CSREES
New England
Region Water Quality Program

Applying knowledge to improve water quality

Cooperative Extension in New England

- Research
- Education
- Extension

The Use of GIS in Watershed Management

The CSREES New England Water Quality Program utilizes geo-spatial technologies as tools to protect the Region's valuable water resources. These technologies allow local decision makers and citizens to obtain the most up-to-date geographical information for informed decision-making and watershed management to improve and protect water quality throughout New England.

Situation

Community leaders and others need simple tools to help make sense of the many factors involved with watershed protection. Inventorying natural resources, assessing the health of those resources, modeling existing and future pollution loads, and visualizing future landscapes are all important to piecing together the watershed picture.

The use of geo-spatial technologies like geographic information systems (GIS), global positioning systems (GPS), and remote sensing has dramatically increased in town halls across New England. The CSREES New England Water Quality Program applies cutting-edge research techniques and tools to help communities use this technology to protect our water resources and rural watersheds.

Members of the Old Saybrook, CT NEMO committee inspect natural resource inventory maps.

Actions

CSREES New England programs apply research and use educational programs, hands-on training, and workshops to educate municipal boards, watershed and environmental organizations, and state and local agencies on the use of geo-spatial technologies for watershed management. Some highlights include:

- Using the results of research and pilot studies conducted at New England's Land Grant Universities, Extension water quality programs conduct natural resource inventories in New Hampshire, Connecticut, Massachusetts, and Rhode Island. Working with volunteers and organizations and using GIS, these projects examine the remaining developable land within particular areas, determine which lands are most critical for protection, and overlay that information with watershed natural resources information.
- Nonpoint Education for Municipal Officials (NEMO) Programs and affiliates in New England develop watershed assessment tools and methods using GIS and other geo-spatial technologies that analyze pollution risks to water resources from local land use management practices.
- Interactive internet mapping sites allow land use decision makers to access geographic data using their internet browser (http://nemo.uconn.edu/). Connecticut's Changing Landscape website provides maps, charts, and data on land cover change from 1985-2002 (http://clear.uconn.edu). The University of Rhode Island offers digital data and static maps at www.edc.uri.edu.
- Hands-on training courses for community decision makers and educators in GIS and GPS, offered at the Universities of Connecticut, New Hampshire, and Rhode Island Water Quality Programs, help local decision-makers work effectively with GIS technology.

"Several branches of the NOAA are involved with NEMO, both in supporting national coordination and in individual state projects. We feel that NEMO is an important strategy to address nonpoint source pollution of our coastal waters, and are proud to partner with USDA/ CSREES and EPA on this program."

John Kuriawa, NOAA's Coastal Nonpoint Source Program.

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The Use of GIS in Watershed Management relates to CSREES National Theme:
Watershed Management

For contacts go to: http://www.usawaterquality.org/newengland/newq_contacts.html

The CSREES New England Regional Water Quality Program works to improve water quality management through educational knowledge and extension programming that emerges from a research base. The program builds on the strengths of the Extension Water Quality Programs at the Land Grant Universities throughout New England. Partners in this regional program are equal opportunity providers and employers.

CSREES is the Cooperative States Research, Education and Extension Service, a sub-agency of the United States Department of Agriculture, and is the federal partner in this water quality program.

- The National NEMO Network, based at the University of Connecticut, collaborated with the National Oceanic and Atmospheric Administration's Coastal Services Center (NOAA/CSC) to develop and conduct regional training on the use of the Impervious Surface Analysis Tool (ISAT; http://www.csc.noaa.gov/crs/is/). New Hampshire, Maine and Rhode Island participated from the New England region.

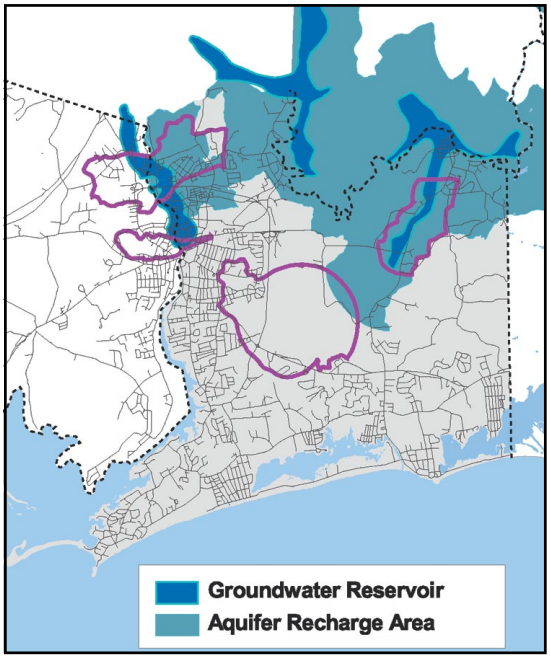
Impacts

Use of these geo-spatial tools and approaches has led to improved decision making capability at the local level protecting water resources throughout New England.

- In New Hampshire, the Squam Lake Project used GIS to map natural resources and wildlife habitats. This resulted in the development of a water nutrient sampling budget for the lake, and two local towns worked to restrict the extent of subdivision development around the lake.
- Incorporation of natural resource inventories and resulting data into community and organizational planning and management enabled communities throughout New England to improve open space protection planning and to review new development projects.
- In Rhode Island, communities have adopted local wastewater management plans and programs as a result of GIS analyses using the MANAGE model (http://www.uri.edu/ce/wq/mtp/html/manage.html).
- Valuable partnerships have been enhanced among the New England Land Grant Universities and municipal decision makers.
- New England municipal training programs have been strengthened with the development of new educational materials, innovative programming, and new delivery techniques.

Partners

In addition to the support of CSREES, Extension programs developing and promoting the use of GIS in watershed management have been facilitated through collaborations with NOAA, EPA, local communities, state agencies, nonprofit organizations, watershed associations, and conservation districts.



GIS tools help communities identify critical water resource areas.

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