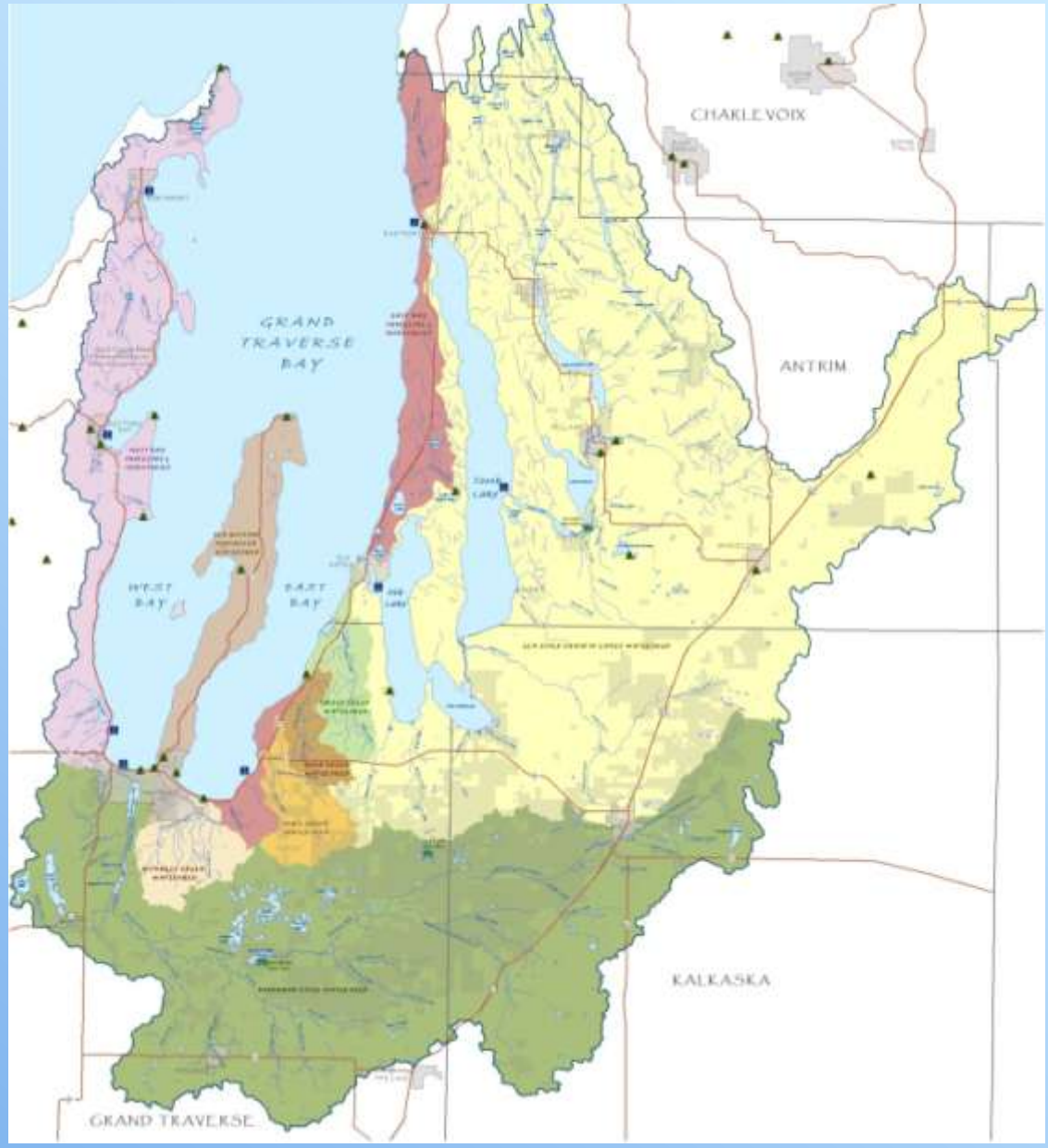
# Grand Traverse Bay

## Watershed Protection Plan:

## *An Overview*

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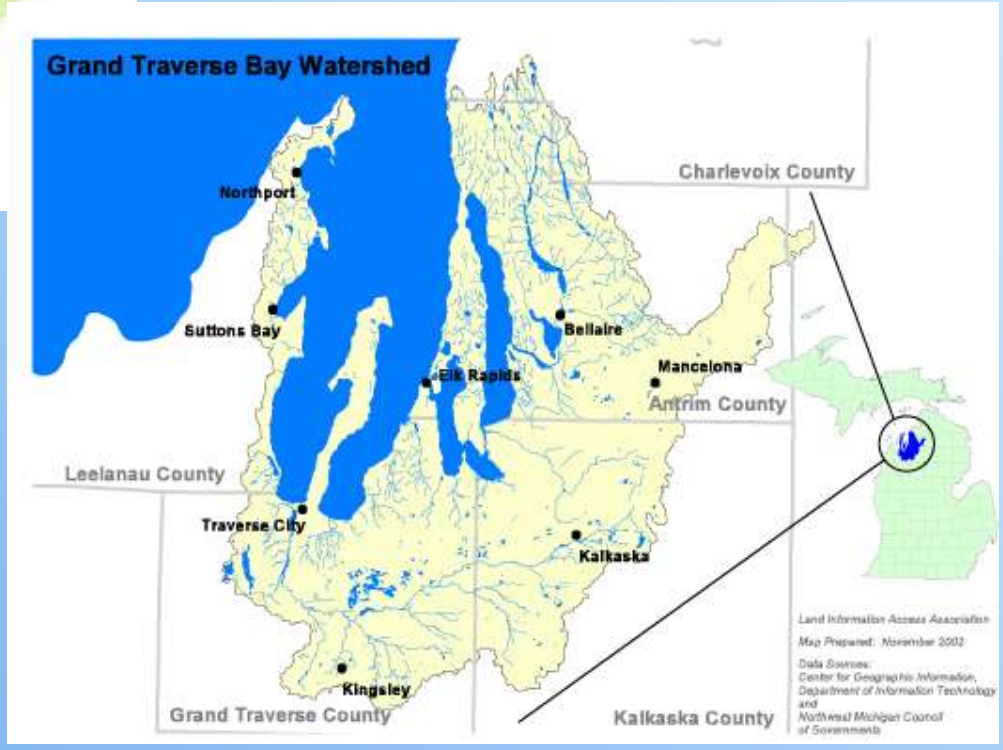
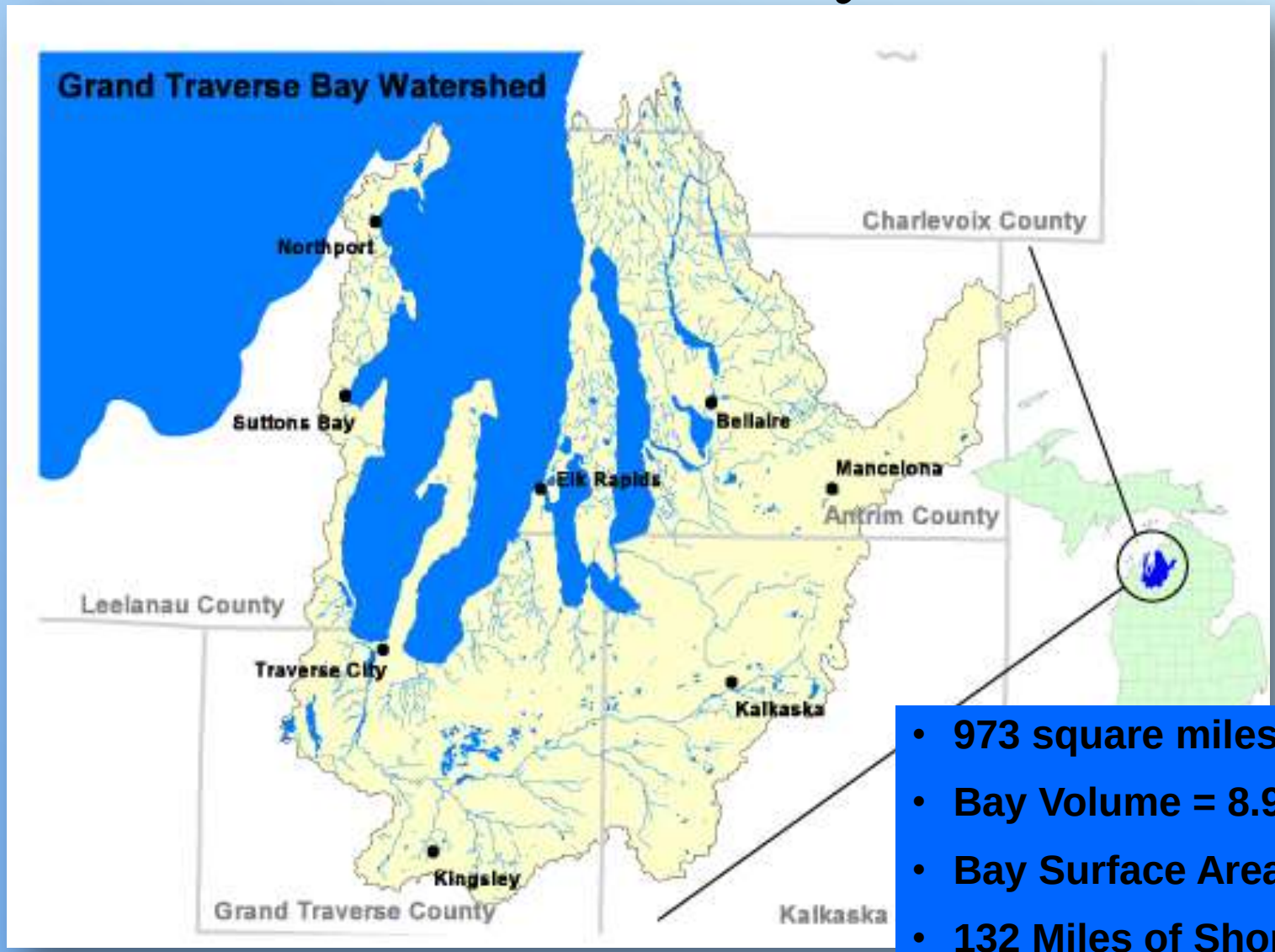
# What is a Watershed?


A ***watershed is an area of land*** that captures rainfall and other precipitation and funnels it to a lake or stream or wetland.

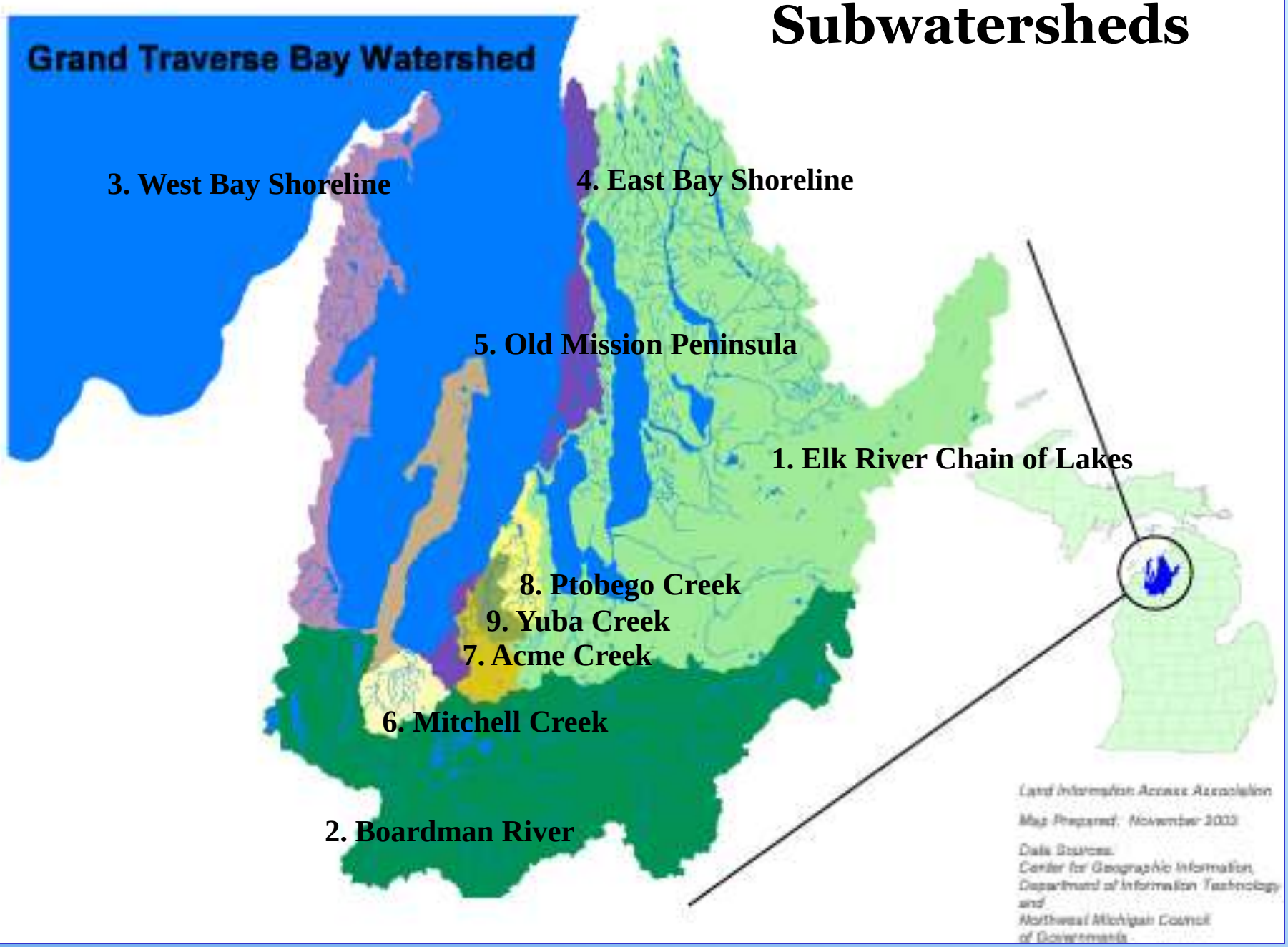


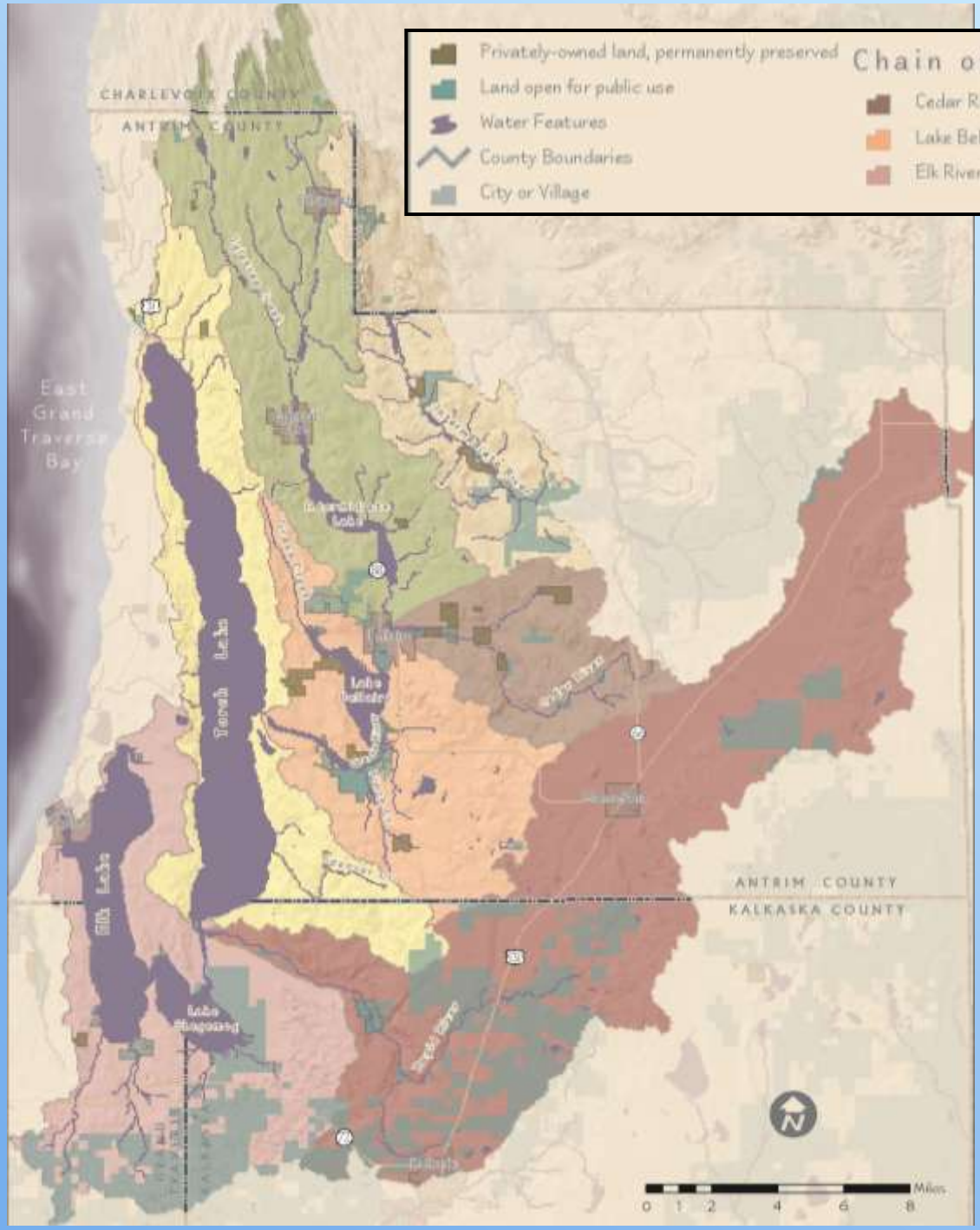
# The Grand Traverse Bay Watershed




- 973 square miles
- Bay Volume = 8.97 $mi^3$
- Bay Surface Area = 277 $mi^2$
- 132 Miles of Shoreline
- 4 Counties, 44 townships, 11 municipalities

# Subwatersheds





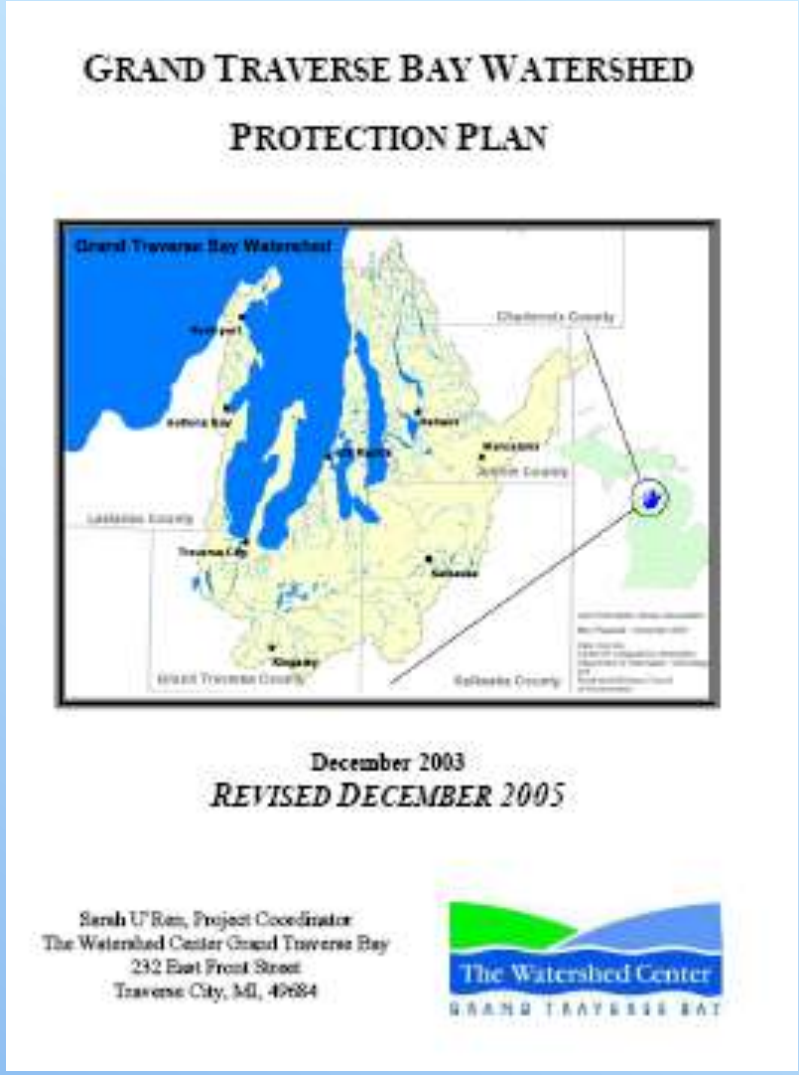

## Elk River Chain of Lakes

- **Largest subwatershed, 500 $mi^2$**
- **10% covered with water**
- **Provides 60% of surface $H_20$ to GT Bay**
- **Series of 14 interconnected lakes and rivers**
- **200+ streams**
- **138 miles of designated trout streams**
- **Waters flow 55 miles, drop 40 feet in elevation on their way to the bay**

***Map courtesy of the Grand Traverse Regional Land Conservancy, Used in 2009 Chain of Lakes Report from TWC***

# Watershed Protection Plan

- **Approved December 2005 by Michigan Department of Environmental Quality and US Environmental Protection Agency**
- **Blueprint for Protecting the Bay and Watershed**
- **Gateway for State and Federal Funding**




**Funded through MDEQ Section 319 Planning Grants**

DEQ Michigan's Nonpoint Source Program

# Q: Who will use the plan?

**Intended for use by:**

- **All government sectors (state, county, local)**
- **Watershed protection groups**
- **Anybody who wants to!**

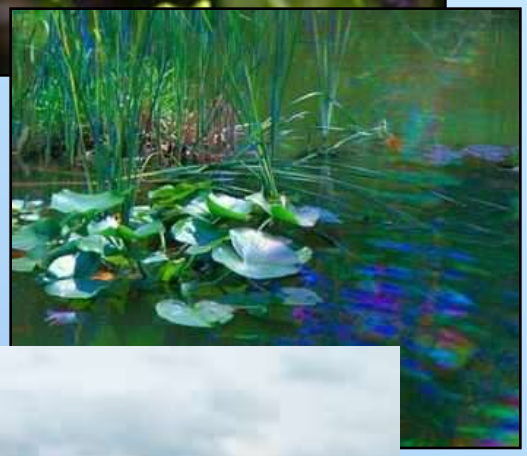
# Q: How will the plan be used?

**The plan provides guidelines and recommendations for watershed protection.**

**It is NOT A LEGAL DOCUMENT!**

- **Establish priorities for different areas in watershed**
- **Ideas/recommendations for implementation**
  - **Structural Best Management Practices**
  - **Education Priorities**

# Key Points of the Plan



- Assessed the Natural Resource Conditions
  - Identifies Threatened Designated Uses
  - Pollutants, Sources, Causes
- Identified and Prioritized WQ Problems
- Analyze Management Options and Proposed Recommendations
- Proposed an Implementation Strategy consisting of a Public Information & Education Program and Best Management Practices

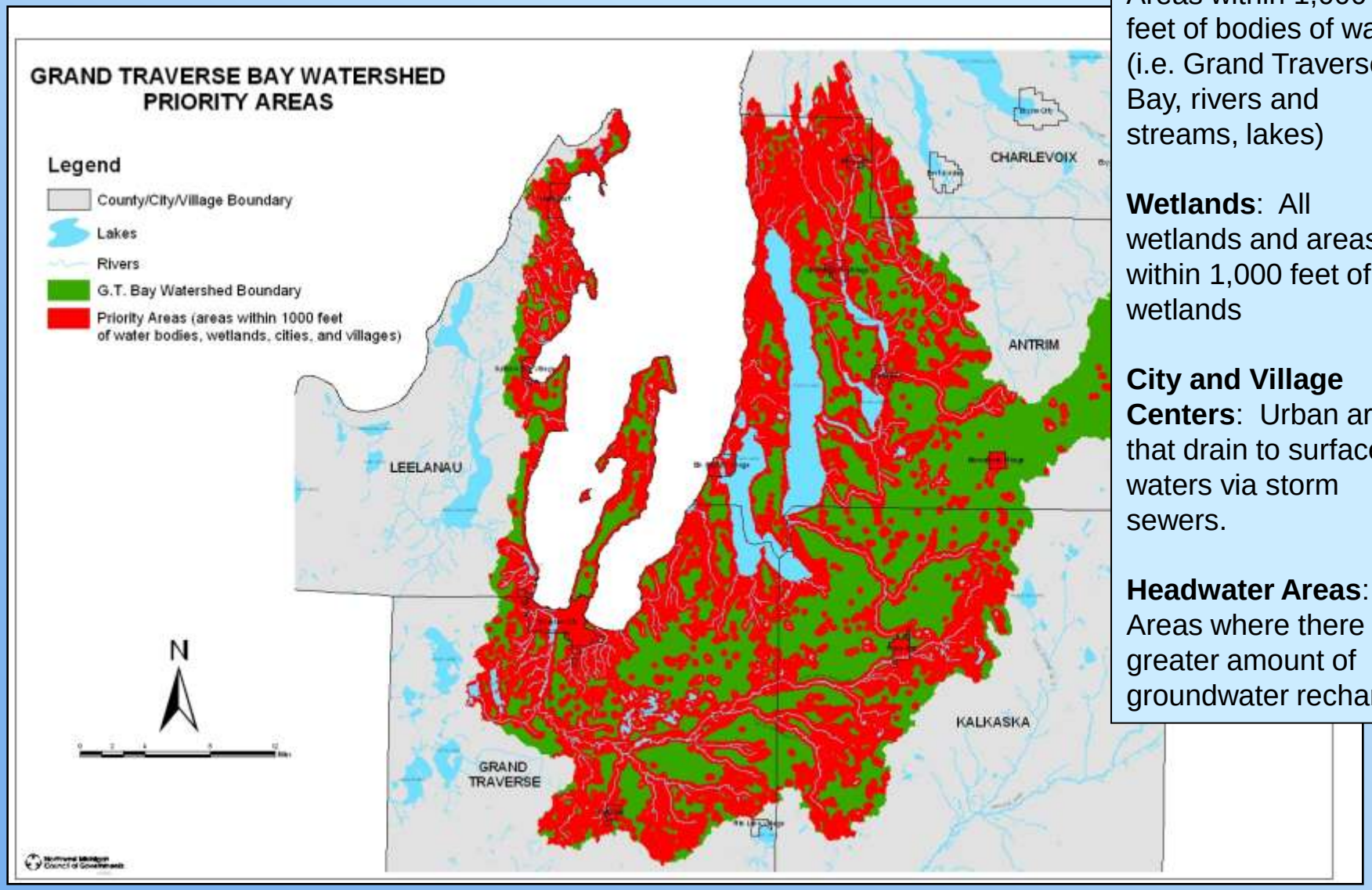
# Watershed Pollutants

**Top three threats to Grand Traverse Bay and its watershed are nutrients, sediment, and invasive species.**

**Issues specifically in ERCOL:**

- Streambank erosion and sedimentation
- Road stream crossings
- Stormwater runoff
- Septic tanks
- Lack of riparian buffers
- Reduction of wetlands
- Residential fertilizer use

# Priority Areas




**Riparian Corridors**: Areas within 1,000 feet of bodies of water (i.e. Grand Traverse Bay, rivers and streams, lakes)

**Wetlands**: All wetlands and areas within 1,000 feet of wetlands

**City and Village Centers**: Urban areas that drain to surface waters via storm sewers.

**Headwater Areas**: Areas where there is a greater amount of groundwater recharge.

***Portions of watershed that are most sensitive to environmental impacts and greatest likelihood to affect WQ and habitat – Targets for future WQ improvement efforts***

# Implementation Tasks

100+ tasks identified: BMPs (‘on the ground’) and Outreach

-- Summarized into 16 categories

1. Shoreline protection/restoration
2. Road/stream crossings
3. Agriculture
4. Hydrology

5. Habitat – Fish and Wildlife
6. Wastewater
7. Stormwater
8. Human Health
9. Wetlands
10. Invasive Species
11. Land Protection
12. Development
13. Zoning and Land Use
14. Groundwater
15. Monitoring
16. Desired Uses

*Examples*

## Category:
## Shoreline Protection and Restoration

**Task 3:** Work with municipalities and other government organizations to install riparian buffers on publicly owned property in the watershed.

**Estimated Cost:** $50,000/yr
**Timeline:** 10 years
**Priority:** High
**Potential Project Partners:**
TWC, CRA, CDs, GTBOCI, TOMWC, LA, MDNR, LGOV, ERCOL
**Milestone:**
50% of buffers established on public property by 2010,
75% established by 2015

*Buffer installed in East Bay Township*

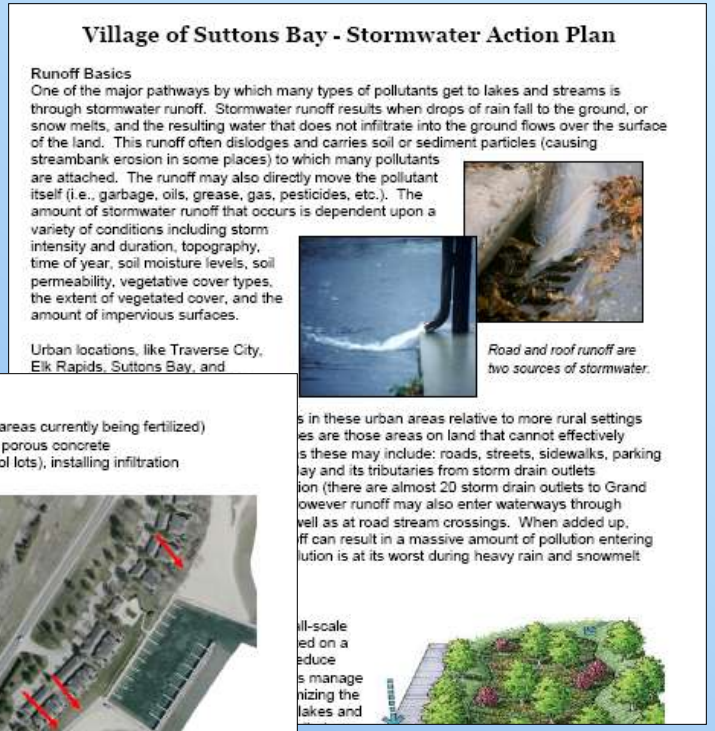
*Examples*

## Category: Stormwater

**Task 4:** Work cooperatively with local units of government to develop stormwater management plans and/or ordinances for each community using a variety of tools including mapping of existing storm sewers; identifying locations where retrofitting is needed; working with adjacent townships to manage joint stormwater; and ensure that emergency response plans exist for pollutant spills.

**Estimated Cost:** $25,000
**Timeline:** 10 years
**Priority:** High
**Potential Project Partners:**
TWC, LGOV

**Milestone:**
Complete one management plan every 2 years.



Village of Suttons Bay - Stormwater Action Plan

Runoff Basics
One of the major pathways by which many types of pollutants get to lakes and streams is through stormwater runoff. Stormwater runoff results when drops of rain fall to the ground, or snow melts, and the resulting water that does not infiltrate into the ground flows over the surface of the land. This runoff often dislodges and carries soil or sediment particles (causing streambank erosion in some places) to which many pollutants are attached. The runoff may also directly move the pollutant itself (i.e., garbage, oils, grease, gas, pesticides, etc.). The amount of stormwater runoff that occurs is dependent upon a variety of conditions including storm intensity and duration, topography, time of year, soil moisture levels, soil permeability, vegetative cover types, the extent of vegetated cover, and the amount of impervious surfaces.

Urban locations, like Traverse City, Elk Rapids, Suttons Bay, and

*Road and roof runoff are two sources of stormwater.*

s in these urban areas relative to more rural settings
es are those areas on land that cannot effectively
s these may include: roads, streets, sidewalks, parking
ay and its tributaries from storm drain outlets
ion (there are almost 20 storm drain outlets to Grand
owever runoff may also enter waterways through
well as at road stream crossings. When added up,
ff can result in a massive amount of pollution entering
lution is at its worst during heavy rain and snowmelt

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Findings/Recommendations

- General management -
  - Use Phosphorus-free fertilizers on village property (on areas currently being fertilized)
  - Install porous pavement where possible: paver stones, porous concrete
  - Consider, for large parking areas (i.e. marina and school lots), installing infiltration islands to direct runoff into

- Suttons Bay Yacht Club and Port Sutton -

No buffer between grass and beach; Drive down to marina has rock chute at bottom with erosion around it

  - Buffer along shoreline between grass lawn and beach/marina
  - Phosphorus free fertilizers
  - Rain garden at bottom of rock chute
  - Detention basins in upper development area could be converted to rain gardens (ex: Bay Cliff Dr)

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# Questions?

Link to GT Bay Watershed Plan:
www.gtbay.org → Resources → Watershed Plan

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