Ontario Geological Survey
Sedimentary Geoscience Section
Activities 2008

Ross Kelly

Ontario Geological Survey

Presentation Outline

- Overview of Program Areas
- Selected Surveys and Field Activities of the Sedimentary Geoscience Section

Survey Types and Field Activities

- Surficial Geochemistry
- Surficial Mapping and Sampling
- Aggregates and Industrial Minerals
- Groundwater
- Energy

Surficial Geochemistry

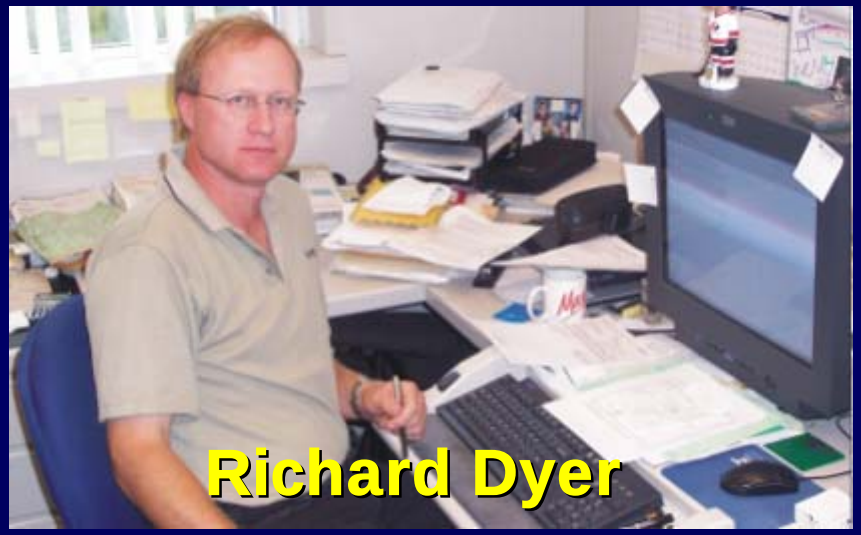
- Lake Sediment Surveys – Ongoing Project
  - Bruce Mines – Elliot Lake

  Approx 2500 samples (sediments and waters)

- Thematic Projects - Ongoing

  Response of surficial media - Platinum Group Elements (PGE)
  Case studies: East Bull Lake area

- *Geochemistry & Indicator Mineral Database (SGO)*
  - Surficial geochemical data
  - 7 new datasets being added
  - 80,000 sites, 7 million analytical results
  - Web enabled



Surficial Geochemistry

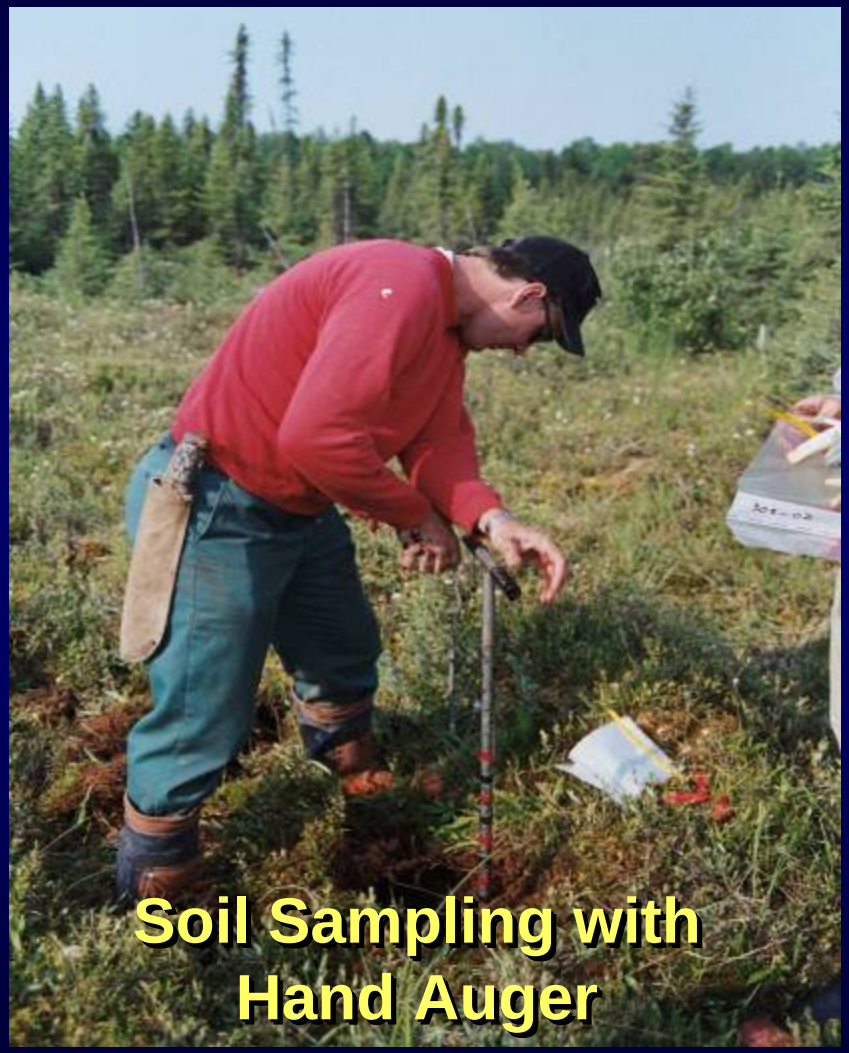
Lake Sediment and Water Surveys

- Helicopter and boat work
- Collect lake water and lake sediment samples (lake bottom) with specialized samplers

Sampling

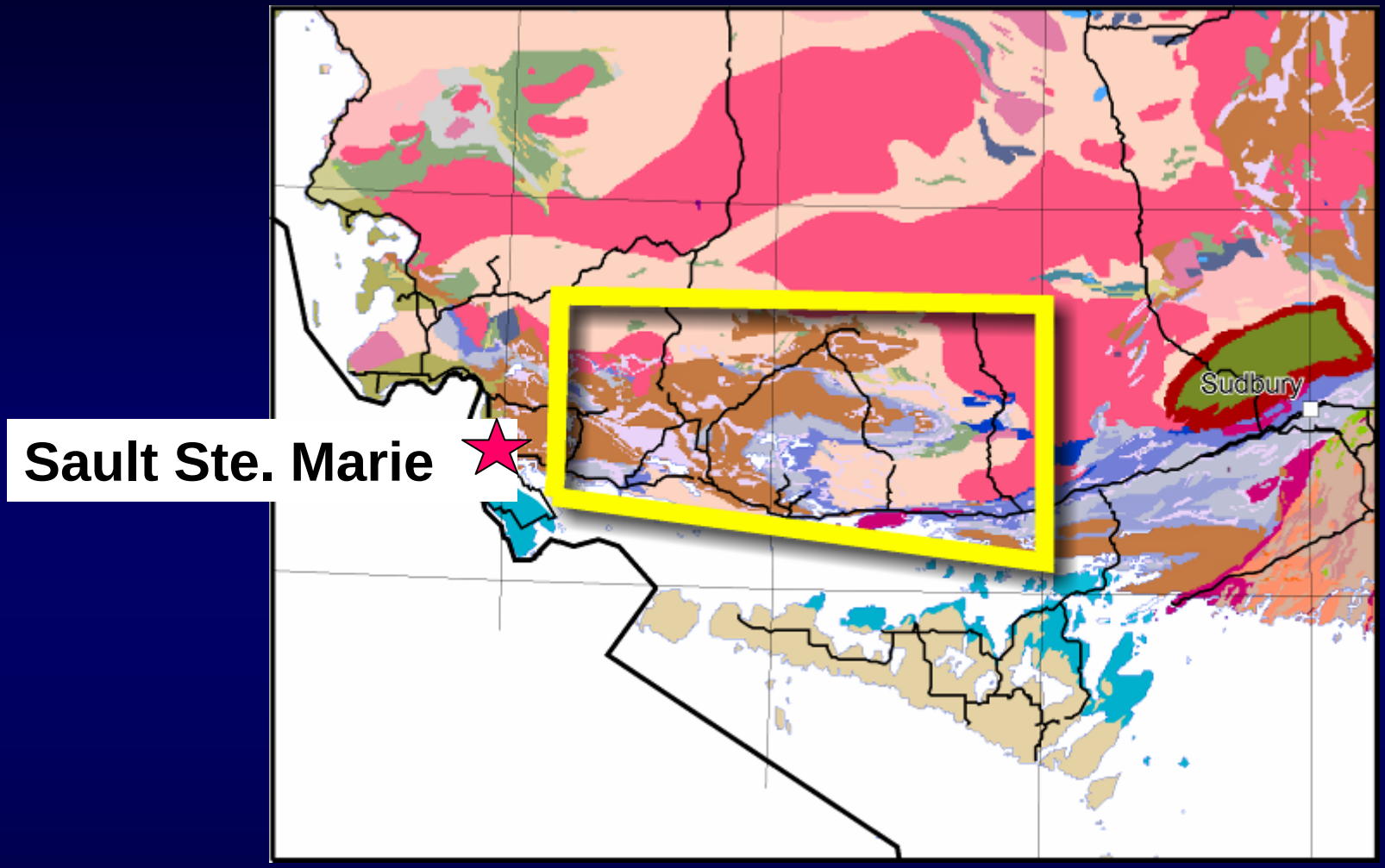
Collected Samples

Surficial Geochemistry



Surficial Media Sampling

- Geochemical exploration in areas of thick overburden
- Collection of various surficial media samples (soil, peat, water, etc.)



Lake Sediment Survey: Bruce Mines – Elliot Lake Area

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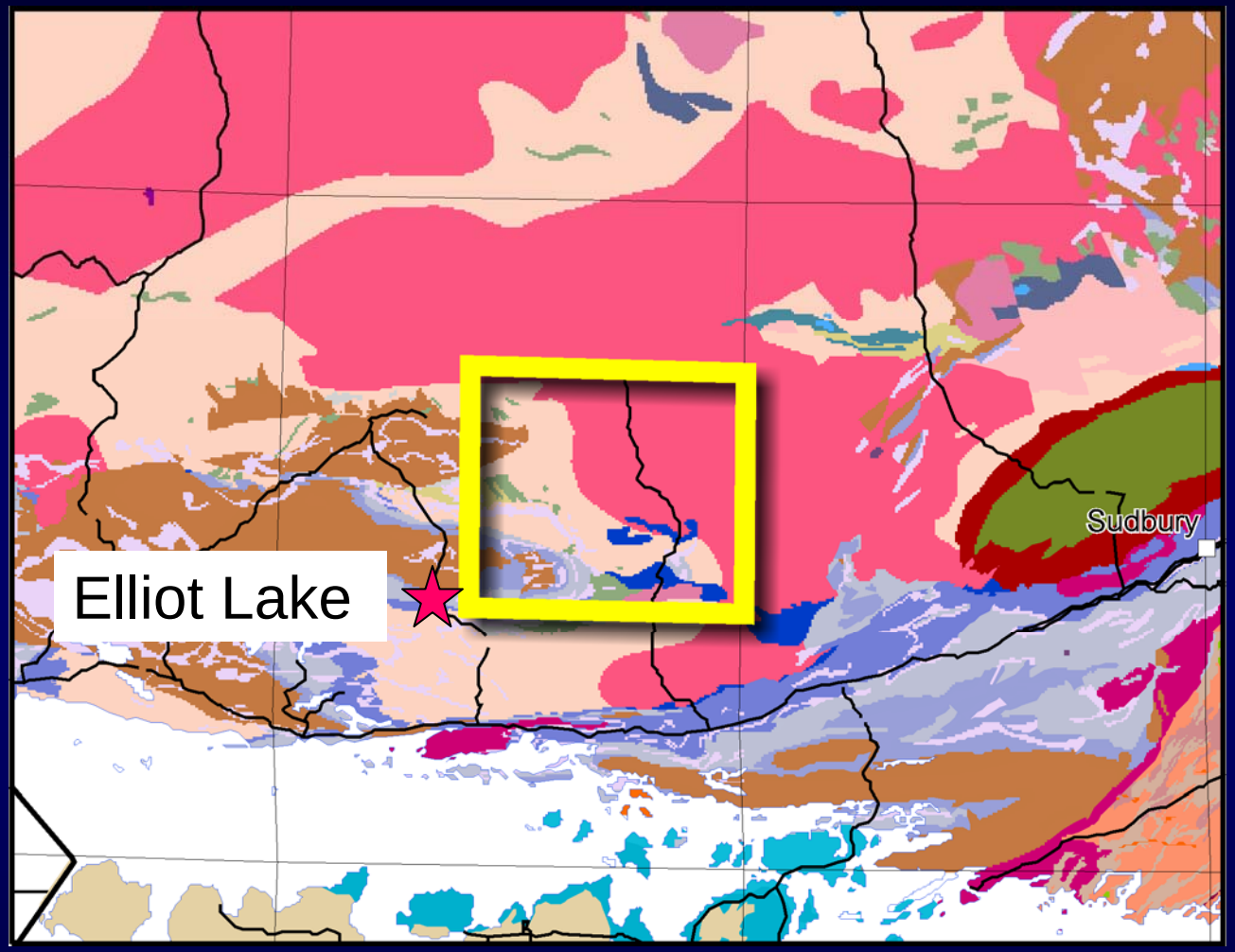

Response of Surficial Media PGE Case Studies: East Bull Lake Area

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Surficial Mapping and Sampling

Indicator Mineral Surveys

- **Collect sand and gravel samples from streams, rivers and other surficial deposits**
- **Boats, ATVs, Helicopter-supported**

River Bar Sample Site

Screening and Bagging Sample

Surficial Mapping and Sampling

Indicator Mineral Till Surveys

Till Section for Sampling

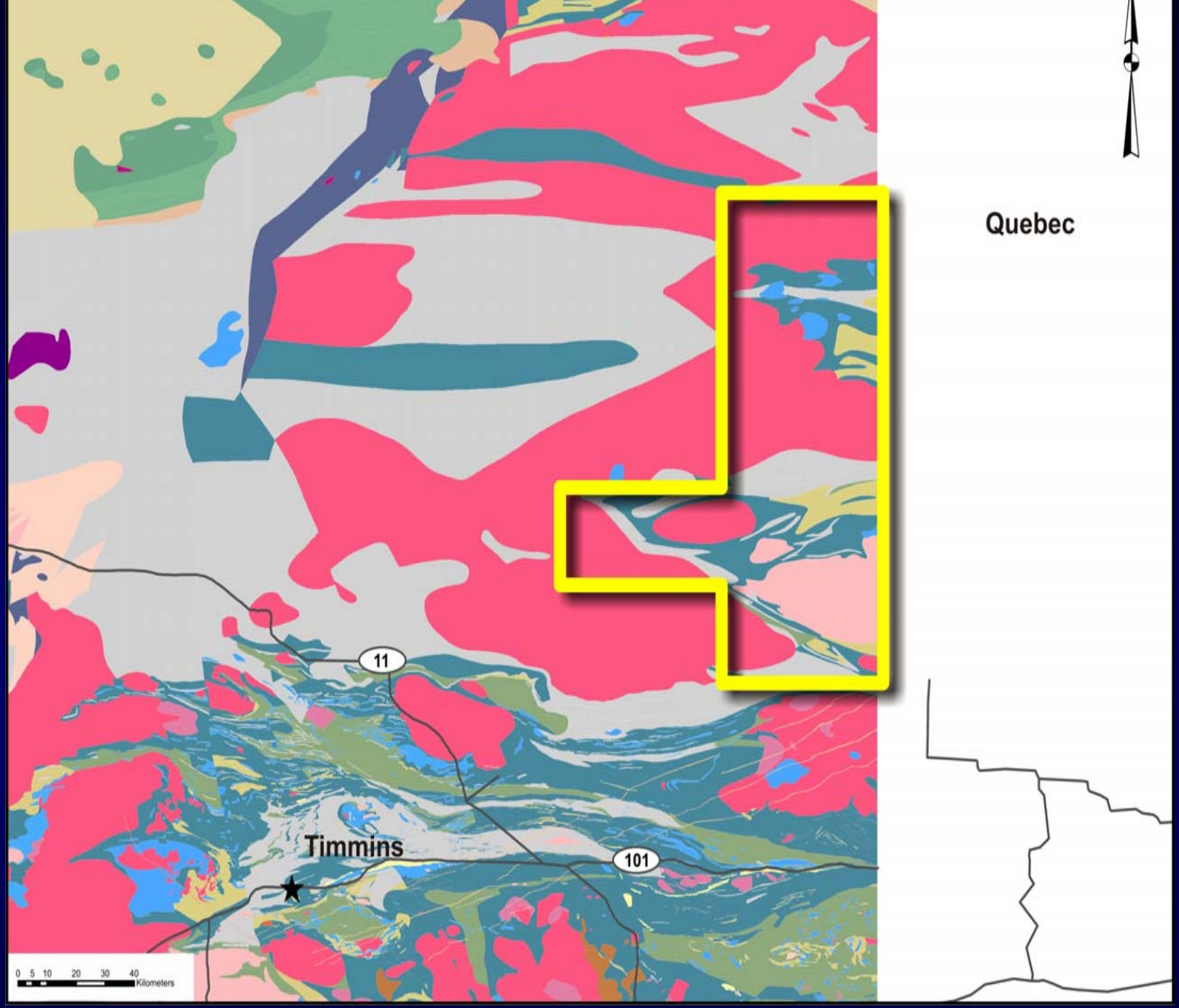
Screening Till to Collect 10 – 15 kg Sample

Surficial Mapping & Sampling

- Indicator mineral studies – in progress
  - Webequie (Far North)
  - Approx 200 till and sediment samples

Mapping & sampling – New

- Detour-Burntbush - Geological Surveys Branch
- Mowe Lake



Detour-Burntbush Surficial Mapping/Sampling

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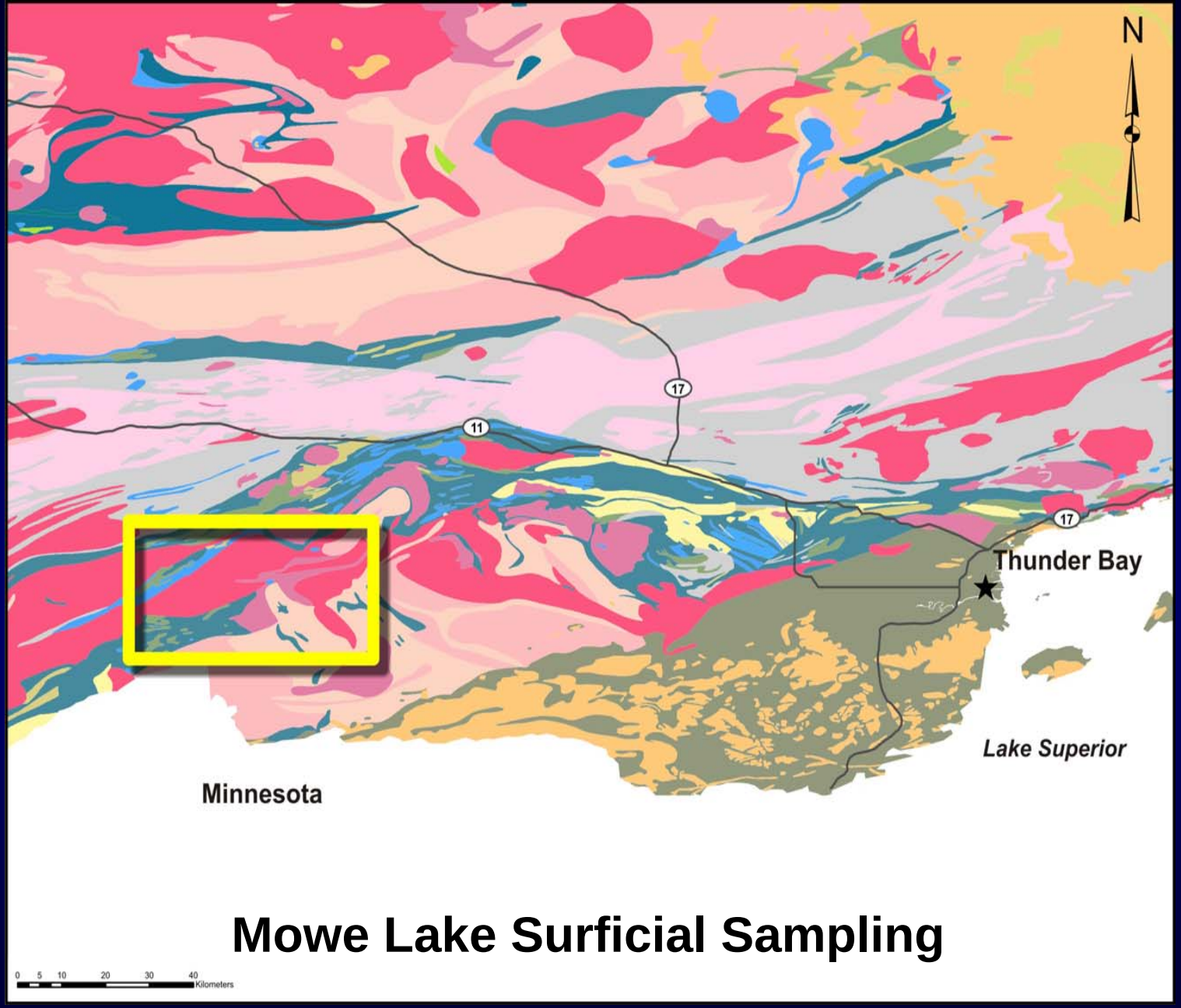

Mowe Lake Surficial Sampling

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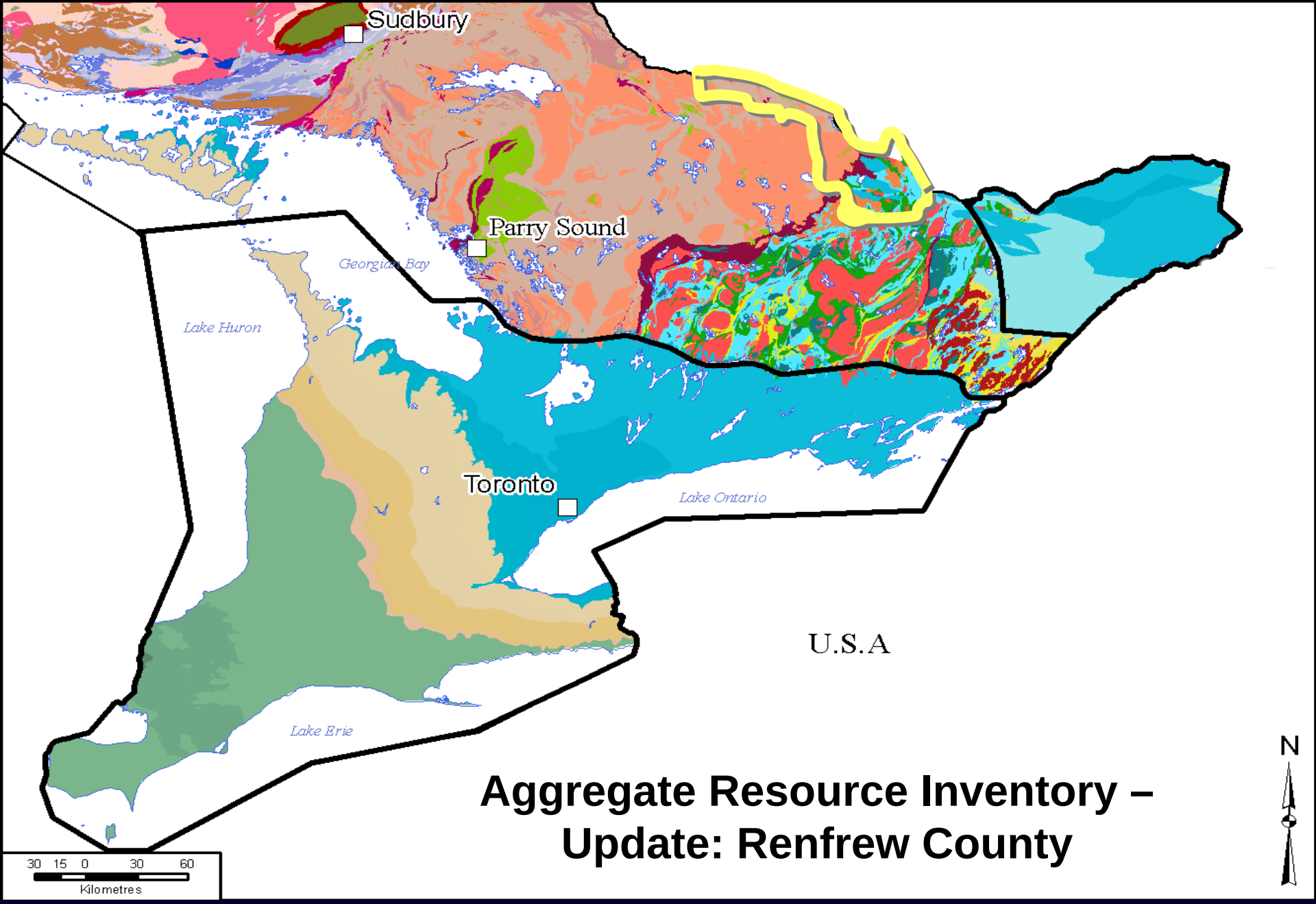
Aggregate / Industrial Minerals

Aggregate Resources Inventory Papers (ARIPs): Several counties municipalities in Southern Ontario underway

Renfrew County - update

– Bedrock Mapping:

Niagara – Cambridge and subsurface Southwestern Ontario (Armstrong)



Aggregate Resource Inventory – Update: Renfrew County

Groundwater Mapping Program

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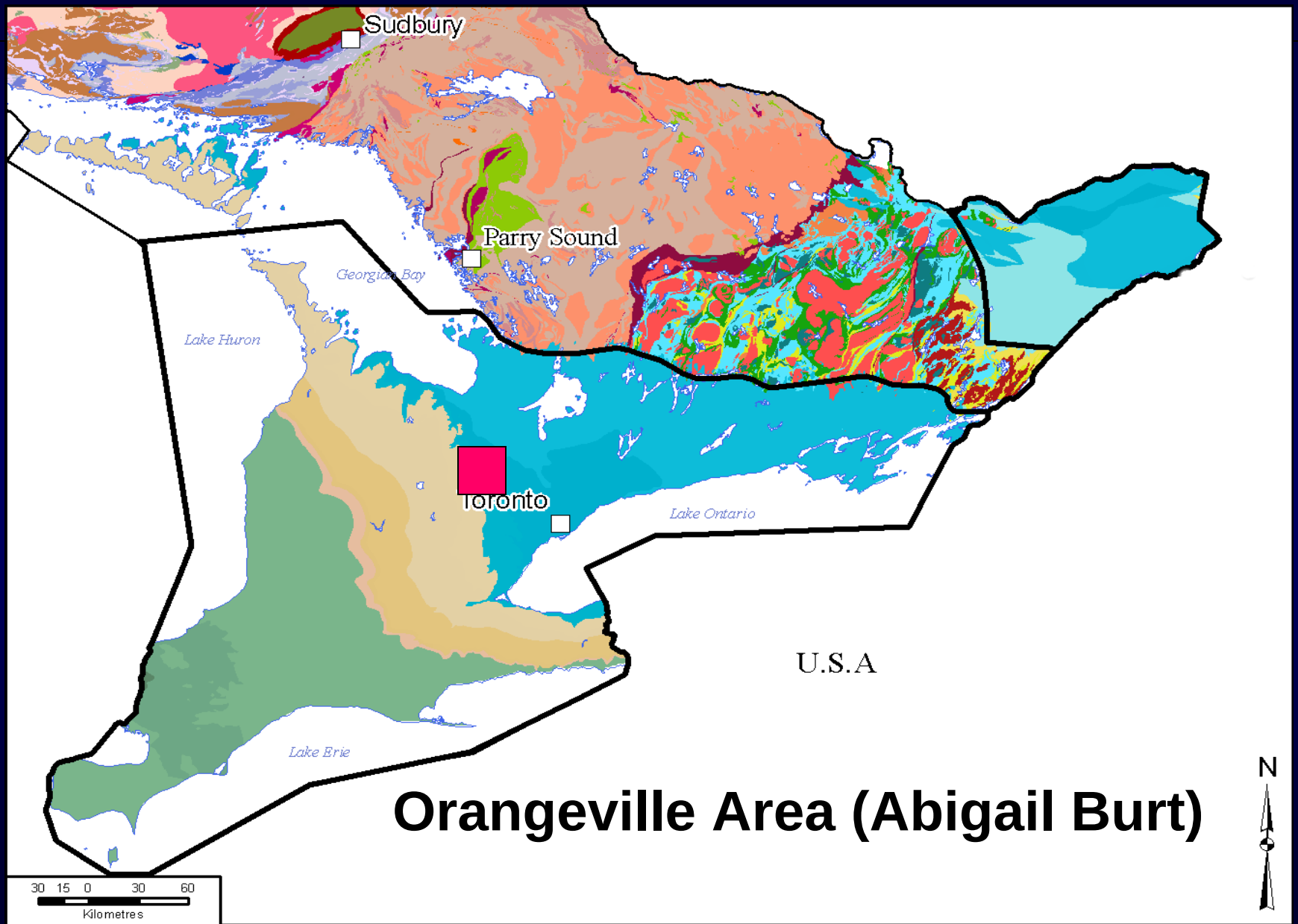
Groundwater Mapping Program

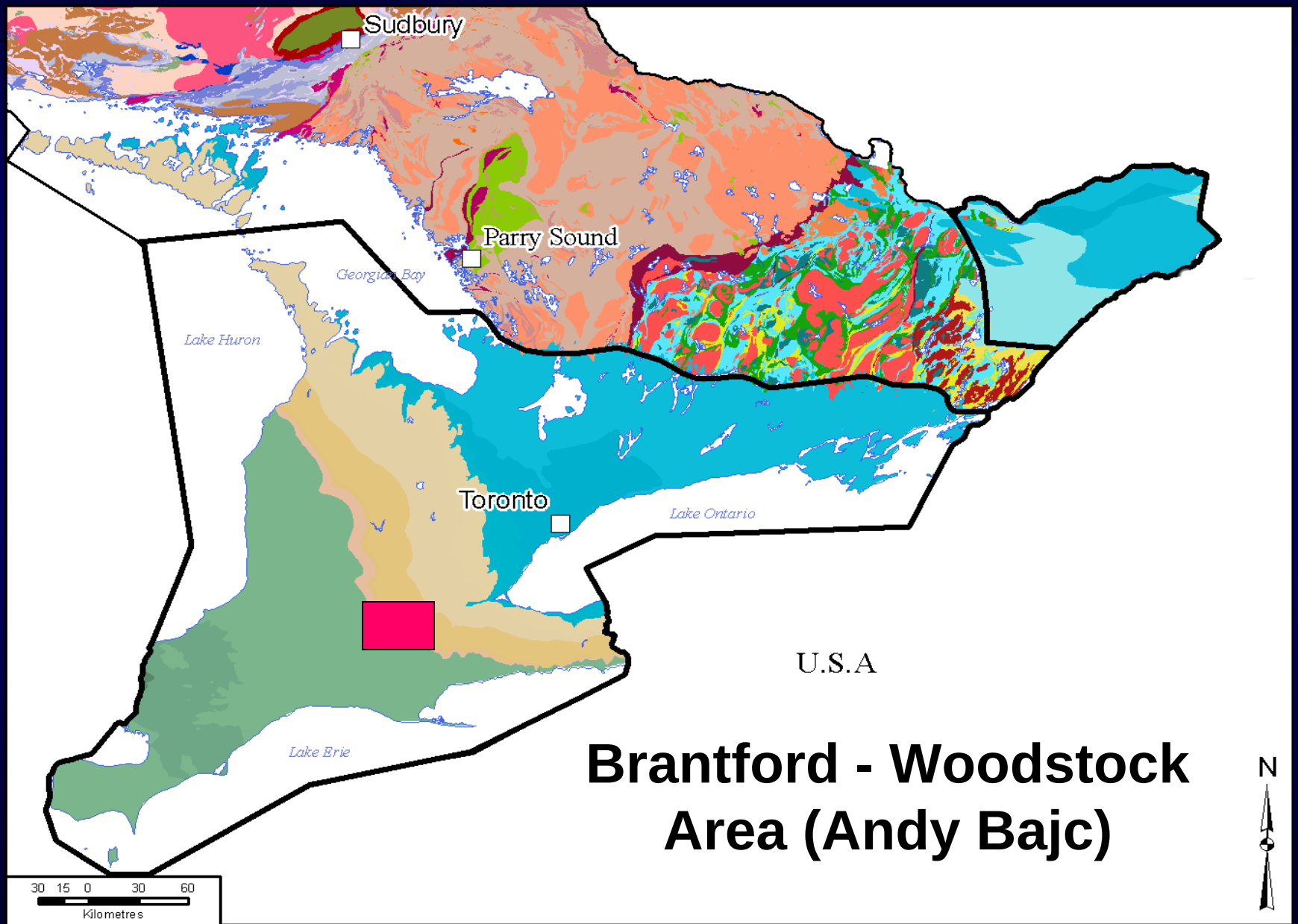
- 3-Dimensional (aquifer) mapping
- Development of GIS-based maps / databases
- Watershed based inventories / studies
- Vulnerability assessment thin drift/karst areas
- Data management - product development
- Groundwater geochemistry

3-D Geologic Mapping



Orangeville Area (Abigail Burt)

3-D Geologic Mapping

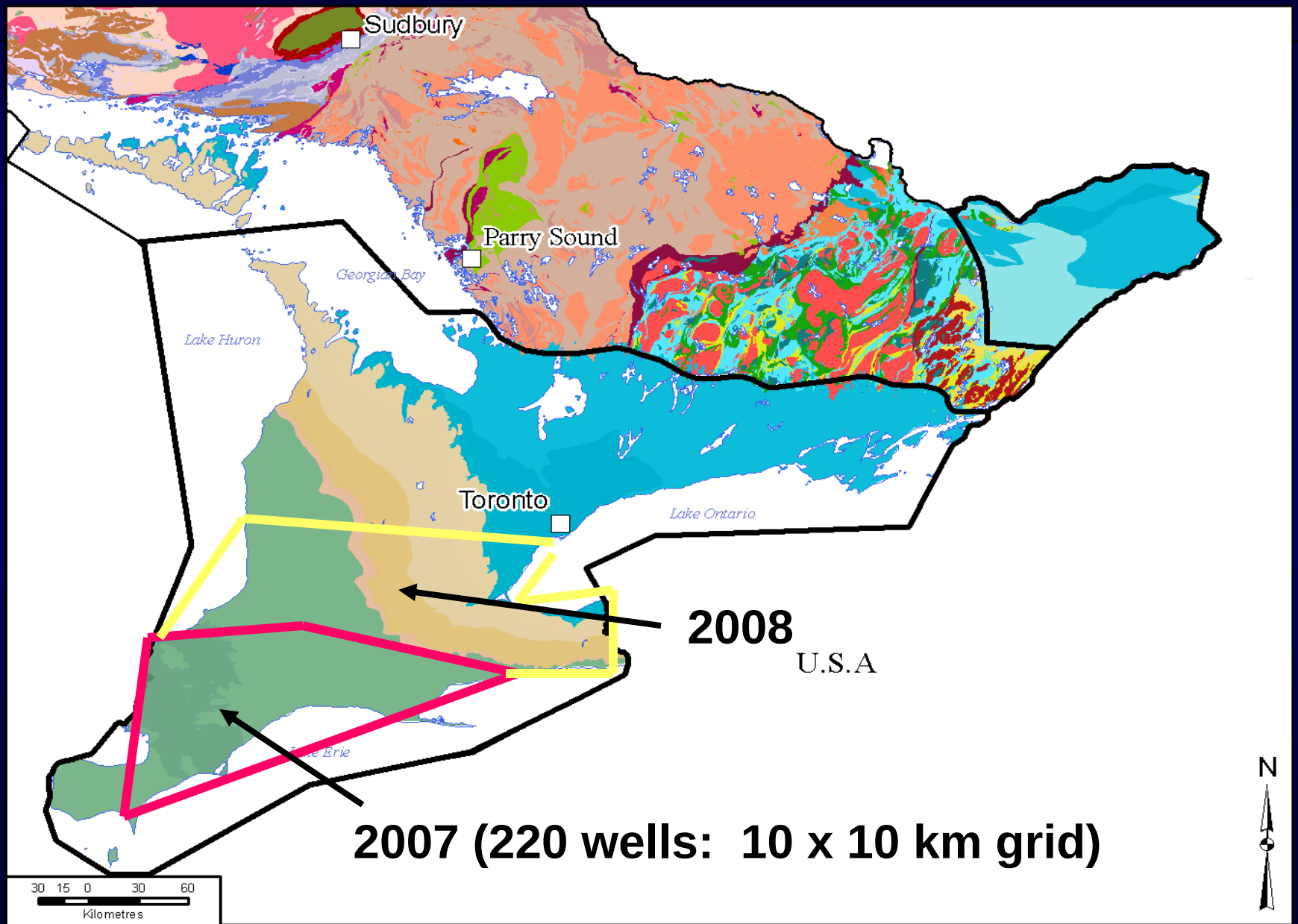


Brantford - Woodstock Area (Andy Bajc)

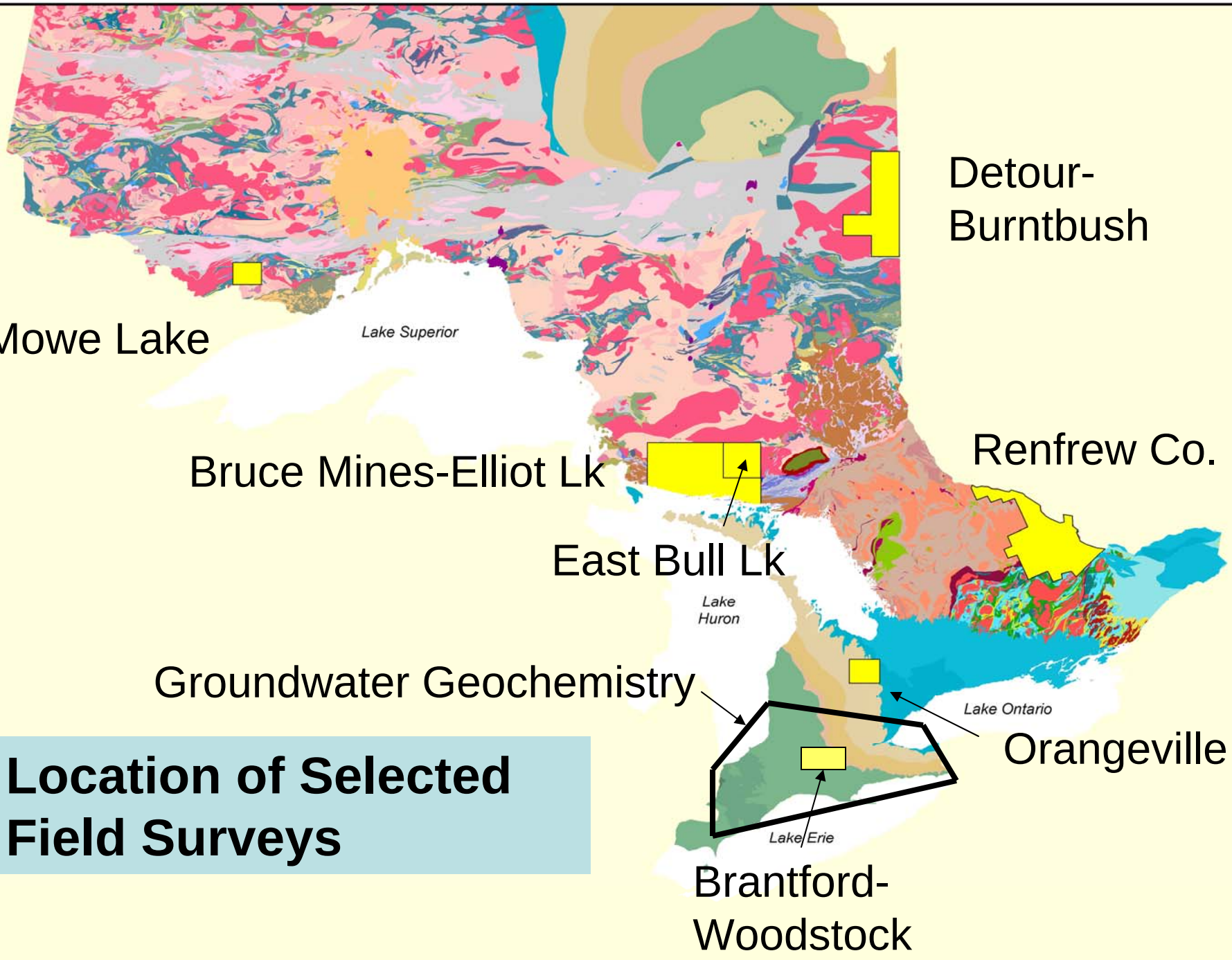
Groundwater Geochemistry

Geochemistry of Groundwater from Bedrock and Deep Overburden Aquifers (Stew Hamilton)

Groundwater Geochemistry



Summary: Location of Selected Survey Areas



Location of Selected Field Surveys

Map Sources

Ontario Geological Survey
1991: Bedrock geology of Ontario, northern sheet, Ontario Geological Survey Map M2541
1991: Bedrock geology of Ontario, west-central sheet, Ontario Geological Survey Map M2542
1991: Bedrock geology of Ontario, east-central sheet, Ontario Geological Survey Map M2543
1991: Bedrock geology of Ontario, southern sheet, Ontario Geological Survey MP M2544

For More Information

Surficial Mapping, Aggregates, Geochemistry
Ross Kelly
Manager, Mapping and Geochemistry
Sedimentary Geoscience Section
Ontario Geological Survey
705-670-5908
Ross.kelly@ontario.ca