

Follow the Flow Training Workshop

Presented by Beth Brazil of the
Merrimack River Watershed Council

Workshop Agenda

- Introduction of MRWC and Haverhill Lakes Alliance
- What is a Watershed?
- The Groundwater Connection
- Non-point Source Pollution
- Ideas for Best Management Practices

Training Goals:

- Educate municipal workers about the impacts of land use on water quality and offer options available for managing those impacts
- Introduce the “watershed approach”, which is an integrated management methodology based on:
 - Geographically defined management
 - Local people solving local problems
 - Partnership of watershed stakeholders
 - Guidance by science and broad input
 - Watershed based prioritization
- Communicate the importance of source water protection

Haverhill Lakes Alliance



Haverhill Lakes Alliance

**Formed Through a Joint Effort by the
Merrimack River Watershed
Council and Haverhill Water
Department**

ABOUT Merrimack River Watershed Council (MRWC)

- 25 Years Old
- Serves 2 States- MA & NH
- Budget of ± \$750,000
- Professional Staff of 7
- Board of Directors

HAVERHILL LAKES ALLIANCE

Mission:

To protect the Haverhill lakes as a permanent drinking water supply by educating the public on watershed issues, advocating responsible care of the lakes and watersheds by all users, and promoting compatible recreational uses.

HAVERHILL LAKES ALLIANCE

Who should care?

Anyone who hikes around the lakes

Anyone who fishes in the lakes

Anyone who drinks Haverhill water!

Get involved!

Adopt a lake with your school group or neighborhood association.

Join our water quality monitoring effort
(we provide training!)

Participate in our watershed education series.

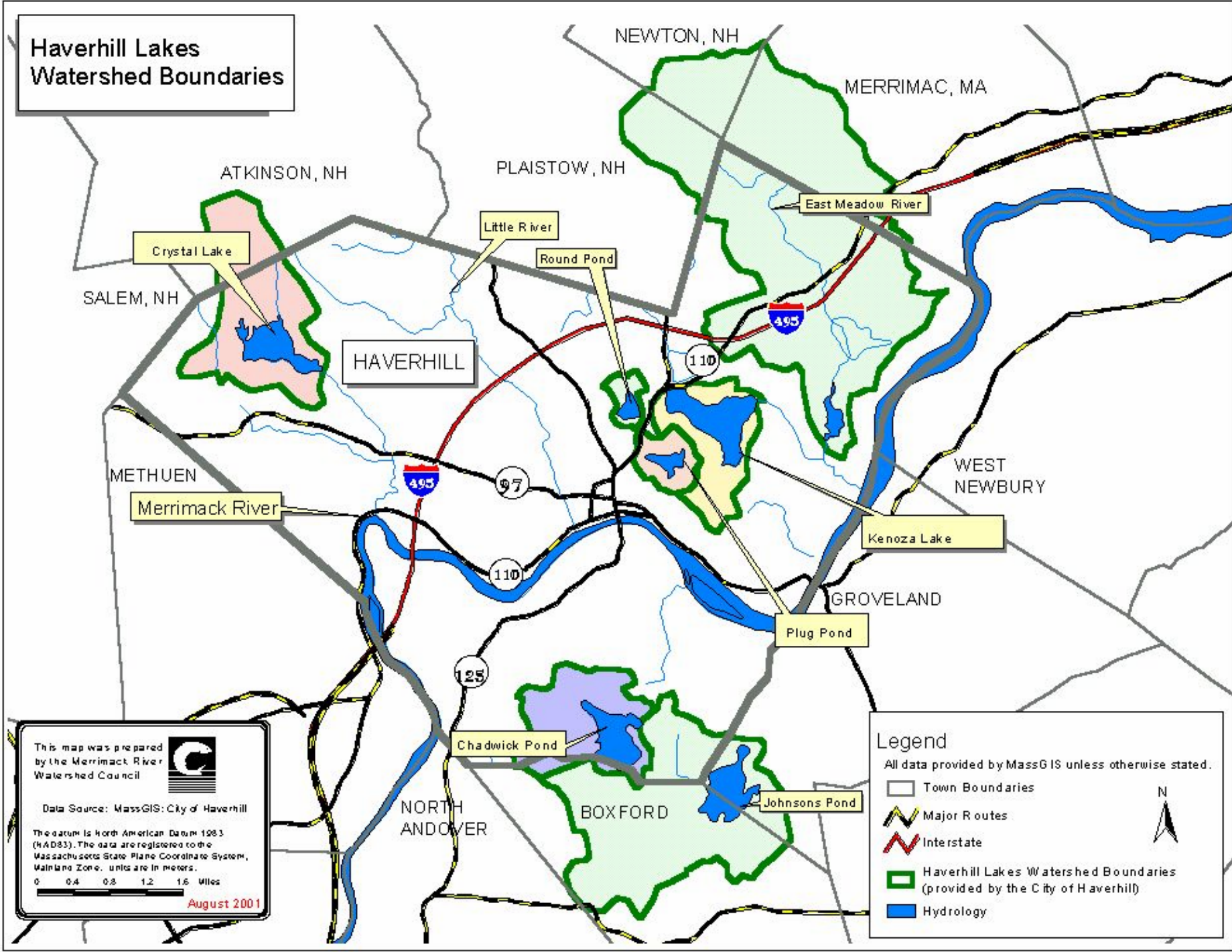
HAVERHILL LAKES



What is a Watershed?

A watershed is the land area from which surface runoff drains into a common body of water, such as a lake, river, or stream

Haverhill Lakes Watershed Boundaries



This map was prepared by the Merrimack River Watershed Council

Data Source: MassGIS: City of Haverhill

The datum is North American Datum 1983 (NAD83). The data are registered to the Massachusetts State Plane Coordinate System, Mainland Zone. Units are in meters.

0 0.4 0.8 1.2 1.6 Miles

August 2001

Legend

All data provided by MassGIS unless otherwise stated.

- Town Boundaries
- Major Routes
- Interstate
- Haverhill Lakes Watershed Boundaries (provided by the City of Haverhill)
- Hydrology

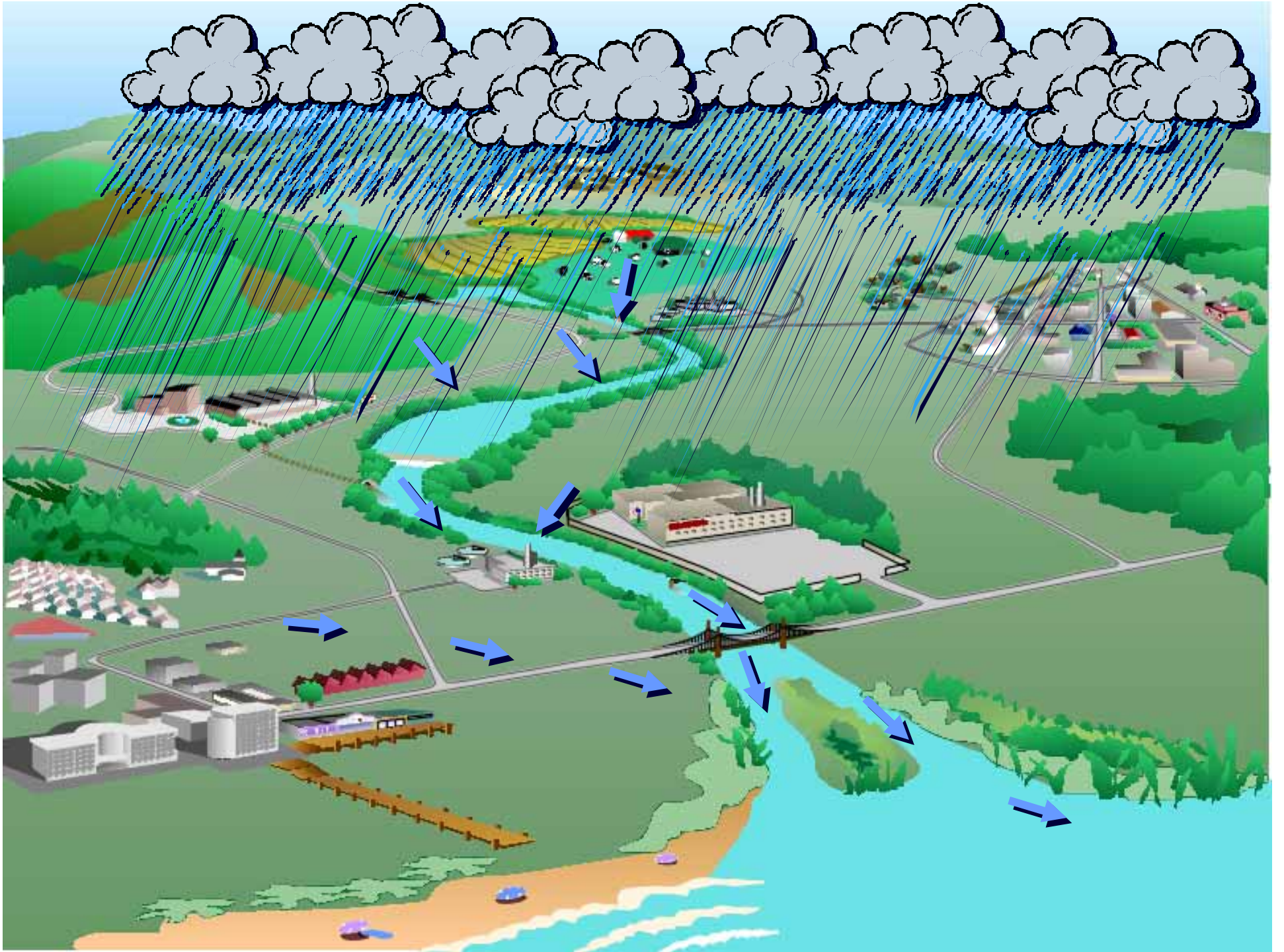
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The Groundwater Connection

- **Surface water is water found above the surface of the land, such as lakes and rivers**
- **Ground water is water found in spaces between soil particles underground**
- **Surface and ground water have a direct connection**

Non-Point Source Pollution

- **Non-point source (NPS) water pollution, also known as polluted runoff, comes from diffuse or scattered sources in the environment rather than from a defined outlet such as a pipe**
- **NPS pollution is the leading cause of water pollution in the United States**
- **NPS water pollution results from a wide variety of human activities on the land**

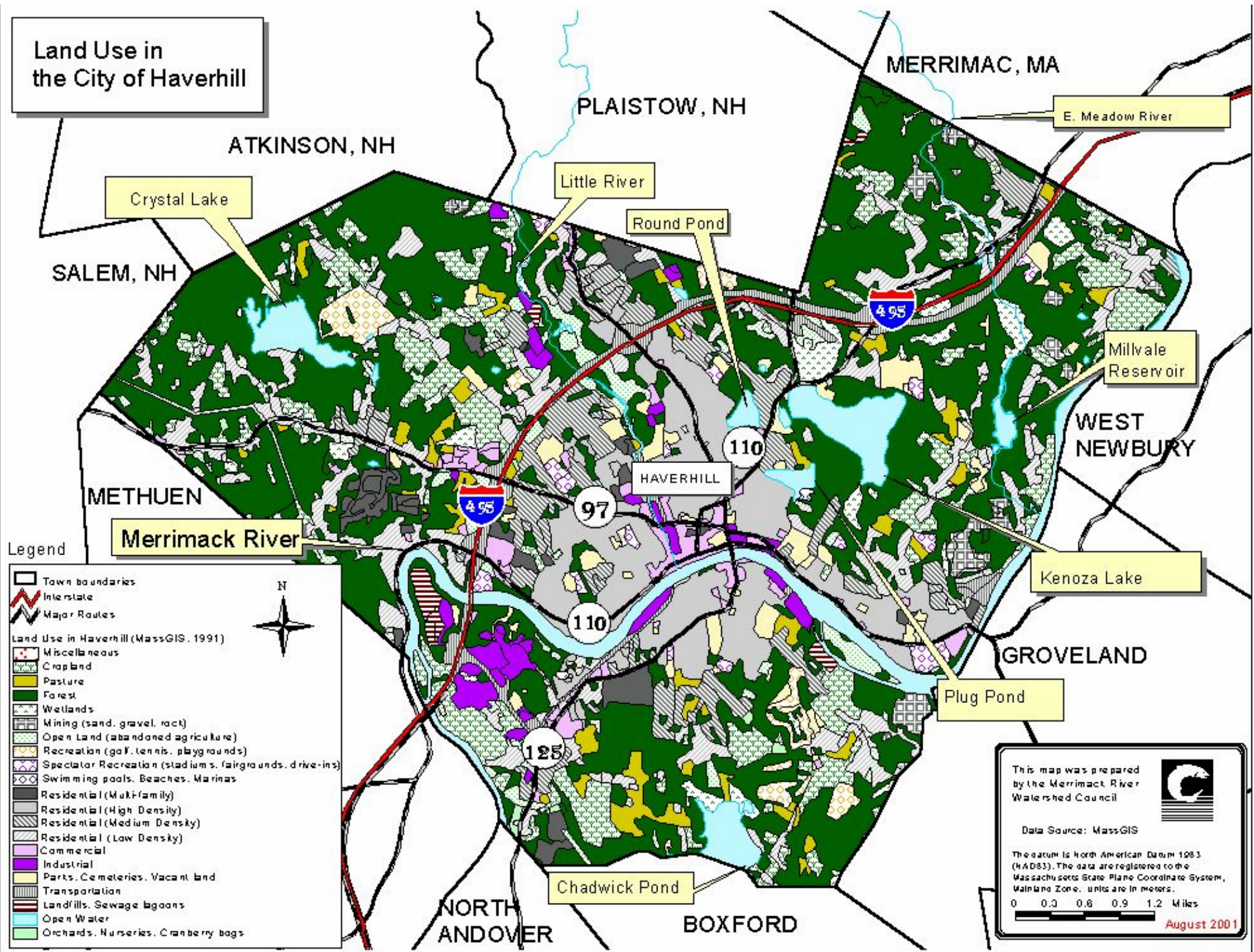


NPS Pollution Continued

Common types of NPS pollution are:

- Phosphorus and nitrogen in lawn and garden fertilizers
- Pet waste
- Phosphorus and bacteria from septic systems
- Oil and grease from parking lots and roads
- Sediment from construction activities and soil erosion
- Road salt and sand

Land Use in the City of Haverhill



Legend

- Town boundaries
- Interstate
- Major Routes
- Land Use in Haverhill (MassGIS, 1991)**
- Miscellaneous
- Cropland
- Pasture
- Forest
- Wetlands
- Mining (sand, gravel, rock)
- Open Land (abandoned agriculture)
- Recreation (golf, tennis, playgrounds)
- Spectator Recreation (stadiums, fairgrounds, drive-ins)
- Swimming pools, beaches, marinas
- Residential (Multi-family)
- Residential (High Density)
- Residential (Medium Density)
- Residential (Low Density)
- Commercial
- Industrial
- Parks, Cemeteries, Vacant land
- Transportation
- Landfills, Sewage lagoons
- Open Water
- Orchards, Nurseries, Cranberry bogs



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0 0.3 0.6 0.9 1.2 Miles

August 2001

Is There a Solution to NPS Pollution?

- Preventing and reducing NPS pollution is key to improving lake water quality
- Best Management Practices (BMPs) can be carried out that prevents NPS pollution or can mitigate its effects
- BMPs are easier and more cost effective than restoring a degraded resource
- BMPs can be structural (e.g., planting a buffer) or non-structural (analyzing lawn soil before fertilizer applied)

What Can YOU Do to Prevent NPS Pollution?

- Identify and discuss sources of NPS pollution generated from Water and Wastewater Departments
- Discuss possible BMPs. Examples include:
 - Minimize impervious surfaces near facilities
 - Slow or divert stormwater runoff towards vegetated areas
 - Plant vegetation around Haverhill's lakes