

Natural. Valued. Protected.

Land Information Ontario

September 2009

Inside This Issue

Ontario Road Network Report	2
Imagery Report	3
Ontario Parcel Report	3
Arc Hydro Quaternary Watershed Project	4
Ontario Trail Network Report	5
Naming the GeoCoder Interface	6
Technology Report	6
Researchers and Ontario Data: Making the Connection	6

Ontario.ca/lio

Coordinator's Report

For us at Land Information Ontario (LIO), August always means the big Association of Municipalities of Ontario (AMO) conference in Ottawa. This year, we were especially pleased at the number of delegates that stopped at the LIO booth to see our new web map that features trailheads across Ontario. If you haven't already done so, check it out and see if we have your trail information. If we don't have it, get it to us! To access the trail application, please go to Ontario.ca/lio and click the Ontario Trail Network.

Thanks to everyone that provided, largely positive, feedback on the improvements to the [LIO Make-a-Map](#) application. As a result, we will be making some additional changes that should go "live" in February 2010. Some of our users have told us they're using our Google-based trail application together with the Make-a-Map application to help them explore Ontario's trails. Clearly, there is a place for both mass market geographic information tools like Google Maps and custom tools like LIO Make-a-Map on the same Web site.

Over the summer the Ontario Road Network (ORN) Version 2 was accepted as the new Government of Ontario standard and has become part of the new National Road Network (NRN) available through GeoBase. This includes, for the first time at the national level, address ranges for all road segments in Ontario.

On the technology front, we have been busy making behind-the-scenes improvements to our data ordering tool, also known as the Land Information Data Subscription (LIDS) service. You can also look for reductions in system down-time as we fine-tune our automated system monitoring utility.

As always, please consider taking a moment to send us your suggestions or comments about LIO or any of our communications. Contributions for consideration in an upcoming LIO Newsletter issue should be sent to at carrie.belton@ontario.ca. Take care, and stay well.

Raphael

Ontario Road Network Report

By Carol-Anne Albertson

Street names and address ranges associated with the Ontario Road Network (ORN) are now available through [Geobase](#) as part of the National Road Network (NRN).

Based on an agreement with Natural Resources Canada, we provide the ORN annually for incorporation into the NRN. The NRN product is distributed as thirteen provincial or territorial datasets and consists of two linear entities (road segment and ferry connection segment) and three punctual entities (junction, blocked passage, and toll point). These entities are associated with descriptive attributes such as: first house number, last house number, street name, place name, road class, pavement status, lanes, structure type,

route number, route name, and exit number.

Addressing information (address range, street name and place name) linked to road segment entities is also distributed in three distinct tables (address range, street and place names, and alternate name link).

For the most up-to-date roads data, the ORN is available from the [LIO Warehouse](#).

ORN is the Authoritative Source of Roads Data for Ontario Government

Based on modifications to the linear referenced model, the ORN was accepted and

approved by the Government of Ontario Information & Technology Standards (GO-ITS). GO-ITS are the official standards, guidelines, and preferred practices adopted by the Information Technology Standards Council.

For more information regarding GO-ITS please refer to: http://www.gov.on.ca/MGS/en/IAAndIT/STEL02_047295.html

The ORN Data Standard for Road Geometry and Attributes (GO-ITS 29) is available at: http://www.gov.on.ca/mgs/graphics/STEL02_047435.pdf

For more information on the ORN and how it can be used to support your business needs, please contact carolanne.albertson@ontario.ca.

New Data in the Warehouse
[Ontario In-filled Climate Data](#)

[Southern Ontario Land Use - Canada Land Inventory](#)

[Aggregate Bedrock Deposits 2008](#)

[Aggregate Sand and Gravel Deposits 2008](#)

[Aggregate Site Authorized](#)

[Aggregate Sites MTO - March 2009](#)

[Aggregate Pit or Quarry Historical](#)

[Soil Survey Complex](#)

[Arc Hyrdro Quaternary Watershed Sessions](#)



Satellite Imagery of Toronto

Imagery Report

By Mike Robertson

LIO continues to promote and develop a partnership approach to image acquisition projects across the province. The Digital Raster Acquisition Project –East (DRAPE) is nearing completion and has proven to be very successful in providing organizations with significant cost benefits through the development of multi-sector partnerships. While there are still some areas that need to be acquired, we expect most of the imagery will be available in late October.

Partnerships are now being finalized for the second South Western Ontario Orthophotography Project (SWOOP 2010). Organizations interested in becoming a funding partner must submit a Letter of Intent to participate by September 30th. The intent of the project is to acquire 20 cm imagery along with a much more accurate Digital Elevation Model (DEM). The products and geographic extent of this

project are dependent on the partnership and the funding identified by those partners. Acquisition is currently proposed for the spring of 2010, with leaf-off conditions.

Another partnership currently being discussed is a potential leaf-off acquisition in the North Bay, Sudbury, Manitoulin Island areas. This project is intended to assist municipalities and conservation authorities in those areas to acquire imagery that will support source water protection, environmental and natural resource considerations as well as infrastructure development.

Ontario Parcel Report

By Carla Jordan-Cooke

We are pleased that to let you know that you can now view the Assessment parcel layer when using the [LIO Make a Map application](#). By clicking on a parcel, you can also see the Assessment Roll Number. This was the result of making the Ontario Parcel available as an OGC-compliant Web Mapping Services (WMS) for use by the Ontario Public Service in desktop GIS tools or web-based applications.

An MNR Ontario Parcel sub-licence agreement was recently

signed with the Ontario Land Trust Alliance (OLTA). By signing this agreement, 35 OLTA members are now eligible to sign the MNR Ontario Parcel licensing agreements. These members must also belong to the OGDE. To date, seven agencies have signed agreements.

For more information, please contact Carla Jordan-Cooke at carla.jordan-cooke@ontario.ca.

The Forest Resource Inventory (FRI) acquisition is nearing completion and products are being delivered to MNR.

For more information about these imagery acquisition projects, please contact Mike Robertson at mike.robertson@ontario.ca.

Arc Hydro Quaternary Watershed Project

By John Gaoit, Data Analyst, Water Resources Information Program

Water is the single most important element in the evolution and survival of the human species. Since the beginning of human existence people have developed imaginative ways to deal with too little water or too much water; and have suffered terribly from the use of water unfit to drink.

Hydrology, the study of water, forms the basis for plans of action relating to water. In the past this took the form of measuring and recording the extremes and averages of water quality and quantity. Today, Geographic Information Systems (GIS), permit us to use this vast historic knowledge to model, analyze and predict the behaviour and health of water while it is actually still moving above, below and on the surface of the earth, both locally and globally.

Watersheds are commonly differentiated into a hierarchy

known as primary, secondary, tertiary, and quaternary. Information is collected and analyzed at all four levels, often applying different approaches with differing objectives, and using different data, for each level, sometimes, but not always, aggregating the information from level to level. The Water Resources Information Program (WRIP) has investigated various methods and software tools for improving the quality of information at all four levels, including the use of Arc Hydro by ESRI®.

In 1998 WRIP was initiated as a project to work with the Provincial Watershed Project to support Forest Management Planning, by creating, maintaining, and improving Ontario's water information. Since then, the need for digital water information has grown tremendously and WRIP's mandate has expanded to support improved data and information management for water-related data sets across the OPS and among its partners.

What is Arc Hydro?

[Arc Hydro](#) (AH) can be described as a geospatial and temporal data model for water resources, which operates as an

extension to ArcGIS by ESRI®, the world's most commonly used geographic Information system software. Using this data model ensures that information is stored and structured for consistency and compatibility so that it can be easily shared world-wide. Arc Hydro was developed by the GIS in Water Resources ([GISWR](#)) Consortium.

In general, Arc Hydro:

- Can assist professionals in performing advanced modeling of surface and groundwater systems.
- Can be used alone within ArcGIS or integrated with other surface and groundwater computer models.
- Works best in smaller study areas such as quaternary watersheds, which form the basis of the Southern Ontario Arc Hydro Quaternary Watershed Project.

The Project

The Arc Hydro Quaternary Watershed Project was initiated by WRIP to support the business needs of the River and Stream Ecology Unit (RSEU) of the Ministry of Natural Resources (MNR). The project involved assembling different layers of water information for the Great Lakes – St. Lawrence River Basin by quaternary watershed. The assembled data included the following major components:

- The WRIP single-line stream network
- Stream-related catchment areas and discharge points
- The WRIP enhanced flow-direction information

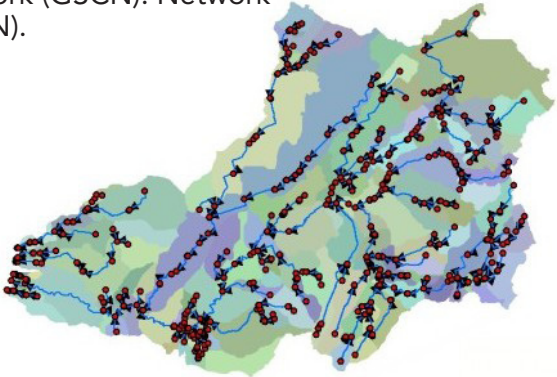
The business needs of RSEU included sub-watershed delineation and characterization for fish habitat. Once this data

was assembled within the Arc Hydro structure, RSEU scientists, GIS staff from MNR Southern Region and Trent University masters students were able to utilize Arc Hydro tools to perform advanced hydrologic modeling (e.g. watershed delineation) in a standardized way.

This analysis provided the characterization required for their Stream Site Analysis Tool (SSAT) developed by the MNR Southern Science & Information Section (SSIS), which is a good example of how Arc Hydro integrates with other tools.

The project concluded that Arc Hydro is the most suitable product for managing Ontario's water information at the quaternary level, and for analyzing water information at all four levels of hierarchy. While WRIP continues to evaluate other uses of Arc Hydro within the MNR, the results of the quaternary watershed Arc Hydro research created in this project have been made available as packaged products through the LIO Warehouse to all OGDE members.

This project would not have been possible without the dedication of staff within the Geomatics Service Centre Network (GSCN). Network (GSCN).



A quaternary watershed with the major hydrology components.

Ontario Trail Network Report

By Carol-Anne Albertson

The Ministry of Health Promotion's Ontario Trails Strategy is an exciting, long term plan to promote the management and the use of recreational trails across Ontario.

To support this Strategy, we've developed a web map called "Do We Have Your Trail?" that shows trail locations in Ontario. The trail information has been provided to us by Ontario municipalities and trail organizations. Check to see if we have your trail in [English](#) or [French](#)!

If you don't see your trail contact us at trails@ontario.ca and we can add it. By adding your trail to the [Ontario Trail Network](#), your trail along with other trails, will be accessible at no cost to government ministries and other organizations for planning, analysis and emergency management.

For more information about the Ontario Trail Network please contact Carol-Anne Albertson at carolanne.albertson@ontario.ca.



Welcome New Data Exchange Members

- Corporation of the Town of Cobourg
- Township of King
- Ministry of Aboriginal Affairs - Negotiations and Reconciliation Division
- Fanshawe College
- Rainy River First Nations
- The Corporation of the Township of Carlow/Mayo
- The Corporation of the Municipality of Meaford

Naming the GeoCoder Interface

We need your help! LIO is developing a web-based application to generate point locations for full or partial addresses. It will use the LIO GeoCoder Web Service that has been available to the public for several years that checks the submitted addresses against the Ontario Parcel, the Ontario Road Network, and the Postal Code.

What do we want? We're looking for a name or acronym for this application. We know that LIO participants are a very imaginative bunch and, as an incentive, we will provide a beautiful blue LIO shirt in your size to the individual that provides the name we ultimately select. Send any ideas, or any question, comments or suggestions to lio@ontario.ca or call us at (705) 755-1878.

Technical Bulletins

[Changes to Nesting Site Data Class Model](#)

[Changes to Tile Drainage Area Data Class](#)

[Changes to Constructed Drain Data Class](#)

[Changes to OTN Trail Segment Data Class](#)

[Changes to OTN Trailhead Data Class](#)

Technology Report

By Bruce Wurtele

Over the last quarter, we've focussed our efforts on the modernization projects under the GIS Application Architecture Renewal Project. Work is progressing well, including work on the development of a new metadata tool, simplification of the LIO Warehouse data structure, creation of a new web-based mapping tool, and re-engineering of the corporate data maintenance system. These major projects will begin their implementations over the next year. By early 2010, users will notice that data extracted from the LIO Warehouse will have a simpler format.

Other recent activities include a variety of minor updates to the data download utility, addition of new data classes to the

Warehouse and Web Mapping Services, implementation of new and updated Internet Mapping Framework applications for business clients in various OPS ministries, and work on a user interface for the LIO GeoCoder. As always, please check the LIO website for Technical Bulletins and Release Notes for full details on all application and data changes. Lastly, MNR has started loading data to the Geographic Information Archive (GIA). The GIA is a large enterprise scale information system that provides a secure archive for hundreds of terabytes of imagery products. Due to the sheer size of the imagery collection, data loading will be ongoing for several months.

For more information, please contact Bruce Wurtele at bruce.wurtele@ontario.ca.

Researchers and Ontario Data: Making the Connection

By Barbara Znamirowski

In 2002 six university libraries: University of Guelph, McMaster University, Trent University, University of Ottawa, University of Toronto, and the University of Waterloo signed a Memoranda of Understanding with the Ministry of Natural Resources to receive Natural Resources Information System data. This was a significant achievement that provided new opportunities for researchers and students to obtain large scale spatial data.

But this was just the beginning: this cooperative arrangement has continued to expand, and today 17 Ontario university libraries are members of the Ontario Geospatial Data Exchange (OGDE).

Working under the umbrella of the Ontario Council of University Libraries (OCUL), library data and GIS support specialists administer institutional memberships to the OGDE and to other data partnership



agreements on behalf of their clients: the students, faculty, staff and administrators of Ontario universities. These agreements have generated new teaching and research opportunities, and have also changed the role that libraries play, becoming campus centres for geospatial data and GIS technologies.

Agreements such as the OGDE ensure that in spite of funding challenges and other constraints, libraries will be able to respond to campus needs for spatial data. These needs may include, for example, a geography professor's request for large scale topographic and digital elevation data to support a field or lab exercise in mapping local drumlins; a professional school's request for road network and school building information to support a weekend workshop for teachers in GIS; or an administrator's interest in obtaining data to support mapping student catchment areas in relation to the university.

The OGDE's success is reflected in the cooperative spirit it embodies: the willingness of its members to not only share data but to plan together and to loan their valuable time and expertise to the collective effort. Last year, for example, a variety of partners from the Information Access Section of Land Information Ontario, the Water Resources Information Program (WRIP), the Ontario Road Network, the Ontario Trails Network, and the Ministry of Agriculture, Food and Rural Affairs met with OCUL to present the geographic information they produce. The day was a great success, with considerable information exchanged about both data projects and the patterns of questions and requests for data that libraries encounter.

But the best "success stories" of the OGDE are those told by our own students and researchers, through the projects they undertake and the outcomes they produce. These projects range across social and physical sciences. We are heartened that the requests for data that we receive contribute to projects that vary from highly disciplined research suitable for publication (for example, tree species in stream flow catchments, and modeling of digital elevation data to support analysis of soil erosion), to the imaginative embrace of creative opportunities (for example, a student project involving mapping potential UFO landing spots near a campus).

In their own words, here is a selection of the many project titles for which OGDE data were supplied by libraries this past academic year:

"Fire evacuation routes for North Bay and area", "Water quality on Ontario Aboriginal reserves", "Mapping deer yards and deer populations in eastern Ontario", "Landscape analysis of the GTA", "An analysis of runoff into wetlands along the Great Lakes shoreline", "An assessment of whether forest composition and proximity predict nest box occupancy for three cavity nesting waterfowl species", " Watershed modeling for the Grand River Watershed", "The use of remotely sensed imagery to detect the impacts of the emerald ash borer in southern Ontario", "West Nile mosquito monitoring and testing", "Identification of Niagara wine sub-appellations boundaries", "Garlic mustard habitat suitability map", and "Applied sustainability and photovoltaics : a project that estimates the total roof area in south eastern Ontario for use in solar photovoltaic applications"

(To answer these questions a variety of data was used including: vector topographic layers, road and trail network information, information from WRIP, SOLRIS, OMAFRA soils and the Ontario Forest Resource Inventory (FRI) projects, Ontario QuickBird satellite imagery, and orthophotography from such initiatives as the South Western Orthophotography (SWOOP), Digital Raster Acquisition – EAST (DRAPE), Simcoe/Muskoka, and GTA projects)

Barbara Znamirowski is the Ontario Council of University Libraries (OCUL) Map Group Liaison Contact to MNR. She is also Department Head, Maps, Data and Government Information Centre (MaDGIC) at Trent University Library.