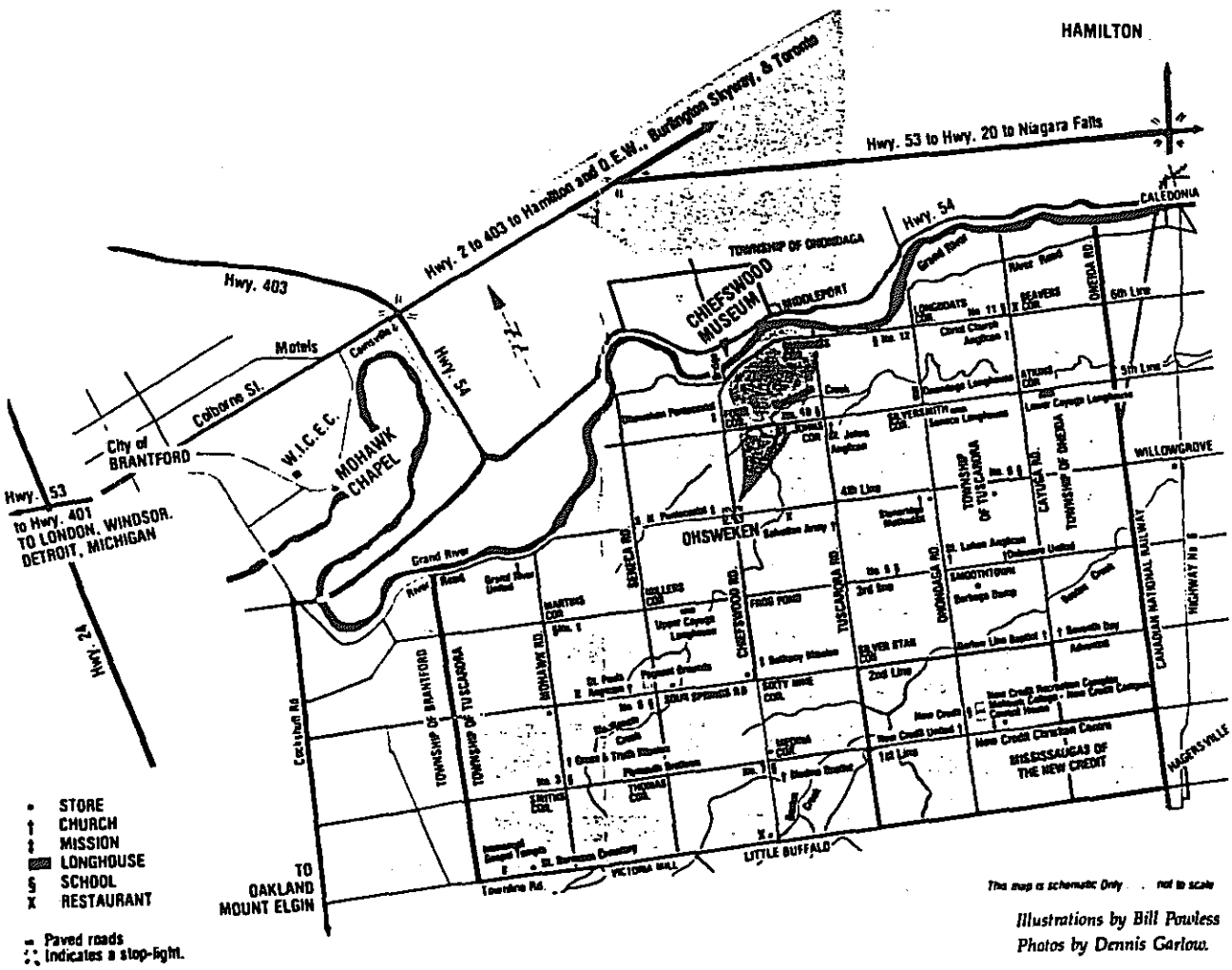
THE EAGLE'S CRY

A LAND RESEARCH INFORMATION SYSTEM



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SIX NATIONS RESERVE PROJECT

PROJECT PROPOSAL

PURPOSE: To set up a land information system for the Six Nations Reserve. This system will be accessible and will be utilized by various organizations and institutions both on the reserve and off.

OBJECTIVE: The objective of the project is to develop a comprehensive land information system for the reserve that will facilitate land claims, land development, community planning, real estate, ecosystem management and tourism.

METHODOLOGY: Through the use of ESRI's ArcView2, the Six Nations Reserve will be mapped using the coordinates from CLSR maps. dBase will be used to store data pertaining to the features on the map and Visual Basic 4.0 will be used to link the database to the map in ArcView. All systems will be run on Windows 3.11. The information to be stored in the database will come form many different sources. Organizations on the reserve will be consulted to determine what information will be included and how it should be represented on the map. As well, companies off the reserve will need to be consulted for existing data and mapping information.

TERMINOLOGY: Throughout the project outline, there will be terms used that pertain to ArcView features and functions that are best defined now:

Theme: A theme is a group of similar geographic features in a view. For example, imagine a map of city blocks, upon which you superimpose other maps representing streets, hydro lines, sewer lines and zoning designations. Each of these maps is a separate theme.

View: A view is a collection of themes. Therefore a map showing city blocks, streets and hydro lines constitutes one view. Within ArcView, there can be any number of themes in a view, but choices can be made as to which ones are active (displayed in the view).

Attribute data: Tabular data that is linked to themes. It can contain information associated with features in a theme, such as coordinates, area and perimeter of a polygon, addresses and lot numbers.

COMPONENTS

Base Map: Primary Base Map - basic outline of lots, streets, railways, waterways
Secondary Base Map - Primary base map is further divided into individual lots (a separate theme)

- either one of these maps could be used depending on the detail required and information that needs to be displayed.

Public Works/Utilities: Hydro, cable, telephone, sewers, water, natural gas, fire stations, etc.
- old wells, piplines etc. that are not in use anymore
- landfill sites - currently used and unused

Housing: Number of and type of buildings on a lot, current ownership, lease information, date of construction, the building's area, etc.

Lands: land ownership, leases, transfers, membership, etc.

Land use: commercial, residential, agricultural, recreational, institutional, religious, etc.

Historical Sites: Map out historical village sites, battle grounds, burial sites and other sites of historical and/or cultural importance.

Tourism: Points of Interest could be mapped with information available (ie. owner names, company names, business hours, dates, phone numbers, directions etc.)

Natural Resources: Map rivers, streams, ponds, marshes, wetlands, forests, etc.
- physiographical, geological, hydrogeological information
- soil types
- mining (ie. gypsum), forestry, fisheries
- wildlife habitats and inventories

Satellite Images/Aerial Photos: Be able to bring up the aerial photo of the whole map and/or selected lot(s) at any time.

- The following pages describe, in more detail, each component as we envision the Six Nations Reserve Land Information System to function.

BASE MAP

Primary : Basic outline of the reserve's lots, streets, railways and waterways.
Drawn using coordinates from the CLSR maps.
Secondary : A further breakdown of the lots so each individual lot is shown.
Could be a theme that is added to the Primary map or could be a separate map.

Themes: Lots (Primary)
Indiv.lots (Secondary)
Streets
Waterways
Street names
Block names
Railways

Select funtions:

In order to view the attribute data for a feature, the theme that is in question must first be active, as well as the attribute icon. When the user clicks on a feature, its length and/or area, and its coordinates will appear diresctly on the map.

Search functions:

Use a search icon that, when clicked on, would bring up another box that prompts user to search by:

Lot ID
Street name
Stream name

If Lot ID is selected: To search by lot ID, the user would be prompted to enter the township, concession and lot numbers. Once the lot ID is entered, that lot is highlighted and the dimensions and lot ID appear just as if the lot had simply been clicked on (select function described previously).

If Street name is selected: To search by street name, the user would be prompted to enter the street name. Once the street name is entered, the entire street is highlighted and its name appears on the map as if the street had been clicked on (select function described previously).

If Stream name is selected: To search by stream/river name, the user would be prompted to enter the stream name. Once the stream name is entered, the entire stream is highlighted and its name appears on the map as if the stream had been clicked on (select function described previously).

Once a lot, street or stream has been selected using the search function, the user can proceed to use the attribute icon to view information about that feature.

The above search and select functions should be operational at **all** times.

PUBLIC WORKS / UTILITIES

Use either the Primary or Secondary Base Map
Search and select functions will be operational as described for the Base Map.

Themes:
- Hydro lines
- Cable lines
- Sewer lines, sewer treatment plant
- Septic tanks
- Telephone lines
- Natural Gas lines
- Water lines, water treatment plant
- Landfill sites
- Fire stations
- Fire hydrants
- Police station

A different colour and/or symbol will be used for each theme so that they can all be displayed in the view at one time. The above themes would be for currently used utilities.

Other themes:
- Old abandoned wells
- Old pipelines
- Old landfill sites
- Other unused utilities - TBD

Again, these themes would be different colours than those above so that all information could be displayed simultaneously.

The user will be able to click on one of the above mentioned features on the map, the feature will blink or be highlighted and an information box will appear displaying the name of the feature (i.e. Ontario Hydro line, Bell Canada telephone line, Six Nations Natural Gas line, etc.) and any other pertinent information.

HOUSING

Best to use the Secondary Base Map.
Search and select functions will be operational as described for the Base Map.

The user will be able to select a lot, then click on an icon that will bring up an information box containing details and/or actual documents about:

- the number of buildings on the lot.
- the type of building (single family dwelling, multi-family dwelling, townhouse, church, longhouse, school, retail store, service building, etc.)
- the area of the building.
- the date the building was constructed. (Who constructed it, if the infomation is available)
- Current owner/leasee of the house/building and of the land it is on. For the details and history of past land ownership, the user could utilize the icons as described for LANDS.
- An actual photograph of the building should come up as part of the information box.

The information used will be determined and provided through consultation with the Housing office. The information will be stored in a database (Visual dBase) that would in turn be linked to ArcView.

LANDS

Best to work from the Secondary Base Map.
Search and select functions will be operational as described for the Base Map.

Once a lot is selected, the user will be able to:
- click on an icon that brings up ownership information
- click on an icon that brings up lease information
- click on an icon that brings up transfer information
- click on an icon that brings up membership information
- other information TBD

Each icon will bring up an information box with the corresponding information, actual documents, and an aerial photograph of the lot.

The icons would be linked to a database containing information provided by the Housing and Land registry offices.

LAND USE

For details of land use, the Secondary map would be the best map to use.
Using the theme, Indiv.lots, each lot will be colour coded according to the designated or actual land use (ie. commercial, residential, recreational, institutional, agricultural, parks/protected areas, rural, urban etc.).

This map would aid in community planning.

HISTORICAL SITES

The Primary map would be sufficient to use as the base map.

Themes would include original village sites, battle grounds, burial sites and any other sites that may be of cultural or historical significance to the reserve. Each site would be shown as a point, or if known, a polygon representing the actual area. Once a site is clicked on, an information box will appear containing the historical information and/or documents for that site.

NATURAL RESOURCES

The Primary Base Map will be sufficient to use as a base map.

- All rivers, creeks, ponds, marshes, wetlands, forests, culverts, etc. will be mapped
- User will be able to access topographical, physiographical, hydrogeological and geological information, soil information, etc.
- Forestry, mining, other resource extraction.
- Wildlife habitats and inventories will be mapped as well as floral habitats.

When the user clicks on a feature, it should blink or become highlighted, and then the attribute icon can be used to get the information box with the feature's name, its area and any other pertinent information.

TOURISM

Utilize either the Primay or Secondary Map.

Themes:
- Street names — as described for the Base Map and including major area highways (ie. highway 54, #6, etc)
- City names — area city names (ie. Ohsweken, Caledonia, Hagersville, Brantford, Middleport etc.)
- Point of interest - displayed on the map as a dot or other symbol.

Will be able to:
Click on a symbol, then using an icon, pull up an information box containing information on that site:

- name of the point of interest
- owner and/or caretakers of the site
- date/seasons/hours it is open or running
- any other pertinent information

Additional search options:

- By point of interest. Once the user chooses to do a search (by clicking on the search icon), the user will then be asked to search by:
  - Enter the name
  - See list

  If user chooses to search by entering the name, the user enters the name of the point of interest.
  If user chooses to search from the list, a list of all points of interest appears and the user points and clicks on the desired selection.

Once a selection is made, the corresponding dot should begin flashing on the map. The user can then pull up the information box using the designated icon.

Other possibilities:

An option could be built in that would enable the user to select a point of interest on the map and the computer would highlight, on the map, the best route for the user to take from the tourism centre to the point of interest.
An option to print maps could also be offered. One map would contain all points of interest with street names, city names and major intersections on it. One map would be contain the highlighted route to a selected point of interest from the tourism centre. This option would best be utilized by the tourism centre.

SATELLITE IMAGES/AERIAL PHOTOGRAPHS

At least one satellite image of the whole reserve will be accessible to the user at any time. The user will be able to overlay either of the base maps onto the image, as well as any of the themes.

Aerial photographs could be very useful for almost all areas of this project.

Actual photographs of buildings or objects on the land would be useful, especially for the housing and tourism areas. The picture should appear directly in the information box each time the information box is called up.

EMERGENCY RESPONSE

The police and fire stations could effectively utilize this system. If a caller calls in an emergency, the dispatchers would be able to type in the address (township, concession, lot number) and the lot should blink - this is essentially the search function by lotID, as described for the base map. Street names and major intersections should already be displayed (thus utilizing the secondary base map with the block names and street names themes).

The dispatcher would then be able to click on another icon that would cause the nearest fire station, fire hydrants and police patrol routes to be highlighted. Information on the nearest first response volunteers would also be available. The dispatcher could then easily determine who to dispatch and give them the exact directions to the location of the emergency.