

Using NEMO to Advance Watershed Management

January 17, 2007

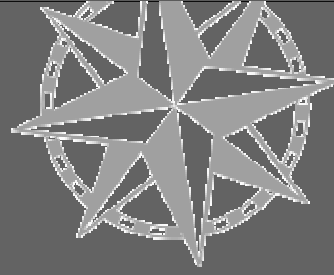
***A Watershed Academy Webcast
in Three Parts***



Webcast sponsored by EPA's Watershed Academy



The Cast

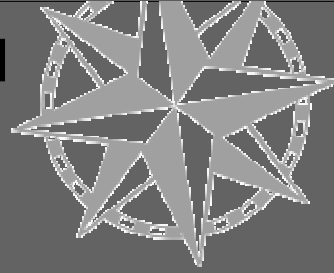


What We'll Cover

- **Brief & Painless Introduction**
- **NEMO Basics**
- **How is it Working?**
- **New & Noteworthy at NEMO**
- **The National NEMO Network**



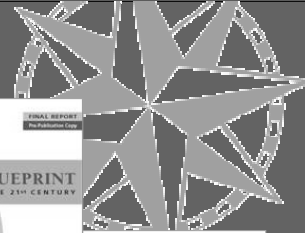
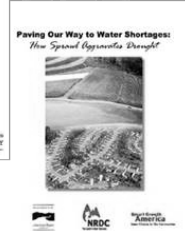
The Center for Land Use Education and Research

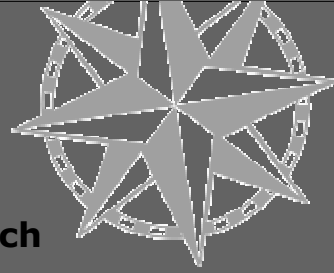


Provides information, education and assistance to land use decision makers, in support of balancing growth and natural resource protection.



Why Land Use?





1. Landscape research



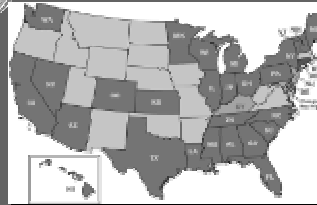
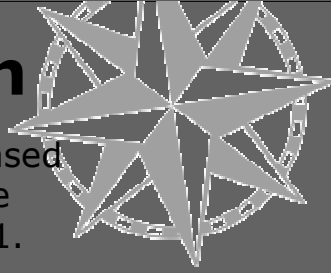
2. Tools & Training

3. Outreach Education



CLEAR's Foundation

A national award-winning research-based educational program for local land use decision makers, operating since 1991.

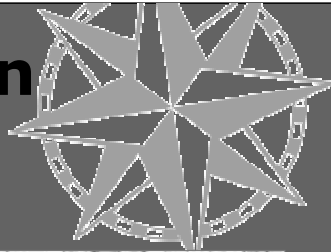


What We'll Cover

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Nonpoint Education for Municipal Officials



- **University of Connecticut**
- **Established 1991-1992**
- **CT staff = 3-4 people**
- **National staff = 2 people**
- **Supported mostly on grants**



Early NEMO workshops included innovative techniques to ensure participation.⁹

Where NEMO Comes From

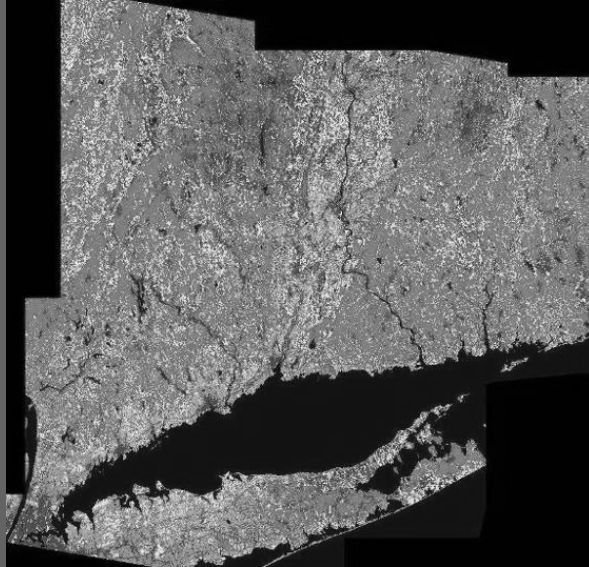
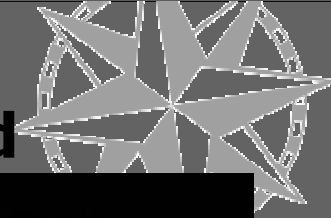
- **6% agriculture; 55% forest land**
- **49th of 50 states in % of federal land**
- **population density of 700/mi²**



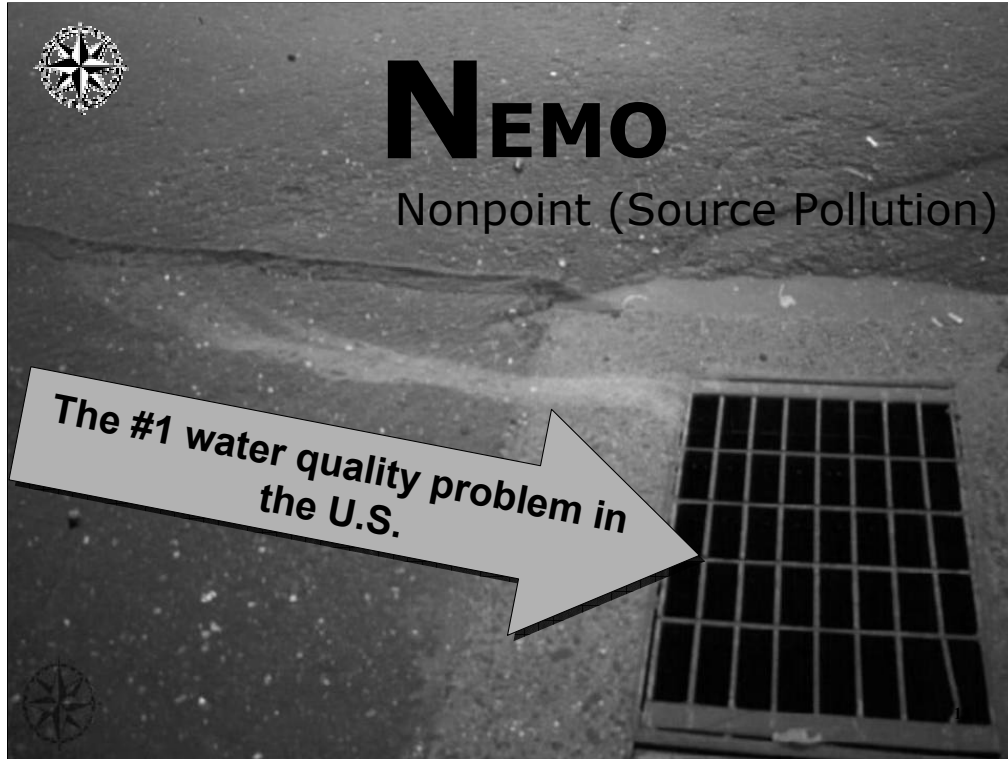
Where NEMO Comes From

- **no county government since 1952**
- **half the towns have no professional staff**
- **no state Planning Office**
- **no state GIS Center or repository**
- **no legal connection between local plans & zoning regulations**

NEMO History: Long Island Sound



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Underscore that urban NPS is a big issue coastal waters.





General patterns. Town boundaries as the key overlay vs. land use.



The Target Audience

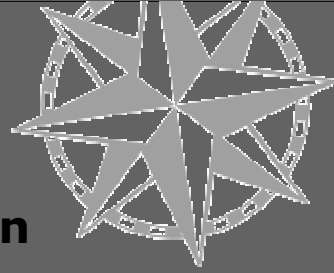


Local land use decision makers

- Legal Mandates
- Full Plate
- High Turnover
- Complexity of Environmental Issues
- Inability to Track Cumulative Impacts

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NEMO's Goal



Catalyze land use decision makers to:

- **Ask the right questions**
- **Put development in greater context**
- **Get started on natural resource-based planning**



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Project goals.



The Message

**9 OUT OF 10
AMERICANS AGREE:**



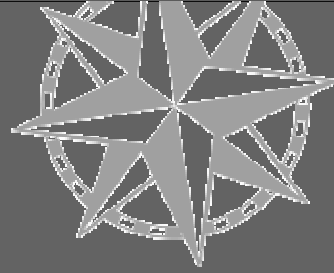
**NEMO
is
Nifty!**

- **Natural resource-based planning**
- **You can do this!**
- **Planning as self-determination**

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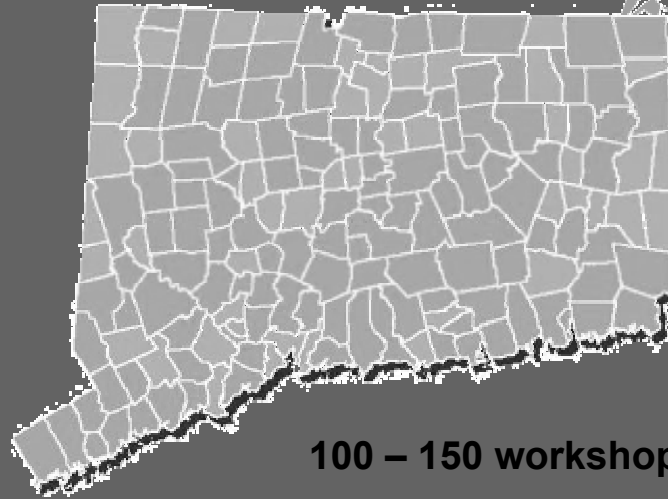
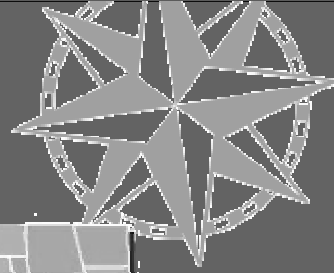


Modus operandi nemoidi



- **We go to them**
- **We keep it brief**
- **We go only where invited!**
- **We try to bring all the boards together**
- **We make (judicious) use of geospatial technology**

Where We've Worked

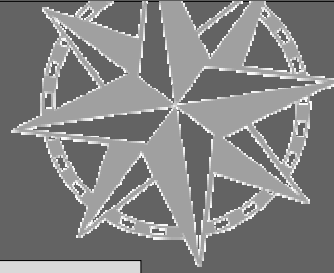


100 – 150 workshops/year

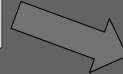
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The Way It Works:

Option 1



**Call from local
commission**



**Crack NEMO Team
Processes Call**

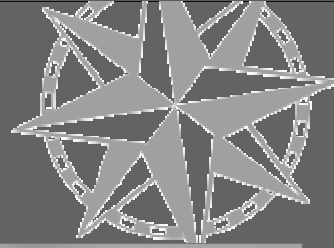


**NEMO teams
works with locals
to organize
workshop**



**Great things
happen!**

Bringing Different Boards Together

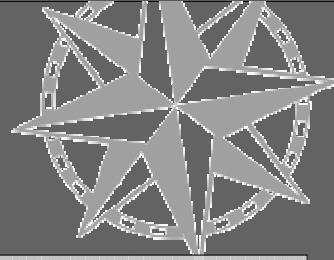


- **Selectmen**
- **Planning**
- **Zoning**
- **Conservation**
- **Wetlands**
- **Economic Development**
- **Municipal departments**
- **Land Trust**
- **Watershed Groups**
- **Historical Society**



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The Way It Works: *Option 2*



The Municipal Initiative

Application Form
NEMO Project CT Municipal Program 2000-2001

1. Color in your municipality.



2. Name of municipality willing to work with the NEMO Team to encourage reduced motor vehicle pollution/emissions surface reduction. Through (Indicate by checking the boxes):

- Local resources inventory.
- Use of GIS system.
- Zoning regulations.
- Landowner regulations.
- Fuel standards.

3. The following indicate that Project are willing to commit time to work with the NEMO Team. The indicated commission and departments are minimum requirements. Please indicate a contact person (name and phone #). Check only the boxes, as the requirements in cooperation with The NEMO Team, deem necessary.

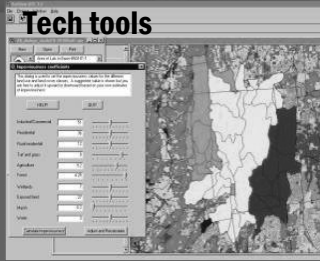
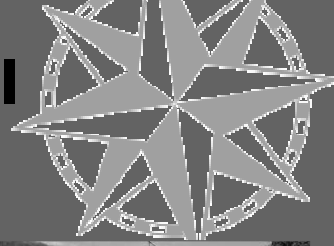
Name	Commission, Department	Email	Phone
	Planning		
	Local Resources		
	Commuter		
	Board of Selectmen		

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- ✓ **Endorsement of town C.E.O.**
- ✓ **Creation of multi-commission "task force"**
- ✓ **Designation of principal contact person**
- ✓ **Agreement to pursue defined goals**

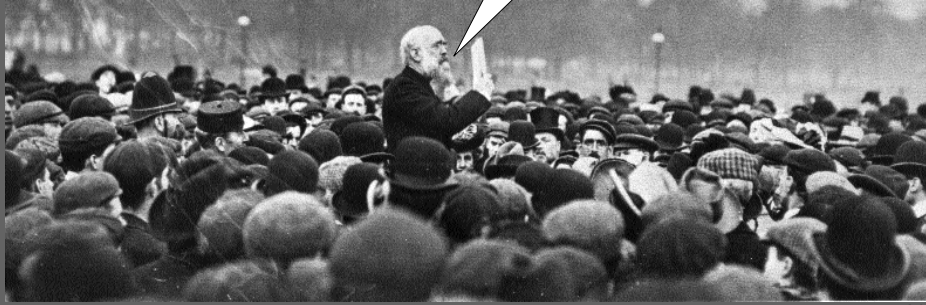


NEMO's Educational Arsenal



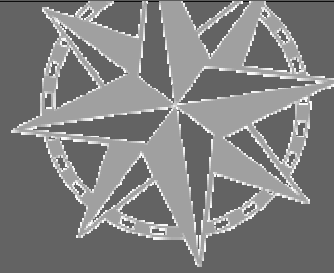


Questions?



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Linking Land Use to Water Quality

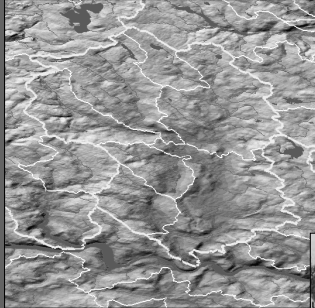
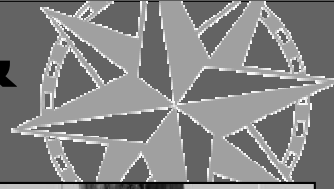


- 1. Water & Watersheds**
- 2. Land & Land Use**
- 3. Impervious Surface as an Indicator**
- 4. Natural Resource-Based Planning**

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The four basic “chapters” of Basic NEMO. No room to get into any details here, but it has a heavy emphasis on land use and its potential impacts on water resources.

Part One: Water & Watersheds



Watersheds



**Water Quality
Impacts**



**Water Quantity
Impacts**

Part One: Water & Watersheds

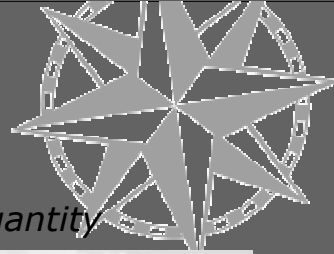


urbanization & water quantity

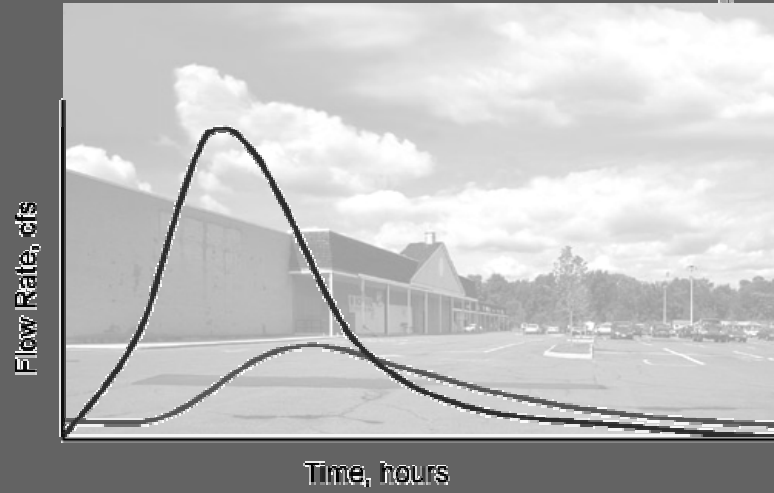


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Part One: Water & Watersheds

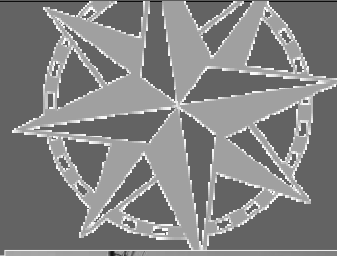


urbanization & water quantity



30

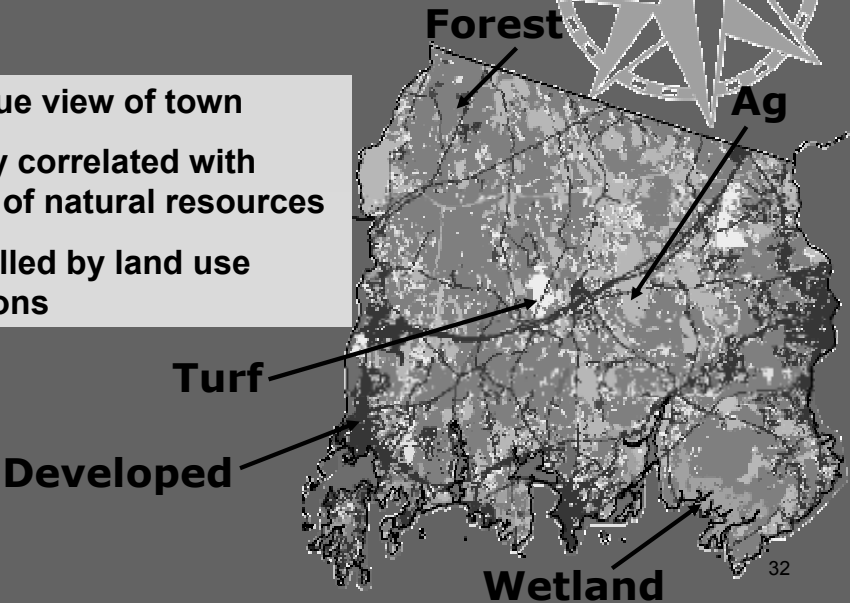
Part Two: Land & Land Cover



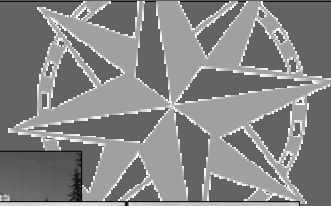
Underscore that urban NPS is a big issue coastal waters.

Land Cover

- a unique view of town
- closely correlated with health of natural resources
- controlled by land use decisions



A Road Runs Through It ...

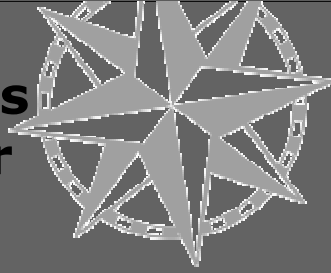


INTENSITY OF LAND USE

WATER QUANTITY/QUALITY PROBLEMS

Amount of IMPERVIOUS SURFACES

Part Three: Impervious Surface as an Indicator



- 1. it simplifies complex impacts**
- 2. it's tangible & measurable**
- 3. It's generated by local land use regulations**



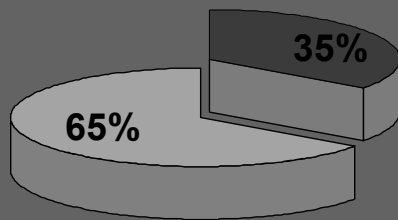
34

Regulations may even mandate IS creation.

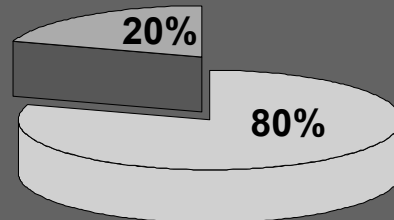
The Impervious Surface Budget



Transportation (Parking Lots, Roads, Driveways, Sidewalks)
Structures (Offices, Stores, Houses, Patios)



Urban



Rural

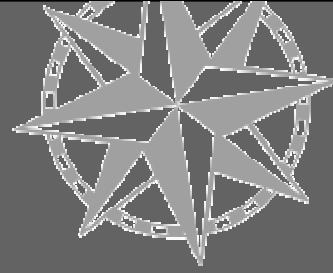
35

Derived from CLEAR Connecticut's Changing Landscape project data

Pie Chart: Impervious Surface budget (Structures and Transportation)

Look at how you can reduce impervious surface. Roughly 65% of our total impervious surface is for transportation (parking, driveways, roads), while 35% of the total is for structures (e.g. houses, stores, patios). It therefore often makes sense to focus on the transportation element, looking at where impervious surface can be reduced and where alternatives can be used.

**Part Four:
Natural Resource
Based Planning**



1. Planning

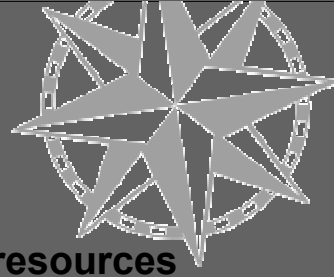
2. Site Design

3. (Mechanical) Best Management Practices

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ns1158

Natural Resource Based Planning



inventory natural/cultural resources

- open space plan
- economic development plan

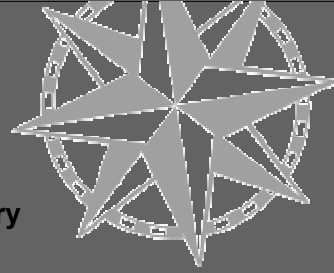
Plan of Cons. & Development

review/change land use regs & policies

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You will be sick of this slide before the 2 days of Boot Camp are out! This is NEMO's recipe for resource-based planning.

Follow-up: Workshops

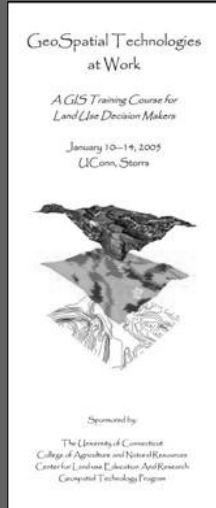


- **Conducting a Community Resource Inventory**
- **Open Space Planning**
- **Planning for Economic Development**
- **Revisiting Your Plan of Conservation & Development**
- **Farmland Protection**
- **Smart Growth**
- **Low Impact Development**
- **Natural Resource-Based Planning for Watersheds**
- **GIS in Your Town**
- **Map Reading 101**

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But today and tomorrow, the focus is on the first two bullets: Open Space Planning, and Conducting a Community Resource Inventory. Go to it, Jim and John!

Follow-up: Tech Training

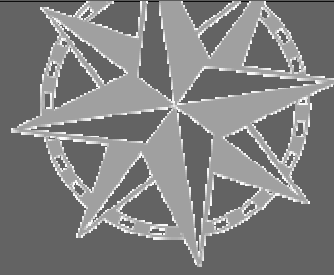


- geographic information systems (GIS)
- remote sensing (RS)
- global positioning systems (GPS)

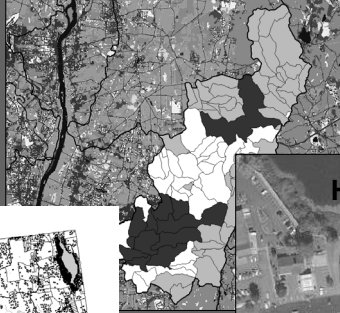


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Follow-up: GIS Tools



"ISAT" Watershed Analysis



High resolution imagery

CommunityViz buildout analysis

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Follow-up: Web Info & Tools

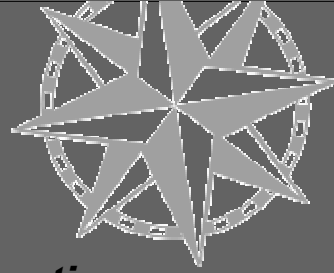
- PDF maps
- Data tables & charts
- Animations
- Interactive internet mapping site
- Downloadable data
- Client-driven "on the fly" data & maps, by town or watershed



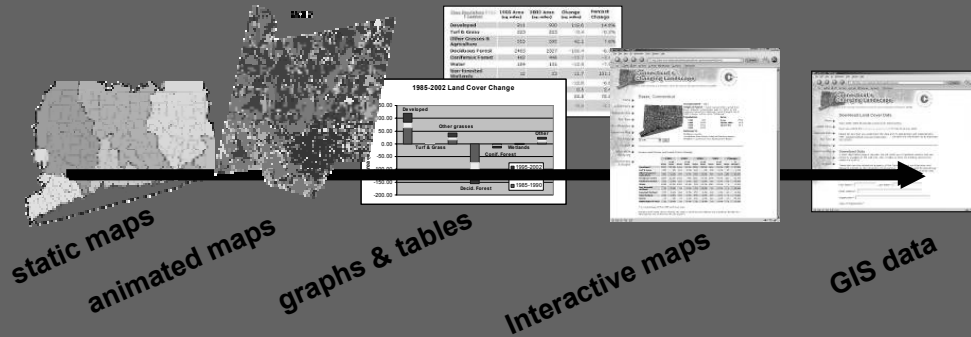
New development: 1985- 2002

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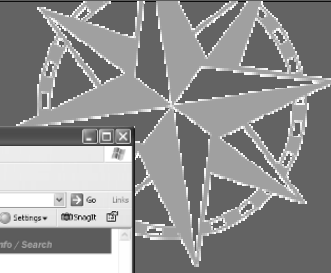
Follow-up: Web Info & Tools



A Range of web-based options



Lots More At:



CLEAR Website - Microsoft Internet Explorer

Address: <http://dear.uconn.edu/>

Center for Land Use Education and Research

clear CLEAR provides information, education and assistance to land use decision makers, in support of balancing growth and natural resource protection.

Research
Project Guide

Imagery & Data
Data Guide

Education
Program Guide

- NEMO Program
- National NEMO Network
- Land Use Academy
- Forestry
- Green Valley Institute
- Geospatial Technology Program
- Land Use Planning Program

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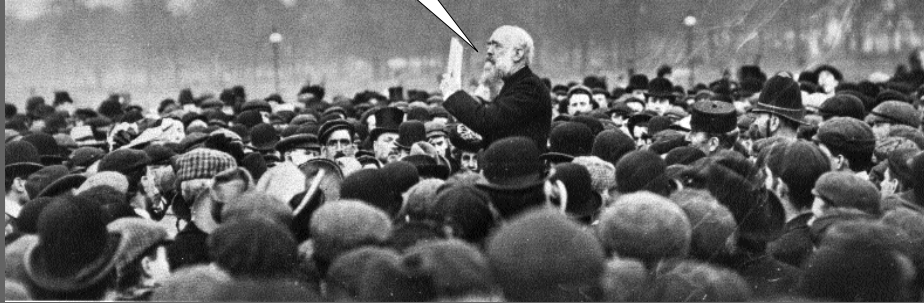
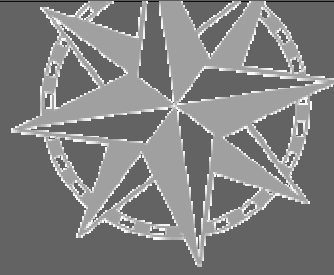
NASA CLEAR is funded by the University of Connecticut and by a number of state and federal grants (please see individual program webpages for details). Major funding for CLEAR is provided by the USDA Science Mission Directorate Applied Sciences Program.

University of Connecticut
College of Agriculture and Natural Resources

Done

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Questions?



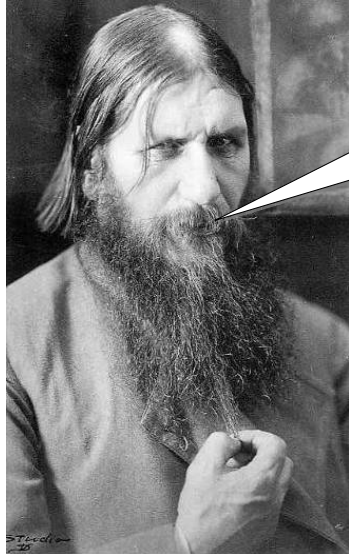
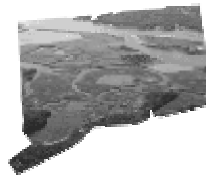
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Connecticut NEMO



Yes, yes.
But Does it Work?!


How NEMO Spells Success:




1. Research & information gathering
2. Changes to the decision making process
3. Changes to plans
4. Changes to regulations
5. On the ground changes
6. Beyond local impacts

Local Impacts: Examples

Putting Communities in Charge



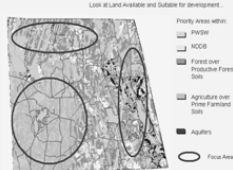
A progress report on an educational support system for local land use decision makers
Nonpoint Education for Municipal Officials



A program of the University of Connecticut Cooperative Extension and Sea Grant



In Summary





Woodstock, CT

- New natural resources inventory
- Resource inventory web site
- New open space plan
- Conservation Commission review of subdivision applications > 10 acres
- Conservation Commission of the Year award for 2004



Site/Subdivision Plan Review for Compatibility with Woodstock Plan of Open Space and Conservation

PROJECT NAME/DESCRIPTION: _____ PROPOSED LOCATION: _____ DATE CHECKLIST WAS COMPLETED: _____

NO.	RESOURCE:	Proposed Use Compatible? Adjacent to? (check all applicable boxes, and fill in the blanks):	CONSIDERATIONS:	RECOMMENDATIONS:
1.	Wetland & Water Resources (Please PG 4 and 5)	<input type="checkbox"/> Adjacent _____ ft <input type="checkbox"/> Buffering (minimum) _____ ft <input type="checkbox"/> Wetland (minimum) _____ ft <input type="checkbox"/> 100' from public water supply <input type="checkbox"/> 100' from utility entrance <input type="checkbox"/> 100' from power lines	<ul style="list-style-type: none"> • Wetland (minimum) 100' from public water supply • Wetland (minimum) 100' from utility entrance • Wetland (minimum) 100' from power lines 	<ul style="list-style-type: none"> • No Development • No Development
2.	Soils (Please PG 6)	<input type="checkbox"/> Prime/Very Prime <input type="checkbox"/> Prime/Very Prime (adjacent to water) _____ ft <input type="checkbox"/> Prime/Very Prime (adjacent to water) _____ ft	<ul style="list-style-type: none"> • Prime/Very Prime (adjacent to water) 100' from public water supply • Prime/Very Prime (adjacent to water) 100' from public water supply 	<ul style="list-style-type: none"> • No Development • No Development
3.	Endangered Species (Please PG 7)	<input type="checkbox"/> Endangered Species (adjacent to water) _____ ft <input type="checkbox"/> Endangered Species (adjacent to water) _____ ft	<ul style="list-style-type: none"> • Endangered Species (adjacent to water) 100' from public water supply • Endangered Species (adjacent to water) 100' from public water supply 	<ul style="list-style-type: none"> • No Development • No Development
4.	Historic Resources (Please PG 8)	<input type="checkbox"/> Historic Resources (adjacent to water) _____ ft <input type="checkbox"/> Historic Resources (adjacent to water) _____ ft	<ul style="list-style-type: none"> • Historic Resources (adjacent to water) 100' from public water supply • Historic Resources (adjacent to water) 100' from public water supply 	<ul style="list-style-type: none"> • No Development • No Development

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Review check list



Old Saybrook, CT

- New town road policy
- Zoning changes to limit impervious surfaces
- New natural resource inventory
- New open space plan
- Changes to comprehensive plan
- New “residence conservation” district
- Model “low impact” subdivision





Waterford, CT

- Wetland/pond stormwater complexes required for major commercial development
- Zoning changes to lower minimum parking ratios
- water quality review of all proposed development
- National “low impact” design monitoring/demonstration project
- Regular monitoring of stormwater BMPs and major waterways

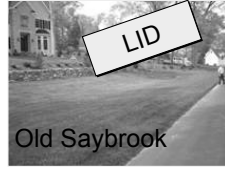


A Tale of 3 Towns



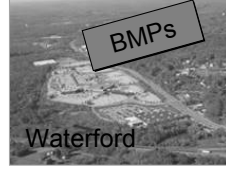
Woodstock

- New natural resources inventory
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- New open space plan
- Conservation Commission review of subdivision applications > 10 acres
- Conservation Commission of the Year award for 2004



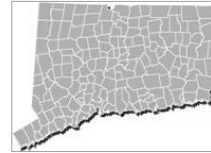
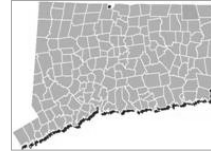
Old Saybrook

- New town road policy
- Zoning changes to limit impervious surfaces
- New natural resource inventory
- New open space plan
- Annual natural resource tour
- Changes to comprehensive plan
- New "residence conservation" district
- Model "low impact" subdivision

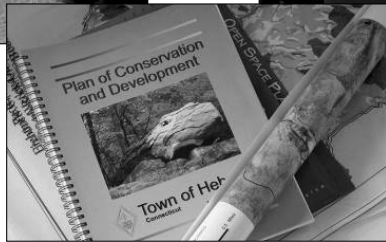


Waterford

- Wetland/pond stormwater complexes required for major commercial development
- Zoning changes to lower minimum parking ratios
- Pre development infiltration levels required for new commercial development
- National "low impact" monitoring/demonstration project
- Regular monitoring of stormwater BMPs and major waterways

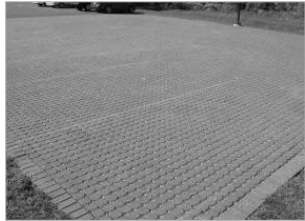


A Lot of Good Natural Resource-Based Planning Going On



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Gaining Momentum On LID



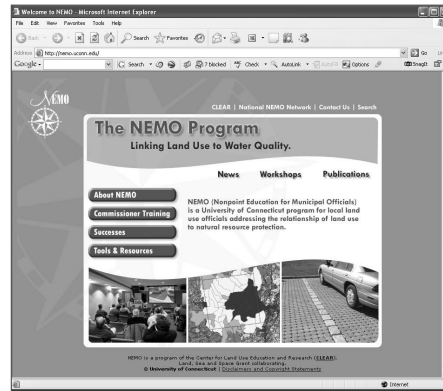
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- **New & Noteworthy at NEMO**
- **The National NEMO Network**

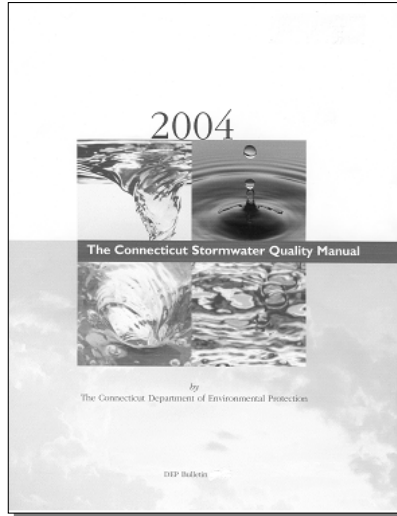


New & Noteworthy: Stormwater / LID

1. CT Stormwater Quality Manual
2. Contractor LID workshops
3. Online LID database
4. Rain Garden manual
5. Jordan Cove DVD



The 2004 Stormwater Quality Manual Blitzkrieg



- >1000 people trained
- every last manual handed out
- training sessions for state agencies
- Partnered with regional planning and professional organizations



Contractor's Workshops



Next Workshop: Winter 2007

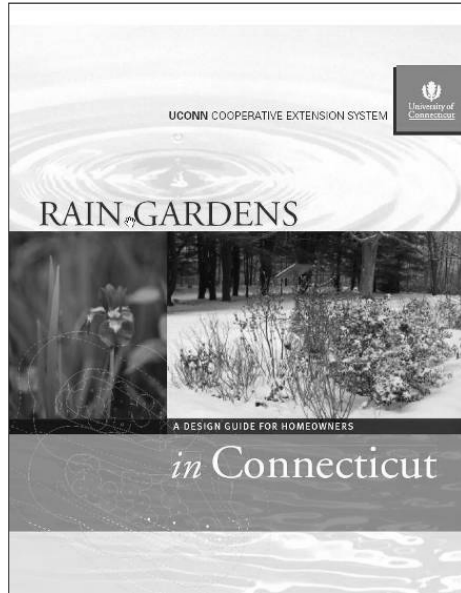
LID Inventory Site

Search by
Town or by
Practice



59

Rain Garden Manual



Designing your rain garden

Calculating the size of your rain garden

Based on the amount of roof runoff from your home.

The house has a footprint of **60 feet x 30 feet, or 1800 sq. ft.** One quarter of the roof area contributes to the gutter near where the rain garden is to be built. So the contributing area would be **1800 sq. ft. x .25 = 450 sq. ft.** This area is then divided by 6, so that the square footage of the rain garden would be **450 sq. ft. ÷ 6 = 75 sq. ft.** A nicely shaped rain garden might be **10 ft x 7.5 ft.** However, you have the flexibility to make it any shape you want, as long as you approximate the size.

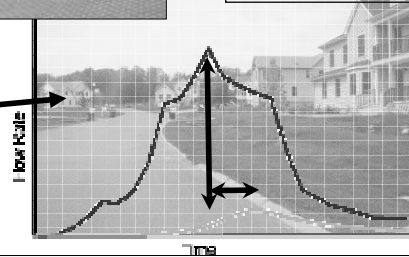
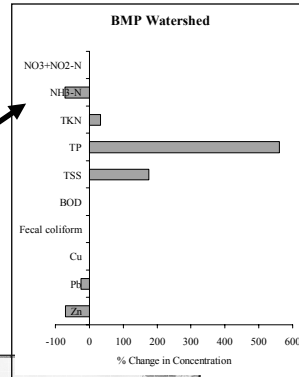
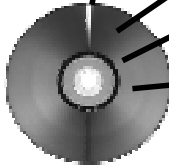
EXAMPLE:

Diagram photo adapted from the University of Vermont Extension, Rain Garden, A Guide to Manual for Homeowners.

[4] Rain Gardens in Connecticut & Design Guide for Homeowners

60

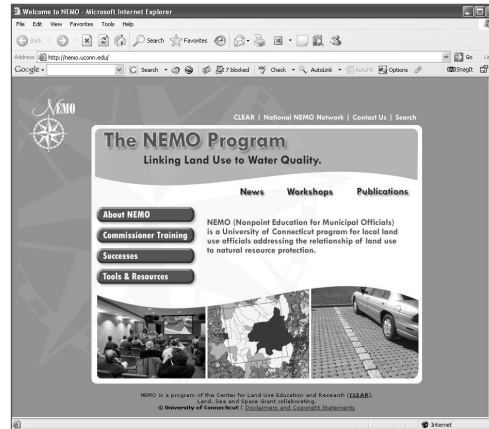
Jordan Cove DVD



61

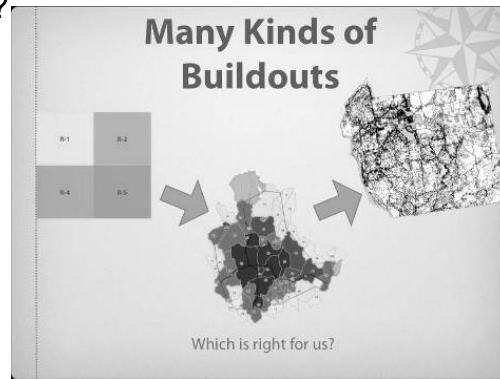
New & Noteworthy: Planning

- Buildout Publication
- Land Use Academy
- Online Community Resource Inventory



Buildout Publication

- What exactly is a “buildout”?
- Where does it fit into community planning?
- What can it be used for?
- What are the different types of buildout?
- Methods
- Examples



CT Land Use Academy

- **OPM Program, funded by CT Legislature based on several statewide reports**
- **3 “courses” per year, 3 workshops per course:**
 - ❖ Roles & Responsibilities (CLEAR)
 - ❖ What’s Legally Required (CT Bar Assoc.)
 - ❖ Map Reading for Site Plan Review (CLEAR)



Online Community Resource Inventory



The screenshot shows a web browser window displaying the "Community Resource Inventory Online" website. The browser's address bar shows the URL "http://www.ct.gov/dep/etools/cr...". The website header includes the NEMO logo and navigation tabs for "CRI Home", "Build Your CRI", "Use Your CRI", and "Expand Your CRI". A sidebar on the left lists options like "CRI Home", "Schedule a CRI Presentation", "Contact Us", "CLEAR Site", "CT NEMO Site", and "Search Site". The main content area is titled "Welcome" and "Why a Resource Inventory?". It explains that the website supports the NEMO workshop "Conducting a Community Resource Inventory" and provides resources for developing a CRI. It also describes the planning process, which includes Inventory, Analysis, Plan, and Implementation, shown in a circular diagram.

Why a Resource Inventory?

This website supports the NEMO workshop *Conducting a Community Resource Inventory*. This site will enable you to develop a Community Resource Inventory for your town using available statewide information. A Community Resource Inventory (CRI) is a list or atlas of the natural and cultural resources in your community. The maps contained are appropriate for community-level planning and not for site-level assessment.

After choosing your municipality at [Build Your CRI](#), you can page through a series of town maps showing important natural and cultural resources, and access this information in both document (.PDF) and data (.GIS) formats ([Coming Summer 2006](#)). While the inventory should be considered a "bare bones" version that can be enhanced and improved by other sources of data, it nonetheless provides a foundation for sound, future planning decisions.

Conducting a CRI is the first step in community planning. In order to effectively plan for your community's future, you need to have a handle on the natural, cultural and economic resources your town possesses. It is quite literally the first step in the planning process.

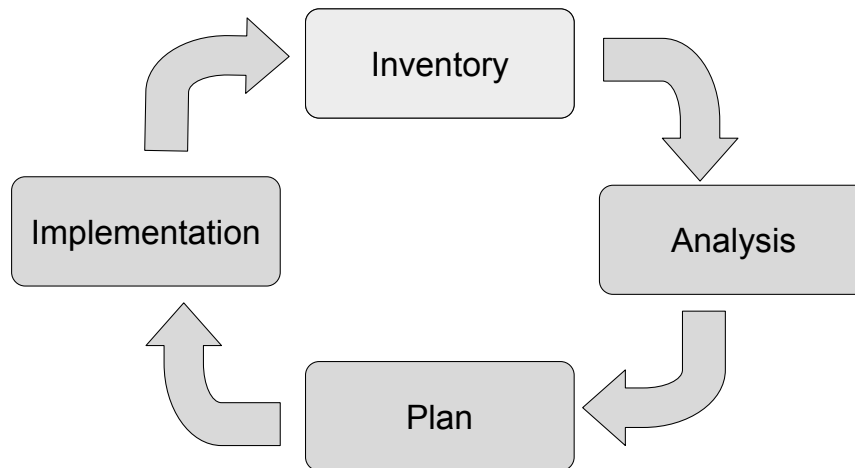
What is the Planning Process?

The Planning Process

```
graph TD; Inventory --> Analysis; Analysis --> Plan; Plan --> Implementation; Implementation --> Inventory;
```

An idealized process for planning generally takes place in 4 steps. We have clearly acknowledged that the **Inventory** is the first step in the process. But there is often times confusion between compiling a database of information and maps for your town, and the analysis of that information. **Analysis** is a separate activity from the inventory and usually

The Planning Process



66

How do we get started with a Community Plan?

An idealized process for planning generally takes place in 4 steps. We have already acknowledged that the **Inventory** is the first step in the process. But there is often times confusion between compiling a database of information and maps for your town, and the analysis of that information. **Analysis** is a separate activity from the inventory and usually involves the manipulation of the data in order to answer questions you or your group have about your town. The analysis step leads directly to the formulation of the **Plan**, which sets priorities and goals for your town. The Plan also lays out a process for the attainment of the community's goals, which are carried out during the **Implementation** phase - that is, getting real things accomplished.

Community Resource Inventory - CT NEMO Program
 http://117.95.85.71/clearweb/projects/cr/cr_online/00b_location.asp?tkman=1

Think Secret Mac/Touch Home Page Apple Yahoo! NEMO Your Town CRI Online MMS News Google

NEMO CRI Community Resource Inventory Online
 A mapping resource for Connecticut communities.

CRI Home Build Your CRI Use Your CRI Expand Your CRI

Location map
 You've Chosen: **Lebanon, CT**

Map Sets


Natural Resources

1. Base Map
2. Topo
3. Land Cover
4. Soils
 - Wetland Soils
 - Farmland Soils
5. Water Resources
 - Watersheds
 - Surface Water
 - Ground Water
6. Unique & Fragile
7. Open Space

Cultural Resources

1. Transportation
2. Utilities
3. Registered Lands

Print Your CRI



Cops, wrong town! Select Another
 Lebanon [Go]

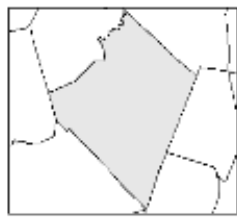
Proceed to the **Lebanon CRI**
Next →

Incorporated - 1700
Origin of Name - named 1697 from Lebanon in Syria; Hebrew name - white; incorporated Oct., 1700.

Population		Area	
1850	1001	Acres	35305
1900	1531	Square Miles	55.2
1980	1883	Square Km	142.9
2000	6027		

Belongs to
 New London County
 Windham Region Council of Governments
 Northeast Regional Development Region

Special thanks to the Environmental and Geographic Information Center (EGIC) of the Connecticut Department of Environmental Protection.



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Community Resource Inventory - CT NEMO Program

http://117.95.85.71/clearweb/projects/cri/cr_online/02_topo.asp?lctm=71

Think Search MapsTouch Home Page Apple Yahoo! NEMO Your Team CRI Online NWS Home Google

NEMO **CRI** Community Resource Inventory Online
A mapping resource for Connecticut communities.

CRI Home **Build Your CRI** **Use Your CRI** **Expand Your CRI**

2. Lebanon Topography

Map Sets

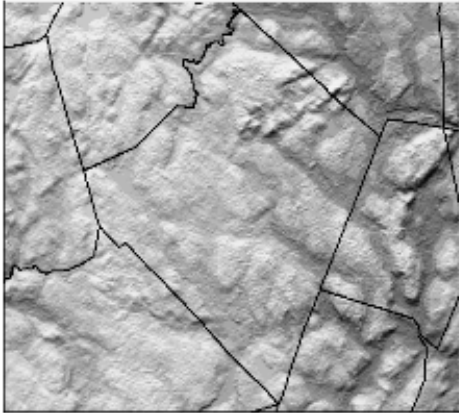
Natural Resources

1. Base Map
2. Topo
3. Land Cover
4. Soils
 - Wetland Soils
 - Farmland Soils
5. Water Resources
 - Watersheds
 - Surface Water
 - Ground Water
6. Unique & Fragile
7. Open Space

Cultural Resources

1. Transportation
2. Utilities
3. Regulated Lands

Print Your CRI



◀ Back Next ▶

To Orient Yourself:

- Turn Beards On

More Information:

- Topography

Other Common Topography Sources:

- USGS Topo Maps

Legend:

Highest Elevation

Lowest Elevation

Download and print pdf of the topography for Lebanon.

Lebanon

Topography allows you to assess the "lay of the land" and understand where the steep and gentle slopes are within a town. These maps are derived from a Digital elevation model.

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Community Resource Inventory - CT NEMO Program

http://117.95.85.71/clearweb/projects/cr/cr_online/01_landcover.asp?setown=

Think Secret Maps/Touch Home Page Apple Yahoo! NEMO Your Town CRI Online NWS News Google

NEMO **CRI** Community Resource Inventory Online
A mapping resource for Connecticut communities.

CRI Home **Build Your CRI** **Use Your CRI** **Expand Your CRI**

3. Lebanon Land Cover

Map Sets

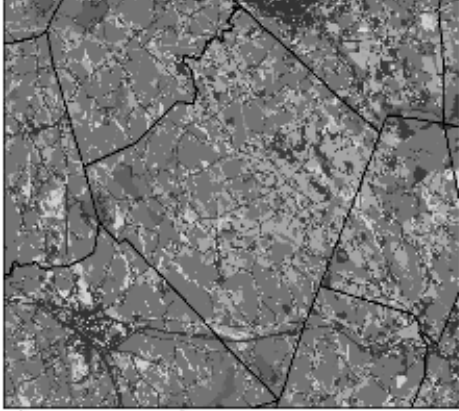
Natural Resources

1. Base Map
2. Topo
3. Land Cover
4. Soils
 - Wetland Soils
 - Farmland Soils
5. Water Resources
 - Watersheds
 - Surface Water
 - Ground Water
6. Unique & Fragile
7. Open Space

Cultural Resources

1. Transportation
2. Utilities
3. Regulated Land

Print Your CRI



← Back Next →

More Information:

- 2002 Land Cover

Other Common Sources of Land Cover:

- National Land Cover Dataset (NLCD)

Legend:

- Water
- Half Acre Swale
- Open Area
- Deciduous Forest
- Coniferous Forest
- Wetland
- Non Forest Wetland
- Forested Wetland
- Cultural Wetland
- Barren
- Urban Right-of-Way

Download and print pdf of the land cover map for Lebanon.

Lebanon

Land cover data comes from the UConn Center for Land Use Education And Research (CLEAR). It is based on information from the Landsat satellite, and relates what is on the surface of the land

69

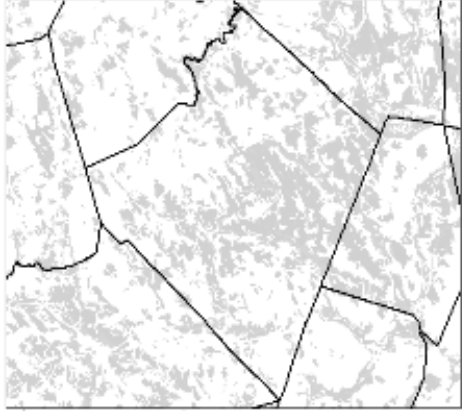
Community Resource Inventory - CT NEMO Program

http://137.89.85.71/czaweb/projects/crionline/04c_soilfarm.asp?stown=LEB

Community Resource Inventory Online
A mapping resource for Connecticut communities.

CRI Home Build Your CRI Use Your CRI Expand Your CRI

4. Lebanon Farmland Soils



To Orient Yourself:
 Turn Roads On

More Information:
 Farmland Soils (To DEP)

Legend:
 Farmsteads
 All other (1:1 contour) farmsteads
 Farmsteads

Download and print pdf of the soils map for Lebanon.

← Back Next →

Lebanon [ID] Go

The soils data is made up of many small map units, which may be dominated by a single soil, a mixture of soils, or non-soil areas. Soils data was collected by the USDA NRCS (formerly the Soil Conservation Service) between 1962-1995. This map shows all the soil units (thin grey lines), but highlights soils

Print Your CRI

70

Community Resource Inventory - CT NEMO Program

http://117.95.85.71/clearweb/projects/cri/cr_online/05h_water.asp?Ettown=71

Think Search Maps Touch Home Page Apple Yahoo! NEMO Your Town CRI Online NWS Home Google

NEMO **CRI** Community Resource Inventory Online
A mapping resource for Connecticut communities.

CRI Home **Build Your CRI** **Use Your CRI** **Expand Your CRI**

5. Lebanon Water Resources: Surface Water

Map Sets

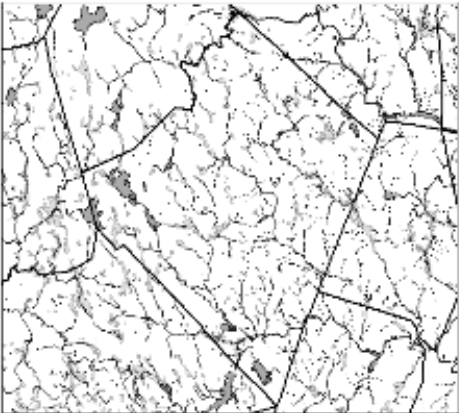
Natural Resources

1. Base Map
2. Topo
3. Land Cover
4. Soils
 - Wetland Soils
 - Farmland Soils
5. Water Resources
 - Watersheds
 - Surface Water
 - Ground Water
6. Unique & Fragile
7. Open Space

Cultural Resources

1. Transportation
2. Utilities
3. Regulated Land

Print Your CRI



◀ Back Next ▶

To Orient Yourself:

- Turn North On

More Information:

- Hydrography (To DEP)

Legend:

- Major Waterbody
- Water
- Stream
- Streambed Water
- Flow
- Woods
- Streambed Water
- Wetland
- Wetland
- Wetland Area
- Wetland Area

Download and print pdf of the surface water for Lebanon.

Lebanon [Go]

The surface water map shows the key streams, rivers, ponds, lakes and coastal resources in your town. Waterways are the "lifelines" of the aquatic ecosystem, and can be critical components of your drinking water system. They also may serve as a recreational resource. As

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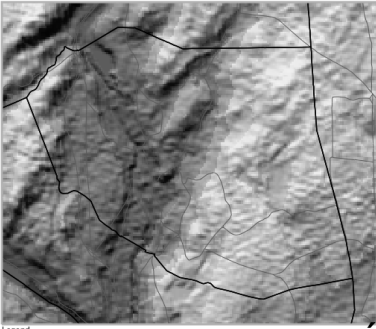
Community Resource Inventory - CT NEMO Program

http://117.95.85.71/clearweb/projects/cr/cr_online/finch.asp?intown=71

Ansonia

Topography

Community Resource Inventory Map Series



Legend




- Towns
- Primary Roads
- Secondary Roads
- Highest Elevation
- Lowest Elevation

Topography allows you to assess the "lay of the land" and understand where the steep and gradual slopes are within a town. These maps are derived from a digital elevation model developed by the U.S. Geological Service that determines the elevation of an area by assigning elevations to a regularly spaced grid. The resolution or size of the grid cells is about 30-meters (approximately 100-feet).

Visit <http://clear.uconn.edu/projects/cr/> for more information.

Data source: USGS National Elevation Dataset painted relief.

This project was funded in part by the CT DEP through an EPA Clean Water Act Section 319 Nonpoint Source Grant. NEMO is an educational program of the Center for Land Use Education and Research (CLEAR) at the University of Connecticut. These maps are intended for general information and planning.

Print Your CRI

Resource Inventory Online

A mapping resource for Connecticut communities.

Use Your CRI **Expand Your CRI**

Inventory

The first step to in the Community Resource Inventory for

ould like to print a map or maps and haven't done so, click on [its](#) together to create an inventory. OR, click on [One-Fall-Swamp](#) (a publication)! Such a detail!

ould like to go one step further and work with the data layers [GIS](#), [click here](#).

	Pdf	
Resources Inventory	Pdf	link
	Pdf	link
	Pdf	link
	Pdf	link
	Pdf	link
	Pdf	link
	Pdf	link
	Pdf	link
	Pdf	link
	Pdf	link

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Community Resource Inventory - CT NEMO Program

http://137.95.85.71/clearweb/projects/cr/expand_cri.htm

Mac Ramon Your Town NEMO MadeTouch Home Page Apple Amazon News Yahoo! MSN Google CRI Online

NEMO **CRI** Community Resource Inventory Online
A mapping resource for Connecticut communities.

CRI Home Build Your CRI Use Your CRI Expand Your CRI

Expand Your CRI

Data in GIS format and how to use it

Coming Soon! GIS Data packaged for each municipality, how to use it and how to add other data layers.

- **More Resources**

Other helpful data layers not currently available on a statewide basis

Under Construction!

Transportation

- **Community facilities** such as schools, government buildings, and community centers
- **Utility lines** which can be obtained from the utility companies, or from aerial photographs
- **Parcels** which can be obtained from the town tax assessor

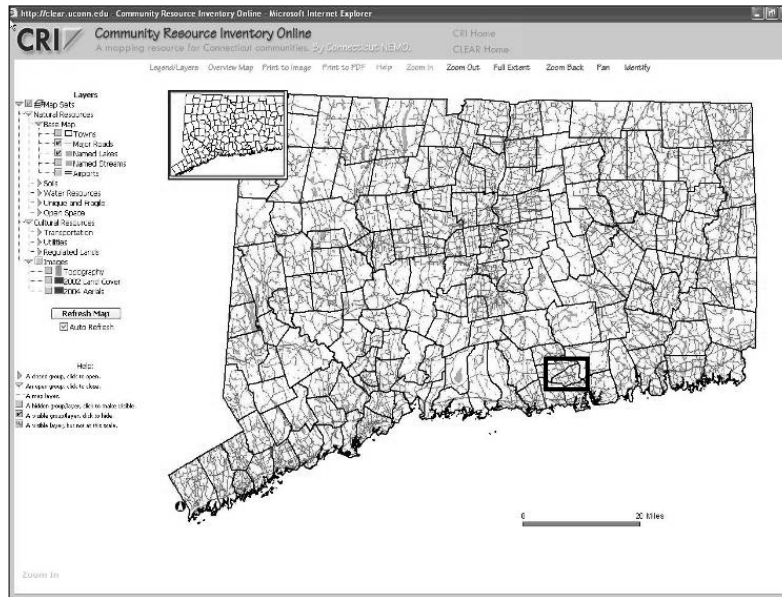
Regulated Lands

- **Local zoning** is the most prevalent type of regulation in your town, designating what use and density of development is allowed; local zoning is not available statewide, but would be an important inventory layer to acquire for your CRI.

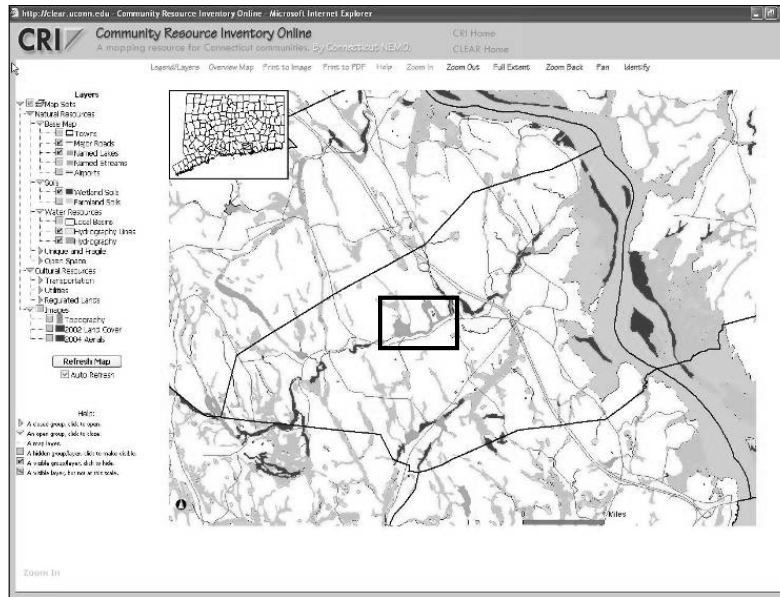
73

This issue 2 errors opening the page. For more information, choose Activity from the Window menu.

Interactive Mapping on the Web



Interactive Mapping on the Web



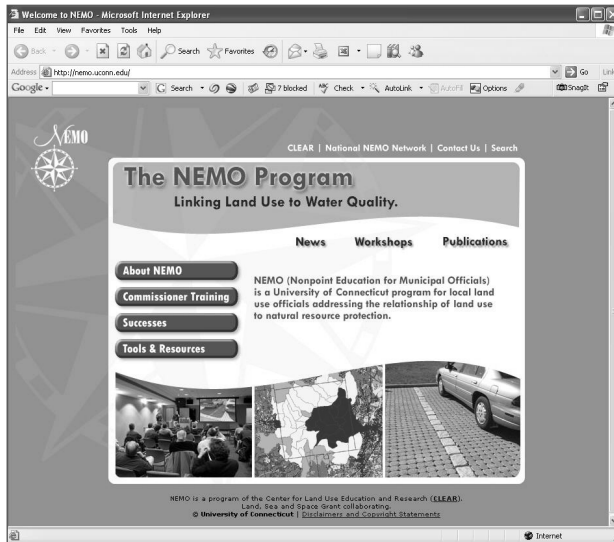
75

Interactive Mapping on the Web

The screenshot displays the 'Community Resource Inventory Online' (CRI) web application. The browser address bar shows the URL: <http://clear.uconn.edu>. The page title is 'Community Resource Inventory Online' and the subtitle is 'A mapping resource for Connecticut communities by Connecticut NEMO'. The interface includes a navigation menu with options like 'Layers', 'Overview Map', 'Print to Image', 'Print to PDF', 'Help', 'Zoom In', 'Zoom Out', 'Full Extent', 'Zoom Back', 'Pan', and 'Identify'. A 'Layers' panel on the left lists various map layers such as 'Map Tiles', 'Water Resources', 'Land Use', 'Roads', 'Soils', 'Wetlands', 'Open Space', and 'Transportation'. The main map area shows a grayscale aerial view of a coastal region with several large water bodies and land parcels. A 'Refresh Map' button and a 'Map' legend are also visible.

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Questions?



<http://nemo.uconn.edu>

76
77

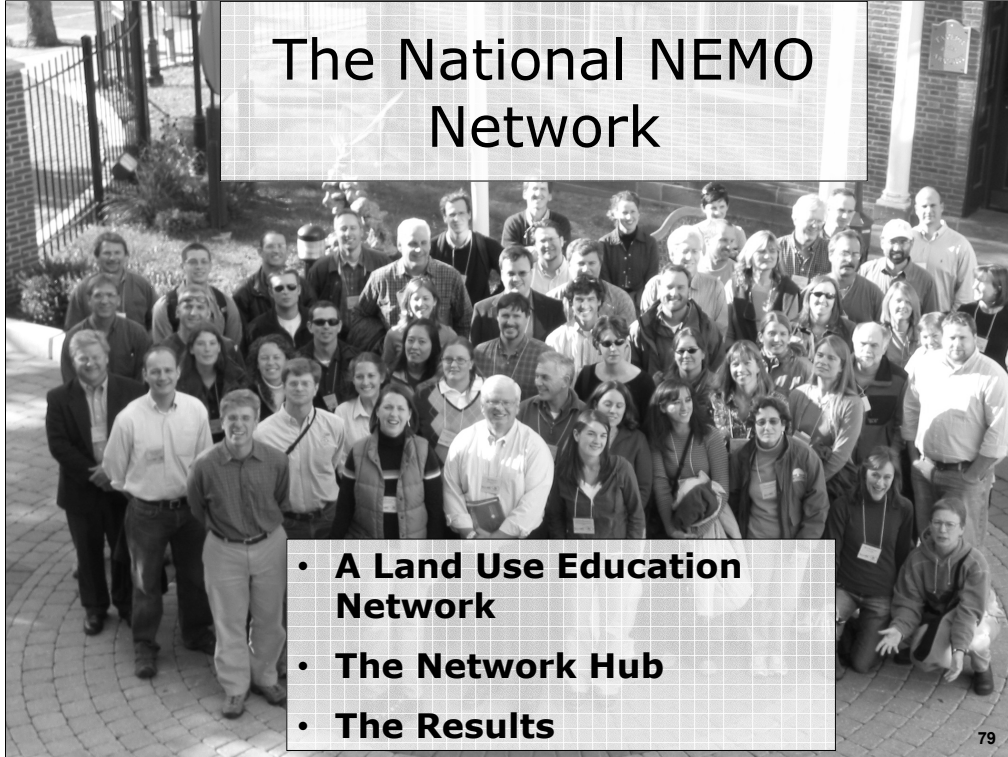


What We'll Cover

- **Brief & Painless Introduction**
- **NEMO Basics**
- **How is it Working?**
- **New & Noteworthy at NEMO**
- **The National NEMO Network**

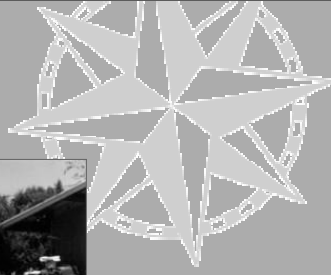


The National NEMO Network

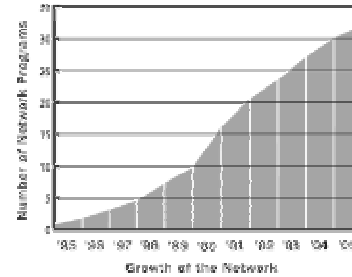
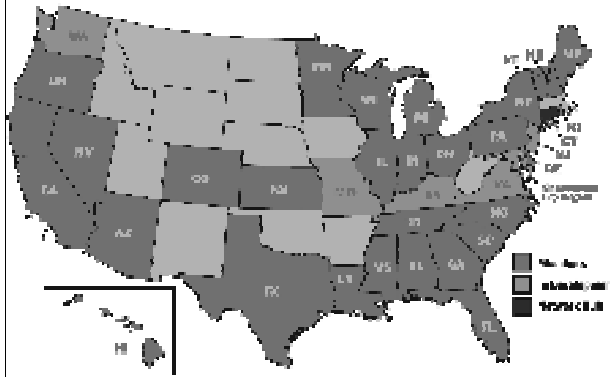


- **A Land Use Education Network**
- **The Network Hub**
- **The Results**

NEMO Road Show...



The National NEMO Network



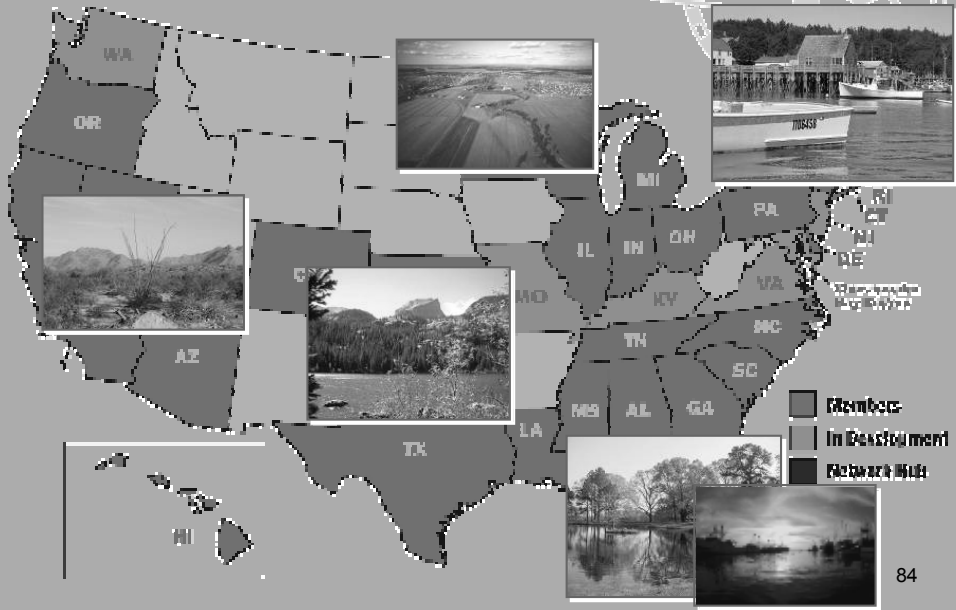
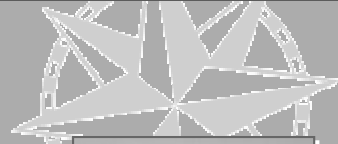
A group of **educational** projects focused on the relationship of **land use** to natural resource protection, **sharing** information, materials and educational models.

NEMO Family Values



- **The IMPACT OF LAND USE on water resources is the issue**
- **LOCAL LAND USE DECISION MAKERS are the target audience**
- **EDUCATION is the method**
- **NATURAL RESOURCE-BASED PLANNING is the solution offered**
- **GEOSPATIAL TECHNOLOGY is used to enhance the education**

Adapting NEMO

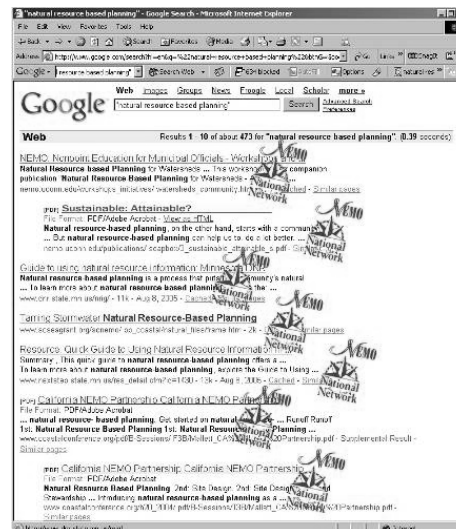


Natural Resource-Based Planning R Us

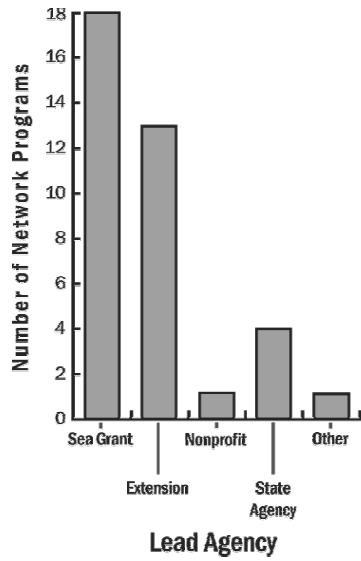
1. Planning

2. Site Design

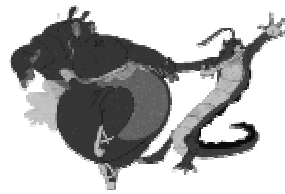
3. (Mechanical) Best Management Practices



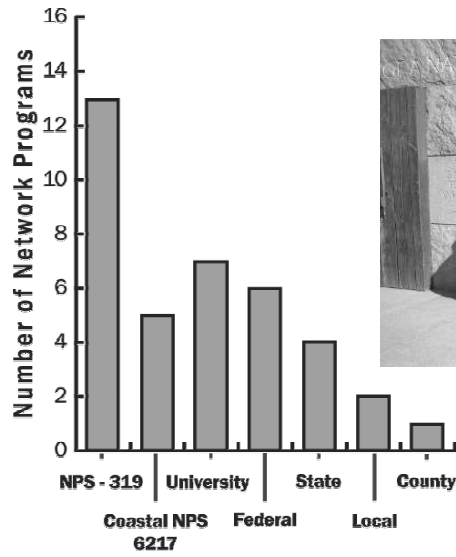
NEMO Project Leadership



Most NEMO projects are led by University-based Extension and/or Sea Grant Extension staff.



NEMO Project Funding



PA, IN, & MN NEMO Directors seeking funds in Washington DC

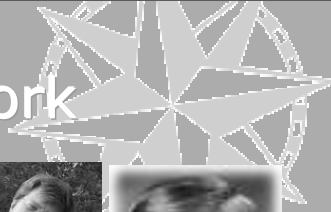
Dispelling NEMO Myths



- **The Network is not the creation of any one agency or organization.**
- **NEMO is not an invasive species.**
- **Our coordination of the Network is through the force of our sparkling personality (i.e., we give them no \$\$!).**



Coordinating the Network



Coordinator Dickson



Founders:

2005-2006: \$153,000



Communicator (& Head Backhoe Driver) Bonsack

Funders:



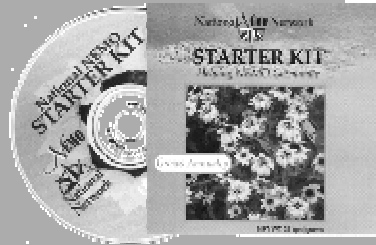
89



Network Hub Services

Getting Started

- Scoping Workshops
- Publications
- Starter Kit



Adapting NEMO to Your Area: A Few Key Considerations

Signing On: Nuts & Bolts Questions About Adapting NEMO

How to Reach Local Land Use Officials

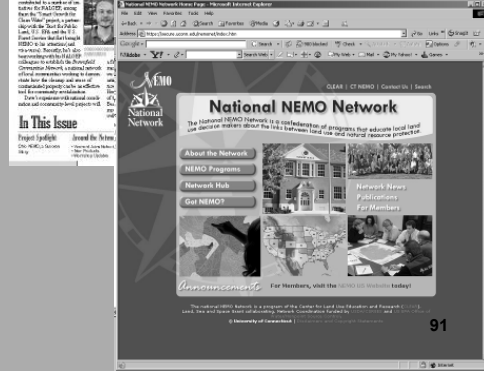
90



Network Hub Services

Connecting Programs

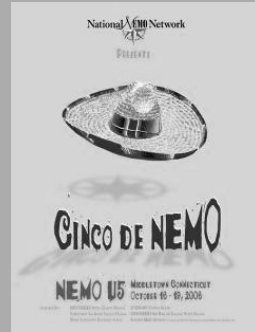
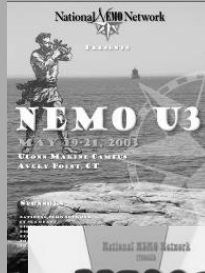
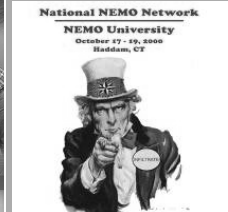
- Listserv
- Website
- Sharing Libraries
- Newsletter





Network Hub Services

NEMO University





Network Hub Services

Enhancing Programs

- Open Space Planning
- ISAT Training
- Enhancing Coastal NEMO Programs
- Basic GIS Training

National NEMO Network
OPEN SPACE PLANNING
BOOT CAMP

UConn Maritime Campus
 Avery Point, CT
 August 5 & 6, 2002



Enhancing Coastal NEMO Programs

Using the NEMO Network, Project Profile #3

The Project
 In 2002, five branches of NEMO joined their resources to conduct NEMO's Open Space Planning Program. The Coastal Program Director, National Sea Grant College Program, National Oceanic and Atmospheric Administration, and Coastal Program Director, National Oceanic and Atmospheric Administration, provided the funding for this project.

Project Objectives
 The purpose of this project was to enhance the coastal NEMO programs in various ways, including:

- Enhancing the coastal NEMO programs in various ways, including:
- Enhancing the coastal NEMO programs in various ways, including:
- Enhancing the coastal NEMO programs in various ways, including:

Project Results
 The project was successful in achieving its goals. The coastal NEMO programs were enhanced in various ways, including:

- Enhancing the coastal NEMO programs in various ways, including:
- Enhancing the coastal NEMO programs in various ways, including:
- Enhancing the coastal NEMO programs in various ways, including:

Project Impact
 The project had a significant impact on the coastal NEMO programs. The coastal NEMO programs were enhanced in various ways, including:

- Enhancing the coastal NEMO programs in various ways, including:
- Enhancing the coastal NEMO programs in various ways, including:
- Enhancing the coastal NEMO programs in various ways, including:

Network Impacts

1. Research & information gathering
2. Changes to the decision making process
3. Changes to plans
4. Changes to regulations
5. On the ground changes
6. Beyond local impacts



Research & Information Gathering

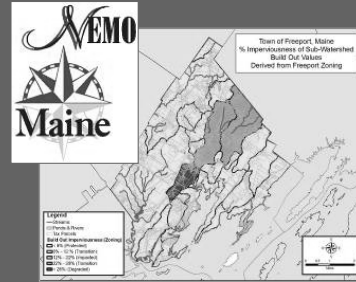
- **Natural resource inventories**
- **Watershed characterizations**
- **Buildout analyses**
- **Landscape visualizations**
- **Runoff and other modeling**

Research . . .

Examples



NRBP Guide



Impervious Surface Analysis

Changes to the Decision Making Process



- **Inter-commission committees**
- **Special committees**
- **Study groups**
- **Multi-town work groups**
- **Watershed efforts**
- **“Asking the right questions”**

Process Changes . . .

Examples



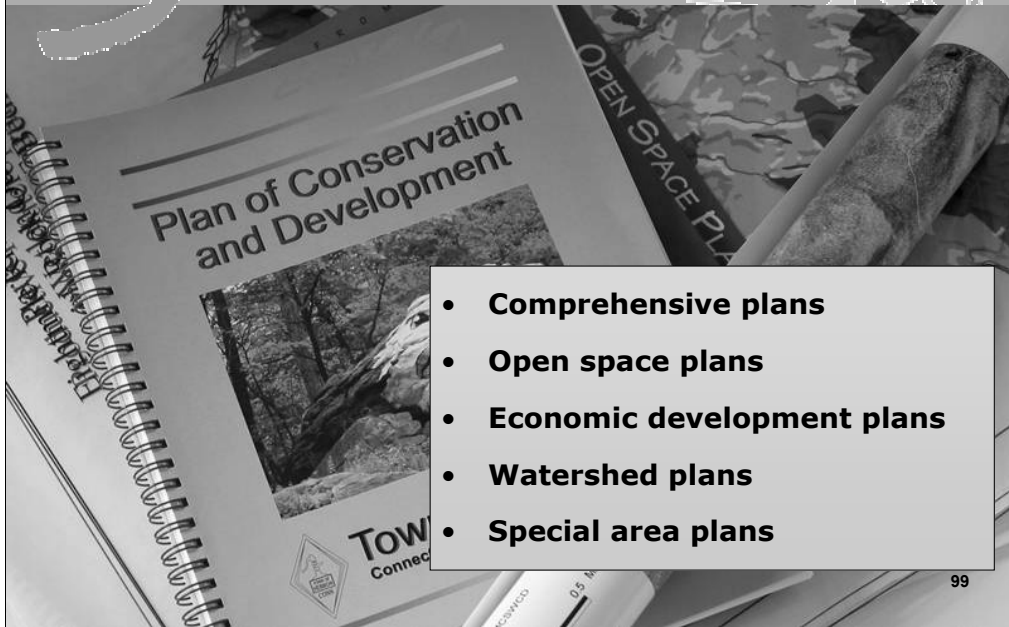
Inter-Governmental Partnerships



Asking the Right Questions

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Changes to Plans



- **Comprehensive plans**
- **Open space plans**
- **Economic development plans**
- **Watershed plans**
- **Special area plans**

Changes to Plans...

Examples



Comprehensive Plans



Open Space/Conservation Plans

4

Changes to Regulations

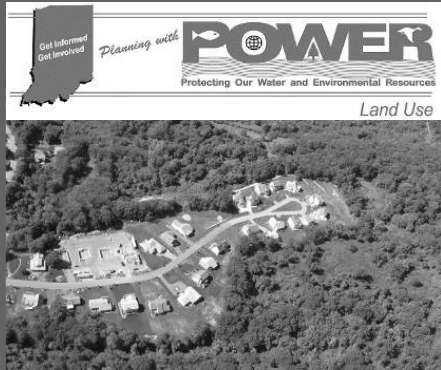


- **Zoning regulations**
- **Subdivision regulations**
- **Wetlands regulations**
- **Road ordinances**
- **Parking ordinances**
- **Landscaping ordinances**
- **Special overlays**

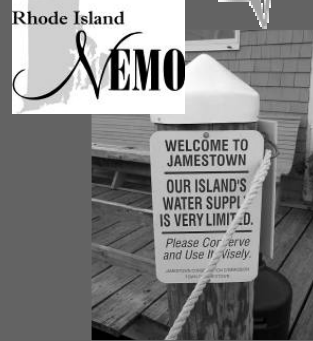
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Regulations...

Examples



Subdivision Regulations



Special Area Overlays

5 On the Ground Changes

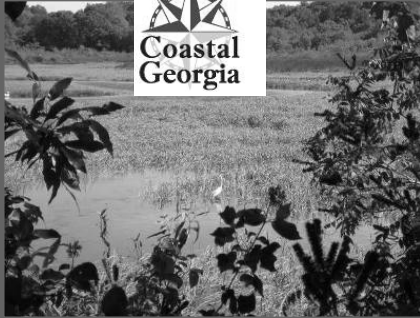
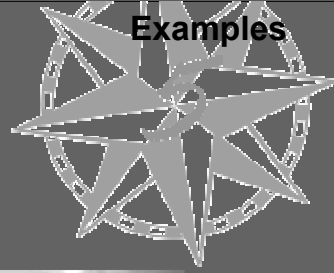


- Overall development patterns
- Development design/LID
- Stormwater BMPs
- Open space protection
- Farmland protection
- Wetland protection

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On the Ground . . .

Examples



Open Space Protection



Demonstration Projects

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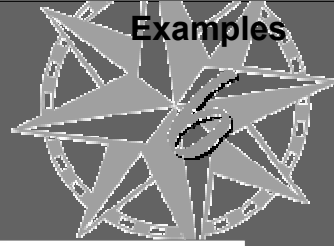
Beyond Local Impacts

- State laws
- State guidance documents
- State studies & commissions
- State or national recognition



Beyond Local . . .

Examples

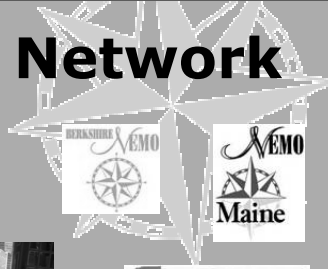


Statewide Changes



National

The National NEMO Network



NEMO University 5, October 2006



Questions? . . .



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Check Out Our Next Webcast on Feb. 21st...



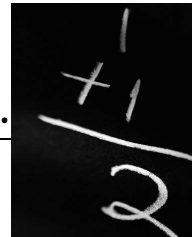
*Happy 20th Birthday, National Estuary
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*Implementation of TMDLs and Trading
through the National Estuary Program* 109



You've seen the presentation, now tell us how it was...

Check out some additional resources...



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