Centre Wellington Tier Three Water Budget Assessment

Community Liaison Group Meeting #5

Webinar

Wednesday, May 20, 2020, 6:30 – 8:30 pm

Drinking Water Source Protection – Act for Clean Water

Lake Erie Source Protection Region

Centre Wellington

DIGITAL CLG MEETING FORMAT

Platforms & Consent Disclaimer

- CLG members are joining us tonight on a Zoom Webinar via computer and telephone

- Public observers are watching tonight via a YouTube Live stream embedded in the Source Water Protection website

CLG Members:

Please be reminded that this livestream is part of the public record. A recording of the meeting will remain on the Source Water Protection website for review and reporting purposes for two weeks following today's date. ***By speaking into your unmuted microphone and/or turning on your webcam during the meeting to ask a question or state a comment, you are consenting to the recording of your voice and/or image through the livestream.***

MEETING PURPOSE

- Provide a refresh of the study process, scope and key participants
- Provide an overview of the threats and climate change assessments and policy approaches
- Receive feedback and discuss the threats and climate change assessments and policy approaches
- Address any questions about the process overall

ROLES & RESPONSIBILITIES

Tier 3 Water Budget Project Team:

- leads the Tier 3 Water Budget
- responsible for all decisions related to this project

Provincial Peer Review Team:

- provides an external, independent, third party peer review of the technical findings at each major milestone

Project Consultant Team:

- responsible for conducting the Tier 3 Water Budget with direction from the Project Team

ROLES & RESPONSIBILITIES

Community Liaison Group (CLG):

- provides a forum for the community to be informed
- provide input on the Tier 3 Water Budget and its progress
- abide by Terms of Reference and the code of conduct

Third Party Facilitator:

- chairs the CLG meetings
- provides facilitation and secretariat services

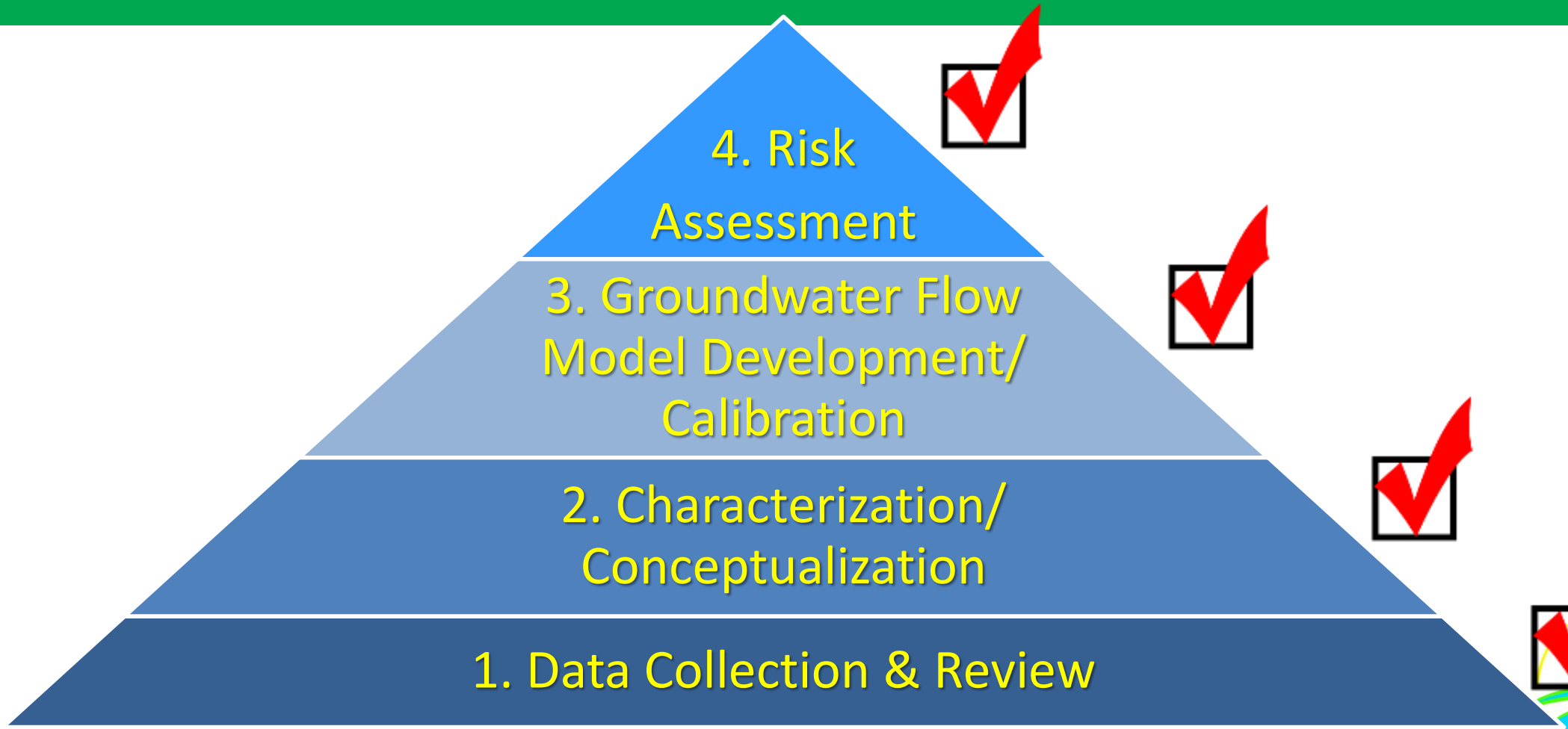
General Public:

- informed about the Tier 3 Water Budget
- provide input on the Tier 3 Water Budget (via public representatives)
- observers at CLG meetings

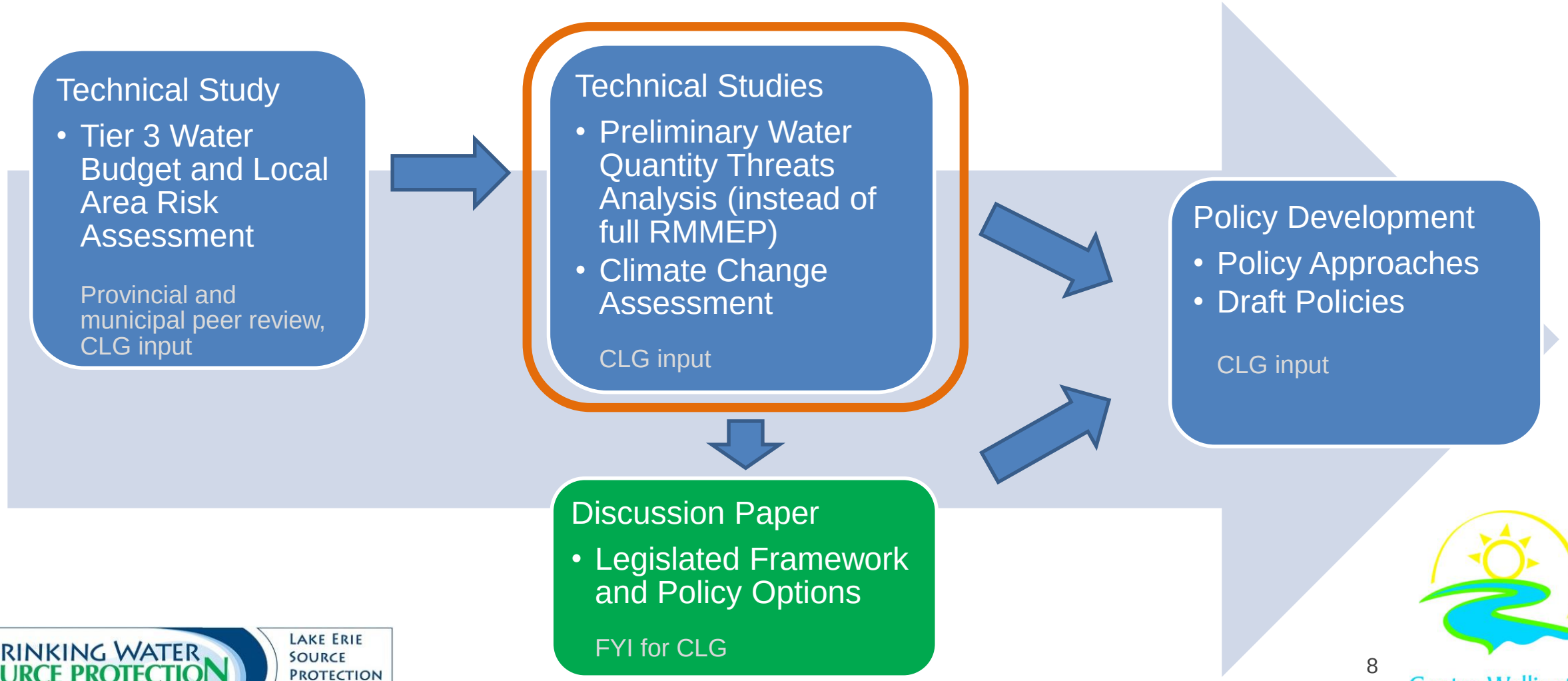
AGENDA

6:15 pm	Log In and Set Up
6:30 pm	Welcome and Introductions
6:40 pm	Threats Assessment and Climate Change Assessment
7:20 pm	Draft Policy Approaches
7:35 pm	Discussion
8:25 pm	Next Steps and Wrap Up
8:30 pm	Adjourn

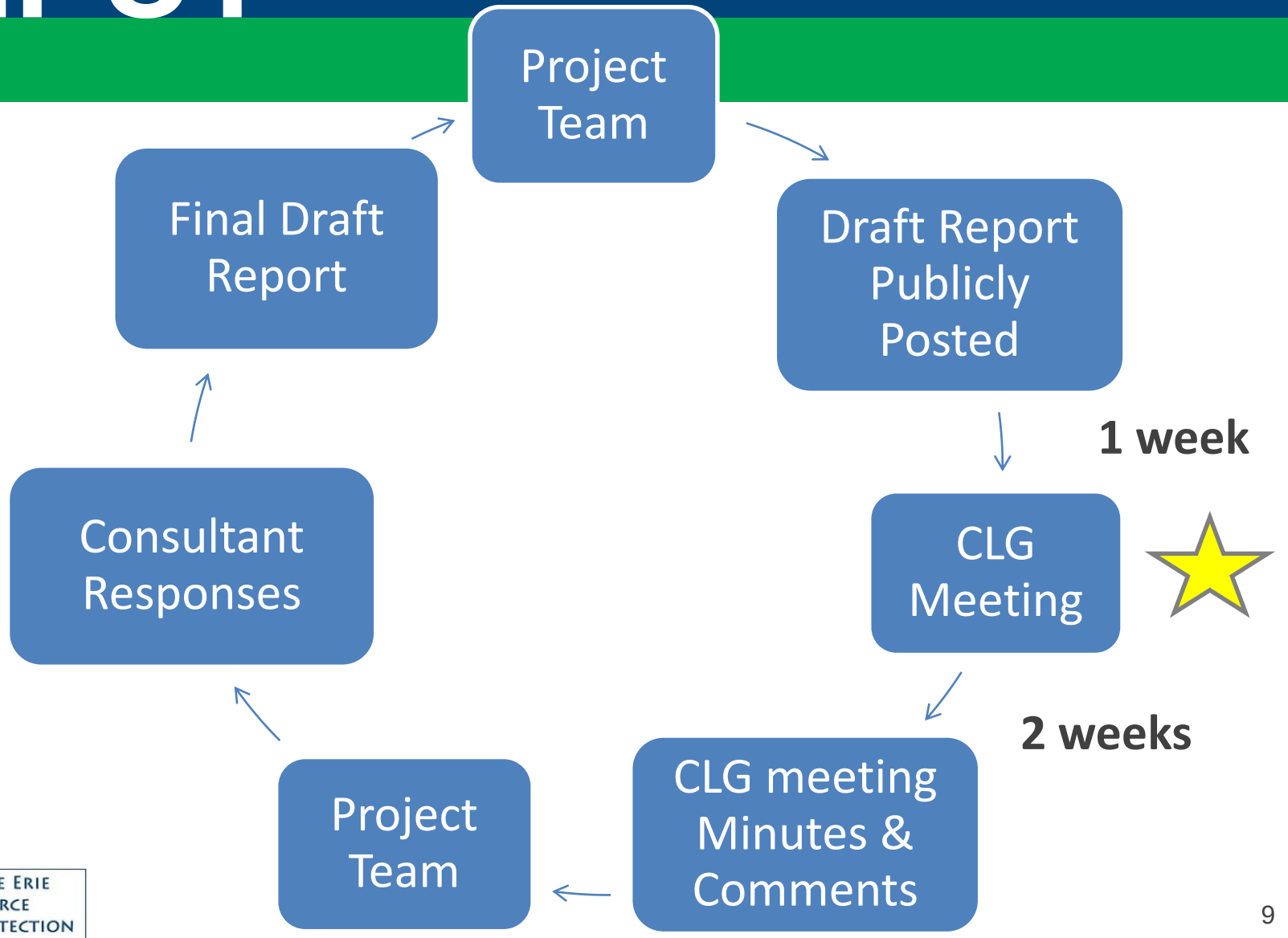
TIER 3 STUDY COMPONENTS



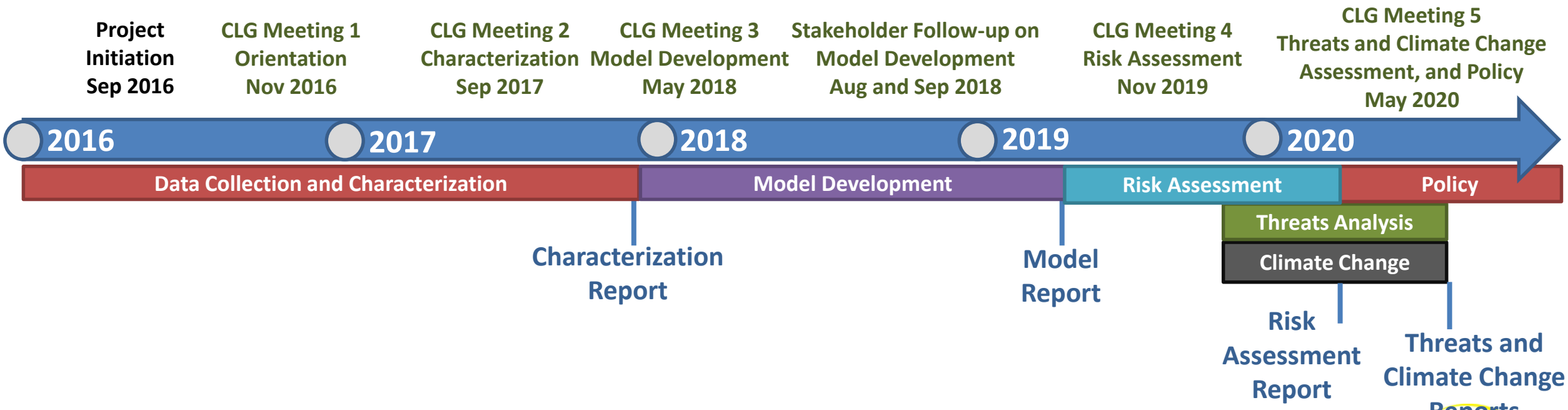
ADDITIONAL STUDIES



CLG INPUT


Project Team
Draft Report Publicly Posted
1 week
CLG Meeting
2 weeks
CLG meeting Minutes & Comments
Project Team
Consultant Responses
Final Draft Report

PROJECT TIMELINE



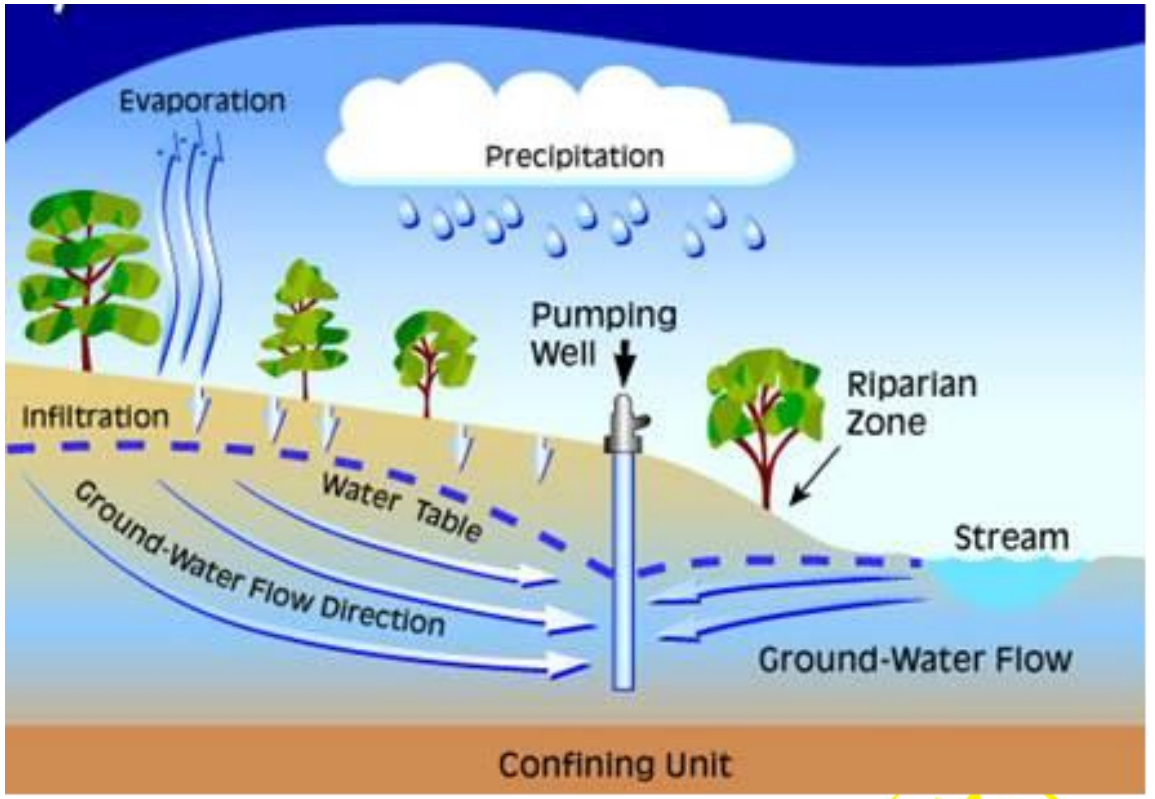
WATER QUANTITY THREATS ANALYSIS

RECALL - RISK ASSESSMENT

Can the current well infrastructure supply enough water …

- …with current population (i.e., 2018 pumping rates)
- …with projected population growth (i.e., increased pumping rates)?
- …during a prolonged drought?
- …with increased development (i.e., more impervious areas -> less groundwater recharge)

What are the impacts to other users including cold water streams and Provincially Significant Wetlands?



DRINKING WATER SOURCE PROTECTION
ACT FOR CLEAN WATER
LAKE ERIE SOURCE PROTECTION REGION

Centre Wellington

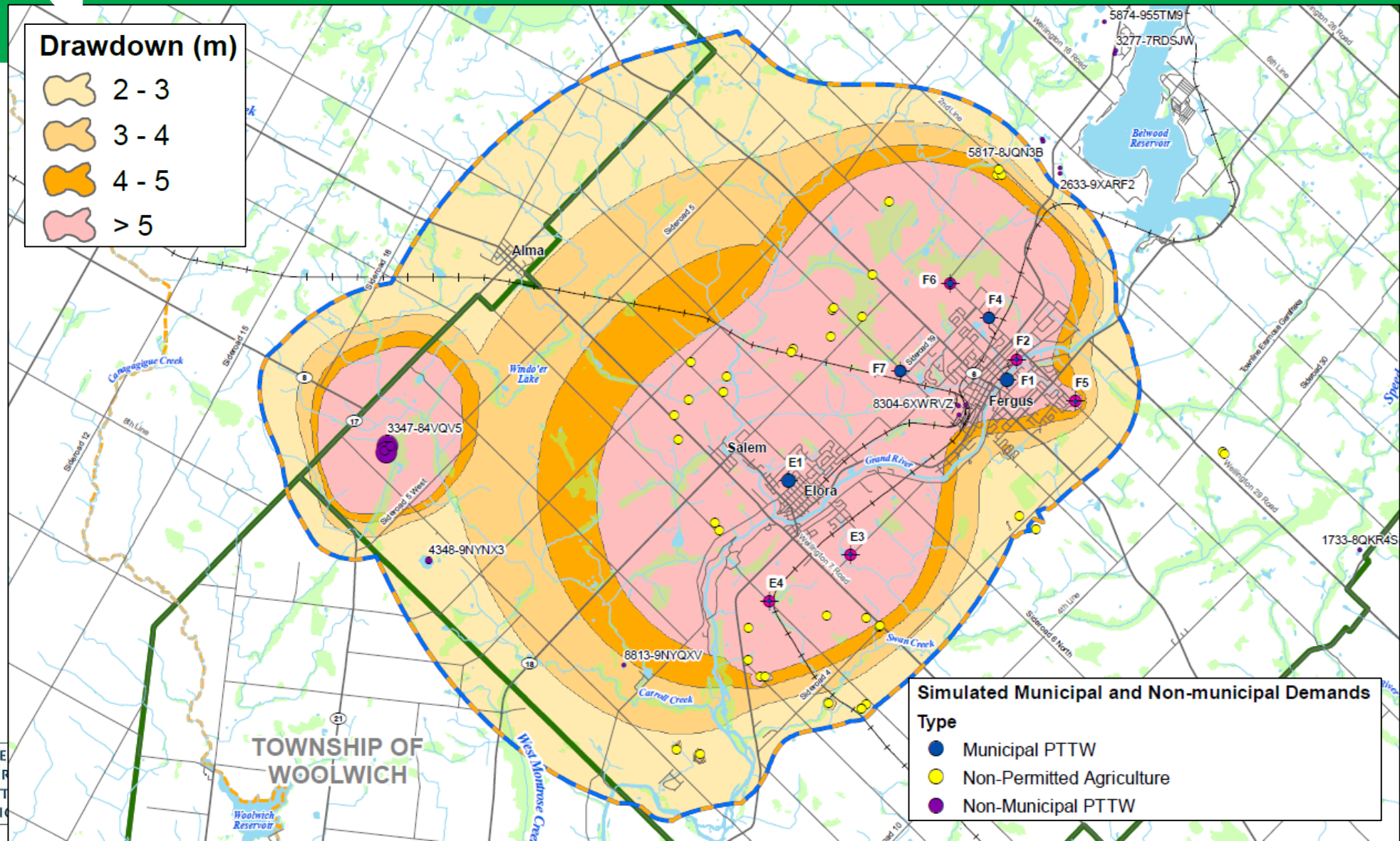
RISK ASSESSMENT SCENARIOS

A set of scenarios to evaluate ability to pump water under various conditions:

	Existing Water Demand	Future (2031) Average Water Demand
Existing Land Use	☑	☑
Future Land Use	☑	☑
Average Climate	☑	☑
Drought Conditions	☑	☑

WHPA-Q DELINEATION

- Analysis and delineation represents conservative screening level exercise
- Specific water takings within the WHPA-Q do not necessarily affect the municipal water supply



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RISK ASSESSMENT RESULTS

- Current water supply system can meet future water demand until 2031 to 2036 period under average and drought climate conditions without impacts to the natural environment.
- Current well infrastructure capacity (9,060 m3/day) is insufficient to meet 2041 average day demand (11,104 m3/day). Results in a significant risk level designation according to the Province's Technical Rules.
- WHPA-Q assigned significant risk level. All groundwater takings and potential reductions to groundwater recharge within this area are classified as significant water quantity threats

WATER QUANTITY THREATS ANALYSIS

Objectives:

1) Estimate the relative impact that groundwater takings and land use changes will have on groundwater levels at Centre Wellington municipal wells
2) Use insights to inform development of appropriate policies to mitigate current and future water quantity threats

Graphic from: https://www.wisewater.ca/municipal-well-water/

Graphic from: http://184.154.69.106/~elcr/wp-content/uploads/2013/06/development-line-credit-Keith-Mountain.jpg

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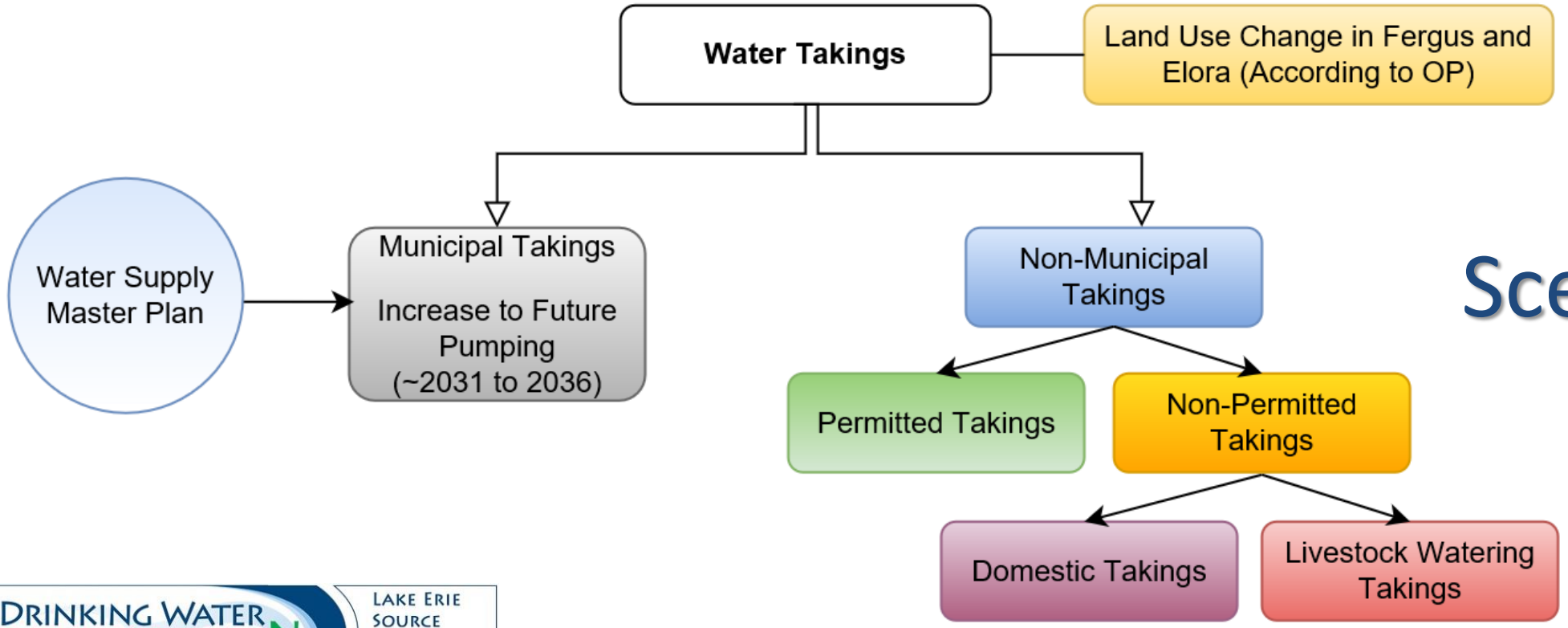
APPROACH

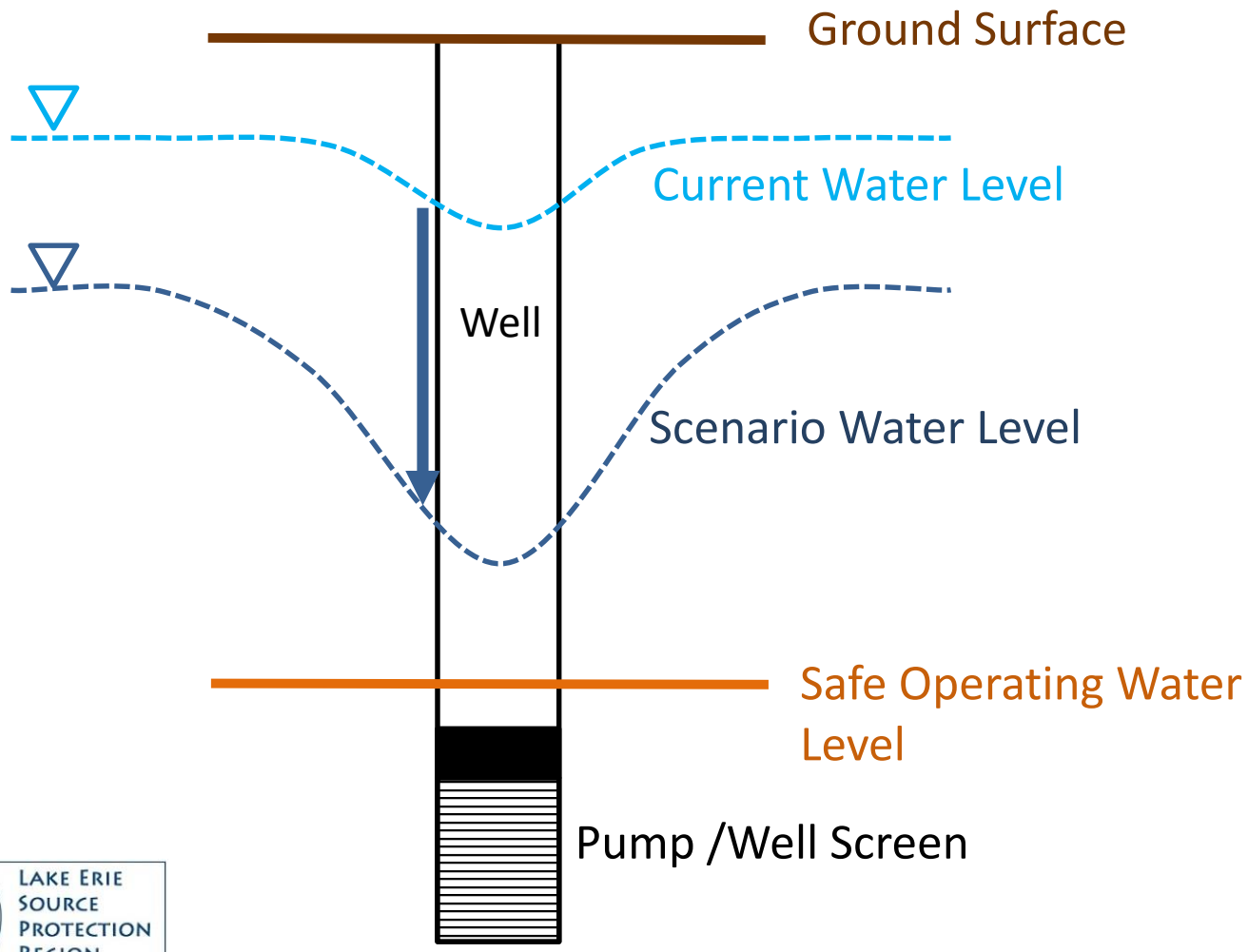
Scenarios developed to estimate the relative impact of different water takings or areas of land use change may have on simulated water levels at municipal wells



Scenarios

SCENARIO ANALYSIS

How do we measure potential impacts?



SCENARIO RESULTS

1) Largest influence on future groundwater levels is from increased **municipal pumping** to meet population growth (i.e., 1.5 to 24.2 m of aquifer drawdown)

2) Cumulative effect of **unserviced domestic water well pumping** on water supply aquifer is minimal (i.e., 0.1 to 0.4 m of aquifer drawdown)

3) Effect of **land development** on future groundwater levels in the water supply aquifer is minimal (i.e., 0.1 to 0.2 m of aquifer drawdown)

4) While effect of existing **permitted, non-municipal takings** on water supply aquifer was minimal (i.e., < 0.05 to 0.1 m of aquifer drawdown), increased or new large groundwater takings may affect groundwater levels at municipal wells depending on location and pumping rate

5) Effect of **livestock watering** on water supply aquifer is minimal (i.e., < 0.05 m of aquifer drawdown)

CLIMATE CHANGE ASSESSMENT

CLIMATE CHANGE ASSESSMENT

Objective

Evaluate the potential effects of climate change on groundwater levels at Centre Wellington's municipal supply wells

Graphic from: https://www.nasa.gov/sites/default/files/thumbnails/image/edu_what_is_earth_0.jpg

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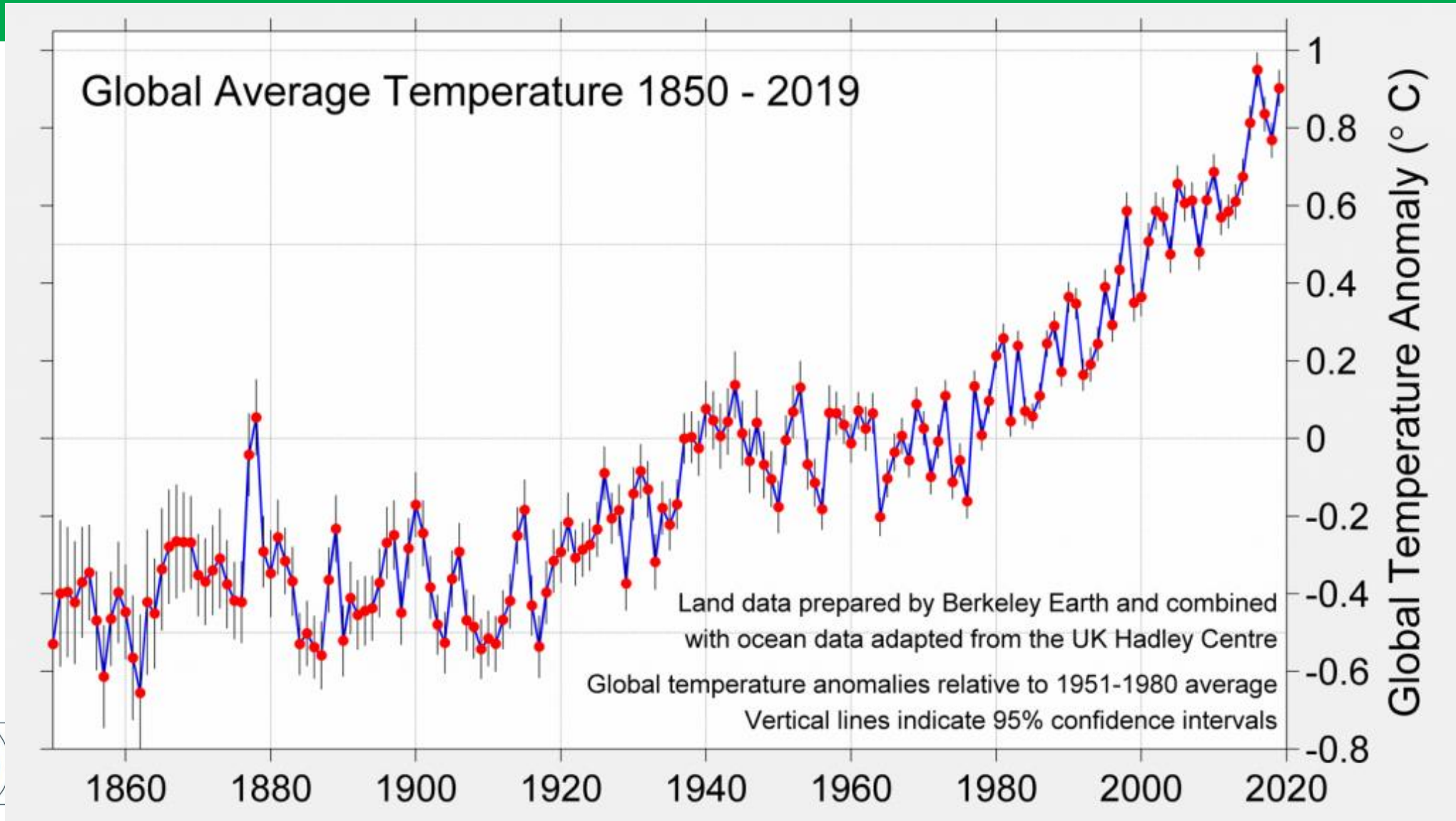
CLIMATE CHANGE ASSESSMENT

It has not been this hot for 120,000 years

(Stanford University)



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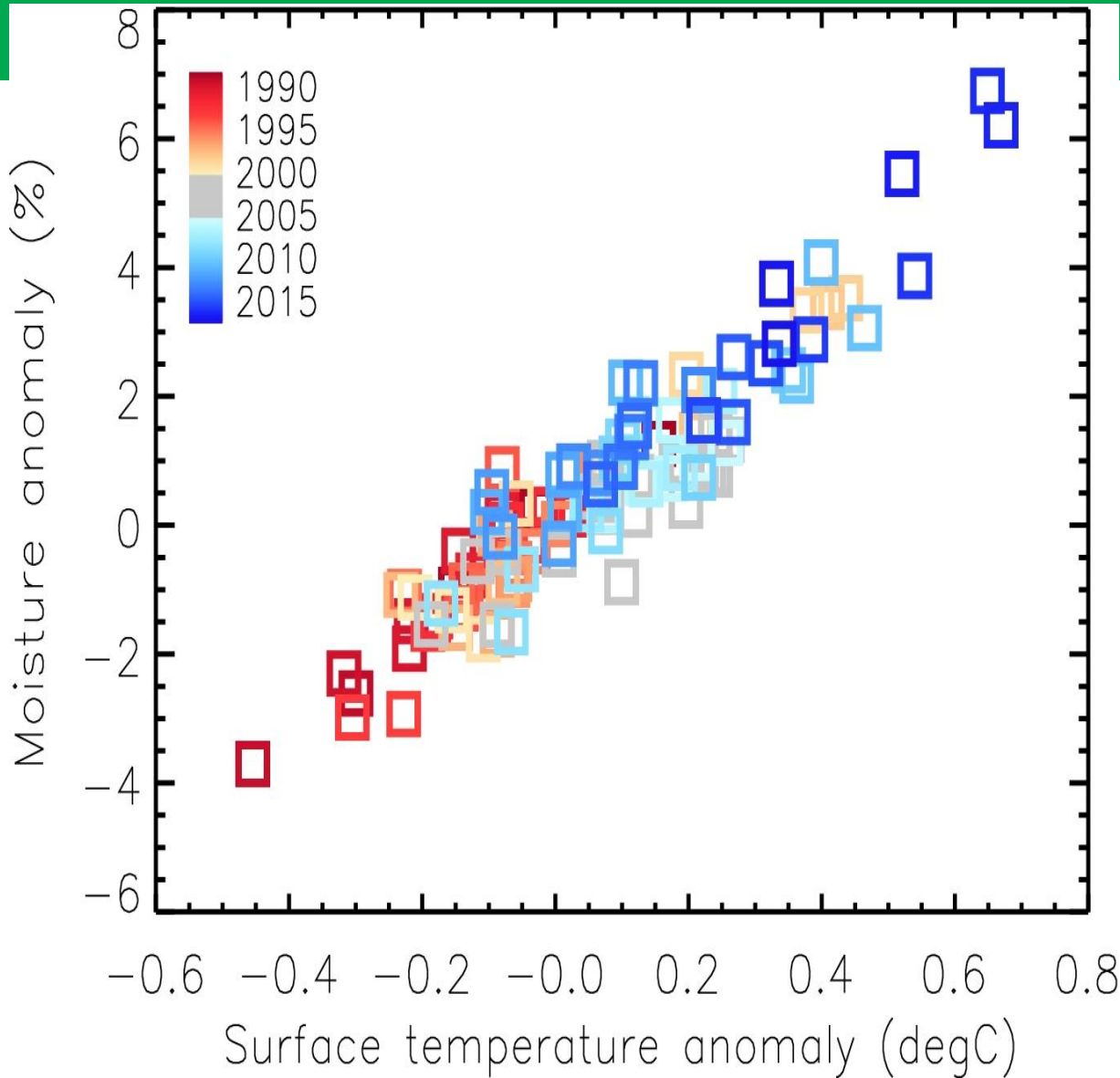
CLIMATE CHANGE ASSESSMENT

Basics of Climate Change Modelling

- A warmer atmosphere holds more moisture
- In Southern Ontario, a warmer atmosphere means more precipitation



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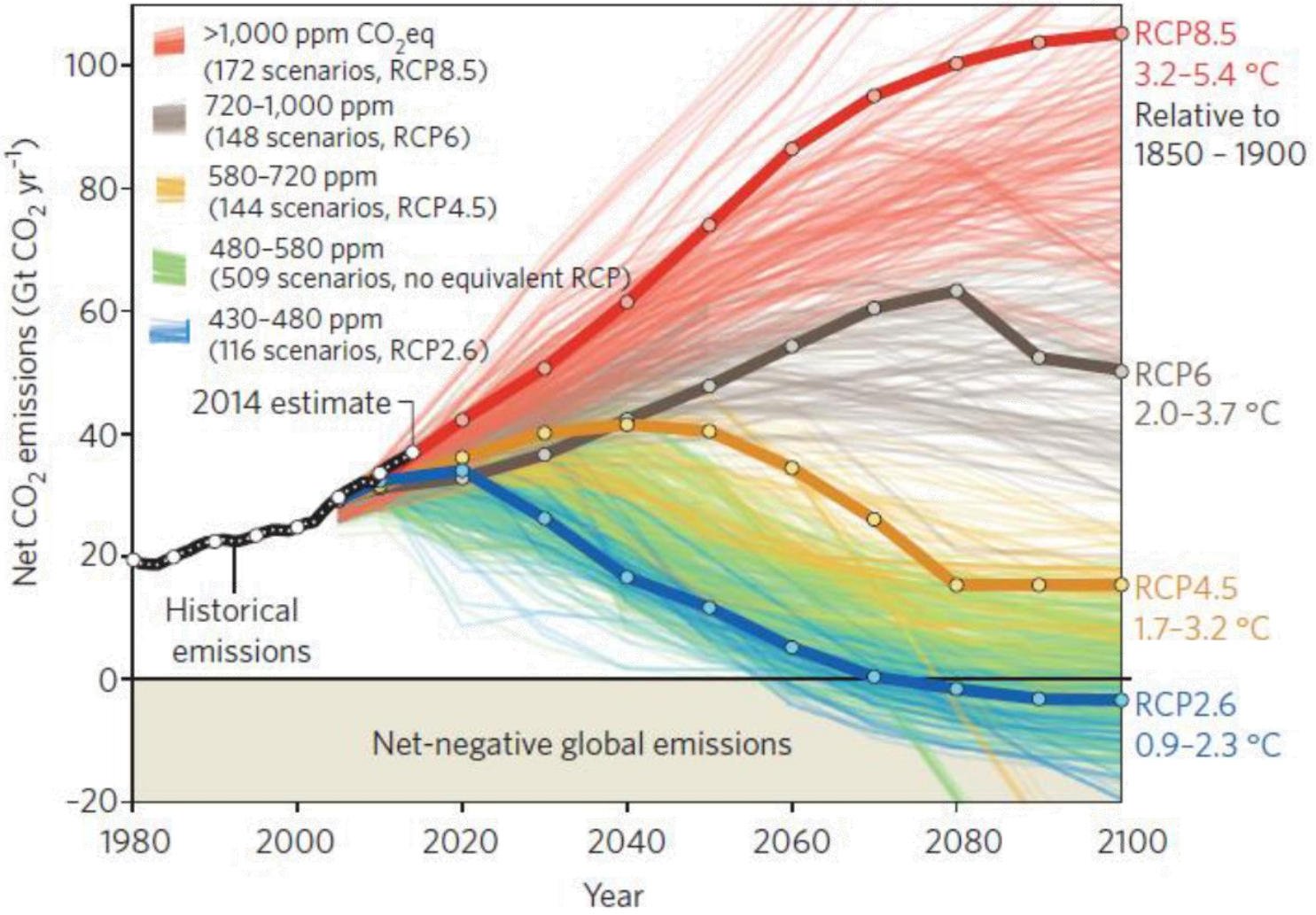
CLIMATE CHANGE ASSESSMENT

Basics of Climate Change Modelling

Representative Concentration Pathways (RCPs)

- Set of future carbon emissions scenarios and time-dependent projections of atmospheric greenhouse gas (GHG) concentrations
- a specific long-term concentration or radiative forcing outcome
- RCP8.5 ~ radiative forcing value in the year 2100 of 8.5 W/m^2



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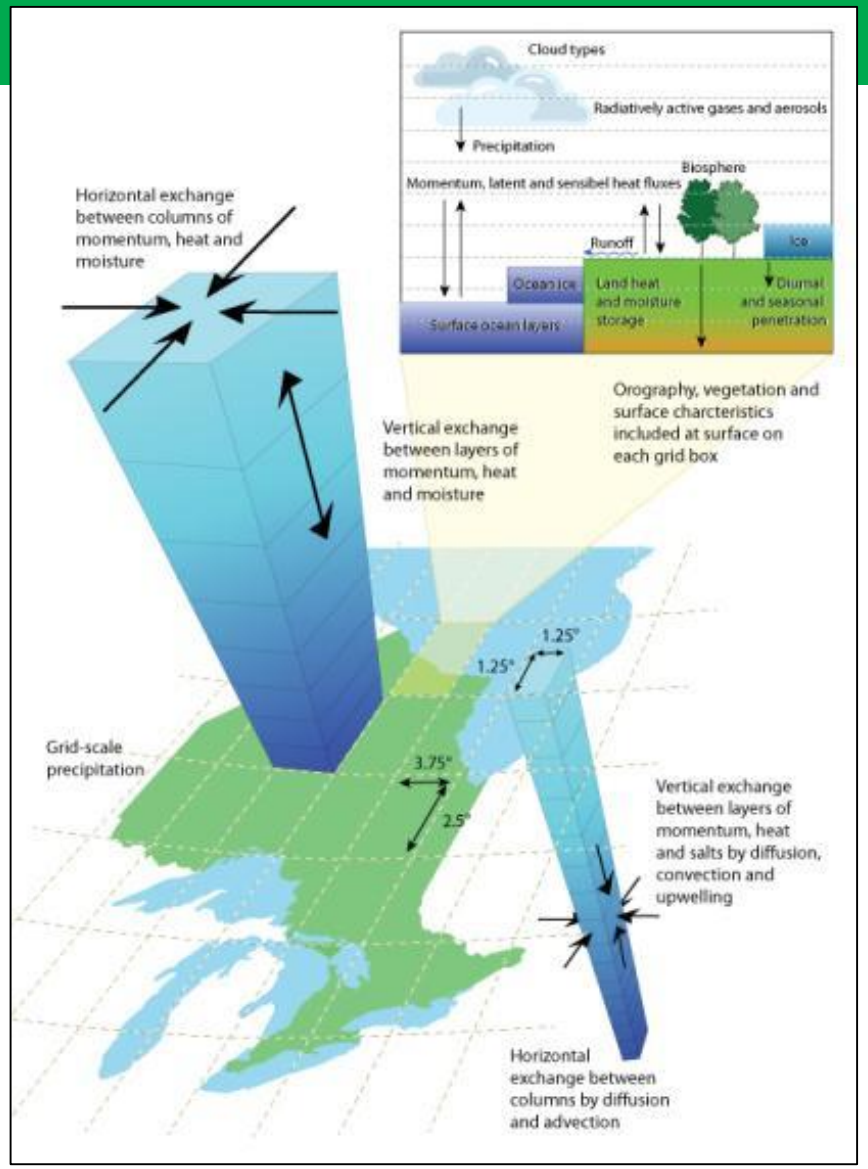
CLIMATE CHANGE ASSESSMENT

Basics of Climate Change Modelling

Global Climate Models (GCMs)

- primary tool for climate impact assessment
- represent the atmosphere, oceans, and land surfaces in a three dimensional grid
- account for the movement and transformation of moisture and energy, reflecting the interactions between air and water and air and land.
- simulate weather patterns continuously over simulation periods of 250 years+



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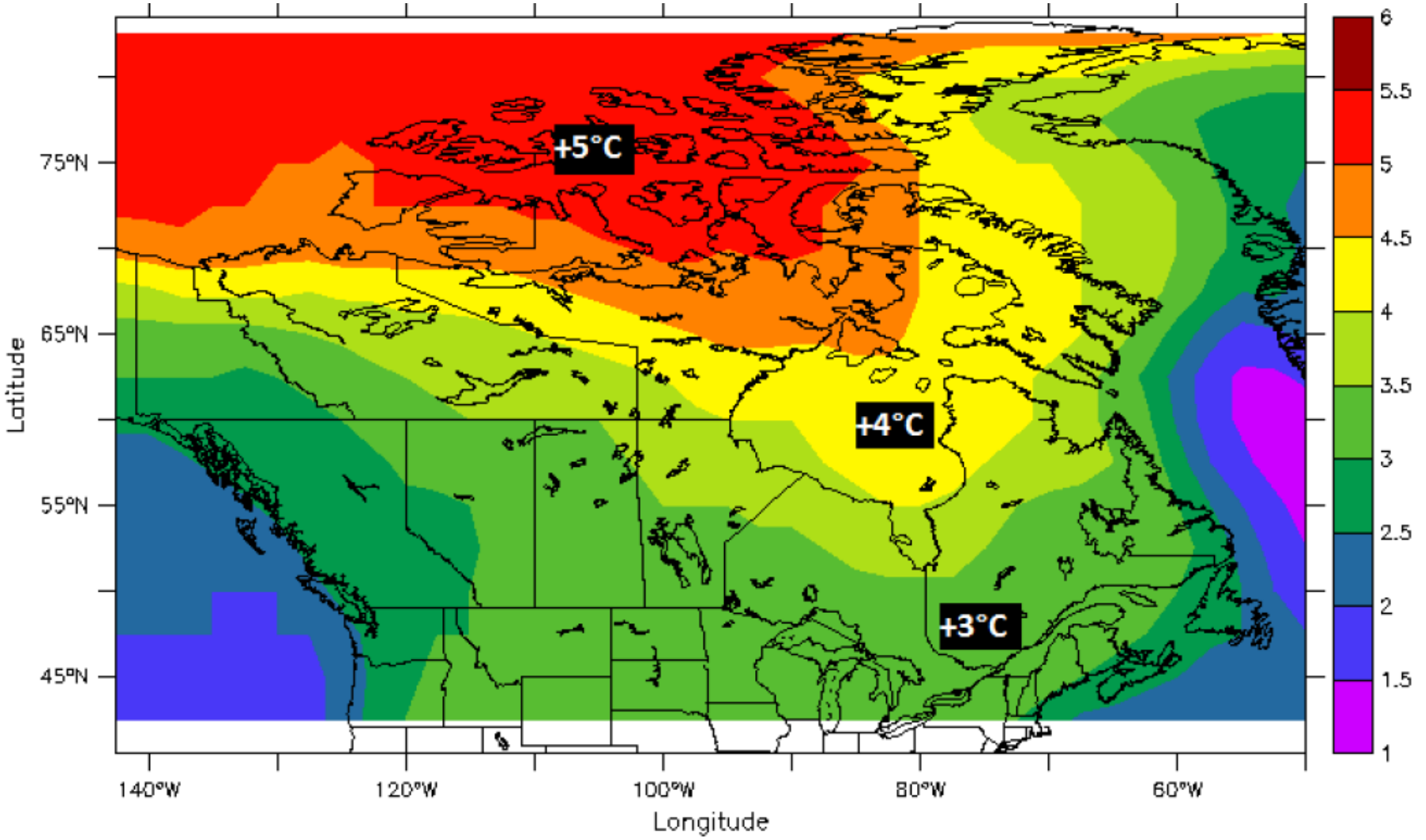
CLIMATE CHANGE ASSESSMENT

Projected Mean Annual Temperature Change in 2050s (IPCC, RCP8.5)



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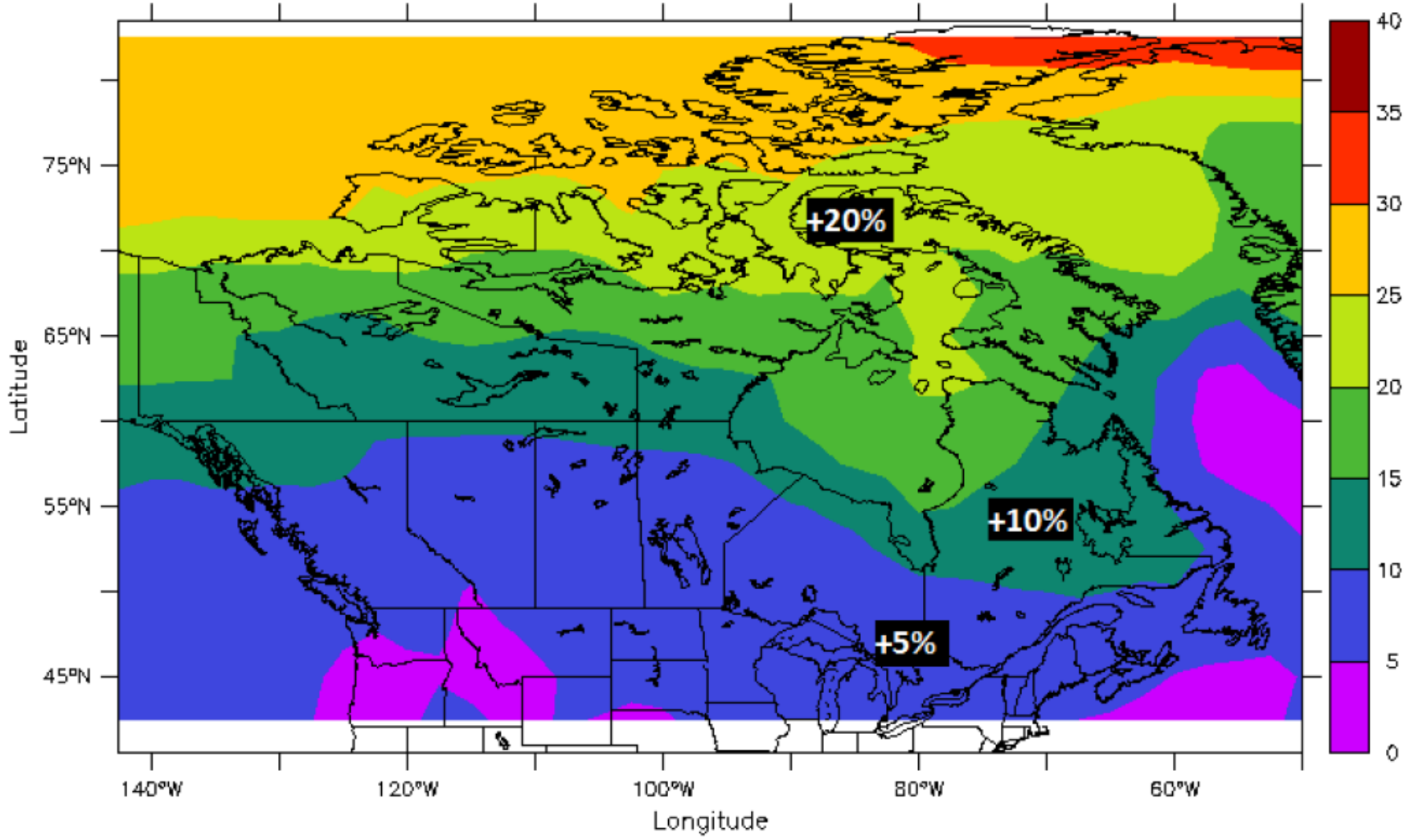
CLIMATE CHANGE ASSESSMENT

Projected Mean Annual Precipitation Change in 2050s (IPCC, RCP8.5)



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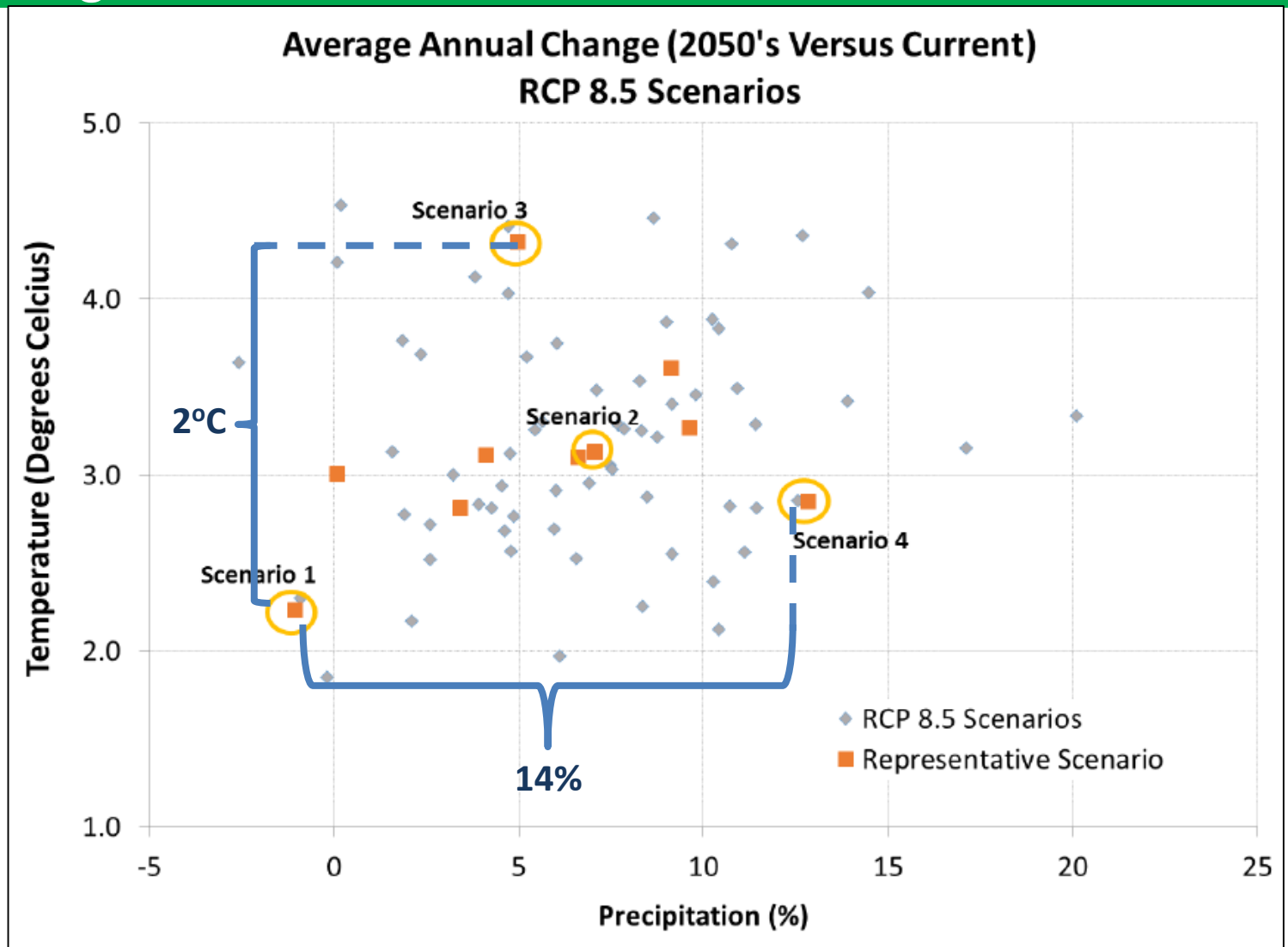
CLIMATE CHANGE ASSESSMENT

GCMs Considered for Centre Wellington Area

- GCMs for 2050's project a range of higher precipitation and warming
- Selected 10 scenarios that are representative for the range of change in Temperature and Precipitation



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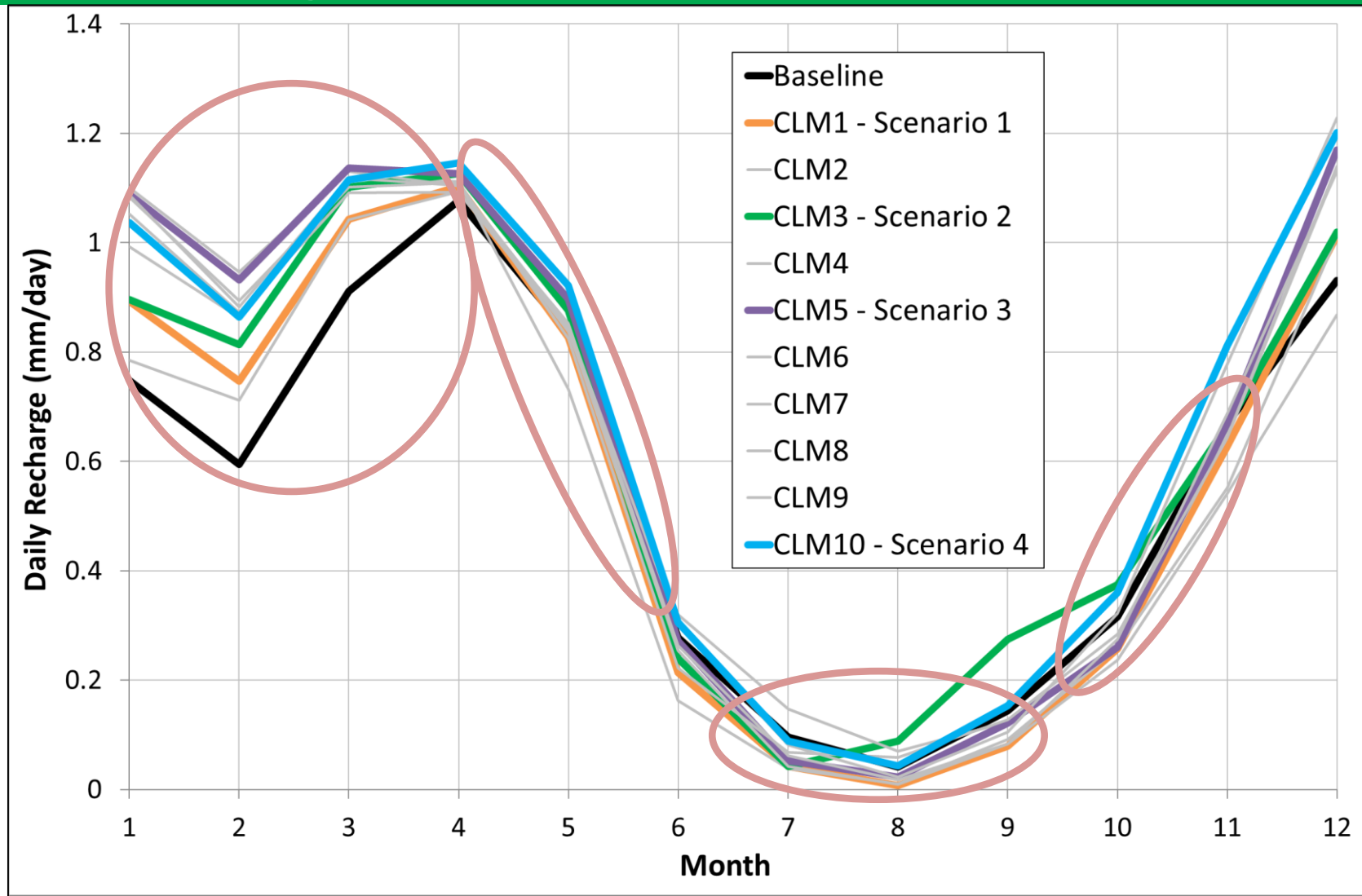
CLIMATE CHANGE ASSESSMENT

Hydrologic Modelling for Centre Wellington Area

- Recharge increases from 10% to 30% during winter and early spring months due to:
  - Warmer winters
  - Less frozen soil
  - Increased precipitation
- Recharge similar in late spring and fall months
- Recharge lower in summer months



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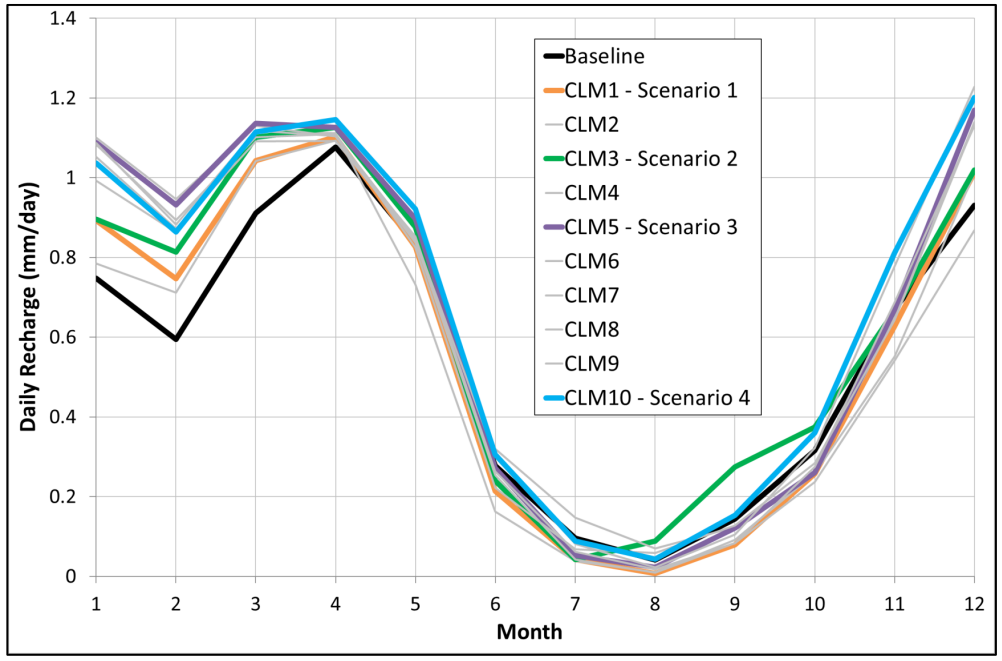
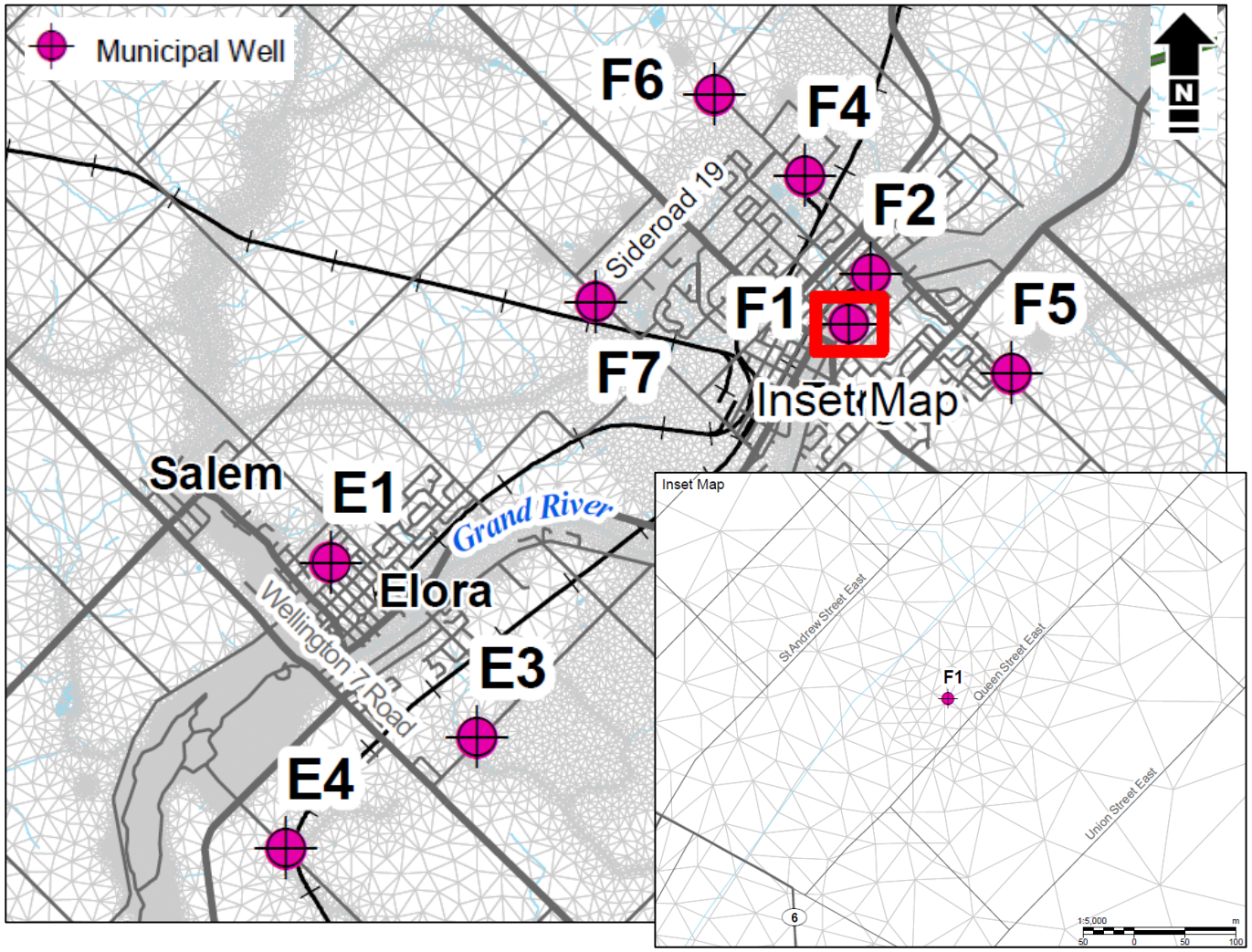
CLIMATE CHANGE ASSESSMENT

Hydrogeologic Modelling for Centre Wellington Area





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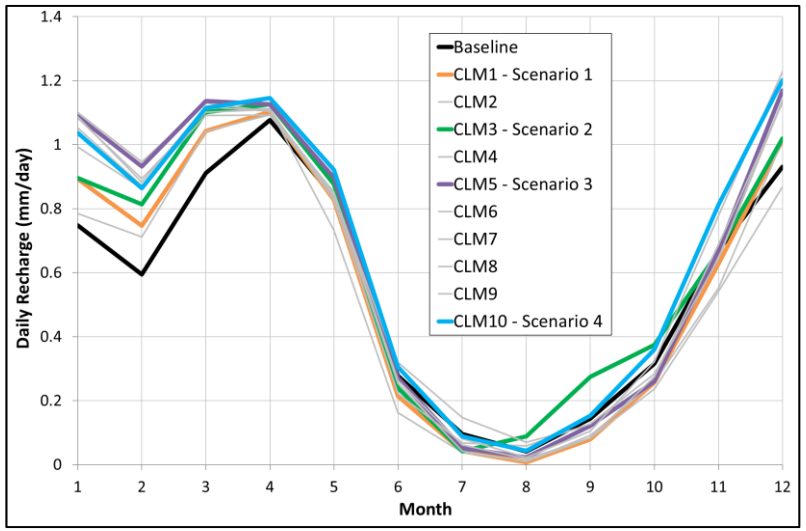
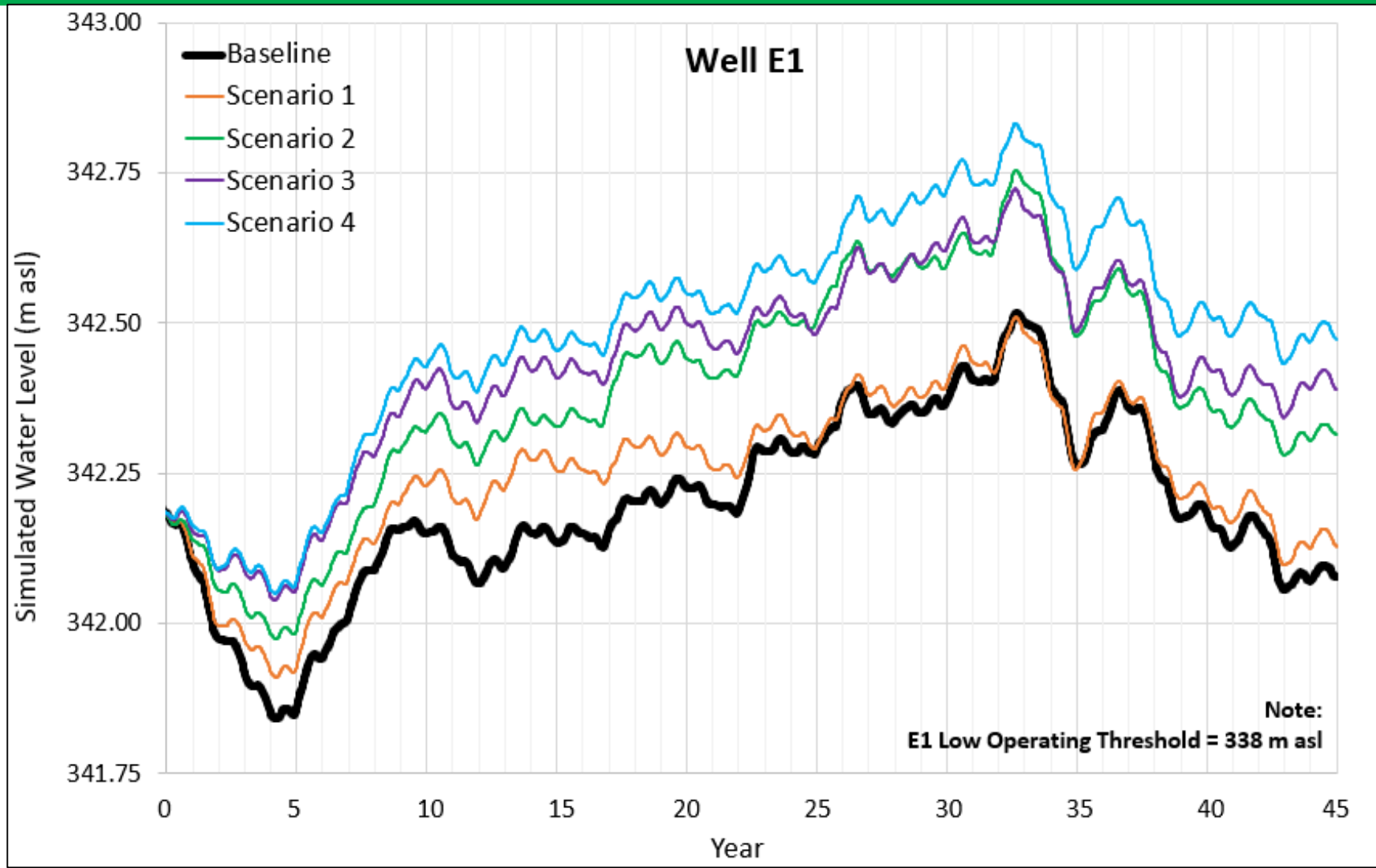
CLIMATE CHANGE ASSESSMENT

Groundwater Levels increase under Future Climate Scenarios





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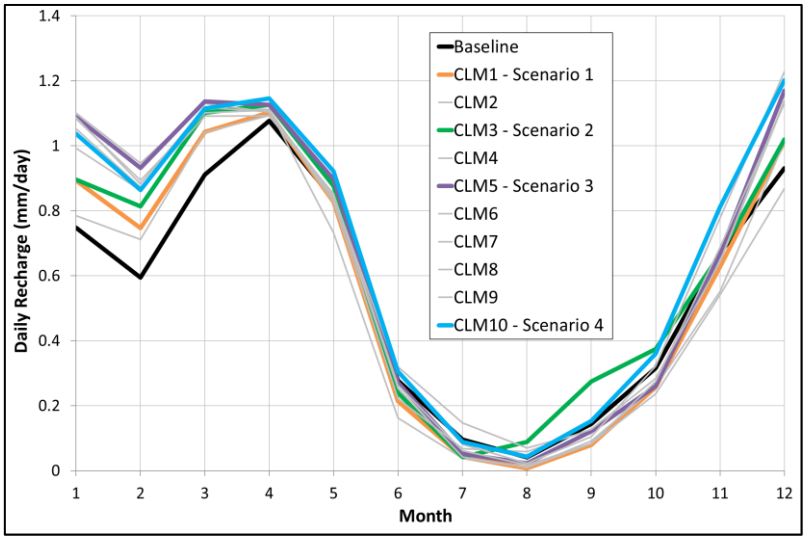
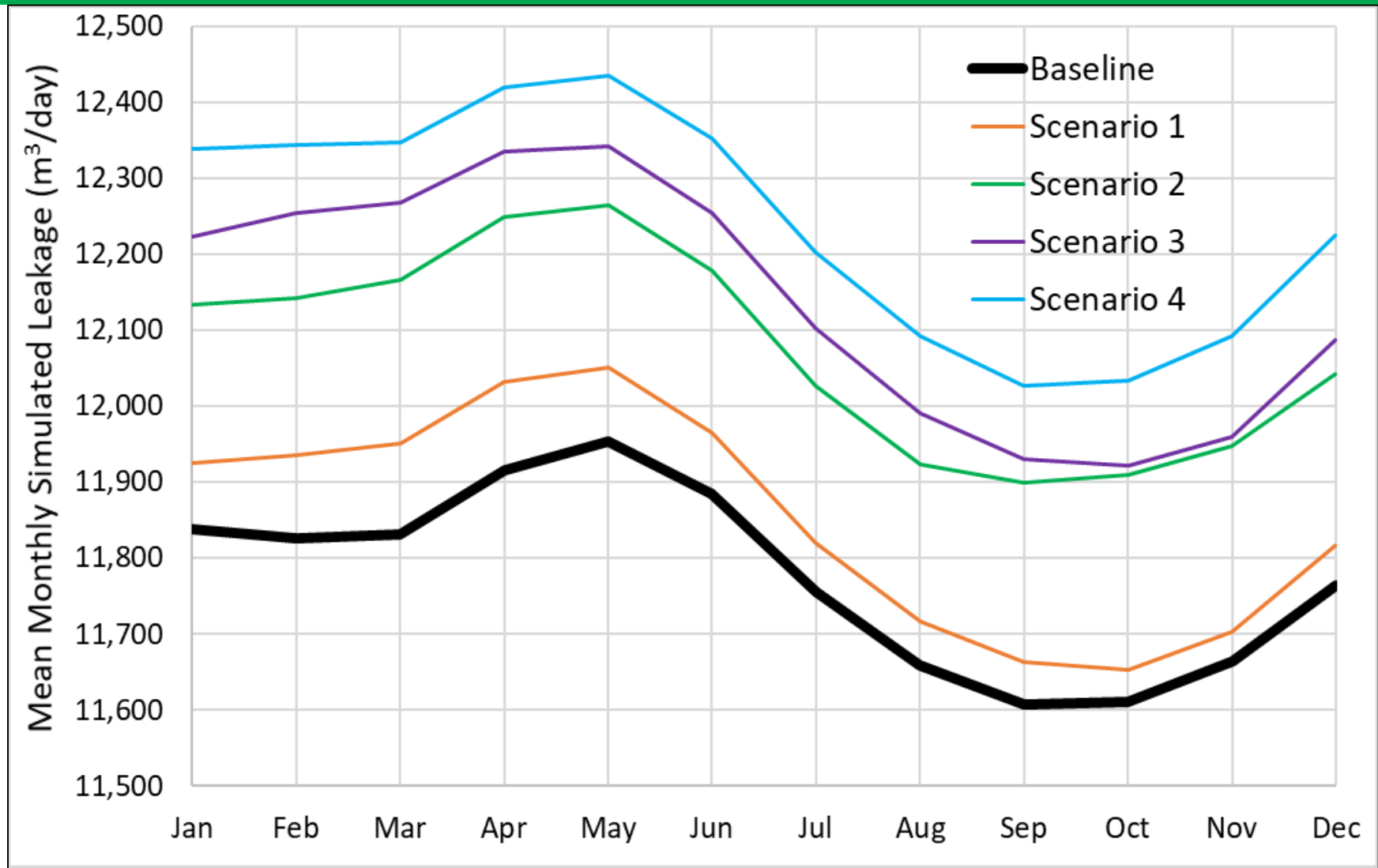
CLIMATE CHANGE ASSESSMENT

Leakage to Aquifer increases with Future Climate Scenarios





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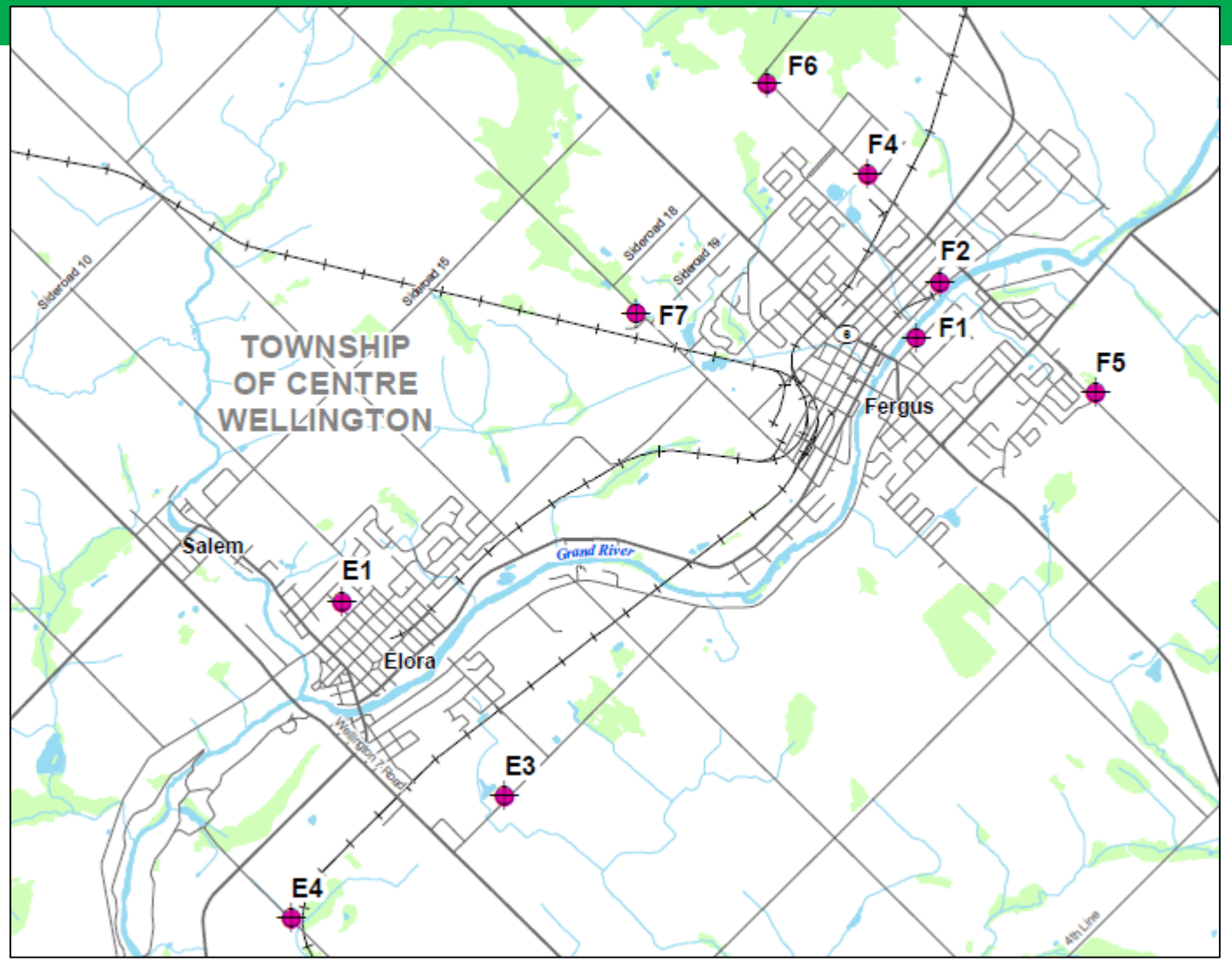
CLIMATE CHANGE ASSESSMENT

Water Quantity Summary

- Groundwater recharge rates predicted to increase during the winter and early spring months
- Groundwater levels predicted to increase based on the modelled climate scenarios
- No climate change risk predicted to quantity of municipal groundwater supply to 2050 time horizon



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SUMMARY OF KEY FINDINGS

Implications for Policy Development

- Focus on management and optimization of municipal water takings using insights from Water Supply Master Plan
  - Decrease future demand – water conservation and demand management
  - Increase future supply – optimize/redevelop existing wells and install new wells
- Assess potential interference with municipal wells to mitigate impacts from new or expanded non-municipal takings
- Maintain recharge to support existing water budget, water quality and ecological functions
- Consider ongoing model maintenance and funding
- Consider maintaining groundwater and surface water monitoring program
- No climate change risk predicted to quantity of municipal groundwater supply to 2050 time horizon

Graphic from: https://barnard.edu/reslife/policies

WATER QUANTITY POLICY APPROACHES

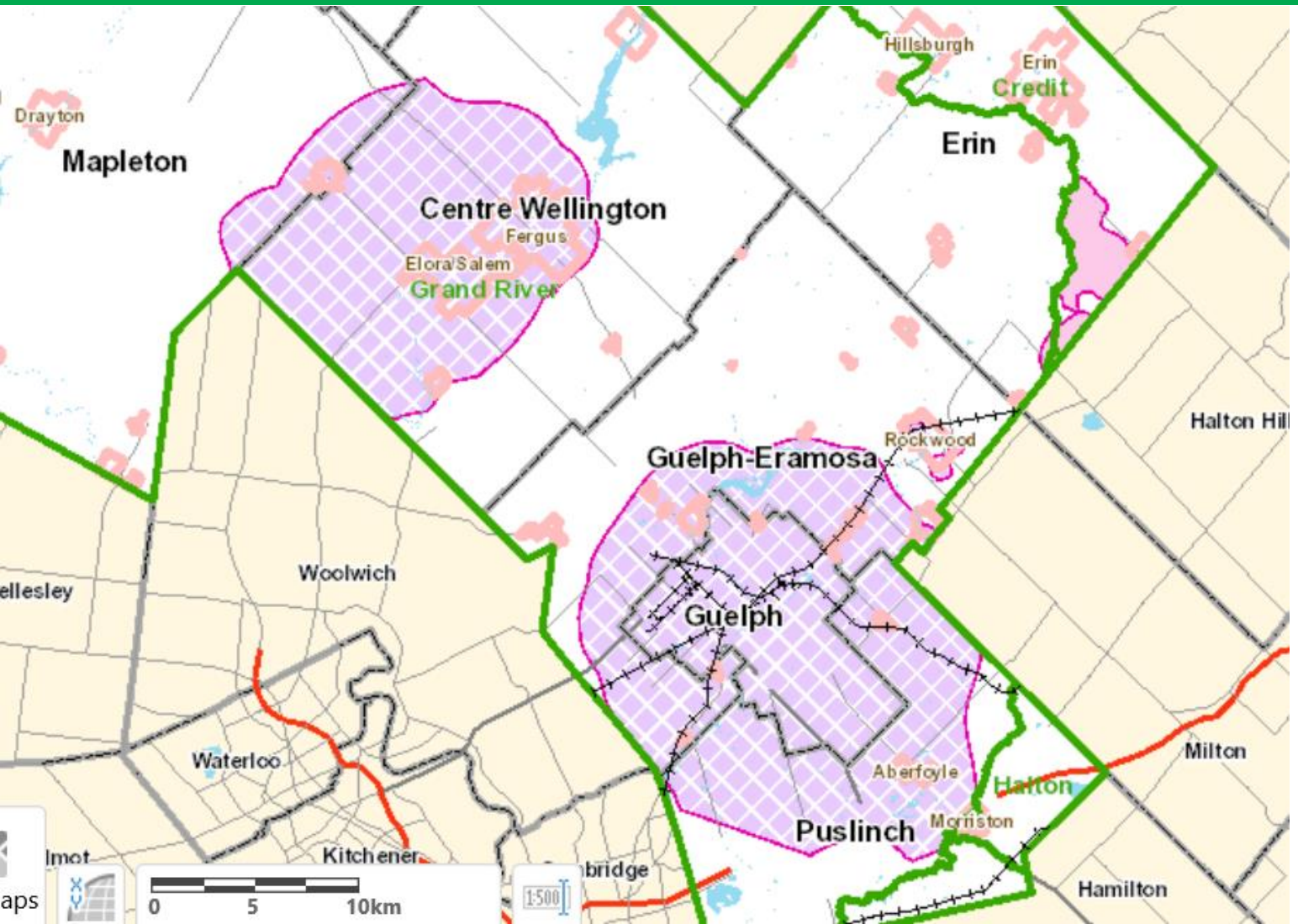
POLICY APPROACHES

Next Steps to address Water Quantity

- Policies address prescribed activities under Clean Water Act:
  - #19 – Consumptive Water Takings (not returned to same aquifer)
  - #20 – Activities that reduce groundwater recharge
- Policies apply within WHPA-Q:
  - Existing and future water takings
  - Existing and future activities that reduce groundwater recharge (e.g., roads, parking lots, development)
- Source Protection Committee delegated policy development to Project Team
- Project Team will recommend draft policies to Source Protection Committee
- Policy approaches first step in policy development process and represent high level overview of the approaches allowed under the Clean Water Act and considered when drafting policy text

WELLINGTON COUNTY WHPA-Q

Draft (hatched) and Approved (solid)

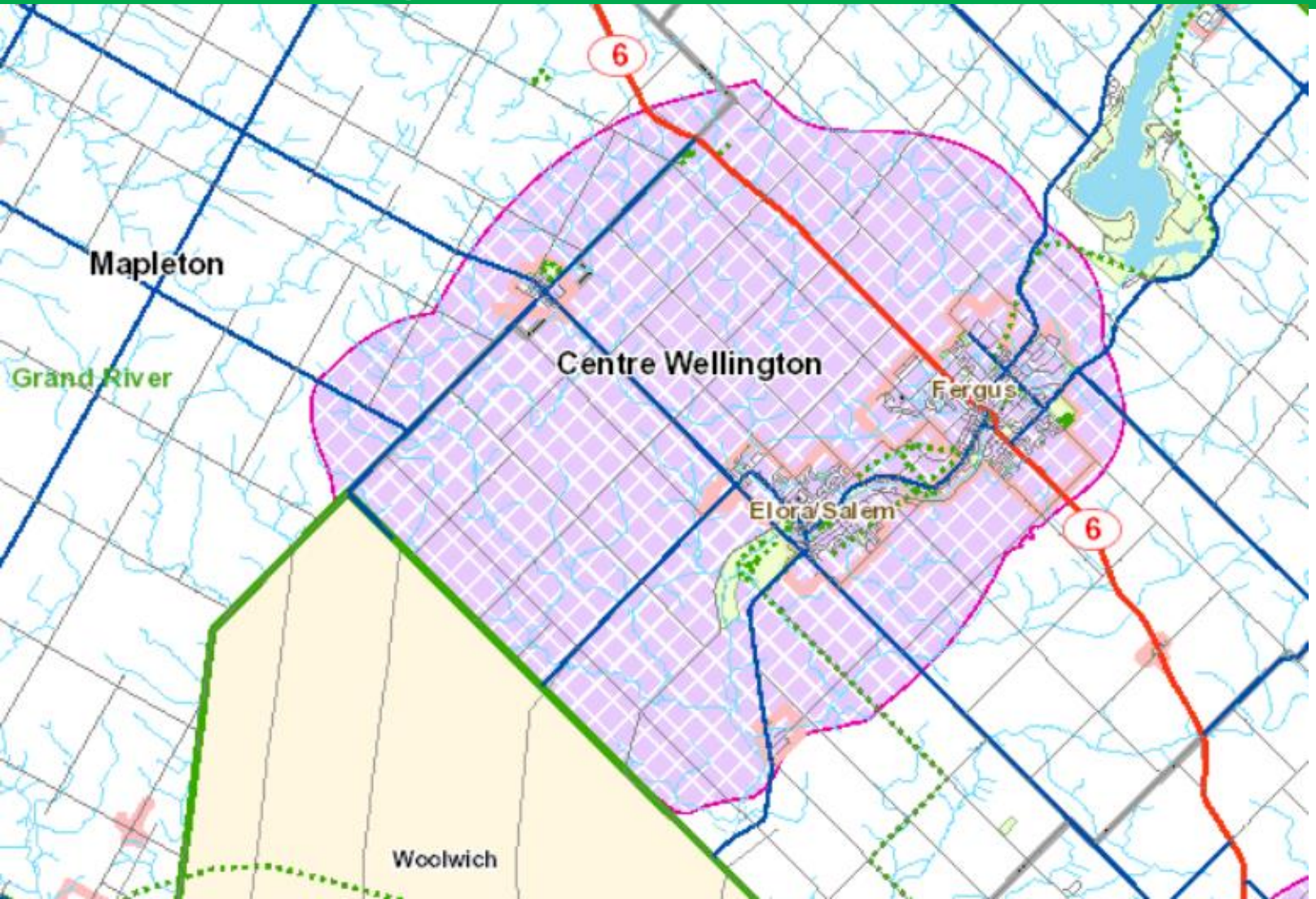


- Four WHPA-Q's in County
  - Centre Wellington
  - Acton (Erin)
  - Georgetown (Erin)
  - Guelph - Guelph / Eramosa
- At this time, focus is on policy development for Centre Wellington and Acton WHPA-Qs that include portions of Centre Wellington, Mapleton and Erin.

Centre Wellington

CENTRE WELLINGTON WHPA-Q

Centre Wellington and Mapleton



- Majority of the Centre Wellington WHPA-Q will be covered by policies in the Wellington County Chapter of the Grand River Source Protection Plan.
- A small portion extends into Woolwich and will be covered by the Region of Waterloo Chapter.

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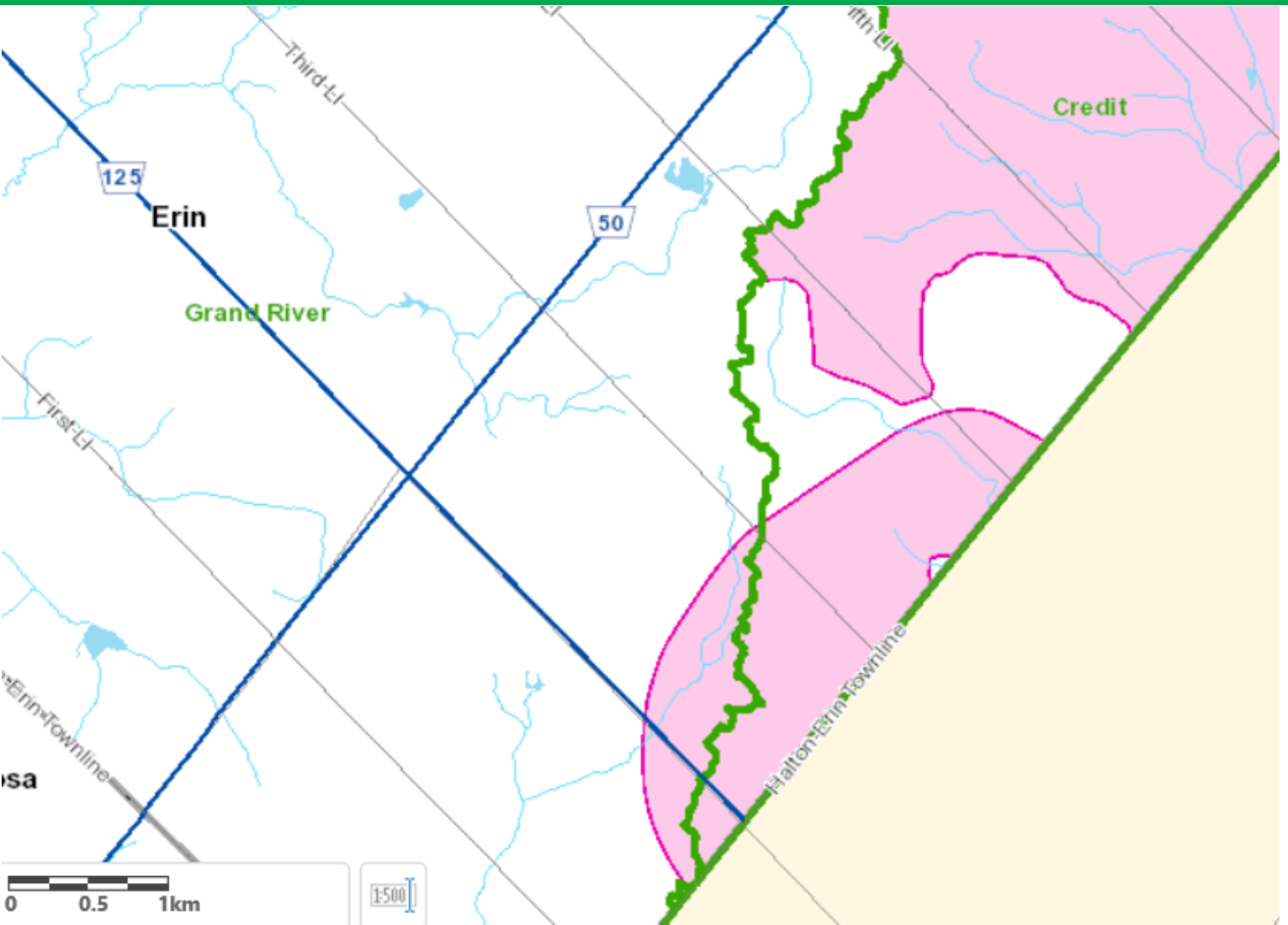
ACTON WHPA-Q

Acton WHPA-Q (Erin)



- All of Georgetown's WHPA-Q and a majority of Acton's WHPA-Q is covered by the CTC Source Protection Plan policies
- A portion of Acton's WHPA-Q extends into the Grand River watershed and therefore requires policies in the Grand River Source Protection Plan

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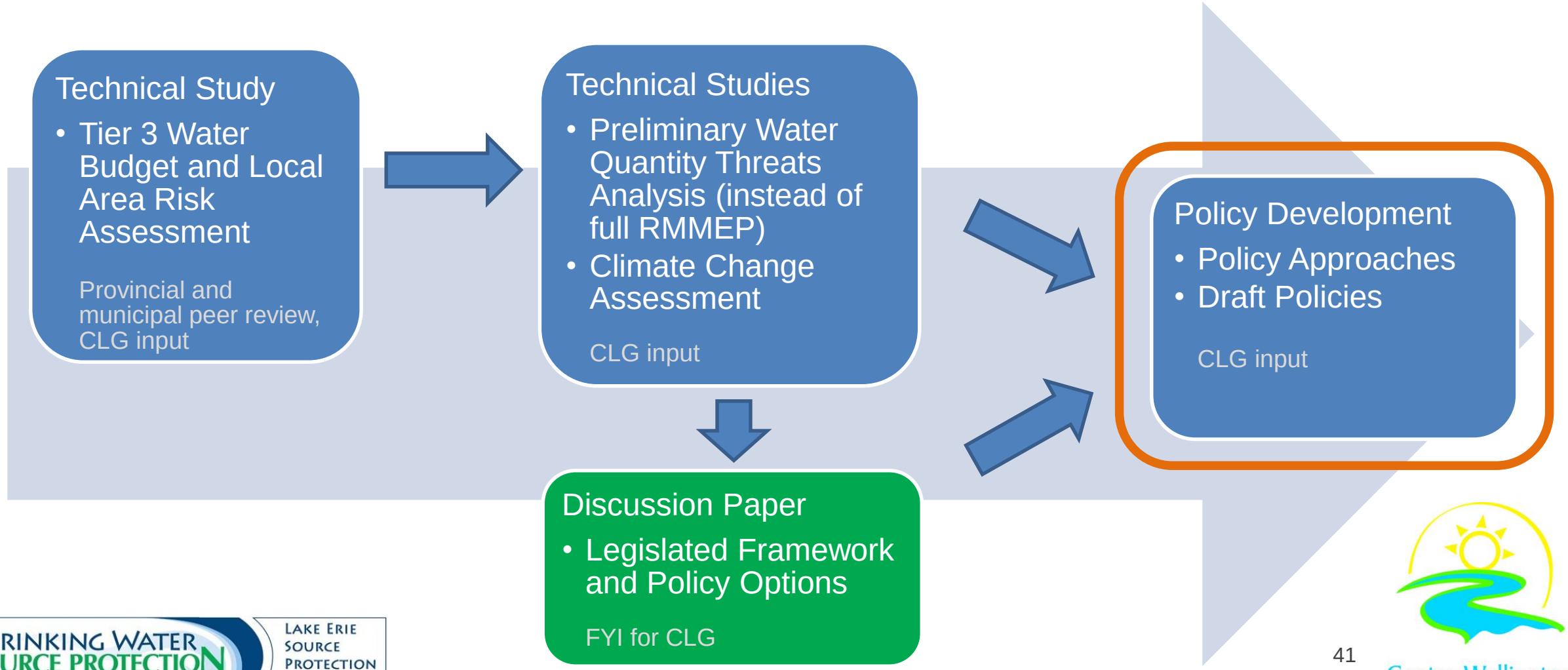
POLICY DEVELOPMENT



DISCUSSION PAPER

What is a discussion paper?

- When specific source protection policies are first developed (quantity and quality), Lake Erie Region has drafted a discussion paper.
- Aids policy makers by providing background information on:
  - Technical studies
  - Drinking water quantity threats
  - Existing legislation, policies and programs
  - Review of policy tools and approaches available
- Discusses promising policy tools that could be used to protect water quantity sources.
- Water quantity discussion paper was developed for the Guelph-Guelph/Eramosa Tier 3 study in 2018 and therefore some appendices are specific to that study

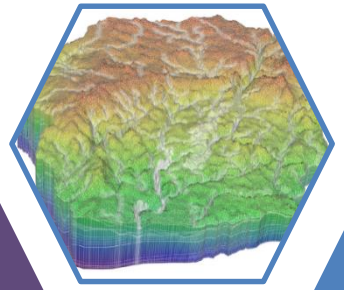
EXISTING LEGISLATION

And Policies and Other Programs

- **Federal**
  - e.g., Great Lakes Water Quality Agreement, Federal Water Policy, International Boundary Water Treaty Act and International River Improvement Act
- **Provincial**
  - E.g., Ontario Water Resources Act, Clean Water Act, Planning Act, Places to Grow Act, Municipal Act, Building Code Act, Ontario Environmental Assessment Act, Ontario Low Water Response, Environmental Protection Act, Water Opportunities and Water Conservation Act
- **Municipal**
  - Wellington County / Townships: e.g., Water Supply Master Plan, Growth Management Strategy County and Local Official Plans,

REGULATORY PROCESSES

Private Wells
- PHU
- MECP



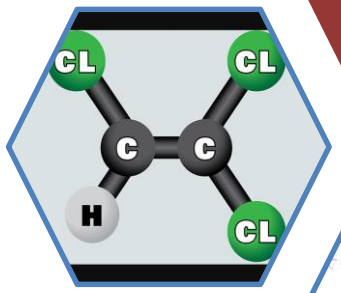
WSMP
- Municipal

Planning Act / PPS
- Municipal

Contaminated Sites
- MECP

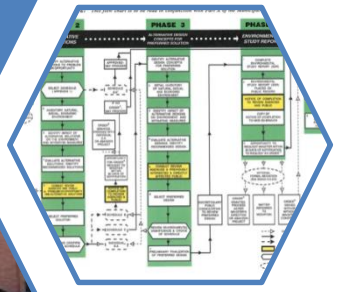
SP-Quantity
- GRCA
- Municipal
- MECP

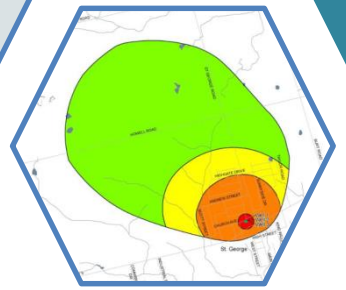
Class EA
- Municipal



SP-Quality
- GRCA
- Municipal
- MECP

PTTW
- MECP





SDWA
- Municipal
- MECP

- Permit To Take Water (PTTW)
- Safe Drinking Water Act (SDWA)
- Water Supply Master Plan (WSMP)
- Provincial Policy Statement (PPS)
- Class Environmental Assessment (EA)

DRINKING WATER SOURCE PROTECTION
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POLICY TOOLBOX

Clean Water Act, 2006

- Provincial Regulatory Approvals (Prescribed Instruments)
- Land Use Planning
- Education, Outreach / Incentive Programs
- Stewardship Programs, Best Management Practices, Pilot Programs and Research
- Directing Specific Actions (Specify Action Policies)
- Clean Water Act - Part IV
  - Prohibition (S.57)
  - Risk Management Plans (S.58)
  - Restricted Land Uses (S.59)

POLICY APPROACHES

Consumptive Water Takings

- **Prescribed Instrument** – Province can be directed to review/amend Permit to Take Water (PTTW)
- **Land Use Planning** – new development can be managed through Official Plans and By-laws
- **Education / Outreach** – municipality can be directed to continue / expand water conservation and efficiency measures

POLICY APPROACHES

Consumptive Water Takings

- **Specific Action**
  - Develop / update municipal water management/conservation plans
  - Develop joint water resource management systems to provide collaboration and cooperation between province, source protection authority, and municipalities
  - Use of Tier 3 model to support making informed decisions
  - Provincial funding on ongoing maintenance of Tier 3 models
  - Ensuring existing and future municipal water demands are met before allocating water to other users, i.e., shifting to “priority of use” concept
- **Other** – e.g., water conservation stewardship projects, promote pilot programs for water conservation at businesses, consideration of alternative water supplies (i.e., water reuse)

POLICY APPROACHES

Consumptive Water Takings

New authorities under Clean Water Act (Part IV):

- Section 57 **prohibition** of consumptive water taking

- Section 58 **risk management plan** for consumptive water taking (negotiated between risk management official and water taker)

- Section 59 **restricted land use** (procedural tool only used in conjunction with either S.57 and S.58 policies)

POLICY APPROACHES

Recharge Reduction

- **Prescribed Instruments** – Province can be directed to review/amend Environmental Compliance Approvals (ECA) for storm water infiltration projects
- **Land Use Planning** – new developments can be managed through Official Plans and By-laws to maintain recharge
- **Education / Outreach** – municipality can be encouraged to continue / expand water recharge education initiatives

POLICY APPROACHES

Recharge Reduction

- **Other** – e.g., protection of recharge area through stewardship, best management practices such as disconnecting downspouts

- **Specific Action** – e.g., develop water management plans to maximize recharge, develop joint water resource management system, optimize Low Impact Development guidelines

- Part IV (S.57) **prohibition** of development that reduces recharge
- Part IV (S.58) **risk management plans** for developments to maintain recharge
- Part IV (S.59) **restricted land use** (only used in conjunction with other Part IV tools)

EXAMPLE POLICY APPROACHES

From Approved Source Protection Plans

Permit To Take Water

- Policies directing MECP to manage water takings that are significant drinking water threats using Permits to Take Water (PTTW).
- This has been a key approach used in other Source Protection Plans.
- Overarching goal of Clean Water Act is to not duplicate regulatory processes
- Therefore, management through existing Provincial Prescribed Instruments is preferred where available

EXAMPLE POLICY APPROACHES

From Approved Source Protection Plans

Growth and Development

- Policies focusing on earlier/stronger contemplation of water supply considerations in growth and development planning
  - Water resources availability should be considered earlier in provincial growth forecasting and municipal planning process
  - New development should maintain existing groundwater recharge rates
  - Better coordination between municipalities and the province about local water resources and developments that could affect water resources
  - Increased coordination between municipalities and the province on planning applications/developments that will require a PTTW.

EXAMPLE POLICY APPROACHES

From Approved Source Protection Plans

Specific Actions

- Municipal water supply management and planning process – incorporating the Tier 3 study results
- Water Conservation – reinforcing/strengthening municipal programs
- Monitoring – increase/maintain groundwater and surface water monitoring to support future updates to Tier 3 models
- Increasing information sharing between local water managers (e.g., municipalities, province and conservation authorities)
- Continued provincial funding for Tier 3 models maintenance and updates

POLICY CONSIDERATIONS

To address Water Quantity

- Policy approaches considerations:
  - Using technical results (key findings/insights) to guide policies
  - Existing regulations preferred
  - Avoid duplication of regulatory burden
  - Prohibition as last resort
- Consistency in approved SPPs, where possible
- Precedent of approaches used in existing SPP
- Consistency with neighbouring SPPs or SPP chapters where WHPA-Q extends across watershed or municipal boundaries
- Policy suite to address problem, multi-pronged approach (e.g., Clean Water Act, Water Supply Master Plan)

POLICY DEVELOPMENT

To address Water Quantity

- Lake Erie Region committed to collaborative process for policy development
- Municipal, stakeholder, and community engagement through Project Team and CLG
- Policy development considerations include the conclusions and recommendations of the technical studies, precedent in other Source Protection Plans and comments from municipal, Conservation Authority and Provincial reviewers
- Draft policies will be presented to the CLG for feedback and to municipal councils for their information
- Project Team will recommend draft policies to the Source Protection Committee for endorsement and release for pre- and public consultation

TIMELINE

Policy Development Process

2016-2020	May 2020	Jun 2020	Summer 2020	Oct 2020	Oct-Nov 2020	Early 2021	Spring 2021
Tier 3 Water Budget and Risk Assessment: Threats Analysis Climate Change Assessment Start Policy Development	Presentation of Policy Approaches to Community Liaison Group	Presentation of Draft Water Quantity Policies to Source Protection Committee	Presentation of Draft Water Quantity Policies to Community Liaison Group	Presentation of Revised Water Quantity Policies to Source Protection Committee	Municipal and Ministries pre-consultation period	Formal Public Consultation period	SPC considers public consultation comments SPC releases updated plan to Grand River Source Protection Authority for submission to MECP

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Centre Wellington

COMMUNITY LIAISON GROUP

Questions and Discussion

NEXT STEPS

CLG meeting summary and comments

- CLG provide comments on meeting summary (by June 3, 2020)
- May 20, 2020 CLG meeting video recording available until June 3, 2020
- finalize meeting summary with comments
- post meeting summary and presentation on website

Policy Development

- Project Team continues with policy development
- Project Team recommends draft policies to Source Protection Committee June 25, 2020

Next CLG Meeting:

- Tentatively in summer 2020 to present draft water quantity policies
- Project Team will follow up with CLG members to set date