

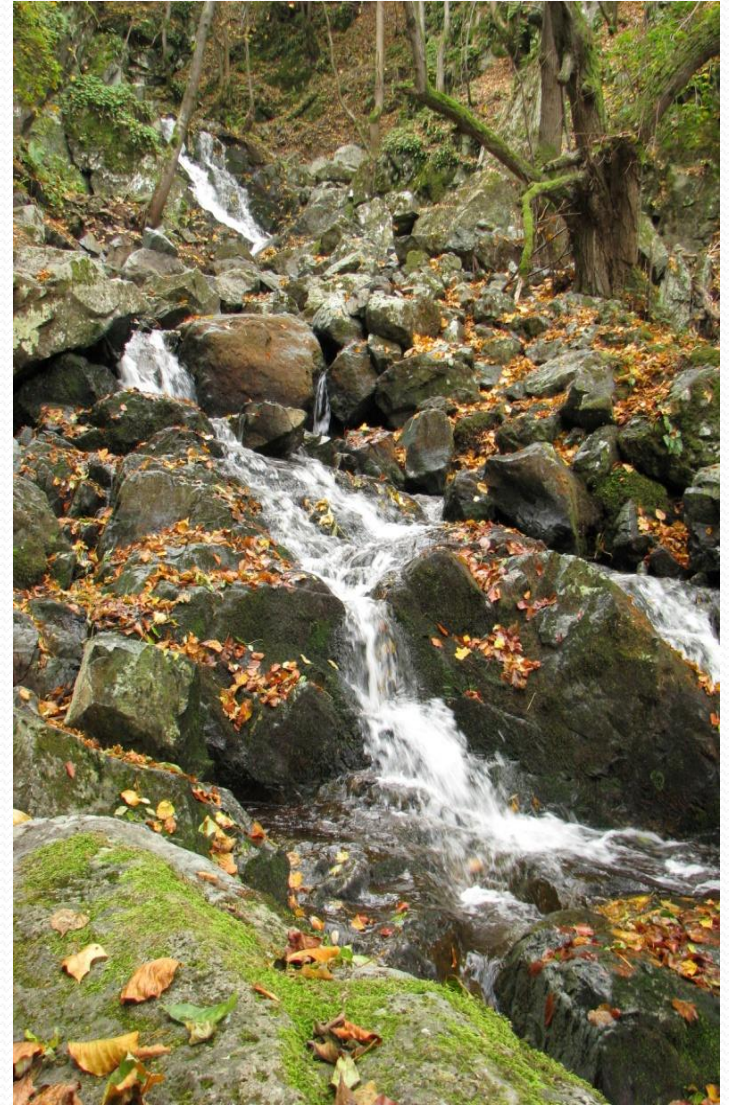
The Bay of Fundy and it's Water



Presentation by: Ashley Sprague, Ecology Action Centre

Outline

- Watersheds and Water
- Function of the Coast
- Water Issues
- State of Water Quality
- Municipal and Rural Context

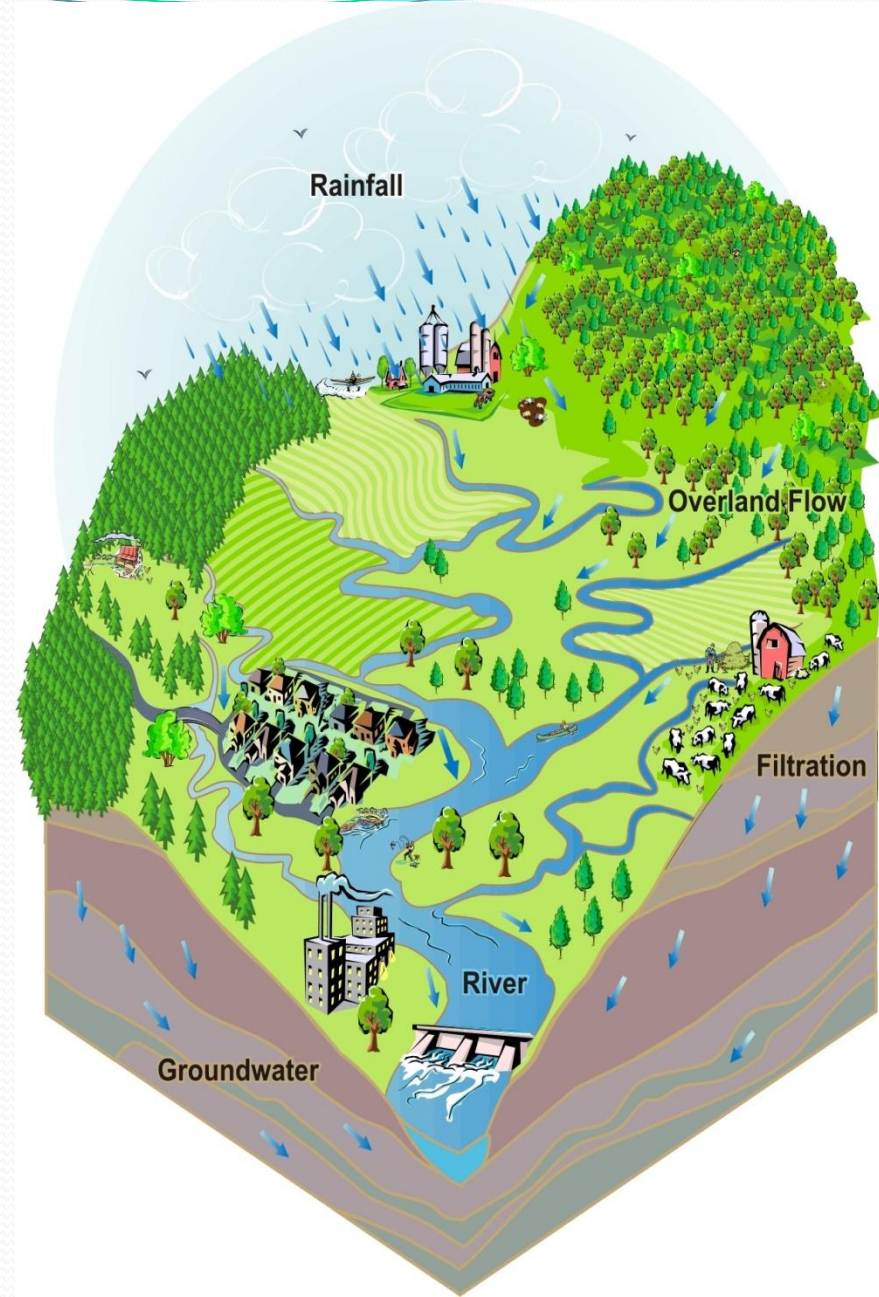


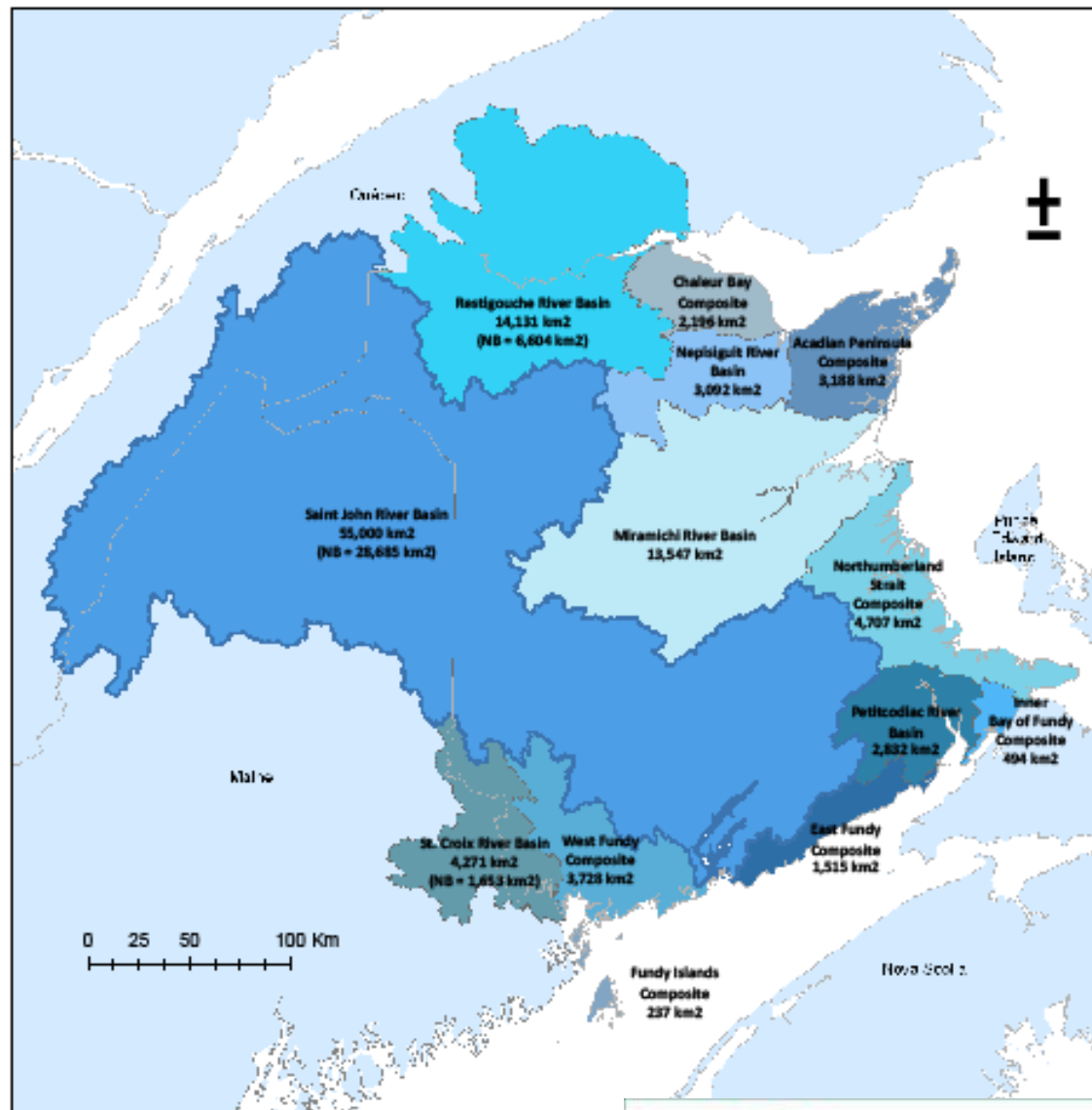
Watersheds

‘entire land area that drains into a single system’

- Connected system
- Changes in land use can alter runoff patterns, increase sediment and contaminant transport and groundwater recharge

Healthy watersheds =
healthy people, community,
economy, environment





Legend

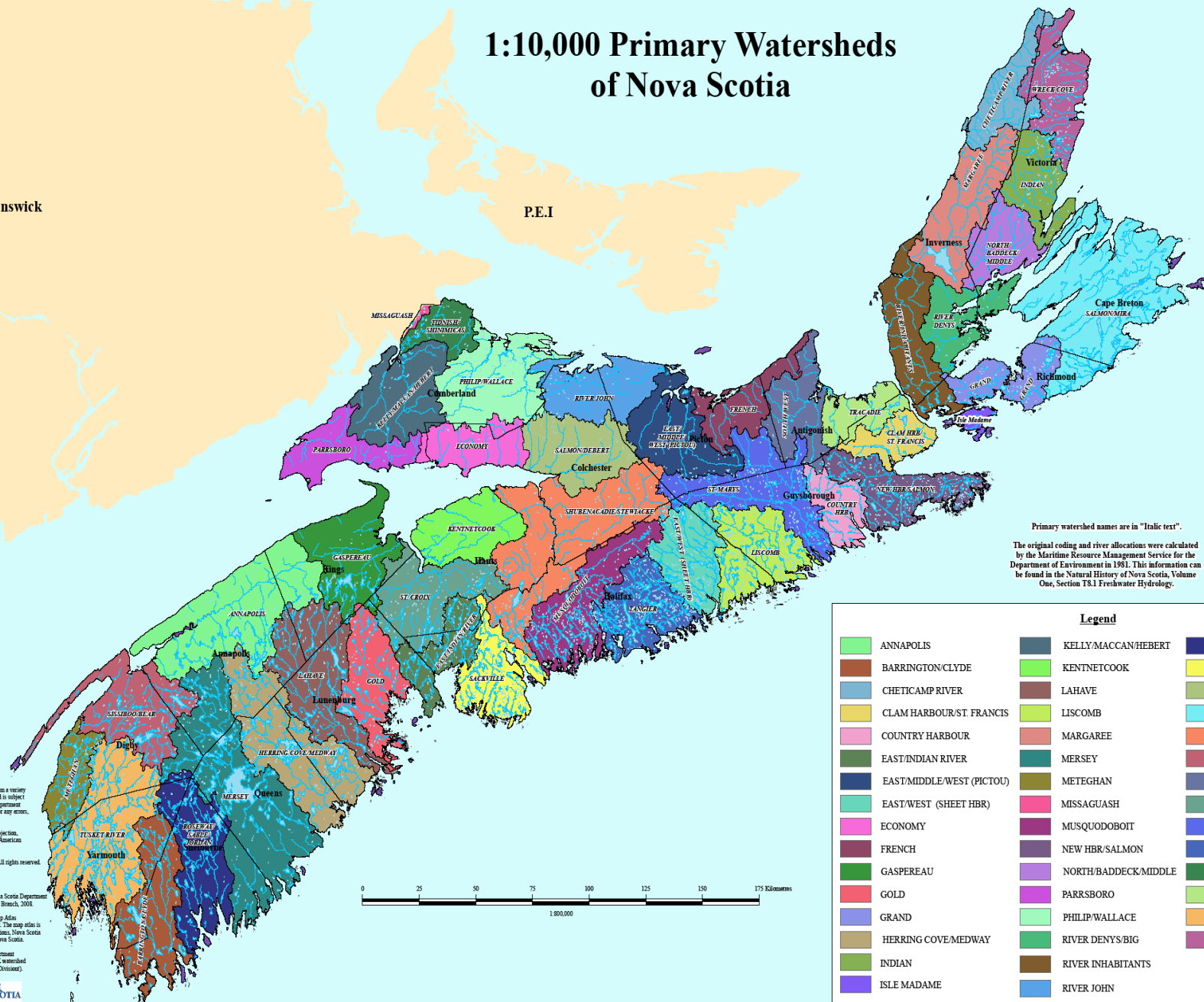
| | |
|---------------------------------|------------------------------|
| Saint John River Basin | West Fundy Composite |
| Miramichi River Basin | Acadian Peninsula Composite |
| Restigouche River Basin | Chaleur Bay Composite |
| St. Croix River Basin | East Fundy Composite |
| Nepisiguit River Basin | Fundy Isles Composite |
| Petitcodiac River Basin | Inner Bay of Fundy Composite |
| Northumberland Strait Composite | |



1:10,000 Primary Watersheds of Nova Scotia

New Brunswick

P.E.I.



Primary watershed names are in "Italic text".

The original coding and river allocations were calculated by the Maritime Resource Management Service for the Department of Environment in 1981. This information can be found in the Natural History of Nova Scotia, Volume One, Section T8.1 Freshwater Hydrology.

Legend

| | | |
|---------------------------|----------------------|----------------------|
| ANNAPOLIS | KELLY/MACCAN/HEBERT | ROSEWAY/SABLE/JORDAN |
| BARRINGTON/CLYDE | KENTNETCOOK | SACKVILLE |
| CHETICAMP RIVER | LAHAVE | SALMON/DEBERT |
| CLAM HARBOUR/ST FRANCIS | LISCOMB | SALMON/MIRA |
| COUNTRY HARBOUR | MARGAREE | SHUBENACADIE/STEWART |
| EAST/INDIAN RIVER | MERSEY | SISSIBOO/BEAR |
| EAST/MIDDLE/WEST (PICTOU) | METEGHAN | SOUTH/WEST |
| EAST/WEST (SHEET HBR) | MISSAGUASH | ST CROIX |
| ECONOMY | MUSQUODOBOIT | ST MARYS |
| FRENCH | NEW HBR/SALMON | TANGIER |
| GASPEREAU | NORTH/BADDECK/MIDDLE | TIDNISH/SHINIMICAS |
| GOLD | PARRSBORO | TRACADIE |
| GRAND | PHILIP/WALLACE | TUSKET RIVER |
| HERRING COVE/MEDWAY | RIVER DENYS/BIG | WRECK COVE |
| INDIAN | RIVER INHABITANTS | |
| ISLE MADAME | RIVER JOHN | |

Disclaimer

The information on this map may have come from a variety of government and non-government sources and is subject to change without notice. The Nova Scotia Department of Environment and Labour accepts no liability for any errors, deficiencies, or faults on this map.

4° Universal Transverse Mercator (UTM) Projection,
Zone 20, Central Meridian 63°50' West North American
Datum (NAD83) 1983.

© Crown Copyright, Province of Nova Scotia, 2008. All rights reserved.

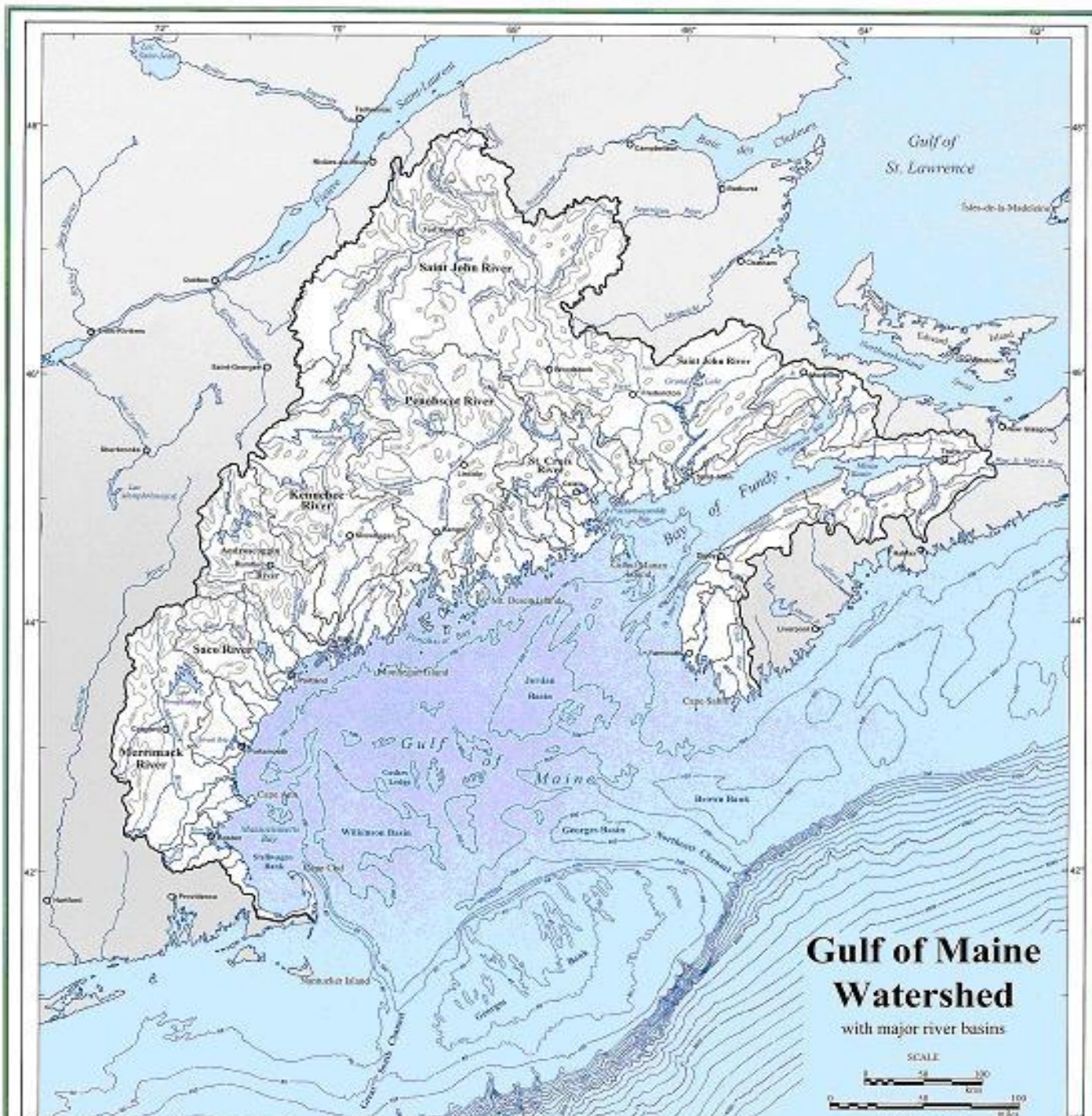
Map Notes

Cartographic compilation, design and production by Nova Scotia Department of Environment and Labour, Water and Wastewater Branch, 2008.

Base data derived from the Nova Scotia Map Atlas
Copyright Province of Nova Scotia. All rights reserved. The map data is
available from Service Nova Scotia & Municipal Relations, Nova Scotia
Geomatics Centre, 140 Willow St., Amherst, Nova Scotia.

Additional information derived from Department of
Environment and Labour, 2008. Primary 100 watershed
layer (Water and Wastewater Branch, ENAM Division).

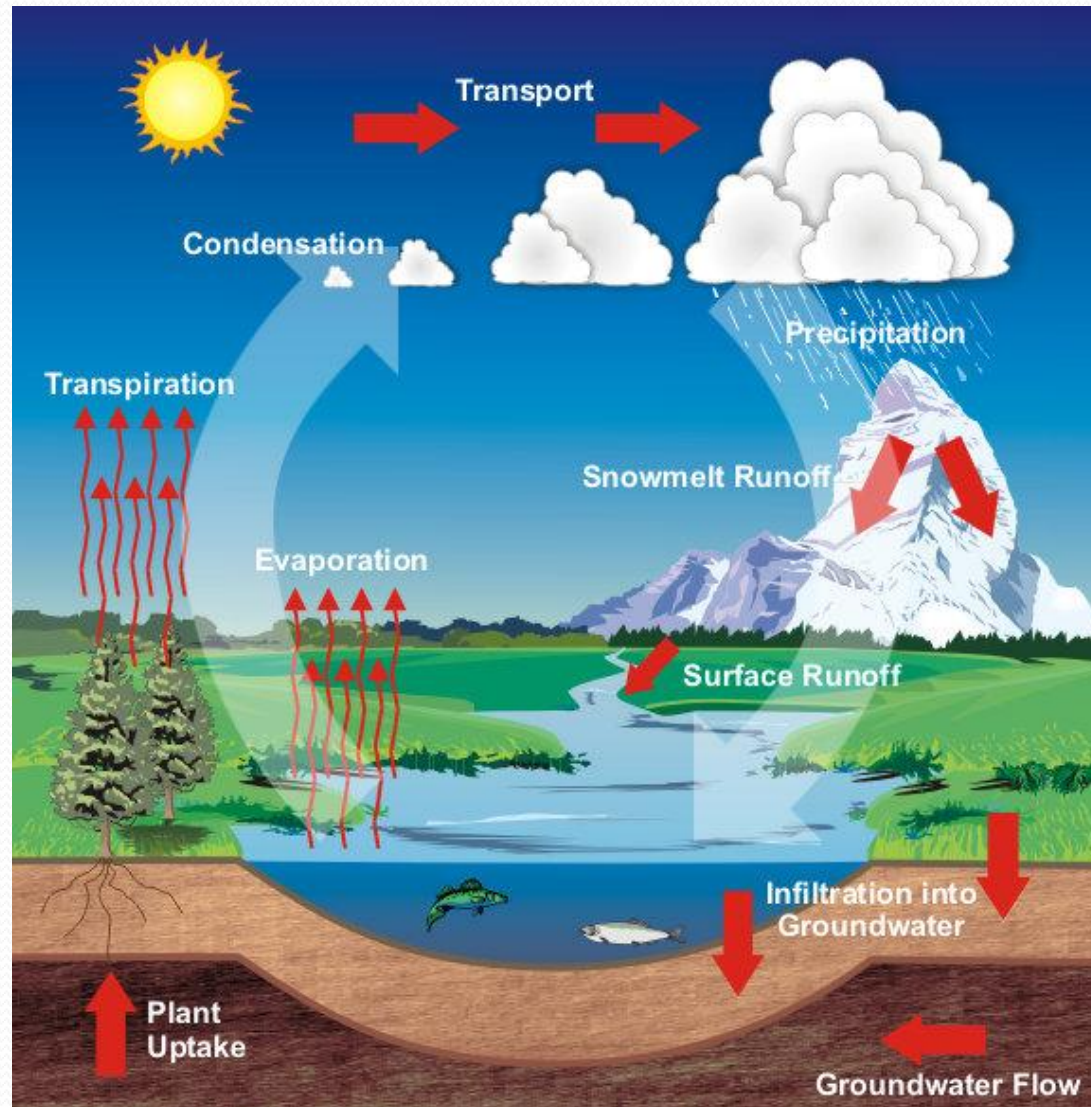




**Gulf of Maine
Watershed**
with major river basins



Water 101

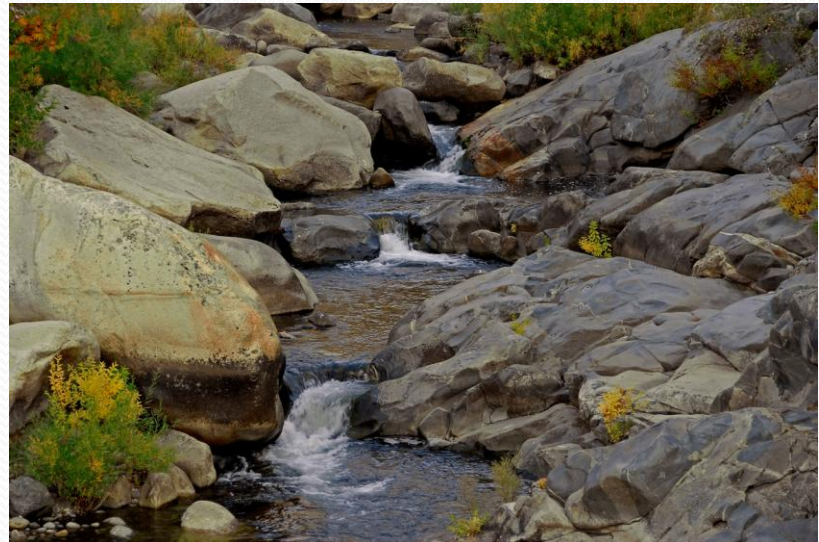


Groundwater



Surface water

- Nutrient and gas exchange
- Drain rainwater
- Drinking water



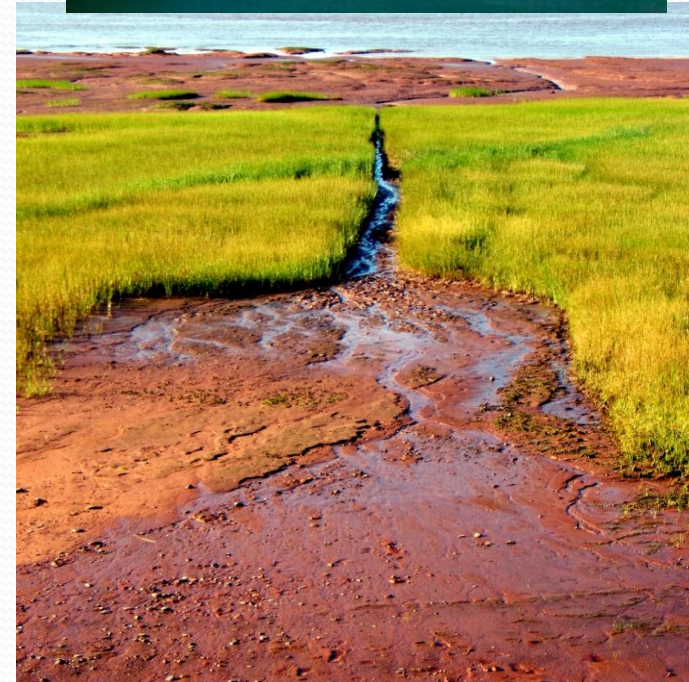
Riparian zone

- Bank stabilization
- Filter and purify
- Temperature regulation
- Habitat and food



Estuaries and salt marshes

- Purify and filter
- Protect adjacent land from flooding
- Important habitat



Intertidal Mudflats

- Shorebird migration



Eelgrass and kelp beds

- Filter and trap sediment
- Slow wave action
- Important habitat

Intact coastline is first line of defence against impacts of climate change



The Bay of Fundy

- Unique and diverse ecosystem
- High productivity and biodiversity
- Coastal communities
- Traditional livelihoods
- Tourism
- New Natural Wonder of the World?



Photo Courtesy of Bay of Fundy Tourism and Derek Mason Photography ©2010

Developed watersheds

- Change runoff patterns
- Impervious surfaces
- Increased sediment and contaminant transport
- Prevention of groundwater recharge
- Increased risk of flooding and erosion



Water Issues



What is water pollution?

Between 100,000- 500,000 chemicals are in regular industrial use

- Organic
- Inorganic
- Physical



Organic contaminants

- Sick over short time period
- Nutrients and bacteria
- Nitrogen, Phosphorous, E.Coli

Sources

- Wastewater treatment
- Septic systems
- Fertilizers
- Agriculture /aquaculture operations

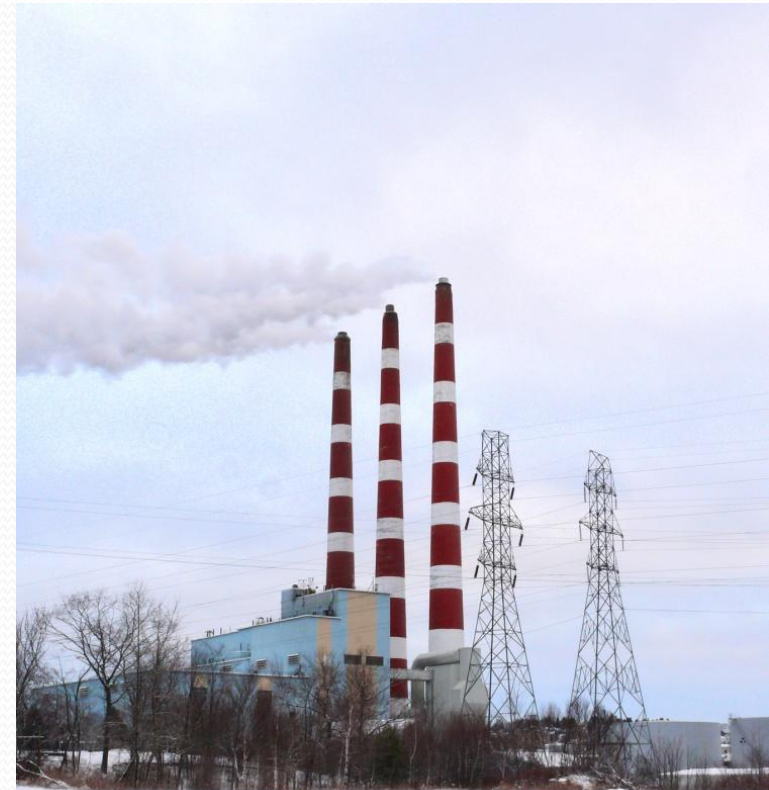


Inorganic contaminants

- Sick over prolonged exposure
- Heavy metals and pollutants
- Highly persistent compounds
- Mercury, Lead, Arsenic

Sources

- Leachate from landfills
- Mining /industrial activities
- Pesticides and herbicides



Physical contamination

- Garbage
- Sediments

Sources

- Changes in land use
- Alteration of waterways



Consequences

- **Environmental**
 - Eutrophication
 - Loss of habitat
- **Economic**
 - Shellfish closures
 - Beach closures
- **Health**
 - Drinking water contamination



State of water quality

80% of coastal pollution comes from land- based activities

Gulf of Maine facts (2010):

- 2,024 active point sources of contaminants
- 378 wastewater treatment plants
- 93 power plants



Photo Courtesy of Bay of Fundy Tourism and Derek Mason Photography ©2010

State of water quality

Atlantic Canada facts (2008):

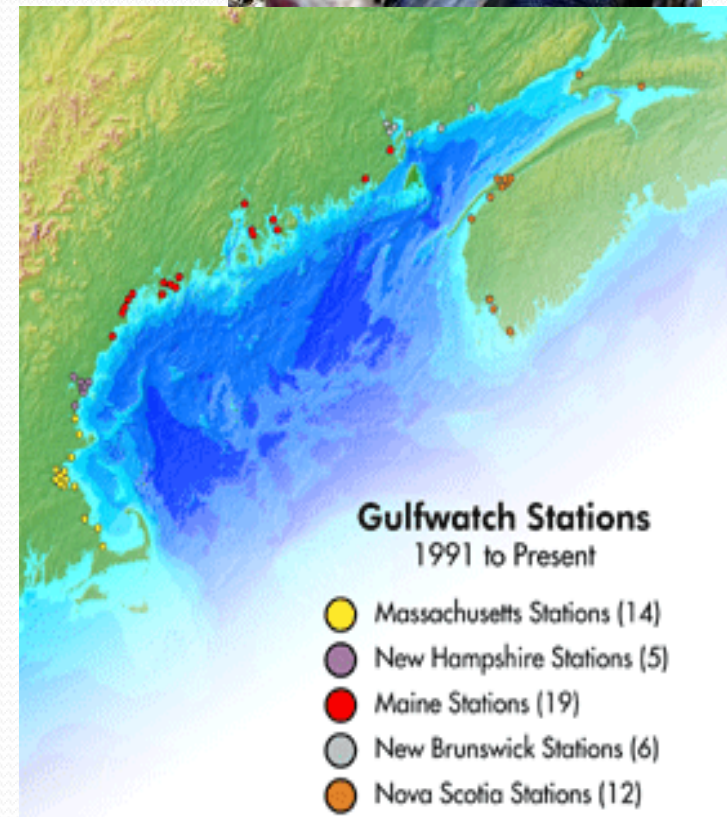
- Each year, 100 million m³ raw sewage is dumped into coastal waters
- 122 million m³ "treated" wastewater also flows into coastal waters
- 1/4 has only primary treatment



State of water quality

Gulfwatch (1993-present)

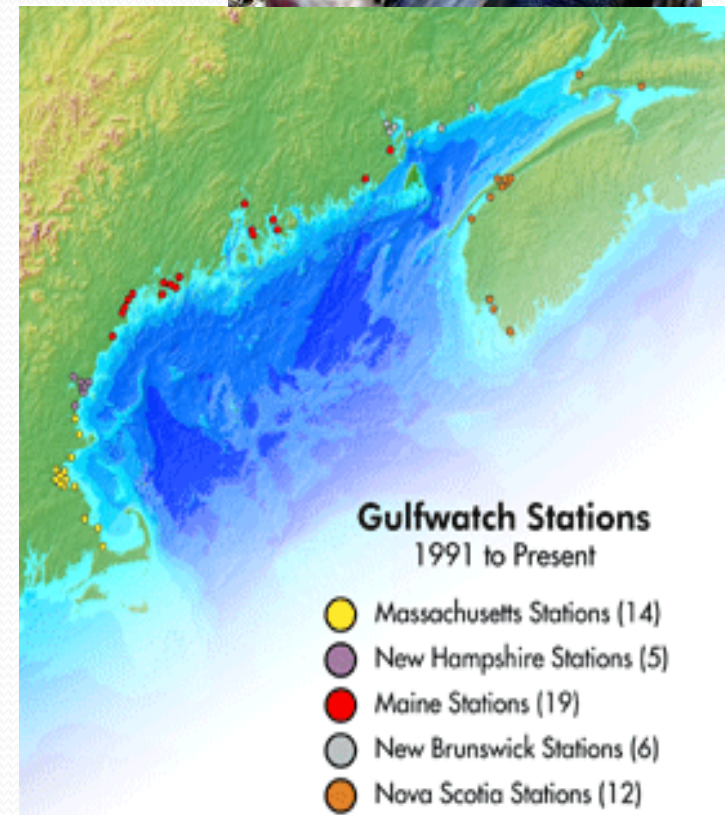
- Monitors contaminant levels in mussels
- 38 sites from Gulf of Maine



State of water quality

Gulfwatch results

- Higher heavy metal concentrations in Southern Gulf
- Nearly all measured metal contaminants were detected at each of the sampling sites
- Contaminants more concentrated near cities and large river mouths





Municipal and planning authority context



Impacts

- Rising costs
- Public health and safety
- Emergency Preparedness
- Protection and repair of infrastructure
- Public expectation
- Federal and provincial regulations



Federal role for coasts and water

Control coastal waters from the ordinary low watermark seaward to the 200 miles.

- Canadian Environmental Protection Act
- Fisheries Act Section 35 (HADD)
- Oceans Act
- Canada Water Act
- Parks Act, Wildlife Act, Species at Risk
- Migratory Bird Convention
- Environment Act

Provincial Role

Nova Scotia

- Municipal Government Act
- County based system
- No unincorporated areas
- No provincial coastal policy
- Planning optional
- 5 Statements of Provincial Interest

• **New Brunswick**

- Community Planning Act
- Unincorporated areas and planning districts
- Provincial Coastal Areas Policy
- Planning optional?
- Wetland designation policy

Coastal watershed management?



- Patchwork Approach
 - Inconsistent
 - Confusing
 - Not working?
-
- What a municipality or planning district to do?

Municipal and Rural Planning

Community Planning Act and Municipal Government Act includes tools that may be used by municipalities to address coastal and water concerns

- Municipal planning strategies
- Zoning by-laws
- Subdivision control
- Site planning control
- Waste water management districts



Related Initiatives

- NB Coastal Area Protection Policy and NS Coastal Strategy
- NS Water Resources Management Strategy and NB Water Policy
- Atlantic Climate Adaptation Solutions (ACAS)
- Integrated Community Sustainability Plans
- NS and NB wetland policy and regulations
- Federal waste water treatment guidelines



Main Messages

- Most consequences of poor water management will be felt at community level
- There's lots of regulations, but little consistent planning and application
- Municipal and Rural leadership essential

