

Roseau River Water Quality Data Summary

Roseau River IWMP – Watershed Team Meeting
Dominion City Community Centre

September 19, 2016

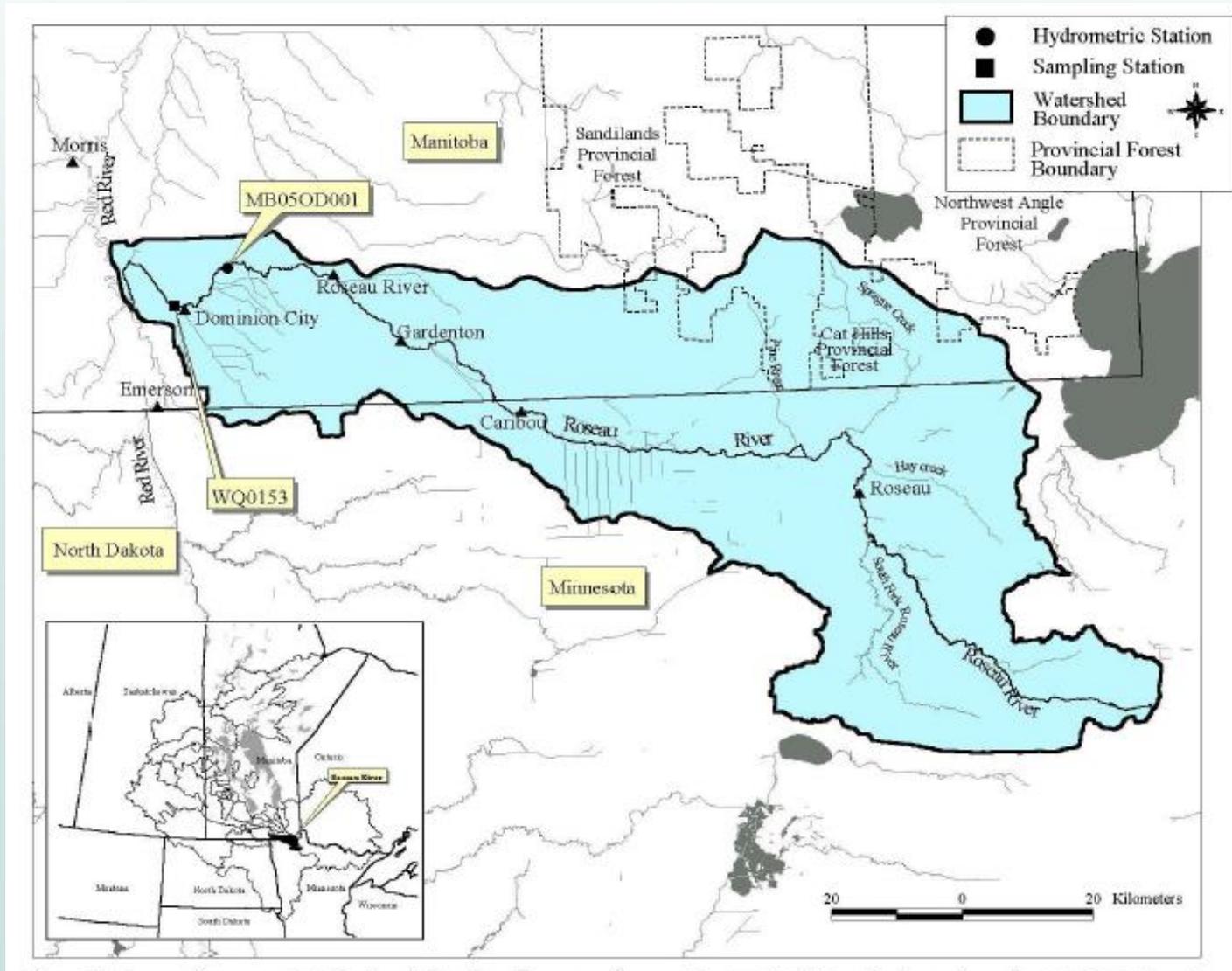
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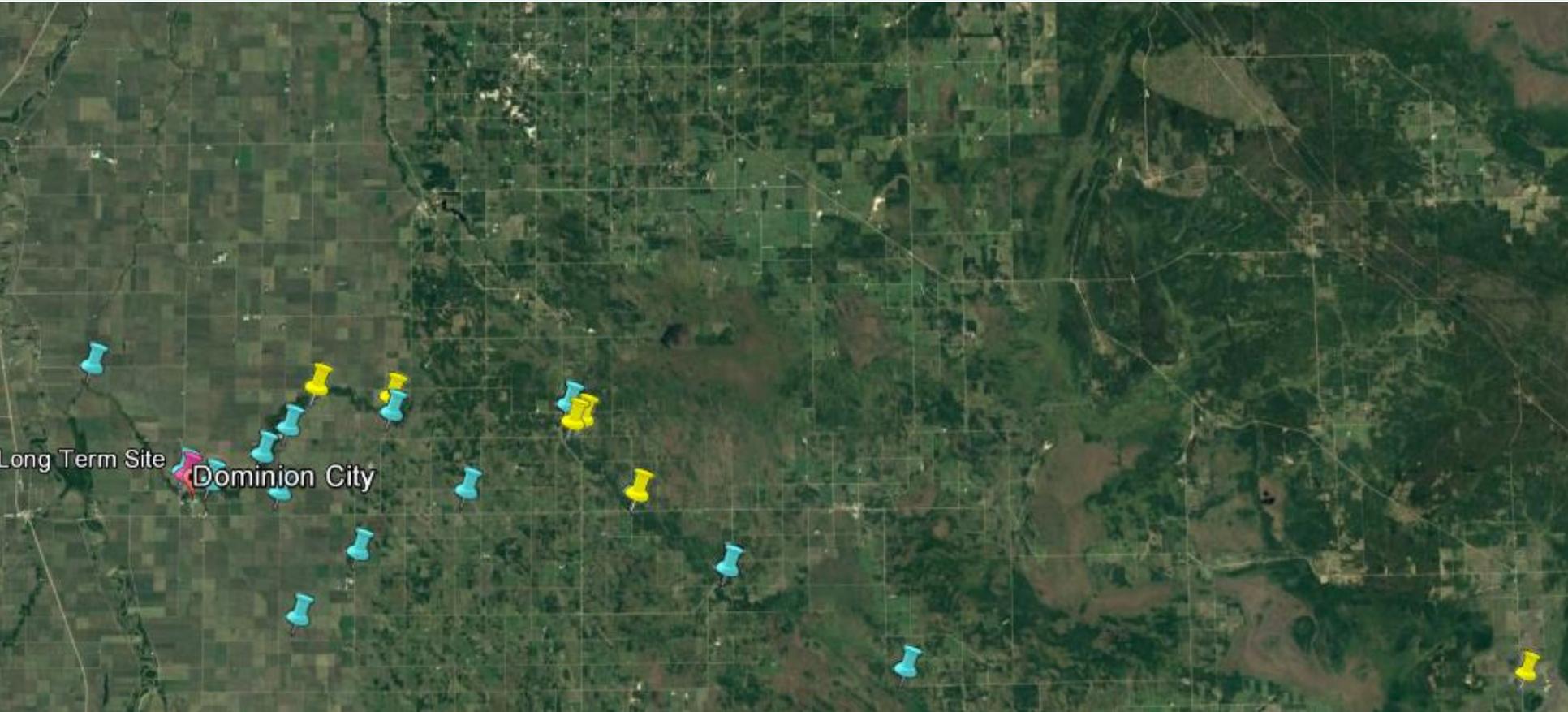
Manitoba



Roseau River Watershed



Water Quality Monitoring Stations



Water Quality Monitoring Stations

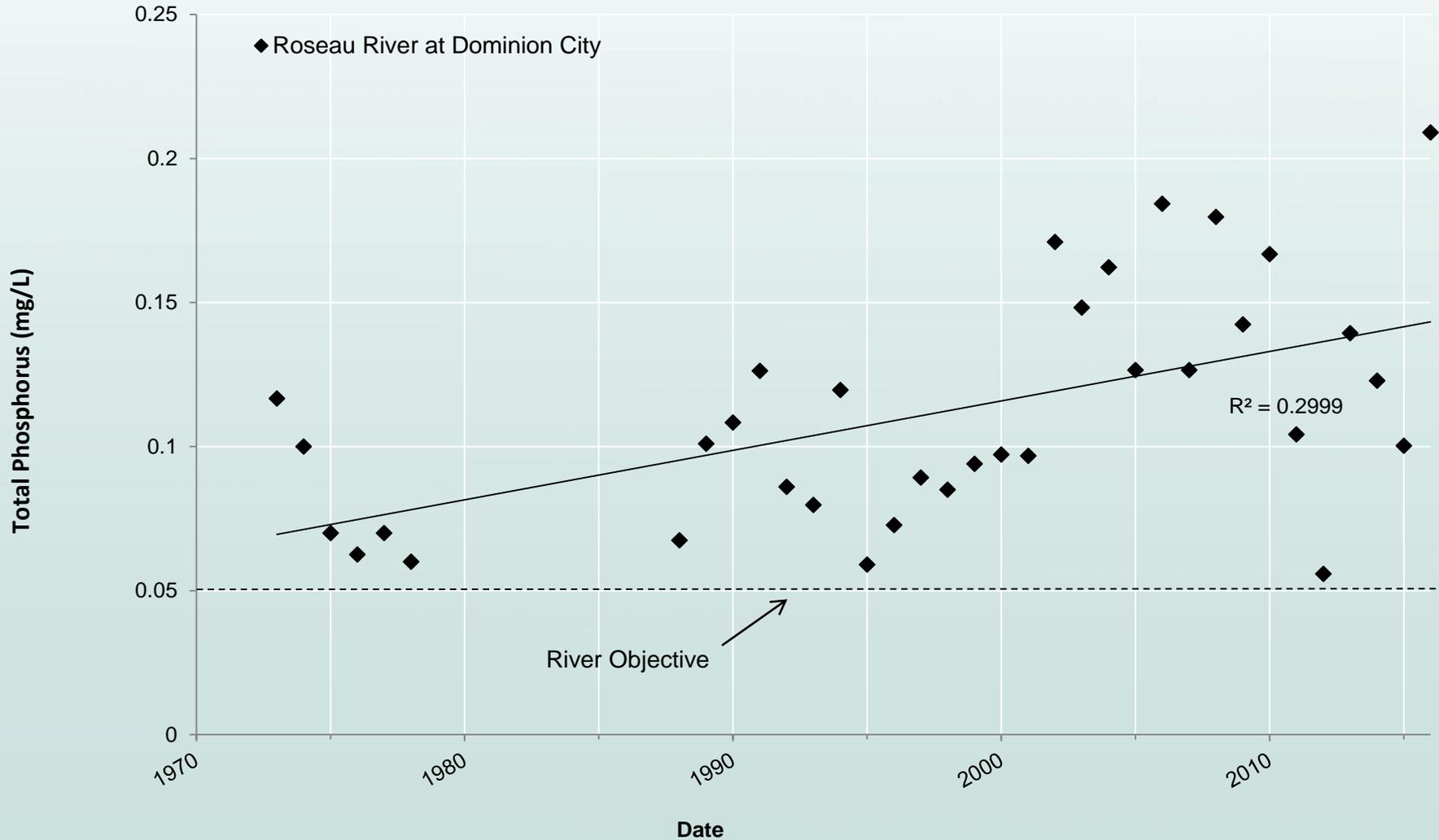
- Roseau River at Dominion City
 - Long term monitoring station (1973 to present)
 - Monitored quarterly
- Historic Stations
 - Short term studies (1973-1983; 1995-2005)
 - Variable monitoring frequency
- What is commonly measured?
 - Over 150 water quality variables
 - Nutrients (phosphorus, nitrogen)
 - Bacteria
 - Pesticides
 - Metals
 - General chemistry

Sources of Nutrients - N and P

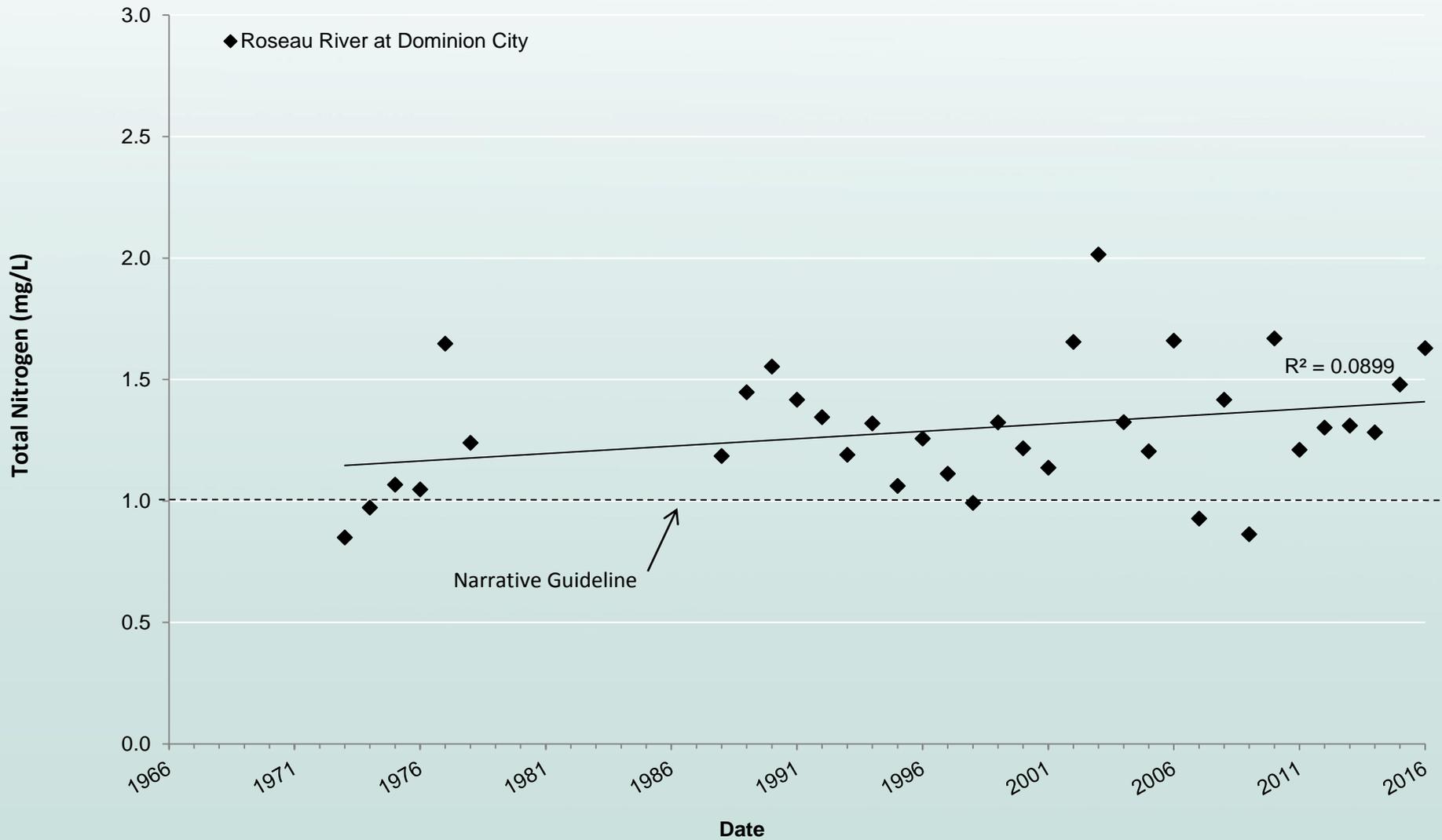
- Natural as well as human
 - industrial, municipal, agricultural, homeowners
- **Runoff**
 - release from soils & vegetation
 - leaf litter; grass clippings, garden wastes
 - **application of fertilizers and manures**
 - **reduced riparian vegetation**
 - **loss of wetlands**
 - **enhanced drainage**
- **Poorly maintained septic fields**
- **Direct effluent discharge**
- **Grey water – storm water runoff - sewers**



Total Phosphorus



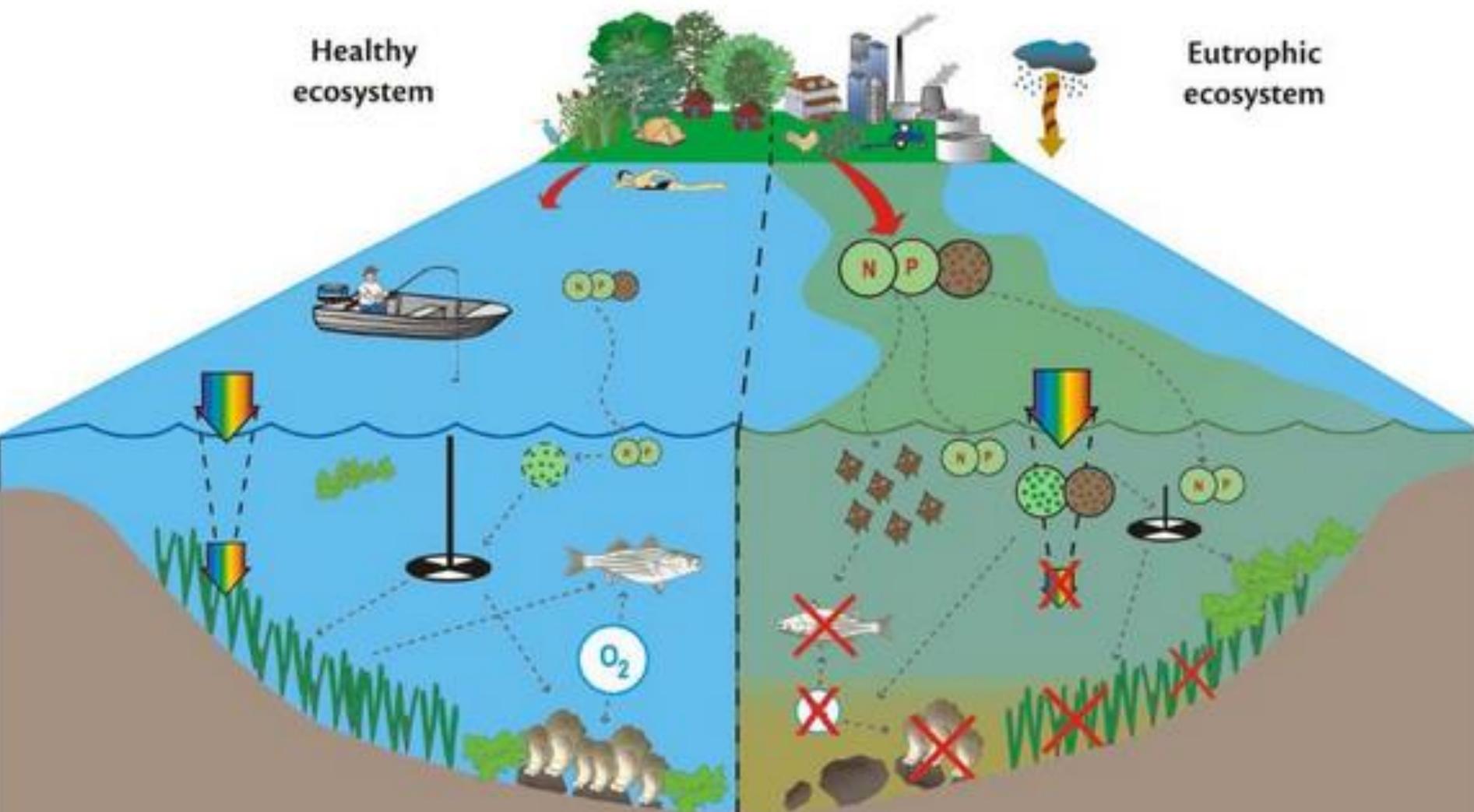
Total Nitrogen



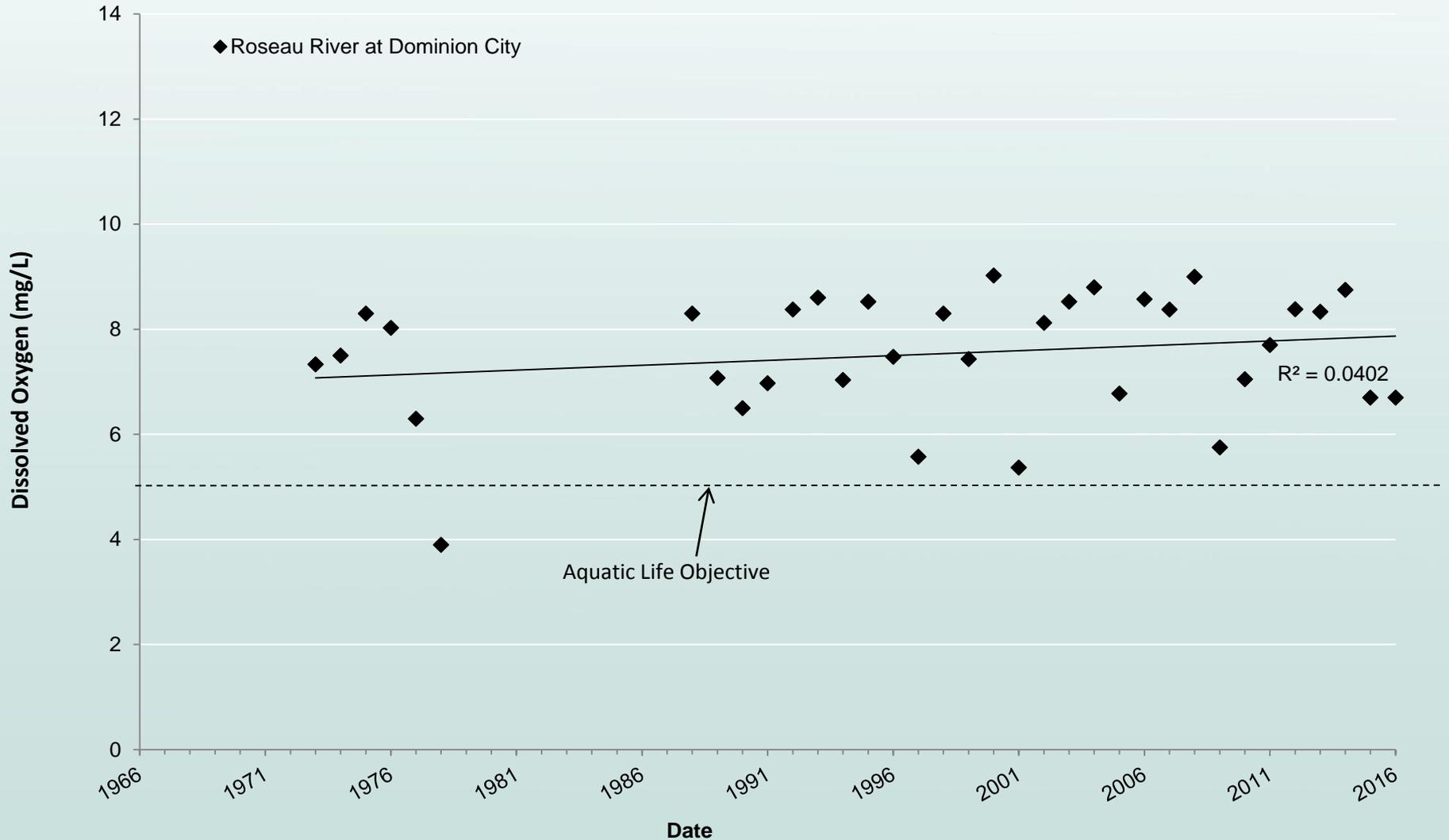
Dissolved Oxygen

Healthy ecosystem

Eutrophic ecosystem

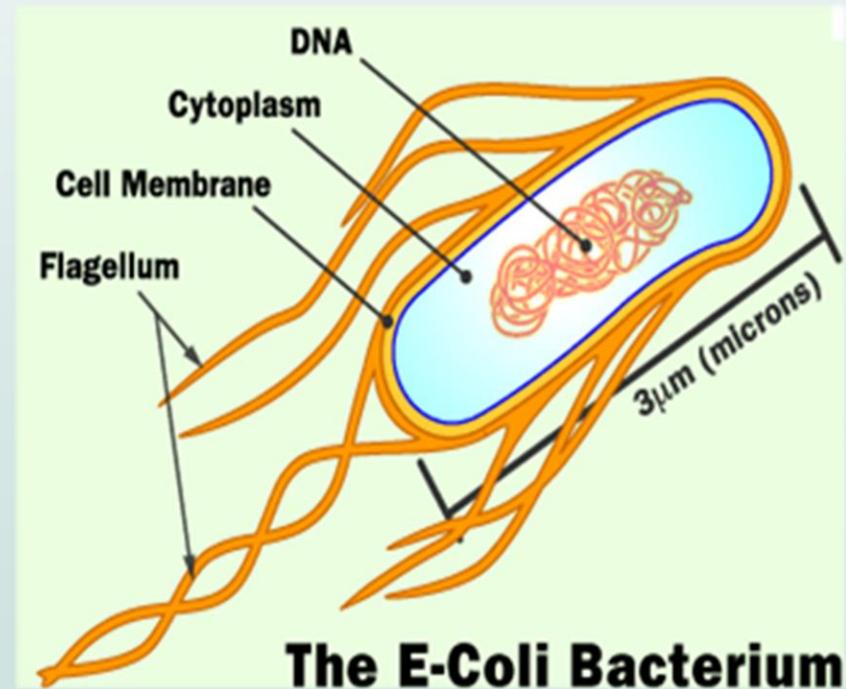


Dissolved Oxygen

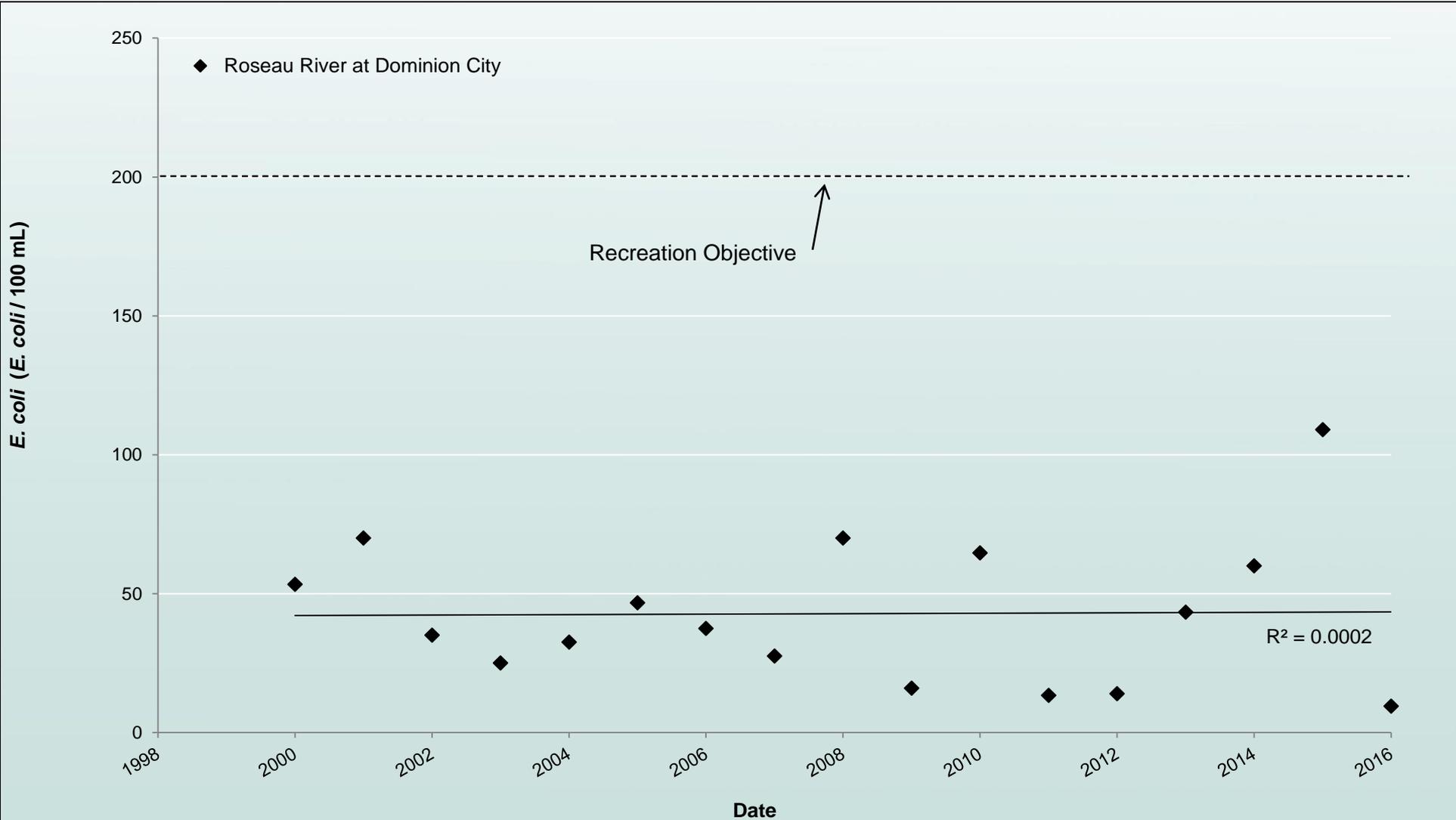


Escherichia coli (*E. coli*)

- Bacteria found in all warm-blooded animals; humans, livestock, wildlife, and birds
- *E. coli* itself does not generally cause illness
- Common infections; eyes, ears, nose, and throat and stomach upsets.
Symptoms include mild fever, vomiting, diarrhea and stomach cramps



E. coli (*Escherichia coli*)



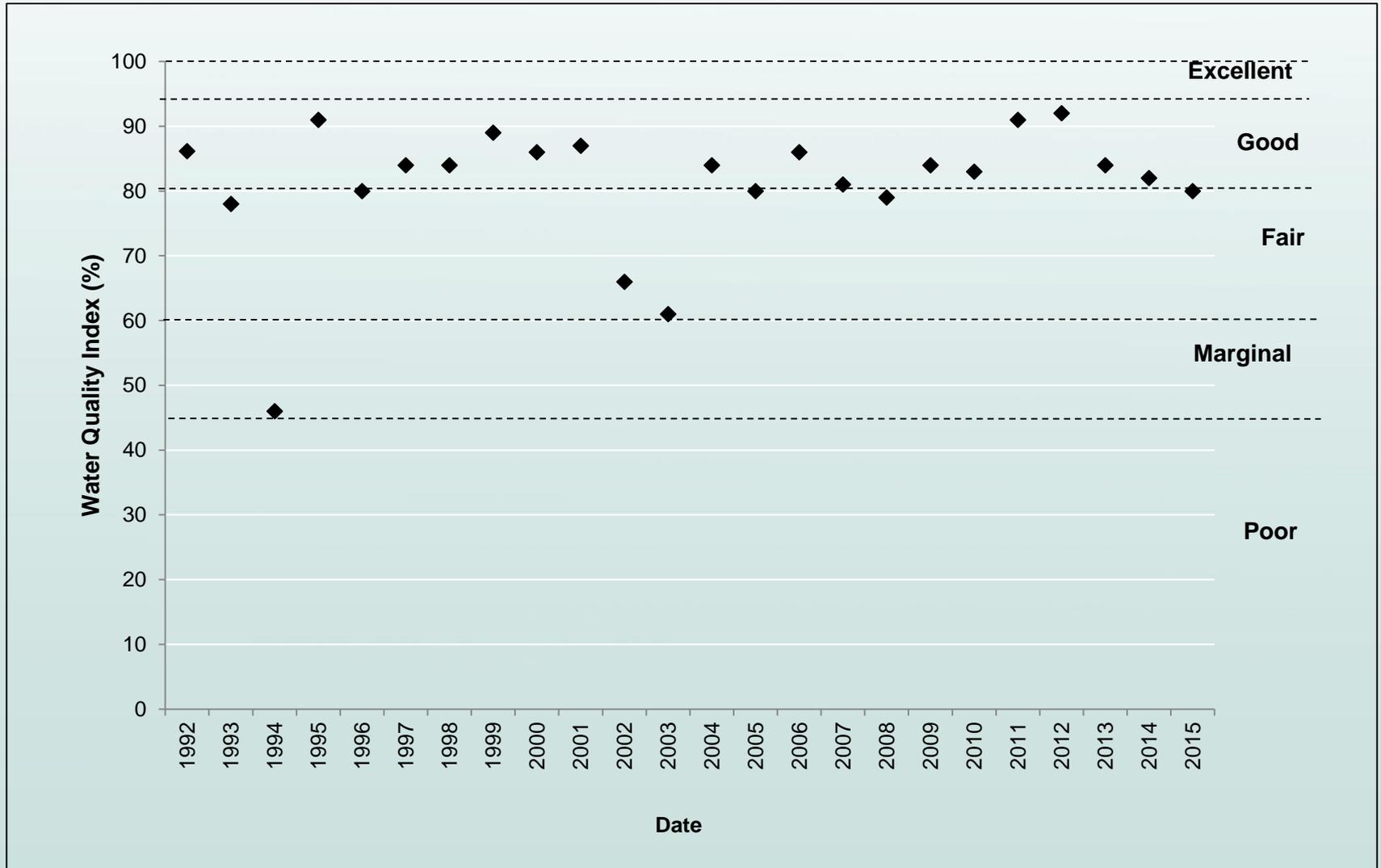
Pesticides

- Roseau River at Dominion City
 - below the level of detection, or very close to that limit
 - samples did not exceed water quality objectives in all years monitored
- Pesticides which were detected, but below water quality objectives include;
 - 2,4 D, Bromoxynil, Dicamba, MCPA, and Simazine

Water Quality Index

- CCME Water Quality Index summarizes large amounts of water quality data into simple terms for consistent reporting
- Calculated using 11 variables compared with Canadian water quality guidelines.
- Combines three different aspects of water quality:
 - 'scope' = % water quality variables exceeding guidelines;
 - 'frequency' = % total observations exceeding guidelines
 - 'amplitude' = amount by which observations exceed the guidelines
- Water Quality Index ranges from 0 to 100 - from poor to excellent
- Water quality = excellent when all guidelines are met virtually all the time.
- When guidelines or objectives are not met, water quality becomes progressively poorer

Water Quality Index



Summary

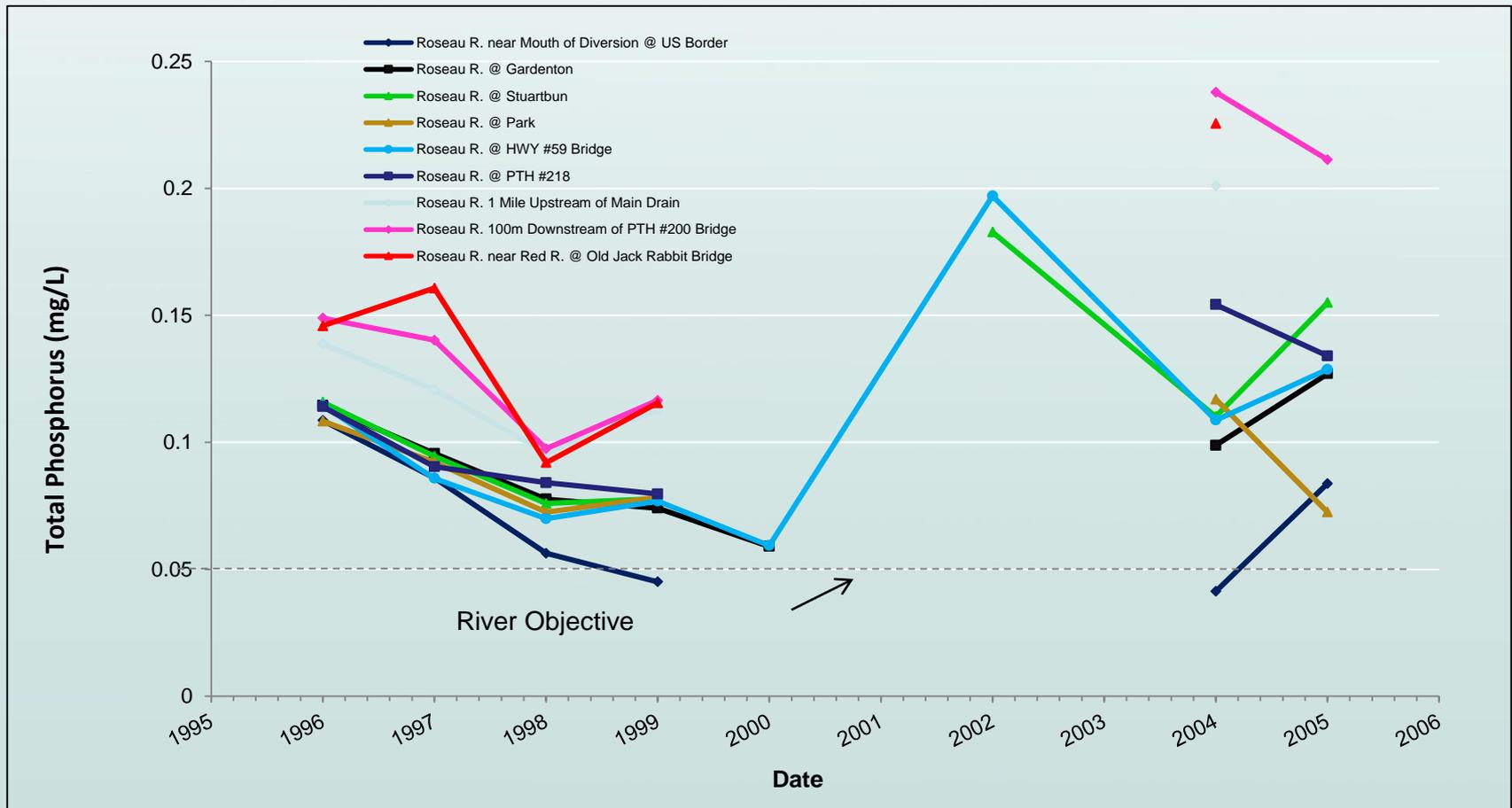
- Overall water quality in Roseau River is typically 'good'
- Water quality monitoring is useful to identify focus areas, but does not improve water quality
- Best Management Practices (BMPs) are key
- Nitrogen and phosphorus increasing trend
- BMPs focus nutrient reduction, both to the Roseau River and the watershed
 - particularly in the spring and summer



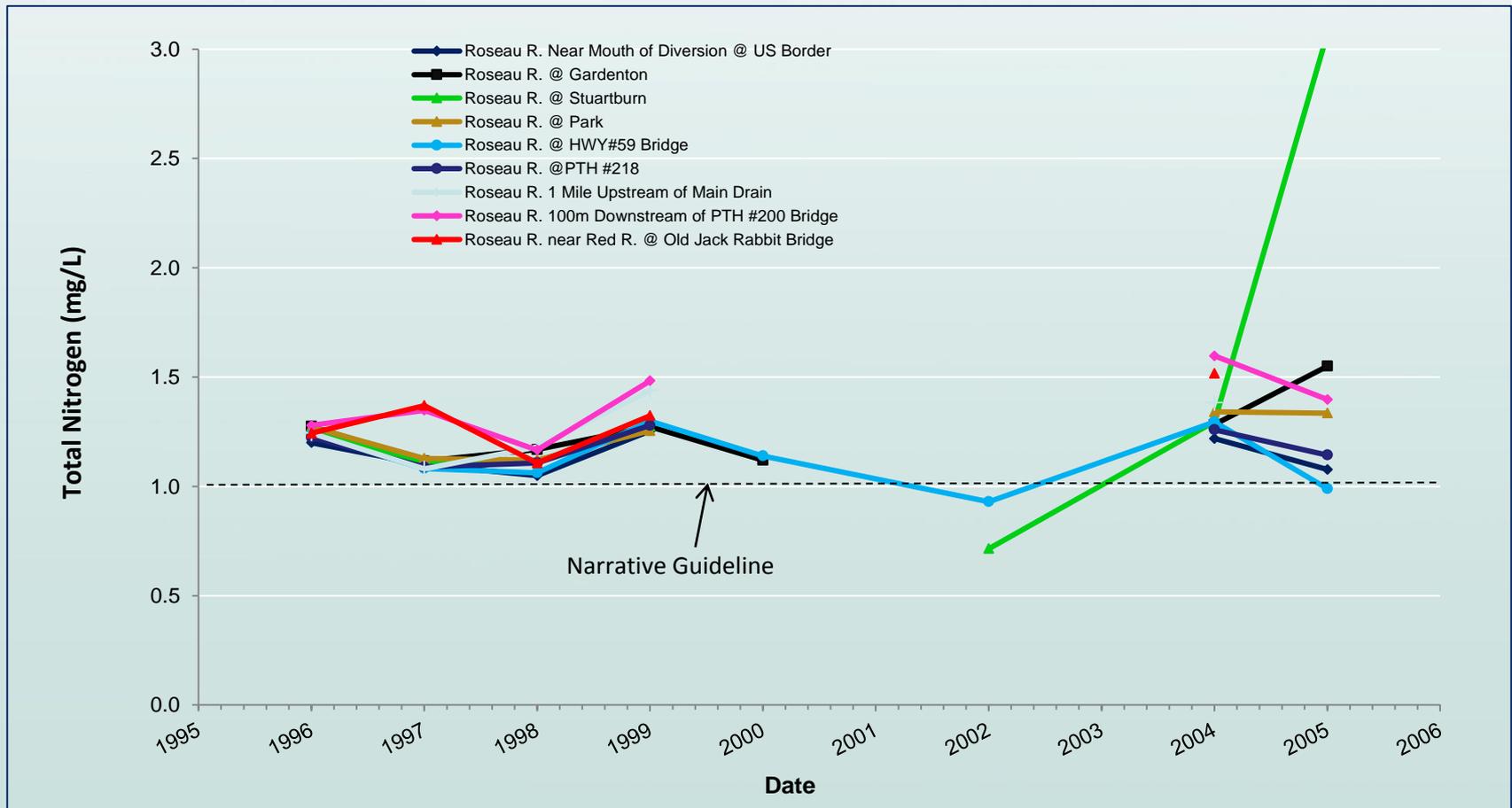
Questions?

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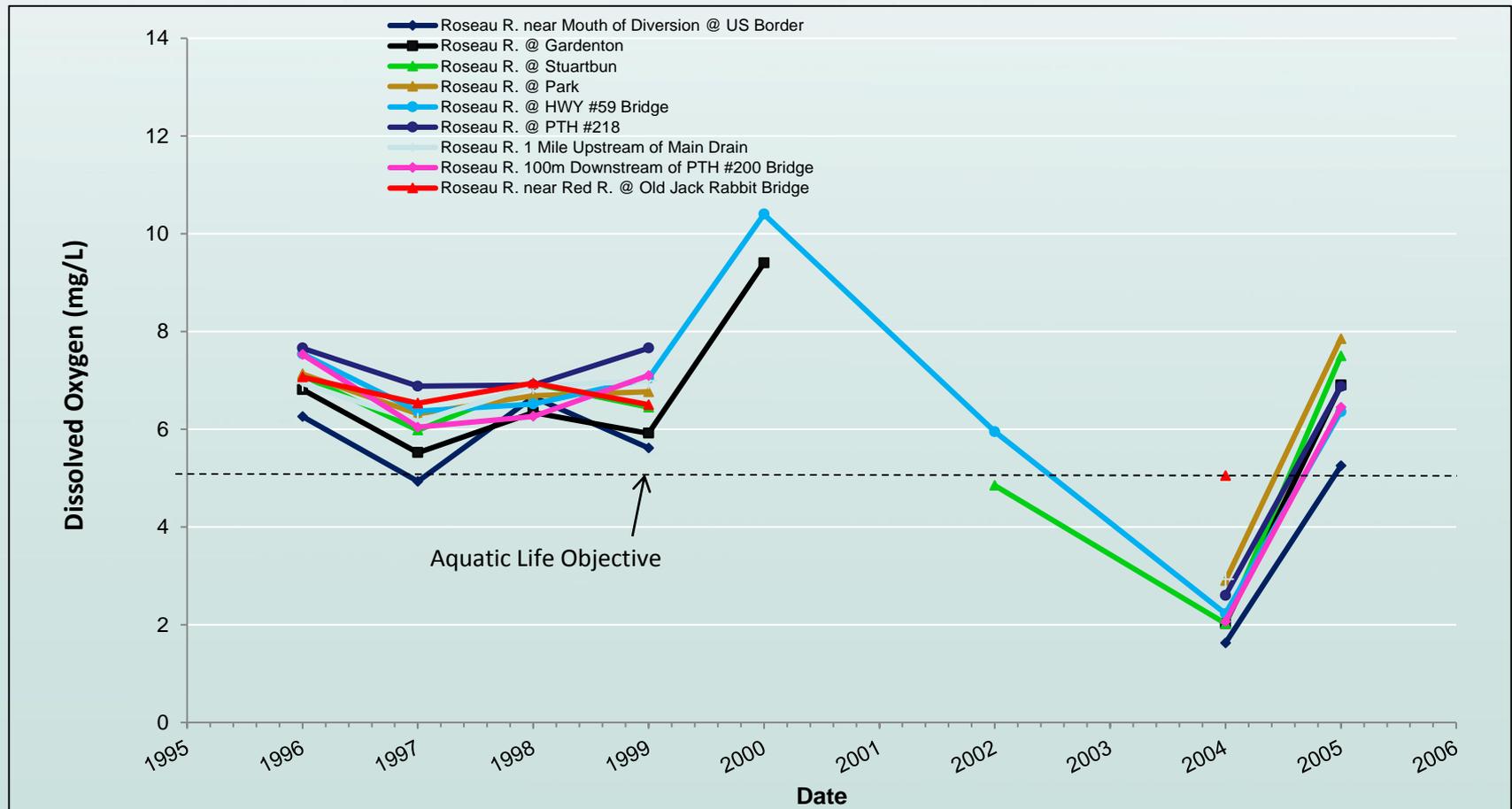
Total Phosphorus



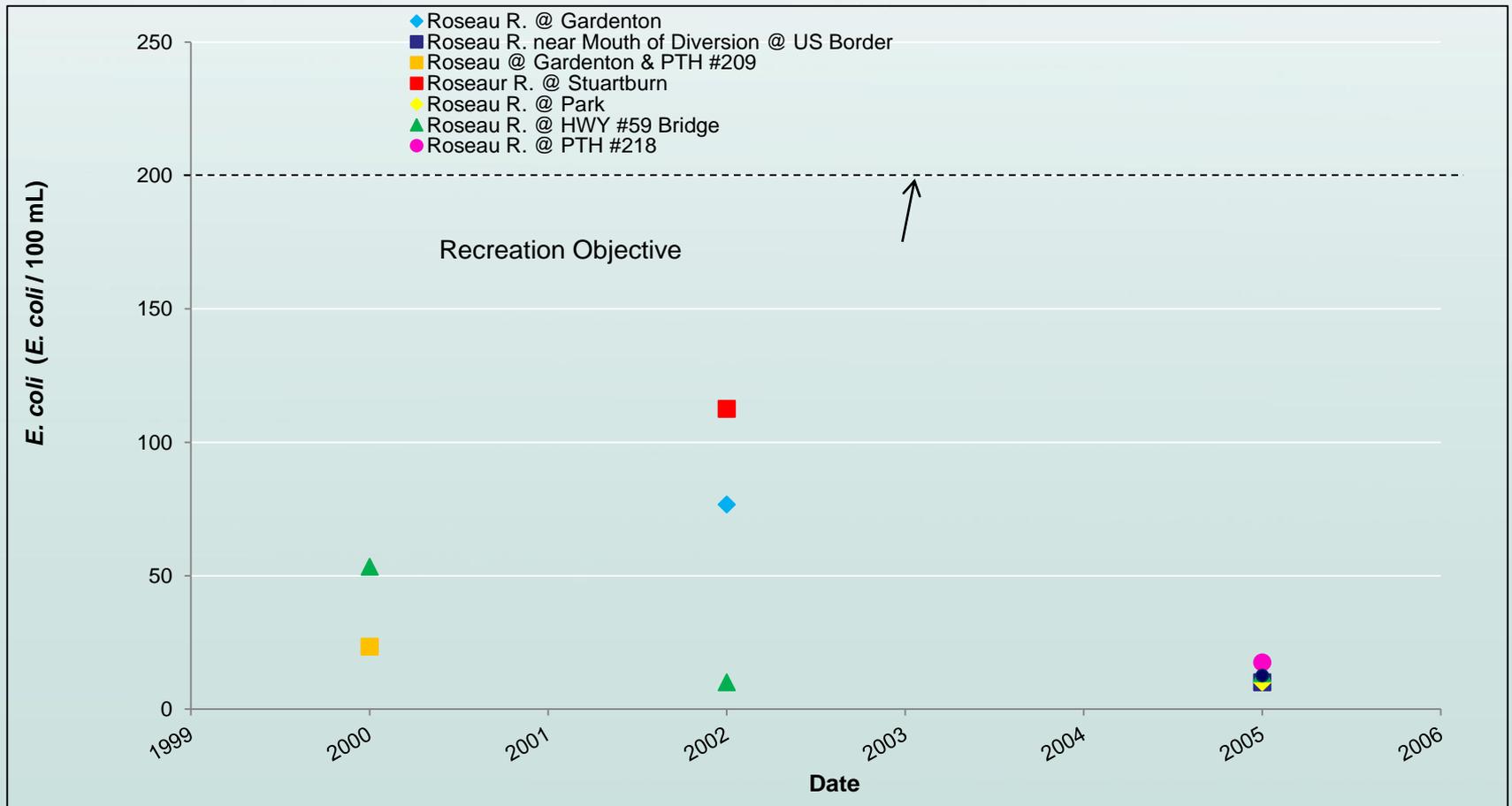
Total Nitrogen



Dissolved Oxygen



E. coli



Summary & Recommendations

- Example Best Management Practices:
 - Riparian enhancement
 - Wetland restoration and water retention
 - Rain gardens/ shelter belts
 - Use phosphorus-free products
(<http://www.lakefriendly.ca/>)
 - Maintain onsite wastewater management systems
 - Exclude livestock from waterways
 - ie. offsite watering systems
 - Encourage municipal lagoons to meet 1 mg/L phosphorus requirements
 - (ex. water retention, cattail harvesting/ biofuel)