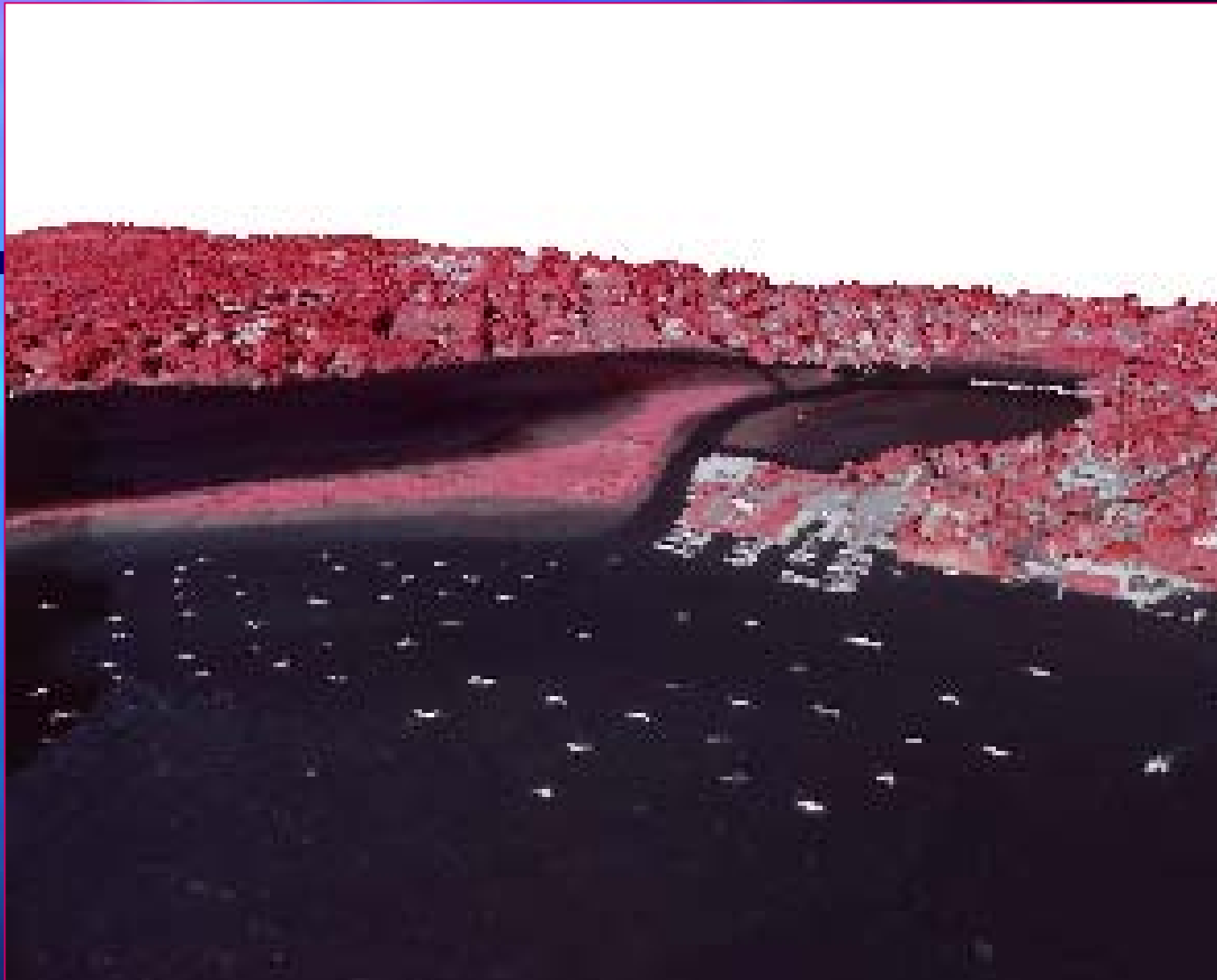
**Annotations:**

- A large bracket on the left labeled "Project" encompasses the legend and map view.
- Arrows point from "Menu Bar", "Button Bar", and "Tool Bar" to their respective UI elements.
- Arrows point from "View Window" to the map area.
- Arrows point from "Table of Contents" to the legend and the data table.
- An arrow points from "Table Document" to the data table.

# 3-Dimensional Tools

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- Take LIDAR data, geo-reference photo and drape it over digital elevation model
- Shine “light” to find viewshed
- Can conduct percentage view calculations if create 3D model for entire viewshed in virtual reality



3-D Viewshed Analysis using ArcGIS. 3-D landscape created by draping orthophoto over LIDAR elevation data





180° "light" shines toward the land to show what is visible were a person to be standing in the boat on the water. View is set at 10 ft. off the water.

# Visual Simulation

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- Allows depiction of development and alternatives in both 2-D and 3-D
- 2-D is user-friendly and utilizes CanVis free software
- For advanced users can be scale-accurate
- Website created by NOAA Coastal Services Center with tutorial and files

# Local and Regional Measures

- Plan of Conservation and Development and zoning ordinances can preserve views of local significance
- Harbor Management Plans can determine appropriate water uses based on town goals
- Gateway Standards could incorporate visual impact measures that protect the scenic vista of the river, including ridgeline views




# Harbor Management Plan Measures



- Encouraging communal docks
- Working with the town to delineate zones more and less appropriate for water-dependent development
- Limiting dock length and accessory structures
- Incorporating design suggestions that fit the characteristic of your town

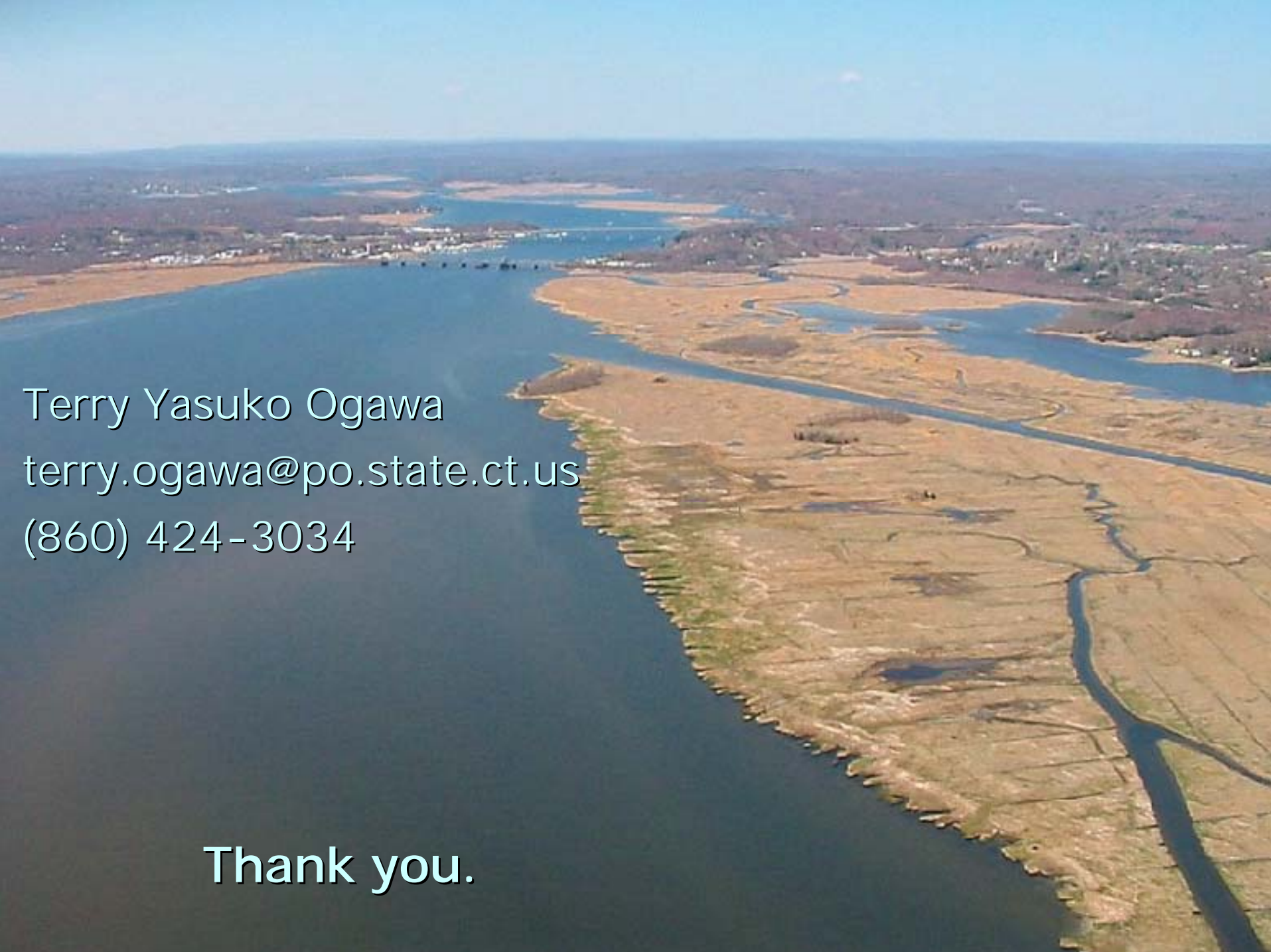


An aerial photograph of a wetland landscape. A dark, winding waterway flows through a patchwork of green and brown fields. The background shows a dense forest of trees. The text is overlaid in the center of the image.

What we want to  
protect is what we  
know and love.

Dream big.





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Thank you.