

# **Junction Creek Subwatershed Study and Stormwater Master Plan**

**Establish Targets and Objectives**

**Public Meeting No. 2**

**May 24 and 25, 2017**

# 1. Introduction and Meeting Goals

- Public Meeting No. 1 – held February 15 and 16, 2017:
  - Provided an opportunity to introduce the Study and its goals
  - Provided a high-level overview of the Study Area's existing conditions
- The goal of this 2<sup>nd</sup> Public Meeting is to:
  - Confirm the Study process
  - Outline / summarize background information received
  - Describe Management Objectives and Targets
  - Provide an update on deliverables
  - Provide information regarding the next steps
  - Provide an opportunity for the public to offer feedback on the Study, specific to Management Objectives and Targets

## *What is a watershed?*

An area of land that collects water from rain and snow and drains through surface waterways (wetlands, stream, rivers, lakes) or seeps beneath the surface to groundwater. The area of land is defined by the shape and height (elevation) of the ground surface.



# 2. Subwatershed Study and Stormwater Master Plan

## Purpose and Objectives

### Subwatershed Study and Stormwater Master Plan

#### Purpose:

- Develop a long-term plan that will provide policy and management actions to protect, maintain and enhance the surface water, groundwater and natural resources of Junction Creek and its tributaries

#### Objectives:

##### Water Quality

- Improve sediment, surface water and groundwater quality
- Minimize pollutant loadings to groundwater and surface water
- Improved aesthetics of Junction Creek and its tributaries

##### Water Quantity

- Preserve and re-establish the natural hydrologic process to protect, restore and replenish surface water and groundwater resources
- Reduce the impacts of erosion on aquatic and terrestrial habitats and property
- Minimize the threats to life and property from flooding

##### Natural Environment

- Protect, enhance and restore natural features and functions such as wetlands, riparian and ecological corridors
- Improve warmwater and coldwater fisheries if appropriate

# 3. Municipal Class Environmental Assessment Process

- Many municipal projects are similar in nature, carried out routinely and have predictable and environmental effects that can be effectively managed – these projects are examined according to the Municipal Engineers Association "Municipal Class Environmental Assessment," (October 2007, 2011 and 2015)
- Master Plans are completed at the broad level of assessment and require more detailed investigations at the project-specific level. They have distinguishing features that set them apart from project-specific studies
  - Master Plans are broad in scope and focus on the analysis of a system for the purpose of outlining a framework for the provision of future works and developments
  - Master Plans provide recommendations for specific projects that are part of a larger management system and are distributed geographically throughout the study area
- The Stormwater Management Master Plan will follow the Class EA process for Master Plans and will satisfy Phases 1 and 2 of the process

*The Class EA defines a Master Plan as:*

“A Long Range Plan which integrates infrastructure requirements for existing and future land use with environmental planning principles. These Plans examine the whole infrastructure system or group of related projects, in order to outline a framework for planning subsequent projects and/or developments.”

# 4. Study Process and Schedule



# 5. Summary of Background Information

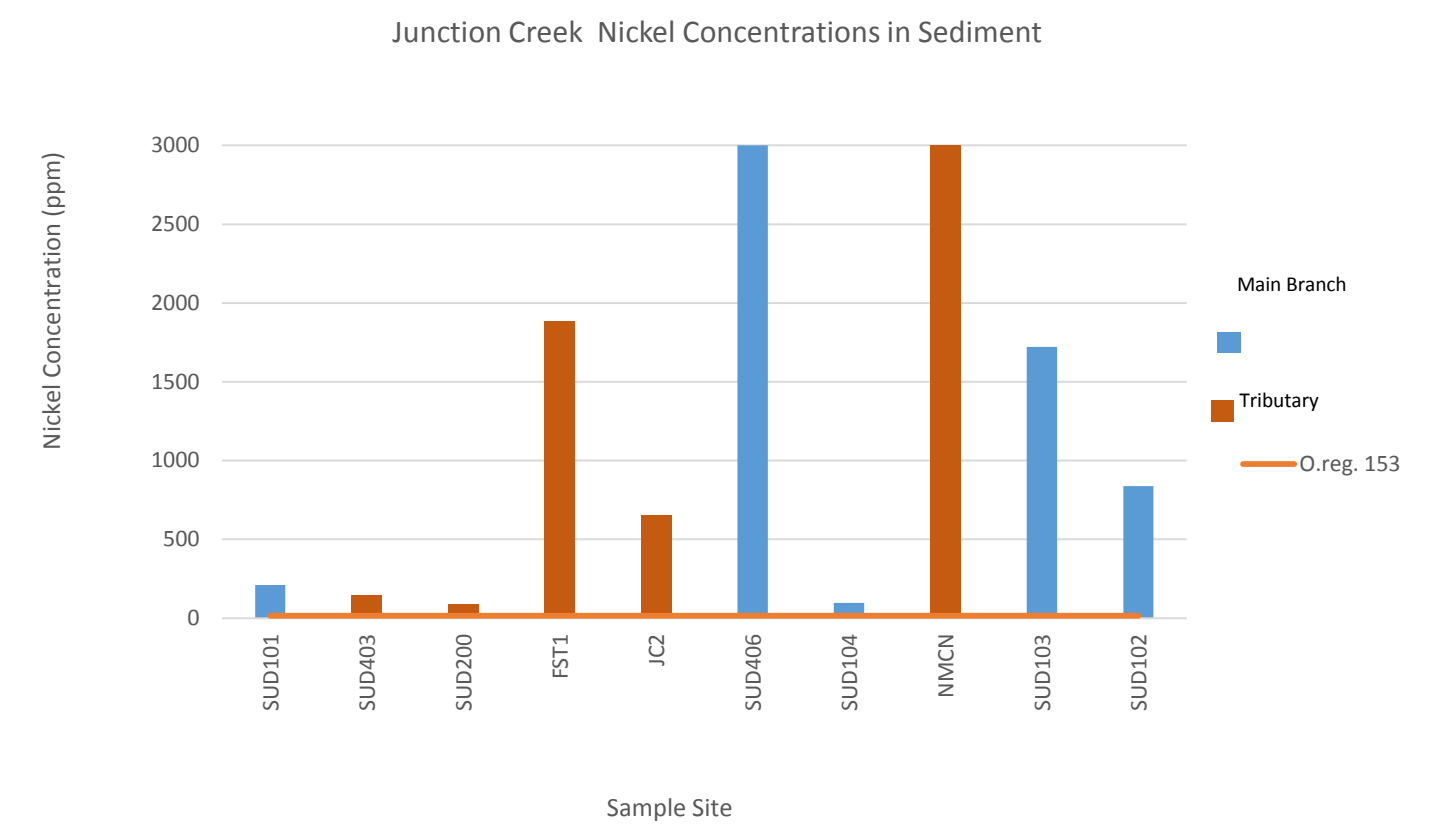
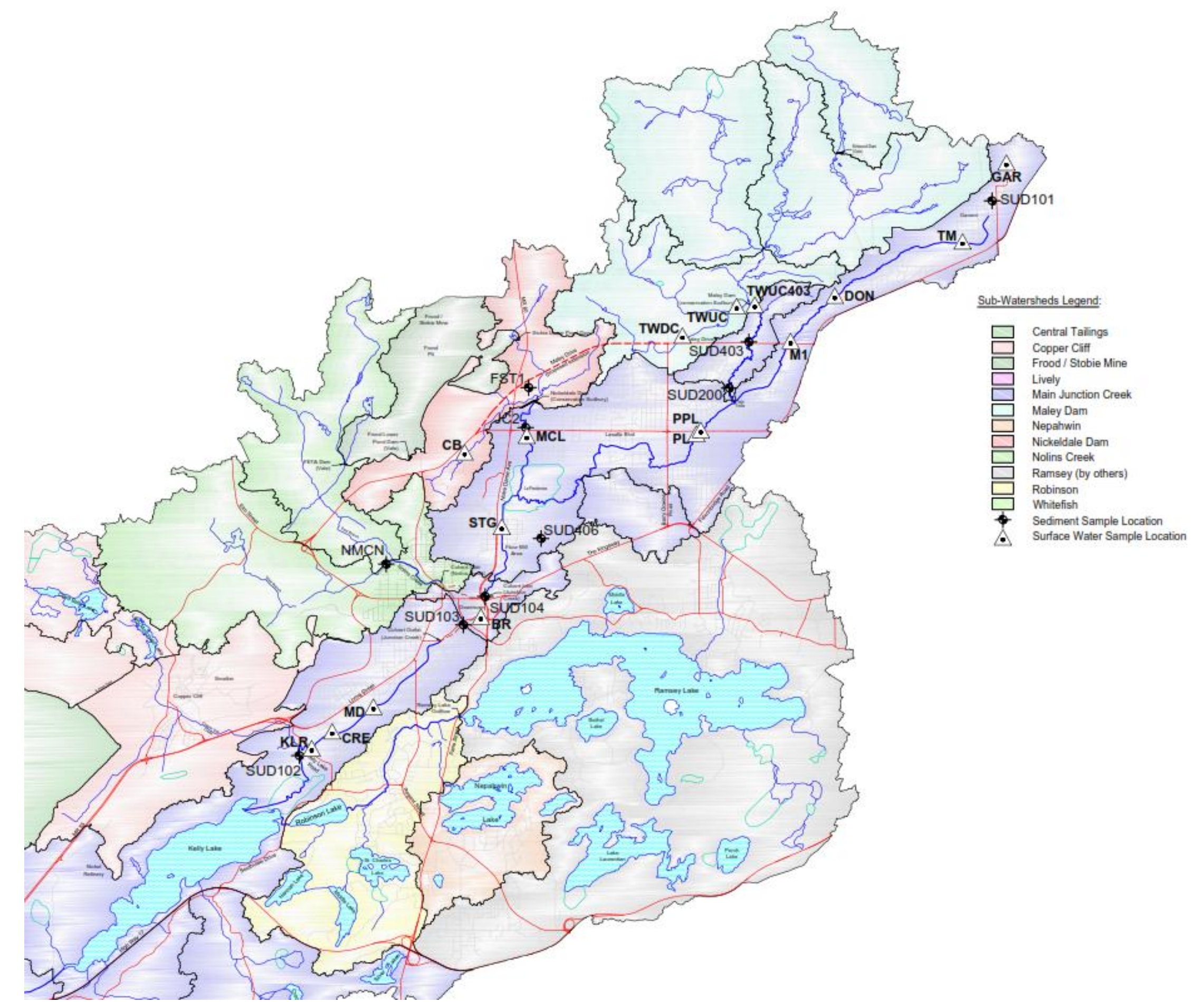
Background Information	Data Gaps	Method to Close Data Gaps
<b>Rainfall and Surface Water Flow Data</b>		
<ul style="list-style-type: none"> <li>Historic data for 11 stations</li> </ul>	<ul style="list-style-type: none"> <li>Unclear location for several stations</li> </ul>	<ul style="list-style-type: none"> <li>Follow up with data provided</li> </ul>
<b>Water Quality</b>		
<ul style="list-style-type: none"> <li>Approximately 10 stations with data collected monthly between 2004 and 2016</li> <li>PWQO exceedances in metals across the subwatershed</li> </ul>	<ul style="list-style-type: none"> <li>Lack of specific information on thermal regime for the Junction Creek main branch and inflowing tributaries</li> </ul>	<ul style="list-style-type: none"> <li>During the field surveys the project team may collect temperature measurements</li> </ul>
<b>Hydrologic Modelling</b>		
<ul style="list-style-type: none"> <li>Hydrological characteristics for each subwatershed: area, shape, slope, soil and land cover conditions</li> <li>32 major storm sewer systems located on the main branch of Junction Creek</li> </ul>	<ul style="list-style-type: none"> <li>Information for 14 storm sewer systems are inaccurate</li> </ul>	<ul style="list-style-type: none"> <li>Reviewing gap filling methods with the City to verify the information</li> </ul>
<b>Stream Morphology</b>		
<ul style="list-style-type: none"> <li>Identified locations of shoreline and bank erosion</li> <li>Compiled physical information of the creek geometry and substrates in several locations</li> </ul>	<ul style="list-style-type: none"> <li>Information is not sufficiently systematic for use in establishing physical observations</li> </ul>	<ul style="list-style-type: none"> <li>Stratigraphy information and water table depths data will be extracted from past projects</li> <li>Systematic geomorphological observations are currently being gathered at reach scale at local students</li> </ul>

# 6. Summary of Background Information

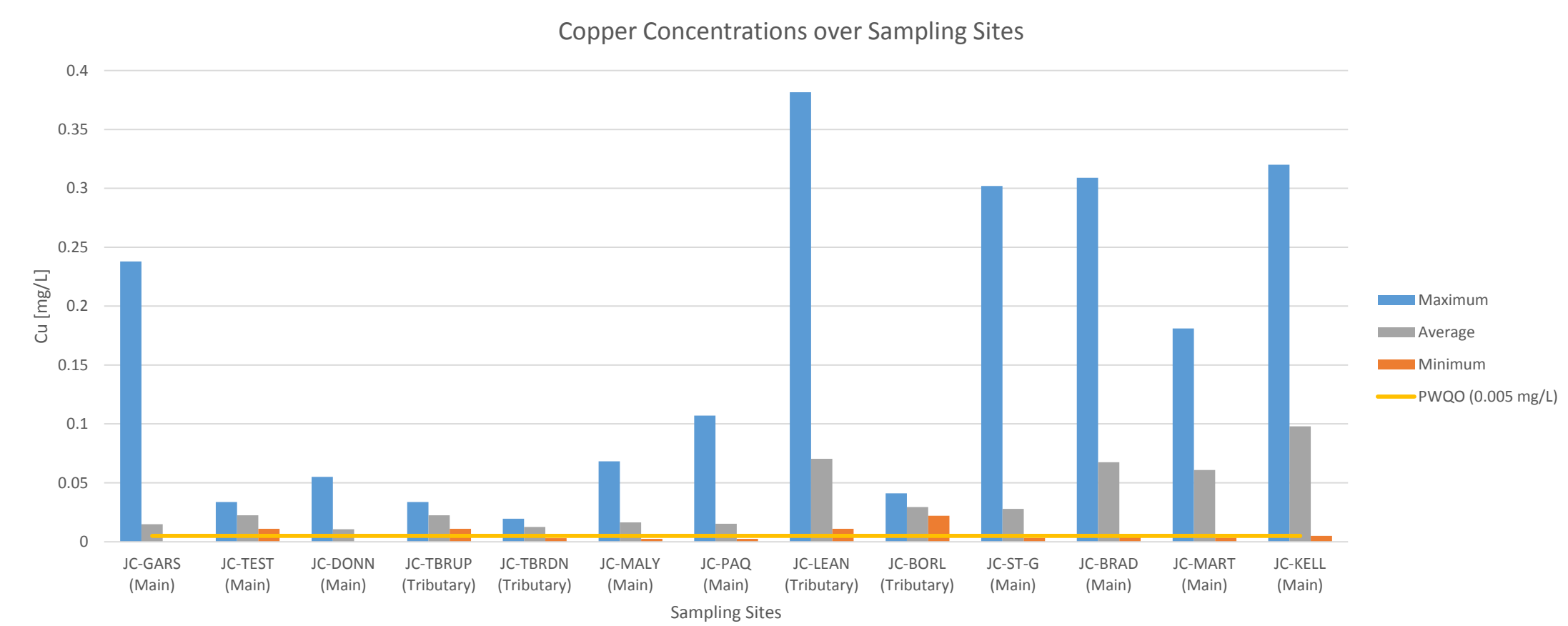
Background Information	Data Gaps	Method to Close Data Gaps
<b>Terrestrial Habitat</b>		
<ul style="list-style-type: none"> <li>Amphibians and Reptiles               <ul style="list-style-type: none"> <li>Approximately 25 species</li> <li>3 Provincially tracked</li> <li>2 Species At Risk (SAR)</li> </ul> </li> <li>Birds:               <ul style="list-style-type: none"> <li>Approximately 152 species</li> <li>8 Provincially tracked</li> <li>6 SAR</li> </ul> </li> <li>Mammals:               <ul style="list-style-type: none"> <li>Approximately 46 species</li> <li>2 SAR</li> </ul> </li> <li>Insects:               <ul style="list-style-type: none"> <li>52 species of butterflies, 3 Provincially tracked</li> <li>16 species of dragonflies and damselflies</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Available data for several groups are relatively limited for the Study Area</li> <li>Mammal species data within the Study Area was generally historic</li> </ul>	<ul style="list-style-type: none"> <li>The project team will consult the MNRF to pursue additional local data sets.</li> <li>The project team is reviewing site specific data collected by the City to support other projects within the study area to supplement this data.</li> </ul>
<b>Aquatic Habitat</b>		
<ul style="list-style-type: none"> <li>Fish Community:               <ul style="list-style-type: none"> <li>Approximately 32 species</li> </ul> </li> <li>Benthic Invertebrate Community</li> </ul>	<ul style="list-style-type: none"> <li>Limited information on water quality, fish and benthic macroinvertebrate</li> <li>Habitat data are lacking downstream of Kelly Lake</li> </ul>	<ul style="list-style-type: none"> <li>Additional information regarding aquatic habitat will be collected as part of the fluvial geomorphology field surveys</li> </ul>



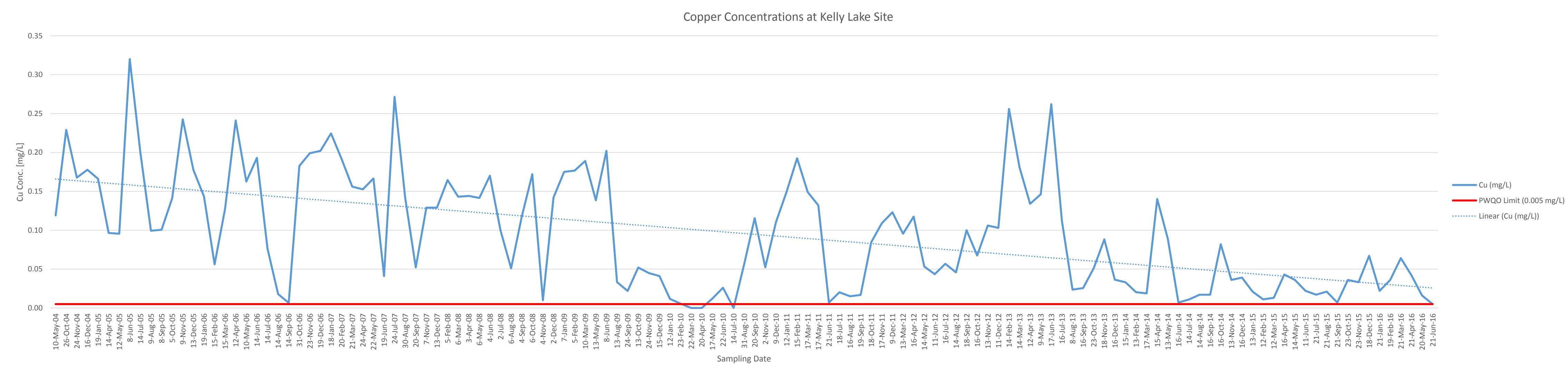
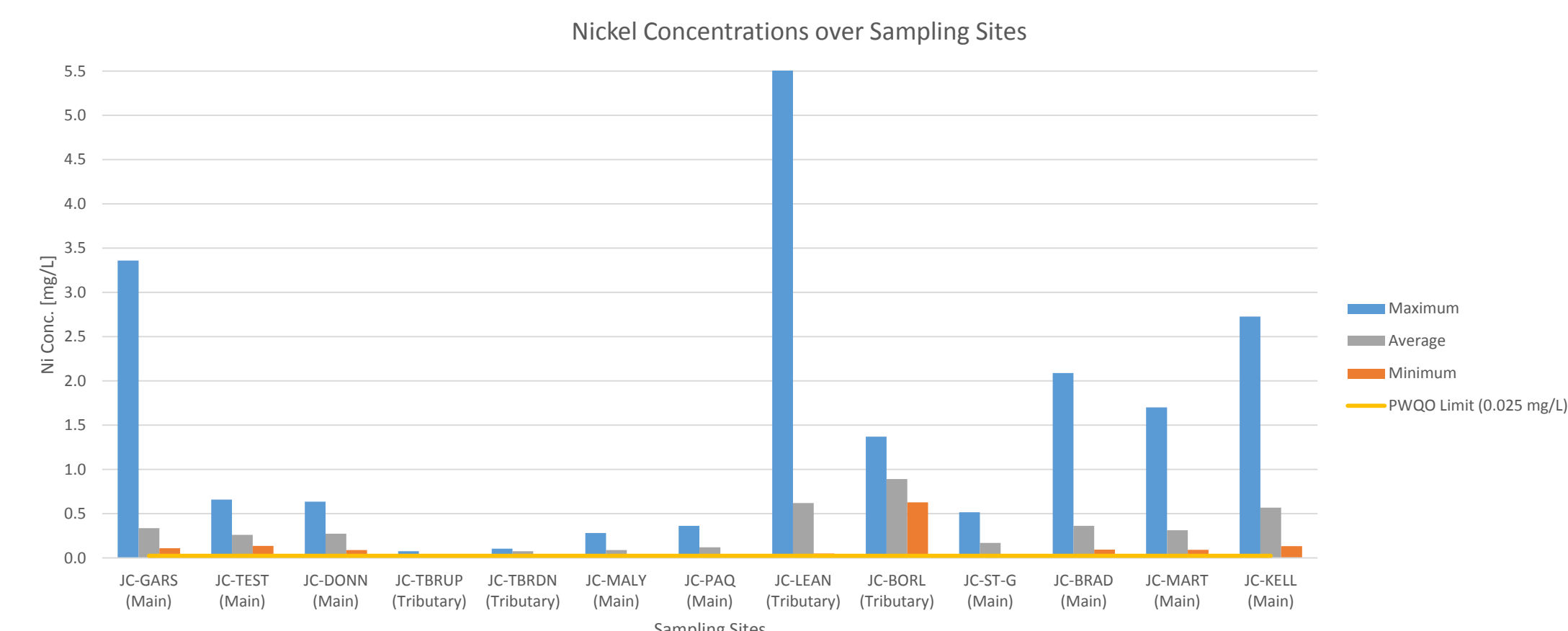
# 7. Summary of Background Information



Nickel concentrations in Junction Creek sediment reveal that lower concentrations occur from Garson downstream to where several tributaries connect with the main branch of Junction Creek. All concentrations exceed the Ontario Regulation 153 Sediment Standards of 16 ppm.



Copper and nickel concentrations in surface water in Junction Creek reveal that higher concentrations occur near the upstream (Garson) end and decline through New Sudbury. They increase downstream due to input from tributaries connecting from the north. Concentrations exceed the Provincial Water Quality standards.



Copper concentrations in surface water at Kelly Lake reveal that water quality is improving over time; however, concentrations continue to exceed the Provincial Water Quality standards.



# 9. Water Quality

## Objectives

- Identify sources of pollution and trends in water quality
- Identify ways to address and improve water quality issues

## Targets

- At a minimum meet current Provincial criteria for any new development or re-development based on existing habitat Classification (i.e. ‘Enhanced’ Treatment – MOECC Design Manual)
- Consider emerging ‘draft’ Provincial criteria in development projects
- Address thermal targets related to any aquatic species of concern



# 10. Surface Water

## Objectives

- Characterize surface water features (flooding and erosion susceptibility)
- Identify flood hazards, sites of erosion and capacity constraints

## Targets

- Any new development or re-development is to manage flood risk to pre-development levels at minimum
- Where system hydraulic capacity is less than Municipal or Provincial criteria, consider 'over' control for urbanizing or re-development areas
- Minor system (storm sewers) to convey 5-year event without surcharge
- Major system (overland network) to safely convey 100-year event on public lands
- Manage erosion flow regime to within 5% of existing conditions



# 11. Stream Morphology

## Objectives

- To characterize the watercourses within the watershed with regards to morphology or form, function, and sensitivity; to identify and quantify erosion-related hazards

## Targets

- Discourage any new development and re-development within the meander belt or erosion hazard of the Junction Creek and its tributaries
- Per Surface Water criteria, manage erosion potential of flow regime to within 5% of existing conditions



These historical assessments illustrate past channel straightening; this limits the channel's ability to adjust to changes in flow and sediment regime



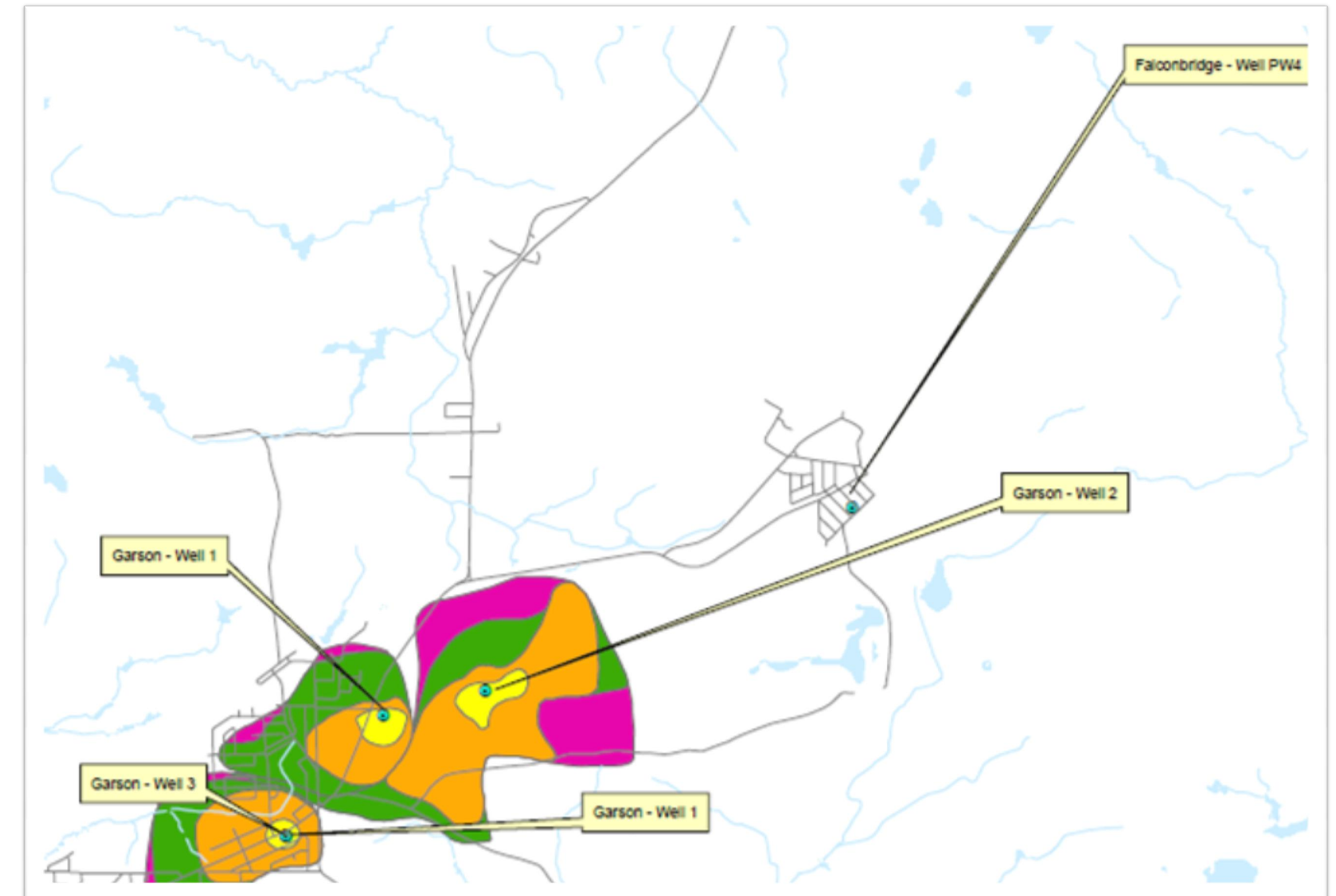
# 12. Groundwater

## Objectives

- Characterize groundwater conditions ( water levels, water quality, significant recharge areas, ecological connection)
- Identify components that may be sensitive to future land use changes
- Identify opportunities to mitigate long-term groundwater quantity and quality impacts

## Targets

- For any new development or re-development promote a water balance post-development
- Maintain natural recharge quality and quantity, where practical, through “Best Management Practices”



# 13. Aquatic Resources (fish, invertebrates and their habitat)

## Objectives

- Identify aquatic resources that are sensitive or of high importance to aquatic communities
- Identify need for additional assessment and monitoring of aquatic resources
- Identify opportunities to preserve, enhance or restore aquatic habitats

## Targets

- Remove barriers to fish movement
- Establish setbacks from watercourses based on sensitivity classification and in accordance with Provincial criteria
- Improve and manage water quality through stormwater management and retrofits to existing facilities
- Improve water temperatures through creation of stormwater management, retrofits and restoration projects



# 14. Terrestrial Resources (land-based animals and their habitat)

## Objectives

- Identify terrestrial resources and evaluate their sensitivity
- Identify natural heritage system protection areas
- Identify habitat enhancement / restoration and management opportunities
- Assess areas that may be potentially impacted by proposed mitigation or enhancement activities throughout the watershed



## Targets

- Protect important natural areas by establishing buffers in accordance with Municipal and Provincial criteria
- Address water balance for new and existing developments to protect and maintain wetlands



# 15. Next Steps

- Ongoing geomorphology field investigation
- Gather additional data for storm sewers
- Complete numerical modelling of stormwater system (major/minor network)
- Prepare Background Characterization report
- Develop and evaluate alternative solutions
- Identify preferred solutions
- Finalize Subwatershed Study and Master Plan



# 16. How Can You Get Involved?

- Join our Project Mailing List for timely, relevant updates by adding your name to the sign-in sheet
- Review information shared at this Stage 2 public meeting
- Attend 1 of the 3 upcoming public meetings:
  - Stage 3: Alternative Solutions & Assessment
  - Stage 4: Recommended Preferred Solution
  - Stage 5: Subwatershed Study Completion
- Provide input on your observations regarding:
  - priorities and interests
  - opportunities to enhance the health of the ecosystem
  - constraints that may be sensitive to disruption

## WAYS TO PROVIDE YOUR INPUT

- City's website:  
[greatersudbury.ca/watershedstudy2016](http://greatersudbury.ca/watershedstudy2016)
- Comment form:
  - Paper copy
  - Online
- Speak with one of the Study Team members:
  - **Paul Javor**, M.A.Sc., P.Eng.  
City of Greater Sudbury  
Phone: 705-674-4455 ext. 3691  
Fax: 705-560-6109  
Email: [Paul.Javor@greatersudbury.ca](mailto:Paul.Javor@greatersudbury.ca)
  - **Tim McBride**, B.Sc., P.Geo.  
Amec Foster Wheeler  
Phone: 705-682-2632  
Fax: 705-682-2260  
E-mail: [tim.mcbride@amecfw.com](mailto:tim.mcbride@amecfw.com)