A new water management study will address important issues in the Grand River watershed and provide strategies for addressing them over the next 25 years.
Grand River watershed

- Major tributaries: Conestogo, Speed, Eramosa, Nith
- 39 municipalities, 2 First Nations
- 80% of people live in 5 cities
- 70% is actively farmed
- 70% of water supply from groundwater; 27% from the river
- 29 wastewater treatment plants
- 7 multi-purpose reservoirs
About the GRCA

- Partnership of watershed municipalities created in 1932 to address water quality, flooding

- GRCA responsibilities:
  - Reduce flood damages
  - Ensure adequate water supply
  - Improve water quality
  - Watershed planning
  - Protect natural areas
  - Environmental education
  - Outdoor recreation
Charting a Path Forward

- A collaborative process leading to action

- Steering Committee:
  - GRCA
  - Municipalities
  - First Nations
  - Ontario ministries
  - Federal agencies

- Builds on existing information and new studies
We’ve Always Had a Plan

• 75 year history of successful collaboration

• Shared responsibility required

• Goal is improved health, preparedness for population growth, climate change
Goals of the Water Management Plan

- Improve water quality to improve river health and reduce impact on the eastern basin of Lake Erie.
- Ensure sustainable water supplies for communities, economies and ecosystems.
- Increase resiliency to deal with climate change.
- Reduce flood damage potential.
Water quality in the watershed

- Nutrients
  - High Phosphorus
  - Increasing Nitrates
- Low dissolved oxygen
- High suspended sediment
- Chloride
- Pathogens
- Trace Contaminants
Agricultural and urban NPS’s are important

- Point Sources, Septic Systems: 3%
- Shand Dam Output: 3%
- Urban NPS: 29%
- Middle Grand Creeks: 24%
- Conestogo River: 29%
- Irvine Creek: 7%
- Canagagigue Creek: 5%

% Total Phosphorus Loads
Point sources dominate during summer

% Total Phosphorus Loads

- Kitchener WWTP: 48%
- Waterloo WWTP: 22%
- Upstream of Bridgeport: 30%

Sewage Treatment Plants
Capacity (MLD)
- < 5.0
- 5 - 10
- 10 - 50
- > 50
Action to improve water quality

➢ **Point sources**
  - Planned WWTP upgrades
  - WWTP performance optimization

➢ **Non-point sources**
  - RWQP expanded to practices, rural non-farm, all watershed
  - Urban SWM best practices
  - In-river works
Water Quantity and Supply

- **86% of population served by municipal supplies**
- **70% from groundwater**

### Water Takings

- **Annual Total: 152 Mm³/year**

* Accounts for recirculation
Climate Change Scenarios

Key findings:
- Air temperature increases of 1.8 to 4.0°C with temperature increases in all months
- Changes in precipitation ranging from -6% to +12% with a trend towards more precipitation in the winter, less in the summer
- More frequent winter melts with less frozen ground conditions, earlier spring
- Longer low flow season now extending from April/May through October

Conclusions:
- A range of variability in future climates similar to that experienced in the past.
- Increased frequency of extreme events, both floods and droughts.
Action for sustainable water supplies

➢ Municipal supply
  ▪ Demand management as part of municipal supply planning

➢ Irrigation
  ▪ Reduce dependency on the creeks
  ▪ Efficient equipment

➢ Reservoir Operations
  ▪ Current operating procedures / discharge targets are most reliable
  ▪ Investigate filling procedures to improve reliability of filling as winters warm
Implementation

- An Implementation Committee that meets annually to report on progress
- An annual progress report on plan implementation
- A five year review/update of the plan