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# Great Lakes Shoreline Classification and Mapping Study: Canadian Side

FINAL REPORT



JULY, 1992

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Submitted by  
**Geomatics International**



in association with  
Dr. Robin Davidson-Arnott

**International Joint Commission  
Great Lakes - St. Lawrence River  
Levels Reference Study Board**

**GREAT LAKES SHORELINE CLASSIFICATION  
AND MAPPING STUDY: CANADIAN SIDE**

**FINAL REPORT**

**Submitted to:**

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## **GREAT LAKES SHORELINE CLASSIFICATION AND MAPPING STUDY: CANADIAN SIDE**

### **Executive Summary**

The purpose of this study was to classify and map the Great Lakes-St. Lawrence River shoreline using a three-tiered classification devised by the Erosion Processes Task Group of Working Committee 2. The classification scheme was designed to emphasize features that could be related to the resistance of the shoreline to erosion and the proportion of the shoreline covered by shore protection structures. The shoreline was first divided into reaches on the order of 1-5 km in length whose boundaries were generally defined by a change in shoreline orientation, composition or relief and these reaches formed the basic units for the classification procedure. Within each reach the shoreline was classified on the basis of: a) geomorphology and geology; b) proportion of the shoreline protected; and c) the material found in the nearshore. The first layer of the classification scheme takes into account the characteristics of the sub-aerial portion of the coast and consists of 17 classes ranging from coastal bluffs formed in cohesive sediments, through sandy beach and dunes, wetlands, bedrock, and artificial shorelines. The second layer of the classification is based simply on an estimate of the percentage of the shoreline that has some shore protection and contains six classes. The third part of the classification scheme is based on the nature of the material forming the subaqueous profile and also contains six classes. Minor modifications to the original scheme were made as a result of practical considerations during the actual classification process and following a peer review workshop held in January, 1992 in Burlington, Ontario. As a result of this workshop, it was deemed necessary to incorporate known shoreline recession rates as a further indication of the erodibility of the shoreline.

The classification procedure itself involved a considerable degree of subjectivity since the classification scheme is largely descriptive and because even within the small reaches there can be a certain degree of variability. In order to make the procedure as consistent as possible classification of the whole of the Canadian shoreline was carried out by two individuals - John Fisher of Geomatics International and Robin Davidson-Arnott of the University of Guelph. Extensive sections of Lake Ontario and Lake Huron were classified jointly in order to establish a consistent procedure for classification and common criteria for interpretation.

A variety of sources of information were used for the classification. Classification of geomorphology and protection was based primarily on shoreline video tapes or vertical aerial photographs, supplemented by material from the Canada/Ontario Coastal Zone Atlas, topographic maps, and maps of bedrock geology, surficial geology and soils. Low-altitude colour video tapes which covered most of Lakes Ontario and Superior provided the best source

of information, with vertical aerial photographs generally being more difficult to interpret, particularly where the scale of the photographs was greater than 1:10,000. There was much less information available on the characteristics of the nearshore bottom. Much of the information for Lake Ontario, Lake Erie and southern Lake Huron was derived from mapping carried out by Dr. N. Rukavina at the Canada Centre for Inland Waters. Additional material came from reports for Remedial Action Plans and in some cases from interpretation of aerial photographs and shoreline videos. In many areas the personal knowledge of the investigators was an important source for both the geomorphic and the nearshore classifications. With the exception of a few reaches, it was possible to classify the whole shoreline on the basis of geomorphology and protection. However, lack of available data meant that for the nearshore classification some 48% of the shoreline had to be placed in the unclassified category.

The shoreline of the entire system was digitized from the 1:50,000 National Topographic Series for the lower Great Lakes (south of Severn Sound in Georgian Bay) and from 1:250,000 NTS map sheets for the rest of Lake Huron and Lake Superior. Each reach was given a unique number for a particular water body and this provided the link to the classification codes entered into the Dbase files. The shoreline classification is presented on hardcopy maps with the second class (protection) following the actual shoreline and the other two as lines offset just inland and offshore of the shoreline for the geomorphic and nearshore classes respectively. The actual numbers representing the class for each classification were also plotted on the hardcopy map at the centre of each reach. Known recession rate values were also represented on the map using symbols which corresponded to an appropriate range of values as indicated on the legend of each map.

The results of the shoreline classification are summarized in tabular form by lake and connecting channel and for the whole system for each of the three classifications and complete tables which include reach numbers and shoreline lengths are given in the appendix to the report. The summary tables clearly show the contrast between the upper lakes and the eastern end of Lake Ontario which are dominated by bedrock and beaches, and the lower lakes where cohesive bluffs are generally the dominant class. This is reflected in the extent of shore protection, with most areas of high to moderate shore protection occurring in the lower Great Lakes and the connecting channels.

## **1.0 Introduction**

This study, which involved classifying and mapping the Great Lakes - St. Lawrence River shoreline, forms a part of the 1986 International Joint Commission Levels Reference Study on the effects of fluctuating lake levels on the Great Lakes - St. Lawrence River System

The first component of the study involved the classification of the shoreline of the Great Lakes and connecting channels in Canada from Lake Superior to Trois Rivières based on a three-tier classification scheme designed to provide a geomorphological classification of the sub-aerial shore, the amount of protection along the shore, and a classification of the sub-aqueous/nearshore portion of the shore. The primary shoreline unit was the reach, defined as a length of shoreline with nearly uniform sub-aerial characteristics and with boundaries defined by a change in the shoreline characteristics, including shoreline orientation, sub-aerial composition and height. In addition, the effects of coastal processes such as erosion or accretion of the shore, and longshore sediment transport were considered when defining the reaches.

The reaches used for most of the shoreline were those that had previously been defined during Phase I of the International Joint Commission Water Levels Reference Study for the digital coastal zone data base (GIS) produced for Working Committee III. During this study occasional adjustments were made to the boundaries of the previously defined reaches where new evidence suggested that it was warranted. A few new reaches were defined for the lower lakes, usually associated with small islands that had not been mapped in the earlier study. Reaches for Lake Superior and northern Lake Huron which had not previously been defined in detail, were substantially expanded and modified. In some cases, mainly in the upper Great Lakes and the St. Lawrence River, islands were included with a section of mainland shoreline to form a reach. In areas of numerous tiny islands, such as the Thirty Thousand Islands of Georgian Bay, some of the islands were not included for presentation purposes. Almost all reaches were between 1 and 5 km in length on the lower Great Lakes. However, on Lake Superior and northern Lake Huron, some of the reaches used were longer because of the greater uniformity of shoreline type and the more limited information available.

The second component of the study involved the mapping of the shore type classifications. This was accomplished by digitizing the shoreline from 1:50,000 scale National Topographic Series map sheets for the lower Great Lakes (south of Severn Sound) and from 1:250,000 scale NTS map sheets for Lake Superior and upper Lake Huron/Georgian Bay. To produce the three-tier classification of the shoreline on hardcopy maps, each section of shoreline (reach) was digitized and coded to the reach number. This allowed the different shoreline classifications (geomorphic, protection, and subaqueous) to be linked by the reach number and then plotted on each map as a series of three parallel lines along the actual shoreline. The second class (protection) followed the original shoreline, with the first class (geomorphic) being a parallel offset on the land side of the shoreline and the third class (sub-aqueous) being a parallel offset on the water side of the shore. Where available, shoreline recession rates were added to the data base and were plotted on the maps using distinctive symbols to illustrate different recession rate classes.

## 2.0 Shoreline Classification

### 2.1 Classification Scheme

The classification scheme used was that devised by Working Committee 2, Erosion Processes Task Group and approved at a meeting of the committee held at Buffalo, New York on November 15, 1991. The scheme had been developed over a period of several months and involved input from members of the committee, the consultants, and other interested parties. The classification scheme is a three-tiered one with the first layer being based on the geomorphology of the sub-aerial portion of the shoreline, the second layer being based on the proportion of the shoreline with shore protection structures and the third layer based on the composition of the sub-aqueous nearshore zone. The final shoreline classification scheme was as follows:

#### Geomorphic Classification

<u>Class Number</u>	<u>Shore Type</u>
1	High (> 15m) Bluff (intermittent or no beach)
2	High (> 15m) Bluff With Beach
3	Low (< 15m) Bluff (intermittent or no beach)
4	Low (< 15m) Bluff With Beach
5	Sandy/Silty Banks
6	Clay Banks
7	Sandy Beach / Dunes
8	Coarse Beach
9	Baymouth or Barrier Beach
10	Bedrock (Resistant)
11	Bedrock (Non-Resistant)
12	Low Plain
13	Open Shoreline Wetlands
14	Semi-Protected Wetlands
15	Composite Shorelines
16	Artificial
17	Unclassified



**Protection Classification**

<u>Class Number</u>	<u>Protection Level</u>
1	Heavily Protected
2	Moderately Protected
3	Minor Protection
4	No Protection
5	Non-Structural Protection
6	Unclassified

**Subaqueous/Nearshore Classification**

<u>Class Number</u>	<u>Subaqueous/Nearshore Composition</u>
1	Clay
2	Sand
3	Sand / Gravel Lag Over Clay
4	Bedrock (Resistant)
5	Bedrock (Non-Resistant)
6	Unclassified

During the actual classification process some small changes were made to the definition of some of the shore types, based primarily on practical considerations, and clarifications of some of the criteria used were brought out during discussion at the peer review workshop held in Burlington on January 28 and 29, 1992. These changes are summarized below.

Under the Geomorphic Classification the changes were as follows:

1) Shore types 1-4 the word till was removed. In practise it was not generally possible to distinguish bluffs in till from bluffs in different sedimentary materials. It is evident that these shore types incorporate "cohesive" shorelines developed in sediments with a variety of compositions, often with some till units, and varying degrees of cohesion but which are not lithified.

2) The distinction between bluffs, and bluffs with beach for shore types 1-4 was refined to give a more precise definition of what was meant by "with beach". A bluff with no beach was defined as one where the sand/gravel beach was thin, discontinuous alongshore and generally less than 10 m in width. Conversely a bluff with beach shore type had a continuous beach generally greater than 10 m in width. These classifications are the most contentious of the

geomorphic classifications, given that changes to water levels may affect the presence of a beach along some bluff shorelines and the classification was made from a particular "snapshot" in time.

3) The term relict was removed from shore type 7 since almost all the sandy beaches are active, and therefore modern.

4) The term riverine was removed from shore type 12 since some sections of low plain occur on sheltered portions of the main lakes.

5) An additional class "Artificial" was added as class 16 to the classification scheme (making "Unclassified" class 17) to include reaches where the natural shoreline no longer existed due to the presence of large artificial structures such as marina complexes and harbour structures, or other areas where the natural shoreline had been completely obliterated by landfills and/or major urban and industrial developments.

Under the **Protection Classification** the definitions of classes 1 and 3 were revised from Well Protected and Poor Protection to Heavily Protected and Minor Protection respectively. This change was designed to emphasize that the classification is based solely on the length of the reach protected and does not include any judgement as to the quality of the structures and the degree of protection provided.

Under the **Subaqueous/nearshore Classification** no changes were made, though it was noted at the meeting of January 28/29, 1992 that two additional classes, termed sand/gravel lag over bedrock and organic/muck, could have been included. In practise, as noted below, where there was evidence of bedrock control of the subaqueous profile the reach was classified under the bedrock class and because of the limited information available on the subaqueous it was felt that a greater degree of distinction was not really feasible.

## **2.2 Classification Procedure**

It is important to emphasize that the process of classification of reaches is essentially subjective and based almost entirely on descriptive criteria. This was dictated by the extensive nature of the work required and by the classification scheme itself. In the geomorphic classification the only quantitative element is the use of 15 m height to distinguish between high and low bluffs. In the protection classification classes 1-4 are distinguished on the basis of % of shoreline protected, but here these are estimated visually, not measured directly although this was not considered a detriment to using the classification scheme by the contractors. Some simple descriptions of the characteristics of the shore types and example locations were given with the classification scheme and these were discussed and elaborated on at the meetings of November

15, 1991 and January 28/29, 1992. Ultimately, however, classification of each reach is the result of the subjective interpretation of the individual doing the work, based on an understanding of the classification scheme, the information available, and the experience of the individual.

Classification of the Canadian shoreline was carried out by John Fisher of Geomatics International Inc. and Robin Davidson-Arnott of the University of Guelph. In order to ensure uniformity in the interpretation of the classification scheme, two days were spent jointly classifying the Lake Ontario shoreline from the Niagara River to east of Coburg. Later, a section of the Lake Huron coast from Sarnia to Douglas Point and another from Wasaga Beach to Midland were also classified jointly. These sections of shoreline covered almost all of the shoreline types in the classification scheme and this procedure ensured that the criteria used to assign a reach to a particular shoreline class were essentially the same for both operators. We are therefore confident that, within the limitations of the classification scheme itself, there is a high degree of consistency in the actual classification procedure over the whole length of the Canadian shoreline.

Classification was done on a reach-by-reach basis with the geomorphic and protection classification being carried out simultaneously from video tapes or vertical aerial photographs and supplemented by other information (see next section for a description of the data sources). Where information on the nature of the subaqueous material was evident from these sources it was also coded. In some cases the information was sufficient to provide a definitive classification (e.g. sand bars or bedrock visible in the nearshore). In other cases there was some evidence, but it was not sufficiently definitive and this was noted for future verification from other sources if available.

### **2.3 Sources of Information**

A variety of sources of information were used for the study. Unfortunately, there was no single source that covered the whole shoreline extent, and there is some variation in the quality of information available on different lakes and connecting channels. The sources used for each lake and connecting channel are summarized below along with a brief description of each source.

**Environment Canada, Environmental Protection Branch Colour Video tapes:** Video tapes of the shoreline taken in July, 1991 were available for almost all of Lake Ontario and large parts of Lake Superior. Some portions of Lake Superior missed in July were flown in November, 1991. These were all shot from a helicopter flying at an altitude of approximately 50-100 m and a distance of several hundred metres offshore. The survey was conducted as part of an exercise to develop plans for mitigation of damage caused by potential oil spills and thus the purpose differed somewhat from the present exercise. The accompanying narrative focused

primarily on the nature of the beach/water interface. In general the tapes were of excellent quality though some details of the underwater topography close to shore and the nature of the inland area were lost because of the low altitude and low angle to the surface. Where these tapes existed they were used as the primary source of information for the geomorphic and protection classifications. In many instances the characteristics of the inner nearshore could be interpreted both from the video tape and from the accompanying commentary - for example the presence of sand bars indicated an extensive sand cover, while bedrock was often easily visible through the water. These were noted at the time.

**Ontario Ministry of Natural Resources, Sault Ste. Marie District colour video tapes:** Video tapes of a portion of the Lake Superior shoreline from Lake Superior Provincial Park to the St Mary's River, the St Mary's River itself, St. Joseph's Island and the Lake Huron Shoreline west of Thessalon were flown in September, 1991 from a helicopter. These were taken from a greater elevation and provided a better overall view of the shoreline, but slightly less detail on beach type.

**Vertical Aerial photographs:** Black and white vertical aerial photographs were available for large portions of the shoreline for various dates in 1985, 1986, 1988, and 1989 at a scale of 1:8,000. These photographs were taken during the spring (April or May) for the years indicated for Lakes Huron, St. Clair, Erie and Ontario and their connecting channels. The 1:8000 scale aerial photographs for Lake Superior were taken in October, 1986. These formed the primary data source for the Lake Erie and Lake Huron/Georgian Bay shorelines and those of Lake St. Clair and the connecting channels. The quality of information was lower than that which could be obtained from video tapes. In particular, it is more difficult to distinguish shore parallel protection, such as revetments and seawalls, though shore-perpendicular groynes show up clearly. In general it is not possible to distinguish between sandy and coarse beaches directly though this could often be inferred from the presence of dunes or nearshore bars (sand) or the presence of bedrock cliffs and absence of dunes (coarse beaches).

Colour aerial photographs taken in July of 1990 for Ontario Hydro were used for the north channel of Lake Huron and a portion of Manitoulin Island. While the colour photographs made interpretation easier than black and white, this was offset by the smaller scale (1:20,000) which resulted in some loss of detail. The Severn Sound area of Lake Huron was covered only by 1987 black and white photographs at a scale of 1:50,000 taken for the Department of Energy, Mines and Resources. Black and white 1:10,000 scale vertical aerial photographs from 1978 were used for the St. Lawrence River east of Gananoque to the Ontario/Québec provincial border. In the Québec portion of the St. Lawrence River, black and white 1:15,000 scale vertical aerial photographs from 1983 or 1985 (primarily 1983 except around Trois Rivières) were used as the primary source for shoreline classification. High turbidity in the water and the relatively small scale of the photographs made most nearshore classification difficult for this area.

**Canada/Ontario Coastal Zone Atlas:** This Atlas, produced in 1975 following damages associated with high lake levels in 1972 and 1973, covers the Great Lakes/connecting channels shoreline from Midland to Kingston. It contains photo-mosaic maps at a scale of 1:20,000 (originally derived from 1:10,000 photographs taken in 1972) with contours superimposed along the shoreline and data on recession rates at profiles along the shoreline derived primarily from photogrammetric comparison of 1955 and 1973 photography. The atlas also has shoreline maps of physical characteristics of the shoreline based on a simple classification scheme with 11 classes, and some information on shoreline protection. The atlas was originally used as the basis for the definition of reaches during the Phase 1 study and it was used as a secondary resource in this study for all the area it covers. In particular the contours were used to distinguish between high and low bluff shorelines and the maps of the physical characteristics of the shoreline were used to supplement information derived from the video tapes and vertical aerial photographs.

**Ontario Ministries of Natural Resources and Northern Development and Mines, Surficial Geology Maps:** Maps of the surficial geology of parts of the province at a scale of 1:50,000 provided supplemental information on the nature of the shoreline material in areas where available and were used particularly for stretches of the shoreline where no video tapes were available.

**Nearshore Sediment Characteristics Maps:** Nearshore bottom characteristics for Lakes Ontario, Erie and southern Lake Huron based on work carried out by Dr. N. Rukavina at the Canada Centre for Inland Waters were used to determine the subaqueous classification. These maps are derived primarily from echo sounding along lines spaced roughly 1 km apart and from grab samples and vibracores. The data begins in water depths of 2-3m and the information provided is at quite a coarse scale. Nevertheless, together with information derived from video tapes and vertical aerial photographs, they generally provided sufficient information for the simple subaqueous classification.

**Remedial Action Plans for Great Lakes Areas of Concern:** Reports containing information on sediments for many of the connecting channels (St. Marys, St. Clair, Detroit, part of St. Lawrence) and for Lake St. Clair, Hamilton Harbour and Severn Sound were used as sources of data for subaqueous/nearshore composition. RAP reports for other Areas of Concern were scrutinized but did not provide any useful data on nearshore sediments.

**Personal knowledge:** Both investigators have considerable personal knowledge of portions of the shorelines of the lower Great Lakes which was utilised wherever possible to supplement the information from the primary sources noted above. This knowledge is derived from field research carried out in some areas (including extensive surveying, sediment sampling, echo

sounding and some diving operations), from flights for oblique aerial photography, field trips and from a variety of secondary sources. In particular, we were familiar with most of the Lake Huron shoreline from Midland to Sarnia, with the Lake Erie shoreline from Pt. Pelee to Port Dover, and with the Lake Ontario shoreline from the Niagara River to east of Oshawa.

## **2.4 Problems and Limitations**

Two types of limitations or potential sources of error were noted during the classification procedure: 1) problems arising from the nature of the classification exercise itself and 2) problems arising from limitations in the sources of information.

The first set of limitations arise from the fact that no simple classification scheme can encompass adequately the range of shoreline characteristics that exists in the Great Lakes - particularly in the case of the geomorphic and subaqueous classifications. Each shore type is distinct in the classification but in reality there is a continuum, so that there will always exist reaches which are borderline between two classes. However, for this study, the objective was not to produce an exact classification of the shoreline in its entirety, but rather to capture the relative dominance of different shore erosion characteristics for the lakes and connecting channels.

An example of this is the occurrence along the north shore of Lake Ontario of beach and dunes backed by wetlands and ponds. Where the beach and dune was quite narrow and there was evidence of overwash or open channels connecting the wetland to the lake then the reach was classified as 9 (baymouth-barrier beach). Where there was an extensive area of dunes between the beach and the wetland and no evidence of interaction between the wetland and the lake then the reach was classified as 7 (sandy beach/dunes). However there were a number of reaches where, either it was difficult to determine whether the wetland was completely isolated from lake processes or not, or where there was variation in the degree of isolation along the reach.

A second example occurs in areas of bedrock shoreline with small bays and pocket beach development such as occurs in the Penetang Peninsula. In this case there is a transition from bedrock shorelines with a veneer of sand (class 10) to sandy beaches (class 7). There is no clear measure of how much sand (width of beach, thickness, continuity alongshore) is needed to make the transition from a bedrock shore to a sandy beach. Thus in cases such as these there were times when a particular reach could have been assigned equally to two different classes.

A related problem is that of overlap between some of the classes or the fact that they are not necessarily mutually exclusive. Thus, it is not entirely clear what the distinction is between class 3 (low bluff), class 5 (sand/silt bank) and class 6 (clay banks). At least some of the distinction conceptually appears to be that the material of class 6 is pure clay with high cohesion which has not been overconsolidated due to glacial activity. However, all three types appear similar on video tapes and aerial photographs, and it is not possible to distinguish between them unless

some additional information on sediment composition is available. An example of the problem of exclusivity can be seen in classification of some of the shoreline of Wolfe Island at the eastern end of Lake Ontario. Here much of the shoreline consists of a low plain developed in bedrock, which is obviously subject to flooding in some areas. The shoreline can be classified both as bedrock (10) and low plain (12).

The second set of problems in assigning a reach to a particular class arises from the limitations imposed by the data sources or by the relatively vague definition in the classification scheme itself. In general it is not possible to distinguish clearly on the video tapes the size of beach material, and it is virtually impossible to do so on the vertical aerial photographs. Thus, in some cases coarse beaches (class 8) may have been classified as sandy beaches (class 7). In many instances indirect evidence such as the presence of dunes or of multiple bars in the nearshore was indirect evidence of the presence of sand and over much of the lower Great Lakes familiarity of the operators with the shoreline enabled the distinction to be made. However, in some areas of eastern Lake Ontario, Georgian Bay and Lake Superior some errors may occur.

The classification scheme distinguishes between non-resistant bedrock (class 10) and resistant bedrock (class 11), but it is not defined quantitatively. Moreover, this distinction is not readily apparent on the primary data sources. Some information can be derived from geological maps and reports but again this requires matching the description of rock type with some measure of resistance. Finally in areas of highly variable lithology it is necessary to know the characteristics of the bedrock that is in the subaqueous zone or at the shoreline and this need not be the formation that is shown as outcropping on the land.

Because the video tapes and photographs used as the primary sources may have been taken in different years at different seasons, there will be some variation in water level and also the vegetation exposed at the shoreline. This can affect, for example, the distinction between bluffs and bluffs with beach, or the ability to identify emergent vegetation on sheltered shorelines.

Classification by level of protection was generally easily accomplished, particularly for those sections where a video tape was available. Shore parallel structures were more difficult to identify in vertical aerial photographs, but areas where these were likely to be present could be picked out readily by the presence of houses near the shoreline and sometimes by the existence of some shore-perpendicular structures. Careful analysis of the photographs using a magnifying glass or stereoscope then enabled a reasonable estimate of the amount of protection to be determined.

Information on the subaqueous composition was the most limited and resulted in an appreciable percentage of the shoreline in some areas (upper Great Lakes primarily and portions of the St. Lawrence River) that could not be classified reliably.

In summary, the greatest difficulties experienced were with the geomorphic classification for the reasons outlined above. Roughly 70-80% of the reaches could be placed in a class with

relatively little difficulty, but the other 20-30% either required gathering of additional material or the exercise of the judgement of the operator to choose between two different classes. However, in almost all cases it was possible to assign a reach to a definite class, and only rarely was it necessary to resort to the unclassified category.

Quality control checks were performed on the shoreline classifications for selected sites on the Great Lakes. Draft shoreline classification maps, the accompanying NTS sheets with reaches defined and the classification data tables were sent to the appropriate Conservation Authority/MNR District for each of the Canadian potential damage sites (Thunder Bay, Severn Sound, Belle River to Windsor, central Lake Erie, Toronto). The CA/MNR District was provided with maps which covered the potential damage site as well as the remainder of the shoreline under their jurisdiction. In total, of the approximately 230 reaches checked by the CAs/MNR, only 4 modifications to the original geomorphic, protection or nearshore classifications were required. In the Thunder Bay region of Lake Superior, several reaches originally unclassified because of a lack of data were able to be classified following the quality control check courtesy of field data collected by the Lakehead Region Conservation Authority.

Time constraints, considering it took several months to receive the shoreline classification reviews from the appropriate local shoreline experts, and the low rate of correction required for the maps checked, influenced the decision to limit the quality control check to the degree indicated. Several of the reviewers reinforced the level of difficulty discussed earlier in distinguishing between several similar geomorphic classification types (low plain and bedrock; low bluff, sand/silt bank or clay bank).

Given the low number of changes required as a result of the quality control checks conducted by the local shoreline experts and the ability to use secondary sources to determine a geomorphic classification if in doubt, confidence limits of approximately ninety percent are warranted for both the geomorphic and protection classifications. Given the difficulty of discerning the nearshore and the relative scarcity of reliable data, a confidence level of 75% is felt appropriate for the nearshore classification.

## **2.5 Classification Tables by Water Body**

Included in Appendix A are water body-by-water body summaries of the three-tier classification tables on a per reach basis. During Phase I, reaches were defined for six water bodies (Lake Superior and St. Mary's River including St. Joseph Island; Lake Huron; Lake St. Clair and the St. Clair and Detroit Rivers; Lake Erie; Lake Ontario and Niagara River; St. Lawrence River). The reaches were numbered starting at number 1 at the eastern or updrift end of the water body and continued sequentially to the western or downdrift end of the water body or bodies. Each of the reaches defined for each water body or bodies have been used in the tables in Appendix A. When additions to Phase I reaches were required, a new reach number was



assigned and added to the table based on the next available reach number for that particular water body.

Each classification summary table indicates the water body being classified; the reach number of that section of shoreline (**Reach no.**); whether the reach boundaries were adjusted from the original coastal zone reaches defined in Phase I (**CZR Adjustment**); the NTS map number on which the reach is located (**NTS No.**); the geomorphic class assigned (**1. Geomor. Class**); the primary source used to determine the geomorphic class (**Source**); the protection class (**2. Protect Class**); the primary source used to define the protection class (**Source**); the nearshore/subaqueous class (**3. Nearsh Class**); the primary source used to determine the nearshore/subaqueous class (**Source**); the three classes combined into a composite class (**4. Comp. Class**); and any comments (**Comments**).

To make the classification tables easier to use, scaled-down final classification maps have been included which indicate the reach number for each section of shoreline.

The numbers in each of the three classification columns on the table correspond to a particular geomorphic class, protection class or nearshore class as outlined below. The composite class is simply the three classification types combined together into a unique number based on each of their component parts. For example, a composite number or unique identification code of 742 indicates a geomorphic class 7, which is a sand beach/dunes, a protection class of 4, which indicates no protection, and a nearshore/subaqueous class of 2, which is a nearshore composed of sand.

### **2.5.1 Source Short Forms and/or Acronyms**

The primary sources used for each classification type are identified in the tables by short forms or acronyms which will be described below.

**AP??**

-indicates vertical aerial photographs were used and the year of the photos; almost all photos (AP85, AP86, AP88 & AP89) were 1:8,000 scale; exceptions are AP87 for Severn Sound at 1:50,000 scale, AP90 for north shore of Lake Huron at 1:20,000 scale, AP78 for the Ontario portion of the St. Lawrence River at 1:10,000 scale and AP83 or AP85 for the Québec portion of the St. Lawrence at 1:15,000 scale.

**VIDEO91**

-indicates the use of video tapes of the Lake Ontario and Superior shoreline from 1991 provided by Environmental Protection, Environment Canada; tapes were primarily recorded during July, 1991 for both Lakes Ontario and Superior with some of Superior from November, 1991.

- MNRVIDEO91** -indicates the source was provided by MNR, Sault Ste. Marie district; video tape coverage was from September, 1991 and covered the eastern Lake Superior, St. Mary's River and St. Joseph Island areas.
- CZA** -indicates that the 1976 Coastal Zone Atlas was used as a source.
- OGS** -indicates an Ontario Geological Survey surficial geology or Quaternary geology map of the area was used as a source.
- NTS** -indicates information from the National Topographic Series map sheet was used as a source.
- EP??** -indicates that the Coastal Sensitivity Atlas produced in the referenced year by Environmental Protection, Environment Canada was used as a source.
- Rukavina** -indicates that nearshore sediment characteristic maps produced by Dr. N. Rukavina were used as a source.
- Rukavina86** -indicates a 1986 paper on Bottom Sediments for Upper St. Clair River by Dr. N. Rukavina was used.
- Rukavina92** -indicates a 1992 report by Dr. N. Rukavina and R. Delorme on the use of GIS to determine volumes of contaminated sediment for Lac St. Louis and Lac Saint Pierre was used.
- SWG87** -indicates a 1987 report by the Sediments Workgroup on St. Clair River Sediments was used.
- SWG88** -indicates a 1988 report by the Sediments Workgroup on the Sediments of Lake St. Clair was used as a source.
- USEPA87** -indicates the use of a 1987 report on the Sediments of the Detroit River by the United States Environmental Protection Agency.
- HHRAP89** -indicates the use of the 1989 Remedial Action Plan for Hamilton Harbour as a source.
- HH87** -indicates the use of a 1987 report on Current and Historical Contamination of Sediment in the St. Marys River by R.J. Hesselberg and Y. Hamdy as a source.

- STLAWEI??** -indicates the use of environmental impact studies conducted for the RAP area around Cornwall, Ontario on the St. Lawrence River.
- MVCA** -indicates source used was mapping provided by Maitland Valley Conservation Authority.
- LRCA** -indicates the use of nearshore data provided from field checks by Lakehead Region Conservation Authority for some sections of western Lake Superior.
- FISHER** -indicates that personal knowledge of an area was used as a source by that individual (John Fisher).
- RDA** -indicates that personal knowledge of an area was used as a source by that individual (Robin Davidson-Arnott).
- NO DATA** -indicates no data was available as a source.

## **2.6 Reach Boundaries and Length**

Included in Appendix A are tables which indicate reach starting and ending positions in Universal Transverse Mercator coordinates and the length of shoreline (km) for each reach for the six water bodies identified. Superior is in coordinates for UTM Zone 16; Huron, St. Clair and Erie are in UTM Zone 17 coordinates; Ontario is divided between UTM Zone 17 and 18 and the appropriate zone is indicated in the table; the St. Lawrence coordinates are in UTM Zone 18.

Reaches and their coordinates and lengths are listed in ascending numerical order for each water body. Due to modifications and additions to the reaches defined during Phase I of the Levels Reference Study, coordinates may not be listed in sequential order in these tables. Some reach start and end coordinates are the same which indicates the reach encompasses an entire island.

Reach lengths are reported in kilometres and represent the actual length following all the changes in orientation as it was digitized from the National Topographic Series mapping.

### **3.0 Recession Rate Information**

#### **3.1 Addition of Recession Rate Information to the Data Base**

As a result of the Peer Review Workshop in late January, 1992, it was decided in February/March, 1992 that known recession rate values for the Great Lakes shoreline should be added to the shoreline classification data base. Given time, monetary and information limitations, it was decided that existing recession rates would be collected where available for the lower Great Lakes and connecting channels (south of Severn Sound on Georgian Bay through to Kingston on Lake Ontario). Data was only to be collected from existing sources where the information was in a readily useable form (recession rates already determined). This would include, if possible, information for the two potential damage study sites (Thunder Bay on Lake Superior and Montréal on the St. Lawrence River), not included in the previously defined lower Great Lakes study area. Given the general lack of recession rate information for Lake Superior, St. Marys River, northern Lake Huron and the St. Lawrence River, and the high percentage of non-erodible shoreline indicated from the results of the shoreline classification, it was felt these areas could be omitted from the recession rate data collection.

Because the Canadian Great Lakes shoreline was subdivided into reaches based on shore type, it was thought appropriate to utilize these reaches in order to assign recession rates to the shoreline. This uniformity would also be advantageous when making comparisons between shore types and recession rates given that all of the shoreline classifications were defined on the basis of these shoreline reaches. Although continuous linear recession rate data was designated the most desirable, this quality of information does not exist for most of the Great Lakes shoreline on the Canadian side except for most of southern Lake Huron from Pointe Clarke to Sarnia and for central Lake Erie from east of Pointe-aux-Pins to just west of Long Point. For the remainder of the lower Great Lakes shoreline, recession rate information existed mostly as discrete point data.

Although it is recognized that a recession rate calculated at a discrete point extrapolated for several kilometres along the shoreline is a questionable representation of the erosion along that entire stretch of shore, it was felt that the use of one or several discrete points to represent an entire reach of similar shore type could be justified for the purposes of this study. The recession rate data collected and presented on the shoreline classification maps was intended solely as an indication of the degree of erodibility of the shoreline in a general sense and was not intended to suggest any designation of hazard limits or definitive erosion limits for any of the Great Lakes shoreline.

### **3.2 Data Sources**

The twenty-six Conservation Authorities (CA) bordering the Great Lakes were approached to supply any available erosion and/or recession data for their stretches of shoreline. Follow-up telephone calls were undertaken to obtain data from non-respondent CA's to request recession data. Much of the data obtained was either from the Shore Damage Survey (1976) or from Boyd (1981). Several CA's have continued Boyd's work using the same erosion stations, or undertaken additional work with recession rate data on their own. This data was incorporated where appropriate.

Of the Conservation Authorities contacted there was no response from four authorities (Nottawasaga Valley, Hamilton Region, Lower Trent, and Napanee), and seven others indicated that there was no additional recession/erosion data available for their area of jurisdiction. The areas with no updated information included Lakehead Region (data collection was initiated in 1989), Grey Sauble, Saugeen Valley, Halton Region, Cataraqui Region, Prince Edward Region, and Moira River.

Much of the data used for the determination of the recession rates for the Great Lakes reaches has been obtained from the Shore Damage Survey Technical Report (SDS) (Appendix 3.4) (EC/MNR, 1976a) and the Coastal Zone Atlas (CZA) (EC/MNR, 1976b). The combination of these two data sources still provides the most comprehensive source of recession rate data on the Canadian Great Lakes shorelines. Survey locations were obtained from the CZA and attributed to reaches delineated along the shorelines. Three separate sets of data are available in this report and can be isolated based on the period of time covered.

Historical recession/accretion rates were derived through linear changes in shoreline property dimensions by comparing more recent land surveys with similar ones of the past (EC/MNR, 1976a). In the SDS, steps were taken to correct historical data to minimize the effects of several factors on the reliability of the different data sets. These factors included: varying standards of accuracy between surveys; different shoreline reference points (ie. Edge-of-Bluff, Waters Edge, High Water Mark); large differences in lake levels on Waters Edge and High Water Mark; and gaps in coverage. Where sufficient doubt existed as to the reliability of the survey, the data was not used in recession rate calculations.

Lakes Huron, St. Clair and Ontario have numerous historical erosion stations delineated by unique erosion station numbers based on County locations. The station locations have been obtained from maps associated with the Great Lakes Shoreline Erosion Inventory undertaken in the late '60's and early '70's by the IJC as part of the Great Lakes Water Levels Study. Recession data for these stations were included in the SDS, however, station locations were not plotted in the CZA.

The second set of data is based on interpretation of aerial photographs. The first set of overflights were flown between 1952 and 1955 by the Ministry of Natural Resources, and the

second in 1973. Edge-of-Bluff measurements were used, where available, and where no bluff was discernable Waters Edge was used as a reference point. These data were obtained from the SDS and CZA.

Ground surveys, conducted at specific shoreline erosion stations around the Great Lakes account for the third data set. These surveys, originally undertaken from 1971 to 1973, formed the Great Lakes Erosion Monitoring Programme established jointly by the Government of Canada and the Government of Ontario. These stations were surveyed annually between 1973 and 1980 covering the area south of Severn Sound on Georgian Bay around to Kingston on Lake Ontario and the results were documented in Boyd (1981). They were however, only monitored for seven years and may not necessarily represent long term erosion rates.

A study conducted by Fleming (1983) represents three sets of continuous historic shoreline surveys. Recession rates were calculated at approximately 100 metre intervals along the shore. These cover more than 100 km of Lake Erie shoreline between the Howard-Orford Township line (east of Pointe-aux-Pins) to the west and the Houghton-South Walsingham Township line (west of Long Point) in the east. Fleming determined that recession values were highly variable between both geographically adjacent and successive surveys. These surveys cover the periods from 1896 to 1975, with successive surveys in 1896; 1936/37; and 1968/71/75. Only data comparing the '36/37 and more recent surveys was incorporated into the present survey. The 1896 survey was considered to be unreliable due to questionable shoreline reference points.

Recession rates calculated from continuous historic shoreline surveys using 1935-36 Ontario Land Surveys (OLS) and recent (1983-1988) FDRP (Flood Damage Reduction Plan) mapping were also available for some of south-eastern Lake Huron between Pointe Clarke to the north and Sarnia in the south.

### **3.3 Data Types**

Erosion/recession rates have been determined using several different surveys encompassing numerous methods of rate calculations. The three main methods used to measure recession rates include: Edge of Bluff (EOB) - the top-of-bluff is identified by a break in slope; Waters Edge (WE) - where a bluff was not present or not discernable measurements were made from the waters edge; and thirdly some surveys utilized High Water Marks (HWM) as a basis for recession measurements.

The position of the waters edge changes with fluctuating water levels. Data correction is therefore necessary in order to compensate for the shifting water edge positions. This correction is based on water elevations during each survey. WE were only used where, according to the Technical Report (EC/MNR. 1976a), water elevation corrections had been made and the data appeared reliable.

### 3.4 Data Tables

Data tables containing the recession rate information are found in Appendix B. Statistical data pertaining to recession rates is listed by reach number for each lake or connecting channel. For each reach the mean, median, maximum and minimum recession rates are provided along with the statistical variance for all recession data within the reach.

The remaining columns in the tables detail the types of data used for each reach. The recession rates for many of the reaches were calculated by averaging all of the individual rates for discrete point locations available within each reach. A data type classification was assigned to each reach dependent on the method of data compilation used to calculate the recession rate. The six types include; 1) point location, discrete value; 2) point location, range value; 3) linear zone, discrete value; 4) linear zone, range value; 5) point location, descriptive value; and 6) linear zone descriptive value.

Along the Canadian shoreline of the Great Lakes only three of these classes have been noted. The majority of the classified reaches (including all classified reaches within Lake Ontario) belong in Type 1 (point location, discrete value) as they often have several discrete point values found within each stretch of shoreline. The stretch of shoreline monitored by the Ausable Bayfield CA in Lake Huron consists of Type 4 data (linear zone, range value). Where more than one range value was located within a specified reach, a weighted average was used.

The third class of data found within the Great Lakes study area was provided by the Essex Region Conservation Authority for southern Lake St. Clair and western Lake Erie. In some instances, data was provided as linear zone, discrete values (Type 3) and sometimes as linear zone, range value (Type 4). A length of shoreline was assigned an average recession rate value by the CA based on accumulated data.

Also provided for each reach, where available, are the number of samples used, the sample numbers and corresponding data types (ie EOB, WE, HWM). Included in the data type are indications of origins of the values. This indicates whether they were obtained from historical data (H), photogrammetric interpretation (P) or more recent erosion stations (R).

The final two columns in the data tables represent remarks and recession rate classification. Under remarks, the data source is listed if it was not the CZA or the SDS. Abbreviation for the various CA's are listed at the bottom of the table. If the data source was the CZA or SDS then the remarks will only contain stable or accretion information. Where data was not available "NA" is listed under remarks.

The recession rates have been classified in order to enable graphical output on the shoreline classification maps. The scheme qualitatively describes the recession rates and contains the eight historical shoreline change rate classes:

- |                          |             |
|--------------------------|-------------|
| 1. less than -0.1 m/yr   | - Accretion |
| 2. -0.1 to 0.1 m/yr      | - Stable    |
| 3. 0.11 to 0.3 m/yr      | - Low       |
| 4. 0.31 to 0.7 m/yr      | - Moderate  |
| 5. 0.71 to 1.2 m/yr      | - High      |
| 6. 1.21 to 2.0 m/yr      | - Very High |
| 7. greater than 2.0 m/yr | - Severe    |
| 8. Unclassified          |             |

The primary concern of this study was to compile available shoreline recession data. As a result, all reaches which experienced accretion were placed in one class (Class 1), while receding lengths of shoreline were subdivided into 6 classes. In addition, accretion is shown as a negative number. Class 8 (Unclassified), refers to those section of shoreline where recession or accretion data was not available or was not considered to be reliable.

### **3.4.1 Thunder Bay, Lake Superior**

The Lakehead Region Conservation Authority was contacted for recession rate data for the potential damage study site. Unfortunately collection of erosion data for their jurisdiction was only initiated in 1989. Therefore, sufficient data has not yet been collected in order to determine long-term rates of recession along these shoreline reaches.

### **3.4.2 Southern Lake Huron**

In southern Lake Huron (south of Severn Sound), recession data is available for 123 of a possible 396 reaches. The area of the Bruce Peninsula has very limited data due to the abundance of exposed bedrock and therefore the lack of significant shoreline erosion.

The shoreline reaches encompassed by the Maitland Valley Conservation Authority (MVCA) had detailed recession rate calculations performed as a test site for the determination of long term recession rates by the Ministry of Natural Resources (MNR) and the MVCA. To determine these rates, data from the historical shoreline survey of 1935 and the more recent FDRP mapping of 1983 were used. Based on 1935 toe-of-bluff and top-of-bluff measurements and the



corresponding points delineated on the 1983 mapping, rates of erosion/recession were calculated. The reaches incorporated by the detailed work include 541 to 546. Recession rates for reaches 527 to 531 within MVCA were also calculated based on the historic OLS surveys.

Recession rates for the Ausable Bayfield Conservation Authority (reaches 546 to 554) were obtained using OLS historic data in comparison to 1988 FDRP mapping. They provided a range-value for a section of shoreline which was then used to calculate a weighted average for each reach of shoreline.

Recession rates for the St. Clair Region Conservation Authority (reaches 573 to 582) were calculated in a manner similar to the Ausable Bayfield shoreline. In this case though, individual point values located at 50-100 metre intervals along the shoreline were available and these were averaged to calculate individual reach recession rates.

### **3.4.3 St. Clair River, Lake St. Clair and Detroit River**

Limited data is available for the St. Clair River, Lake St. Clair and the Detroit River. Recession rates were obtained for a total of 14 of the 54 reaches. This data is portrayed as linear zone, range values and was provided by the Essex Region Conservation Authority (ERCA) (DiCiocco, 1992). This data set is outlined in full in the Lake Erie data description which follows.

### **3.4.4 Lake Erie**

Recession rates have been calculated for a total of approximately 76 of the 166 reaches defined for Lake Erie.

Recession data for the western end of Lake Erie was provided by the ERCA (DiCiocco, 1992). Data was compiled by the Conservation Authority using the Shore Damage Survey as a base. Rates were averaged for a range of shoreline taking into consideration several factors. These factors were: 1) rates were established assuming no shoreline protection; 2) apparent infilling/reclamation or shore protection areas where recession rates have been artificially reduced were eliminated; 3) where available, field measurement stations were used over air photo stations; and 4) short term record stations were eliminated. Reaches covered by the ERCA include 1 through 29 and 153 through 158 (Pelee Island).

The Lower Thames Valley Conservation Authority (LTVCA) provided recession rate data for selected areas within reaches 29 through 40. The LTVCA used old subdivision and road surveys from 1866 and 1969 to compare measurements taken from the centre line of the roadway to the

top-of-bluff. Values obtained from surveys conducted in 1991 and 1992 were averaged along with the older surveys to obtain recession rates. These calculated rates were then compared to corresponding data values for the CZA to check for large discrepancies. The LTVCA recession rate data was used in conjunction with data obtained from the Technical Report and the CZA to determine averaged rates for the shoreline reaches in this area.

Reaches 41 through 66 are covered by data extracted from Fleming (1983) whose methodology was outlined above in Data Sources. Individual points spaced 100 metres apart were averaged for each reach to calculate average recession rates for a reach.

The remaining reaches were covered by the Shore Damages Survey, the erosion stations, including Boyd (1981), and historical data obtained from the Lake Erie Shoreline Inventory and Land Use maps (Lake Erie Task Force, 1969).

### **3.4.5 Lake Ontario**

In Lake Ontario, recession rates have been calculated for 96 of a total 468 reaches. Significant gaps in the data occur east of Kingston in the Bay of Quinte and Prince Edward County areas. The majority of the data has been collected from the three main surveys (Historical, Shore Damage, Erosion Station).

The Niagara Peninsula Conservation Authority provided erosion data for numerous stations along the stretch of shoreline from Niagara-on-the-Lake to Grimsby. Indicated station locations generally coincide with the erosion stations utilized by Boyd (1981). However, a common control point between these points and the original survey conducted during the Great Lakes Erosion Monitoring Program was not referenced, therefore updated recession rates were not able to be determined from this data.

Updated material was obtained from the Credit Valley Conservation Authority for reaches 61 through 68, and the Metropolitan Toronto and Region Conservation Authority (MTRCA) provided recession data for selected stations for reaches 90 to 108. A combined shoreline management plan prepared for Central Lake Ontario CA, Ganaraska Region CA and the Lower Trent Region CA provided updated recession information for a total of eleven stations in selected reaches between 121 and 189.

### **3.4.6 Montréal, St. Lawrence River**

No recession rate information for the potential damage study site at Montréal, Québec was available. Contact with Paragon Engineering who conducted the work at this potential damage site indicated the area was reasonably well protected and no recession rates had been calculated for the area.

### **3.5 Confidence**

The Shore Damage Survey made a point of eliminating any recession data that had questionable reliability. Therefore, any data that was obtained from this survey has a moderate to high level of confidence. Confidence levels as proposed by the U.S. Army Corps of Engineers were considered high if the data was generated with appropriate quality control, moderate indicated the data was generally accepted as accurate, and low confidence indicated the values obtained were largely judgemental.

Stations recorded as Edge of Bluff (EOB) generally have a greater degree of confidence than do the Waters Edge (WE) or the High Water Mark (HWM) due to inherent data variability in reference points. In addition, any ground survey points have a higher level of confidence than do the photogrammetric stations due to possible interpretation errors or differences in reference points.

For the most part the recent data obtained from erosion stations, including Boyd (1981) and any updated material by the Conservation Authorities, has a moderate level of confidence. The only drawback of this data is the short study period that is incorporated (less than 20 years).

The historic data has a moderate confidence level associated with it. Documentation is limited as to the methods of rate determination, however, the recorded rates of recession compare favourably with other data sets.

Recession rates calculated from the 1930's OLS shoreline survey compared to recent FDRP mapping were felt to have a high degree of confidence, given the large number of data points associated with this work.

When the validity of erosion/recession data was in doubt the station was not included in this study.

## **4.0 Hardcopy Mapping of Shoreline Classifications and Digital Product**

### **4.1 Hardcopy Maps of Shoreline Classifications**

The second component of the study involved the mapping of the shore type classifications onto hardcopy maps. This was accomplished by first digitizing the shoreline represented on 1:50,000 scale National Topographic Series map sheets for the lower Great Lakes (south of Severn Sound) and from 1:250,000 scale NTS map sheets for Lake Superior and upper Lake Huron/Georgian Bay. It was necessary to digitize the shoreline because of data gaps in the coastal zone digital data base and because the classification structure of the data files was different from that needed to produce the final mapping product in the manner requested by the Erosion Processes Task Group.

In order to present the three-tier shoreline classification scheme on hardcopy maps as a set of three distinct parallel lines, each section of shoreline (reach) was digitized and coded to a pre-assigned reach number. The reach number was the link to the classification codes which were entered into Dbase files. The reach number, geomorphic classification, protection classification, nearshore classification and the three-tiered composite classification were extracted from the Dbase files and input into ARC/INFO GIS where they formed lookup tables which linked each classification type to the appropriate reach number for that section of shoreline. The second class (protection; yellow lines) followed the original shoreline, with the first class (geomorphic; multiple colours and line styles) being a parallel offset on the land side of the actual shoreline and the third class (nearshore; blue lines) being a parallel offset on the water side of the actual shore.

Because there were three tiers to the classification, the lines were required to be offset from the actual shoreline by a distance which was predicated by the width of each line along with the inclusion of a gap between lines so there was both a visual and graphical differentiation between each line. This caused some graphical problems in areas where the shoreline experiences extreme changes in orientation such as peninsulas and embayments. Because two of the lines were offset from the actual shoreline by a given distance, areas that were less than this distance could not accommodate all three lines in the same manner as on a straight stretch of shoreline. The offset lines also experienced some smoothing where changes in shoreline orientation occurred. Also, because of the character of the shoreline in some areas, geomorphic or nearshore classification lines crossed themselves due to insufficient space for the lines to be represented in the thickness required at an adequate distance from the actual shoreline.

The three-tiered composite classification identifier (eg. 241, represents high bluff with beach, no protection, and clay nearshore) was also plotted on the hardcopy map to aid interpretation. This identifier was located in the centre of each reach. Reach boundaries were delineated on the mapping by single black lines which ran perpendicular to the shoreline. An example of how to interpret this classification identifier was also shown on the shore type classification maps.

The geomorphic class was always the first 1 or 2 digits of the identifier, the protection class was located in the middle, and the nearshore at the end of the composite classification identifier.

For each map produced, a grid was generated which represented coordinates for the appropriate Universal Transverse Mercator Zone. The same UTM projection as used on the paper NTS maps was used for each plotted map. The box created for the mapping limits of each shore type classification map followed the National Topographic Series mapping which used a UTM projection with the corners at known latitudes and longitudes. In several instances, the NTS mapping limits were adjusted to better illustrate the shoreline on a single map instead of several fragmented maps. The contributing NTS map sheets were all included on the source list on the map in these instances. Both UTM and latitude and longitude coordinates were placed on the maps so values could be obtained.

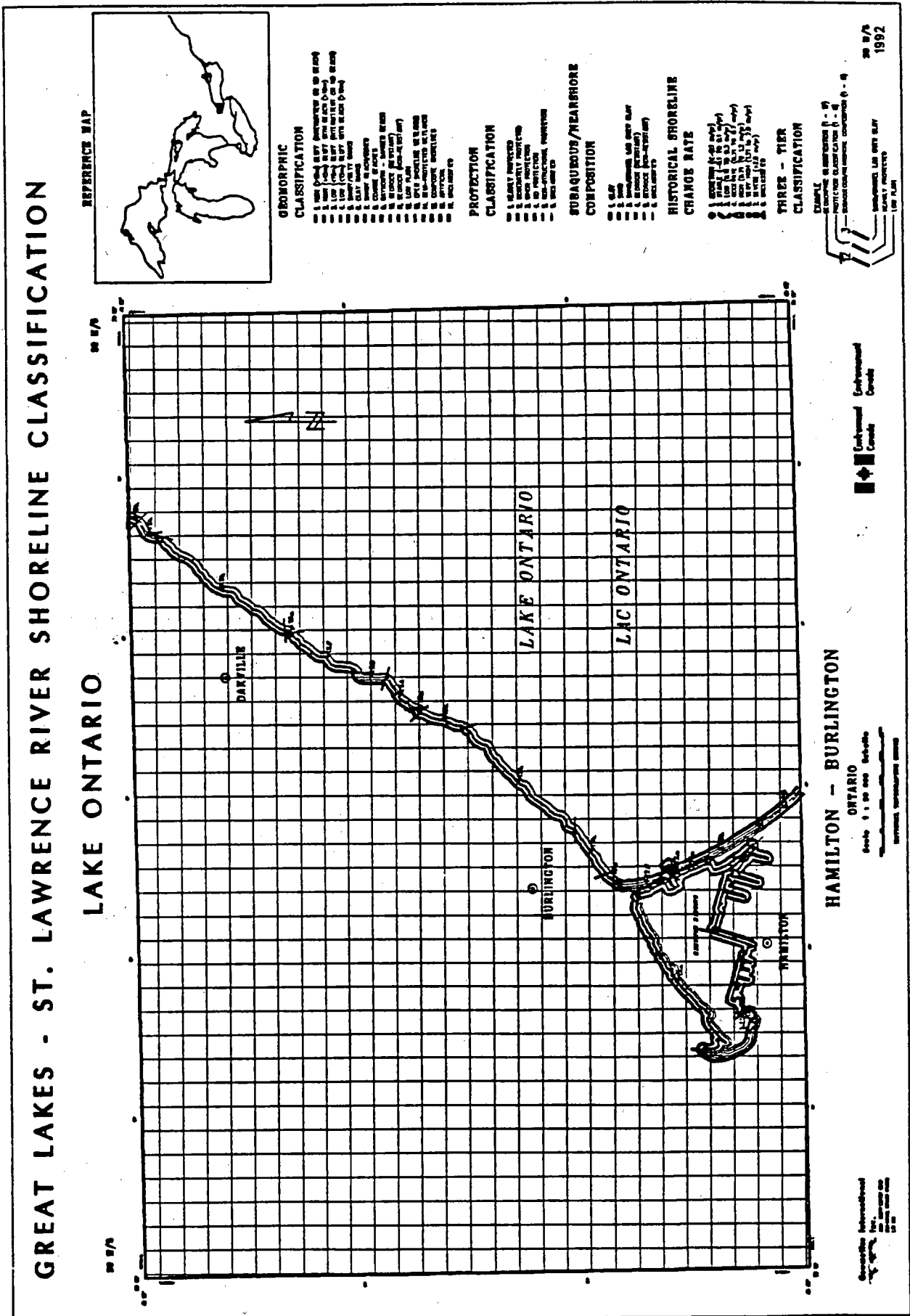
A reference map of the Great Lakes - St. Lawrence River was included to aid with geographical placement of each map. A small box the size of the map coverage was placed on the reference map to illustrate the mapped area. Several place names, as well as the National Topographic Series map number and name were also included to aid in identification.

A standard legend was composed for the complete set of shoreline classification maps. The legend was organized by each of the tiers of the classification scheme (geomorphic, protection, nearshore) and each appropriate line type and colour was displayed along with the classification number and description. The colours and line types were chosen so that each was unique and distinguishable on the map. Recession rate information (shown as Historical Shoreline Change Rates on maps) was added to the mapping in the form of symbols which indicate a range of recession/accretion rates as indicated on the legend. This recession/accretion rate information was compiled where available for the lower Great Lakes (south of Severn Sound on Georgian Bay to Kingston on Lake Ontario). This symbol was placed on the maps beside the composite classification identifier in the centre of each reach length. A scaled-down page size black and white representation of the final mapping product is illustrated in Figure 4.1.

## **4.2 Digital Products**

Accompanying the hardcopy maps are a series of SPANS GIS digital files divided into universes based on each of the six water bodies (Superior, Huron, St. Clair/Detroit, Erie, Ontario, and St. Lawrence). The details of the SPANS GIS files and attributes are contained in Appendix C.

Figure 4.1 An example of a final shore type classification map for Lake Ontario.



## **5.0 Results**

### **5.1 Statistics of Shoreline Classification Types**

Lake-by-lake statistical summaries are provided for the geomorphic, protection and nearshore classifications individually and as a composite three-tiered classification in Appendix D. These statistical summaries have been broken down from the water body classification tables to give statistics for each individual lake and connecting channel. In order to provide a complete summary of the study area shoreline, the lake-by-lake statistical summaries were also combined to form an entire Great Lakes - St. Lawrence River system summary for each of the geomorphic, protection and nearshore classifications (see Appendix D).

Also included in Appendix D are statistical summaries of the historic shoreline change rates for the lakes and connecting channels for which information was available (southern Lake Huron, St. Clair River, Lake St. Clair, Detroit River, Lake Erie, Niagara River, and Lake Ontario), essentially the lower Great Lakes and connecting channels. Also found in Appendix D, are summaries which combine the three-tiered composite classification with the historic shoreline change rate for each of the lakes and connecting channels where data was available. This results in a four or five digit classification, again with the first one or two digits being the geomorphic class, followed by a one digit protection class, then a one digit nearshore class, and the last digit being the recession rate class. This information is shown under the Comp\_rec class (composite and recession class) column in each table. Presenting the data in this manner allows the user the full complement of options. Comparisons can be made between all possible shore type combinations and recession rates by using the entire comp\_rec class number or the data can be collapsed to indicate the recession rate for the geomorphic, protection or nearshore classification separately.

Each table indicates the number of classes found on a particular lake or connecting channel (number), the classification type (\_\_\_\_ class), the number of occurrences based on the number of reaches for the lake or channel (occurrences) and the length of shoreline for that particular class type (shore length (km)). The total number of classification types occurring for that particular area, the total number of reaches and percentage, and the total shoreline length and percentage for the lake or connecting channel are also shown on each table. These tables provide the information required to quantify the amounts of each shore type for each lake and connecting channel.

The negative side to presenting the data in this form is that the classification scheme for each tier is required in order to identify what is represented by each component of the comp\_rec class. The classes are explained at the end of each table to overcome this problem. This simplifies the task of determining for instance, that a comp\_rec class of 5124 indicates a geomorphic class of 5, which is a sandy/silty bank, a protection class of 1, which indicates a

heavily protected shoreline, a nearshore class of 2, which means the nearshore is composed of sand, and a recession rate class of 4, indicating a moderate recession rate of 0.31 to 0.7 m/year.

In order to indicate a degree of coverage for each classification, the number of occurrences and the length of shoreline that was not classified for each classification type due to a lack of data are illustrated in Tables 5.1, 5.2, 5.3 and 5.4.

Overall, 11 of a total of 1,973 reaches (0.6%) accounting for 63.6 km of 11,469.1 km of total shoreline for the study area were not classed for the geomorphic classification (Table 5.1). Two of these reaches were located in Lake Ontario and represented river mouths where no appropriate classification existed. The remainder were located in the St. Lawrence River. Several occurred at Lac Saint Pierre, where no vertical aerial photographs were available, as was the case at St. Regis. Several of the shoreline reaches in the St. Lawrence River did not lend themselves to the classification scheme and were designated as unclassified.

Only 35 of the 1,973 reaches (1.8%) consisting of 172.2 km of shoreline (1.5% of total shoreline) over the entire study area were not classified for protection (Table 5.2). The majority of these (22), were located in Lake Ontario in the Bay of Quinte area where the 1991 video tape of the shoreline provided by Environmental Protection, Environment Canada was unavailable, as were vertical aerial photographs. For the geomorphic classification of this area, the Coastal Zone Atlas and OGS surficial geology maps were used. An additional nine reaches were not classified for protection on the St. Lawrence River where no vertical aerial photographs were available.

It should be noted that no visual data (video tapes or aerial photographs) were used to classify protection for the eastern shore of Georgian Bay and most of Manitoulin Island but personal familiarity with the area and consultation with other people knowledgeable of the area made it possible to confidently classify shoreline protection in these areas.

The nearshore classification contained a large number of unclassified reaches. There were 652 of the total 1,973 reaches or 33.0% of the reaches not classified (Table 5.3). This consisted of 5,507.2 km or 48.0% of the study shoreline. All lakes and connecting channels, except for Lake Erie and St. Clair, and the St. Clair and Detroit Rivers, had unclassified nearshore. This greater number of unclassified occurrences for the nearshore is a result of the general lack of data sources for nearshore sediment composition in the Great Lakes - St. Lawrence River system and the inability to adequately assess the nearshore using video tapes or aerial photographs in many areas. Because of these factors, relatively large proportions of northern Lake Huron/Georgian Bay were not classified for nearshore, along with sections of Lake Superior and the St. Lawrence River.

As illustrated in Table 5.4, there was a high percentage (69%) of both reaches and shoreline length which were unclassified for the historic shoreline change rate. The upper Great Lakes (Lake Huron, north of Severn Sound and Lake Superior) and the St. Lawrence River were not



Lake/Connecting Channel	Lake Superior	St. Marys River	Lake Huron	St. Clair River	Lake St. Clair	Detroit River	Lake Erie	Niagara River	Lake Ontario	St. Lawrence River	Great Lakes St. Lawrence River
Number of Unclassified Reaches	0	0	0	0	0	0	0	0	2	9	11
Total Number of Reaches for Water Body	305	45	637	19	28	7	166	11	468	287	1973
Percentage Unclassified (%)	0	0	0	0	0	0	0	0	0.4	3.1	0.6
Unclassified Shoreline Length (km)	0	0	0	0	0	0	0	0	1.3	62.3	63.6
Total Shoreline Length for Water Body (km)	2541.2	292.4	4588.3	91.3	139.2	106.6	623.5	58.8	1135.9	1892.0	11469.1
Percentage Unclassified (%)	0	0	0	0	0	0	0	0	0	3.3	0.6

Table 5.1 Table Indicating Number of Reaches and Length of Shoreline Unclassified for the Geomorphic Classification for each Lake and Connecting Channel and the entire Great Lakes - St. Lawrence River System.

Lake/Connecting Channel	Lake Superior	St. Marys River	Lake Huron	St. Clair River	Lake St. Clair	Detroit River	Lake Erie	Niagara River	Lake Ontario	St. Lawrence River	Great Lakes St. Lawrence River
Number of Unclassified Reaches	1	0	2	0	1	0	0	0	22	9	35
Total Number of Reaches for Water Body	305	45	637	19	28	7	166	11	468	287	1973
Percentage Unclassified (%)	0.3	0	0.3	0	3.6	0	0	0	4.7	3.1	1.8
Unclassified Shoreline Length (km)	12.0	0	1.8	0	0.3	0	0	0	92.4	65.7	172.2
Total Shoreline Length for Water Body (km)	2541.2	292.4	4588.3	91.3	139.2	106.6	623.5	58.8	1135.9	1892.0	11469.1
Percentage Unclassified (%)	0.5	0	0.04	0	0.2	0	0	0	8.1	3.5	1.5

Table 5.2 Table Indicating Number of Reaches and Length of Shoreline Unclassified for the Protection Classification for each Lake and Connecting Channel and the entire Great Lakes - St. Lawrence River System.

Lake/Connecting Channel	Lake Superior	St. Marys River	Lake Huron	St. Clair River	Lake St. Clair	Detroit River	Lake Erie	Niagara River	Lake Ontario	St. Lawrence River	Great Lakes St. Lawrence River
Number of Unclassified Reaches	138	6	236	0	0	0	0	11	101	166	652
Total Number of Reaches for Water Body	305	45	637	19	28	7	166	11	468	287	1973
Percentage Unclassified (%)	45.2	13.3	37.0	0	0	0	0	100	21.6	57.8	33.0
Unclassified Shoreline Length (km)	944.8	24.2	3009.0	0	0.3	0	0	58.8	328.9	1141.5	5507.2
Total Shoreline Length for Water Body (km)	2541.2	292.4	4588.3	91.3	139.2	106.6	623.5	58.8	1135.9	1892.0	11469.1
Percentage Unclassified (%)	37.2	8.3	65.6	0	0.2	0	0	100	29.0	60.3	48.0

Table 5.3 Table Indicating Number of Reaches and Length of Shoreline Unclassified for the Nearshore Classification for each Lake and Connecting Channel and the entire Great Lakes - St. Lawrence River System.

Lake/Connecting Channel	South Huron	St. Clair River	Lake St. Clair	Detroit River	Lake Erie	Niagara River	Lake Ontario	Lower Great Lakes
Number of Unclassified Reaches	274	19	19	7	69	11	362	761
Total Number of Reaches for Water Body	396	19	28	7	166	11	468	1095
Percentage Unclassified (%)	69.2	100	67.9	100	41.6	100	77.4	69.5
Unclassified Shoreline Length (km)	843.0	91.3	104.4	106.6	229.4	58.8	901.9	2335.4
Total Shoreline Length for Water Body (km)	1210.9	91.3	139.2	106.6	623.5	58.8	1135.9	3366.2
Percentage Unclassified (%)	69.6	100	75.0	100	36.8	100	79.4	69.4

Table 5.4 Table Indicating Number of Reaches and Length of Shoreline Unclassified for the Historical Shoreline Change Rate Classification for each Lake and Connecting Channel for the lower Great Lakes (between Severn Sound, Lake Huron and Kingston, Lake Ontario).

included in the historic shoreline change rate classification so the lower Great Lakes and connecting channels form the total study area. For the study area, 761 of the 1,095 reaches (69.5%) did not contain any information on rates of historic shoreline change. This corresponded to a shoreline length of 2,335.4 km of a total 3,366.2 km or 69.4% that was not classified due to a lack of data.

Of all the lakes and connecting channels in the study area, Lake Erie contained the most information on historic shoreline change. Lake Erie had 63% of a total shoreline length of 623.5 km classified for historic shoreline change. None of the connecting channels (St. Clair, Detroit, Niagara) had any reliable information on historic shoreline change. This may in part be a result of the generally high percentage of protected shoreline found on the connecting channels which caused them to be thought of as stable and therefore were not monitored. The remaining lakes generally contained information (21% to 33%) on historic shoreline changes along the same level as for the entire lower Great Lakes study area.

The percentage of each classification type by lake and connecting channel for geomorphic, protection, nearshore and historic shoreline change rate classifications have been summarized in Tables 5.5, 5.6, 5.7 and 5.8 respectively, in order to highlight the variations between the lakes. The contrast between the largely bedrock shorelines of the upper Great Lakes and the softer shorelines of the lower Great Lakes is clearly evident. Bedrock shorelines account for roughly 60% of Lakes Superior and southern Huron (south of Severn Sound) and 80% of northern Lake Huron, while bluff shorelines account for less than 2% on Superior and northern Huron and about 9% on southern Lake Huron. In fact, almost all the bluff shoreline on Lake Huron is found south of Point Clarke, and if the division between the upper and lower lakes is placed here then the contrast between the two systems is even greater. Lake St. Clair is anomalous in that a large proportion is dominated by wetlands (and banks) and there is little bedrock or beach present.

Almost half (46.8%) of the entire Great Lakes - St. Lawrence River shoreline (5372.2 km of 11,469.1 km) is classified as resistant bedrock shoreline for the geomorphic classification. Only 30.5% or 602 of the total 1,973 shoreline reaches defined for the Great Lakes - St. Lawrence River system were classed as resistant bedrock. This is a result of the less variable shoreline found on the upper Great Lakes which resulted in longer reaches being defined as compared to the more diverse shoreline along the lower Great Lakes and St. Lawrence River which required shorter, more frequent reaches to be defined in order to accommodate this greater variability in shore types.

The contrast between the lakes found for the geomorphic classes is also evident for the protection classes (Table 5.6). Shorelines that have high or moderate protection account for 24.2%, 34.3% and 37.9% of the shorelines of Lake Ontario, Erie and St. Clair, respectively. If the bedrock shoreline at the east end of Lake Ontario is ignored, then the figures for Lake Ontario would be very similar to those found for the other two lakes. In contrast, less than 10% of the shoreline for the upper lakes has this degree of protection. In total, a large proportion

Geomorphic Class	Percent Shoreline by Lake or Connecting Channel												
	Lake Superior	St. Marys River	Northern Huron	Southern Huron	St. Clair River	Lake St. Clair	Detroit River	Lake Erie	Niagara River	Lake Ontario	St. Lawrence River	Great Lakes St. Lawrence River	
1. High Bluff	0	0	0	2.2	0	0	0	27.8	0	2.4	0	2.0	
2. High Bluff & Beach	0	0	0	5.4	0	0	0	0.7	0	0.2	0	0.6	
3. Low Bluff	0.4	0	1.6	0.7	29.9	0	0	7.4	5.3	17.0	1.3	3.2	
4. Low Bluff & Beach	0	0	0.03	0.7	0	0	0	6.5	0	1.5	0.5	0.6	
5. Sand/Silt Banks	0.1	1.8	0	1.4	1.0	20.5	30.4	2.8	0	0.6	2.2	1.3	
6. Clay Banks	0	0	0.4	0	15.6	6.3	2.8	2.6	54.2	1.4	0.2	0.9	
7. Sand Beach/Dunes	10.0	8.3	12.2	24.6	0	0.3	0	16.0	0	2.9	0	9.8	
8. Coarse Beach	19.4	3.9	3.0	1.6	0	0	0	0	0	4.9	1.0	6.1	
9. Barrier Beach	0.3	0	0	0	0	0	0	21.2	0	9.3	0.4	2.2	
10. Bedrock (Resistant)	60.2	34.8	76.7	57.5	0	0	0	1.3	29.3	17.2	12.4	46.8	
11. Bedrock (Non-resistant)	0	0	3.5	0.4	0	0	0	0	0	0.2	0	1.1	
12. Low Plain	1.5	8.3	0	0.2	17.1	7.4	0	0	3.4	20.1	42.5	9.8	
13. Open Shore Wetland	6.0	4.5	0.5	0.5	30.8	55.9	46.4	10.0	0	6.0	17.8	7.1	
14. Semi-protected Wetland	0.8	35.1	2.2	1.2	0	5.2	0	0	0	5.6	5.8	3.4	
15. Composite Shore	0	0	0	0	0	0	0	0	0	0	0	0	
16. Artificial	1.5	3.3	0	3.9	5.6	4.3	20.5	3.7	7.8	10.7	12.7	4.5	
17. Unclassified	0	0	0	0	0	0	0	0	0	0.1	3.3	0.6	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	

Table 5.5 Geomorphic Classification Summary Table for Percentage of Shoreline Length by Lake or Connecting Channel.

Protection Class	Percent Shoreline by Lake or Connecting Channel											
	Lake Superior	St. Marys River	Northern Huron	Southern Huron	St. Clair River	Lake St. Clair	Detroit River	Lake Erie	Niagara River	Lake Ontario	St. Lawrence River	Great Lakes St. Lawrence River
1. Heavily Protected	1.3	4.0	0	5.0	69.1	32.7	49.7	17.3	60.7	15.1	13.0	7.2
2. Moderately Protected	1.3	2.7	0	3.9	8.4	5.2	37.5	17.0	10.0	9.1	9.6	4.7
3. Minor Protection	5.0	4.4	0.3	10.4	0	18.7	12.8	11.5	29.3	19.2	23.3	9.2
4. No Protection	92.0	89.0	99.7	80.3	22.5	43.2	0	54.2	0	48.5	50.6	77.4
5. Non-structural Protection	0	0	0	0.2	0	0	0	0	0	0	0	0.02
6. Unclassified	0.5	0	0	0.2	0	0.2	0	0	0	8.1	3.5	1.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100

Table 5.6 Protection Classification Summary Table for Percentage of Shoreline Length by Lake or Connecting Channel.

Nearshore Class	Percent Shoreline by Lake or Connecting Channel											
	Lake Superior	St. Marys River	Northern Huron	Southern Huron	St. Clair River	Lake St. Clair	Detroit River	Lake Erie	Niagara River	Lake Ontario	St. Lawrence River	Great Lakes St. Lawrence River
1. Clay	5.6	17.9	0	0.4	3.1	0	0	22.3	0	12.1	6.1	5.2
2. Sand	5.7	20.0	1.3	9.4	33.8	100	56.9	27.1	0	12.0	18.9	11.0
3. Sand/Gravel Lag over Clay	0.2	17.4	0	12.1	63.1	0	43.1	31.6	0	8.2	0.9	5.3
4. Bedrock (Resistant)	51.3	36.4	13.2	67.1	0	0	0	18.9	0	33.4	13.8	29.9
5. Bedrock (Non-resistant)	0	0	0	0.9	0	0	0	0	0	5.4	0	0.6
6. Unclassified	37.2	8.3	85.5	10.1	0	0	0	0	100	29.0	60.3	48.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 5.7 Nearshore Classification Summary Table for Percentage of Shoreline Length by Lake or Connecting Channel.



Historical Shoreline Change Rate Class	Percent Shoreline by Lake or Connecting Channel							
	Southern Huron	St. Clair River	Lake St. Clair	Detroit River	Lake Erie	Niagara River	Lake Ontario	Lower Great Lakes
1. Accretion (< -0.1 m/yr)	6.1	0	0	0	3.9	0	1.2	3.3
2. Stable (-0.1 to 0.1 m/yr)	12.3	0	0	0	8.9	0	4.2	7.5
3. Low (0.11 to 0.3 m/yr)	6.5	0	10.6	0	12.1	0	6.6	7.3
4. Moderate (0.31 to 0.7 m/yr)	4.4	0	14.4	0	21.9	0	5.1	7.9
5. High (0.71 to 1.2 m/yr)	1.0	0	0	0	4.4	0	2.3	2.0
6. Very High (1.21 to 2.0 m/yr)	0	0	0	0	6.9	0	1.1	1.6
7. Severe (> 2.0 m/yr)	0	0	0	0	5.1	0	0.1	1.0
8. Unclassified	69.6	100.0	75.0	100.0	36.8	100.0	79.4	69.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 5.8 Historical Shoreline Change Rate Classification Summary Table for Percentage of Shoreline Length by Lake or Connecting Channel.

(77.4%) of the Great Lakes - St. Lawrence River shoreline as a whole was classified as no protection (8,879.6 km of 11,469.1 km).

Comparison of nearshore classes (Table 5.7) is made difficult by the lack of information on parts of Lake Ontario as well as large sections of the upper Great Lakes and for the St. Lawrence River. However, as would be expected from the geomorphic classification, bedrock dominates the upper lakes and quite extensive sections of Lake Ontario. Table 5.6 also indicates the lack of nearshore information which exists for the upper Great Lakes and the St. Lawrence River. Even the data for the lower Great Lakes is often point data and further nearshore data is needed.

As with the nearshore classification, the amount of unclassified shoreline for the historic shoreline change rate makes it difficult to make comparisons between classes or lakes (Table 5.8). However, if one were to assume that many of the unclassified areas on the lower Great Lakes have no data because historically no erosion problems have existed, and thus no measurements were taken or recorded, then Table 5.8 can be used to illustrate the proportions of each lake which have experienced historical changes to the shoreline.

Regardless of assumptions made, Table 5.8 does indicate that at least 30% or 1,031 km of shoreline between Severn Sound on Lake Huron and Kingston on Lake Ontario has historically experienced change. Of this 1,031 km, 666.1 km of shoreline or 20% of the total lower Great Lakes has experienced erosion that has been measured historically. Lake Erie appears to have experienced the most erosion (50%) as a total of it's shoreline. It also has the most data available as a proportion of the shoreline (63%) as compared to the other lakes which only have information for 20% to 30% of their shoreline length.

## **6.0 Concluding Remarks and Recommendations**

The Canadian side of the Great Lakes - St. Lawrence River was classified for the three shore type classifications ( geomorphic, protection and nearshore) from the Canadian - U.S. border on Lake Superior in the west to Trois Rivières, Québec in the east. Mapping, which illustrated the results of this three-tiered shore type classification was produced based on the National Topographic Series grid for the entire study area. For the portion of the study area where the historic shoreline change rate was determined (Severn Sound, Lake Huron to Kingston, Lake Ontario), the mapping incorporated this additional set of information.

In total, the shoreline, including most islands, classified on the Canadian side of the Great Lakes - St. Lawrence River totalled 11,469.1 km. This shoreline was broken into 1,973 reaches or segments of shoreline for the purposes of the classification. Many of the reaches, especially on the lower Great Lakes, remained consistent with those defined in the Coastal Zone Data Base during Phase 1 of the IJC Water Levels study. The majority of changes to the CZDB reaches occurred on the upper Great Lakes, where a lack of data sources during the original reach definition resulted in the need to make more extensive changes during this study.

The best data source for classifying the shoreline for both the geomorphic and protection classifications was found to be the video tapes of the shoreline recorded from a helicopter as provided by Environmental Protection for Lakes Ontario and Superior. Environmental Protection mapped flight lines and times onto sections of NTS map sheets which aided greatly in maintaining correct referencing especially in remote areas. The video tapes provided an oblique view of the shoreline which aided in classification more than that which could be achieved through the use of vertical aerial photographs. Oblique colour photographs were also identified as a good source of data for classifying the shoreline although the continuous nature of the video tape both spatially and temporally proved superior to oblique photographs.

Classification of the nearshore/subaqueous component of the shoreline and the historical shoreline change rate illustrated the lack of data available to accomplish this task. As the results of this study indicated, for almost half of the Great Lakes - St. Lawrence River, no reliable nearshore data was available and what did exist was often point data which had been extrapolated to encompass a larger nearshore area. The same lack of information exists when trying to classify the shoreline for rates of historic shoreline change. Over 69% of the shoreline investigated (2,335.4 km of 3366.2 km) between Severn Sound, Lake Huron and Kingston, Lake Ontario contained no information on historical shoreline change rates. The data that does exist are generally random points which have been derived from numerous sources over different time periods. Overall, there is a need for more information for the nearshore/subaqueous component of the shoreline and in order to quantify historic shoreline change rates in a reliable manner.

The main difficulty in applying the classification scheme to the shoreline was the subjectivity of the person doing the classification. As discussed in Section 2.0, several of the geomorphic classifications could be used to define the same reach or section of shoreline. Fortunately,

secondary information such as surficial geology maps were often available in these situations which resulted in a more reliable classification. In addition, the actual classifications were completed by only two individuals which decreased the variability of the result.

The use of reaches or predefined sections of shorelines upon which to base the classification increased the functionality of the information. The loss of detail due to generalization of some shoreline into specific reaches and applying the classification to that reach as a whole was minimal considering the extent of shoreline under consideration (11,469.1 km) for this study. Generally, reaches were made to reflect most changes in the geomorphic classification and then the reach was assessed for amount of protection and the composition of the nearshore/subaqueous component based on the reach boundaries. Information detailing historical shoreline change rates were also calculated based on the reach boundaries.

### Recommendations

1. Optimally, a consistent temporal source of information (preferably video tapes) should be used to classify the shoreline for the entire study area. This is not as critical for the geomorphic classification as it is for the protection classification where changes over time can be quite dramatic.
2. More information is required in order to adequately classify the nearshore/subaqueous component of the shoreline. Many areas, especially the upper Great Lakes and the St. Lawrence River have no reliable nearshore/subaqueous information.
3. In order to determine historical shoreline change rates for the entire Great lakes - St. Lawrence River shoreline, continuous and comparable data are required. The existing information is mainly site-specific or point data for the lower Great Lakes, spanning numerous time periods of varying intervals, and was collected using a number of various techniques.
4. Although, the classification of the shoreline was done with the utmost care and attention to quality, it is intended as an overview of the entire Great Lakes - St. Lawrence River shoreline and was not intended to provide the level of detail required for a more specific study. The classifications and information summarized in this study provide a general level of detail from which the user can become more detailed in their investigation or study.

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**APPENDIX A**

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**Shore Type Classification Data Files by Water Body  
Reach Boundaries and Lengths by Water Body**

LAKE SUPERIOR.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. 1 Class	Source	Protect 2 Class	Source	Nearsh 3 Class	Source	Comp. 4 Class	Comments	
1	YES	NORTH BOUND 1KM SOUTH	52A4	7	VIDEO91	4	VIDEO91	2	VIDEO91	742	
2	NO		52A4	10	VIDEO91	4	VIDEO91	4	VIDEO91 LRCA	1044	
3	NO		52A4	10	VIDEO91	4	VIDEO91	6	NO DATA	1046	
4	NO		52A4	10	VIDEO91	4	VIDEO91	6	NO DATA	1046	
5	NO		52A4	7	VIDEO91	3	VIDEO91	6	NO DATA	736	
6	YES	EAST BOUND 600M EAST	52A4	10	VIDEO91	4	VIDEO91	6	NO DATA	1046	
7	YES	WEST BOUND 600M EAST	52A4 52A3	14	VIDEO91	4	VIDEO91	1	VIDEO91	1441	SEDIMENT FROM RIVER
8	NO		52A3	10	VIDEO91	4	VIDEO91	4	VIDEO91	1044	
9	NO		52A3	8	VIDEO91	4	VIDEO91	4	VIDEO91	844	
10	NO		52A3	10	VIDEO91	4	VIDEO91	4	VIDEO91	1044	
11	NO		52A3	10	VIDEO91	4	VIDEO91	4	VIDEO91 LRCA	1044	
12	YES	EAST BOUND 300M WEST	52A3	8	VIDEO91	4	VIDEO91	4	LRCA	844	
13	YES	WEST BOUND 800M EAST	52A3	14	VIDEO91	3	VIDEO91	4	LRCA	1434	
14	NO		52A3	8	VIDEO91	4	VIDEO91	4	LRCA	844	
15	NO		52A3	10	VIDEO91	4	VIDEO91	6	NO DATA	1046	
16	YES	EAST BOUND 1KM WEST	52A3	10	VIDEO91	4	VIDEO91	6	NO DATA	1046	
17	YES	NORTH BOUND 3KM WEST	52A3	10	VIDEO91	4	VIDEO91	2	LRCA	1042	
18	NO		52A3	8	VIDEO91	4	VIDEO91	4	VIDEO91	844	
19	YES		52A3	8	VIDEO91	4	VIDEO91	6	NO DATA	846	
20	YES	NORTH BOUND 4KM NORTH	52A3 52A6	8	VIDEO91	4	VIDEO91	4	VIDEO91	844	INCLUDES FLATLAND ISL
21	YES	SOUTH BOUND 4KM NORTH	52A6	10	VIDEO91	4	VIDEO91	4	LRCA	1044	
22	NO		52A6 52A3	8	VIDEO91	4	VIDEO91	4	VIDEO91	844	SHALLOW
23	NO		52A3	8	VIDEO91	4	VIDEO91	4	VIDEO91	844	
24	NO		52A3	8	VIDEO91	4	VIDEO91	4	VIDEO91	844	
25	NO		52A3	10	VIDEO91	4	VIDEO91	4	VIDEO91	1044	
26	NO		52A3 52A6	8	VIDEO91	4	VIDEO91	4	VIDEO91	844	
27	NO		52A6	8	VIDEO91	4	VIDEO91	4	VIDEO91	844	SHELF OFFSHORE
28	NO		52A6	8	VIDEO91	3	VIDEO91	4	LRCA	834	
29	NO		52A6	8	VIDEO91	3	VIDEO91	2	LRCA	832	SHALLOW
30	NO		52A6	16	VIDEO91	1	VIDEO91	6	NO DATA	1616	SETTLING POND
31	NO		52A6	13	VIDEO91	4	VIDEO91	1	VIDEO91	1341	
32	NO		52A6	16	VIDEO91	1	VIDEO91	6	NO DATA	1616	
33	NO		52A6	16	VIDEO91	1	VIDEO91	6	NO DATA	1616	
34	NO		52A6	12	VIDEO91 OGS	2	VIDEO91	3	FISHER	1223	
35	NO		52A6	7	VIDEO91 OGS	2	VIDEO91	2	VIDEO91 FISHER	722	SHALLOW
36	NO		52A6	7	VIDEO91 OGS	2	VIDEO91	2	VIDEO91 FISHER	722	
37	YES	EAST BOUND 1KM WEST	52A6 52A11 52A10	8	VIDEO91	2	VIDEO91	4	VIDEO91 FISHER	824	
38	NO		52A10	10	VIDEO91	3	VIDEO91	4	VIDEO91	1034	
39	NO		52A10	7	VIDEO91	3	VIDEO91	2	LRCA	732	
40	NO		52A10	10	VIDEO91	4	VIDEO91	4	VIDEO91	1044	
41	NO		52A10	7	VIDEO91	3	VIDEO91	2	VIDEO91	732	

AI

LAKE SUPERIOR.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
42	NO	52A10	VIDE091	VIDE091	VIDE091	1044
43	NO	52A10	VIDE091	VIDE091	VIDE091	1044
44	NO	52A10	VIDE091	VIDE091	VIDE091	732
45	NO	52A10	VIDE091	VIDE091	VIDE091	1034
46	NO	52A10	VIDE091	VIDE091	VIDE091	1236
47	YES SOUTH BOUND 1KM NORTH	52A10	VIDE091	VIDE091	VIDE091	1342
48	YES NORTH BOUND 1KM NORTH	52A10 52A7	VIDE091	VIDE091	VIDE091	844
49	NO	52A7	VIDE091	VIDE091	VIDE091	844
50	YES EAST BOUND 5.5KM WEST	52A7	VIDE091	VIDE091	VIDE091	1044
51	YES S B 2KM N, N B 3KM S	52A7	VIDE091	VIDE091	VIDE091	844
52	NO	52A7	VIDE091	VIDE091	VIDE091	1044
53	NO	52A7	VIDE091	VIDE091	VIDE091	844
54	NO	52A7	VIDE091	VIDE091	VIDE091	844
55	YES SOUTH BOUND 1KM NORTH	52A7	VIDE091	VIDE091	VIDE091	1241
56	NO	52A7 52A10	VIDE091	VIDE091	VIDE091	844
57	YES NORTH BOUND 2KM SOUTH	52A10	VIDE091 EP91	VIDE091	NO DATA	1346
58	NO	52A10	VIDE091 EP91	VIDE091	VIDE091	1341
59	YES NORTH BOUND 5KM SOUTH	52A10 52A15	VIDE091	VIDE091	NO DATA	1046
60	NO	52A15 52A16	VIDE091	VIDE091	VIDE091	1341
61	NO	52A16	VIDE091	VIDE091	VIDE091	1341
62	NO	52A16	VIDE091	VIDE091	VIDE091	1341
63	NO	52A16	VIDE091	VIDE091	VIDE091	1341
64	NO	52A16	VIDE091	VIDE091	VIDE091	1341
65	NO	52A16 52A9	VIDE091	VIDE091	VIDE091	1341
66	NO	52A16 52A9	VIDE091	VIDE091	NO DATA	746
67	NO	52A9	VIDE091 EP91	VIDE091	VIDE091	1044
68	NO	52A9	VIDE091	VIDE091	VIDE091	1044
69	NO	52A9 52A10	VIDE091	VIDE091	VIDE091	1044
70	NO	52A7 52A10	VIDE091	VIDE091	VIDE091	1044
71	YES	52A7	VIDE091	VIDE091	VIDE091	1044
72	NO	52A7 52A9 52A8	VIDE091	VIDE091	VIDE091	1044
73	YES EAST BOUND 5.5KM WEST	52A9	VIDE091 OGS	VIDE091	VIDE091	844
74	YES WEST BOUND 5.5KM WEST	52A9	VIDE091 OGS	VIDE091	VIDE091	1044
75	NO	52A9	VIDE091 OGS	VIDE091	VIDE091	1044
76	NO	52A9 52A16	VIDE091 OGS	VIDE091	VIDE091	1044
77	NO	52A16 52A9	VIDE091	VIDE091	VIDE091	1044
78	YES NORTH BOUND 1KM SOUTH	52A9	VIDE091	VIDE091	VIDE091	1044
79	NO	52A9 42D12	VIDE091	VIDE091	VIDE091	844
80	NO	42D12 42D13	VIDE091	VIDE091	VIDE091	744
81	NO	42D13 42D12	VIDE091	VIDE091	VIDE091	844
82	NO	42D12	VIDE091	VIDE091	NO DATA	1044

SHALLOW

LAKE SUPERIOR.ASC

Reach No.	CZR Adjustment	NTS No.	Geomorf. 1 Class	Source	Protect Source 2 Class	Nearsh 3 Class	Source	Comp. 4 Class	Comments
83	NO	42D12 42D13	10	VIDEO91	4 VIDEO91	6	NO DATA	1046	
84	NO	42D13	10	VIDEO91	4 VIDEO91	4	VIDEO91	1044	SHALLOW
85	NO	42D13	8	VIDEO91	4 VIDEO91	4	VIDEO91	844	
86	NO	42D13 52A16	7	VIDEO91	4 VIDEO91	4	VIDEO91	744	
87	YES WEST BOUND 5.2KM EAST	52A16	10	VIDEO91 OGS	4 VIDEO91	4	VIDEO91	1044	
88	YES N B 4KM S B 2KM S	52A16	3	VIDEO91 OGS	4 VIDEO91	1	VIDEO91	341	ERODING BLUFF
89	NO	52A16	12	VIDEO91	3 VIDEO91	1	VIDEO91	1231	
90	NO	52A16	16	VIDEO91	6 VIDEO91	6	NO DATA	1666	
91	NO	52A16	13	VIDEO91	4 VIDEO91	1	VIDEO91	1341	
92	YES NEW	52A16 52HI	8	VIDEO91	4 VIDEO91	6	NO DATA	846	NIPIGON RIVER MOUTH
93	YES EAST BORDER	52A16	8	VIDEO91	4 VIDEO91	6	NO DATA	846	
94	YES WEST BOUND 1KM EAST	42P13	10	VIDEO91	4 VIDEO91	6	NO DATA	1046	
95	YES REDUCED TO EAST	42D13	8	VIDEO91	4 VIDEO91	6	NO DATA	846	
96	YES EAST BOUND 5KM EAST	42D13	7	VIDEO91	4 VIDEO91	2	VIDEO91	742	
97	YES REDUCED EAST BORDER	42D13	10	VIDEO91	4 VIDEO91	4	VIDEO91	1044	
98	YES REDUCED	42D13	10	VIDEO91	4 VIDEO91	4	VIDEO91	1044	
99	YES NORTH BOUND 1.5KM NORTH	42D14	10	VIDEO91	4 VIDEO91	4	VIDEO91	1044	
100	NO	42D14	10	VIDEO91	4 VIDEO91	4	VIDEO91	1044	
101	NO	42D14	8	VIDEO91	4 VIDEO91	6	NO DATA	846	
102	YES BOTH BOUNDS	42D14	10	AP8691	4 AP8691	6	NO DATA	1046	
103	YES WEST BOUND 600M WEST	42D14	10	AP8691	4 AP8691	6	NO DATA	1046	
104	NO	42D14 42D15	10	NTS	4 NTS	6	NO DATA	1046	
105	NO	42D14 42D15	10	NTS	4 NTS	6	NO DATA	1046	
106	NO	42D15	8	NTS	4 NTS	6	NO DATA	846	
107	YES EAST BOUND 800M NORTH	42D15	10	NTS	4 NTS	6	NO DATA	1046	
108	NO	42D15 42D10	10	NTS	4 NTS	6	NO DATA	1046	
109	NO	42D11 42D10	10	NTS	4 NTS	6	NO DATA	1046	
110	NO	42D11	10	NTS	4 NTS	6	NO DATA	1046	
111	NO	42D11 42D10	10	NTS	4 NTS	6	NO DATA	1046	
112	NO	42D10	10	NTS	4 NTS	6	NO DATA	1046	
113	YES EAST BOUND 8KM WEST	42D10 42D15	10	NTS	4 NTS	6	NO DATA	1046	
114	YES REDUCED WEST BOUND 5KM E	42D15	7	VIDEO91	4 VIDEO91	2	VIDEO91	742	WIDE BEACH
115	NO	42D15 42D10	10	VIDEO91	4 VIDEO91	4	VIDEO91	1044	
116	NO	42D10	10	VIDEO91	4 VIDEO91	4	VIDEO91	1044	PIC ISLAND
117	NO	42D10	10	VIDEO91	4 VIDEO91	4	VIDEO91	1044	PIC ISLAND
118	NO	42D10	10	VIDEO91	4 VIDEO91	4	VIDEO91	1044	PIC ISLAND
119	NO	42D10	10	VIDEO91	4 VIDEO91	4	VIDEO91	1044	PIC ISLAND
120	YES EAST BOUND 3KM WEST	42D10	8	VIDEO91	4 VIDEO91	6	NO DATA	846	
121	YES WEST BOUND 3KM WEST	42D10 42D15	10	VIDEO91	4 VIDEO91	4	VIDEO91	1044	
122	NO	42D15 42D16	10	VIDEO91	4 VIDEO91	4	VIDEO91	1044	
123	NO	42D16 42D9	10	VIDEO91	4 VIDEO91	4	VIDEO91	1044	

LAKE SUPERIOR.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
124	YES SOUTH BOUND 2KM NORTH	42D9	10	4	4	1044
125	YES WEST BOUND 1KM EAST	42D9	8	4	6	846
126	YES SOUTH BOUND 1KM EAST	42D9	10	4	6	1046
127	YES BOTH ENDS REDUCED 1KM	42D9	7	4	2	742
128	YES NORTH BOUND 1KM NORTH	42D9 42D8	10	4	4	1044
129	YES SOUTH BOUND 3KM NORTH	42D8	10	4	6	1046
130	YES NORTH BORDER 2KM NORTH	42D8	10	4	6	1046
131	NO	42D8 42D1	10	4	6	1046
132	NO	42D1	10	3	6	1036
133	YES SOUTH BOUND 6KM NORTH	42D1 42C4	10	4	6	1046
134	YES BOTH BOUND NORTH	42D1 42C4	10	4	4	1044
135	YES NORTH BOUND 2KM NORTH	42C4	10	4	6	1046
136	NO	41N13	7	4	6	746
137	NO	41N13	10	4	6	1046
138	YES WEST BOUND 4KM WEST	41N13	8	4	6	846
139	YES MOVED TO SOUTH OF ISL	41N12	7	4	6	746
140	NO	41N13 41N12	10	4	6	1046
141	YES EAST BOUND NOW 139	41N12	8	4	6	846
142	NO	41N12	8	4	6	846
143	NO	41N13 41N12	10	4	6	1046
144	NO	41N13	8	4	6	846
145	NO	41N13 41N14	10	4	6	1046
146	NO	41N14	10	4	6	1046
147	NO	41N14	10	4	6	1046
148	YES EAST BOUND 2.5KM EAST	41N14	7	4	4	744
149	YES E B 700M W W B 2.5KM E	41N14	10	4	6	1046
150	YES EAST BOUND 6KM WEST	41N14 41N15	10	4	6	1046
151	NO	41N15	10	4	6	1046
152	NO	41N15	7	4	6	746
153	NO	41N15	10	4	6	1046
154	NO	41N15	10	4	4	1044
155	NO	41N15	7	4	6	746
156	YES SOUTH 5KM NORTH	41N15 41N10	10	4	6	1046
157	YES N B 1KM N S B 6KM N	41N10	10	4	6	1046
158	YES NORTH BOUND 4.3KM NORTH	41N10	10	4	6	1046
159	YES NORTH BOUND 2KM NORTH	41N10 41N7	10	4	4	1044
160	YES NORTH BOUND 7KM SOUTH	41N7	7	4	2	742
161	NO	41N7	10	4	4	1044
162	YES SOUTH BOUND 3KM NORTH	41N7	7	4	2	742
163	NO	41N7	10	4	6	1046
164	NO	41N7 41N2	8	4	6	846

PIC RIVER

LAKE SUPERIOR.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
165	YES SOUTH BOUND 2KM NORTH	41N2	8 VIDEO91	4 VIDEO91	6 NO DATA	846
166	YES NORTH BOUND 2KM NORTH	41N2	10 VIDEO91	4 VIDEO91	6 NO DATA	1046
167	NO	41N2	8 VIDEO91	4 VIDEO91	4 VIDEO91	844
168	NO	41N2	10 VIDEO91	4 VIDEO91	6 NO DATA	1046
169	YES NORTH BOUND 5KM NORTH	41N2	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044
170	NO	41N2	10 VIDEO91	4 VIDEO91	6 NO DATA	1046
171	NO	41N2	7 VIDEO91	4 VIDEO91	6 NO DATA	746
172	YES SOUTH BOUND 7KM NORTH	41N2 41K15	10 VIDEO91	4 VIDEO91	6 NO DATA	1046
173	YES WEST BOUND 2KM WEST	41K15	8 VIDEO91	4 VIDEO91	6 NO DATA	846
174	NO	41K15	7 VIDEO91	4 VIDEO91	2 VIDEO91	742
175	NO	41K15	8 VIDEO91	4 VIDEO91	4 VIDEO91	844
176	NO	41K15	7 VIDEO91	4 VIDEO91	6 NO DATA	746
177	NO	41K15	7 VIDEO91	3 VIDEO91	6 NO DATA	736
178	NO	41K15	7 VIDEO91	4 VIDEO91	2 VIDEO91	742
179	YES SOUTH BOUND 3.5KM NORTH	41K15	8 VIDEO91	4 VIDEO91	6 NO DATA	846
180	YES EAST BOUND 6KM WEST	41K15	8 VIDEO91	4 VIDEO91	6 NO DATA	846
181	NO	41K16 41K15	13 VIDEO91	4 VIDEO91	6 NO DATA	1346
182	NO	41K15 41K16	7 VIDEO91	4 VIDEO91	2 VIDEO91	742
183	NO	41K16	13 VIDEO91	4 VIDEO91	2 VIDEO91	1342
184	NO	41K16	7 VIDEO91	4 VIDEO91	2 VIDEO91	742
185	YES SOUTH BOUND 3KM NORTH	41K16	7 VIDEO91	3 VIDEO91	2 VIDEO91	732
186	YES NORTH BOUND 800M NORTH	41K16	12 VIDEO91	3 VIDEO91	2 VIDEO91	1232
187	YES NORTH&SOUTH BOUND 500M S	41K16	7 VIDEO91	3 VIDEO91	2 VIDEO91	732
188	YES NORTH BOUND 500M SOUTH	41K16	5 VIDEO91 OGS	2 VIDEO91	6 NO DATA	526
189	NO	41K16	7 VIDEO91	1 VIDEO91	2 VIDEO91	712
190	YES NORTH BOUND 2.5KM WEST	41K16	12 VIDEO91	1 VIDEO91	6 NO DATA	1216
191	YES PART OF 190	41K16	7 VIDEO91	2 VIDEO91	6 NO DATA	726
192	YES EAST BOUND 3KM NORTH	41K16 41K15	7 VIDEO91	2 VIDEO91	4 VIDEO91	724
193	NO	41K15	8 VIDEO91	4 VIDEO91	4 VIDEO91	844
194	YES SOUTH BOUND 1KM EAST	41K15	8 VIDEO91	4 VIDEO91	4 VIDEO91	844
195	YES NORTH BOUND 1KM WEST	41K15	7 VIDEO91	3 VIDEO91	4 VIDEO91	734
196	YES SOUTH BOUND 1KM NORTH	41K15 41K10	8 VIDEO91	3 VIDEO91	4 VIDEO91	834
197	NO	41K10	8 VIDEO91	4 VIDEO91	6 NO DATA	846
198	YES SOUTH BOUND 4KM NORTH	41K10	8 VIDEO91	4 VIDEO91	4 VIDEO91	844
199	YES EAST BOUND 1KM WEST	41K10	8 VIDEO91	4 VIDEO91	6 NO DATA	846
200	NO	41K10 41K15 41K16	12 VIDEO91	2 VIDEO91	6 NO DATA	1226
201	YES 1KM EAST ON N 1KM SOUTH	41K16 41K9	12 VIDEO91	3 VIDEO91	6 NO DATA	1236
202	YES SOUTH BOUND 3KM NORTH	41K9	13 VIDEO91	4 VIDEO91	2 VIDEO91	1342
203	NO	41K9	8 VIDEO91	3 VIDEO91	6 NO DATA	836
204	NO	41K9 41K10	8 VIDEO91	4 VIDEO91	4 VIDEO91 OGS	844
205	NO	41K10	10 VIDEO91	4 VIDEO91	4 VIDEO91 OGS	1044

AS



LAKE SUPERIOR.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. 1 Class	Source	Protect Source 2 Class	Nearsh Source 3 Class	Comp. 4 Class	Comments
206	NO	41K10	5	VIDEO91	3	VIDEO91	6	NO DATA
207	NO	41K10 41K7	12	VIDEO91	1	VIDEO91	6	NO DATA
208	NO	41K9	7	AP86	1	AP86	6	NO DATA
209	NO	41K9	7	AP86	3	AP86	3	HH87
210	YES	WEST BOUND EAST	16	MNRVIDEO91	4	MNRVIDEO91	2	HH87
211	NO	41K9	16	MNRVIDEO91	1	MNRVIDEO91	3	HH87
212	YES	EAST BOUND 1KM EAST	12	MNRVIDEO91	2	MNRVIDEO91	3	HH87
213	YES	EAST BOUND 2.5KM EAST	14	MNRVIDEO91	4	MNRVIDEO91	1	HH87
214	NO	41K9	14	MNRVIDEO91	4	MNRVIDEO91	2	HH87
215	NO	41K9 41K8	7	MNRVIDEO91	4	MNRVIDEO91	3	HH87
216	NO	41K8	14	MNRVIDEO91	4	MNRVIDEO91	2	HH87
217	NO	41K8	14	MNRVIDEO91	4	MNRVIDEO91	3	HH87
218	NO	41K8	10	MNRVIDEO91	4	MNRVIDEO91	2	HH87
219	NO	41K8 41J5	10	MNRVIDEO91	4	MNRVIDEO91	2	HH87
220	NO	41J5	10	MNRVIDEO91	4	MNRVIDEO91	4	MNRVIDEO91
221	YES	41J5	10	MNRVIDEO91	4	MNRVIDEO91	4	MNRVIDEO91
222	NO	41J5 41K8	10	MNRVIDEO91	4	MNRVIDEO91	2	HH87
223	YES	WEST BOUND 2KM EAST	13	MNRVIDEO91	4	MNRVIDEO91	2	HH87
224	NO	41K8	12	MNRVIDEO91	4	MNRVIDEO91	3	HH87
225	NO	41K1	14	MNRVIDEO91	4	MNRVIDEO91	3	HH87
226	NO	41K1 41J4	14	MNRVIDEO91	4	MNRVIDEO91	1	HH87
227	NO	41J4	14	MNRVIDEO91	4	MNRVIDEO91	1	HH87
228	YES	NEW PART OF 228	10	MNRVIDEO91	4	MNRVIDEO91	4	MNRVIDEO91
229	YES	BOTH ENDS	13	MNRVIDEO91	4	MNRVIDEO91	4	MNRVIDEO91
230	YES	PART OF 1	10	VIDEO91	4	VIDEO91	4	VIDEO91
231	YES	PART OF 1	7	VIDEO91	4	VIDEO91	2	VIDEO91
232	YES	NEW PART OF 12/13	10	VIDEO91	4	VIDEO91	4	LRCA
233	YES	NEW	10	VIDEO91	4	VIDEO91	4	VIDEO91
234	YES	NEW	8	VIDEO91	4	VIDEO91	6	NO DATA
235	YES	NEW PART OF 17	8	VIDEO91	4	VIDEO91	2	LRCA
236	YES	NEW PART OF 17	10	VIDEO91	4	VIDEO91	6	NO DATA
237	YES	NEW	14	VIDEO91	3	VIDEO91	1	LRCA
238	YES	NEW	8	VIDEO91	4	VIDEO91	4	VIDEO91
239	YES	NEW	10	VIDEO91	4	VIDEO91	4	VIDEO91
240	YES	NEW PART OF 37	7	VIDEO91	4	VIDEO91	2	VIDEO91
241	YES	NEW	10	VIDEO91	4	VIDEO91	4	VIDEO91
242	YES	NEW PART OF 50	8	VIDEO91	3	VIDEO91	4	VIDEO91
243	YES	NEW PART OF 50	14	VIDEO91	4	VIDEO91	1	VIDEO91
244	YES	NEW PART OF 50	10	VIDEO91	4	VIDEO91	4	VIDEO91
245	YES	NEW PART OF 51	7	VIDEO91	4	VIDEO91	4	VIDEO91
246	YES	NEW PART OF 51	10	VIDEO91	4	VIDEO91	4	VIDEO91

VICTORIA ISLAND

WELCOME ISLANDS

CARIBOU ISL

LAKE SUPERIOR.ASC

Reach No.	CZR Adjustment	NTS No.	Geonor. 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
247	YES NEW PART OF 51	52A7	7	VIDEO91	4 VIDEO91	744
248	YES NEW PART OF 57	52A10	8	VIDEO91	4 VIDEO91	846
249	YES NEW PART OF 59	52A10	13	VIDEO91 EP91	4 VIDEO91	1341 SHALLOW
250	YES NEW PART OF 71	52A7	13	VIDEO91	4 VIDEO91	1344 SHALLOW
251	YES NEW PART OF 87	52A16	13	VIDEO91 EP91	4 VIDEO91	1341
252	YES NEW PART OF 88	52A16	13	VIDEO91	4 VIDEO91	1341
253	YES NEW	52A16	10	VIDEO91	4 VIDEO91	1046
254	YES NEW	52A16	10	VIDEO91	4 VIDEO91	1046
255	YES NEW	52A16	10	VIDEO91	4 VIDEO91	1046
256	YES NEW	52A16	10	VIDEO91	4 VIDEO91	1046
257	YES NEW	52A16	8	VIDEO91	4 VIDEO91	844
258	YES NEW	52A16	10	VIDEO91	4 VIDEO91	1046
259	YES NEW	52A16	13	VIDEO91	4 VIDEO91	1341
260	YES NEW	52H1	13	VIDEO91	4 VIDEO91	1346
261	YES NEW	52H1 52A16	8	VIDEO91	3 VIDEO91	836
262	YES NEW	52A16	7	VIDEO91	4 VIDEO91	743
263	YES NEW	52A16 42D13	7	VIDEO91	4 VIDEO91	746
264	YES NEW	42D13 42D12	10	VIDEO91	4 VIDEO91	1046
265	YES NEW	42D13	10	VIDEO91 OGS	4 VIDEO91	1044 VEIN ISLAND
266	YES NEW PART OF 95	42D13	7	VIDEO91	4 VIDEO91	742
267	YES NEW OLD 95	42D13	10	VIDEO91	4 VIDEO91	1044
268	YES NEW OLD 95	42D13	7	VIDEO91	4 VIDEO91	742
269	YES NEW PART OF 96	42D13	10	VIDEO91	3 VIDEO91	1036 SHALLOW
270	YES NEW	42D13 42D14	10	VIDEO91 OGS	4 VIDEO91	1044 WILSON & COPPER ISL
271	YES NEW PART OF 97	42D13	13	VIDEO91	4 VIDEO91	1341 SHALLOW
272	YES NEW PART OF 97	42D13	10	VIDEO91	4 VIDEO91	1046
273	YES NEW PART OF 98	42D13 42D14	7	VIDEO91	4 VIDEO91	746
274	YES NEW PART OF OLD 124	42D9	16	VIDEO91	1 VIDEO91	1616
275	YES NEW PART OF OLD 124/125	42D9	10	VIDEO91	4 VIDEO91	1046
276	YES PART OF OLD 129	42D8	7	VIDEO91	4 VIDEO91	742
277	YES NEW PART OF OLD 130	42D8	7	VIDEO91	4 VIDEO91	746
278	YES NEW PART OF 133	42D1 42C4	13	VIDEO91	4 VIDEO91	1346
279	YES NEW EAST BOUND OF 149	41N14	7	EP91	4 EP91	744
280	YES NEW PART OF OLD 150	41N15	7	EP91	4 EP91	746
281	YES NEW PART OF OLD 150	41N15	10	EP91	4 EP91	1046
282	YES NEW PART OF OLD 150	41N15	7	EP91	4 EP91	746
283	YES NEW PART OF OLD 150	41N15	10	EP91	4 EP91	1046
284	YES NEW OLD 156	41N10	8	VIDEO91	4 VIDEO91	844 SHALLOW
285	YES NEW PART OF 157	41N10	7	VIDEO91	4 VIDEO91	746
286	YES NEW PART OF 158	41N10	7	VIDEO91	4 VIDEO91	746
287	YES NEW	41N7	8	VIDEO91	4 VIDEO91	844 LEACH ISL SHALLOW

LAKE SUPERIOR.ASC

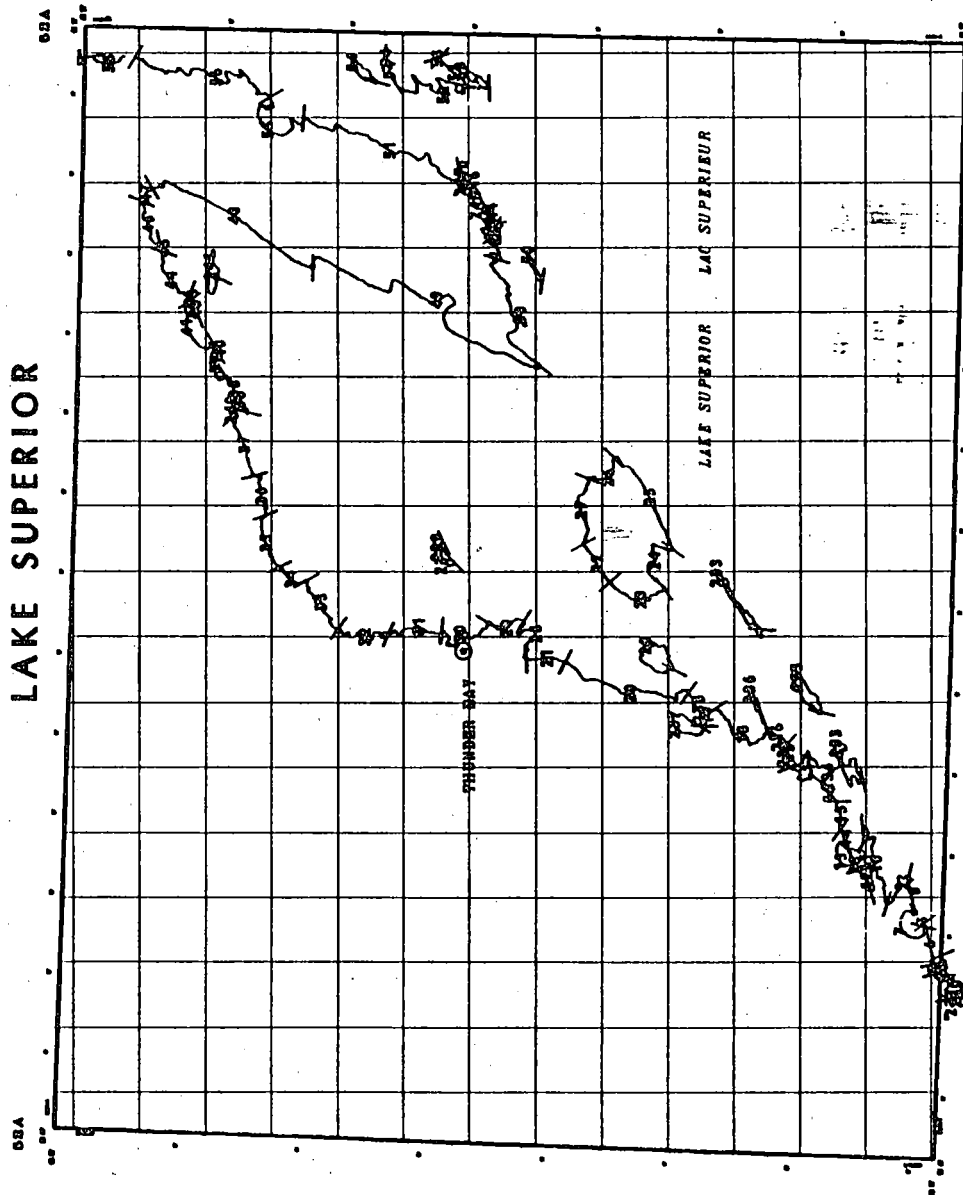
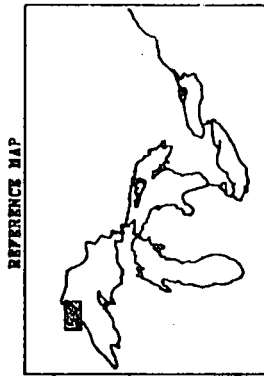
Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
288	YES NEW	41N7	8 VIDEO91	4 VIDEO91	6 NO DATA	846
289	YES NEW	41N7	8 VIDEO91	4 VIDEO91	4 VIDEO91	844 SHALLOW
290	YES NEW PART OF 51	52A7	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044
291	YES NEW PART OF 51	52A7	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044
292	YES NEW	52A7	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044
293	YES NEW PART OF 71	52A7	13 VIDEO91	4 VIDEO91	6 NO DATA	1346
294	YES NEW	52A7	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044
295	YES PART OF 159	41N7	7 VIDEO91	4 VIDEO91	2 VIDEO91	742
296	YES NEW PART OF 159	41N7	10 VIDEO91	4 VIDEO91	6 NO DATA	1046
297	YES NEW PART OF 160	41N7	7 VIDEO91	4 VIDEO91	2 VIDEO91	742
298	YES NEW PART OF 160	41N7	10 VIDEO91	4 VIDEO91	6 NO DATA	1046
299	YES NEW PART OF 160	41N7	10 VIDEO91	4 VIDEO91	6 NO DATA	1046
300	YES NEW PART OF 160	41N7	7 VIDEO91	4 VIDEO91	6 NO DATA	746
301	YES NEW PART OF 162	41N7	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044
302	YES NEW PART OF 162	41N7	7 VIDEO91	4 VIDEO91	6 NO DATA	746
303	YES NEW PART OF 162	41N7	10 VIDEO91	4 VIDEO91	6 NO DATA	1046
304	YES NEW PART OF 169	41N2	8 VIDEO91	4 VIDEO91	6 NO DATA	846
305	YES NEW PART OF 169	41N2	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044
306	YES NEW PART OF 172	41K15	7 VIDEO91	4 VIDEO91	6 NO DATA	746
307	YES NEW PART OF 179	41K15	8 VIDEO91	4 VIDEO91	6 NO DATA	846
308	YES NEW PART OF 179	41K15	13 VIDEO91	4 VIDEO91	6 NO DATA	1346
309	YES NEW PART OF 180	41K16	7 VIDEO91	4 VIDEO91	2 VIDEO91	742
310	YES NEW PART OF 180	41K16	13 VIDEO91	3 VIDEO91	6 NO DATA	1346
311	YES NEW	41K10	7 VIDEO91	4 VIDEO91	2 VIDEO91	732
312	YES NEW PART OF 198	41K10	8 VIDEO91	4 VIDEO91	6 NO DATA	846
313	YES NEW PART OF 201	41K16	13 VIDEO91 EP91	3 VIDEO91	6 NO DATA	1336
314	YES NEW PART OF 201	41K9	9 VIDEO91	3 VIDEO91	2 VIDEO91	932
315	YES NEW SOUTH PART OF 202	41K16	8 VIDEO91	3 VIDEO91	6 NO DATA	836
316	YES NEW PART OF 185	41K16	8 VIDEO91	4 VIDEO91	4 VIDEO91	844
317	YES NEW PART OF 187	41K15	7 VIDEO91	3 VIDEO91	2 VIDEO91	732
318	YES NEW PART OF 192	52A9	7 VIDEO91	4 VIDEO91	2 VIDEO91	742
319	YES NEW PART OF 78	42C4	7 VIDEO91	4 VIDEO91	6 NO DATA	746
320	YES NEW PART OF OLD 134	41K10	3 VIDEO91	4 VIDEO91	6 NO DATA	346
321	YES NEW PART OF 199	41K10	8 VIDEO91	4 VIDEO91 EP91	6 NO DATA	846
322	YES NEW	41K10	10 VIDEO91 EP91	4 VIDEO91	6 NO DATA	1046
323	YES NEW	42D14	9 AP86	4 AP86	6 NO DATA	946
324	YES NEW PART OF 102	42D14	10 AP86	4 AP86	6 NO DATA	1046
325	YES NEW PART OF 102	42D14	7 AP86	4 AP86	6 NO DATA	746
326	YES NEW PART OF 102	42D15	7 NTS	4 NTS	6 NO DATA	746
327	YES NEW PART OF 107	42D15	7 NTS	4 NTS	6 NO DATA	746
328	YES NEW PART OF 113	42D15	7 NTS	4 NTS	6 NO DATA	746

LAKE SUPERIOR.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Camp. Comments 4 Class
329	YES NEW PART OF 113& 114	42D15	NTS	4 NTS	6 NO DATA	746
330	YES NEW PART OF 210	41K9 41K8	MNRVIDEO91	4 MNRVIDEO91	3 HH87	1043
331	YES NEW PART OF 213	41K09	VIDEO91	4 VIDEO91	2 HH87	741
332	YES NEW PART OF 223	41K8	MNRVIDEO91	4 MNRVIDEO91	2 HH87	1042
333	YES NEW PART OF 228	41J4	MNRVIDEO91	4 MNRVIDEO91	1 MNRVIDEO91	1441
334	YES NEW PART OF 228	41J4	MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	1044
335	YES NEW PART OF 228	41J4	MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	744
336	YES NEW PART OF 228	41J4	MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	1444
337	YES NEW PART OF 228	41J4	MNRVIDEO91	4 MNRVIDEO91	6 NO DATA	1446
338	YES NEW PART OF 228	41J4	MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	1044
339	YES NEW PART OF 228	41J4	MNRVIDEO91	4 MNRVIDEO91	6 NO DATA	1446
340	YES NEW PART OF 228	41J4	MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	1044
341	YES NEW PART OF 228	41J4	MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	1444
342	YES NEW PART OF 228	41J4	MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	1044
343	YES NEW PART OF 229	41J4	MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	1044
344	YES NEW PART OF 229	41J4	MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	844
345	YES NEW PART OF 221	41J5	MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	1044
346	YES NEW PART OF 221	41J5	MNRVIDEO91	4 MNRVIDEO91	6 NO DATA	1346
347	YES NEW PART OF 221	41J5	MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	844
348	YES NEW PART OF 221	41J5	MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	1044
349	YES NEW PART OF 221	41J5	MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	1244
350	YES NEW PART OF 221	41J5	MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	1344

MOSQUITO BAY

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION



## GEOMORPHIC CLASSIFICATION

- 1. HIGH (GLACIAL) CLIFF
- 2. LOW (GLACIAL) CLIFF
- 3. LOW (GLACIAL) CLIFF WITH GLACIAL DEPOSITS
- 4. LOW (GLACIAL) CLIFF WITH GLACIAL DEPOSITS AND SAND
- 5. CLIFF WITH SAND
- 6. CLIFF WITH SAND AND GRAVEL
- 7. CLIFF WITH SAND AND GRAVEL AND SILT
- 8. CLIFF WITH SAND AND GRAVEL AND SILT AND CLAY
- 9. CLIFF WITH SAND AND GRAVEL AND SILT AND CLAY AND ORGANIC MATERIAL
- 10. CLIFF WITH SAND AND GRAVEL AND SILT AND CLAY AND ORGANIC MATERIAL AND VEGETATION
- 11. CLIFF WITH SAND AND GRAVEL AND SILT AND CLAY AND ORGANIC MATERIAL AND VEGETATION AND ROCK
- 12. CLIFF WITH SAND AND GRAVEL AND SILT AND CLAY AND ORGANIC MATERIAL AND VEGETATION AND ROCK AND VEGETATION
- 13. CLIFF WITH SAND AND GRAVEL AND SILT AND CLAY AND ORGANIC MATERIAL AND VEGETATION AND ROCK AND VEGETATION AND SAND
- 14. CLIFF WITH SAND AND GRAVEL AND SILT AND CLAY AND ORGANIC MATERIAL AND VEGETATION AND ROCK AND VEGETATION AND SAND AND GRAVEL
- 15. CLIFF WITH SAND AND GRAVEL AND SILT AND CLAY AND ORGANIC MATERIAL AND VEGETATION AND ROCK AND VEGETATION AND SAND AND GRAVEL AND SAND
- 16. CLIFF WITH SAND AND GRAVEL AND SILT AND CLAY AND ORGANIC MATERIAL AND VEGETATION AND ROCK AND VEGETATION AND SAND AND GRAVEL AND SAND AND GRAVEL
- 17. CLIFF WITH SAND AND GRAVEL AND SILT AND CLAY AND ORGANIC MATERIAL AND VEGETATION AND ROCK AND VEGETATION AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND
- 18. CLIFF WITH SAND AND GRAVEL AND SILT AND CLAY AND ORGANIC MATERIAL AND VEGETATION AND ROCK AND VEGETATION AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL
- 19. CLIFF WITH SAND AND GRAVEL AND SILT AND CLAY AND ORGANIC MATERIAL AND VEGETATION AND ROCK AND VEGETATION AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL
- 20. CLIFF WITH SAND AND GRAVEL AND SILT AND CLAY AND ORGANIC MATERIAL AND VEGETATION AND ROCK AND VEGETATION AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL

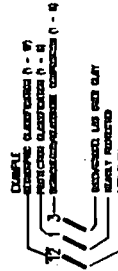
## PROTECTION CLASSIFICATION

- 1. FULLY PROTECTED
- 2. PARTIALLY PROTECTED
- 3. NOT PROTECTED
- 4. NON-STRUCTURAL PROTECTION
- 5. UNCLASSIFIED

## SUBAQUEOUS/NEARSHORE COMPOSITION

- 1. CLAY
- 2. SAND
- 3. SAND AND SILT
- 4. SAND AND SILT AND CLAY
- 5. SAND AND SILT AND CLAY AND ORGANIC MATERIAL
- 6. UNCLASSIFIED

## THREE - TIER CLASSIFICATION



THUNDER BAY

ONTARIO  
SCALE 1 : 185 000  
NATIONAL HYDROGRAPHIC SERVICE

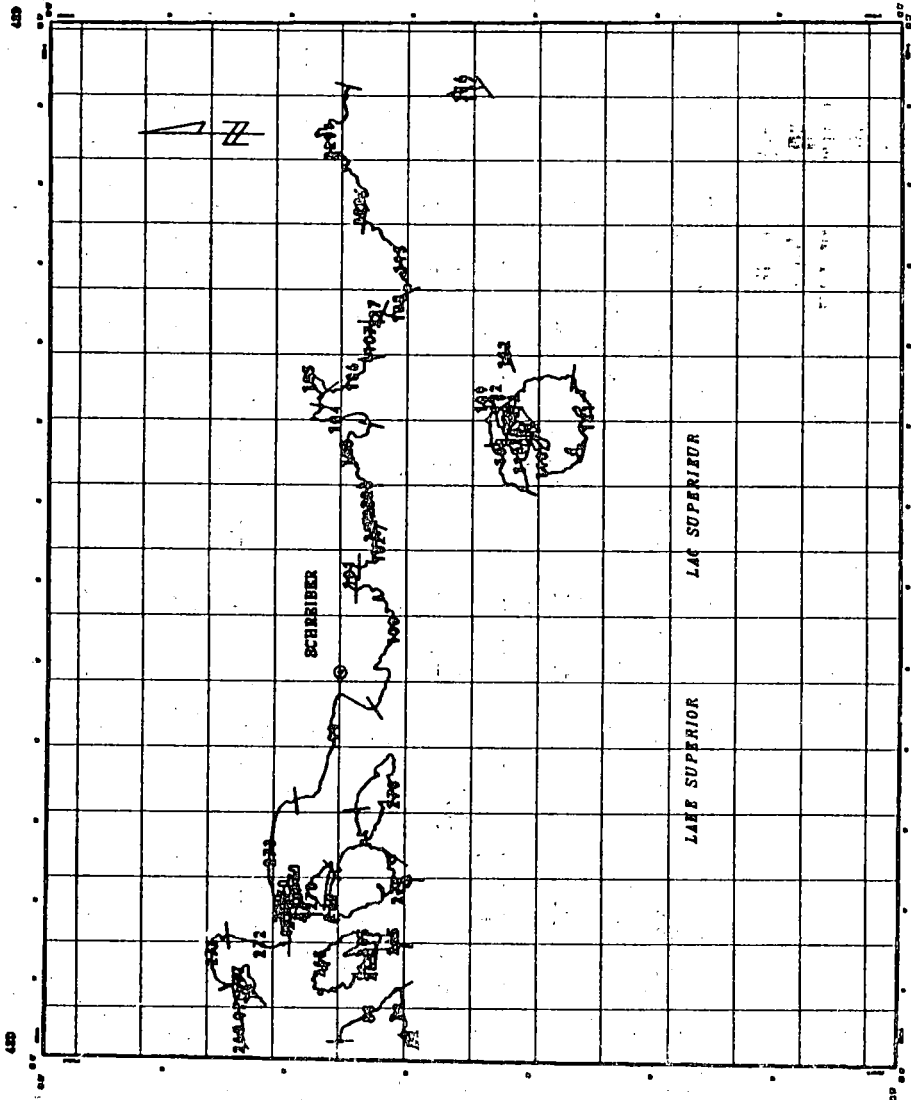
Legend for symbols:   
 Unprotected Occurrence  
 Partially Protected Occurrence  
 Fully Protected Occurrence

Geomatics International Inc.  
1000  
1000  
1000



# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE SUPERIOR



REFERENCE MAP



**GEOMORPHIC CLASSIFICATION**

- 1. HIGH (Mud) CLAY CONCRETIONS ON BEACH
- 2. HIGH (Mud) CLAY WITH SAND (Mud)
- 3. LOW (Sand) CLAY CONCRETIONS ON BEACH
- 4. LOW (Sand) CLAY WITH SAND (Mud)
- 5. SANDY (Mud) CLAY
- 6. CLAY SAND
- 7. SANDY CLAY
- 8. SANDY CLAY
- 9. SANDY CLAY
- 10. SANDY CLAY
- 11. SANDY CLAY
- 12. SANDY CLAY
- 13. SANDY CLAY
- 14. SANDY CLAY
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- 27. SANDY CLAY
- 28. SANDY CLAY
- 29. SANDY CLAY
- 30. SANDY CLAY
- 31. SANDY CLAY
- 32. SANDY CLAY
- 33. SANDY CLAY
- 34. SANDY CLAY
- 35. SANDY CLAY
- 36. SANDY CLAY
- 37. SANDY CLAY
- 38. SANDY CLAY
- 39. SANDY CLAY
- 40. SANDY CLAY
- 41. SANDY CLAY
- 42. SANDY CLAY
- 43. SANDY CLAY
- 44. SANDY CLAY
- 45. SANDY CLAY
- 46. SANDY CLAY
- 47. SANDY CLAY
- 48. SANDY CLAY
- 49. SANDY CLAY
- 50. SANDY CLAY

**PROTECTION CLASSIFICATION**

- 1. SLIGHTLY PROTECTED
- 2. MODERATELY PROTECTED
- 3. HEAVILY PROTECTED
- 4. PROTECTED
- 5. PROTECTED
- 6. PROTECTED
- 7. PROTECTED
- 8. PROTECTED
- 9. PROTECTED
- 10. PROTECTED
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- 37. PROTECTED
- 38. PROTECTED
- 39. PROTECTED
- 40. PROTECTED
- 41. PROTECTED
- 42. PROTECTED
- 43. PROTECTED
- 44. PROTECTED
- 45. PROTECTED
- 46. PROTECTED
- 47. PROTECTED
- 48. PROTECTED
- 49. PROTECTED
- 50. PROTECTED

**SUBAQUEOUS/NEARSHORE COMPOSITION**

- 1. CLAY
- 2. SANDY CLAY
- 3. SANDY CLAY
- 4. SANDY CLAY
- 5. SANDY CLAY
- 6. SANDY CLAY
- 7. SANDY CLAY
- 8. SANDY CLAY
- 9. SANDY CLAY
- 10. SANDY CLAY
- 11. SANDY CLAY
- 12. SANDY CLAY
- 13. SANDY CLAY
- 14. SANDY CLAY
- 15. SANDY CLAY
- 16. SANDY CLAY
- 17. SANDY CLAY
- 18. SANDY CLAY
- 19. SANDY CLAY
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- 21. SANDY CLAY
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- 23. SANDY CLAY
- 24. SANDY CLAY
- 25. SANDY CLAY
- 26. SANDY CLAY
- 27. SANDY CLAY
- 28. SANDY CLAY
- 29. SANDY CLAY
- 30. SANDY CLAY
- 31. SANDY CLAY
- 32. SANDY CLAY
- 33. SANDY CLAY
- 34. SANDY CLAY
- 35. SANDY CLAY
- 36. SANDY CLAY
- 37. SANDY CLAY
- 38. SANDY CLAY
- 39. SANDY CLAY
- 40. SANDY CLAY
- 41. SANDY CLAY
- 42. SANDY CLAY
- 43. SANDY CLAY
- 44. SANDY CLAY
- 45. SANDY CLAY
- 46. SANDY CLAY
- 47. SANDY CLAY
- 48. SANDY CLAY
- 49. SANDY CLAY
- 50. SANDY CLAY

**THREE - TIER CLASSIFICATION**

- 1. CLAY
- 2. SANDY CLAY
- 3. SANDY CLAY
- 4. SANDY CLAY
- 5. SANDY CLAY
- 6. SANDY CLAY
- 7. SANDY CLAY
- 8. SANDY CLAY
- 9. SANDY CLAY
- 10. SANDY CLAY
- 11. SANDY CLAY
- 12. SANDY CLAY
- 13. SANDY CLAY
- 14. SANDY CLAY
- 15. SANDY CLAY
- 16. SANDY CLAY
- 17. SANDY CLAY
- 18. SANDY CLAY
- 19. SANDY CLAY
- 20. SANDY CLAY
- 21. SANDY CLAY
- 22. SANDY CLAY
- 23. SANDY CLAY
- 24. SANDY CLAY
- 25. SANDY CLAY
- 26. SANDY CLAY
- 27. SANDY CLAY
- 28. SANDY CLAY
- 29. SANDY CLAY
- 30. SANDY CLAY
- 31. SANDY CLAY
- 32. SANDY CLAY
- 33. SANDY CLAY
- 34. SANDY CLAY
- 35. SANDY CLAY
- 36. SANDY CLAY
- 37. SANDY CLAY
- 38. SANDY CLAY
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**CLASSIFICATION**

- 1. CLAY
- 2. SANDY CLAY
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- 50. SANDY CLAY

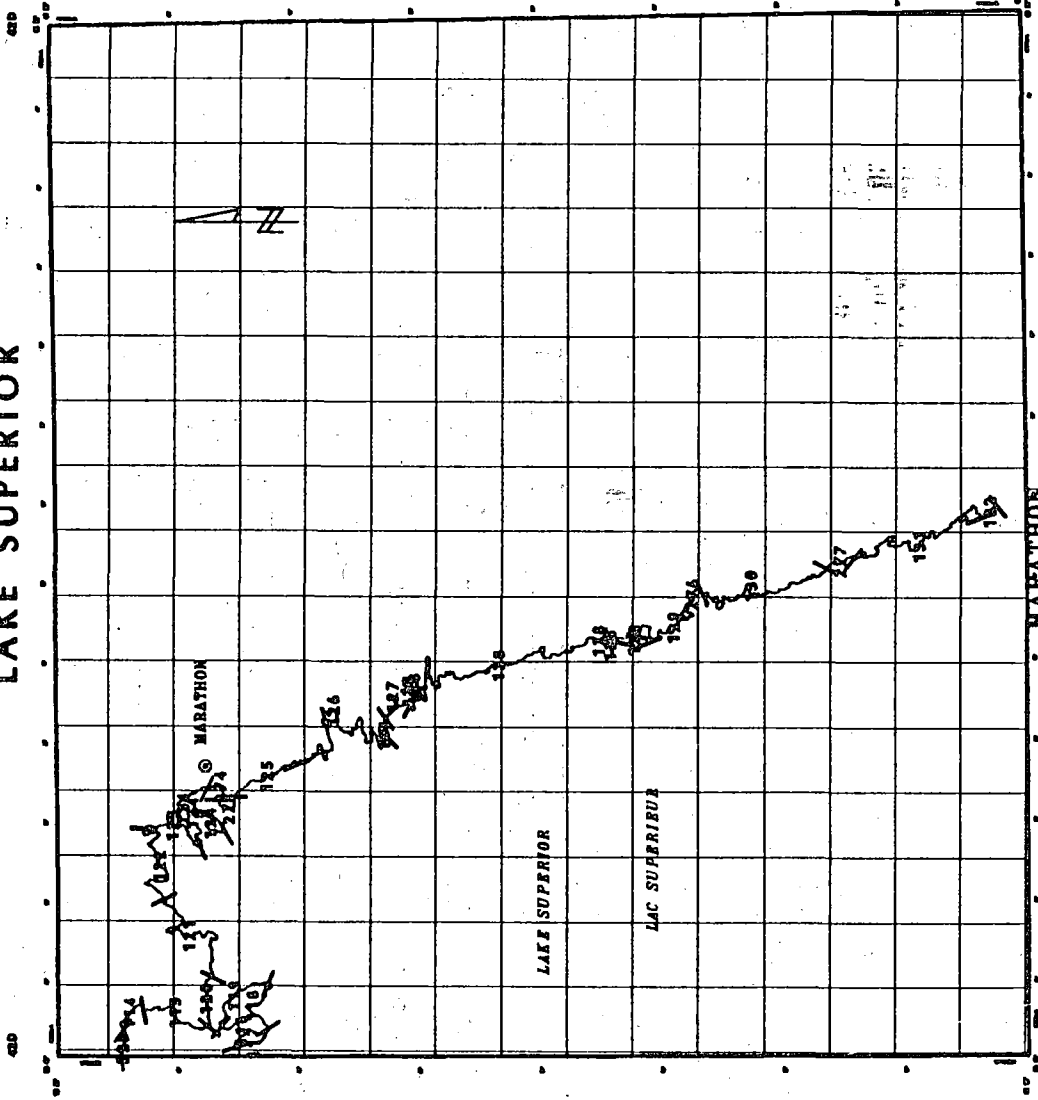
Geological Interpretation  
 1985  
 ON  
 1:100,000  
 1:100,000

**SCHREIBER**  
 ONTARIO  
 SCALE 1 : 100 000  
 GEOMORPHIC CLASSIFICATION

Geological Interpretation  
 1985  
 ON  
 1:100,000  
 1:100,000

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE SUPERIOR



REFERENCE MAP



### GEOMORPHIC CLASSIFICATION

- 1. 1st ORDER DRAINAGE BASIN
- 2. 2nd ORDER DRAINAGE BASIN
- 3. 3rd ORDER DRAINAGE BASIN
- 4. 4th ORDER DRAINAGE BASIN
- 5. 5th ORDER DRAINAGE BASIN
- 6. 6th ORDER DRAINAGE BASIN
- 7. 7th ORDER DRAINAGE BASIN
- 8. 8th ORDER DRAINAGE BASIN
- 9. 9th ORDER DRAINAGE BASIN
- 10. 10th ORDER DRAINAGE BASIN
- 11. 11th ORDER DRAINAGE BASIN
- 12. 12th ORDER DRAINAGE BASIN
- 13. 13th ORDER DRAINAGE BASIN
- 14. 14th ORDER DRAINAGE BASIN
- 15. 15th ORDER DRAINAGE BASIN
- 16. 16th ORDER DRAINAGE BASIN
- 17. 17th ORDER DRAINAGE BASIN
- 18. 18th ORDER DRAINAGE BASIN
- 19. 19th ORDER DRAINAGE BASIN

### PROTECTION CLASSIFICATION

- 1. 1st ORDER PROTECTED
- 2. 2nd ORDER PROTECTED
- 3. 3rd ORDER PROTECTED
- 4. 4th ORDER PROTECTED
- 5. 5th ORDER PROTECTED
- 6. 6th ORDER PROTECTED
- 7. 7th ORDER PROTECTED
- 8. 8th ORDER PROTECTED
- 9. 9th ORDER PROTECTED
- 10. 10th ORDER PROTECTED
- 11. 11th ORDER PROTECTED
- 12. 12th ORDER PROTECTED
- 13. 13th ORDER PROTECTED
- 14. 14th ORDER PROTECTED
- 15. 15th ORDER PROTECTED
- 16. 16th ORDER PROTECTED
- 17. 17th ORDER PROTECTED
- 18. 18th ORDER PROTECTED
- 19. 19th ORDER PROTECTED

### SUBAQUEOUS/NEARSHORE COMPOSITION

- 1. 1st ORDER
- 2. 2nd ORDER
- 3. 3rd ORDER
- 4. 4th ORDER
- 5. 5th ORDER
- 6. 6th ORDER
- 7. 7th ORDER
- 8. 8th ORDER
- 9. 9th ORDER
- 10. 10th ORDER
- 11. 11th ORDER
- 12. 12th ORDER
- 13. 13th ORDER
- 14. 14th ORDER
- 15. 15th ORDER
- 16. 16th ORDER
- 17. 17th ORDER
- 18. 18th ORDER
- 19. 19th ORDER

### THREE - TIER CLASSIFICATION

- 1. 1st TIER
- 2. 2nd TIER
- 3. 3rd TIER
- 4. 4th TIER
- 5. 5th TIER
- 6. 6th TIER
- 7. 7th TIER
- 8. 8th TIER
- 9. 9th TIER
- 10. 10th TIER
- 11. 11th TIER
- 12. 12th TIER
- 13. 13th TIER
- 14. 14th TIER
- 15. 15th TIER
- 16. 16th TIER
- 17. 17th TIER
- 18. 18th TIER
- 19. 19th TIER

### ENVIRONMENTAL CLASSIFICATION

- 1. 1st ORDER
- 2. 2nd ORDER
- 3. 3rd ORDER
- 4. 4th ORDER
- 5. 5th ORDER
- 6. 6th ORDER
- 7. 7th ORDER
- 8. 8th ORDER
- 9. 9th ORDER
- 10. 10th ORDER
- 11. 11th ORDER
- 12. 12th ORDER
- 13. 13th ORDER
- 14. 14th ORDER
- 15. 15th ORDER
- 16. 16th ORDER
- 17. 17th ORDER
- 18. 18th ORDER
- 19. 19th ORDER

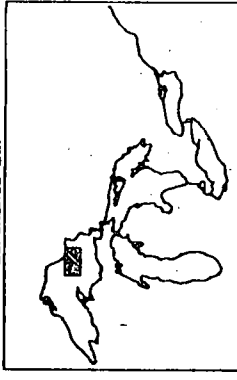
Environment Canada  
Environnement Canada

SCALE 1 : 125 000  
MATHURON ONTARIO

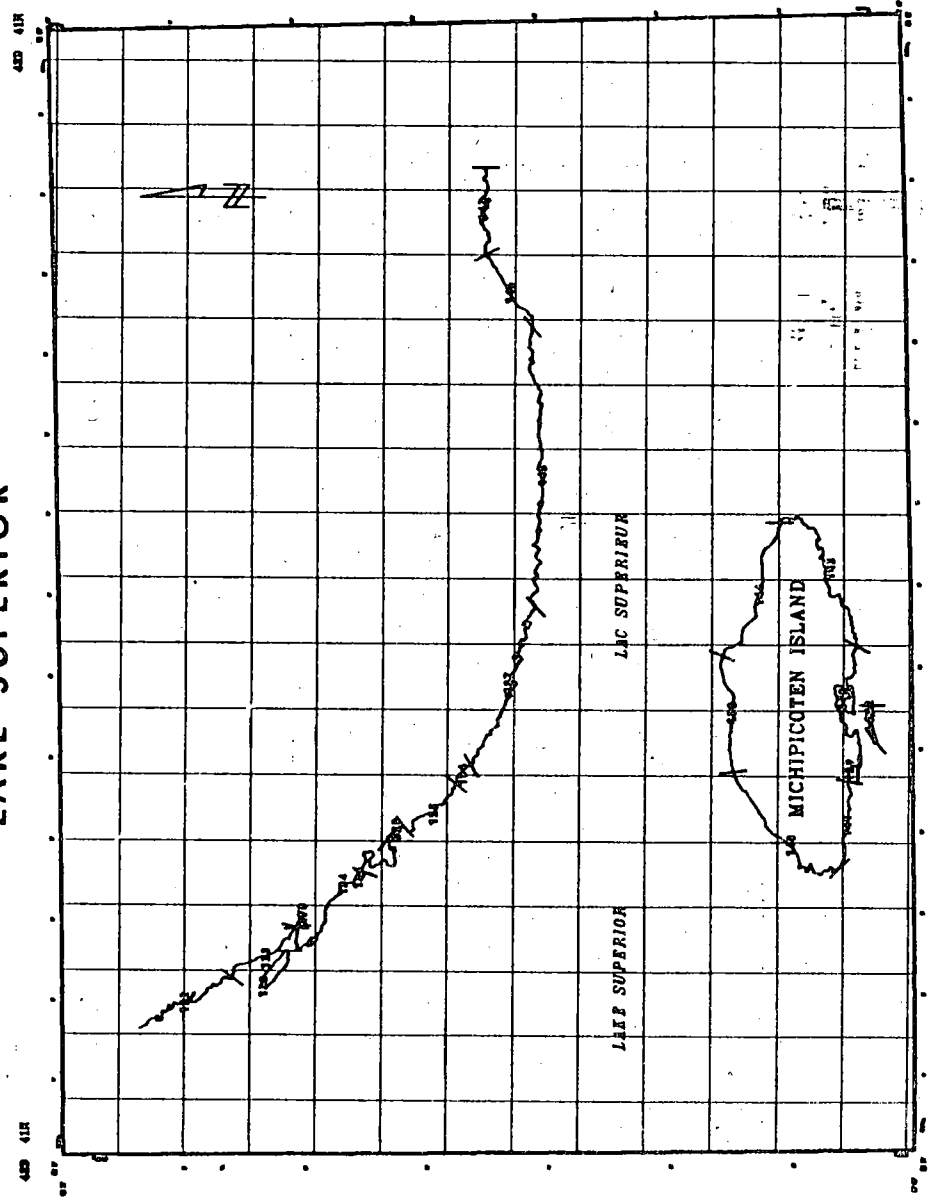
Geomatics International  
1000  
1000  
1000



# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION



## LAKE SUPERIOR



- GEO MORPHIC CLASSIFICATION**
- 01 1. HIGH BLUFF (HEIGHTS 10 TO 20 M)
  - 02 2. MEDIUM BLUFF (HEIGHTS 5 TO 10 M)
  - 03 3. LOW BLUFF (HEIGHTS 2 TO 5 M)
  - 04 4. SAND BLUFF (HEIGHTS 2 TO 5 M)
  - 05 5. SAND BLUFF (HEIGHTS 2 TO 5 M)
  - 06 6. SAND BLUFF (HEIGHTS 2 TO 5 M)
  - 07 7. SAND BLUFF (HEIGHTS 2 TO 5 M)
  - 08 8. SAND BLUFF (HEIGHTS 2 TO 5 M)
  - 09 9. SAND BLUFF (HEIGHTS 2 TO 5 M)
  - 10 10. SAND BLUFF (HEIGHTS 2 TO 5 M)
  - 11 11. SAND BLUFF (HEIGHTS 2 TO 5 M)
  - 12 12. SAND BLUFF (HEIGHTS 2 TO 5 M)
  - 13 13. SAND BLUFF (HEIGHTS 2 TO 5 M)
  - 14 14. SAND BLUFF (HEIGHTS 2 TO 5 M)
  - 15 15. SAND BLUFF (HEIGHTS 2 TO 5 M)
  - 16 16. SAND BLUFF (HEIGHTS 2 TO 5 M)
  - 17 17. SAND BLUFF (HEIGHTS 2 TO 5 M)
  - 18 18. SAND BLUFF (HEIGHTS 2 TO 5 M)
  - 19 19. SAND BLUFF (HEIGHTS 2 TO 5 M)
  - 20 20. SAND BLUFF (HEIGHTS 2 TO 5 M)
- PROTECTION CLASSIFICATION**
- 01 1. CLASS 1
  - 02 2. CLASS 2
  - 03 3. CLASS 3
  - 04 4. CLASS 4
  - 05 5. CLASS 5
  - 06 6. CLASS 6
  - 07 7. CLASS 7
  - 08 8. CLASS 8
  - 09 9. CLASS 9
  - 10 10. CLASS 10
  - 11 11. CLASS 11
  - 12 12. CLASS 12
  - 13 13. CLASS 13
  - 14 14. CLASS 14
  - 15 15. CLASS 15
  - 16 16. CLASS 16
  - 17 17. CLASS 17
  - 18 18. CLASS 18
  - 19 19. CLASS 19
  - 20 20. CLASS 20
- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 01 1. CLAY
  - 02 2. SILT
  - 03 3. SAND
  - 04 4. GRAVEL
  - 05 5. COBBLES
  - 06 6. Boulders
  - 07 7. Shale
  - 08 8. Sandstone
  - 09 9. Limestone
  - 10 10. Dolomite
  - 11 11. Gneiss
  - 12 12. Granite
  - 13 13. Basalt
  - 14 14. Andesite
  - 15 15. Diorite
  - 16 16. Quartzite
  - 17 17. Schist
  - 18 18. Slate
  - 19 19. Marble
  - 20 20. Amphibolite
- YRBE - YRBE CLASSIFICATION**
- 01 1. CLASS 1
  - 02 2. CLASS 2
  - 03 3. CLASS 3
  - 04 4. CLASS 4
  - 05 5. CLASS 5
  - 06 6. CLASS 6
  - 07 7. CLASS 7
  - 08 8. CLASS 8
  - 09 9. CLASS 9
  - 10 10. CLASS 10
  - 11 11. CLASS 11
  - 12 12. CLASS 12
  - 13 13. CLASS 13
  - 14 14. CLASS 14
  - 15 15. CLASS 15
  - 16 16. CLASS 16
  - 17 17. CLASS 17
  - 18 18. CLASS 18
  - 19 19. CLASS 19
  - 20 20. CLASS 20

## MICHIPICOTEN

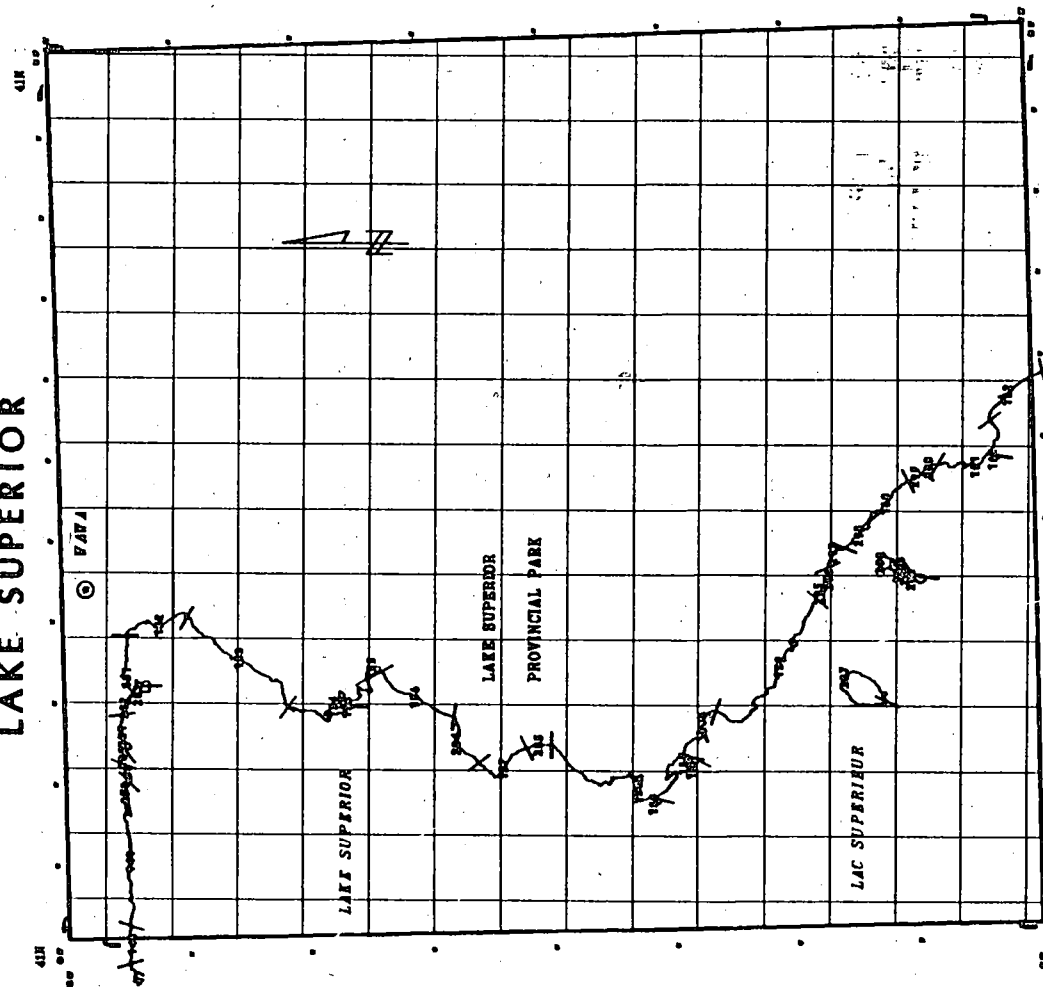
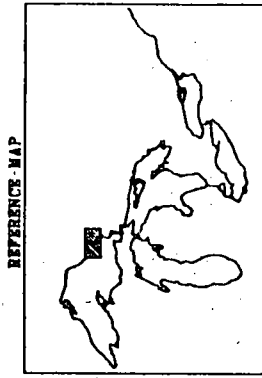
ONTARIO  
SCALE 1 : 100 000



Geomatics International  
Inc.  
1000  
1000  
1000

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE SUPERIOR



### GEOMORPHIC CLASSIFICATION

- 1. HIGH POINT CLIFF (ELEVATION 20 TO 50M)
- 2. LOW POINT CLIFF (ELEVATION 0 TO 20M)
- 3. CLIFF WITH SAND (ELEVATION 0 TO 20M)
- 4. SAND (ELEVATION 0 TO 20M)
- 5. SAND WITH SAND (ELEVATION 0 TO 20M)
- 6. SAND WITH SAND (ELEVATION 0 TO 20M)
- 7. SAND WITH SAND (ELEVATION 0 TO 20M)
- 8. SAND WITH SAND (ELEVATION 0 TO 20M)
- 9. SAND WITH SAND (ELEVATION 0 TO 20M)
- 10. SAND WITH SAND (ELEVATION 0 TO 20M)
- 11. SAND WITH SAND (ELEVATION 0 TO 20M)
- 12. SAND WITH SAND (ELEVATION 0 TO 20M)
- 13. SAND WITH SAND (ELEVATION 0 TO 20M)
- 14. SAND WITH SAND (ELEVATION 0 TO 20M)
- 15. SAND WITH SAND (ELEVATION 0 TO 20M)
- 16. SAND WITH SAND (ELEVATION 0 TO 20M)
- 17. SAND WITH SAND (ELEVATION 0 TO 20M)
- 18. SAND WITH SAND (ELEVATION 0 TO 20M)
- 19. SAND WITH SAND (ELEVATION 0 TO 20M)
- 20. SAND WITH SAND (ELEVATION 0 TO 20M)

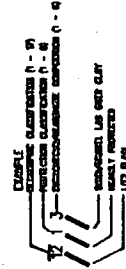
### PROTECTION CLASSIFICATION

- 1. UNCLASSIFIED
- 2. UNCLASSIFIED
- 3. UNCLASSIFIED
- 4. UNCLASSIFIED
- 5. UNCLASSIFIED
- 6. UNCLASSIFIED
- 7. UNCLASSIFIED
- 8. UNCLASSIFIED
- 9. UNCLASSIFIED
- 10. UNCLASSIFIED
- 11. UNCLASSIFIED
- 12. UNCLASSIFIED
- 13. UNCLASSIFIED
- 14. UNCLASSIFIED
- 15. UNCLASSIFIED
- 16. UNCLASSIFIED
- 17. UNCLASSIFIED
- 18. UNCLASSIFIED
- 19. UNCLASSIFIED
- 20. UNCLASSIFIED

### SUBAQUEOUS/NEARSHORE COMPOSITION

- 1. SAND
- 2. SAND
- 3. SAND
- 4. SAND
- 5. SAND
- 6. SAND
- 7. SAND
- 8. SAND
- 9. SAND
- 10. SAND
- 11. SAND
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- 13. SAND
- 14. SAND
- 15. SAND
- 16. SAND
- 17. SAND
- 18. SAND
- 19. SAND
- 20. SAND

### THREE - TIER CLASSIFICATION

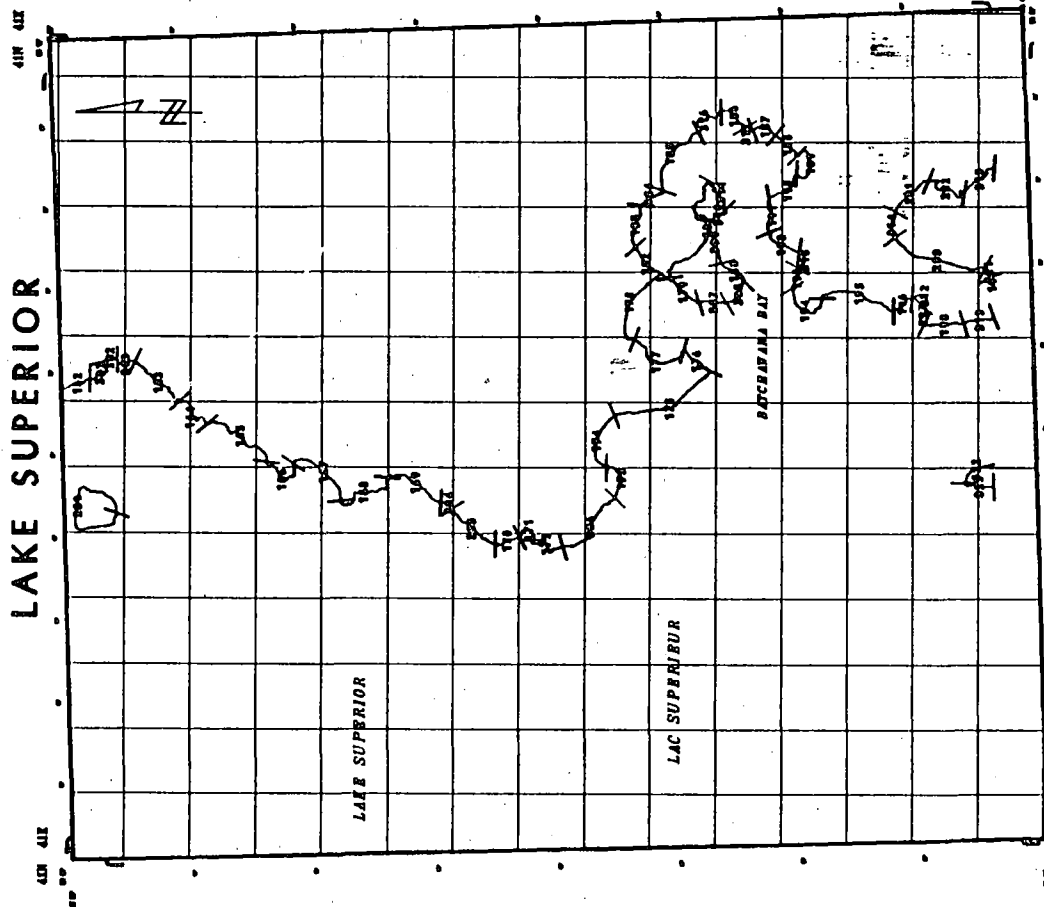


Geomatics International  
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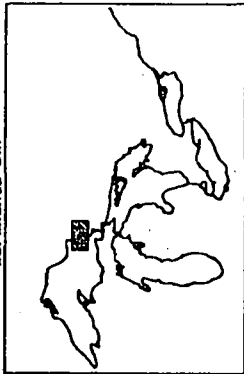
LAKE SUPERIOR PROVINCIAL PARK  
 ONTARIO  
 SCALE 1 : 125,000  
 NATIONAL TOPOGRAPIHC CODE

Environment Canada  
 Environment Canada

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION



REFERENCE MAP



## GEOMORPHIC CLASSIFICATION

- 1. HIGH CLIFF (CLIFF HEIGHTS 20 TO 50 M)
- 2. LOW CLIFF (CLIFF HEIGHTS 10 TO 20 M)
- 3. LOW (CLIFF HEIGHTS 5 TO 10 M)
- 4. CLIFF (CLIFF HEIGHTS 5 TO 10 M)
- 5. CLIFF (CLIFF HEIGHTS 5 TO 10 M)
- 6. CLIFF (CLIFF HEIGHTS 5 TO 10 M)
- 7. CLIFF (CLIFF HEIGHTS 5 TO 10 M)
- 8. CLIFF (CLIFF HEIGHTS 5 TO 10 M)
- 9. CLIFF (CLIFF HEIGHTS 5 TO 10 M)
- 10. CLIFF (CLIFF HEIGHTS 5 TO 10 M)
- 11. CLIFF (CLIFF HEIGHTS 5 TO 10 M)
- 12. CLIFF (CLIFF HEIGHTS 5 TO 10 M)
- 13. CLIFF (CLIFF HEIGHTS 5 TO 10 M)
- 14. CLIFF (CLIFF HEIGHTS 5 TO 10 M)
- 15. CLIFF (CLIFF HEIGHTS 5 TO 10 M)
- 16. CLIFF (CLIFF HEIGHTS 5 TO 10 M)
- 17. CLIFF (CLIFF HEIGHTS 5 TO 10 M)
- 18. CLIFF (CLIFF HEIGHTS 5 TO 10 M)
- 19. CLIFF (CLIFF HEIGHTS 5 TO 10 M)
- 20. CLIFF (CLIFF HEIGHTS 5 TO 10 M)

## PROTECTION CLASSIFICATION

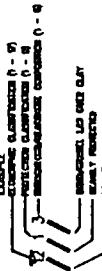
- 1. COMPLETELY PROTECTED
- 2. PARTIALLY PROTECTED
- 3. NOT PROTECTED
- 4. NOT PROTECTED
- 5. NOT PROTECTED
- 6. NOT PROTECTED
- 7. NOT PROTECTED
- 8. NOT PROTECTED
- 9. NOT PROTECTED
- 10. NOT PROTECTED

## SUBAQUEOUS/NEARSHORE COMPOSITION

- 1. CLAY
- 2. SAND
- 3. SAND
- 4. SAND
- 5. SAND
- 6. SAND
- 7. SAND
- 8. SAND
- 9. SAND
- 10. SAND

## THREE - TIER CLASSIFICATION

- 1. CLAY
- 2. SAND
- 3. SAND
- 4. SAND
- 5. SAND
- 6. SAND
- 7. SAND
- 8. SAND
- 9. SAND
- 10. SAND



Geomatics International  
Inc.  
1000  
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BATCHAWANA BAY  
ONTARIO  
SCALE 1 : 125 000  
VERTICAL DATUM: CANADIAN DATUM

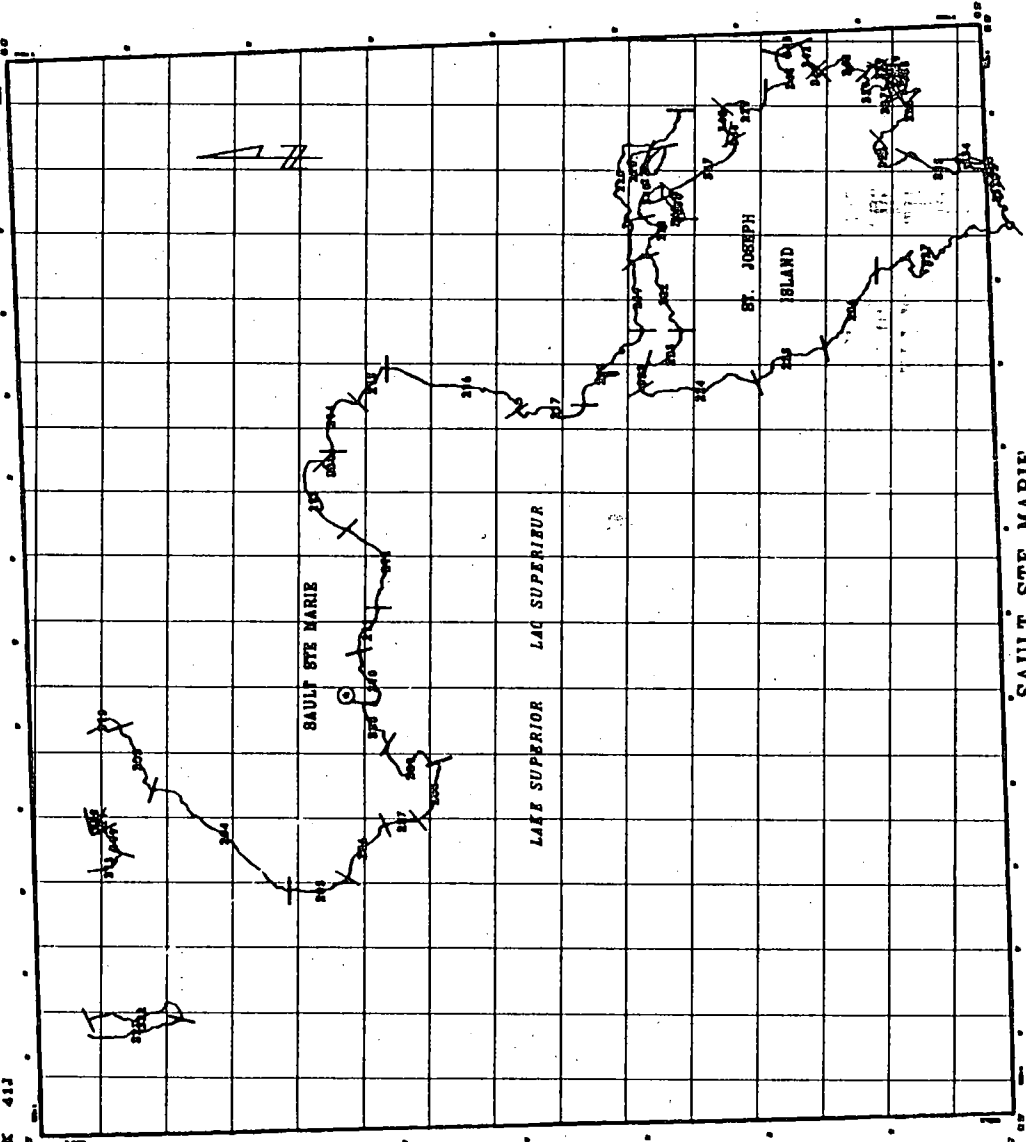
Environment Canada  
Environnement Canada

41N 41E  
1992

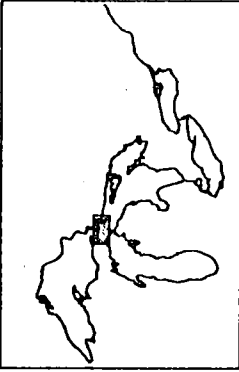
# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE SUPERIOR

41K 41J



REFERENCE MAP



### GEOMORPHIC CLASSIFICATION

- 1 HIGH (CLAY) CLIFF (INTERIOR OF LAKE)
- 2 LOW (CLAY) CLIFF (NEAR SHORE)
- 3 LOW (CLAY) CLIFF (OFF SHORE)
- 4 LOW (CLAY) CLIFF (OFF SHORE)
- 5 CORRELLITY BANK
- 6 SAND BLANKETS
- 7 SAND BLANKETS
- 8 SAND BLANKETS
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- 59 SAND BLANKETS
- 60 SAND BLANKETS

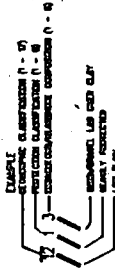
### PROTECTION CLASSIFICATION

- 1 FULLY PROTECTED
- 2 PARTIALLY PROTECTED
- 3 UNPROTECTED
- 4 UNPROTECTED
- 5 UNPROTECTED
- 6 UNPROTECTED
- 7 UNPROTECTED
- 8 UNPROTECTED
- 9 UNPROTECTED
- 10 UNPROTECTED
- 11 UNPROTECTED
- 12 UNPROTECTED
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- 58 UNPROTECTED
- 59 UNPROTECTED
- 60 UNPROTECTED

### SUBAQUEOUS/NEARSHORE COMPOSITION

- 1 CLAY
- 2 CLAY
- 3 CLAY
- 4 CLAY
- 5 CLAY
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- 60 CLAY

### THREE - TIER CLASSIFICATION



## SAULT STE MARIE

SCALE 1 : 100 000

41K 41J

41K 41J

LAKE HURON.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
1	YES	41J5	MNRVIDEO91	4	MNRVIDEO91	1044
2	YES NEW	41J5	MNRVIDEO91	4	MNRVIDEO91	1444 BRUCE BAY
3	YES	41J5	MNRVIDEO91	4	MNRVIDEO91	1044
4	YES	41J5	MNRVIDEO91	4	MNRVIDEO91	1444
5	YES	41J5	MNRVIDEO91	4	MNRVIDEO91	1044
6	YES BOTH BOUND REDUCED	41J5	AP90	4	AP90	742
7	YES WEST BOUND 2KM NORTH	41J5 41J4	AP90	4	AP90	1044
8	NO	41J4 41J3	AP90	4	AP90	1044
9	YES EAST BOUND 5KM WEST	41J3	AP90	3	AP90	1044
10	YES W B 3KM E, E B 3KM W	41J3	AP90	4	AP90	1434
11	YES W B 2KM E, E B 2 KM W	41J3	AP90	4	AP90	1044
12	YES WEST BOUND 2KM WEST	41J3	AP90	4	AP90	1444
13	YES EAST BOUND 5KM WEST	41J3	AP90	4	AP90	1044
14	YES EAST BOUND 1.5KM WEST	41J3 41J2	AP90	4	AP90	1442
15	YES W B 1.5KM W, E B 8KM W	41J2	AP90	4	AP90	1044
16	YES WEST BOUND 1.5KM EAST	41J2	AP90	4	AP90	744
17	NO	41J2	AP90	4	AP90	1044
18	NO	41J2	AP90	4	AP90	1044
19	NO	41J2	AP90	4	AP90	1044
20	NO	41J2	AP90	4	AP90	1044
21	NO	41J2 41J1	AP90	4	AP90	744
22	NO	41J1	AP90	4	AP90	1044
23	NO	41J1	AP90	4	AP90	1044
24	YES EAST BOUND 8KM WEST	41J1	AP90	4	AP90	744
25	YES W B 1 KM W, E B 2KM E	41J1	AP90	4	AP90	744
26	YES W B 2KM E, E B 2KM W	41J4	AP90	4	AP90	742
27	YES WEST BOUND 2KM WEST	41J4	AP90	4	AP90	1044
28	NO	41J4	AP90	4	AP90	1044
29	YES WEST BOUND 5KM EAST	41J4	AP90	4	AP90	844
30	NO	41J4	AP90	4	AP90	844
31	NO	41H3	OGS91	4	OGS91	1046
32	NO	41H3	OGS91	4	OGS91	1046
33	NO	41H3 41G16	OGS91	4	OGS91	1146
34	NO	41G16	OGS91	4	OGS91	1146
35	NO	41G12	OGS91	4	OGS91	1146
36	NO	41G12	OGS91	4	OGS91	1146
37	NO	41G12	OGS91	4	OGS91	1146
38	NO	41G12	OGS91	4	OGS91	1146
39	NO	41G12	OGS91	4	OGS91	746
40	NO	41G12	OGS91	4	OGS91	746
41	YES NORTH BOUND 4KM SOUTH	41G12	OGS91	4	OGS91	746

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Reach No.	CZR Adjustment	NTS No.	Geonor. 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
42	YES SOUTH BOUND MOVED SOUTH	41G12	7	OGS91	6	NO DATA
43	NO	41G12	7	OGS91	6	NO DATA
44	YES WEST BOUND 1KM WEST	41G12	11	OGS91	6	NO DATA
45	YES N B 3.5KM N, S B 1 KM N	41G12	7	OGS91	6	NO DATA
46	YES SOUTH BOUND 3.5 KM NORTH	41G12	7	OGS91	6	NO DATA
47	YES WEST BOUND 3 KM EAST	41G12	7	OGS91	6	NO DATA
48	YES EAST BOUND 3KM EAST	41G16	11	OGS91	6	NO DATA
49	NO	41G16	11	OGS91	6	NO DATA
50	NO	41G16	7	OGS91	6	NO DATA
51	NO	41G16	7	OGS91	6	NO DATA
52	NO	41G16 41G15	11	OGS91	6	NO DATA
53	NO	41G15	7	OGS91	6	NO DATA
54	YES WEST BOUND 1.5KM WEST	41G15	7	OGS91	6	NO DATA
55	YES EAST BOUND 1.5KM WEST	41G15	11	OGS91	6	NO DATA
56	NO	41G15	11	OGS91	6	NO DATA
57	NO	41G15	11	OGS91	6	NO DATA
58	NO	41G15	11	OGS91	6	NO DATA
59	NO	41G15	11	OGS91	6	NO DATA
60	NO	41G15	10	OGS91	6	NO DATA
61	NO	41G15	10	OGS91	6	NO DATA
62	NO	41G15	10	OGS91	6	NO DATA
63	NO	41G15	7	OGS91	6	NO DATA
64	NO	41G15	7	OGS91	6	NO DATA
65	YES SOUTH BOUND 1KM NORTH	41G15	10	OGS91	6	NO DATA
66	YES WEST BOUND 1KM NORTH	41G15	10	OGS91	6	NO DATA
67	YES SOUTH BOUND 1.5KM NORTH	41G15	10	OGS91	6	NO DATA
68	NO	41G15	10	OGS91	6	NO DATA
69	YES WEST BOUND 1KM EAST	41G15	10	OGS91	6	NO DATA
70	YES SOUTH BOUND 2.5KM NORTH	41G15	10	OGS91	6	NO DATA
71	YES EAST BOUND 2KM WEST	41G15	7	OGS91	6	NO DATA
72	NO	41G15	7	OGS91	6	NO DATA
73	NO	41G15	7	OGS91	6	NO DATA
74	NO	41G15	11	OGS91	6	NO DATA
75	NO	41G15	11	OGS91	6	NO DATA
76	YES WEST BOUND 1.5KM EAST	41G15	11	OGS91	6	NO DATA
77	YES EAST BOUND 1.5KM EAST	41G15	10	OGS91	6	NO DATA
78	NO	41G15	10	OGS91	6	NO DATA
79	NO	41G15	10	OGS91	6	NO DATA
80	NO	41G15 41G14	10	OGS91	6	NO DATA
81	NO	41G14	10	OGS91	6	NO DATA
82	YES WEST BOUND 1KM WEST	41G14	10	OGS91	6	NO DATA

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Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
83	YES EAST BOUND 1KM WEST	41G14	7 OGS91	4 NTS	6 NO DATA	746
84	YES NORTH BOUND .75KM SOUTH	41G14	7 OGS91	4 NTS	6 NO DATA	746
85	YES SOUTH BOUND .75KM SOUTH	41G14	10 OGS91	4 NTS	6 NO DATA	1046
86	NO	41G14	10 OGS91	4 NTS	6 NO DATA	1046
87	NO	41G14	10 OGS91	4 NTS	6 NO DATA	1046
88	NO	41G14	7 OGS91	4 NTS	6 NO DATA	746
89	NO	41G14	7 OGS91	4 NTS	6 NO DATA	746
90	NO	41G14	7 OGS91	4 NTS	6 NO DATA	746
91	NO	41G14	7 OGS91	4 NTS	6 NO DATA	746
92	NO	41G14	7 OGS91	4 NTS	6 NO DATA	746
93	NO	41G14	7 OGS91	4 NTS	6 NO DATA	746
94	NO	41G14	7 OGS91	4 NTS	6 NO DATA	746
95	NO	41G14	7 OGS91	4 NTS	6 NO DATA	746
96	NO	41G14	10 OGS91	4 NTS	6 NO DATA	1046
97	YES EAST BOUND 2KM WEST	41G14 41G15	10 OGS91	4 NTS	6 NO DATA	1046
98	YES W B 2KM N, E B 3KM E	41G15	7 OGS91	4 NTS	6 NO DATA	746
99	YES W B 3KM E, E B 2KM W	41G15	10 OGS91	4 NTS	6 NO DATA	1046
100	NO	41G15	7 OGS91	4 NTS	6 NO DATA	746
101	YES EAST BOUND 8KM WEST	41G15	7 OGS91	4 NTS	6 NO DATA	746
102	YES WEST BOUND 2KM WEST	41G10 41G9	10 OGS91	4 NTS	6 NO DATA	1046
103	NO	41G9	7 OGS91	4 NTS	6 NO DATA	746
104	NO	41G9	10 OGS91	4 NTS	6 NO DATA	1046
105	NO	41G9	7 OGS91	4 NTS	6 NO DATA	746
106	YES EAST BOUND 5KM WEST	41G9	10 OGS91	4 NTS	6 NO DATA	1046
107	YES WEST BOUND 1KM EAST	41G9	7 OGS91	4 NTS	6 NO DATA	746
108	YES EAST BOUND 3KM EAST	41G9	7 OGS91	4 NTS	6 NO DATA	746
109	YES WEST BOUND 3KM EAST	41G9	10 OGS91	4 NTS	6 NO DATA	1046
110	NO	41G9	10 OGS91	4 NTS	6 NO DATA	1046
111	NO	41G9 41H12 41H11	10 OGS91	4 NTS	6 NO DATA	1046
112	NO	41H12 41H11	7 OGS91	4 NTS	6 NO DATA	746
113	YES SOUTH BOUND 5KM NORTH	41H12 41H11	7 OGS91	4 NTS	6 NO DATA	746
114	YES W B 1KM E E B 1 KM E	41H12 41H11	10 OGS91	4 NTS	6 NO DATA	1046
115	YES WEST BOUND 1KM EAST	41H12 41H11	13 OGS91	4 NTS	6 NO DATA	1346
116	NO	41H12 41H11	7 OGS91	4 NTS	6 NO DATA	746
117	NO	41H12 41H11	10 OGS91	4 NTS	6 NO DATA	1046
118	NO	41H12 41H11	10 OGS91	4 NTS	6 NO DATA	1046
119	NO	41H12 41H11 41G9	10 OGS91	4 NTS	6 NO DATA	1046
120	NO	41H12 41H11 41G9	10 OGS91	4 NTS	6 NO DATA	1046
121	NO	41H12 41H11	10 OGS91	4 NTS	6 NO DATA	1046
122	NO	41H12 41H11 41H5	10 OGS91	4 NTS	6 NO DATA	1046
123	NO	41H5	10 OGS91	4 NTS	6 NO DATA	1046

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Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
124	NO	41H5 41H11 41H12	8	4	6	846
125	NO	41H11 41H12	10	4	6	1046
126	NO	41H11 41H12	8	4	6	846
127	YES NORTH BOUND 1KM SOUTH	41H11 41H12	13	4	6	1346
128	YES SOUTH BOUND 1KM SOUTH	41H11 41H12	8	4	6	846
129	NO	41H11 41H12	8	4	6	846
130	NO	41H11 41H12	7	4	6	746
131	NO	41H11 41H12	7	4	6	746
132	NO	41H11 41H12 41H13	8	4	6	846
133	NO	41H13	8	4	6	846
134	NO	41H13	7	4	6	746
135	NO	41H13	7	4	6	746
136	NO	41H13	7	4	6	746
137	NO	41H13	11	4	6	1146
138	YES S B 5KM N, N B 1KM E	41H13	14	4	6	1446
139	YES NORTH BOUND 1KM WEST	41H13	7	4	6	746
140	YES SOUTH BOUND 1KM NORTH	41H13	7	4	6	746
141	YES NORTH BOUND 1KM NORTH	41H13 41H12 41H11	7	4	6	746
142	NO	41H12 41H11	6	4	6	646
143	NO	41H12 41H11	6	4	6	646
144	NO	41H12 41H11 41H13	7	4	6	746
145	NO	41H13	7	4	6	746
146	NO	41H13	7	4	6	746
147	NO	41H13	14	4	6	1446
148	NO	41H13	14	4	6	1446
149	NO	41H13	11	4	6	1146
150	YES NORTH BOUND 3KM SOUTH	41H13	6	4	6	646
151	NO	41H13	10	4	6	1046
152	NO	41H13	10	4	6	1046
153	YES S B NORTH NORTH ADJUSTED	41H13 41H14	8	4	6	846
154	YES WEST BOUND ADJUSTED	41H14	10	4	6	1046
155	NO	41H14	10	4	6	1046
156	NO	41H14 41H13	10	4	6	1046
157	NO	41H13	10	4	6	1046
158	YES	41H13 41H14	10	4	6	1046
159	NO	41H13 41H14	10	4	6	1046
160	NO	41H14	10	4	6	1046
161	NO	41H14	10	4	6	1046
162	NO	41H14 41H15	10	4	6	1046
163	NO	41H14 41H15	10	4	6	1046
164	NO	41H15	10	4	6	1046



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Reach No.	CZR Adjustment	NTS No.	Geomorph. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
165	NO	41H15	10	4	6	1046
166	NO	41H15	10	4	6	1046
167	NO	41H15 41H10	10	4	6	1046
168	NO	41H10	10	4	6	1046
169	NO	41H10	10	4	6	1046
170	NO	41H10 41H9	10	4	6	1046
171	NO	41H8 41H9	10	4	6	1046
172	NO	41H8	10	4	6	1046
173	YES	EAST BOUND 5KM WEST	10	4	6	1046
174	NO	41H8	10	4	6	1046
175	YES	SOUTH BOUND 2.5 KM NORTH	10	4	6	1046
176	YES	EAST BOUND 2.5 KM NORTH	10	4	6	1046
177	NO	41H8	10	4	6	1046
178	NO	41H8	3	4	6	346
179	NO	41H8	3	4	6	346
180	NO	41H8 41H1	10	4	6	1046
181	NO	41H1	10	4	6	1046
182	NO	41H1	10	4	6	1046
183	NO	41H1	10	4	6	1046
184	NO	41H1	10	4	6	1046
185	NO	41H1	10	4	6	1046
186	NO	31E4 41H1 31D13	10	4	6	1046
187	NO	31D13	10	4	6	1046
188	NO	31D13	10	4	6	1046
189	NO	31D13	10	4	6	1046
190	NO	31D13	10	4	6	1046
191	NO	31D13	10	4	6	1046
192	NO	31D13	10	4	6	1046
193	NO	31D13	10	3	6	1036
194	NO	31D13	10	3	6	1036
195	NO	31D13	10	3	4	1034
196	NO	31D13 31D12	10	4	4	1044
197	NO	31D12	16	1	6	1616
198	NO	31D12	13	4	6	1346
199	NO	31D12 31D13	7	4	4	744
200	NO	31D13	7	4	4	744
201	NO	31D13	7	4	4	744
202	YES	S B 800M W N B 500 S	7	3	4	734
203	YES	NORTH BOUND 800M WEST	10	4	6	1046
204	YES	SOUTH BOUND 600M NORTH	16	1	6	1616
205	NO	31D13	10	4	4	1044

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Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
206 NO		31D13	AP87	4 AP87	4 AP87	744 BEACHES WITH BEDROCK
207 NO		31D13	AP87	4 AP87	4 AP87 RDA	1044
208 NO		31D13	AP87	4 AP87	4 AP87 RDA	1044
209 NO		31D13 31D12	AP87	1 AP87	6 NO DATA	1616
210 NO		31D13 31D12	AP87	1 AP87	6 NO DATA	1616
211 NO		31D13	AP87	1 AP87	6 NO DATA	1616
212 NO		31D13	AP87	1 AP87	6 NO DATA	1616
213 NO		31D13	AP87	4 AP87	4 AP87	1044
214 NO		31D13	AP87	4 AP87	4 AP87 RDA	1044
215 NO		31D13	AP87	4 AP87	4 AP87 RDA	1044
216 NO		31D13	AP87	4 AP87	4 AP87 RDA	1044
217 NO		31D13	AP87	4 AP87	4 AP87 RDA	744
218 NO		31D13	AP87	3 AP87	6 NO DATA	736
219 NO		31D13	AP87	1 AP87	6 NO DATA	1616
220 NO		31D13	AP87	4 AP87	4 RDA	744
221 NO		31D13	AP87 CZA	3 AP87 CZA	4 RDA	734
222 NO		31D13	AP87 CZA	3 AP87 CZA	4 RDA	734
223 NO		31D13	AP87 CZA	3 AP87 CZA	4 RDA	734
224 NO		31D13	AP87 CZA	3 AP87 CZA	4 RDA	734
225 NO		31D13	CZA	3 CZA	4 RDA	734
226 NO		31D13	CZA	3 CZA	4 RDA	734
227 NO		31D13	CZA	3 CZA	4 RDA	734
228 NO		31D13 41A16	CZA	4 CZA	4 RDA	744
229 NO		31D13 41A16	CZA	4 CZA	4 RDA	744
230 NO		31D13 41A16	CZA	4 CZA	4 RDA	1044
231 NO		41A16	CZA	4 CZA	4 RDA	1044
232 NO		41A16	CZA	4 CZA	4 RDA	744
233 NO		41A16	CZA	4 CZA	4 RDA	744
234 NO		41A16	CZA	4 CZA	4 RDA	1044
235 NO		41A16	CZA	4 CZA	4 CZA	744
236 NO		41A16	CZA	3 CZA	4 CZA	734
237 NO		41A16	CZA	4 CZA	4 CZA	744
238 NO		41A16	CZA RDA	4 CZA RDA	2 CZA RDA	742
239 NO		41A16	CZA RDA	4 CZA RDA	2 CZA RDA	742
240 NO		41A16	CZA RDA	4 CZA RDA	4 CZA RDA	744
241 NO		41A16	CZA RDA	4 CZA RDA	4 CZA RDA	1044
242 NO		41A16	CZA	4 CZA	4 CZA	744
243 NO		41A16	CZA	4 CZA	4 CZA	1044
244 NO		41A16	CZA	4 CZA	4 CZA	1044
245 NO		41A16	CZA	4 CZA	4 CZA	1044
246 NO		41A16	CZA	4 CZA	2 CZA	742

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Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
247 NO		41A16	10 CZA	4 CZA	4 CZA	1044
248 NO		41A16	10 CZA	4 CZA	4 CZA	1044
249 YES		41A16	10 CZA	4 CZA	4 CZA	1044
250 NO		41A16	10 CZA	4 CZA	4 CZA	1044
251 NO		41A16	10 CZA	4 CZA	4 CZA	1044
252 NO		41A16	7 CZA	4 CZA	4 CZA	744
253 NO		41A16	7 CZA	4 CZA	4 CZA	744
254 NO		41A16	7 AP89	4 AP89	2 AP89	742
255 NO		41A16	7 AP89	4 AP89	2 AP89	742
256 NO		41A16	7 AP88	4 AP88	2 AP88	742
257 NO		41A16	7 AP89	4 AP89	2 AP89	742
258 NO		41A16	10 AP89	4 AP89	4 AP89	1044
259 NO		41A16	10 AP89	4 AP89	4 AP89	1044
260 NO		41A16	7 AP89	4 AP89	2 AP89	742
261 NO		41A16	7 CZA	4 CZA	2 CZA	742
262 NO		41A16	10 CZA	4 CZA	4 CZA	1044
263 NO		41A16	10 CZA	4 CZA	4 CZA	1044
264 NO		41A16	10 CZA	4 CZA	4 CZA	1044
265 NO		41A16	10 CZA	4 CZA	4 CZA	1044
266 NO		41A16	10 AP89	4 AP89	4 AP89	1044
267 NO		41A16	10 AP89	4 AP89	4 AP89	1044
268 NO		41A16	7 AP89	4 AP89	2 AP89	742
269 NO		41A16	10 AP89	4 AP89	4 AP89	1044
270 NO		41A16	10 AP89	4 AP89	4 AP89	1044
271 NO		41A16	10 AP89	4 AP89	4 AP89	1044
272 NO		41A16	10 AP89	4 AP89	4 AP89	1044
273 NO		41A16	7 AP89	4 AP89	4 AP89	744
274 NO		41A16	10 AP89	4 AP89	4 AP89	1044
275 NO		41A16	7 AP89	4 AP89	4 AP89	744
276 NO		41A9 41A16	7 AP89	4 AP89	4 AP89	744
277 NO		41A9	7 AP89	4 AP89	4 AP89	744
278 NO		41A9	7 AP89	4 AP89	2 AP89	742
279 NO		41A9	7 AP89	4 AP89	4 AP89	744
280 NO		41A9	7 AP89	4 AP89	2 AP89	742
281 NO		41A9	7 AP89	4 AP89	4 AP89	744
282 NO		41A9	7 AP89	4 AP89	2 AP89	742
283 NO		41A9	7 AP89	4 AP89	4 AP89	744
284 NO		31D12 41A9	7 AP89	4 AP89	2 AP89	742
285 NO		31D12	7 AP89	4 AP89	3 AP89	743
286 NO		31D12	7 AP89	4 AP89	2 AP89	742
287 NO		31D12 41A9	7 AP89	4 AP89	2 AP89	742

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Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
288 NO		31D12 41A9	7 AP89	4 AP89	3 AP89	743
289 NO		31D12	7 AP89	4 AP89	2 AP89	742
290 NO		31D12 41A9	7 AP89	4 AP89	2 AP89	742
291 NO		41A9	7 AP89	4 AP89	2 AP89	742
292 NO		41A8 41A9	7 AP89	3 AP89	2 AP89	732
293 NO		41A8	7 AP89	4 AP89	2 AP89	742
294 NO		41A8	7 AP89	4 AP89	2 AP89	742
295 NO		41A8	8 AP89	3 AP89	4 AP89	834
296 NO		41A8 41A9	10 AP89	3 AP89	4 AP89	1034
297 NO		41A9	16 AP89	1 AP89	6 NO DATA	1616
298 NO		41A9	10 AP89	2 AP89	6 NO DATA	1026
299 NO		41A9	14 AP89	2 AP89	6 NO DATA	1426
300 NO		41A9	14 AP89	4 AP89	4 AP89	1444
301 NO		41A9	7 AP89	4 AP89	4 AP89	744
302 NO		41A9	10 AP89	4 AP89	4 AP89	1044
303 NO		41A9	10 AP89	4 AP89	6 NO DATA	1046
304 NO		41A9	10 AP89	4 AP89	6 NO DATA	1046
305 NO		41A9	4 AP89	4 AP89	4 AP89	444
306 NO		41A9	10 AP89	4 AP89	6 NO DATA	1046
307 NO		41A9	10 AP89	3 AP89	4 AP89	1034
308 NO		41A9	16 AP89	1 AP89	6 NO DATA	1616
309 NO		41A9	10 AP89	2 AP89	6 NO DATA	1026
310 NO		41A9	10 AP89	2 AP89	4 AP89	1024
311 NO		41A9	10 AP89	3 AP89	4 AP89	1034
312 NO		41A9 41A10	10 AP89	4 AP89	4 AP89	1044
313 NO		41A10	4 AP89	4 AP89	6 NO DATA	446
314 NO		41A10	1 AP89	4 AP89	6 NO DATA	146
315 NO		41A10	14 AP89	4 AP89	6 NO DATA	1446
316 NO		41A10	10 AP89	4 AP89	6 NO DATA	1044
317 NO		41A10	16 AP89	1 AP89	6 NO DATA	1616
318 NO		41A10	10 AP89	4 AP89	4 AP89	1044
319 NO		41A10	10 AP89	4 AP89	6 NO DATA	1046
320 NO		41A10	10 AP89	4 AP89	4 AP89	1044
321 NO		41A10	10 AP89	4 AP89	4 AP89	1044
322 NO		41A10	10 AP89	4 AP89	6 NO DATA	1046
323 NO		41A10	10 AP89	4 AP89	6 NO DATA	1046
324 NO		41A10	10 AP89	4 AP89	4 AP89	1044
325 NO		41A10	10 AP89	4 AP89	6 NO DATA	1046
326 NO		41A10	10 AP89	4 AP89	6 NO DATA	1046
327 NO		41A10	16 AP89	6 AP89	6 NO DATA	1666
328 NO		41A10	10 AP89	4 AP89	6 NO DATA	1046

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Reach No.	CZR Adjustment	NTS No.	Geonor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
329 NO		41A10	10 AP89	4 AP89	6 NO DATA	1046
330 NO		41A10	10 AP89	4 AP89	6 NO DATA	1046
331 NO		41A10	7 AP89	4 AP89	4 AP89	744
332 NO		41A10	10 AP89	4 AP89	6 NO DATA	1046
333 NO		41A10	10 AP89	3 AP89	6 NO DATA	1036
334 NO		41A10	7 AP89	4 AP89	2 AP89	742
335 NO		41A10	16 AP89	1 AP89	6 NO DATA	1616
336 NO		41A10	10 AP89	2 AP89	6 NO DATA	1026
337 NO		41A10	10 AP89	2 AP89	6 NO DATA	1026
338 NO		41A10	10 AP89	4 AP89	4 AP89	1044
339 NO		41A10	10 AP89	4 AP89	6 NO DATA	1046
340 NO		41A10	10 AP89	3 AP89	6 NO DATA	1036
341 NO		41A10	7 AP89	4 AP89	6 NO DATA	746
342 NO		41A10	10 AP89	3 AP89	6 NO DATA	1036
343 NO		41A10	10 AP89	4 AP89	6 NO DATA	1046
344 NO		41A10 41A15	10 AP89	4 AP89	4 AP89	1044
345 NO		41A15	10 AP89	4 AP89	4 AP89	1044
346 NO		41A15	10 AP89	4 AP89	4 AP89	1044
347 NO		41A15	10 AP89	4 AP89	4 AP89	1044
348 NO		41A15	10 AP89	4 AP89	4 AP89	1044
349 NO		41A15	10 AP89	4 AP89	4 AP89	1044
350 NO		41A15	10 AP89	4 AP89	4 AP89	1044
351 NO		41A15	10 AP89	4 AP89	4 AP89	1044
352 NO		41A15	10 AP89	4 AP89	4 AP89	1044
353 NO		41A15	10 AP89	4 AP89	4 AP89	1044
354 NO		41A15	10 AP89	4 AP89	4 AP89	1044
355 NO		41A15	10 AP89	4 AP89	4 AP89	1044
356 NO		41A15	10 AP89	4 AP89	4 AP89	1044
357 NO		41A15	10 AP89	4 AP89	4 AP89	1044
358 NO		41A15	14 AP89 CZA	4 AP89	4 AP89	1444
359 NO		41A15	10 AP89	4 AP89	4 AP89	1044
360 NO		41A15	10 AP89	4 AP89	4 AP89	1044
361 NO		41A14 41A15	10 AP89	4 AP89	4 AP89	1044
362 NO		41A14	10 AP89	4 AP89	4 AP89	1044
363 NO		41A11 41A14	10 AP89	4 AP89	4 AP89	1044
364 NO		41A11	16 AP89	1 AP89	6 NO DATA	1616
365 NO		41A11 41A14	10 AP89	3 AP89	4 AP89	1034
366 NO		41A14	10 AP89	4 AP89	4 AP89	1044
367 NO		41A14	10 AP89	4 AP89	4 AP89	1044
368 NO		41A14	10 AP89	4 AP89	4 AP89	1044
369 NO		41A14	10 AP89	4 AP89	4 AP89	1044

LAKE HURON.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
370 NO		41A14	10 AP89	4 AP89	4 AP89	1044
371 NO		41A14	10 AP89	4 AP89	4 AP89	1044
372 NO		41A15	10 AP89	4 AP89	4 AP89	1044
373 NO		41A15	10 AP89	4 AP89	4 AP89	1044
374 NO		41A15	10 AP89	4 AP89	4 AP89	1044
375 NO		41A14	10 AP89	4 AP89	4 AP89	1044
376 NO		41A14	14 AP89	4 AP89	4 AP89	1444
377 NO		41A14	10 AP89	4 AP89	4 AP89	1044
378 NO		41A14 41A15	8 AP89	4 AP89	4 AP89	844
379 NO		41A15	10 AP89	4 AP89	4 AP89	1044
380 NO		41A15	10 AP89	4 AP89	4 AP89	1044
381 NO		41A15	10 AP89	4 AP89	4 AP89	1044
382 NO		41A15	10 AP89	4 AP89	4 AP89	1044
383 NO		41A14 41A15	10 AP89	4 AP89	4 AP89	1044
384 NO		41A14	10 AP89	4 AP89	4 AP89	1044
385 NO		41A14	10 AP89	4 AP89	4 AP89	1044
386 NO		41A14	10 AP89	4 AP89	4 AP89	1044
387 NO		41A14	10 AP89	4 AP89	4 AP89	1044
388 NO		41A16	10 AP89	4 AP89	4 AP89	1044
389 NO		41A14	10 AP89	4 AP89	4 AP89	1044
390 NO		41A14	10 AP89	4 AP89	4 AP89	1044
391 NO		41A14	10 AP89	4 AP89	4 AP89	1044
392 NO		41A14	10 AP89	4 AP89	4 AP89	1044
393 NO		41A14	10 AP89	4 AP89	4 AP89	1044
394 NO		41A14	10 AP89	4 AP89	4 AP89	1044
395 NO		41A14	10 AP89	4 AP89	4 AP89	1044
396 NO		41A14	10 AP89	4 AP89	4 AP89	1044
397 NO		41A14	10 AP89	4 AP89	4 AP89	1044
398 NO		41A14	10 AP89	4 AP89	4 AP89	1044
399 NO		41A14	10 AP89	4 AP89	4 AP89	1044
400 NO		41A14	10 AP89	4 AP89	4 AP89	1044
401 NO		41A14	7 AP89	4 AP89	2 AP89	742
402 NO		41A14	10 AP89	4 AP89	4 AP89	1044
403 NO		41A14	10 AP89	4 AP89	4 AP89	1044
404 NO		41A14	8 AP89	4 AP89	4 AP89	844
405 NO		41A14	8 AP89	4 AP89	4 AP89	844
406 NO		41A14	8 AP89	4 AP89	4 AP89	844
407 NO		41A14	10 AP89	4 AP89	4 AP89	1044
408 NO		41A14	8 AP89	4 AP89	6 AP89	846
409 NO		41A14	10 AP89	4 AP89	4 AP89	1044
410 NO		41A14	10 AP89	4 AP89	4 AP89	1044

LAKE HURON.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
411 NO		41A14 41H3	10 AP89	4 AP89	4 AP89	1044
412 NO		41A14 41H3	10 AP89	4 AP89	4 AP89	1044
413 NO		41A14	7 AP89	3 AP89	4 AP89	734
414 NO		41A14 41H3	10 AP89	4 AP89	4 AP89	1044
415 NO		41H3	10 AP89	4 AP89	4 AP89	1044
416 NO		41H3	10 AP89	4 AP89	4 AP89	1044
417 NO		41H3	10 AP89	4 AP89	4 AP89	1044
418 NO		41H3	10 AP89	4 AP89	4 AP89	1044
419 NO		41H3	10 AP89	4 AP89	4 AP89	1044
420 NO		41H3	10 AP89	4 AP89	4 AP89	1044
421 NO		41H3	10 AP89	4 AP89	4 AP89	1044
422 NO		41H3	10 AP89	4 AP89	4 AP89	1044
423 NO		41H3	10 AP89	4 AP89	4 AP89	1044
424 NO		41H3	10 AP89	4 AP89	4 AP89	1044
425 NO		41H3	10 AP89	4 AP89	4 AP89	1044
426 NO		41H3	10 AP89	4 AP89	4 AP89	1044
427 NO		41H3	10 AP89	4 AP89	4 AP89	1044
428 NO		41H3	10 AP89	4 AP89	4 AP89	1044
429 NO		41H3	10 AP89	4 AP89	4 AP89	1044
430 NO		41H3 41H4	10 AP89	4 AP89	4 AP89	1044
431 NO		41H4	10 AP89	4 AP89	4 AP89	1044
432 NO		41H4 41H5	10 AP89	4 AP89	4 AP89	1044
433 NO		41H4 41H5	10 AP89	4 AP89	4 AP89	1044
434 NO		41H4 41H5	10 AP89	4 AP89	4 AP89	1044
435 NO		41H4 41H5	7 AP89	4 AP89	4 AP89	744
436 NO		41H5	10 AP89	4 AP89	4 AP89	1044
437 NO		41H5	10 CZA AP88	4 AP88	4 AP88	1044
438 NO		41H5	10 CZA AP88	4 AP88	4 AP88	1044
439 NO		41H5	10 CZA AP88	4 AP88	4 AP88	1044
440 NO		41H5	10 CZA AP88	4 AP88	4 AP88	1044
441 NO		41H5	10 CZA AP88	4 AP88	4 AP88	1044
442 NO		41H5	10 CZA AP88	4 AP88	4 AP88	1044
443 NO		41H5	10 AP89	4 AP89	4 AP89	1044
444 NO		41H5	10 AP89	4 AP89	4 AP89	1044
445 NO		41H5	10 AP89	4 AP89	4 AP89	1044
446 NO		41H5	10 AP89	4 AP89	4 AP89	1044
447 NO		41H5	10 AP89	4 AP89	4 AP89	1044
448 NO		41H5	10 AP88	4 AP88	4 AP88	1044
449 NO		41H5	10 AP88	4 AP88	4 AP88	1044
450 NO		41H5	10 AP88	4 AP88	4 AP88	1044
451 NO		41H5	10 AP88	4 AP88	4 AP88	1044

LAKE HURON.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
452 NO		41H4 41H5	10 AP88	4 AP88	4 AP88	1044
453 NO		41H4	10 AP88	4 AP88	4 AP88	1044
454 NO		41H4	10 AP88	4 AP88	4 AP88	1044
455 NO		41H4	10 AP88	4 AP88	4 AP88	1044
456 NO		41H4	10 AP88	4 AP88	4 AP88	1044
457 NO		41H4	10 AP88	4 AP88	4 AP88	1044
458 NO		41H4	10 AP88	4 AP88	4 AP88	1044
459 NO		41H4	10 AP88	4 AP88	4 AP88	1044
460 NO		41H4	10 AP88	4 AP88	4 AP88	1044
461 NO		41H3 41H4	10 AP88	4 AP88	4 AP88	1044
462 NO		41H3	10 AP88	4 AP88	4 AP88	1044
463 NO		41A14 41H3	10 AP88	4 AP88	4 AP88	1044
464 NO		41A14	10 AP88	4 AP88	4 AP88	1044
465 NO		41A14	10 AP88	4 AP88	4 AP88	1044
466 NO		41A14	10 AP88	3 AP88	4 AP88	1034
467 NO		41A14	10 AP88	4 AP88	4 AP88	1044
468 NO		41A14	10 AP88	4 AP88	4 AP88	1044
469 NO		41A14	10 AP88	4 AP88	4 AP88	1044
470 NO		41A14	10 AP88	4 AP88	4 AP88	1044
471 NO		41A14	10 AP88	4 AP88	4 AP88	1044
472 NO		41A14	10 AP88	4 AP88	4 AP88	1044
473 NO		41A14	10 AP88	4 AP88	4 AP88	1044
474 NO		41A14	10 AP88	4 AP88	4 AP88	1044
475 NO		41A14	10 AP88	3 AP88	4 AP88	1034
476 YES	PART NOW 586	41A14	14 AP88	4 AP88	4 AP88	1444
477 NO		41A14	7 AP88	4 AP88	4 AP88	744
478 NO		41A14	10 AP88	4 AP88	4 AP88	1044
479 NO		41A11 41A14	7 AP88	4 AP88	4 AP88	744
480 NO		41A11	10 AP88	4 AP88	4 AP88	1044
481 NO		41A11	10 AP88	4 AP88	4 AP88	1044
482 NO		41A11	10 AP88	4 AP88	4 AP88	1044
483 NO		41A11	7 AP88	4 AP88	2 AP88	742
484 NO		41A11	7 AP88	4 AP88	2 AP88	742
485 NO		41A11	7 AP88	3 AP88	2 AP88	732
486 NO		41A11	7 AP88	3 AP88	4 AP88	734
487 NO		41A11	10 AP88	4 AP88	4 AP88	1044
488 NO		41A11	10 AP88	4 AP88	4 AP88	1044
489 NO		41A11	7 AP88	4 AP88	2 AP88	742
490 NO		41A11	7 AP88	3 AP88	4 AP88	734
491 NO		41A11	7 AP88	3 AP88	4 AP88	734
492 NO		41A11	7 AP88	4 AP88	4 AP88	744

HOWDEWALL BAY



LAKE HURON.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
493 NO		41A11	16 AP88	6 AP88	6 NO DATA	1666
494 NO		41A6 41A11	7 AP88	2 AP88	2 AP88	722
495 NO		41A6	7 AP88	2 AP88	2 AP88	722
496 NO		41A6	7 AP88	3 AP88	2 AP88	732
497 NO		41A6	7 AP88	4 AP88	4 AP88	744
498 NO		41A6	7 AP88	4 AP88	6 NO DATA	746
499 NO		41A6	7 AP88	4 AP88	6 NO DATA	746
500 NO		41A6	16 AP88	1 AP88	6 NO DATA	1616
501 NO		41A6	7 AP88	4 AP88	2 AP88	742
502 NO		41A6	7 AP88	4 AP88	4 AP88	744
503 NO		41A6	7 AP88	4 AP88	4 AP88	744
504 NO		41A5 41A6	7 AP88	4 AP88	4 AP88	744
505 NO		41A5	10 AP88	4 AP88	4 AP88	1044
506 NO		41A5	7 AP88	4 AP88	4 AP88	744
507 NO		41A5	10 AP88	3 AP88	4 AP88	1034
508 NO		41A5	13 AP88	4 AP88	4 AP88	1344
509 NO		41A5	10 AP88	2 AP88	4 AP88	1024
510 NO		41A5	10 AP88	2 AP88	4 AP88	1024
511 NO		41A5	10 AP88	1 AP88	4 AP88	1014
512 NO		41A5	10 AP88	4 AP88	4 AP88	1044
513 NO		41A5	7 AP88	4 AP88	4 AP88	1044
514 NO		41A5	10 AP88 OGS	4 AP88	4 AP88	1044
515 NO		41A5	10 AP88 OGS	4 AP88	4 AP88	1044
516 NO		41A5	7 AP88	4 AP88	2 AP88 RUKAVINA	742
517 NO		41A5	10 AP88	4 AP88	4 AP88	1044
518 NO		41A5	10 AP88	4 AP88	4 AP88	1044
519 NO		41A4 41A5	7 AP88 OGS	4 AP88	4 AP88	744
520 NO		41A4	7 AP88 OGS	4 AP88	4 RUKAVINA	744
521 NO		41A4	7 AP88 OGS	1 AP88	3 RUKAVINA FISHER	713
522 NO		41A4	16 AP88	1 AP88	3 RUKAVINA FISHER	1613
523 NO		41A4	7 AP88 OGS	4 AP88	3 RUKAVINA FISHER	743
524 NO		41A4	7 AP88 OGS	3 AP88	3 RUKAVINA FISHER	733
525 NO		41A4	7 AP88 OGS	4 AP88	3 RUKAVINA FISHER	743
526 NO		41A4	7 AP88 OGS	4 AP88	3 RUKAVINA FISHER	743
527 NO		41A4	7 AP88 OGS	3 AP88	3 RUKAVINA FISHER	733
528 NO		41A4	2 AP88 OGS	4 AP88	3 RUKAVINA FISHER	243
529 NO		40P13 41A4	1 AP88 OGS	4 AP88	1 RUKAVINA FISHER	141
530 NO		40P13	2 AP88 OGS	4 AP88	3 RUKAVINA FISHER	243
531 NO		40P13	2 AP88 OGS	4 AP88	3 RUKAVINA FISHER	243
532 NO		40P13	2 AP88 OGS	4 AP88	3 RUKAVINA FISHER	243
533 NO		40P13	2 AP88 OGS	4 AP88	3 RUKAVINA FISHER	243

HARBOUR

LAKE HURON.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
534	NO	40P13	2 CZA OGS	4 CZA MVCA	3 RUKAVINA FISHER	243
535	NO	40P13	2 CZA OGS	4 CZA MVCA	3 RUKAVINA FISHER	243
536	NO	40P13	2 CZA OGS	4 CZA MVCA	3 RUKAVINA FISHER	243
537	NO	40P13	2 CZA	4 CZA MVCA	3 RUKAVINA FISHER	243
538	NO	40P13	2 CZA	4 CZA MVCA	3 RUKAVINA FISHER	243
539	NO	40P12 40P13	7 CZA	4 CZA	2 RUKAVINA	742
540	YES S BORDER 800M NORTH	40P12	16 CZA	1 MVCA	3 RUKAVINA	1613
541	YES S B 300M S, N B 800M N	40P12	2 CZA MVCA	5 MVCA	3 RUKAVINA	253
542	YES N BORDER 300M SOUTH	40P12	2 CZA MVCA	4 MVCA CZA	3 RUKAVINA	243
543	NO	40P12	1 CZA	4 CZA MVCA	3 RUKAVINA	143
544	NO	40P12	2 CZA OGS	4 CZA	3 RUKAVINA	243
545	NO	40P12	2 AP88	4 AP88	3 RUKAVINA	243
546	NO	40P12	2 AP88	4 AP88	3 RUKAVINA	243
547	NO	40P12	7 AP88	4 AP88	3 RUKAVINA	743
548	NO	40P12	16 AP88	1 AP88	3 RUKAVINA	1613
549	NO	40P12	1 AP88	3 AP88	3 RUKAVINA	133
550	NO	40P5 40P12	2 AP88	2 AP88	3 RUKAVINA	223
551	NO	40P5	2 AP88	3 AP88	3 RUKAVINA	233
552	NO	40P5	2 AP88	3 AP88	3 RUKAVINA	233
553	NO	40P5	2 AP88	4 AP88	2 RUKAVINA	242
554	NO	40P5	4 AP88	4 AP88	2 RUKAVINA	442
555	NO	40P5	7 AP88	4 AP88	2 RUKAVINA	742
556	NO	40P5	7 AP88	4 AP88	2 RUKAVINA	742
557	NO	40P5	7 AP88	1 AP88	2 RUKAVINA	1612
558	NO	40P5	7 AP88	2 AP88	2 RUKAVINA	722
559	NO	40P4 40P5	7 AP88	4 AP88	2 RUKAVINA	742
560	NO	40P4 40P5	7 AP88	4 AP88	2 RUKAVINA	742
561	NO	40P4	7 AP88	4 AP88	2 RUKAVINA AP88	742
562	NO	40P4	7 AP88	4 AP88	2 RUKAVINA AP88	742
563	NO	40P4	11 AP88 OGS	4 AP88	5 RUKAVINA AP88	1145
564	NO	40P4	7 AP88	3 AP88	2 RUKAVINA AP88	732
565	NO	40O1 40P4	7 AP88	3 AP88	3 RUKAVINA	733
566	NO	40O1	11 AP88 OGS	1 AP88	5 AP88	1115
567	NO	40O1	11 AP88 OGS	4 AP88 OGS	5 AP88	1145
568	NO	40O1	14 AP88	4 AP88	5 AP88	1445
569	NO	40O1	12 CZA	4 CZA	5 AP88	1245
570	NO	40O1	1 CZA	4 CZA	3 RUKAVINA	143
571	NO	40O1	1 CZA	3 CZA	3 RUKAVINA	133
572	NO	40O1	1 AP85	3 AP85	3 RUKAVINA	133
573	NO	40O1	1 AP85	3 AP85	3 RUKAVINA	133
574	NO	40O1	1 AP85 OGS	4 AP85	3 RUKAVINA	143

LAKE HURON.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
575 NO		4001	1 AP85 OGS	4 AP85	3 RUKAVINA	143
576 NO		4001	3 AP85 OGS	4 AP85	3 RUKAVINA	343
577 NO		4001	3 AP85 OGS	4 AP85	3 RUKAVINA	343
578 NO		4001	3 AP85 OGS	1 AP85	3 RUKAVINA	313
579 NO		4001	7 AP85 OGS	3 AP85	3 RUKAVINA	733
580 NO		4001	5 AP85	1 AP85	3 RUKAVINA	513
581 NO		4001	5 AP85	1 AP85	3 RUKAVINA	513
582 NO		4001	5 AP85 OGS	2 AP85	3 RUKAVINA	523
583 NO		4001	5 AP85 OGS	2 AP85	3 RUKAVINA	523
584 NO		4001	7 AP85 OGS	4 AP85	3 RUKAVINA	743
585 NO		4001	5 AP85 OGS	1 AP85	3 RUKAVINA	513
586 YES	NEW PART OF 476	41A14	7 AP88	2 AP88	4 AP88	724
587 YES	S B 1KM NW, N B 2.5KM SE	41A14	10 AP88	4 AP88	4 AP88	1044
588 YES	NEW PART OF 173	41H8	10 OGS	4 OGS FISHER	6 NO DATA	1046
589 YES	NEW PART OF 173	41H8	7 OGS	4 OGS FISHER	6 NO DATA	746
590 YES	NEW PART OF 204	31D12	13 AP87	4 AP87	6 NO DATA	1346
591 YES	NEW PART OF 201	31D13	16 AP87	1 AP87	6 NO DATA	1616
592 YES	PART OF 249	41A16	7 CZA	4 CZA	2 CZA	742
593 YES	NEW	41J5	10 MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	1044
594 YES	NEW PART OF 2	41J05	10 MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	1044
595 YES	NEW PART OF 2 AND 3	41J05	14 MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	1444
596 YES	NEW PART OF 3	41J05	10 MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	1044
597 YES	NEW PART OF 3 AND 4	41J05	14 MNRVIDEO91	4 MNRVIDEO91	4 MNRVIDEO91	1444
598 YES	NEW	41J5	14 AP90	4 AP90	4 AP90	1444
599 YES	NEW	41J5 41J4	10 AP90	4 AP90	4 AP90	1044
600 YES	NEW PART OF 9	41J3	10 AP90	4 AP90	4 AP90	1044
601 YES	NEW PART OF 9	41J3	14 AP90	4 AP90	4 AP90	1444
602 YES	NEW PART OF 9	41J3	10 AP90	4 AP90	4 AP90	1044
603 YES	NEW PART OF 9 AND 10	41J3	7 AP90	4 AP90	2 AP90	742
604 YES	NEW PART OF 10 AND 11	41J3	7 AP90	4 AP90	4 AP90	744
605 YES	NEW PART OF 11	41J3	7 AP90	4 AP90	4 AP90	744
606 YES	NEW PART OF 13	41J3	7 AP90	4 AP90	2 AP90	742
607 YES	NEW PART OF 15	41J2	7 AP90	4 AP90	2 AP90	742
608 YES	NEW PART OF 15	41J2	7 AP90	4 AP90	4 AP90	744
609 YES	NEW PART OF 15	41J2	7 AP90	4 AP90	2 AP90	742
610 YES	NEW PART OF 15 AND 16	41J2	7 AP90	4 AP90	4 AP90	744
611 YES	PART OF 24	41J1	14 AP90	4 AP90	4 AP90	1444
612 YES	PART OF 24	41J1	10 AP90	4 AP90	4 AP90	1044
613 YES	PART OF 24	41J1	7 AP90	4 AP90	2 AP90	742
614 YES	PART OF 24	41J1	10 AP90	4 AP90	4 AP90	1044
615 YES	NEW PART OF 29	41I4	10 AP90	4 AP90	4 AP90	1044

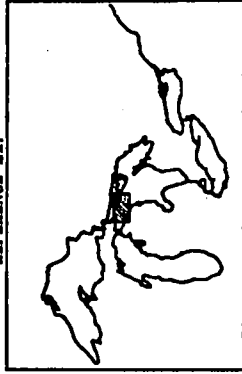
N SHORE RED BAY  
FROM BARLLEY POINT

LAKE HURON.ASC

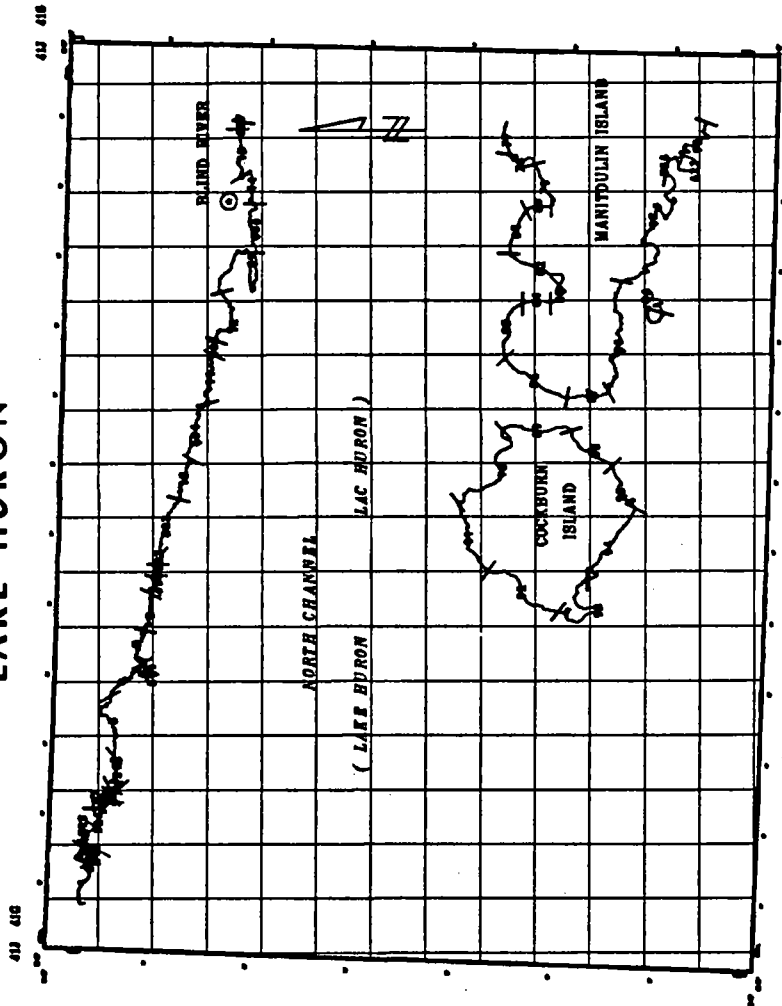
Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
616	YES NEW PART OF 41	41G12	OGS91	4 NTS	6 NO DATA	1146
617	YES NEW PART OF 65	41G15	OGS91	4 NTS	6 NO DATA	746
618	YES NEW PART OF 66 AND 67	41G15	OGS91	4 NTS	6 NO DATA	346
619	YES NEW PART OF 70	41G15	OGS91	4 NTS	6 NO DATA	746
620	YES NEW PART OF 71	41G15	OGS91	4 NTS	6 NO DATA	1046
621	YES NEW PART OF 97 AND 98	41G15	OGS91	4 NTS	6 NO DATA	1046
622	YES NEW PART OF 99	41G15	OGS91	4 NTS	6 NO DATA	1346
623	YES NEW PART OF 101	41G15	OGS91	4 NTS	6 NO DATA	746
624	YES NEW PART OF 101	41G15	OGS91	4 NTS	6 NO DATA	746
625	YES NEW PART OF 101	41G15 41G10	OGS91	4 NTS	6 NO DATA	746
626	YES NEW PART OF 106	41G09	OGS91	4 NTS	6 NO DATA	746
627	YES NEW PART OF 106	41G09	OGS91	4 NTS	6 NO DATA	1046
628	YES NEW PART OF 113	41H12 41H11	OGS91	4 NTS	6 NO DATA	1046
629	YES NEW PART OF 114	41H12 41H11	OGS91	4 NTS	6 NO DATA	1346
630	YES NEW PART OF 138	41H13	OGS91	4 NTS	6 NO DATA	1146
631	YES NEW PART OF 139	41H13	OGS91	4 NTS	6 NO DATA	1146
632	YES NEW PART OF 150	41H13	OGS91	4 NTS	6 NO DATA	1046
633	YES NEW PART OF 153	41H4	OGS91	4 NTS	6 NO DATA	1046
634	YES NEW PART OF 158	41H13	OGS91	4 NTS	6 NO DATA	846
635	YES NEW PART OF 159	41H13	OGS91	4 NTS	6 NO DATA	1046
636	YES NEW PART OF 97	41G15	OGS91	4 NTS	6 NO DATA	746
637	YES NEW	41J4 41J5	AP90	4 AP90	2 AP90	442

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

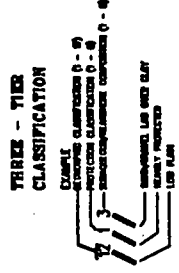
REFERENCE MAP



## LAKE HURON



- GEOGRAPHIC CLASSIFICATION**
- 1. SAND BEACH (SANDSTONE OR SILT CLAY)
  - 2. SILT BEACH (SANDSTONE OR SILT CLAY)
  - 3. SILT BEACH (SANDSTONE OR SILT CLAY)
  - 4. SILT BEACH (SANDSTONE OR SILT CLAY)
  - 5. SILT BEACH (SANDSTONE OR SILT CLAY)
  - 6. SILT BEACH (SANDSTONE OR SILT CLAY)
  - 7. SILT BEACH (SANDSTONE OR SILT CLAY)
  - 8. SILT BEACH (SANDSTONE OR SILT CLAY)
  - 9. SILT BEACH (SANDSTONE OR SILT CLAY)
  - 10. SILT BEACH (SANDSTONE OR SILT CLAY)
  - 11. SILT BEACH (SANDSTONE OR SILT CLAY)
  - 12. SILT BEACH (SANDSTONE OR SILT CLAY)
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  - 18. SILT BEACH (SANDSTONE OR SILT CLAY)
  - 19. SILT BEACH (SANDSTONE OR SILT CLAY)
  - 20. SILT BEACH (SANDSTONE OR SILT CLAY)
- PROTECTION CLASSIFICATION**
- 1. HEAVY PROTECTION
  - 2. MODERATE PROTECTION
  - 3. LIGHT PROTECTION
  - 4. NO PROTECTION
  - 5. PROTECTION DEFICIENT
  - 6. UNCLASSIFIED
- SUBAQUOUS/NEARSHORE COMPOSITION**
- 1. SILT
  - 2. SAND
  - 3. SANDSTONE
  - 4. SANDSTONE
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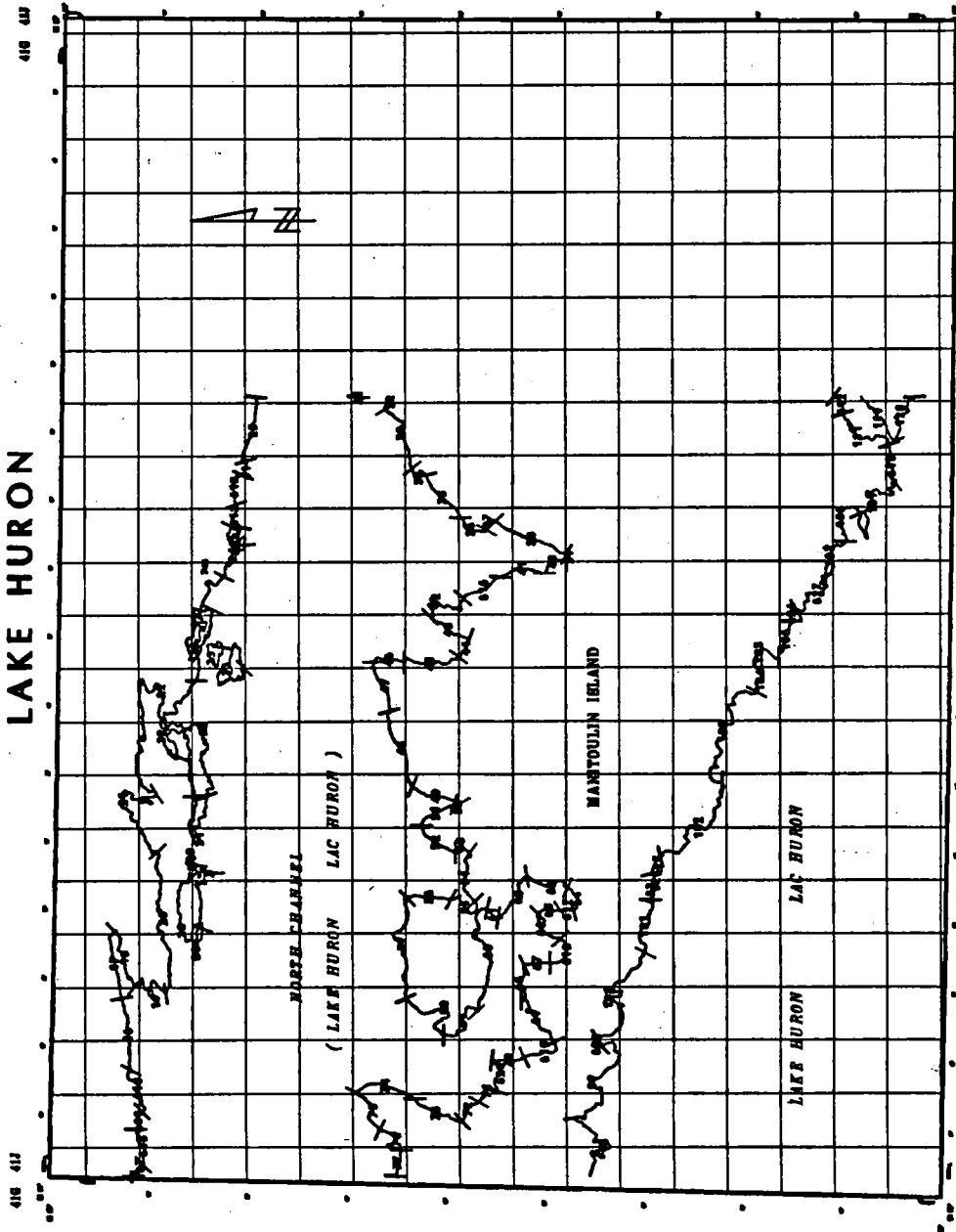
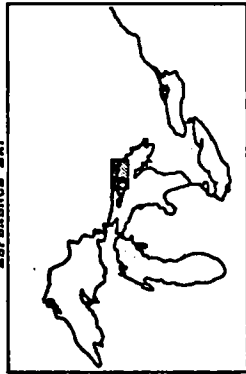


BLIND RIVER  
ONTARIO  
SCALE 1 : 100 000



Geological Information  
Map  
Scale  
1 : 100 000  
1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION



**GEOGRAPHIC CLASSIFICATION**

- 1. LOW (LOW) SLAY (SLOPE) ON NO SLAY
- 2. LOW (LOW) SLAY (SLOPE) ON SLAY (SLAY)
- 3. LOW (LOW) SLAY (SLOPE) ON NO SLAY
- 4. LOW (LOW) SLAY (SLOPE) ON SLAY (SLAY)
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- 20. SLAY (SLAY)

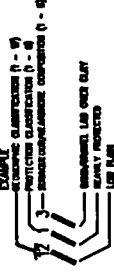
**PROTECTION CLASSIFICATION**

- 1. SLAY (SLAY)
- 2. SLAY (SLAY)
- 3. SLAY (SLAY)
- 4. SLAY (SLAY)
- 5. SLAY (SLAY)
- 6. SLAY (SLAY)
- 7. SLAY (SLAY)
- 8. SLAY (SLAY)
- 9. SLAY (SLAY)
- 10. SLAY (SLAY)

**SUBAQUOUS/NEARSHORE COMPOSITION**

- 1. SLAY (SLAY)
- 2. SLAY (SLAY)
- 3. SLAY (SLAY)
- 4. SLAY (SLAY)
- 5. SLAY (SLAY)
- 6. SLAY (SLAY)
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**THREE - TIER CLASSIFICATION**



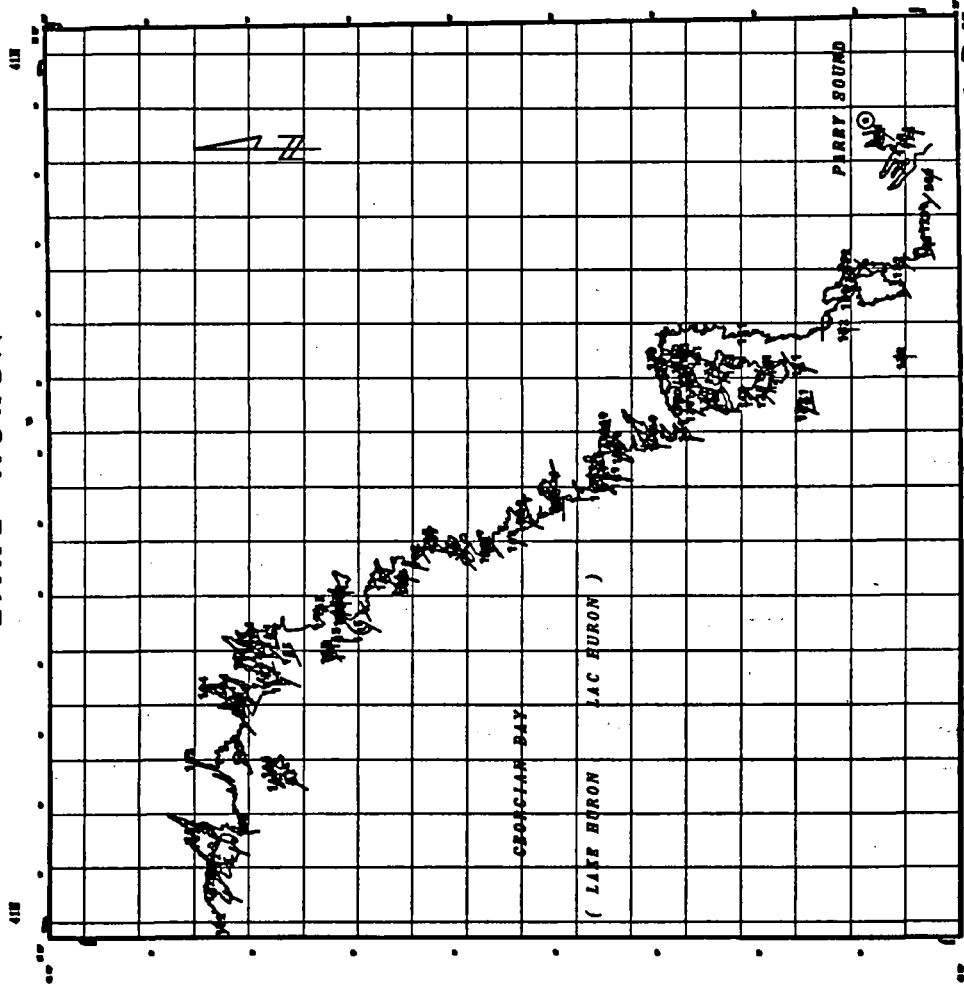
Geomatics International  
1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992

ONTARIO  
SCALE 1 : 150 000  
NATIONAL HYDROGRAPHIC SERVICE

Environmental  
Canada

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE HURON



## REFERENCE MAP



### GEOMORPHIC CLASSIFICATION

- 1. LOW (LOW) BAY (WATERLINE ON 20 MILES)
- 2. LOW (LOW) BAY (WATERLINE ON 10 MILES)
- 3. LOW (LOW) BAY (WATERLINE ON 5 MILES)
- 4. LOW (LOW) BAY (WATERLINE ON 2 MILES)
- 5. SAND/SHALE BAY
- 6. CLAY SAND BAY
- 7. CLAY SAND BAY
- 8. CLAY SAND BAY
- 9. SAND BAY
- 10. SAND BAY
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- 100. SAND BAY

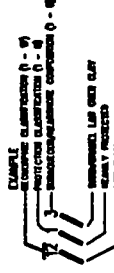
### PROTECTION CLASSIFICATION

- 1. HEAVY PROTECTED
- 2. MODERATELY PROTECTED
- 3. LIGHT PROTECTED
- 4. NO PROTECTION
- 5. UNCLASSIFIED

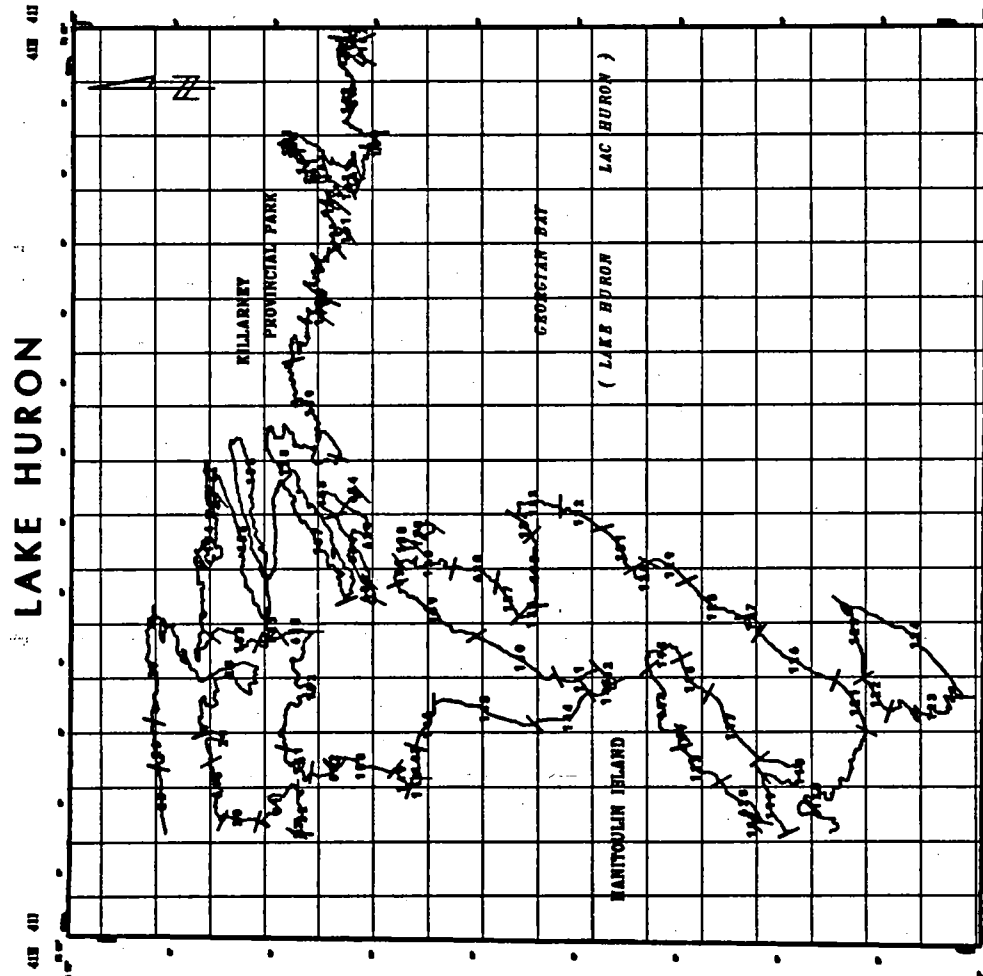
### SUBAQUOUS/NEARSHORE COMPOSITION

- 1. CLAY
- 2. SAND
- 3. SAND/CLAY
- 4. SAND/SHALE
- 5. SAND/SHALE
- 6. SAND/SHALE
- 7. SAND/SHALE
- 8. SAND/SHALE
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- 99. SAND/SHALE
- 100. SAND/SHALE

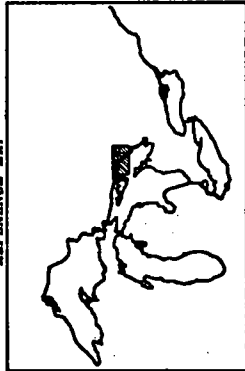
### THREE - TIER CLASSIFICATION



# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION



REFERENCE MAP



## GEOLOGIC CLASSIFICATION

- 1. HIGH (LOW) CLAY (CONCRETION OR NO CLAY)
- 2. HIGH (LOW) CLAY WITH SILT (SAND)
- 3. SILT (SAND) WITH HIGH (LOW) CLAY
- 4. SILT (SAND) WITH SILT (SAND)
- 5. SAND/SILT (CLAY)
- 6. CLAY SAND
- 7. SAND
- 8. SAND GRAVEL
- 9. SANDSTONE - MEDIUM GRAIN
- 10. SANDSTONE (FINE-GRAINED)
- 11. SANDSTONE (MEDIUM-GRAINED)
- 12. SANDSTONE (COARSE-GRAINED)
- 13. SANDSTONE (VERY COARSE-GRAINED)
- 14. SANDSTONE (GRAVEL)
- 15. SANDSTONE (COBBLES)
- 16. SANDSTONE (Boulders)
- 17. SANDSTONE (CLASTIC)
- 18. SANDSTONE (CONGLOMERATE)
- 19. SANDSTONE (BRECCIA)
- 20. SANDSTONE (TUFF)
- 21. SANDSTONE (LIMESTONE)
- 22. SANDSTONE (GYPSEUM)
- 23. SANDSTONE (SALT)
- 24. SANDSTONE (OTHER)

## PROTECTION CLASSIFICATION

- 1. FULLY PROTECTED
- 2. PARTIALLY PROTECTED
- 3. NO PROTECTION
- 4. PROTECTIVE MEASURES
- 5. UNPROTECTED

## SUBAQUEOUS/NEARSHORE COMPOSITION

- 1. CLAY
- 2. SILT
- 3. SANDSTONE, LAC DU ST. LAWRENCE (FINE-GRAINED)
- 4. SANDSTONE (MEDIUM-GRAINED)
- 5. SANDSTONE (COARSE-GRAINED)
- 6. SANDSTONE (VERY COARSE-GRAINED)
- 7. SANDSTONE (GRAVEL)
- 8. SANDSTONE (COBBLES)
- 9. SANDSTONE (Boulders)
- 10. SANDSTONE (CLASTIC)
- 11. SANDSTONE (CONGLOMERATE)
- 12. SANDSTONE (BRECCIA)
- 13. SANDSTONE (TUFF)
- 14. SANDSTONE (LIMESTONE)
- 15. SANDSTONE (GYPSEUM)
- 16. SANDSTONE (SALT)
- 17. SANDSTONE (OTHER)

## THREE - TIER CLASSIFICATION

- 1. CLASS 1
- 2. CLASS 2
- 3. CLASS 3
- 4. CLASS 4
- 5. CLASS 5
- 6. CLASS 6
- 7. CLASS 7
- 8. CLASS 8
- 9. CLASS 9
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418 411  
1992

KILLARNEY PROVINCIAL PARK  
ONTARIO  
SCALE 1 : 100 000

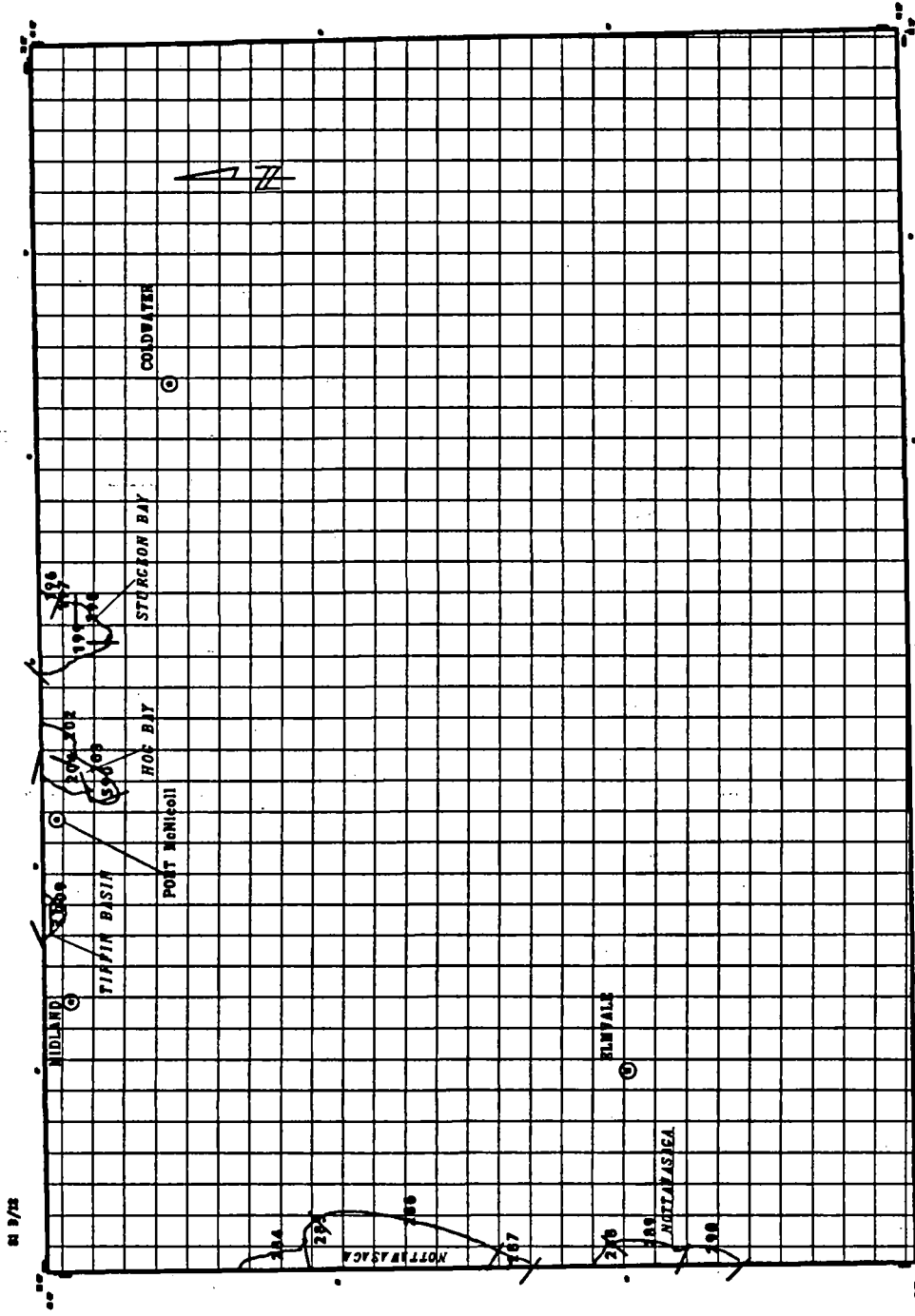
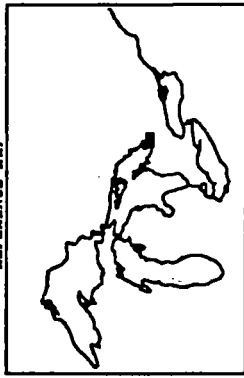
Geomatics International  
1992



# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE HURON

01 9/78



- GEOMORPHIC CLASSIFICATION**
- 1. SAND (DUNE) CLAY (INCORPORATED IN SO SOLO)
  - 2. SAND (DUNE) CLAY (WITH SILT AND SILT)
  - 3. SAND (DUNE) CLAY (WITH SILT AND SILT)
  - 4. SAND (DUNE) CLAY (WITH SILT AND SILT)
  - 5. SAND (DUNE) CLAY (WITH SILT AND SILT)
  - 6. SAND (DUNE) CLAY (WITH SILT AND SILT)
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  - 44. SAND (DUNE) CLAY (WITH SILT AND SILT)
  - 45. SAND (DUNE) CLAY (WITH SILT AND SILT)
  - 46. SAND (DUNE) CLAY (WITH SILT AND SILT)
  - 47. SAND (DUNE) CLAY (WITH SILT AND SILT)
  - 48. SAND (DUNE) CLAY (WITH SILT AND SILT)
  - 49. SAND (DUNE) CLAY (WITH SILT AND SILT)
  - 50. SAND (DUNE) CLAY (WITH SILT AND SILT)

- PROTECTION CLASSIFICATION**
- 1. HEAVY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. LIGHT PROTECTION
  - 4. NO PROTECTION
  - 5. UNDESIRABLE PROTECTION
  - 6. UNCLASSIFIED

- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. UNCLASSIFIED (SAND OVER CLAY)
  - 4. UNCLASSIFIED (SAND OVER SILT)
  - 5. UNCLASSIFIED (SAND OVER SAND)
  - 6. UNCLASSIFIED

- HISTORICAL SHORELINE CHANGE RATE**
- 1. RETREATING (0.01 m/yr)
  - 2. STABLE (0.01 to 0.2 m/yr)
  - 3. ADVANCING (0.2 to 1 m/yr)
  - 4. ADVANCING (1 to 2 m/yr)
  - 5. ADVANCING (2 to 3 m/yr)
  - 6. ADVANCING (3 to 5 m/yr)
  - 7. ADVANCING (5 to 10 m/yr)
  - 8. ADVANCING (10 to 20 m/yr)
  - 9. ADVANCING (20 to 50 m/yr)
  - 10. ADVANCING (50 to 100 m/yr)

- THREE - TIER CLASSIFICATION**

EXAMPLE  
 GEOMORPHIC CLASSIFICATION 0 - 9  
 PROTECTION CLASSIFICATION 0 - 6  
 SUBAQUEOUS/NEARSHORE COMPOSITION 0 - 6  
 HISTORICAL SHORELINE CHANGE RATE 0 - 10



ELMVALE  
 ONTARIO  
 Scale 1:50,000  
 1992

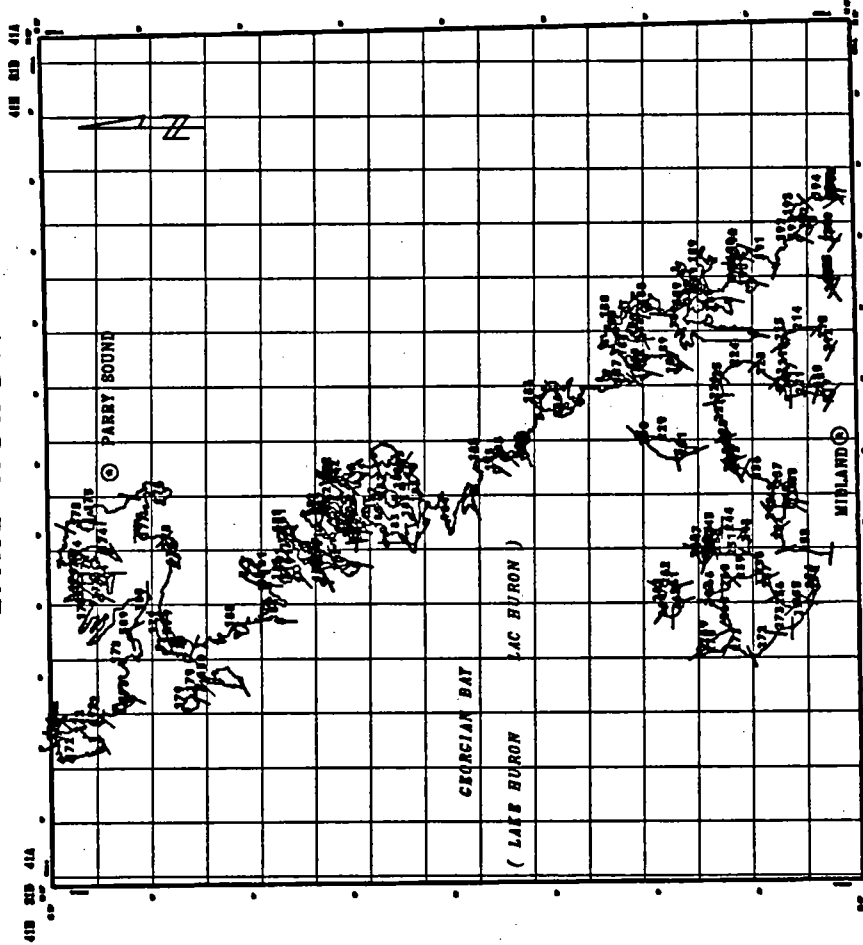
Geomatics International  
 1000  
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# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

REFERENCE MAP



## LAKE HURON



- GEO MORPHIC CLASSIFICATION**
- 1. HIGH (LOW) BAY (SHOULDER) OR ISLAND
  - 2. LOW (HIGH) BAY (SHOULDER) OR ISLAND
  - 3. LOW (HIGH) BAY (SHOULDER) OR ISLAND
  - 4. LOW (HIGH) BAY (SHOULDER) OR ISLAND
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  - 16. LOW (HIGH) BAY (SHOULDER) OR ISLAND
  - 17. LOW (HIGH) BAY (SHOULDER) OR ISLAND
  - 18. LOW (HIGH) BAY (SHOULDER) OR ISLAND
  - 19. LOW (HIGH) BAY (SHOULDER) OR ISLAND
  - 20. LOW (HIGH) BAY (SHOULDER) OR ISLAND

- PROTECTION CLASSIFICATION**
- 1. NEARLY PROTECTED
  - 2. PARTIALLY PROTECTED
  - 3. FULLY PROTECTED
  - 4. UNPROTECTED
  - 5. UNCLASSIFIED

- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. SAND AND SILT
  - 4. SILT AND CLAY
  - 5. SILT
  - 6. UNCLASSIFIED

- THREE - TIER CLASSIFICATION**
- EXAMPLE
- 1. MORPHIC CLASSIFICATION (1 - 20)
  - 2. PROTECTION CLASSIFICATION (1 - 5)
  - 3. SUBAQUEOUS/NEARSHORE COMPOSITION (1 - 6)

MIDLAND  
ONTARIO  
SCALE 1 : 100 000

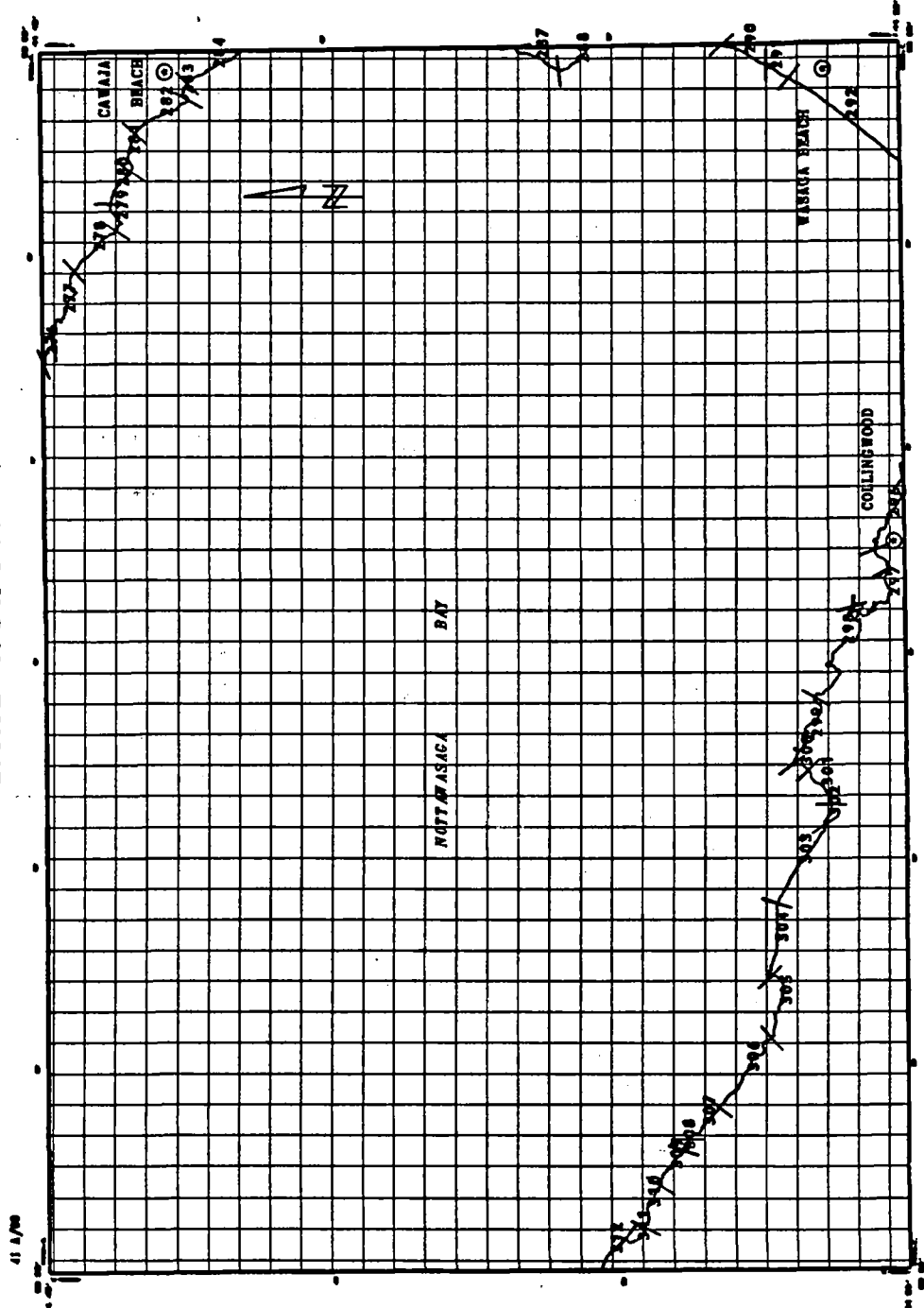
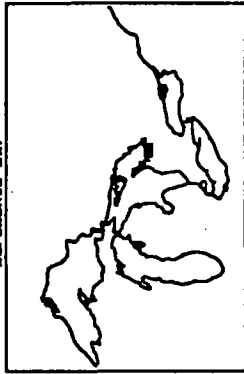


Geographic Information System  
Map of the Great Lakes - St. Lawrence River  
Shoreline Classification

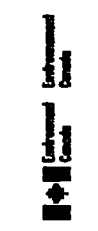
# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE HURON

41 A/90



- GEOMORPHIC CLASSIFICATION**
- 1. LOW CLAY BLT (EXPOSED TO BLK)
  - 2. LOW CLAY BLT (WITH BLK) (M)
  - 3. LOW CLAY BLT (WITH BLK) (M)
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  - 100. LOW CLAY BLT (WITH BLK) (M)
- PROTECTION CLASSIFICATION**
- 1. HEAVY PROTECTED
  - 2. MODERATE PROTECTED
  - 3. LIGHT PROTECTED
  - 4. UNPROTECTED
  - 5. UNPROTECTED
  - 6. UNPROTECTED
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  - 8. UNPROTECTED
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  - 99. UNPROTECTED
  - 100. UNPROTECTED
- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. GRAVEL
  - 4. ROCK
  - 5. CORAL
  - 6. SHELLS
  - 7. SAND
  - 8. SAND
  - 9. SAND
  - 10. SAND
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  - 99. SAND
  - 100. SAND
- HISTORICAL SHORELINE CHANGE RATE**
- 1. 0.00 (0.00 m/yr)
  - 2. 0.01 (0.01 m/yr)
  - 3. 0.02 (0.02 m/yr)
  - 4. 0.03 (0.03 m/yr)
  - 5. 0.04 (0.04 m/yr)
  - 6. 0.05 (0.05 m/yr)
  - 7. 0.06 (0.06 m/yr)
  - 8. 0.07 (0.07 m/yr)
  - 9. 0.08 (0.08 m/yr)
  - 10. 0.09 (0.09 m/yr)
  - 11. 0.10 (0.10 m/yr)
  - 12. 0.11 (0.11 m/yr)
  - 13. 0.12 (0.12 m/yr)
  - 14. 0.13 (0.13 m/yr)
  - 15. 0.14 (0.14 m/yr)
  - 16. 0.15 (0.15 m/yr)
  - 17. 0.16 (0.16 m/yr)
  - 18. 0.17 (0.17 m/yr)
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  - 97. 0.96 (0.96 m/yr)
  - 98. 0.97 (0.97 m/yr)
  - 99. 0.98 (0.98 m/yr)
  - 100. 0.99 (0.99 m/yr)
- THREE - TIER CLASSIFICATION**
- EXAMPLE:  
 1. GEOMORPHIC CLASSIFICATION (1 - 100)  
 2. PROTECTION CLASSIFICATION (1 - 100)  
 3. SUBAQUEOUS/NEARSHORE COMPOSITION (1 - 100)  
 4. HISTORICAL SHORELINE CHANGE RATE (1 - 100)



**NOTTAWASAGA BAY**  
 ONTARIO  
 Scale 1:100,000  
 1992

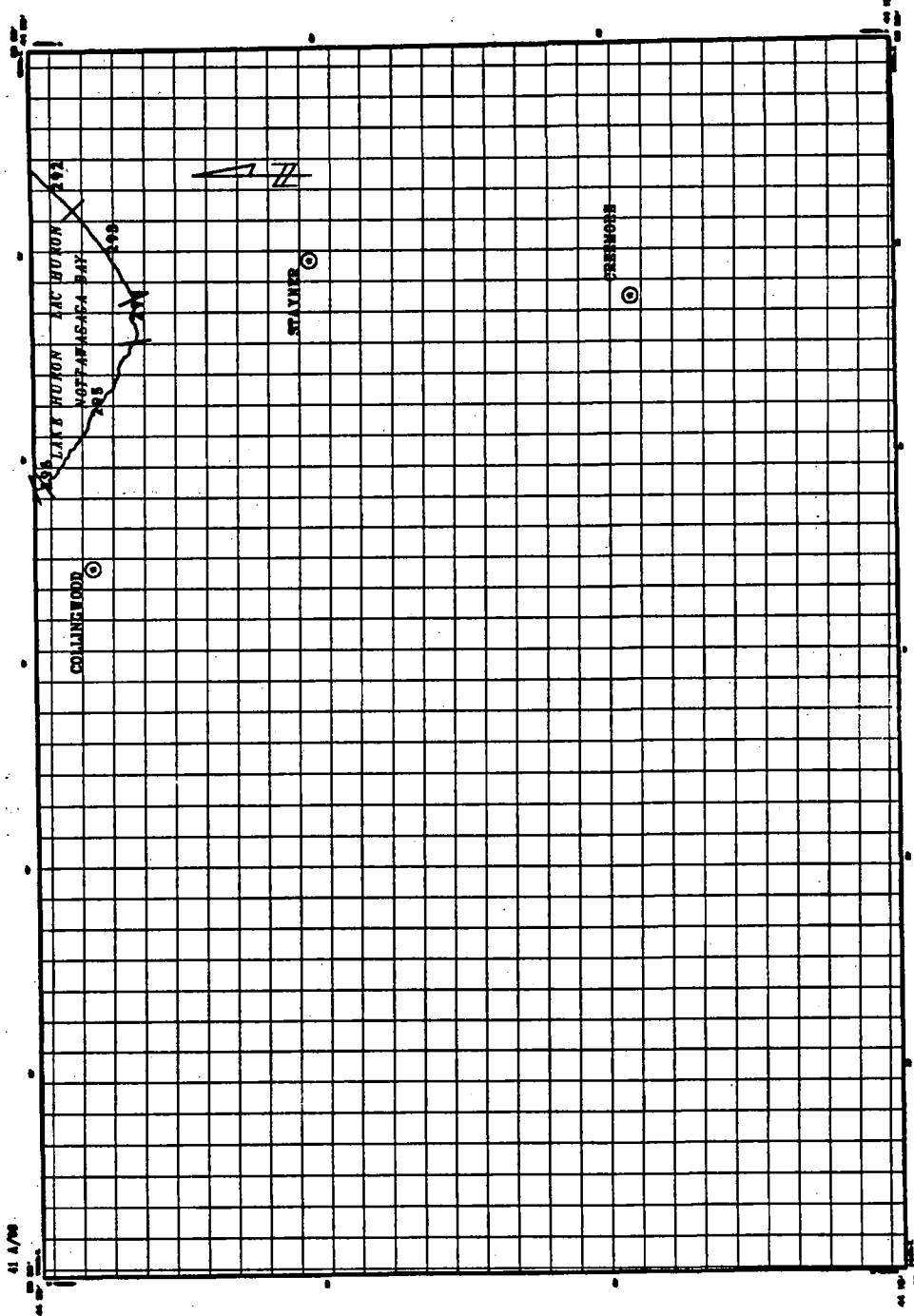
Geographical Information  
 Systems  
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# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE HURON

41 A/98

41 A/98



### GEOMORPHIC CLASSIFICATION

- 1. HIGH (LOW) BAY (INDICATED ON 10 MAP)
- 2. HIGH (LOW) BAY WITH BAY (1-10)
- 3. LOW (HIGH) BAY (INDICATED ON 10 MAP)
- 4. BAY (INDICATED ON 10 MAP)
- 5. BAY (INDICATED ON 10 MAP)
- 6. BAY (INDICATED ON 10 MAP)
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- 20. BAY (INDICATED ON 10 MAP)

### PROTECTION CLASSIFICATION

- 1. FULLY PROTECTED
- 2. PARTIALLY PROTECTED
- 3. NO PROTECTION
- 4. PROTECTION
- 5. NON-PROTECTIVE INTERFERENCES
- 6. UNCLASSIFIED

### SUBAQUEOUS/NEARSHORE COMPOSITION

- 1. CLAY
- 2. SILT
- 3. SAND
- 4. SAND/SILT
- 5. SAND/SILT/CLAY
- 6. SAND/SILT/CLAY/GRAVEL
- 7. SAND/SILT/CLAY/GRAVEL/COBBLES
- 8. SAND/SILT/CLAY/GRAVEL/COBBLES/STONES
- 9. SAND/SILT/CLAY/GRAVEL/COBBLES/STONES/ROCKS
- 10. SAND/SILT/CLAY/GRAVEL/COBBLES/STONES/ROCKS/CLIFFS

### HISTORICAL SHORELINE CHANGE RATE

- 1. RETREATING (1-10 m/yr)
- 2. STABLE (1-10 m/yr)
- 3. ADVANCING (1-10 m/yr)
- 4. STABLE (10-25 m/yr)
- 5. ADVANCING (10-25 m/yr)
- 6. STABLE (25-50 m/yr)
- 7. ADVANCING (25-50 m/yr)
- 8. UNCLASSIFIED

### THREE - TIER CLASSIFICATION

- 1. COMPLETELY PROTECTED (P-1)
- 2. PARTIALLY PROTECTED (P-2)
- 3. UNPROTECTED (P-3)
- 4. UNCLASSIFIED (P-4)
- 5. COMPLETELY PROTECTED (P-5)
- 6. PARTIALLY PROTECTED (P-6)
- 7. UNPROTECTED (P-7)
- 8. UNCLASSIFIED (P-8)
- 9. COMPLETELY PROTECTED (P-9)
- 10. PARTIALLY PROTECTED (P-10)
- 11. UNPROTECTED (P-11)
- 12. UNCLASSIFIED (P-12)



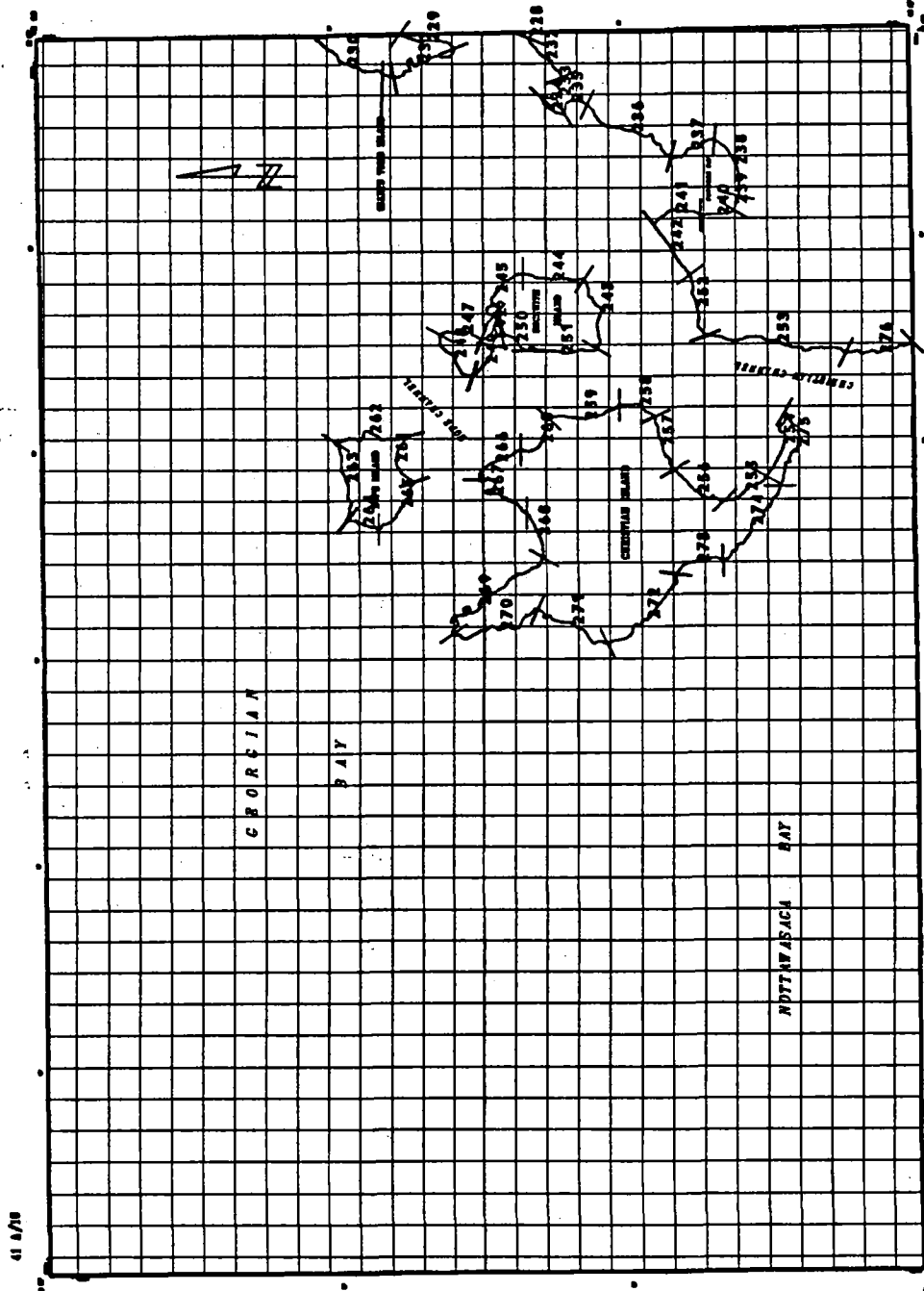
**COLLINGWOOD**  
 ONTARIO  
 Scale 1:100,000  
 1992

Geomatics International  
 1000 Lakeshore Blvd. W.  
 Toronto, Ontario M8Z 1R7  
 Canada

GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

LAKE HURON

41 A/78



41 A/78

REFERENCE MAP



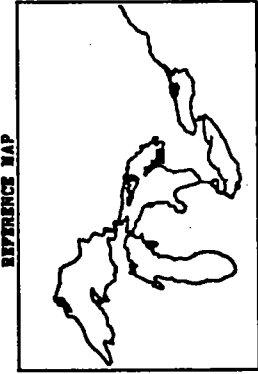
- GEOLOGIC CLASSIFICATION**
    - 1. SAND BEACH (RECORDED OR NOT)
    - 2. SAND BEACH (RECORDED OR NOT)
    - 3. SAND BEACH (RECORDED OR NOT)
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  - PROTECTION CLASSIFICATION**
    - 1. SAND BEACH (RECORDED OR NOT)
    - 2. SAND BEACH (RECORDED OR NOT)
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    - 22. SAND BEACH (RECORDED OR NOT)
    - 23. SAND BEACH (RECORDED OR NOT)
    - 24. SAND BEACH (RECORDED OR NOT)
    - 25. SAND BEACH (RECORDED OR NOT)
  - SUBAQUEOUS/NEARSHORE COMPOSITION**
    - 1. SAND
    - 2. SAND
    - 3. SAND
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  - HISTORICAL SHORELINE CHANGE RATE**
    - 1. SAND BEACH (RECORDED OR NOT)
    - 2. SAND BEACH (RECORDED OR NOT)
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    - 23. SAND BEACH (RECORDED OR NOT)
    - 24. SAND BEACH (RECORDED OR NOT)
    - 25. SAND BEACH (RECORDED OR NOT)
  - THREE - TIER CLASSIFICATION**
    - 1. SAND BEACH (RECORDED OR NOT)
    - 2. SAND BEACH (RECORDED OR NOT)
    - 3. SAND BEACH (RECORDED OR NOT)
    - 4. SAND BEACH (RECORDED OR NOT)
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    - 23. SAND BEACH (RECORDED OR NOT)
    - 24. SAND BEACH (RECORDED OR NOT)
    - 25. SAND BEACH (RECORDED OR NOT)
- EXAMPLE:  
SHORELINE CLASSIFICATION: 0 - 9  
PROTECTION CLASSIFICATION: 0 - 9  
SUBAQUEOUS/NEARSHORE COMPOSITION: 0 - 9  
HISTORICAL SHORELINE CHANGE RATE: 0 - 9  
THREE - TIER CLASSIFICATION: 0 - 9
- 41 A/78  
1992

CHRISTIAN ISLAND  
ONTARIO  
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Vertical datum: 1985

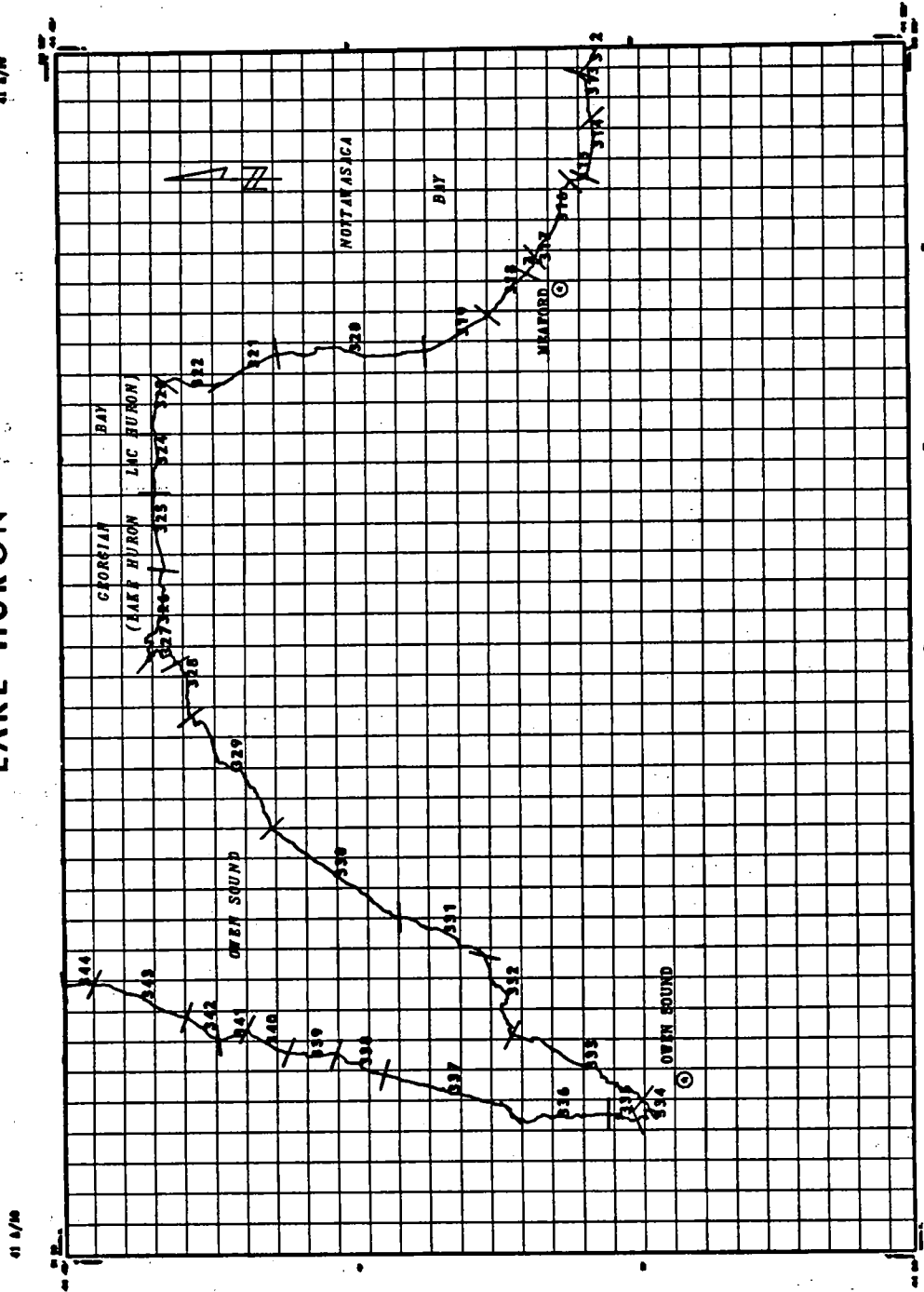
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# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE HURON



41 A/M



**GEOGRAPHIC CLASSIFICATION**

- 1. SAND (S) BAY (SANDSTONE OR SO BEACH)
- 2. SAND (S) BAY (SANDSTONE OR SO BEACH) WITH CLAY (C) BAND
- 3. SAND (S) BAY (SANDSTONE OR SO BEACH) WITH SILT (SI) BAND
- 4. SAND (S) BAY (SANDSTONE OR SO BEACH) WITH SILT (SI) BAND AND CLAY (C) BAND
- 5. SAND (S) BAY (SANDSTONE OR SO BEACH) WITH SILT (SI) BAND AND CLAY (C) BAND AND GRAVEL (G) BAND
- 6. SAND (S) BAY (SANDSTONE OR SO BEACH) WITH SILT (SI) BAND AND CLAY (C) BAND AND GRAVEL (G) BAND AND COARSE SAND (CS) BAND
- 7. SAND (S) BAY (SANDSTONE OR SO BEACH) WITH SILT (SI) BAND AND CLAY (C) BAND AND GRAVEL (G) BAND AND COARSE SAND (CS) BAND AND SILT (SI) BAND
- 8. SAND (S) BAY (SANDSTONE OR SO BEACH) WITH SILT (SI) BAND AND CLAY (C) BAND AND GRAVEL (G) BAND AND COARSE SAND (CS) BAND AND SILT (SI) BAND AND SANDSTONE (ST) BAND
- 9. SAND (S) BAY (SANDSTONE OR SO BEACH) WITH SILT (SI) BAND AND CLAY (C) BAND AND GRAVEL (G) BAND AND COARSE SAND (CS) BAND AND SILT (SI) BAND AND SANDSTONE (ST) BAND AND SANDSTONE (ST) BAND
- 10. SAND (S) BAY (SANDSTONE OR SO BEACH) WITH SILT (SI) BAND AND CLAY (C) BAND AND GRAVEL (G) BAND AND COARSE SAND (CS) BAND AND SILT (SI) BAND AND SANDSTONE (ST) BAND AND SANDSTONE (ST) BAND AND SANDSTONE (ST) BAND

**PROTECTION CLASSIFICATION**

- 1. HEAVY PROTECTED
- 2. MODERATE PROTECTED
- 3. LIGHT PROTECTED
- 4. UNPROTECTED
- 5. UNPROTECTED, PROTECTED
- 6. UNPROTECTED
- 7. UNPROTECTED
- 8. UNPROTECTED
- 9. UNPROTECTED
- 10. UNPROTECTED

**SUBAQUEOUS/NEARSHORE COMPOSITION**

- 1. SAND
- 2. SAND
- 3. SANDSTONE
- 4. SANDSTONE
- 5. SANDSTONE
- 6. SANDSTONE
- 7. SANDSTONE
- 8. SANDSTONE
- 9. SANDSTONE
- 10. SANDSTONE

**HISTORICAL SHORELINE CHANGE RATES**

- 1. 0.1 (0.1 to 0.2 m/yr)
- 2. 0.2 (0.2 to 0.3 m/yr)
- 3. 0.3 (0.3 to 0.4 m/yr)
- 4. 0.4 (0.4 to 0.5 m/yr)
- 5. 0.5 (0.5 to 0.6 m/yr)
- 6. 0.6 (0.6 to 0.7 m/yr)
- 7. 0.7 (0.7 to 0.8 m/yr)
- 8. 0.8 (0.8 to 0.9 m/yr)
- 9. 0.9 (0.9 to 1.0 m/yr)
- 10. 1.0 (1.0 to 1.1 m/yr)

**THREE - TIER CLASSIFICATION**

- 1. UNCLASSIFIED
- 2. UNCLASSIFIED
- 3. UNCLASSIFIED
- 4. UNCLASSIFIED
- 5. UNCLASSIFIED
- 6. UNCLASSIFIED
- 7. UNCLASSIFIED
- 8. UNCLASSIFIED
- 9. UNCLASSIFIED
- 10. UNCLASSIFIED

**EXAMPLE**

- 1. UNCLASSIFIED
- 2. UNCLASSIFIED
- 3. UNCLASSIFIED
- 4. UNCLASSIFIED
- 5. UNCLASSIFIED
- 6. UNCLASSIFIED
- 7. UNCLASSIFIED
- 8. UNCLASSIFIED
- 9. UNCLASSIFIED
- 10. UNCLASSIFIED

41 A/M  
1992

**OWEN SOUND**  
ONTARIO  
Scale 1:100,000  
SHEET 1000

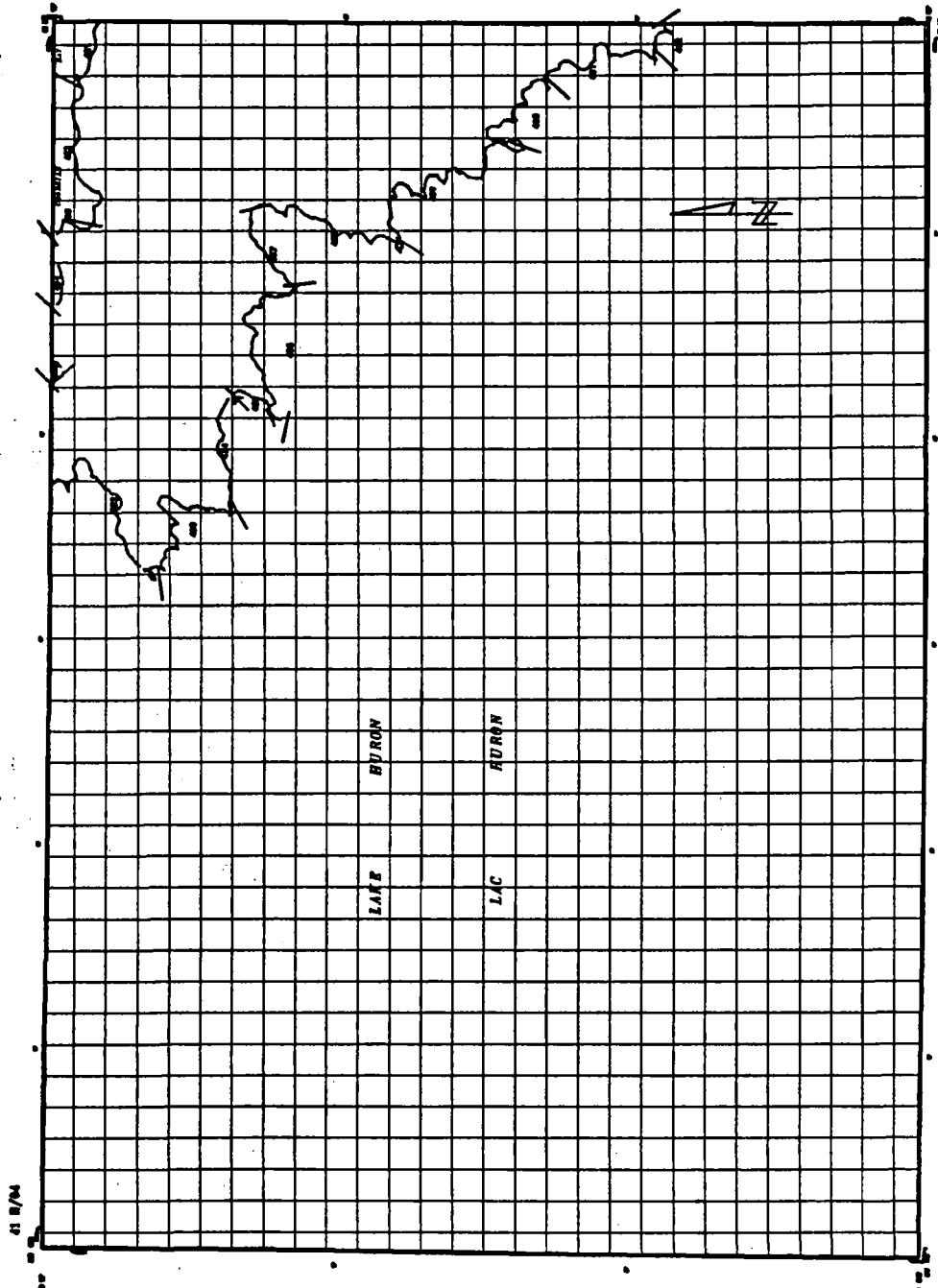


Geomatics International  
Inc.  
100  
100  
100  
100

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE HURON

### REFERENCE MAP



- GEOMORPHIC CLASSIFICATION**
- 1. LOW (LOW) RIFT (INTERIOR OR ON RAMP)
  - 2. LOW (LOW) RIFT (ON RAMP)
  - 3. LOW (LOW) RIFT (ON RAMP)
  - 4. LOW (LOW) RIFT (ON RAMP)
  - 5. LOW (LOW) RIFT (ON RAMP)
  - 6. LOW (LOW) RIFT (ON RAMP)
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  - 44. LOW (LOW) RIFT (ON RAMP)
  - 45. LOW (LOW) RIFT (ON RAMP)
  - 46. LOW (LOW) RIFT (ON RAMP)
  - 47. LOW (LOW) RIFT (ON RAMP)
  - 48. LOW (LOW) RIFT (ON RAMP)
  - 49. LOW (LOW) RIFT (ON RAMP)
  - 50. LOW (LOW) RIFT (ON RAMP)
- PROTECTION CLASSIFICATION**
- 1. FULLY PROTECTED
  - 2. PARTIALLY PROTECTED
  - 3. NO PROTECTION
  - 4. UNDESIRABLE PROTECTION
  - 5. UNDESIRABLE PROTECTION
  - 6. UNDESIRABLE PROTECTION
  - 7. UNDESIRABLE PROTECTION
  - 8. UNDESIRABLE PROTECTION
  - 9. UNDESIRABLE PROTECTION
  - 10. UNDESIRABLE PROTECTION
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  - 29. UNDESIRABLE PROTECTION
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  - 44. UNDESIRABLE PROTECTION
  - 45. UNDESIRABLE PROTECTION
  - 46. UNDESIRABLE PROTECTION
  - 47. UNDESIRABLE PROTECTION
  - 48. UNDESIRABLE PROTECTION
  - 49. UNDESIRABLE PROTECTION
  - 50. UNDESIRABLE PROTECTION
- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. SAND
  - 2. SAND
  - 3. SAND
  - 4. SAND
  - 5. SAND
  - 6. SAND
  - 7. SAND
  - 8. SAND
  - 9. SAND
  - 10. SAND
  - 11. SAND
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  - 45. SAND
  - 46. SAND
  - 47. SAND
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  - 49. SAND
  - 50. SAND
- HISTORICAL SHORELINE CHANGE RATE**
- 1. 0.000000 (0-0.000000)
  - 2. 0.000000 (0-0.000000)
  - 3. 0.000000 (0-0.000000)
  - 4. 0.000000 (0-0.000000)
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  - 48. 0.000000 (0-0.000000)
  - 49. 0.000000 (0-0.000000)
  - 50. 0.000000 (0-0.000000)
- THREE - TIER CLASSIFICATION**
- EXAMPLE CLASSIFICATION P - 97  
 PROTECTION CLASSIFICATION P - 97  
 SUBAQUEOUS/NEARSHORE COMPOSITION C - 10  
 HISTORICAL SHORELINE CHANGE RATE R - 10  
 FULLY PROTECTED  
 LOW PLAIN

**DORCAS BAY**  
 ONTARIO  
 Scale 1:50,000  
 SOURCE: HYDROGRAPHIC SERVICE

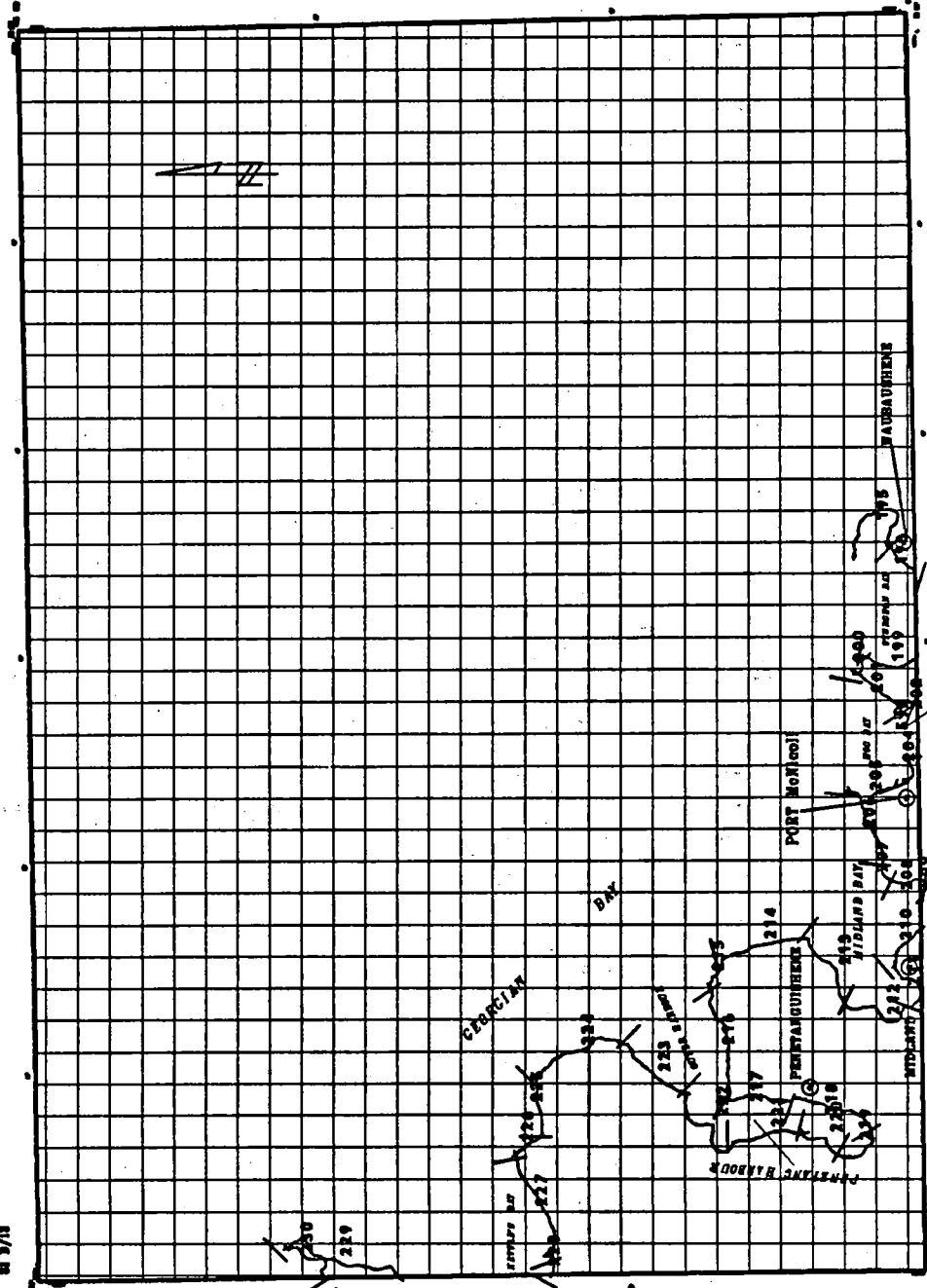
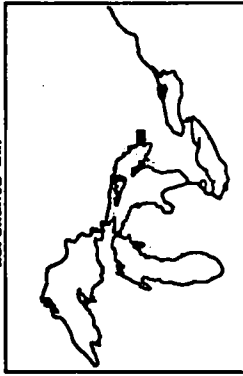
Geospatial Information  
 Inc.  
 1000  
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01 8/94  
 1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE HURON

SI 9/78



### GEOMORPHIC CLASSIFICATION

- 1. HIGH (STEEP) CLIFF (INDICATED BY 20' SCALE)
- 2. MEDIUM (STEEP) CLIFF (INDICATED BY 10' SCALE)
- 3. LOW (SHALLOW) CLIFF (INDICATED BY 5' SCALE)
- 4. SAND/GRIT BANKS
- 5. CLAY BANKS
- 6. SAND/CLAY BANKS
- 7. SAND/CLAY BANKS (WITH VEGETATION)
- 8. SAND/CLAY BANKS (WITH VEGETATION) (WITH PROTECTION)
- 9. SAND/CLAY BANKS (WITH VEGETATION) (WITH PROTECTION) (WITH PROTECTION)
- 10. SAND/CLAY BANKS (WITH VEGETATION) (WITH PROTECTION) (WITH PROTECTION) (WITH PROTECTION)
- 11. SAND/CLAY BANKS (WITH VEGETATION) (WITH PROTECTION) (WITH PROTECTION) (WITH PROTECTION) (WITH PROTECTION)
- 12. SAND/CLAY BANKS (WITH VEGETATION) (WITH PROTECTION) (WITH PROTECTION) (WITH PROTECTION) (WITH PROTECTION) (WITH PROTECTION)

### PROTECTION CLASSIFICATION

- 1. HEAVILY PROTECTED
- 2. MODERATELY PROTECTED
- 3. MINOR PROTECTION
- 4. NO PROTECTION
- 5. NON-PROTECTION PENDING
- 6. UNCLASSIFIED

### SUBAQUEOUS/NEARSHORE COMPOSITION

- 1. SAND
- 2. SILT
- 3. SAND/SILT
- 4. SAND/SILT/CLAY
- 5. SAND/SILT/CLAY (WITH VEGETATION)
- 6. SAND/SILT/CLAY (WITH VEGETATION) (WITH PROTECTION)
- 7. SAND/SILT/CLAY (WITH VEGETATION) (WITH PROTECTION) (WITH PROTECTION)
- 8. SAND/SILT/CLAY (WITH VEGETATION) (WITH PROTECTION) (WITH PROTECTION) (WITH PROTECTION)
- 9. SAND/SILT/CLAY (WITH VEGETATION) (WITH PROTECTION) (WITH PROTECTION) (WITH PROTECTION) (WITH PROTECTION)
- 10. SAND/SILT/CLAY (WITH VEGETATION) (WITH PROTECTION) (WITH PROTECTION) (WITH PROTECTION) (WITH PROTECTION) (WITH PROTECTION)

### HISTORICAL SHORELINE CHANGES RATE

- 1. 0-100' (0-100' per year)
- 2. 100-200' (100-200' per year)
- 3. 200-300' (200-300' per year)
- 4. 300-400' (300-400' per year)
- 5. 400-500' (400-500' per year)
- 6. 500-600' (500-600' per year)
- 7. 600-700' (600-700' per year)
- 8. 700-800' (700-800' per year)
- 9. 800-900' (800-900' per year)
- 10. 900-1000' (900-1000' per year)

### THREE - TIER CLASSIFICATION

- 1. UNCLASSIFIED (0 - 1)
- 2. UNCLASSIFIED (1 - 2)
- 3. UNCLASSIFIED (2 - 3)
- 4. UNCLASSIFIED (3 - 4)
- 5. UNCLASSIFIED (4 - 5)
- 6. UNCLASSIFIED (5 - 6)
- 7. UNCLASSIFIED (6 - 7)
- 8. UNCLASSIFIED (7 - 8)
- 9. UNCLASSIFIED (8 - 9)
- 10. UNCLASSIFIED (9 - 10)



PENETANGUISHENE ONTARIO

Scale 1 : 100 000

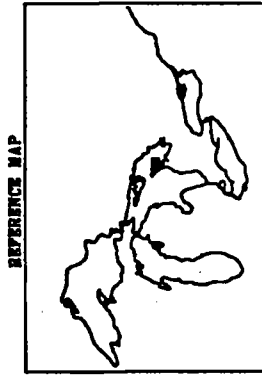
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SI 9/78 1992

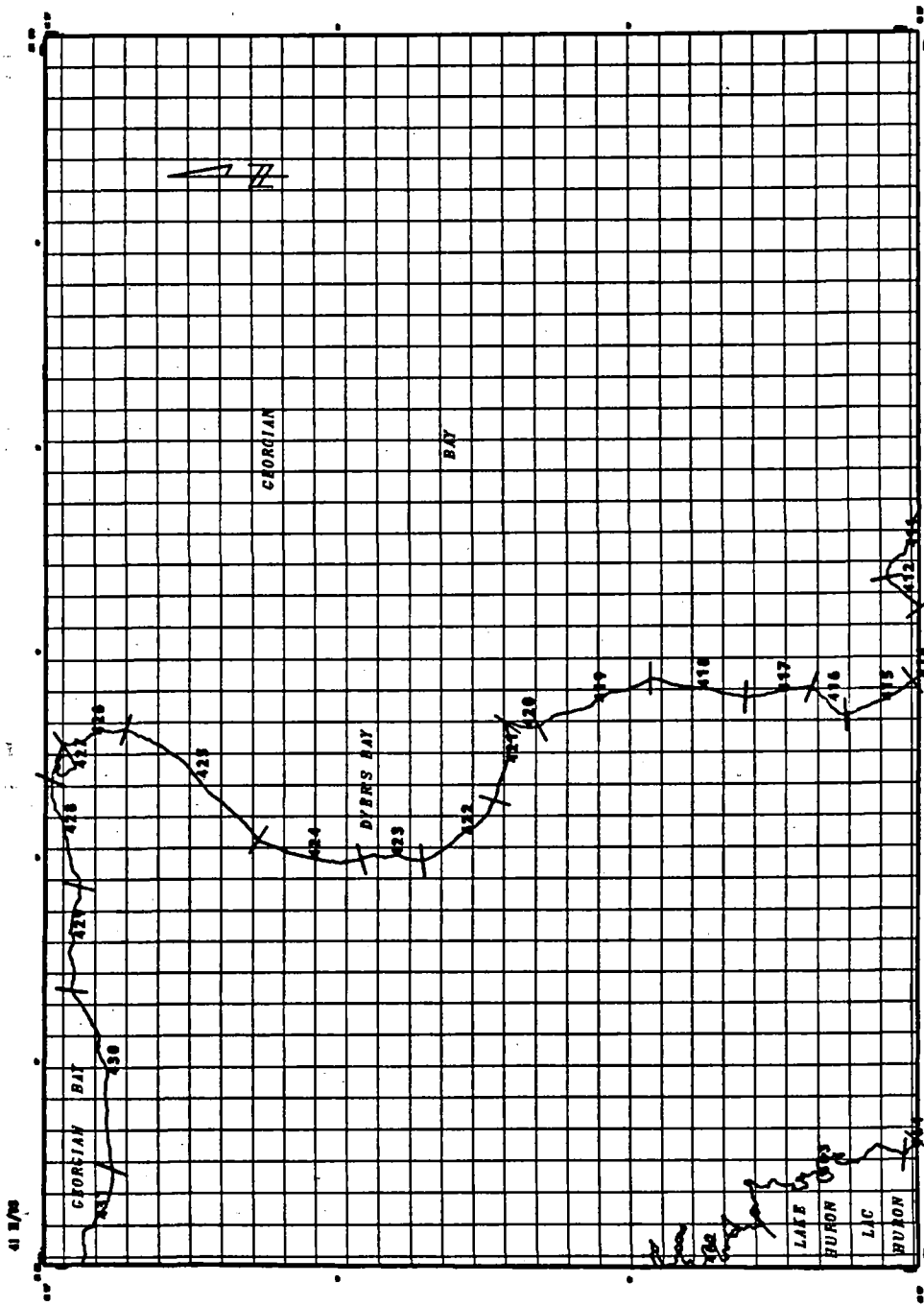


# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE HURON



41 8/78



41 8/78

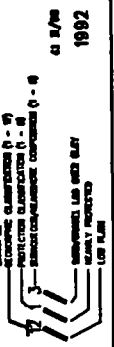
- GEOGRAPHIC CLASSIFICATION**
- 1. SAND BEACH
  - 2. SAND BEACH WITH MUD FLATS
  - 3. SAND BEACH WITH MUD FLATS (W/OUT MUD)
  - 4. SAND BEACH WITH MUD FLATS (W/OUT MUD)
  - 5. SAND BEACH WITH MUD FLATS (W/OUT MUD)
  - 6. SAND BEACH WITH MUD FLATS (W/OUT MUD)
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  - 26. SAND BEACH WITH MUD FLATS (W/OUT MUD)
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  - 28. SAND BEACH WITH MUD FLATS (W/OUT MUD)
  - 29. SAND BEACH WITH MUD FLATS (W/OUT MUD)
  - 30. SAND BEACH WITH MUD FLATS (W/OUT MUD)

- PROTECTION CLASSIFICATION**
- 1. FULLY PROTECTED
  - 2. PARTIALLY PROTECTED
  - 3. NOT PROTECTED
  - 4. UNKNOWN
  - 5. PROTECTABLE
  - 6. NOT PROTECTABLE
  - 7. NOT PROTECTABLE
  - 8. NOT PROTECTABLE
  - 9. NOT PROTECTABLE
  - 10. NOT PROTECTABLE

- SUBSTRATE NEARSHORE COMPOSITION**
- 1. SAND
  - 2. SAND
  - 3. SAND
  - 4. SAND
  - 5. SAND
  - 6. SAND
  - 7. SAND
  - 8. SAND
  - 9. SAND
  - 10. SAND
  - 11. SAND
  - 12. SAND
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  - 19. SAND
  - 20. SAND
  - 21. SAND
  - 22. SAND
  - 23. SAND
  - 24. SAND
  - 25. SAND
  - 26. SAND
  - 27. SAND
  - 28. SAND
  - 29. SAND
  - 30. SAND

- HISTORICAL SHORELINE CHANGE RATE**
- 1. RETREATING
  - 2. STABLE
  - 3. ADVANCING
  - 4. UNKNOWN
  - 5. UNKNOWN
  - 6. UNKNOWN
  - 7. UNKNOWN
  - 8. UNKNOWN
  - 9. UNKNOWN
  - 10. UNKNOWN

- THREE-TIER CLASSIFICATION**
- 1. CLASSIFICATION
  - 2. CLASSIFICATION
  - 3. CLASSIFICATION
  - 4. CLASSIFICATION
  - 5. CLASSIFICATION
  - 6. CLASSIFICATION
  - 7. CLASSIFICATION
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  - 18. CLASSIFICATION
  - 19. CLASSIFICATION
  - 20. CLASSIFICATION



Environment Canada

Environment Canada

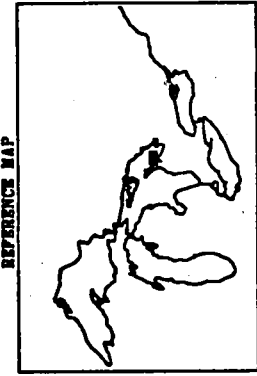
Geographic Information Systems

41 8/78 1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

LAKE HURON

41 A/16



## GEOGRAPHIC CLASSIFICATION

- 1. HIGH CLIFF (SHORELINE 40-50 Meters)
- 2. MEDIUM CLIFF (SHORELINE 20-40 Meters)
- 3. LOW CLIFF (SHORELINE 10-20 Meters)
- 4. SAND/GRIT BEACH (SHORELINE 0-10 Meters)
- 5. CLAY BEACH
- 6. GRAVEL BEACH
- 7. SAND/CLAY BEACH
- 8. SAND/CLAY BEACH (SHORELINE 0-10 Meters)
- 9. SAND/CLAY BEACH (SHORELINE 10-20 Meters)
- 10. SAND/CLAY BEACH (SHORELINE 20-40 Meters)
- 11. SAND/CLAY BEACH (SHORELINE 40-50 Meters)
- 12. SAND/CLAY BEACH (SHORELINE 50-60 Meters)
- 13. SAND/CLAY BEACH (SHORELINE 60-70 Meters)
- 14. SAND/CLAY BEACH (SHORELINE 70-80 Meters)
- 15. SAND/CLAY BEACH (SHORELINE 80-90 Meters)
- 16. SAND/CLAY BEACH (SHORELINE 90-100 Meters)

## PROTECTION CLASSIFICATION

- 1. HEAVY PROTECTED
- 2. MEDIUM PROTECTED
- 3. NO PROTECTION
- 4. UNDESIRABLE PROTECTED
- 5. UNDESIRABLE

## SUBAQUEOUS/NEARSHORE COMPOSITION

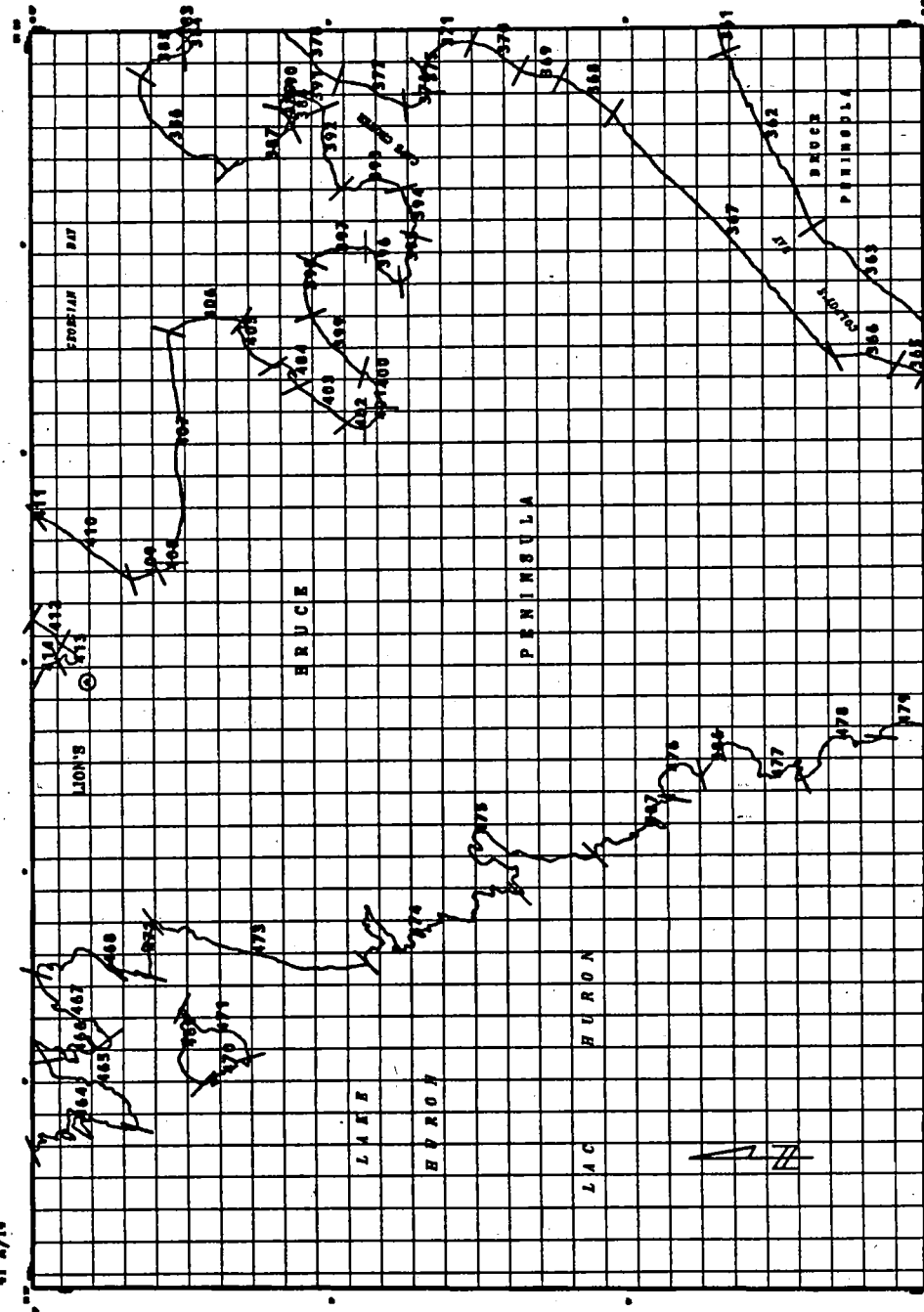
- 1. CLAY
- 2. SAND
- 3. SAND/CLAY
- 4. SAND/CLAY (SHORELINE 0-10 Meters)
- 5. SAND/CLAY (SHORELINE 10-20 Meters)
- 6. SAND/CLAY (SHORELINE 20-40 Meters)
- 7. SAND/CLAY (SHORELINE 40-50 Meters)
- 8. SAND/CLAY (SHORELINE 50-60 Meters)
- 9. SAND/CLAY (SHORELINE 60-70 Meters)
- 10. SAND/CLAY (SHORELINE 70-80 Meters)
- 11. SAND/CLAY (SHORELINE 80-90 Meters)
- 12. SAND/CLAY (SHORELINE 90-100 Meters)

## HISTORICAL SHORELINE CHANGE RATE

- 1. RETreating (0-25 m/yr)
- 2. STABLE (25-50 m/yr)
- 3. ADVancing (50-75 m/yr)
- 4. ADVancing (75-100 m/yr)
- 5. ADVancing (100-150 m/yr)
- 6. ADVancing (150-200 m/yr)
- 7. ADVancing (200-300 m/yr)
- 8. ADVancing (300-500 m/yr)

## THREE - TIER CLASSIFICATION

- 1. UNDESIRABLE PROTECTED (0-9)
- 2. UNDESIRABLE (10-19)
- 3. UNDESIRABLE (20-29)
- 4. UNDESIRABLE (30-39)
- 5. UNDESIRABLE (40-49)
- 6. UNDESIRABLE (50-59)
- 7. UNDESIRABLE (60-69)
- 8. UNDESIRABLE (70-79)
- 9. UNDESIRABLE (80-89)
- 10. UNDESIRABLE (90-99)
- 11. UNDESIRABLE (100-109)
- 12. UNDESIRABLE (110-119)
- 13. UNDESIRABLE (120-129)
- 14. UNDESIRABLE (130-139)
- 15. UNDESIRABLE (140-149)
- 16. UNDESIRABLE (150-159)
- 17. UNDESIRABLE (160-169)
- 18. UNDESIRABLE (170-179)
- 19. UNDESIRABLE (180-189)
- 20. UNDESIRABLE (190-199)



41 A/16

CAPE CROKER  
ONTARIO

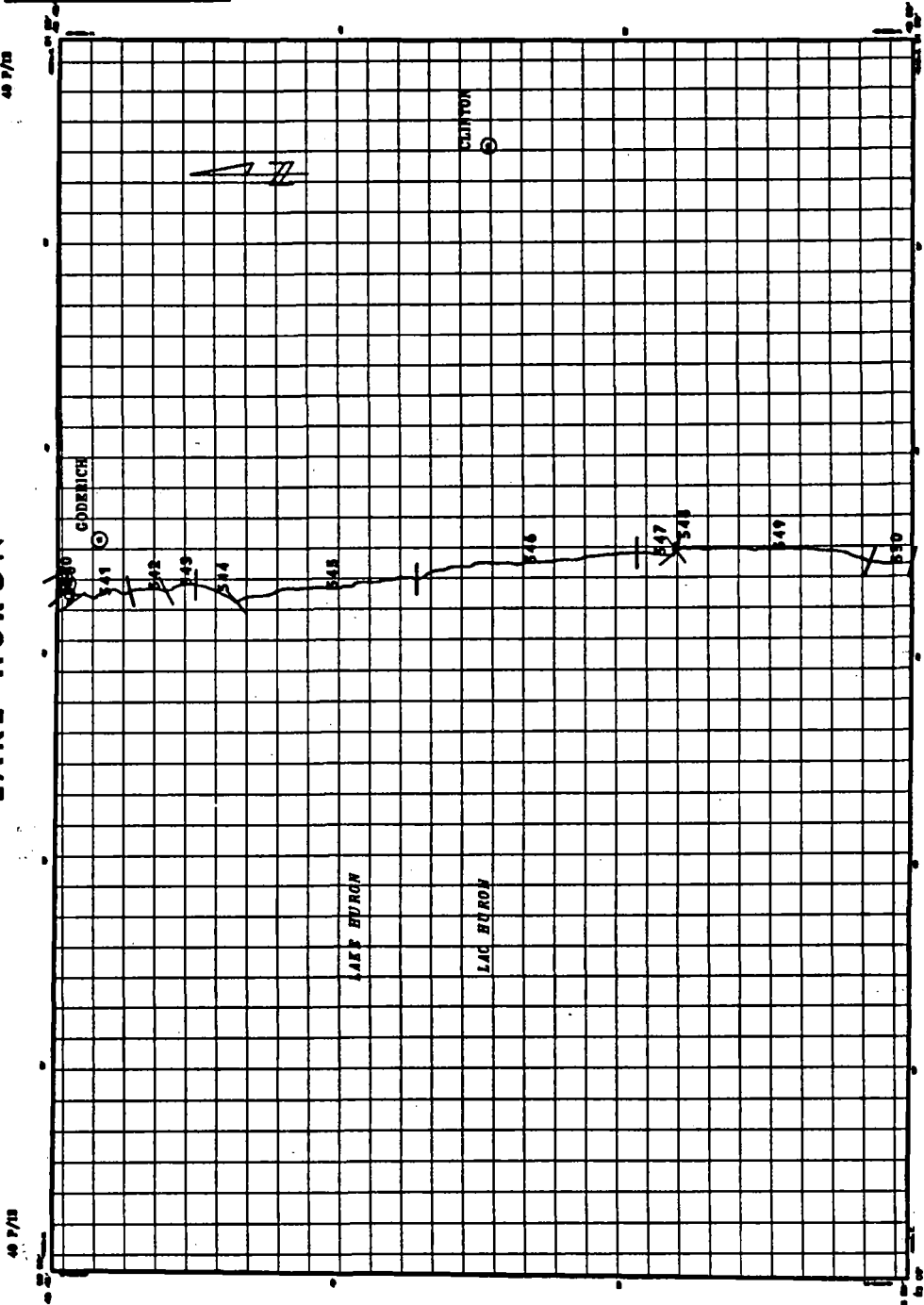
Scale 1:50,000

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# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE HURON



REFERENCE MAP



### GEOGRAPHIC CLASSIFICATION

- 1. SAND BEACH (UNDESIGNED OR NO BEACH)
- 2. SAND BEACH (DESIGNED WITH BEACH GRASS)
- 3. SAND BEACH (DESIGNED WITH ROCKS OR NO BEACH)
- 4. SAND BEACH (DESIGNED WITH ROCKS (SAND))
- 5. SAND BEACH (DESIGNED WITH ROCKS (GRAVEL))
- 6. SAND BEACH (DESIGNED WITH ROCKS (COBBLES))
- 7. SAND BEACH (DESIGNED WITH ROCKS (Boulders))
- 8. SAND BEACH (DESIGNED WITH ROCKS (Large Boulders))
- 9. SAND BEACH (DESIGNED WITH ROCKS (Very Large Boulders))
- 10. SAND BEACH (DESIGNED WITH ROCKS (Very Large Boulders))
- 11. SAND BEACH (DESIGNED WITH ROCKS (Very Large Boulders))
- 12. SAND BEACH (DESIGNED WITH ROCKS (Very Large Boulders))
- 13. SAND BEACH (DESIGNED WITH ROCKS (Very Large Boulders))
- 14. SAND BEACH (DESIGNED WITH ROCKS (Very Large Boulders))
- 15. SAND BEACH (DESIGNED WITH ROCKS (Very Large Boulders))
- 16. SAND BEACH (DESIGNED WITH ROCKS (Very Large Boulders))
- 17. SAND BEACH (DESIGNED WITH ROCKS (Very Large Boulders))
- 18. SAND BEACH (DESIGNED WITH ROCKS (Very Large Boulders))
- 19. SAND BEACH (DESIGNED WITH ROCKS (Very Large Boulders))
- 20. SAND BEACH (DESIGNED WITH ROCKS (Very Large Boulders))

### PROTECTION CLASSIFICATION

- 1. HEAVILY PROTECTED
- 2. MODERATELY PROTECTED
- 3. SLIGHTLY PROTECTED
- 4. NO PROTECTION
- 5. NON-STRUCTURAL PROTECTION
- 6. STRUCTURAL PROTECTION

### SUBSTRATUM/REARSHORE COMPOSITION

- 1. SAND
- 2. SAND AND GRAVEL
- 3. SAND AND GRAVEL
- 4. SAND AND GRAVEL
- 5. SAND AND GRAVEL
- 6. SAND AND GRAVEL
- 7. SAND AND GRAVEL
- 8. SAND AND GRAVEL
- 9. SAND AND GRAVEL
- 10. SAND AND GRAVEL

### HISTORICAL SHORELINE CHANGE RATE

- 1. 0.00 (0.00 to 0.00)
- 2. 0.01 (0.01 to 0.01)
- 3. 0.02 (0.02 to 0.02)
- 4. 0.03 (0.03 to 0.03)
- 5. 0.04 (0.04 to 0.04)
- 6. 0.05 (0.05 to 0.05)
- 7. 0.06 (0.06 to 0.06)
- 8. 0.07 (0.07 to 0.07)
- 9. 0.08 (0.08 to 0.08)
- 10. 0.09 (0.09 to 0.09)

### TIER CLASSIFICATION

- 1. TIER I (0.00 to 0.00)
- 2. TIER II (0.01 to 0.01)
- 3. TIER III (0.02 to 0.02)
- 4. TIER IV (0.03 to 0.03)
- 5. TIER V (0.04 to 0.04)
- 6. TIER VI (0.05 to 0.05)
- 7. TIER VII (0.06 to 0.06)
- 8. TIER VIII (0.07 to 0.07)
- 9. TIER IX (0.08 to 0.08)
- 10. TIER X (0.09 to 0.09)



GODERICH  
ONTARIO  
Scale 1:10,000  
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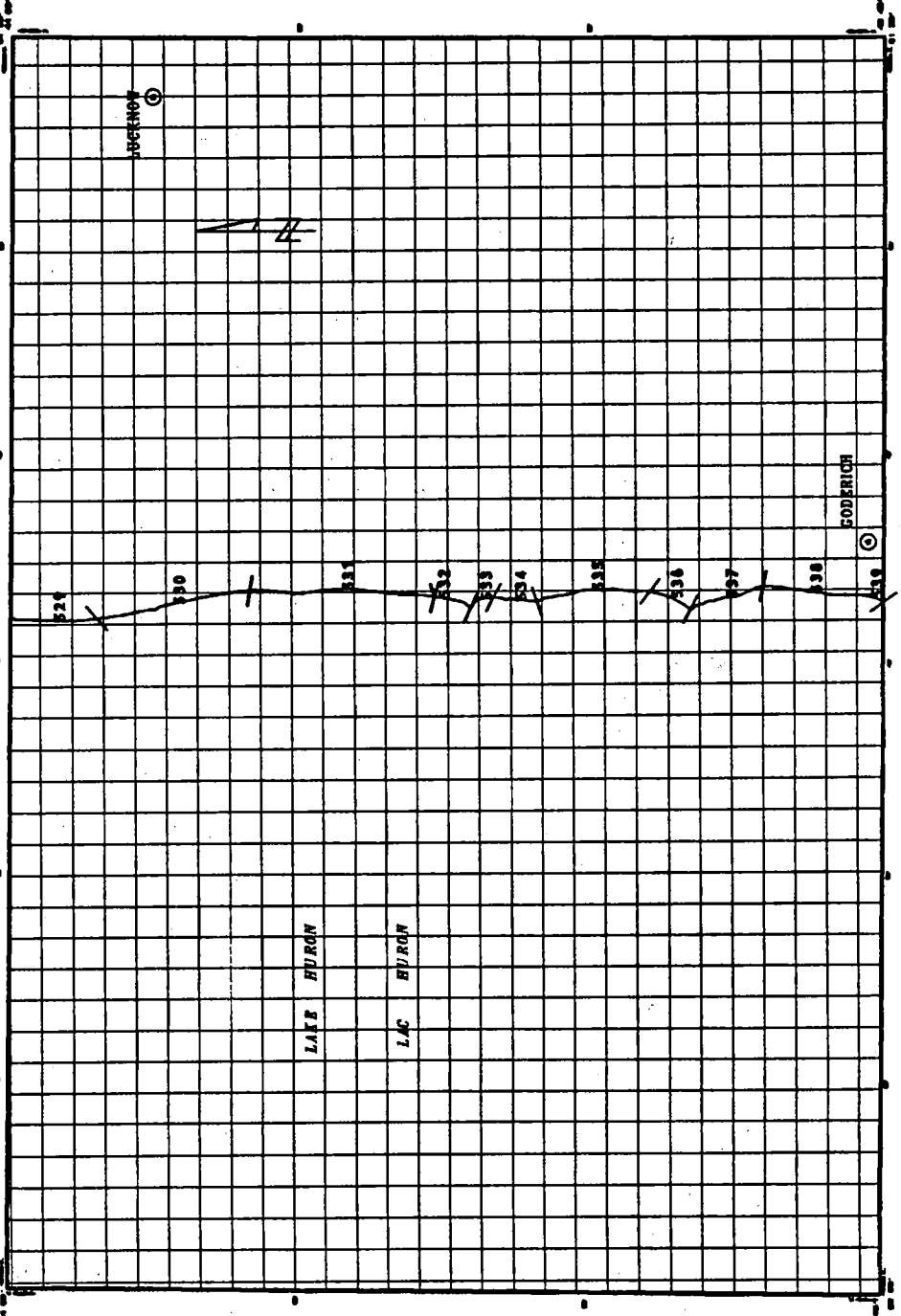
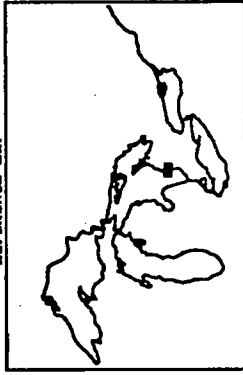
40 7/10  
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1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE HURON

48 7/10

REFERENCE MAP



### GEOMORPHIC CLASSIFICATION

- 1. HIGH (STEEP) SLOPE
- 2. LOW (FLAT) SLOPE
- 3. LOW (FLAT) SLOPE WITH SAND (DUNE)
- 4. SANDY BEACHES
- 5. SANDY BEACHES WITH SAND (DUNE)
- 6. SANDY BEACHES WITH SAND (DUNE) WITH SAND (DUNE)
- 7. SANDY BEACHES WITH SAND (DUNE) WITH SAND (DUNE)
- 8. SANDY BEACHES WITH SAND (DUNE) WITH SAND (DUNE)
- 9. SANDY BEACHES WITH SAND (DUNE) WITH SAND (DUNE)
- 10. SANDY BEACHES WITH SAND (DUNE) WITH SAND (DUNE)
- 11. SANDY BEACHES WITH SAND (DUNE) WITH SAND (DUNE)
- 12. SANDY BEACHES WITH SAND (DUNE) WITH SAND (DUNE)

### PROTECTION CLASSIFICATION

- 1. HEAVILY PROTECTED
- 2. MODERATELY PROTECTED
- 3. SLIGHT PROTECTION
- 4. NO PROTECTION
- 5. UNDESIRABLE PROTECTION
- 6. UNDESIRABLE PROTECTION

### SUBAQUOUS/NEARSHORE COMPOSITION

- 1. CLAY
- 2. SAND
- 3. GRAVEL
- 4. ROCK
- 5. SAND (SAND)
- 6. SAND (SAND)
- 7. SAND (SAND)
- 8. SAND (SAND)

### HISTORICAL SHORELINE CHANGE RATE

- 1. RETREATING (<-1 m/yr)
- 2. STABLE (0 to 1 m/yr)
- 3. ADVANCING (1 to 2 m/yr)
- 4. ADVANCING (>2 m/yr)
- 5. ADVANCING (>2 m/yr)
- 6. ADVANCING (>2 m/yr)
- 7. ADVANCING (>2 m/yr)
- 8. ADVANCING (>2 m/yr)

### THREE - TIER CLASSIFICATION

- 1. EXPOSED (CLASSIFIED 1-4)
- 2. PARTIALLY PROTECTED (CLASSIFIED 5-8)
- 3. HEAVILY PROTECTED (CLASSIFIED 9-12)

LUCKNOW  
ONTARIO

Scale 1 : 25 000  
VERTICAL DATUM: MEAN SEA LEVEL

Geographic Information System  
Map 100000000  
1992

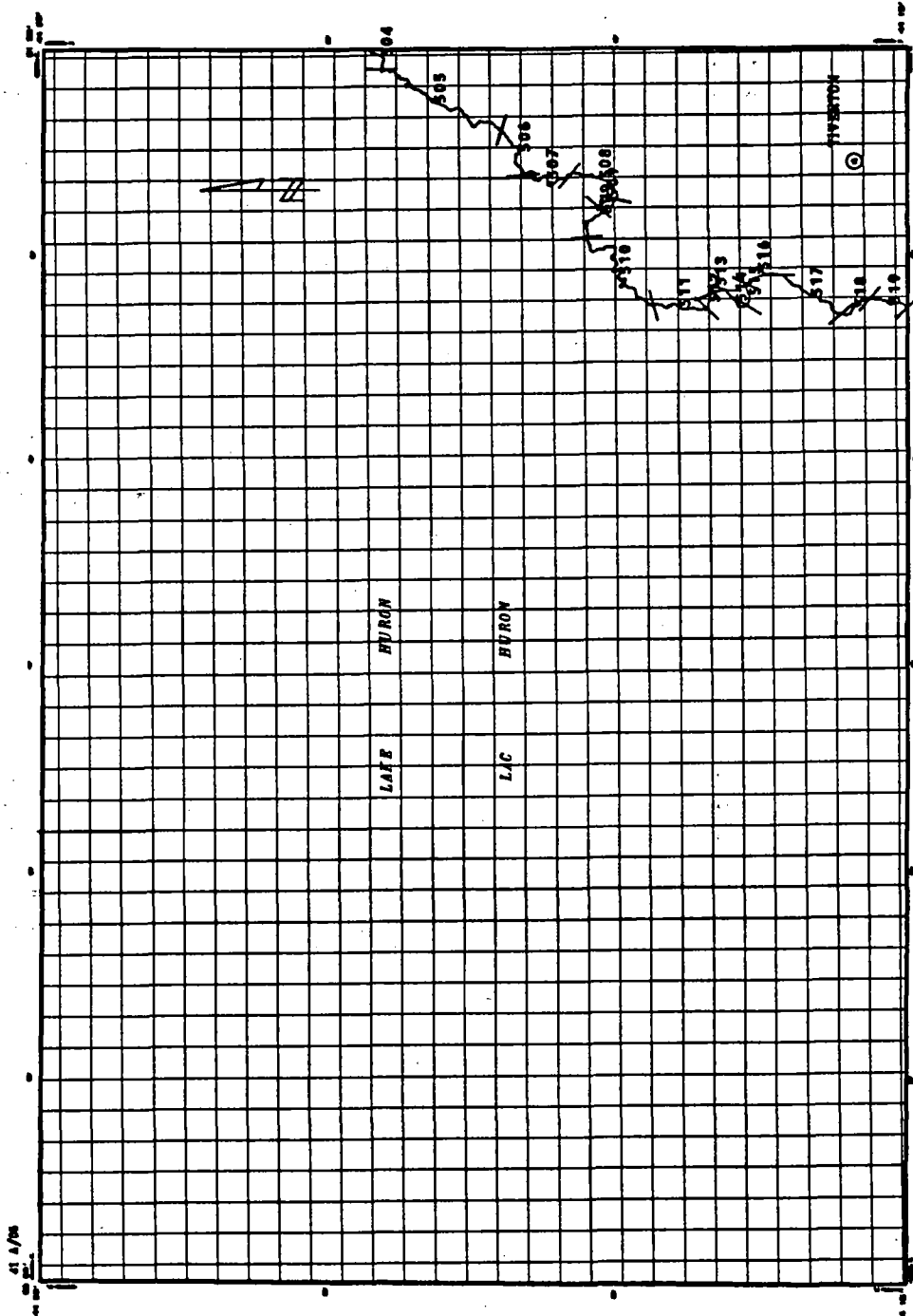


48 7/10  
1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE HURON

41 A/M



41 A/M



- GEOGRAPHIC CLASSIFICATION**
- 1. SAND (SEE NOTE)
  - 2. SILT (SEE NOTE)
  - 3. CLAY (SEE NOTE)
  - 4. SILT AND CLAY (SEE NOTE)
  - 5. SAND AND SILT (SEE NOTE)
  - 6. SAND AND CLAY (SEE NOTE)
  - 7. SAND AND SILT AND CLAY (SEE NOTE)
  - 8. SAND AND SILT AND CLAY AND GRAVEL (SEE NOTE)
  - 9. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES (SEE NOTE)
  - 10. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders (SEE NOTE)
  - 11. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS (SEE NOTE)
  - 12. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL (SEE NOTE)
  - 13. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS (SEE NOTE)
  - 14. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS (SEE NOTE)
  - 15. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS (SEE NOTE)
  - 16. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous (SEE NOTE)
  - 17. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous AND OTHER (SEE NOTE)
  - 18. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous AND OTHER AND UNCLASSIFIED (SEE NOTE)
  - 19. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous AND OTHER AND UNCLASSIFIED AND UNKNOWN (SEE NOTE)
  - 20. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous AND OTHER AND UNCLASSIFIED AND UNKNOWN AND UNIDENTIFIED (SEE NOTE)
  - 21. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous AND OTHER AND UNCLASSIFIED AND UNKNOWN AND UNIDENTIFIED AND UNCLASSIFIED (SEE NOTE)
  - 22. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous AND OTHER AND UNCLASSIFIED AND UNKNOWN AND UNIDENTIFIED AND UNCLASSIFIED AND UNCLASSIFIED (SEE NOTE)
  - 23. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous AND OTHER AND UNCLASSIFIED AND UNKNOWN AND UNIDENTIFIED AND UNCLASSIFIED AND UNCLASSIFIED AND UNCLASSIFIED (SEE NOTE)
  - 24. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous AND OTHER AND UNCLASSIFIED AND UNKNOWN AND UNIDENTIFIED AND UNCLASSIFIED AND UNCLASSIFIED AND UNCLASSIFIED AND UNCLASSIFIED (SEE NOTE)
  - 25. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous AND OTHER AND UNCLASSIFIED AND UNKNOWN AND UNIDENTIFIED AND UNCLASSIFIED AND UNCLASSIFIED AND UNCLASSIFIED AND UNCLASSIFIED (SEE NOTE)
- PROTECTION CLASSIFICATION**
- 1. HEAVILY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. SLIGHTLY PROTECTED
  - 4. UNPROTECTED
  - 5. NON-STRUCTURAL PROTECTION
  - 6. UNCLASSIFIED
- SUBAQUOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. SAND AND SILT
  - 4. SAND AND SILT AND CLAY
  - 5. SAND AND SILT AND CLAY AND GRAVEL
  - 6. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES
  - 7. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders
  - 8. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS
  - 9. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL
  - 10. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS
  - 11. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS
  - 12. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS
  - 13. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous
  - 14. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous AND OTHER
  - 15. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous AND OTHER AND UNCLASSIFIED
  - 16. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous AND OTHER AND UNCLASSIFIED AND UNKNOWN
  - 17. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous AND OTHER AND UNCLASSIFIED AND UNKNOWN AND UNIDENTIFIED
  - 18. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous AND OTHER AND UNCLASSIFIED AND UNKNOWN AND UNIDENTIFIED AND UNCLASSIFIED
  - 19. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous AND OTHER AND UNCLASSIFIED AND UNKNOWN AND UNIDENTIFIED AND UNCLASSIFIED AND UNCLASSIFIED
  - 20. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORAL AND SHELLS AND BRACHIOPOD SHELLS AND CRINOID STALKS AND Fossiliferous AND OTHER AND UNCLASSIFIED AND UNKNOWN AND UNIDENTIFIED AND UNCLASSIFIED AND UNCLASSIFIED AND UNCLASSIFIED
- HISTORICAL SHORELINE CHANGE RATE**
- 1. UNKNOWN (SEE NOTE)
  - 2. STABLE (SEE NOTE)
  - 3. RETREATING (SEE NOTE)
  - 4. ADVANCING (SEE NOTE)
  - 5. RETREATING AND ADVANCING (SEE NOTE)
  - 6. RETREATING AND ADVANCING AND UNCLASSIFIED (SEE NOTE)
  - 7. RETREATING AND ADVANCING AND UNCLASSIFIED AND UNKNOWN (SEE NOTE)
  - 8. RETREATING AND ADVANCING AND UNCLASSIFIED AND UNKNOWN AND UNIDENTIFIED (SEE NOTE)
  - 9. RETREATING AND ADVANCING AND UNCLASSIFIED AND UNKNOWN AND UNIDENTIFIED AND UNCLASSIFIED (SEE NOTE)
  - 10. RETREATING AND ADVANCING AND UNCLASSIFIED AND UNKNOWN AND UNIDENTIFIED AND UNCLASSIFIED AND UNCLASSIFIED (SEE NOTE)
- THREE - TIER CLASSIFICATION**
- 1. PROTECTED CLASSIFICATION (1-5)
  - 2. UNPROTECTED CLASSIFICATION (1-5)
  - 3. UNCLASSIFIED CLASSIFICATION (1-5)
  - 4. UNCLASSIFIED CLASSIFICATION (1-5)
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**TIVERTON**  
 ONTARIO  
 Scale 1:100,000  
 1992

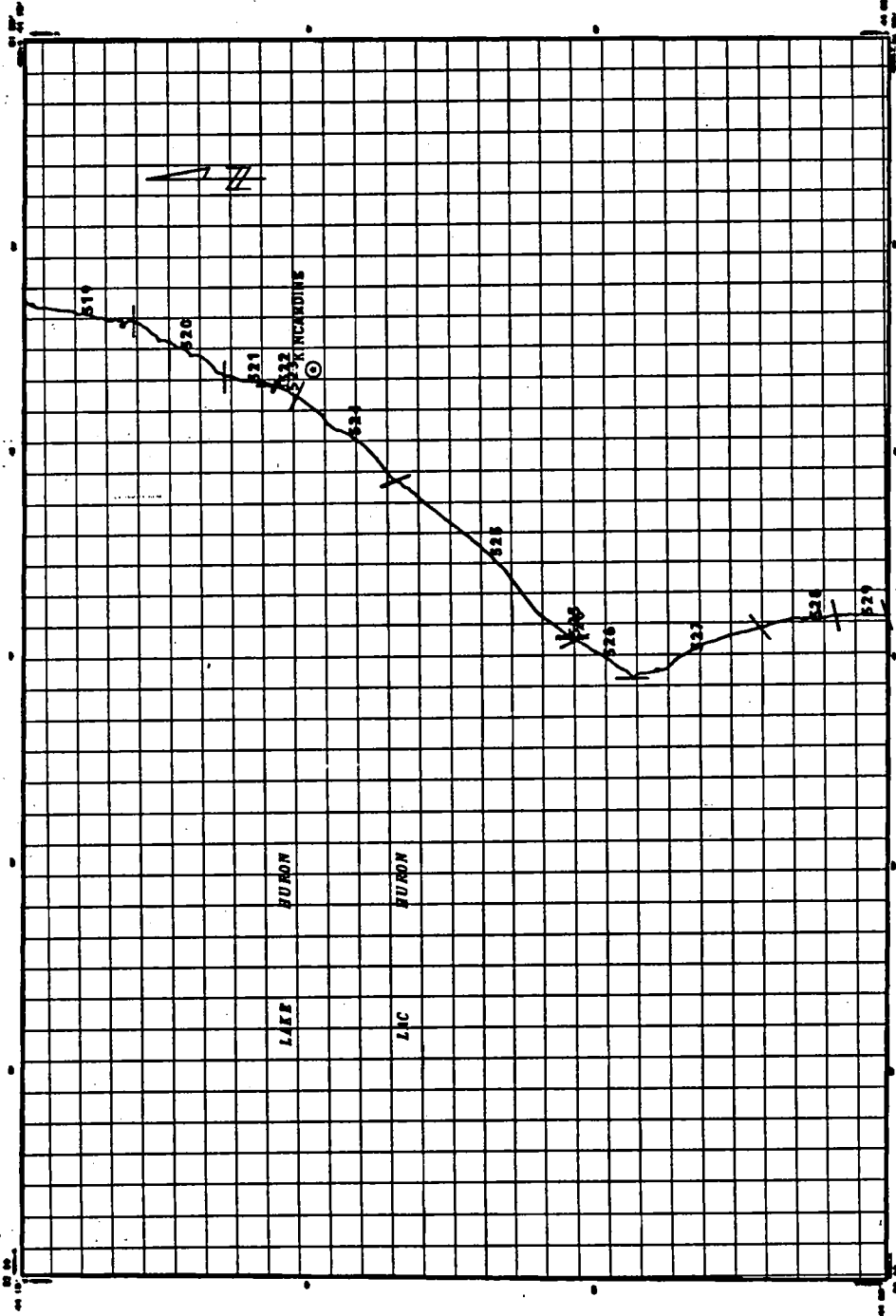


Geospatial Information  
 1000 Lakeshore Blvd. East  
 Suite 100  
 Tiverton, Ontario N0G 1H0  
 519-861-1111

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE HURON

41 A/M



**GEOMORPHIC CLASSIFICATION**

- 1. HIGH CLAY BEACHES (0-10 m)
- 2. MEDIUM CLAY BEACHES (10-20 m)
- 3. LOW CLAY BEACHES (20-30 m)
- 4. SAND BEACHES (30-40 m)
- 5. SAND BEACHES (40-50 m)
- 6. SAND BEACHES (50-60 m)
- 7. SAND BEACHES (60-70 m)
- 8. SAND BEACHES (70-80 m)
- 9. SAND BEACHES (80-90 m)
- 10. SAND BEACHES (90-100 m)
- 11. SAND BEACHES (100-110 m)
- 12. SAND BEACHES (110-120 m)
- 13. SAND BEACHES (120-130 m)
- 14. SAND BEACHES (130-140 m)
- 15. SAND BEACHES (140-150 m)
- 16. SAND BEACHES (150-160 m)
- 17. SAND BEACHES (160-170 m)
- 18. SAND BEACHES (170-180 m)
- 19. SAND BEACHES (180-190 m)
- 20. SAND BEACHES (190-200 m)

**PROTECTION CLASSIFICATION**

- 1. HEAVILY PROTECTED
- 2. MODERATELY PROTECTED
- 3. PROTECTED
- 4. UNPROTECTED
- 5. UNSTRUCTURED PROTECTION
- 6. UNCLASSIFIED

**SUBAQUEOUS/NEARSHORE COMPOSITION**

- 1. CLAY
- 2. SAND
- 3. SAND/CLAY
- 4. SAND/SILT
- 5. SAND/SILT/CLAY
- 6. SAND/SILT/CLAY/SHELL
- 7. SAND/SILT/CLAY/SHELL/SHELL
- 8. SAND/SILT/CLAY/SHELL/SHELL/SHELL
- 9. SAND/SILT/CLAY/SHELL/SHELL/SHELL/SHELL
- 10. SAND/SILT/CLAY/SHELL/SHELL/SHELL/SHELL/SHELL
- 11. SAND/SILT/CLAY/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL
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- 14. SAND/SILT/CLAY/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL
- 15. SAND/SILT/CLAY/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL
- 16. SAND/SILT/CLAY/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL
- 17. SAND/SILT/CLAY/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL
- 18. SAND/SILT/CLAY/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL
- 19. SAND/SILT/CLAY/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL
- 20. SAND/SILT/CLAY/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL/SHELL

**HISTORICAL SHORELINE CHANGE RATE**

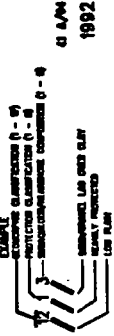
- 1. 1.00 (1.00 m/yr)
- 2. 1.25 (1.25 m/yr)
- 3. 1.50 (1.50 m/yr)
- 4. 1.75 (1.75 m/yr)
- 5. 2.00 (2.00 m/yr)
- 6. 2.25 (2.25 m/yr)
- 7. 2.50 (2.50 m/yr)
- 8. 2.75 (2.75 m/yr)
- 9. 3.00 (3.00 m/yr)
- 10. 3.25 (3.25 m/yr)
- 11. 3.50 (3.50 m/yr)
- 12. 3.75 (3.75 m/yr)
- 13. 4.00 (4.00 m/yr)
- 14. 4.25 (4.25 m/yr)
- 15. 4.50 (4.50 m/yr)
- 16. 4.75 (4.75 m/yr)
- 17. 5.00 (5.00 m/yr)
- 18. 5.25 (5.25 m/yr)
- 19. 5.50 (5.50 m/yr)
- 20. 5.75 (5.75 m/yr)

**THREE - TIER CLASSIFICATION**

- 1. COMPLETELY UNPROTECTED (0 - 1)
- 2. PARTIALLY UNPROTECTED (2 - 3)
- 3. MODERATELY PROTECTED (4 - 5)
- 4. HEAVILY PROTECTED (6 - 7)
- 5. UNCLASSIFIED (8 - 9)

**EXAMPLE**

- 1. COMPLETELY UNPROTECTED (0 - 1)
- 2. PARTIALLY UNPROTECTED (2 - 3)
- 3. MODERATELY PROTECTED (4 - 5)
- 4. HEAVILY PROTECTED (6 - 7)
- 5. UNCLASSIFIED (8 - 9)



**Environmental Engineering Canada**

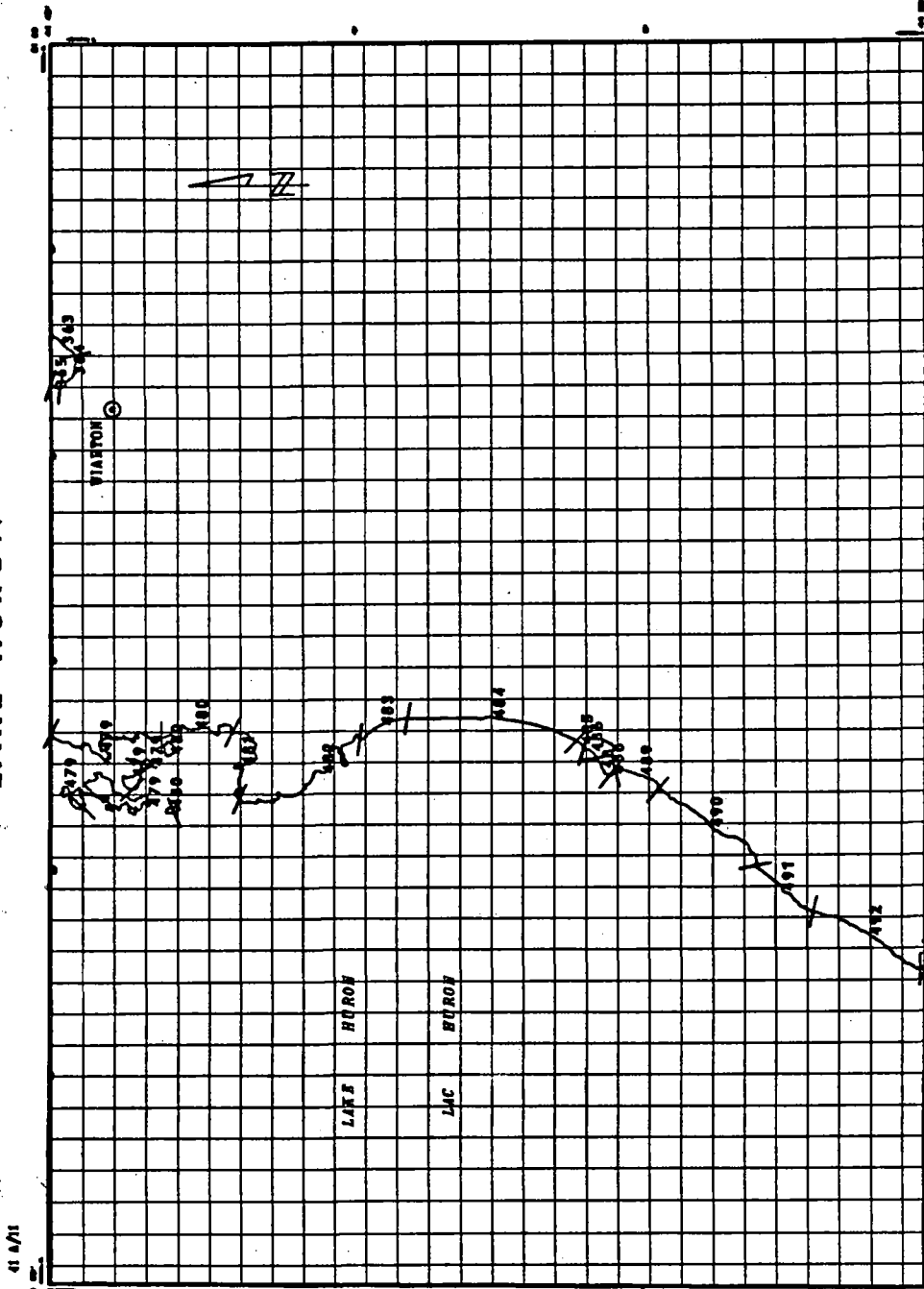
**KINCARDINE ONTARIO**  
Scale 1:1 on one sheet

Geomatics International  
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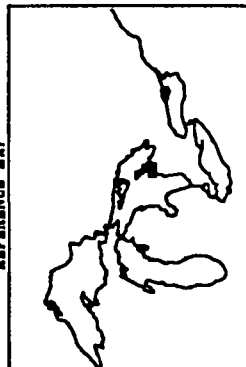
41 A/M  
1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE HURON



REFERENCE MAP



**GEOMORPHIC CLASSIFICATION**

1. HIGH CLIFF (OVERLOOKING OR BEHIND)
2. HIGH CLIFF (FRONT)
3. HIGH CLIFF (SIDE)
4. LOW CLIFF (FRONT)
5. LOW CLIFF (SIDE)
6. SHARP POINT (FRONT)
7. SHARP POINT (SIDE)
8. SANDY BEACH
9. SANDY BEACH (FRONT)
10. SANDY BEACH (SIDE)
11. SANDY BEACH (BEHIND)
12. SANDY BEACH (FRONT/SIDE)
13. SANDY BEACH (FRONT/SIDE)
14. SANDY BEACH (FRONT/SIDE)
15. SANDY BEACH (FRONT/SIDE)
16. SANDY BEACH (FRONT/SIDE)
17. SANDY BEACH (FRONT/SIDE)
18. SANDY BEACH (FRONT/SIDE)
19. SANDY BEACH (FRONT/SIDE)
20. SANDY BEACH (FRONT/SIDE)

**PROTECTION CLASSIFICATION**

1. HEAVY PROTECTED
2. MODERATELY PROTECTED
3. SPARSE PROTECTION
4. NO PROTECTION
5. PROTECTED (OTHER THAN ABOVE)
6. UNCLASSIFIED

**SUBAQUEOUS/NEARSHORE COMPOSITION**

1. CLAY
2. SILT
3. SAND
4. GRAVEL
5. SAND AND GRAVEL
6. SAND AND SILT
7. SAND AND CLAY
8. SAND AND GRAVEL (FRONT/SIDE)
9. SAND AND GRAVEL (FRONT/SIDE)
10. SAND AND GRAVEL (FRONT/SIDE)

**HISTORICAL SHORELINE CHANGE RATE**

1. INCREASING (FRONT)
2. INCREASING (SIDE)
3. INCREASING (BEHIND)
4. STABLE (FRONT)
5. STABLE (SIDE)
6. STABLE (BEHIND)
7. DECREASING (FRONT)
8. DECREASING (SIDE)
9. DECREASING (BEHIND)
10. UNCLASSIFIED

**THREE - TIER CLASSIFICATION**

1. TIER I
2. TIER II
3. TIER III
4. UNCLASSIFIED

EXAMPLE:  
 TIER II - CLASSIFICATION P - 9  
 SUBAQUEOUS/NEARSHORE COMPOSITION P - 8  
 PROTECTION CLASSIFICATION P - 3

41 A/71  
1992

**WIARTON**  
 ONTARIO

Scale 1:100,000  
 METERS / FEET

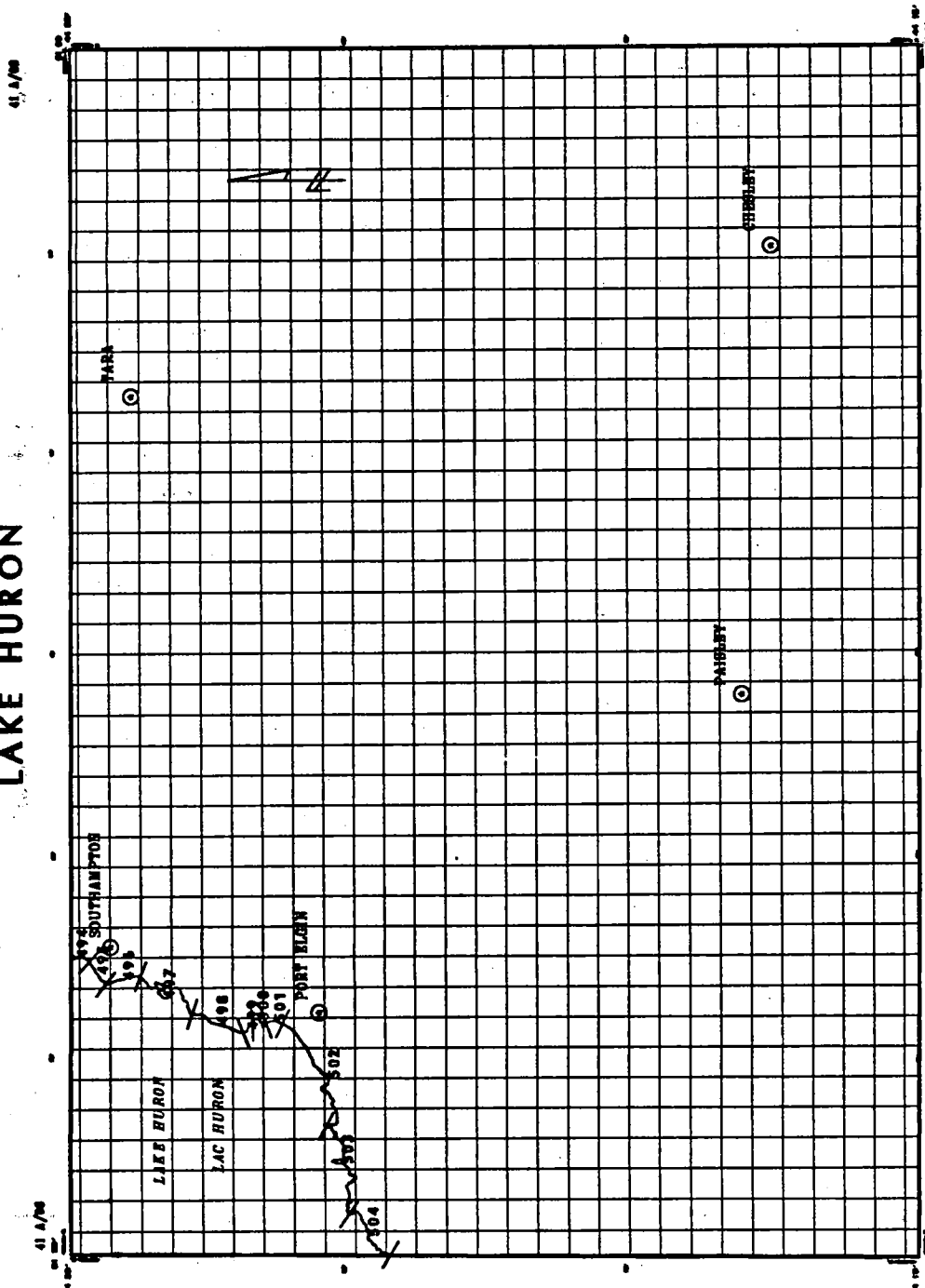
Environmental Canada  
 Environmental Canada

Geomatics International Inc.  
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# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE HURON

### REFERENCE MAP



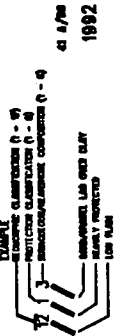
- #### GEOMORPHIC CLASSIFICATION
- 1. VERY LOW BAY (SHOULDER OR TO BEACH)
  - 2. LOW BAY (SHOULDER OR TO BEACH)
  - 3. LOW (SAND) BAY (SHOULDER OR TO BEACH)
  - 4. LOW (SAND) BAY WITH BEACH (TO BEACH)
  - 5. SANDY FULL BAY
  - 6. SANDY BAY
  - 7. SANDY BAY (SHOULDER)
  - 8. CHALKY BAY
  - 9. CHALKY BAY (SHOULDER)
  - 10. SANDY - SANDY BEACH
  - 11. SANDY - SANDY BEACH (SHOULDER)
  - 12. SANDY - SANDY BEACH (SHOULDER)
  - 13. SANDY - SANDY BEACH (SHOULDER)
  - 14. SANDY - SANDY BEACH (SHOULDER)
  - 15. SANDY - SANDY BEACH (SHOULDER)
  - 16. SANDY - SANDY BEACH (SHOULDER)
  - 17. SANDY - SANDY BEACH (SHOULDER)
  - 18. SANDY - SANDY BEACH (SHOULDER)
  - 19. SANDY - SANDY BEACH (SHOULDER)
  - 20. SANDY - SANDY BEACH (SHOULDER)

- #### PROTECTION CLASSIFICATION
- 1. HEAVY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. LIGHT PROTECTION
  - 4. NO PROTECTION
  - 5. PROTECTION
  - 6. PROTECTION
  - 7. PROTECTION

- #### SUBAQUOUS/NEARSHORE COMPOSITION
- 1. CLAY
  - 2. SAND
  - 3. SAND AND SILT
  - 4. SAND AND SILT
  - 5. SAND AND SILT
  - 6. SAND AND SILT
  - 7. SAND AND SILT
  - 8. SAND AND SILT
  - 9. SAND AND SILT
  - 10. SAND AND SILT

- #### HISTORICAL SHORELINE CHANGE RATE
- 1. NO CHANGE (1900-1950)
  - 2. SLIGHT CHANGE (1900-1950)
  - 3. MODERATE CHANGE (1900-1950)
  - 4. MODERATE CHANGE (1900-1950)
  - 5. MODERATE CHANGE (1900-1950)
  - 6. MODERATE CHANGE (1900-1950)
  - 7. MODERATE CHANGE (1900-1950)
  - 8. MODERATE CHANGE (1900-1950)
  - 9. MODERATE CHANGE (1900-1950)
  - 10. MODERATE CHANGE (1900-1950)

- #### THREE - TIER CLASSIFICATION
- EXAMPLE
- 1. SANDY BAY (SHOULDER OR TO BEACH)
  - 2. MODERATELY PROTECTED
  - 3. SAND AND SILT
  - 4. MODERATE CHANGE (1900-1950)
  - 5. MODERATE CHANGE (1900-1950)
  - 6. MODERATE CHANGE (1900-1950)
  - 7. MODERATE CHANGE (1900-1950)
  - 8. MODERATE CHANGE (1900-1950)
  - 9. MODERATE CHANGE (1900-1950)
  - 10. MODERATE CHANGE (1900-1950)



**CHESLEY**  
ONTARIO

Scale 1:100 000

Canadian International  
Map Series

41 A/M 1992

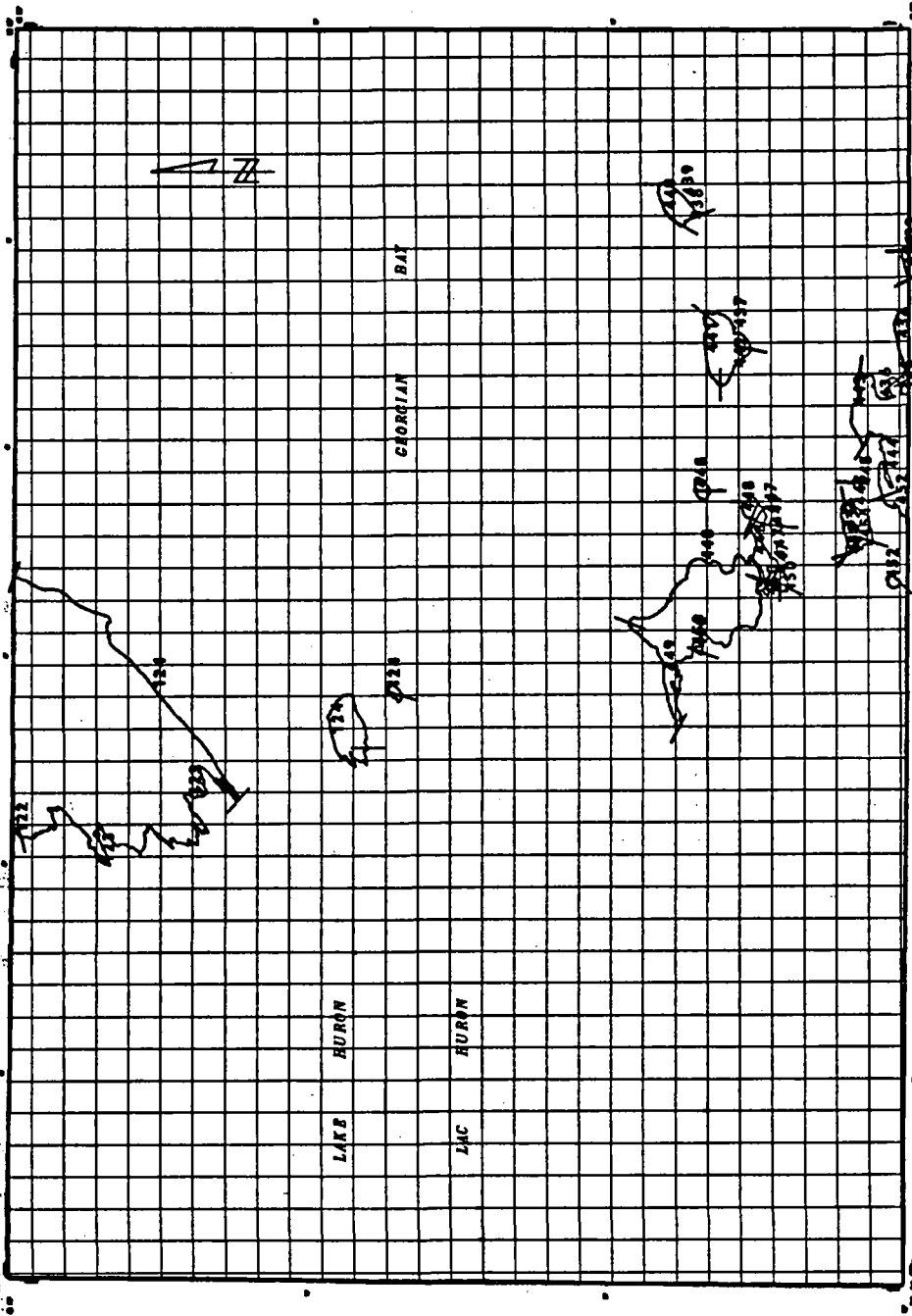


# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE HURON

41 8/86

41 8/86



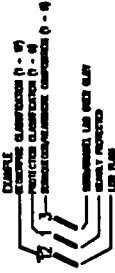
- GEO MORPHIC CLASSIFICATION**
- 1. HIGH CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 2. LOW CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 3. CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 4. CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 5. CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 6. CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 7. CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 8. CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 9. CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 10. CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 11. CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 12. CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 13. CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 14. CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 15. CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 16. CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 17. CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 18. CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 19. CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 20. CLIFF (VERTICAL OR NEARLY VERTICAL)

- PROTECTION CLASSIFICATION**
- 1. HEAVY PROTECTED
  - 2. MODERATE PROTECTED
  - 3. LIGHT PROTECTED
  - 4. NO PROTECTION
  - 5. UN-PROTECTED
  - 6. UN-PROTECTED
  - 7. UN-PROTECTED
  - 8. UN-PROTECTED
  - 9. UN-PROTECTED
  - 10. UN-PROTECTED

- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SILT
  - 3. SAND
  - 4. GRAVEL
  - 5. ROCK
  - 6. CORAL
  - 7. SHELLS
  - 8. OTHER

- HISTORICAL SHORELINE CHANGE RATE**
- 1. RETREATING (1-50 m/yr)
  - 2. STABLE (0-10 m/yr)
  - 3. ADVANCING (10-50 m/yr)
  - 4. RETREATING (50-100 m/yr)
  - 5. ADVANCING (100-500 m/yr)
  - 6. RETREATING (>500 m/yr)
  - 7. ADVANCING (>500 m/yr)

- THREE - TIER CLASSIFICATION**
- 1. CLASS I
  - 2. CLASS II
  - 3. CLASS III



Environment Canada

FLOWERPOT ISLAND  
ONTARIO  
Scale 1:100,000  
SHEETS: 1/100,000

Geomatics International  
100, 1000  
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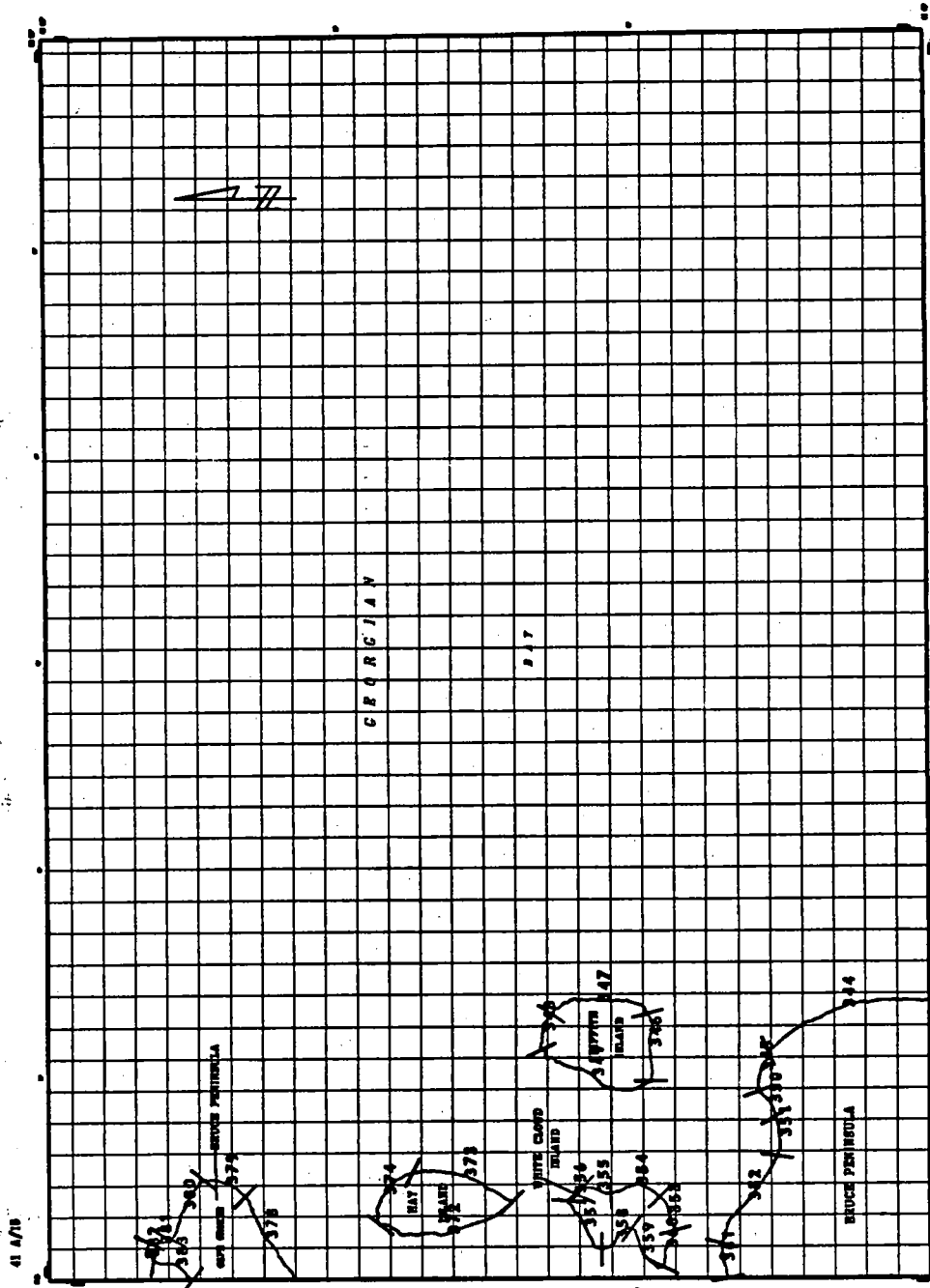
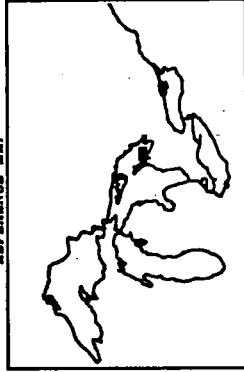
41 8/86  
1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE HURON

41 A/18

REFERENCE MAP



- GEO MORPHIC CLASSIFICATION**
- 1. LOW (SAND) SLT. SUBSTRATE OR NO SLT.
  - 2. LOW (SAND) SLT. WITH SLT. (SAND)
  - 3. LOW (SAND) SLT. WITH SLT. (SAND)
  - 4. LOW (SAND) SLT. WITH SLT. (SAND)
  - 5. LOW (SAND) SLT. WITH SLT. (SAND)
  - 6. CLAY SAND
  - 7. SAND
  - 8. SAND
  - 9. SAND
  - 10. SAND
  - 11. SAND
  - 12. SAND
  - 13. SAND
  - 14. SAND
  - 15. SAND
  - 16. SAND
  - 17. SAND
  - 18. SAND
  - 19. SAND
  - 20. SAND

- PROTECTION CLASSIFICATION**
- 1. SLIGHTLY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. MODERATELY PROTECTED
  - 4. MODERATELY PROTECTED
  - 5. MODERATELY PROTECTED
  - 6. MODERATELY PROTECTED
  - 7. MODERATELY PROTECTED
  - 8. MODERATELY PROTECTED
  - 9. MODERATELY PROTECTED
  - 10. MODERATELY PROTECTED

- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. SAND
  - 4. SAND
  - 5. SAND
  - 6. SAND
  - 7. SAND
  - 8. SAND
  - 9. SAND
  - 10. SAND

- HISTORICAL SHORELINE CHANGE RATE**
- 1. 0.1 (0.1 to 0.2 m/yr)
  - 2. 0.2 (0.2 to 0.3 m/yr)
  - 3. 0.3 (0.3 to 0.4 m/yr)
  - 4. 0.4 (0.4 to 0.5 m/yr)
  - 5. 0.5 (0.5 to 0.6 m/yr)
  - 6. 0.6 (0.6 to 0.7 m/yr)
  - 7. 0.7 (0.7 to 0.8 m/yr)
  - 8. 0.8 (0.8 to 0.9 m/yr)
  - 9. 0.9 (0.9 to 1.0 m/yr)
  - 10. 1.0 (1.0 to 1.1 m/yr)

- THREE - TIER CLASSIFICATION**
- 1. CLASS 1 (CLASS 1 - 1)
  - 2. CLASS 2 (CLASS 2 - 2)
  - 3. CLASS 3 (CLASS 3 - 3)
  - 4. CLASS 4 (CLASS 4 - 4)
  - 5. CLASS 5 (CLASS 5 - 5)
  - 6. CLASS 6 (CLASS 6 - 6)
  - 7. CLASS 7 (CLASS 7 - 7)
  - 8. CLASS 8 (CLASS 8 - 8)
  - 9. CLASS 9 (CLASS 9 - 9)
  - 10. CLASS 10 (CLASS 10 - 10)

41 A/18  
1992

## WHITE CLOUD ISLAND ONTARIO

Scale 1:100,000  
Vertical Interval 10m

Geomatics International  
1000  
1000  
1000



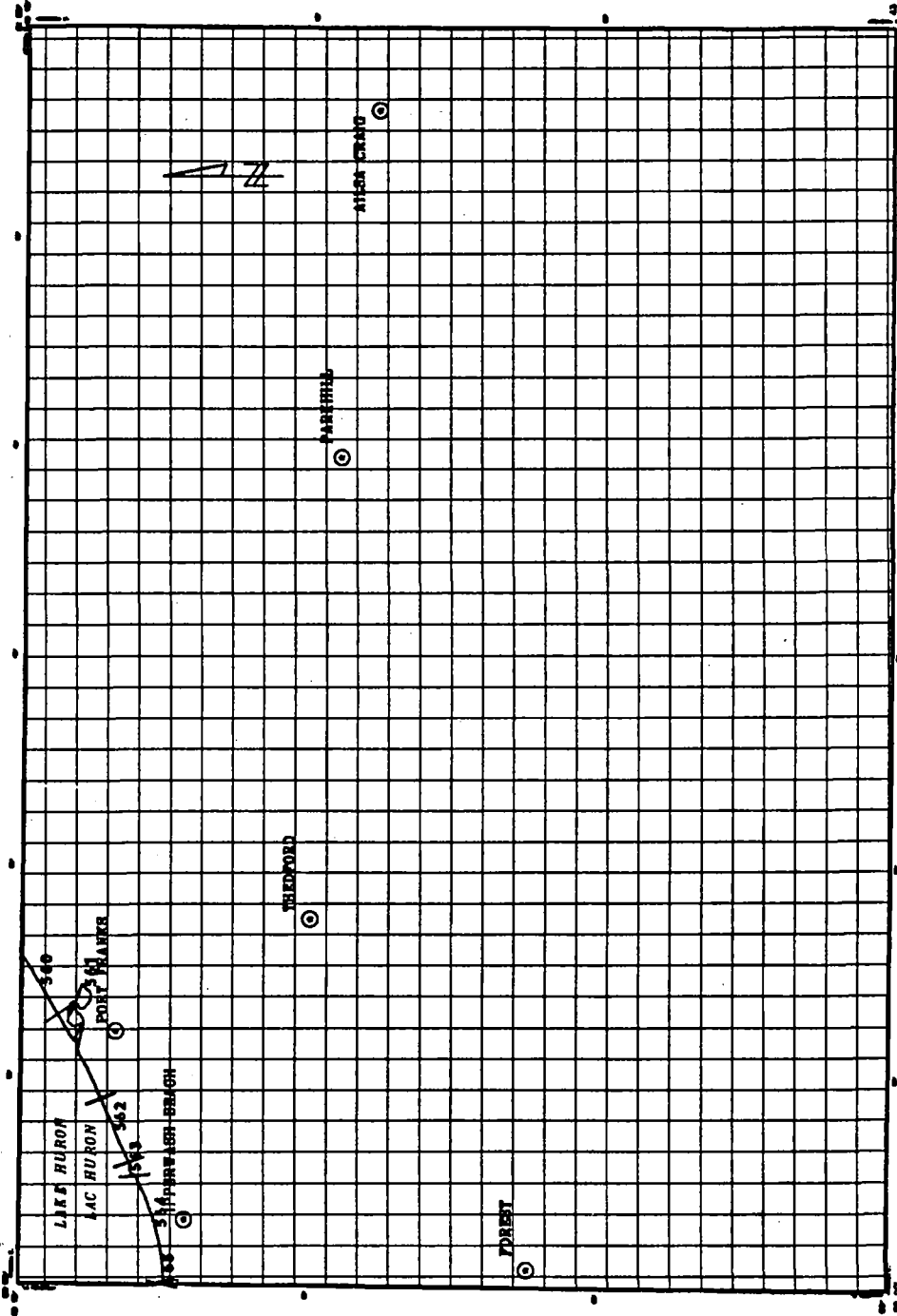
# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE HURON

40 P/M



40 P/M



- GEOMORPHIC CLASSIFICATION**
- 1. HIGH POINT (HURON)
  - 2. HIGH POINT (LAKE HURON)
  - 3. HIGH POINT (ST. LAWRENCE RIVER)
  - 4. HIGH POINT (MICHIGAN)
  - 5. HIGH POINT (ONTARIO)
  - 6. HIGH POINT (QUEBEC)
  - 7. HIGH POINT (NEW BRUNSWICK)
  - 8. HIGH POINT (NEWFOUNDLAND)
  - 9. HIGH POINT (ATLANTIC)
  - 10. HIGH POINT (PACIFIC)
  - 11. HIGH POINT (ARCTIC)
  - 12. HIGH POINT (ANTARCTIC)
  - 13. HIGH POINT (SUBANTARCTIC)
  - 14. HIGH POINT (TROPICAL)
  - 15. HIGH POINT (SUBTROPICAL)
  - 16. HIGH POINT (TEMPERATE)
  - 17. HIGH POINT (COLD)
  - 18. HIGH POINT (WET)
  - 19. HIGH POINT (DRY)
  - 20. HIGH POINT (WET/DRY)
  - 21. HIGH POINT (WET/DRY)
  - 22. HIGH POINT (WET/DRY)
  - 23. HIGH POINT (WET/DRY)
  - 24. HIGH POINT (WET/DRY)
  - 25. HIGH POINT (WET/DRY)
  - 26. HIGH POINT (WET/DRY)
  - 27. HIGH POINT (WET/DRY)
  - 28. HIGH POINT (WET/DRY)
  - 29. HIGH POINT (WET/DRY)
  - 30. HIGH POINT (WET/DRY)

- PROTECTION CLASSIFICATION**
- 1. HIGH POINT
  - 2. HIGH POINT
  - 3. HIGH POINT
  - 4. HIGH POINT
  - 5. HIGH POINT
  - 6. HIGH POINT
  - 7. HIGH POINT
  - 8. HIGH POINT
  - 9. HIGH POINT
  - 10. HIGH POINT
  - 11. HIGH POINT
  - 12. HIGH POINT
  - 13. HIGH POINT
  - 14. HIGH POINT
  - 15. HIGH POINT
  - 16. HIGH POINT
  - 17. HIGH POINT
  - 18. HIGH POINT
  - 19. HIGH POINT
  - 20. HIGH POINT

- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. GRAVEL
  - 4. SILT
  - 5. MUD
  - 6. COARSE SAND
  - 7. FINE SAND
  - 8. SILT
  - 9. MUD
  - 10. COARSE SAND
  - 11. FINE SAND
  - 12. SILT
  - 13. MUD
  - 14. COARSE SAND
  - 15. FINE SAND
  - 16. SILT
  - 17. MUD
  - 18. COARSE SAND
  - 19. FINE SAND
  - 20. SILT

- HISTORICAL SHORELINES CHANGE RATE**
- 1. CLAY
  - 2. SAND
  - 3. GRAVEL
  - 4. SILT
  - 5. MUD
  - 6. COARSE SAND
  - 7. FINE SAND
  - 8. SILT
  - 9. MUD
  - 10. COARSE SAND
  - 11. FINE SAND
  - 12. SILT
  - 13. MUD
  - 14. COARSE SAND
  - 15. FINE SAND
  - 16. SILT
  - 17. MUD
  - 18. COARSE SAND
  - 19. FINE SAND
  - 20. SILT

- THREE - TIER CLASSIFICATION**
- 1. CLAY
  - 2. SAND
  - 3. GRAVEL
  - 4. SILT
  - 5. MUD
  - 6. COARSE SAND
  - 7. FINE SAND
  - 8. SILT
  - 9. MUD
  - 10. COARSE SAND
  - 11. FINE SAND
  - 12. SILT
  - 13. MUD
  - 14. COARSE SAND
  - 15. FINE SAND
  - 16. SILT
  - 17. MUD
  - 18. COARSE SAND
  - 19. FINE SAND
  - 20. SILT

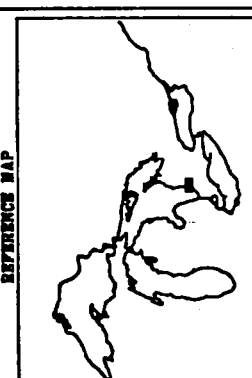
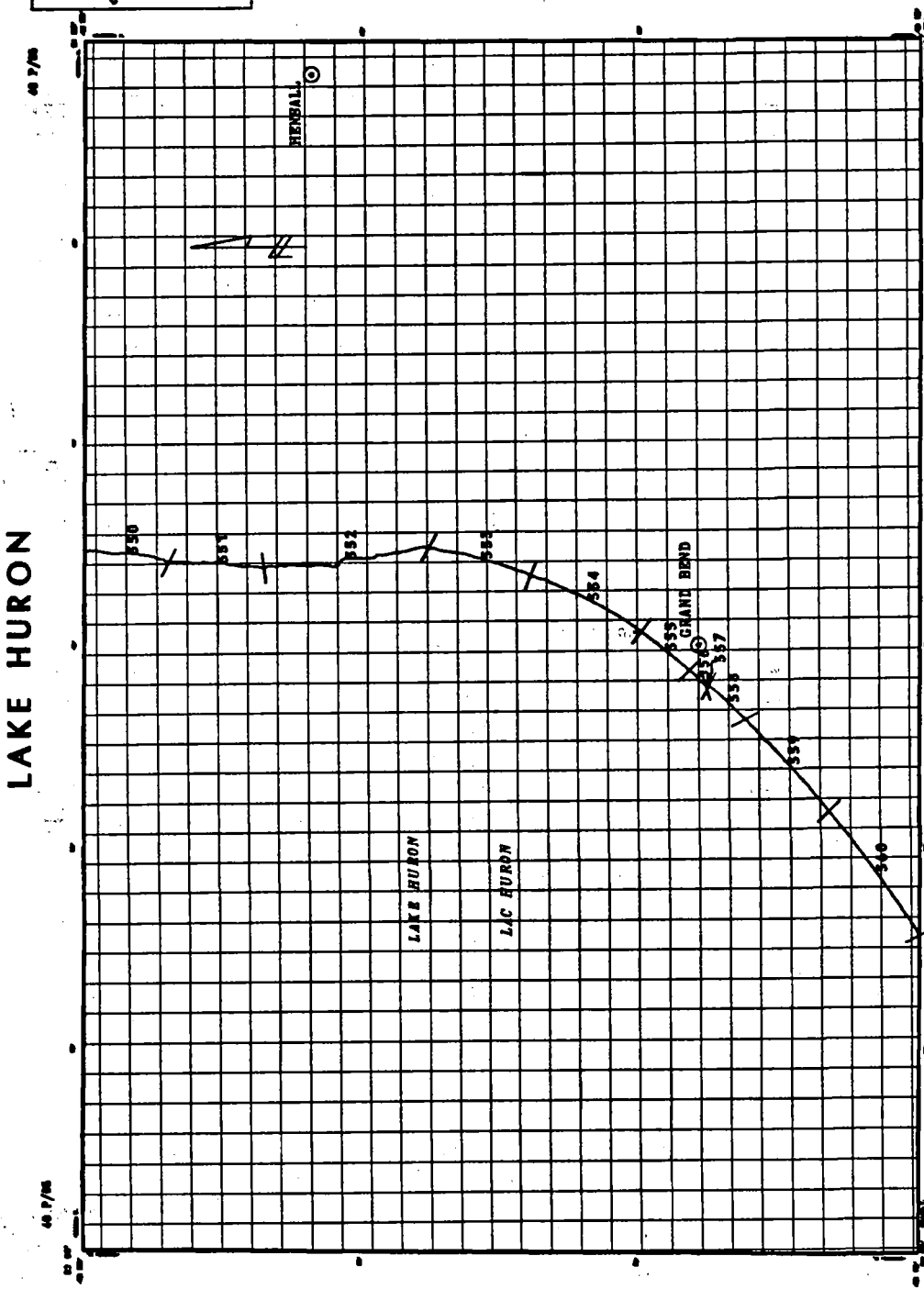
**PARKHILL ONTARIO**  
Scale 1:50,000  
Vertical Datum: 1985  
Horizontal Datum: 1985



Geomatics International Inc.  
1000  
1000  
1000

40 P/M 1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION LAKE HURON



- GEOMORPHIC CLASSIFICATION**
- 1. SAND (FINE) BEACH (EXPOSED OR TO BE)
  - 2. SAND (FINE) BEACH WITH SLIGHT POOL
  - 3. SAND (FINE) BEACH WITH POOL
  - 4. SAND (FINE) BEACH WITH SLIGHT POOL (DUNE)
  - 5. SAND (FINE) BEACH WITH POOL (DUNE)
  - 6. CLAY SANDS
  - 7. SANDS
  - 8. CLAY SANDS
  - 9. SANDS
  - 10. SANDS - SANDS BEACH
  - 11. SANDS - SANDS BEACH
  - 12. SANDS - SANDS BEACH
  - 13. SANDS - SANDS BEACH
  - 14. SANDS - SANDS BEACH
  - 15. SANDS - SANDS BEACH
  - 16. SANDS - SANDS BEACH
  - 17. SANDS - SANDS BEACH
  - 18. SANDS - SANDS BEACH
  - 19. SANDS - SANDS BEACH
  - 20. SANDS - SANDS BEACH
- PROTECTION CLASSIFICATION**
- 1. VEGETATION
  - 2. VEGETATION
  - 3. VEGETATION
  - 4. VEGETATION
  - 5. VEGETATION
  - 6. VEGETATION
  - 7. VEGETATION
  - 8. VEGETATION
  - 9. VEGETATION
  - 10. VEGETATION
  - 11. VEGETATION
  - 12. VEGETATION
  - 13. VEGETATION
  - 14. VEGETATION
  - 15. VEGETATION
  - 16. VEGETATION
  - 17. VEGETATION
  - 18. VEGETATION
  - 19. VEGETATION
  - 20. VEGETATION
- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. SANDS
  - 4. SANDS
  - 5. SANDS
  - 6. SANDS
  - 7. SANDS
  - 8. SANDS
  - 9. SANDS
  - 10. SANDS
  - 11. SANDS
  - 12. SANDS
  - 13. SANDS
  - 14. SANDS
  - 15. SANDS
  - 16. SANDS
  - 17. SANDS
  - 18. SANDS
  - 19. SANDS
  - 20. SANDS
- HISTORICAL SHORELINE CHANGE RATE**
- 1. 0 to 100 ft (0 to 30 m)
  - 2. 100 to 200 ft (30 to 60 m)
  - 3. 200 to 300 ft (60 to 90 m)
  - 4. 300 to 400 ft (90 to 120 m)
  - 5. 400 to 500 ft (120 to 150 m)
  - 6. 500 to 600 ft (150 to 180 m)
  - 7. 600 to 700 ft (180 to 210 m)
  - 8. 700 to 800 ft (210 to 240 m)
  - 9. 800 to 900 ft (240 to 270 m)
  - 10. 900 to 1000 ft (270 to 300 m)
  - 11. 1000 to 1100 ft (300 to 330 m)
  - 12. 1100 to 1200 ft (330 to 360 m)
  - 13. 1200 to 1300 ft (360 to 390 m)
  - 14. 1300 to 1400 ft (390 to 420 m)
  - 15. 1400 to 1500 ft (420 to 450 m)
  - 16. 1500 to 1600 ft (450 to 480 m)
  - 17. 1600 to 1700 ft (480 to 510 m)
  - 18. 1700 to 1800 ft (510 to 540 m)
  - 19. 1800 to 1900 ft (540 to 570 m)
  - 20. 1900 to 2000 ft (570 to 600 m)
- THREE - TIER CLASSIFICATION**
- EXAMPLE
- 1. STRONG CLASSES (1 - 4)
  - 2. MODERATE CLASSES (5 - 8)
  - 3. WEAK CLASSES (9 - 12)
  - 4. UNCLASSIFIED CLASSES (13 - 16)
  - 5. UNCLASSIFIED CLASSES (17 - 20)



40 30' / 40 50'

83 10' / 83 00'

GRAND BEND  
ONTARIO  
Scale 1 : 25 000  
SHEPPARD INTERNATIONAL INC.

40 30' / 1992



LAKE STCLAIR.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
1	NO	40001 40J16	5 AP85 OGS	1 AP85	3 FISHER OGS	513
2	NO	40J16	16 AP85 OGS	1 AP85	3 FISHER OGS	1613
3	NO	40J16	6 AP85 OGS	1 AP85	3 RUKAVINA86	613
4	NO	40J16	3 AP85 OGS	1 AP85	3 RUKAVINA86	313
5	NO	40J16	3 AP85 OGS	1 AP85	3 FISHER OGS	313
6	NO	40J16	3 AP85 OGS	1 AP85	1 SWG87	311
7	NO	40J16	3 AP85 OGS	1 AP85	3 SWG87	313
8	NO	40J16	3 AP85 OGS	1 AP85	3 SWG87	313
9	NO	40J16	6 AP85 OGS	1 AP85	3 SWG87	613
10	NO	40J16	3 AP85 OGS	1 AP85	3 SWG87	313
11	NO	40J16 40J09	6 AP85 OGS	1 AP85	2 SWG87	612
12	NO	40J09 40J08	12 AP85 CZA	1 AP85	2 SWG87	1212
13	NO	40J10	12 AP85 CZA	1 AP85	3 SWG87	1213
14	NO	40J10	12 AP85 CZA	1 AP85	3 SWG87	1213
15	NO	40J10	13 CZA AP85	4 AP85	3 SWG88	1343
16	NO	40J10	13 CZA AP85	4 AP85	2 SWG88	1342
17	NO	40J10	13 CZA AP85	4 AP85	2 SWG88	1342
18	NO	40J10	13 CZA AP85	4 AP85	2 SWG88	1342
19	NO	40J10	13 CZA AP85	2 AP85	2 SWG88	1322
20	NO	40J10	13 CZA AP85	4 AP85	2 SWG88	1342
21	NO	40J10 40J07	13 CZA AP85	4 AP85	2 SWG88	1342
22	NO	40J10 40J07	13 CZA AP85	4 AP85	2 SWG88	1342
23	NO	40J10 40J07	13 CZA AP85	4 AP85	2 SWG88	1342
24	NO	40J10 40J08	13 CZA AP85	4 AP85	2 SWG88	1342
25	NO	40J08	13 AP85	3 AP85	2 SWG88	1332
26	YES	40J08	13 AP85	4 AP85	2 SWG88	1342
27	NO	40J08	13 AP85	4 AP85	2 SWG88	1342
28	NO	40J08	13 AP85	3 AP85	2 SWG88	1332
29	YES	40J08	14 AP85	2 AP85	2 SWG88	1422
30	NO	40J08	16 AP88	6 AP88	2 SWG88	1662
31	NO	40J08	16 AP88	1 AP88	2 SWG88	1612
32	NO	40J08 40J07	12 AP88 OGS	1 AP88	2 SWG88	1212
33	NO	40J07	12 AP88 CZA	1 AP88	2 SWG88	1212
34	NO	40J07	6 AP88 OGS	1 AP88	2 SWG88	612
35	YES	40J07	13 AP88	4 AP88	2 SWG88	1342
36	NO	40J07	5 AP88 OGS	1 AP88	2 SWG88	512
37	NO	40J07	7 AP88 CZA	4 AP88	2 SWG88	742
38	NO	40J07	16 AP88	1 AP88	2 SWG88	1612
39	NO	40J07	5 AP88 OGS	1 AP88	2 SWG88	512
40	NO	40J07	5 AP88 OGS	1 AP88	2 SWG88	512
41	NO	40J07	5 AP88 OGS	1 AP88	2 SWG88	512

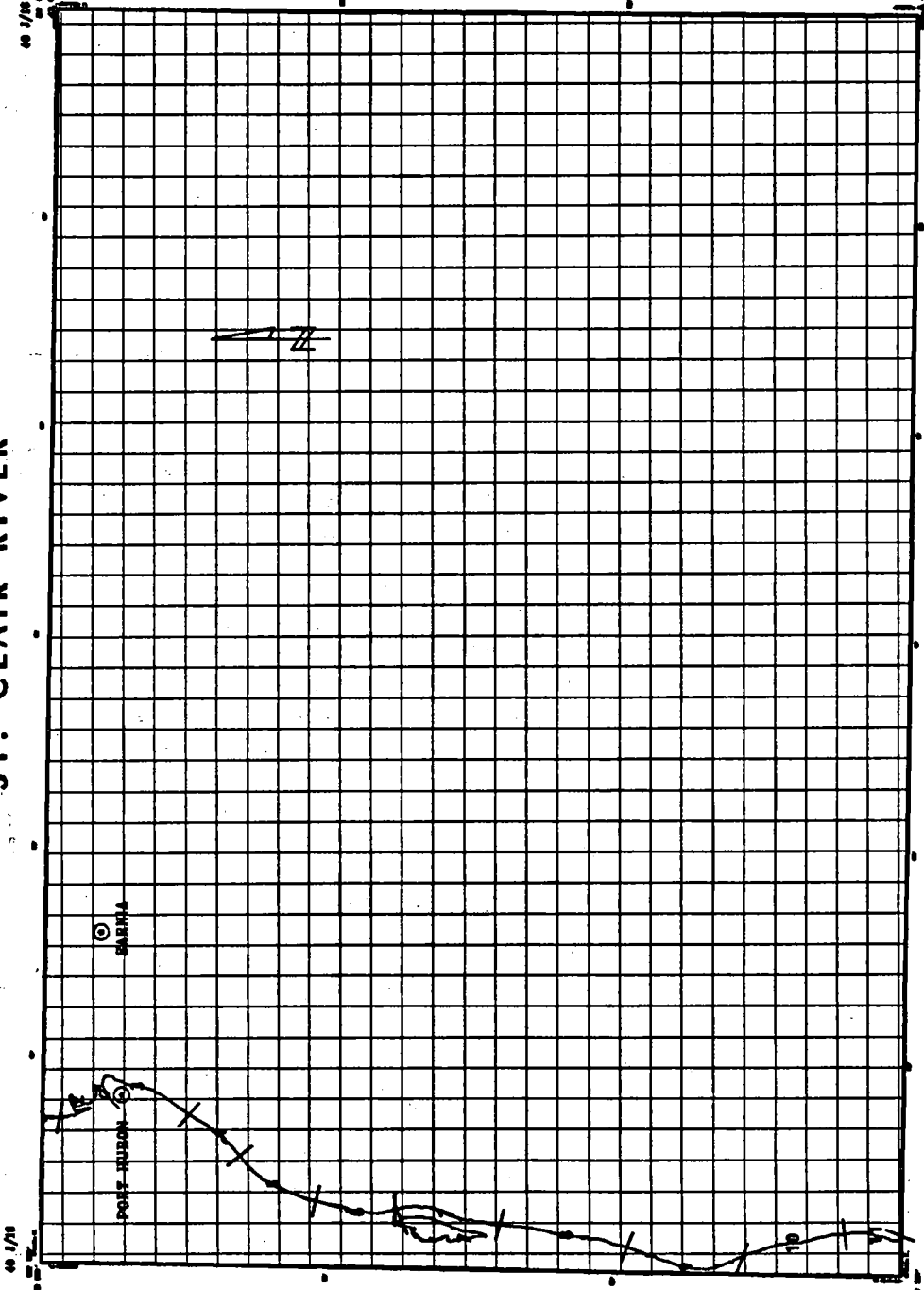
HARBOUR MARINA

LAKE STCLAIR.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
42	NO	40107	5 AP88 OGS	1 AP88	2 SWG88	512
43	YES WEST BOUND 500M WEST	40107	5 AP88 OGS	1 AP88	2 SWG88	512
44	YES PECHE ISLAND	40107	6 AP88 OGS	3 AP88	2 SWG88	632 ISLAND
45	NO	40107	6 AP88 OGS	1 AP88	2 USEPA87	612
46	NO	40107 40106	16 AP88 OGS	1 AP88	2 USEPA87	1612
47	NO	40106	16 AP88 OGS	1 AP88	2 USEPA87	1612
48	NO	40106 40103	13 AP88 OGS	2 AP88	2 USEPA87	1322
49	YES SOUTH BOUND 4.3KM NORTH	40103	13 AP88 OGS	3 AP88	3 USEPA87	1333
50	YES NORTH BOUND 4.3KM NORTH	40103	5 AP88 OGS	1 AP88	3 USEPA87	513
51	NO	40103	5 AP88 OGS	2 AP88	3 USEPA87	523
52	YES NEW PART OF 26	40108	16 AP85	1 AP85	2 SWG88	1612
53	YES NEW PART OF 29	40108	12 AP88	3 AP88	2 SWG88	1232 RIVER MOUTH
54	YES NEW WEST PART OF 35	40107	5 AP88	1 AP88	2 SWG88	512

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## ST. CLAIR RIVER



46 1/2°

83 1/2°

REFERENCE MAP



### GEOGRAPHIC CLASSIFICATION

- 1. HIGH POINT (ELEVATION 100 FT. OR MORE)
- 2. LOW POINT (ELEVATION 100 FT. OR MORE)
- 3. HIGH POINT (ELEVATION 50 FT. TO 100 FT.)
- 4. LOW POINT (ELEVATION 50 FT. TO 100 FT.)
- 5. HIGH POINT (ELEVATION 25 FT. TO 50 FT.)
- 6. LOW POINT (ELEVATION 25 FT. TO 50 FT.)
- 7. HIGH POINT (ELEVATION 10 FT. TO 25 FT.)
- 8. LOW POINT (ELEVATION 10 FT. TO 25 FT.)
- 9. HIGH POINT (ELEVATION 5 FT. TO 10 FT.)
- 10. LOW POINT (ELEVATION 5 FT. TO 10 FT.)
- 11. HIGH POINT (ELEVATION 0 FT. TO 5 FT.)
- 12. LOW POINT (ELEVATION 0 FT. TO 5 FT.)
- 13. HIGH POINT (ELEVATION 0 FT. TO 5 FT.)
- 14. LOW POINT (ELEVATION 0 FT. TO 5 FT.)
- 15. HIGH POINT (ELEVATION 0 FT. TO 5 FT.)
- 16. LOW POINT (ELEVATION 0 FT. TO 5 FT.)
- 17. HIGH POINT (ELEVATION 0 FT. TO 5 FT.)
- 18. LOW POINT (ELEVATION 0 FT. TO 5 FT.)
- 19. HIGH POINT (ELEVATION 0 FT. TO 5 FT.)
- 20. LOW POINT (ELEVATION 0 FT. TO 5 FT.)

### PROTECTION CLASSIFICATION

- 1. HEAVILY PROTECTED
- 2. MODERATELY PROTECTED
- 3. LIGHTLY PROTECTED
- 4. UNPROTECTED
- 5. UNDESIRABLE PROTECTION
- 6. UNDESIRABLE PROTECTION
- 7. UNDESIRABLE PROTECTION
- 8. UNDESIRABLE PROTECTION
- 9. UNDESIRABLE PROTECTION
- 10. UNDESIRABLE PROTECTION

### SUBAQUEOUS/NEARSHORE COMPOSITION

- 1. CLAY
- 2. SAND
- 3. GRAVEL
- 4. SILT
- 5. SILT
- 6. SILT
- 7. SILT
- 8. SILT
- 9. SILT
- 10. SILT

### HISTORICAL SHORELINE CHANGE RATE

- 1. RETREAT (100 FT. OR MORE)
- 2. RETREAT (50 FT. TO 100 FT.)
- 3. RETREAT (25 FT. TO 50 FT.)
- 4. RETREAT (10 FT. TO 25 FT.)
- 5. RETREAT (5 FT. TO 10 FT.)
- 6. RETREAT (0 FT. TO 5 FT.)
- 7. ADVANCE (100 FT. OR MORE)
- 8. ADVANCE (50 FT. TO 100 FT.)
- 9. ADVANCE (25 FT. TO 50 FT.)
- 10. ADVANCE (10 FT. TO 25 FT.)
- 11. ADVANCE (5 FT. TO 10 FT.)
- 12. ADVANCE (0 FT. TO 5 FT.)

### THREE - TIER CLASSIFICATION

- 1. EXCELLENT
- 2. GOOD
- 3. FAIR
- 4. POOR
- 5. VERY POOR
- 6. UNDESIRABLE
- 7. UNDESIRABLE
- 8. UNDESIRABLE
- 9. UNDESIRABLE
- 10. UNDESIRABLE

SARNIA  
ONTARIO

Scale 1 : 50,000

Geomatics International  
1000  
1000  
1000

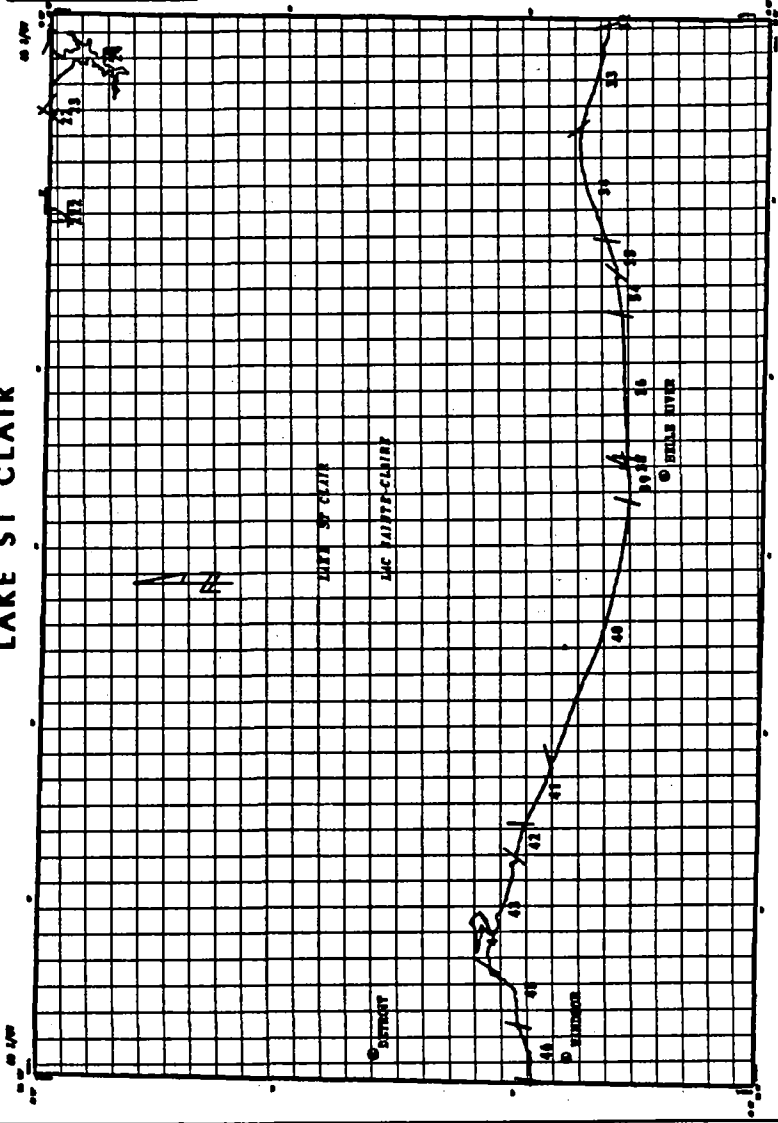
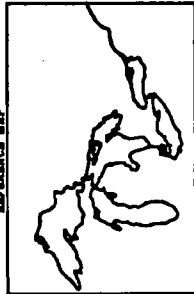
Environmental  
Canada

46 1/2°  
1992



# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE ST CLAIR



- GENERAL CLASSIFICATION**
  - 1. OPEN WATER
  - 2. OPEN WATER WITH ICE
  - 3. OPEN WATER WITH ICE (SLOTTED)
  - 4. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES
  - 5. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS
  - 6. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES
  - 7. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS
  - 8. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES
  - 9. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS
  - 10. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS
- PROTECTION CLASSIFICATION**
  - 1. OPEN WATER
  - 2. OPEN WATER WITH ICE
  - 3. OPEN WATER WITH ICE (SLOTTED)
  - 4. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES
  - 5. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS
  - 6. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES
  - 7. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS
  - 8. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES
  - 9. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS
  - 10. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS
- HYDROLOGY/FLUORESCENCE COMPOSITION**
  - 1. OPEN WATER
  - 2. OPEN WATER WITH ICE
  - 3. OPEN WATER WITH ICE (SLOTTED)
  - 4. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES
  - 5. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS
  - 6. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES
  - 7. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS
  - 8. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES
  - 9. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS
  - 10. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS
- HISTORICAL SHOULDER CHANGE DATE**
  - 1. OPEN WATER
  - 2. OPEN WATER WITH ICE
  - 3. OPEN WATER WITH ICE (SLOTTED)
  - 4. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES
  - 5. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS
  - 6. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES
  - 7. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS
  - 8. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES
  - 9. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS
  - 10. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS
- VEGETATION - TYPE CLASSIFICATION**
  - 1. OPEN WATER
  - 2. OPEN WATER WITH ICE
  - 3. OPEN WATER WITH ICE (SLOTTED)
  - 4. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES
  - 5. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS
  - 6. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES
  - 7. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS
  - 8. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES
  - 9. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS
  - 10. OPEN WATER WITH ICE (SLOTTED) WITH WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS AND WIND-DRIVEN WAVES AND CURRENTS

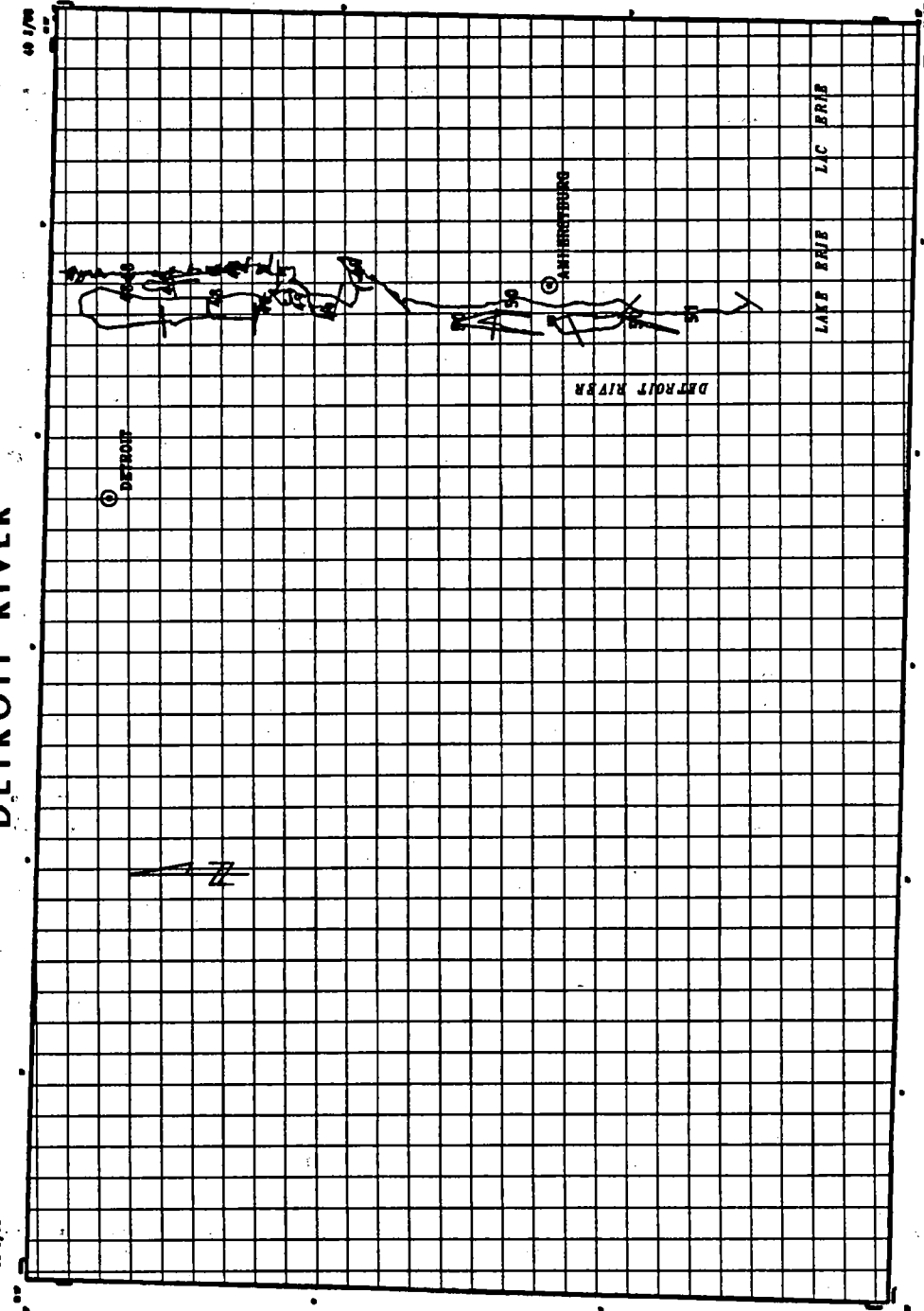
**BELLE RIVER**  
 ONTARIO  
 Scale 1:100,000  
 40 4/87  
 1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## DETROIT RIVER

40 1/2"

40 1/2"



REFERENCE MAP



### GEOMORPHIC CLASSIFICATION

- 1. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 2. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 3. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 4. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 5. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 6. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 7. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 8. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 9. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 10. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 11. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 12. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 13. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 14. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 15. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 16. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 17. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 18. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 19. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 20. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 21. LOW (LOW) CLAY (SANDSTONE OR SILT)
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- 23. LOW (LOW) CLAY (SANDSTONE OR SILT)
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- 25. LOW (LOW) CLAY (SANDSTONE OR SILT)
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- 27. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 28. LOW (LOW) CLAY (SANDSTONE OR SILT)
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- 30. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 31. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 32. LOW (LOW) CLAY (SANDSTONE OR SILT)
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- 43. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 44. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 45. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 46. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 47. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 48. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 49. LOW (LOW) CLAY (SANDSTONE OR SILT)
- 50. LOW (LOW) CLAY (SANDSTONE OR SILT)

### PROTECTION CLASSIFICATION

- 1. FULLY PROTECTED
- 2. PARTIALLY PROTECTED
- 3. NO PROTECTION
- 4. PROTECTIVE
- 5. NON-STRUCTURAL PROTECTION
- 6. UNCLASSIFIED

### SUBAQUEOUS/NEARSHORE COMPOSITION

- 1. CLAY
- 2. SILT
- 3. SANDSTONE
- 4. SAND
- 5. GRAVEL
- 6. ROCK
- 7. UNCLASSIFIED

### HISTORICAL SHORELINE CHANGE RATE

- 1. 0.000 (0-0.000 m/yr)
- 2. 0.000 (0-0.000 m/yr)
- 3. 0.000 (0-0.000 m/yr)
- 4. 0.000 (0-0.000 m/yr)
- 5. 0.000 (0-0.000 m/yr)
- 6. 0.000 (0-0.000 m/yr)
- 7. 0.000 (0-0.000 m/yr)
- 8. 0.000 (0-0.000 m/yr)
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- 11. 0.000 (0-0.000 m/yr)
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- 21. 0.000 (0-0.000 m/yr)
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- 46. 0.000 (0-0.000 m/yr)
- 47. 0.000 (0-0.000 m/yr)
- 48. 0.000 (0-0.000 m/yr)
- 49. 0.000 (0-0.000 m/yr)
- 50. 0.000 (0-0.000 m/yr)

### THREE - TIER CLASSIFICATION

- 1. CLASS I
- 2. CLASS II
- 3. CLASS III
- 4. CLASS IV
- 5. CLASS V
- 6. CLASS VI
- 7. CLASS VII
- 8. CLASS VIII
- 9. CLASS IX
- 10. CLASS X
- 11. CLASS XI
- 12. CLASS XII
- 13. CLASS XIII
- 14. CLASS XIV
- 15. CLASS XV
- 16. CLASS XVI
- 17. CLASS XVII
- 18. CLASS XVIII
- 19. CLASS XIX
- 20. CLASS XX
- 21. CLASS XXI
- 22. CLASS XXII
- 23. CLASS XXIII
- 24. CLASS XXIV
- 25. CLASS XXV
- 26. CLASS XXVI
- 27. CLASS XXVII
- 28. CLASS XXVIII
- 29. CLASS XXIX
- 30. CLASS XXX
- 31. CLASS XXXI
- 32. CLASS XXXII
- 33. CLASS XXXIII
- 34. CLASS XXXIV
- 35. CLASS XXXV
- 36. CLASS XXXVI
- 37. CLASS XXXVII
- 38. CLASS XXXVIII
- 39. CLASS XXXIX
- 40. CLASS XXXX
- 41. CLASS XXXXI
- 42. CLASS XXXXII
- 43. CLASS XXXXIII
- 44. CLASS XXXXIV
- 45. CLASS XXXXV
- 46. CLASS XXXXVI
- 47. CLASS XXXXVII
- 48. CLASS XXXXVIII
- 49. CLASS XXXXIX
- 50. CLASS XXXXX

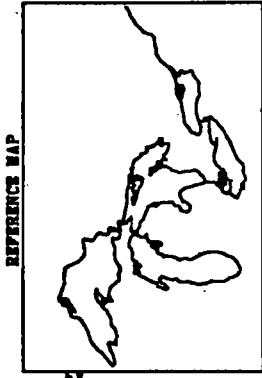
### AMHERSTBURG ONTARIO

Scale 1 : 100 000  
 1982

Environment Canada  
 Environment Canada

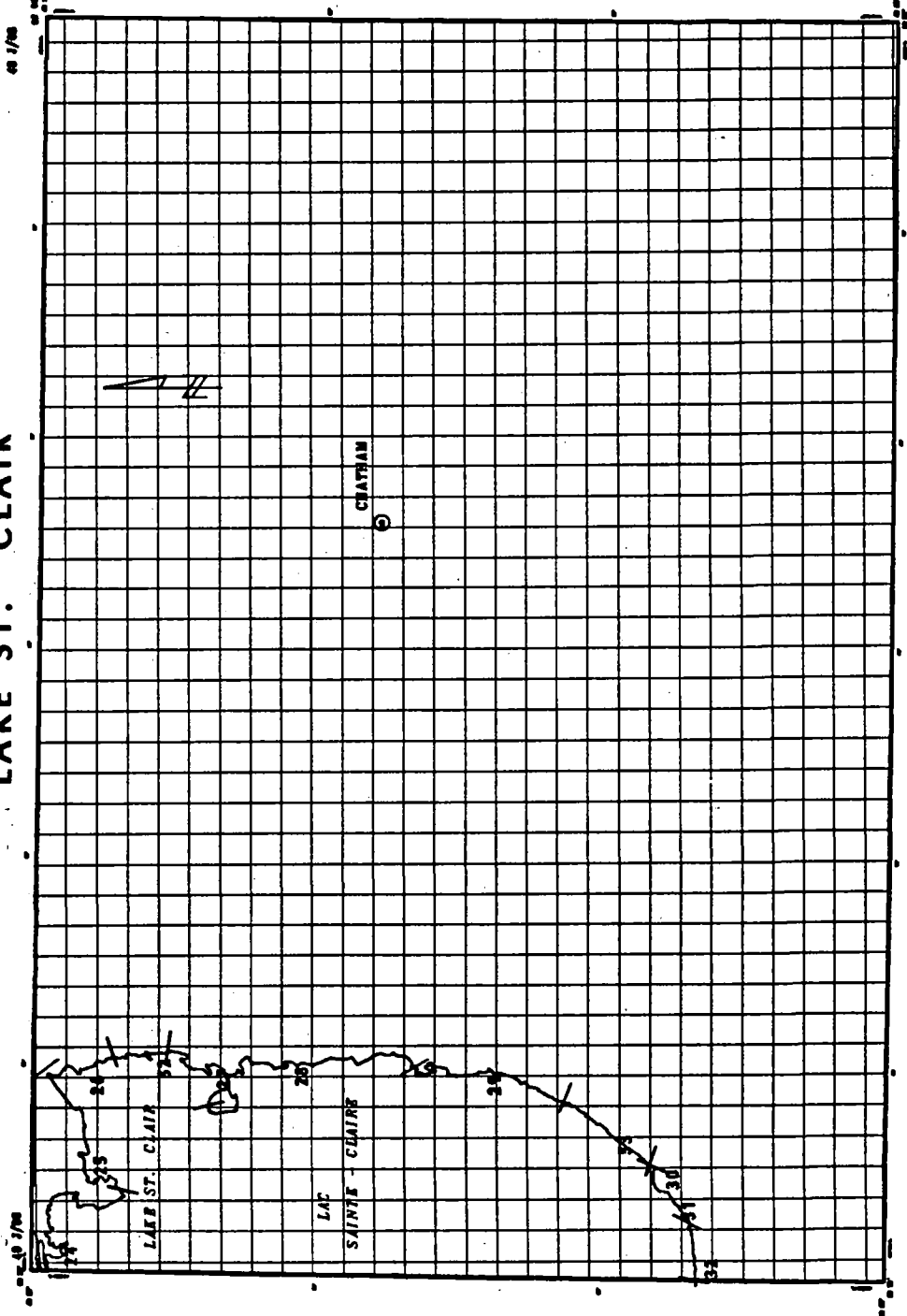
Geomatics International  
 1982

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION



40 1/100

LAKE ST. CLAIRE



## GEOLOGIC CLASSIFICATION

- 1. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 2. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 3. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 4. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 5. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 6. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 7. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 8. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 9. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 10. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 11. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 12. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 13. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 14. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 15. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 16. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 17. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 18. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 19. SAND (SAND) BAY (SAND) BAY (SAND) BAY
- 20. SAND (SAND) BAY (SAND) BAY (SAND) BAY

## PROTECTION CLASSIFICATION

- 1. HEAVY PROTECTED
- 2. MODERATELY PROTECTED
- 3. MODERATELY UNPROTECTED
- 4. UNPROTECTED
- 5. UNSTRUCTURED PROTECTED
- 6. UNCLASSIFIED

## SUBAQUEOUS/NEARSHORE COMPOSITION

- 1. SAND
- 2. SAND
- 3. SAND
- 4. SAND
- 5. SAND
- 6. SAND
- 7. SAND
- 8. SAND
- 9. SAND
- 10. SAND
- 11. SAND
- 12. SAND
- 13. SAND
- 14. SAND
- 15. SAND
- 16. SAND
- 17. SAND
- 18. SAND
- 19. SAND
- 20. SAND

## HISTORICAL SHOULDER CHANGE RATE

- 1. 1.00 (1.00) (1.00) (1.00) (1.00)
- 2. 1.00 (1.00) (1.00) (1.00) (1.00)
- 3. 1.00 (1.00) (1.00) (1.00) (1.00)
- 4. 1.00 (1.00) (1.00) (1.00) (1.00)
- 5. 1.00 (1.00) (1.00) (1.00) (1.00)
- 6. 1.00 (1.00) (1.00) (1.00) (1.00)
- 7. 1.00 (1.00) (1.00) (1.00) (1.00)
- 8. 1.00 (1.00) (1.00) (1.00) (1.00)
- 9. 1.00 (1.00) (1.00) (1.00) (1.00)
- 10. 1.00 (1.00) (1.00) (1.00) (1.00)

## THREE - TIER CLASSIFICATION

- 1. UNCLASSIFIED
- 2. UNCLASSIFIED
- 3. UNCLASSIFIED
- 4. UNCLASSIFIED
- 5. UNCLASSIFIED
- 6. UNCLASSIFIED
- 7. UNCLASSIFIED
- 8. UNCLASSIFIED
- 9. UNCLASSIFIED
- 10. UNCLASSIFIED



40 1/100  
1992



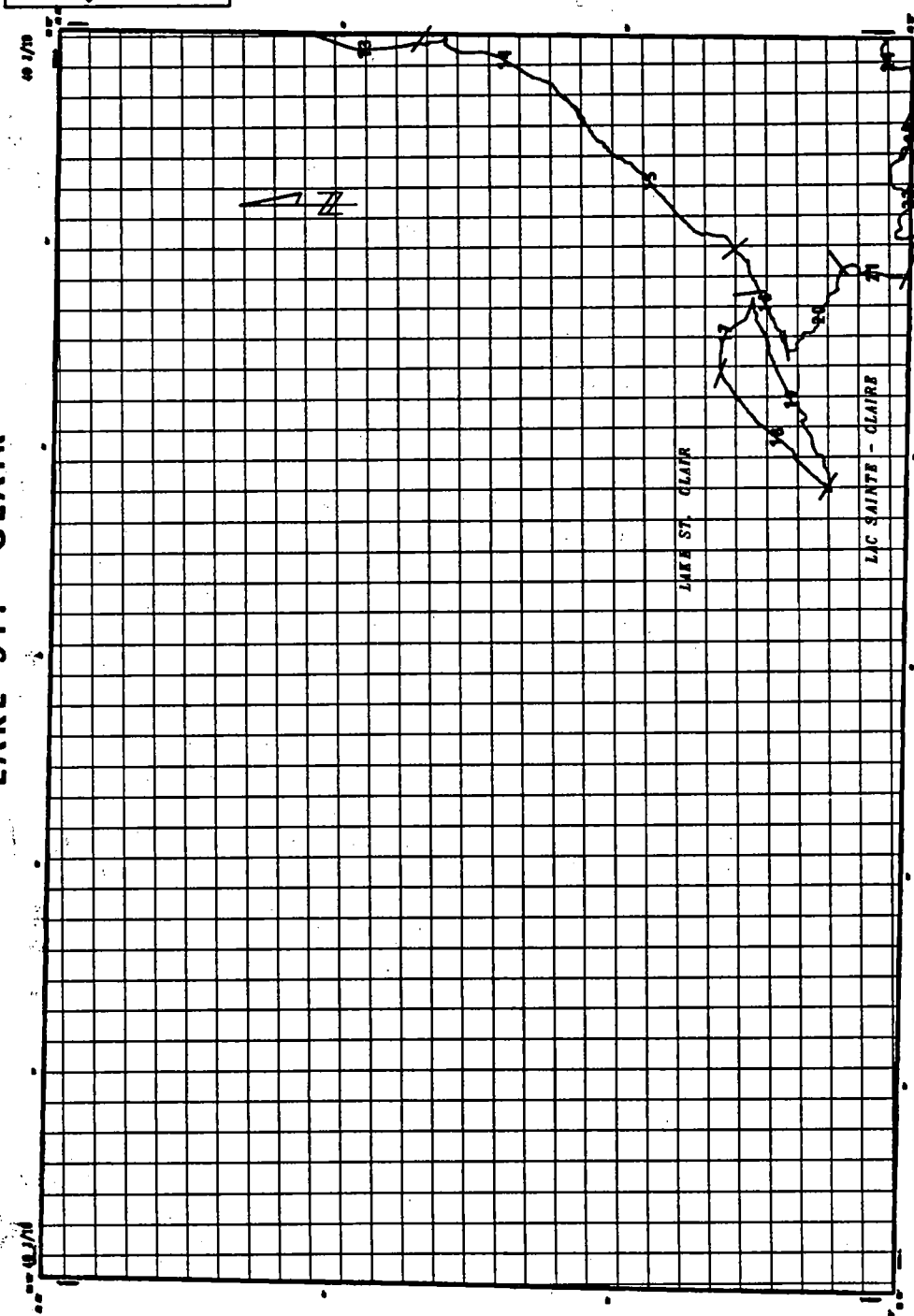
CHATHAM  
ONTARIO

Scale 1 : 100 000  
SHEET 1 OF 10

Geomatics International  
1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE ST. CLAIR



REFERENCE MAP



### GEOGRAPHIC CLASSIFICATION

- 1. 100% OPEN BAY (CONTIGUOUS TO THE BAY)
- 2. 75% OPEN BAY (CONTIGUOUS TO THE BAY)
- 3. 50% OPEN BAY (CONTIGUOUS TO THE BAY)
- 4. 25% OPEN BAY (CONTIGUOUS TO THE BAY)
- 5. 0% OPEN BAY (CONTIGUOUS TO THE BAY)
- 6. OPEN BAY (CONTIGUOUS TO THE BAY)
- 7. OPEN BAY (CONTIGUOUS TO THE BAY)
- 8. OPEN BAY (CONTIGUOUS TO THE BAY)
- 9. OPEN BAY (CONTIGUOUS TO THE BAY)
- 10. OPEN BAY (CONTIGUOUS TO THE BAY)
- 11. OPEN BAY (CONTIGUOUS TO THE BAY)
- 12. OPEN BAY (CONTIGUOUS TO THE BAY)
- 13. OPEN BAY (CONTIGUOUS TO THE BAY)
- 14. OPEN BAY (CONTIGUOUS TO THE BAY)
- 15. OPEN BAY (CONTIGUOUS TO THE BAY)
- 16. OPEN BAY (CONTIGUOUS TO THE BAY)
- 17. OPEN BAY (CONTIGUOUS TO THE BAY)
- 18. OPEN BAY (CONTIGUOUS TO THE BAY)
- 19. OPEN BAY (CONTIGUOUS TO THE BAY)
- 20. OPEN BAY (CONTIGUOUS TO THE BAY)

### PROTECTION CLASSIFICATION

- 1. FULLY PROTECTED
- 2. PARTIALLY PROTECTED
- 3. UNPROTECTED
- 4. PROTECTION
- 5. PROTECTION
- 6. PROTECTION
- 7. PROTECTION
- 8. PROTECTION
- 9. PROTECTION
- 10. PROTECTION

### SUBAQUEOUS/NEARSHORE COMPOSITION

- 1. SAND
- 2. SAND
- 3. SAND
- 4. SAND
- 5. SAND
- 6. SAND
- 7. SAND
- 8. SAND
- 9. SAND
- 10. SAND

### HISTORICAL SHORELINE CHANGE RATE

- 1. 0.00 (0.00 m/yr)
- 2. 0.01 (0.01 m/yr)
- 3. 0.02 (0.02 m/yr)
- 4. 0.03 (0.03 m/yr)
- 5. 0.04 (0.04 m/yr)
- 6. 0.05 (0.05 m/yr)
- 7. 0.06 (0.06 m/yr)
- 8. 0.07 (0.07 m/yr)
- 9. 0.08 (0.08 m/yr)
- 10. 0.09 (0.09 m/yr)

### THREE - TIER CLASSIFICATION

- 1. CLASSIFICATION 0 - 99
- 2. CLASSIFICATION 0 - 99
- 3. CLASSIFICATION 0 - 99
- 4. CLASSIFICATION 0 - 99
- 5. CLASSIFICATION 0 - 99
- 6. CLASSIFICATION 0 - 99
- 7. CLASSIFICATION 0 - 99
- 8. CLASSIFICATION 0 - 99
- 9. CLASSIFICATION 0 - 99
- 10. CLASSIFICATION 0 - 99

48 2/18  
1992

PORT LAMBTON  
ONTARIO

Scale 1 : 50 000  
NAD 83  
UTM PROJECTION

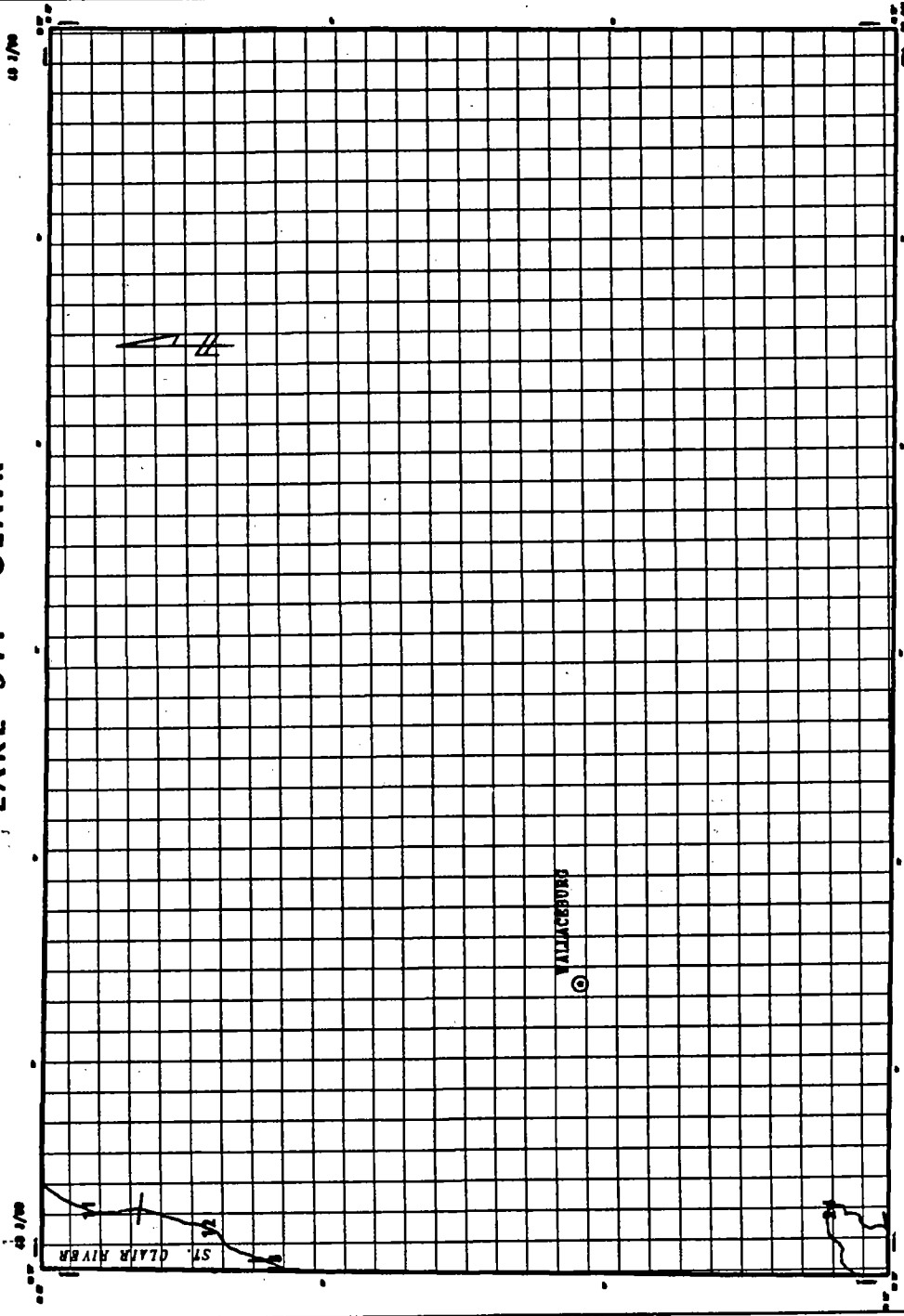
Environmental  
Canada

Geomatics International  
1000  
1000  
1000

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE ST. CLAIR

08/7/90



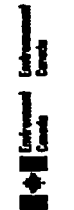
- ### GEOMORPHIC CLASSIFICATION
- 1. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 2. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 3. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 4. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 5. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 6. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 7. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 8. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 9. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 10. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 11. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 12. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 13. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 14. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 15. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 16. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 17. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 18. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 19. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 20. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 21. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 22. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 23. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 24. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 25. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 26. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 27. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 28. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 29. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)
  - 30. LOW (LOW) CLAY (CLAY) (CLAY) (CLAY)

- ### PROTECTION CLASSIFICATION
- 1. FULLY PROTECTED
  - 2. PARTIALLY PROTECTED
  - 3. NOT PROTECTED
  - 4. PROTECTED
  - 5. PROTECTED
  - 6. PROTECTED

- ### SUBAQUOUS/NEARSHORE COMPOSITION
- 1. CLAY
  - 2. SAND
  - 3. GRAVEL
  - 4. SAND AND GRAVEL
  - 5. SAND AND GRAVEL
  - 6. SAND AND GRAVEL
  - 7. SAND AND GRAVEL
  - 8. SAND AND GRAVEL
  - 9. SAND AND GRAVEL
  - 10. SAND AND GRAVEL
  - 11. SAND AND GRAVEL
  - 12. SAND AND GRAVEL
  - 13. SAND AND GRAVEL
  - 14. SAND AND GRAVEL
  - 15. SAND AND GRAVEL
  - 16. SAND AND GRAVEL
  - 17. SAND AND GRAVEL
  - 18. SAND AND GRAVEL
  - 19. SAND AND GRAVEL
  - 20. SAND AND GRAVEL
  - 21. SAND AND GRAVEL
  - 22. SAND AND GRAVEL
  - 23. SAND AND GRAVEL
  - 24. SAND AND GRAVEL
  - 25. SAND AND GRAVEL
  - 26. SAND AND GRAVEL
  - 27. SAND AND GRAVEL
  - 28. SAND AND GRAVEL
  - 29. SAND AND GRAVEL
  - 30. SAND AND GRAVEL

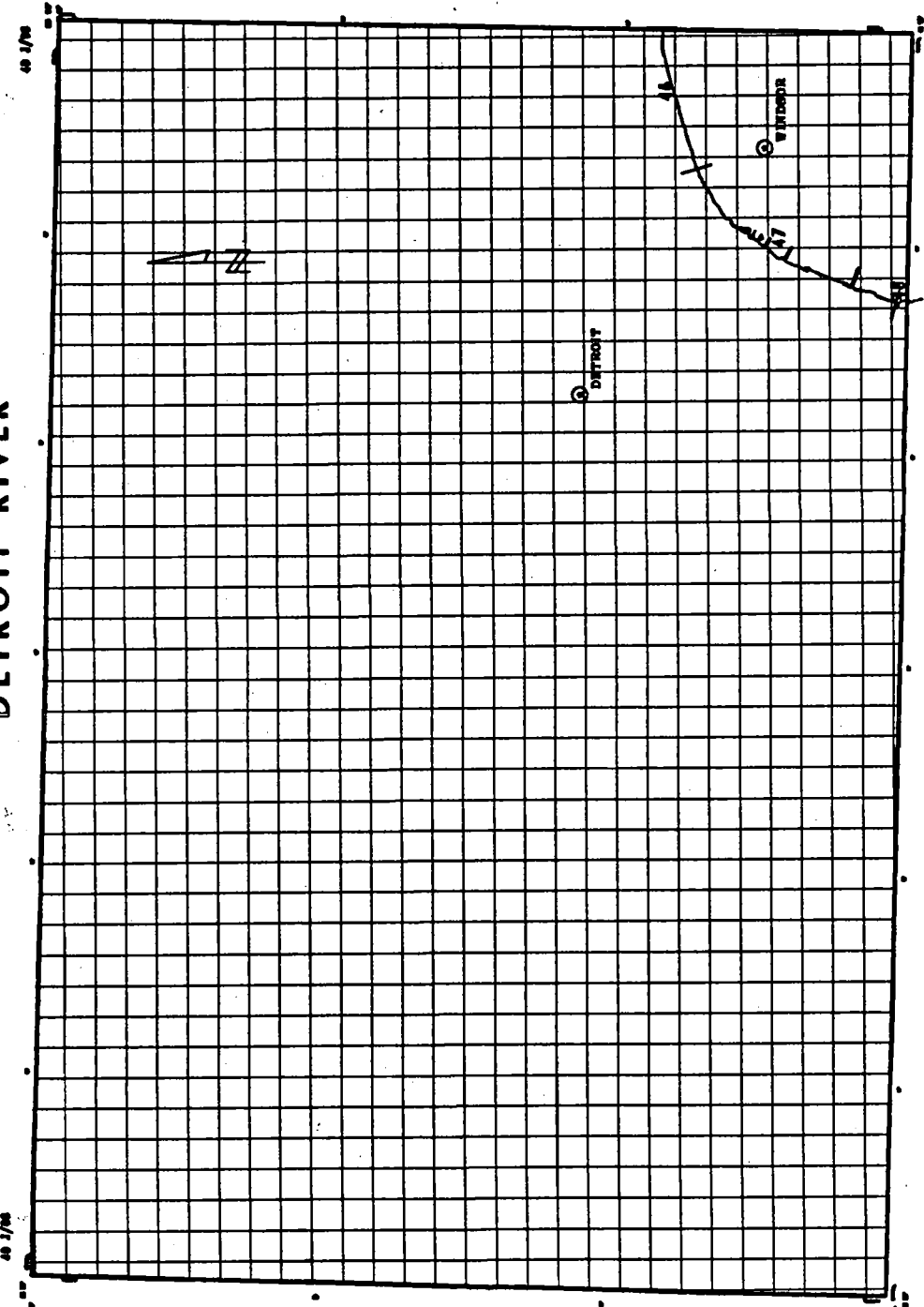
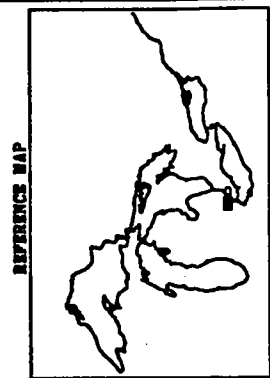
- ### HISTORICAL SHORELINE CHANGE RATE
- 1. UNKNOWN (0-0.01 m/yr)
  - 2. RETREAT (0.01-0.10 m/yr)
  - 3. STABLE (0.10-0.20 m/yr)
  - 4. ADVANCE (0.20-0.50 m/yr)
  - 5. ADVANCE (0.50-1.00 m/yr)
  - 6. ADVANCE (1.00-2.00 m/yr)
  - 7. ADVANCE (2.00-5.00 m/yr)
  - 8. ADVANCE (5.00-10.00 m/yr)
  - 9. ADVANCE (10.00-20.00 m/yr)
  - 10. ADVANCE (20.00-50.00 m/yr)
  - 11. ADVANCE (50.00-100.00 m/yr)
  - 12. ADVANCE (100.00-200.00 m/yr)
  - 13. ADVANCE (200.00-500.00 m/yr)
  - 14. ADVANCE (500.00-1000.00 m/yr)
  - 15. ADVANCE (1000.00-2000.00 m/yr)
  - 16. ADVANCE (2000.00-5000.00 m/yr)
  - 17. ADVANCE (5000.00-10000.00 m/yr)
  - 18. ADVANCE (10000.00-20000.00 m/yr)
  - 19. ADVANCE (20000.00-50000.00 m/yr)
  - 20. ADVANCE (50000.00-100000.00 m/yr)
  - 21. ADVANCE (100000.00-200000.00 m/yr)
  - 22. ADVANCE (200000.00-500000.00 m/yr)
  - 23. ADVANCE (500000.00-1000000.00 m/yr)
  - 24. ADVANCE (1000000.00-2000000.00 m/yr)
  - 25. ADVANCE (2000000.00-5000000.00 m/yr)
  - 26. ADVANCE (5000000.00-10000000.00 m/yr)
  - 27. ADVANCE (10000000.00-20000000.00 m/yr)
  - 28. ADVANCE (20000000.00-50000000.00 m/yr)
  - 29. ADVANCE (50000000.00-100000000.00 m/yr)
  - 30. ADVANCE (100000000.00-200000000.00 m/yr)

- ### THREE-TIER CLASSIFICATION
- 1. PROTECTED CLASSIFICATION (0-1)
  - 2. PROTECTED CLASSIFICATION (1-2)
  - 3. PROTECTED CLASSIFICATION (2-3)
  - 4. PROTECTED CLASSIFICATION (3-4)
  - 5. PROTECTED CLASSIFICATION (4-5)
  - 6. PROTECTED CLASSIFICATION (5-6)
  - 7. PROTECTED CLASSIFICATION (6-7)
  - 8. PROTECTED CLASSIFICATION (7-8)
  - 9. PROTECTED CLASSIFICATION (8-9)
  - 10. PROTECTED CLASSIFICATION (9-10)
  - 11. PROTECTED CLASSIFICATION (10-11)
  - 12. PROTECTED CLASSIFICATION (11-12)
  - 13. PROTECTED CLASSIFICATION (12-13)
  - 14. PROTECTED CLASSIFICATION (13-14)
  - 15. PROTECTED CLASSIFICATION (14-15)
  - 16. PROTECTED CLASSIFICATION (15-16)
  - 17. PROTECTED CLASSIFICATION (16-17)
  - 18. PROTECTED CLASSIFICATION (17-18)
  - 19. PROTECTED CLASSIFICATION (18-19)
  - 20. PROTECTED CLASSIFICATION (19-20)
  - 21. PROTECTED CLASSIFICATION (20-21)
  - 22. PROTECTED CLASSIFICATION (21-22)
  - 23. PROTECTED CLASSIFICATION (22-23)
  - 24. PROTECTED CLASSIFICATION (23-24)
  - 25. PROTECTED CLASSIFICATION (24-25)
  - 26. PROTECTED CLASSIFICATION (25-26)
  - 27. PROTECTED CLASSIFICATION (26-27)
  - 28. PROTECTED CLASSIFICATION (27-28)
  - 29. PROTECTED CLASSIFICATION (28-29)
  - 30. PROTECTED CLASSIFICATION (29-30)



# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## DETROIT RIVER



- GEOMORPHIC CLASSIFICATION**
- 1. HIGH CLIFF (CLIFF HEIGHTS 60 TO 80 M)
  - 2. LOW CLIFF (CLIFF HEIGHTS 20 TO 60 M)
  - 3. LOW (CLIFF) RIFT (CLIFF HEIGHTS 10 TO 20 M)
  - 4. LOW (CLIFF) RIFT (CLIFF HEIGHTS 5 TO 10 M)
  - 5. BRICK PAVEMENT
  - 6. BRICK PAVEMENT (WITH SAND)
  - 7. BRICK PAVEMENT (WITH GRAVEL)
  - 8. BRICK PAVEMENT (WITH GRAVEL AND SAND)
  - 9. BRICK PAVEMENT (WITH GRAVEL AND SAND AND GRAVEL)
  - 10. BRICK PAVEMENT (WITH GRAVEL AND SAND AND GRAVEL AND SAND)
  - 11. BRICK PAVEMENT (WITH GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL)
  - 12. BRICK PAVEMENT (WITH GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND)
  - 13. BRICK PAVEMENT (WITH GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL)
  - 14. BRICK PAVEMENT (WITH GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND)
  - 15. BRICK PAVEMENT (WITH GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL)
  - 16. BRICK PAVEMENT (WITH GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND)
  - 17. BRICK PAVEMENT (WITH GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL)
  - 18. BRICK PAVEMENT (WITH GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND)
  - 19. BRICK PAVEMENT (WITH GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL)
  - 20. BRICK PAVEMENT (WITH GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND)
- PROTECTION CLASSIFICATION**
- 1. HEAVY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. LIGHT PROTECTION
  - 4. NO PROTECTION
  - 5. UNDESIRABLE PROTECTION
  - 6. UNDESIRABLE PROTECTION
  - 7. UNDESIRABLE PROTECTION
  - 8. UNDESIRABLE PROTECTION
  - 9. UNDESIRABLE PROTECTION
  - 10. UNDESIRABLE PROTECTION
  - 11. UNDESIRABLE PROTECTION
  - 12. UNDESIRABLE PROTECTION
  - 13. UNDESIRABLE PROTECTION
  - 14. UNDESIRABLE PROTECTION
  - 15. UNDESIRABLE PROTECTION
  - 16. UNDESIRABLE PROTECTION
  - 17. UNDESIRABLE PROTECTION
  - 18. UNDESIRABLE PROTECTION
  - 19. UNDESIRABLE PROTECTION
  - 20. UNDESIRABLE PROTECTION
- SUBAQUOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. SAND AND SILT
  - 4. SILT AND CLAY
  - 5. SILT
  - 6. SAND AND SILT AND CLAY
  - 7. SAND AND SILT AND CLAY AND GRAVEL
  - 8. SAND AND SILT AND CLAY AND GRAVEL AND SAND
  - 9. SAND AND SILT AND CLAY AND GRAVEL AND SAND AND GRAVEL
  - 10. SAND AND SILT AND CLAY AND GRAVEL AND SAND AND GRAVEL AND SAND
  - 11. SAND AND SILT AND CLAY AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL
  - 12. SAND AND SILT AND CLAY AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND
  - 13. SAND AND SILT AND CLAY AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL
  - 14. SAND AND SILT AND CLAY AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND
  - 15. SAND AND SILT AND CLAY AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL
  - 16. SAND AND SILT AND CLAY AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND
  - 17. SAND AND SILT AND CLAY AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL
  - 18. SAND AND SILT AND CLAY AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND
  - 19. SAND AND SILT AND CLAY AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL
  - 20. SAND AND SILT AND CLAY AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND AND GRAVEL AND SAND
- HISTORICAL SHORELINE CHANGE RATE**
- 1. 0.1 TO 0.2 (cm/yr)
  - 2. 0.2 TO 0.3 (cm/yr)
  - 3. 0.3 TO 0.4 (cm/yr)
  - 4. 0.4 TO 0.5 (cm/yr)
  - 5. 0.5 TO 0.6 (cm/yr)
  - 6. 0.6 TO 0.7 (cm/yr)
  - 7. 0.7 TO 0.8 (cm/yr)
  - 8. 0.8 TO 0.9 (cm/yr)
  - 9. 0.9 TO 1.0 (cm/yr)
  - 10. 1.0 TO 1.1 (cm/yr)
  - 11. 1.1 TO 1.2 (cm/yr)
  - 12. 1.2 TO 1.3 (cm/yr)
  - 13. 1.3 TO 1.4 (cm/yr)
  - 14. 1.4 TO 1.5 (cm/yr)
  - 15. 1.5 TO 1.6 (cm/yr)
  - 16. 1.6 TO 1.7 (cm/yr)
  - 17. 1.7 TO 1.8 (cm/yr)
  - 18. 1.8 TO 1.9 (cm/yr)
  - 19. 1.9 TO 2.0 (cm/yr)
  - 20. 2.0 TO 2.1 (cm/yr)
- THREE - TIER CLASSIFICATION**
- EXAMPLE CLASSIFICATION 0 - 9  
 0 - 9  
 10 - 19  
 20 - 29  
 30 - 39  
 40 - 49  
 50 - 59  
 60 - 69  
 70 - 79  
 80 - 89  
 90 - 99

**WINDSOR**  
 ONTARIO  
 Scale 1:100,000  
 NATIONAL HYDROGRAPHIC SERVICE



Geomatics International  
 1000  
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48 1/98  
 1992

LAKE ERIE-ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
1	NO	40J03	9 EP CZA	4 AP85	3 RUKAVINA FISHER	943
2	YES EAST BOUND 2.3 KM EAST	40J03	9 EP CZA	3 AP85 88	3 RUKAVINA FISHER	933
3	YES WEST BOUND 2.3 KM EAST	40G15 40J02 40J03	5 AP85 OGS	2 AP85	3 RUKAVINA	523
4	NO	40G15	3 CZA AP85	3 AP85	3 RUKAVINA	333
5	NO	40G15	7 CZA AP85	4 AP85	3 RUKAVINA	743
6	NO	40G15	16 AP85	1 AP85	3 RUKAVINA	1613
7	NO	40G15	3 CZA AP85	3 AP85 88	3 RUKAVINA	333
8	YES EAST BOUND 500M EAST	40G15	1 CZA AP88	2 AP88	3 RUKAVINA	123
9	YES WEST BOUND 500M EAST	40G15 40J02	5 OGS AP88	1 AP88	3 RUKAVINA	513
10	NO	40J02	7 OGS AP88	1 AP88	3 RUKAVINA	713
11	NO	40J02	7 OGS AP88	4 AP88	2 RUKAVINA	742
12	NO	40J02	7 AP88	2 AP88	2 RUKAVINA	722
13	NO	40J02	5 AP88 OGS	2 AP88	2 RUKAVINA	522
14	NO	40J02	7 AP88	4 AP88	2 RUKAVINA	742
15	NO	40J02	16 AP88	1 AP88	2 RUKAVINA	1612
16	NO	40J02	3 OGS AP88	1 AP88	2 RUKAVINA	312
17	NO	40J02	1 CZA	2 AP88	1 RUKAVINA	121
18	NO	40J02	7 CZA AP88	4 AP88	2 RUKAVINA	742
19	NO	40J02	7 CZA AP88	1 AP88	3 RUKAVINA	713
20	NO	40J02	16 CZA AP88	1 AP88	2 RUKAVINA	1612
21	NO	40J02 40G15	7 CZA AP88	1 AP88	2 RUKAVINA	712
22	NO	40G15	9 CZA AP85	4 AP85	2 RUKAVINA	942
23	YES 23A	40G15 40G10	6 OGS	1 EP87	1 RUKAVINA	611
24	NO	40G15	9 CZA OGS AP85	4 AP85	3 RUKAVINA FISHER	943
25	YES NORTH BOUND 2KM NORTH	40G15 40J01	9 CZA AP88	1 AP88	3 RUKAVINA FISHER	913
26	YES SOUTH BOUND 2KM NORTH	40J01	9 AP88	4 AP88	3 RUKAVINA FISHER	943
27	NO	40J01	7 EP AP88	1 AP88	3 RUKAVINA FISHER	713
28	NO	40J01	7 EP AP88	1 AP88	3 RUKAVINA FISHER	713
29	NO	40J01	4 AP88	3 AP88	3 RUKAVINA FISHER	433
30	NO	40J01	3 EP87 CZA	4 EP87	1 RUKAVINA	341
31	NO	40J01	1 EP87 CZA	4 EP87	1 RUKAVINA	141
32	NO	40J01	1 CZA	4 EP87	1 RUKAVINA	141
33	NO	40J01	1 CZA	4 EP87	1 RUKAVINA	141
34	NO	40J08 40J01	1 CZA	4 EP87	1 RUKAVINA	141
35	NO	40J08 40J05	7 CZA AP88	1 AP88	3 RUKAVINA	713
36	NO	40I05	9 CZA AP88	4 AP88	2 RUKAVINA	942
37	NO	40I05	9 CZA AP88	4 AP88	2 RUKAVINA	942
38	NO	40I05	9 CZA	4 EP87	2 RUKAVINA	942
39	YES NE BOUND 1KM NE	40I05	9 CZA AP88	4 AP88	3 RUKAVINA	943
40	YES SW BOUND 1KM SW	40I05	3 CZA EP87	4 EP87	1 RUKAVINA	341
41	NO	40I05	1 CZA EP87	4 EP87	1 RUKAVINA	141

LAKE ERIE, ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
42	NO	40105 40112	1 CZA EP87	4 EP87	1 RUKAVINA	141
43	NO	40112	1 CZA EP87	4 EP87	3 RUKAVINA	143
44	NO	40112	1 CZA EP87	4 EP87 AP85	3 RUKAVINA	143
45	NO	40112 40111	1 CZA EP87	4 EP87 AP85	3 RUKAVINA	143
46	NO	40111	4 EP87 AP85	4 AP85	3 RUKAVINA	443
47	NO	40111	1 CZA AP85	4 AP85	3 RUKAVINA	143
48	NO	40111	1 CZA AP85	4 AP85	3 RUKAVINA	143
49	NO	40111	1 CZA AP85	4 AP85	3 RUKAVINA	143
50	NO	40111	2 CZA AP85	4 AP85	3 RUKAVINA	243
51	NO	40111	1 CZA AP85	4 AP85	3 RUKAVINA	143
52	NO	40111	7 CZA AP85	4 AP85	2 RUKAVINA	742
53	NO	40111	16 AP85	1 AP85	3 RUKAVINA	1613
54	NO	40111	1 CZA AP88	4 AP85	1 RUKAVINA	141
55	NO	40111	1 CZA AP85	4 AP85	3 RUKAVINA	143
56	NO	40111	7 CZA AP85	4 AP85	2 RUKAVINA	742
57	NO	40111	16 AP85	1 AP85	3 RUKAVINA	1613
58	NO	40111 40110	1 AP85 CZA	4 AP85	3 RUKAVINA	143
59	YES EAST BOUND 250M WEST	40110	1 AP85 CZA	4 AP85	3 RUKAVINA	143
60	YES WEST BOUND 250M WEST	40110	7 AP85 CZA	4 AP85	2 RUKAVINA	742
61	NO	40110	16 AP85	1 AP85	3 RUKAVINA	1613
62	NO	40110	1 AP85 CZA	3 AP85	3 RUKAVINA	133
63	NO	40110	1 AP85 CZA	4 AP85	3 RUKAVINA	143
64	NO	40110	1 AP85 CZA	4 AP85	3 RUKAVINA	143
65	NO	40110	1 AP85 CZA	4 AP85	3 RUKAVINA	143
66	NO	40110	3 AP85 CZA	4 AP85	2 RUKAVINA	342
67	NO	40110 40109	9 AP85 CZA	4 AP85	2 RUKAVINA	942
68	NO	40109	9 CZA AP85	2 AP85	2 RUKAVINA	942
69	NO	40109	9 CZA AP85	4 AP85	2 RUKAVINA	942
70	NO	40109	9 CZA EP87 AP85	4 AP85	2 RUKAVINA	942
71	NO	40109	9 EP87 AP85	4 AP85	2 RUKAVINA	942
72	NO	40109	9 EP87 CZA	4 AP85	2 RUKAVINA	942
73	NO	40109	9 CZA AP85	4 AP85	2 RUKAVINA	942
74	NO	40109	9 AP85	4 AP85	2 RUKAVINA	942
75	NO	40109	9 AP85	4 AP85	2 RUKAVINA	942
76	NO	40109	9 AP85	4 AP85	2 RUKAVINA	942
77	NO	40109	13 AP85	4 AP85	2 RUKAVINA	1342
78	NO	40109	13 AP85	4 AP85	2 RUKAVINA	1342
79	NO	40109	13 EP87	4 EP87	2 RUKAVINA	1342
80	NO	40109	1 EP87	3 EP87	2 RUKAVINA	132
81	NO	40109	13 EP87	4 EP87	2 RUKAVINA	1342
82	YES NE BOUND 350M NE	40109	9 EP87 CZA	2 CZA EP87	2 RUKAVINA	922



LAKE ERIE-ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
83	YES SW BOUND 350M SW	40109	1 OGS AP88	4 AP88	1 RUKAVINA	141
84	NO	40109 40116	1 OGS AP88	3 AP88	1 RUKAVINA	131
85	NO	40116	2 OGS AP88	3 AP88	3 RUKAVINA	233
86	NO	40116	1 CZA AP88	1 AP88	3 RUKAVINA	113
87	NO	40116	4 AP88	3 AP88	3 RUKAVINA	433
88	NO	40116	16 AP88	1 AP88	1 RUKAVINA	1611
89	NO	40116	1 CZA AP88	2 AP88	4 RUKAVINA	124
90	NO	40116	4 AP88	2 AP88	3 RUKAVINA FISHER	423
91	NO	40116	4 CZA AP88	2 AP88	4 RUKAVINA	424
92	NO	40116	3 AP88	4 AP88	4 RUKAVINA	344
93	NO	40116	4 CZA AP88	1 AP88	2 RUKAVINA	412
94	NO	40116	16 AP88	1 AP88	4 RUKAVINA	1614
95	NO	40116 30L13	3 AP88 CZA	2 AP88	1 RUKAVINA	321
96	NO	30L13	10 CZA EP87 AP88	4 AP88	4 RUKAVINA	1044
97	NO	30L13	4 CZA AP88	4 AP88	3 RUKAVINA FISHER	443
98	NO	30L13	9 CZA AP88	1 AP88	3 RUKAVINA	913
99	NO	30L13	4 AP88 CZA	3 AP88	4 RUKAVINA	434
100	NO	30L13	4 AP88 CZA	3 AP88	4 RUKAVINA	434
101	YES WEST BOUND 250M	30L13	4 AP88 EP87	2 AP88	4 AP88 RUKAVINA	424
102	NO	30L13	4 AP88 CZA	2 AP88	4 AP88 EP87	424
103	NO	30L13	3 AP88 CZA	2 AP88	4 RUKAVINA	324
104	NO	30L13	4 AP88 CZA	1 AP88	4 RUKAVINA	414
105	YES WEST BOUND 200M NORTH	30L13	10 AP88 EP87	3 AP88	4 AP88	1034
106	YES EAST BOUND 200M NORTH	30L13	6 OGS AP88	1 AP88	4 RUKAVINA	614
107	NO	30L13	3 AP88	1 AP88	4 AP88	314
108	NO	30L13	3 AP88	2 AP88	4 AP88	324
109	NO	30L13	7 CZA AP88	2 AP88	4 RUKAVINA	724
110	NO	30L13	3 AP88	2 AP88	4 AP88	324
111	NO	30L13	4 AP88	2 AP88	4 RUKAVINA	424
112	NO	30L13	3 AP88 CZA	3 AP88	4 AP88 EP87	334
113	YES EAST BOUND 300 M WEST	30L13	4 AP88 CZA	3 AP88	4 RUKAVINA	434
114	YES WEST BOUND 300M WEST	30L13	3 AP88	4 AP88	4 AP88 OGS	344
115	NO	30L13	7 AP88 OGS	3 AP88	3 RUKAVINA	733
116	NO	30L13	16 AP88	1 AP88	3 RUKAVINA	1613
117	NO	30L13	7 AP88	4 AP88	3 RUKAVINA	743
118	YES EAST BOUND 350M NORTH	30L13	3 AP88	4 AP88	4 RUKAVINA	344
119	YES WEST BOUND 350M NORTH	30L13 30L14	3 AP88	4 AP88	1 RUKAVINA	341
120	NO	30L13 30L14	1 CZA AP88	4 AP88	1 RUKAVINA	141
121	NO	30L14	4 CZA AP88	4 AP88	3 RUKAVINA FISHER	443
122	NO	30L14	4 CZA AP88	1 AP88	4 RUKAVINA	414
123	NO	30L14	4 CZA AP88	1 AP88	4 RUKAVINA	414

LAKE ERIE-ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
124 NO		30L14	7	CZA AP88 OGS	1 AP88	713
125 NO		30L14	3	OGS AP88	3 AP88	334
126 NO		30L14	5	OGS AP88	3 AP88	534
127 NO		30L14	7	OGS AP88	2 AP88	724
128 NO		30L14	5	OGS AP88	4 AP88	544
129 NO		30L14	5	OGS AP88	2 AP88	524
130 YES	EAST BOUND 1KM WEST	30L14	6	OGS AP88	1 AP88	614
131 YES	WEST BOUND 400M WEST	30L14	7	CZA AP88	2 AP88	724
132 NO		30L14	16	AP88 OGS	1 AP88	1614
133 NO		30L14	7	OGS AP88	3 AP88	734
134 NO		30L14	7	OGS AP88	4 AP88	744
135 NO		30L14	7	OGS AP88	4 AP88	744
136 NO		30L14	7	OGS AP88	3 AP88	734
137 NO		30L14	7	OGS AP88	1 AP88	714
138 NO		30L14	7	OGS AP88	2 AP88	724
139 NO		30L14	7	OGS AP88	2 AP88	722
140 NO		30L14	7	OGS AP88	1 AP88	712
141 NO		30L14	10	OGS AP88	4 AP88	1044
142 NO		30L14	10	OGS AP88	4 AP88	1044
143 NO		30L14	7	OGS AP88	1 AP88	712
144 NO		30L14	7	OGS AP88	2 AP88	722
145 NO		30L14	7	OGS AP88	1 AP88	714
146 NO		30L14	7	OGS AP88	1 AP88	714
147 NO		30L14 30L15	7	OGS AP88	2 AP88	724
148 NO		30L15	7	OGS AP88	1 AP88	714
149 NO		30L15	7	OGS AP88	2 AP88	724
150 NO		30L15	7	OGS AP88	1 AP88	714
151 NO		30L15	7	OGS AP88	1 AP88	712
152 NO		30L15	10	AP88	1 AP88	1014
153 NO	23B	40G10	7	EP87	4 EP87	743
154 NO	23C	40G10	9	EP87	4 EP87	943
155 NO	23D	40G10	6	EP87	2 EP87	624
156 NO	23E	40G10 40G15	7	EP87	3 EP87	734
157 NO	23F	40G15	7	EP87	3 EP87	733
158 NO	23G	40G15	10	OGS EP87	4 EP87	1044
159 YES	NEW	40I05	16	AP88	1 AP88	1612
160 YES	NEW	40I05	9	AP88	4 AP88	941
161 YES	NEW	40I05	13	OGS AP88	4 AP88	1341
162 YES	NEW	40I05	5	AP88	1 AP88	511
163 YES	NEW	40I05	13	AP88 OGS	2 AP88	1321
164 YES	NEW	40I05	16	AP88 EP87	1 AP88	1611

HARBOUR ARTIFICIAL

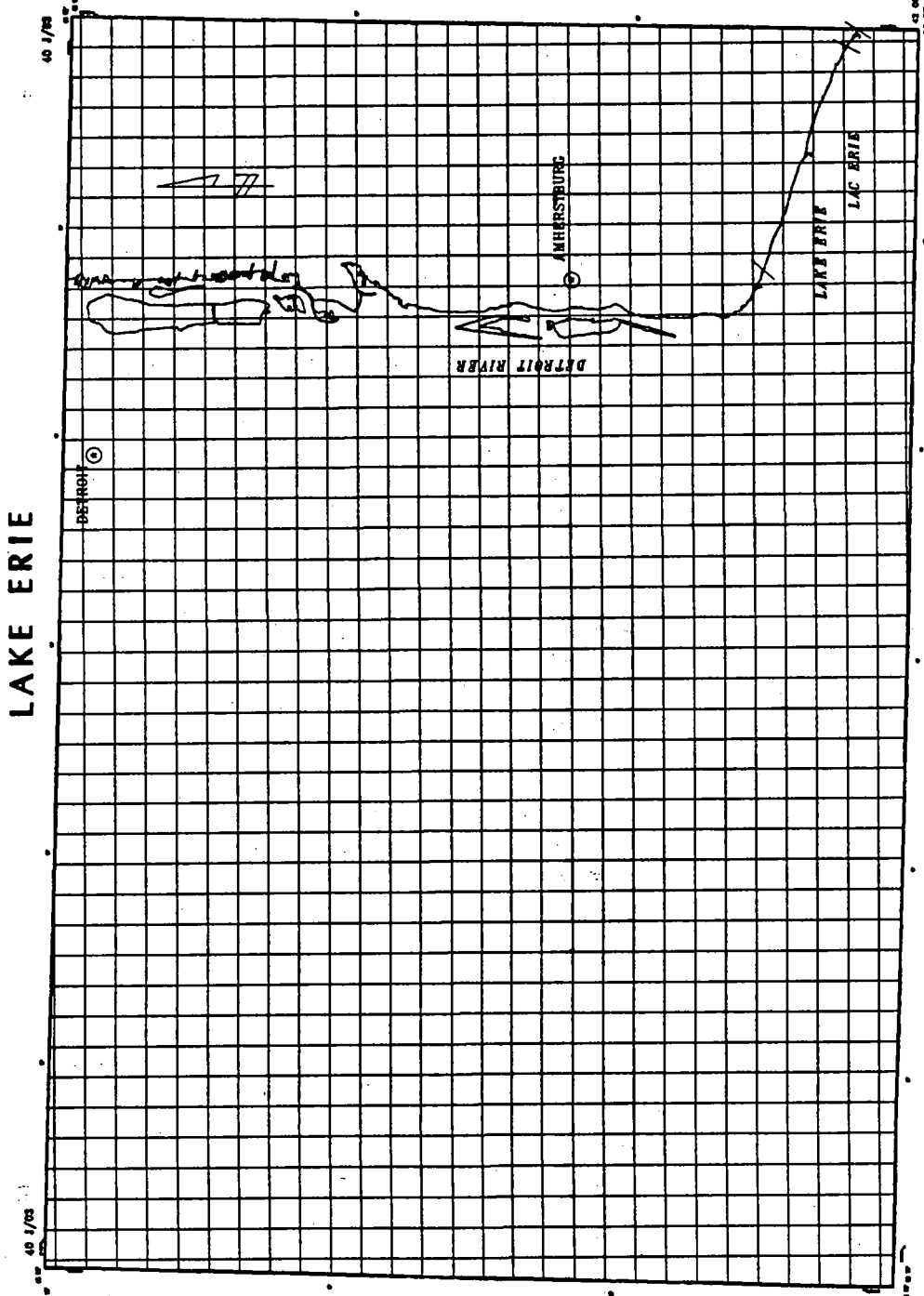
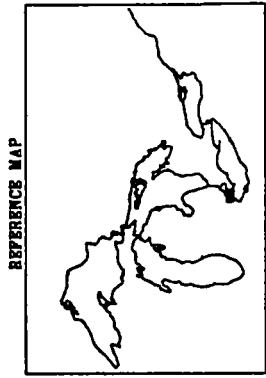
HARBOUR

ARTIFICIAL

LAKE ERIE ASC

Resch No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
165	YES NEW PART OF OLD 100	30L13	10 AP88 EP87	2 AP88	4 RUKAVINA	1024
166	YES NEW PART OF OLD 130	30L14	10 AP88 EP87	3 AP88	4 RUKAVINA	1034

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION



## GEOMORPHIC CLASSIFICATION

- 1. HIGH (OVER) BURY (OVERSTOCKS OR IN BURY)
- 2. HIGH (OVER) BURY WITH BEACH (OVER)
- 3. LOW (UNDER) BURY (UNDERSTOCKS OR IN BURY)
- 4. SANDY CLAY BANKS
- 5. CLAY BANKS
- 6. SANDY SANDS
- 7. SANDY SANDS
- 8. SANDY SANDS
- 9. SANDY SANDS
- 10. SANDY SANDS
- 11. SANDY SANDS
- 12. SANDY SANDS
- 13. SANDY SANDS
- 14. SANDY SANDS
- 15. SANDY SANDS
- 16. SANDY SANDS
- 17. SANDY SANDS
- 18. SANDY SANDS
- 19. SANDY SANDS
- 20. SANDY SANDS

## PROTECTION CLASSIFICATION

- 1. HEAVY PROTECTION
- 2. MODERATE PROTECTION
- 3. MODERATE PROTECTION
- 4. MODERATE PROTECTION
- 5. MODERATE PROTECTION
- 6. MODERATE PROTECTION
- 7. MODERATE PROTECTION
- 8. MODERATE PROTECTION
- 9. MODERATE PROTECTION
- 10. MODERATE PROTECTION
- 11. MODERATE PROTECTION
- 12. MODERATE PROTECTION
- 13. MODERATE PROTECTION
- 14. MODERATE PROTECTION
- 15. MODERATE PROTECTION
- 16. MODERATE PROTECTION
- 17. MODERATE PROTECTION
- 18. MODERATE PROTECTION
- 19. MODERATE PROTECTION
- 20. MODERATE PROTECTION

## SUBAQUEOUS/WEARSHORE COMPOSITION

- 1. CLAY
- 2. SAND
- 3. SAND
- 4. SAND
- 5. SAND
- 6. SAND
- 7. SAND
- 8. SAND
- 9. SAND
- 10. SAND
- 11. SAND
- 12. SAND
- 13. SAND
- 14. SAND
- 15. SAND
- 16. SAND
- 17. SAND
- 18. SAND
- 19. SAND
- 20. SAND

## HISTORICAL SHORELINE CHANGE RATE

- 1. INCREASE (CAL. 1970)
- 2. INCREASE (CAL. 1970)
- 3. INCREASE (CAL. 1970)
- 4. INCREASE (CAL. 1970)
- 5. INCREASE (CAL. 1970)
- 6. INCREASE (CAL. 1970)
- 7. INCREASE (CAL. 1970)
- 8. INCREASE (CAL. 1970)
- 9. INCREASE (CAL. 1970)
- 10. INCREASE (CAL. 1970)
- 11. INCREASE (CAL. 1970)
- 12. INCREASE (CAL. 1970)
- 13. INCREASE (CAL. 1970)
- 14. INCREASE (CAL. 1970)
- 15. INCREASE (CAL. 1970)
- 16. INCREASE (CAL. 1970)
- 17. INCREASE (CAL. 1970)
- 18. INCREASE (CAL. 1970)
- 19. INCREASE (CAL. 1970)
- 20. INCREASE (CAL. 1970)

## THREE - TIER CLASSIFICATION

- 1. GEOMORPHIC CLASSIFICATION (1 - 20)
- 2. PROTECTION CLASSIFICATION (1 - 20)
- 3. SUBAQUEOUS/WEARSHORE COMPOSITION (1 - 20)
- 4. HISTORICAL SHORELINE CHANGE RATE (1 - 20)

EXAMPLE  
 GEOMORPHIC CLASSIFICATION (1 - 20)  
 PROTECTION CLASSIFICATION (1 - 20)  
 SUBAQUEOUS/WEARSHORE COMPOSITION (1 - 20)  
 HISTORICAL SHORELINE CHANGE RATE (1 - 20)



## AMHERSTBURG ONTARIO

Scale 1:100,000  
 NATIONAL TOPOGRAPHIC SERVICE

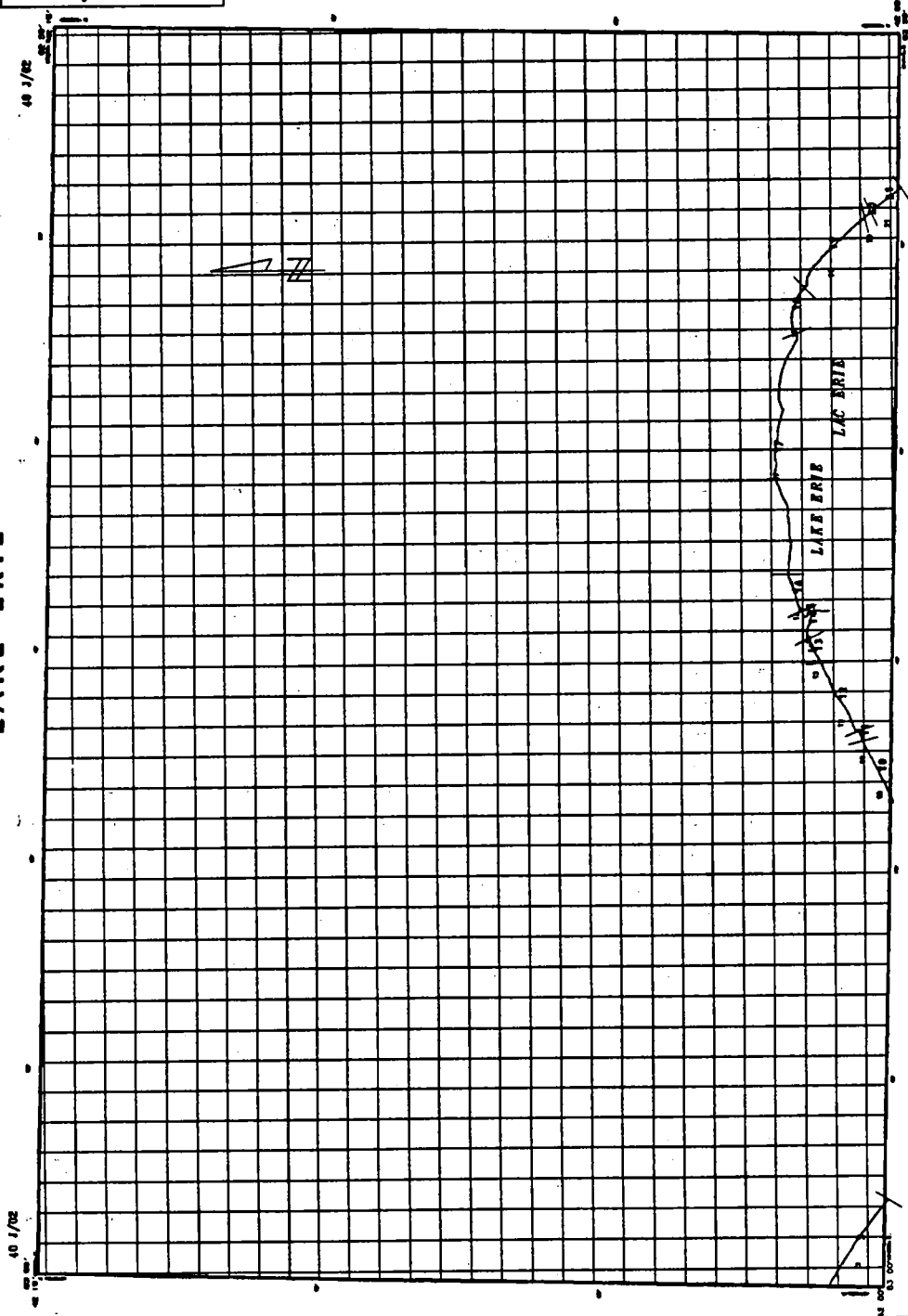
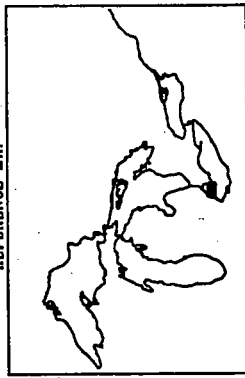
Geomatics International  
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48 1/89  
 1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE ERIE

REFERENCE MAP



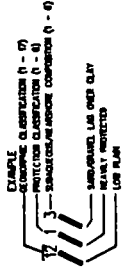
- GEOMORPHIC CLASSIFICATION**
- 1. HIGH (10m) CLIFF (INTERIOR OR TO BEACH)
  - 2. HIGH (10m) CLIFF (SHORELINE OR TO BEACH)
  - 3. LOW (10m) CLIFF (INTERIOR OR TO BEACH)
  - 4. LOW (10m) CLIFF (SHORELINE OR TO BEACH)
  - 5. SAND/GRASS BANKS
  - 6. SAND/GRASS BANKS
  - 7. SAND/GRASS BANKS
  - 8. SAND/GRASS BANKS
  - 9. SAND/GRASS BANKS
  - 10. SAND/GRASS BANKS
  - 11. SAND/GRASS BANKS
  - 12. SAND/GRASS BANKS
  - 13. SAND/GRASS BANKS
  - 14. SAND/GRASS BANKS
  - 15. SAND/GRASS BANKS
  - 16. SAND/GRASS BANKS
  - 17. SAND/GRASS BANKS

- PROTECTION CLASSIFICATION**
- 1. HEAVILY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. LIGHT PROTECTION
  - 4. NO PROTECTION
  - 5. UNCLASSIFIED

- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. SAND/SILT
  - 4. SAND/SILT/CLAY
  - 5. SAND/SILT/CLAY
  - 6. SAND/SILT/CLAY
  - 7. SAND/SILT/CLAY
  - 8. SAND/SILT/CLAY
  - 9. SAND/SILT/CLAY
  - 10. SAND/SILT/CLAY
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  - 15. SAND/SILT/CLAY
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  - 96. SAND/SILT/CLAY
  - 97. SAND/SILT/CLAY
  - 98. SAND/SILT/CLAY
  - 99. SAND/SILT/CLAY
  - 100. SAND/SILT/CLAY

- HISTORICAL SHORELINE CHANGE RATE**
- 1. 0.00 (0.00 to 0.00 m/yr)
  - 2. 0.00 (0.00 to 0.00 m/yr)
  - 3. 0.00 (0.00 to 0.00 m/yr)
  - 4. 0.00 (0.00 to 0.00 m/yr)
  - 5. 0.00 (0.00 to 0.00 m/yr)
  - 6. 0.00 (0.00 to 0.00 m/yr)
  - 7. 0.00 (0.00 to 0.00 m/yr)
  - 8. 0.00 (0.00 to 0.00 m/yr)
  - 9. 0.00 (0.00 to 0.00 m/yr)
  - 10. 0.00 (0.00 to 0.00 m/yr)
  - 11. 0.00 (0.00 to 0.00 m/yr)
  - 12. 0.00 (0.00 to 0.00 m/yr)
  - 13. 0.00 (0.00 to 0.00 m/yr)
  - 14. 0.00 (0.00 to 0.00 m/yr)
  - 15. 0.00 (0.00 to 0.00 m/yr)
  - 16. 0.00 (0.00 to 0.00 m/yr)
  - 17. 0.00 (0.00 to 0.00 m/yr)
  - 18. 0.00 (0.00 to 0.00 m/yr)
  - 19. 0.00 (0.00 to 0.00 m/yr)
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  - 21. 0.00 (0.00 to 0.00 m/yr)
  - 22. 0.00 (0.00 to 0.00 m/yr)
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  - 25. 0.00 (0.00 to 0.00 m/yr)
  - 26. 0.00 (0.00 to 0.00 m/yr)
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  - 28. 0.00 (0.00 to 0.00 m/yr)
  - 29. 0.00 (0.00 to 0.00 m/yr)
  - 30. 0.00 (0.00 to 0.00 m/yr)
  - 31. 0.00 (0.00 to 0.00 m/yr)
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  - 34. 0.00 (0.00 to 0.00 m/yr)
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  - 38. 0.00 (0.00 to 0.00 m/yr)
  - 39. 0.00 (0.00 to 0.00 m/yr)
  - 40. 0.00 (0.00 to 0.00 m/yr)
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  - 43. 0.00 (0.00 to 0.00 m/yr)
  - 44. 0.00 (0.00 to 0.00 m/yr)
  - 45. 0.00 (0.00 to 0.00 m/yr)
  - 46. 0.00 (0.00 to 0.00 m/yr)
  - 47. 0.00 (0.00 to 0.00 m/yr)
  - 48. 0.00 (0.00 to 0.00 m/yr)
  - 49. 0.00 (0.00 to 0.00 m/yr)
  - 50. 0.00 (0.00 to 0.00 m/yr)
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  - 98. 0.00 (0.00 to 0.00 m/yr)
  - 99. 0.00 (0.00 to 0.00 m/yr)
  - 100. 0.00 (0.00 to 0.00 m/yr)

- THREE - TIER CLASSIFICATION**
- 1. CLASS 1 (A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z)
  - 2. CLASS 2 (A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z)
  - 3. CLASS 3 (A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z)



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ONTARIO  
Scale 1 : 50 000 sheets

Geomatics International  
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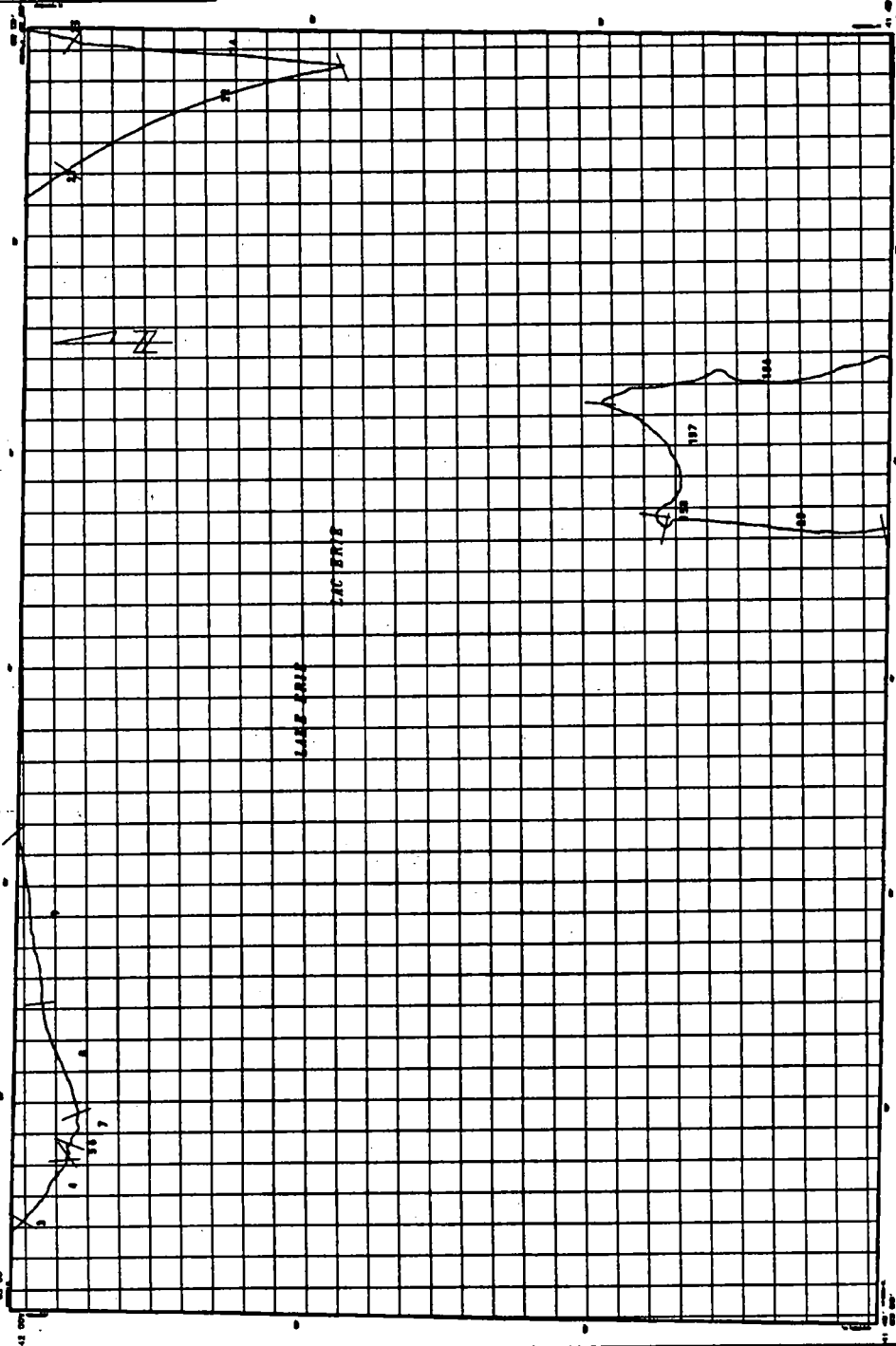
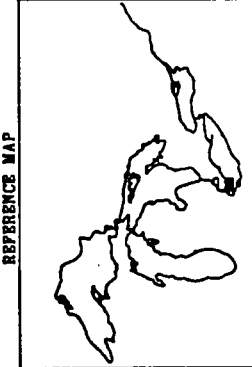
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1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

LAKE ERIE

40 9/15

40 9/15



## GEOMORPHIC CLASSIFICATION

- 1. SAND (SAND) CLAY (SAND) CLAY (SAND) CLAY
- 2. SAND (SAND) CLAY (SAND) CLAY (SAND) CLAY
- 3. SAND (SAND) CLAY (SAND) CLAY (SAND) CLAY
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- 16. SAND (SAND) CLAY (SAND) CLAY (SAND) CLAY
- 17. SAND (SAND) CLAY (SAND) CLAY (SAND) CLAY

## PROTECTION CLASSIFICATION

- 1. HEAVILY PROTECTED
- 2. MODERATELY PROTECTED
- 3. MODERATE PROTECTION
- 4. MODERATE PROTECTION
- 5. MODERATE PROTECTION
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- 14. MODERATE PROTECTION
- 15. MODERATE PROTECTION
- 16. MODERATE PROTECTION
- 17. MODERATE PROTECTION

## SUBAQUEOUS/NEARSHORE COMPOSITION

- 1. CLAY
- 2. SAND
- 3. SAND/SHALE LIM OVER CLAY
- 4. SAND/SHALE LIM OVER CLAY
- 5. SAND/SHALE LIM OVER CLAY
- 6. SAND/SHALE LIM OVER CLAY
- 7. SAND/SHALE LIM OVER CLAY
- 8. SAND/SHALE LIM OVER CLAY
- 9. SAND/SHALE LIM OVER CLAY
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- 11. SAND/SHALE LIM OVER CLAY
- 12. SAND/SHALE LIM OVER CLAY
- 13. SAND/SHALE LIM OVER CLAY
- 14. SAND/SHALE LIM OVER CLAY
- 15. SAND/SHALE LIM OVER CLAY
- 16. SAND/SHALE LIM OVER CLAY
- 17. SAND/SHALE LIM OVER CLAY

## HISTORICAL SHORELINE CHANGE RATE

- 1. ACCRETION (<0.1 m/y)
- 2. ACCRETION (0.1 to 0.2 m/y)
- 3. ACCRETION (0.2 to 0.3 m/y)
- 4. ACCRETION (0.3 to 0.4 m/y)
- 5. ACCRETION (0.4 to 0.5 m/y)
- 6. ACCRETION (0.5 to 0.6 m/y)
- 7. ACCRETION (0.6 to 0.7 m/y)
- 8. ACCRETION (0.7 to 0.8 m/y)
- 9. ACCRETION (0.8 to 0.9 m/y)
- 10. ACCRETION (0.9 to 1.0 m/y)
- 11. ACCRETION (1.0 to 1.1 m/y)
- 12. ACCRETION (1.1 to 1.2 m/y)
- 13. ACCRETION (1.2 to 1.3 m/y)
- 14. ACCRETION (1.3 to 1.4 m/y)
- 15. ACCRETION (1.4 to 1.5 m/y)
- 16. ACCRETION (1.5 to 1.6 m/y)
- 17. ACCRETION (1.6 to 1.7 m/y)

## THREE - TIER CLASSIFICATION

- 1. SAMPLE
- 2. GEOMORPHIC CLASSIFICATION (1 - 9)
- 3. PROTECTION CLASSIFICATION (1 - 6)
- 4. SUBAQUEOUS/NEARSHORE COMPOSITION (1 - 9)
- 5. HISTORICAL SHORELINE CHANGE RATE (1 - 17)
- 6. SAND/SHALE LIM OVER CLAY
- 7. SAND/SHALE LIM OVER CLAY
- 8. SAND/SHALE LIM OVER CLAY
- 9. SAND/SHALE LIM OVER CLAY
- 10. SAND/SHALE LIM OVER CLAY
- 11. SAND/SHALE LIM OVER CLAY
- 12. SAND/SHALE LIM OVER CLAY
- 13. SAND/SHALE LIM OVER CLAY
- 14. SAND/SHALE LIM OVER CLAY
- 15. SAND/SHALE LIM OVER CLAY
- 16. SAND/SHALE LIM OVER CLAY
- 17. SAND/SHALE LIM OVER CLAY

40 9/15  
1992



PELEE ISLAND

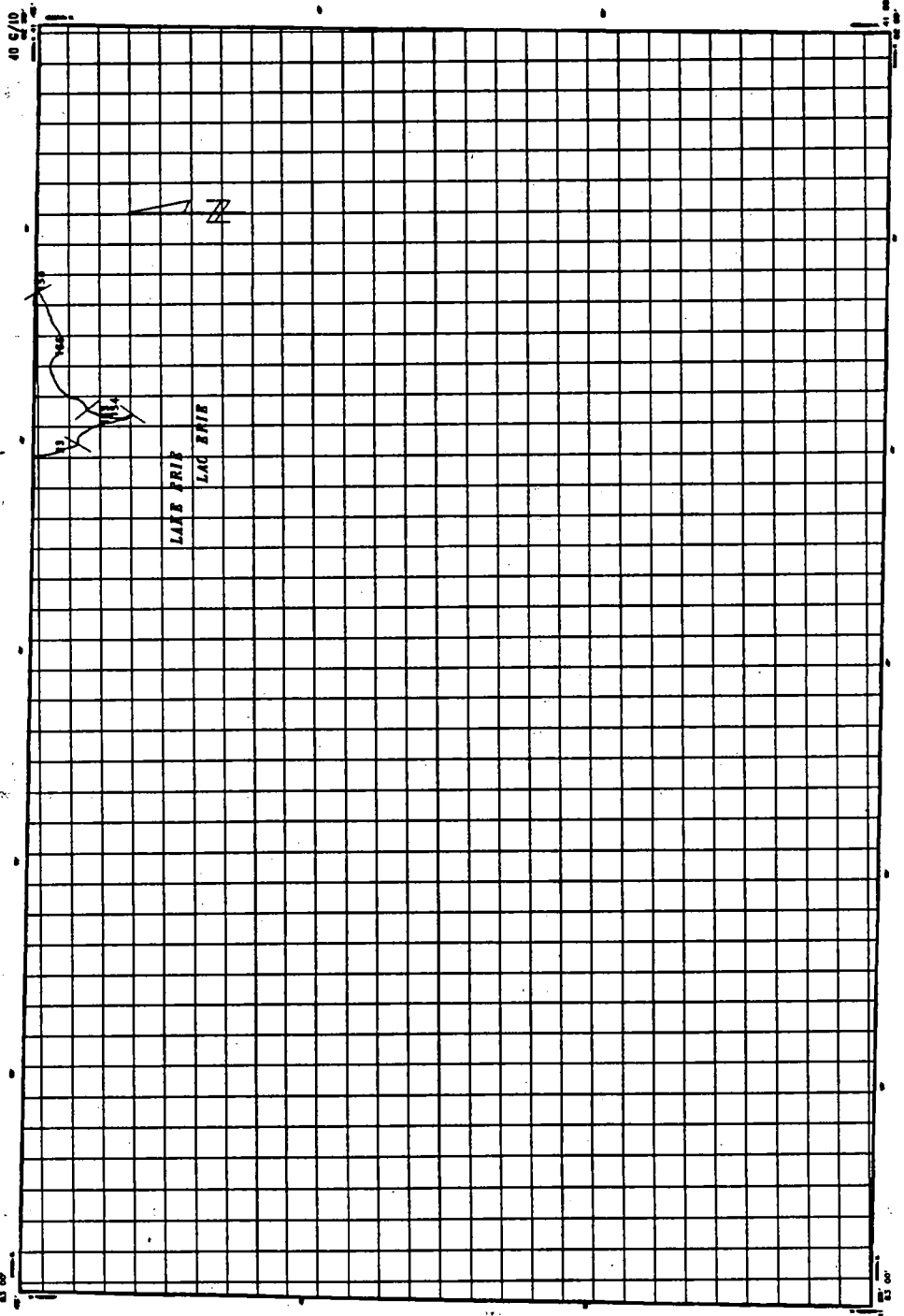
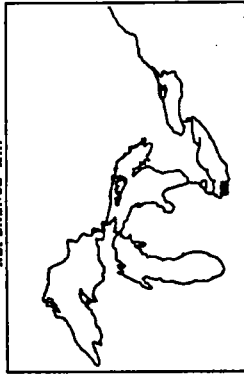
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NATIONAL HYDROGRAPHIC SERVICE

Geomatics International  
Inc.  
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# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE ERIE

40 5/10



### GEOMORPHIC CLASSIFICATION

- 01 L. SAND (FINE) CLAY (DOMINANT OR NO SAND)
- 02 L. SAND (FINE) CLAY (WITH SAND GRAIN)
- 03 L. SAND (FINE) CLAY (WITH SAND GRAIN) (NO SAND)
- 04 L. SAND (FINE) CLAY (WITH SAND GRAIN) (NO SAND)
- 05 L. SAND (FINE) CLAY (WITH SAND GRAIN) (NO SAND)
- 06 L. SAND (FINE) CLAY (WITH SAND GRAIN) (NO SAND)
- 07 L. SAND (FINE) CLAY (WITH SAND GRAIN) (NO SAND)
- 08 L. SAND (FINE) CLAY (WITH SAND GRAIN) (NO SAND)
- 09 L. SAND (FINE) CLAY (WITH SAND GRAIN) (NO SAND)
- 10 L. SAND (FINE) CLAY (WITH SAND GRAIN) (NO SAND)
- 11 L. SAND (FINE) CLAY (WITH SAND GRAIN) (NO SAND)
- 12 L. SAND (FINE) CLAY (WITH SAND GRAIN) (NO SAND)
- 13 L. SAND (FINE) CLAY (WITH SAND GRAIN) (NO SAND)
- 14 L. SAND (FINE) CLAY (WITH SAND GRAIN) (NO SAND)
- 15 L. SAND (FINE) CLAY (WITH SAND GRAIN) (NO SAND)
- 16 L. SAND (FINE) CLAY (WITH SAND GRAIN) (NO SAND)
- 17 L. SAND (FINE) CLAY (WITH SAND GRAIN) (NO SAND)

### PROTECTION CLASSIFICATION

- 01 NEARLY PROTECTED
- 02 PROTECTED
- 03 HIGH PROTECTION
- 04 PROTECTION
- 05 HIGH-STRUCTURAL PROTECTION
- 06 UNCLASSIFIED

### SUBAQUEOUS/NEARSHORE COMPOSITION

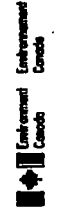
- 01 CLAY
- 02 SAND
- 03 SAND/SILT/CLAY OVER CLAY
- 04 SAND/SILT/CLAY OVER SAND
- 05 SAND/SILT/CLAY OVER SAND
- 06 UNCLASSIFIED

### HISTORICAL SHORELINE CHANGE RATE

- 01 ACCRETION (1-20 m/yr)
- 02 STABLE (0-1 m/yr)
- 03 RETREAT (1-20 m/yr)
- 04 UNCLASSIFIED (0-20 m/yr)
- 05 RETREAT (20-50 m/yr)
- 06 RETREAT (50-100 m/yr)
- 07 RETREAT (100-200 m/yr)
- 08 UNCLASSIFIED

### THREE - TIER CLASSIFICATION

- 01 PROTECTION CLASSIFICATION (1 - 9)
- 02 PROTECTION CLASSIFICATION (1 - 9)
- 03 SUBAQUEOUS/NEARSHORE COMPOSITION (1 - 6)



### MIDDLE ISLAND

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NATIONAL HYDROGRAPHIC COMMISSION

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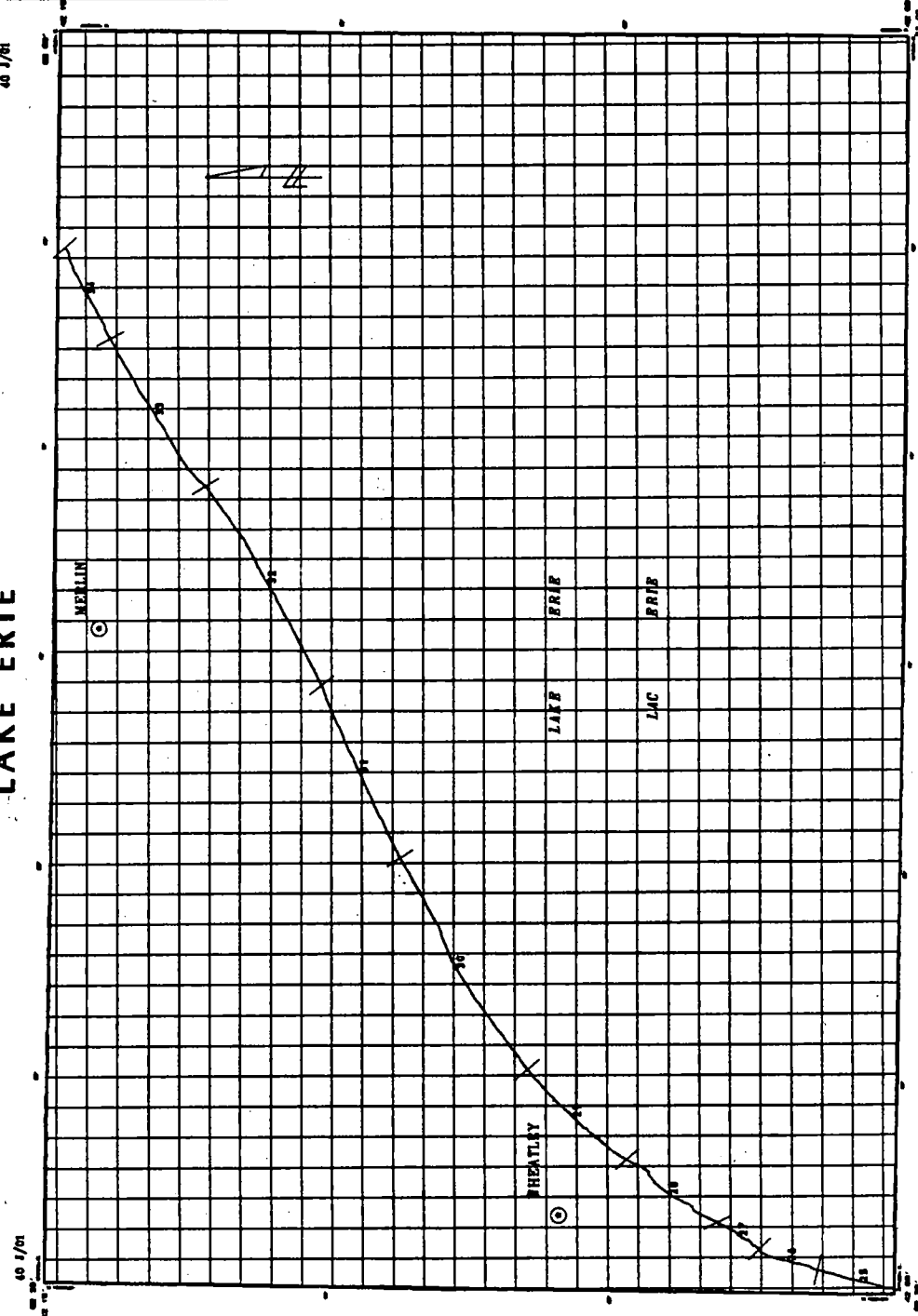
40 5/10  
1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE ERIE

40 1/81

REFERENCE MAP



**GEOMORPHIC CLASSIFICATION**

- 1. HIGH (POINT) BLUFF (CONTINUOUS OR IN ISLANDS)
- 2. HIGH (POINT) BLUFF (SPARSELY OCCURRING)
- 3. HIGH (POINT) BLUFF (SPARSELY OCCURRING) WITH BEACH
- 4. LOW (POINT) BLUFF WITH BEACH (POINT)
- 5. SAND/CLAY BLUFF
- 6. SAND/CLAY BLUFF
- 7. SAND/CLAY BLUFF
- 8. SAND/CLAY BLUFF
- 9. SAND/CLAY BLUFF
- 10. SAND/CLAY BLUFF
- 11. SAND/CLAY BLUFF
- 12. SAND/CLAY BLUFF
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- 47. SAND/CLAY BLUFF
- 48. SAND/CLAY BLUFF
- 49. SAND/CLAY BLUFF
- 50. SAND/CLAY BLUFF

**PROTECTION CLASSIFICATION**

- 1. FULLY PROTECTED
- 2. PARTIALLY PROTECTED
- 3. NO PROTECTION
- 4. NO PROTECTION
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- 47. NO PROTECTION
- 48. NO PROTECTION
- 49. NO PROTECTION
- 50. NO PROTECTION

**SUBAQUEOUS/NEARSHORE COMPOSITION**

- 1. CLAY
- 2. SILT
- 3. SAND
- 4. SAND/CLAY
- 5. SAND/CLAY
- 6. SAND/CLAY
- 7. SAND/CLAY
- 8. SAND/CLAY
- 9. SAND/CLAY
- 10. SAND/CLAY
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- 45. SAND/CLAY
- 46. SAND/CLAY
- 47. SAND/CLAY
- 48. SAND/CLAY
- 49. SAND/CLAY
- 50. SAND/CLAY

**HISTORICAL SHORELINE CHANGE RATE**

- 1. POSITIVE (1-0.1 m/yr)
- 2. POSITIVE (0.1-0.2 m/yr)
- 3. POSITIVE (0.2-0.3 m/yr)
- 4. POSITIVE (0.3-0.4 m/yr)
- 5. POSITIVE (0.4-0.5 m/yr)
- 6. POSITIVE (0.5-0.6 m/yr)
- 7. POSITIVE (0.6-0.7 m/yr)
- 8. POSITIVE (0.7-0.8 m/yr)
- 9. POSITIVE (0.8-0.9 m/yr)
- 10. POSITIVE (0.9-1.0 m/yr)
- 11. POSITIVE (1.0-1.1 m/yr)
- 12. POSITIVE (1.1-1.2 m/yr)
- 13. POSITIVE (1.2-1.3 m/yr)
- 14. POSITIVE (1.3-1.4 m/yr)
- 15. POSITIVE (1.4-1.5 m/yr)
- 16. POSITIVE (1.5-1.6 m/yr)
- 17. POSITIVE (1.6-1.7 m/yr)
- 18. POSITIVE (1.7-1.8 m/yr)
- 19. POSITIVE (1.8-1.9 m/yr)
- 20. POSITIVE (1.9-2.0 m/yr)
- 21. POSITIVE (2.0-2.1 m/yr)
- 22. POSITIVE (2.1-2.2 m/yr)
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- 29. POSITIVE (2.8-2.9 m/yr)
- 30. POSITIVE (2.9-3.0 m/yr)
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- 32. POSITIVE (3.1-3.2 m/yr)
- 33. POSITIVE (3.2-3.3 m/yr)
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- 35. POSITIVE (3.4-3.5 m/yr)
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- 48. POSITIVE (4.7-4.8 m/yr)
- 49. POSITIVE (4.8-4.9 m/yr)
- 50. POSITIVE (4.9-5.0 m/yr)

**THREE - TIER CLASSIFICATION**

EXAMPLE

- 1. GEOMORPHIC CLASSIFICATION (1-50)
- 2. PROTECTION CLASSIFICATION (1-50)
- 3. SUBAQUEOUS/NEARSHORE COMPOSITION (1-50)
- 4. HISTORICAL SHORELINE CHANGE RATE (1-50)

40 1/81 1992

ENVIRONMENTAL CANADA

WHEATLEY LAKE ERIE CLAY FULLY PROTECTED

**WHEATLEY ONTARIO**

Scale 1 : 25 000 sheets

ENVIRONMENTAL CANADA

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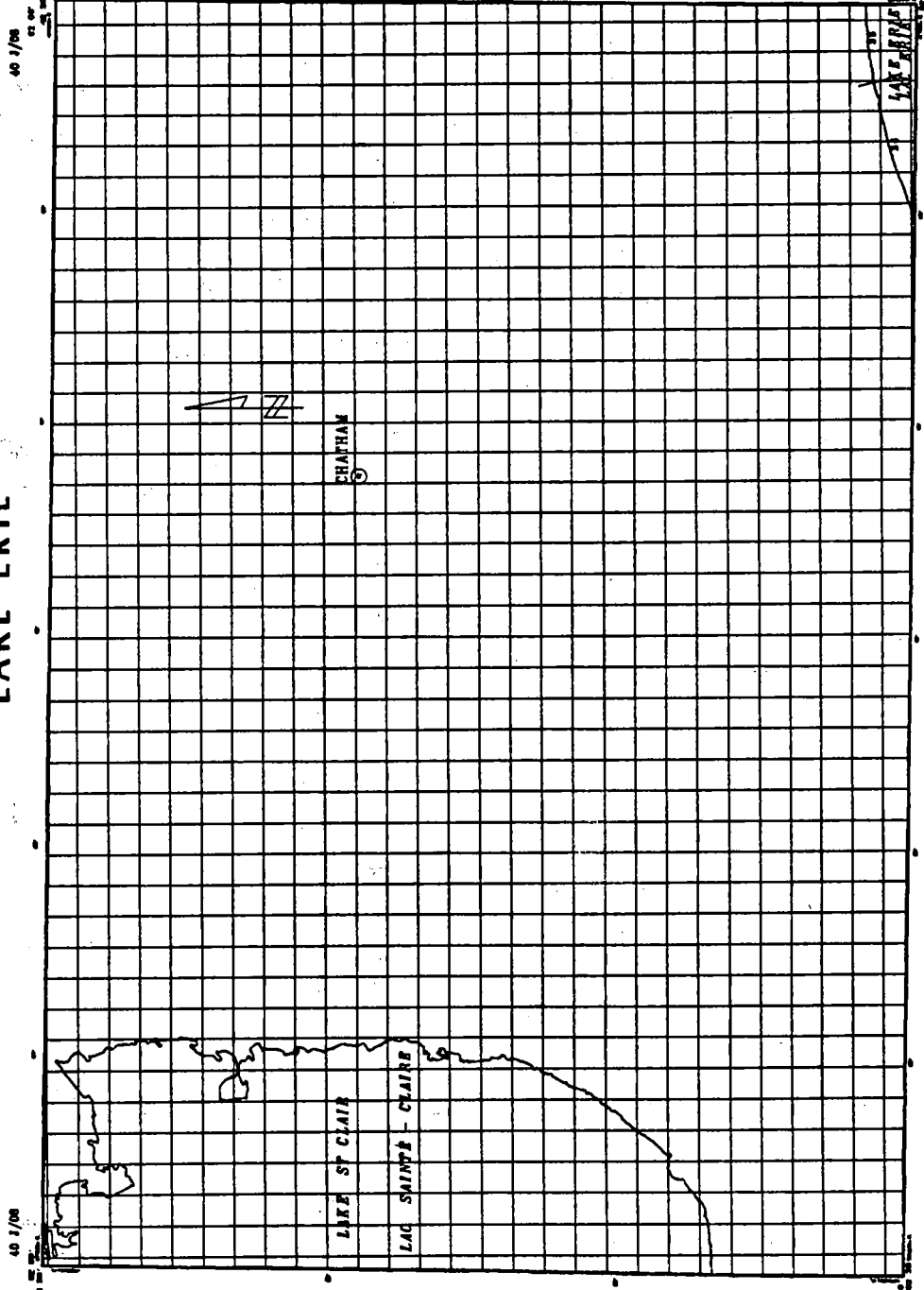
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# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

LAKE ERIE

REFERENCE MAP



- GEOMORPHIC CLASSIFICATION**
- 1. HIGH (OVER) BURY (ACCUMULATED IN BEACH)
  - 2. LOW (UNDER) BURY (WITH ACCUMULATED IN BEACH)
  - 3. LOW (UNDER) BURY (WITH ACCUMULATED IN BEACH)
  - 4. CLAY BANKS
  - 5. SANDY BEACHES
  - 6. SANDY BEACHES
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- PROTECTION CLASSIFICATION**
- 1. FULLY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. PARTIALLY PROTECTED
  - 4. UNPROTECTED
  - 5. UNCLASSIFIED

- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
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  - 99. SAND
  - 100. SAND

- HISTORICAL SHORELINE CHANGE RATE**
- 1. 1.00 (1.00 to 1.00)
  - 2. 1.00 (1.00 to 1.00)
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- THREE - TIER CLASSIFICATION**
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CHATHAM  
ONTARIO  
Scale 1:50,000  
NATIONAL HYDROGRAPHIC SERVICE

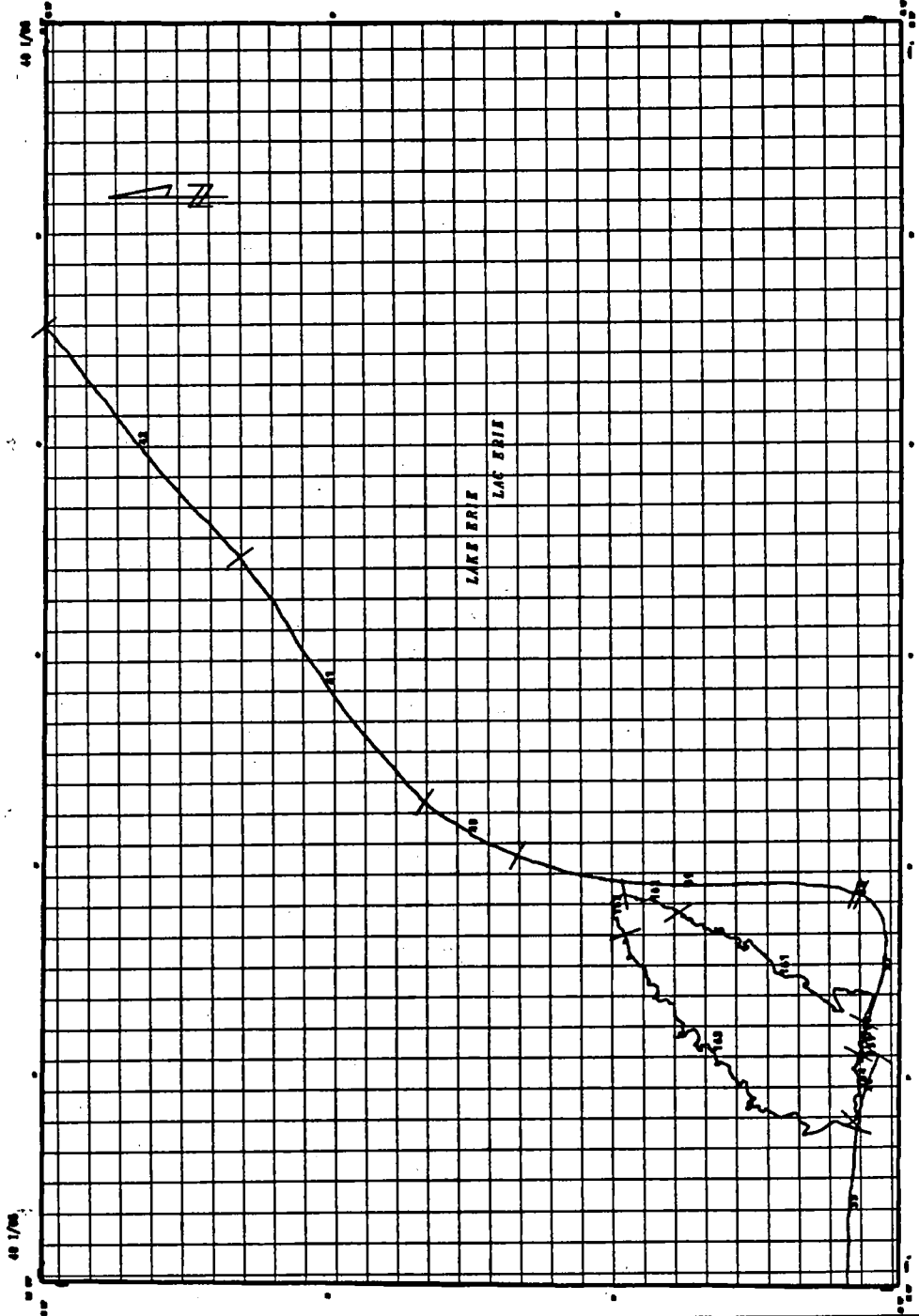


48 1/98  
1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE ERIE

48 1/8"



48 1/8"

### ORIGORPHIC CLASSIFICATION

- 1. 100% SAND
- 2. 100% SILT
- 3. 100% CLAY
- 4. 100% SILT AND CLAY
- 5. 100% SAND AND SILT
- 6. 100% SAND AND CLAY
- 7. 100% SAND AND SILT AND CLAY
- 8. 100% SAND AND SILT AND CLAY AND GRAVEL
- 9. 100% SAND AND SILT AND CLAY AND GRAVEL AND COBBLES
- 10. 100% SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders
- 11. 100% SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS
- 12. 100% SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS
- 13. 100% SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS AND SHELLS
- 14. 100% SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS AND SHELLS AND BRACHIOPODS
- 15. 100% SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS AND SHELLS AND BRACHIOPODS AND MOLLUSKS
- 16. 100% SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS AND SHELLS AND BRACHIOPODS AND MOLLUSKS AND NAUPTILUS
- 17. 100% SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS AND SHELLS AND BRACHIOPODS AND MOLLUSKS AND NAUPTILUS AND CRUSTACEANS
- 18. 100% SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS AND SHELLS AND BRACHIOPODS AND MOLLUSKS AND NAUPTILUS AND CRUSTACEANS AND PLANTS
- 19. 100% SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS AND SHELLS AND BRACHIOPODS AND MOLLUSKS AND NAUPTILUS AND CRUSTACEANS AND PLANTS AND ANIMALS
- 20. 100% SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS AND SHELLS AND BRACHIOPODS AND MOLLUSKS AND NAUPTILUS AND CRUSTACEANS AND PLANTS AND ANIMALS AND HUMANS

### PROTECTION CLASSIFICATION

- 1. 100% PROTECTED
- 2. 75% PROTECTED
- 3. 50% PROTECTED
- 4. 25% PROTECTED
- 5. NOT PROTECTED

### SUBAQUEOUS/NEARSHORE COMPOSITION

- 1. CLAY
- 2. SILT
- 3. SAND
- 4. SAND AND SILT
- 5. SAND AND CLAY
- 6. SAND AND SILT AND CLAY
- 7. SAND AND SILT AND CLAY AND GRAVEL
- 8. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES
- 9. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders
- 10. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS
- 11. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS
- 12. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS AND SHELLS
- 13. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS AND SHELLS AND BRACHIOPODS
- 14. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS AND SHELLS AND BRACHIOPODS AND MOLLUSKS
- 15. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS AND SHELLS AND BRACHIOPODS AND MOLLUSKS AND NAUPTILUS
- 16. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS AND SHELLS AND BRACHIOPODS AND MOLLUSKS AND NAUPTILUS AND CRUSTACEANS
- 17. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS AND SHELLS AND BRACHIOPODS AND MOLLUSKS AND NAUPTILUS AND CRUSTACEANS AND PLANTS
- 18. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS AND SHELLS AND BRACHIOPODS AND MOLLUSKS AND NAUPTILUS AND CRUSTACEANS AND PLANTS AND ANIMALS
- 19. SAND AND SILT AND CLAY AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND CORALS AND SHELLS AND BRACHIOPODS AND MOLLUSKS AND NAUPTILUS AND CRUSTACEANS AND PLANTS AND ANIMALS AND HUMANS

### HISTORICAL SHORELINE CHANGE RATE

- 1. 100% (1950-1970)
- 2. 100% (1970-1980)
- 3. 100% (1980-1990)
- 4. 100% (1990-2000)
- 5. 100% (2000-2010)
- 6. 100% (2010-2020)
- 7. 100% (2020-2030)
- 8. 100% (2030-2040)
- 9. 100% (2040-2050)
- 10. 100% (2050-2060)
- 11. 100% (2060-2070)
- 12. 100% (2070-2080)
- 13. 100% (2080-2090)
- 14. 100% (2090-2100)

### THREE - TIER CLASSIFICATION

- 1. 100% TIER 1
- 2. 75% TIER 1
- 3. 50% TIER 1
- 4. 25% TIER 1
- 5. NOT TIER 1

48 1/8" 1992

RIDGETOWN ONTARIO  
Scale 1:250,000  
DATE: 1992

Geographic Information System  
Map Scale: 1:250,000  
Date: 1992

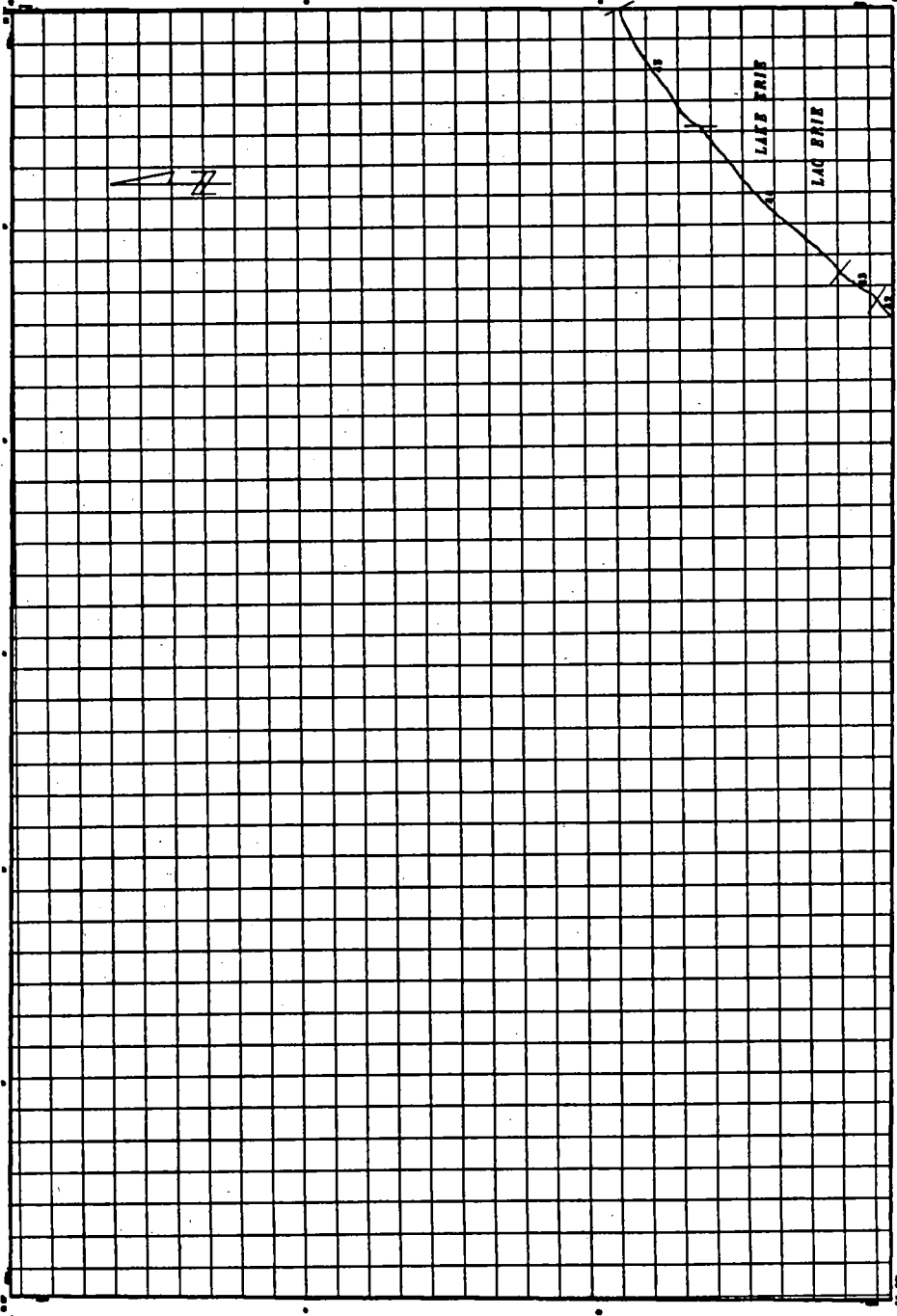


# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE ERIE

40 1/12

40 1/12



### GEOMORPHIC CLASSIFICATION

- 1. HIGH (CLAY) CLAY (RESISTANCE TO EROSION)
- 2. LOW (SAND) SAND (RESISTANCE TO EROSION)
- 3. LOW (CLAY) CLAY (RESISTANCE TO EROSION)
- 4. SAND (CLAY) CLAY WITH SAND (0-5%)
- 5. SAND (CLAY) CLAY
- 6. SANDY SILT (CLAY)
- 7. SANDY SILT (CLAY)
- 8. SANDY SILT (CLAY)
- 9. SANDY SILT (CLAY)
- 10. SANDY SILT (CLAY)
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- 13. SANDY SILT (CLAY)
- 14. SANDY SILT (CLAY)
- 15. SANDY SILT (CLAY)
- 16. SANDY SILT (CLAY)
- 17. SANDY SILT (CLAY)

### PROTECTION CLASSIFICATION

- 1. NEARLY PROTECTED
- 2. MODERATELY PROTECTED
- 3. MODERATE PROTECTION
- 4. MODERATE PROTECTION
- 5. MODERATE PROTECTION
- 6. MODERATE PROTECTION
- 7. MODERATE PROTECTION
- 8. MODERATE PROTECTION

### SUBAQUEOUS/NEARSHORE COMPOSITION

- 1. CLAY
- 2. SAND
- 3. SAND
- 4. SAND
- 5. SAND
- 6. SAND
- 7. SAND
- 8. SAND
- 9. SAND
- 10. SAND
- 11. SAND
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- 13. SAND
- 14. SAND
- 15. SAND
- 16. SAND
- 17. SAND

### HISTORICAL SHORELINE CHANGE RATE

- 1. STABLE (0.1 to 0.2 m/yr)
- 2. STABLE (0.1 to 0.2 m/yr)
- 3. STABLE (0.1 to 0.2 m/yr)
- 4. STABLE (0.1 to 0.2 m/yr)
- 5. STABLE (0.1 to 0.2 m/yr)
- 6. STABLE (0.1 to 0.2 m/yr)
- 7. STABLE (0.1 to 0.2 m/yr)
- 8. STABLE (0.1 to 0.2 m/yr)
- 9. STABLE (0.1 to 0.2 m/yr)
- 10. STABLE (0.1 to 0.2 m/yr)
- 11. STABLE (0.1 to 0.2 m/yr)
- 12. STABLE (0.1 to 0.2 m/yr)
- 13. STABLE (0.1 to 0.2 m/yr)
- 14. STABLE (0.1 to 0.2 m/yr)
- 15. STABLE (0.1 to 0.2 m/yr)
- 16. STABLE (0.1 to 0.2 m/yr)
- 17. STABLE (0.1 to 0.2 m/yr)

### THREE - TIER CLASSIFICATION

- 1. PROTECTED (CLASSIFICATION 1 - 5)
- 2. MODERATELY PROTECTED (CLASSIFICATION 6 - 10)
- 3. MODERATELY PROTECTED (CLASSIFICATION 11 - 15)
- 4. MODERATELY PROTECTED (CLASSIFICATION 16 - 17)

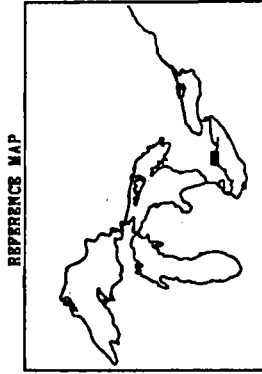
40 1/12  
1992

BOTHWELL  
ONTARIO  
Scale 1 : 50 000  
NATIONAL HYDROGRAPHIC SERVICE

Geomatics International  
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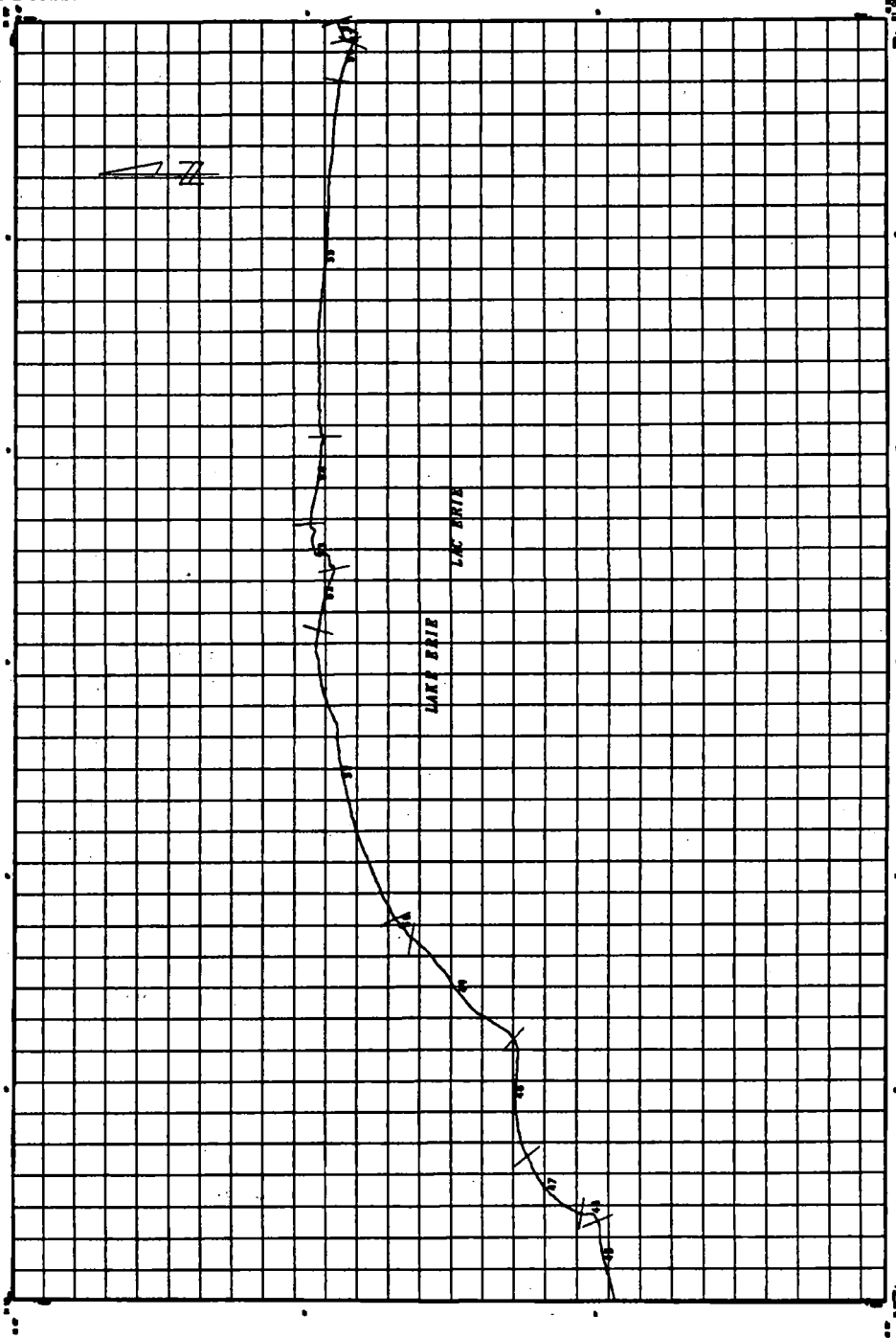
# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION LAKE ERIE



REFERENCE MAP

49 1/11

49 1/11



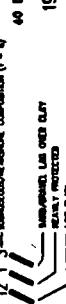
- GEOMORPHIC CLASSIFICATION**
- 1. Low (sand) clay (intermediate to no sand)
  - 2. Low (sand) clay (with much silt)
  - 3. Low (sand) clay (intermediate to no sand)
  - 4. Low (sand) clay (with much silt)
  - 5. Low (sand) clay (with much silt)
  - 6. Clay (sand)
  - 7. Sand (clay)
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  - 16. Sand (clay)
  - 17. Sand (clay)

- PROTECTION CLASSIFICATION**
- 1. HEAVILY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. MODERATELY PROTECTED
  - 4. MODERATELY PROTECTED
  - 5. MODERATELY PROTECTED
  - 6. MODERATELY PROTECTED
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  - 12. MODERATELY PROTECTED
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  - 14. MODERATELY PROTECTED
  - 15. MODERATELY PROTECTED
  - 16. MODERATELY PROTECTED
  - 17. MODERATELY PROTECTED

- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. SAND
  - 4. SAND
  - 5. SAND
  - 6. SAND
  - 7. SAND
  - 8. SAND
  - 9. SAND
  - 10. SAND
  - 11. SAND
  - 12. SAND
  - 13. SAND
  - 14. SAND
  - 15. SAND
  - 16. SAND
  - 17. SAND

- HISTORICAL SHORELINE CHANGE RATE**
- 1. 1.00 (1.00 to 1.00)
  - 2. 1.00 (1.00 to 1.00)
  - 3. 1.00 (1.00 to 1.00)
  - 4. 1.00 (1.00 to 1.00)
  - 5. 1.00 (1.00 to 1.00)
  - 6. 1.00 (1.00 to 1.00)
  - 7. 1.00 (1.00 to 1.00)
  - 8. 1.00 (1.00 to 1.00)
  - 9. 1.00 (1.00 to 1.00)
  - 10. 1.00 (1.00 to 1.00)
  - 11. 1.00 (1.00 to 1.00)
  - 12. 1.00 (1.00 to 1.00)
  - 13. 1.00 (1.00 to 1.00)
  - 14. 1.00 (1.00 to 1.00)
  - 15. 1.00 (1.00 to 1.00)
  - 16. 1.00 (1.00 to 1.00)
  - 17. 1.00 (1.00 to 1.00)

- THREE - TIER CLASSIFICATION**
- 1. 1.00 (1.00 to 1.00)
  - 2. 1.00 (1.00 to 1.00)
  - 3. 1.00 (1.00 to 1.00)
  - 4. 1.00 (1.00 to 1.00)
  - 5. 1.00 (1.00 to 1.00)
  - 6. 1.00 (1.00 to 1.00)
  - 7. 1.00 (1.00 to 1.00)
  - 8. 1.00 (1.00 to 1.00)
  - 9. 1.00 (1.00 to 1.00)
  - 10. 1.00 (1.00 to 1.00)
  - 11. 1.00 (1.00 to 1.00)
  - 12. 1.00 (1.00 to 1.00)
  - 13. 1.00 (1.00 to 1.00)
  - 14. 1.00 (1.00 to 1.00)
  - 15. 1.00 (1.00 to 1.00)
  - 16. 1.00 (1.00 to 1.00)
  - 17. 1.00 (1.00 to 1.00)



UNDEVELOPED LAKE BED CLAY  
HEAVILY PROTECTED LAKE BED CLAY

PORT STANLEY  
ONTARIO  
Scale 1:100,000 sheets

Geomatics International  
11-1111

49 1/11  
1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

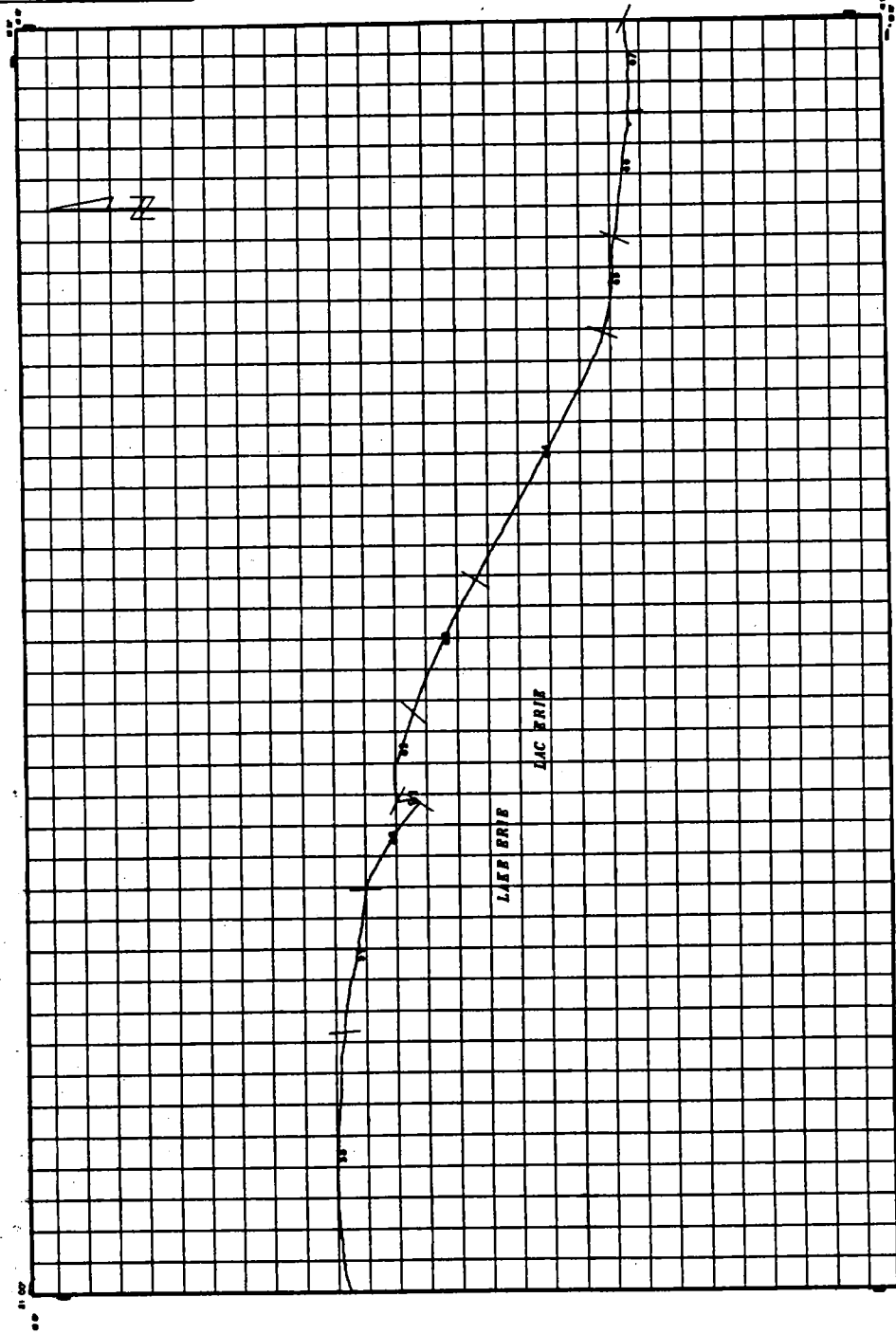
LAKE ERIE

REFERENCE MAP



48 1/10

48 1/10



## GEOMORPHIC CLASSIFICATION

- 1. HIGH (LOW) CLIFF (UNPROTECTED OR NO BEACH)
- 2. LOW (HIGH) CLIFF (UNPROTECTED OR NO BEACH)
- 3. LOW (HIGH) CLIFF WITH BEACH (YES)
- 4. SAND BEACH
- 5. CLAY BEACH
- 6. SANDY BEACH
- 7. SANDY BEACH
- 8. SANDY BEACH
- 9. SANDY BEACH
- 10. SANDY BEACH
- 11. SANDY BEACH
- 12. SANDY BEACH
- 13. SANDY BEACH
- 14. SANDY BEACH
- 15. SANDY BEACH
- 16. SANDY BEACH
- 17. UNCLASSIFIED

## PROTECTION CLASSIFICATION

- 1. NEARLY PROTECTED
- 2. PROTECTED
- 3. PARTIALLY PROTECTED
- 4. UNPROTECTED
- 5. UNCLASSIFIED

## SUBAQUEOUS/NEARSHORE COMPOSITION

- 1. CLAY
- 2. SAND
- 3. SANDY SILT
- 4. SILTY SAND
- 5. SILT
- 6. UNCLASSIFIED

## HISTORICAL SHORELINE CHANGE RATE

- 1. RETREAT (-0.1 to 0.1 m/yr)
- 2. STABLE (0.1 to 0.3 m/yr)
- 3. ADVANCE (0.3 to 0.5 m/yr)
- 4. ADVANCE (0.5 to 1.0 m/yr)
- 5. ADVANCE (1.0 to 1.5 m/yr)
- 6. UNCLASSIFIED

## THREE - TIER CLASSIFICATION

- 1. PROTECTION CLASSIFICATION (1-5)
- 2. PROTECTION CLASSIFICATION (1-5)
- 3. SUBAQUEOUS/NEARSHORE COMPOSITION (1-6)

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PORT BURWELL  
ONTARIO

Scale 1 : 50 000 sheets

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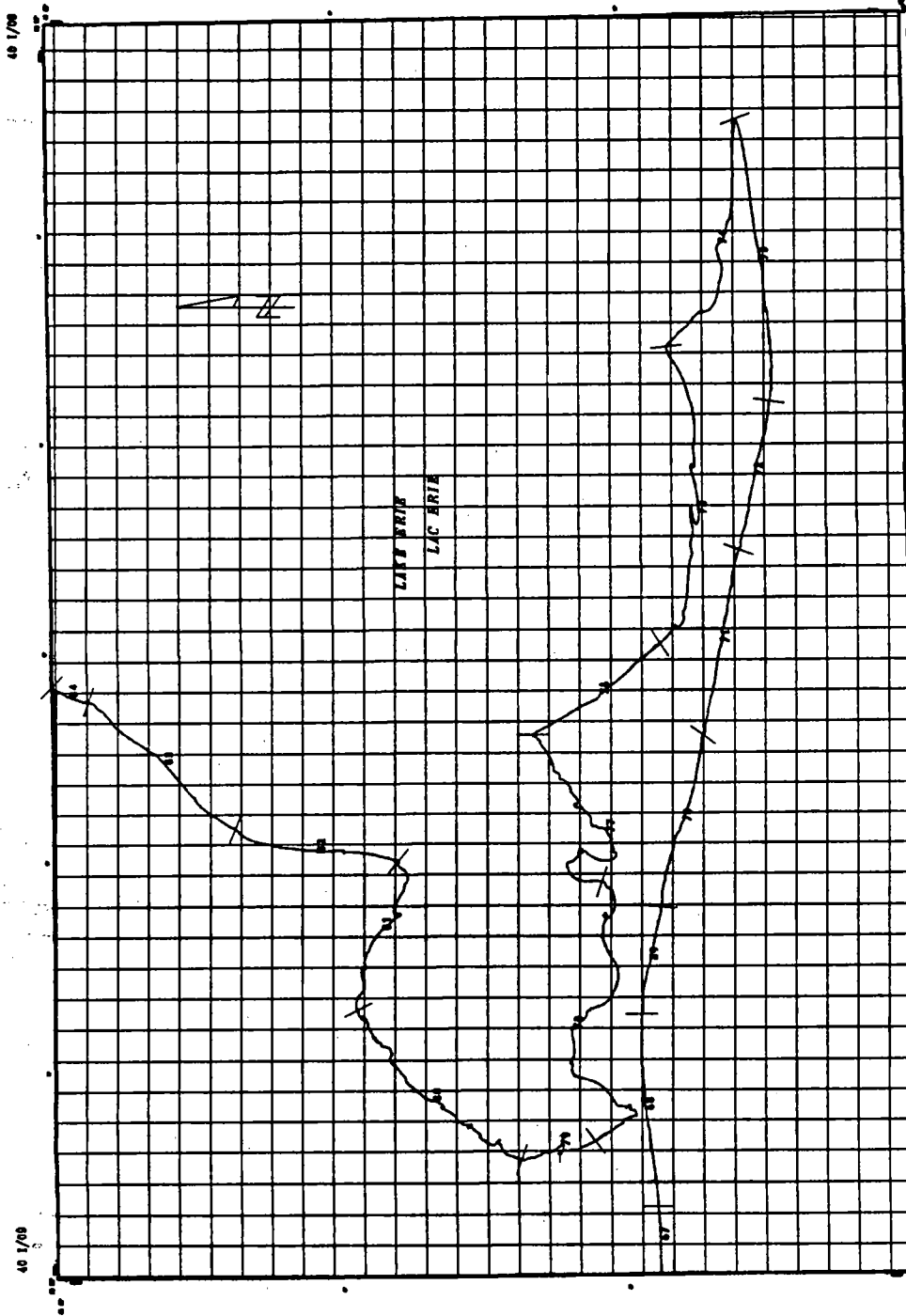
Geomatics International  
1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE ERIÉ



REFERENCE MAP



### GEOMORPHIC CLASSIFICATION

- 01. HIGH (LOW) CLAY TERRACES OR TO BELOW
- 02. LOW (HIGH) CLAY TERRACES OR TO BELOW
- 03. LOW (HIGH) CLAY TERRACES OR TO BELOW
- 04. LOW (HIGH) CLAY WITH SAND (D-SAND)
- 05. SANDY (SAND) SAND
- 06. SANDY (SAND) SAND
- 07. SANDY (SAND) SAND
- 08. SANDY (SAND) SAND
- 09. SANDY (SAND) SAND
- 10. SANDY (SAND) SAND
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- 44. SANDY (SAND) SAND
- 45. SANDY (SAND) SAND
- 46. SANDY (SAND) SAND
- 47. SANDY (SAND) SAND
- 48. SANDY (SAND) SAND
- 49. SANDY (SAND) SAND
- 50. SANDY (SAND) SAND

### PROTECTION CLASSIFICATION

- 01. HEAVILY PROTECTED
- 02. MODERATELY PROTECTED
- 03. MODERATELY PROTECTED
- 04. MODERATELY PROTECTED
- 05. MODERATELY PROTECTED
- 06. MODERATELY PROTECTED
- 07. MODERATELY PROTECTED
- 08. MODERATELY PROTECTED
- 09. MODERATELY PROTECTED
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- 46. MODERATELY PROTECTED
- 47. MODERATELY PROTECTED
- 48. MODERATELY PROTECTED
- 49. MODERATELY PROTECTED
- 50. MODERATELY PROTECTED

### SUBAQUEOUS/NEARSHORE COMPOSITION

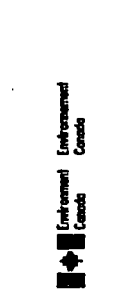
- 01. CLAY
- 02. SAND
- 03. SAND
- 04. SAND
- 05. SAND
- 06. SAND
- 07. SAND
- 08. SAND
- 09. SAND
- 10. SAND
- 11. SAND
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- 45. SAND
- 46. SAND
- 47. SAND
- 48. SAND
- 49. SAND
- 50. SAND

### HISTORICAL SHORELINE CHANGE RATE

- 01. 1.00 (1.00 m/yr)
- 02. 1.00 (1.00 m/yr)
- 03. 1.00 (1.00 m/yr)
- 04. 1.00 (1.00 m/yr)
- 05. 1.00 (1.00 m/yr)
- 06. 1.00 (1.00 m/yr)
- 07. 1.00 (1.00 m/yr)
- 08. 1.00 (1.00 m/yr)
- 09. 1.00 (1.00 m/yr)
- 10. 1.00 (1.00 m/yr)
- 11. 1.00 (1.00 m/yr)
- 12. 1.00 (1.00 m/yr)
- 13. 1.00 (1.00 m/yr)
- 14. 1.00 (1.00 m/yr)
- 15. 1.00 (1.00 m/yr)
- 16. 1.00 (1.00 m/yr)
- 17. 1.00 (1.00 m/yr)
- 18. 1.00 (1.00 m/yr)
- 19. 1.00 (1.00 m/yr)
- 20. 1.00 (1.00 m/yr)
- 21. 1.00 (1.00 m/yr)
- 22. 1.00 (1.00 m/yr)
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- 24. 1.00 (1.00 m/yr)
- 25. 1.00 (1.00 m/yr)
- 26. 1.00 (1.00 m/yr)
- 27. 1.00 (1.00 m/yr)
- 28. 1.00 (1.00 m/yr)
- 29. 1.00 (1.00 m/yr)
- 30. 1.00 (1.00 m/yr)
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- 34. 1.00 (1.00 m/yr)
- 35. 1.00 (1.00 m/yr)
- 36. 1.00 (1.00 m/yr)
- 37. 1.00 (1.00 m/yr)
- 38. 1.00 (1.00 m/yr)
- 39. 1.00 (1.00 m/yr)
- 40. 1.00 (1.00 m/yr)
- 41. 1.00 (1.00 m/yr)
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- 44. 1.00 (1.00 m/yr)
- 45. 1.00 (1.00 m/yr)
- 46. 1.00 (1.00 m/yr)
- 47. 1.00 (1.00 m/yr)
- 48. 1.00 (1.00 m/yr)
- 49. 1.00 (1.00 m/yr)
- 50. 1.00 (1.00 m/yr)

### THREE - TIER CLASSIFICATION

- 01. SAMPLE 01 (SAND) (S - 01)
- 02. SAMPLE 02 (SAND) (S - 02)
- 03. SAMPLE 03 (SAND) (S - 03)
- 04. SAMPLE 04 (SAND) (S - 04)
- 05. SAMPLE 05 (SAND) (S - 05)
- 06. SAMPLE 06 (SAND) (S - 06)
- 07. SAMPLE 07 (SAND) (S - 07)
- 08. SAMPLE 08 (SAND) (S - 08)
- 09. SAMPLE 09 (SAND) (S - 09)
- 10. SAMPLE 10 (SAND) (S - 10)
- 11. SAMPLE 11 (SAND) (S - 11)
- 12. SAMPLE 12 (SAND) (S - 12)
- 13. SAMPLE 13 (SAND) (S - 13)
- 14. SAMPLE 14 (SAND) (S - 14)
- 15. SAMPLE 15 (SAND) (S - 15)
- 16. SAMPLE 16 (SAND) (S - 16)
- 17. SAMPLE 17 (SAND) (S - 17)
- 18. SAMPLE 18 (SAND) (S - 18)
- 19. SAMPLE 19 (SAND) (S - 19)
- 20. SAMPLE 20 (SAND) (S - 20)
- 21. SAMPLE 21 (SAND) (S - 21)
- 22. SAMPLE 22 (SAND) (S - 22)
- 23. SAMPLE 23 (SAND) (S - 23)
- 24. SAMPLE 24 (SAND) (S - 24)
- 25. SAMPLE 25 (SAND) (S - 25)
- 26. SAMPLE 26 (SAND) (S - 26)
- 27. SAMPLE 27 (SAND) (S - 27)
- 28. SAMPLE 28 (SAND) (S - 28)
- 29. SAMPLE 29 (SAND) (S - 29)
- 30. SAMPLE 30 (SAND) (S - 30)
- 31. SAMPLE 31 (SAND) (S - 31)
- 32. SAMPLE 32 (SAND) (S - 32)
- 33. SAMPLE 33 (SAND) (S - 33)
- 34. SAMPLE 34 (SAND) (S - 34)
- 35. SAMPLE 35 (SAND) (S - 35)
- 36. SAMPLE 36 (SAND) (S - 36)
- 37. SAMPLE 37 (SAND) (S - 37)
- 38. SAMPLE 38 (SAND) (S - 38)
- 39. SAMPLE 39 (SAND) (S - 39)
- 40. SAMPLE 40 (SAND) (S - 40)
- 41. SAMPLE 41 (SAND) (S - 41)
- 42. SAMPLE 42 (SAND) (S - 42)
- 43. SAMPLE 43 (SAND) (S - 43)
- 44. SAMPLE 44 (SAND) (S - 44)
- 45. SAMPLE 45 (SAND) (S - 45)
- 46. SAMPLE 46 (SAND) (S - 46)
- 47. SAMPLE 47 (SAND) (S - 47)
- 48. SAMPLE 48 (SAND) (S - 48)
- 49. SAMPLE 49 (SAND) (S - 49)
- 50. SAMPLE 50 (SAND) (S - 50)



LONG POINT  
ONTARIO  
Scale 1:50,000  
NATIONAL WATERWAYS BOARD

Geomatics International  
1000  
1000  
1000

40 1/00  
1992

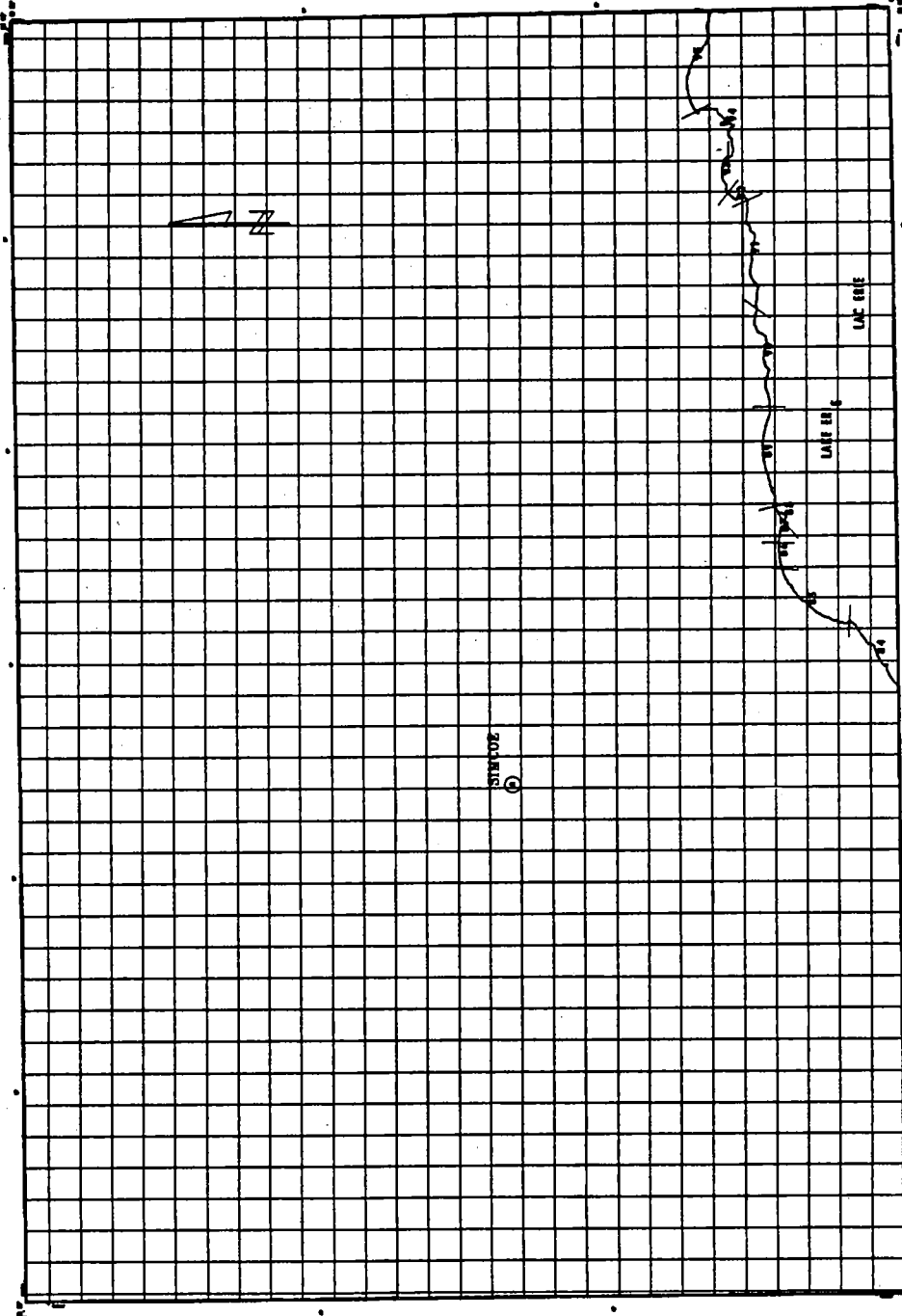
# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

LAKE ERIE

40 1/16

40 1/16

REFERENCE MAP



- GEOMORPHIC CLASSIFICATION**
- 1. HIGH CLIFF (HEIGHT 10 TO 20 M)
  - 2. LOW CLIFF (HEIGHT 5 TO 10 M)
  - 3. LOW CLIFF WITH TERRACE (5 TO 10 M)
  - 4. LOW CLIFF WITH BEACH (5 TO 10 M)
  - 5. SANDWALLED BEACH
  - 6. SANDWALLED BEACH WITH TERRACE
  - 7. SANDWALLED BEACH WITH BEACH
  - 8. SANDWALLED BEACH WITH BEACH AND TERRACE
  - 9. SANDWALLED BEACH WITH BEACH AND TERRACE AND BEACH
  - 10. SANDWALLED BEACH WITH BEACH AND TERRACE AND BEACH AND TERRACE
  - 11. SANDWALLED BEACH WITH BEACH AND TERRACE AND BEACH AND TERRACE AND BEACH
  - 12. LOW FLAT WITH BEACH
  - 13. SANDWALLED BEACH WITH BEACH
  - 14. SANDWALLED BEACH WITH BEACH AND TERRACE
  - 15. SANDWALLED BEACH WITH BEACH AND TERRACE AND BEACH
  - 16. SANDWALLED BEACH WITH BEACH AND TERRACE AND BEACH AND TERRACE
  - 17. SANDWALLED BEACH WITH BEACH AND TERRACE AND BEACH AND TERRACE AND BEACH
  - 18. SANDWALLED BEACH WITH BEACH AND TERRACE AND BEACH AND TERRACE AND BEACH AND TERRACE
  - 19. SANDWALLED BEACH WITH BEACH AND TERRACE AND BEACH AND TERRACE AND BEACH AND TERRACE AND BEACH
  - 20. SANDWALLED BEACH WITH BEACH AND TERRACE AND BEACH AND TERRACE AND BEACH AND TERRACE AND BEACH AND TERRACE

- PROTECTION CLASSIFICATION**
- 1. HEAVILY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. LIGHT PROTECTION
  - 4. NON-PROTECTED
  - 5. NON-STRUCTURAL PROTECTION
  - 6. UNCLASSIFIED

- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. GRAVEL
  - 4. ROCKS (BENTONITE)
  - 5. ROCKS (NON-BENTONITE)
  - 6. UNCLASSIFIED

- HISTORICAL SHORELINE CHANGE RATE**
- 1. RETREAT (-0.1 m/yr)
  - 2. LOW (0.1 TO 0.3 m/yr)
  - 3. MOD (0.3 TO 0.7 m/yr)
  - 4. HIGH (0.7 TO 1.5 m/yr)
  - 5. VERY HIGH (1.5 TO 2.5 m/yr)
  - 6. UNCLASSIFIED

- THREE - TIER CLASSIFICATION**
- EXAMPLE CLASSIFICATION (1 - 4)
- 1. GEOMORPHIC CLASSIFICATION (1 - 20)
  - 2. PROTECTION CLASSIFICATION (1 - 6)
  - 3. SUBAQUEOUS/NEARSHORE COMPOSITION (1 - 6)

- LEGEND**
- 1. Embankment
  - 2. Canals
  - 3. Unembankment
  - 4. Canals

**SIMCOE**  
ONTARIO  
Scale 1 : 50 000 Schelle  
NORTHWEST INFORMATION SERIES

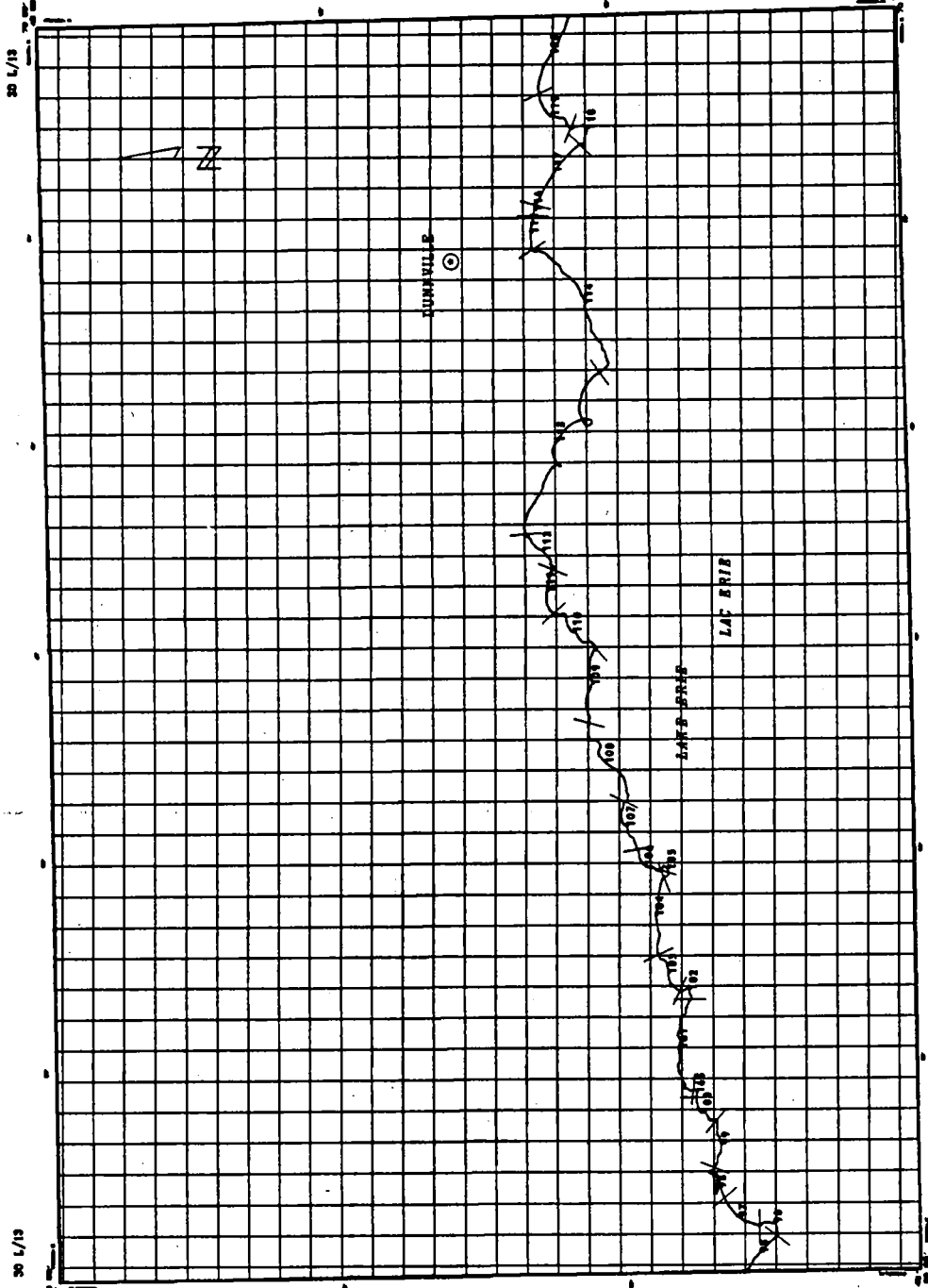
Geospatial Information  
1992

40 1/16  
1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

LAKE ERIE

REFERENCE MAP



**GEO MORPHIC CLASSIFICATION**

- 1. HIGH (OVER) BANK PROTRUSION AS IN BEACH
- 2. LOW (UNDER) BANK WITH BEACH (CLAY)
- 3. LOW (UNDER) BANK WITH SAND (CLAY)
- 4. LOW (UNDER) BANK WITH SAND (CLAY)
- 5. CLAY BANK (SAND)
- 6. SANDY BEACHES
- 7. SANDY BEACHES
- 8. SANDY BEACHES
- 9. SANDY BEACHES
- 10. SANDY BEACHES
- 11. SANDY BEACHES
- 12. SANDY BEACHES
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- 15. SANDY BEACHES
- 16. SANDY BEACHES
- 17. SANDY BEACHES
- 18. SANDY BEACHES
- 19. SANDY BEACHES
- 20. SANDY BEACHES

**PROTECTION CLASSIFICATION**

- 1. HEAVILY PROTECTED
- 2. MODERATELY PROTECTED
- 3. PROTECTED
- 4. NON-STRUCTURAL PROTECTION
- 5. UNCLASSIFIED

**SUBAQUOUS/NEARSHORE COMPOSITION**

- 1. CLAY
- 2. SAND
- 3. SANDY SILT
- 4. SANDY SILT
- 5. SANDY SILT
- 6. SANDY SILT
- 7. SANDY SILT
- 8. SANDY SILT
- 9. SANDY SILT
- 10. SANDY SILT

**HISTORICAL SHORELINE CHANGE RATE**

- 1. STABLE (40 TO 60 CM/YR)
- 2. LOW (60 TO 80 CM/YR)
- 3. MOD (80 TO 100 CM/YR)
- 4. HIGH (100 TO 150 CM/YR)
- 5. VERY HIGH (150 TO 200 CM/YR)
- 6. UNCLASSIFIED

**THREE - TIER CLASSIFICATION**

- 1. DUNE CLASSIFICATION (1 - 9)
- 2. PROTECTION CLASSIFICATION (1 - 5)
- 3. SUBAQUOUS/NEARSHORE COMPOSITION (1 - 10)
- 4. HISTORICAL CHANGE RATE CLASSIFICATION (1 - 6)

**DUNNVILLE**  
ONTARIO  
Scale 1:50,000  
Geospatial International Inc.  
1100

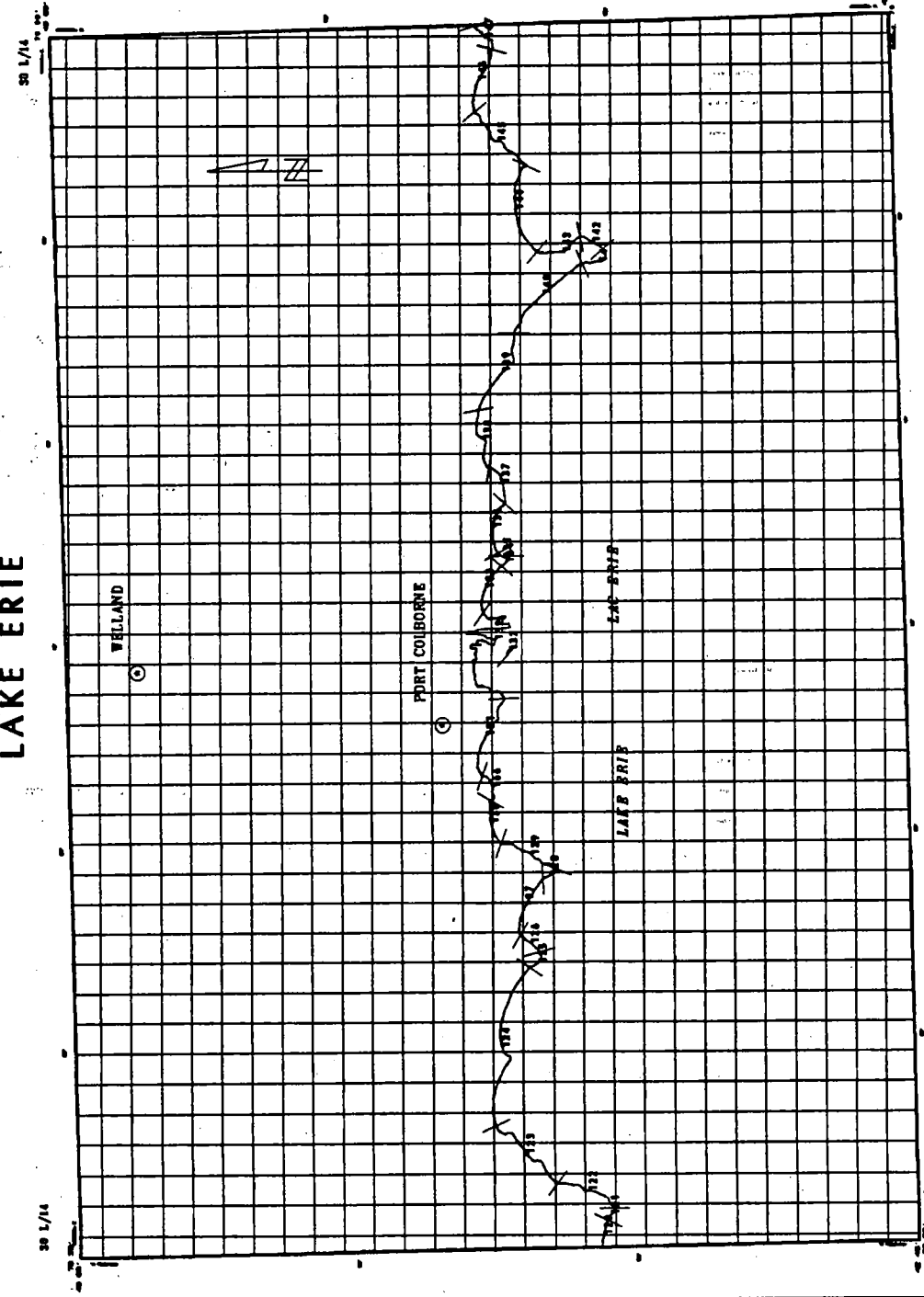
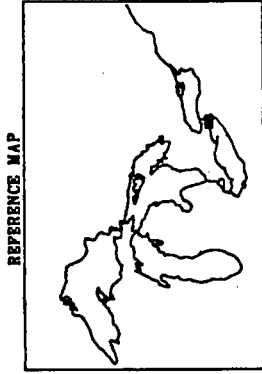
Environment Canada  
Environment Canada  
HEAVILY PROTECTED  
LOW RISK

30 L/13  
30 L/13  
30 L/13  
1992



# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE ERIE



**GEOMORPHIC CLASSIFICATION**

- 1. HIGH (10m) CLIFF (CONTINUOUS OR IN ISLANDS)
- 2. HIGH (10m) CLIFF WITH SPOTS (SPOTS)
- 3. LOW (5m) CLIFF (CONTINUOUS OR IN ISLANDS)
- 4. LOW (5m) CLIFF WITH SPOTS (SPOTS)
- 5. SAND/CLAY BANKS
- 6. CLAY BANKS
- 7. SAND/CLAY BANKS
- 8. SAND/CLAY BANKS
- 9. SAND/CLAY BANKS
- 10. SAND/CLAY BANKS
- 11. SAND/CLAY BANKS
- 12. SAND/CLAY BANKS
- 13. SAND/CLAY BANKS
- 14. SAND/CLAY BANKS
- 15. SAND/CLAY BANKS
- 16. SAND/CLAY BANKS
- 17. SAND/CLAY BANKS
- 18. SAND/CLAY BANKS
- 19. SAND/CLAY BANKS
- 20. SAND/CLAY BANKS

**PROTECTION CLASSIFICATION**

- 1. HEAVILY PROTECTED
- 2. MODERATELY PROTECTED
- 3. MODERATE PROTECTION
- 4. MODERATE PROTECTION
- 5. MODERATE PROTECTION
- 6. MODERATE PROTECTION
- 7. MODERATE PROTECTION
- 8. MODERATE PROTECTION
- 9. MODERATE PROTECTION
- 10. MODERATE PROTECTION
- 11. MODERATE PROTECTION
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- 15. MODERATE PROTECTION
- 16. MODERATE PROTECTION
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- 18. MODERATE PROTECTION
- 19. MODERATE PROTECTION
- 20. MODERATE PROTECTION

**SUBAQUEOUS/NEARSHORE COMPOSITION**

- 1. CLAY
- 2. SAND
- 3. SAND/CLAY
- 4. SAND/CLAY
- 5. SAND/CLAY
- 6. SAND/CLAY
- 7. SAND/CLAY
- 8. SAND/CLAY
- 9. SAND/CLAY
- 10. SAND/CLAY
- 11. SAND/CLAY
- 12. SAND/CLAY
- 13. SAND/CLAY
- 14. SAND/CLAY
- 15. SAND/CLAY
- 16. SAND/CLAY
- 17. SAND/CLAY
- 18. SAND/CLAY
- 19. SAND/CLAY
- 20. SAND/CLAY

**HISTORICAL SHORELINE CHANGE RATE**

- 1. 1.00 (100%)
- 2. 0.75 (75%)
- 3. 0.50 (50%)
- 4. 0.25 (25%)
- 5. 0.00 (0%)
- 6. -0.25 (-25%)
- 7. -0.50 (-50%)
- 8. -0.75 (-75%)
- 9. -1.00 (-100%)
- 10. -1.25 (-125%)
- 11. -1.50 (-150%)
- 12. -1.75 (-175%)
- 13. -2.00 (-200%)
- 14. -2.25 (-225%)
- 15. -2.50 (-250%)
- 16. -2.75 (-275%)
- 17. -3.00 (-300%)
- 18. -3.25 (-325%)
- 19. -3.50 (-350%)
- 20. -3.75 (-375%)

**THREE - TIER CLASSIFICATION**

- 1. 1.00 (100%)
- 2. 0.75 (75%)
- 3. 0.50 (50%)
- 4. 0.25 (25%)
- 5. 0.00 (0%)
- 6. -0.25 (-25%)
- 7. -0.50 (-50%)
- 8. -0.75 (-75%)
- 9. -1.00 (-100%)
- 10. -1.25 (-125%)
- 11. -1.50 (-150%)
- 12. -1.75 (-175%)
- 13. -2.00 (-200%)
- 14. -2.25 (-225%)
- 15. -2.50 (-250%)
- 16. -2.75 (-275%)
- 17. -3.00 (-300%)
- 18. -3.25 (-325%)
- 19. -3.50 (-350%)
- 20. -3.75 (-375%)

**EXAMPLE**

- 1. 1.00 (100%)
- 2. 0.75 (75%)
- 3. 0.50 (50%)
- 4. 0.25 (25%)
- 5. 0.00 (0%)
- 6. -0.25 (-25%)
- 7. -0.50 (-50%)
- 8. -0.75 (-75%)
- 9. -1.00 (-100%)
- 10. -1.25 (-125%)
- 11. -1.50 (-150%)
- 12. -1.75 (-175%)
- 13. -2.00 (-200%)
- 14. -2.25 (-225%)
- 15. -2.50 (-250%)
- 16. -2.75 (-275%)
- 17. -3.00 (-300%)
- 18. -3.25 (-325%)
- 19. -3.50 (-350%)
- 20. -3.75 (-375%)

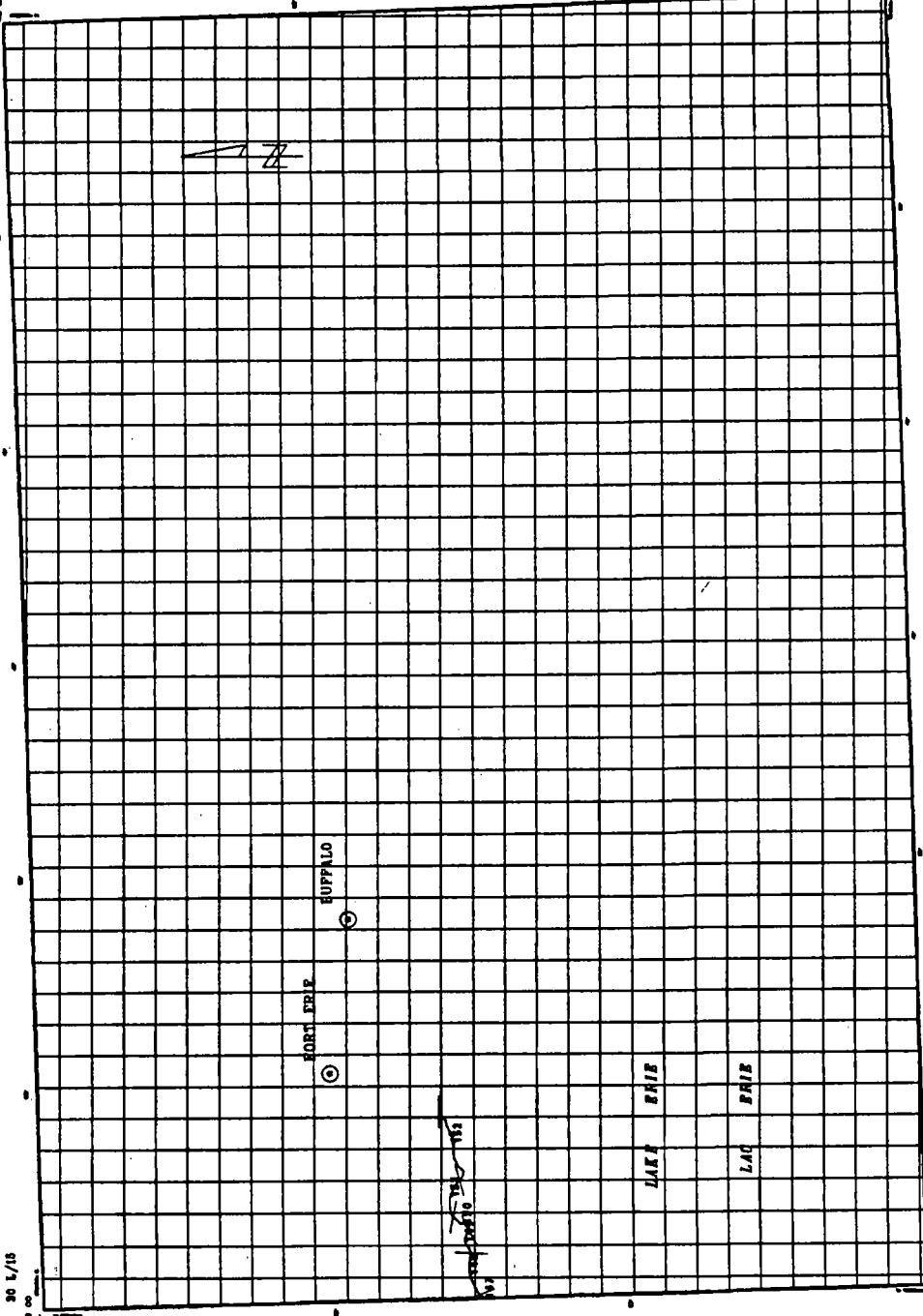
**WELLAND ONTARIO**

Scale 1:50,000 sheets

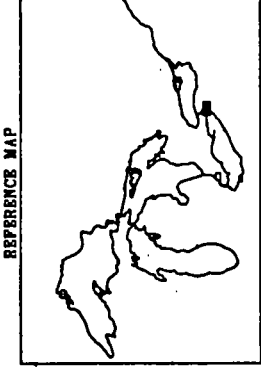
ENVIRONMENTAL CANADA

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION LAKE ERIE

30 1/15



30 1/15



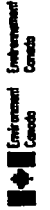
- GEOMORPHIC CLASSIFICATION**
- 1. HIGH (H) CLIFF (INTERMITTENT OR NO BEACH)
  - 2. HIGH (H) CLIFF WITH BEACH (P) (H)
  - 3. HIGH (H) CLIFF WITH BEACH (P) (H)
  - 4. LOW (L) CLIFF WITH BEACH (P) (H)
  - 5. SAND/GRIT BEACH
  - 6. CLAY BEACH
  - 7. SAND/GRIT BEACH
  - 8. SAND/GRIT BEACH
  - 9. SAND/GRIT BEACH
  - 10. SAND/GRIT BEACH
  - 11. SAND/GRIT BEACH
  - 12. SAND/GRIT BEACH
  - 13. SAND/GRIT BEACH
  - 14. SAND/GRIT BEACH
  - 15. SAND/GRIT BEACH
  - 16. SAND/GRIT BEACH
  - 17. UNCLASSIFIED
- PROTECTION CLASSIFICATION**
- 1. HEAVY PROTECTED
  - 2. MODERATE PROTECTED
  - 3. NO PROTECTION
  - 4. UNCLASSIFIED
- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. SAND/GRIT
  - 4. SAND/GRIT
  - 5. UNCLASSIFIED
- HISTORICAL SHORELINE CHANGE RATE**
- 1. RETREAT (1-10 m/yr)
  - 2. UNCLASSIFIED
  - 3. ADVANCE (1-10 m/yr)
  - 4. ADVANCE (1-10 m/yr)
  - 5. ADVANCE (1-10 m/yr)
  - 6. ADVANCE (1-10 m/yr)
  - 7. ADVANCE (1-10 m/yr)
  - 8. UNCLASSIFIED

**THREE - TIER CLASSIFICATION**

EXAMPLE

GEOMORPHIC CLASSIFICATION (1-7)  
PROTECTION CLASSIFICATION (1-4)  
SUBAQUEOUS/NEARSHORE COMPOSITION (1-5)  
HISTORICAL SHORELINE CHANGE RATE (1-8)

30 1/15 1992



**FORT ERIE**  
ONTARIO  
Scale 1 : 50 000  
SHEET 11 OF 12

Geomatics International Inc.  
1100

LAKE ONTARIO.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh. Source 3 Class	Comp. Comments 4 Class	
1	NO	30L15	3	OGS AP88	1	CZA EP87	316
2	NO	30L15	6	OGS	1	NTS AP88	616
3	NO	30L15 30L14	6	OGS	1	NTS	616
4	NO	30L14 30L13	6	OGS	1	NTS	616
5	NO	30L13	6	OGS	1	NTS	616
6	NO	30M03	16	OGS	1	OGS	1616
7	NO	30M03	10	OGS	4	NTS	1046
8	NO	30M03	10	OGS	4	NTS	1046
9	NO	30M03	10	OGS	4	NTS	1046
10	NO	30M03	6	OGS	3	NTS	636
11	NO	30M06	12	VIDEO91	1	VIDEO91	1216
12	YES	30M06	3	CZA VIDEO91	2	VIDEO91	325
13	NO	30M06	9	VIDEO91 CZA	4	VIDEO91	943
14	NO	30M06	3	CZA VIDEO91	2	VIDEO91	321
15	NO	30M06 30M03	3	CZA VIDEO91	3	VIDEO91	331
16	NO	30M03	3	CZA VIDEO91	3	VIDEO91	331
17	NO	30M03	7	CZA VIDEO91	4	VIDEO91	743
18	NO	30M03	16	VIDEO91	1	VIDEO91	1611
19	NO	30M03	16	VIDEO91	1	VIDEO91	1611
20	NO	30M03	16	VIDEO91	1	VIDEO91	1611
21	NO	30M03	7	CZA VIDEO91	4	VIDEO91	743
22	NO	30M03	3	CZA VIDEO91	2	VIDEO91	321
23	NO	30M03	16	CZA VIDEO91	1	VIDEO91	1611
24	NO	30M03	16	VIDEO91	1	VIDEO91	1611
25	NO	30M03	7	CZA VIDEO91	4	VIDEO91	743
26	NO	30M03	3	CZA VIDEO91	3	VIDEO91	333
27	NO	30M03	9	CZA VIDEO91	4	VIDEO91	942
28	NO	30M03	3	CZA VIDEO91	3	VIDEO91	331
29	NO	30M03	9	CZA VIDEO91	1	VIDEO91	912
30	NO	30M03	3	CZA VIDEO91	3	VIDEO91	331
31	NO	30M03	3	CZA VIDEO91	2	VIDEO91	325
32	NO	30M03	3	CZA VIDEO91	3	VIDEO91	331
33	NO	30M04	4	CZA VIDEO91	3	VIDEO91	433
34	NO	30M04	9	CZA VIDEO91	1	VIDEO91	913
35	NO	30M04	11	CZA VIDEO91	2	VIDEO91	1125
36	NO	30M04	3	CZA VIDEO91	2	VIDEO91	321
37	NO	30M04	7	CZA VIDEO91	3	VIDEO91	733
38	NO	30M04	3	CZA VIDEO91	2	VIDEO91	321
39	NO	30M04	3	CZA VIDEO91	2	VIDEO91	321
40	NO	30M04	3	CZA VIDEO91	3	VIDEO91	331
41	NO	30M04	9	CZA VIDEO91	4	VIDEO91	942

WEST BOUND 1.7KM EAST

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Reach No.	CZR Adjustment	NTS No.	Geomor. 1 Class	Source	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
42	NO	30M04	7	CZA VIDEO91	2	2	722 RUKAVINA
43	NO	30M05	9	CZA VIDEO91	4	2	942 RUKAVINA
44	NO	30M05	16	VIDEO91	6	2	166 RUKAVINA
45	NO	30M05	16	VIDEO91	1	1	1611 HHRAP89
46	NO	30M05	16	VIDEO91	1	1	1611 HHRAP89
47	YES WEST BOUND 1.2KM EAST	30M05	16	VIDEO91	1	1	1611 HHRAP89
48	YES E B 1.2KM E, W B 600M N	30M05	9	VIDEO91 OGS	4	3	943 HHRAP89
49	YES WEST BOUND 600M NORTH	30M05	3	VIDEO91 OGS	1	3	313 HHRAP89
50	NO	30M05	9	CZA VIDEO91	4	2	942 RUKAVINA
51	NO	30M05	3	CZA VIDEO91	1	5	315 RUKAVINA
52	NO	30M05	3	CZA VIDEO91	1	5	315 RUKAVINA
53	NO	30M05	3	CZA VIDEO91	1	5	315 RUKAVINA
54	NO	30M05	3	CZA VIDEO91	1	5	315 RUKAVINA
55	NO	30M05	16	VIDEO91	1	5	1615 RUKAVINA
56	NO	30M05	3	CZA VIDEO91	2	5	325 RUKAVINA
57	NO	30M05	7	CZA VIDEO91	4	5	745 RUKAVINA
58	NO	30M05	3	CZA VIDEO91	1	5	315 RUKAVINA
59	NO	30M05	16	VIDEO91	1	5	1615 RUKAVINA
60	NO	30M05	3	CZA VIDEO91	1	5	315 RUKAVINA
61	NO	30M05	3	CZA VIDEO91	1	5	315 RUKAVINA
62	NO	30M05	3	CZA VIDEO91	2	5	325 RUKAVINA
63	NO	30M12	9	CZA VIDEO91	4	5	945 RUKAVINA
64	NO	30M12	3	CZA VIDEO91	2	5	325 RUKAVINA
65	NO	30M12	3	CZA VIDEO91	2	1	321 RUKAVINA
66	NO	30M12	16	VIDEO91	1	5	1615 RUKAVINA
67	NO	30M12	3	CZA VIDEO91	1	5	315 RUKAVINA
68	NO	30M12	16	VIDEO91	1	5	1615 RUKAVINA
69	NO	30M12	16	VIDEO91	1	5	1615 RUKAVINA
70	NO	30M12	7	VIDEO91	3	5	735 RUKAVINA
71	NO	30M12	3	VIDEO91	1	5	315 RUKAVINA
72	YES EAST BOUND 300M WEST	30M12	16	VIDEO91	1	5	1615 RUKAVINA
73	YES WEST BOUND 300M WEST	30M12	3	VIDEO91 CZA	1	5	315 RUKAVINA
74	NO	30M11	16	VIDEO91	1	1	1611 RUKAVINA
75	NO	30M11	16	VIDEO91	1	1	1611 RUKAVINA
76	NO	30M11	17	VIDEO91	6	1	1761 RUKAVINA
77	NO	30M11	7	VIDEO91	1	3	713 RUKAVINA
78	NO	30M11	7	VIDEO91	1	3	713 RUKAVINA
79	NO	30M11	16	VIDEO91	1	3	1613 RUKAVINA
80	NO	30M11	16	VIDEO91	6	2	1662 RUKAVINA
81	NO	30M11	9	VIDEO91	4	2	942 RUKAVINA
82	NO	30M11	9	VIDEO91	2	2	922 RUKAVINA

LAKE ONTARIO.ASC

Reach No.	CZ/R Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
83	YES SLIGHT ADJUST	30M11	VIDEO91	2 VIDEO91	2 RUKAVINA	922
84	NO	30M11	VIDEO91	1 VIDEO91	2 RUKAVINA	1612 LESLIE STREET SPTT
85	NO	30M11	VIDEO91	1 VIDEO91	2 RUKAVINA	1612 LESLIE STREET SPTT
86	NO	30M11	VIDEO91	1 VIDEO91	2 RUKAVINA	1612 ASHBRIDGE BAY
87	NO	30M11	VIDEO91	1 VIDEO91	2 RUKAVINA	1612 ASHBRIDGE BAY
88	NO	30M11	CZA VIDEO91	2 VIDEO91	2 RUKAVINA	722
89	NO	30M11	CZA VIDEO91	2 VIDEO91	2 RUKAVINA	322
90	NO	30M11	CZA VIDEO91	1 VIDEO91	2 RUKAVINA	112
91	YES EAST BOUND 600M WEST	30M11	CZA VIDEO91	1 VIDEO91	2 RUKAVINA	1612 BLUFFERS PARK
92	NO	30M11	VIDEO91	4 VIDEO91	3 RUKAVINA	143
93	NO	30M11	VIDEO91	1 VIDEO91	1 RUKAVINA	111
94	NO	30M11 30M14	VIDEO91	3 VIDEO91	1 RUKAVINA	131
95	NO	30M14	CZA VIDEO91	3 VIDEO91	1 RUKAVINA	331
96	NO	30M14	CZA VIDEO91	4 VIDEO91	3 RUKAVINA	943
97	NO	30M14	CZA VIDEO91	4 VIDEO91	3 RUKAVINA	943
98	NO	30M14	CZA VIDEO91	4 VIDEO91	2 RUKAVINA	942
99	NO	30M14	CZA VIDEO91	4 VIDEO91	2 RUKAVINA	942
100	NO	30M14	VIDEO91	1 VIDEO91	3 RUKAVINA	1613 PICKERING NUCLEAR
101	NO	30M14	VIDEO91	4 VIDEO91	3 RUKAVINA	343
102	NO	30M14	CZA VIDEO91	4 VIDEO91	2 RUKAVINA	442
103	NO	30M14	CZA VIDEO91	4 VIDEO91	2 RUKAVINA	942
104	NO	30M14	VIDEO91	4 VIDEO91	3 RUKAVINA	443
105	NO	30M14 30M15	VIDEO91	3 VIDEO91	3 RUKAVINA	333
106	NO	30M15	CZA VIDEO91	3 VIDEO91	2 RUKAVINA	732
107	NO	30M15	CZA VIDEO91	4 VIDEO91	2 RUKAVINA	942
108	NO	30M15	CZA VIDEO91	3 VIDEO91	3 RUKAVINA	433
109	NO	30M15	VIDEO91	4 VIDEO91	3 RUKAVINA FISHER	943
110	NO	30M15	VIDEO91	4 VIDEO91	3 RUKAVINA FISHER	443
111	NO	30M15	VIDEO91	4 VIDEO91	3 RUKAVINA FISHER	943
112	NO	30M15	VIDEO91	2 VIDEO91	1 RUKAVINA	321
113	NO	30M15	VIDEO91	4 VIDEO91	3 RUKAVINA FISHER	743
114	NO	30M15	VIDEO91	1 VIDEO91	3 RUKAVINA FISHER	913
115	NO	30M15	VIDEO91	4 VIDEO91	3 RUKAVINA FISHER	743
116	NO	30M15	CZA VIDEO91	4 VIDEO91	3 RUKAVINA FISHER	443
117	NO	30M15	CZA VIDEO91	4 VIDEO91	1 RUKAVINA	341
118	NO	30M15	CZA VIDEO91	4 VIDEO91	3 RUKAVINA FISHER	943
119	NO	30M15	CZA VIDEO91	4 VIDEO91	3 RUKAVINA FISHER	443
120	NO	30M15	CZA VIDEO91	4 VIDEO91	3 RUKAVINA FISHER	943
121	NO	30M15	CZA VIDEO91	4 VIDEO91	3 RUKAVINA FISHER	443
122	NO	30M15	VIDEO91	4 VIDEO91	3 RUKAVINA	943
123	NO	30M15	VIDEO91	4 VIDEO91	3 RUKAVINA	343

LAKE ONTARIO.ASC

Reach No.	CZR Adjustment	NTS No.	Geonor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Cmp. Comments 4 Class
124 NO		30M15	3 VIDE091	4 VIDE091	3 RUKAVINA	343
125 NO		30M15	3 VIDE091	1 VIDE091	2 RUKAVINA	312
126 NO		30M15	9 VIDE091	4 VIDE091	2 RUKAVINA	942
127 NO		30M15	16 VIDE091	1 VIDE091	2 RUKAVINA	1612
128 NO		30M15	4 VIDE091	4 VIDE091	2 RUKAVINA	442
129 NO		30M15	9 VIDE091	4 VIDE091	2 RUKAVINA	942
130 NO		30M15	9 VIDE091	4 VIDE091	2 RUKAVINA	943
131 NO		30M15	3 VIDE091	4 VIDE091	3 RUKAVINA	343
132 NO		30M15	3 VIDE091	4 VIDE091	3 RUKAVINA	343
133 YES	EAST BOUND 1.5KM WEST	30M15	3 VIDE091	4 VIDE091	1 RUKAVINA	341
134 NO		30M15	1 VIDE091	4 VIDE091	1 RUKAVINA	141
135 NO		30M15	7 VIDE091	4 VIDE091	3 RUKAVINA	743
136 NO		30M15	16 VIDE091	1 VIDE091	3 RUKAVINA	1613
137 NO		30M15	16 VIDE091	1 VIDE091	3 RUKAVINA	1613
138 NO		30M15	16 VIDE091	1 VIDE091	3 RUKAVINA	1613
139 NO		30M15	3 VIDE091	4 VIDE091	3 RUKAVINA	343
140 NO		30M15	9 VIDE091	3 VIDE091	2 RUKAVINA	932
141 NO		30M15	7 VIDE091	4 VIDE091	2 RUKAVINA	742
142 NO		30M15	9 VIDE091	4 VIDE091	2 RUKAVINA	942
143 NO		30M15	17 VIDE091	6 VIDE091	2 RUKAVINA	1762
144 NO		30M15	7 VIDE091	4 VIDE091	2 RUKAVINA	742
145 NO		30M15	3 VIDE091	4 VIDE091	3 RUKAVINA	343
146 NO		30M15	3 VIDE091	4 VIDE091	1 RUKAVINA	341
147 NO		30M15	4 VIDE091	4 VIDE091	3 RUKAVINA FISHER	443
148 NO		30M15	9 VIDE091	4 VIDE091	3 RUKAVINA FISHER	943
149 NO		30M15	3 VIDE091	4 VIDE091	1 RUKAVINA	341
150 NO		30M15	7 VIDE091	4 VIDE091	3 RUKAVINA FISHER	743
151 NO		30M15	16 VIDE091	6 VIDE091	3 RUKAVINA FISHER	1663
152 NO		30M15	7 VIDE091	4 VIDE091	3 RUKAVINA FISHER	743
153 NO		30M15	1 VIDE091	4 VIDE091	1 RUKAVINA	141
154 NO		30M15	1 VIDE091	4 VIDE091	1 RUKAVINA	141
155 NO		30M15 30M16	1 VIDE091	4 VIDE091	3 RUKAVINA	143
156 NO		30M16	1 VIDE091	4 VIDE091	2 RUKAVINA	142
157 NO		30M16	2 VIDE091	4 VIDE091	2 RUKAVINA	242
158 NO		30M16	1 VIDE091	4 VIDE091	1 RUKAVINA	141
159 NO		30M16	9 VIDE091	4 VIDE091	2 RUKAVINA	942
160 NO		30M16	3 VIDE091	4 VIDE091	2 RUKAVINA	342
161 NO		30M16	7 VIDE091	4 VIDE091	2 RUKAVINA	742
162 NO		30M16	9 VIDE091	4 VIDE091	2 RUKAVINA	942
163 NO		30M16	7 VIDE091	4 VIDE091	3 RUKAVINA	743
164 YES	EAST BOUND 400M EAST	30M16	1 VIDE091	4 VIDE091	1 RUKAVINA	141

LAKE ONTARIO.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
165	YES WEST BOUND 400M EAST	30M16	7	4	2	742
166	YES EAST BOUND 1000M	30M16	3	4	3	343
167	NO	30M16	7	4	3	743
168	NO	30M16	16	1	2	1612
169	NO	30M16	3	2	2	322
170	NO	30M16	9	4	3	943
171	NO	30M16	9	4	3	943
172	NO	30M16	9	4	3	943
173	NO	30M16	8	4	2	842
174	NO	30M16	7	2	3	723
175	NO	30M16	7	4	3	743
176	NO	30M16	16	1	2	1612
177	NO	30M16	7	3	2	732
178	NO	30M16	3	3	2	332
179	NO	30M16	3	4	5	345
180	NO	30M16	3	4	5	345
181	NO	30M16	3	4	1	341
182	NO	30M16	3	4	1	341
183	NO	30M16	3	4	1	341
184	NO	30M16	3	4	1	341
185	NO	30M16	3	4	1	341
186	NO	30M16	3	4	1	341
187	NO	30M16	3	4	1	341
188	NO	30M16	3	4	1	341
189	NO	30M16	8	4	1	841
190	NO	30M16	8	4	1	841
191	NO	30M16 30N13	9	4	3	943
192	NO	30N13	3	4	3	343
193	NO	30N13	3	4	3	343
194	NO	30N13	9	4	3	943
195	NO	30N13	3	4	1	341
196	NO	30N13	3	4	1	341
197	NO	30N13	3	4	1	341
198	NO	30N13	9	4	3	943
199	NO	30N13	3	4	4	344
200	NO	30N13	16	1	4	1614
201	NO	30N13	16	1	4	1614
202	NO	30N13	4	4	2	442
203	NO	30N13	3	3	2	332
204	NO	30N13	9	4	2	942
205	NO	30N13	3	2	2	322

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
206 NO		30N13	3 VIDEO91	4 VIDEO91	3 RUKAVINA	343
207 NO		30N13 31C04	3 VIDEO91	4 VIDEO91	2 RUKAVINA	342
208 NO		31C04	3 VIDEO91	4 VIDEO91	2 RUKAVINA	342
209 NO		31C04	9 VIDEO91	4 VIDEO91	2 RUKAVINA	942
210 NO		31C04	4 VIDEO91	3 VIDEO91	2 RUKAVINA	432
211 NO		31C04	4 VIDEO91	4 VIDEO91	2 RUKAVINA	442
212 NO		31C04	9 VIDEO91	4 VIDEO91	2 RUKAVINA	942
213 NO		31C04	4 VIDEO91	4 VIDEO91	2 RUKAVINA	442
214 NO		31C04	3 VIDEO91	2 VIDEO91	2 RUKAVINA	322
215 NO		31C04 30N13	7 VIDEO91	4 VIDEO91	2 RUKAVINA	742
216 YES		30N13	9 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	944
217 YES		30N13	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
218 YES		30N13	9 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	944
219 NO		30N13	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
220 NO		30N13	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
221 YES N EAST BOUND 1KM S WEST		30N13 31C04	3 VIDEO91	1 VIDEO91	4 VIDEO91	314
222 NO		30N13 31C04	10 VIDEO91	2 VIDEO91	4 VIDEO91	1024
223 NO		31C04 30N13	14 VIDEO91	4 VIDEO91	1 OGS	1441
224 NO		31C04	14 VIDEO91	4 VIDEO91	1 OGS	1441
225 NO		31C04	12 VIDEO91	2 VIDEO91	6 NO DATA	1226
226 NO		31C04	14 VIDEO91	2 VIDEO91	6 NO DATA	1426
227 NO		31C04	10 VIDEO91 OGS	1 VIDEO91	6 NO DATA	1016
228 NO		31C04	14 VIDEO91	4 VIDEO91	6 NO DATA	1446
229 NO		31C04	12 VIDEO91	2 VIDEO91	4 VIDEO91	1224
230 NO		31C04	14 VIDEO91	4 VIDEO91	4 VIDEO91	1444
231 NO		31C04	12 VIDEO91	1 VIDEO91	4 VIDEO91	1214
232 NO		31C04	3 VIDEO91	1 VIDEO91	4 VIDEO91	314
233 NO		31C04	14 VIDEO91	4 VIDEO91	2 VIDEO91 RUKAVINA	1442
234 NO		31C04	3 VIDEO91	2 VIDEO91	4 VIDEO91	324
235 NO		31C04	3 VIDEO91	2 VIDEO91	4 VIDEO91	324
236 NO		31C04	9 VIDEO91	4 VIDEO91	2 RYKAVINA	942
237 YES WEST BOUND 500M EAST		31C04	9 VIDEO91	4 VIDEO91	2 RUKAVINA	942
238 YES NORTH BOUND 300M SOUTH		31C04 30N13	9 VIDEO91	4 VIDEO91	2 VIDEO91 RUKAVINA	942
239 NO		30N13	10 VIDEO91	3 VIDEO91	4 VIDEO91 RUKAVINA	1034
240 NO		30N13	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
241 NO		30N13	8 VIDEO91	4 VIDEO91	4 RUKAVINA	844
242 NO		30N13	9 VIDEO91	4 VIDEO91	4 RUKAVINA	944
243 NO		30N13	8 VIDEO91	4 VIDEO91	4 VIDEO91	844
244 NO		30N13	9 VIDEO91	4 VIDEO91	2 VIDEO91	942
245 NO		30N13	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044
246 NO		30N13	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044



LAKE ONTARIO\_ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
247 NO		30N13	9 VIDEO91	4 VIDEO91	2 RUKAVINA	942
248 NO		30N13	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
249 NO		30N13	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
250 NO		30N13 30N14	9 VIDEO91	4 VIDEO91	2 RUKAVINA	942
251 NO		30N14	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044
252 NO		30N14	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044
253 NO		30N14	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
254 NO		30N14	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
255 NO		30N14	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
256 NO		30N14	9 VIDEO91	4 VIDEO91	2 VIDEO91 RUKAVINA	942
257 NO		30N14	9 VIDEO91	4 VIDEO91	2 VIDEO91 RUKAVINA	942
258 NO		30N14	9 VIDEO91	4 VIDEO91	2 VIDEO91 RUKAVINA	942
259 NO		30N14	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
260 NO		30N14	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
261 NO		30N14	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
262 NO		30N14	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
263 NO		30N14	9 VIDEO91	4 VIDEO91	2 VIDEO91 RUKAVINA	942
264 NO		30N14	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
265 NO		20N14	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
266 NO		30N14	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
267 NO		30N14	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
268 NO		30N14	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
269 NO		30N14	9 VIDEO91	4 VIDEO91	4 RUKAVINA	944
270 NO		30N14	9 VIDEO91	4 VIDEO91	4 RUKAVINA	944
271 NO		30N14	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
272 NO		30N14	9 VIDEO91	4 VIDEO91	4 RUKAVINA	944
273 NO		30N14	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
274 NO		30N14	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
275 NO		30N14	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
276 NO		30N14	9 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	944
277 NO		30N14	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
278 NO		30N14	8 VIDEO91	4 VIDEO91	4 RUKAVINA	844
279 NO		30N14	9 VIDEO91	4 VIDEO91	4 RUKAVINA	944
280 NO		30N14	9 VIDEO91	4 VIDEO91	4 RUKAVINA	944
281 NO		30M14	9 VIDEO91	4 VIDEO91	4 RUKAVINA	944
282 NO		30N14	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
283 NO		30N14	9 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	944
284 NO		30N14	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
285 NO		30N14 30N15	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
286 NO		30N15	9 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	944
287 NO		30N15	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844

GRAVEL BARRIER

COARSE BARRIER

LAKE ONTARIO.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
288 NO		30N15	8 VIDEO91	4 VIDEO91	4 RUKAVINA	844
289 NO		30N15	8 VIDEO91	4 VIDEO91	4 RUKAVINA	844
290 NO		30N15	9 VIDEO91	4 VIDEO91	2 VIDEO91 RUKAVINA	942
291 NO		30N15	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
292 NO		30N15	8 VIDEO91	4 VIDEO91	4 RUKAVINA	844
293 NO		30N15	8 VIDEO91	4 VIDEO91	4 RUKAVINA	844
294 NO		30N15	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
295 NO		30N15	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
296 NO		30N15	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
297 NO		30N15	9 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	944
298 NO		30N15	8 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	844
299 NO		30N15	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
300 NO		30N15	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
301 NO		30N15	10 AP89 OGS	4 AP89	4 AP89	1044
302 NO		30N15	10 AP89 OGS	4 AP89	6 NO DATA	1046
303 NO		30N15	10 AP89 OGS	4 AP89	6 NO DATA	1046
304 NO		30N15	10 CZA OGS	4 CZA	6 NO DATA	1046
305 NO		30N15	10 OGS CZA	4 CZA	6 NO DATA	1046
306 NO		30N15	9 OGS CZA	4 VZA	6 NO DATA	946
307 NO		30N15	10 OGS CZA	4 CZA	6 NO DATA	1046
308 NO		30N15 30N14	10 OGS CZA	4 CZA	6 NO DATA	1046
309 NO		30N14	10 AP89 OGS	4 AP89	6 NO DATA	1046
310 NO		30N14	10 AP89 OGS	4 AP89	6 NO DATA	1046
311 NO		30N14	10 AP89 OGS	4 AP89	6 NO DATA	1046
312 NO		30N14	10 AP89 OGS	4 AP89	6 NO DATA	1046
313 NO		30N14	13 AP89 CZA	4 AP89	6 NO DATA	1346
314 NO		30N14	10 AP89 OGS	4 AP89	6 NO DATA	1046
315 NO		30N14	10 AP89 OGS	4 AP89	6 NO DATA	1046
316 NO		30N14	10 AP89 OGS	4 AP89	6 NO DATA	1046
317 NO		30N14	5 AP89 OGS	4 AP89	6 NO DATA	546
318 NO		30N14	5 AP89 OGS	4 AP89	6 NO DATA	546
319 NO		30N14	10 AP89 OGS	4 AP89	6 NO DATA	1046
320 NO		30N14	10 AP89 OGS	4 AP89	6 NO DATA	1046
321 NO		30N14	10 AP89 OGS	4 AP89	6 NO DATA	1046
322 NO		30N14	10 AP89 OGS	4 AP89	6 NO DATA	1046
323 NO		30N14	10 AP89 OGS	4 AP89	6 NO DATA	1046
324 NO		30N14	9 AP89	4 AP89	4 AP89	944
325 NO		30N14 30N15	10 AP89 OGS	4 AP89	6 NO DATA	1046
326 NO		30N14 30N15	10 AP89 OGS	4 AP89	6 NO DATA	1046
327 NO		30N14	10 AP89 OGS	4 AP89	6 NO DATA	1046
328 NO		30N14	5 AP89 OGS	4 AP89	4 AP89	544

LOW VEG BANKS

LAKE ONTARIO.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
329 NO		30N14	5 AP89 OGS	4 AP89	4 AP89	544
330 NO		30N14	13 AP89 OGS	4 AP89	6 NO DATA	1346
331 NO		30N14	13 AP89 OGS	4 AP89	6 NO DATA	1346
332 NO		30N14	10 AP89 OGS	4 AP89	6 NO DATA	1046
333 NO		30N14 31C03	13 AP89	4 AP89	6 NO DATA	1346
334 NO		30N14 30N15 31C03	10 AP89 OGS	4 AP89	6 NO DATA	1046
335 NO		31C02	10 AP89 OGS	3 AP89	6 NO DATA	1036
336 NO		31C02	9 AP89	4 AP89	6 NO DATA	946
337 NO		31C02 30N15	10 AP89 OGS	4 AP89	6 NO DATA	1046
338 NO		30N15	10 CZA OGS	4 CZA	6 NO DATA	1046
339 NO		30N15	10 CZA OGS	4 CZA	6 NO DATA	1046
340 NO		30N15	6 OGS	4 CZA	4 AP89	644
341 NO		30N15	10 OGS CZA	4 CZA	6 NO DATA	1046
342 NO		30N15	9 CZA	4 CZA	6 NO DATA	946
343 NO		30N15 31C02	10 CZA OGS	4 CZA	6 NO DATA	1046
344 NO		31C02	10 CZA OGS	4 CZA	6 NO DATA	1046
345 NO		31C02	5 OGS AP89	4 AP89	6 NO DATA	546
346 NO		31C02	5 OGS AP89	4 AP89	6 NO DATA	546
347 NO		31C02	9 AP89	4 AP89	6 NO DATA	946
348 NO		31C02	7 AP89 OGS	4 AP89	6 NO DATA	746
349 NO		31C02	7 AP89 OGS	4 AP89	6 NO DATA	746
350 NO		31C02	10 AP89 OGS	4 AP89	6 NO DATA	1046
351 NO		31C02	10 AP89 OGS	4 AP89	6 NO DATA	1046
352 NO		31C02	6 AP89 OGS	4 AP89	6 NO DATA	646
353 NO		31C02	6 CZA OGS	4 CZA	6 NO DATA	646
354 NO		31C02	10 AP89 OGS	4 AP89	6 NO DATA	1046
355 NO		31C02	6 AP89 OGS	4 AP89	6 NO DATA	646
356 NO		31C02	6 AP89 OGS	3 AP89	6 NO DATA	636
357 NO		31C02	6 AP89 OGS	3 AP89	6 NO DATA	636
358 NO		31C02	6 AP89 OGS	3 AP89	6 NO DATA	636
359 NO		31C02	10 CZA	3 CZA	6 NO DATA	1036
360 NO		31C03 31C02	3 CZA	6 CZA	6 NO DATA	366
361 NO		31C03	10 CZA	6 CZA	6 NO DATA	1066
362 NO		31C03	3 CZA	6 CZA	6 NO DATA	366
363 NO		31C03	3 CZA	6 CZA	6 NO DATA	366
364 NO		31C03	3 CZA	6 CZA	6 NO DATA	366
365 NO		31C03	3 CZA	6 CZA	6 NO DATA	366
366 NO		31C03	3 CZA	6 CZA	6 NO DATA	366
367 NO		31C03	12 CZA	6 CZA	6 NO DATA	1266
368 NO		31C03	12 CZA	6 CZA	6 NO DATA	1266
369 NO		31C03	12 CZA	6 CZA	6 NO DATA	1266

LAKE ONTARIO.ASC

Resrch No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
370 NO		31C03	14	CZA	6	NO DATA
371 NO		31C03	12	CZA	6	NO DATA
372 NO		31C03	12	CZA	6	NO DATA
373 NO		31C03	12	CZA	6	NO DATA
374 NO		31C03	14	CZA	6	NO DATA
375 NO		31C03	12	CZA	6	NO DATA
376 NO		31C03	13	VIDEO91	4	VIDEO91
377 NO		31C03	12	VIDEO91	3	VIDEO91
378 NO		31C03	10	VIDEO91	4	VIDEO91
379 NO		31C03	10	VIDEO91	2	VIDEO91
380 NO		31C03	13	VIDEO91	4	VIDEO91
381 NO		31C03	12	VIDEO91	2	VIDEO91
382 NO		31C03	12	VIDEO91	3	VIDEO91
383 NO		31C03 13C04	12	VIDEO91	2	VIDEO91
384 NO		31C04	13	VIDEO91	3	VIDEO91
385 NO		31C04	12	VIDEO91	3	VIDEO91
386 NO		31C04	16	VIDEO91	1	VIDEO91
387 NO		31C04	16	VIDEO91	1	VIDEO91
388 NO		31C04 31C03	12	VIDEO91	3	VIDEO91
389 NO		31C03	16	VIDEO91	1	VIDEO91
390 NO		31C03	12	VIDEO91	3	VIDEO91
391 NO		31C03	13	VIDEO91	4	VIDEO91
392 NO		31C03	12	VIDEO91	4	VIDEO91
393 NO		31C03	12	VIDEO91	4	VIDEO91
394 NO		31C03	12	VIDEO91	4	VIDEO91
395 NO		31C03	12	VIDEO91	4	VIDEO91
396 NO		31C03	12	VIDEO91	4	VIDEO91
397 NO		31C03	14	VIDEO91	4	VIDEO91
398 NO		31C03	12	VIDEO91	4	VIDEO91
399 NO		31C03	12	VIDEO91	2	VIDEO91
400 NO		31C03	14	VIDEO91	4	VIDEO91
401 NO		31C03	13	VIDEO91	4	VIDEO91
402 NO		31C03	12	VIDEO91	3	VIDEO91
403 NO		31C03	12	VIDEO91	4	VIDEO91
404 NO		31C03 31C02	12	VIDEO91	4	VIDEO91
405 NO		31C02	13	VIDEO91	4	VIDEO91
406 NO		31C02	13	VIDEO91	4	VIDEO91
407 NO		31C02	13	VIDEO91	4	VIDEO91
408 NO		31C02	13	VIDEO91	4	VIDEO91
409 NO		31C02 31C03	12	VIDEO91	3	VIDEO91
410 NO		31C03	12	VIDEO91	4	VIDEO91

TRENT CANAL ENTRANCE

MORIA RIVER

NAPANEE RIVER

LAKE ONTARIO.ASC

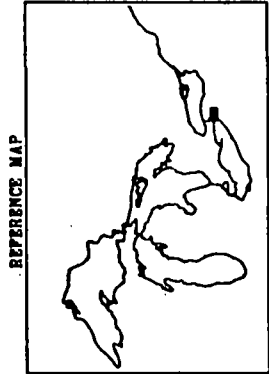
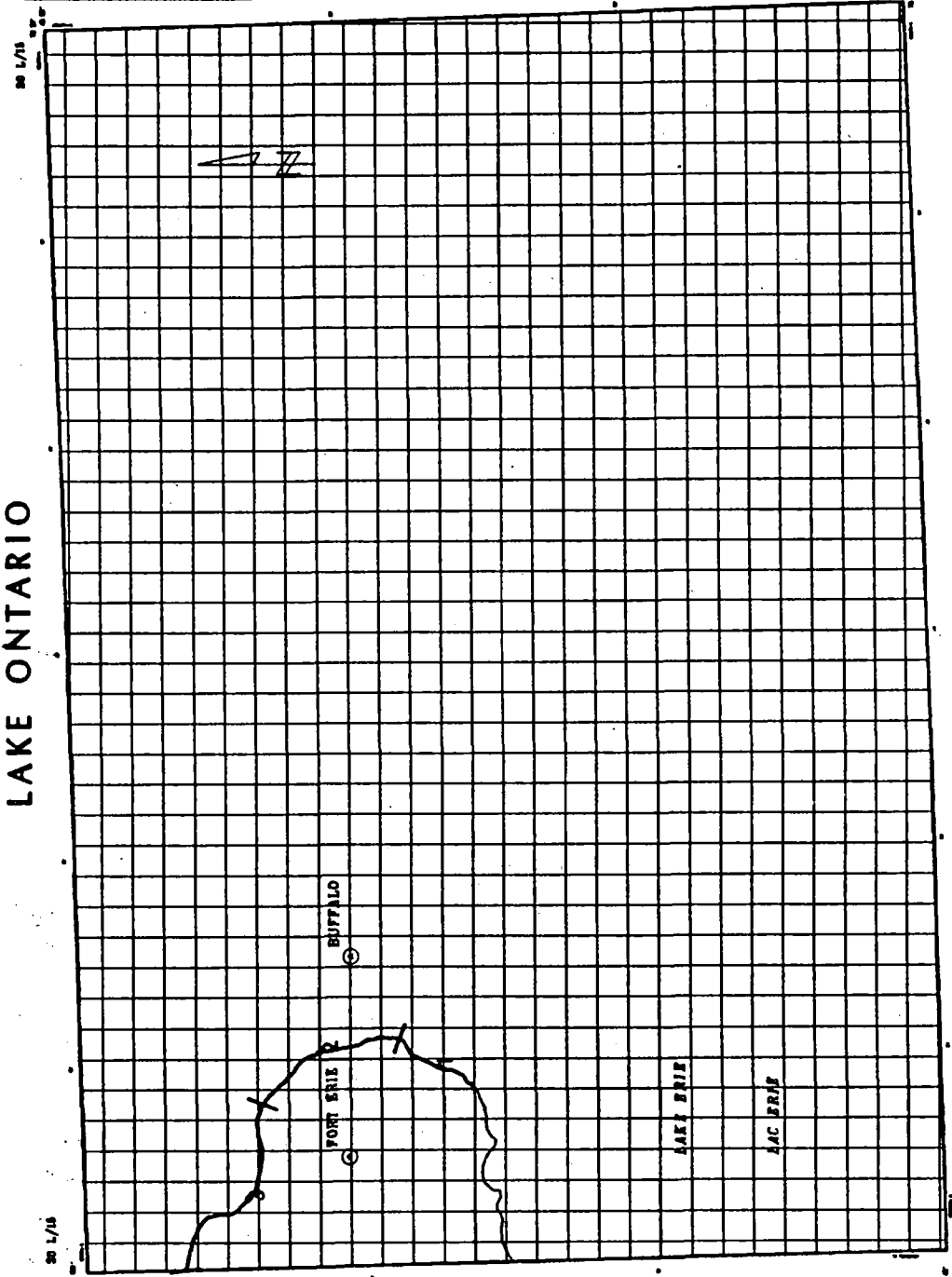
Resrch No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
411 NO		31C03	VIDE091	3	VIDE091	1236
412 NO		31C03	VIDE091	3	VIDE091	1234
413 NO		31C03 31C02	VIDE091	4	VIDE091	1246
414 NO		31C02	VIDE091	3	VIDE091	1234
415 NO		31C02	VIDE091	3	VIDE091	1236
416 NO		31C02	VIDE091	3	VIDE091	1034
417 NO		31C02	VIDE091	3	VIDE091	1034
418 NO		31C02	VIDE091	2	VIDE091	1024
419 NO		31C02	VIDE091	4	VIDE091	1044
420 NO		31C02	VIDE091	2	VIDE091	1024
421 NO		31C02	VIDE091	3	VIDE091	1034
422 NO		31C02	VIDE091	3	VIDE091	1034
423 NO		31C02	VIDE091	3	VIDE091	1034
424 NO		31C02	VIDE091	6	VIDE091	1666
425 NO		31C02	VIDE091	2	VIDE091	1024
426 NO		31C02	VIDE091	2	VIDE091	1024
427 NO		31C02	VIDE091	3	VIDE091	1034
428 NO		31C02	VIDE091	3	VIDE091	1034
429 NO		31C02	VIDE091	3	VIDE091	1034
430 NO		31C02	VIDE091	2	VIDE091	1424
431 NO		31C02	VIDE091	4	VIDE091	1444
432 NO		31C02	VIDE091	4	VIDE091	1044
433 NO		31C02	VIDE091	4	VIDE091	1246
434 NO		31C02	VIDE091	4	VIDE091	1044
435 NO		31C02	VIDE091	4	VIDE091	1044
436 NO		31C02	VIDE091	4	VIDE091	1044
437 NO		31C02	VIDE091	4	VIDE091	1044
438 NO		31C02	VIDE091	4	VIDE091	1044
439 NO		31C02	VIDE091	4	VIDE091	1044
440 NO		31C02	VIDE091	4	VIDE091	1044
441 NO		31C02	VIDE091	4	VIDE091	1044
442 NO		31C02	VIDE091	4	VIDE091	1044
443 NO		31C02	VIDE091	4	VIDE091	944
444 NO		31C02	VIDE091	4	VIDE091	1044
445 NO		31C02	VIDE091	4	VIDE091	844
446 NO		31C02	VIDE091	4	VIDE091	946
447 NO		31C02	VIDE091	4	VIDE091	844
448 NO		31C02	VIDE091	3	VIDE091	834
449 NO		31C02	VIDE091	4	VIDE091	946
450 NO		31C02	VIDE091	4	VIDE091	846
451 NO		31C02	VIDE091	4	VIDE091	946

RIVER MOUTH

LAKE ONTARIO.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
452	NO	31C02	8 VIDEO91	3 VIDEO91	4 VIDEO91	834
453	NO	31C02	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044
454	NO	31C02	9 VIDEO91	4 VIDEO91	4 VIDEO91	944
455	NO	31C02	8 VIDEO91	4 VIDEO91	4 VIDEO91	844
456	NO	31C02	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044
457	NO	31C02	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044
458	NO	31C02	8 VIDEO91	4 VIDEO91	6 NO DATA	846
459	NO	31C02	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044
460	NO	31C02	10 VIDEO91	3 VIDEO91	4 VIDEO91	1034
461	NO	31C02	14 VIDEO91	1 VIDEO91	4 VIDEO91	1414
462	NO	31C02	10 VIDEO91	1 VIDEO91	4 VIDEO91	1014
463	YES NEW	30M06	9 CZA VIDEO91	4 VIDEO91	3 RUKAVINA FISHER	943
464	YES NEW	30M06	3 CZA VIDEO91	4 VIDEO91	1 RUKAVINA	341
465	YES NEW	30M11	16 VIDEO91	2 VIDEO91	2 RUKAVINA	1622
466	YES NEW PART OF 91	30M11	7 VIDEO91	4 VIDEO91	2 RUKAVINA	742
467	YES NEW	30M15	16 VIDEO91	1 VIDEO91	1 RUKAVINA	1611
468	YES NEW	30M16	1 VIDEO91	4 VIDEO91	1 RUKAVINA	141
469	YES NEW PART OF 221	31C04	9 VIDEO91	4 VIDEO91	4 VIDEO91	944
470	YES NEW PART OF 221	31C04	3 VIDEO91	1 VIDEO91	4 VIDEO91	314
471	YES NEW PART OF 237/238	31C04	12 VIDEO91	4 VIDEO91	4 VIDEO91	1244
472	YES NEW	30N13	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044
473	YES NEW	30N15	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
474	YES NEW	30N15	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
475	YES NEW	30N15	9 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	944
476	YES NEW	30N15	10 VIDEO91	4 VIDEO91	4 VIDEO91 RUKAVINA	1044
477	YES NEW	31C3	13 VIDEO91	4 VIDEO91	4 VIDEO91	1344
478	YES NEW	31C02	8 VIDEO91	4 VIDEO91	4 VIDEO91	844
479	YES NEW	31C3	12 VIDEO91	4 VIDEO91	4 VIDEO91	1244

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION LAKE ONTARIO



### GEOMORPHIC CLASSIFICATION

- 01. LOW CLIFF (LOW PROTECTION OR NO CLIFF)
- 02. LOW CLIFF (HIGH PROTECTION OR NO CLIFF)
- 03. LOW CLIFF (HIGH PROTECTION OR NO CLIFF)
- 04. LOW CLIFF (HIGH PROTECTION OR NO CLIFF)
- 05. SANDY BEACH
- 06. SANDY BEACH
- 07. SANDY BEACH
- 08. SANDY BEACH
- 09. SANDY BEACH
- 10. SANDY BEACH
- 11. SANDY BEACH
- 12. SANDY BEACH
- 13. SANDY BEACH
- 14. SANDY BEACH
- 15. SANDY BEACH
- 16. SANDY BEACH
- 17. SANDY BEACH

### PROTECTION CLASSIFICATION

- 01. FULLY PROTECTED
- 02. PARTIALLY PROTECTED
- 03. NOT PROTECTED
- 04. PARTIALLY PROTECTED
- 05. NOT PROTECTED
- 06. PARTIALLY PROTECTED
- 07. NOT PROTECTED

### SUBAQUEOUS/NEARSHORE COMPOSITION

- 01. CLAY
- 02. SAND
- 03. SAND AND CLAY
- 04. SAND AND CLAY
- 05. SAND AND CLAY
- 06. SAND AND CLAY
- 07. SAND AND CLAY
- 08. SAND AND CLAY
- 09. SAND AND CLAY
- 10. SAND AND CLAY
- 11. SAND AND CLAY
- 12. SAND AND CLAY
- 13. SAND AND CLAY
- 14. SAND AND CLAY
- 15. SAND AND CLAY
- 16. SAND AND CLAY
- 17. SAND AND CLAY

### HISTORICAL SHORELINE CHANGE RATE

- 01. INCREASE (1-10 m/yr)
- 02. INCREASE (11-20 m/yr)
- 03. INCREASE (21-30 m/yr)
- 04. INCREASE (31-40 m/yr)
- 05. INCREASE (41-50 m/yr)
- 06. INCREASE (51-60 m/yr)
- 07. INCREASE (61-70 m/yr)
- 08. INCREASE (71-80 m/yr)
- 09. INCREASE (81-90 m/yr)
- 10. INCREASE (91-100 m/yr)
- 11. INCREASE (101-110 m/yr)
- 12. INCREASE (111-120 m/yr)
- 13. INCREASE (121-130 m/yr)
- 14. INCREASE (131-140 m/yr)
- 15. INCREASE (141-150 m/yr)
- 16. INCREASE (151-160 m/yr)
- 17. INCREASE (161-170 m/yr)
- 18. INCREASE (171-180 m/yr)
- 19. INCREASE (181-190 m/yr)
- 20. INCREASE (191-200 m/yr)

### THREE - TIER CLASSIFICATION

- 01. UNCLASSIFIED
- 02. UNCLASSIFIED
- 03. UNCLASSIFIED
- 04. UNCLASSIFIED
- 05. UNCLASSIFIED
- 06. UNCLASSIFIED
- 07. UNCLASSIFIED
- 08. UNCLASSIFIED
- 09. UNCLASSIFIED
- 10. UNCLASSIFIED
- 11. UNCLASSIFIED
- 12. UNCLASSIFIED
- 13. UNCLASSIFIED
- 14. UNCLASSIFIED
- 15. UNCLASSIFIED
- 16. UNCLASSIFIED
- 17. UNCLASSIFIED
- 18. UNCLASSIFIED
- 19. UNCLASSIFIED
- 20. UNCLASSIFIED

FORT ERIE  
ONTARIO

Geomatics International  
Inc.  
1000  
1000

Environment Canada  
Environment Canada

30 1/15  
1992

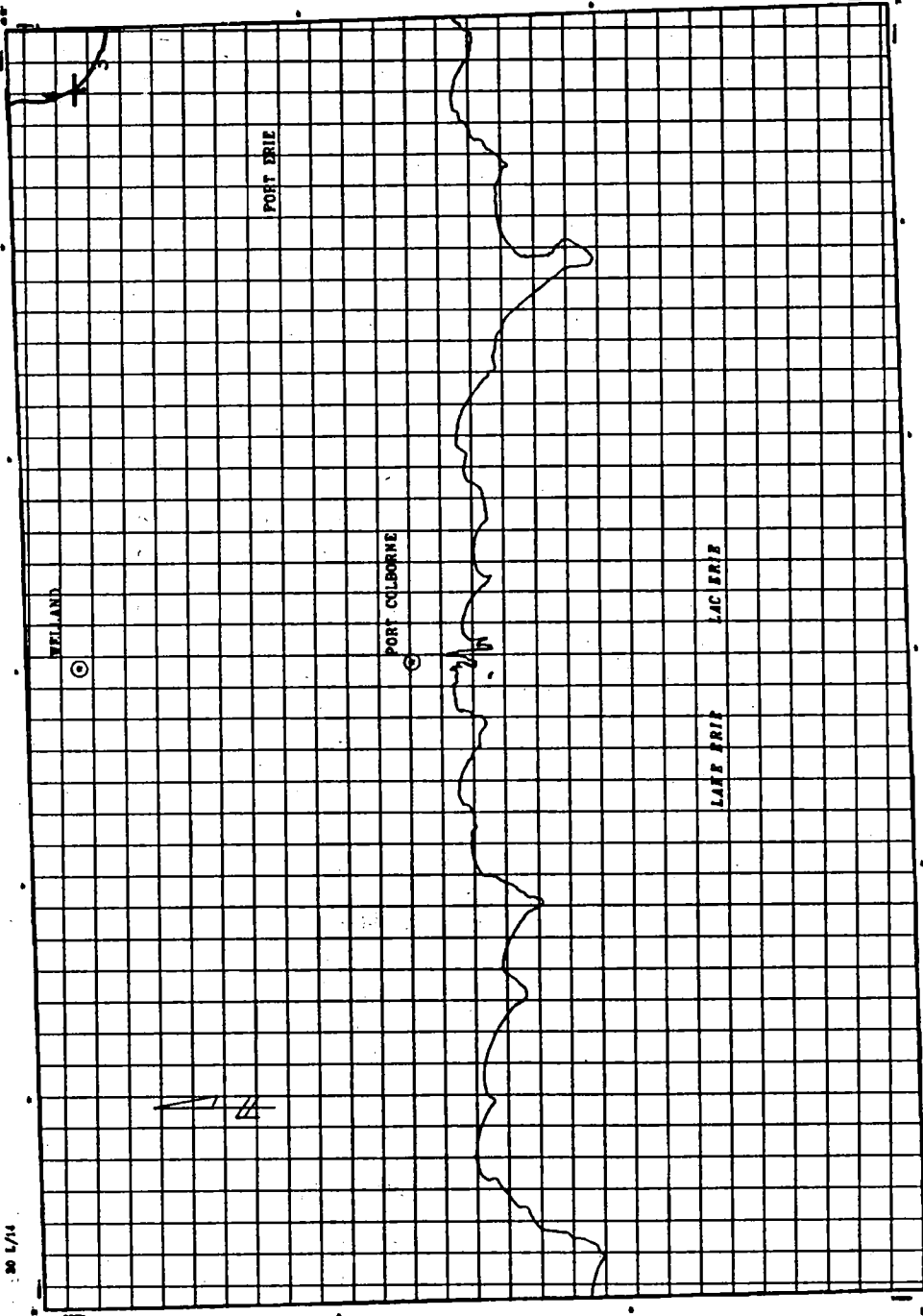
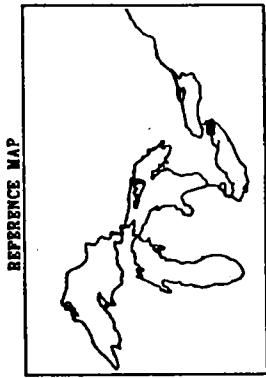
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# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

LAKE ONTARIO

30 1/4

30 1/4



- GEOMORPHIC CLASSIFICATION**
- 1. SAND BLUFF (SEE DEFINITION ON 30 1/4)
  - 2. SAND BLUFF WITH CLAY (SEE DEFINITION ON 30 1/4)
  - 3. SAND BLUFF WITH SILT (SEE DEFINITION ON 30 1/4)
  - 4. SAND BLUFF WITH SILT AND CLAY (SEE DEFINITION ON 30 1/4)
  - 5. SAND BLUFF WITH SILT AND CLAY (SEE DEFINITION ON 30 1/4)
  - 6. SAND BLUFF WITH SILT AND CLAY (SEE DEFINITION ON 30 1/4)
  - 7. SAND BLUFF WITH SILT AND CLAY (SEE DEFINITION ON 30 1/4)
  - 8. SAND BLUFF WITH SILT AND CLAY (SEE DEFINITION ON 30 1/4)
  - 9. SAND BLUFF WITH SILT AND CLAY (SEE DEFINITION ON 30 1/4)
  - 10. SAND BLUFF WITH SILT AND CLAY (SEE DEFINITION ON 30 1/4)
  - 11. SAND BLUFF WITH SILT AND CLAY (SEE DEFINITION ON 30 1/4)
  - 12. SAND BLUFF WITH SILT AND CLAY (SEE DEFINITION ON 30 1/4)
  - 13. SAND BLUFF WITH SILT AND CLAY (SEE DEFINITION ON 30 1/4)
  - 14. SAND BLUFF WITH SILT AND CLAY (SEE DEFINITION ON 30 1/4)
  - 15. SAND BLUFF WITH SILT AND CLAY (SEE DEFINITION ON 30 1/4)
  - 16. SAND BLUFF WITH SILT AND CLAY (SEE DEFINITION ON 30 1/4)
  - 17. SAND BLUFF WITH SILT AND CLAY (SEE DEFINITION ON 30 1/4)
  - 18. SAND BLUFF WITH SILT AND CLAY (SEE DEFINITION ON 30 1/4)
  - 19. SAND BLUFF WITH SILT AND CLAY (SEE DEFINITION ON 30 1/4)
  - 20. SAND BLUFF WITH SILT AND CLAY (SEE DEFINITION ON 30 1/4)

- PROTECTION CLASSIFICATION**
- 1. HEAVILY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. MODERATELY PROTECTED
  - 4. MODERATELY PROTECTED
  - 5. MODERATELY PROTECTED
  - 6. MODERATELY PROTECTED
  - 7. MODERATELY PROTECTED
  - 8. MODERATELY PROTECTED
  - 9. MODERATELY PROTECTED
  - 10. MODERATELY PROTECTED
  - 11. MODERATELY PROTECTED
  - 12. MODERATELY PROTECTED
  - 13. MODERATELY PROTECTED
  - 14. MODERATELY PROTECTED
  - 15. MODERATELY PROTECTED
  - 16. MODERATELY PROTECTED
  - 17. MODERATELY PROTECTED
  - 18. MODERATELY PROTECTED
  - 19. MODERATELY PROTECTED
  - 20. MODERATELY PROTECTED

- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. SAND
  - 4. SAND
  - 5. SAND
  - 6. SAND
  - 7. SAND
  - 8. SAND
  - 9. SAND
  - 10. SAND
  - 11. SAND
  - 12. SAND
  - 13. SAND
  - 14. SAND
  - 15. SAND
  - 16. SAND
  - 17. SAND
  - 18. SAND
  - 19. SAND
  - 20. SAND

- HISTORICAL SHORELINE CHANGE RATE**
- 1. STABLE (0-10 cm/yr)
  - 2. STABLE (10-20 cm/yr)
  - 3. STABLE (20-30 cm/yr)
  - 4. STABLE (30-40 cm/yr)
  - 5. STABLE (40-50 cm/yr)
  - 6. STABLE (50-60 cm/yr)
  - 7. STABLE (60-70 cm/yr)
  - 8. STABLE (70-80 cm/yr)
  - 9. STABLE (80-90 cm/yr)
  - 10. STABLE (90-100 cm/yr)
  - 11. STABLE (100-110 cm/yr)
  - 12. STABLE (110-120 cm/yr)
  - 13. STABLE (120-130 cm/yr)
  - 14. STABLE (130-140 cm/yr)
  - 15. STABLE (140-150 cm/yr)
  - 16. STABLE (150-160 cm/yr)
  - 17. STABLE (160-170 cm/yr)
  - 18. STABLE (170-180 cm/yr)
  - 19. STABLE (180-190 cm/yr)
  - 20. STABLE (190-200 cm/yr)

- THREE - TIER CLASSIFICATION**
- EXAMPLE CLASSIFICATION (1 - 27)  
 PROTECTION CLASSIFICATION (1 - 8)  
 SUBAQUEOUS/NEARSHORE COMPOSITION (1 - 8)
- EXAMPLE CLASSIFICATION (1 - 8)  
 PROTECTION CLASSIFICATION (1 - 8)  
 SUBAQUEOUS/NEARSHORE COMPOSITION (1 - 8)

30 1/4  
1992



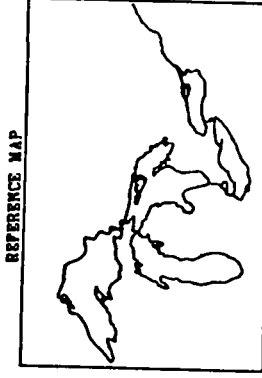
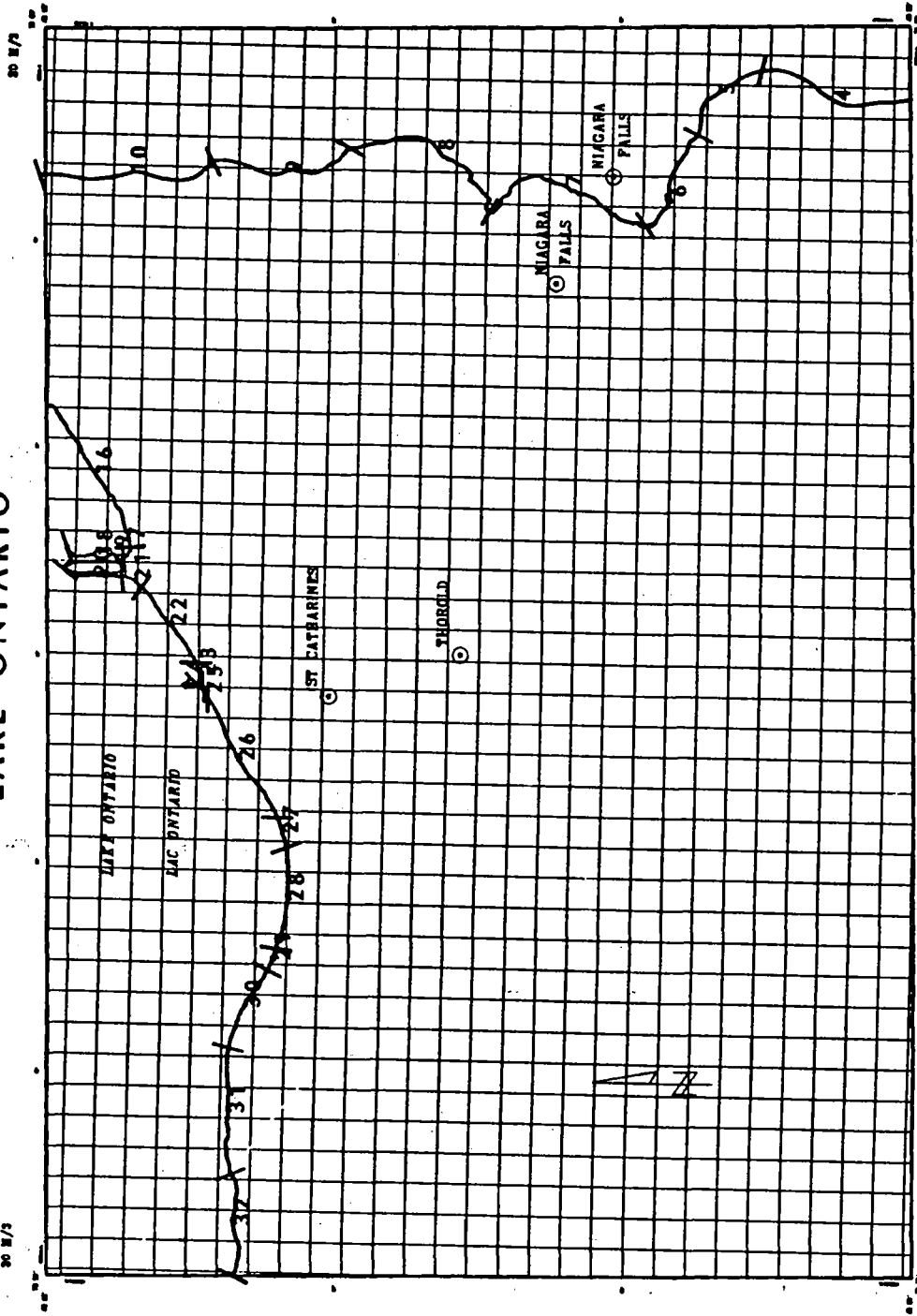
WELLAND  
ONTARIO

Geosite International  
100, rue...  
110



# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

LAKE ONTARIO



- GEOMORPHIC CLASSIFICATION**
- 1. HIGH (H) CLAY SUBSTRATE ON SAND
  - 2. HIGH (H) CLAY SUBSTRATE ON CLAY
  - 3. LOW (L) CLAY SUBSTRATE ON SAND
  - 4. LOW (L) CLAY SUBSTRATE ON CLAY
  - 5. SAND/SILT SAND
  - 6. CLAY SAND
  - 7. SAND
  - 8. SAND - GRAVEL
  - 9. SAND - GRAVEL - SAND
  - 10. SAND - GRAVEL - SAND - GRAVEL
  - 11. SAND - GRAVEL - SAND - GRAVEL - SAND
  - 12. SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL
  - 13. SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND
  - 14. SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL
  - 15. SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND
  - 16. SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL
  - 17. SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND
  - 18. SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL
  - 19. SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND
  - 20. SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL - SAND - GRAVEL

- PROTECTION CLASSIFICATION**
- 1. HEAVY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. LIGHTLY PROTECTED
  - 4. UNPROTECTED
  - 5. UNDESIRABLE PROTECTION
  - 6. UNDESIRABLE PROTECTION
  - 7. UNDESIRABLE PROTECTION
  - 8. UNDESIRABLE PROTECTION
  - 9. UNDESIRABLE PROTECTION
  - 10. UNDESIRABLE PROTECTION
  - 11. UNDESIRABLE PROTECTION
  - 12. UNDESIRABLE PROTECTION
  - 13. UNDESIRABLE PROTECTION
  - 14. UNDESIRABLE PROTECTION
  - 15. UNDESIRABLE PROTECTION
  - 16. UNDESIRABLE PROTECTION
  - 17. UNDESIRABLE PROTECTION
  - 18. UNDESIRABLE PROTECTION
  - 19. UNDESIRABLE PROTECTION
  - 20. UNDESIRABLE PROTECTION

- SUBAQUOUS/REARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND/SILT SAND
  - 3. SAND/SILT SAND
  - 4. SAND/SILT SAND
  - 5. SAND/SILT SAND
  - 6. SAND/SILT SAND
  - 7. SAND/SILT SAND
  - 8. SAND/SILT SAND
  - 9. SAND/SILT SAND
  - 10. SAND/SILT SAND
  - 11. SAND/SILT SAND
  - 12. SAND/SILT SAND
  - 13. SAND/SILT SAND
  - 14. SAND/SILT SAND
  - 15. SAND/SILT SAND
  - 16. SAND/SILT SAND
  - 17. SAND/SILT SAND
  - 18. SAND/SILT SAND
  - 19. SAND/SILT SAND
  - 20. SAND/SILT SAND

- HISTORICAL SHORELINE CHANGE RATE**
- 1. POSITIVE (4-10 m/y)
  - 2. POSITIVE (10-20 m/y)
  - 3. POSITIVE (20-30 m/y)
  - 4. POSITIVE (30-40 m/y)
  - 5. POSITIVE (40-50 m/y)
  - 6. POSITIVE (50-60 m/y)
  - 7. POSITIVE (60-70 m/y)
  - 8. POSITIVE (70-80 m/y)
  - 9. POSITIVE (80-90 m/y)
  - 10. POSITIVE (90-100 m/y)
  - 11. POSITIVE (100-110 m/y)
  - 12. POSITIVE (110-120 m/y)
  - 13. POSITIVE (120-130 m/y)
  - 14. POSITIVE (130-140 m/y)
  - 15. POSITIVE (140-150 m/y)
  - 16. POSITIVE (150-160 m/y)
  - 17. POSITIVE (160-170 m/y)
  - 18. POSITIVE (170-180 m/y)
  - 19. POSITIVE (180-190 m/y)
  - 20. POSITIVE (190-200 m/y)

- THREE - TIER CLASSIFICATION**
- 1. CLASSIFICATION P - 17
  - 2. CLASSIFICATION P - 18
  - 3. CLASSIFICATION P - 19
  - 4. CLASSIFICATION P - 20
  - 5. CLASSIFICATION P - 21
  - 6. CLASSIFICATION P - 22
  - 7. CLASSIFICATION P - 23
  - 8. CLASSIFICATION P - 24
  - 9. CLASSIFICATION P - 25
  - 10. CLASSIFICATION P - 26
  - 11. CLASSIFICATION P - 27
  - 12. CLASSIFICATION P - 28
  - 13. CLASSIFICATION P - 29
  - 14. CLASSIFICATION P - 30
  - 15. CLASSIFICATION P - 31
  - 16. CLASSIFICATION P - 32
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  - 18. CLASSIFICATION P - 34
  - 19. CLASSIFICATION P - 35
  - 20. CLASSIFICATION P - 36

NIAGARA ONTARIO

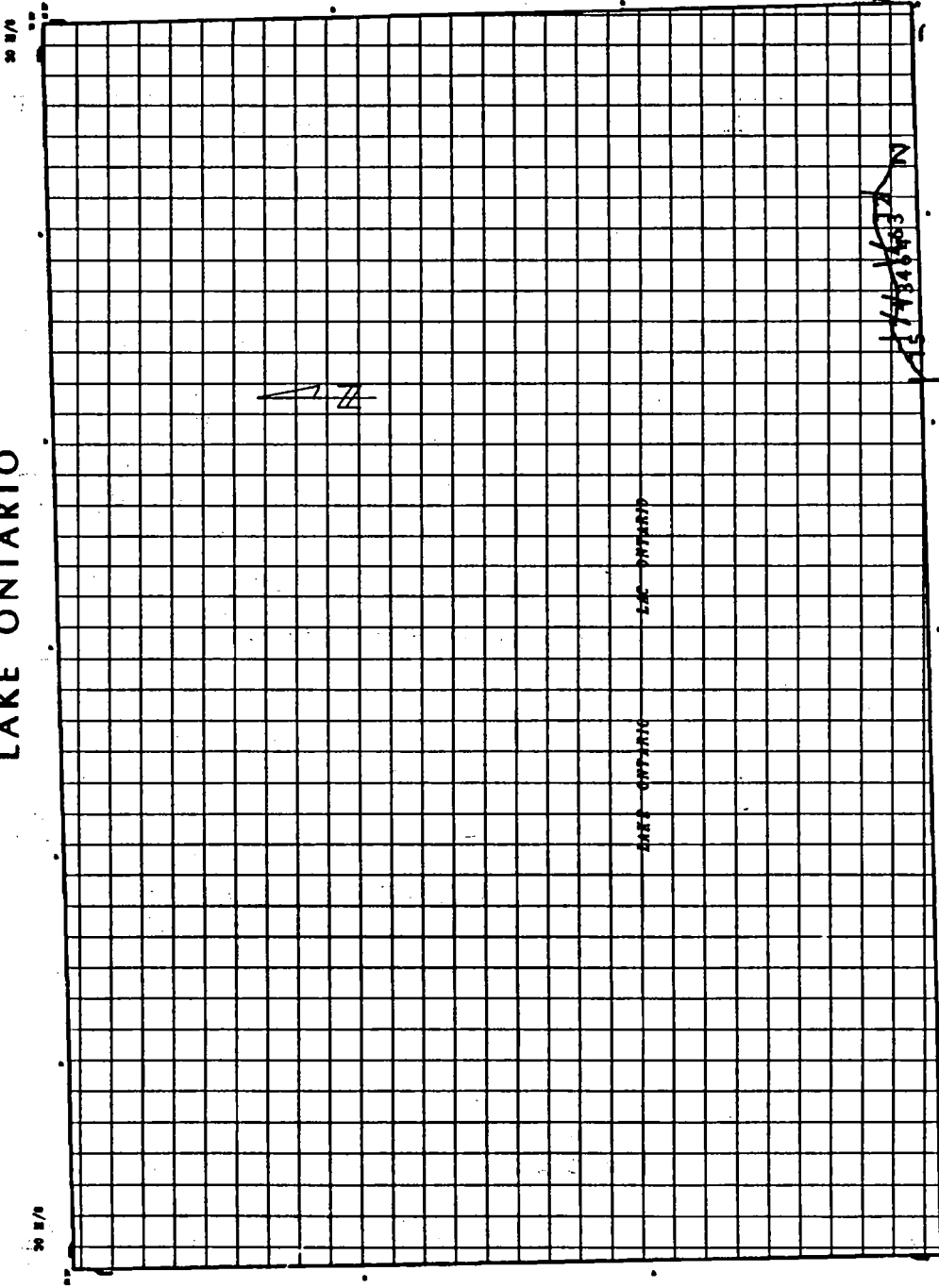
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Environment Canada  
 Environment Canada

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

LAKE ONTARIO

REFERENCE MAP



**GEOMORPHIC CLASSIFICATION**

- 1. HIGH (Pebb) BLUFF (INTERIOR OR TO BEACH)
- 2. HIGH (Pebb) BLUFF (TO BEACH)
- 3. HIGH (SAND) BLUFF (TO BEACH)
- 4. LOW (SAND) BLUFF (TO BEACH)
- 5. SAND/CLAY BLUFF
- 6. CLAY BLUFF
- 7. SAND/CLAY BLUFF
- 8. SAND/CLAY BLUFF
- 9. SAND/CLAY BLUFF
- 10. SAND/CLAY BLUFF
- 11. SAND/CLAY BLUFF
- 12. SAND/CLAY BLUFF
- 13. SAND/CLAY BLUFF
- 14. SAND/CLAY BLUFF
- 15. SAND/CLAY BLUFF
- 16. SAND/CLAY BLUFF
- 17. SAND/CLAY BLUFF
- 18. SAND/CLAY BLUFF
- 19. SAND/CLAY BLUFF
- 20. SAND/CLAY BLUFF

**PROTECTION CLASSIFICATION**

- 1. HEAVILY PROTECTED
- 2. MODERATELY PROTECTED
- 3. MODERATELY PROTECTED
- 4. MODERATELY PROTECTED
- 5. MODERATELY PROTECTED
- 6. MODERATELY PROTECTED
- 7. MODERATELY PROTECTED
- 8. MODERATELY PROTECTED
- 9. MODERATELY PROTECTED
- 10. MODERATELY PROTECTED
- 11. MODERATELY PROTECTED
- 12. MODERATELY PROTECTED
- 13. MODERATELY PROTECTED
- 14. MODERATELY PROTECTED
- 15. MODERATELY PROTECTED
- 16. MODERATELY PROTECTED
- 17. MODERATELY PROTECTED
- 18. MODERATELY PROTECTED
- 19. MODERATELY PROTECTED
- 20. MODERATELY PROTECTED

**SUBAQUEOUS/NEARSHORE COMPOSITION**

- 1. CLAY
- 2. SAND
- 3. SAND/CLAY
- 4. SAND/CLAY
- 5. SAND/CLAY
- 6. SAND/CLAY
- 7. SAND/CLAY
- 8. SAND/CLAY
- 9. SAND/CLAY
- 10. SAND/CLAY
- 11. SAND/CLAY
- 12. SAND/CLAY
- 13. SAND/CLAY
- 14. SAND/CLAY
- 15. SAND/CLAY
- 16. SAND/CLAY
- 17. SAND/CLAY
- 18. SAND/CLAY
- 19. SAND/CLAY
- 20. SAND/CLAY

**HISTORICAL SHORELINE CHANGE RATE**

- 1. ACCRETION (0-10 m/yr)
- 2. STABLE (0-10 m/yr)
- 3. EROSION (0-10 m/yr)
- 4. EROSION (0-10 m/yr)
- 5. EROSION (0-10 m/yr)
- 6. EROSION (0-10 m/yr)
- 7. EROSION (0-10 m/yr)
- 8. EROSION (0-10 m/yr)
- 9. EROSION (0-10 m/yr)
- 10. EROSION (0-10 m/yr)
- 11. EROSION (0-10 m/yr)
- 12. EROSION (0-10 m/yr)
- 13. EROSION (0-10 m/yr)
- 14. EROSION (0-10 m/yr)
- 15. EROSION (0-10 m/yr)
- 16. EROSION (0-10 m/yr)
- 17. EROSION (0-10 m/yr)
- 18. EROSION (0-10 m/yr)
- 19. EROSION (0-10 m/yr)
- 20. EROSION (0-10 m/yr)

**THREE - TIER CLASSIFICATION**

- 1. GEOMORPHIC CLASSIFICATION (0 - 19)
- 2. PROTECTION CLASSIFICATION (0 - 9)
- 3. SUBAQUEOUS/NEARSHORE COMPOSITION (0 - 9)
- 4. HISTORICAL SHORELINE CHANGE RATE (0 - 9)
- 5. TIER CLASSIFICATION (0 - 9)
- 6. TIER CLASSIFICATION (0 - 9)
- 7. TIER CLASSIFICATION (0 - 9)
- 8. TIER CLASSIFICATION (0 - 9)
- 9. TIER CLASSIFICATION (0 - 9)
- 10. TIER CLASSIFICATION (0 - 9)
- 11. TIER CLASSIFICATION (0 - 9)
- 12. TIER CLASSIFICATION (0 - 9)
- 13. TIER CLASSIFICATION (0 - 9)
- 14. TIER CLASSIFICATION (0 - 9)
- 15. TIER CLASSIFICATION (0 - 9)
- 16. TIER CLASSIFICATION (0 - 9)
- 17. TIER CLASSIFICATION (0 - 9)
- 18. TIER CLASSIFICATION (0 - 9)
- 19. TIER CLASSIFICATION (0 - 9)
- 20. TIER CLASSIFICATION (0 - 9)

**EXAMPLE**

- 1. GEOMORPHIC CLASSIFICATION (0 - 19)
- 2. PROTECTION CLASSIFICATION (0 - 9)
- 3. SUBAQUEOUS/NEARSHORE COMPOSITION (0 - 9)
- 4. HISTORICAL SHORELINE CHANGE RATE (0 - 9)
- 5. TIER CLASSIFICATION (0 - 9)
- 6. TIER CLASSIFICATION (0 - 9)
- 7. TIER CLASSIFICATION (0 - 9)
- 8. TIER CLASSIFICATION (0 - 9)
- 9. TIER CLASSIFICATION (0 - 9)
- 10. TIER CLASSIFICATION (0 - 9)
- 11. TIER CLASSIFICATION (0 - 9)
- 12. TIER CLASSIFICATION (0 - 9)
- 13. TIER CLASSIFICATION (0 - 9)
- 14. TIER CLASSIFICATION (0 - 9)
- 15. TIER CLASSIFICATION (0 - 9)
- 16. TIER CLASSIFICATION (0 - 9)
- 17. TIER CLASSIFICATION (0 - 9)
- 18. TIER CLASSIFICATION (0 - 9)
- 19. TIER CLASSIFICATION (0 - 9)
- 20. TIER CLASSIFICATION (0 - 9)

NIAGARA ONTARIO



Environment Canada

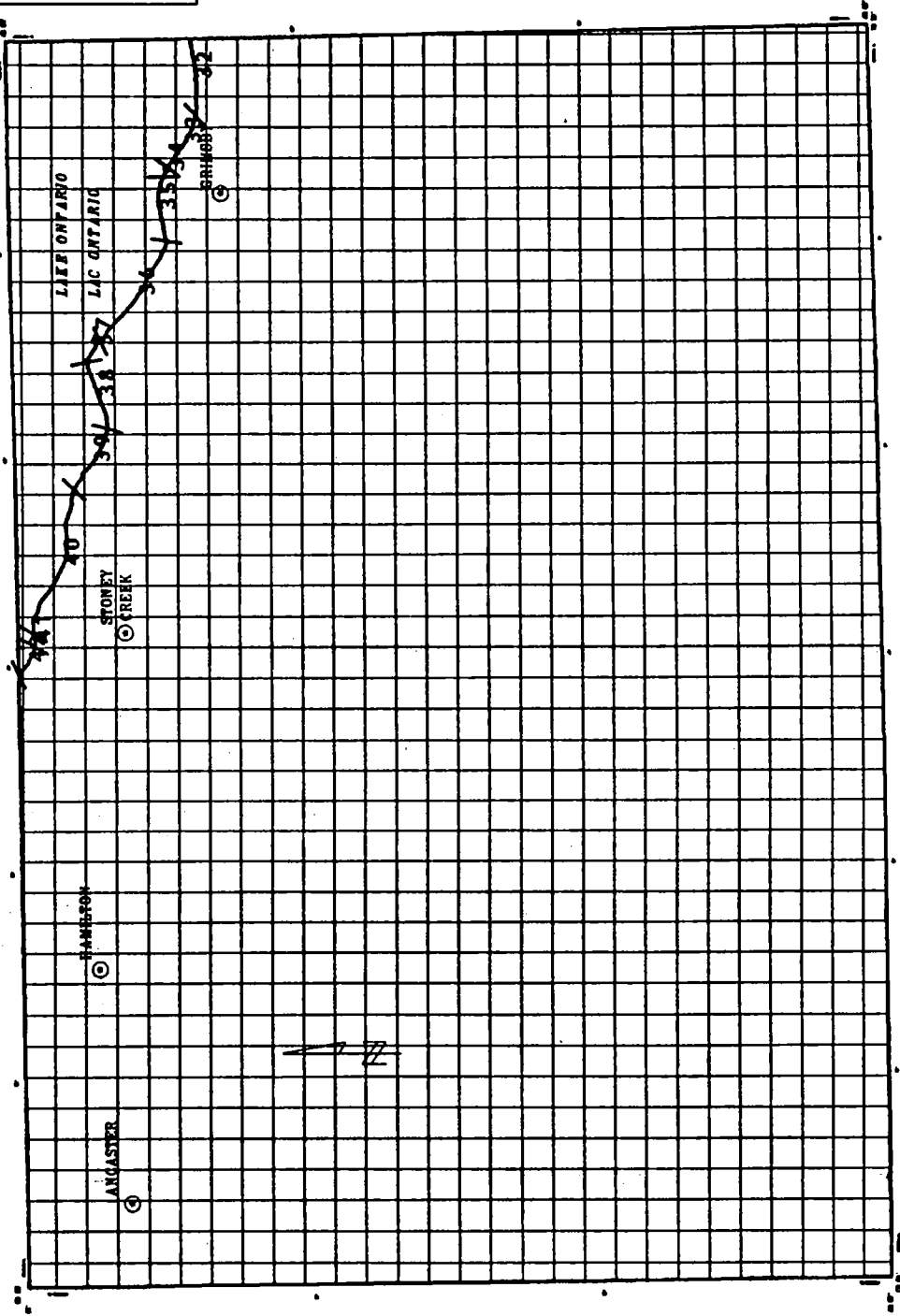
30 M/W 1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE ONTARIO

30 M/1

30 M/1



- ### GEOMORPHIC CLASSIFICATION
- 1. HIGH (HIG) BAY (SLOPE OF 10:1)
  - 2. LOW (LOW) BAY (SLOPE OF 10:1)
  - 3. SAND (SAND) BAY (SLOPE OF 10:1)
  - 4. SAND (SAND) BAY (SLOPE OF 10:1)
  - 5. SAND (SAND) BAY (SLOPE OF 10:1)
  - 6. SAND (SAND) BAY (SLOPE OF 10:1)
  - 7. SAND (SAND) BAY (SLOPE OF 10:1)
  - 8. SAND (SAND) BAY (SLOPE OF 10:1)
  - 9. SAND (SAND) BAY (SLOPE OF 10:1)
  - 10. SAND (SAND) BAY (SLOPE OF 10:1)
  - 11. SAND (SAND) BAY (SLOPE OF 10:1)
  - 12. SAND (SAND) BAY (SLOPE OF 10:1)
  - 13. SAND (SAND) BAY (SLOPE OF 10:1)
  - 14. SAND (SAND) BAY (SLOPE OF 10:1)
  - 15. SAND (SAND) BAY (SLOPE OF 10:1)
  - 16. SAND (SAND) BAY (SLOPE OF 10:1)
  - 17. SAND (SAND) BAY (SLOPE OF 10:1)
  - 18. SAND (SAND) BAY (SLOPE OF 10:1)
  - 19. SAND (SAND) BAY (SLOPE OF 10:1)
  - 20. SAND (SAND) BAY (SLOPE OF 10:1)

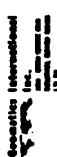
- ### PROTECTION CLASSIFICATION
- 1. HEAVY PROTECTED
  - 2. MODERATE PROTECTED
  - 3. LIGHT PROTECTED
  - 4. UNPROTECTED
  - 5. MODERATE PROTECTED
  - 6. HEAVY PROTECTED
  - 7. MODERATE PROTECTED
  - 8. LIGHT PROTECTED
  - 9. UNPROTECTED

- ### SUBAQUEOUS/NEARSHORE COMPOSITION
- 1. SILT
  - 2. SAND
  - 3. SAND AND SILT
  - 4. SAND (GRAVEL)
  - 5. SAND (GRAVEL)
  - 6. SAND (GRAVEL)
  - 7. SAND (GRAVEL)
  - 8. SAND (GRAVEL)
  - 9. SAND (GRAVEL)
  - 10. SAND (GRAVEL)

- ### HISTORICAL SHORELINE CHANGE RATE
- 1. INCREASE (1-10 M/Y)
  - 2. STABLE (1-10 M/Y)
  - 3. DECREASE (1-10 M/Y)
  - 4. INCREASE (1-10 M/Y)
  - 5. STABLE (1-10 M/Y)
  - 6. DECREASE (1-10 M/Y)
  - 7. INCREASE (1-10 M/Y)
  - 8. STABLE (1-10 M/Y)
  - 9. DECREASE (1-10 M/Y)

- ### THREE-TIER CLASSIFICATION
- EXAMPLE:
- GEOMORPHIC CLASSIFICATION (A - 17)  
 PROTECTION CLASSIFICATION (P - 0)  
 SUBAQUEOUS/NEARSHORE COMPOSITION (C - 0)

HAMILTON-GRIMSBY  
 ONTARIO

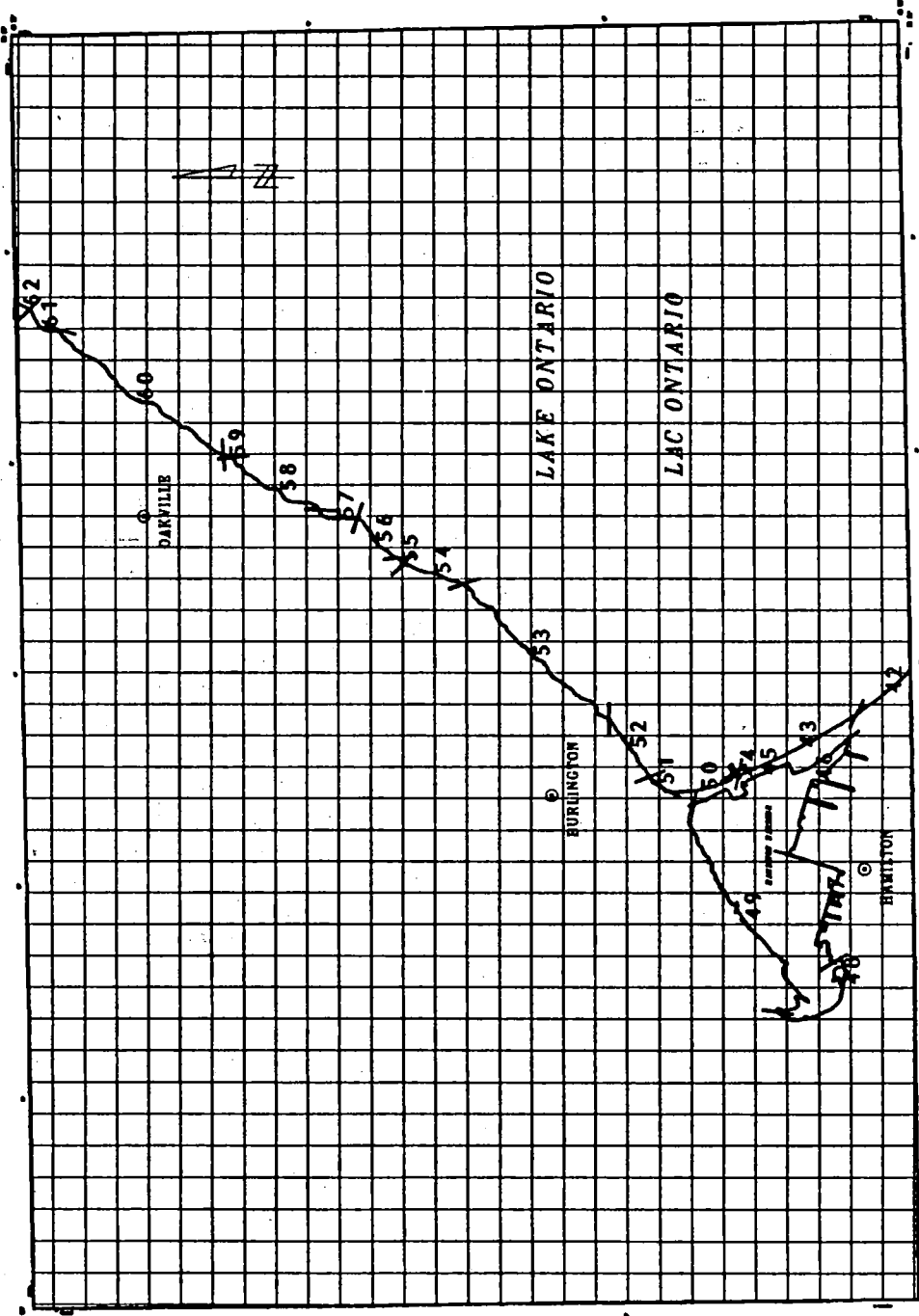
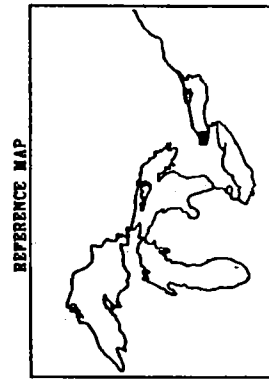


30 M/1  
 1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

LAKE ONTARIO

30 M/S

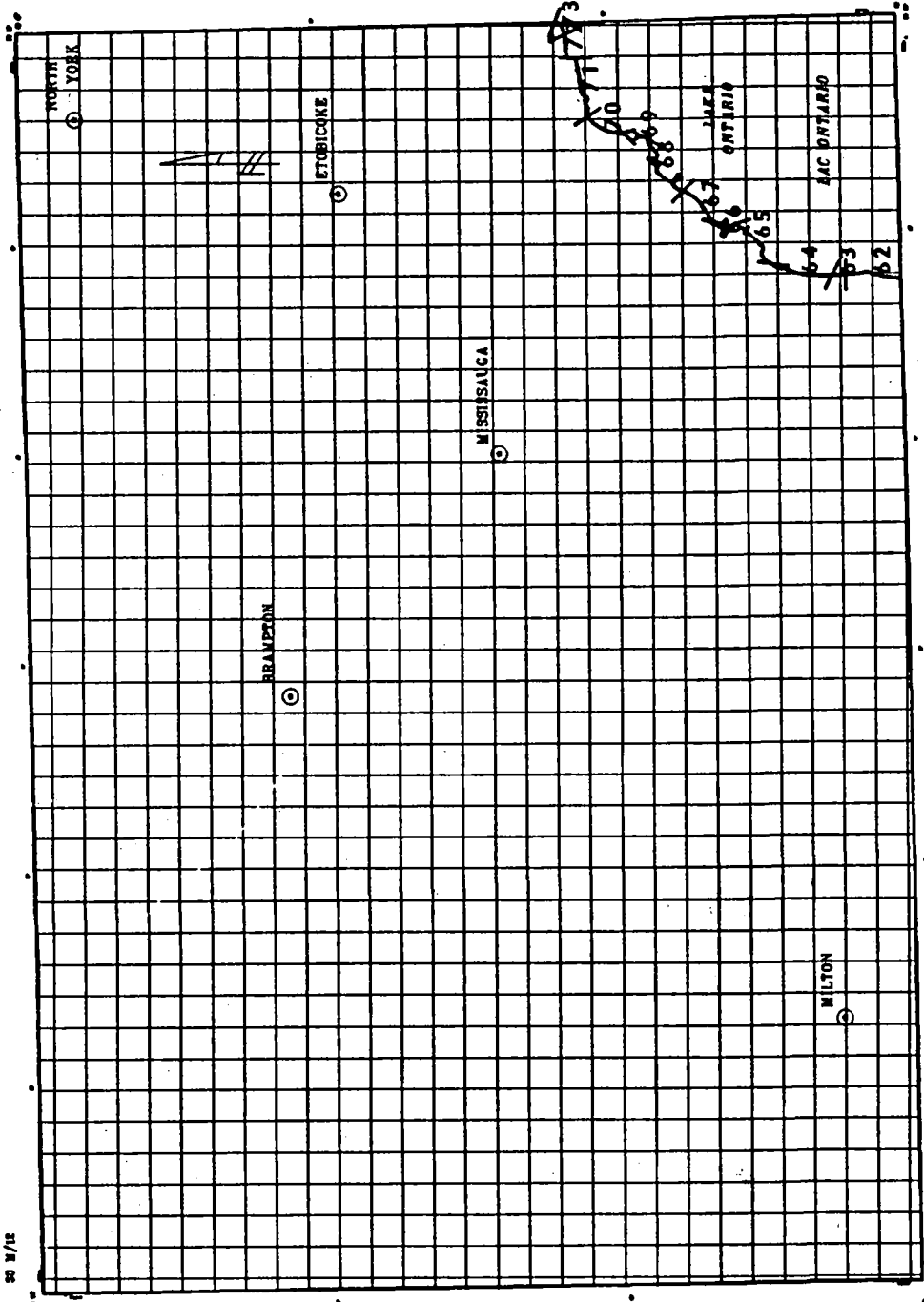
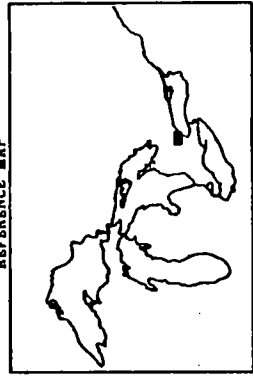


- GEOMORPHIC CLASSIFICATION**
- 1. SAND (FINE) CLAY (SILT) ACCRETION ON CLAY
  - 2. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 3. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 4. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 5. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 6. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 7. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 8. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 9. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 10. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 11. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 12. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 13. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 14. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 15. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 16. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 17. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 18. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 19. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
  - 20. SAND (FINE) CLAY (SILT) WITH SILT (FINE) SILT
- PROTECTION CLASSIFICATION**
- 1. HEAVY PROTECTED
  - 2. MODERATE PROTECTED
  - 3. LIGHT PROTECTED
  - 4. NO PROTECTION
  - 5. PROTECTABLE
  - 6. PROTECTABLE
  - 7. PROTECTABLE
  - 8. PROTECTABLE
  - 9. PROTECTABLE
  - 10. PROTECTABLE
  - 11. PROTECTABLE
  - 12. PROTECTABLE
  - 13. PROTECTABLE
  - 14. PROTECTABLE
  - 15. PROTECTABLE
  - 16. PROTECTABLE
  - 17. PROTECTABLE
  - 18. PROTECTABLE
  - 19. PROTECTABLE
  - 20. PROTECTABLE
- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. SAND
  - 2. SAND
  - 3. SAND
  - 4. SAND
  - 5. SAND
  - 6. SAND
  - 7. SAND
  - 8. SAND
  - 9. SAND
  - 10. SAND
  - 11. SAND
  - 12. SAND
  - 13. SAND
  - 14. SAND
  - 15. SAND
  - 16. SAND
  - 17. SAND
  - 18. SAND
  - 19. SAND
  - 20. SAND
- HISTORICAL SHORELINE CHANGE RATE**
- 1. ACCRETION (0-0.5 m/yr)
  - 2. STABLE (0.5-1.0 m/yr)
  - 3. EROSION (1.0-1.5 m/yr)
  - 4. EROSION (1.5-2.0 m/yr)
  - 5. EROSION (2.0-2.5 m/yr)
  - 6. EROSION (2.5-3.0 m/yr)
  - 7. EROSION (3.0-3.5 m/yr)
  - 8. EROSION (3.5-4.0 m/yr)
  - 9. EROSION (4.0-4.5 m/yr)
  - 10. EROSION (4.5-5.0 m/yr)
  - 11. EROSION (5.0-5.5 m/yr)
  - 12. EROSION (5.5-6.0 m/yr)
  - 13. EROSION (6.0-6.5 m/yr)
  - 14. EROSION (6.5-7.0 m/yr)
  - 15. EROSION (7.0-7.5 m/yr)
  - 16. EROSION (7.5-8.0 m/yr)
  - 17. EROSION (8.0-8.5 m/yr)
  - 18. EROSION (8.5-9.0 m/yr)
  - 19. EROSION (9.0-9.5 m/yr)
  - 20. EROSION (9.5-10.0 m/yr)
- THREE - TIER CLASSIFICATION**
- EXAMPLE CLASSIFICATION (1 - 17)  
 PROTECTION CLASSIFICATION (1 - 10)  
 SUBAQUEOUS/NEARSHORE COMPOSITION (1 - 10)
- ENVIRONMENTAL CANADA  
 ENVIRONNEMENT CANADA
- DATE: 1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

LAKE ONTARIO

30 M/12



- GEOMORPHIC CLASSIFICATION**
- 1. LOW (POOR) CLAY INCORPORATION IN SO ECLAY
  - 2. LOW (POOR) CLAY WITH SOME COARSE
  - 3. LOW (POOR) CLAY WITH MODERATE SO IN ECLAY
  - 4. LOW (POOR) CLAY WITH SOME COARSE
  - 5. CLAY (POOR)
  - 6. CLAY (POOR)
  - 7. SANDY OR COARSE
  - 8. SANDY OR COARSE
  - 9. SANDY OR COARSE
  - 10. SANDY OR COARSE
  - 11. SANDY OR COARSE
  - 12. SANDY OR COARSE
  - 13. SANDY OR COARSE
  - 14. SANDY OR COARSE
  - 15. SANDY OR COARSE
  - 16. SANDY OR COARSE
  - 17. SANDY OR COARSE

- PROTECTION CLASSIFICATION**
- 1. HEAVILY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. MODERATELY PROTECTED
  - 4. MODERATELY PROTECTED
  - 5. MODERATELY PROTECTED
  - 6. MODERATELY PROTECTED
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  - 12. MODERATELY PROTECTED
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  - 14. MODERATELY PROTECTED
  - 15. MODERATELY PROTECTED
  - 16. MODERATELY PROTECTED
  - 17. MODERATELY PROTECTED

- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. CLAY
  - 3. CLAY
  - 4. CLAY
  - 5. CLAY
  - 6. CLAY
  - 7. CLAY
  - 8. CLAY
  - 9. CLAY
  - 10. CLAY
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  - 12. CLAY
  - 13. CLAY
  - 14. CLAY
  - 15. CLAY
  - 16. CLAY
  - 17. CLAY

- HISTORICAL SHORELINE CHANGE RATE**
- 1. STABLE (0.00 to 0.01 m/yr)
  - 2. SLIGHTLY RETROGRADING (0.01 to 0.02 m/yr)
  - 3. SLIGHTLY PROGRADING (0.02 to 0.03 m/yr)
  - 4. MODERATELY PROGRADING (0.03 to 0.04 m/yr)
  - 5. MODERATELY RETROGRADING (0.04 to 0.05 m/yr)
  - 6. MODERATELY PROGRADING (0.05 to 0.06 m/yr)
  - 7. MODERATELY RETROGRADING (0.06 to 0.07 m/yr)
  - 8. MODERATELY PROGRADING (0.07 to 0.08 m/yr)
  - 9. MODERATELY RETROGRADING (0.08 to 0.09 m/yr)
  - 10. MODERATELY PROGRADING (0.09 to 0.10 m/yr)
  - 11. MODERATELY RETROGRADING (0.10 to 0.11 m/yr)
  - 12. MODERATELY PROGRADING (0.11 to 0.12 m/yr)
  - 13. MODERATELY RETROGRADING (0.12 to 0.13 m/yr)
  - 14. MODERATELY PROGRADING (0.13 to 0.14 m/yr)
  - 15. MODERATELY RETROGRADING (0.14 to 0.15 m/yr)
  - 16. MODERATELY PROGRADING (0.15 to 0.16 m/yr)
  - 17. MODERATELY RETROGRADING (0.16 to 0.17 m/yr)

- THREE - TIER CLASSIFICATION**
- 1. CLAY
  - 2. CLAY
  - 3. CLAY
  - 4. CLAY
  - 5. CLAY
  - 6. CLAY
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  - 16. CLAY
  - 17. CLAY

- LEGEND**
- 1. CLAY
  - 2. CLAY
  - 3. CLAY
  - 4. CLAY
  - 5. CLAY
  - 6. CLAY
  - 7. CLAY
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  - 16. CLAY
  - 17. CLAY

BRAMPTON ONTARIO

30 M/12 1992

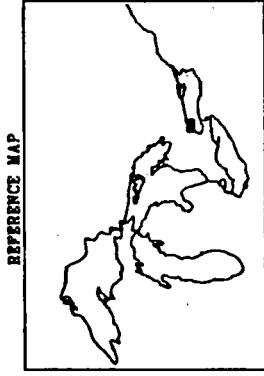


BRAMPTON ONTARIO

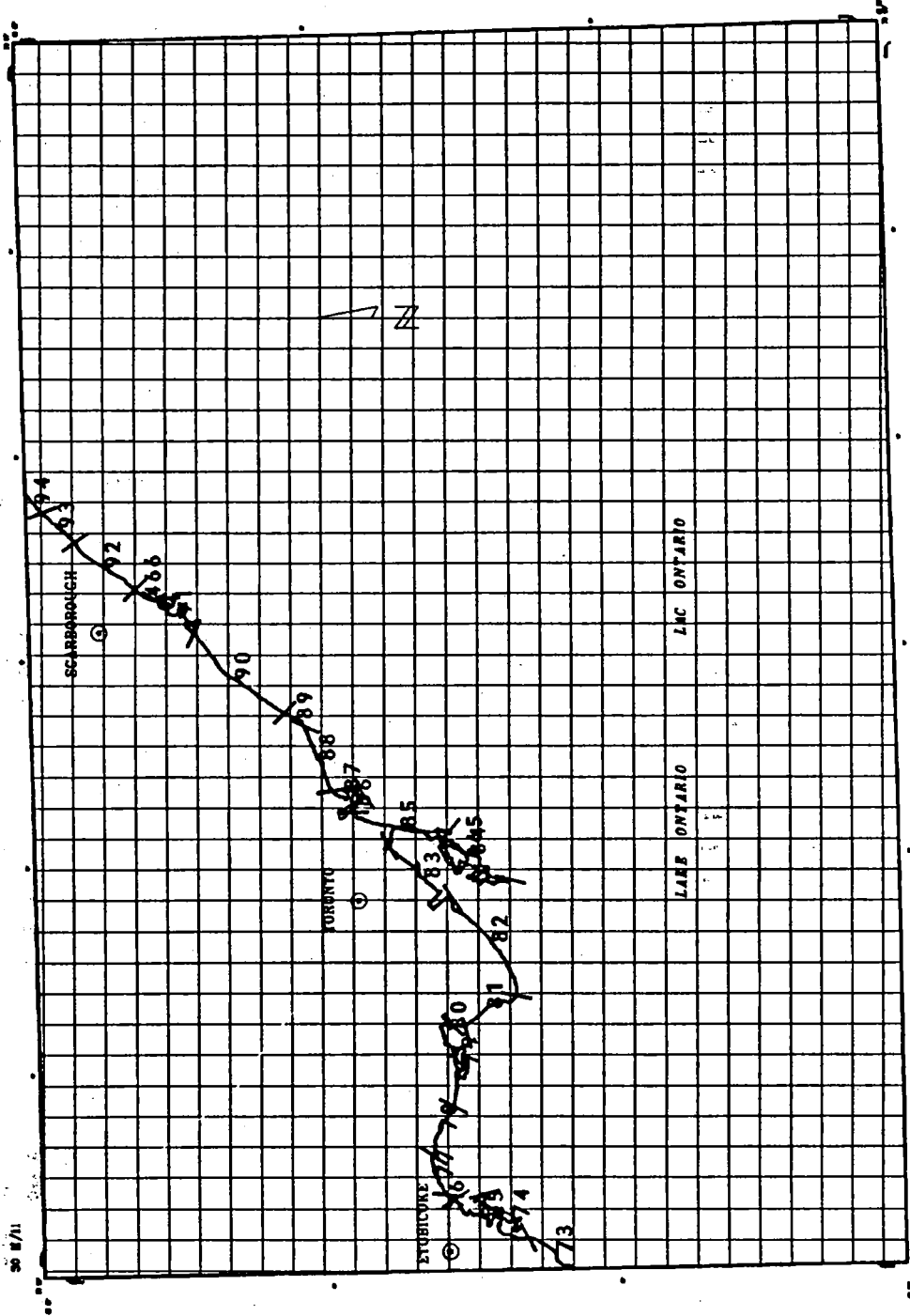
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# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE ONTARIO

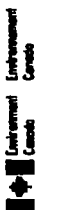


30 M/11



- GEOMORPHIC CLASSIFICATION**
- 1. HIGH (H) RIFT EMBAYMENT OR BAY
  - 2. HIGH (H) RIFT WITH BAY
  - 3. LOW (L) RIFT EMBAYMENT OR BAY
  - 4. LOW (L) RIFT WITH BAY
  - 5. CLAY BANK
  - 6. CLAY BANK
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- PROTECTION CLASSIFICATION**
- 1. HEAVILY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. PROTECTED
  - 4. UNPROTECTED
  - 5. UNPROTECTED
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  - 94. UNPROTECTED
- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND/SILT
  - 3. SAND/SILT
  - 4. SAND/SILT
  - 5. SAND/SILT
  - 6. SAND/SILT
  - 7. SAND/SILT
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  - 94. SAND/SILT
- HISTORICAL SHORELINE CHANGE RATE**
- 1. POSITIVE (+0.1 m/yr)
  - 2. POSITIVE (+0.2 m/yr)
  - 3. POSITIVE (+0.3 m/yr)
  - 4. POSITIVE (+0.4 m/yr)
  - 5. POSITIVE (+0.5 m/yr)
  - 6. POSITIVE (+0.6 m/yr)
  - 7. POSITIVE (+0.7 m/yr)
  - 8. POSITIVE (+0.8 m/yr)
  - 9. POSITIVE (+0.9 m/yr)
  - 10. POSITIVE (+1.0 m/yr)
  - 11. POSITIVE (+1.1 m/yr)
  - 12. POSITIVE (+1.2 m/yr)
  - 13. POSITIVE (+1.3 m/yr)
  - 14. POSITIVE (+1.4 m/yr)
  - 15. POSITIVE (+1.5 m/yr)
  - 16. POSITIVE (+1.6 m/yr)
  - 17. POSITIVE (+1.7 m/yr)
  - 18. POSITIVE (+1.8 m/yr)
  - 19. POSITIVE (+1.9 m/yr)
  - 20. POSITIVE (+2.0 m/yr)
  - 21. POSITIVE (+2.1 m/yr)
  - 22. POSITIVE (+2.2 m/yr)
  - 23. POSITIVE (+2.3 m/yr)
  - 24. POSITIVE (+2.4 m/yr)
  - 25. POSITIVE (+2.5 m/yr)
  - 26. POSITIVE (+2.6 m/yr)
  - 27. POSITIVE (+2.7 m/yr)
  - 28. POSITIVE (+2.8 m/yr)
  - 29. POSITIVE (+2.9 m/yr)
  - 30. POSITIVE (+3.0 m/yr)
  - 31. POSITIVE (+3.1 m/yr)
  - 32. POSITIVE (+3.2 m/yr)
  - 33. POSITIVE (+3.3 m/yr)
  - 34. POSITIVE (+3.4 m/yr)
  - 35. POSITIVE (+3.5 m/yr)
  - 36. POSITIVE (+3.6 m/yr)
  - 37. POSITIVE (+3.7 m/yr)
  - 38. POSITIVE (+3.8 m/yr)
  - 39. POSITIVE (+3.9 m/yr)
  - 40. POSITIVE (+4.0 m/yr)
  - 41. POSITIVE (+4.1 m/yr)
  - 42. POSITIVE (+4.2 m/yr)
  - 43. POSITIVE (+4.3 m/yr)
  - 44. POSITIVE (+4.4 m/yr)
  - 45. POSITIVE (+4.5 m/yr)
  - 46. POSITIVE (+4.6 m/yr)
  - 47. POSITIVE (+4.7 m/yr)
  - 48. POSITIVE (+4.8 m/yr)
  - 49. POSITIVE (+4.9 m/yr)
  - 50. POSITIVE (+5.0 m/yr)
  - 51. POSITIVE (+5.1 m/yr)
  - 52. POSITIVE (+5.2 m/yr)
  - 53. POSITIVE (+5.3 m/yr)
  - 54. POSITIVE (+5.4 m/yr)
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  - 56. POSITIVE (+5.6 m/yr)
  - 57. POSITIVE (+5.7 m/yr)
  - 58. POSITIVE (+5.8 m/yr)
  - 59. POSITIVE (+5.9 m/yr)
  - 60. POSITIVE (+6.0 m/yr)
  - 61. POSITIVE (+6.1 m/yr)
  - 62. POSITIVE (+6.2 m/yr)
  - 63. POSITIVE (+6.3 m/yr)
  - 64. POSITIVE (+6.4 m/yr)
  - 65. POSITIVE (+6.5 m/yr)
  - 66. POSITIVE (+6.6 m/yr)
  - 67. POSITIVE (+6.7 m/yr)
  - 68. POSITIVE (+6.8 m/yr)
  - 69. POSITIVE (+6.9 m/yr)
  - 70. POSITIVE (+7.0 m/yr)
  - 71. POSITIVE (+7.1 m/yr)
  - 72. POSITIVE (+7.2 m/yr)
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  - 76. POSITIVE (+7.6 m/yr)
  - 77. POSITIVE (+7.7 m/yr)
  - 78. POSITIVE (+7.8 m/yr)
  - 79. POSITIVE (+7.9 m/yr)
  - 80. POSITIVE (+8.0 m/yr)
  - 81. POSITIVE (+8.1 m/yr)
  - 82. POSITIVE (+8.2 m/yr)
  - 83. POSITIVE (+8.3 m/yr)
  - 84. POSITIVE (+8.4 m/yr)
  - 85. POSITIVE (+8.5 m/yr)
  - 86. POSITIVE (+8.6 m/yr)
  - 87. POSITIVE (+8.7 m/yr)
  - 88. POSITIVE (+8.8 m/yr)
  - 89. POSITIVE (+8.9 m/yr)
  - 90. POSITIVE (+9.0 m/yr)
  - 91. POSITIVE (+9.1 m/yr)
  - 92. POSITIVE (+9.2 m/yr)
  - 93. POSITIVE (+9.3 m/yr)
  - 94. POSITIVE (+9.4 m/yr)
- THREE - TIER CLASSIFICATION**
- 1. CLASSIFICATION (1 - 10)
  - 2. CLASSIFICATION (1 - 10)
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  - 82. CLASSIFICATION (1 - 10)
  - 83. CLASSIFICATION (1 - 10)
  - 84. CLASSIFICATION (1 - 10)
  - 85. CLASSIFICATION (1 - 10)
  - 86. CLASSIFICATION (1 - 10)
  - 87. CLASSIFICATION (1 - 10)
  - 88. CLASSIFICATION (1 - 10)
  - 89. CLASSIFICATION (1 - 10)
  - 90. CLASSIFICATION (1 - 10)
  - 91. CLASSIFICATION (1 - 10)
  - 92. CLASSIFICATION (1 - 10)
  - 93. CLASSIFICATION (1 - 10)
  - 94. CLASSIFICATION (1 - 10)

30 M/11  
1992



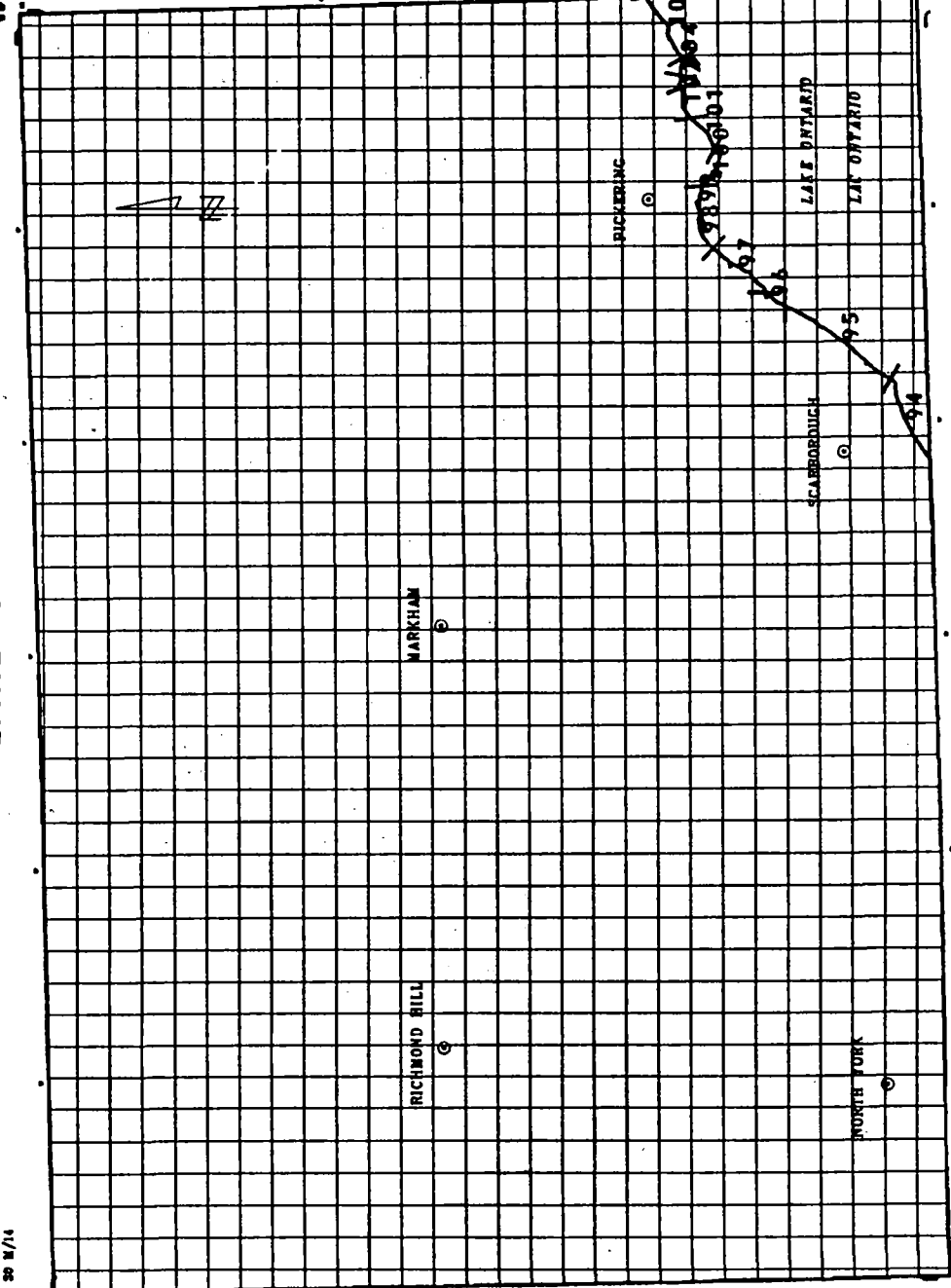
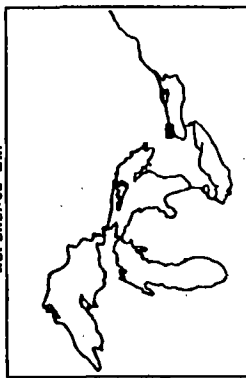
TORONTO  
ONTARIO

Geomatics International Inc.

GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

LAKE ONTARIO

50 M/14



**GEOMORPHIC CLASSIFICATION**

- 01. 100% (Fine) CLAY
- 02. 75% (Fine) CLAY
- 03. 50% (Fine) CLAY
- 04. 25% (Fine) CLAY
- 05. 0% (Fine) CLAY
- 06. 100% (Medium) SILT
- 07. 75% (Medium) SILT
- 08. 50% (Medium) SILT
- 09. 25% (Medium) SILT
- 10. 0% (Medium) SILT
- 11. 100% (Coarse) SAND
- 12. 75% (Coarse) SAND
- 13. 50% (Coarse) SAND
- 14. 25% (Coarse) SAND
- 15. 0% (Coarse) SAND
- 16. 100% (Very Fine) SAND
- 17. 75% (Very Fine) SAND
- 18. 50% (Very Fine) SAND
- 19. 25% (Very Fine) SAND
- 20. 0% (Very Fine) SAND
- 21. 100% (Sand) GRAVEL
- 22. 75% (Sand) GRAVEL
- 23. 50% (Sand) GRAVEL
- 24. 25% (Sand) GRAVEL
- 25. 0% (Sand) GRAVEL
- 26. 100% (Gravel) SAND
- 27. 75% (Gravel) SAND
- 28. 50% (Gravel) SAND
- 29. 25% (Gravel) SAND
- 30. 0% (Gravel) SAND
- 31. 100% (Gravel) GRAVEL
- 32. 75% (Gravel) GRAVEL
- 33. 50% (Gravel) GRAVEL
- 34. 25% (Gravel) GRAVEL
- 35. 0% (Gravel) GRAVEL
- 36. 100% (Gravel) SAND GRAVEL
- 37. 75% (Gravel) SAND GRAVEL
- 38. 50% (Gravel) SAND GRAVEL
- 39. 25% (Gravel) SAND GRAVEL
- 40. 0% (Gravel) SAND GRAVEL

**PROTECTION CLASSIFICATION**

- 01. 100% PROTECTED
- 02. 75% PROTECTED
- 03. 50% PROTECTED
- 04. 25% PROTECTED
- 05. 0% PROTECTED
- 06. 100% UNPROTECTED
- 07. 75% UNPROTECTED
- 08. 50% UNPROTECTED
- 09. 25% UNPROTECTED
- 10. 0% UNPROTECTED

**SUBAQUEOUS/NEARSHORE COMPOSITION**

- 01. CLAY
- 02. SILT
- 03. SAND
- 04. GRAVEL
- 05. SAND GRAVEL
- 06. GRAVEL SAND
- 07. GRAVEL
- 08. SAND GRAVEL
- 09. SAND
- 10. SILT
- 11. CLAY

**HISTORICAL SHORELINE CHANGE RATE**

- 01. 100% (Decrease)
- 02. 75% (Decrease)
- 03. 50% (Decrease)
- 04. 25% (Decrease)
- 05. 0% (Decrease)
- 06. 100% (Increase)
- 07. 75% (Increase)
- 08. 50% (Increase)
- 09. 25% (Increase)
- 10. 0% (Increase)
- 11. 100% (Stable)
- 12. 75% (Stable)
- 13. 50% (Stable)
- 14. 25% (Stable)
- 15. 0% (Stable)

**THREE - TIER CLASSIFICATION**

**EXAMPLE:**

1. 100% PROTECTED (0 - 1)

2. 75% PROTECTED (0 - 2)

3. 50% PROTECTED (0 - 3)

4. 25% PROTECTED (0 - 4)

5. 0% PROTECTED (0 - 5)

6. 100% UNPROTECTED (1 - 0)

7. 75% UNPROTECTED (1 - 1)

8. 50% UNPROTECTED (1 - 2)

9. 25% UNPROTECTED (1 - 3)

10. 0% UNPROTECTED (1 - 4)

11. 100% UNPROTECTED (2 - 0)

12. 75% UNPROTECTED (2 - 1)

13. 50% UNPROTECTED (2 - 2)

14. 25% UNPROTECTED (2 - 3)

15. 0% UNPROTECTED (2 - 4)

16. 100% UNPROTECTED (3 - 0)

17. 75% UNPROTECTED (3 - 1)

18. 50% UNPROTECTED (3 - 2)

19. 25% UNPROTECTED (3 - 3)

20. 0% UNPROTECTED (3 - 4)

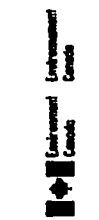
21. 100% UNPROTECTED (4 - 0)

22. 75% UNPROTECTED (4 - 1)

23. 50% UNPROTECTED (4 - 2)

24. 25% UNPROTECTED (4 - 3)

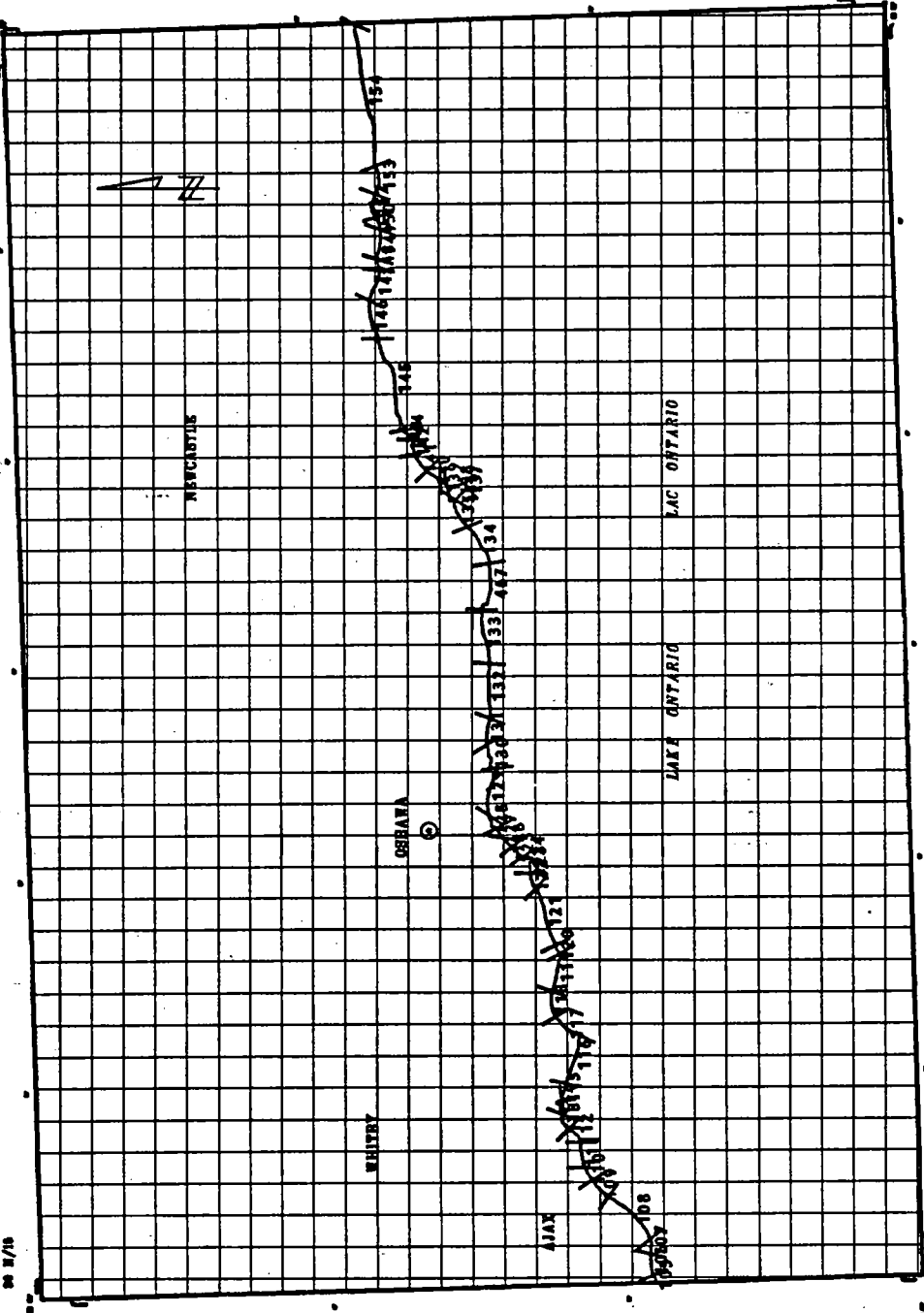
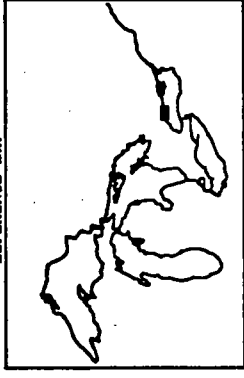
25. 0% UNPROTECTED (4 - 4)



MARKHAM ONTARIO

Garfield International Inc.

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION LAKE ONTARIO



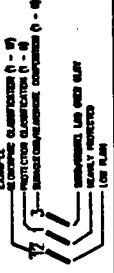
- GEOMORPHIC CLASSIFICATION**
- 1. HIGH (CHINA CLAY) PROTECTION ON SO BEACH
  - 2. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 3. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 4. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 5. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 6. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 7. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 8. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 9. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 10. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 11. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 12. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 13. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 14. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 15. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 16. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 17. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 18. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 19. LOW (CHINA CLAY) PROTECTION ON SO BEACH
  - 20. LOW (CHINA CLAY) PROTECTION ON SO BEACH

- PROTECTION CLASSIFICATION**
- 1. HEAVILY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. LIGHT PROTECTION
  - 4. NO PROTECTION
  - 5. NON-STRUCTURAL PROTECTION
  - 6. ENCLAVATED

- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. GRAVEL
  - 4. SILT
  - 5. SILT
  - 6. SILT
  - 7. SILT
  - 8. SILT
  - 9. SILT
  - 10. SILT
  - 11. SILT
  - 12. SILT
  - 13. SILT
  - 14. SILT
  - 15. SILT
  - 16. SILT
  - 17. SILT
  - 18. SILT
  - 19. SILT
  - 20. SILT

- HISTORICAL SHORELINE CHANGE RATE**
- 1. RETREATING (100-150 m/yr)
  - 2. RETREATING (150-200 m/yr)
  - 3. RETREATING (200-250 m/yr)
  - 4. RETREATING (250-300 m/yr)
  - 5. RETREATING (300-350 m/yr)
  - 6. RETREATING (350-400 m/yr)
  - 7. RETREATING (400-450 m/yr)
  - 8. RETREATING (450-500 m/yr)
  - 9. RETREATING (500-550 m/yr)
  - 10. RETREATING (550-600 m/yr)
  - 11. RETREATING (600-650 m/yr)
  - 12. RETREATING (650-700 m/yr)
  - 13. RETREATING (700-750 m/yr)
  - 14. RETREATING (750-800 m/yr)
  - 15. RETREATING (800-850 m/yr)
  - 16. RETREATING (850-900 m/yr)
  - 17. RETREATING (900-950 m/yr)
  - 18. RETREATING (950-1000 m/yr)
  - 19. RETREATING (1000-1050 m/yr)
  - 20. RETREATING (1050-1100 m/yr)

- THREE - TIER CLASSIFICATION**
- 1. UNCLASSIFIED (0-10)
  - 2. UNCLASSIFIED (10-20)
  - 3. UNCLASSIFIED (20-30)
  - 4. UNCLASSIFIED (30-40)
  - 5. UNCLASSIFIED (40-50)
  - 6. UNCLASSIFIED (50-60)
  - 7. UNCLASSIFIED (60-70)
  - 8. UNCLASSIFIED (70-80)
  - 9. UNCLASSIFIED (80-90)
  - 10. UNCLASSIFIED (90-100)
  - 11. UNCLASSIFIED (100-110)
  - 12. UNCLASSIFIED (110-120)
  - 13. UNCLASSIFIED (120-130)
  - 14. UNCLASSIFIED (130-140)
  - 15. UNCLASSIFIED (140-150)
  - 16. UNCLASSIFIED (150-160)
  - 17. UNCLASSIFIED (160-170)
  - 18. UNCLASSIFIED (170-180)
  - 19. UNCLASSIFIED (180-190)
  - 20. UNCLASSIFIED (190-200)



OSHAWA ONTARIO  
Environmental Canada  
Canadian Environmental Commission

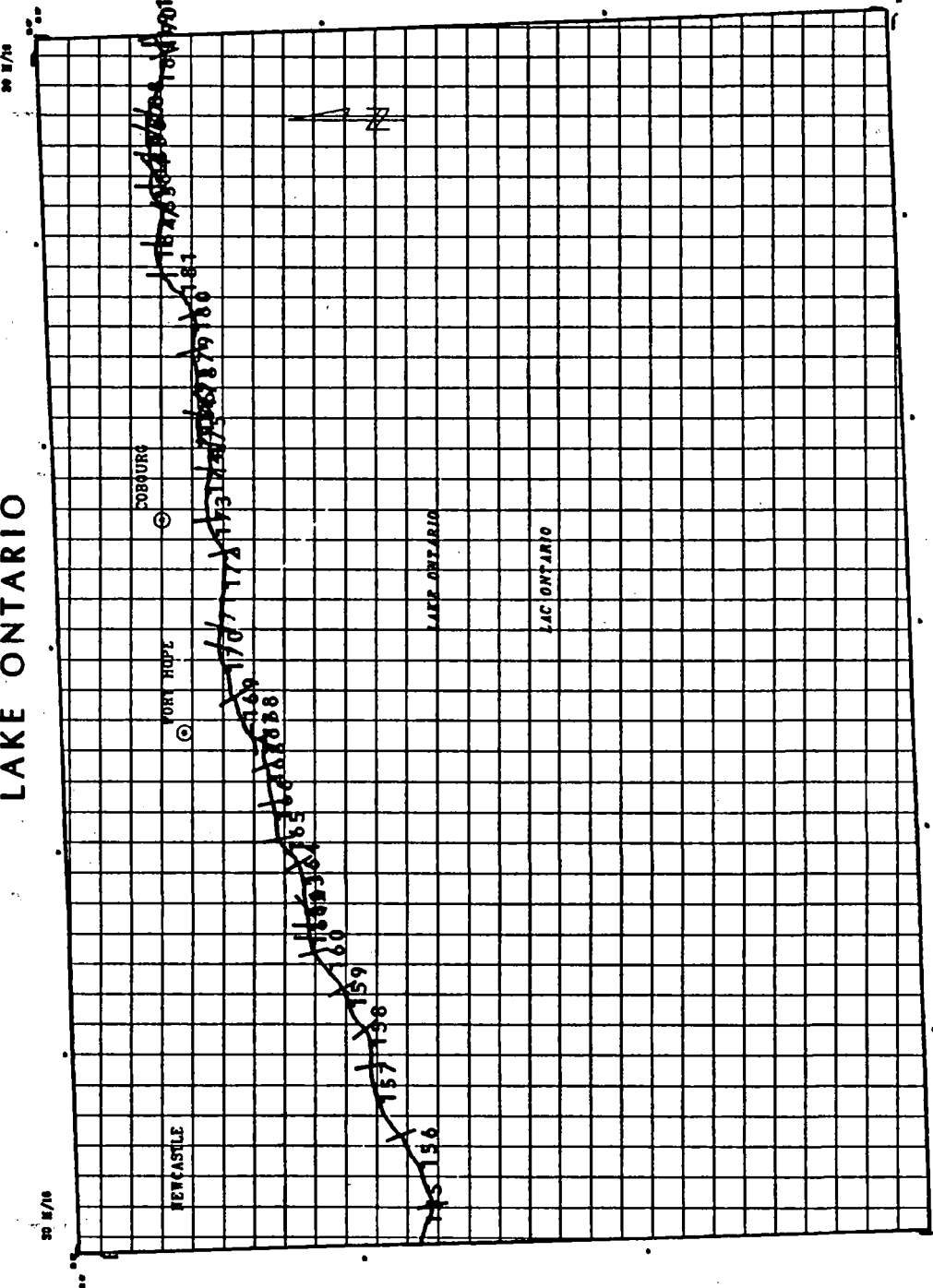
OSHAWA ONTARIO  
Environmental Canada  
Canadian Environmental Commission

00 8/70  
1892



# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

LAKE ONTARIO



REFERENCE MAP



## GEOMORPHIC CLASSIFICATION

- 1. HIGH POINT BAY (CONCRETE OR IN SLOPE)
- 2. LOW POINT BAY (CONCRETE OR IN SLOPE)
- 3. LOW POINT BAY (GRAVEL OR SAND)
- 4. SAND/CLAY BEACH
- 5. CLAY BEACH
- 6. SAND/CLAY BEACH
- 7. SAND/CLAY BEACH
- 8. SAND/CLAY BEACH
- 9. SAND/CLAY BEACH
- 10. SAND/CLAY BEACH
- 11. SAND/CLAY BEACH
- 12. SAND/CLAY BEACH
- 13. SAND/CLAY BEACH
- 14. SAND/CLAY BEACH
- 15. SAND/CLAY BEACH
- 16. SAND/CLAY BEACH
- 17. SAND/CLAY BEACH
- 18. SAND/CLAY BEACH
- 19. SAND/CLAY BEACH
- 20. SAND/CLAY BEACH

## PROTECTION CLASSIFICATION

- 1. FULLY PROTECTED
- 2. PARTIALLY PROTECTED
- 3. UNPROTECTED
- 4. UNPROTECTED
- 5. UNPROTECTED
- 6. UNPROTECTED
- 7. UNPROTECTED
- 8. UNPROTECTED
- 9. UNPROTECTED
- 10. UNPROTECTED

## SUBAQUEOUS/NEARSHORE COMPOSITION

- 1. CLAY
- 2. SAND/CLAY
- 3. SAND/CLAY
- 4. SAND/CLAY
- 5. SAND/CLAY
- 6. SAND/CLAY
- 7. SAND/CLAY
- 8. SAND/CLAY
- 9. SAND/CLAY
- 10. SAND/CLAY

## HISTORICAL SHORELINE CHANGE RATE

- 1. RETROGRADE (1-40%)
- 2. RETROGRADE (40-70%)
- 3. RETROGRADE (70-90%)
- 4. RETROGRADE (90-100%)
- 5. RETROGRADE (100-150%)
- 6. RETROGRADE (150-200%)
- 7. RETROGRADE (200-300%)
- 8. RETROGRADE (300-400%)
- 9. RETROGRADE (400-500%)
- 10. RETROGRADE (500-1000%)

## THREE - TIER CLASSIFICATION

- 1. TIER 1 (CONCRETE OR IN SLOPE)
- 2. TIER 2 (CONCRETE OR IN SLOPE)
- 3. TIER 3 (CONCRETE OR IN SLOPE)
- 4. TIER 4 (CONCRETE OR IN SLOPE)
- 5. TIER 5 (CONCRETE OR IN SLOPE)
- 6. TIER 6 (CONCRETE OR IN SLOPE)
- 7. TIER 7 (CONCRETE OR IN SLOPE)
- 8. TIER 8 (CONCRETE OR IN SLOPE)
- 9. TIER 9 (CONCRETE OR IN SLOPE)
- 10. TIER 10 (CONCRETE OR IN SLOPE)

30 M/75  
1992



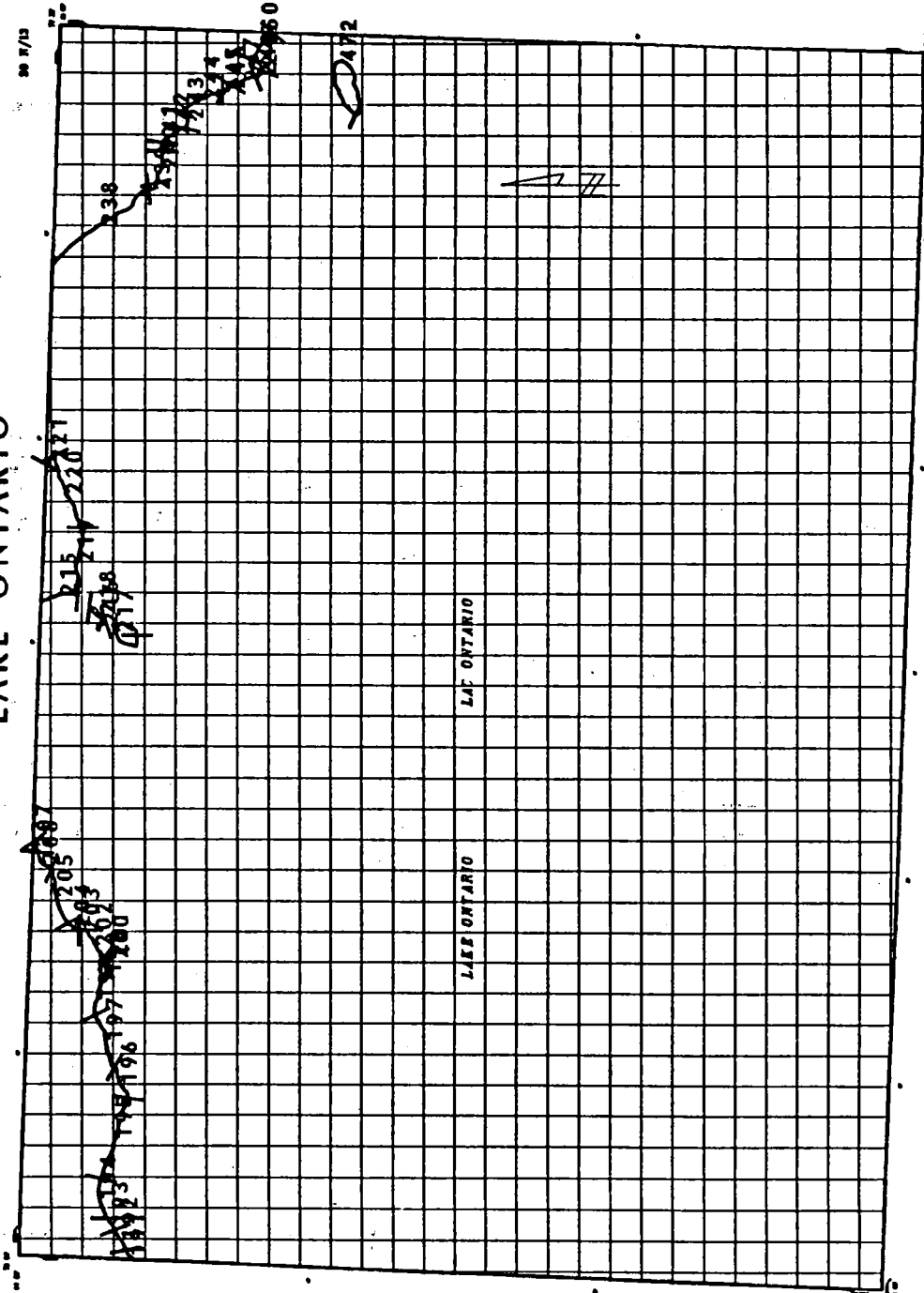
PORT HOPE  
ONTARIO

Geomatics International  
1111  
1111

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE ONTARIO

30 8/13



REFERENCE MAP



### GEOMORPHIC CLASSIFICATION

- 1. HIGH (FROM 100 FT TO 200 FT)
- 2. LOW (FROM 10 FT TO 100 FT)
- 3. VERY LOW (FROM 0 FT TO 10 FT)
- 4. FLAT (FROM 0 FT TO 10 FT)
- 5. SANDY BEACHES
- 6. SANDY POINTS
- 7. SANDY SPITS
- 8. SANDY BARS
- 9. SANDY POINTS
- 10. SANDY SPITS
- 11. SANDY BARS
- 12. SANDY POINTS
- 13. SANDY SPITS
- 14. SANDY BARS
- 15. SANDY POINTS
- 16. SANDY SPITS
- 17. SANDY BARS
- 18. SANDY POINTS
- 19. SANDY SPITS
- 20. SANDY BARS

### PROTECTION CLASSIFICATION

- 1. NEARLY PROTECTED
- 2. PROTECTED
- 3. PARTIALLY PROTECTED
- 4. UNPROTECTED
- 5. UNPROTECTED NEARSHORE
- 6. UNPROTECTED

### SUBAQUEOUS/NEARSHORE COMPOSITION

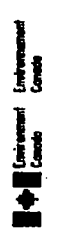
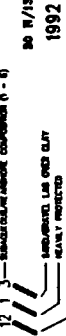
- 1. CLAY
- 2. SAND
- 3. SAND/CLAY
- 4. SAND/SILT
- 5. SAND/SILT/CLAY
- 6. SAND/SILT/CLAY
- 7. SAND/SILT/CLAY
- 8. SAND/SILT/CLAY
- 9. SAND/SILT/CLAY
- 10. SAND/SILT/CLAY

### HISTORICAL SHORELINE CHANGE RATE

- 1. POSITIVE (1-10 m/yr)
- 2. POSITIVE (10-20 m/yr)
- 3. POSITIVE (20-30 m/yr)
- 4. POSITIVE (30-40 m/yr)
- 5. POSITIVE (40-50 m/yr)
- 6. POSITIVE (50-60 m/yr)
- 7. POSITIVE (60-70 m/yr)
- 8. POSITIVE (70-80 m/yr)
- 9. POSITIVE (80-90 m/yr)
- 10. POSITIVE (90-100 m/yr)

### THREE - TIER CLASSIFICATION

- 1. CLASSIFICATION (1-10)
- 2. PROTECTION CLASSIFICATION (1-6)
- 3. SUBAQUEOUS/NEARSHORE COMPOSITION (1-10)

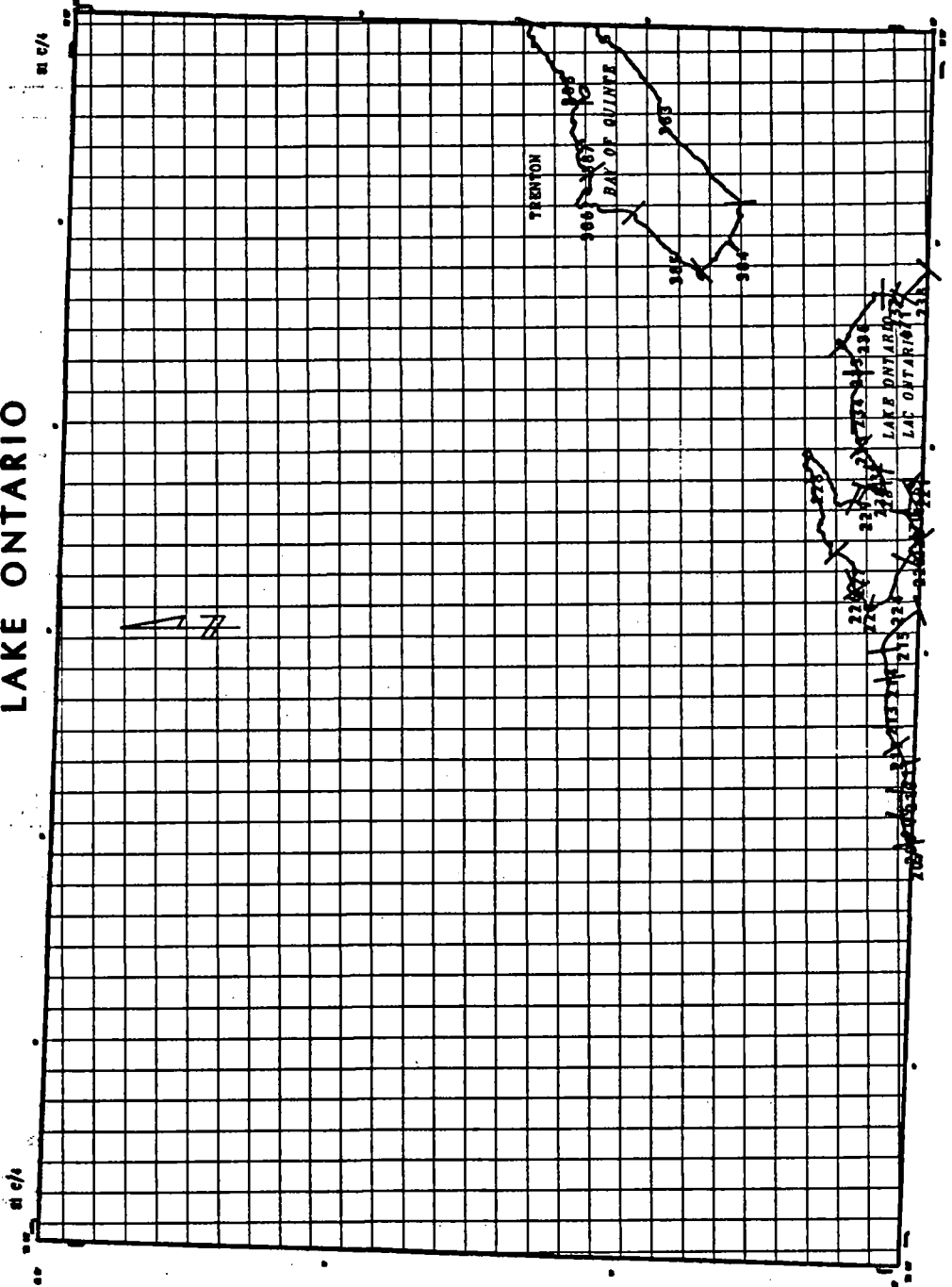


CONSECON ONTARIO

Geomatics International Inc. 1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

LAKE ONTARIO



REFERENCE MAP



- GEOMORPHIC CLASSIFICATION**
- 1. HIGH (STEEP) BANK
  - 2. LOW (FLAT) BANK
  - 3. SANDY BANK
  - 4. SILTY BANK
  - 5. GRAVELLY BANK
  - 6. ROCKY BANK
  - 7. SANDY SILT BANK
  - 8. SILTY SAND BANK
  - 9. SANDY SILT BANK (WITH WEEDS)
  - 10. SANDY SILT BANK (WITH ALGAE)
  - 11. SANDY SILT BANK (WITH MUSKELGROUSE)
  - 12. SANDY SILT BANK (WITH OTHER VEGETATION)
  - 13. SANDY SILT BANK (WITH OTHER VEGETATION)
  - 14. SANDY SILT BANK (WITH OTHER VEGETATION)
  - 15. SANDY SILT BANK (WITH OTHER VEGETATION)
  - 16. SANDY SILT BANK (WITH OTHER VEGETATION)
  - 17. SANDY SILT BANK (WITH OTHER VEGETATION)
  - 18. SANDY SILT BANK (WITH OTHER VEGETATION)
  - 19. SANDY SILT BANK (WITH OTHER VEGETATION)
  - 20. SANDY SILT BANK (WITH OTHER VEGETATION)

- PROTECTION CLASSIFICATION**
- 1. HEAVILY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. SPARSE PROTECTION
  - 4. NO PROTECTION
  - 5. PROTECTION UNDER CONSIDERATION
  - 6. UNCLASSIFIED

- SUBAQUOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SILT
  - 3. SAND
  - 4. GRAVEL
  - 5. COBBLES
  - 6. ROCKS
  - 7. SHELF
  - 8. TRENCH
  - 9. DEPRESSION
  - 10. UNCLASSIFIED

- HISTORICAL SHORELINE CHANGE RATE**
- 1. 100% (1940-1960)
  - 2. 50% (1940-1960)
  - 3. 25% (1940-1960)
  - 4. 10% (1940-1960)
  - 5. 5% (1940-1960)
  - 6. 2% (1940-1960)
  - 7. 1% (1940-1960)
  - 8. 0% (1940-1960)
  - 9. 1% (1960-1980)
  - 10. 2% (1960-1980)
  - 11. 5% (1960-1980)
  - 12. 10% (1960-1980)
  - 13. 25% (1960-1980)
  - 14. 50% (1960-1980)
  - 15. 100% (1960-1980)

- THREE - TIER CLASSIFICATION**
- EXAMPLE CLASSIFICATION 0 - 99  
 PROTECTION CLASSIFICATION 0 - 9  
 SUBAQUOUS/NEARSHORE COMPOSITION 0 - 9

Coastline International  
 1000 Lakeshore Blvd. East  
 Unit 100  
 Toronto, Ontario M2X 1Y4



TRENTON  
 ONTARIO

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

LAKE ONTARIO

REFERENCE MAP



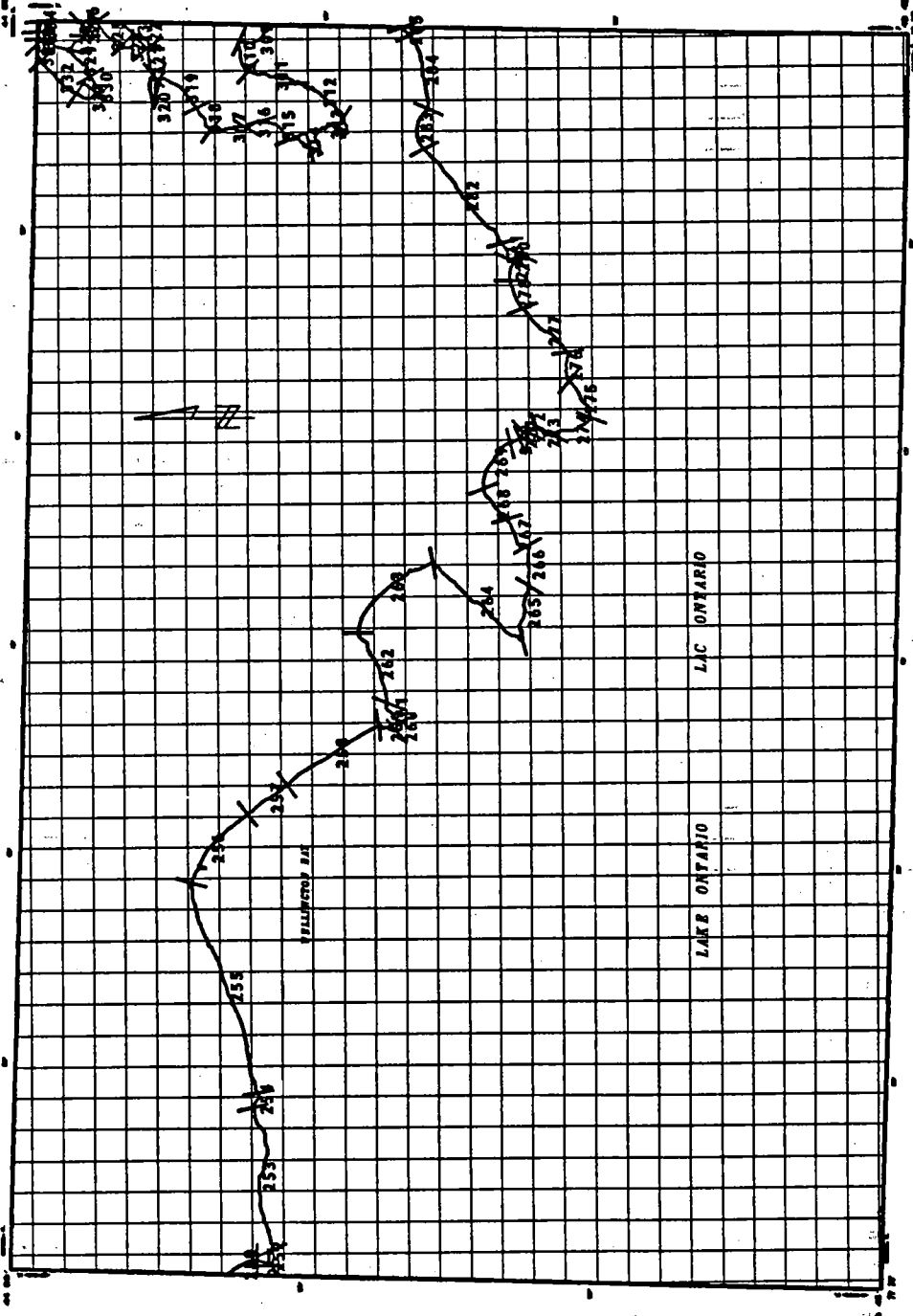
- GEOGRAPHIC CLASSIFICATION**
- 1. HIGH (LOW) RIFT (UNCLASSIFIED OR 10) (HIGH)
  - 2. LOW (HIGH) RIFT (UNCLASSIFIED OR 10) (LOW)
  - 3. LOW (HIGH) RIFT WITH BEACH (10-15)
  - 4. SANDY BEACH
  - 5. SANDY BEACH
  - 6. SANDY BEACH
  - 7. SANDY BEACH
  - 8. SANDY BEACH
  - 9. SANDY BEACH
  - 10. SANDY BEACH
  - 11. SANDY BEACH
  - 12. SANDY BEACH
  - 13. SANDY BEACH
  - 14. SANDY BEACH
  - 15. SANDY BEACH
  - 16. SANDY BEACH
  - 17. SANDY BEACH
  - 18. SANDY BEACH
  - 19. SANDY BEACH
  - 20. SANDY BEACH

- PROTECTION CLASSIFICATION**
- 1. HEAVILY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. SPARSE PROTECTION
  - 4. NO PROTECTION
  - 5. UNCLASSIFIED

- SUBAQUOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SILT
  - 3. SAND
  - 4. GRAVEL
  - 5. ROCK
  - 6. UNCLASSIFIED

- HISTORICAL SHORELINE CHANGE RATE**
- 1. STABLE (0.00-0.05)
  - 2. SLIGHTLY RETROGRADING (0.05-0.10)
  - 3. MODERATELY RETROGRADING (0.10-0.20)
  - 4. RAPIDLY RETROGRADING (0.20-0.50)
  - 5. UNCLASSIFIED

- THREE - TIER CLASSIFICATION**
- 1. PROTECTION CLASSIFICATION (1-5)
  - 2. SUBAQUOUS/NEARSHORE COMPOSITION (1-6)
  - 3. HISTORICAL SHORELINE CHANGE RATE (1-5)



WELLINGTON ONTARIO

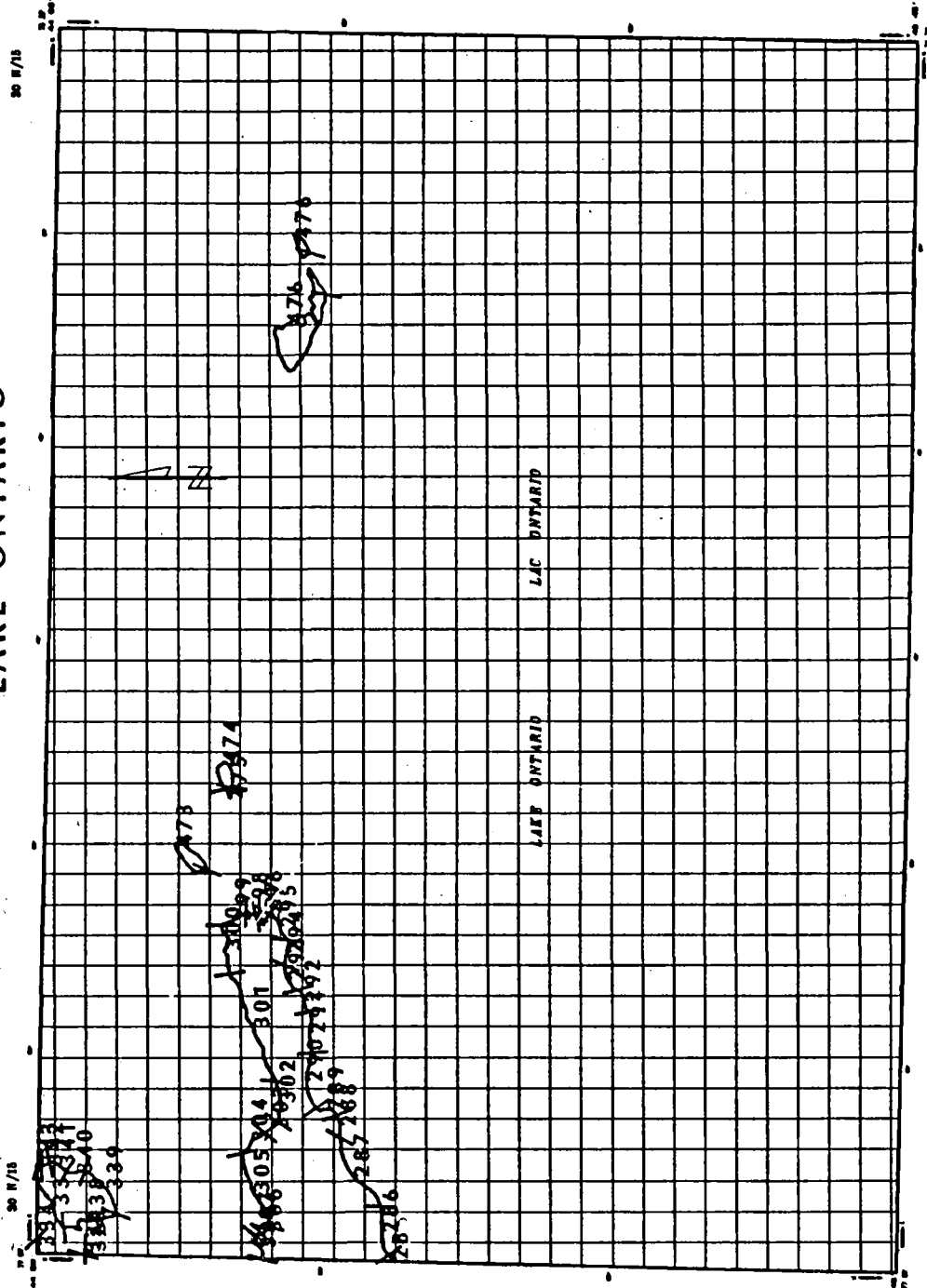
Quantica International Inc. 1992

Environment Canada

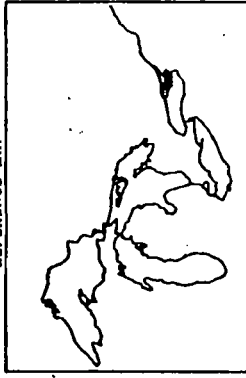
Environment Canada

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE ONTARIO



REFERENCE MAP



### GEOMORPHIC CLASSIFICATION

- 01 1. HIGH (PLAIN) SURF (PROPORTION OF 50 TO 100%)
- 02 2. HIGH (PLAIN) SURF (PROPORTION OF 10 TO 50%)
- 03 3. HIGH (PLAIN) SURF (PROPORTION OF 5 TO 10%)
- 04 4. HIGH (PLAIN) SURF (PROPORTION OF 1 TO 5%)
- 05 5. HIGH (PLAIN) SURF (PROPORTION OF 0.5 TO 1%)
- 06 6. HIGH (PLAIN) SURF (PROPORTION OF 0.1 TO 0.5%)
- 07 7. HIGH (PLAIN) SURF (PROPORTION OF 0.05 TO 0.1%)
- 08 8. HIGH (PLAIN) SURF (PROPORTION OF 0.01 TO 0.05%)
- 09 9. HIGH (PLAIN) SURF (PROPORTION OF 0.005 TO 0.01%)
- 10 10. HIGH (PLAIN) SURF (PROPORTION OF 0.001 TO 0.005%)
- 11 11. HIGH (PLAIN) SURF (PROPORTION OF 0.0005 TO 0.001%)
- 12 12. HIGH (PLAIN) SURF (PROPORTION OF 0.0001 TO 0.0005%)
- 13 13. HIGH (PLAIN) SURF (PROPORTION OF 0.00005 TO 0.0001%)
- 14 14. HIGH (PLAIN) SURF (PROPORTION OF 0.00001 TO 0.00005%)
- 15 15. HIGH (PLAIN) SURF (PROPORTION OF 0.000005 TO 0.00001%)
- 16 16. HIGH (PLAIN) SURF (PROPORTION OF 0.000001 TO 0.000005%)
- 17 17. HIGH (PLAIN) SURF (PROPORTION OF 0.0000005 TO 0.000001%)
- 18 18. HIGH (PLAIN) SURF (PROPORTION OF 0.0000001 TO 0.0000005%)
- 19 19. HIGH (PLAIN) SURF (PROPORTION OF 0.00000005 TO 0.0000001%)
- 20 20. HIGH (PLAIN) SURF (PROPORTION OF 0.00000001 TO 0.00000005%)

### PROTECTION CLASSIFICATION

- 01 1. HEAVILY PROTECTED
- 02 2. MODERATELY PROTECTED
- 03 3. LIGHTLY PROTECTED
- 04 4. UNPROTECTED
- 05 5. PROTECTIVE RESTRICTIONS
- 06 6. UNRESTRICTED

### SUBAQUEOUS/NEARSHORE COMPOSITION

- 01 1. CLAY
- 02 2. SILT
- 03 3. SAND/MUD, USE OVER CLAY
- 04 4. SAND (SAND)
- 05 5. SAND (SAND-RESTRICT)
- 06 6. SAND (SAND)
- 07 7. SAND (SAND)
- 08 8. SAND (SAND)
- 09 9. SAND (SAND)
- 10 10. SAND (SAND)
- 11 11. SAND (SAND)
- 12 12. SAND (SAND)
- 13 13. SAND (SAND)
- 14 14. SAND (SAND)
- 15 15. SAND (SAND)
- 16 16. SAND (SAND)
- 17 17. SAND (SAND)
- 18 18. SAND (SAND)
- 19 19. SAND (SAND)
- 20 20. SAND (SAND)

### HISTORICAL SHORELINE CHANGE RATE

- 01 1. INCREASE (4-10 cm/yr)
- 02 2. INCREASE (1-4 cm/yr)
- 03 3. INCREASE (0.5-1 cm/yr)
- 04 4. INCREASE (0.1-0.5 cm/yr)
- 05 5. INCREASE (0.05-0.1 cm/yr)
- 06 6. INCREASE (0.01-0.05 cm/yr)
- 07 7. INCREASE (0.005-0.01 cm/yr)
- 08 8. INCREASE (0.001-0.005 cm/yr)
- 09 9. INCREASE (0.0005-0.001 cm/yr)
- 10 10. INCREASE (0.0001-0.0005 cm/yr)
- 11 11. INCREASE (0.00005-0.0001 cm/yr)
- 12 12. INCREASE (0.00001-0.00005 cm/yr)
- 13 13. INCREASE (0.000005-0.00001 cm/yr)
- 14 14. INCREASE (0.000001-0.000005 cm/yr)
- 15 15. INCREASE (0.0000005-0.000001 cm/yr)
- 16 16. INCREASE (0.0000001-0.0000005 cm/yr)
- 17 17. INCREASE (0.00000005-0.0000001 cm/yr)
- 18 18. INCREASE (0.00000001-0.00000005 cm/yr)
- 19 19. INCREASE (0.000000005-0.00000001 cm/yr)
- 20 20. INCREASE (0.000000001-0.000000005 cm/yr)

### THREE - TIER CLASSIFICATION

- 01 1. CLASSIFICATION (1 - 10)
- 02 2. CLASSIFICATION (1 - 10)
- 03 3. CLASSIFICATION (1 - 10)
- 04 4. CLASSIFICATION (1 - 10)
- 05 5. CLASSIFICATION (1 - 10)
- 06 6. CLASSIFICATION (1 - 10)
- 07 7. CLASSIFICATION (1 - 10)
- 08 8. CLASSIFICATION (1 - 10)
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- 11 11. CLASSIFICATION (1 - 10)
- 12 12. CLASSIFICATION (1 - 10)
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- 14 14. CLASSIFICATION (1 - 10)
- 15 15. CLASSIFICATION (1 - 10)
- 16 16. CLASSIFICATION (1 - 10)
- 17 17. CLASSIFICATION (1 - 10)
- 18 18. CLASSIFICATION (1 - 10)
- 19 19. CLASSIFICATION (1 - 10)
- 20 20. CLASSIFICATION (1 - 10)

### LEGEND

- 01 1. CLASSIFICATION (1 - 10)
- 02 2. CLASSIFICATION (1 - 10)
- 03 3. CLASSIFICATION (1 - 10)
- 04 4. CLASSIFICATION (1 - 10)
- 05 5. CLASSIFICATION (1 - 10)
- 06 6. CLASSIFICATION (1 - 10)
- 07 7. CLASSIFICATION (1 - 10)
- 08 8. CLASSIFICATION (1 - 10)
- 09 9. CLASSIFICATION (1 - 10)
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- 18 18. CLASSIFICATION (1 - 10)
- 19 19. CLASSIFICATION (1 - 10)
- 20 20. CLASSIFICATION (1 - 10)

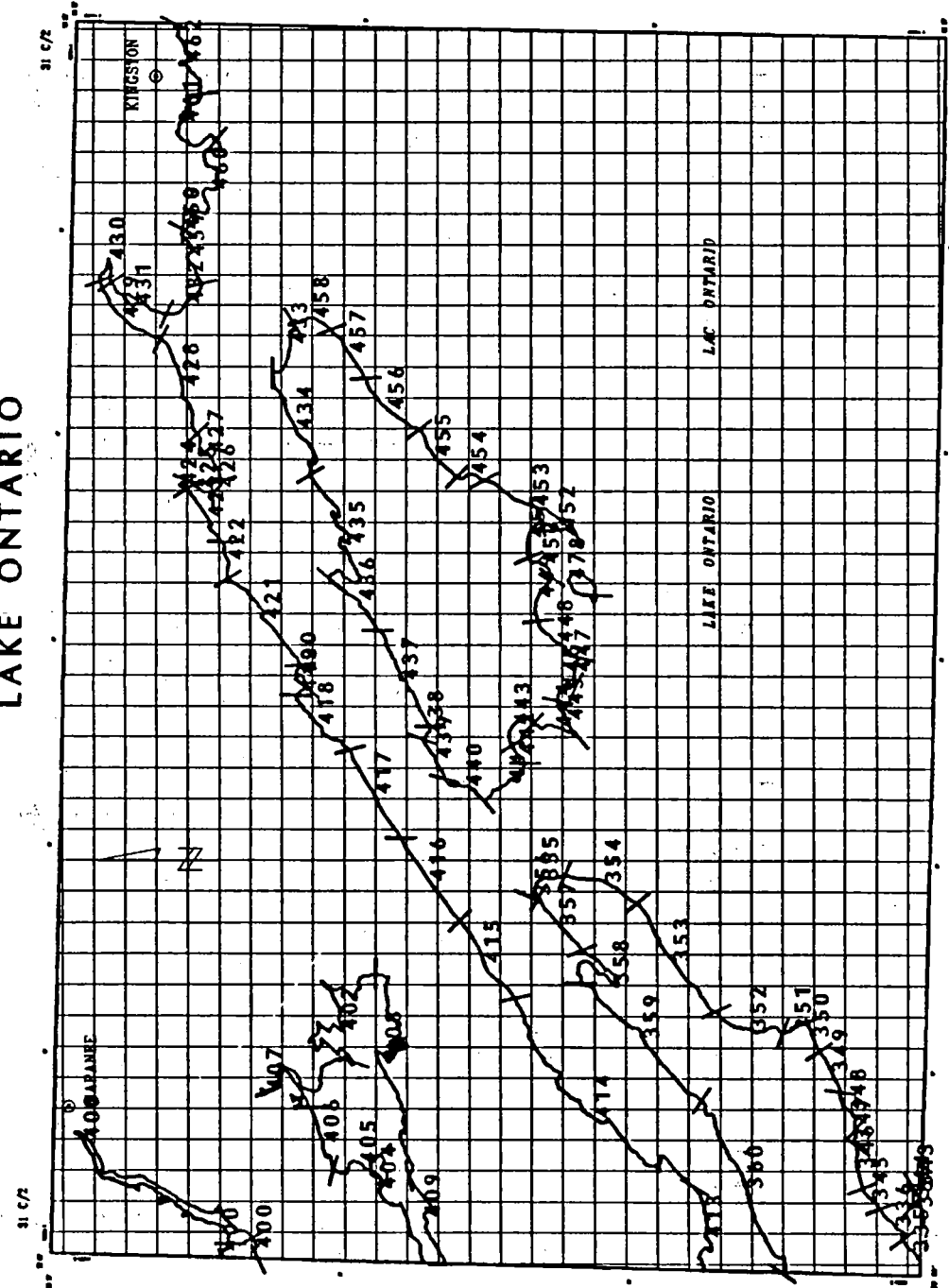
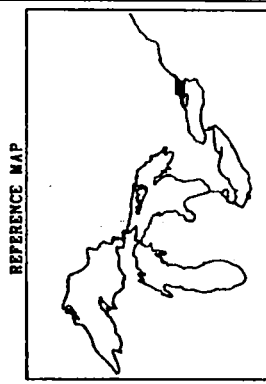
Environment Canada  
 Environment Canada

Geospatial Information  
 100  
 100

20 8/10  
 1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE ONTARIO



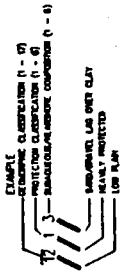
- GEOMORPHIC CLASSIFICATION**
- 1. LOW (10m) BAY, INTERMITTENT OR NO BAY
  - 2. LOW (10m) BAY WITH SLACK (10m)
  - 3. LOW (10m) BAY WITH INTERMITTENT OR NO BAY
  - 4. LOW (10m) BAY WITH SLACK (10m)
  - 5. BAY
  - 6. BAY WITH SLACK
  - 7. SANDY BEACHES
  - 8. SANDY BEACHES WITH SLACK
  - 9. SANDY BEACHES WITH SLACK AND BAY
  - 10. SANDY BEACHES WITH SLACK AND BAY
  - 11. SANDY BEACHES WITH SLACK AND BAY
  - 12. SANDY BEACHES WITH SLACK AND BAY
  - 13. SANDY BEACHES WITH SLACK AND BAY
  - 14. SANDY BEACHES WITH SLACK AND BAY
  - 15. SANDY BEACHES WITH SLACK AND BAY
  - 16. SANDY BEACHES WITH SLACK AND BAY
  - 17. SANDY BEACHES WITH SLACK AND BAY
  - 18. SANDY BEACHES WITH SLACK AND BAY
  - 19. SANDY BEACHES WITH SLACK AND BAY
  - 20. SANDY BEACHES WITH SLACK AND BAY

- PROTECTION CLASSIFICATION**
- 1. FULLY PROTECTED
  - 2. PARTIALLY PROTECTED
  - 3. UNPROTECTED
  - 4. UNPROTECTED
  - 5. UNPROTECTED
  - 6. UNPROTECTED
  - 7. UNPROTECTED
  - 8. UNPROTECTED
  - 9. UNPROTECTED
  - 10. UNPROTECTED

- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. SAND
  - 4. SAND
  - 5. SAND
  - 6. SAND
  - 7. SAND
  - 8. SAND
  - 9. SAND
  - 10. SAND

- HISTORICAL SHORELINE CHANGE RATE**
- 1. 0.00 (0.00 m/yr)
  - 2. 0.01 (0.01 m/yr)
  - 3. 0.02 (0.02 m/yr)
  - 4. 0.03 (0.03 m/yr)
  - 5. 0.04 (0.04 m/yr)
  - 6. 0.05 (0.05 m/yr)
  - 7. 0.06 (0.06 m/yr)
  - 8. 0.07 (0.07 m/yr)
  - 9. 0.08 (0.08 m/yr)
  - 10. 0.09 (0.09 m/yr)

**THREE - TIER CLASSIFICATION**



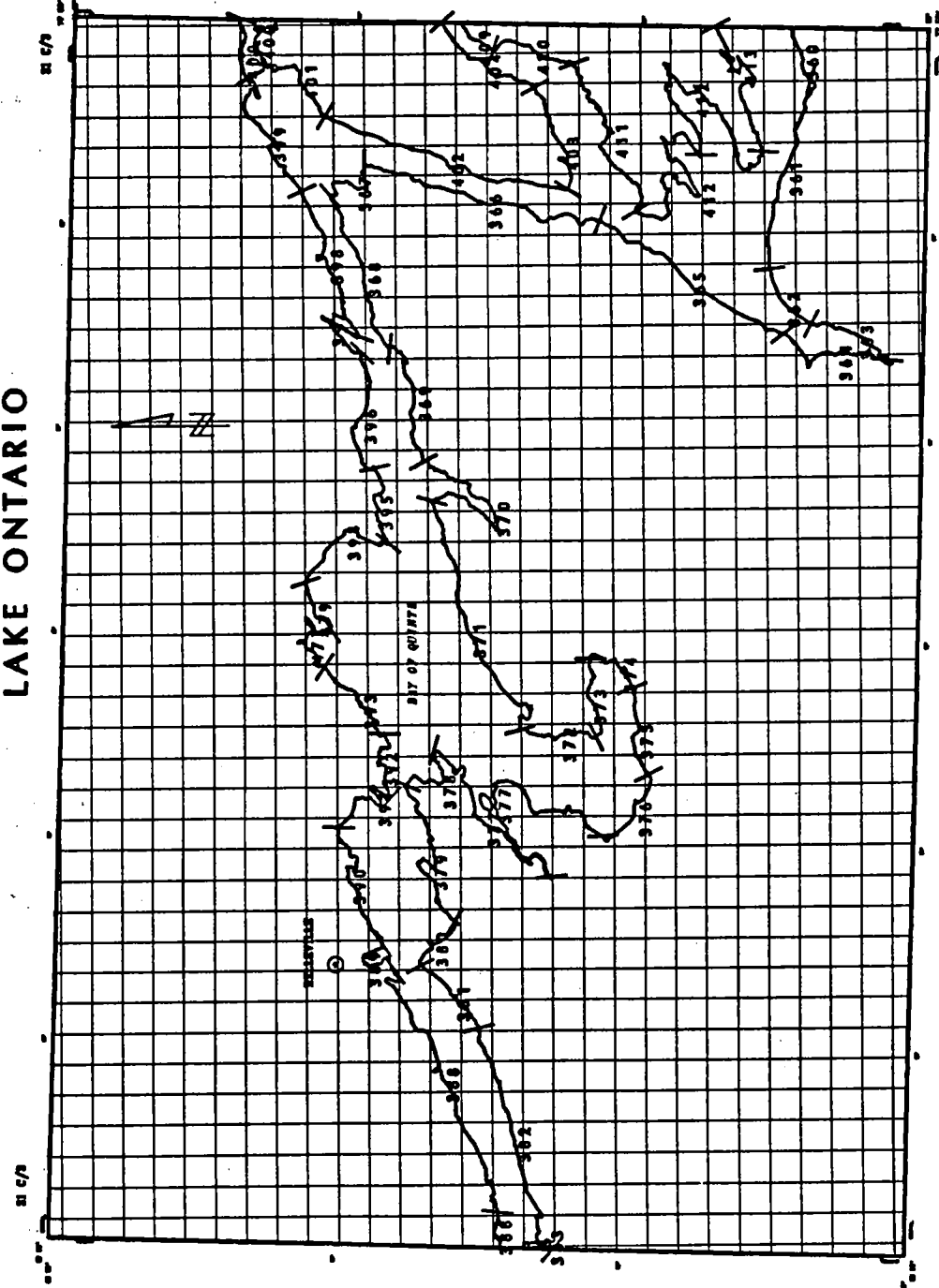
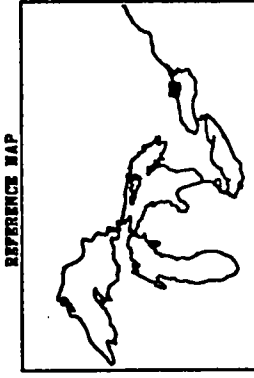
Geomatics International Inc.

Environment Canada / Environnement Canada

BATH ONTARIO

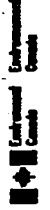
# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## LAKE ONTARIO



- GEOMORPHIC CLASSIFICATION**
- 1. HIGH (LOW) BAY (SLOPE 0.50 OR GREATER)
  - 2. HIGH (LOW) BAY (SLOPE 0.25 TO 0.50)
  - 3. LOW (HIGH) BAY (SLOPE 0.25 TO 0.50)
  - 4. LOW (HIGH) BAY (SLOPE 0.50 OR GREATER)
  - 5. SAND/SHALE BEACH
  - 6. CLAY BEACH
  - 7. SAND/SHALE POINT
  - 8. SAND/SHALE POINT
  - 9. SAND/SHALE POINT
  - 10. SAND/SHALE POINT
  - 11. SAND/SHALE POINT
  - 12. SAND/SHALE POINT
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  - 48. SAND/SHALE POINT
  - 49. SAND/SHALE POINT
  - 50. SAND/SHALE POINT
- PROTECTION CLASSIFICATION**
- 1. FULLY PROTECTED
  - 2. PARTIALLY PROTECTED
  - 3. NO PROTECTION
  - 4. NO PROTECTION
  - 5. NO PROTECTION
  - 6. NO PROTECTION
  - 7. NO PROTECTION
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  - 48. NO PROTECTION
  - 49. NO PROTECTION
  - 50. NO PROTECTION
- COMPOSITION**
- 1. SAND
  - 2. SAND/SHALE
  - 3. SAND/SHALE
  - 4. SAND/SHALE
  - 5. SAND/SHALE
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  - 7. SAND/SHALE
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  - 47. SAND/SHALE
  - 48. SAND/SHALE
  - 49. SAND/SHALE
  - 50. SAND/SHALE
- HISTORICAL SHORELINE CHANGE RATE**
- 1. 0.00 TO 0.25 (m/yr)
  - 2. 0.25 TO 0.50 (m/yr)
  - 3. 0.50 TO 1.00 (m/yr)
  - 4. 1.00 TO 2.00 (m/yr)
  - 5. 2.00 TO 5.00 (m/yr)
  - 6. 5.00 TO 10.00 (m/yr)
  - 7. 10.00 TO 20.00 (m/yr)
  - 8. 20.00 TO 50.00 (m/yr)
  - 9. 50.00 TO 100.00 (m/yr)
  - 10. 100.00 TO 200.00 (m/yr)
  - 11. 200.00 TO 500.00 (m/yr)
  - 12. 500.00 TO 1000.00 (m/yr)
  - 13. 1000.00 TO 2000.00 (m/yr)
  - 14. 2000.00 TO 5000.00 (m/yr)
  - 15. 5000.00 TO 10000.00 (m/yr)
  - 16. 10000.00 TO 20000.00 (m/yr)
  - 17. 20000.00 TO 50000.00 (m/yr)
  - 18. 50000.00 TO 100000.00 (m/yr)
  - 19. 100000.00 TO 200000.00 (m/yr)
  - 20. 200000.00 TO 500000.00 (m/yr)
  - 21. 500000.00 TO 1000000.00 (m/yr)
  - 22. 1000000.00 TO 2000000.00 (m/yr)
  - 23. 2000000.00 TO 5000000.00 (m/yr)
  - 24. 5000000.00 TO 10000000.00 (m/yr)
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  - 50. 2000000000000000.00 TO 5000000000000000.00 (m/yr)
- THREE - YEAR CLASSIFICATION**
- 1. CLASSIFICATION (1 - 5)
  - 2. CLASSIFICATION (1 - 5)
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  - 50. CLASSIFICATION (1 - 5)

BELLEVILLE  
ONTARIO



Geographic Information  
System  
Map  
Scale  
1:50,000  
Date  
1992

SI C/O  
1992

LAKE LAWRENCE, ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
1	NO	31C01	16	VIDEO91	4	1614
2	NO	31C01	16	VIDEO91	6	1616
3	NO	31C01	10	VIDEO91	4	1044
4	NO	31C01	10	VIDEO91	4	1044
5	NO	31C08	14	VIDEO91	4	1434
6	NO	31C01	10	VIDEO91	4	1044
7	YES 306 ADDED	31C01	14	VIDEO91	4	1444
8	YES 307 ADDED	31C01	10	VIDEO91	4	1044
9	NO	31C01	14	VIDEO91	4	1444
10	NO	31C01	10	VIDEO91	4	1044
11	NO	31C01	14	VIDEO91	4	1444
12	NO	31C01	10	VIDEO91	4	1034
13	NO	31C01 31C02	8	VIDEO91	4	844
14	NO	31C02	8	VIDEO91	4	844
15	NO	31C02 31C01	8	VIDEO91	4	844
16	NO	31C02 31C01	10	VIDEO91	4	1044
17	NO	31C02	12	VIDEO91	4	1244
18	NO	31C02 31C01	9	VIDEO91	4	944
19	NO	31C02	12	VIDEO91	4	1244
20	NO	31C02 31C01	12	VIDEO91	4	1244
21	NO	31C01	12	VIDEO91	4	1244
22	NO	31C01	14	VIDEO91	4	1444
23	NO	31C01	12	VIDEO91	4	1244
24	NO	31C01	10	VIDEO91	4	1044
25	NO	31C01	8	VIDEO91	4	844
26	NO	31C01	9	VIDEO91	4	944
27	NO	31C01	8	VIDEO91	4	844
28	NO	31C01	10	VIDEO91	4	1044
29	NO	31C01	9	VIDEO91	4	944
30	NO	31C01	12	VIDEO91	4	1244
31	NO	31C01	3	VIDEO91	4	344
32	NO	31C01	12	VIDEO91	4	1244
33	NO	31C01	9	VIDEO91	4	944
34	NO	31C01	12	VIDEO91	4	1244
35	NO	31C01	12	VIDEO91	4	1244
36	NO	31C01	14	VIDEO91	4	1444
37	NO	31C01	14	CZA VIDEO91	6	1446
38	NO	31C01	12	CZA VIDEO91	6	1246
39	NO	31C01	10	CZA VIDEO91	4	1044
40	NO	31C01	10	AP78 CZA	6	1046
41	NO	31C01	10	AP78 CZA	6	1046

GARDEN ISLANDS



LAKE LAWRENCE.ASC

Reach No.	CZR Adjustment	NTS No.	Geonor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
42	NO	31C01	12	4	6	1246
43	NO	31C01	12	4	6	1246
44	NO	31C01	12	4	2	1242
45	NO	31C01	12	4	2	1242
46	NO	31C01 31C08	10	4	4	1044
47	NO	31C01 31C08	10	4	6	1046
48	NO	31C01 31C08	12	4	6	1246
49	NO	31C08	10	4	4	1044
50	NO	31C08	10	4	6	1046
51	NO	31C08	6	4	6	1246
52	YES	WEST BORDER 2.5KM NORTH	13	4	6	1346
53	YES	SOUTH BORDER 2.6KM NORTH	14	4	2	1442
54	NO	31C08	10	4	6	1046
55	NO	31C08	12	3	6	1236
56	NO	31C08	10	4	4	1044
57	NO	31C08	10	4	4	1044
58	NO	31C08	10	4	6	1046
59	NO	31C08	10	3	6	1036
60	NO	31C08	10	4	4	1044
61	NO	31C08	10	2	6	1026
62	NO	31C08	13	4	6	1346
63	NO	31C08	10	3	6	1036
64	NO	31C08	10	2	6	1026
65	NO	31C08 31B05	10	4	6	1046
66	YES	NORTH BORDER 6KM SOUTH	10	3	6	1036
67	YES	SOUTH BORDER 3KM NORTH	3	4	6	346
68	YES	NORTH BORDER 1KM NORTH	5	2	6	526
69	YES	SOUTH BORDER 1KM NORTH	10	3	6	1036
70	NO	31B12	16	1	6	1616
71	YES	SOUTH BORDER 3KM NORTH	5	2	6	526
72	NO	31B12	3	3	6	336
73	NO	31B12	4	3	6	436
74	NO	31B12	3	3	6	336
75	NO	31B12	3	2	6	326
76	YES	NORTH BORDER 1.5KM SOUTH	16	1	6	1616
77	YES	SOUTH BORDER 1.5KM SOUTH	12	2	6	1226
78	YES	SOUTH BORDER NORTH 2KM	16	1	6	1616
79	NO	31B14	12	1	6	1216
80	NO	31B14	16	1	6	1616
81	NO	31B14	5	2	3	523
82	NO	31B14	4	3	3	433

ADMIRALTY ISLAND

LAKE LAWRENCE.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
83	YES WEST BORDER 7KM WEST	31B14	13 AP78	4 AP78	2 AP78	1342
84	NO	31B14 31B15 31G02	14 AP78	3 AP78	6 NO DATA	1436
85	NO	31G02	16 AP78	1 AP78	6 NO DATA	1616
86	YES EAST BORDER 6.5KM WEST	31G02	16 AP78 OGS	1 AP78	2 STLAWEI90	1612
87	YES WEST BORDER 6.5KM WEST	31G02	5 AP78	2 AP78	2 STLAWEI90	522
88	NO	31G02	5 AP78	3 AP78	2 STLAWEI88	532
89	NO	31G02	12 AP78	2 AP78	6 NO DATA	1226
90	NO	31G02 31G01	12 AP78	4 AP78	2 STLAWEI88	1242
91	NO	31G01	12 OGS	6 NO DATA	6 NO DATA	1266
92	NO	31G01	12 OGS	6 NO DATA	6 NO DATA	1266
93	NO	31G01	12 AP83	4 AP83	4 AP83	1244
94	NO	31G01	12 AP83	4 AP83	4 AP83	1244
95	NO	31G01	12 AP83	4 AP83	4 AP83	1244
96	NO	31G01 31G08	12 AP83	2 AP83	6 NO DATA	1226
97	NO	31G08	12 AP83	2 AP83	4 AP83	1224
98	NO	31G08	17 AP83	3 AP83	4 AP83	1734
99	YES	31G08	12 AP83	1 AP83	6 NO DATA	1216
100	NO	31G08	16 AP83	1 AP83	6 NO DATA	1616
101	NO	31G08	17 AP83	6 AP83	6 NO DATA	1766
102	NO	31G08	12 AP83	4 AP83	6 NO DATA	1246
103	NO	31G08	12 AP83	4 AP83	6 NO DATA	1246
104	NO	31G08	12 AP83	4 AP83	6 NO DATA	1246
105	NO	31G08	12 AP83	2 AP83	6 NO DATA	1226
106	NO	31G08	12 AP83	2 AP83	6 NO DATA	1226
107	NO	31G08	12 AP83	4 AP83	6 NO DATA	1246
108	NO	31G08	12 AP83	2 AP83	6 NO DATA	1226
109	NO	31G08	12 AP83	3 AP83	6 NO DATA	1236
110	NO	31G08	16 AP83	1 AP83	6 NO DATA	1616
111	NO	31G08	12 AP83	4 AP83	4 AP83	1244
112	NO	31H05	12 AP83	2 AP83	1 RUKAVINA92	1221
113	NO	31H05	12 AP83	3 AP83	1 RUKAVINA92	1231
114	NO	31H05	12 AP83	2 AP83	1 RUKAVINA92	1221
115	NO	31H05	12 AP83	3 AP83	1 RUKAVINA92	1231
116	NO	31H05	12 AP83	3 AP83	2 RUKAVINA92	1232
117	NO	31H05	12 AP83	4 AP83	2 RUKAVINA92	1242
118	NO	31H05	10 AP83	4 AP83	2 RUKAVINA92	1042
119	NO	31H05	10 AP83	4 AP83	2 RUKAVINA92	1042
120	NO	31H05	12 AP83	2 AP83	2 RUKAVINA92	1222
121	NO	31H05	12 AP83	2 AP83	1 RUKAVINA92	1221
122	NO	31H05	12 AP83	4 AP83	1 RUKAVINA92	1241
123	NO	31H05 31G08	12 AP83	4 AP83	6 NO DATA	1246

LAKE LAWRENCE-ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
124	NO	31H05	12 AP83	1 AP83	6 NO DATA	1216
125	NO	31H05 31G08	12 AP83	1 AP83	6 NO DATA	1216
126	NO	31H05 31G08	12 AP83	3 AP83	6 NO DATA	1236
127	NO	31H05 31G08	13 AP83	4 AP83	6 NO DATA	1346
128	NO	31G08	12 AP83	4 AP83	6 NO DATA	1246
129	NO	31G08	12 AP83	4 AP83	2 AP83	1242
130	NO	31G08	17 AP83	6 AP83	6 NO DATA	1766
131	NO	31G08 31H05	12 AP83	4 AP83	6 NO DATA	1246
132	YES	31H05	12 AP83	2 AP83	6 NO DATA	1226
133	NO	31H05 31H12	12 AP83	4 AP83	4 AP83	1244
134	NO	31H12	10 AP83	3 AP83	6 NO DATA	1036
135	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
136	NO	31H12 31H05	12 AP83	4 AP83	6 NO DATA	1246
137	NO	31H12 31H05	12 AP83	4 AP83	6 NO DATA	1246
138	NO	31H05	12 AP83	4 AP83	6 NO DATA	1246
139	NO	31H05 31H12	12 AP83	4 AP83	6 NO DATA	1246
140	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
141	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
142	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
143	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
144	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
145	NO	31H12	12 AP83	3 AP83	6 NO DATA	1236
146	NO	31H12	12 AP83	2 AP83	6 NO DATA	1226
147	NO	31H12	12 AP83	2 AP83	6 NO DATA	1226
148	NO	31H12	12 AP83	3 AP83	6 NO DATA	1236
149	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
150	NO	31H12	12 AP83	3 AP83	6 NO DATA	1236
151	NO	31H12	12 AP83	3 AP83	6 NO DATA	1236
152	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
153	NO	31H12	12 AP83	3 AP83	6 NO DATA	1236
154	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
155	NO	31H12	12 AP83	3 AP83	6 NO DATA	1236
156	NO	31H12	13 AP83	4 AP83	6 NO DATA	1346
157	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
158	NO	31H12	12 AP83	3 AP83	6 NO DATA	1236
159	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
160	NO	31H12	12 AP83	3 AP83	6 NO DATA	1236
161	NO	31H12	13 AP83	4 AP83	4 AP83	1344
162	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
163	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
164	NO	31H12	12 AP83	3 AP83	6 NO DATA	1236

LAKE LAWRENCE.ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
165	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
166	NO	31H12	12 AP83	4 AP83	4 AP83	1244
167	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
168	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
169	NO	31H12 31H11	12 AP83	4 AP83	6 NO DATA	1246
170	NO	31H14 31H11	12 AP83	2 AP83	6 NO DATA	1226
171	NO	31H14 31H11	12 AP83	2 AP83	6 NO DATA	1226
172	NO	31H14	12 AP83	3 AP83	6 NO DATA	1236
173	NO	31H14	13 AP83	4 AP83	6 NO DATA	1346
174	NO	31H14	12 AP83	4 AP83	6 NO DATA	1246
175	NO	31H14 31I03	12 AP83	4 AP83	6 NO DATA	1246
176	NO	31I03	13 AP83	4 AP83	6 NO DATA	1346
177	NO	31I03	13 AP83	4 AP83	6 NO DATA	1346
178	NO	31I03 31I02	13 AP83	4 AP83	2 RUKAVINA92	1342
179	NO	31I07 31I02	13 AP83	4 AP83	2 RUKAVINA92	1342
180	NO	31I07	13 AP83	4 AP83	2 RUKAVINA92	1342
181	NO	31I07	13 AP83	4 AP83	2 RUKAVINA92	1342
182	NO	31I07	12 AP83	4 AP83	2 RUKAVINA92	1242
183	NO	31I07	12 AP85	3 AP85	2 AP85	1232
184	NO	31I07	16 AP85	1 AP85	6 NO DATA	1616
185	NO	31I07	17 AP85	6 AP85	6 NO DATA	1766
212	NO	31I07	13 AP85	3 AP85	2 AP85	1332
213	NO	31I07 31I02	13 AP83	4 AP83	1 RUKAVINA92	1341
214	NO	31I02	13 AP83	4 AP83	6 NO DATA	1346
215	NO	31I02	13 AP83	4 AP83	1 RUKAVINA 92	1341
216	NO	31I02 31I03	13 AP83	4 AP83	2 RUKAVINA 92	1342
217	NO	31I03	17 NO DATA	6 NO DATA	6 NO DATA	1766
218	NO	31I03	17 NO DATA	6 NO DATA	6 NO DATA	1766
220	NO	31I03 31H14	12 AP83	4 AP83	6 NO DATA	1246
221	NO	31H14	13 AP83	4 AP83	6 NO DATA	1346
222	NO	31H14	13 AP83	4 AP83	6 NO DATA	1346
223	NO	31H14	12 AP83	4 AP83	6 NO DATA	1246
224	NO	31H14 31H11	12 AP83	4 AP83	6 NO DATA	1246
225	NO	31H11	12 AP83	4 AP83	6 NO DATA	1246
226	NO	31H11 31H12	12 AP83	4 AP83	6 NO DATA	1246
227	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
228	NO	31H12	12 AP83	3 AP83	6 NO DATA	1236
229	NO	31H12	12 AP83	3 AP83	6 NO DATA	1236
230	NO	31H12	12 AP83	2 AP83	6 NO DATA	1226
231	NO	31H12	12 AP83	2 AP83	6 NO DATA	1226

LAKE LAWRENCE, ASC

Reach No.	CZR Adjustment	NTS No.	Geomor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
232	NO	31H12	12 AP83	3 AP83	6 NO DATA	1236
233	NO	31H12	12 AP83	4 AP83	6 NO DATA	1246
234	NO	31H12 31H05	12 AP83	4 AP83	6 NO DATA	1246
235	NO	31H05	12 AP83	4 AP83	6 NO DATA	1246
236	NO	31H05	12 AP83	4 AP83	6 NO DATA	1246
237	NO	31H05	12 AP83	4 AP83	6 NO DATA	1246
238	NO	31H05	12 AP83	4 AP83	6 NO DATA	1246
239	NO	31H05	12 AP83	3 AP83	6 NO DATA	1236
240	NO	31H05	12 AP83	3 AP83	1 RUKAVINA92	1231
241	NO	31H05	12 AP83	1 AP83	1 RUKAVINA92	1211
242	NO	31H05	12 AP83	1 AP83	2 RUKAVINA92	1212
243	NO	31H05	12 AP83	1 AP83	2 RUKAVINA92	1212
244	NO	31H05	12 AP83	1 AP83	2 RUKAVINA92	1212
245	NO	31H05	12 AP83	1 AP83	2 RUKAVINA92	1212
246	NO	31H05	12 AP83	2 AP83	2 RUKAVINA92	1222
247	NO	31H05	16 AP83	1 AP83	6 NO DATA	1616
248	NO	31H05	16 AP83	2 AP83	6 NO DATA	1626
249	NO	31H05	16 AP83	2 AP83	6 NO DATA	1626
250	NO	31H05	10 AP83	3 AP83	4 AP83	1034
251	NO	31H05 31H12	12 AP83	3 AP83	6 NO DATA	1236
252	NO	31H12	16 AP83	1 AP83	6 NO DATA	1616
253	NO	31H12	16 AP83	1 AP83	6 NO DATA	1616
254	NO	31H12 31H11	12 AP83	3 AP83	6 NO DATA	1236
255	NO	31H12 31H11	16 AP83	1 AP83	6 NO DATA	1616
256	NO	31H11	12 AP83	4 AP83	6 NO DATA	1246
257	NO	31H11	12 AP83	4 AP83	6 NO DATA	1246
258	NO	31H11	12 AP83	4 AP83	6 NO DATA	1246
259	NO	31H11 31H12	12 AP83	3 AP83	6 NO DATA	1236
260	NO	31H05 31H06 31H12 16	16 AP83	1 AP83	6 NO DATA	1616
261	NO	31H05 31H06	16 AP83	1 AP83	6 NO DATA	1616
262	NO	31H05	16 AP83	1 AP83	6 NO DATA	1616
263	NO	31H05	16 AP83	1 AP83	6 NO DATA	1616
264	NO	31H05	12 AP83	4 AP83	6 NO DATA	1246
265	NO	31H05	16 AP83	1 AP83	6 NO DATA	1616
266	YES	WEST BORDER 3KM EAST	16 AP83	1 AP83	6 NO DATA	1616
267	NO	31H05	14 AP83	4 AP83	2 RUKAVINA92	1442
268	YES	31H05	12 AP83	4 AP83	2 RUKAVINA92	1242
269	YES	31H05	12 AP83	4 AP83	2 RUKAVINA92	1242
270	NO	31H05	12 AP83	2 AP83	1 RUKAVINA92	1221
271	NO	31H05	13 AP83	4 AP83	1 RUKAVINA92	1341
272	NO	31H05	16 AP83	1 AP83	2 RUKAVINA92	1612

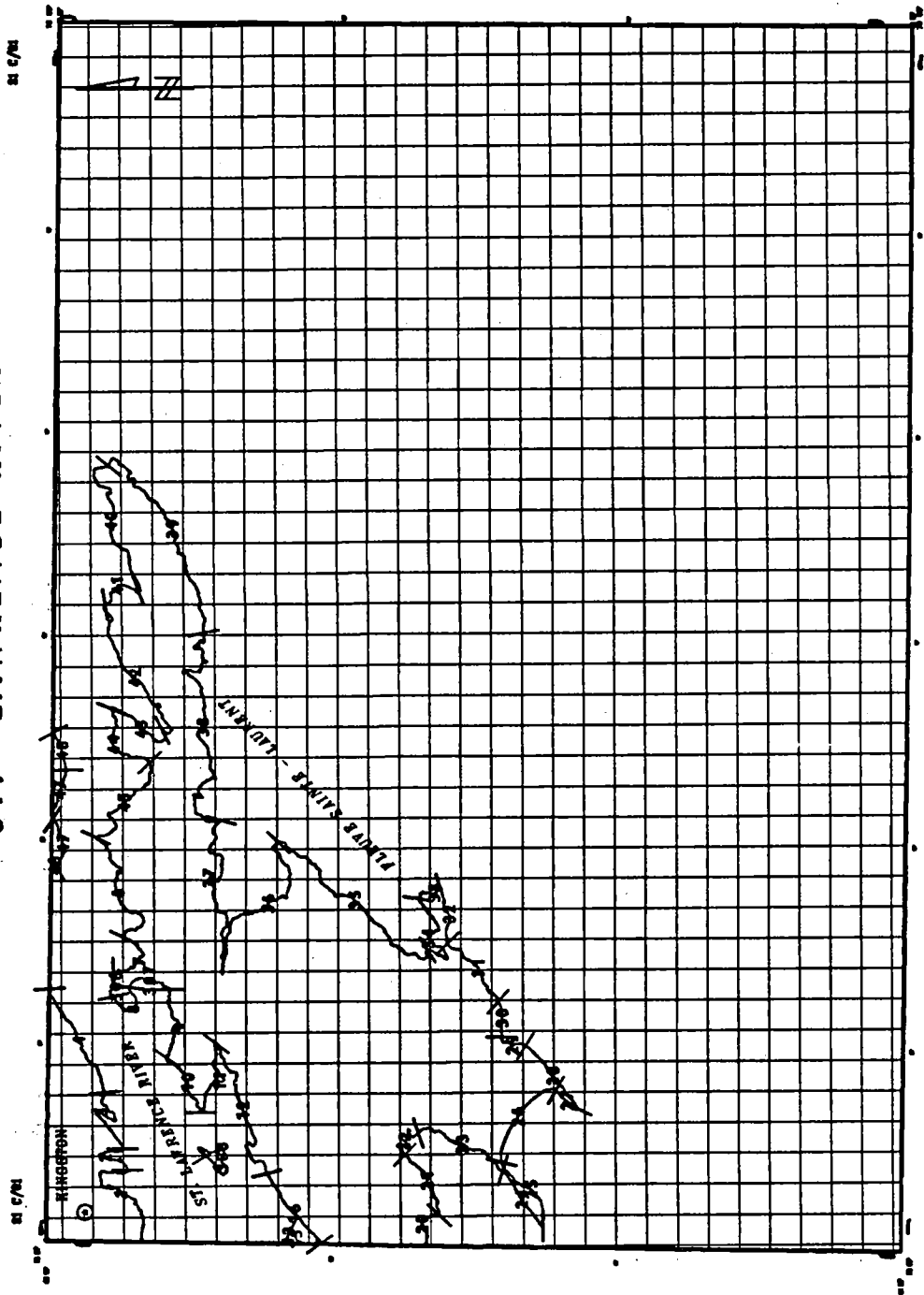
LAKE LAWRENCE.ASC

Reach No.	CZR Adjustment	NTS No.	Geonor. Source 1 Class	Protect Source 2 Class	Nearsh Source 3 Class	Comp. Comments 4 Class
273 NO		31H05	12 AP83	4 AP83	1 RUKAVINA92	1241
274 NO		31H05	12 AP83	2 AP83	1 RUKAVINA92	1221
275 NO		31H05	16 AP83	1 AP83	2 RUKAVINA92	1612
276 NO		31H05	16 AP83	1 AP83	2 RUKAVINA92	1612
277 NO		31H05	12 AP83	2 AP83	2 RUKAVINA92	1222
278 NO		31H05 31G08	12 AP83	2 AP83	6 NO DATA	1226
279 NO		31G08	12 AP83	4 AP83	2 AP83	1242
280 NO		31G08	12 AP83	4 AP83	6 NO DATA	1246
281 NO		31G08	17 AP83	6 AP83	6 NO DATA	1766
282 NO		31G08 31G01	16 AP83	1 AP83	6 NO DATA	1616
283 NO		31G01	12 AP83	4 AP83	4 AP83	1244
284 NO		31G01	16 AP83	4 AP83	6 NO DATA	1646
285 NO		31G01	16 AP83	1 AP83	6 NO DATA	1616
286 NO		31G01	16 AP83	4 AP83	6 NO DATA	1646
287 NO		31G01 31H05 31H04	16 AP83	1 AP83	6 NO DATA	1616
288 NO		31H05 31H04	16 AP83	1 AP83	6 NO DATA	1616
289 NO		31G01	16 AP83	4 AP83	6 NO DATA	1646
290 NO		31G01	16 AP83	4 AP83	6 NO DATA	1646
291 NO		31G01	16 AP83	4 AP83	6 NO DATA	1646
292 NO		31G01	16 AP83	4 AP83	2 AP83	1642
293 NO		31G01	12 AP83	2 AP83	4 AP83	1224
294 NO		31G01	12 AP83	3 AP83	4 AP83	1234
295 NO		31G01	12 AP83	3 AP83	4 AP83	1234
296 NO		31G01	12 AP83	3 AP83	2 AP83	1232
297 NO		31G01	12 AP83	3 AP83	2 AP83	1232
298 NO		31G01	14 AP83	3 AP83	4 AP83	1434
299 NO		31G01	14 AP83	4 AP83	4 AP83	1444
300 NO		31G01 31G02	14 AP78	4 AP78	2 STLAWEI88	1442
301 NO		31G02	14 AP78	4 AP78	2 AP78	1442
302 NO		31G02	17 NO DATA	6 NO DATA	1 STLAWEI90	1761
303 YES	NEW	31G08	17 AP83	4 AP83	4 AP83	1744
304 YES	NEW PART OF OLD 266	31H05	12 AP83	4 AP83	2 RUKAVINA92	1242
305 YES		31H05	14 AP83	4 AP83	6 NO DATA	1446
306 YES		31C01	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044
307 YES		31C01	10 VIDEO91	3 VIDEO91	4 VIDEO91	1034
308 YES		31C01	10 VIDEO91	4 VIDEO91	4 VIDEO91	1044
309 YES	NEW PART OF OLD 66-67	31B05	13 AP78	3 AP78	6 NO DATA	1336
310 YES	NEW PART OF OLD 71	31B12	10 AP78 OGS	4 AP78	6 NO DATA	1046
311 YES	NEW PART OF OLD 77 & 78	31B11 31B14	13 AP78	4 AP78	6 NO DATA	1346
312 YES	NEW PART OF OLD 83	31B14	3 AP78	2 AP78	2 AP78	322
313 YES	NEW	31H06	16 AP83	1 AP83	6 NO DATA	1616

H SIDE OF HIGHWAY LODGE

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## ST. LAWRENCE RIVER

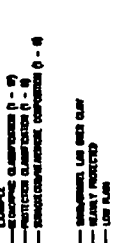


- GEOLOGIC CLASSIFICATION**
- 1. SAND (CLAY) SILT (SANDSTONE OR SILTSTONE)
  - 2. SILT (CLAY) SAND (SANDSTONE OR SILTSTONE)
  - 3. LOAM (CLAY) SILT (SANDSTONE OR SILTSTONE)
  - 4. LOAM (CLAY) SAND (SANDSTONE OR SILTSTONE)
  - 5. SANDY SILT (SANDSTONE OR SILTSTONE)
  - 6. SANDY SILT (SANDSTONE OR SILTSTONE)
  - 7. CLAYEY SILT (SANDSTONE OR SILTSTONE)
  - 8. CLAYEY SILT (SANDSTONE OR SILTSTONE)
  - 9. CLAYEY SILT (SANDSTONE OR SILTSTONE)
  - 10. CLAYEY SILT (SANDSTONE OR SILTSTONE)
  - 11. CLAYEY SILT (SANDSTONE OR SILTSTONE)
  - 12. CLAYEY SILT (SANDSTONE OR SILTSTONE)
  - 13. CLAYEY SILT (SANDSTONE OR SILTSTONE)
  - 14. CLAYEY SILT (SANDSTONE OR SILTSTONE)
  - 15. CLAYEY SILT (SANDSTONE OR SILTSTONE)
  - 16. CLAYEY SILT (SANDSTONE OR SILTSTONE)
  - 17. CLAYEY SILT (SANDSTONE OR SILTSTONE)
  - 18. CLAYEY SILT (SANDSTONE OR SILTSTONE)
  - 19. CLAYEY SILT (SANDSTONE OR SILTSTONE)
  - 20. CLAYEY SILT (SANDSTONE OR SILTSTONE)

- PROTECTION CLASSIFICATION**
- 1. HEAVILY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. SPARSE PROTECTION
  - 4. UNPROTECTED
  - 5. UNPROTECTED (SANDSTONE)
  - 6. UNPROTECTED (SANDSTONE)
  - 7. UNPROTECTED (SANDSTONE)
  - 8. UNPROTECTED (SANDSTONE)
  - 9. UNPROTECTED (SANDSTONE)
  - 10. UNPROTECTED (SANDSTONE)
  - 11. UNPROTECTED (SANDSTONE)
  - 12. UNPROTECTED (SANDSTONE)
  - 13. UNPROTECTED (SANDSTONE)
  - 14. UNPROTECTED (SANDSTONE)
  - 15. UNPROTECTED (SANDSTONE)
  - 16. UNPROTECTED (SANDSTONE)
  - 17. UNPROTECTED (SANDSTONE)
  - 18. UNPROTECTED (SANDSTONE)
  - 19. UNPROTECTED (SANDSTONE)
  - 20. UNPROTECTED (SANDSTONE)

- SUBAQUOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. SANDY SILT
  - 4. SILTY SAND
  - 5. SILTY SAND
  - 6. SILTY SAND
  - 7. SILTY SAND
  - 8. SILTY SAND
  - 9. SILTY SAND
  - 10. SILTY SAND
  - 11. SILTY SAND
  - 12. SILTY SAND
  - 13. SILTY SAND
  - 14. SILTY SAND
  - 15. SILTY SAND
  - 16. SILTY SAND
  - 17. SILTY SAND
  - 18. SILTY SAND
  - 19. SILTY SAND
  - 20. SILTY SAND

- THREE - TIER CLASSIFICATION**
- EXAMPLE CLASSIFICATION 0 - 10
- PROTECTION CLASSIFICATION 0 - 10
- COMPOSITION CLASSIFICATION 0 - 10

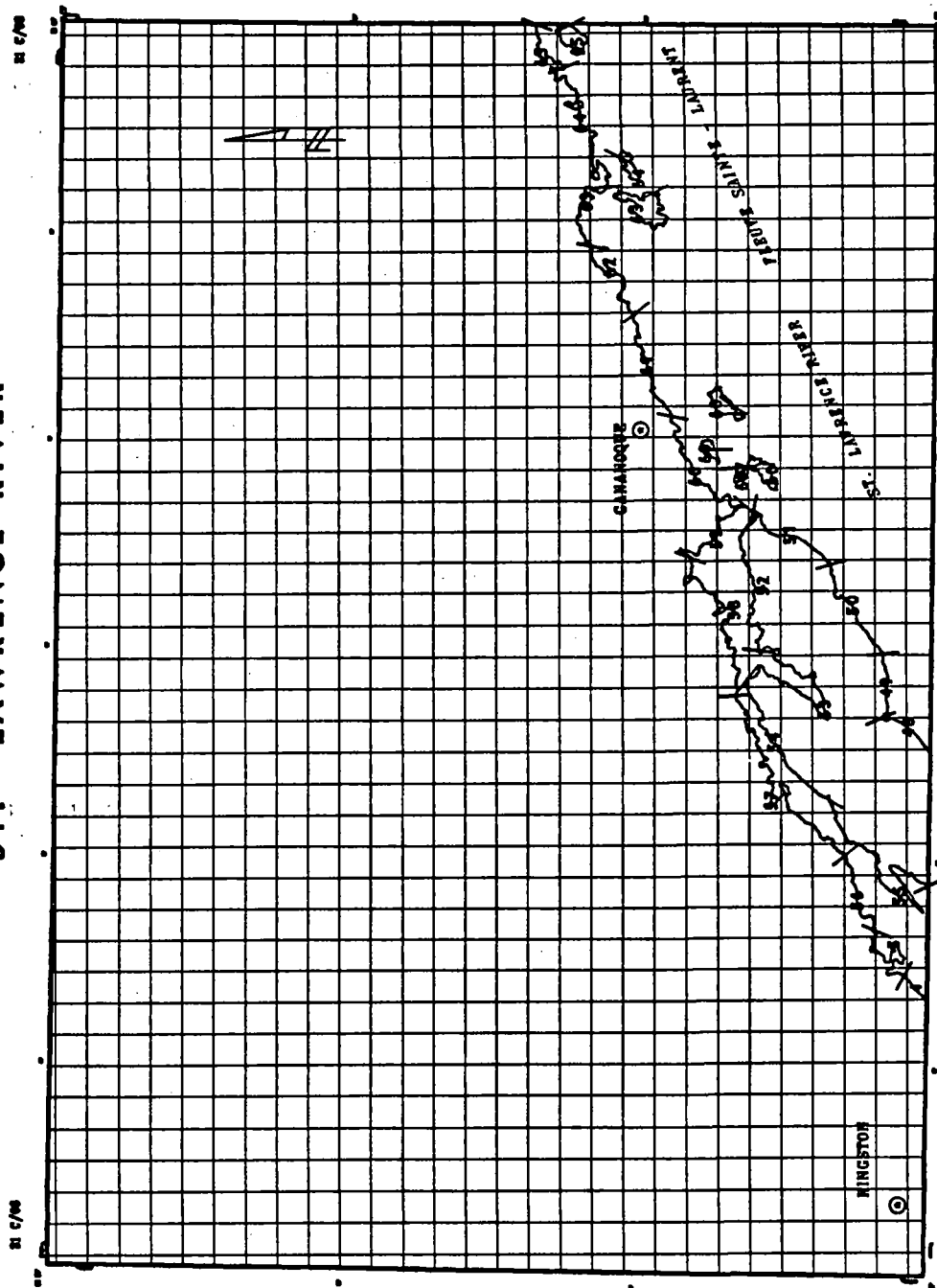
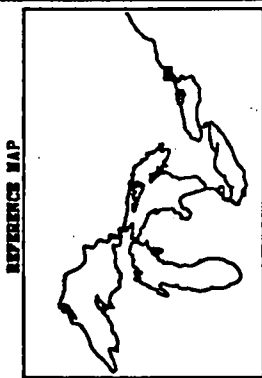






# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## ST. LAWRENCE RIVER



### GEOGRAPHIC CLASSIFICATION

- 1. 100% SAND (SIFT RESIDUE 0.075 MM)
- 2. 100% SAND (SIFT RESIDUE 0.075 MM) & GRAVEL
- 3. 100% SAND (SIFT RESIDUE 0.075 MM) & GRAVEL
- 4. 100% SAND (SIFT RESIDUE 0.075 MM) & GRAVEL
- 5. SAND & GRAVEL
- 6. SAND & GRAVEL
- 7. SAND & GRAVEL
- 8. SAND & GRAVEL
- 9. SAND & GRAVEL
- 10. SAND & GRAVEL
- 11. SAND & GRAVEL
- 12. SAND & GRAVEL
- 13. SAND & GRAVEL
- 14. SAND & GRAVEL
- 15. SAND & GRAVEL
- 16. SAND & GRAVEL
- 17. SAND & GRAVEL
- 18. SAND & GRAVEL
- 19. SAND & GRAVEL
- 20. SAND & GRAVEL
- 21. SAND & GRAVEL
- 22. SAND & GRAVEL
- 23. SAND & GRAVEL
- 24. SAND & GRAVEL
- 25. SAND & GRAVEL
- 26. SAND & GRAVEL
- 27. SAND & GRAVEL
- 28. SAND & GRAVEL
- 29. SAND & GRAVEL
- 30. SAND & GRAVEL
- 31. SAND & GRAVEL
- 32. SAND & GRAVEL
- 33. SAND & GRAVEL
- 34. SAND & GRAVEL
- 35. SAND & GRAVEL
- 36. SAND & GRAVEL
- 37. SAND & GRAVEL
- 38. SAND & GRAVEL
- 39. SAND & GRAVEL
- 40. SAND & GRAVEL
- 41. SAND & GRAVEL
- 42. SAND & GRAVEL
- 43. SAND & GRAVEL
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- 45. SAND & GRAVEL
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- 47. SAND & GRAVEL
- 48. SAND & GRAVEL
- 49. SAND & GRAVEL
- 50. SAND & GRAVEL

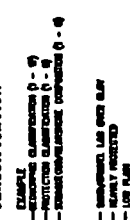
### PROTECTION CLASSIFICATION

- 1. BEACH SERVICES
- 2. BEACH SERVICES
- 3. BEACH SERVICES
- 4. BEACH SERVICES
- 5. BEACH SERVICES
- 6. BEACH SERVICES
- 7. BEACH SERVICES
- 8. BEACH SERVICES
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- 49. BEACH SERVICES
- 50. BEACH SERVICES

### SUBAQUEOUS/NEARSHORE COMPOSITION

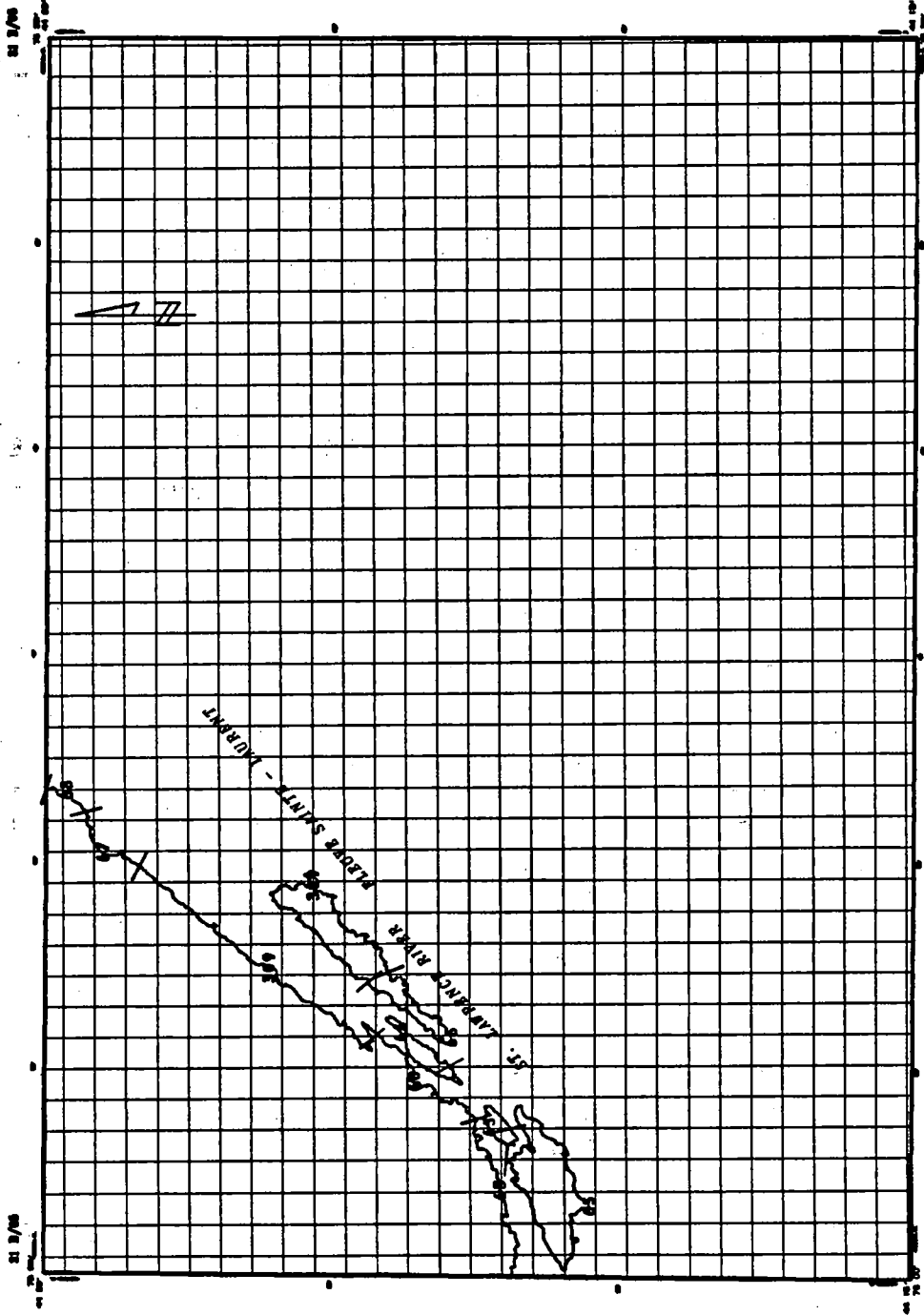
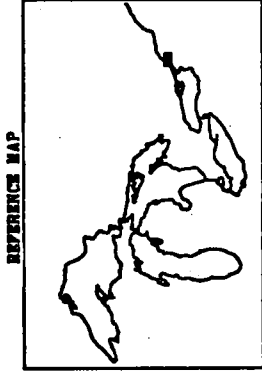
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- 49. CLAY
- 50. CLAY

### THREE - TIER CLASSIFICATION



# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## ST. LAWRENCE RIVER



**GEOLOGIC CLASSIFICATION**

1. SAND GRAVEL BAY (RESISTANCE TO ICE BEACH)
2. SAND GRAVEL BAY WITH BLACK SAND
3. SAND GRAVEL BAY WITH BLACK SAND AND CLAY
4. SAND GRAVEL BAY WITH BLACK SAND
5. SAND GRAVEL BAY WITH BLACK SAND
6. SAND GRAVEL BAY
7. SAND GRAVEL BAY
8. SAND GRAVEL BAY
9. SAND GRAVEL BAY
10. SAND GRAVEL BAY
11. SAND GRAVEL BAY
12. SAND GRAVEL BAY
13. SAND GRAVEL BAY
14. SAND GRAVEL BAY
15. SAND GRAVEL BAY
16. SAND GRAVEL BAY
17. SAND GRAVEL BAY
18. SAND GRAVEL BAY
19. SAND GRAVEL BAY
20. SAND GRAVEL BAY

**PROTECTION CLASSIFICATION**

1. HEAVY PROTECTION
2. MODERATE PROTECTION
3. LIGHT PROTECTION
4. NO PROTECTION
5. PROTECTION PENDING
6. UNCLASSIFIED
7. UNCLASSIFIED
8. UNCLASSIFIED
9. UNCLASSIFIED
10. UNCLASSIFIED
11. UNCLASSIFIED
12. UNCLASSIFIED
13. UNCLASSIFIED
14. UNCLASSIFIED
15. UNCLASSIFIED
16. UNCLASSIFIED
17. UNCLASSIFIED
18. UNCLASSIFIED
19. UNCLASSIFIED
20. UNCLASSIFIED

**SUBAQUOUS/NEARSHORE COMPOSITION**

1. CLAY
2. SAND
3. SAND/CLAY
4. SAND/CLAY
5. SAND/CLAY
6. SAND/CLAY
7. SAND/CLAY
8. SAND/CLAY
9. SAND/CLAY
10. SAND/CLAY
11. SAND/CLAY
12. SAND/CLAY
13. SAND/CLAY
14. SAND/CLAY
15. SAND/CLAY
16. SAND/CLAY
17. SAND/CLAY
18. SAND/CLAY
19. SAND/CLAY
20. SAND/CLAY

**THREE - TIER CLASSIFICATION**

EXAMPLE: (1-2) (3-4) (5-6) (7-8) (9-10) (11-12) (13-14) (15-16) (17-18) (19-20)

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**UNCLASSIFIED**

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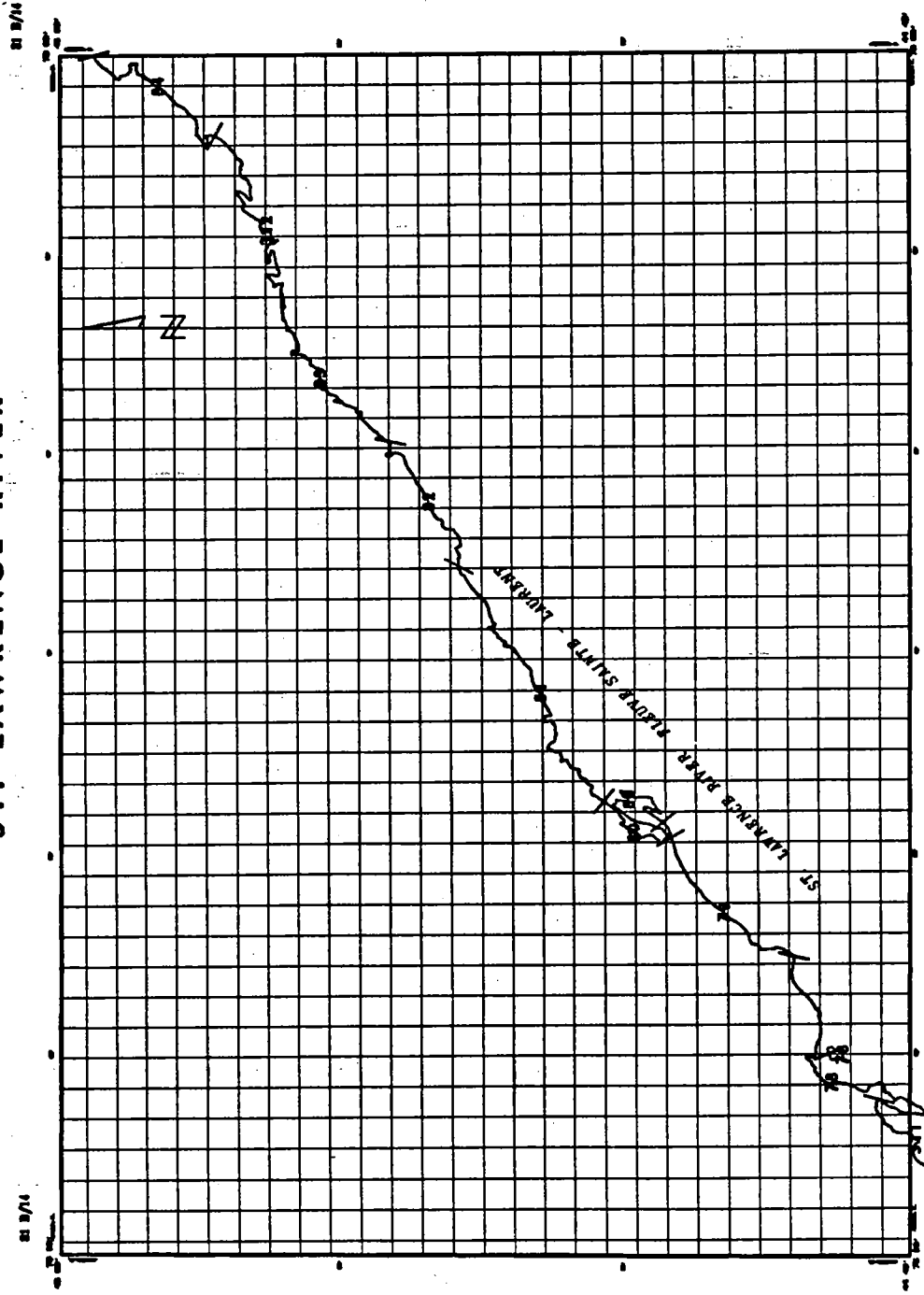
MALLORYTOWN  
ONTARIO  
Scale 1 : 50 000 Meters



21 9/78  
1992



# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION ST. LAWRENCE RIVER



**GEOMORPHIC CLASSIFICATION**

- 1. HIGH CLAY BARRIER ON BEACH
- 2. HIGH CLAY BARRIER WITH SAND DUNE
- 3. LOW CLAY BARRIER WITH SAND DUNE
- 4. LOW CLAY BARRIER WITH SAND DUNE
- 5. CLAY BANK
- 6. SAND SPIT
- 7. SAND SPIT WITH SAND DUNE
- 8. SAND SPIT WITH SAND DUNE
- 9. SAND SPIT WITH SAND DUNE
- 10. SAND SPIT WITH SAND DUNE
- 11. SAND SPIT WITH SAND DUNE
- 12. SAND SPIT WITH SAND DUNE
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- 16. SAND SPIT WITH SAND DUNE
- 17. SAND SPIT WITH SAND DUNE
- 18. SAND SPIT WITH SAND DUNE
- 19. SAND SPIT WITH SAND DUNE
- 20. SAND SPIT WITH SAND DUNE

**PROTECTION CLASSIFICATION**

- 1. FULLY PROTECTED
- 2. PARTIALLY PROTECTED
- 3. NO PROTECTION
- 4. NO PROTECTION
- 5. NO PROTECTION
- 6. NO PROTECTION
- 7. NO PROTECTION
- 8. NO PROTECTION
- 9. NO PROTECTION
- 10. NO PROTECTION
- 11. NO PROTECTION
- 12. NO PROTECTION
- 13. NO PROTECTION
- 14. NO PROTECTION
- 15. NO PROTECTION
- 16. NO PROTECTION
- 17. NO PROTECTION
- 18. NO PROTECTION
- 19. NO PROTECTION
- 20. NO PROTECTION

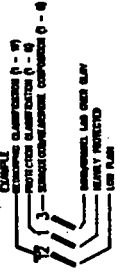
**SUBAQUEOUS/NEARSHORE COMPOSITION**

- 1. CLAY
- 2. SAND
- 3. SAND
- 4. SAND
- 5. SAND
- 6. SAND
- 7. SAND
- 8. SAND
- 9. SAND
- 10. SAND
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- 20. SAND

**TIER CLASSIFICATION**

CLASSIFICATION

- 1. TIER CLASSIFICATION
- 2. TIER CLASSIFICATION
- 3. TIER CLASSIFICATION
- 4. TIER CLASSIFICATION
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- 6. TIER CLASSIFICATION
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- 20. TIER CLASSIFICATION



MORRISBURG  
ONTARIO  
Scale 1:50,000  
MORRISBURG, ONTARIO

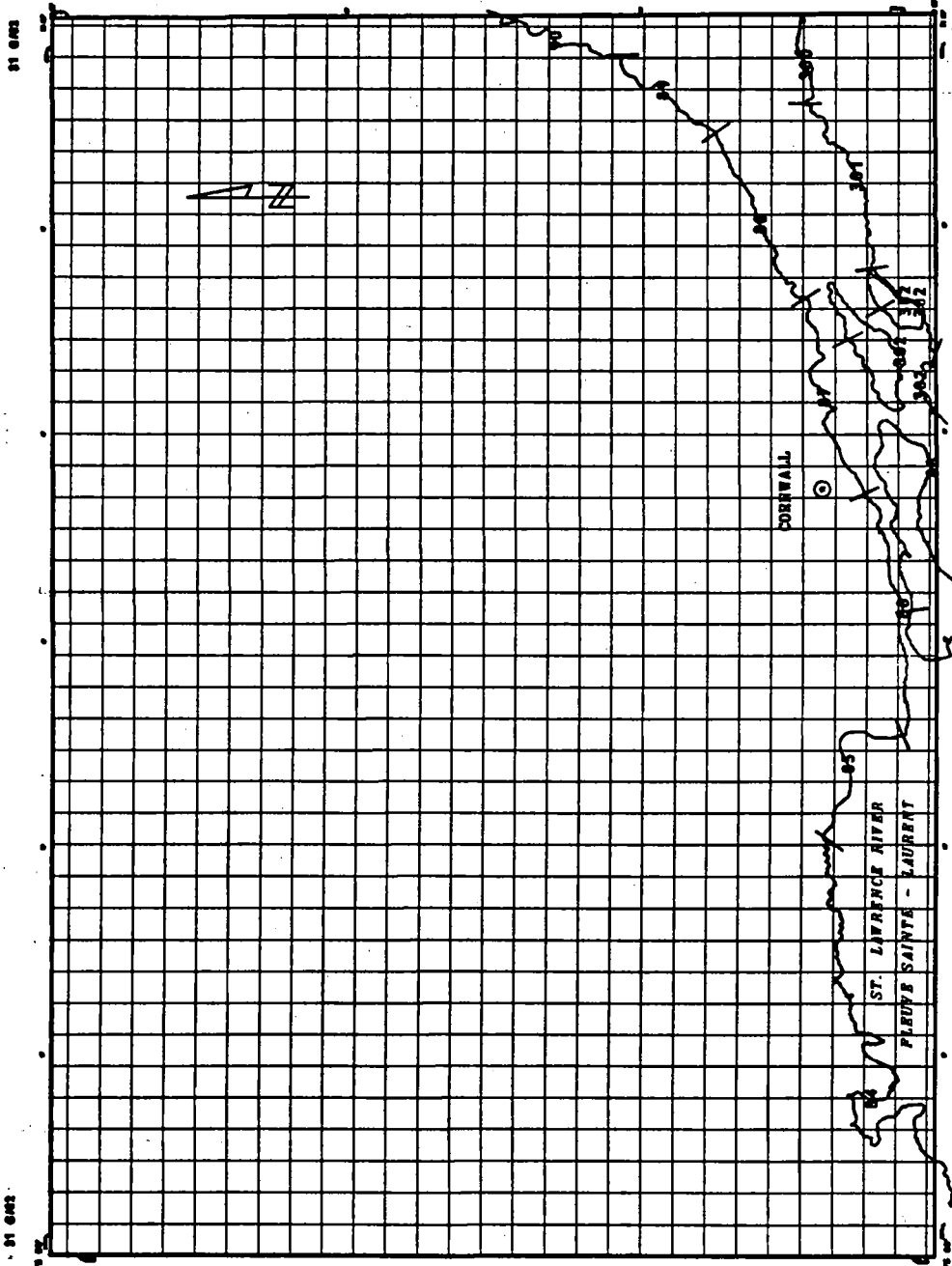


Canadian International  
1976  
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MORRISBURG, ONTARIO

01 9/76  
1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## ST. LAWRENCE RIVER



### SEDIMENT CLASSIFICATION

- 1. HIGH CLAY CONTENT (CLAY > 50%)
- 2. HIGH CLAY CONTENT (CLAY 30-50%)
- 3. LOW CLAY CONTENT (CLAY 10-30%)
- 4. SANDY SILT (SILT > 50%)
- 5. SILTY SAND (SAND > 50%)
- 6. SANDY SILT (SILT > 50%)
- 7. SILTY SAND (SAND > 50%)
- 8. SANDY SILT (SILT > 50%)
- 9. SANDY SILT (SILT > 50%)
- 10. SANDY SILT (SILT > 50%)
- 11. SANDY SILT (SILT > 50%)
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- 46. SANDY SILT (SILT > 50%)
- 47. SANDY SILT (SILT > 50%)
- 48. SANDY SILT (SILT > 50%)
- 49. SANDY SILT (SILT > 50%)
- 50. SANDY SILT (SILT > 50%)

### PROTECTION CLASSIFICATION

- 1. HEAVY PROTECTED
- 2. MODERATE PROTECTED
- 3. LIGHT PROTECTED
- 4. PROTECTED
- 5. UNPROTECTED
- 6. UNPROTECTED
- 7. UNPROTECTED
- 8. UNPROTECTED
- 9. UNPROTECTED
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- 46. UNPROTECTED
- 47. UNPROTECTED
- 48. UNPROTECTED
- 49. UNPROTECTED
- 50. UNPROTECTED

### SUBAQUEOUS/NEARSHORE COMPOSITION

- 1. CLAY
- 2. SAND
- 3. SANDY SILT
- 4. SILTY SAND
- 5. SILT
- 6. SILTY CLAY
- 7. CLAY
- 8. SAND
- 9. SANDY SILT
- 10. SILTY SAND
- 11. SILT
- 12. SILTY CLAY
- 13. CLAY
- 14. SAND
- 15. SANDY SILT
- 16. SILTY SAND
- 17. SILT
- 18. SILTY CLAY
- 19. CLAY
- 20. SAND
- 21. SANDY SILT
- 22. SILTY SAND
- 23. SILT
- 24. SILTY CLAY
- 25. CLAY
- 26. SAND
- 27. SANDY SILT
- 28. SILTY SAND
- 29. SILT
- 30. SILTY CLAY
- 31. CLAY
- 32. SAND
- 33. SANDY SILT
- 34. SILTY SAND
- 35. SILT
- 36. SILTY CLAY
- 37. CLAY
- 38. SAND
- 39. SANDY SILT
- 40. SILTY SAND
- 41. SILT
- 42. SILTY CLAY
- 43. CLAY
- 44. SAND
- 45. SANDY SILT
- 46. SILTY SAND
- 47. SILT
- 48. SILTY CLAY
- 49. CLAY
- 50. SAND

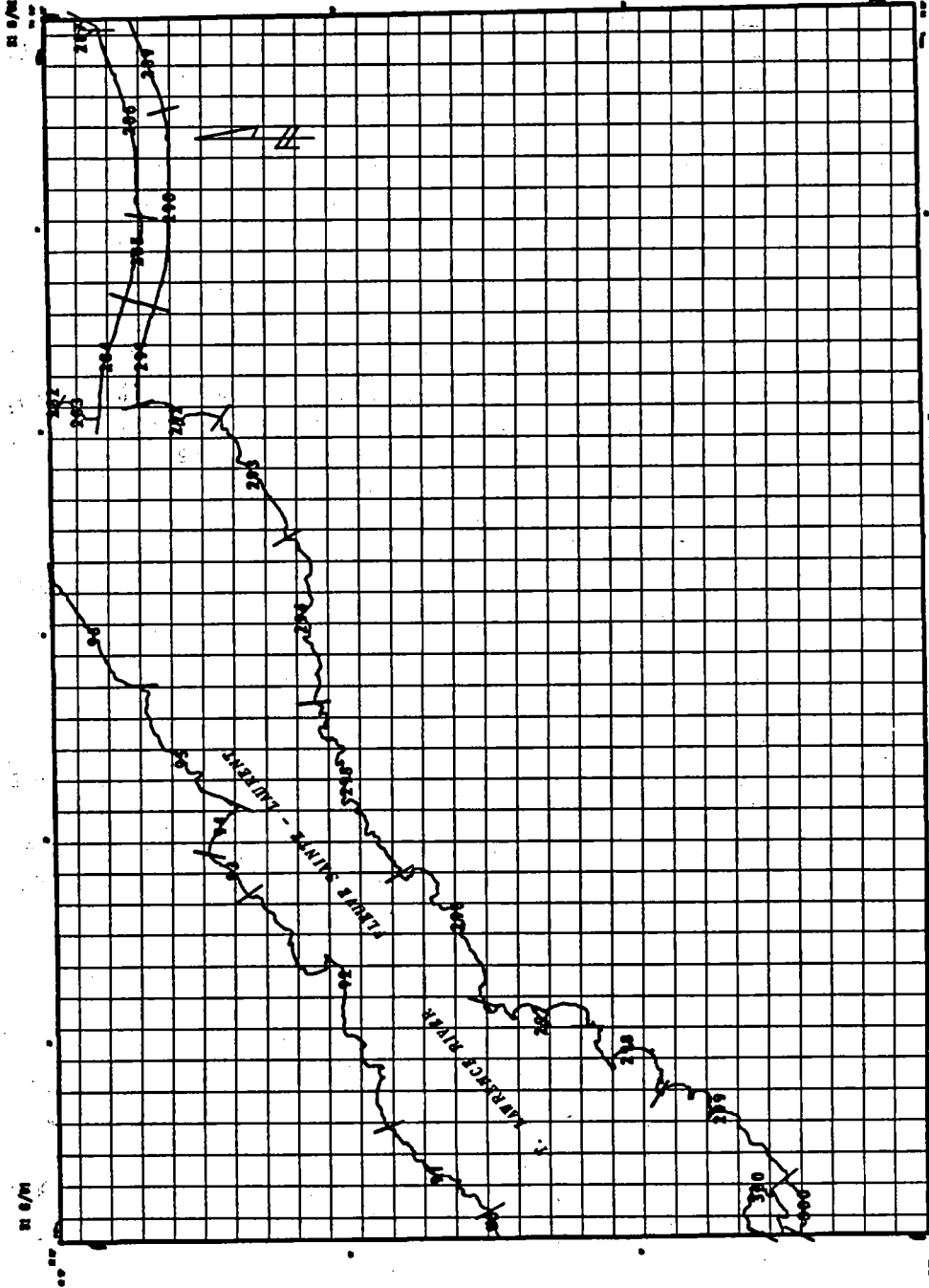
### THREE - TIER CLASSIFICATION

- EXAMPLE
- 1. PROTECTED CLASSIFICATION (1-4)
  - 2. PROTECTED CLASSIFICATION (1-4)
  - 3. PROTECTED CLASSIFICATION (1-4)
  - 4. PROTECTED CLASSIFICATION (1-4)
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  - 47. PROTECTED CLASSIFICATION (1-4)
  - 48. PROTECTED CLASSIFICATION (1-4)
  - 49. PROTECTED CLASSIFICATION (1-4)
  - 50. PROTECTED CLASSIFICATION (1-4)

CORNWALL  
 Scale 1:1,000,000  
 1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## ST. LAWRENCE RIVER



### GEOGRAPHIC CLASSIFICATION

- 1. SAND BEACH
- 2. SAND BEACH WITH GRASS
- 3. SAND BEACH WITH GRASS (WET)
- 4. SAND BEACH WITH GRASS (WET) WITH SAND PILES
- 5. SAND BEACH WITH GRASS (WET) WITH SAND PILES (WET)
- 6. SAND BEACH WITH GRASS (WET) WITH SAND PILES (WET) WITH SAND PILES
- 7. SAND BEACH WITH GRASS (WET) WITH SAND PILES (WET) WITH SAND PILES (WET)
- 8. SAND BEACH WITH GRASS (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES
- 9. SAND BEACH WITH GRASS (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET)
- 10. SAND BEACH WITH GRASS (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES
- 11. SAND BEACH WITH GRASS (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET)
- 12. SAND BEACH WITH GRASS (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES
- 13. SAND BEACH WITH GRASS (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET)
- 14. SAND BEACH WITH GRASS (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES
- 15. SAND BEACH WITH GRASS (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET)
- 16. SAND BEACH WITH GRASS (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES
- 17. SAND BEACH WITH GRASS (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET)
- 18. SAND BEACH WITH GRASS (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES
- 19. SAND BEACH WITH GRASS (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET)
- 20. SAND BEACH WITH GRASS (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES (WET) WITH SAND PILES

### PROTECTION CLASSIFICATION

- 1. NEARLY PROTECTED
- 2. PROTECTED
- 3. PARTIALLY PROTECTED
- 4. PROTECTED
- 5. PROTECTED
- 6. PROTECTED
- 7. PROTECTED
- 8. PROTECTED
- 9. PROTECTED
- 10. PROTECTED
- 11. PROTECTED
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- 16. PROTECTED
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- 18. PROTECTED
- 19. PROTECTED
- 20. PROTECTED

### SUBAQUOUS/NEARSHORE COMPOSITION

- 1. SAND
- 2. SAND
- 3. SAND
- 4. SAND
- 5. SAND
- 6. SAND
- 7. SAND
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- 20. SAND

### THREE - TIER CLASSIFICATION

- 1. TIER 1
- 2. TIER 2
- 3. TIER 3
- 4. TIER 4
- 5. TIER 5
- 6. TIER 6
- 7. TIER 7
- 8. TIER 8
- 9. TIER 9
- 10. TIER 10
- 11. TIER 11
- 12. TIER 12
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- 14. TIER 14
- 15. TIER 15
- 16. TIER 16
- 17. TIER 17
- 18. TIER 18
- 19. TIER 19
- 20. TIER 20



HUNTINGDON

ONTARIO

Scale 1:100,000

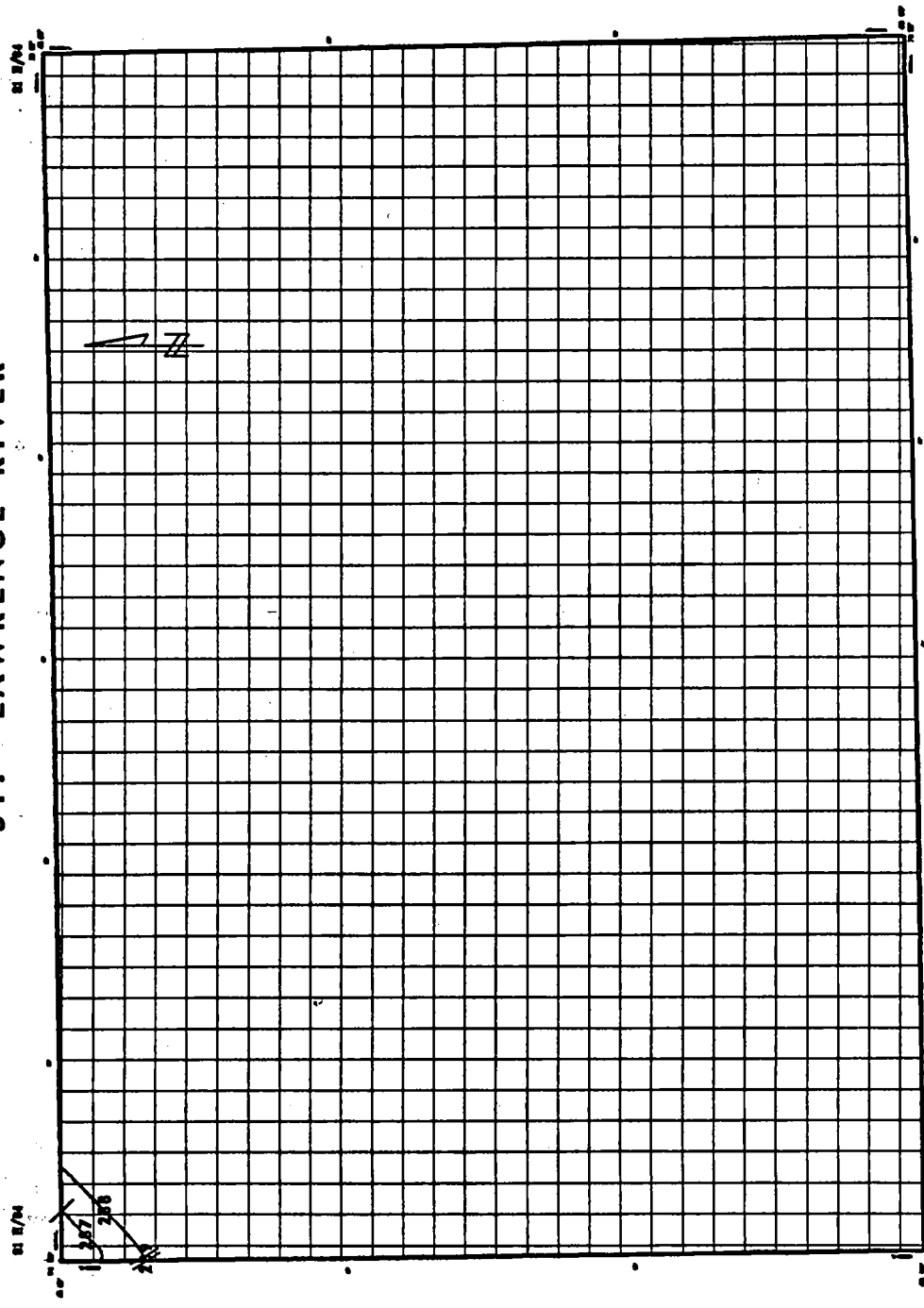


Geomatics International  
1997, Inc.  
1000  
1000

A135

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## ST. LAWRENCE RIVER



- GEOGRAPHIC CLASSIFICATION**
- 1. 100 (100%) SAND
  - 2. 75 (75%) SAND
  - 3. 50 (50%) SAND
  - 4. 25 (25%) SAND
  - 5. 0 (0%) SAND
  - 6. 100 (100%) SILT
  - 7. 75 (75%) SILT
  - 8. 50 (50%) SILT
  - 9. 25 (25%) SILT
  - 10. 0 (0%) SILT
  - 11. 100 (100%) CLAY
  - 12. 75 (75%) CLAY
  - 13. 50 (50%) CLAY
  - 14. 25 (25%) CLAY
  - 15. 0 (0%) CLAY
  - 16. 100 (100%) GRAVEL
  - 17. 75 (75%) GRAVEL
  - 18. 50 (50%) GRAVEL
  - 19. 25 (25%) GRAVEL
  - 20. 0 (0%) GRAVEL
  - 21. 100 (100%) COBBLES
  - 22. 75 (75%) COBBLES
  - 23. 50 (50%) COBBLES
  - 24. 25 (25%) COBBLES
  - 25. 0 (0%) COBBLES
  - 26. 100 (100%) Boulders
  - 27. 75 (75%) Boulders
  - 28. 50 (50%) Boulders
  - 29. 25 (25%) Boulders
  - 30. 0 (0%) Boulders
- PROTECTION CLASSIFICATION**
- 1. 100% PROTECTED
  - 2. 75% PROTECTED
  - 3. 50% PROTECTED
  - 4. 25% PROTECTED
  - 5. 0% PROTECTED
  - 6. 100% UNPROTECTED
  - 7. 75% UNPROTECTED
  - 8. 50% UNPROTECTED
  - 9. 25% UNPROTECTED
  - 10. 0% UNPROTECTED
- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. 100% SAND
  - 2. 75% SAND
  - 3. 50% SAND
  - 4. 25% SAND
  - 5. 0% SAND
  - 6. 100% SILT
  - 7. 75% SILT
  - 8. 50% SILT
  - 9. 25% SILT
  - 10. 0% SILT
  - 11. 100% CLAY
  - 12. 75% CLAY
  - 13. 50% CLAY
  - 14. 25% CLAY
  - 15. 0% CLAY
  - 16. 100% GRAVEL
  - 17. 75% GRAVEL
  - 18. 50% GRAVEL
  - 19. 25% GRAVEL
  - 20. 0% GRAVEL
  - 21. 100% COBBLES
  - 22. 75% COBBLES
  - 23. 50% COBBLES
  - 24. 25% COBBLES
  - 25. 0% COBBLES
  - 26. 100% Boulders
  - 27. 75% Boulders
  - 28. 50% Boulders
  - 29. 25% Boulders
  - 30. 0% Boulders
- TIER CLASSIFICATION**
- 1. 100% TIER 1
  - 2. 75% TIER 1
  - 3. 50% TIER 1
  - 4. 25% TIER 1
  - 5. 0% TIER 1
  - 6. 100% TIER 2
  - 7. 75% TIER 2
  - 8. 50% TIER 2
  - 9. 25% TIER 2
  - 10. 0% TIER 2
  - 11. 100% TIER 3
  - 12. 75% TIER 3
  - 13. 50% TIER 3
  - 14. 25% TIER 3
  - 15. 0% TIER 3
- EXAMPLE**
- 1. 100% SAND
  - 2. 75% SAND
  - 3. 50% SAND
  - 4. 25% SAND
  - 5. 0% SAND
  - 6. 100% SILT
  - 7. 75% SILT
  - 8. 50% SILT
  - 9. 25% SILT
  - 10. 0% SILT
  - 11. 100% CLAY
  - 12. 75% CLAY
  - 13. 50% CLAY
  - 14. 25% CLAY
  - 15. 0% CLAY
  - 16. 100% GRAVEL
  - 17. 75% GRAVEL
  - 18. 50% GRAVEL
  - 19. 25% GRAVEL
  - 20. 0% GRAVEL
  - 21. 100% COBBLES
  - 22. 75% COBBLES
  - 23. 50% COBBLES
  - 24. 25% COBBLES
  - 25. 0% COBBLES
  - 26. 100% Boulders
  - 27. 75% Boulders
  - 28. 50% Boulders
  - 29. 25% Boulders
  - 30. 0% Boulders

SI 8/74  
1992

SAINTE-CHRYSOSTOME

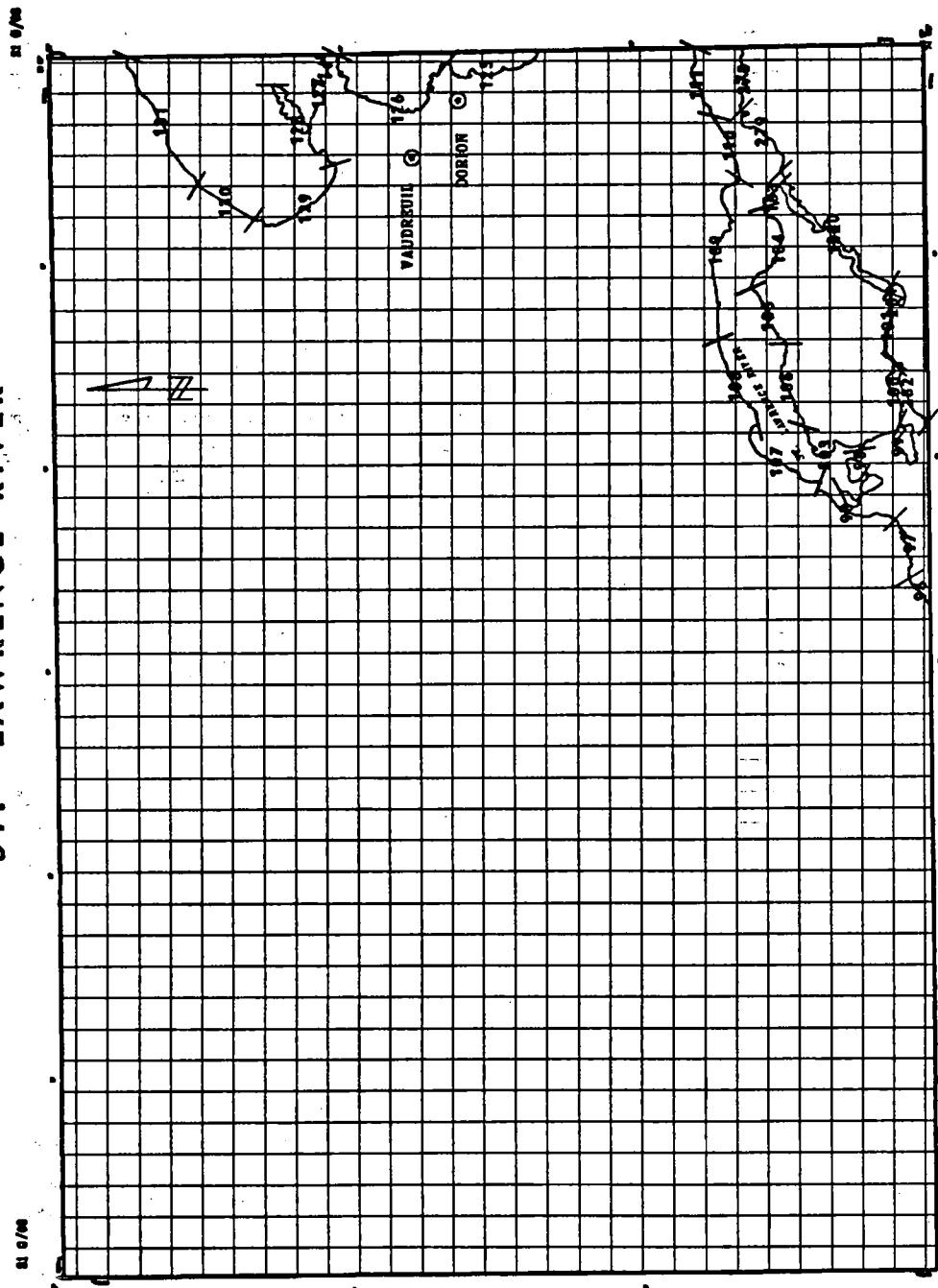
ONTARIO  
Scale 1:50,000 Graphically  
VERTICAL DATUM: CANADIAN DATUM 1985



Geospatial International  
1000  
1000  
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1000

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## ST. LAWRENCE RIVER



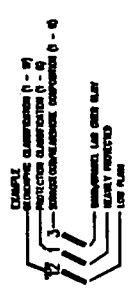
- GEOMORPHIC CLASSIFICATION**
- 1. HIGH CLIFF (CLIFF WITH MORE THAN 10% SLOPE)
  - 2. LOW CLIFF (CLIFF WITH 10% TO 20% SLOPE)
  - 3. LOW (LOW CLIFF WITH 20% TO 40% SLOPE)
  - 4. FLAT (FLAT WITH 40% TO 60% SLOPE)
  - 5. SANDY BEACHES
  - 6. SANDY POINTS
  - 7. SANDY SPITS
  - 8. SANDY PENINSULAS
  - 9. SANDY BAY HEADS
  - 10. SANDY BAY HEADS WITH POINTS
  - 11. SANDY BAY HEADS WITH POINTS AND SPITS
  - 12. SANDY BAY HEADS WITH POINTS AND SPITS AND PENINSULAS
  - 13. SANDY BAY HEADS WITH POINTS AND SPITS AND PENINSULAS AND BAY HEADS
  - 14. SANDY BAY HEADS WITH POINTS AND SPITS AND PENINSULAS AND BAY HEADS AND SANDY BAY HEADS
  - 15. SANDY BAY HEADS WITH POINTS AND SPITS AND PENINSULAS AND BAY HEADS AND SANDY BAY HEADS AND SANDY BAY HEADS
  - 16. SANDY BAY HEADS WITH POINTS AND SPITS AND PENINSULAS AND BAY HEADS AND SANDY BAY HEADS AND SANDY BAY HEADS AND SANDY BAY HEADS
  - 17. SANDY BAY HEADS WITH POINTS AND SPITS AND PENINSULAS AND BAY HEADS AND SANDY BAY HEADS AND SANDY BAY HEADS AND SANDY BAY HEADS
  - 18. SANDY BAY HEADS WITH POINTS AND SPITS AND PENINSULAS AND BAY HEADS AND SANDY BAY HEADS AND SANDY BAY HEADS AND SANDY BAY HEADS
  - 19. SANDY BAY HEADS WITH POINTS AND SPITS AND PENINSULAS AND BAY HEADS AND SANDY BAY HEADS AND SANDY BAY HEADS AND SANDY BAY HEADS
  - 20. SANDY BAY HEADS WITH POINTS AND SPITS AND PENINSULAS AND BAY HEADS AND SANDY BAY HEADS AND SANDY BAY HEADS AND SANDY BAY HEADS

- PROTECTION CLASSIFICATION**
- 1. FULLY PROTECTED
  - 2. PARTIALLY PROTECTED
  - 3. UNPROTECTED
  - 4. PROTECTABLE
  - 5. NON-PROTECTABLE
  - 6. UNCLASSIFIED

**SUBAQUEOUS/NEARSHORE COMPOSITION**

- 1. CLAY
- 2. SILT
- 3. SAND
- 4. GRAVEL
- 5. SAND AND GRAVEL
- 6. SAND AND GRAVEL AND SILT
- 7. SAND AND GRAVEL AND SILT AND CLAY
- 8. SAND AND GRAVEL AND SILT AND CLAY AND GRAVEL
- 9. SAND AND GRAVEL AND SILT AND CLAY AND GRAVEL AND SAND
- 10. SAND AND GRAVEL AND SILT AND CLAY AND GRAVEL AND SAND AND SAND

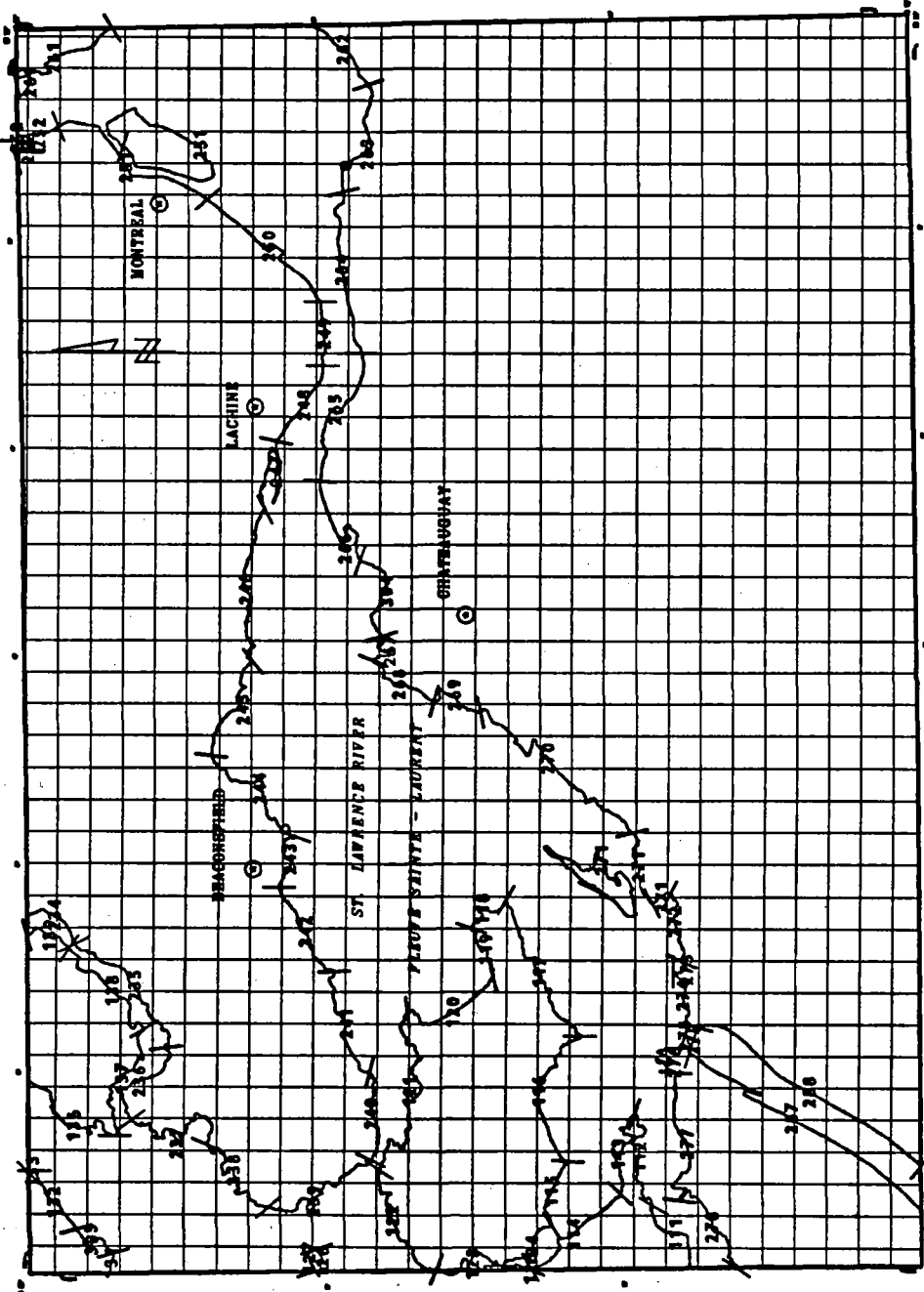
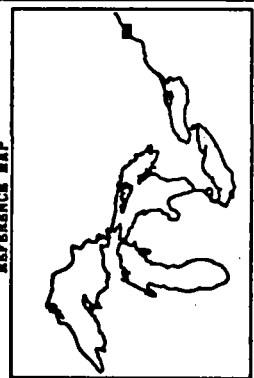
**THREE - TIER CLASSIFICATION**





# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## ST. LAWRENCE RIVER



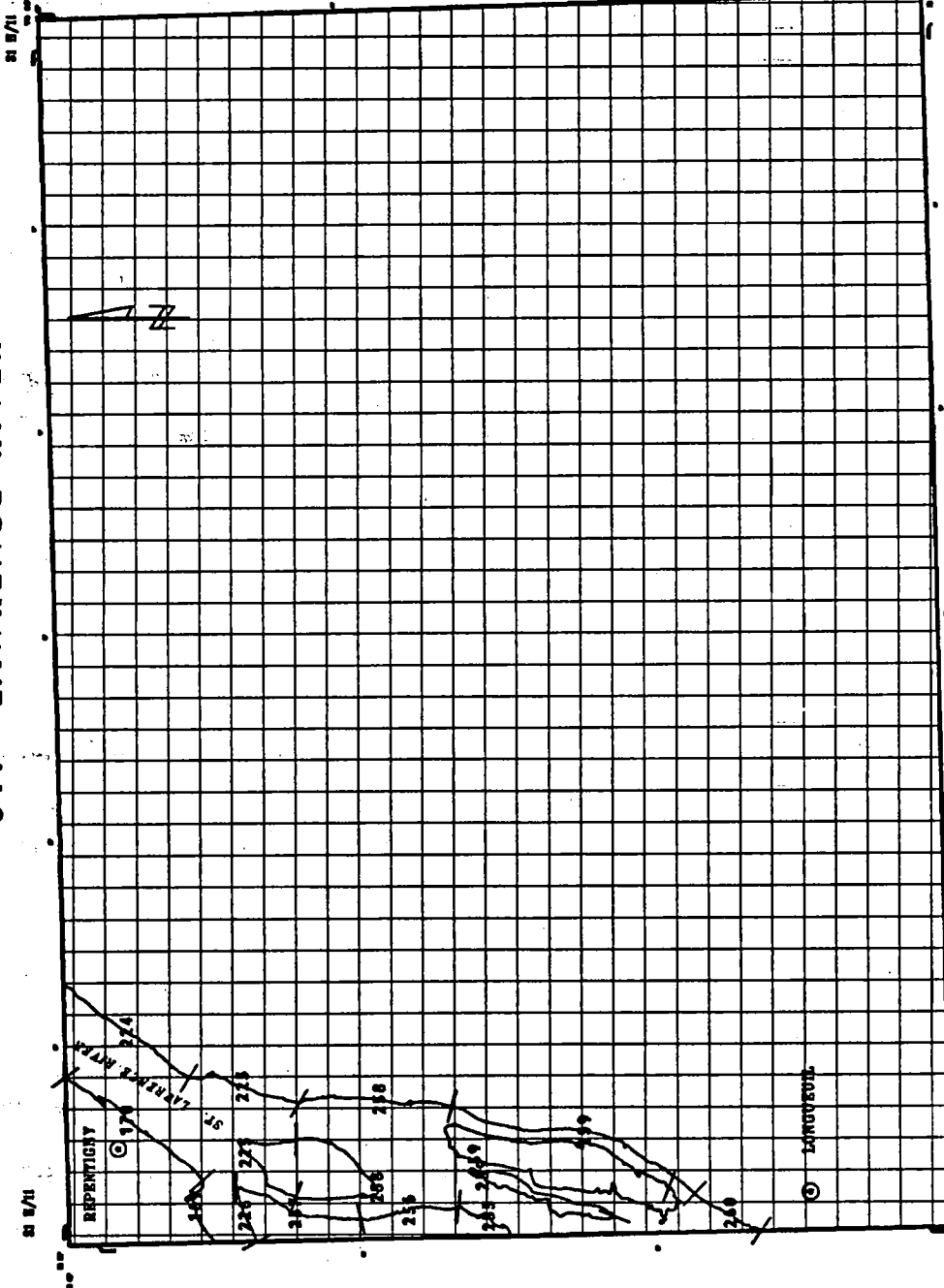
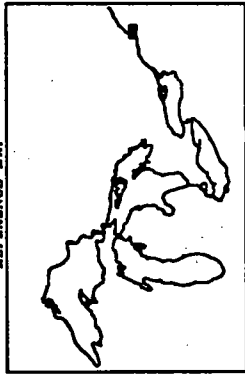
- BIOMORPHIC CLASSIFICATION**
- 1. HIGH (LOW) RIFT SUBSTRATE AND SOIL
  - 2. LOW (HIGH) RIFT SUBSTRATE AND SOIL
  - 3. LOW (HIGH) RIFT WITH SAND (SAND)
  - 4. SAND (SAND)
  - 5. SAND (SAND)
  - 6. SAND (SAND)
  - 7. SAND (SAND)
  - 8. SAND (SAND)
  - 9. SAND (SAND)
  - 10. SAND (SAND)
  - 11. SAND (SAND)
  - 12. SAND (SAND)
  - 13. SAND (SAND)
  - 14. SAND (SAND)
  - 15. SAND (SAND)
  - 16. SAND (SAND)
  - 17. SAND (SAND)
  - 18. SAND (SAND)
  - 19. SAND (SAND)
  - 20. SAND (SAND)
- PROTECTION CLASSIFICATION**
- 1. FULLY PROTECTED
  - 2. PARTIALLY PROTECTED
  - 3. NO PROTECTION
  - 4. PROTECTIVE STRUCTURE
  - 5. PROTECTIVE STRUCTURE
  - 6. PROTECTIVE STRUCTURE
  - 7. PROTECTIVE STRUCTURE
  - 8. PROTECTIVE STRUCTURE
  - 9. PROTECTIVE STRUCTURE
  - 10. PROTECTIVE STRUCTURE
- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. SAND
  - 4. SAND
  - 5. SAND
  - 6. SAND
  - 7. SAND
  - 8. SAND
  - 9. SAND
  - 10. SAND
- THREE - TIER CLASSIFICATION**
- EXAMPLE
- 1. CLASSIFICATION (0 - 9)
  - 2. PROTECTION CLASSIFICATION (0 - 9)
  - 3. SUBAQUEOUS/NEARSHORE COMPOSITION (0 - 9)



LACHINE  
ONTARIO  
Scale 1:100,000  
SHEET NO. 31 8195

Geomatics International  
1000  
1000  
1000

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION ST. LAWRENCE RIVER



**GEOMORPHIC CLASSIFICATION**

- 1. HIGH POINT BAY (CONCRETE OR SOIL)
- 2. HIGH POINT BAY (GRAVEL OR SAND)
- 3. HIGH POINT BAY (SILT OR CLAY)
- 4. LOW POINT BAY (CONCRETE OR SOIL)
- 5. LOW POINT BAY (GRAVEL OR SAND)
- 6. LOW POINT BAY (SILT OR CLAY)
- 7. CLAY BANK
- 8. CLAY BANK (CONCRETE OR SOIL)
- 9. CLAY BANK (GRAVEL OR SAND)
- 10. CLAY BANK (SILT OR CLAY)
- 11. CLAY BANK (CONCRETE OR SOIL)
- 12. CLAY BANK (GRAVEL OR SAND)
- 13. CLAY BANK (SILT OR CLAY)
- 14. CLAY BANK (CONCRETE OR SOIL)
- 15. CLAY BANK (GRAVEL OR SAND)
- 16. CLAY BANK (SILT OR CLAY)
- 17. CLAY BANK (CONCRETE OR SOIL)
- 18. CLAY BANK (GRAVEL OR SAND)
- 19. CLAY BANK (SILT OR CLAY)
- 20. CLAY BANK (CONCRETE OR SOIL)
- 21. CLAY BANK (GRAVEL OR SAND)
- 22. CLAY BANK (SILT OR CLAY)
- 23. CLAY BANK (CONCRETE OR SOIL)
- 24. CLAY BANK (GRAVEL OR SAND)
- 25. CLAY BANK (SILT OR CLAY)
- 26. CLAY BANK (CONCRETE OR SOIL)
- 27. CLAY BANK (GRAVEL OR SAND)
- 28. CLAY BANK (SILT OR CLAY)
- 29. CLAY BANK (CONCRETE OR SOIL)
- 30. CLAY BANK (GRAVEL OR SAND)
- 31. CLAY BANK (SILT OR CLAY)
- 32. CLAY BANK (CONCRETE OR SOIL)
- 33. CLAY BANK (GRAVEL OR SAND)
- 34. CLAY BANK (SILT OR CLAY)
- 35. CLAY BANK (CONCRETE OR SOIL)
- 36. CLAY BANK (GRAVEL OR SAND)
- 37. CLAY BANK (SILT OR CLAY)
- 38. CLAY BANK (CONCRETE OR SOIL)
- 39. CLAY BANK (GRAVEL OR SAND)
- 40. CLAY BANK (SILT OR CLAY)
- 41. CLAY BANK (CONCRETE OR SOIL)
- 42. CLAY BANK (GRAVEL OR SAND)
- 43. CLAY BANK (SILT OR CLAY)
- 44. CLAY BANK (CONCRETE OR SOIL)
- 45. CLAY BANK (GRAVEL OR SAND)
- 46. CLAY BANK (SILT OR CLAY)
- 47. CLAY BANK (CONCRETE OR SOIL)
- 48. CLAY BANK (GRAVEL OR SAND)
- 49. CLAY BANK (SILT OR CLAY)
- 50. CLAY BANK (CONCRETE OR SOIL)
- 51. CLAY BANK (GRAVEL OR SAND)
- 52. CLAY BANK (SILT OR CLAY)
- 53. CLAY BANK (CONCRETE OR SOIL)
- 54. CLAY BANK (GRAVEL OR SAND)
- 55. CLAY BANK (SILT OR CLAY)
- 56. CLAY BANK (CONCRETE OR SOIL)
- 57. CLAY BANK (GRAVEL OR SAND)
- 58. CLAY BANK (SILT OR CLAY)
- 59. CLAY BANK (CONCRETE OR SOIL)
- 60. CLAY BANK (GRAVEL OR SAND)
- 61. CLAY BANK (SILT OR CLAY)
- 62. CLAY BANK (CONCRETE OR SOIL)
- 63. CLAY BANK (GRAVEL OR SAND)
- 64. CLAY BANK (SILT OR CLAY)
- 65. CLAY BANK (CONCRETE OR SOIL)
- 66. CLAY BANK (GRAVEL OR SAND)
- 67. CLAY BANK (SILT OR CLAY)
- 68. CLAY BANK (CONCRETE OR SOIL)
- 69. CLAY BANK (GRAVEL OR SAND)
- 70. CLAY BANK (SILT OR CLAY)
- 71. CLAY BANK (CONCRETE OR SOIL)
- 72. CLAY BANK (GRAVEL OR SAND)
- 73. CLAY BANK (SILT OR CLAY)
- 74. CLAY BANK (CONCRETE OR SOIL)
- 75. CLAY BANK (GRAVEL OR SAND)
- 76. CLAY BANK (SILT OR CLAY)
- 77. CLAY BANK (CONCRETE OR SOIL)
- 78. CLAY BANK (GRAVEL OR SAND)
- 79. CLAY BANK (SILT OR CLAY)
- 80. CLAY BANK (CONCRETE OR SOIL)
- 81. CLAY BANK (GRAVEL OR SAND)
- 82. CLAY BANK (SILT OR CLAY)
- 83. CLAY BANK (CONCRETE OR SOIL)
- 84. CLAY BANK (GRAVEL OR SAND)
- 85. CLAY BANK (SILT OR CLAY)
- 86. CLAY BANK (CONCRETE OR SOIL)
- 87. CLAY BANK (GRAVEL OR SAND)
- 88. CLAY BANK (SILT OR CLAY)
- 89. CLAY BANK (CONCRETE OR SOIL)
- 90. CLAY BANK (GRAVEL OR SAND)
- 91. CLAY BANK (SILT OR CLAY)
- 92. CLAY BANK (CONCRETE OR SOIL)
- 93. CLAY BANK (GRAVEL OR SAND)
- 94. CLAY BANK (SILT OR CLAY)
- 95. CLAY BANK (CONCRETE OR SOIL)
- 96. CLAY BANK (GRAVEL OR SAND)
- 97. CLAY BANK (SILT OR CLAY)
- 98. CLAY BANK (CONCRETE OR SOIL)
- 99. CLAY BANK (GRAVEL OR SAND)
- 100. CLAY BANK (SILT OR CLAY)

**PROTECTION CLASSIFICATION**

- 1. NEARLY PROTECTED
- 2. NEARLY PROTECTED
- 3. NEARLY PROTECTED
- 4. NEARLY PROTECTED
- 5. NEARLY PROTECTED
- 6. NEARLY PROTECTED
- 7. NEARLY PROTECTED
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- 10. NEARLY PROTECTED
- 11. NEARLY PROTECTED
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- 98. NEARLY PROTECTED
- 99. NEARLY PROTECTED
- 100. NEARLY PROTECTED

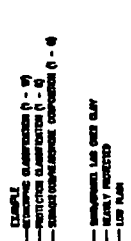
**SUBAQUEOUS/NEARSHORE COMPOSITION**

- 1. CLAY
- 2. CLAY
- 3. CLAY
- 4. CLAY
- 5. CLAY
- 6. CLAY
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- 99. CLAY
- 100. CLAY

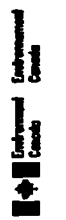
**THREE - TIER CLASSIFICATION**

EXAMPLE

1. NEARLY PROTECTED (N-1)  
2. NEARLY PROTECTED (N-2)  
3. NEARLY PROTECTED (N-3)



SI 8/11  
1992



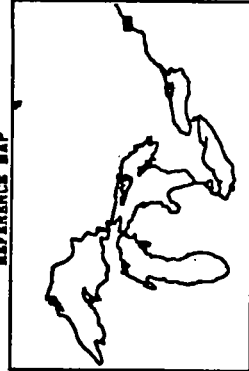
BELOEIL  
ONTARIO  
Scale 1:50,000 Series  
SPECIAL MAPS/CHARTS UNIT

Geomatics International  
1992

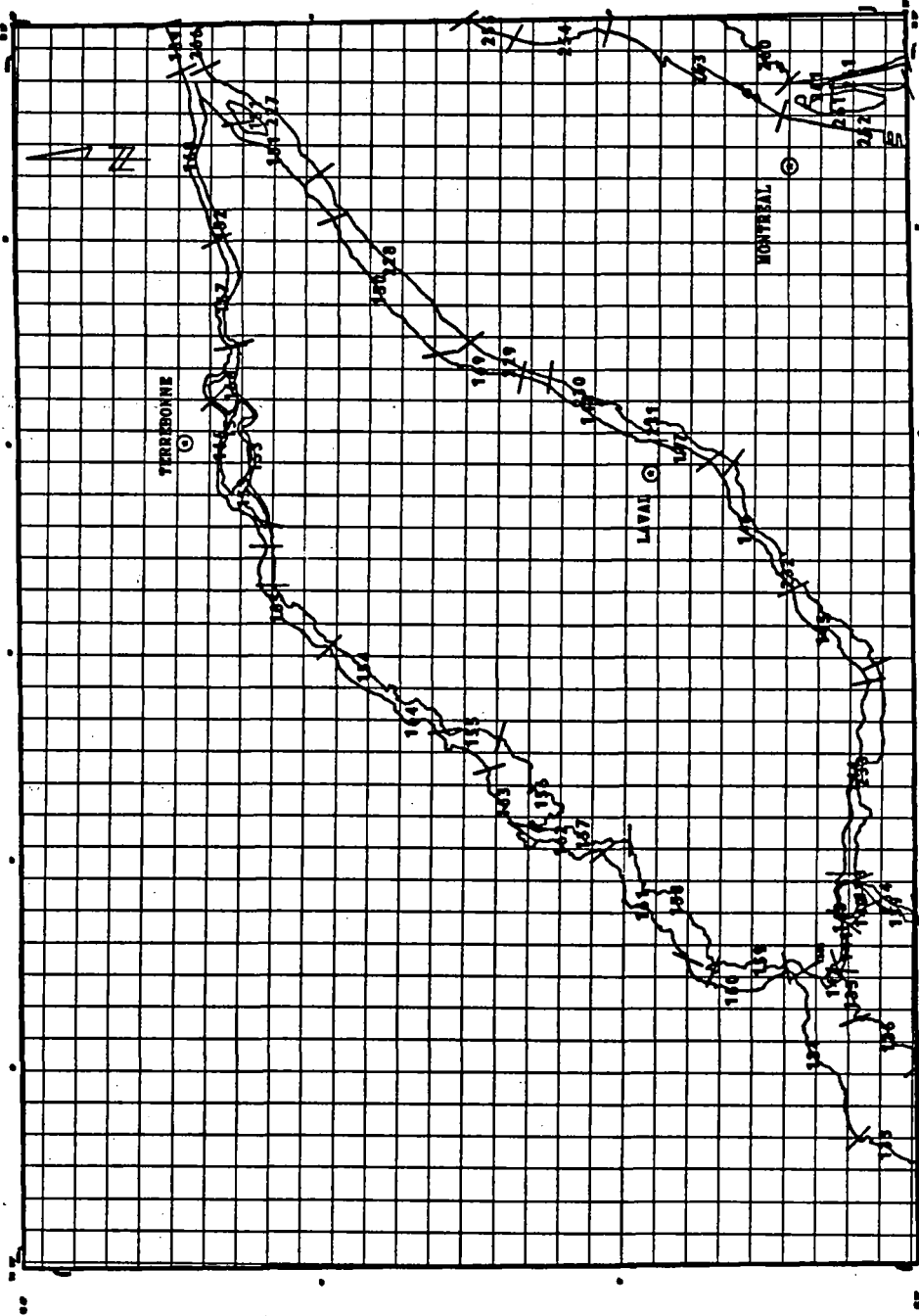
# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## ST. LAWRENCE RIVER

81 8/78



81 8/78



81 8/78

**GEOMORPHIC CLASSIFICATION**

1. HIGH CLAY DEPOSIT
2. LOW CLAY DEPOSIT
3. SAND DEPOSIT
4. SAND WITH SILT
5. SAND WITH SILT AND GRAVEL
6. SAND WITH SILT AND COARSE GRAVEL
7. SAND WITH SILT AND GRAVEL AND COBBLES
8. SAND WITH SILT AND GRAVEL AND COBBLES AND Boulders
9. SAND WITH SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS
10. SAND WITH SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES
11. SAND WITH SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL
12. SAND WITH SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL AND SAND
13. SAND WITH SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL AND SAND AND SILT
14. SAND WITH SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL AND SAND AND SILT AND GRAVEL
15. SAND WITH SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND
16. SAND WITH SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND AND SILT
17. SAND WITH SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND AND SILT AND GRAVEL
18. SAND WITH SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND
19. SAND WITH SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND AND SILT
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21. SAND WITH SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND AND SILT AND GRAVEL
22. SAND WITH SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND AND SILT AND GRAVEL
23. SAND WITH SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND AND SILT AND GRAVEL
24. SAND WITH SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND AND SILT AND GRAVEL
25. SAND WITH SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND AND SILT AND GRAVEL

**PROTECTION CLASSIFICATION**

1. HIGHLY PROTECTED
2. PROTECTED
3. MODERATE PROTECTION
4. LOW PROTECTION
5. NO PROTECTION
6. UNDESIRABLE PROTECTION
7. UNDESIRABLE

**ROBAGIOUS/WEARSHORE COMPOSITION**

1. CLAY
2. SILT
3. SAND
4. SAND AND SILT
5. SAND AND SILT AND GRAVEL
6. SAND AND SILT AND GRAVEL AND COBBLES
7. SAND AND SILT AND GRAVEL AND COBBLES AND Boulders
8. SAND AND SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS
9. SAND AND SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES
10. SAND AND SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL
11. SAND AND SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL AND SAND
12. SAND AND SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL AND SAND AND SILT
13. SAND AND SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL AND SAND AND SILT AND GRAVEL
14. SAND AND SILT AND GRAVEL AND COBBLES AND Boulders AND ROCKS AND COBBLES AND GRAVEL AND SAND AND SILT AND GRAVEL AND SAND AND SILT AND GRAVEL
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**THREE - TIER CLASSIFICATION**

EXAMPLE

- 1. HIGHLY PROTECTED (1 - 4)
- 2. PROTECTED (5 - 6)
- 3. MODERATE PROTECTION (7 - 8)

81 8/78 1992

**Environment Canada**  
**Environnement Canada**

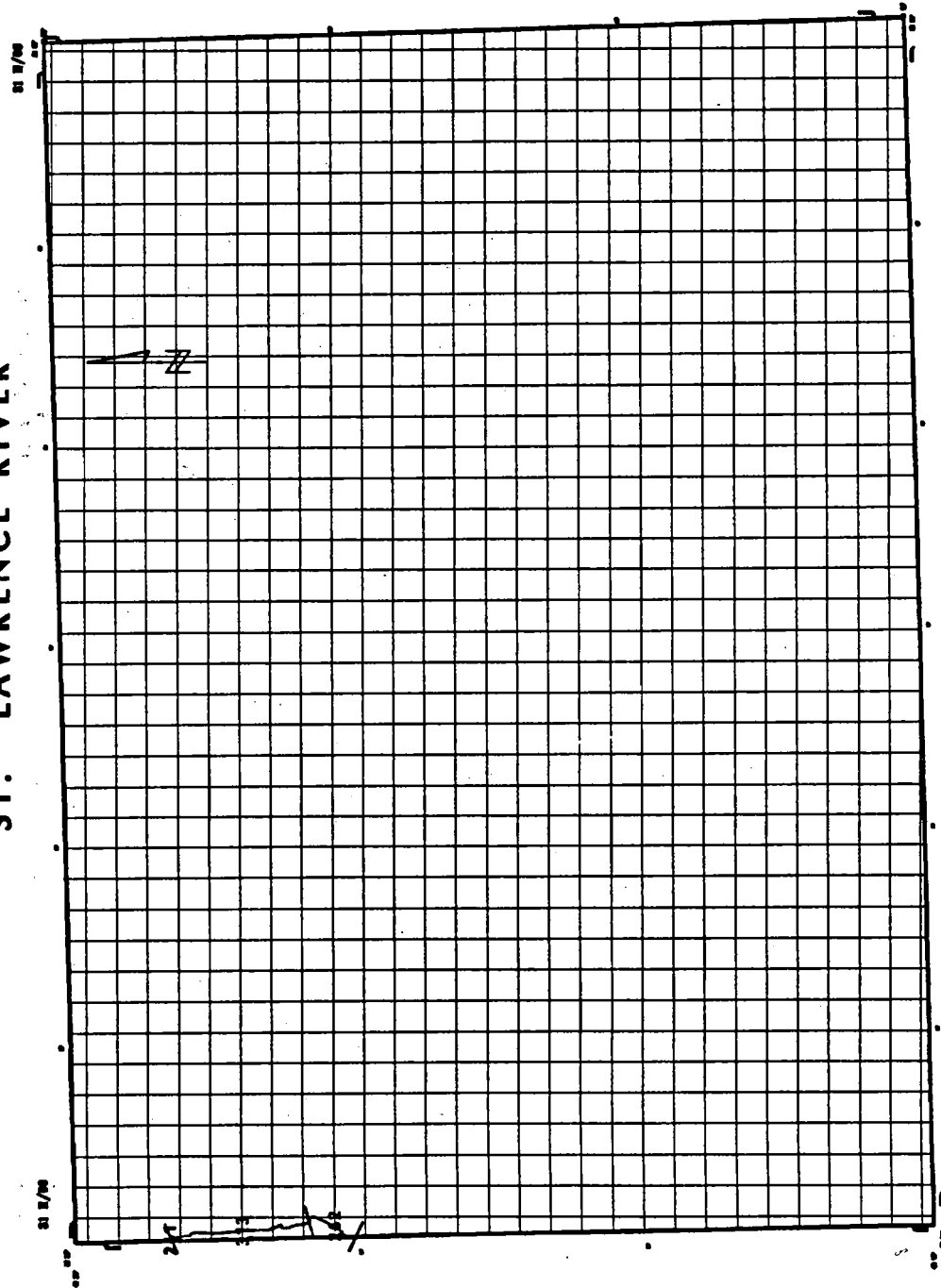
**LAVAL**

ONTARIO  
Scale: 1:50,000

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## ST. LAWRENCE RIVER

REFERENCE MAP



**GEOGRAPHIC CLASSIFICATION**

- 1. LOW (LOW CLIFF) UNPROTECTED OR NO BEACH
- 2. LOW (LOW CLIFF) UNPROTECTED OR NO BEACH
- 3. LOW (LOW CLIFF) UNPROTECTED OR NO BEACH
- 4. LOW (LOW CLIFF) UNPROTECTED OR NO BEACH
- 5. LOW (LOW CLIFF) UNPROTECTED OR NO BEACH
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- 18. LOW (LOW CLIFF) UNPROTECTED OR NO BEACH
- 19. LOW (LOW CLIFF) UNPROTECTED OR NO BEACH
- 20. LOW (LOW CLIFF) UNPROTECTED OR NO BEACH

**PROTECTION CLASSIFICATION**

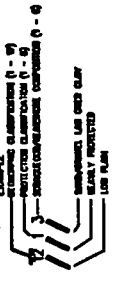
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- 2. NEARLY PROTECTED
- 3. NEARLY PROTECTED
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- 18. NEARLY PROTECTED
- 19. NEARLY PROTECTED
- 20. NEARLY PROTECTED

**SUBAQUEOUS/NEARSHORE COMPOSITION**

- 1. CLAY
- 2. SAND
- 3. SAND
- 4. SAND
- 5. SAND
- 6. SAND
- 7. SAND
- 8. SAND
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- 10. SAND
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- 18. SAND
- 19. SAND
- 20. SAND

**THREE - TIER CLASSIFICATION**

- 1. UNCLASSIFIED
- 2. UNCLASSIFIED
- 3. UNCLASSIFIED
- 4. UNCLASSIFIED
- 5. UNCLASSIFIED
- 6. UNCLASSIFIED
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- 20. UNCLASSIFIED



ST-JEAN  
ONTARIO  
Scale 1:50,000  
SHEET 1 OF 2

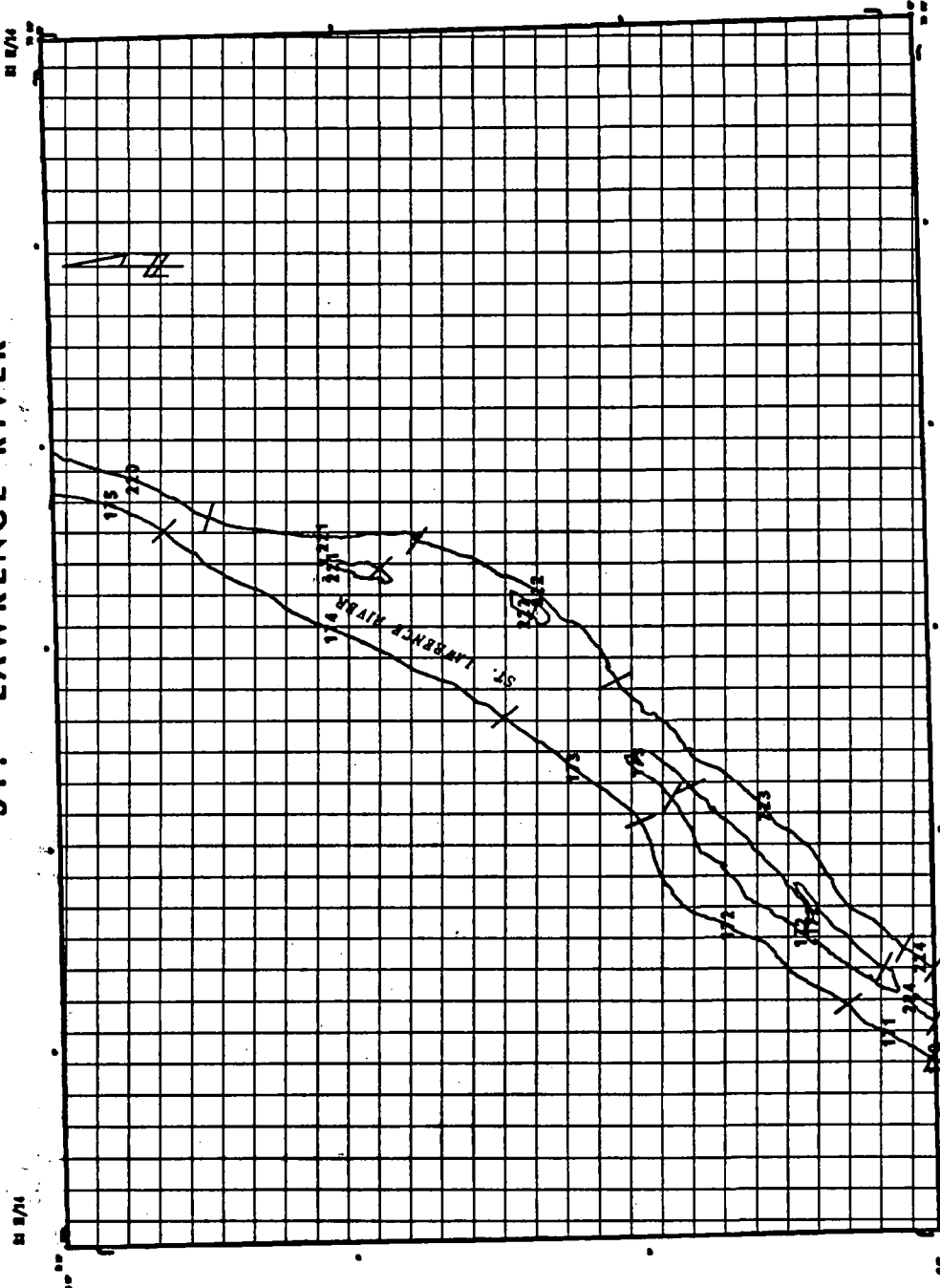
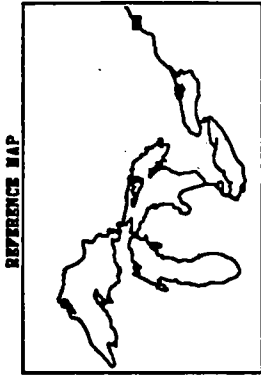
Enforcement  
Crests

Geographic Information  
System

SI 8/86  
1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## ST. LAWRENCE RIVER



**GEOLOGIC CLASSIFICATION**

- 1. SAND (SANDY SILT) (SANDSTONE OR SILTSTONE)
- 2. SAND (SANDY SILT) (SANDSTONE OR SILTSTONE)
- 3. SAND (SANDY SILT) (SANDSTONE OR SILTSTONE)
- 4. SAND (SANDY SILT) (SANDSTONE OR SILTSTONE)
- 5. SAND (SANDY SILT) (SANDSTONE OR SILTSTONE)
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- 47. SAND (SANDY SILT) (SANDSTONE OR SILTSTONE)
- 48. SAND (SANDY SILT) (SANDSTONE OR SILTSTONE)
- 49. SAND (SANDY SILT) (SANDSTONE OR SILTSTONE)
- 50. SAND (SANDY SILT) (SANDSTONE OR SILTSTONE)

**PROTECTION CLASSIFICATION**

- 1. HEAVY PROTECTED
- 2. MODERATELY PROTECTED
- 3. LIGHT PROTECTION
- 4. NO PROTECTION
- 5. NON-PROTECTIVE PROVISIONS
- 6. UNCLASSIFIED

**SUBAQUEOUS/NEARSHORE COMPOSITION**

- 1. SAND
- 2. SANDSTONE
- 3. SANDSTONE AND SANDY SILT
- 4. SANDSTONE (SANDSTONE)
- 5. SANDSTONE (SANDSTONE)
- 6. UNCLASSIFIED

**THREE - TIER CLASSIFICATION**

EXAMPLE

GEOMORPHIC CLASSIFICATION (0 - 9)

PROTECTION CLASSIFICATION (0 - 6)

SUBAQUEOUS/NEARSHORE COMPOSITION (0 - 6)

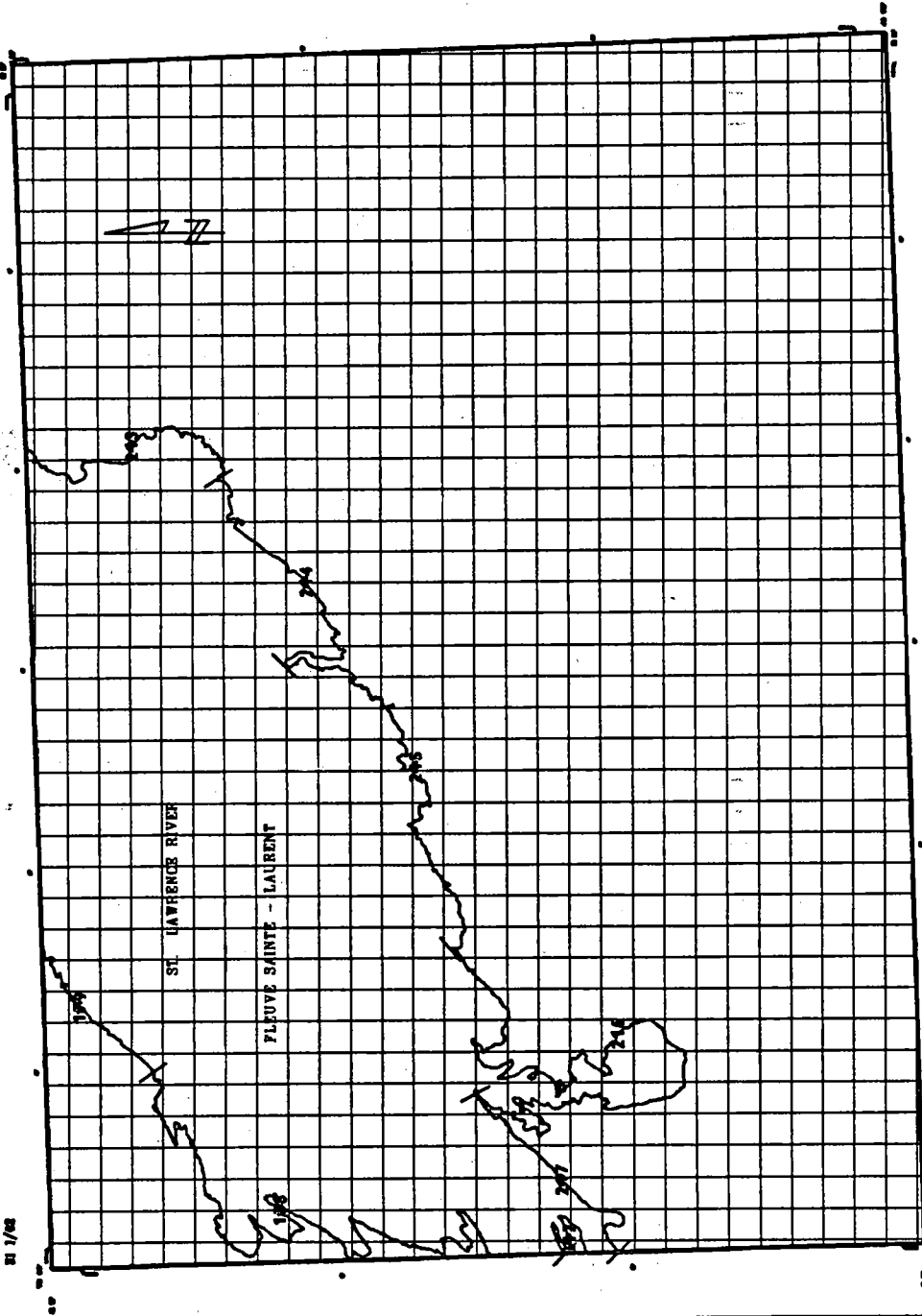


# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## ST. LAWRENCE RIVER

01 1/88

01 1/88



**GEOGRAPHIC CLASSIFICATION**

- 01 1. HIGH (LOW) BAY (NEARSHORE OR BY BAY)
- 02 2. HIGH (LOW) BAY WITH SAND (SAND)
- 03 3. LOW (HIGH) BAY (NEARSHORE OR BY BAY)
- 04 4. LOW (HIGH) BAY WITH SAND (SAND)
- 05 5. BAY (NEARSHORE OR BY BAY)
- 06 6. BAY WITH SAND (SAND)
- 07 7. SANDY BEACHES
- 08 8. SANDY BEACHES WITH SAND (SAND)
- 09 9. SANDY BEACHES WITH SAND (SAND)
- 10 10. SANDY BEACHES WITH SAND (SAND)
- 11 11. SANDY BEACHES WITH SAND (SAND)
- 12 12. SANDY BEACHES WITH SAND (SAND)
- 13 13. SANDY BEACHES WITH SAND (SAND)
- 14 14. SANDY BEACHES WITH SAND (SAND)
- 15 15. SANDY BEACHES WITH SAND (SAND)
- 16 16. SANDY BEACHES WITH SAND (SAND)
- 17 17. SANDY BEACHES WITH SAND (SAND)
- 18 18. SANDY BEACHES WITH SAND (SAND)
- 19 19. SANDY BEACHES WITH SAND (SAND)
- 20 20. SANDY BEACHES WITH SAND (SAND)

**PROTECTION CLASSIFICATION**

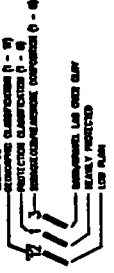
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- 02 2. MODERATELY PROTECTED
- 03 3. PROTECTED
- 04 4. PROTECTED
- 05 5. PROTECTED
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- 07 7. PROTECTED
- 08 8. PROTECTED
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- 10 10. PROTECTED
- 11 11. PROTECTED
- 12 12. PROTECTED
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- 15 15. PROTECTED
- 16 16. PROTECTED
- 17 17. PROTECTED
- 18 18. PROTECTED
- 19 19. PROTECTED
- 20 20. PROTECTED

**SUBAQUEOUS/NEARSHORE COMPOSITION**

- 01 1. CLAY
- 02 2. SAND
- 03 3. SAND
- 04 4. SAND
- 05 5. SAND
- 06 6. SAND
- 07 7. SAND
- 08 8. SAND
- 09 9. SAND
- 10 10. SAND
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- 13 13. SAND
- 14 14. SAND
- 15 15. SAND
- 16 16. SAND
- 17 17. SAND
- 18 18. SAND
- 19 19. SAND
- 20 20. SAND

**THREE - TIER CLASSIFICATION**

- 01 1. NEARLY PROTECTED
- 02 2. MODERATELY PROTECTED
- 03 3. PROTECTED
- 04 4. PROTECTED
- 05 5. PROTECTED
- 06 6. PROTECTED
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- 20 20. PROTECTED



Environment Canada  
Environnement Canada

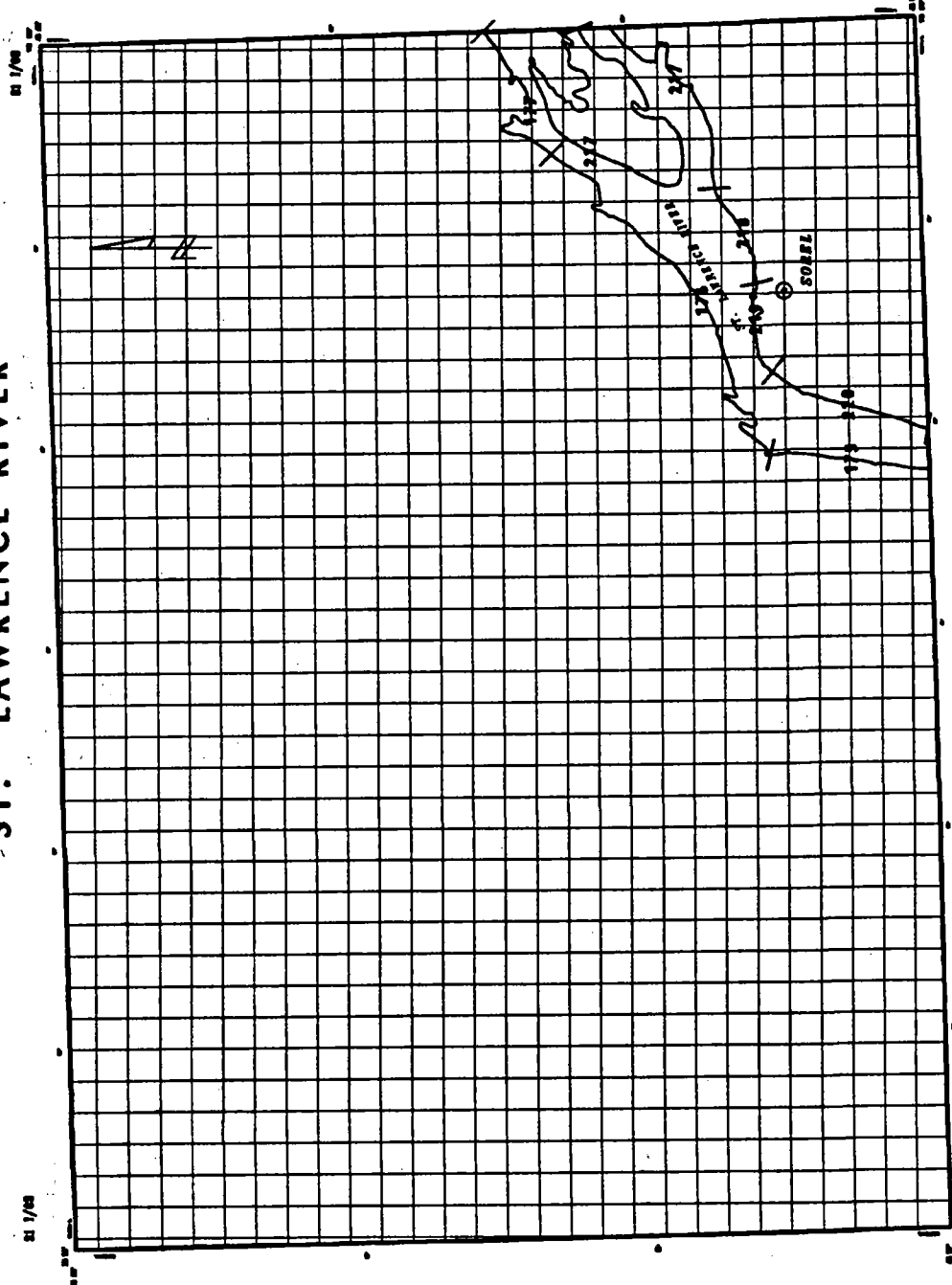
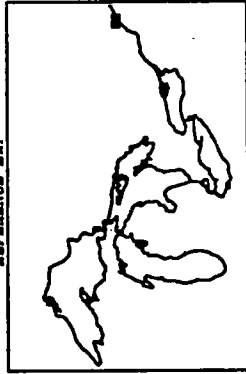
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NAD 83  
UTM Zone 18N  
Datum: NAD 83  
Units: METERS

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01 1/88  
1992

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION

## ST. LAWRENCE RIVER



### GEOMORPHIC CLASSIFICATION

- 01. HIGH (CHINA) BAY (SHORELINE AS OF 1982)
- 02. LOW (CHINA) BAY (SHORELINE AS OF 1982)
- 03. LOW (CHINA) BAY (SHORELINE AS OF 1982)
- 04. LOW (CHINA) BAY (SHORELINE AS OF 1982)
- 05. SAND/CLAY BANKS
- 06. SAND/CLAY BANKS
- 07. SAND/CLAY BANKS
- 08. SAND/CLAY BANKS
- 09. SAND/CLAY BANKS
- 10. SAND/CLAY BANKS
- 11. SAND/CLAY BANKS
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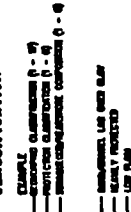
### PROTECTION CLASSIFICATION

- 01. EARLY PROTECTED
- 02. EARLY PROTECTED
- 03. EARLY PROTECTED
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### SUBSTRATUM/NEARSHORE COMPOSITION

- 01. CLAY
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### THREE - TIER CLASSIFICATION



SI 1/88  
1992

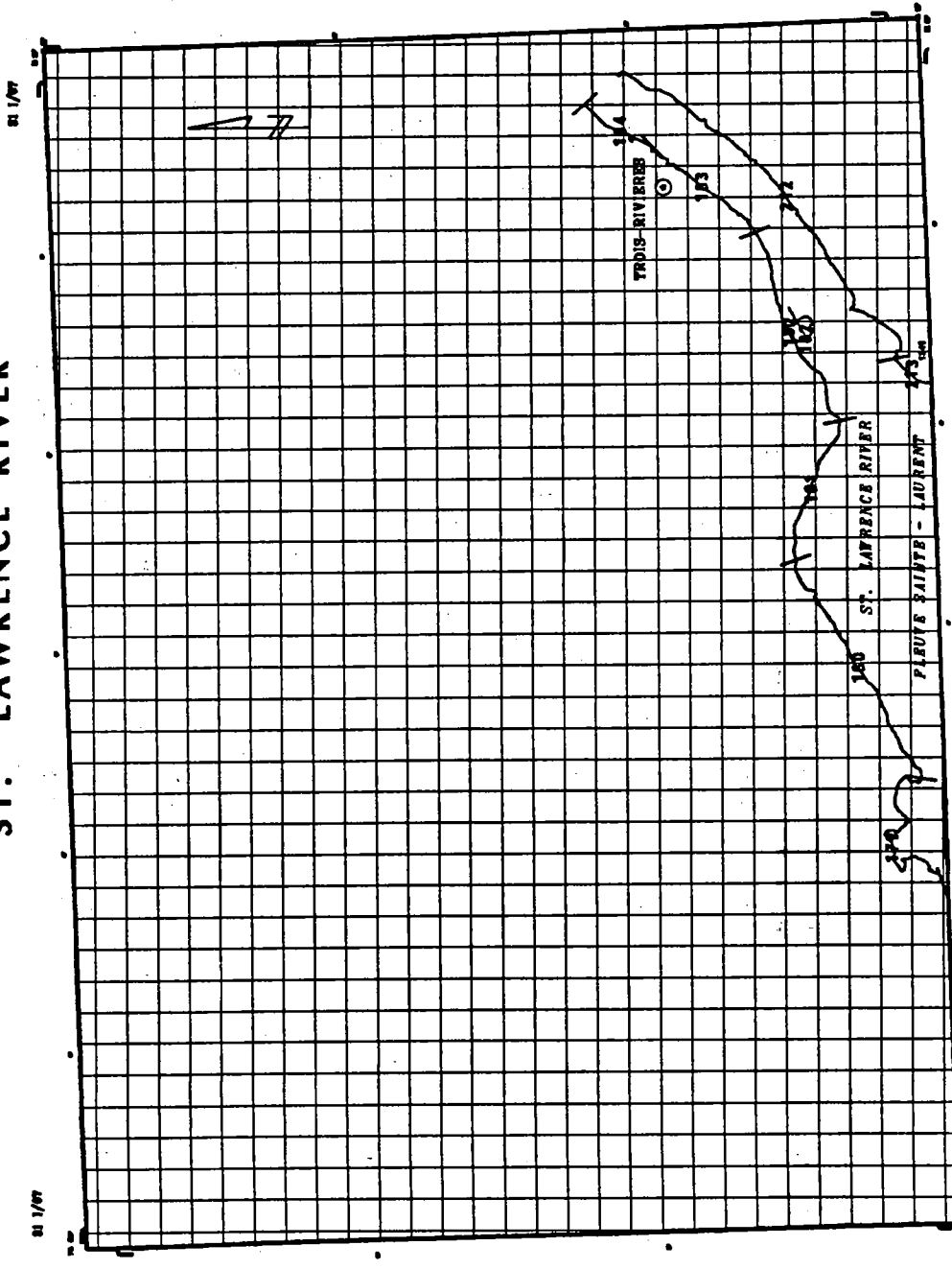
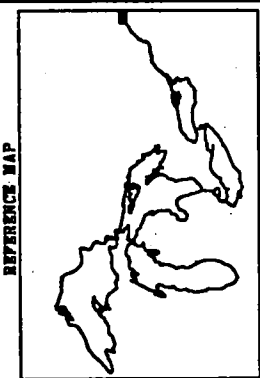
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Scale 1:100,000  
SOREL

Geospatial Information  
System

A144

# GREAT LAKES - ST. LAWRENCE RIVER SHORELINE CLASSIFICATION ST. LAWRENCE RIVER



- GEOMORPHIC CLASSIFICATION**
- 1. HIGH CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 2. LOW CLIFF (VERTICAL OR NEARLY VERTICAL)
  - 3. LOW (CLIFF) SLIP (VERTICAL OR NEARLY VERTICAL)
  - 4. CLIFF (SLIP)
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- PROTECTION CLASSIFICATION**
- 1. FULLY PROTECTED
  - 2. MODERATELY PROTECTED
  - 3. PARTIAL PROTECTION
  - 4. NO PROTECTION
  - 5. NON-STRUCTURAL PROTECTION
  - 6. UNCLASSIFIED

- SUBAQUEOUS/NEARSHORE COMPOSITION**
- 1. CLAY
  - 2. SAND
  - 3. SILT
  - 4. SILT AND SAND
  - 5. SAND AND SILT
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- THREE - TIER CLASSIFICATION**
- EXAMPLE CLASSIFICATION (1 - 50)  
PROTECTION CLASSIFICATION (1 - 5)  
SUBAQUEOUS/NEARSHORE COMPOSITION (1 - 50)
- UNCLASSIFIED SAND AND CLAY  
FULLY PROTECTED  
LOW PLAIN

01/87  
1992

Environment Canada  
Environnement Canada

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**Lake Superior Reach Boundaries and Lengths**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
1	307199	5318958	308104	5319494	1.48
2	307680	5320308	311054	5320790	3.84
3	311054	5320790	309571	5320786	1.51
4	309571	5320786	309718	5321298	1.55
5	309718	5321298	310384	5321439	0.87
6	310384	5321439	313268	5322182	4.37
7	313268	5322182	314148	5322732	5.58
8	314148	5322732	317207	5323349	4.81
9	317207	5323349	315037	5325020	3.87
10	315037	5325020	320955	5326872	8.12
11	320955	5326872	315993	5326230	5.71
12	315993	5326230	317664	5327096	2.03
13	319189	5327934	319415	5328068	4.97
14	319415	5328068	320747	5328586	1.51
15	320747	5328586	322930	5328838	2.52
16	322930	5328838	324227	5329944	1.79
17	325263	5329202	325520	5332343	7.82
18	328618	5334195	330064	5338024	6.78
19	330064	5338024	328732	5338888	1.66
20	331284	5340080	333629	5349422	20.96
21	333629	5349422	333835	5352341	3.00
22	342624	5348074	339726	5346076	3.61
23	339726	5346076	339212	5341903	5.60
24	339212	5341903	342212	5341254	6.29
25	342212	5341254	349275	5345713	8.86
26	349275	5345713	347675	5347719	3.68
27	347675	5347719	342624	5348074	5.82
28	333835	5352341	336743	5352555	5.65
29	336743	5352555	336606	5355267	3.32
30	336606	5355267	336005	5358724	6.91
31	336005	5358724	335727	5362791	6.14
32	335727	5362791	336185	5366576	9.93
33	336185	5366576	339814	5368981	6.38
34	339814	5368981	340862	5371023	2.69
35	340862	5371023	344817	5372075	4.70
36	344817	5372075	347875	5372916	4.84
37	347875	5372916	352473	5374670	5.22
38	353327	5374468	355649	5375157	5.92
39	355649	5375157	357358	5375747	4.09
40	357358	5375747	358033	5375977	1.21
41	358033	5375977	361398	5377797	6.28
42	360305	5377152	361265	5377591	1.26
43	361265	5377591	362001	5377749	2.01
44	362001	5377749	365154	5379753	5.00
45	365154	5379753	365914	5380076	1.22
46	365914	5380076	369088	5381423	4.78
47	369088	5381423	370187	5380648	1.42
48	370187	5380648	363992	5368474	15.17
49	363992	5368474	356317	5351249	24.69
50	356317	5351249	364673	5354532	19.06

## Lake Superior

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
51	371515	5357359	375505	5369179	15.69
52	378258	5362216	377985	5356794	13.97
53	377985	5356794	382542	5364361	18.33
54	382542	5364361	378258	5362216	12.36
55	375505	5369179	377131	5371645	8.99
56	377131	5371645	380646	5385912	21.15
57	380646	5385912	385812	5387027	8.30
58	386880	5388877	388684	5394901	11.59
59	388684	5394901	387796	5396894	3.12
60	386007	5399007	388720	5405911	9.03
61	388720	5405911	390792	5407944	3.20
62	390792	5407944	390955	5410457	5.87
63	390955	5410457	397085	5409780	7.01
64	397085	5409780	401395	5403908	12.23
65	401395	5403908	404195	5400346	5.19
66	404195	5400346	401551	5392459	8.67
67	401551	5392459	398433	5389384	4.77
68	398433	5389384	393187	5384359	7.48
69	393187	5384359	385863	5377340	12.24
70	385863	5377340	381947	5370405	9.45
71	381947	5370405	384506	5365206	14.47
72	384016	5361186	404135	5380607	189.86
73	404135	5380607	404318	5383406	18.79
74	404318	5383406	414291	5386695	48.54
75	414291	5386695	419240	5395360	52.01
76	419240	5395360	418849	5405184	11.85
77	420630	5406550	421351	5394551	14.02
78	422041	5393735	425608	5392867	4.43
79	425608	5392867	427939	5398484	32.60
80	427939	5398484	440414	5398970	29.46
81	445106	5409070	445809	5399652	16.33
82	445809	5399652	456229	5399446	18.80
83	456229	5399446	449197	5409951	14.54
84	449197	5409951	445106	5409070	4.40
85	443338	5409428	426652	5410375	18.36
86	426652	5410375	420630	5406550	7.73
87	418849	5405184	414707	5408063	5.97
88	411451	5409107	409254	5416151	8.46
89	410244	5419591	407737	5422680	4.40
90	407737	5422680	409251	5423600	12.00
91	409251	5423600	421692	5425676	20.57
92	421692	5425676	423186	5428687	4.22
93	424299	5425350	426347	5423637	3.87
94	428017	5423116	430917	5420702	4.44
95	430917	5420702	434505	5420858	4.76
96	443632	5415594	449975	5416110	7.26
97	452346	5411546	456424	5412280	15.62
98	459712	5407938	461652	5408604	2.67
99	470622	5407438	477713	5401502	13.54
100	477713	5401502	486690	5402990	16.04

Lake Superior

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
101	486690	5402990	488395	5402772	3.09
102	488395	5402772	491028	5401497	6.71
103	494654	5401984	499355	5401922	11.22
104	499355	5401922	500737	5405599	6.67
105	500737	5405599	501977	5405254	5.73
106	501977	5405254	504470	5401950	5.07
107	504470	5401950	507237	5401979	2.86
108	507931	5401088	509476	5399254	2.96
109	500205	5392441	494440	5390301	11.84
110	494440	5390301	497914	5392334	26.91
111	497581	5385717	503027	5386616	11.48
112	503027	5386616	500205	5392441	25.64
113	509476	5399254	514992	5402532	9.64
114	526380	5403884	527995	5402229	3.39
115	527995	5402229	526671	5397292	6.87
116	526689	5396407	525175	5395308	4.19
117	525175	5395308	526593	5392787	3.77
118	526593	5392787	530098	5392758	6.25
119	530098	5392758	526689	5396407	6.58
120	526671	5397292	530583	5396983	4.41
121	530583	5396983	536596	5400764	13.40
122	536596	5400764	541978	5402280	11.08
123	541978	5402280	540654	5397954	6.63
124	543122	5397628	543122	5397628	16.07
125	544444	5395419	546943	5390593	6.41
126	546943	5390593	550573	5383775	26.95
127	550573	5383775	551578	5381916	3.92
128	551578	5381916	556406	5363720	47.86
129	556406	5363720	559020	5360988	6.94
130	560171	5359676	562146	5350390	18.37
131	562814	5348316	565966	5338571	20.35
132	565966	5338571	570022	5331313	14.01
133	570022	5331313	573977	5326550	14.84
134	573926	5326372	580648	5319590	23.38
135	581679	5318170	584906	5314321	7.15
136	584906	5314321	586353	5313182	2.41
137	586353	5313182	598480	5308369	19.82
138	594761	5294217	585892	5293307	9.41
139	585213	5284525	586261	5283802	1.83
140	585892	5293307	578632	5285239	14.90
141	578632	5285239	585213	5284525	7.21
142	586261	5283802	595531	5283946	26.00
143	595531	5283946	604878	5289925	16.92
144	604878	5289925	594761	5294217	12.00
145	598480	5308369	620015	5308653	27.96
146	620015	5308653	625602	5312162	6.90
147	625602	5312162	634655	5313077	13.69
148	634655	5313077	637558	5312980	3.42
149	637558	5312980	647002	5313250	11.75
150	648657	5313197	650026	5313646	2.34

## Lake Superior

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
151	656008	5311721	659855	5313538	7.96
152	659855	5313538	661236	5308880	8.26
153	661236	5308880	654465	5301104	12.07
154	654465	5301104	656674	5295107	17.82
155	656674	5295107	657184	5294032	2.07
156	657184	5294032	653786	5288487	6.89
157	650290	5286610	651462	5282951	5.32
158	651686	5281087	652945	5269557	32.04
159	654286	5268587	662858	5260960	17.67
160	668862	5257109	672028	5254093	5.37
161	673252	5251892	676691	5247885	10.71
162	676691	5247885	680862	5242543	8.13
163	682269	5239145	679230	5235778	4.97
164	679230	5235778	677488	5233685	4.13
165	677488	5233685	674631	5229133	6.48
166	674631	5229133	674509	5227127	4.17
167	674509	5227127	671610	5223478	5.49
168	671610	5223478	673408	5219988	5.55
169	673408	5219988	671506	5215875	5.20
170	668385	5211704	668895	5209860	2.12
171	668895	5209860	668676	5208945	2.10
172	668676	5208945	668157	5206570	4.22
173	671873	5202666	674214	5203296	3.27
174	674214	5203296	678196	5202716	4.90
175	678196	5202716	681630	5195405	8.66
176	681630	5195405	683210	5197395	2.65
177	683210	5197395	684024	5201186	5.29
178	684024	5201186	689050	5199150	6.78
179	688735	5198493	686870	5196201	3.08
180	688510	5192814	689926	5194501	2.37
181	696133	5195318	688735	5198493	11.18
182	689050	5199150	691127	5201110	3.03
183	691127	5201110	694404	5200740	3.51
184	694404	5200740	695467	5198992	2.86
185	695467	5198992	699956	5196274	6.01
186	701502	5194571	700305	5192789	2.45
187	700150	5192154	699765	5190482	2.03
188	699765	5190482	698157	5188854	2.38
189	698157	5188854	696788	5188861	4.01
190	696788	5188861	694964	5190945	3.08
191	694964	5190945	692245	5190935	3.04
192	692245	5190935	690769	5188635	3.01
193	689542	5188781	687951	5189234	2.00
194	687951	5189234	687202	5186897	4.24
195	687202	5186897	686227	5181396	6.28
196	686227	5181396	687198	5180028	1.99
197	686614	5179191	685260	5179072	1.78
198	685260	5179072	685261	5176016	3.14
199	686924	5172750	688757	5174048	2.47
200	689569	5174407	691859	5181318	7.67

**Lake Superior**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
201	693827	5181308	696203	5178787	3.72
202	696203	5178787	695228	5176030	4.68
203	696602	5172833	691832	5170330	5.98
204	691832	5170330	684052	5159941	13.86
205	684052	5159941	685055	5155544	4.94
206	685055	5155544	689191	5152676	5.36
207	689191	5152676	689586	5150165	2.58
208	689586	5150165	694110	5148562	5.06
209	694110	5148562	695418	5152493	7.37
210	698505	5154327	702399	5154693	5.67
211	702399	5154693	705748	5153249	3.94
212	705748	5153249	711763	5155620	7.81
213	711763	5155620	716995	5157525	8.86
214	717863	5156689	721667	5154869	5.73
215	721667	5154869	724302	5152667	3.75
216	724302	5152667	721038	5142756	12.74
217	721038	5142756	721507	5137587	7.22
218	721507	5137587	727319	5133173	11.98
219	727319	5133173	732597	5133934	6.34
220	732597	5133934	744303	5130362	32.75
221	736036	5133289	733003	5132920	5.56
222	733003	5132920	727318	5130194	7.29
223	727318	5130194	724800	5132799	4.18
224	722782	5133267	723299	5124451	9.92
225	723299	5124451	725976	5119335	6.76
226	725976	5119335	731991	5115417	7.49
227	731991	5115417	735488	5104943	23.69
228	742127	5115284	745589	5113609	7.35
229	745749	5123929	744607	5127185	5.48
230	308104	5319494	307569	5319942	1.20
231	307569	5319942	307680	5320308	0.56
232	317664	5327096	319189	5327934	1.82
233	329752	5329997	329752	5329997	36.69
234	324227	5329944	325263	5329202	1.44
235	325520	5332343	327309	5332619	4.49
236	327309	5332619	328618	5334195	6.31
237	328732	5338888	328762	5339327	6.22
238	328762	5339327	331284	5340080	2.97
239	342741	5358553	342741	5358553	5.95
240	352473	5374670	353327	5374468	1.03
241	363152	5375583	363152	5375583	7.59
242	364673	5354532	366552	5354831	3.06
243	367100	5354855	367238	5354774	3.00
244	367238	5354774	368830	5355515	2.56
245	368830	5355515	369411	5355824	2.07
246	369411	5355824	370297	5357049	2.31
247	370297	5357049	370864	5356848	1.06
248	385812	5387027	386880	5388877	2.44
249	387796	5396894	386007	5399007	3.52
250	384506	5365206	384876	5364533	1.97

**Lake Superior**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
251	414707	5408063	411451	5409107	4.76
252	409254	5416151	410244	5419591	4.19
253	415048	5420014	418314	5418650	5.61
254	418314	5418650	417821	5420193	1.97
255	417821	5420193	415048	5420014	3.11
256	419743	5419962	425513	5415363	10.40
257	425513	5415363	425143	5419808	5.57
258	425143	5419808	419743	5419962	8.74
259	418275	5414592	418275	5414592	6.30
260	423186	5428687	425101	5428896	2.61
261	425101	5428896	424299	5425350	2.83
262	424299	5425350	425203	5426313	1.92
263	426347	5423637	428017	5423116	2.55
264	440414	5398970	443338	5409428	32.47
265	459252	5401225	459252	5401225	36.97
266	434505	5420858	438760	5417443	6.92
267	438760	5417443	440917	5418740	3.41
268	440917	5418740	443632	5415594	7.77
269	449975	5416110	452346	5411546	5.69
270	464550	5398739	464550	5398739	75.66
271	456424	5412280	460203	5412589	6.87
272	460203	5412589	459712	5407938	5.11
273	461652	5408604	470622	5407438	10.70
274	545043	5397499	544209	5396570	2.18
275	544209	5396570	544444	5395419	2.58
276	559020	5360988	560171	5359676	2.89
277	562146	5350390	562814	5348316	2.95
278	573977	5326550	573926	5326372	2.30
279	647002	5313250	648657	5313197	1.99
280	650026	5313646	650968	5313359	1.33
281	650968	5313359	653814	5313738	3.72
282	653814	5313738	654647	5313257	1.11
283	654647	5313257	656008	5311721	2.99
284	653786	5288487	650290	5286610	4.56
285	651462	5282951	651686	5281087	2.01
286	652945	5269557	654286	5268587	2.98
287	655072	5255594	655072	5255594	10.37
288	665190	5253859	665190	5253859	11.06
289	670654	5240479	670654	5240479	10.90
290	370864	5356848	371515	5357359	0.92
291	366552	5354831	367100	5354855	0.65
292	384876	5364533	384423	5363086	2.11
293	384423	5363086	384431	5362678	1.29
294	384431	5362678	384016	5361186	4.18
295	662858	5260960	663588	5260483	1.07
296	663588	5260483	665325	5260210	1.92
297	665325	5260210	666851	5258933	2.35
298	666851	5258933	668862	5257109	3.07
299	672028	5254093	672594	5253033	1.26
300	672594	5253033	673252	5251892	1.46

**Lake Superior**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
301	680862	5242543	682209	5241592	2.97
302	682209	5241592	682382	5240496	1.24
303	682382	5240496	682269	5239145	2.25
304	671506	5215875	671057	5215011	1.24
305	671057	5215011	668385	5211704	4.69
306	668157	5206570	671873	5202666	6.26
307	686870	5196201	686840	5194106	2.16
308	686840	5194106	688510	5192814	2.24
309	689926	5194501	693132	5195403	3.37
310	693132	5195403	693995	5194248	1.88
311	693995	5194248	696133	5195318	4.11
312	687198	5180028	686614	5179191	2.06
313	685261	5176016	686924	5172750	4.08
314	691859	5181318	693827	5181308	2.11
315	695228	5176030	696602	5172833	4.47
316	699956	5196274	701502	5194571	3.59
317	700305	5192789	700150	5192154	1.38
318	690769	5188635	689542	5188781	1.70
319	421351	5394551	422041	5393735	1.09
320	580648	5319590	581679	5318170	2.30
321	688757	5174048	689569	5174407	0.91
322	674183	5168116	673028	5175985	10.06
323	673028	5175985	674183	5168116	8.41
324	491028	5401497	491728	5401636	1.80
325	491728	5401636	493325	5402055	2.69
326	493325	5402055	494654	5401984	1.68
327	507237	5401979	507931	5401088	1.40
328	514992	5402532	516564	5402697	2.75
329	516564	5402697	526380	5403884	20.35
330	695418	5152493	698505	5154327	4.02
331	716995	5157525	717863	5156689	2.38
332	724800	5132799	722782	5133267	2.24
333	735488	5104943	740307	5108348	12.43
334	740307	5108348	740590	5109427	1.98
335	740590	5109427	740955	5113109	5.73
336	740955	5113109	742127	5115284	5.69
337	745589	5113609	745706	5113937	2.85
338	745706	5113937	746086	5114556	5.10
339	746086	5114556	747316	5116310	7.48
340	747316	5116310	747355	5119708	5.19
341	747355	5119708	747500	5120130	1.71
342	747500	5120130	749487	5121376	2.49
343	749487	5121376	748719	5123143	2.21
344	748719	5123143	745749	5123929	4.67
345	744607	5127185	742532	5126722	2.32
346	742532	5126722	742077	5126346	0.84
347	742077	5126346	738123	5131089	6.65
348	737600	5131521	736036	5133289	5.04
349	735943	5130025	737600	5131521	3.94
350	738123	5131089	735943	5130025	2.58

**Lake Superior**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
				<b>Total</b>	<b>2,833.61</b>



**Huron Water Body Reach Boundaries and Lengths**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
1	280805	5130122	284586	5129646	5.50
2	284746	5129680	286080	5130301	3.42
3	290349	5128548	291553	5127883	7.38
4	291553	5127883	291462	5126843	2.26
5	294379	5127412	299812	5127803	8.02
6	299812	5127803	302174	5125425	4.45
7	302853	5124855	305886	5124525	5.50
8	305886	5124525	309216	5124067	4.52
9	309216	5124067	309936	5123617	1.58
10	317899	5121505	321522	5120124	5.73
11	326796	5118836	331228	5118179	7.51
12	332521	5118000	337040	5117512	8.37
13	337040	5117512	340631	5114658	14.18
14	345094	5114502	347604	5115786	5.29
15	347604	5115786	351997	5116070	5.65
16	361933	5116342	368702	5117163	7.19
17	368702	5117163	374995	5117844	6.78
18	374995	5117844	369852	5115908	7.05
19	369852	5115908	369153	5113054	9.24
20	369153	5113054	382494	5113812	53.72
21	382494	5113812	387932	5113879	26.75
22	387932	5113879	398563	5110144	61.21
23	398563	5110144	408365	5107491	51.93
24	408365	5107491	411279	5105556	5.13
25	419213	5105446	430658	5105031	12.59
26	430658	5105031	434855	5105383	5.62
27	434855	5105383	444509	5105429	15.12
28	444509	5105429	433653	5100969	39.29
29	433653	5100969	431181	5100250	7.53
30	425843	5099172	425706	5095943	4.26
31	425706	5095943	428510	5092177	10.41
32	428510	5092177	424115	5092433	8.26
33	424115	5092433	418504	5089870	7.19
34	418504	5089870	417852	5088619	3.41
35	417852	5088619	413814	5085355	5.32
36	413814	5085355	412634	5082951	3.21
37	412634	5082951	413469	5082129	1.83
38	413469	5082129	410350	5075475	7.48
39	410350	5075475	409782	5075412	0.81
40	409782	5075412	408574	5077530	2.78
41	408574	5077530	408250	5081612	4.38
42	406284	5085186	404511	5088202	8.31
43	404511	5088202	402438	5084560	4.43
44	402438	5084560	400742	5085600	2.07
45	400742	5085600	400216	5090649	6.11
46	400216	5090649	400266	5093506	3.23
47	400266	5093506	395637	5092071	5.20
48	395637	5092071	388529	5089912	8.15
49	388529	5089912	386923	5085481	4.88
50	386923	5085481	386865	5086062	1.05

**Huron Water Body**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
51	386865	5086062	384849	5089046	3.81
52	384849	5089046	382360	5085903	4.21
53	382360	5085903	382343	5084522	2.73
54	382343	5084522	377717	5084055	5.81
55	377717	5084055	377894	5086317	4.81
56	377894	5086317	378015	5090382	4.17
57	378015	5090382	368621	5090558	11.41
58	368621	5090558	365144	5087057	8.77
59	365144	5087057	367324	5083981	7.00
60	367324	5083981	377023	5082913	13.42
61	377023	5082913	376122	5081884	1.40
62	376122	5081884	380061	5079204	6.30
63	380061	5079204	378985	5075429	5.09
64	378985	5075429	376871	5074837	2.90
65	376834	5076035	376537	5078162	2.25
66	376537	5078162	374193	5076131	4.19
67	371903	5077071	371727	5079482	2.44
68	371727	5079482	368537	5079756	4.60
69	368537	5079756	364477	5076696	6.60
70	363055	5079474	362759	5082537	3.16
71	359831	5081984	358884	5083783	2.84
72	358884	5083783	357121	5085296	2.48
73	357121	5085296	359192	5089715	5.72
74	359192	5089715	359741	5095273	6.12
75	359741	5095273	356298	5093045	4.85
76	356298	5093045	354407	5091009	5.73
77	354407	5091009	349633	5091366	6.49
78	349633	5091366	348707	5088911	4.32
79	348707	5088911	344878	5087342	4.78
80	344878	5087342	344483	5089624	2.41
81	344483	5089624	340531	5091197	4.41
82	340531	5091197	337662	5086663	6.50
83	337662	5086663	335934	5087399	2.39
84	335934	5087399	335901	5089946	2.64
85	335901	5089946	330925	5091543	6.19
86	330925	5091543	327198	5085948	7.01
87	327198	5085948	327687	5082123	4.73
88	320914	5081872	324179	5085588	6.93
89	324179	5085588	324245	5091806	6.70
90	324245	5091806	317524	5095973	11.90
91	317524	5095973	311274	5093157	7.73
92	311274	5093157	307523	5086772	8.58
93	307523	5086772	310484	5084161	12.09
94	310484	5084161	316939	5079746	9.09
95	316939	5079746	320914	5081872	6.33
96	327687	5082123	337925	5080946	25.62
97	337925	5080946	347688	5076986	21.45
98	349588	5075387	357367	5074735	20.35
99	357367	5074735	364119	5072267	13.35
100	364794	5072569	372872	5068147	16.64

**Huron Water Body**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
101	372872	5068147	377833	5067595	6.15
102	381900	5066701	388879	5060924	12.39
103	388879	5060924	397366	5057727	15.04
104	397366	5057727	399730	5057212	2.96
105	399730	5057212	400618	5055624	4.60
106	400618	5055624	404011	5054460	3.78
107	408116	5051190	411489	5049358	4.73
108	411489	5049358	414114	5048022	5.50
109	414114	5048022	417078	5044691	14.21
110	417078	5044691	420618	5045248	4.72
111	420618	5045248	423542	5049583	7.99
112	423542	5049583	425659	5049741	3.70
113	429335	5053545	432496	5057145	5.73
114	433761	5057069	439713	5060084	9.41
115	439713	5060084	440629	5057180	7.55
116	440629	5057180	437348	5054692	4.41
117	437348	5054692	431395	5049993	7.88
118	431395	5049993	429926	5049670	9.61
119	429926	5049670	420858	5044801	11.24
120	420858	5044801	433901	5040179	30.60
121	433901	5040179	438524	5043080	5.63
122	438746	5040489	435681	5038139	4.09
123	435681	5038139	436965	5031444	18.58
124	436965	5031444	445531	5042493	23.90
125	445531	5042493	438746	5040489	8.68
126	438524	5043080	442905	5050034	8.55
127	442905	5050034	444412	5051215	4.03
128	444412	5051215	447694	5056638	6.93
129	447694	5056638	449322	5060093	4.22
130	449322	5060093	448845	5061427	3.32
131	448845	5061427	452508	5064322	5.13
132	452508	5064322	454537	5068132	5.45
133	454537	5068132	453564	5072230	5.71
134	453564	5072230	451930	5070763	2.29
135	451930	5070763	445399	5070270	7.46
136	445399	5070270	444464	5071972	2.28
137	444464	5071972	447535	5073998	3.73
138	448826	5077935	449418	5082794	18.93
139	447479	5083011	442690	5075822	10.68
140	442690	5075822	438906	5068430	9.04
141	438906	5068430	439694	5064676	4.22
142	439694	5064676	438410	5063114	2.11
143	438410	5063114	437526	5065604	3.69
144	437526	5065604	434569	5070515	6.41
145	434569	5070515	436375	5079737	9.93
146	436375	5079737	432471	5081396	4.62
147	432471	5081396	429616	5080934	4.00
148	429616	5080934	428764	5081969	1.47
149	428764	5081969	430481	5083271	2.26
150	430481	5083271	430697	5088689	6.64

**Huron Water Body**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
151	430176	5090944	432331	5093236	7.80
152	432331	5093236	443091	5090781	19.31
153	442110	5095846	442701	5100192	6.70
154	442701	5100192	457023	5099938	49.46
155	457023	5099938	444243	5095084	19.23
156	444243	5095084	456865	5093513	44.92
157	456865	5093513	445902	5087655	16.46
158	445902	5087655	459078	5088431	47.93
159	459078	5088431	468095	5092538	20.58
160	468095	5092538	478257	5088374	42.98
161	478257	5088374	489023	5084781	69.65
162	489023	5084781	502033	5084967	88.99
163	502033	5084967	511591	5084424	67.45
164	511591	5084424	519991	5081975	97.58
165	519991	5081975	522115	5073685	52.84
166	522115	5073685	526172	5068926	28.53
167	526172	5068926	527647	5064708	26.23
168	527647	5064708	523314	5054315	73.21
169	532314	5054315	538584	5044829	90.81
170	538584	5044829	547519	5046103	65.59
171	547519	5046103	547976	5031881	117.44
172	547976	5031881	555505	5022548	77.07
173	555505	5022548	561266	5021764	16.93
174	565616	5020384	571486	5027877	73.87
175	571486	5027877	574398	5021957	16.84
176	574398	5021957	571238	5021488	17.16
177	571238	5021488	570487	5018858	3.44
178	570487	5018858	563651	5019540	15.59
179	563651	5019540	560669	5016130	34.65
180	560669	5016130	562875	5010051	32.95
181	562875	5010051	568897	5003481	96.85
182	568897	5003481	577589	4996656	161.26
183	577589	4996656	570079	4995763	24.41
184	570079	4995763	573087	4990274	28.01
185	573087	4990274	578797	4986175	24.58
186	578797	4986175	582822	4981095	36.81
187	582822	4981095	584916	4975769	20.04
188	584916	4975769	590955	4973388	64.58
189	590955	4973388	595555	4966800	108.86
190	595555	4966800	597046	4065423	14.42
191	597046	4965423	595109	4962817	4.98
192	595109	4962817	599814	4960114	15.87
193	599814	4960114	601202	4960069	5.09
194	601202	4960069	601233	4957591	4.77
195	601233	4957591	601857	4956784	4.03
196	601857	4956784	600733	4955359	1.92
197	600733	4955359	600515	4954764	1.01
198	600515	4954764	599621	4953718	1.83
199	599621	4953718	598553	4957306	4.32
200	598553	4957306	597832	4957889	1.26

**Huron Water Body**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
201	597832	4957889	596697	4956416	1.89
202	596651	4956104	595782	4954869	2.16
203	595782	4954869	594669	4953443	1.86
204	594866	4954077	594460	4956499	5.57
205	594460	4956499	594246	4958048	1.88
206	594246	4958048	592066	4957001	3.65
207	592066	4957001	591288	4956766	0.90
208	591288	4956766	591194	4955664	1.21
209	591194	4955664	590544	4955192	1.13
210	590544	4955192	588765	4956612	2.55
211	588765	4956612	587577	4955949	2.21
212	587577	4955949	587521	4957766	2.76
213	587521	4957766	589681	4958996	2.73
214	589681	4958996	589095	4961890	3.07
215	589095	4961890	588002	4962414	1.45
216	588002	4962414	584391	4961992	4.14
217	584391	4961992	584224	4959898	2.30
218	584224	4959898	583587	4957396	3.23
219	583587	4957396	582860	4957922	1.67
220	582860	4957922	583607	4959186	2.08
221	583607	4959186	583307	4961467	2.56
222	583307	4961467	584790	4962722	3.66
223	584790	4962722	586331	4964617	2.80
224	586331	4964617	585304	4967756	3.84
225	585304	4967756	583491	4967639	1.93
226	583491	4967639	582769	4968486	1.22
227	582769	4968486	579547	4967412	3.78
228	578811	4967496	579547	4967412	0.87
229	578484	4969939	579939	4975687	7.13
230	579939	4975687	577567	4971876	6.75
231	577567	4971876	578484	4969939	3.54
232	577551	4966474	578811	4967496	1.76
233	576874	4967091	577551	4966474	1.38
234	576388	4966377	576874	4967091	0.95
235	576674	4965665	576388	4966377	1.05
236	574983	4963016	576674	4965665	3.57
237	575505	4961650	574983	4963016	1.63
238	573706	4960889	575505	4961650	2.10
239	573260	4961039	573706	4960889	0.48
240	573089	4962087	573260	4961039	1.09
241	572844	4963584	573089	4962087	1.72
242	571202	4962447	572844	4963584	2.01
243	568881	4965400	571085	4965789	2.52
244	571085	4965789	571268	4967717	1.98
245	571268	4967717	569935	4968643	2.14
246	569935	4968643	569182	4969052	1.01
247	569182	4969052	569315	4970403	1.62
248	569315	4970403	568011	4969344	1.91
249	568011	4969344	568983	4968694	1.22
250	569330	4968396	568803	4967553	1.05

## Huron Water Body

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
251	568803	4967553	568881	4965400	2.38
252	569249	4961965	571202	4962447	2.10
253	568688	4957505	569249	4961965	4.77
254	566796	4959448	564723	4960026	2.43
255	564723	4960026	563963	4961353	1.61
256	563963	4961353	564975	4962930	2.11
257	564975	4962930	566687	4963539	1.89
258	566687	4963539	567054	4964663	1.29
259	567054	4964663	566616	4966910	2.39
260	566616	4966910	565615	4967791	1.60
261	564600	4971255	566084	4971421	1.91
262	566084	4971421	565887	4973758	2.72
263	565887	4973758	563373	4973392	2.76
264	563373	4973392	563082	4972387	1.14
265	563082	4972387	564600	4971255	2.25
266	565615	4967791	564658	4969121	1.74
267	564658	4969121	563584	4967603	2.76
268	563584	4967603	562138	4967080	1.57
269	562138	4967080	559786	4970015	5.38
270	559786	4970015	560527	4967288	3.64
271	560527	4967288	559463	4965076	2.82
272	559463	4965076	561621	4962917	3.43
273	561621	4962917	562024	4961411	1.69
274	562024	4961411	564412	4959594	3.31
275	564412	4959594	566796	4959448	3.54
276	568688	4957505	569599	4955014	3.14
277	569599	4955014	572062	4954333	3.63
278	572062	4954333	573361	4952997	1.93
279	573361	4952997	574230	4953158	1.13
280	574230	4953158	575312	4952524	1.31
281	575312	4952524	576561	4952394	1.34
282	576561	4952394	577637	4950676	2.10
283	577637	4950676	578176	4950710	0.69
284	578176	4950710	579715	4947347	4.05
285	579715	4947347	580616	4946865	1.31
286	580616	4946865	579779	4941281	5.85
287	579779	4941281	578593	4938681	3.01
288	578593	4938681	579876	4937418	2.07
289	579876	4937418	579687	4935285	2.22
290	579687	4935285	578776	4931996	3.59
291	578776	4931996	578353	4931260	1.28
292	578353	4931260	574330	4926298	6.44
293	574330	4926298	571440	4924325	3.53
294	571440	4924325	570045	4924278	1.62
295	570045	4924278	565396	4927173	5.83
296	565396	4927173	562947	4928492	3.89
297	562947	4928492	561074	4929221	6.76
298	561074	4929221	558152	4930416	5.68
299	558152	4930416	555989	4931179	4.01
300	555989	4931179	555816	4930650	0.62

**Huron Water Body**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
301	555816	4930650	554708	4929883	1.42
302	554708	4929883	554054	4930104	0.72
303	554054	4930104	551533	4931648	3.01
304	551533	4931648	549119	4931884	2.50
305	549119	4931884	547144	4931808	2.49
306	547144	4931808	544909	4933537	3.18
307	544909	4933537	543868	4934551	1.52
308	543868	4934551	543504	4934651	1.26
309	543504	4934651	542378	4935412	1.45
310	542378	4935412	541044	4935881	1.61
311	541044	4935881	540730	4936519	0.94
312	540730	4936519	538813	4937946	2.56
313	538813	4937946	537324	4937602	1.62
314	537324	4937602	535407	4937823	1.97
315	535407	4937823	535268	4938295	0.52
316	535268	4938295	532784	4939457	2.92
317	532784	4939457	532233	4939746	2.32
318	532233	4939746	530864	4941013	1.93
319	530864	4941013	529677	4943060	2.43
320	529677	4943060	529655	4947909	5.21
321	529655	4947909	528676	4949711	2.11
322	528676	4949711	528681	4951578	2.03
323	528681	4951578	527003	4951924	1.83
324	527003	4951924	525049	4951937	2.00
325	525049	4951937	522485	4951662	2.65
326	522485	4951662	519513	4952216	3.98
327	519513	4952216	519424	4951287	1.55
328	519424	4951287	517675	4950806	2.31
329	517675	4950806	514004	4948175	5.60
330	514004	4948175	511034	4944009	5.33
331	511034	4944009	509733	4941239	3.27
332	509733	4941239	507141	4940350	3.39
333	507141	4940350	505028	4936077	5.84
334	505028	4936077	504333	4936272	2.42
335	504333	4936272	504538	4937212	1.69
336	504538	4937212	504588	4940389	3.72
337	504588	4940389	505855	4944526	4.54
338	505855	4944526	506549	4946089	1.81
339	506549	4946089	506614	4947664	1.68
340	506614	4947664	507379	4949027	1.62
341	507379	4949027	507037	4949963	1.05
342	507037	4949963	507785	4950998	1.38
343	507785	4950998	508903	4954010	3.34
344	508903	4954010	507180	4960068	6.61
345	507180	4960068	505910	4960352	1.34
346	506232	4963726	508384	4963845	2.29
347	508384	4963845	508381	4966872	3.56
348	508381	4966872	507243	4967193	1.29
349	507243	4967193	506232	4963726	4.12
350	505910	4960352	505110	4959849	0.98

**Huron Water Body**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
351	505110	4959849	503857	4959795	1.28
352	503857	4959795	501090	4961546	3.34
353	501507	4963002	502591	4963477	1.21
354	502591	4963477	502704	4965001	1.70
355	502704	4965001	502870	4965884	0.92
356	502870	4965884	502466	4966361	0.66
357	502466	4966361	500908	4965296	1.99
358	500908	4965296	501561	4964380	1.22
359	501561	4964380	500347	4963365	1.77
360	500347	4963365	501507	4963002	1.26
361	501090	4961546	499210	4961120	1.99
362	499210	4961120	493688	4958425	6.47
363	493688	4958425	489968	4954170	5.81
364	489968	4954170	488928	4954650	1.27
365	488928	4954650	489331	4955812	1.27
366	489331	4955812	489613	4957751	2.01
367	489613	4957751	497332	4964568	10.48
368	497332	4964568	498453	4966220	2.02
369	498453	4966220	498694	4967461	1.28
370	498694	4967461	499607	4968974	1.80
371	499607	4968974	498761	4970527	1.95
372	501711	4972305	502436	4968133	4.67
373	502436	4968133	503372	4971281	3.45
374	503372	4971281	501711	4972305	2.34
375	498761	4970527	498018	4970329	0.80
376	498018	4970329	497626	4971071	0.94
377	497626	4971071	498410	4973155	2.29
378	498410	4973155	502673	4976521	5.81
379	502673	4976521	503211	4977837	1.50
380	503211	4977837	501311	4978873	2.22
381	501311	4978873	501196	4979547	0.71
382	501196	4979547	500638	4979415	1.03
383	500638	4979415	499773	4977836	1.93
384	499773	4977836	499275	4977945	0.60
385	499275	4977945	498570	4979302	1.67
386	498570	4979302	495614	4976611	4.57
387	495614	4976611	496937	4974552	2.76
388	496937	4974552	497289	4974654	0.84
389	497289	4974654	497558	4974992	0.46
390	497558	4974992	498027	4974398	0.88
391	498027	4974398	497554	4973612	0.94
392	497554	4973612	495014	4973065	2.75
393	495014	4973065	495004	4971200	2.13
394	495004	4971200	493500	4970737	2.08
395	493500	4970737	492054	4971232	1.71
396	492054	4971232	493175	4972309	1.78
397	493175	4972309	492680	4973981	1.93
398	492680	4973981	491028	4974039	1.72
399	491028	4974039	489221	4972401	2.53
400	489221	4972401	488074	4971834	1.39



**Huron Water Body**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
401	488074	4971834	487462	4972367	0.84
402	487462	4972367	487622	4972914	0.59
403	487622	4972914	488773	4974459	1.95
404	488773	4974459	489433	4975229	1.98
405	489433	4975229	490856	4976206	2.25
406	490856	4976206	490531	4978446	2.39
407	490531	4978446	483253	4978408	7.54
408	483253	4978408	483014	4978842	0.56
409	483014	4978842	482743	4979677	0.89
410	482743	4979677	484724	4982603	3.58
411	484724	4982603	482461	4983782	2.76
412	482461	4983782	480723	4981841	2.66
413	480723	4981841	480220	4981944	1.70
414	480220	4981944	479211	4982959	1.50
415	479211	4982959	478174	4985100	2.43
416	478174	4985100	479046	4986182	1.48
417	479046	4986182	478738	4988281	2.14
418	478738	4988281	479333	4991335	3.13
419	479333	4991335	477834	4994882	3.96
420	477834	4994882	477894	4995883	1.05
421	477894	4995883	475472	4996297	2.54
422	475472	4996297	473573	4998588	3.06
423	473573	4998588	473615	5000521	2.02
424	473615	5000521	474239	5003818	3.45
425	474239	5003818	477783	5008000	5.60
426	477783	5008000	477308	5010003	2.21
427	477308	5010003	476181	5010385	3.33
428	476181	5010385	472798	5009494	3.63
429	472798	5009494	469453	5009714	3.56
430	469453	5009714	463766	5008434	6.10
431	463766	5008434	459002	5010083	5.46
432	459002	5010083	454447	5009549	5.72
433	454447	5009549	453816	5010898	2.05
434	453816	5010898	449501	5010539	5.20
435	449501	5010539	449789	5011069	0.96
436	449789	5011069	450057	5012236	2.96
437	450057	5012236	451854	5017013	2.23
438	451854	5017013	455005	5017184	0.72
439	455005	5017184	455985	5018388	1.65
440	455985	5018388	454660	5017696	1.68
441	451854	5017013	449683	5016555	2.38
442	449683	5016555	450791	5015618	1.56
443	450057	5012236	447719	5012121	2.87
444	447719	5012121	446121	5011529	5.54
445	444720	5011852	445941	5012713	3.80
446	445941	5012713	444346	5012624	1.74
447	443436	5014976	445277	5015560	7.07
448	445277	5015560	442222	5019387	
449	442222	5019387	438933	5017898	3.91
450	438933	5017898	443436	5014976	12.07

## Huron Water Body

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
451	444346	5012624	444720	5011852	2.17
452	446121	5011529	442652	5007478	15.37
453	442652	5007478	444814	5004935	10.14
454	444814	5004935	448469	5004975	4.63
455	448469	5004975	447755	5003483	2.39
456	447755	5003483	452095	5002829	11.33
457	452095	5002829	454563	5004208	3.38
458	454563	5004208	453343	4999462	8.21
459	453343	4999462	456526	4995711	17.97
460	456526	4995711	458460	4994783	6.79
461	458460	4994783	459371	4991370	6.43
462	459371	4991370	461942	4987754	16.66
463	461942	4987754	464135	4983262	13.34
464	464135	4983262	465554	4979577	9.59
465	465554	4979577	467660	4982392	4.27
466	467660	4982392	468338	4980434	5.85
467	468338	4980434	470402	4982686	4.11
468	470402	4982686	470292	4979139	6.69
469	469282	4978170	466909	4977521	3.21
470	466909	4977521	467728	4976061	3.28
471	467728	4976061	469282	4978170	3.04
472	470292	4979139	472007	4979054	2.01
473	472007	4979054	470684	4972404	7.55
474	470684	4972404	472824	4967636	12.35
475	472824	4967636	474010	4965244	9.04
476	475763	4962779	476472	4961932	2.65
477	477419	4961318	476373	4958796	4.67
478	476373	4958796	477632	4956359	3.78
479	477632	4956359	477818	4951458	22.24
480	477818	4951458	477982	4949245	5.84
481	477982	4949245	475862	4949019	4.17
482	475862	4949019	477706	4945170	7.35
483	477706	4945170	478382	4943654	1.71
484	478382	4943654	477659	4938302	5.49
485	477659	4938302	477374	4938083	0.39
486	477374	4938083	477102	4937662	0.57
487	477102	4937662	476555	4937253	0.73
488	476555	4937253	476684	4937048	0.29
489	476684	4937048	476088	4935726	1.65
490	476088	4935726	473644	4932637	4.33
491	473644	4932637	472176	4930806	2.44
492	472176	4930806	470306	4927415	4.00
493	470306	4927415	470277	4927304	0.29
494	470277	4927304	469863	4926669	1.00
495	469863	4926669	469117	4926143	0.95
496	469117	4926143	469360	4925006	1.18
497	469360	4925006	468128	4923324	3.73
498	468128	4923324	467515	4921652	1.85
499	467515	4921652	467749	4921357	0.44
500	467749	4921357	467823	4920907	1.34

**Huron Water Body**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
501	467823	4920907	467806	4920367	0.57
502	467806	4920367	464414	4918934	4.89
503	464414	4918934	461519	4918225	5.05
504	461519	4918225	459555	4916462	3.43
505	459555	4916462	457545	4912614	5.64
506	457545	4912614	456075	4911906	1.93
507	456075	4911906	456047	4910444	2.63
508	456047	4910444	455267	4908938	2.46
509	455267	4908938	454032	4909902	3.52
510	454032	4909902	451797	4907763	5.75
511	451797	4907763	451685	4906066	2.07
512	451685	4906066	452138	4905973	0.52
513	452138	4905973	452267	4905428	0.87
514	452267	4905428	451758	4904763	0.97
515	451758	4904763	452474	4904757	0.76
516	452474	4904757	452754	4903734	1.94
517	452754	4903734	451452	4901736	2.63
518	451452	4901736	451924	4900837	1.19
519	451924	4900837	450894	4896102	5.86
520	450894	4896102	449082	4893198	3.66
521	449082	4893198	448788	4891661	1.61
522	448788	4891661	448762	4891566	1.52
523	448762	4891566	448438	4890889	0.77
524	448438	4890889	445691	4887725	4.27
525	445691	4887725	440554	4882030	8.45
526	440554	4882030	439222	4880136	2.62
527	439222	4880136	440823	4876046	4.70
528	440823	4876046	441190	4873620	3.28
529	441190	4873620	441175	4869183	4.50
530	441175	4869183	442056	4864315	5.05
531	442056	4864315	441819	4858417	6.00
532	441819	4858417	441485	4857239	2.28
533	441485	4857239	441788	4856535	0.84
534	441788	4856535	441647	4855142	1.44
535	441647	4855142	441955	4851564	3.69
536	441955	4851564	441370	4850219	1.50
537	441370	4850219	442110	4847979	2.45
538	442110	4847979	441802	4844947	3.10
539	441802	4844947	441474	4844043	0.99
540	441474	4844043	441272	4843644	6.32
541	441272	4843644	441609	4841758	2.26
542	441609	4841758	441609	4840594	1.19
543	441609	4840594	441820	4839634	1.02
544	441820	4839634	441239	4838303	1.47
545	441239	4838303	441954	4832458	6.05
546	441954	4832458	442791	4825301	7.38
547	442791	4825301	442708	4824158	1.16
548	442708	4824158	442884	4824028	1.71
549	442884	4824028	442465	4817749	6.48
550	442465	4817749	442035	4813595	4.27

Huron Water Body

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
551	442035	4813595	441834	4810435	3.23
552	441834	4810435	442471	4804935	5.79
553	442471	4804935	441509	4801520	3.60
554	441509	4801520	439609	4797851	4.20
555	439609	4797851	438325	4796284	2.04
556	438325	4796284	437813	4795736	0.76
557	437813	4795736	437791	4795636	2.13
558	437791	4795636	436674	4794448	1.64
559	436674	4794448	433561	4791705	4.16
560	433561	4791705	427470	4787581	7.38
561	427470	4787581	424745	4786195	9.40
562	424745	4786195	422694	4785295	2.25
563	422694	4785295	422255	4785106	0.55
564	422255	4785106	418848	4784220	3.57
565	418848	4784220	417455	4785099	1.78
566	417455	4785099	416896	4784668	0.73
567	417399	4781954	416896	4784668	3.16
568	416109	4779397	417399	4781954	4.29
569	416109	4779397	414648	4778017	2.07
570	414648	4778017	413865	4777279	1.11
571	413865	4777279	413202	4775978	1.60
572	413202	4775978	410721	4773506	3.52
573	410721	4773506	408450	4772108	2.71
574	408450	4772108	406394	4771501	2.17
575	406394	4771501	406388	4769624	1.95
576	406388	4769624	405224	4768283	1.82
577	405224	4768283	402846	4766754	2.89
578	402846	4766754	399812	4765576	3.29
579	399812	4765576	399033	4765373	0.81
580	399033	4765373	397755	4765032	1.81
581	397755	4765032	393730	4764346	4.31
582	393730	4764346	387121	4763076	6.86
583	387121	4763076	386036	4762343	1.33
584	386036	4762343	384933	4762017	1.17
585	384933	4762017	384358	4761813	2.09
586	476472	4961932	477419	4961318	1.14
587	474010	4965244	475763	4962779	5.18
588	562494	5021611	565616	5020384	4.51
589	561266	5021764	562494	5021611	1.85
590	594669	4953443	594866	4954077	1.10
591	596697	4956416	596651	4956104	1.62
592	568983	4968694	569330	4968396	0.51
593	284586	5129646	284746	5129680	3.17
594	286080	5130301	286891	5130179	1.73
595	286891	5130179	287771	5129274	3.14
596	287771	5129274	289540	5129236	3.04
597	289540	5129236	290349	5128548	2.74
598	291462	5126843	294379	5127412	4.92
599	302174	5125425	302219	5124490	3.65
600	309936	5123617	310844	5123550	1.43

**Huron Water Body**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
601	310844	5123550	311890	5123396	1.32
602	311890	5123396	312622	5123149	1.36
603	312622	5123149	317899	5121505	6.29
604	321522	5120124	326796	5118836	10.33
605	331228	5118179	332521	5118000	1.67
606	340631	5114658	345094	5114502	6.18
607	351997	5116070	353121	5115241	1.69
608	353121	5115241	356415	5115857	3.70
609	356415	5115857	358093	5115275	2.03
610	358093	5115275	361933	5116342	5.31
611	411279	5105556	413000	5106841	7.27
612	413000	5106841	415094	5106376	2.28
613	415094	5106376	417858	5105715	3.86
614	417858	5105715	419213	5105446	1.51
615	431181	5100250	425843	5099172	8.51
616	408250	5081612	406284	5085186	4.22
617	376871	5074837	376834	5076035	1.27
618	374193	5076131	371903	5077071	3.82
619	364477	5076696	363055	5079474	4.01
620	362759	5082537	359831	5081984	3.96
621	349270	5076000	349588	5075387	5.08
622	364119	5072267	364794	5072569	1.38
623	377833	5067595	379189	5067320	1.82
624	379189	5067320	380352	5067515	1.61
625	380352	5067515	381900	5066701	2.45
626	404011	5054460	405128	5053968	1.53
627	405128	5053968	408116	5051190	7.87
628	425659	5049741	429335	5053545	5.91
629	432496	5057145	433761	5057069	2.65
630	447535	5073998	448826	5077935	4.93
631	449418	5082794	447479	5083011	2.62
632	430697	5088689	430176	5090944	5.13
633	442665	5093658	442110	5095846	7.20
634	453736	5088655	454652	5087772	27.32
635	443091	5090781	442665	5093658	3.66
636	347688	5076986	349270	5076000	2.83
637	302219	5124490	302853	5124855	0.97
					4,576.49

**St. Clair/Detroit Reach Boundaries and Lengths**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
1	384358	4761813	384047	4760993	0.95
2	384047	4760993	384712	4759414	5.09
3	384712	4759414	384119	4756828	4.05
4	384119	4756828	382794	4755185	2.70
5	382794	4755185	381327	4752714	3.03
6	381327	4752714	381050	4750165	2.81
7	381050	4750165	380576	4746790	10.90
8	380576	4746790	379841	4742706	4.32
9	379841	4742706	379489	4739009	4.14
10	379489	4739009	380234	4735678	3.52
11	380234	4735678	379079	4730639	6.01
12	379079	4730639	377364	4726591	4.69
13	377364	4726591	376639	4722065	4.72
14	376639	4722065	374352	4717104	6.20
15	374352	4717104	369673	4711897	8.02
16	369673	4711897	366446	4710238	4.05
17	368193	4711440	365542	4712399	3.11
18	365542	4712399	361817	4708895	5.34
19	361817	4708895	368193	4711440	7.63
20	366446	4710238	369156	4708524	3.80
21	369156	4708524	368836	4705479	3.60
22	368836	4705479	373003	4706216	7.53
23	373003	4706216	373796	4703620	7.40
24	373796	4703620	379355	4703221	28.36
25	379355	4703221	383308	4705709	6.94
26	383308	4705709	383834	4703554	2.81
27	384000	4701739	382074	4700423	4.87
28	382074	4700423	383302	4693695	11.13
29	383302	4693695	382289	4688789	7.17
30	380214	4686029	380061	4685989	0.33
31	380061	4685989	378255	4684867	2.45
32	378255	4684867	375970	4684671	2.37
33	375970	4684671	371993	4685741	4.31
34	371993	4685741	367658	4684684	4.57
35	367658	4684684	366406	4684331	1.33
36	364755	4684169	359200	4683981	5.61
37	359200	4683981	359037	4684287	0.46
38	359037	4684287	358950	4683972	0.43
39	358950	4683972	357526	4683978	1.43
40	357526	4683978	347653	4687026	10.50
41	347653	4687026	345063	4688089	2.94
42	345063	4688089	343812	4688341	1.35
43	343812	4688341	339498	4689334	4.95
44	340301	4689914	340301	4689914	4.21
45	339498	4689334	337288	4688221	3.02
46	337288	4688221	330535	4686744	7.27
47	330535	4686744	326039	4680291	14.54
48	326039	4680291	326203	4672456	35.79
49	326203	4672456	325366	4668538	13.60
50	325366	4668538	325140	4661129	28.14

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**St. Clair/Detroit**

<b>Reach No.</b>	<b>Start UTM (Z16)</b>		<b>End UTM (Z16)</b>		<b>Reach Length (km)</b>
	<b>Easting</b>	<b>Northing</b>	<b>Easting</b>	<b>Northing</b>	
51	325140	4661129	325292	4657268	4.20
52	383834	4703554	384000	4701739	2.84
53	382289	4688789	380214	4686029	3.68
54	366406	4684331	364755	4684169	1.81
			<b>TOTAL</b>		<b>336.99</b>

**Erie Water Body Reach Boundaries and Lengths**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
1	325292	4657268	326502	4656561	1.52
2	326502	4656561	333883	4653779	8.08
3	333883	4653779	337657	4650945	4.83
4	337657	4650945	339613	4649601	2.49
5	339613	4649601	339790	4649491	0.22
6	339790	4649491	340125	4649430	0.41
7	340125	4649430	341081	4649213	1.07
8	341081	4649213	344655	4650353	3.84
9	344655	4650353	350147	4651146	5.70
10	350147	4651146	352284	4652142	2.39
11	352284	4652142	352619	4652254	0.36
12	352619	4652254	354886	4653514	2.76
13	354886	4653514	355686	4653899	0.89
14	355686	4653899	356582	4653728	1.03
15	356582	4653728	356587	4654116	0.62
16	356587	4654116	357801	4654563	1.33
17	357801	4654563	365800	4654231	8.38
18	365800	4654231	367334	4653981	1.70
19	367334	4653981	369622	4651954	3.22
20	369622	4651954	369821	4651763	0.30
21	369821	4651763	371559	4649310	3.04
22	371559	4649310	374846	4640445	9.60
23	359798	4630193	360117	4621725	8.85
24	374846	4640445	375747	4649118	8.79
25	375747	4649118	376811	4653381	4.43
26	376811	4653381	377498	4655271	2.08
27	377498	4655271	378361	4656642	1.70
28	378361	4656642	380437	4659583	3.75
29	380437	4659583	383412	4662809	4.54
30	383412	4662809	390368	4666961	8.16
31	390368	4666961	396071	4669536	6.29
32	396071	4669536	402637	4673339	7.64
33	402637	4673339	407521	4676427	5.83
34	407521	4676427	414941	4679206	8.04
35	414941	4679206	422614	4679068	7.79
36	422614	4679068	425039	4678348	2.56
37	425298	4678876	430264	4678895	5.54
38	430264	4678895	430304	4679118	0.23
39	430304	4679118	431614	4689995	11.08
40	431614	4689995	433381	4693006	3.53
41	433381	4693006	441395	4698976	10.05
42	441395	4698976	449531	4705776	10.68
43	449531	4705776	450436	4706923	1.55
44	450436	4706923	455155	4711296	6.50
45	455155	4711296	461508	4714332	7.29
46	461508	4714332	461736	4714835	0.64
47	461736	4714835	463562	4716551	2.63
48	463562	4716551	467321	4716980	3.87
49	467321	4716980	470578	4720254	4.70
50	470578	4720254	471177	4720763	0.93



**Erie Water Body**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
51	471177	4720763	480413	4723222	9.83
52	480413	4723222	482360	4722706	2.04
53	482360	4722706	483833	4723466	2.36
54	483833	4723466	486626	4722994	2.91
55	486626	4722994	498060	4722517	11.87
56	498060	4722517	499286	4722102	1.30
57	499286	4722102	499382	4722307	0.29
58	499382	4722307	508309	4722704	9.28
59	508309	4722704	512910	4722000	4.71
60	512910	4722000	515709	4720227	3.35
61	515709	4720227	515792	4720945	0.92
62	515792	4720945	518618	4720418	3.00
63	518618	4720418	522858	4718405	4.80
64	522858	4718405	530873	4714225	9.11
65	530873	4714225	533945	4713837	3.14
66	533945	4713837	538013	4713372	4.27
67	538013	4713372	543226	4713504	5.27
68	543226	4713504	549463	4713998	6.30
69	549463	4713998	552923	4713366	3.54
70	552923	4713366	558535	4712016	5.84
71	558535	4712016	564543	4710840	6.17
72	564543	4710840	569407	4709814	4.99
73	569407	4709814	578659	4710891	9.38
74	578659	4710891	571203	4713145	8.49
75	571203	4713145	561536	4713400	12.00
76	561536	4713400	558584	4717519	5.12
77	558584	4717519	553742	4715279	9.66
78	553742	4715279	545329	4715509	12.61
79	545329	4715509	544723	4717897	2.90
80	544723	4717897	549628	4723189	9.14
81	549628	4723189	554456	4721885	6.09
82	554456	4721885	555523	4727186	5.64
83	555523	4727186	559702	4731938	6.47
84	559702	4731938	562229	4734648	4.17
85	562229	4734648	563943	4736769	3.09
86	563943	4736769	564753	4736884	0.84
87	564753	4736884	565303	4736589	0.76
88	565303	4736589	565915	4737004	0.93
89	565915	4737004	569096	4737158	3.33
90	569096	4737158	572214	4737535	3.47
91	572214	4737535	575716	4737826	3.76
92	575716	4737826	575974	4738426	0.75
93	575974	4738426	577107	4738416	1.30
94	577107	4738416	578570	4739424	3.99
95	578570	4739424	582915	4737958	5.07
96	582915	4737958	583270	4738512	0.96
97	583270	4738512	584156	4739654	1.55
98	584156	4739654	585116	4739956	2.60
99	585116	4739956	586644	4739901	1.63
100	586644	4739901	587383	4740553	1.20

**Erie Water Body**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
101	587648	4740638	590564	4740724	3.62
102	590564	4740724	590844	4741046	0.70
103	590844	4741046	592012	4741739	1.48
104	592012	4741739	594542	4741551	2.69
105	594542	4741551	594763	4741666	0.69
106	594763	4741666	595440	4742368	1.18
107	595440	4742368	596976	4742835	1.77
108	596976	4742835	599531	4743953	3.34
109	599531	4743953	601927	4743695	2.62
110	601927	4743695	603102	4745081	2.16
111	603102	4745081	604532	4745117	1.55
112	604532	4745117	605682	4745949	1.61
113	605682	4745949	610933	4743540	7.51
114	610933	4743540	614969	4745694	5.24
115	614969	4745694	616057	4745673	1.11
116	616057	4745673	616406	4745588	0.36
117	616406	4745588	618384	4744168	2.46
118	618384	4744168	618911	4744440	1.41
119	618911	4744440	620042	4745466	1.69
120	620042	4745466	623472	4744263	3.70
121	623472	4744263	623883	4744034	0.48
122	623883	4744034	624714	4745913	2.23
123	624714	4745913	626567	4747925	3.03
124	626567	4747925	631822	4746792	5.83
125	631822	4746792	632355	4746437	0.78
126	632355	4746437	632915	4747083	0.87
127	632915	4747083	634793	4746340	2.11
128	634793	4746340	635109	4745878	0.58
129	635109	4745878	635975	4747721	2.23
130	635975	4747721	637411	4748065	1.54
131	638237	4748335	640805	4747607	2.93
132	640805	4747607	643630	4748273	9.35
133	643630	4748273	645195	4747679	1.76
134	645195	4747679	645529	4747409	0.46
135	645529	4747409	645623	4747764	0.40
136	645623	4747764	647305	4747539	1.86
137	647305	4747539	648532	4748045	1.45
138	648532	4748045	650459	4748393	2.20
139	650459	4748393	653042	4747206	3.10
140	653042	4747206	655331	4744932	3.34
141	655331	4744932	655805	4744260	1.16
142	655805	4744260	656235	4744995	0.88
143	656235	4744995	655750	4746423	1.89
144	655750	4746423	658599	4746772	3.28
145	658599	4746772	660428	4748489	2.78
146	660428	4748489	662556	4747899	2.32
147	662556	4747899	663467	4748835	1.61
148	663467	4748835	664750	4749101	1.38
149	664750	4749101	665463	4749152	0.81
150	665463	4749152	665879	4749643	0.76

**Erie Water Body**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
151	665879	4749643	667022	4749432	1.28
152	667022	4749432	669173	4750079	2.60
153	360117	4621725	361084	4619929	2.20
154	361084	4619929	361248	4621405	1.60
155	361248	4621405	365129	4622987	4.78
156	365129	4622987	363844	4632252	9.87
157	360209	4630526	363844	4632252	5.35
158	359798	4630193	360209	4630526	0.60
159	425039	4678348	425073	4679005	0.93
160	426114	4678825	425298	4678876	0.98
161	429721	4684818	426114	4678825	12.32
162	430340	4686540	429721	4684818	2.10
163	422863	4679195	430340	4686540	18.90
164	425073	4679005	422863	4679195	2.54
165	587383	4740553	587648	4740638	0.34
166	637411	4748065	638237	4748335	1.12
				<b>Total</b>	<b>623.44</b>

**Lake Ontario Reach Boundaries and Lengths**

Reach No.	UTM Zone	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
		Easting	Northing	Easting	Northing	
1	UTM_Z17	669014	4749975	670667	4752415	3.14
2	UTM_Z17	670667	4752415	668550	4756869	5.43
3	UTM_Z17	668550	4756869	661142	4760430	10.03
4	UTM_Z17	661142	4760430	661509	4767284	7.29
5	UTM_Z17	661509	4767284	659359	4769288	3.25
6	UTM_Z17	659359	4769288	656410	4770921	4.61
7	UTM_Z17	656410	4770921	656739	4775944	6.31
8	UTM_Z17	656739	4775944	658704	4780470	6.11
9	UTM_Z17	658704	4780470	658193	4784858	4.81
10	UTM_Z17	658193	4784858	657615	4790395	5.85
11	UTM_Z17	657626	4790399	656119	4791515	1.98
12	UTM_Z17	656119	4791515	654364	4791213	1.83
13	UTM_Z17	652711	4790802	652095	4790877	0.64
14	UTM_Z17	652095	4790877	651458	4790859	0.77
15	UTM_Z17	651458	4790859	650100	4789930	1.72
16	UTM_Z17	650108	4789931	645498	4787271	5.67
17	UTM_Z17	645498	4787271	645126	4787463	0.43
18	UTM_Z17	645126	4787463	645526	4789313	2.43
19	UTM_Z17	645526	4789313	644709	4789362	4.78
20	UTM_Z17	644709	4789362	644544	4787513	1.92
21	UTM_Z17	644544	4787513	644188	4786873	0.76
22	UTM_Z17	644188	4786873	641790	4785102	3.03
23	UTM_Z17	641790	4785102	641095	4785064	0.76
24	UTM_Z17	641095	4785064	641017	4784844	1.19
25	UTM_Z17	641017	4784844	640681	4784705	0.37
26	UTM_Z17	640681	4784705	636783	4782401	4.61
27	UTM_Z17	636783	4782401	635793	4782086	1.07
28	UTM_Z17	635793	4782086	632512	4782342	3.46
29	UTM_Z17	632512	4782342	631829	4782616	0.97
30	UTM_Z17	631829	4782616	629285	4783815	2.88
31	UTM_Z17	629285	4783815	625170	4783611	4.21
32	UTM_Z17	625170	4783611	619408	4783359	6.09
33	UTM_Z17	619408	4783359	617719	4784274	1.95
34	UTM_Z17	617719	4784274	617413	4784393	0.61
35	UTM_Z17	617413	4784393	615334	4784325	2.21
36	UTM_Z17	615334	4784325	612075	4786455	3.98
37	UTM_Z17	612075	4786455	611367	4786900	1.35
38	UTM_Z17	611367	4786900	609200	4786255	2.31
39	UTM_Z17	609200	4786255	607172	4787348	2.36
40	UTM_Z17	607172	4787348	602442	4788648	5.19
41	UTM_Z17	602442	4788648	602040	4788631	0.42
42	UTM_Z17	602040	4788631	599705	4790811	3.34
43	UTM_Z17	599705	4790811	597777	4794514	4.21
44	UTM_Z17	597777	4794514	597810	4794684	1.81
45	UTM_Z17	596754	4795940	598860	4791119	6.81
46	UTM_Z17	598860	4791119	595218	4792931	10.63
47	UTM_Z17	595218	4792931	591806	4791523	9.39
48	UTM_Z17	591806	4791523	590218	4793299	6.04
49	UTM_Z17	590218	4793299	596754	4795940	10.62
50	UTM_Z17	597810	4794684	597283	4796802	2.58

## Lake Ontario

Reach No.	UTM Zone	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
		Easting	Northing	Easting	Northing	
51	UTM_Z17	597283	4796802	597696	4797282	0.65
52	UTM_Z17	597696	4797282	599563	4798572	2.36
53	UTM_Z17	599563	4798572	603833	4803082	6.70
54	UTM_Z17	603833	4803082	604467	4804988	2.07
55	UTM_Z17	604467	4804988	604663	4805092	0.24
56	UTM_Z17	604663	4805092	605945	4806394	1.95
57	UTM_Z17	605945	4806394	606196	4807558	1.33
58	UTM_Z17	606196	4807558	607885	4810299	3.89
59	UTM_Z17	607885	4810299	607986	4810603	0.34
60	UTM_Z17	607986	4810603	611958	4815706	6.89
61	UTM_Z17	611958	4815706	612619	4816671	1.33
62	UTM_Z17	612619	4816671	612965	4818832	2.34
63	UTM_Z17	612965	4818832	612951	4819267	0.44
64	UTM_Z17	612951	4819267	613313	4821139	2.07
65	UTM_Z17	613313	4821139	614590	4822318	2.44
66	UTM_Z17	614590	4822318	614629	4822881	2.00
67	UTM_Z17	614629	4822881	615674	4823954	1.63
68	UTM_Z17	615674	4823954	617336	4825052	4.11
69	UTM_Z17	617336	4825052	617524	4825795	1.95
70	UTM_Z17	617524	4825795	618086	4826935	1.34
71	UTM_Z17	618086	4826935	619959	4827305	2.27
72	UTM_Z17	619959	4827305	620688	4827666	1.14
73	UTM_Z17	620688	4827666	622104	4829454	2.63
74	UTM_Z17	622104	4829454	623478	4830855	7.29
75	UTM_Z17	623478	4830855	623338	4831765	3.27
76	UTM_Z17	623338	4831765	623450	4832019	0.87
77	UTM_Z17	623450	4832019	624727	4832507	1.44
78	UTM_Z17	624727	4832507	626341	4831834	1.94
79	UTM_Z17	626341	4831834	628255	4831541	5.59
80	UTM_Z17	628255	4831541	628719	4831386	3.32
81	UTM_Z17	628719	4831386	629933	4829804	2.25
82	UTM_Z17	629933	4829804	633111	4831839	4.05
83	UTM_Z17	633111	4831839	634798	4833866	4.73
84	UTM_Z17	633685	4829998	635275	4831917	3.93
85	UTM_Z17	635275	4831917	635878	4835010	3.36
86	UTM_Z17	635878	4835010	636384	4834609	3.30
87	UTM_Z17	636384	4834609	636554	4835665	1.99
88	UTM_Z17	636554	4835665	638671	4836550	2.44
89	UTM_Z17	638671	4836550	639130	4837186	0.83
90	UTM_Z17	639130	4837186	641718	4840117	4.04
91	UTM_Z17	641718	4840117	642798	4841347	7.53
92	UTM_Z17	643150	4842004	644708	4843919	2.54
93	UTM_Z17	644708	4843919	645687	4844938	1.52
94	UTM_Z17	645687	4844938	648807	4846704	3.73
95	UTM_Z17	648807	4846704	651118	4849988	4.22
96	UTM_Z17	651118	4849988	651540	4850606	1.07
97	UTM_Z17	651540	4850606	652924	4852178	2.50
98	UTM_Z17	652924	4852178	653917	4852542	1.21
99	UTM_Z17	653917	4852542	654840	4852539	0.95
100	UTM_Z17	654840	4852539	655993	4852132	2.77

Lake Ontario

Reach No.	UTM Zone	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
		Easting	Northing	Easting	Northing	
101	UTM_Z17	655993	4852132	656990	4852839	1.27
102	UTM_Z17	656990	4852839	657970	4853118	1.06
103	UTM_Z17	657970	4853118	658340	4853158	0.47
104	UTM_Z17	658340	4853158	658907	4853098	0.58
105	UTM_Z17	658907	4853098	661068	4854353	2.60
106	UTM_Z17	661068	4854353	661753	4854440	0.71
107	UTM_Z17	661753	4854440	662207	4854455	0.53
108	UTM_Z17	662207	4854455	663563	4855752	1.94
109	UTM_Z17	663563	4855752	664084	4856248	0.73
110	UTM_Z17	664084	4856248	664479	4856480	0.46
111	UTM_Z17	664479	4856480	665277	4856593	0.98
112	UTM_Z17	665277	4856593	665676	4857001	0.60
113	UTM_Z17	665676	4857001	666145	4857215	0.54
114	UTM_Z17	666145	4857215	666584	4857190	0.63
115	UTM_Z17	666584	4857190	667131	4857079	0.57
116	UTM_Z17	667131	4857079	668636	4856616	1.60
117	UTM_Z17	668636	4856616	669240	4857385	1.04
118	UTM_Z17	669240	4857385	670042	4857501	0.84
119	UTM_Z17	670042	4857501	671250	4857223	1.26
120	UTM_Z17	671250	4857223	671494	4857391	0.31
121	UTM_Z17	671494	4857391	673308	4858008	1.94
122	UTM_Z17	673308	4858008	673801	4858188	0.54
123	UTM_Z17	673801	4858188	674231	4858147	0.46
124	UTM_Z17	674231	4858147	674329	4858393	0.31
125	UTM_Z17	674329	4858393	674640	4858730	0.48
126	UTM_Z17	674640	4858730	674908	4858986	0.39
127	UTM_Z17	674908	4858986	675236	4859219	0.41
128	UTM_Z17	675236	4859219	675619	4859462	0.54
129	UTM_Z17	675619	4859462	677123	4859205	1.67
130	UTM_Z17	677123	4859205	677860	4859540	1.01
131	UTM_Z17	677860	4859540	678689	4859441	0.84
132	UTM_Z17	678689	4859441	680410	4859450	1.73
133	UTM_Z17	680410	4859450	682099	4859689	1.73
134	UTM_Z17	683549	4859442	684728	4860135	1.40
135	UTM_Z17	684728	4860135	685595	4860526	1.00
136	UTM_Z17	685595	4860526	686010	4860137	0.57
137	UTM_Z17	686010	4860137	686159	4860209	0.17
138	UTM_Z17	686159	4860209	686023	4860755	0.57
139	UTM_Z17	686023	4860755	686291	4860974	0.37
140	UTM_Z17	686291	4860974	686543	4861397	0.50
141	UTM_Z17	686543	4861397	687095	4861777	0.68
142	UTM_Z17	687095	4861777	687576	4861847	0.49
143	UTM_Z17	687576	4861847	687634	4861883	0.44
144	UTM_Z17	687634	4861883	687876	4862068	0.32
145	UTM_Z17	687876	4862068	690769	4862927	3.14
146	UTM_Z17	690769	4862927	691961	4863184	1.26
147	UTM_Z17	691961	4863184	692922	4862889	1.02
148	UTM_Z17	692922	4862889	693267	4862928	0.36
149	UTM_Z17	693267	4862928	694203	4862848	0.95
150	UTM_Z17	694203	4862848	694615	4862912	0.42

Lake Ontario

Reach No.	UTM Zone	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
		Easting	Northing	Easting	Northing	
151	UTM_Z17	694615	4862912	694625	4862973	0.29
152	UTM_Z17	694625	4862973	695327	4863017	0.76
153	UTM_Z17	695327	4863017	696221	4862995	0.95
154	UTM_Z17	696221	4862995	700760	4863619	4.46
155	UTM_Z17	700766	4863601	702074	4863213	1.57
156	UTM_Z17	702074	4863213	704380	4864229	2.57
157	UTM_Z17	704380	4864229	706659	4865229	2.56
158	UTM_Z17	706659	4865229	707861	4865391	1.24
159	UTM_Z17	707861	4865391	709196	4866139	1.76
160	UTM_Z17	709196	4866139	710415	4867072	1.56
161	UTM_Z17	710415	4867072	710870	4867207	0.48
162	UTM_Z17	710870	4867207	711308	4867264	0.45
163	UTM_Z17	711308	4867264	711917	4867340	0.63
164	UTM_Z17	711917	4867340	713316	4867576	1.44
165	UTM_Z17	713316	4867576	714112	4868206	1.05
166	UTM_Z17	714112	4868206	715319	4868399	1.23
167	UTM_Z17	716520	4868616	717270	4868651	0.78
168	UTM_Z17	717270	4868651	717397	4869026	0.55
169	UTM_Z17	717397	4869026	718764	4869689	1.57
170	UTM_Z17	718764	4869689	720455	4870147	1.80
171	UTM_Z17	720455	4870147	721114	4870120	0.66
172	UTM_Z17	721114	4870120	723584	4870006	2.53
173	UTM_Z17	723584	4870006	724661	4870518	1.22
174	UTM_Z17	724661	4870518	726318	4870432	1.69
175	UTM_Z17	726318	4870432	727157	4870425	0.85
176	UTM_Z17	727157	4870425	727512	4870763	1.40
177	UTM_Z17	727512	4870763	728112	4870811	0.63
178	UTM_Z17	728112	4870811	728493	4870638	0.44
179	UTM_Z17	728493	4870638	730209	4871011	1.81
180	UTM_Z17	730209	4871011	731454	4870961	1.28
181	UTM_Z17	731454	4870961	732748	4871977	1.72
182	UTM_Z17	732748	4871977	733750	4872172	1.04
183	UTM_Z17	733750	4872172	734907	4871919	1.20
184	UTM_Z17	734907	4871919	735681	4872365	0.94
185	UTM_Z17	735681	4872365	736269	4872316	0.60
186	UTM_Z17	736269	4872316	736709	4872388	0.45
187	UTM_Z17	736709	4872388	737521	4872459	0.83
188	UTM_Z17	737521	4872459	738098	4872410	0.58
189	UTM_Z17	738098	4872410	740103	4871896	2.11
190	UTM_Z17	740103	4871896	740415	4872135	0.40
191	UTM_Z17	740415	4872135	259633	4872620	0.96
192	UTM_Z18	259633	4872620	260292	4872951	0.75
193	UTM_Z18	260292	4872951	260661	4873201	0.45
194	UTM_Z18	260661	4873201	261934	4873401	1.33
195	UTM_Z18	261934	4873401	264532	4872527	2.78
196	UTM_Z18	264532	4872527	265557	4872947	1.16
197	UTM_Z18	265557	4872947	267260	4873569	1.91
198	UTM_Z18	267260	4873569	268265	4873406	1.06
199	UTM_Z18	268265	4873406	268916	4873187	0.72
200	UTM_Z18	268916	4873187	269285	4872956	0.54

Lake Ontario

Reach No.	UTM Zone	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
		Easting	Northing	Easting	Northing	
201	UTM_Z18	269285	4872956	269144	4873228	0.45
202	UTM_Z18	269144	4873228	270041	4873834	1.13
203	UTM_Z18	270041	4873834	270024	4874098	0.27
204	UTM_Z18	270024	4874098	270268	4874425	0.44
205	UTM_Z18	270268	4874425	272049	4874969	1.92
206	UTM_Z18	272049	4874969	272564	4875406	0.75
207	UTM_Z18	272564	4875406	273135	4875647	0.64
208	UTM_Z18	273135	4875647	274001	4875893	0.91
209	UTM_Z18	274001	4875893	274845	4875889	0.85
210	UTM_Z18	274845	4875889	275747	4875758	0.94
211	UTM_Z18	275747	4875758	276347	4876037	0.67
212	UTM_Z18	276347	4876037	276963	4876329	0.71
213	UTM_Z18	276963	4876329	278534	4876264	1.60
214	UTM_Z18	278534	4876264	279429	4876502	0.96
215	UTM_Z18	279429	4876502	280897	4874119	3.09
216	UTM_Z18	280518	4873748	280010	4873199	1.38
217	UTM_Z18	279620	4872239	279620	4872239	2.61
218	UTM_Z18	280010	4873199	280518	4873748	0.82
219	UTM_Z18	280897	4874119	283139	4873973	2.35
220	UTM_Z18	283139	4873973	285492	4874885	2.60
221	UTM_Z18	285492	4874885	284907	4875436	0.88
222	UTM_Z18	283876	4875774	282999	4875200	2.42
223	UTM_Z18	282119	4875228	282321	4875721	1.95
224	UTM_Z18	282321	4875721	280758	4876922	2.27
225	UTM_Z18	280758	4876922	281384	4877327	0.79
226	UTM_Z18	281384	4877327	281608	4877464	0.59
227	UTM_Z18	281608	4877464	282612	4877986	1.62
228	UTM_Z18	282612	4877986	284299	4877430	8.60
229	UTM_Z18	284299	4877430	284712	4876974	0.89
230	UTM_Z18	284712	4876974	284871	4876438	0.61
231	UTM_Z18	284871	4876438	285304	4876600	0.53
232	UTM_Z18	285304	4876600	286074	4877168	1.06
233	UTM_Z18	286074	4877168	286998	4877450	0.99
234	UTM_Z18	286998	4877450	288456	4877243	1.54
235	UTM_Z18	288456	4877243	289344	4877833	1.37
236	UTM_Z18	289344	4877833	291024	4876426	2.88
237	UTM_Z18	291024	4876426	290938	4876040	0.42
238	UTM_Z18	290896	4875763	294213	4871894	5.20
239	UTM_Z18	294213	4871894	294387	4871654	0.40
240	UTM_Z18	294387	4871654	295447	4871443	1.14
241	UTM_Z18	295447	4871443	295738	4871450	0.31
242	UTM_Z18	295738	4871450	296209	4870711	0.92
243	UTM_Z18	296209	4870711	296834	4870704	0.67
244	UTM_Z18	296834	4870704	297479	4869496	1.39
245	UTM_Z18	297479	4869496	297447	4869366	0.14
246	UTM_Z18	297447	4869366	297621	4869224	0.26
247	UTM_Z18	297621	4869224	297917	4868442	0.84
248	UTM_Z18	297917	4868442	298084	4868179	0.36
249	UTM_Z18	298084	4868179	298448	4868438	0.46
250	UTM_Z18	298448	4868438	299821	4866846	2.26



## Lake Ontario

Reach No.	UTM Zone	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
		Easting	Northing	Easting	Northing	
251	UTM_Z18	299821	4866846	299621	4866501	0.42
252	UTM_Z18	299621	4866501	300122	4866374	0.59
253	UTM_Z18	300122	4866374	304661	4866945	4.86
254	UTM_Z18	304661	4866945	305135	4866770	0.51
255	UTM_Z18	305135	4866770	311853	4868888	7.27
256	UTM_Z18	311853	4868888	314084	4867062	3.43
257	UTM_Z18	314084	4867062	315021	4865800	1.58
258	UTM_Z18	315021	4865800	316909	4862859	3.52
259	UTM_Z18	316909	4862859	316717	4862284	0.70
260	UTM_Z18	316717	4862284	317009	4862183	0.37
261	UTM_Z18	317009	4862183	317612	4862584	0.83
262	UTM_Z18	317612	4862584	319857	4863497	2.54
263	UTM_Z18	319857	4863497	322071	4861099	3.52
264	UTM_Z18	322071	4861099	319581	4858240	3.99
265	UTM_Z18	319581	4858240	321280	4858018	1.87
266	UTM_Z18	321280	4858018	322592	4858067	1.34
267	UTM_Z18	322592	4858067	323461	4858705	1.24
268	UTM_Z18	323461	4858705	324439	4859455	1.28
269	UTM_Z18	324439	4859455	325897	4858587	1.82
270	UTM_Z18	325897	4858587	326014	4858271	0.35
271	UTM_Z18	326014	4858271	326286	4858176	0.29
272	UTM_Z18	326286	4858176	326412	4857792	0.42
273	UTM_Z18	326412	4857792	326140	4857209	0.75
274	UTM_Z18	326140	4857209	326706	4856017	1.43
275	UTM_Z18	326706	4856017	327896	4856735	1.48
276	UTM_Z18	327896	4856735	328837	4856756	0.96
277	UTM_Z18	328837	4856756	330234	4858181	2.09
278	UTM_Z18	330234	4858181	331165	4858573	1.03
279	UTM_Z18	331165	4858573	331954	4858179	0.96
280	UTM_Z18	331962	4858197	331833	4858613	0.59
281	UTM_Z18	331833	4858613	332357	4858827	0.58
282	UTM_Z18	332357	4858827	335429	4861306	4.01
283	UTM_Z18	335429	4861306	336704	4861165	1.47
284	UTM_Z18	336704	4861165	339105	4861719	2.52
285	UTM_Z18	339105	4861719	339582	4862222	0.71
286	UTM_Z18	339582	4862222	341170	4862473	1.67
287	UTM_Z18	341170	4862473	343397	4863800	2.75
288	UTM_Z18	343397	4863800	344127	4863882	0.76
289	UTM_Z18	344127	4863882	344376	4864542	0.84
290	UTM_Z18	344376	4864542	346161	4864667	1.92
291	UTM_Z18	346161	4864667	347492	4864760	1.44
292	UTM_Z18	347492	4864760	348205	4865144	0.87
293	UTM_Z18	348205	4865144	349012	4865562	0.98
294	UTM_Z18	349012	4865562	349832	4865440	0.85
295	UTM_Z18	349832	4865440	350743	4865997	1.10
296	UTM_Z18	350743	4865997	350803	4866378	0.40
297	UTM_Z18	350803	4866378	350611	4866466	1.03
298	UTM_Z18	350611	4866466	350769	4866801	0.39
299	UTM_Z18	350769	4866801	350322	4867605	0.94
300	UTM_Z18	350322	4867605	348720	4867331	1.77

Lake Ontario

Reach No.	UTM Zone	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
		Easting	Northing	Easting	Northing	
301	UTM_Z18	348720	4867331	345223	4865853	3.95
302	UTM_Z18	345223	4865853	343914	4865801	1.39
303	UTM_Z18	343914	4865801	343561	4866239	0.57
304	UTM_Z18	343561	4866239	342894	4866959	1.05
305	UTM_Z18	342894	4866959	340490	4866111	2.63
306	UTM_Z18	340490	4866111	340284	4866320	0.29
307	UTM_Z18	340284	4866320	340229	4866536	0.24
308	UTM_Z18	340229	4866536	339452	4866323	0.81
309	UTM_Z18	339451	4866307	338950	4867184	1.28
310	UTM_Z18	338950	4867184	337956	4866920	1.11
311	UTM_Z18	337956	4866920	337582	4865469	1.76
312	UTM_Z18	337582	4865469	336397	4863911	2.29
313	UTM_Z18	336397	4863911	335481	4864946	4.00
314	UTM_Z18	335481	4864946	335771	4865583	1.08
315	UTM_Z18	335771	4865583	336369	4866494	1.18
316	UTM_Z18	336369	4866494	336125	4866944	0.54
317	UTM_Z18	336125	4866944	336074	4868106	1.23
318	UTM_Z18	336074	4868106	336791	4868565	0.89
319	UTM_Z18	336791	4868565	337771	4869692	1.54
320	UTM_Z18	337771	4869692	337869	4869922	2.83
321	UTM_Z18	337869	4869922	338792	4870033	1.00
322	UTM_Z18	338792	4870033	339118	4870481	0.65
323	UTM_Z18	339118	4870481	338862	4870580	0.30
324	UTM_Z18	338862	4870580	338871	4870885	0.46
325	UTM_Z18	338871	4870885	339797	4872047	1.57
326	UTM_Z18	339797	4872047	339560	4872216	0.35
327	UTM_Z18	339560	4872216	339165	4872084	0.44
328	UTM_Z18	339165	4872084	338707	4872628	0.81
329	UTM_Z18	338707	4872628	337840	4871944	1.33
330	UTM_Z18	337840	4871944	337315	4871770	1.23
331	UTM_Z18	337315	4871770	337268	4872393	0.92
332	UTM_Z18	337268	4872393	338356	4873498	1.59
333	UTM_Z18	338356	4873498	339043	4873518	0.87
334	UTM_Z18	339043	4873518	340124	4873574	1.37
335	UTM_Z18	340124	4873574	340809	4874149	0.73
336	UTM_Z18	340809	4874149	341809	4874862	1.50
337	UTM_Z18	341832	4873895	340494	4872707	2.14
338	UTM_Z18	340494	4872707	340951	4871041	2.68
339	UTM_Z18	340951	4871041	342334	4872040	1.79
340	UTM_Z18	342334	4872040	342300	4872617	0.60
341	UTM_Z18	342300	4872617	342628	4873165	0.67
342	UTM_Z18	342628	4873165	342516	4873414	0.29
343	UTM_Z18	342516	4873414	342590	4873845	0.46
344	UTM_Z18	342590	4873845	341832	4873895	0.80
345	UTM_Z18	341809	4874862	342453	4875437	0.88
346	UTM_Z18	342453	4875437	343824	4875612	1.42
347	UTM_Z18	343824	4875612	344382	4875654	0.75
348	UTM_Z18	344382	4875654	345569	4876145	1.44
349	UTM_Z18	345569	4876145	346896	4876836	1.52
350	UTM_Z18	346896	4876836	347813	4877311	1.07

## Lake Ontario

Reach No.	UTM Zone	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
		Easting	Northing	Easting	Northing	
351	UTM_Z18	347813	4877311	347496	4877993	0.80
352	UTM_Z18	347496	4877993	348179	4880117	2.49
353	UTM_Z18	348179	4880117	351644	4882614	4.39
354	UTM_Z18	351644	4882614	352529	4884914	2.57
355	UTM_Z18	352529	4884914	351837	4886088	1.59
356	UTM_Z18	351837	4886088	351830	4885751	0.47
357	UTM_Z18	351830	4885751	350115	4884378	2.28
358	UTM_Z18	350115	4884378	349070	4884408	4.19
359	UTM_Z18	349070	4884408	345293	4880581	5.64
360	UTM_Z18	345293	4880581	338037	4877458	8.70
361	UTM_Z18	338037	4877458	331815	4878856	6.88
362	UTM_Z18	331815	4878856	330007	4877503	2.38
363	UTM_Z18	330007	4877503	328800	4875030	3.25
364	UTM_Z18	328800	4875030	329695	4878409	5.15
365	UTM_Z18	329695	4878409	333464	4884324	7.44
366	UTM_Z18	333464	4884324	335371	4891988	8.84
367	UTM_Z18	335371	4891988	334349	4893101	3.03
368	UTM_Z18	334349	4893101	329306	4891203	5.85
369	UTM_Z18	329306	4891203	325607	4890137	4.87
370	UTM_Z18	325607	4890137	324332	4889868	7.16
371	UTM_Z18	324332	4889868	316816	4887045	9.66
372	UTM_Z18	316816	4887045	316584	4884563	2.99
373	UTM_Z18	316584	4884563	319111	4884728	2.88
374	UTM_Z18	319111	4884728	318144	4883401	2.80
375	UTM_Z18	318144	4883401	315347	4882886	3.10
376	UTM_Z18	315347	4882886	313336	4884353	3.21
377	UTM_Z18	313336	4884353	316187	4889854	19.19
378	UTM_Z18	316187	4889854	315041	4890756	2.86
379	UTM_Z18	315041	4890756	310582	4889195	7.33
380	UTM_Z18	310582	4889195	309130	4890315	2.45
381	UTM_Z18	309130	4890315	307075	4888411	3.16
382	UTM_Z18	307075	4888411	300119	4886543	8.01
383	UTM_Z18	300119	4886543	294047	4881013	9.93
384	UTM_Z18	294047	4881013	291859	4882270	3.92
385	UTM_Z18	291859	4882270	293751	4884455	3.87
386	UTM_Z18	293751	4884455	295110	4885782	4.09
387	UTM_Z18	295110	4885782	297369	4886244	3.61
388	UTM_Z18	297369	4886244	308969	4891115	18.60
389	UTM_Z18	308969	4891115	309861	4891531	3.95
390	UTM_Z18	309861	4891531	313670	4892955	6.16
391	UTM_Z18	313670	4892955	314613	4891278	4.03
392	UTM_Z18	314613	4891278	316728	4891430	3.60
393	UTM_Z18	316728	4891430	318906	4893385	4.19
394	UTM_Z18	321690	4893982	322969	4891296	4.20
395	UTM_Z18	322969	4891296	325420	4891715	3.13
396	UTM_Z18	325420	4891715	329175	4892112	4.81
397	UTM_Z18	329175	4892112	329719	4892203	3.39
398	UTM_Z18	329719	4892203	334497	4894018	6.53
399	UTM_Z18	334497	4894018	338275	4895676	6.60
400	UTM_Z18	338275	4895676	338689	4895321	26.57

Lake Ontario

Reach No.	UTM Zone	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
		Easting	Northing	Easting	Northing	
401	UTM_Z18	338689	4895321	336994	4893243	3.58
402	UTM_Z18	336994	4893243	334490	4885372	8.84
403	UTM_Z18	334490	4885372	337877	4886418	4.66
404	UTM_Z18	337877	4886418	343517	4890863	11.03
405	UTM_Z18	343517	4890863	343014	4892362	2.49
406	UTM_Z18	343014	4892362	345064	4893144	2.54
407	UTM_Z18	345064	4893144	349344	4890994	20.82
408	UTM_Z18	349344	4890994	342841	4889940	13.24
409	UTM_Z18	342841	4889940	339099	4887773	5.01
410	UTM_Z18	339099	4887773	338634	4885142	3.13
411	UTM_Z18	338634	4885142	333745	4883170	7.48
412	UTM_Z18	333745	4883170	335704	4879024	21.12
413	UTM_Z18	335704	4879024	342492	4880809	11.58
414	UTM_Z18	342492	4880809	348574	4886528	10.59
415	UTM_Z18	348574	4886528	351067	4888290	3.12
416	UTM_Z18	351067	4888290	353722	4890176	3.29
417	UTM_Z18	353722	4890176	356586	4891805	3.35
418	UTM_Z18	356586	4891805	358352	4893537	2.99
419	UTM_Z18	358352	4893537	358585	4893180	0.49
420	UTM_Z18	358585	4893180	359352	4893397	1.11
421	UTM_Z18	359352	4893397	362136	4895720	3.88
422	UTM_Z18	362136	4895720	363349	4895871	1.27
423	UTM_Z18	363349	4895871	365055	4897012	2.24
424	UTM_Z18	365055	4897012	365319	4896977	0.69
425	UTM_Z18	365319	4896977	364946	4896203	0.92
426	UTM_Z18	364946	4896203	365312	4895925	0.49
427	UTM_Z18	365312	4895925	366822	4896688	2.07
428	UTM_Z18	366822	4896688	369877	4897841	3.44
429	UTM_Z18	369877	4897841	371781	4899772	2.90
430	UTM_Z18	371781	4899772	371721	4899423	1.64
431	UTM_Z18	371721	4899423	370689	4897655	2.27
432	UTM_Z18	370689	4897655	371692	4896553	1.66
433	UTM_Z18	370474	4893640	368793	4894267	2.53
434	UTM_Z18	368793	4894267	365506	4893065	4.11
435	UTM_Z18	365506	4893065	362161	4892472	6.78
436	UTM_Z18	362161	4892472	360471	4890902	2.41
437	UTM_Z18	360471	4890902	357340	4889240	3.88
438	UTM_Z18	357340	4889240	356934	4889489	0.55
439	UTM_Z18	356934	4889489	355640	4888784	1.54
440	UTM_Z18	355640	4888784	354942	4887502	1.60
441	UTM_Z18	354942	4887502	356158	4886189	2.14
442	UTM_Z18	356158	4886189	356754	4886576	0.76
443	UTM_Z18	356754	4886576	357424	4885960	1.51
444	UTM_Z18	357424	4885960	357023	4884487	1.69
445	UTM_Z18	357023	4884487	358186	4885136	1.40
446	UTM_Z18	358186	4885136	358645	4884557	0.99
447	UTM_Z18	358645	4884557	359585	4884454	1.04
448	UTM_Z18	359585	4884454	360763	4885755	1.87
449	UTM_Z18	360763	4885755	362192	4885315	1.62
450	UTM_Z18	362192	4885315	362837	4886053	1.12

Lake Ontario

Reach No.	UTM Zone	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
		Easting	Northing	Easting	Northing	
451	UTM_Z18	362837	4886053	364026	4885668	1.38
452	UTM_Z18	364026	4885668	363627	4884544	1.36
453	UTM_Z18	363627	4884544	365330	4887505	3.63
454	UTM_Z18	365330	4887505	365456	4888365	0.99
455	UTM_Z18	365456	4888365	366982	4889575	2.01
456	UTM_Z18	366982	4889575	368625	4891293	2.50
457	UTM_Z18	368625	4891293	370193	4892391	1.96
458	UTM_Z18	370193	4892391	370474	4893640	1.44
459	UTM_Z18	371692	4896553	373476	4897129	2.11
460	UTM_Z18	373476	4897129	376419	4896068	5.20
461	UTM_Z18	376419	4896068	377887	4896547	4.61
462	UTM_Z18	377887	4896547	380187	4897411	3.62
463	UTM_Z17	654364	4791213	653879	4791074	0.51
464	UTM_Z17	653879	4791074	652711	4790802	1.22
465	UTM_Z17	634798	4833866	633685	4829998	10.69
466	UTM_Z17	642798	4841347	643150	4842004	0.76
467	UTM_Z17	682099	4859689	683549	4859442	1.59
468	UTM_Z17	715319	4868399	716520	4868616	1.23
469	UTM_Z18	284907	4875438	284455	4875568	1.11
470	UTM_Z18	284455	4875568	283876	4875774	0.97
471	UTM_Z18	290938	4876040	290896	4875763	0.81
472	UTM_Z18	296695	4865208	296695	4865208	4.27
473	UTM_Z18	352136	4868089	352136	4868089	3.03
474	UTM_Z18	354856	4867258	354801	4867468	2.01
475	UTM_Z18	354801	4867468	354856	4867258	0.71
476	UTM_Z18	370999	4864162	370999	4864162	11.92
477	UTM_Z18	318906	4893385	320144	4893157	4.45
478	UTM_Z18	362006	4884013	362006	4884013	3.00
479	UTM_Z18	320144	4893157	321690	4893982	2.09
				Total		1,194.76

**St. Lawrence River Reach Boundaries and Lengths**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
1	380165	4897420	382550	4897869	4.98
2	382550	4897869	383238	4898013	2.19
3	383238	4898013	385063	4898591	3.64
4	385063	4898591	389736	4901101	5.66
5	389736	4901101	391166	4901953	4.83
6	393411	4898853	390119	4897957	5.00
7	390119	4897957	388944	4898297	2.48
8	388204	4898297	388497	4897806	1.84
9	388412	4896467	386190	4896578	3.12
10	386190	4896578	384406	4895472	2.40
11	384406	4895472	386642	4894977	3.10
12	386642	4894977	382411	4893335	5.97
13	380537	4892591	378011	4893054	3.05
14	378011	4893054	375615	4889501	4.89
15	375615	4889501	380537	4892591	6.42
16	382411	4893335	378928	4890389	5.61
17	378928	4890389	379720	4890554	0.87
18	379720	4890554	379874	4889774	1.24
19	379874	4889774	379363	4887842	2.82
20	379363	4887842	381017	4887717	2.34
21	381017	4887717	383002	4888838	2.57
22	383002	4888838	383699	4888373	2.32
23	383699	4888373	382444	4885652	3.49
24	382444	4885652	380641	4884363	2.26
25	380641	4884363	382720	4885682	2.76
26	382720	4885682	385047	4883912	3.22
27	385047	4883912	384458	4883212	0.97
28	384458	4883212	386506	4884901	2.69
29	386506	4884901	386798	4885667	1.05
30	386798	4885667	387952	4885782	1.23
31	387952	4885782	389843	4887423	2.71
32	389843	4887423	391654	4887643	2.02
33	391654	4887643	391326	4888367	1.45
34	391326	4888367	389651	4888059	3.71
35	389651	4888059	393209	4892938	7.45
36	393209	4892938	389409	4894726	6.10
37	389409	4894726	393943	4894807	6.36
38	393943	4894807	400066	4895347	10.45
39	400066	4895347	405519	4898403	7.87
40	405519	4898403	401478	4897449	5.54
41	401478	4897449	401011	4898525	1.71
42	401011	4898525	396910	4896693	6.09
43	396910	4896693	397621	4898359	2.82
44	397621	4898359	395858	4897109	2.94
45	395858	4897109	393411	4898853	3.94
46	392658	4900367	392440	4900099	0.36
47	392440	4900099	395629	4899780	3.57
48	395629	4899780	397976	4901820	3.47
49	397976	4901820	400029	4901742	2.26
50	400029	4901742	402847	4903378	3.77

**St. Lawrence River**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
51	402847	4903378	404643	4905845	3.35
52	404643	4905845	400143	4905690	6.81
53	400143	4905690	399291	4906017	8.92
54	399291	4906017	395410	4903483	5.76
55	395410	4903483	392611	4900318	9.18
56	391166	4901953	393626	4902951	3.38
57	393626	4902951	398729	4906437	11.26
58	398729	4906437	403095	4907832	8.43
59	403095	4907832	404757	4906088	4.43
60	404757	4906088	404757	4906085	18.16
61	407647	4908382	411001	4909534	4.59
62	411001	4909534	413141	4910903	4.65
63	413141	4910903	415006	4910473	11.70
64	415006	4910473	418903	4911784	12.48
65	418903	4911784	425288	4913782	33.89
66	425288	4913782	430078	4916572	24.96
67	433524	4924552	435278	4926234	3.29
68	435278	4926234	441150	4932928	10.86
69	441150	4932928	445237	4936603	9.12
70	445237	4936603	446667	4938028	2.79
71	448946	4940069	452194	4942939	4.64
72	452194	4942939	453075	4944089	1.67
73	453075	4944089	455044	4946102	2.96
74	455044	4946102	455986	4947225	1.76
75	455986	4947225	458166	4949775	3.77
76	458166	4949775	460695	4951575	3.63
77	460695	4951575	464174	4954780	6.25
78	465498	4956072	470245	4958823	12.73
79	470245	4958823	474124	4962836	6.18
80	474124	4962836	475343	4965005	10.49
81	475343	4965005	483049	4969722	11.59
82	483049	4969722	487196	4971918	5.86
83	487196	4971918	491709	4975441	8.18
84	497294	4977651	513104	4986126	35.15
85	513104	4986126	516503	4983833	5.95
86	516503	4983833	524125	4985081	27.81
87	524125	4985081	530340	4986917	7.84
88	530340	4986917	535614	4989752	6.85
89	535614	4989752	538068	4992678	4.46
90	538068	4992678	540179	4996934	6.59
91	540179	4996934	542855	5000127	5.17
92	542855	5000127	550307	5004578	12.35
93	550307	5004578	551606	5005804	1.88
94	551606	5005804	553171	5004867	1.96
95	553171	5004867	557025	5007950	6.12
96	557025	5007950	561296	5011469	6.27
97	561296	5011469	563199	5011922	2.83
98	563199	5011922	564414	5014291	10.32
99	565422	5013046	566265	5011773	5.61
100	566265	5011773	568175	5011906	2.25

**St. Lawrence River**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
101	568257	5011944	570681	5012048	2.80
102	570681	5012048	573966	5015574	6.20
103	573966	5015574	573244	5016071	1.10
104	573244	5016071	570645	5016488	3.34
105	570645	5016488	568854	5015378	2.57
106	568854	5015378	566199	5014825	3.15
107	564414	5014291	566238	5016260	3.69
108	566238	5016260	568993	5017543	3.27
109	568993	5017543	574158	5016853	6.10
110	574158	5016853	576200	5017674	2.27
111	576200	5017674	580294	5019371	5.47
112	580294	5019371	583158	5019964	4.33
113	583158	5019964	580682	5020408	4.29
114	580682	5020408	578391	5023194	4.02
115	579674	5022520	581662	5022012	2.35
116	581662	5022012	585619	5021658	5.08
117	585619	5021658	589886	5024016	5.67
118	589886	5024016	589005	5025088	1.94
119	589005	5025088	587521	5024409	1.89
120	587521	5024409	586348	5027048	3.74
121	586348	5027048	581401	5027907	8.07
122	581401	5027907	578335	5026122	4.69
123	578335	5026122	578429	5024132	3.09
124	578429	5024132	579674	5022520	2.37
125	578391	5023194	577969	5026100	4.37
126	577969	5026100	578933	5029859	8.37
127	578933	5029859	577262	5031663	9.10
128	577262	5031663	574695	5029674	4.45
129	574695	5029674	572919	5032269	3.78
130	572919	5032269	574019	5034101	2.14
131	574019	5034101	578783	5036189	5.60
132	579527	5037322	581331	5038609	2.32
133	581331	5038609	581967	5040670	2.68
134	581967	5040670	587266	5042910	6.47
135	587214	5041197	585674	5040761	1.98
136	585674	5040761	582451	5036139	7.78
137	582451	5036139	585817	5035263	4.55
138	585817	5035263	588341	5037607	4.39
139	588341	5037607	589393	5040183	3.26
140	589393	5040183	588677	5041024	1.22
141	588677	5041024	587214	5041197	1.52
142	587184	5042398	587388	5041368	2.66
143	587388	5041368	590238	5041186	6.96
144	590238	5041186	596256	5040416	6.48
145	596256	5040416	599109	5042792	4.78
146	599109	5042792	603114	5045416	5.14
147	603114	5045416	603749	5047217	3.01
148	603749	5047217	605749	5051287	4.78
149	605749	5051287	606455	5053856	2.89
150	606455	5053856	610696	5057161	5.62



**St. Lawrence River**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
151	610696	5057161	614483	5061323	9.52
152	614483	5061323	606720	5060134	8.53
153	606720	5060134	599148	5058970	18.99
154	599148	5058970	594659	5053608	8.60
155	594659	5053608	594475	5051885	1.99
156	594475	5051885	591693	5050924	6.07
157	591693	5050924	591240	5047821	4.10
158	591240	5047821	587158	5045200	6.44
159	587158	5045200	587184	5042398	3.65
160	587266	5042910	587544	5045974	4.00
161	587544	5045974	590903	5048645	5.25
162	590903	5048645	591526	5051186	3.79
163	591526	5051186	593491	5052213	2.60
164	593491	5052213	597251	5057214	7.63
165	597251	5057214	600354	5059189	4.35
166	600354	5059189	606638	5060353	11.41
167	606638	5060353	610000	5060795	3.89
168	610000	5060795	615322	5061924	5.66
169	615322	5061924	618714	5062969	4.41
170	618714	5062969	622117	5067385	6.81
171	622117	5067385	623851	5070062	3.36
172	623851	5070062	629767	5076699	34.31
173	629767	5076699	633099	5081022	10.88
174	633099	5081022	639048	5091892	12.64
175	639048	5091892	640841	5100480	8.93
176	640841	5100480	650539	5107372	15.05
177	650539	5107372	654527	5109519	7.12
178	654527	5109519	660385	5120308	31.12
179	660385	5120308	668323	5124674	14.90
180	668323	5124674	675281	5128626	8.44
181	675281	5128626	679769	5127187	4.95
182	679769	5127187	685958	5129919	9.60
183	685958	5129919	688635	5133091	4.69
184	688635	5133091	690024	5135233	2.92
185	690024	5135233	691761	5136728	8.47
212	690994	5134191	681765	5125455	14.52
213	681765	5125455	679383	5118129	13.37
214	679383	5118129	673382	5116073	11.77
215	673382	5116073	664282	5110785	18.28
216	664282	5110785	659638	5110017	34.98
217	659638	5110017	649391	5102199	44.55
218	649391	5102199	646334	5100872	3.46
219	646334	5100872	643499	5100400	3.76
220	643499	5100400	639488	5090473	10.86
221	639488	5090473	638726	5083814	12.93
222	638726	5083814	634276	5077447	12.27
223	634276	5077447	625631	5068280	13.33
224	625631	5068280	621955	5063380	9.24
225	621955	5063380	621146	5059903	8.51
226	618491	5061901	616964	5061326	1.66

**St. Lawrence River**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
227	615405	5061192	612121	5057595	5.15
228	612121	5057595	606842	5052901	7.33
229	606842	5052901	605745	5050407	2.77
230	605745	5050407	604910	5048850	2.08
231	604910	5048850	603057	5044678	6.08
232	603057	5044678	596799	5040203	9.24
233	596799	5040203	590076	5040734	7.83
234	590076	5040734	588468	5037455	4.63
235	588468	5037455	585220	5034589	5.45
236	585220	5034589	582943	5035642	3.61
237	582943	5035642	582174	5033294	5.99
238	582174	5033294	580232	5031364	4.54
239	580232	5031364	581698	5028155	5.84
240	581698	5028155	584465	5028217	3.21
241	584465	5028217	587627	5029348	3.91
242	587627	5029348	590254	5031096	3.66
243	590254	5031096	591839	5030594	2.29
244	591839	5030594	594376	5033228	4.93
245	594376	5033228	597338	5031928	3.97
246	597338	5031928	602108	5031581	5.65
247	602108	5031581	604245	5031244	6.09
248	604245	5031244	606605	5029790	2.84
249	606605	5029790	608617	5029883	2.10
250	608617	5029883	611848	5033408	5.70
251	611848	5033408	614127	5038038	14.66
252	614127	5038038	613963	5043233	12.28
253	613963	5043233	616614	5048666	9.75
254	616614	5048666	616381	5051575	3.21
255	616381	5051575	617862	5054885	4.70
256	617862	5054885	617492	5057974	3.42
257	617492	5057974	618491	5061901	4.30
258	621146	5059903	621016	5055082	11.65
259	621016	5055082	618264	5047473	39.25
260	618264	5047473	614990	5043047	8.01
261	614990	5043047	617318	5036274	22.95
262	617854	5031809	615485	5028397	4.94
263	615485	5028397	612090	5029161	5.13
264	612090	5029161	607006	5028591	5.48
265	607006	5028591	603007	5029860	4.99
266	603007	5029860	600515	5028604	6.53
267	598131	5027914	597368	5028152	2.03
268	597368	5028152	596084	5026284	2.54
269	596084	5026284	595732	5024839	2.17
270	595732	5024839	591980	5020112	8.09
271	591980	5020112	590038	5018934	13.62
272	590038	5018934	587981	5018548	3.04
273	587981	5018548	587666	5018793	0.87
274	587666	5018793	585971	5018416	2.10
275	585971	5018416	585240	5018507	1.62
276	585240	5018507	584482	5018698	2.86

**St. Lawrence River**

Reach No.	Start UTM (Z16)		End UTM (Z16)		Reach Length (km)
	Easting	Northing	Easting	Northing	
277	584482	5018698	580470	5018564	5.09
278	580470	5018564	576381	5016799	6.67
279	576381	5016799	574382	5015544	3.29
280	574382	5015544	570726	5012034	6.91
281	570726	5012034	568257	5011944	4.26
282	568175	5011906	565964	5010636	3.36
283	565964	5010636	565654	5009294	2.18
284	565654	5009294	569496	5008418	3.98
285	569496	5008418	572137	5007891	3.40
286	572137	5007891	578149	5009224	6.40
287	578149	5009224	585105	5018273	13.91
288	585902	5018040	578644	5008373	12.47
289	578644	5008373	575539	5007175	3.35
290	575539	5007175	569226	5007494	6.50
291	569226	5007494	566072	5008013	3.34
292	566072	5008013	565634	5005398	3.65
293	565634	5005398	561744	5003287	4.96
294	561744	5003287	556466	5002420	6.87
295	556466	5002420	550947	4999754	9.77
296	550947	4999754	546794	4997094	7.44
297	546794	4997094	546026	4993772	6.48
298	546026	4993772	543858	4991492	6.50
299	543858	4991492	541139	4987531	7.41
300	541139	4987531	536544	4986936	13.05
301	536544	4986936	531270	4984836	6.79
302	531270	4984836	526694	4982778	23.31
303	566199	5014825	565422	5013046	3.74
304	600515	5028604	598131	5027914	3.43
305	578783	5036189	579527	5037322	1.94
306	388944	4898297	388204	4898297	1.20
307	388497	4897806	388412	4896467	1.67
308	382987	4895320	382987	4895320	3.57
309	430078	4916572	433524	4924552	26.11
310	446667	4938028	448946	4940069	3.13
311	464174	4954780	465498	4956072	2.34
312	491709	4975441	497294	4977651	10.61
313	617318	5036274	617854	5031809	4.73
				<b>Total</b>	<b>1,892.03</b>

**APPENDIX B**

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**Recession Rate Data Files**

LAKE HURON HISTORIC SHORELINE CHANGE RATE

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHOREL. CHANGE RATE
1						0			NA	8
2						0			NA	8
3						0			NA	8
4						0			NA	8
5						0			NA	8
6						0			NA	8
7						0			NA	8
8						0			NA	8
9						0			NA	8
10						0			NA	8
11						0			NA	8
12						0			NA	8
13						0			NA	8
14						0			NA	8
15						0			NA	8
16						0			NA	8
17						0			NA	8
18						0			NA	8
19						0			NA	8
20						0			NA	8
21						0			NA	8
22						0			NA	8
23						0			NA	8
24						0			NA	8
25						0			NA	8
26						0			NA	8
27						0			NA	8
28						0			NA	8
29						0			NA	8
30						0			NA	8
31						0			NA	8
32						0			NA	8
33						0			NA	8
34						0			NA	8
35						0			NA	8
36						0			NA	8
37						0			NA	8
38						0			NA	8
39						0			NA	8
40						0			NA	8
41						0			NA	8
42						0			NA	8
43						0			NA	8
44						0			NA	8
45						0			NA	8
46						0			NA	8
47						0			NA	8

LAKE HURON HISTORIC SHORELINE CHANGE RATE (cont'd..)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELM. CHANGE RATE
48						0			NA	8
49						0			NA	8
50						0			NA	8
51						0			NA	8
52						0			NA	8
53						0			NA	8
54						0			NA	8
55						0			NA	8
56						0			NA	8
57						0			NA	8
58						0			NA	8
59						0			NA	8
60						0			NA	8
61						0			NA	8
62						0			NA	8
63						0			NA	8
64						0			NA	8
65						0			NA	8
66						0			NA	8
67						0			NA	8
68						0			NA	8
69						0			NA	8
70						0			NA	8
71						0			NA	8
72						0			NA	8
73						0			NA	8
74						0			NA	8
75						0			NA	8
76						0			NA	8
77						0			NA	8
78						0			NA	8
79						0			NA	8
80						0			NA	8
81						0			NA	8
82						0			NA	8
83						0			NA	8
84						0			NA	8
85						0			NA	8
86						0			NA	8
87						0			NA	8
88						0			NA	8
89						0			NA	8
90						0			NA	8
91						0			NA	8
92						0			NA	8

LAKE HURON HISTORIC SHORELINE CHANGE RATE (cont'd...)

REACH NO.	MEAN REC.RATE	MEDIAN REC.RATE	MAX REC.RATE	MIN REC.RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
93						0			NA	8
94						0			NA	8
95						0			NA	8
96						0			NA	8
97						0			NA	8
98						0			NA	8
99						0			NA	8
100						0			NA	8
101						0			NA	8
102						0			NA	8
103						0			NA	8
104						0			NA	8
105						0			NA	8
106						0			NA	8
107						0			NA	8
108						0			NA	8
109						0			NA	8
110						0			NA	8
111						0			NA	8
112						0			NA	8
113						0			NA	8
114						0			NA	8
115						0			NA	8
116						0			NA	8
117						0			NA	8
118						0			NA	8
119						0			NA	8
120						0			NA	8
121						0			NA	8
122						0			NA	8
123						0			NA	8
124						0			NA	8
125						0			NA	8
126						0			NA	8
127						0			NA	8
128						0			NA	8
129						0			NA	8
130						0			NA	8
131						0			NA	8
132						0			NA	8
133						0			NA	8
134						0			NA	8
135						0			NA	8
136						0			NA	8
137						0			NA	8

LAKE HURON HISTORIC SHORELINE CHANGE RATE (con't..)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
138						0			NA	8
139						0			NA	8
140						0			NA	8
141						0			NA	8
142						0			NA	8
143						0			NA	8
144						0			NA	8
145						0			NA	8
146						0			NA	8
147						0			NA	8
148						0			NA	8
149						0			NA	8
150						0			NA	8
151						0			NA	8
152						0			NA	8
153						0			NA	8
154						0			NA	8
155						0			NA	8
156						0			NA	8
157						0			NA	8
158						0			NA	8
159						0			NA	8
160						0			NA	8
161						0			NA	8
162						0			NA	8
163						0			NA	8
164						0			NA	8
165						0			NA	8
166						0			NA	8
167						0			NA	8
168						0			NA	8
169						0			NA	8
170						0			NA	8
171						0			NA	8
172						0			NA	8
173						0			NA	8
174						0			NA	8
175						0			NA	8
176						0			NA	8
177						0			NA	8
178						0			NA	8
179						0			NA	8
180						0			NA	8
181						0			NA	8
182						0			NA	8



LAKE HURON HISTORIC SHORELINE CHANGE RATE (cont...)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
183						0			NA	8
184						0			NA	8
185						0			NA	8
186						0			NA	8
187						0			NA	8
188						0			NA	8
189						0			NA	8
190						0			NA	8
191						0			NA	8
192						0			NA	8
193						0			NA	8
194						0			NA	8
195						0			NA	8
196	0.000	0.000	0.000	0.000	0.000	1 H-1	53-73	1 WE (P)	STABLE	2
197						0			NA	8
198						0			NA	8
199						0			NA	8
200						0			NA	8
201	0.300	0.300	0.300	0.300	0.000	1 H-2	53-73	1 WE (P)	NA	3
202						0			NA	8
203						0			NA	8
204						0			NA	8
205						0			NA	8
206						0			NA	8
207						0			NA	8
208						0			NA	8
209	0.000	0.000	0.000	0.000	0.000	1 H-3	53-73	1 WE (P)	STABLE	2
210						0			NA	8
211	-0.150	-0.080	-0.050	-0.320	0.121	3 TA-16	58-63	1 HMM (H)	ACCRETION	1
212						H-4	53-73	1 WE (P)		
212						TA-15	58-68	1 HMM (H)		
213	0.020	0.020	0.020	0.020	0.000	1 TA-14	58-62	1 HMM (H)	STABLE	2
214	-0.238	-0.185	-0.080	-0.500	0.161	4 TA-12	1858-1957	1 HMM (H)	ACCRETION	1
214						H-5	53-73	1 WE (P)		
214						TA-9	13-46	1 HMM (H)		
214						TA-8	46-68	1 HMM (H)		
215	-0.255	-0.183	-0.110	-0.400	0.145	2 TA-6	1858-1946	1 HMM (H)	ACCRETION	1
215						TA-4	1858-1969	1 HMM (H)		
216	-0.070	-0.050	0.060	-0.240	0.119	4 H-6	53-73	1 WE (P)	STABLE	2
216						TA-3	1858-1969	1 HMM (H)		
216						TA-2	1858-1972	1 HMM (H)		
217						TA-1	1858-1965	1 HMM (H)	NA	8
218						0			NA	8

LAKE HURON HISTORIC SHORELINE CHANGE RATE (cont'd..)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
219						0			NA	8
220						0			NA	8
221						0			NA	8
222						0			NA	8
223	0.070	0.070	0.070	0.070	0.000	1 T1-58	51-72	1 HWM (H)	STABLE	2
224	-0.035	-0.035	0.000	-0.070	0.035	2 H-7	53-73	1 VE (P)	STABLE	2
224						T1-56	47-71	1 HWM (H)		
225	0.153	0.150	0.550	-0.240	0.323	3 T1-51	23-47	1 HWM (H)		
225						51-52A	47-73	1 HWM (H)		3
225						H-8	53-73	1 VE (P)		
225	0.230	0.230	0.460	0.000	0.230	2 T1-50	23-46	1 HWM (H)		3
226						T1-48	46-61	1 HWM (H)		
227	-0.150	-0.150	-0.150	-0.150	0.000	1 H-9	53-73	1 VE (P)	ACCRETION	1
228						0			NA	8
229						0			NA	8
230						0			NA	8
231						0			NA	8
232						0			NA	8
233						0			NA	8
234						0			NA	8
235						0			NA	8
236						0			NA	8
237						0			NA	8
238	-0.025	-0.025	0.000	-0.050	0.025	2 T1-42	38-68	1 HWM (H)	STABLE	2
238						H-10	53-73	1 EOB (P)		
239	-0.390	-0.390	-0.390	-0.390	0.000	0			NA	8
240	0.080	0.080	0.080	0.080	0.000	1 T1-40	38-55	1 HWM (H)	ACCRETION	1
241						1 T1-39	38-70	1 HWM (H)	STABLE	2
242						0			NA	8
243						0			NA	8
244						0			NA	8
245	-0.150	-0.150	-0.150	-0.150	0.000	1 H-12	53-73	1 VE (P)	ACCRETION	1
246						0			NA	8
247						0			NA	8
248						0			NA	8
249	-0.100	-0.100	-0.100	-0.100	0.000	1 H-13	53-73	1 VE (P)	STABLE	2
250						0			NA	8
251	-0.030	0.000	0.010	-0.100	0.050	3 T1-38	38-63	1 HWM (H)	STABLE	2
252						H-11	53-73	1 VE (P)		
252						T1-37	36-61	1 HWM (H)		
253	0.150	0.150	0.150	0.150	0.000	1 H-16	53-73	1 VE (P)		3
254						0			NA	8
255	-0.050	-0.050	-0.050	-0.050	0.000	1 H-14	53-73	1 VE (P)	STABLE	2
256						0			NA	8

LAKE HURON HISTORIC SHORELINE CHANGE RATE (cont'd.)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
257						0			NA	8
258						0			NA	8
259						0			NA	8
260						0			NA	8
261						0			NA	8
262						0			NA	8
263						0			NA	8
264						0			NA	8
265						0			NA	8
266						0			NA	8
267						0			NA	8
268	0.400	0.400	0.400	0.400	0.000	1 H-15	53-73	1 VE (P)	NA	4
269						0			NA	8
270						0			NA	8
271						0			NA	8
272						0			NA	8
273						0			NA	8
274						0			NA	8
275						0			NA	8
276	-0.050	-0.050	-0.050	-0.050	0.000	1 H-17	53-73	1 VE (P)	STABLE	2
277	-0.492	-0.450	0.420	-1.520	0.679	5 T1-33A,B,C	38-63	1 HUM (H)	ACCRETION 1	1
277						T1-33B	38-63	1 HUM (H)		
277						T1-33C	38-63	1 HUM (H)		
277						T1-30	38-56	1 HUM (H)		
277						H-18	53-73	1 VE (P)		
278	-0.300	-0.300	-0.300	-0.300	0.000	1 T1-29	38-67	1 HUM (H)	ACCRETION 1	1
279						0			NA	8
280	-0.075	-0.075	0.030	-0.180	0.150	2 H-19	53-73	1 VE (P)		
280						T1-28	14-48	1 HUM (H)	STABLE	2
281	0.290	0.290	0.290	0.290	0.000	1 T1-27	38-70	1 HUM (H)		3
282	0.177	-0.180	0.000	-0.350	0.143	3 H-20	53-73	1 VE (P)		3
282						T1-26	23-71	1 HUM (H)		
282						T1-23	23-38	1 HUM (H)		
283						0			NA	8
284	-0.043	0.050	0.130	-0.380	0.179	7 H-21	53-73	1 VE (P)		
284						H-22	53-73	1 VE (P)	STABLE	2
284						T1-19	22-62	1 HUM (H)		
284						T1-21A	24-60	1 HUM (H)		
284						T1-21B	24-60	1 HUM (H)		
284						T1-20	22-73	1 HUM (H)		
284						T1-22	22-38	1 HUM (H)		
285	0.000	0.000	0.000	0.000	0.000	2 T1-16	31-48	1 HUM (H)	STABLE	2
285						H-23	53-73	1 VE (P)		
286	-0.082	-0.070	0.160	-0.400	0.183	5 T1-12	28-63	1 HUM (H)	STABLE	2
286						T1-10	38-69	1 HUM (H)		

LAKE HURON HISTORIC SHORELINE CHANGE RATE (cont'd..)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
286						11-10A	46-69	1 HMM (H)		
286						H-24, H-25	53-73	1 WE (P)		
287	-0.250	-0.250	-0.250	-0.250	0.000	1 11-6	34-61	1 HMM (H)	ACCRETION 1	
288	0.085	-0.015	0.640	-0.270	0.357	0			NA	8
289						4 11-2	23-38	1 WE (H)	STABLE	2
289						11-1	38-70	1 WE (H)		
289						11-3	21-38	1 HMM (H)		
289						H-26	53-73	1 WE (P)		
290	-0.277	0.000	0.720	-0.207	0.785	9 H-27	53-73	1 WE (P)	ACCRETION 1	
290						F-13	21-38	1 HMM (H)		
290						F-12	21-38	1 HMM (H)		
290						F-10	25-73	1 HMM (H)		
290						F-11	25-73	1 HMM (H)		
290						F-8	40-69	1 HMM (H)		
290						F-9	25-40	1 HMM (H)		
290						F-6	23-41	1 HMM (H)		
290						F-7	40-61	1 HMM (H)		
291						0			NA	8
292	-0.183	-0.175	0.510	-0.130	0.464	12 F-2	09-62	1 HMM (H)	ACCRETION 1	
292						H-28	54-73	1 WE (P)		
292						H-29	54-73	1 WE (P)		
292						SU-15	1883-1938	1 HMM (H)		
292						F-1	09-38	1 HMM (H)		
292						SU-14	08-38	1 HMM (H)		
292						SU-13	08-38	1 HMM (H)		
292						SU-12	22-38	1 HMM (H)		
292						SU-11	13-38	1 HMM (H)		
292						SU-6	23-38	1 HMM (H)		
292						SU-5	23-38	1 HMM (H)		
292						SU-8	22-38	1 HMM (H)		
293	0.255	0.255	0.500	0.000	0.255	2 SU-1	25-60	1 WE (H)		3
293						H-30	53-73	1 WE (P)		
294	-0.105	-0.105	-0.050	0.160	0.055	2 H-32	54-75	1 WE (P)	ACCRETION 1	
294						H-31	54-73	1 WE (P)		
295	0.154	0.150	0.480	-0.340	0.210	11 N-2	48-73	1 WE (H)		3
295						N-4	48-73	1 WE (H)		
295						N-5	48-73	1 WE (H)		
295						H-33	54-73	1 WE (P)		
295						N-3	48-73	1 WE (H)		
295						N-9	38-73	1 HMM (H)		
295						N-10	38-72	1 HMM (H)		
295						H-34	54-73	1 WE (P)		
295						N-12	53-69	1 HMM (H)		
295						N-13	53-69	1 HMM (H)		
295						N-8	38-73	1 HMM (H)		

LAKE HURON HISTORIC SHORELINE CHANGE RATE (cont'd...)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
296	-1.150	-1.150	-0.860	-1.430	0.233	3 N-16	39-70	1 HMM (H)	ACCRETION 1	
296						N-17	39-70	1 HMM (H)		
296						N-18	39-70	1 HMM (H)		
297						0				NA 8
298						0				NA 8
299						0				NA 8
300						0				NA 8
301	-0.160	-0.160	-0.160	-0.160	0.000	1 H-35	55-73	1 VE (P)	ACCRETION 1	
302	0.040	0.040	0.040	0.040	0.000	1 C-40	40-56	1 HMM (H)	STABLE 2	
303	0.430	0.430	0.430	0.430	0.000	1 C-36	40-64	1 HMM (H)		
304	-0.050	-0.050	-0.050	-0.050	0.000	1 H-36	54-73	1 VE (P)	STABLE 4	
305	0.460	0.460	0.460	0.460	0.000	1 C-24	37-70	1 VE (H)	STABLE 2	
306	-0.220	-0.130	0.290	-0.910	0.518	4 H-37	54-73	1 VE (P)	ACCRETION 4	
306						C-22	48-70	1 HMM (H)	ACCRETION 1	
306						C-20	48-70	1 HMM (H)		
306						C-18	48-65	1 HMM (H)		
307						0				NA 8
308						0				NA 8
309						0				NA 8
310	0.570	0.570	0.570	0.570	0.000	1 C-8	28-68	1 HMM (H)		
311	0.445	0.445	0.450	0.450	0.005	2 H-38	54-73	1 EOB (P)		
311						C-7	38-68	1 HMM (H)		
312	-0.480	-0.480	-0.480	-0.480	0.000	1 C-3	54-73	1 HMM (H)	ACCRETION 1	
313	0.320	0.320	0.320	0.320	0.000	1 H-39	54-73	1 VE (P)	4	
314	0.260	0.260	0.260	0.260	0.000	1 H-40	54-73	1 EOB (P)	3	
315						0			NA 8	
316	-0.010	-0.010	0.100	-0.120	0.090	3 VM-10	33-69	1 HMM (H)	STABLE 2	
316						VM-9	33-66	1 HMM (H)		
316						H-41	54-73	1 VE (P)		
317						0				NA 8
318	0.570	0.130	2.680	-0.280	1.090	5 VM-6	33-59	1 HMM (H)	4	
318						VM-5	33-59	1 HMM (H)		
318						VM-4	33-54	1 HMM (H)		
318						VM-3	33-54	1 HMM (H)		
318						VM-2	33-69	1 HMM (H)		
319	0.000	0.000	0.000	0.000	0.000	1 H-42	54-73	1 VE (P)	STABLE 2	
320	0.051	0.050	0.280	-0.060	0.102	7 V-8	42-60	1 HMM (H)	STABLE 2	
320						V-6	42-60	1 HMM (H)		
320						V-5	41-59	1 HMM (H)		
320						V-3	42-73	1 HMM (H)		
320						V-7	42-60	1 HMM (H)		
320						V-2	42-73	1 HMM (H)		
320						V-1	42-63	1 HMM (H)		
321						0			NA 8	
322						0			NA 8	

LAKE HURON HISTORIC SHORELINE CHANGE RATE (cont...)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
323						0			NA	8
324						0			NA	8
325						0			NA	8
326	0.000	0.000	0.000	0.000	0.000	1 H-44	54-73	1 EOB (P)	STABLE	2
327						0			NA	8
328	0.000	0.000	0.000	0.000	0.000	1 H-45	54-73	1 EOB (P)	STABLE	2
329	-0.040	-0.040	-0.040	-0.040	0.000	1 SY-24	57-71	1 HMM (H)	STABLE	2
330	0.030	0.030	0.030	0.030	0.000	1 SY-17	54-69	1 HMM (H)	STABLE	2
331	0.073	0.073	0.260	-0.110	0.185	2 H-46	54-73	1 VE (P)	STABLE	2
332	-0.01	-0.01	0.100	-0.110	0.105	2 SY-3	41-71	1 HMM (H)	STABLE	2
333						H-47	21-64	1 HMM (H)		
334						0	54-73	1 VE (P)	NA	8
335						0			NA	8
336						0			NA	8
337						0			NA	8
338						0			NA	8
339						0			NA	8
340						0			NA	8
341						0			NA	8
342						0			NA	8
343						0			NA	8
344						0			NA	8
345						0			NA	8
346						0			NA	8
347						0			NA	8
348						0			NA	8
349						0			NA	8
350						0			NA	8
351						0			NA	8
352						0			NA	8
353						0			NA	8
354						0			NA	8
355						0			NA	8
356						0			NA	8
357						0			NA	8
358						0			NA	8
359						0			NA	8
360						0			NA	8
361						0			NA	8
362						0			NA	8
363						0			NA	8
364						0			NA	8
365						0			NA	8

LAKE HURON HISTORIC SHORELINE CHANGE RATE (cont...)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
366						0			NA	8
367						0			NA	8
368						0			NA	8
369						0			NA	8
370						0			NA	8
371						0			NA	8
372						0			NA	8
373						0			NA	8
374						0			NA	8
375						0			NA	8
376						0			NA	8
377						0			NA	8
378						0			NA	8
379						0			NA	8
380						0			NA	8
381						0			NA	8
382						0			NA	8
383						0			NA	8
384						0			NA	8
385						0			NA	8
386						0			NA	8
387						0			NA	8
388						0			NA	8
389						0			NA	8
390						0			NA	8
391						0			NA	8
392						0			NA	8
393						0			NA	8
394						0			NA	8
395						0			NA	8
396						0			NA	8
397						0			NA	8
398						0			NA	8
399						0			NA	8
400						0			NA	8
401						0			NA	8
402						0			NA	8
403						0			NA	8
404						0			NA	8
405						0			NA	8
406						0			NA	8
407						0			NA	8
408						0			NA	8
409						0			NA	8
410						0			NA	8

LAKE HURON HISTORIC SHORELINE CHANGE RATE (con't...)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
411						0			NA	8
412						0			NA	8
413						0			NA	8
414						0			NA	8
415						0			NA	8
416						0			NA	8
417						0			NA	8
418						0			NA	8
419						0			NA	8
420						0			NA	8
421						0			NA	8
422						0			NA	8
423						0			NA	8
424						0			NA	8
425						0			NA	8
426						0			NA	8
427						0			NA	8
428						0			NA	8
429						0			NA	8
430						0			NA	8
431						0			NA	8
432						0			NA	8
433						0			NA	8
434						0			NA	8
435						0			NA	8
436						0			NA	8
437						0			NA	8
438						0			NA	8
439						0			NA	8
440						0			NA	8
441						0			NA	8
442						0			NA	8
443						0			NA	8
444						0			NA	8
445						0			NA	8
446						0			NA	8
447						0			NA	8
448						0			NA	8
449						0			NA	8
450						0			NA	8
451						0			NA	8
452						0			NA	8
453						0			NA	8
454						0			NA	8
455						0			NA	8



LAKE HURON HISTORIC SHORELINE CHANGE RATE (con't...)

REACH NO.	MEAN REC.RATE	MEDIAN REC.RATE	MAX REC.RATE	MIN REC.RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELM. CHANGE RATE
456						0			NA	8
457						0			NA	8
458						0			NA	8
459						0			NA	8
460						0			NA	8
461						0			NA	8
462						0			NA	8
463						0			NA	8
464						0			NA	8
465						0			NA	8
466						0			NA	8
467						0			NA	8
468						0			NA	8
469						0			NA	8
470						0			NA	8
471						0			NA	8
472						0			NA	8
473						0			NA	8
474						0			NA	8
475						0			NA	8
476						0			NA	8
477						0			NA	8
478						0			NA	8
479						0			NA	8
480						0			NA	8
481						0			NA	8
482						0			NA	8
483	-0.150	-0.150	-0.150	-0.150	0.000	1 H-48	54-73	1 WE (P)	ACCRETION 1	8
484	0.000	0.000	0.000	0.000	0.000	2 H-50	54-73	1 WE (P)	STABLE 2	8
484						H-49	54-73	1 WE (P)		
485	-0.110	-0.110	-0.110	-0.110	0.000	1 H-51	54-73	1 WE (P)	ACCRETION 1	8
486						0			NA	8
487						0			NA	8
488						0			NA	8
489						0			NA	8
490						0			NA	8
491						0			NA	8
492	-0.050	-0.050	-0.050	-0.050	0.000	1 H-54	54-73	1 WE (P)	STABLE 2	8
493						0			NA	8
494						0			NA	8
495	-0.050	-0.050	-0.050	-0.050	0.000	1 H-55	54-73	1 WE (P)	STABLE 2	8
496						0			NA	8
497						0			NA	8
498						0			NA	8
499						0			NA	8

LAKE HURON HISTORIC SHORELINE CHANGE RATE (cont'd..)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
500						0			NA	8
501						0			NA	8
502	-0.060	-0.060	-0.060	-0.060	0.000	1 H-56	54-73	1 WE (P)	STABLE	2
503						0			NA	8
504						0			NA	8
505						0			NA	8
506						0			NA	8
507						0			NA	8
508						0			NA	8
509						0			NA	8
510						0			NA	8
511						0			NA	8
512						0			NA	8
513						0			NA	8
514						0			NA	8
515						0			NA	8
516	-0.110	-0.110	-0.110	-0.110	0.000	1 H-58	55-73	1 WE (P)	ACCRETION	1
517						0			NA	8
518						0			NA	8
519	-0.490	-0.490	-0.490	-0.490	0.000	1 H-59	55-73	1 WE (P)	ACCRETION	1
520	0.000	0.000	0.000	0.000	0.000	1 H-60	55-73	1 EOB (P)	STABLE	2
521	-0.430	-0.430	-0.430	-0.430	0.000	1 H-61	55-73	1 WE (P)	ACCRETION	1
522						0			NA	8
523	0.280	0.280	0.280	0.280	0.000	1 H-62	55-73	1 WE (P)	STABLE	3
524	0.135	0.050	0.860	-0.220	0.426	4 76 H-63	57-73	1 HMM (H)		2
524						77	34-67	1 WE (P)		
524						73	34-73	1 HMM (H)		
525	-0.100	-0.100	0.000	-0.200	0.100	2 H-64	55-73	1 WE (P)	STABLE	2
525						H-66	55-73	1 WE (P)		
526	0.220	0.220	0.220	0.220	0.000	1 H-67	55-73	1 WE (P)		3
527	0.000	0.000	0.000	0.000	0.000	15	34-83	1	OLS/FDRP	2
528	0.054	0.038	0.125	0.000	0.050	18	34-83	1	OLS/FDRP	2
529	0.310	0.288	0.610	0.000	0.218	35	34-83	1	OLS/FDRP	4
530	0.145	0.033	0.500	0.000	0.175	40	34-83	1	OLS/FDRP	3
531	0.075	0.000	0.420	0.000	0.112	44	34-83	1	OLS/FDRP	2
532	-0.110	-0.110	0.000	-0.220	0.110	2 H-80	55-73	1 WE (P)	ACCRETION	1
532						47	34-55	1 HMM (H)		
533	0.000	0.000	0.000	0.000	0.000	1 46	34-73	1 HMM (H)	STABLE	2
534	0.140	0.140	0.280	0.000	0.140	2 45	35-72	1 HMM (H)		3
534						H-81	55-73	1 EOB (P)		
535	0.000	0.000	0.000	0.000	0.000	4 42	57-72	1 HMM (H)	STABLE	2
535						43C	55-70	1 HMM (H)		
535						H-82	55-73	1 EOB (P)		
535						44	53-72	1 EOB (H)		

LAKE HURON HISTORIC SHORELINE CHANGE RATE (cont'd..)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHOREL. CHANGE RATE
536	0.000	0.000	0.000	0.000	0.000	2 H-83	55-73	1 E08 (P)	STABLE	2
536						41	35-73	1 E08 (H)		
537	0.000	0.000	0.000	0.000	0.000	2 40	35-53	1 E08 (H)	STABLE	2
537						H-84	55-73	1 E08 (P)		
538	0.114	0.000	0.450	-0.150	0.216	5 39A	21-73	1 HMM (H)		3
538						38	35-73	1 HMM (H)		
538						H-9-15	73-80	1 E08 (R)		
538						39B	31-73	1 E08 (H)		
538						H-85	55-73	1 E08 (P)		
539						0			NA	8
540	-0.380	-0.380	-0.380	-0.380	0.000	1 37	35-58	1 HMM (H)	ACCRETION	1
541	0.626	0.610	1.060	0.170	0.321	23	35-83	1	MNR/MVCA	4
542	0.558	0.580	0.700	0.390	0.103	18	35-83	1	MNR/MVCA	4
543	0.625	0.670	0.840	0.350	0.178	11	35-83	1	MNR/MVCA	4
544	0.734	0.660	1.280	0.460	0.209	11	35-83	1	MNR/MVCA	5
545	0.360	0.400	1.080	0.000	0.186	66	35-83	1	MNR/MVCA	4
546	0.239	0.290	0.460	0.000	0.133	27	35-83	1	MNR/MVCA	4
547	0.150	0.000	0.150	0.150	0.000	1	35-88	4	ABCA	3
548	0.341	0.000	0.455	0.150	0.000	1	35-88	4	ABCA	4
549						0			NA	8
550	0.155	0.000	0.455	0.150	0.000	1	35-88	4	ABCA	3
551	0.179	0.000	0.455	0.150	0.000	1	35-88	4	ABCA	3
552	0.200	0.000	0.455	0.150	0.000	1	35-88	4	ABCA	3
553	0.890	0.000	1.200	0.150	0.000	1	35-88	4	ABCA	5
554	0.150	0.000	0.150	0.150	0.000	1	35-88	4	ABCA	3
555	0.040	0.000	0.170	-0.290	0.190	3 2	22-48	1 E08 (H)	STABLE	2
555						3	31-70	1 E08 (H)		
555						H-119	55-73	1 E08 (P)		
556	-0.470	-0.770	0.220	-0.860	0.489	3 1	22-74	1 HMM (H)	ACCRETION	1
556						H-120	55-73	1 VE (P)		
556						H-121	55-73	1 VE (P)		
557						0			NA	8
558	0.760	0.760	0.760	0.760	0.000	1 B-13	50-70	1 E08 (H)		5
559	-0.037	-0.110	0.130	-0.130	0.118	3 H-122	55-73	1 VE (P)	STABLE	2
559						B-12	37-69	1 HMM (H)		
559						B-1	37-63	1 HMM (H)		
559						3 H-124	55-73	1 VE (P)	ACCRETION	1
560	-0.113	-0.170	0.000	-0.170	0.080	H-125	55-73	1 VE (P)		
560						H-123	55-73	1 VE (P)		
561	0.420	0.420	0.420	0.420	0.000	1 AREA-B	51-69	4 VE (H)		4
562	0.280	0.280	0.280	0.280	0.000	1 H-126	55-73	1 VE (P)		3
563						0			NA	8
564	0.710	0.220	1.410	0.180	0.476	5 AREA A	56-73	4 VE (H)		5
564						H-127	55-73	1 VE (P)		
564						B-10	53-72	1 VE (H)		

LAKE HURON HISTORIC SHORELINE CHANGE RATE (con't...)

REACH NO.	MEAN REC-RATE	MEDIAN REC-RATE	MAX REC-RATE	MIN REC-RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
564	-0.173	-0.060	0.050	-0.510	0.242	B-9	56-72	1 WE (H)	ACCRETION 1	8
564						H-128	55-73	1 WE (P)	NA	8
565						3 B-7	55-74	1 WE (H)	NA	8
565						B-6	55-74	1 WE (H)	NA	8
565						H-129	55-73	1 WE (P)	NA	8
566						0			STABLE	2
567						0				4
568						0				3
569	0.000	0.000	0.000	0.000	0.000	2 H-131	55-73	1 EOB (P)	OLS/FDRP	2
569						B-5	31-74	1 EOB (H)	OLS/FDRP	3
570	0.335	0.335	0.670	0.000	0.335	2 H-132	55-73	1 EOB (P)	OLS/FDRP	4
570						B-4	31-74	1 EOB (H)	OLS/FDRP	5
571	0.140	0.140	0.220	0.060	0.080	2 H-133	55-73	1 EOB (P)	OLS/FDRP	3
571						B-2	48-74	1 EOB (H)	OLS/FDRP	2
572	0.053	0.000	0.099	0.019	0.040	7	35-88	1	OLS/FDRP	2
573	0.137	0.000	1.480	0.043	0.031	40	35-88	1	OLS/FDRP	3
574	0.678	0.000	0.766	0.395	0.109	38	35-88	1	OLS/FDRP	4
575	1.180	0.000	0.356	0.068	0.865	36	35-88	1	OLS/FDRP	5
576	0.119	0.091	0.156	0.091	0.032	26	35-88	1	OLS/FDRP	3
577	0.471	0.000	0.556	0.347	0.082	56	35-88	1	OLS/FDRP	4
578	0.188	0.000	0.580	0.058	0.167	64	35-88	1	OLS/FDRP	3
579	0.062	0.000	0.062	0.062	0.000	14	35-88	1	OLS/FDRP	2
580	0.283	0.000	0.435	0.217	0.071	0	35-88	1	NA	8
582	0.204	0.000	0.550	0.280	0.165	70	35-88	1	OLS/FDRP	3
583						88	35-88	1	OLS/FDRP	3
584						0			NA	8
585						0			NA	8
586						0			NA	8
587						0			NA	8
590						0			NA	8
591						0			NA	8
592						0			NA	8
593						0			NA	8
594						0			NA	8
595						0			NA	8
596						0			NA	8
597						0			NA	8
598						0			NA	8
599						0			NA	8
600						0			NA	8
601						0			NA	8
602						0			NA	8
603						0			NA	8
604						0			NA	8

LAKE HURON HISTORIC SHORELINE CHANGE RATE (con't..)

REACH NO.	MEAN REC.RATE	MEDIAN REC.RATE	MAX REC.RATE	MIN REC.RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELW. CHANGE RATE
605						0			NA	8
606						0			NA	8
607						0			NA	8
608						0			NA	8
609						0			NA	8
610						0			NA	8
611						0			NA	8
612						0			NA	8
613						0			NA	8
614						0			NA	8
615						0			NA	8
616						0			NA	8
617						0			NA	8
618						0			NA	8
619						0			NA	8
620						0			NA	8
621						0			NA	8
622						0			NA	8
623						0			NA	8
624						0			NA	8
625						0			NA	8
626						0			NA	8
627						0			NA	8
628						0			NA	8
629						0			NA	8
630						0			NA	8
631						0			NA	8
632						0			NA	8
633						0			NA	8
634						0			NA	8
635						0			NA	8
636						0			NA	8
637						0			NA	8

- NA - Not Available
  - EOB - Edge of Bluff
  - WE - Waters Edge
  - HWM - High Water Mark
  - (H) - Historical Data Point
  - (P) - Photogrammetric Data Point
  - (R) - Recent Erosion Station
  - MVCA - Maitland Valley Conservation Authority
  - ABCA - Ausable Bayfield Conservation Authority
- 
- OLS - Ontario Land Survey
  - FDRP - Flood Damage Reduction Plan
  - MNR - Ministry of Natural Resources
- 
- Historical Shoreline Change Rate Classification (m/yr)
- 1 - accretion (>0.1)
  - 2 - stable (-0.1 to 0.1)
  - 3 - low (0.11 to 0.3)
  - 4 - moderate (0.31 to 0.7)
  - 5 - high (0.71 to 1.20)
  - 6 - very high (1.21 to 2.0)
  - 7 - severe (> 2.0)
  - 8 - unclassified

LAKE ST. CLAIR HISTORICAL SHORELINE CHANGE RATE

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLES	NO. OF SAMPLES	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
1						0	0			NA	8
2						0	0			NA	8
3						0	0			NA	8
4						0	0			NA	8
5						0	0			NA	8
6						0	0			NA	8
7						0	0			NA	8
8						0	0			NA	8
9						0	0			NA	8
10						0	0			NA	8
11						0	0			NA	8
12						0	0			NA	8
13						0	0			NA	8
14						0	0			NA	8
15						0	0			NA	8
16						0	0			NA	8
17						0	0			NA	8
18						0	0			NA	8
19						0	0			NA	8
20						0	0			NA	8
21						0	0			NA	8
22						0	0			NA	8
23						0	0			NA	8
24						0	0			NA	8
25						0	0			NA	8
26						0	0			NA	8
27						0	0			NA	8
28						0	0			NA	8
29						0	0			NA	8
30						0	0			NA	8
31						0	0			NA	8
32	0.500	0.000	0.500	0.500	0.000	1	4			ERCA	4
33	0.500	0.000	0.500	0.500	0.000	1	4			ERCA	4
34	0.450	0.000	0.500	0.400	0.050	2	4			ERCA	4
35	0.400	0.000	0.400	0.400	0.000	1	4			ERCA	4
36	0.400	0.000	0.400	0.400	0.000	1	4			ERCA	4
37						0	0			NA	8
38						0	0			NA	8
39						0	0			NA	8
40	0.250	0.000	0.250	0.250	0.000	1	4			ERCA	3
41	0.250	0.000	0.250	0.250	0.000	1	4			ERCA	3
42	0.250	0.000	0.250	0.250	0.000	1	4			ERCA	3
43						0	0			NA	8
44						0	0			NA	8
45						0	0			NA	8
46						0	0			NA	8
47						0	0			NA	8

LAKE ST. CLAIR HISTORICAL SHORELINE CHANGE RATE

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLES	NO. OF SAMPLES	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
48	0.400	0.000	0.400	0.400	0.400	0	0			NA	8
49						0	0			NA	8
50						0	0			NA	8
51						0	0			NA	8
52						0	0			NA	8
53						0	0			NA	8
54	0.400	0.000	0.400	0.400	0.400	1	4			ERCA	4

- NA - Not Available
- EOB - Edge of Bluff
- WE - Waters Edge
- HWM - High Water Mark
- (H) - Historic Data Point
- (P) - Photogrametric Data Point
- (R) - Recent Erosion Station
- ERCA - Essex Region Conservation Authority

Historical Shoreline Change Rate Classification (m/yr)

- 1 - accretion (>-0.1)
- 2 - stable (-0.1 to 0.1)
- 3 - low (0.11 to 0.3)
- 4 - moderate (0.31 to 0.7)
- 5 - high (0.71 to 1.20)
- 6 - very high (1.21 to 2.0)
- 7 - severe (> 2.0)
- 8 - unclassified

LAKE ERIE HISTORIC SHORELINE CHANGE RATE

REACH NO.	MEAN				MEDIAN				MAX				MIN				VARIANCE	NO. OF SAMPLES	I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHOREL. CHANGE RATE
	REC. RATE	REC. RATE	REC. RATE	REC. RATE	REC. RATE	REC. RATE	REC. RATE	REC. RATE	REC. RATE	REC. RATE	REC. RATE	REC. RATE	REC. RATE	REC. RATE	REC. RATE								
1	-0.600	0.000	0.000	-0.600	0.000	0.000	-0.600	0.000	1												ERCA	1	
2	0.000	0.000	0.000	-0.600	0.000	0.000	-0.600	0.000	2												ERCA	2	
3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1												ERCA	2	
4	0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2												ERCA	3	
5									0												NA	8	
6									0												NA	8	
7	0.600	0.000	0.000	0.600	0.000	0.000	0.600	0.000	1												ERCA	4	
8	0.600	0.000	0.000	0.600	0.000	0.000	0.600	0.000	1												ERCA	4	
9	0.600	0.000	0.000	0.600	0.000	0.000	0.600	0.000	1												ERCA	4	
10	0.600	0.000	0.000	0.600	0.000	0.000	0.600	0.000	1												ERCA	4	
11									0												NA	8	
12	0.600	0.000	0.000	0.600	0.000	0.000	0.600	0.000	1												ERCA	4	
13									0												NA	8	
14									0												NA	8	
15									0												NA	8	
16	0.500	0.000	0.000	0.500	0.000	0.000	0.500	0.000	1												ERCA	4	
17	0.500	0.000	0.000	0.500	0.000	0.000	0.500	0.000	1												ERCA	4	
18	0.500	0.000	0.000	0.500	0.000	0.000	0.500	0.000	1												ERCA	4	
19	0.600	0.000	0.000	0.600	0.000	0.000	0.600	0.000	1												ERCA	4	
20									0												NA	8	
21	0.600	0.000	0.000	0.600	0.000	0.000	0.600	0.000	1												ERCA	4	
22	-1.000	0.000	0.000	-1.000	0.000	0.000	-1.000	0.000	1												ERCA	1	
23									0												NA	8	
24	3.000	0.000	0.000	3.000	0.000	0.000	3.000	0.000	1												SHAW	7	
25	0.600	0.000	0.000	0.600	0.000	0.000	0.600	0.000	1												ERCA	4	
26	0.600	0.000	0.000	0.600	0.000	0.000	0.600	0.000	1												ERCA	4	
27	0.600	0.000	0.000	0.600	0.000	0.000	0.600	0.000	1												ERCA	4	
28	0.600	0.000	0.000	0.600	0.000	0.000	0.600	0.000	1												ERCA	4	
29	0.830	0.950	0.950	1.550	0.320	0.320	1.550	0.320	18												LTVCA	5	
30	0.290	0.360	0.360	0.550	0.120	0.120	0.550	0.120	7												LTVCA SDS	3	
31	0.240	0.260	0.260	0.410	0.020	0.020	0.410	0.020	5												LTVCA SDS	3	
32	0.370	0.540	0.540	0.910	0.000	0.000	0.910	0.000	12												LTVCA SDS	4	
33	0.530	0.210	0.210	1.600	0.620	0.620	1.600	0.620	5												SDS, IGLLB	4	
34	0.310	0.340	0.340	0.800	0.000	0.000	0.800	0.000	5												SDS	4	
35	0.130	0.030	0.030	0.360	0.140	0.140	0.360	0.140	4												SDS	3	
36									0												NA	8	
37									0												NA	8	
38									0												NA	8	
39	-0.530	-0.470	-0.470	0.060	0.460	0.460	-1.220	0.460	4												ACCRETION	1	
39									0														
39									0														
39									0														
39									0														
40	0.095	0.070	0.070	0.140	0.035	0.035	0.140	0.035	5												LTVCA	2	
41	0.683	0.690	0.690	1.310	0.224	0.224	1.310	0.224	79												FLEMING83	4	



LAKE ERIE HISTORIC SHORELINE CHANGE RATE (cont'd...)

REACH NO.	MEAN REC.RATE	MEDIAN REC.RATE	MAX REC.RATE	MIN REC.RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.-D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELM. CHANGE RATE
42	0.737	0.725	1.690	0.009	0.326	106	36-71		FLEMING83 5	
43	0.885	0.940	1.390	0.120	0.348	15	36-69		FLEMING83 5	
44	0.832	0.850	1.480	0.000	0.337	65	36-69		FLEMING83 5	
45	0.606	0.600	1.580	0.000	0.341	60	36-69		FLEMING83 4	
46	0.345	0.440	0.750	-0.220	0.358	6	36-68		FLEMING83 4	
47	0.681	0.670	1.660	-0.160	0.587	20	36-68		FLEMING83 4	
48	0.211	0.090	0.840	-0.280	0.337	34	36-68		FLEMING83 3	
49	0.408	0.410	0.880	0.030	0.221	33	36-68		FLEMING83 4	
50	0.553	0.590	0.750	0.280	0.139	7	36-68		FLEMING83 4	
51	1.266	1.280	2.420	-1.440	0.405	97	37-68		FLEMING83 6	
52						0			NA	8
53						0			NA	8
54	2.588	2.595	4.130	1.390	0.758	26	37-68		FLEMING83 7	
55	1.701	1.635	2.940	1.000	0.446	114	37-75		FLEMING83 6	
56						0			NA	8
57						0			NA	8
58	1.771	1.740	2.790	0.540	0.388	90	36-75		FLEMING83 6	
59	1.860	1.820	2.950	0.970	0.503	44	36-75		FLEMING83 6	
60						0			NA	8
61						0			NA	8
62	2.729	3.240	3.970	-1.180	1.250	27	37-75		FLEMING83 7	
63	4.500	4.555	5.290	3.370	0.450	48	37-75		FLEMING83 7	
64	2.370	2.110	4.790	-0.550	0.991	90	37-75		FLEMING83 7	
65	2.625	2.000	4.790	1.620	0.948	32	37-75		FLEMING83 7	
66	1.945	2.030	2.710	1.320	0.325	31	37-75		FLEMING83 6	
67						0			NA	8
68						0			NA	8
69						0			NA	8
70						0			NA	8
71						0			NA	8
72						0			NA	8
73						0			NA	8
74						0			NA	8
75						0			NA	8
76						0			NA	8
77						0			NA	8
78						0			NA	8
79						0			NA	8
80	0.285	0.285	0.510	0.060	0.225	2 E-142	55-73	1 E08 (P)		3
80						E-143	55-73	1 E08 (P)		
81						0			NA	8
82	0.140	0.140	0.280	0.000	0.140	2 E-144	55-73	1 UE (P)		3
82						E-145	55-73	1 UE (P)		
83	0.130	0.280	0.500	-0.380	0.374	3 E-146	55-73	1 E08 (P)		3
83						E-147	55-73	1 E08 (P)		

LAKE ERIE HISTORIC SHORELINE CHANGE RATE (cont'd..)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELIN. CHANGE RATE
83	0.890	0.000	0.890	0.890	0.000	E-148	55-73	1 EOB (P)		
84	1.328	1.225	2.310	0.550	0.750	1 E-150	55-73	1 WE (P)		5
85						4 IGLB-41	37-70	1 EOB (P)		6
85						E-4-30	72-80	1 EOB (P)		
85						E-151	55-73	1 EOB (P)		
85						E-152	55-73	1 EOB (P)		
86						0			NA	8
87						0			NA	8
87	0.460	0.000	0.460	0.460	0.000	1 E-154	55-73	WE (P)		4
88	0.250	0.220	0.560	0.000	0.201	4 E-156	55-73	1 EOB (P)		8
89						E-155	55-73	1 EOB (P)		3
89						E-4-35	74-80	1 EOB (P)		
89						E-157	55-73	1 EOB (P)		
89	0.000	0.000	0.000	0.000	0.000	2 E-159	55-73	1 EOB (P)	STABLE	2
90	0.410	0.500	0.000	1.010	0.380	5 E-163	55-73	1 EOB (P)		4
91						E-4-40	73-80	1 EOB (P)		
91						E-162	55-73	1 EOB (P)		
91						E-161	55-73	1 EOB (P)		
91						E-160	55-73	1 EOB (P)		
92	0.000	0.000	0.000	0.000	0.000	1 E-164	55-73	1 EOB (P)	STABLE	2
93	0.000	0.000	0.000	0.000	0.000	1 E-164	55-73	1 EOB (P)	STABLE	2
94	0.010	0.040	0.170	-0.210	0.141	4 IGLB-24	55-68	1 WE (H)	NA	8
95						E-167	55-73	1 WE (P)		3
95						E-168	55-73	1 EOB (P)		
95						E-166	55-73	1 WE (P)		
96						0				
97	0.135	0.135	0.440	-0.170	0.305	2 IGLB-23	37-68	1 WE (H)		
97						E-169	55-73	1 WE (P)		
98	0.440	0.440	0.440	0.440	0.000	1 E-170	55-73	1 WE (P)		4
99	0.260	0.260	0.260	0.260	0.000	1 E-170	55-78	1 WE (P)		3
100						0			NA	8
101	0.460	0.560	0.610	0.220	0.173	3 E-172	55-78	1 WE (P)		4
101						IGLB-21	37-68	1 WE (H)		
101						E-173	55-78	1 WE (P)		
102						0			NA	8
103	0.110	0.110	0.110	0.110	0.000	1 E-174	55-78	1 WE (P)		3
104	0.050	0.050	0.100	0.000	0.050	2 E-175	55-78	1 WE (P)	STABLE	2
104						E-176	55-78	1 WE (P)		
105						0			NA	8
106	-0.060	0.000	-0.060	-0.060	0.000	1 E-177	55-78	1 WE (P)	STABLE	2
107						1 E-178	55-78	1 WE (P)	STABLE	2
108						0			NA	8

LAKE ERIE HISTORIC SHORELINE CHANGE RATE (cont..)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
109	0.220	0.220	0.220	0.220	0.000	1 E-179	55-78	1 VE (P)		3
110	-0.030	-0.030	0.000	-0.060	0.030	2 IGLLB-20 E-180	38-68	1 E08 (P)	STABLE	2
111						1 E-181	55-78	1 E08 (P)	STABLE	2
112	0.155	0.155	0.110	0.200	0.045	2 E-182	55-78	1 VE (P)		3
112						IGLLB-18	38-68	1 VE (P)		
113	0.490	0.245	0.270	0.220	0.530	4 IGLLB-15 E-185	37-70	1 VE (H)		4
113						E-183	55-73	1 VE (P)		
113						E-184	55-73	1 VE (P)		
114	0.000	0.000	0.000	0.000	0.000	2 E-187	55-73	1 VE (P)	STABLE	2
114						E-186	55-73	1 VE (P)		
115	0.330	0.330	0.380	0.280	0.050	2 IGLLB-11 E-188	37-70	1 VE (H)		4
115						E-188	55-73	1 VE (P)		
116						0			NA	8
117	0.240	0.000	0.240	0.240	0.000	1 E-189	55-73	1 VE (P)		3
118						0			NA	8
119	0.330	0.000	0.330	0.330	0.000	1 E-190	55-73	1 VE (P)		4
120	0.340	0.420	0.600	0.420	0.251	3 E-192	55-73	1 VE (P)		4
120						E-191	55-73	1 E08 (P)		
120						E-5-10	75-80	1 VE (P)		
121	0.000	0.000	0.000	0.000	0.000	1 E-193	55-73	1 VE (P)	STABLE	2
122						0			NA	8
123	0.300	0.300	0.380	0.220	0.080	2 E-195	55-73	1 VE (P)		3
123						IGLLB-4	37-68	1 E08 (H)		
124	-0.074	-0.074	0.110	-0.240	0.116	5 IGLLB-4 E-198	37-70	1 VE (P)	STABLE	2
124						E-196	55-73			
124						IGLLB-3	37-70			
124						E-197	55-73			
125						0			NA	8
126	0.160	0.000	0.160	0.160	0.000	1 E-199	55-73	1 VE (P)		8
128						0			NA	8
129						0			NA	3
130	-0.060	0.000	-0.060	-0.060	0.000	1 E-200	55-73	1 VE (P)	STABLE	8
131	0.015	0.015	0.160	-0.130	0.145	2 IGLLB-1 E-201	37-68	1 VE (H)	STABLE	2
131						E-201	55-73	1 VE (P)		
132	0.360	0.000	0.360	0.360	0.000	1 E-202	55-73	1 VE (P)	NA	8
133						0			NA	4
134						0			NA	8
135	-0.230	0.000	-0.230	-0.230	0.000	1 E-203	55-73	1 VE (P)	NA	8
136	0.390	0.000	0.390	0.390	0.000	1 E-204	55-73	1 VE (P)	ACCRETION	1
137						0			NA	8
138						1 E-204	55-73	1 VE (P)		4

LAKE ERIE HISTORIC SHORELINE CHANGE RATE (con't..)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
139	0.660	0.000	0.660	0.660	0.000	1 E-205	55-73	1 WE (P)		4
140	0.220	0.000	0.220	0.220	0.000	1 E-206	55-73	1 WE (P)		3
141						0			NA	8
142						0			NA	8
143						0			NA	8
144	-0.030	-0.030	0.110	-0.170	0.140	2 E-207 E-208	55-73 55-73	1 WE (P) 1 WE (P)	STABLE	2
145						0			NA	8
146	0.110	0.000	0.110	0.110	0.000	1 E-209	55-73	1 WE (P)		3
147						0			NA	8
148	0.390	0.000	0.390	0.390	0.000	1 E-210	55-73	1 WE (P)		4
149						0			NA	8
150						0			NA	8
151	0.390	0.000	0.390	0.390	0.000	1 E-211	55-78	1 WE (P)		4
152						0			NA	8
153	0.450	0.000	0.600	0.300	0.000	2		4	ERCA	4
154	0.450	0.000	0.600	0.300	0.000	2		4	ERCA	4
155						0			NA	8
156						0			NA	8
157	0.450	0.000	0.600	0.300	0.000	2		4	ERCA	4
158						0			NA	8
159						0			NA	8
160						0			NA	8
161						0			NA	8
162						0			NA	8
163						0			NA	8
164						0			NA	8
165						0			NA	8
166						0			NA	8

NA - Not Available  
 EOB - Edge of Bluff  
 WE - Water's Edge  
 HWM - High Water Mark  
 (H) - Historical Data Point  
 (P) - Photogrammetric Data Point  
 (R) - Recent Erosion Station  
 ERCA - Essex Region Conservation Authority  
 SHAW - Data Point from Shaw, 19  
 LTVA - Lower Thames Valley Conservation Authority

SDS - Shore Damage Survey  
 IGLB - International Great Lakes Level Board Historic Data  
 FLEMING83 - Data from Fleming, 1983

Historical Shoreline Change Rate Classification (m/yr)  
 1 - accretion (>0.1)    5 - high (0.71 to 1.20)  
 2 - stable (-0.1 to 0.1)    6 - very high (1.21 to 2.0)  
 3 - low (0.11 to 0.3)    7 - severe (> 2.0)  
 4 - moderate (0.31 to 0.7)    8 - unclassified

LAKE ONTARIO HISTORICAL SHORELINE CHANGE RATE

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELM. CHANGE RATE
1						0			NA	8
2						0			NA	8
3						0			NA	8
4						0			NA	8
5						0			NA	8
6						0			NA	8
7						0			NA	8
8						0			NA	8
9						0			NA	8
10						0			NA	8
11						0			NA	8
12						0			NA	8
13						0			NA	8
14	0.850	0.000	0.850	0.850	0.000	1 L-2	1918-1960	1 E08 (H)		5
15	0.430	0.520	0.600	0.170	0.190	3 0-1-20	72-80	1 E08 (R)		4
15						0-3	54-73	1 WE (P)		
15						0-4	54-73	1 E08 (P)		
16	0.850	0.500	1.530	0.170	0.490	5 L-4	15-66	1 E08 (H)		5
16						0-5	54-73	1 E08 (P)		
16						0-6	54-73	1 E08 (P)		
16						L-5	32-66	1 E08 (H)		
16						0-1-30	72-80	1 E08 (R)		
17	-3.020	0.000	-3.020	-3.020	0.000	1 0-10	54-73	1 WE (P)		
18						0			ACCRETION 1	
19						0			NA	8
20						0			NA	8
21						0			NA	8
22	1.430	1.370	2.220	0.780	0.520	4 0-1-60B	72-79	1 E08 (R)		6
22						L-9	19-66	1 E08 (H)		
22						0-13	54-73	1 E08 (P)		
22						0-14	54-73	1 E08 (P)		
23	0.400	0.000	0.400	0.400	0.000	1 0-15	54-73	1 E08 (P)		4
24						0			NA	8
25						0			NA	8
26	0.510	0.520	0.800	0.250	0.170	8 0-16	54-73	1 WE (P)		4
26						0-17	54-73	1 E08 (P)		
26						0-18	54-73	1 E08 (P)		
26						L-10	35-66	1 E08 (H)		
26						L-12	28-66	1 E08 (H)		
26						0-1-80	72-80	1 E08 (R)		
26						L-13	28-66	1 E08 (H)		
26						0-19	54-73	1 E08 (P)		
27						0			NA	8
28	0.490	0.400	0.740	0.340	0.180	3 L-14	40-66	1 E08 (H)		4
28						0-20	54-73	1 E08 (P)		
28						0-1-90	72-80	1 E08 (R)		
29	-0.590	0.000	-0.590	-0.590	0.000	1 0-21	54-73	1 WE (P)		1

LAKE ONTARIO HISTORICAL SHORELINE CHANGE RATE (cont'd...)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
30	0.820	0.000	0.820	0.820	0.820	2	54-73	1 EOB (P)		5
30						0-23	54-73	1 EOB (P)		
31	0.160	0.140	0.370	0.000	0.140	4	38-66	1 EOB (H)		3
31						L-17	48-66	1 EOB (H)		
31						L-18	54-73	1 EOB (P)		
31						0-24	54-73	1 WE (P)		
31						0-25	54-73	1 EOB (P)		4
32	0.680	0.720	1.500	-0.360	0.500	8	54-73	1 EOB (P)		
32						0-26	54-73	1 EOB (P)		
32						0-28	54-73	1 EOB (H)		
32						L-19	31-66	1 EOB (R)		
32						0-1-110	72-80	1 EOB (R)		
32						0-27	54-73	1 EOB (P)		
32						L-21	20-66	1 EOB (H)		
32						L-23	48-66	1 EOB (H)		
32						0-29	54-73	1 WE (P)		
32	0.360	0.190	0.900	0.000	0.390	3	50-66	1 EOB (H)		4
33						L-25	72-74	1 EOB (R)		
33						0-1-130	73-80	1 EOB (R)		
33						0-1-140		1 EOB (R)		
34						0			NA	8
35	0.600	0.470	1.030	0.300	0.310	3	40-66	1 EOB (H)		4
35						L-28	72-80	1 EOB (R)		
35						0-1-150		1 EOB (H)		
35						L-29	20-66	1 EOB (R)		
36	1.360	1.500	1.990	0.600	0.580	3	54-73	1 EOB (P)		6
36						0-34	54-73	1 EOB (P)		
36						0-35	54-73	1 EOB (P)		
37	0.035	0.000	0.030	0.040	0.005	0	28-66	1 EOB (H)		8
38	0.590	0.585	0.850	0.320	0.265	2	28-66	1 EOB (H)		2
38						W-2	20-66	1 EOB (H)		
39	0.890	0.850	1.500	0.320	0.483	2	55-73	1 EOB (P)		4
39						W-3	73-78	1 EOB (R)		
40						3	20-66	1 EOB (H)		5
40						0-2-30	55-73	1 EOB (H)		
40						W-3		1 EOB (P)		
41	-0.660	0.110	0.240	-1.420	0.770	0	55-73	1 WE (P)		8
42						3	31-66	1 EOB (H)		1
42						0-39	55-73	1 WE (P)		
42						W-5	55-73	1 WE (P)		
42						0-40	55-73	1 WE (P)		
43	0.270	0.270	0.340	0.200	0.070	2	55-73	1 WE (P)		3
43						0-42	55-73	1 WE (P)		
43						0-43	55-73	1 WE (P)		
44						0			NA	8
45						0			NA	8
46						0			NA	8
47						0			NA	8
48						0			NA	8
49						0			NA	8
50	-0.070	0.000	-0.070	-0.070	0.000	2	55-73	1 WE (P)		2
50						0-44	55-73	1 WE (P)		
50						0-45				

LAKE ONTARIO HISTORICAL SHORELINE CHANGE RATE (cont'd..)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHOREL. CHANGE RATE
51	0.220	0.220	0.230	0.210	0.010	0	28-66	1 EOB (H)	MA	8
52						2	55-73	1 EOB (P)		3
53	0.210	0.200	0.380	0.100	0.050	7	55-73	1 WE (P)		3
53						0-49	55-73	1 EOB (P)		
53						0-50	55-73	1 EOB (P)		
53						H-4	28-66	1 EOB (H)		
53						H-7	21-66	1 EOB (H)		
53						0-3-10	73-80	1 EOB (R)		
53						H-9	26-66	1 EOB (H)		
54	0.150	0.050	0.400	0.000	0.178	3	22-66	1 EOB (H)		3
54						0-51	55-73	1 EOB (P)		
54						0-52	55-73	1 EOB (P)		
55						0			NA	8
56	0.420	0.000	0.420	0.420	0.000	1	55-73	1 EOB (P)		4
57	-0.640	0.000	-0.640	-0.640	0.000	1	41-66	1 EOB (H)	ACCRETION	1
58	0.000	0.000	0.000	0.000	0.000	1	55-73	1 EOB (P)		2
59						0			NA	8
60	0.243	0.250	0.600	-0.120	0.300	4	10-36	1 EOB (H)		3
60						0-57	55-73	1 EOB (P)		
60						0-58	55-73	1 EOB (P)		
60						H-23	17-66	1 EOB (H)		
61	0.120	0.120	0.200	0.040	0.080	2	22-66	1 EOB (H)	CVCA SDS	3
61						CVCA	45-75	1 (H)		
62	0.150	0.150	0.200	0.100	-0.050	2	45-75	1 (H)	CVCA SDS	3
62						CVCA	45-90	1 (H)		
63						0			NA	8
64	0.170	0.400	0.720	-0.610	0.570	3	1900-76	1 CVCA (H)	CVCA SDS	3
64						0-60	55-73	1 WE(P)		
64						P-7	52-66	1 EOB (H)		
65						0			NA	8
66						0			NA	8
67	0.400	0.000	0.400	0.400	0.000	1	46-71	1 (H)	CVCA SDS	4
68	0.210	0.210	0.400	0.020	0.190	2	1872-1966	1 EOB (H)	CVCA SDS	3
68						CVCA	46-71	1 (H)		
69						0			NA	8
70						0			NA	8
71						0			NA	8
72						0			NA	8
73						0			NA	8
74						0			NA	8
75						0			NA	8
76						0			NA	8
77						0			NA	8
78						0			NA	8
79						0			NA	8

LAKE ONTARIO HISTORICAL SHORELINE CHANGE RATE (con't...)

REACH NO.	MEAN REC.RATE		MEDIAN REC.RATE		MAX REC.RATE		MIN REC.RATE		NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
	REC.RATE	REC.RATE	REC.RATE	REC.RATE	REC.RATE	REC.RATE	REC.RATE	REC.RATE					
80									0			NA	8
81	-1.970	0.000	-1.970	-1.970	0.000	0.000	0.000	0.000	1 0-63	55-73	1 WE (P)	ACCRETION 1	
82	1.115	1.115	2.200	0.030	1.090				2 0-64	55-73	1 WE (P)	MTRCA SDS 5	
83									MTRCA	72-81	1 EOB (R)	NA	8
84									0			NA	8
85									0			NA	8
86									0			NA	8
87									0			NA	8
88									0			NA	8
89									0			NA	8
90	0.470	0.360	0.900	0.150	0.316				3 0-67	55-73	1 EOB (P)	MTRCA SDS 4	
90									0-68	55-73	1 EOB (P)		
90									0-5-23	77-90	1 EOB (R)		
91	1.740	1.740	2.040	1.440	0.300				2 0-69	55-73	1 EOB (P)	NA	8
92									0 0-70	55-73	1 EOB (P)		6
93	0.320	0.320	0.640	0.000	0.320				2 0-71	55-73	1 EOB (P)	NA	8
94									0-72	55-73	1 EOB (P)		4
94	0.195	0.240	0.280	0.020	0.103				4 0-73	55-73	1 EOB (P)	MTRCA SDS 3	
95									0-5	41-66	1 EOB (H)		
95									0-74	55-73	1 EOB (P)		
95									0-6-10	80-90	1 EOB (R)		
96									0			NA	8
97	0.230	0.000	0.230	0.230	0.000				1 FAIRPORT BEACH	71-91	1 EOB (R)		3
98	0.080	0.000	0.080	0.080	0.000				1 0-76	55-73	1 WE (P)	STABLE	2
99	0.210	0.000	0.210	0.210	0.000				1 0-8	14-66	1 EOB (H)		3
100									0			NA	8
101	0.230	0.000	0.230	0.230	0.000				1 0-78	55-73	1 EOB (P)		3
102	0.155	0.155	0.210	0.100	0.055				2 0-79	55-73	1 EOB (P)		3
102									0-6-20	73-80	1 EOB (R)		
103									0			NA	8
104									0			NA	8
105									0			NA	8
106	0.000	0.000	0.000	0.000	0.000				1 0-10	30-66	1 EOB (H)	STABLE	2
108	0.985	0.985	1.840	0.130	0.855				2 0-81	55-73	1 EOB (P)	MTRCA	5
108									0-6-25	73-90	1 EOB (R)		
109									0			NA	8
110									0			NA	8
111									0			NA	8
112									0			NA	8
113	-0.270	-0.270	-0.270	-0.270	-0.270				1 0-82	55-73	1 WE (P)	ACCRETION 1	
114									0			NA	8



LAKE ONTARIO HISTORICAL SHORELINE CHANGE RATE (cont..)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIM REC. RATE	VARIANCE	NO. OF SAMPLES	I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHOREL. CHANGE RATE
115	0.513	0.530	0.660	0.350	0.127	0				NA	8
116						3	0-83	55-73	1 EOB (P)		4
116							0-11	1899-1966	1 EOB (H)		
116							0-12	40-66	1 EOB (H)		
117	0.145	0.145	0.290	0.000	0.145	2	0-84	24-66	1 EOB (H)		3
117							0-13	55-73	1 EOB (P)		
118						0				NA	8
119						0				NA	8
120						0				NA	8
121	0.310	0.310	0.420	0.200	0.090	3	0-6-29	73-88	1 EOB (R)		4
121							0-6-30	73-80	1 EOB (R)	CLOCA SDS	
121							0-6-30	34-66	1 EOB (H)		
122						0				NA	8
123	0.150	0.150	0.150	0.150	0.150	1	0-17	21-66	1 EOB (H)		3
124	0.560	0.560	0.600	0.520	0.040	2	0-6-33	73-88	1 EOB (R)		4
124							0-87	55-73	1 EOB (P)		
125	0.350	0.350	0.350	0.350	0.350	1	0-18	23-66	1 EOB (H)		4
126						0				NA	8
127						0				NA	8
128						0				NA	8
129	0.020	0.020	0.020	0.020	0.020	1	0-6-35	73-88	1 EOB (R)		8
130						0				CLOCA SDS	2
131						0				NA	8
132						0				NA	8
133						0				NA	8
134	0.170	0.170	0.340	0.000	0.170	2	0-92	55-73	1 EOB (P)		3
134							DU-3	30-66	1 EOB (H)		
135						0				NA	8
136						0				NA	8
137						0				NA	8
138						0				NA	8
139						0				NA	8
140	0.460	0.000	0.460	0.460	0.000	1	0-7-15	73-88	1 EOB (R)		4
141						0				CLOCA	4
142						0				NA	8
143						0				NA	8
144	1.160	1.160	1.160	1.160	1.160	1	DU -6	49-66	1 EOB (H)		6
145	0.170	0.120	0.410	0.000	0.170	3	DU -9	49-66	1 EOB (H)		3
145							0-94	55-73	1 EOB (P)		
145							0-7-18	73-82	1 EOB (R)		
146	0.410	0.410	0.410	0.410	0.410	1	0-95	55-73	1 EOB (P)		4
147	0.660	0.570	1.340	0.060	0.530	3	DU -11	29-66	1 EOB (H)		4
147							0-96	55-73	1 EOB (P)	CLOCA SDS	
147							0-7-22	73-88	1 EOB (R)		
148						0				NA	8
149						0				NA	8

LAKE ONTARIO HISTORICAL SHORELINE CHANGE RATE (con't...)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLES	I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
150						0				NA	8
151						0				NA	8
152						0				NA	8
153	0.370	0.280	0.450	0.280	0.085	2	0-98	55-73	1 E08 (P)	CLOCA SDS	4
154	0.530	0.530	0.530	0.530	0.530	1	0-25	73-88	1 E08 (R)		
155	0.140	0.100	0.180	0.100	0.040	2	0-99	55-73	1 E08 (P)		4
156	0.240	0.000	0.240	0.240	0.000	1	0-30	73-80	1 E08 (R)		
157	0.000	0.000	0.000	0.000	0.000	2	0-100	55-73	1 E08 (P)	CLOCA SDS	3
158	0.185	0.000	0.270	0.100	0.085	1	0-101	55-73	1 E08 (P)		
159	0.210	0.210	0.210	0.210	0.210	1	0-104	1859-1966	1 E08 (H)	STABLE	2
160	0.170	0.170	0.290	0.050	0.120	2	0-103	55-73	1 E08 (P)	CLOCA SDS	3
161						0	0-7-35	73-88	1 E08 (R)		
162						0	0-104	55-73	1 WE (P)		
163	0.590	0.590	0.590	0.590	0.590	1	0-106	1854-1967	1 E08 (H)		8
164	0.350	0.400	0.420	0.240	0.081	3	0-105	55-73	1 E08 (P)	NA	8
165						0	0-105	1854-1967	1 E08 (H)	NA	8
166						0	0-105	38-66	1 E08 (H)		4
167	0.000	0.000	0.000	0.000	0.000	2	0-108	1854-1967	1 E08 (H)		4
168	-0.990	0.000	-0.990	-0.990	0.000	0	0-108	55-73	1 WE (P)	STABLE	2
169	0.145	0.110	0.180	0.110	0.350	2	0-7-45	73-88	1 E08 (R)	NA	8
170	0.110	0.000	0.110	0.110	0.000	1	0-109	55-73	1 E08 (P)	NA	8
171						0	0-110	55-73	1 WE (P)	CLOCA	3
172	0.460	0.000	0.460	0.460	0.000	1	0-111	55-73	1 WE (P)		
173	0.000	0.000	0.000	0.000	0.000	0	0-112	55-73	1 WE (P)		
174						0	0-112				
175	0.000	0.000	0.000	0.000	0.000	1	0-112				
176						0					
177						0					
178						0					
179						0					
180						0					
181	0.050	0.000	0.050	0.050	0.000	1	0-114	55-73	1 WE (P)		2
182	0.890	0.000	0.890	0.890	0.000	1	0-115	55-73	1 E08 (P)		5
183	0.980	0.000	0.980	0.980	0.000	1	NO-9	1865-1967	1 E08 (H)		5
184						0					
185	0.020	0.020	0.340	-0.300	0.320	2	0-8-20	73-88	1 E08 (R)	NA	8
186						0	0-116	55-73	1 E08 (P)	STABLE	2
						0				NA	8

LAKE ONTARIO HISTORICAL SHORELINE CHANGE RATE (con't...)

REACH NO.	MEAN REC.RATE	MEDIAN REC.RATE	MAX REC.RATE	MIN REC.RATE	VARIANCE	NO. OF SAMPLES	I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
187						0				NA	8
188						0				NA	8
189	-0.195	-0.280	-0.280	-0.110	0.080	2	0-117	55-73	1 WE (P)	CLOCA	1
189						0	0-8-25	73-88	1 WE (R)		
190						0				NA	8
191						0				NA	8
192						0				NA	8
193						0				NA	8
194						0				NA	8
195	0.183	0.150	0.400	0.000	0.165	3	NO-14	1874-1967	1 EOB (H)		3
195						0	0-118	54-73	1 EOB (P)		
195						0	0-119	54-73	1 WE (P)		
196						0				NA	8
197						0				NA	8
198	0.385	0.385	0.500	0.270	0.115	2	0-120	54-73	1 WE (P)		4
198						0	NO-15	1852-1967	1 EOB (H)		
199						0				NA	8
200						0				NA	8
201						0				NA	8
202	0.000	0.000	0.000	0.000	0.000	1	0-121	54-73	1 WE (P)	STABLE	2
203						0				NA	8
204	1.160	0.000	1.160	1.160	0.000	1	NO-20	28-67	1 EOB (H)		6
205	1.150	0.000	1.150	1.150	0.000	1	0-122	54-73	1 EOB (P)		6
206						0				NA	8
207	0.780	0.000	0.780	0.780	0.000	0		54-73	1 WE (P)		5
208						0	0-123			NA	8
209						0				NA	8
210						0				NA	8
211						0				NA	8
212						0				NA	8
213	0.540	0.000	0.540	0.540	0.000	1	0-125	54-73	1 WE (P)		4
214						0				NA	8
215	0.150	0.000	0.150	0.150	0.000	1	0-127	54-73	1 WE (P)		3
216						0				NA	8
217						0				NA	8
218						0				NA	8
219						0				NA	8
220	0.130	0.130	0.160	0.100	0.030	2	0-128	55-73	1 WE (P)		3
220						0	0-8-45	73-80	1 WE (R)		
221						0				NA	8
222						0				NA	8
223						0				NA	8
224						0				NA	8
225						0				NA	8
226						0				NA	8
227						0				NA	8

LAKE ONTARIO HISTORICAL SHORELINE CHANGE RATE (con't...)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLES	I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
228						0				NA	8
229						0				NA	8
230						0				NA	8
231						0				NA	8
232						0				NA	8
233						0				NA	8
234						0				NA	8
235						0				NA	8
236						0				NA	8
237						0				NA	8
238	0.000	0.000	0.000	0.000	0.000	1	0-129	53-73	1 WE (P)	STABLE	2
239						0				NA	8
240						0				NA	8
241						0				NA	8
242						0				NA	8
243						0				NA	8
244						0				NA	8
245						0				NA	8
246						0				NA	8
247						0				NA	8
248						0				NA	8
249						0				NA	8
250						0				NA	8
251						0				NA	8
252	0.150	0.000	0.150	0.150	0.000	1	PE-19	51-67	1 EOB (H)	NA	3
253						0				NA	8
254	0.060	0.000	0.060	0.060	0.000	1	PE-15	28-67	1 EOB (H)	STABLE	2
255						0				NA	8
256						0				NA	8
257						0				NA	8
258	0.060	0.000	0.060	0.060	0.000	1	0-130	53-73	1 WE (P)	STABLE	2
259						0				NA	8
260						0				NA	8
261						0				NA	8
262						0				NA	8
263	0.440	0.000	0.440	0.440	0.000	1	0-131	53-73	1 WE (P)	NA	4
264						0				NA	8
265						0				NA	8
266						0				NA	8
267						0				NA	8
268						0				NA	8
269						0				NA	8
270						0				NA	8
271						0				NA	8
272						0				NA	8
273						0				NA	8

LAKE ONTARIO HISTORICAL SHORELINE CHANGE RATE (cont'd..)

REACH NO.	MEAN REC.RATE	MEDIAN REC.RATE	MAX REC.RATE	MIN REC.RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
274	0.000	0.000	0.000	0.000	0.000	0	52-67	1 E08 (H)	NA	8
275	0.000	0.000	0.000	0.000	0.000	1 PE-7	52-67	1 E08 (H)	STABLE	2
276						0			NA	8
277						0			NA	8
278						0			NA	8
279						0			NA	8
280						0			NA	8
281						0			NA	8
282						1 PE-6	52-67	1 E08 (H)	STABLE	2
283	0.000	0.000	0.000	0.000	0.000	0			NA	8
284						0			NA	8
285						0			NA	8
286						0			NA	8
287						0			NA	8
288						0			NA	8
289						0			NA	8
290						0			NA	8
291						0			NA	8
292						0			NA	8
293						0			NA	8
294						0			NA	8
295						0			NA	8
296						0			NA	8
297						0			NA	8
298						0			NA	8
299						0			NA	8
300						0			NA	8
301						0			NA	8
302						0			NA	8
303						0			NA	8
304						0			NA	8
305						0			NA	8
306						0			NA	8
307						0			NA	8
308						0			NA	8
309						0			NA	8
310						0			NA	8
311						0			NA	8
312						0			NA	8
313						0			NA	8
314						0			NA	8
315						0			NA	8
316						0			NA	8
317						0			NA	8
318						0			NA	8
319						0			NA	8

LAKE ONTARIO HISTORICAL SHORELINE CHANGE RATE (cont'd...)

REACH NO.	MEAN REC.RATE	MEDIAN REC.RATE	MAX REC.RATE	MIN REC.RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELM. CHANGE RATE
320						0			NA	8
321						0			NA	8
322						0			NA	8
323						0			NA	8
324						0			NA	8
325						0			NA	8
326						0			NA	8
327						0			NA	8
328	0.200	0.000	0.200	0.200	0.000	1 PE-5	52-67	1 E08 (H)	NA	3
329						0			NA	8
330						0			NA	8
331						0			NA	8
332						0			NA	8
333						0			NA	8
334						0			NA	8
335						0			NA	8
336						0			NA	8
337						0			NA	8
338						0			NA	8
339						0			NA	8
340						0			NA	8
341						0			NA	8
342						0			NA	8
343						0			NA	8
344						0			NA	8
345						0			NA	8
346						0			NA	8
347						0			NA	8
348						0			NA	8
349						0			NA	8
350						0			NA	8
351						0			NA	8
352						0			NA	8
353						0			NA	8
354						0			NA	8
355						0			NA	8
356						0			NA	8
357						0			NA	8
358						0			NA	8
359						0			NA	8
360						0			NA	8
361						0			NA	8
362						0			NA	8
363						0			NA	8
364						0			NA	8
365						0			NA	8

LAKE ONTARIO HISTORICAL SHORELINE CHANGE RATE (cont'd..)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
366						0			NA	8
367						0			NA	8
368						0			NA	8
369						0			NA	8
370						0			NA	8
371						0			NA	8
372						0			NA	8
373						0			NA	8
374						0			NA	8
375						0			NA	8
376						0			NA	8
377						0			NA	8
378						0			NA	8
379						0			NA	8
380						0			NA	8
381						0			NA	8
382						0			NA	8
383						0			NA	8
384						0			NA	8
385						0			NA	8
386						0			NA	8
387						0			NA	8
388						0			NA	8
389						0			NA	8
390						0			NA	8
391						0			NA	8
392						0			NA	8
393						0			NA	8
394						0			NA	8
395						0			NA	8
396						0			NA	8
397						0			NA	8
398						0			NA	8
399						0			NA	8
400						0			NA	8
401						0			NA	8
402						0			NA	8
403						0			NA	8
404						0			NA	8
405						0			NA	8
406						0			NA	8
407						0			NA	8
408						0			NA	8
409						0			NA	8
410						0			NA	8
411						0			NA	8

LAKE ONTARIO HISTORICAL SHORELINE CHANGE RATE (cont'd..)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLES	I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELN. CHANGE RATE
412						0				NA	8
413						0				NA	8
414						0				NA	8
415	0.095	0.095	0.120	0.070	0.025	2	LA-1	36-67	1 EOB (H)	STABLE	2
416	0.070	0.020	0.240	0.000	0.099	4	LA-2 LA-6 LA-4 LA-5 LA-3	36-67 36-67 36-67 36-67 36-67	1 EOB (H) 1 EOB (H) 1 EOB (H) 1 EOB (H) 1 EOB (H)	STABLE	2
417						0				NA	8
418						0				NA	8
419						0				NA	8
420						0				NA	8
421						0				NA	8
422						0				NA	8
423						0				NA	8
424						0				NA	8
425						0				NA	8
426						0				NA	8
427						0				NA	8
428						0				NA	8
429						0				NA	8
430						0				NA	8
431						0				NA	8
432						0				NA	8
433						0				NA	8
434						0				NA	8
435						0				NA	8
436						0				NA	8
437						0				NA	8
438						0				NA	8
439						0				NA	8
440						0				NA	8
441						0				NA	8
442						0				NA	8
443						0				NA	8
444						0				NA	8
445						0				NA	8
446						0				NA	8
447						0				NA	8
448						0				NA	8
449						0				NA	8
450	1.040	0.000	1.040	1.040	0.000	1	0-132	54-73	1 WE (P)		5
451	-0.050	0.000	-0.050	-0.050	0.000	0				ACCRETION	1
452						0	0-133	54-73	1 WE (P)	NA	8
453						0				NA	8



LAKE ONTARIO HISTORICAL SHORELINE CHANGE RATE (cont...)

REACH NO.	MEAN REC. RATE	MEDIAN REC. RATE	MAX REC. RATE	MIN REC. RATE	VARIANCE	NO. OF SAMPLE SAMPLES I.D.	YEARS RECORDED	DATA TYPE	REMARKS	HIST. SHORELW. CHANGE RATE
454						0			NA	8
455						0			NA	8
456						0			NA	8
457						0			NA	8
458						0			NA	8
459						0			NA	8
460						0			NA	8
461						0			NA	8
462						0			NA	8
463						0			NA	8
464	1.140	1.140	1.670	0.610	0.530	2 L-1	50-66	1 EOB (H)		5
464						0-2	54-73	1 EOB (P)		
465						0			NA	8
466						0			NA	8
467	0.447	0.410	0.730	0.200	0.218	3 0-7-10	73-88	1 EOB (R)		4
467						DU -1	15-68	1 EOB (H)	CLOCA	
467						0-91	55-73	1 EOB (P)		
468	0.280	0.100	0.460	0.100	0.180	2 0-7-46	73-88	1 EOB (R)	CLOCA	3
468						0-107	55-73	1 EOB (P)		
469						0			NA	8
470						0			NA	8
471						0			NA	8
472						0			NA	8
473						0			NA	8
474						0			NA	8
475						0			NA	8
476						0			NA	8
477						0			NA	8
478						0			NA	8
479						0			NA	8

NA - Not Available  
 EOB - Edge of Bluff  
 VE - Waters Edge  
 HWM - High Water Mark  
 (H) - Historic Data Point  
 (P) - Photogrammetric Data Point  
 (R) - Recent Erosion Station  
 CVCA - Credit Valley Conservation Authority  
 SDS - Shore Damage Survey

MTRCA - Metropolitan Toronto Region Conservation Authority  
 CLOCA - Central Lake Ontario Conservation Authority  
 (consists of Lower Trent CA, Central Lake Ontario CA, Ganaraska Region CA)

Historical Shoreline Change Rate Classification (m/yr)  
 1 - accretion (>-0.1)      5 - high (0.71 to 1.20)  
 2 - stable (-0.1 to 0.1)    6 - very high (1.21 to 2.0)  
 3 - low (0.11 to 0.3)      7 - severe (> 2.0)  
 4 - moderate (0.31 to 0.7)    8 - unclassified

**APPENDIX C**

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**SPANS GIS Files**

**Great Lake Shoreline Classification  
SPANS GIS Digital Files****SPANS TYDIG Files**

The digital files used during the Great Lakes Shoreline Classification and Mapping project were produced from National Topographic Series (NTS) 1:50,000 and 1:250,000 scale map sheets. The 1:50,000 scale map sheets were used from Trois Rivières on the St. Lawrence River, west through Lake Ontario, Lake Erie, the Detroit River, Lake St. Clair, St. Clair River, and around Lake Huron and Georgian Bay to just north of Midland, Ontario. From this point north of Midland on Georgian Bay, to the west end of Lake Superior (Thunder Bay) 1:250,000 scale NTS map sheets were used.

The shoreline was digitized using SPANS TYDIG versions 4.3 and 5.2, from map sheets containing portions of the shoreline (Table 1). Digital files were produced using the appropriate Universal Transverse Mercator (UTM) coordinates for each NTS map sheet. Wherever possible the shoreline was digitized using a single line segment per reach. Each segment was then assigned a reach value on both the LEVEL and FEATURE code. The line-per-reach method was adopted to decrease the frequency of lines with a given reach value, and to eliminate any unnecessary nodes between vectors representing the same reach. In cases where there were islands within a reach, or the reach spanned across two or more NTS map sheets, the frequency of vectors with that value would be greater than one. These reaches were identified and checked to ensure statistics generated would be correct.

A single point, with the reach value on both the LEVEL and FEATURE code, was placed in the middle of each shoreline reach. This point would allow for querying data linked to a SPANS attribute file containing the shoreline classification information.

The inclusion of the coordinates (latitude and longitude) for each reach-point enables these attributes tables to be imported directly into other universes. This makes it possible to use these tables in conjunction with other information, such as that found in the Coastal Zone Data Base (CZDB). The original CZDB reaches were used as the basis for this study, therefore the information collected is directly compatible with the CZDB.

Some modifications and additions were made to the original CZDB reaches for the shoreline classifications. These changes were recorded on the classification data tables so the CZDB could be easily modified to the newly defined reaches.

The original Coastal Zone Data Base remains incomplete and portions of its data is of uncertain quality, it was therefore decided that Geomatics International Inc. would digitize the shoreline from the NTS map sheets in the manner required to produce the desired mapping. Since this digitizing was not fully accommodated in the proposal, much of the digitizing cost was assumed by Geomatics International Inc. This digitizing was conducted with a high degree of emphasis

on quality, producing a digital product comparable to or superior to that found in the CZDB, due to the age of the data used in the Coastal Zone Data Base.

To identify the digital files each map sheet was given the prefix "GL" before its topographic index name. A complete listing of all NTS map sheets used for the Great Lakes - St. Lawrence River Shoreline Classification and Mapping project are contained in Table 1. For each digitized NTS map sheet there were seven SPANS TYDIG files generated.

As an example "GL40I09" for the map sheet 40 I/09 LONG POINT on Lake Erie.  
Associated SPANS files:

GL40I09.CRD	TYDIG binary file
GL40I09.DIR	TYDIG binary file
GL40I09.FMT	TYDIG binary file
GL40I09.HDR	TYDIG ascii file - Description of file
GL40I09.HST	TYDIG ascii file - Log of operations performed
GL40I09.VEC	TYDIG ascii file - Vector Data to import to SPANS
GL40I09.VEH	TYDIG ascii file - Vector Header linked to *.VEC for import

In order to simplify the task of displaying the shoreline digital files for each map sheet in SPANS, the \*.VEC files for each NTS map sheet were joined in ARC/INFO to form a complete working area (eg. Lake Erie, Lake Huron etc.). These working areas form the major headings in Table 1. The joined NTS map sheets were cleaned and exported from ARC/INFO and processed through a vector conversion program (VECMENU) to produce the related SPANS \*.VEC and \*.VEH files. The joining of the files was a means of concentrating the data, and conversion process results in no loss of data quality. Two table files were also generated during the conversion process; one file represents vectors and the other areas.

In total there are four files related to the vectors and produced for import into SPANS. Each of these files has been generated for each of the six water bodies defined within the Great Lakes-St. Lawrence River system. An example of these four files are:

ERIE.VEC	- SPANS vector data file
ERIE.VEH	- SPANS vector header file
ERIEV.TBA	- SPANS vector table file
ERIEA.TBA	- SPANS area (polygon) table file

The \*V.TBA is the more important of the two table files. This file enables the display of different shoreline reaches as different colours. It is necessary to import this table file into the appropriate SPANS Universe. Since the data is not topologically linked (ie. no polygon coverage produced), the \*A.TBA is not needed.

LAKE SUPERIOR	LAKE HURON	LAKE ST. CLAIR DETROIT RIVER	LAKE ERIE	LAKE ONTARIO	ST. LAWRENCE RIVER
1:250 000 1:50 000	1:250 000 1:50 000	1:50 000	1:50 000	1:50 000	1:50 000
41 K SAULT STE. MARIE	40 O/01 SARNIA	40 J/03 AMHERSTBURG	30 L/14 WELLAND	30 L/14 WELLAND	31 B/14 MORRISBURG
42 D SCHREIBER	40 P/04 PARKHILL	40 J/06 WINDSOR	30 L/15 FORT ERIE	30 L/15 FORT ERIE	31 B/05 MALLORYTOWN
42 C WHITE RIVER	40 P/05 GRAND BEND	40 J/07 BELLE RIVER	40 J/01 WHEATLEY	30 M/03 NIAGARA FALLS	31 B/12 BROCKVILLE
41 N MICHIPICOTEN	40 P/12 GODERICH	40 J/08 CHATHAM	40 J/02 ESSEX	30 M/04 GRIMSBY	31 G/01 HUNTINGTON
52 A THUNDER BAY	40 P/13 LUCKNOW	40 J/09 WALLACEBURG	40 J/03 AMHERSTBURG	30 M/05 HAMILTON	31 G/02 CORNWALL
	41 A/04 KINCARDINE	40 J/10 PORT LAMBTON	40 J/08 CHATHAM	30 M/06 NIAGARA FALLS	31 G/08 VALLEYFIELD
	41 A/05 TIVERTON	40 J/16 SARNIA	30 L/13 DUNNVILLE	30 M/11 TORONTO	31 H/04 CHRYSOSTOME
	41 A/06 CHESLEY		40 G/10 MIDDLE ISL	30 M/12 BRAMPTON	31 H/05 LACINE
	41 A/08 COLLINGWOOD		40 G/15 PELEE	30 M/14 MARKHAM	31 H/11 BELOEIL
	41 A/09 NOTTAWASAGA BAY		40 J/05 RIDEGTOWN	30 M/15 OSHAWA	31 H/12 LAVAL
	41 A/10 OWEN SOUND		40 J/10 PORT BURWELL	30 M/16 PORT HOPE	31 H/14 VERCHERES
	41 A/11 WIARTON		40 J/11 PORT STANELY	30 N/13 CONSECON	31 J/02 YAMASKA
	41 A/14 CAPE CROKER		40 J/16 SIMCOE	30 N/14 WELLINGTON	31 J/03 SOREL
	41 A/15 WHITE CLOUD ISL		40 J/09 LONG POINT	30 N/15 YORKSHIRE	31 J/07 TROIS RIVIERES
	41 A/16 CHRISTIAN ISL		40 J/12 BOTHWELL	31 C/02 BATH	31 H/06 SAINT JEAN
	41 H/03 DYERS BAY			31 C/03 BELLEVILLE	31 C/01 WOLFE ISLAND
	41 H/04 DORCAS BAY			31 C/04 TRENTON	31 C/02 BATH
	41 H/05 FLOWERPOT ISL				31 C/08 GANANOQUE
	31 D/12 ELMVALE				
	31 D/13 PENETANGUISHINE				
	41 G ALPHENA				
	41 H TOBERMORY				
	41 I SUDBURY				
	41 J BLIND RIVER				
	31 E HUNTSVILLE				

Table 1. National Topographic Series Maps Used in Study

## SPANS Ver 5.2 Universes

Following the vector conversions from ARC/INFO to SPANS, working areas referred to as Universes were established within SPANS. The Universes were established using a UTM projection, based on UTM Zones corresponding to the geographical location of the shoreline. The Universe extents (minimum and maximum geo-referenced coordinates) were determined from the joined NTS-based vector files (Table 2).

Most of the Universes were located within a single UTM Zone. However, two cross-Zone basins were encountered. Lake Ontario was almost equally divided between Zone 17 and Zone 18. As a result, two SPANS Universes were set up for this lake. They are Onteast for UTM Zone 18 and Ontwest for UTM Zone 17. Eastern Lake Superior and the St. Marys River also carry across two UTM Zones. Only a small portion was located in UTM Zone 17, therefore it was possible to convert these vector into UTM Zone 16 to join with the rest of Lake Superior.

The SPANS \*.VEC/\*.VEH files for each working area were then imported into their respective SPANS Universes. The process of importing vector files into SPANS generates three new files.

\*.TOP/\*.VTX - internal SPANS (binary) vector files

These are the files that you will use to display the shoreline.

\*.PNT - ASCII data file containing geo-referenced centrally-located points for each shoreline reach

Each SPANS \*.VEC file contains a POINTS section and a VECTOR (arcs) section. Both sections contain X and Y coordinates, and an attribute for each POINT or for each VERTEX of a line segment. The POINTS section from each of the NTS \*.VEC files were extracted and joined together for each of the working areas. These files were checked to determine if all reaches had been accounted for, and for duplication of reach number. Duplicates exist as a result of reaches spanning two or more NTS map sheets.

Once the new point files were determined to be correct they were sorted by reach number and converted to an ASCII file. This file was then imported to Dbase and joined to the existing Dbase Shoreline Classification Data using the reach number as the linking factor. This file was then once again converted to an ASCII file format.

A table header file (\*.TBA) was produced for each Dbase point file (eg. ERIE.TBA). The structure of these table files is outlined in Table 3. When imported into the appropriate SPANS Universe the \*.TBA (ASCII) file generates a \*.TBB (binary) file (eg. ERIE.TBB). Once in SPANS the \*.TBB files were sorted by MORTON number (SPANS internal positioning coordinate) to allow for querying of the point data. Any information listed in Table 3 can be queried from the database within SPANS.

LAKE SUPERIOR, ST. MARYS RIVER	LAKE HURON	ST. CLAIR RIVER, LAKE ST. CLAIR, DETROIT RIVER.	LAKE ERIE	WESTERN LAKE ONTARIO, NIAGARA RIVER	EASTERN LAKE ONTARIO	ST. LAWRENCE RIVER
1:250 000 SUPERIOR UTM ZONE 16	1:250 000, 1:50 000 HURON UTM ZONE 17	1:50 000 STCLAIR UTM ZONE 17	1:50 000 ERIE UTM ZONE 17	1:50 000 ONTWEST UTM ZONE 17	1:50 000 ONTEAST UTM ZONE 18	1:50 000 LAWRENCE UTM ZONE 18
41 K	40 O/01	40 J/03	30 L/14	30 L/14	30 N/13	31 B/14
42 D	40 P/04	40 J/06	30 L/15	30 L/15	30 N/14	31 B/05
42 C	40 P/05	40 J/07	40 J/01	30 M/03	30 N/15	31 B/12
41 N	40 P/12	40 J/08	40 J/02	30 M/04	31 C/02	31 G/01
52 A	40 P/13	40 J/09	40 J/03	30 M/05	31 C/03	31 G/02
	41 A/04	40 J/10	40 J/08	30 M/06	31 C/04	31 G/08
	41 A/05	40 J/16	30 L/13	30 M/11		31 H/04
	41 A/06		40 G/10	30 M/12		31 H/05
	41 A/08		40 G/15	30 M/14		31 H/11
	41 A/09		40 J/05	30 M/15		31 H/12
	41 A/10		40 I/10	30 M/16		31 H/14
	41 A/11		40 I/11			31 I/02
	41 A/14		40 I/16			31 I/03
	41 A/15		40 I/09			31 I/07
	41 A/16		40 I/12			31 I/06
	41 H/03					31 C/01
	41 H/04					31 C/02
	41 H/05					31 C/08
	31 D/12					
	31 D/13					
	41 G					
	41 H					
	41 I					
	41 J					
	31 E					
5	25	7	15	11	6	18

Table 2. Lake and/or Connecting Channel, Universal Transverse Mercator (UTM) Zone, and N.T.S. map sheets found in each SPANS Universe (Superior, Huron, St. Clair, Erie, Ontwest, Onteast, Lawrence).

FIELD	EXAMPLE	DESCRIPTION
REACH NUMBER	75	REACH NUMBER
CZR ADJUSTMENT	YES	
CZR COMMENTS	EAST BOUND 1km WEST	
NTS NUMBER(S)	40109	NTS MAP SHEET IDENTIFIER
GEOMORPHIC VALUE	9	GEOMORPHIC CLASSIFICATION IDENTIFIER
GEOMORPHIC CLASS	BAYMOUTH BARRIER BEACH	GEOMORPHIC CLASSIFICATION CHARACTERISTICS
SOURCE	AP85	SOURCE OF INFORMATION
PROTECTION VALUE	4	PROTECTION CLASSIFICATION IDENTIFIER
PROTECTION CLASS	NO PROTECTION	PROTECTION CLASSIFICATION CHARACTERISTICS
SOURCE	AP85	SOURCE OF INFORMATION
NEARSHORE VALUE	2	NEARSHORE CLASSIFICATION IDENTIFIER
NEARSHORE CLASS	SAND	NEARSHORE CLASSIFICATION CHARACTERISTICS
SOURCE	RUKAVINA	SOURCE OF INFORMATION
THREE TIER CLASS	942	GEOMORPHIC (9) + PROTECTION (4) + NEARSHORE (2) = 942
COMMENTS	LONG POINT	SITE SPECIFIC COMMENTS
MEAN RECESSION	0.05 m/yr	MEAN ANNUAL RECESSION RATE
RECESSION VALUE	2	RECESSION RATE IDENTIFIER
RECESSION CLASS	STABLE	RECESSION RATE CLASSIFICATION CHARACTERISTICS

Table 3. Sample Data Structure for SPANS Table



## HOW TO QUERY ON THE POINT ATTRIBUTE FILE

Querying on a point will display selected portions of or all of the attribute data file.

The following represents the necessary steps to prepare a SPANS Universe to query a particular stretch of shoreline. To effectively view a particular reach or section of reaches along the shoreline (eg. LONG POINT) a smaller scale view of the shoreline is necessary. This is achieved by windowing in on the area of concern. The following uses LONGPOINT (Lake Erie) as an example.

- to view entire lake  
VISUALIZE - ENTITIES - VECTORS - ERIE.TOP/VTX WINDOW 00

- to define a smaller scale window

Using the mouse, press the left button while positioned at the lower left corner of the area wanted enlarged, drag the mouse to the upper right corner of the desired area with the button still depressed, then release the button. SPANS will prompt you to enter a window name (eg. Long Point) and a window ID (eg. LP).

- to clear the display  
VISUALIZE - DISPLAY - CLEAR

- to view the shoreline in the new window  
VISUALIZE - ENTITIES - VECTORS - ERIE.TOP/VTX WINDOW LP

- to visualize each of the reaches in a different colour  
VISUALIZE - ENTITIES - VECTORS - ERIE.TOP/VTX WINDOW LP

The following prompts will occur:

**LINestyle** - select what style of line preferred (using the mouse click on the arrow (options) to view the various options).

**COLOUR** - select TABLE - enter vector table name (ERIEV.TBB), and selected REACH\_NUM under the FIELD option.

**WIDTH** - select width of line desired (same procedure as for LINestyle)

The **ERIE.TBB** is required in order to query the points. **SPANS** will prompt for what elements of the data file are desired for display during querying. Using the right button of the mouse click on options desired (options will have a black background if selected).

#### **QUERY - POINTS - ERIE.TBB**

It may be necessary to increase the size of the query box depending on the number of fields that are displayed. Simply grab the edge of the box with the cursor and drag the edges to increase size.

Once in **QUERY** mode simply position the cursor over the desired portion of shoreline or corresponding point, and the desired data base information will appear in the **QUERY** box. To exit **QUERY** mode, move the cursor position into the **QUERY** box, press the right mouse button to activate the **QUERY** box and press **ESCAPE**.

**APPENDIX D**

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**Statistical Summaries of Shoreline Classification Types**

**GREAT LAKES - ST. LAWRENCE RIVER GEOMORPHIC CLASSIFICATION**

NUMBER	GEOMORPHIC CLASS	OCCURRENCES	SHORE LENGTH (km)
1	1 High Bluff	51 2.6%	227.30 2.0%
2	2 High Bluff & Beach	22 1.1%	71.47 0.6%
3	3 Low Bluff	122 6.2%	365.33 3.2%
4	4 Low Bluff & Beach	37 1.9%	75.45 0.6%
5	5 Sand/Silty Banks	35 1.8%	151.56 1.3%
6	6 Clay Banks	26 1.3%	105.99 0.9%
7	7 Sandy Beach/Dunes	319 16.2%	1,121.54 9.8%
8	8 Coarse Beach	127 6.4%	697.03 6.1%
9	9 Barrier Beach	107 5.4%	250.36 2.2%
10	10 Bedrock (Resistant)	602 30.5%	5,372.20 46.8%
11	11 Bedrock (Non-Resist)	27 1.4%	125.00 1.1%
12	12 Low Plain	200 10.1%	1,125.37 9.8%
13	13 Open Shore Wetlands	98 5.0%	810.24 7.1%
14	14 Semi-Protected Wtlnds	65 3.3%	390.13 3.4%
15	15 Composite Shoreline	0 0.0%	0.00 0.0%
16	16 Artificial	124 6.3%	516.60 4.5%
17	17 Unclassified	11 0.5%	63.56 0.6%
<b>TOTAL</b>	<b>17</b>	<b>1973 100.0</b>	<b>11,469.13 100.0</b>

**GREAT LAKES - ST. LAWRENCE RIVER PROTECTION CLASSIFICATION**

NUMBER	PROTECTION CLASS	OCCURRENCES	SHORE LENGTH (km)
1	1 Heavily Protected	213 10.8%	827.98 7.2%
2	2 Mod Protected	129 6.5%	534.43 4.7%
3	3 Minor Protection	201 10.2%	1,052.57 9.2%
4	4 No Protection	1394 70.6%	8,879.63 77.4%
5	5 Non-Struct Protect	1 0.1%	2.26 0.0%
5	6 Unclassified	35 1.8%	172.26 1.5%
<b>TOTAL</b>	<b>6</b>	<b>1973 100.0</b>	<b>11,469.13 100.0</b>

**GREAT LAKES - ST. LAWRENCE RIVER NEARSHORE CLASSIFICATION**

NUMBER	NEARSHORE CLASS	OCCURRENCES	SHORE LENGTH (km)
1	1 Clay	117 5.9%	594.37 5.2%
2	2 Sand	297 15.0%	1257.90 11.0%
3	3 Sand/Gravel over Clay	193 9.8%	612.61 5.3%
4	4 Bedrock (Resistant)	676 34.3%	3425.27 29.9%
5	5 Bedrock (Non-Resist)	32 1.6%	71.82 0.6%
6	6 Unclassified	658 33.4%	5507.16 48.0%
<b>TOTAL</b>	<b>6</b>	<b>1973 100.0</b>	<b>11,469.13 100.0</b>

**LOWER GREAT LAKES HISTORICAL SHORELINE CHANGE RATE**

NUMBER	HISTORICAL SHORELINE CHANGE RATE	OCCURRENCES	SHORE LENGTH (km)
1	1 < -0.1 m/yr - accretion	39 3.6%	111.62 3.3%
2	2 -0.1 to 0.1 m/yr - stable	84 7.7%	253.08 7.5%
3	3 0.11 to 0.3 m/yr - low	80 7.3%	244.61 7.3%
4	4 0.31 to 0.7 m/yr - moderate	91 8.3%	267.70 7.9%
5	5 0.71 to 1.2 m/yr - high	21 1.9%	66.17 2.0%
6	6 1.21 to 2.0 m/yr - very high	12 1.1%	55.28 1.6%
7	7 > 2.0 m/yr - severe	7 0.6%	32.36 1.0%
8	8 unclassified	761 69.5%	2335.35 69.4%
<b>TOTAL</b>		<b>1095 100%</b>	<b>3366.17 100%</b>

**LAKE SUPERIOR GEOMORPHIC CLASSIFICATION**

NUMBER	GEOMORPHIC CLASS	OCCURRENCES	SHORE LENGTH (km)
1	3 Low Bluff	2 0.7%	9.38 0.4%
2	5 Sand/Silty Banks	1 0.3%	2.38 0.1%
3	7 Sandy Beach/Dunes	63 20.7%	253.54 10.0%
4	8 Coarse Beach	67 22.0%	492.07 19.4%
5	9 Barrier Beach	2 0.7%	6.27 0.3%
6	10 Bedrock (Resistant)	127 41.6%	1,529.28 60.2%
7	12 Low Plain	8 2.6%	37.77 1.5%
8	13 Open Shore Wetlands	26 8.5%	153.32 6.0%
9	14 Semi-Protected Wtlds	4 1.3%	19.78 0.8%
10	16 Artificial	5 1.6%	37.40 1.5%
<b>TOTAL</b>	<b>10</b>	<b>305 100.0</b>	<b>2,541.19 100.0</b>

**LAKE SUPERIOR PROTECTION CLASSIFICATION**

NUMBER	PROTECTION CLASS	OCCURRENCES	SHORE LENGTH (km)
1	1 Heavily Protected	6 2.0%	32.49 1.3%
2	2 Mod Protected	8 2.6%	33.57 1.3%
3	3 Minor Protection	29 9.5%	126.01 5.0%
4	4 No Protection	261 85.6%	2,337.12 92.0%
5	6 Unclassified	1 0.3%	12.00 0.5%
<b>TOTAL</b>	<b>5</b>	<b>305 100.0</b>	<b>2,541.19 100.0</b>

**LAKE SUPERIOR NEARSHORE CLASSIFICATION**

NUMBER	NEARSHORE CLASS	OCCURRENCES	SHORE LENGTH (km)
1	1 Clay	20 6.6%	143.12 5.6%
2	2 Sand	37 12.1%	145.59 5.7%
3	3 Sand/Gravel over Clay	2 0.7%	4.62 0.2%
4	4 Bedrock (Resistant)	108 35.4%	1,303.07 51.3%
5	6 Unclassified	138 45.2%	944.80 37.2%
<b>TOTAL</b>	<b>5</b>	<b>305 100.0</b>	<b>2,541.19 100.0</b>

LAKE SUPERIOR COMPOSITE CLASSIFICATION

NUMBER	COMPOSITE CLASS	OCCURRENCES		SHORE LENGTH (km)	
1	341	1	0.3%	8.46	0.3%
2	346	1	0.3%	0.91	0.0%
3	526	1	0.3%	2.38	0.1%
4	712	1	0.3%	4.01	0.2%
5	722	2	0.7%	9.55	0.4%
6	724	1	0.3%	3.01	0.1%
7	726	1	0.3%	3.04	0.1%
8	732	7	2.3%	27.18	1.1%
9	734	1	0.3%	6.28	0.3%
10	736	2	0.7%	6.15	0.2%
11	742	19	6.2%	72.69	2.9%
12	743	1	0.3%	1.92	0.1%
13	744	6	2.0%	48.86	1.9%
14	746	23	7.5%	91.19	3.6%
15	824	1	0.3%	5.22	0.2%
16	832	1	0.3%	3.32	0.1%
17	834	3	1.0%	10.71	0.4%
18	836	3	1.0%	12.41	0.5%
19	842	1	0.3%	4.49	0.2%
20	844	32	10.5%	311.69	12.3%
21	846	26	8.5%	144.24	5.7%
22	932	1	0.3%	4.47	0.2%
23	946	1	0.3%	1.80	0.1%
24	1034	2	0.7%	7.14	0.3%
25	1036	2	0.7%	19.70	0.8%
26	1042	1	0.3%	7.82	0.3%
27	1044	60	19.7%	903.22	35.5%
28	1046	61	20.0%	571.05	22.5%
29	1216	1	0.3%	3.08	0.1%
30	1223	1	0.3%	2.69	0.1%
31	1226	1	0.3%	7.67	0.3%
32	1231	1	0.3%	4.40	0.2%
33	1232	1	0.3%	2.45	0.1%
34	1236	2	0.7%	8.50	0.3%
35	1241	1	0.3%	8.99	0.4%
36	1336	1	0.3%	2.11	0.1%
37	1341	14	4.6%	106.47	4.2%
38	1342	3	1.0%	9.62	0.4%
39	1344	1	0.3%	1.97	0.1%
40	1346	7	2.3%	33.16	1.3%
41	1431	1	0.3%	6.22	0.2%

LAKE SUPERIOR COMPOSITE CLASSIFICATION

NUMBER	COMPOSITE CLASS	OCCURRENCES		SHORE LENGTH (km)	
42	1434	1	0.3%	4.97	0.2%
43	1441	2	0.7%	8.58	0.3%
44	1616	4	1.3%	25.40	1.0%
45	1666	1	0.3%	12.00	0.5%
<b>TOTAL</b>	<b>45</b>	<b>305</b>	<b>100.0</b>	<b>2,541.19</b>	<b>100.0</b>



**ST MARYS RIVER GEOMORPHIC CLASSIFICATION**

NUMBER	GEOMORPHIC CLASS		OCCURRENCES		SHORE LENGTH (km)	
	CLASS					
1	5	Sand/Silty Banks	1	2.2%	5.36	1.8%
2	7	Sandy Beach/Dunes	5	11.1%	24.29	8.3%
3	8	Coarse Beach	2	4.4%	11.32	3.9%
4	10	Bedrock (Resistant)	15	33.3%	101.85	34.8%
5	12	Low Plain	4	8.9%	24.25	8.3%
6	13	Open Shore Wetlands	4	8.9%	13.09	4.5%
7	14	Semi-Protected Wtlds	12	26.7%	102.65	35.1%
8	16	Artificial	2	4.4%	9.61	3.3%
<b>TOTAL</b>	<b>8</b>		<b>45</b>	<b>100.0</b>	<b>292.42</b>	<b>100.0</b>

**ST MARYS RIVER PROTECTION CLASSIFICATION**

NUMBER	PROTECTION CLASS		OCCURRENCES		SHORE LENGTH (km)	
	CLASS					
1	1	Heavily Protected	3	6.7%	11.58	4.0%
2	2	Mod Protected	1	2.2%	7.81	2.7%
3	3	Minor Protection	2	4.4%	12.73	4.4%
4	4	No Protection	39	86.7%	260.30	89.0%
<b>TOTAL</b>	<b>4</b>		<b>45</b>	<b>100.0</b>	<b>292.42</b>	<b>100.0</b>

**ST MARYS RIVER NEARSHORE CLASSIFICATION**

NUMBER	NEARSHORE CLASS		OCCURRENCES		SHORE LENGTH (km)	
	CLASS					
1	1	Clay	4	8.9%	52.47	17.9%
2	2	Sand	9	20.0%	58.55	20.0%
3	3	Sand/Gravel over Clay	8	17.8%	50.78	17.4%
4	4	Bedrock (Resistant)	18	40.0%	106.44	36.4%
5	6	Unclassified	6	13.3%	24.17	8.3%
<b>TOTAL</b>	<b>5</b>		<b>45</b>	<b>100.0</b>	<b>292.42</b>	<b>100.0</b>

**ST. MARYS RIVER COMPOSITE CLASSIFICATION**

NUMBER	COMPOSITE CLASS	OCCURRENCES		SHORE LENGTH (km)	
1	536	1	2.2%	5.36	1.8%
2	716	1	2.2%	5.06	1.7%
3	733	1	2.2%	7.37	2.5%
4	741	1	2.2%	2.38	0.8%
5	743	1	2.2%	3.75	1.3%
6	744	1	2.2%	5.73	2.0%
7	844	2	4.4%	11.32	3.9%
8	1042	4	8.9%	27.85	9.5%
9	1043	1	2.2%	4.02	1.4%
10	1044	10	22.2%	69.98	23.9%
11	1216	1	2.2%	2.58	0.9%
12	1223	1	2.2%	7.81	2.7%
13	1243	1	2.2%	9.92	3.4%
14	1244	1	2.2%	3.94	1.4%
15	1342	1	2.2%	4.18	1.4%
16	1344	2	4.4%	8.06	2.8%
17	1346	1	2.2%	0.84	0.3%
18	1441	4	8.9%	52.47	17.9%
19	1442	2	4.4%	18.47	6.3%
20	1443	2	4.4%	13.97	4.8%
21	1444	2	4.4%	7.40	2.5%
22	1446	2	4.4%	10.33	3.5%
23	1613	1	2.2%	3.94	1.4%
24	1642	1	2.2%	5.67	1.9%
<b>TOTAL</b>	<b>24</b>	<b>45</b>	<b>100.0</b>	<b>292.42</b>	<b>100.0</b>

**LAKE HURON GEOMORPHIC CLASSIFICATION**

GEOMORPHIC NUMBER	CLASS		OCCURRENCES		SHORE LENGTH (km)	
1	1	High Bluff	10	1.6%	27.03	0.6%
2	2	High Bluff & Beach	19	3.0%	64.88	1.4%
3	3	Low Bluff	6	0.9%	62.04	1.3%
4	4	Low Bluff & Beach	4	0.6%	9.28	0.2%
5	5	Sand/Silty Banks	5	0.8%	16.40	0.4%
6	6	Clay Banks	3	0.5%	12.44	0.3%
7	7	Sandy Beach/Dunes	181	28.4%	710.78	15.5%
8	8	Coarse Beach	16	2.5%	119.40	2.6%
9	10	Bedrock (Resistant)	319	50.1%	3,286.49	71.6%
10	11	Bedrock (Non-Resist)	26	4.1%	122.79	2.7%
11	12	Low Plain	1	0.2%	2.07	0.1%
12	13	Open Shore Wetlands	7	1.1%	21.00	0.4%
13	14	Semi-Protected Wtlands	20	3.1%	86.98	1.9%
14	16	Artificial	20	3.1%	46.67	1.0%
<b>TOTAL</b>	<b>14</b>		<b>637</b>	<b>100.0</b>	<b>4,588.25</b>	<b>100.0</b>

**LAKE HURON PROTECTION CLASSIFICATION**

PROTECTION NUMBER	CLASS		OCCURRENCES		SHORE LENGTH (km)	
1	1	Heavily Protected	25	3.9%	60.73	1.3%
2	2	Mod Protected	15	2.4%	47.48	1.0%
3	3	Minor Protection	43	6.7%	137.77	3.0%
4	4	No Protection	551	86.5%	4,338.17	94.5%
5	5	Non-Struct Protect	1	0.2%	2.26	0.1%
6	6	Unclassified	2	0.3%	1.84	0.1%
<b>TOTAL</b>	<b>6</b>		<b>637</b>	<b>100.0</b>	<b>4,588.25</b>	<b>100.0</b>

**LAKE HURON NEARSHORE CLASSIFICATION**

NEARSHORE NUMBER	CLASS		OCCURRENCES		SHORE LENGTH (km)	
1	1	Clay	1	0.2%	4.50	0.1%
2	2	Sand	55	8.6%	159.65	3.5%
3	3	Sand/Gravel over Clay	49	7.7%	146.50	3.2%
4	4	Bedrock (Resistant)	291	45.7%	1,257.83	27.4%
5	5	Bedrock (Non-Resist)	5	0.8%	10.81	0.2%
6	6	Unclassified	236	37.0%	3,008.96	65.6%
<b>TOTAL</b>	<b>6</b>		<b>637</b>	<b>100.0</b>	<b>4,588.25</b>	<b>100.0</b>

LAKE HURON COMPOSITE CLASSIFICATION

NUMBER	COMPOSITE CLASS	OCCURRENCES		SHORE LENGTH (km)	
1	133	4	0.6%	14.31	0.3%
2	141	1	0.2%	4.50	0.1%
3	143	4	0.6%	6.25	0.1%
4	146	1	0.2%	1.97	0.0%
5	223	1	0.2%	4.27	0.1%
6	233	2	0.3%	9.01	0.2%
7	242	1	0.2%	3.60	0.1%
8	243	14	2.2%	45.73	1.0%
9	253	1	0.2%	2.26	0.1%
10	313	1	0.2%	3.29	0.1%
11	343	2	0.3%	4.71	0.1%
12	346	3	0.5%	54.05	1.2%
13	442	2	0.3%	5.17	0.1%
14	444	1	0.2%	2.49	0.1%
15	446	1	0.2%	1.62	0.0%
16	513	3	0.5%	8.21	0.2%
17	523	2	0.3%	8.19	0.2%
18	646	3	0.5%	12.44	0.3%
19	713	1	0.2%	1.61	0.0%
20	722	3	0.5%	3.59	0.1%
21	724	1	0.2%	1.14	0.0%
22	732	4	0.6%	11.57	0.3%
23	733	4	0.6%	11.56	0.3%
24	734	13	2.0%	34.56	0.8%
25	736	1	0.2%	3.23	0.1%
26	742	43	6.8%	119.39	2.6%
27	743	7	1.1%	17.55	0.4%
28	744	45	7.1%	191.57	4.2%
29	746	59	9.3%	314.99	6.9%
30	834	1	0.2%	5.83	0.1%
31	844	6	0.9%	24.23	0.5%
32	846	9	1.4%	89.35	2.0%
33	1014	1	0.2%	2.07	0.1%
34	1024	3	0.5%	10.88	0.2%
35	1026	4	0.6%	15.39	0.3%
36	1034	8	1.3%	27.42	0.6%
37	1036	5	0.8%	18.70	0.4%
38	1044	198	31.1%	915.61	20.0%
39	1046	100	15.7%	2,296.43	50.1%
40	1115	1	0.2%	0.73	0.0%
41	1145	2	0.3%	3.71	0.1%

**LAKE HURON COMPOSITE CLASSIFICATION**

NUMBER	COMPOSITE CLASS	OCCURRENCES		SHORE LENGTH (km)	
42	1146	23	3.6%	118.34	2.6%
43	1245	1	0.2%	2.07	0.1%
44	1344	1	0.2%	2.46	0.1%
45	1346	6	0.9%	18.54	0.4%
46	1426	1	0.2%	4.01	0.1%
47	1434	1	0.2%	1.58	0.0%
48	1442	1	0.2%	14.18	0.3%
49	1444	12	1.9%	38.00	0.8%
50	1445	1	0.2%	4.29	0.1%
51	1446	4	0.6%	24.92	0.5%
52	1612	1	0.2%	2.13	0.1%
53	1613	3	0.5%	9.54	0.2%
54	1616	14	2.2%	33.15	0.7%
55	1666	2	0.3%	1.84	0.0%
<b>TOTAL</b>	<b>55</b>	<b>637</b>	<b>100.0</b>	<b>4,588.25</b>	<b>100.0</b>

**NORTHERN LAKE HURON GEOMORPHIC CLASSIFICATION**

NUMBER	GEOMORPHIC CLASS	OCCURRENCES	SHORE LENGTH (km)
1	3 Low Bluff	3 1.2%	54.05 1.6%
2	4 Low Bluff & Beach	1 0.4%	0.97 0.0%
3	6 Clay Banks	3 1.2%	12.44 0.4%
4	7 Sandy Beach/Dunes	71 29.5%	412.88 12.2%
5	8 Coarse Beach	10 4.2%	100.58 3.0%
6	10 Bedrock (Resistant)	113 46.9%	2,589.71 76.7%
7	11 Bedrock (Non-Resist)	23 9.5%	118.34 3.5%
8	13 Open Shore Wetlands	4 1.7%	15.61 0.5%
9	14 Semi-Protected Wtlnds	13 5.4%	72.74 2.2%
<b>TOTAL</b>	<b>9</b>	<b>241 100.0</b>	<b>3,377.32 100.0</b>

**NORTHERN LAKE HURON PROTECTION CLASSIFICATION**

NUMBER	PROTECTION CLASS	OCCURRENCES	SHORE LENGTH (km)
1	3 Minor Protection	3 1.2%	11.43 0.3%
2	4 No Protection	238 98.8%	3,365.89 99.7%
<b>TOTAL</b>	<b>2</b>	<b>241 100.0</b>	<b>3,377.32 100.0</b>

**NORTHERN LAKE HURON NEARSHORE CLASSIFICATION**

NUMBER	NEARSHORE CLASS	OCCURRENCES	SHORE LENGTH (km)
1	2 Sand	9 3.7%	45.26 1.3%
2	4 Bedrock (Resistant)	45 18.7%	445.61 13.2%
3	6 Unclassified	187 77.6%	2,886.45 85.5%
<b>TOTAL</b>	<b>3</b>	<b>241 100.0</b>	<b>3,377.32 100.0</b>

NORTHERN LAKE HURON COMPOSITE CLASSIFICATION

NUMBER	COMPOSITE CLASS	OCCURRENCES		SHORE LENGTH (km)	
1	346	3	1.2%	54.05	1.6%
2	442	1	0.4%	0.97	0.0%
3	646	3	1.2%	12.44	0.4%
4	742	7	2.9%	30.11	0.9%
5	744	8	3.3%	71.13	2.1%
6	746	56	23.2%	311.64	9.2%
7	844	2	0.8%	11.79	0.4%
8	846	8	3.3%	88.79	2.6%
9	1036	2	0.8%	9.86	0.3%
10	1044	26	10.8%	328.53	9.7%
11	1046	85	35.3%	2,251.32	66.7%
12	1146	23	9.5%	118.34	3.5%
13	1346	4	1.7%	15.61	0.5%
14	1434	1	0.4%	1.58	0.1%
15	1442	1	0.4%	14.18	0.4%
16	1444	8	3.3%	32.58	1.0%
17	1446	3	1.2%	24.40	0.7%
<b>TOTAL</b>	<b>17</b>	<b>241</b>	<b>100.0</b>	<b>3,377.32</b>	<b>100.0</b>

**SOUTHERN LAKE HURON GEOMORPHIC CLASSIFICATION**

NUMBER	GEOMORPHIC CLASS	OCCURRENCES		SHORE LENGTH (km)	
1	1 High Bluff	10	2.5%	27.03	2.2%
2	2 High Bluff & Beach	19	4.8%	64.88	5.4%
3	3 Low Bluff	3	0.8%	7.99	0.7%
4	4 Low Bluff & Beach	3	0.8%	8.31	0.7%
5	5 Sand/Silty Banks	5	1.3%	16.40	1.4%
6	7 Sandy Beach/Dunes	110	27.8%	297.90	24.6%
7	8 Coarse Beach	6	1.5%	18.82	1.6%
8	10 Bedrock (Resistant)	206	52.0%	696.79	57.5%
9	11 Bedrock (Non-Resist)	3	0.8%	4.45	0.4%
10	12 Low Plain	1	0.3%	2.07	0.2%
11	13 Open Shore Wetlands	3	0.8%	5.39	0.5%
12	14 Semi-Protected Wtlnds	7	1.8%	14.24	1.2%
13	16 Artificial	20	5.1%	46.67	3.9%
<b>TOTAL</b>	<b>13</b>	<b>396</b>	<b>100.0</b>	<b>1,210.93</b>	<b>100.0</b>

**SOUTHERN LAKE HURON PROTECTION CLASSIFICATION**

NUMBER	PROTECTION CLASS	OCCURRENCES		SHORE LENGTH (km)	
1	1 Heavily Protected	25	6.3%	60.73	5.0%
2	2 Mod Protected	15	3.8%	47.48	3.9%
3	3 Minor Protection	40	10.1%	126.34	10.4%
4	4 No Protection	313	79.0%	972.29	80.3%
5	5 Non-Struct Protect	1	0.3%	2.26	0.2%
6	6 Unclassified	2	0.5%	1.84	0.2%
<b>TOTAL</b>	<b>6</b>	<b>396</b>	<b>100.0</b>	<b>1,210.93</b>	<b>100.0</b>

**SOUTHERN LAKE HURON NEARSHORE CLASSIFICATION**

NUMBER	NEARSHORE CLASS	OCCURRENCES		SHORE LENGTH (km)	
1	1 Clay	1	0.3%	4.50	0.4%
2	2 Sand	46	11.6%	114.39	9.4%
3	3 Sand/Gravel over Clay	49	12.4%	146.50	12.1%
4	4 Bedrock (Resistant)	246	62.1%	812.21	67.1%
5	5 Bedrock (Non-Resist)	5	1.3%	10.81	0.9%
6	6 Unclassified	49	12.4%	122.52	10.1%
<b>TOTAL</b>	<b>6</b>	<b>396</b>	<b>100.0</b>	<b>1,210.93</b>	<b>100.0</b>



**SOUTHERN LAKE HURON COMPOSITE CLASSIFICATION**

NUMBER	COMPOSITE CLASS	OCCURRENCES		SHORE LENGTH (km)	
1	133	4	1.0%	14.31	1.2%
2	141	1	0.3%	4.50	0.4%
3	143	4	1.0%	6.25	0.5%
4	146	1	0.3%	1.97	0.2%
5	223	1	0.3%	4.27	0.4%
6	233	2	0.5%	9.01	0.7%
7	242	1	0.3%	3.60	0.3%
8	243	14	3.5%	45.73	3.8%
9	253	1	0.3%	2.26	0.2%
10	313	1	0.3%	3.29	0.3%
11	343	2	0.5%	4.71	0.4%
12	442	1	0.3%	4.20	0.4%
13	444	1	0.3%	2.49	0.2%
14	446	1	0.3%	1.62	0.1%
15	513	3	0.8%	8.21	0.7%
16	523	2	0.5%	8.19	0.7%
17	713	1	0.3%	1.61	0.1%
18	722	3	0.8%	3.59	0.3%
19	724	1	0.3%	1.14	0.1%
20	732	4	1.0%	11.57	1.0%
21	733	4	1.0%	11.56	1.0%
22	734	13	3.3%	34.56	2.9%
23	736	1	0.3%	3.23	0.3%
24	742	36	9.1%	89.28	7.4%
25	743	7	1.8%	17.55	1.5%
26	744	37	9.3%	120.44	10.0%
27	746	3	0.8%	3.35	0.3%
28	834	1	0.3%	5.83	0.5%
29	844	4	1.0%	12.44	1.0%
30	846	1	0.3%	0.56	0.1%
31	1014	1	0.3%	2.07	0.2%
32	1024	3	0.8%	10.88	0.9%
33	1026	4	1.0%	15.39	1.3%
34	1034	8	2.0%	27.42	2.3%
35	1036	3	0.8%	8.84	0.7%
36	1044	172	43.4%	587.08	48.5%
37	1046	15	3.8%	45.12	3.7%
38	1115	1	0.3%	0.73	0.1%
39	1145	2	0.5%	3.71	0.3%
40	1245	1	0.3%	2.07	0.2%
41	1344	1	0.3%	2.46	0.2%

**SOUTHERN LAKE HURON COMPOSITE CLASSIFICATION**

NUMBER	COMPOSITE CLASS	OCCURRENCES		SHORE LENGTH (km)	
42	1346	2	0.5%	2.93	0.2%
43	1426	1	0.3%	4.01	0.3%
44	1444	4	1.0%	5.42	0.5%
45	1445	1	0.3%	4.29	0.4%
46	1446	1	0.3%	0.52	0.0%
47	1612	1	0.3%	2.13	0.2%
48	1613	3	0.8%	9.54	0.8%
49	1616	14	3.5%	33.15	2.7%
50	1666	2	0.5%	1.84	0.2%
<b>TOTAL</b>	<b>50</b>	<b>396</b>	<b>100.0</b>	<b>1,210.94</b>	<b>100.0</b>

**SOUTHERN LAKE HURON HISTORICAL SHORELINE CHANGE RATE**

NUMBER	HISTORICAL SHORELINE CHANGE RATE	OCCURRENCES	SHORE LENGTH (km)
1	1 < -0.1 m/yr - accretion	26 6.6%	74.44 6.1%
2	2 -0.1 to 0.1 m/yr - stable	47 11.9%	149.38 12.3%
3	3 0.11 to 0.3 m/yr - low	26 6.6%	79.03 6.5%
4	4 0.31 to 0.7 m/yr - moderate	18 4.5%	52.84 4.4%
5	5 0.71 to 1.2 m/yr - high	5 1.2%	12.24 1.0%
6	8 unclassified	274 69.2%	843.00 69.6%
<b>TOTAL</b>	<b>6</b>	<b>396 100%</b>	<b>1210.93 100%</b>

Southern Lake Huron Three-Tier Composite Classification with added  
Historical Shoreline Change Rate Class

NUMBER	COMP_REC CLASS	OCCURRENCES		SHORE LENGTH	
		no.	%	km	%
1	1332	1	0.3	3.52	0.3
2	1333	2	0.5	4.31	0.4
3	1338	1	0.3	6.48	0.5
4	1414	1	0.3	4.50	0.4
5	1434	3	0.8	4.30	0.4
6	1435	1	0.3	1.95	0.2
7	1463	1	0.3	1.97	0.2
8	2233	1	0.3	4.27	0.4
9	2333	2	0.5	9.01	0.7
10	2425	1	0.3	3.60	0.3
11	2431	1	0.3	2.28	0.2
12	2432	6	1.5	17.77	1.5
13	2433	3	0.8	9.59	0.8
14	2434	3	0.8	14.62	1.2
15	2435	1	0.3	1.47	0.1
16	2534	1	0.3	2.26	0.2
17	3133	1	0.3	3.29	0.3
18	3433	1	0.3	1.82	0.2
19	3434	1	0.3	2.89	0.2
20	4423	1	0.3	4.20	0.3
21	4444	1	0.3	2.49	0.2
22	4464	1	0.3	1.62	0.1
23	5133	1	0.3	4.31	0.4
24	5138	2	0.5	3.90	0.3
25	5233	1	0.3	6.86	0.6
26	5238	1	0.3	1.33	0.1
27	7131	1	0.3	1.61	0.1
28	7222	1	0.3	0.95	0.1
29	7225	1	0.3	1.64	0.1
30	7228	1	0.3	1.00	0.1
31	7248	1	0.3	1.14	0.1
32	7321	2	0.5	6.82	0.6
33	7325	1	0.3	3.57	0.3
34	7328	1	0.3	1.18	0.1
35	7331	1	0.3	1.78	0.1
36	7332	3	0.8	9.78	0.8
37	7341	1	0.3	3.78	0.3
38	7342	2	0.5	6.64	0.5
39	7343	2	0.5	3.15	0.3

Southern Lake Huron (con't)

NUMBER	COMP_REC CLASS	OCCURRENCES		SHORE LENGTH	
		no.	%	km	%
40	7348	8	2.0	21.00	1.7
41	7368	1	0.3	3.23	0.3
42	7421	9	2.3	22.94	1.9
43	7422	9	2.3	29.33	2.4
44	7423	3	0.8	7.87	0.7
45	7424	2	0.5	10.97	0.9
46	7428	13	3.3	18.17	1.5
47	7432	2	0.5	9.76	0.8
48	7433	3	0.8	4.56	0.4
49	7438	2	0.5	3.24	0.3
50	7441	4	1.0	12.00	1.0
51	7442	6	1.5	21.07	1.7
52	7443	3	0.8	8.00	0.7
53	7448	24	6.1	79.37	6.6
54	7468	3	0.8	3.35	0.3
55	8343	1	0.3	5.83	0.5
56	8448	4	1.0	12.44	1.0
57	8468	1	0.3	0.56	0.0
58	10148	1	0.3	2.07	0.2
59	10244	1	0.3	1.61	0.1
60	10248	2	0.5	9.27	0.8
61	10268	4	1.0	15.39	1.3
62	10341	1	0.3	3.89	0.3
63	10344	1	0.3	0.94	0.1
64	10348	6	1.5	22.60	1.9
65	10368	3	0.8	8.84	0.7
66	10441	3	0.8	7.09	0.6
67	10442	8	2.0	20.41	1.7
68	10444	1	0.3	1.93	0.2
69	10448	160	40.4	557.65	46.1
70	10461	1	0.3	3.18	0.3
71	10462	7	1.8	25.53	2.1
72	10464	1	0.3	3.01	0.2
73	10468	6	1.5	13.39	1.1
74	11158	1	0.3	0.73	0.1
75	11458	2	0.5	3.71	0.3
76	12452	1	0.3	2.07	0.2
77	13448	1	0.3	2.46	0.2
78	13468	2	0.5	2.93	0.2

Southern Lake Huron (con't)

NUMBER	COMP_REC CLASS	OCCURRENCES		SHORE LENGTH	
		no.	%	km	%
79	14268	1	0.3	4.01	0.3
80	14448	4	1.0	5.42	0.4
81	14458	1	0.3	4.29	0.4
82	14468	1	0.3	0.52	0.0
83	16128	1	0.3	2.13	0.2
84	16131	1	0.3	6.32	0.5
85	16134	1	0.3	1.71	0.1
86	16138	1	0.3	1.52	0.1
87	16161	1	0.3	2.76	0.2
88	16162	1	0.3	2.55	0.2
89	16168	12	3.0	27.84	2.3
90	16668	2	0.5	1.84	0.2
<b>TOTALS</b>		<b>396</b>	<b>100.0</b>	<b>1210.93</b>	<b>100.0</b>

Example: COMP\_REC CLASS  
12348

- 12 - Geomorphic class
- 3 - Protection class
- 4 - Nearshore class
- 8 - Historical Shoreline Change rate

Protection Classification

- 1 Heavily Protected
- 2 Moderately Protected
- 3 Minor Protection
- 4 No Protection
- 5 Non-Structural Protection
- 6 Unclassified

Geomorphic Classification

- 1 High (> 15m) Bluff (intermittent or no beach)
- 2 High (> 15m) Bluff With Beach
- 3 Low (< 15m) Bluff (intermittent or no beach)
- 4 Low (< 15m) Bluff With Beach
- 5 Sandy/Silty Banks
- 6 Clay Banks
- 7 Sandy Beach / Dunes
- 8 Coarse Beach
- 9 Baymouth or Barrier Beach
- 10 Bedrock (Resistant)
- 11 Bedrock (Non-Resistant)
- 12 Low Plain
- 13 Open Shoreline Wetlands
- 14 Semi-Protected Wetlands
- 15 Composite Shorelines
- 16 Artificial
- 17 Unclassified

Subaqueous/Nearshore Classification

- 1 Clay
- 2 Sand
- 3 Sand / Gravel Lag Over Clay
- 4 Bedrock (Resistant)
- 5 Bedrock (Non-Resistant)
- 6 Unclassified

Historical Shoreline Change Rate

- 1 < -0.1 m/yr - Accretion
- 2 -0.1 to 0.1 m/yr - Stable
- 3 0.11 to 0.3 m/yr - Low
- 4 0.31 to 0.7 m/yr - Moderate
- 5 0.71 to 1.2 m/yr - High
- 6 1.21 to 2.0 m/yr - Very High
- 7 > 2.0 m/yr - Severe
- 8 Unclassified

**ST CLAIR RIVER GEOMORPHIC CLASSIFICATION**

NUMBER	GEOMORPHIC CLASS	OCCURRENCES	SHORE LENGTH (km)
1	3 Low Bluff	6 31.6%	27.28 29.9%
2	5 Sand/Silty Banks	1 5.3%	0.95 1.0%
3	6 Clay Banks	3 15.8%	14.19 15.6%
4	12 Low Plain	3 15.8%	15.61 17.1%
5	13 Open Shore Wetlands	5 26.3%	28.16 30.8%
6	16 Artificial	1 5.3%	5.09 5.6%
<b>TOTAL</b>	<b>6</b>	<b>19 100.0</b>	<b>91.28 100.0</b>

**ST CLAIR RIVER PROTECTION CLASSIFICATION**

NUMBER	PROTECTION CLASS	OCCURRENCES	SHORE LENGTH (km)
1	1 Heavily Protected	14 73.7%	63.13 69.1%
2	2 Mod Protected	1 5.3%	7.63 8.4%
3	4 No Protection	4 21.1%	20.52 22.5%
<b>TOTAL</b>	<b>3</b>	<b>19 100.0</b>	<b>91.28 100.0</b>

**ST CLAIR RIVER NEARSHORE CLASSIFICATION**

NUMBER	NEARSHORE CLASS	OCCURRENCES	SHORE LENGTH (km)
1	1 Clay	1 5.3%	2.81 3.1%
2	2 Sand	6 31.6%	30.83 33.8%
3	3 Sand/Gravel over Clay	12 63.2%	57.64 63.1%
<b>TOTAL</b>	<b>3</b>	<b>19 100.0</b>	<b>91.28 100.0</b>

**ST. CLAIR RIVER COMPOSITE CLASSIFICATION**

NUMBER	COMPOSITE CLASS	OCCURRENCES		SHORE LENGTH (km)	
1	311	1	5.3%	2.81	3.1%
2	313	5	26.3%	24.46	26.8%
3	513	1	5.3%	0.95	1.0%
4	612	1	5.3%	6.01	6.6%
5	613	2	10.5%	8.19	9.0%
6	1212	1	5.3%	4.69	5.1%
7	1213	2	10.5%	10.92	12.0%
8	1322	1	5.3%	7.63	8.4%
9	1342	3	15.8%	12.50	13.7%
10	1343	1	5.3%	8.02	8.8%
11	1613	1	5.3%	5.09	5.6%
<b>TOTAL</b>	<b>11</b>	<b>19</b>	<b>100.0</b>	<b>91.28</b>	<b>100.0</b>



**ST. CLAIR RIVER HISTORICAL SHORELINE CHANGE RATE**

<b>NUMBER</b>	<b>HISTORICAL SHORELINE CHANGE RATE</b>	<b>OCCURRENCES</b>		<b>SHORE LENGTH (km)</b>	
<b>1</b>	<b>8 unclassified</b>	<b>19</b>	<b>100%</b>	<b>91.28</b>	<b>100%</b>
<b>TOTAL</b>	<b>1</b>	<b>19</b>	<b>100%</b>	<b>91.28</b>	<b>100%</b>

**St. Clair River Three-Tier Composite Classification with added  
Historical Shoreline Change Rate Class**

NUMBER	COMP_REC CLASS	OCCURRENCES		SHORE LENGTH	
		no.	%	km	%
1	3118	1	5.3	2.81	3.1
2	3138	5	26.3	24.46	26.8
3	5138	1	5.3	0.95	1.0
4	6128	1	5.3	6.01	6.6
5	6138	2	10.5	8.19	9.0
6	12128	1	5.3	4.69	5.1
7	12138	2	10.5	10.92	12.0
8	13228	1	5.3	7.63	8.4
9	13428	3	15.8	12.50	13.7
10	13438	1	5.3	8.02	8.8
11	16138	1	5.3	5.09	5.6
<b>TOTALS</b>		<b>19</b>	<b>100</b>	<b>91.28</b>	<b>100.0</b>

Example: **COMP\_REC CLASS**  
**12348**

- 12 - Geomorphologic class
- 3 - Protection class
- 4 - Nearshore class
- 8 - Historical Shoreline Change rate

**Protection Classification**

- 1 Heavily Protected
- 2 Moderately Protected
- 3 Minor Protection
- 4 No Protection
- 5 Non-Structural Protection
- 6 Unclassified

**Geomorphologic Classification**

- 1 High (> 15m) Bluff (intermittent or no beach)
- 2 High (> 15m) Bluff With Beach
- 3 Low (< 15m) Bluff (intermittent or no beach)
- 4 Low (< 15m) Bluff With Beach
- 5 Sandy/Silty Banks
- 6 Clay Banks
- 7 Sandy Beach / Dunes
- 8 Coarse Beach
- 9 Baymouth or Barrier Beach
- 10 Bedrock (Resistant)
- 11 Bedrock (Non-Resistant)
- 12 Low Plain
- 13 Open Shoreline Wetlands
- 14 Semi-Protected Wetlands
- 15 Composite Shorelines
- 16 Artificial
- 17 Unclassified

**Subaqueous/Nearshore Classification**

- 1 Clay
- 2 Sand
- 3 Sand / Gravel Lag Over Clay
- 4 Bedrock (Resistant)
- 5 Bedrock (Non-Resistant)
- 6 Unclassified

**Historical Shoreline Change Rate**

- 1 < -0.1 m/yr - Accretion
- 2 -0.1 to 0.1 m/yr - Stable
- 3 0.11 to 0.3 m/yr - Low
- 4 0.31 to 0.7 m/yr - Moderate
- 5 0.71 to 1.2 m/yr - High
- 6 1.21 to 2.0 m/yr - Very High
- 7 > 2.0 m/yr - Severe
- 8 Unclassified

**LAKE ST CLAIR GEOMORPHIC CLASSIFICATION**

NUMBER	GEOMORPHIC CLASS		OCCURRENCES		SHORE LENGTH (km)	
1	5	Sand/Silty Banks	7	25.0%	28.59	20.5%
2	6	Clay Banks	2	7.1%	8.78	6.3%
3	7	Sandy Beach/Dunes	1	3.6%	0.46	0.3%
4	12	Low Plain	3	10.7%	10.35	7.4%
5	13	Open Shore Wetlands	10	35.7%	77.77	55.9%
6	14	Semi-Protected Wtnds	1	3.6%	7.17	5.2%
7	16	Artificial	4	14.3%	6.04	4.3%
<b>TOTAL</b>	<b>7</b>		<b>28</b>	<b>100.0</b>	<b>139.16</b>	<b>100.0</b>

**LAKE ST CLAIR PROTECTION CLASSIFICATION**

NUMBER	PROTECTION CLASS		OCCURRENCES		SHORE LENGTH (km)	
1	1	Heavily Protected	13	46.4%	45.55	32.7%
2	2	Mod Protected	1	3.6%	7.17	5.2%
3	3	Minor Protection	4	14.3%	25.95	18.7%
4	4	No Protection	9	32.1%	60.16	43.2%
5	6	Unclassified	1	3.6%	0.33	0.2%
<b>TOTAL</b>	<b>5</b>		<b>28</b>	<b>100.0</b>	<b>139.16</b>	<b>100.0</b>

**LAKE ST CLAIR NEARSHORE CLASSIFICATION**

NUMBER	NEARSHORE CLASS		OCCURRENCES		SHORE LENGTH (km)	
1	2	Sand	28	100.0%	139.16	100.0%
<b>TOTAL</b>	<b>1</b>		<b>28</b>	<b>100.0</b>	<b>139.16</b>	<b>100.0</b>

**LAKE ST. CLAIR COMPOSITE CLASSIFICATION**

NUMBER	COMPOSITE CLASS	OCCURRENCES		SHORE LENGTH (km)	
1	512	7	25.0%	28.59	20.5%
2	612	1	3.6%	4.57	3.3%
3	632	1	3.6%	4.21	3.0%
4	742	1	3.6%	0.46	0.3%
5	1212	2	7.1%	6.68	4.8%
6	1232	1	3.6%	3.68	2.6%
7	1332	2	7.1%	18.06	13.0%
8	1342	8	28.6%	59.70	42.9%
9	1422	1	3.6%	7.17	5.2%
10	1612	3	10.7%	5.71	4.1%
11	1662	1	3.6%	0.33	0.2%
<b>TOTAL</b>	<b>11</b>	<b>28</b>	<b>100.0</b>	<b>139.16</b>	<b>100.0</b>

**LAKE ST. CLAIR HISTORICAL SHORELINE CHANGE RATE**

<b>NUMBER</b>	<b>HISTORICAL SHORELINE CHANGE RATE</b>	<b>OCCURRENCES</b>	<b>SHORE LENGTH (km)</b>		
1	3 0.11 to 0.3 m/yr - low	3	10.7%	14.79	10.6%
2	4 0.31 to 0.7 m/yr - moderate	6	21.4%	20.00	14.4%
3	8 unclassified	19	67.9%	104.37	75.0%
<b>TOTAL</b>	<b>3</b>	<b>28</b>	<b>100%</b>	<b>139.16</b>	<b>100%</b>

**Lake St. Clair Three-Tier Composite Classification with added  
Historical Shoreline Change Rate Class**

NUMBER	COMP_REC CLASS	OCCURRENCES		SHORELENGTH	
		no.	%	km	%
1	5123	3	10.7	14.79	10.6
2	5124	2	7.1	7.41	5.3
3	5128	2	7.1	6.38	4.6
4	6124	1	3.6	4.57	3.3
5	6328	1	3.6	4.21	3.0
6	7428	1	3.6	0.46	0.3
7	12124	2	7.1	6.68	4.8
8	12328	1	3.6	3.68	2.6
9	13328	2	7.1	18.06	13.0
10	13424	1	3.6	1.33	1.0
11	13428	7	25.0	58.37	41.9
12	14228	1	3.6	7.17	5.2
13	16128	3	10.7	5.71	4.1
14	16628	1	3.6	0.33	0.2
<b>TOTALS</b>		<b>28</b>	<b>100.0</b>	<b>139.16</b>	<b>100.0</b>

**Example: COMP\_REC CLASS - 12348**

- 12 - Geomorphic class
- 3 - Protection class
- 4 - Nearshore class
- 8 - Historical Shoreline Change rate

**Geomorphic Classification**

- 1 High (> 15m) Bluff (intermittent or no beach)
- 2 High (> 15m) Bluff With Beach
- 3 Low (< 15m) Bluff (intermittent or no beach)
- 4 Low (< 15m) Bluff With Beach
- 5 Sandy/Silty Banks
- 6 Clay Banks
- 7 Sandy Beach / Dunes
- 8 Coarse Beach
- 9 Baymouth or Barrier Beach
- 10 Bedrock (Resistant)
- 11 Bedrock (Non-Resistant)
- 12 Low Plain
- 13 Open Shoreline Wetlands
- 14 Semi-Protected Wetlands
- 15 Composite Shorelines
- 16 Artificial
- 17 Unclassified

**Protection Classification**

- 1 Heavily Protected
- 2 Moderately Protected
- 3 Minor Protection
- 4 No Protection
- 5 Non-Structural Protection
- 6 Unclassified

**Subaqueous/Nearshore Classification**

- 1 Clay
- 2 Sand
- 3 Sand / Gravel Lag Over Clay
- 4 Bedrock (Resistant)
- 5 Bedrock (Non-Resistant)
- 6 Unclassified

**Historical Shoreline Change Rate**

- 1 < -0.1 m/yr - Accretion
- 2 -0.1 to 0.1 m/yr - Stable
- 3 0.11 to 0.3 m/yr - Low
- 4 0.31 to 0.7 m/yr - Moderate
- 5 0.71 to 1.2 m/yr - High
- 6 1.21 to 2.0 m/yr - Very High
- 7 > 2.0 m/yr - Severe
- 8 Unclassified

**DETROIT RIVER GEOMORPHIC CLASSIFICATION**

NUMBER	GEOMORPHIC CLASS	OCCURRENCES	SHORE LENGTH (km)
1	5 Sand/Silty Banks	2 28.6%	32.34 30.4%
2	6 Clay Banks	1 14.3%	3.02 2.8%
3	13 Open Shore Wetlands	2 28.6%	49.40 46.4%
4	16 Artificial	2 28.6%	21.80 20.5%
<b>TOTAL</b>	<b>4</b>	<b>7 100.0</b>	<b>106.56 100.0</b>

**DETROIT RIVER PROTECTION CLASSIFICATION**

NUMBER	PROTECTION CLASS	OCCURRENCES	SHORE LENGTH (km)
1	1 Heavily Protected	4 57.1%	52.97 49.7%
2	2 Mod Protected	2 28.6%	39.99 37.5%
3	3 Minor Protection	1 14.3%	13.60 12.8%
<b>TOTAL</b>	<b>3</b>	<b>7 100.0</b>	<b>106.56 100.0</b>

**DETROIT RIVER NEARSHORE CLASSIFICATION**

NUMBER	NEARSHORE CLASS	OCCURRENCES	SHORE LENGTH (km)
1	2 Sand	4 57.1%	60.61 56.9%
2	3 Sand/Gravel over Clay	3 42.9%	45.95 43.1%
<b>TOTAL</b>	<b>2</b>	<b>7 100.0</b>	<b>106.56 100.0</b>

**DETROIT RIVER COMPOSITE CLASSIFICATION**

NUMBER	COMPOSITE CLASS	OCCURRENCES		SHORE LENGTH (km)	
1	513	1	14.3%	28.14	26.4%
2	523	1	14.3%	4.20	3.9%
3	612	1	14.3%	3.02	2.8%
4	1322	1	14.3%	35.79	33.6%
5	1333	1	14.3%	13.60	12.8%
6	1612	2	28.6%	21.80	20.5%
<b>TOTAL</b>	<b>6</b>	<b>7</b>	<b>100.0</b>	<b>106.56</b>	<b>100.0</b>



**DETROIT RIVER HISTORIC SHORELINE CHANGE RATE CLASSIFICATION**

<b>NUMBER</b>	<b>HISTORICAL SHORELINE CHANGE RATE CLASS</b>	<b>OCCURRENCES</b>	<b>SHORE LENGTH (km)</b>
<b>1</b>	<b>8 unclassified</b>	<b>7 100%</b>	<b>106.56 100%</b>
<b>TOTAL</b>	<b>1</b>	<b>7 100%</b>	<b>106.56 100%</b>

**Detroit River Three-Tier Composite Classification with added  
Historical Shoreline Change Rate Class**

	COMP_REC CLASS	OCCURRENCES		SHORELENGTH	
		no.	%	km	%
1	5138	1	14.3	28.14	26.4
NUMBER	5238	1	14.3	4.20	3.9
3	6128	1	14.3	3.02	2.8
4	13228	1	14.3	35.79	33.6
5	13338	1	14.3	13.60	12.8
6	16128	2	28.6	21.80	20.5
<b>TOTALS</b>		<b>7</b>	<b>100.0</b>	<b>106.56</b>	<b>100.0</b>

Example: **COMP\_REC CLASS**  
**12348**

- 12 - Geomorphic class
- 3 - Protection class
- 4 - Nearshore class
- 8 - Historical Shoreline Change rate

**Protection Classification**

- 1 Heavily Protected
- 2 Moderately Protected
- 3 Minor Protection
- 4 No Protection
- 5 Non-Structural Protection
- 6 Unclassified

**Geomorphic Classification**

- 1 High (> 15m) Bluff (intermittent or no beach)
- 2 High (> 15m) Bluff With Beach
- 3 Low (< 15m) Bluff (intermittent or no beach)
- 4 Low (< 15m) Bluff With Beach
- 5 Sandy/Silty Banks
- 6 Clay Banks
- 7 Sandy Beach / Dunes
- 8 Coarse Beach
- 9 Baymouth or Barrier Beach
- 10 Bedrock (Resistant)
- 11 Bedrock (Non-Resistant)
- 12 Low Plain
- 13 Open Shoreline Wetlands
- 14 Semi-Protected Wetlands
- 15 Composite Shorelines
- 16 Artificial
- 17 Unclassified

**Subaqueous/Nearshore Classification**

- 1 Clay
- 2 Sand
- 3 Sand / Gravel Lag Over Clay
- 4 Bedrock (Resistant)
- 5 Bedrock (Non-Resistant)
- 6 Unclassified

**Historical Shoreline Change Rate**

- 1 < -0.1 m/yr - Accretion
- 2 -0.1 to 0.1 m/yr - Stable
- 3 0.11 to 0.3 m/yr - Low
- 4 0.31 to 0.7 m/yr - Moderate
- 5 0.71 to 1.2 m/yr - High
- 6 1.21 to 2.0 m/yr - Very High
- 7 > 2.0 m/yr - Severe
- 8 Unclassified

**LAKE ERIE GEOMORPHIC CLASSIFICATION**

NUMBER	GEOMORPHIC CLASS		OCCURRENCES		SHORE LENGTH (km)	
1	1	High Bluff	29	17.5%	173.59	27.8%
2	2	High Bluff & Beach	2	1.2%	4.03	0.7%
3	3	Low Bluff	17	10.2%	46.15	7.4%
4	4	Low Bluff & Beach	17	10.2%	40.65	6.5%
5	5	Sand/Silty Banks	7	4.2%	17.21	2.8%
6	6	Clay Banks	4	2.4%	16.35	2.6%
7	7	Sandy Beach/Dunes	40	24.1%	99.81	16.0%
8	9	Barrier Beach	24	14.5%	131.84	21.2%
9	10	Bedrock (Resistant)	8	4.8%	8.35	1.3%
10	13	Open Shore Wetlands	6	3.6%	62.48	10.0%
11	16	Artificial	12	7.2%	23.02	3.7%
<b>TOTAL</b>	<b>11</b>		<b>166</b>	<b>100.0</b>	<b>623.48</b>	<b>100.0</b>

**LAKE ERIE PROTECTION CLASSIFICATION**

NUMBER	PROTECTION CLASS		OCCURRENCES		SHORE LENGTH (km)	
1	1	Heavily Protected	42	25.3%	108.14	17.3%
2	2	Mod Protected	29	17.5%	106.03	17.0%
3	3	Minor Protection	22	13.3%	71.68	11.5%
4	4	No Protection	73	44.0%	337.63	54.2%
<b>TOTAL</b>	<b>4</b>		<b>166</b>	<b>100.0</b>	<b>623.48</b>	<b>100.0</b>

**LAKE ERIE NEARSHORE CLASSIFICATION**

NUMBER	NEARSHORE CLASS		OCCURRENCES		SHORE LENGTH (km)	
1	1	Clay	22	13.3%	139.24	22.3%
2	2	Sand	40	24.1%	169.19	27.1%
3	3	Sand/Gravel over Clay	52	31.3%	197.06	31.6%
4	4	Bedrock (Resistant)	52	31.3%	117.99	18.9%
<b>TOTAL</b>	<b>4</b>		<b>166</b>	<b>100.0</b>	<b>623.48</b>	<b>100.0</b>

LAKE ERIE COMPOSITE CLASSIFICATION

NUMBER	COMPOSITE CLASS	OCCURRENCES	SHORE LENGTH (km)
1	113	1 0.6%	0.84 0.1%
2	121	1 0.6%	8.38 1.3%
3	123	1 0.6%	3.84 0.6%
4	124	1 0.6%	3.33 0.5%
5	131	1 0.6%	4.17 0.7%
6	132	1 0.6%	9.14 1.5%
7	133	1 0.6%	3.00 0.5%
8	141	9 5.4%	61.62 9.9%
9	143	13 7.8%	79.28 12.7%
10	233	1 0.6%	3.09 0.5%
11	243	1 0.6%	0.93 0.2%
12	312	1 0.6%	1.33 0.2%
13	314	1 0.6%	1.77 0.3%
14	321	1 0.6%	5.07 0.8%
15	324	3 1.8%	6.98 1.1%
16	333	2 1.2%	3.56 0.6%
17	334	2 1.2%	2.39 0.4%
18	341	3 1.8%	13.38 2.2%
19	342	1 0.6%	4.27 0.7%
20	344	3 1.8%	7.40 1.2%
21	412	1 0.6%	1.30 0.2%
22	414	3 1.8%	7.96 1.3%
23	423	1 0.6%	3.47 0.6%
24	424	4 2.4%	9.63 1.5%
25	433	2 1.2%	5.29 0.9%
26	434	3 1.8%	10.34 1.7%
27	443	3 1.8%	2.66 0.4%
28	511	1 0.6%	2.10 0.3%
29	513	1 0.6%	5.70 0.9%
30	522	1 0.6%	0.89 0.1%
31	523	1 0.6%	4.83 0.8%
32	524	1 0.6%	2.23 0.4%
33	534	1 0.6%	0.87 0.1%
34	544	1 0.6%	0.58 0.1%
35	611	1 0.6%	8.85 1.4%
36	614	2 1.2%	2.72 0.4%
37	624	1 0.6%	4.78 0.8%
38	712	4 2.4%	9.55 1.5%
39	713	6 3.6%	24.68 4.0%
40	714	5 3.0%	8.69 1.4%
41	722	3 1.8%	9.13 1.5%

**LAKE ERIE COMPOSITE CLASSIFICATION**

NUMBER	COMPOSITE CLASS	OCCURRENCES		SHORE LENGTH (km)	
42	724	6	3.6%	12.28	2.0%
43	733	2	1.2%	6.46	1.0%
44	734	3	1.8%	13.49	2.2%
45	742	6	3.6%	9.78	1.6%
46	743	3	1.8%	4.88	0.8%
47	744	2	1.2%	0.87	0.1%
48	913	2	1.2%	7.04	1.1%
49	922	2	1.2%	11.93	1.9%
50	933	1	0.6%	8.08	1.3%
51	941	1	0.6%	0.98	0.2%
52	942	13	7.8%	78.73	12.6%
53	943	5	3.0%	25.08	4.0%
54	1014	1	0.6%	2.60	0.4%
55	1024	1	0.6%	0.34	0.1%
56	1034	2	1.2%	1.81	0.3%
57	1044	4	2.4%	3.60	0.6%
58	1321	1	0.6%	18.90	3.0%
59	1341	1	0.6%	12.32	2.0%
60	1342	4	2.4%	31.27	5.0%
61	1611	2	1.2%	3.47	0.6%
62	1612	3	1.8%	1.86	0.3%
63	1613	5	3.0%	4.34	0.7%
64	1614	2	1.2%	13.34	2.1%
<b>TOTAL</b>	<b>64</b>	<b>166</b>	<b>100.0</b>	<b>623.48</b>	<b>100.0</b>

**LAKE ERIE HISTORICAL SHORELINE CHANGE RATE**

<b>NUMBER</b>	<b>HISTORICAL SHORELINE CHANGE RATE</b>	<b>OCCURRENCES</b>		<b>SHORE LENGTH (km)</b>	
1	1 < -0.1 m/yr - accretion	4	2.4%	24.06	3.9%
2	2 -0.1 to 0.1 m/yr - stable	18	10.8%	55.69	8.9%
3	3 0.11 to 0.3 m/yr - low	19	11.4%	75.32	12.1%
4	4 0.31 to 0.7 m/yr - moderate	39	23.5%	136.78	21.9%
5	5 0.71 to 1.2 m/yr - high	5	3.0%	27.44	4.4%
6	6 1.21 to 2.0 m/yr - very high	6	3.6%	43.05	6.9%
7	7 > 2.0 m/yr - severe	6	3.6%	31.75	5.1%
8	8 unclassified	69	41.6%	229.39	36.8%
<b>TOTAL</b>	<b>8</b>	<b>166</b>	<b>100%</b>	<b>623.48</b>	<b>100%</b>

Lake Erie Three-Tier Composite Classification with added  
Historical Shoreline Change Rate Class

NUMBER	COMP_REC CLASS	OCCURRENCES		SHORE LENGTH	
		no.	%	km	%
1	1138	1	0.6	0.84	0.1
2	1214	1	0.6	8.38	1.3
3	1234	1	0.6	3.84	0.6
4	1243	1	0.6	3.33	0.5
5	1315	1	0.6	4.17	0.7
6	1323	1	0.6	9.14	1.5
7	1337	1	0.6	3.00	0.5
8	1413	2	1.2	12.76	2.0
9	1414	5	3.0	35.27	5.7
10	1415	1	0.6	10.68	1.7
11	1417	1	0.6	2.91	0.5
12	1433	1	0.6	3.87	0.6
13	1434	3	1.8	14.62	2.3
14	1435	2	1.2	8.05	1.3
15	1436	4	2.4	35.68	5.7
16	1437	3	1.8	17.05	2.7
17	2336	1	0.6	3.09	0.5
18	2434	1	0.6	0.93	0.1
19	3124	1	0.6	1.33	0.2
20	3142	1	0.6	1.77	0.3
21	3212	1	0.6	5.07	0.8
22	3242	1	0.6	2.16	0.3
23	3243	1	0.6	1.48	0.2
24	3248	1	0.6	3.34	0.5
25	3333	1	0.6	2.49	0.4
26	3334	1	0.6	1.07	0.2
27	3343	1	0.6	1.61	0.3
28	3348	1	0.6	0.78	0.1
29	3412	1	0.6	3.53	0.6
30	3413	1	0.6	8.16	1.3
31	3414	1	0.6	1.69	0.3
32	3426	1	0.6	4.27	0.7
33	3442	2	1.2	5.99	1.0
34	3448	1	0.6	1.41	0.2
35	4122	1	0.6	1.30	0.2
36	4142	1	0.6	2.69	0.4
37	4143	1	0.6	3.03	0.5

Lake Erie (con't)

NUMBER	COMP_REC CLASS	OCCURRENCES		SHORE LENGTH	
		no.	%	km	%
38	4148	1	0.6	2.23	0.4
39	4232	1	0.6	3.47	0.6
40	4242	1	0.6	1.55	0.2
41	4244	2	1.2	7.37	1.2
42	4248	1	0.6	0.70	0.1
43	4334	1	0.6	0.76	0.1
44	4335	1	0.6	4.54	0.7
45	4343	1	0.6	1.63	0.3
46	4344	1	0.6	7.51	1.2
47	4348	1	0.6	1.20	0.2
48	4432	1	0.6	0.48	0.1
49	4433	1	0.6	1.55	0.2
50	4434	1	0.6	0.64	0.1
51	5118	1	0.6	2.10	0.3
52	5134	1	0.6	5.70	0.9
53	5228	1	0.6	0.89	0.1
54	5232	1	0.6	4.83	0.8
55	5248	1	0.6	2.23	0.4
56	5348	1	0.6	0.87	0.1
57	5448	1	0.6	0.58	0.1
58	6118	1	0.6	8.85	1.4
59	6142	2	1.2	2.72	0.4
60	6248	1	0.6	4.78	0.8
61	7123	1	0.6	3.34	0.5
62	7124	2	1.2	4.33	0.7
63	7128	1	0.6	1.89	0.3
64	7132	1	0.6	5.83	0.9
65	7133	1	0.6	7.79	1.2
66	7134	4	2.4	11.06	1.8
67	7143	1	0.6	2.32	0.4
68	7144	1	0.6	1.38	0.2
69	7148	3	1.8	4.99	0.8
70	7222	1	0.6	3.28	0.5
71	7224	2	1.2	5.85	0.9
72	7242	1	0.6	2.93	0.5
73	7243	2	1.2	4.73	0.8
74	7244	1	0.6	2.20	0.4



Lake Erie (con't)

NUMBER	COMP_REC CLASS	OCCURRENCES		SHORE LENGTH	
		no.	%	km	%
75	7248	2	1.2	2.42	0.4
76	7334	2	1.2	6.46	1.0
77	7341	1	0.6	1.86	0.3
78	7344	1	0.6	1.76	0.3
79	7348	1	0.6	9.87	1.6
80	7424	1	0.6	1.70	0.3
81	7428	5	3.0	8.08	1.3
82	7433	1	0.6	2.46	0.4
83	7434	1	0.6	2.20	0.4
84	7438	1	0.6	0.22	0.0
85	7448	2	1.2	0.87	0.1
86	9134	2	1.2	7.04	1.1
87	9223	1	0.6	5.64	0.9
88	9228	1	0.6	6.30	1.0
89	9332	1	0.6	8.08	1.3
90	9418	1	0.6	0.98	0.2
91	9421	1	0.6	9.60	1.5
92	9428	12	7.2	69.13	11.1
93	9431	2	1.2	12.61	2.0
94	9434	2	1.2	3.68	0.6
95	9437	1	0.6	8.79	1.4
96	10148	1	0.6	2.60	0.4
97	10248	1	0.6	0.34	0.1
98	10348	2	1.2	1.81	0.3
99	10448	4	2.4	3.60	0.6
100	13218	1	0.6	18.90	3.0
101	13418	1	0.6	12.32	2.0
102	13428	4	2.4	31.27	5.0
103	16118	2	1.2	3.47	0.6
104	16128	3	1.8	1.86	0.3
105	16138	5	3.0	4.34	0.7
106	16148	2	1.2	13.34	2.1
<b>TOTALS</b>		<b>166</b>	<b>100.0</b>	<b>623.48</b>	<b>100.0</b>

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**Lake Erie (con't)**

**Example: COMP\_REC CLASS  
12348**

- 12 - Geomorphic class
- 3 - Protection class
- 4 - Nearshore class
- 8 - Historical Shoreline Change rate

**Protection Classification**

- 1 Heavily Protected
- 2 Moderately Protected
- 3 Minor Protection
- 4 No Protection
- 5 Non-Structural Protection
- 6 Unclassified

**Geomorphic Classification**

- 1 High (> 15m) Bluff (intermittent or no beach)
- 2 High (> 15m) Bluff With Beach
- 3 Low (< 15m) Bluff (intermittent or no beach)
- 4 Low (< 15m) Bluff With Beach
- 5 Sandy/Silty Banks
- 6 Clay Banks
- 7 Sandy Beach / Dunes
- 8 Coarse Beach
- 9 Baymouth or Barrier Beach
- 10 Bedrock (Resistant)
- 11 Bedrock (Non-Resistant)
- 12 Low Plain
- 13 Open Shoreline Wetlands
- 14 Semi-Protected Wetlands
- 15 Composite Shorelines
- 16 Artificial
- 17 Unclassified

**Subaqueous/Nearshore Classification**

- 1 Clay
- 2 Sand
- 3 Sand / Gravel Lag Over Clay
- 4 Bedrock (Resistant)
- 5 Bedrock (Non-Resistant)
- 6 Unclassified

**Historical Shoreline Change Rate**

- 1 < -0.1 m/yr - Accretion
- 2 -0.1 to 0.1 m/yr - Stable
- 3 0.11 to 0.3 m/yr - Low
- 4 0.31 to 0.7 m/yr - Moderate
- 5 0.71 to 1.2 m/yr - High
- 6 1.21 to 2.0 m/yr - Very High
- 7 > 2.0 m/yr - Severe
- 8 Unclassified

**NIAGARA RIVER GEOMORPHIC CLASSIFICATION**

NUMBER	GEOMORPHIC CLASS	OCCURRENCES	SHORE LENGTH (km)
1	3 Low Bluff	1 9.1%	3.14 5.3%
2	6 Clay Banks	5 45.5%	31.86 54.2%
3	10 Bedrock (Resistant)	3 27.3%	17.23 29.3%
4	12 Low Plain	1 9.1%	1.98 3.4%
5	16 Artificial	1 9.1%	4.61 7.8%
<b>TOTAL</b>	<b>5</b>	<b>11 100.0</b>	<b>58.82 100.0</b>

**NIAGARA RIVER PROTECTION CLASSIFICATION**

NUMBER	PROTECTION CLASS	OCCURRENCES	SHORE LENGTH (km)
1	1 Heavily Protected	7 63.6%	35.74 60.7%
2	3 Minor Protection	1 9.1%	5.85 10.0%
3	4 No Protection	3 27.3%	17.23 29.3%
<b>TOTAL</b>	<b>3</b>	<b>11 100.0</b>	<b>58.82 100.0</b>

**NIAGARA RIVER NEARSHORE CLASSIFICATION**

NUMBER	NEARSHORE CLASS	OCCURRENCES	SHORE LENGTH (km)
1	6 Unclassified	11 100.0%	58.82 100.0%
<b>TOTAL</b>	<b>1</b>	<b>11 100.0</b>	<b>58.82 100.0</b>

**NIAGARA RIVER COMPOSITE CLASSIFICATION**

<b>NUMBER</b>	<b>COMPOSITE CLASS</b>	<b>OCCURRENCES</b>		<b>SHORE LENGTH (km)</b>	
1	316	1	9.1%	3.14	5.3%
2	616	4	36.4%	26.00	44.2%
3	636	1	9.1%	5.85	10.0%
4	1046	3	27.3%	17.23	29.3%
5	1216	1	9.1%	1.98	3.4%
6	1616	1	9.1%	4.61	7.8%
<b>TOTAL</b>	<b>6</b>	<b>11</b>	<b>100.0</b>	<b>58.82</b>	<b>100.0</b>

NIAGARA RIVER HISTORICAL SHORELINE CHANGE RATE

NUMBER	HISTORICAL SHORELINE CHANGE RATE	OCCURRENCES	SHORE LENGTH (km)
8	8 unclassified	11 100%	58.82 100%
TOTAL	1	11 100%	58.82 100%

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Niagara River Three-Tier Composite Classification with added  
Historical Shoreline Change Rate Class

NUMBER	COMP_REC CLASS	OCCURRENCES		SHORELENGTH	
		no.	%	km	%
1	3168	1	9.1	3.14	5.3
2	6168	4	36.4	26.00	44.2
3	6368	1	9.1	5.85	9.9
4	10468	3	27.3	17.23	29.3
5	12168	1	9.1	1.98	3.4
6	16168	1	9.1	4.61	7.8
<b>TOTALS</b>		<b>11</b>	<b>100</b>	<b>58.81</b>	<b>100</b>

Example: **COMP\_REC CLASS - 12348**

- 12 - Geomorphic class
- 3 - Protection class
- 4 - Nearshore class
- 8 - Historical Shoreline Change rate

Geomorphic Classification

- 1 High (> 15m) Bluff (intermittent or no beach)
- 2 High (> 15m) Bluff With Beach
- 3 Low (< 15m) Bluff (intermittent or no beach)
- 4 Low (< 15m) Bluff With Beach
- 5 Sandy/Silty Banks
- 6 Clay Banks
- 7 Sandy Beach / Dunes
- 8 Coarse Beach
- 9 Baymouth or Barrier Beach
- 10 Bedrock (Resistant)
- 11 Bedrock (Non-Resistant)
- 12 Low Plain
- 13 Open Shoreline Wetlands
- 14 Semi-Protected Wetlands
- 15 Composite Shorelines
- 16 Artificial
- 17 Unclassified

Protection Classification

- 1 Heavily Protected
- 2 Moderately Protected
- 3 Minor Protection
- 4 No Protection
- 5 Non-Structural Protection
- 6 Unclassified

Subaqueous/Nearshore Classification

- 1 Clay
- 2 Sand
- 3 Sand / Gravel Lag Over Clay
- 4 Bedrock (Resistant)
- 5 Bedrock (Non-Resistant)
- 6 Unclassified

Historical Shoreline Change Rate

- 1 < -0.1 m/yr - Accretion
- 2 -0.1 to 0.1 m/yr - Stable
- 3 0.11 to 0.3 m/yr - Low
- 4 0.31 to 0.7 m/yr - Moderate
- 5 0.71 to 1.2 m/yr - High
- 6 1.21 to 2.0 m/yr - Very High
- 7 > 2.0 m/yr - Severe
- 8 Unclassified

**LAKE ONTARIO GEOMORPHIC CLASSIFICATION**

NUMBER	GEOMORPHIC CLASS	OCCURRENCES	SHORE LENGTH (km)
1	1 High Bluff	12 2.6%	26.68 2.4%
2	2 High Bluff & Beach	1 0.2%	2.56 0.2%
3	3 Low Bluff	84 18.0%	193.54 17.0%
4	4 Low Bluff & Beach	14 3.0%	16.70 1.5%
5	5 Sand/Silty Banks	6 1.3%	6.55 0.6%
6	6 Clay Banks	7 1.5%	16.00 1.4%
7	7 Sandy Beach/Dunes	29 6.2%	32.66 2.9%
8	8 Coarse Beach	37 7.9%	56.15 4.9%
9	9 Barrier Beach	77 16.5%	105.29 9.3%
10	10 Bedrock (Resistant)	94 20.1%	195.13 17.2%
11	11 Bedrock (Non-Resist)	1 0.2%	2.21 0.2%
12	12 Low Plain	37 7.9%	228.55 20.1%
13	13 Open Shore Wetlands	14 3.0%	67.75 6.0%
14	14 Semi-Protected Wtlnds	13 2.8%	63.44 5.6%
15	16 Artificial	40 8.6%	121.42 10.7%
16	17 Unclassified	2 0.4%	1.31 0.1%
<b>TOTAL</b>	<b>16</b>	<b>468 100.0</b>	<b>1,135.94 100.0</b>

**LAKE ONTARIO PROTECTION CLASSIFICATION**

NUMBER	PROTECTION CLASS	OCCURRENCES	SHORE LENGTH (km)
1	1 Heavily Protected	61 13.0%	171.58 15.1%
2	2 Mod Protected	38 8.1%	103.11 9.1%
3	3 Minor Protection	51 10.9%	218.22 19.2%
4	4 No Protection	296 63.3%	550.65 48.5%
5	6 Unclassified	22 4.7%	92.38 8.1%
<b>TOTAL</b>	<b>5</b>	<b>468 100.0</b>	<b>1,135.94 100.0</b>

**LAKE ONTARIO NEARSHORE CLASSIFICATION**

NUMBER	NEARSHORE CLASS	OCCURRENCES	SHORE LENGTH (km)
1	1 Clay	54 11.5%	137.73 12.1%
2	2 Sand	75 16.0%	136.80 12.0%
3	3 Sand/Gravel over Clay	65 13.9%	92.61 8.2%
4	4 Bedrock (Resistant)	146 31.2%	378.89 33.4%
5	5 Bedrock (Non-Resist)	27 5.8%	61.01 5.4%
6	6 Unclassified	101 21.6%	328.90 29.0%
<b>TOTAL</b>	<b>6</b>	<b>468 100.0</b>	<b>1,135.94 100.0</b>

LAKE ONTARIO COMPOSITE CLASSIFICATION

NUMBER	COMPOSITE CLASS	OCCURRENCES		SHORE LENGTH (km)	
1	111	1	0.2%	1.52	0.1%
2	112	1	0.2%	4.04	0.4%
3	131	1	0.2%	3.73	0.3%
4	141	6	1.3%	10.72	0.9%
5	142	1	0.2%	2.57	0.2%
6	143	2	0.4%	4.11	0.4%
7	242	1	0.2%	2.56	0.2%
8	312	1	0.2%	0.48	0.0%
9	313	1	0.2%	10.62	0.9%
10	314	3	0.6%	2.91	0.3%
11	315	10	2.1%	31.43	2.8%
12	321	7	1.5%	15.49	1.4%
13	322	4	0.9%	5.29	0.5%
14	324	2	0.4%	2.91	0.3%
15	325	5	1.1%	11.39	1.0%
16	331	7	1.5%	29.21	2.6%
17	332	2	0.4%	0.71	0.1%
18	333	2	0.4%	7.21	0.6%
19	341	16	3.4%	19.42	1.7%
20	342	3	0.6%	3.11	0.3%
21	343	12	2.6%	13.80	1.2%
22	344	1	0.2%	0.72	0.1%
23	345	2	0.4%	3.10	0.3%
24	366	6	1.3%	35.75	3.2%
25	432	1	0.2%	0.94	0.1%
26	433	2	0.4%	3.89	0.3%
27	442	5	1.1%	5.00	0.4%
28	443	6	1.3%	6.87	0.6%
29	544	2	0.4%	2.14	0.2%
30	546	4	0.9%	4.41	0.4%
31	636	3	0.6%	6.94	0.6%
32	644	1	0.2%	0.60	0.1%
33	646	3	0.6%	8.47	0.8%
34	713	2	0.4%	3.38	0.3%
35	722	2	0.4%	5.78	0.5%
36	723	1	0.2%	1.69	0.2%
37	732	2	0.4%	1.34	0.1%
38	733	1	0.2%	1.35	0.1%
39	735	1	0.2%	1.34	0.1%
40	742	6	1.3%	6.39	0.6%
41	743	11	2.4%	7.11	0.6%



**LAKE ONTARIO COMPOSITE CLASSIFICATION**

<b>NUMBER</b>	<b>COMPOSITE CLASS</b>	<b>OCCURRENCES</b>		<b>SHORE LENGTH (km)</b>	
42	745	1	0.2%	1.33	0.1%
43	746	2	0.4%	2.95	0.3%
44	834	2	0.4%	3.22	0.3%
45	841	2	0.4%	2.50	0.2%
46	842	1	0.2%	1.22	0.1%
47	844	30	6.4%	46.65	4.1%
48	846	2	0.4%	2.56	0.2%
49	912	1	0.2%	0.97	0.1%
50	913	2	0.4%	1.24	0.1%
51	922	2	0.4%	8.78	0.8%
52	932	1	0.2%	0.50	0.0%
53	942	28	6.0%	47.41	4.2%
54	943	17	3.6%	21.38	1.9%
55	944	18	3.9%	17.74	1.6%
56	945	1	0.2%	0.44	0.0%
57	946	7	1.5%	6.83	0.6%
58	1014	1	0.2%	3.62	0.3%
59	1016	1	0.2%	1.62	0.1%
60	1024	6	1.3%	15.27	1.3%
61	1034	11	2.4%	30.90	2.7%
62	1036	2	0.4%	6.38	0.6%
63	1044	40	8.6%	89.91	7.9%
64	1046	32	6.8%	40.55	3.6%
65	1066	1	0.2%	6.88	0.6%
66	1125	1	0.2%	2.21	0.2%
67	1214	1	0.2%	0.53	0.1%
68	1224	3	0.6%	13.98	1.2%
69	1226	2	0.4%	7.38	0.7%
70	1234	7	1.5%	91.36	8.0%
71	1236	5	1.1%	25.29	2.2%
72	1244	7	1.5%	29.67	2.6%
73	1246	5	1.1%	27.96	2.5%
74	1266	7	1.5%	32.38	2.9%
75	1336	1	0.2%	3.92	0.4%
76	1344	5	1.1%	16.63	1.5%
77	1346	8	1.7%	47.20	4.2%
78	1414	1	0.2%	4.61	0.4%
79	1424	1	0.2%	1.64	0.1%
80	1426	1	0.2%	0.59	0.1%
81	1441	2	0.4%	4.22	0.4%
82	1442	1	0.2%	0.99	0.1%

**LAKE ONTARIO COMPOSITE CLASSIFICATION**

NUMBER	COMPOSITE CLASS	OCCURRENCES		SHORE LENGTH (km)	
83	1444	2	0.4%	2.88	0.3%
84	1446	3	0.6%	38.56	3.4%
85	1466	2	0.4%	9.95	0.9%
86	1611	11	2.4%	50.06	4.4%
87	1612	8	1.7%	22.47	2.0%
88	1613	5	1.1%	9.66	0.9%
89	1614	2	0.4%	0.99	0.1%
90	1615	6	1.3%	9.79	0.9%
91	1616	3	0.6%	11.64	1.0%
92	1622	1	0.2%	10.69	0.9%
93	1662	2	0.4%	5.13	0.3%
94	1663	1	0.2%	0.29	0.0%
95	1666	1	0.2%	0.69	0.1%
96	1761	1	0.2%	0.87	0.1%
97	1762	1	0.2%	0.44	0.0%
<b>TOTAL</b>	<b>97</b>	<b>468</b>	<b>100.0</b>	<b>1,135.94</b>	<b>100.0</b>

**LAKE ONTARIO HISTORICAL SHORELINE CHANGE RATE**

NUMBER	HISTORICAL SHORELINE CHANGE RATE		OCCURRENCES		SHORE LENGTH (km)	
1	1	< -0.1 m/yr - accretion	9	1.9%	13.12	1.2%
2	2	-0.1 to 0.1 m/yr - stable	19	4.1%	48.01	4.2%
3	3	0.11 to 0.3 m/yr - low	32	6.8%	75.47	6.6%
4	4	0.31 to 0.7 m/yr - moderate	28	6.0%	58.08	5.1%
5	5	0.71 to 1.2 m/yr - high	11	2.4%	26.49	2.3%
6	6	1.21 to 2.0 m/yr - very high	6	1.3%	12.23	1.1%
7	7	> 2.0 m/yr - severe	1	0.2%	0.61	0.1%
8	8	unclassified	362	77.3%	901.93	79.4%
<b>TOTAL</b>			<b>468</b>	<b>100%</b>	<b>1,135.94</b>	<b>100%</b>

Lake Ontario Three-Tier Composite Classification with added  
Historical Shoreline Change Rate Class

NUMBER	COMP_REC CLASS	OCCURRENCES		SHORELENGTH	
		no.	%	km	%
1	1118	1	0.2	1.52	0.1
2	1124	1	0.2	4.04	0.4
3	1314	1	0.2	3.73	0.3
4	1413	3	0.6	3.87	0.3
5	1414	3	0.6	6.85	0.6
6	1423	1	0.2	2.57	0.2
7	1433	1	0.2	1.57	0.1
8	1436	1	0.2	2.54	0.2
9	2422	1	0.2	2.56	0.2
10	3124	1	0.2	0.48	0.0
11	3138	1	0.2	10.62	0.9
12	3148	3	0.6	2.91	0.3
13	3152	1	0.2	3.89	0.3
14	3153	5	1.1	20.35	1.8
15	3154	1	0.2	1.63	0.1
16	3158	3	0.6	5.55	0.5
17	3212	1	0.2	2.31	0.2
18	3214	1	0.2	2.36	0.2
19	3215	1	0.2	0.77	0.1
20	3216	2	0.4	7.02	0.6
21	3218	2	0.4	3.04	0.3
22	3223	1	0.2	1.57	0.1
23	3226	1	0.2	1.92	0.2
24	3228	2	0.4	1.80	0.2
25	3248	2	0.4	2.91	0.3
26	3253	3	0.6	7.61	0.7
27	3254	1	0.2	1.95	0.2
28	3258	1	0.2	1.83	0.2
29	3313	1	0.2	4.22	0.4
30	3314	3	0.6	11.26	1.0
31	3315	3	0.6	13.73	1.2
32	3328	2	0.4	0.71	0.1
33	3334	1	0.2	4.61	0.4
34	3338	1	0.2	2.60	0.2
35	3412	2	0.4	2.33	0.2
36	3413	2	0.4	3.82	0.3
37	3414	1	0.2	1.26	0.1
38	3415	3	0.6	3.46	0.3
39	3418	8	1.7	8.55	0.8
40	3423	1	0.2	1.56	0.1
41	3425	1	0.2	0.91	0.1

Lake Ontario (con't)

NUMBER	COMP_REC CLASS	OCCURRENCES		SHORELENGTH	
		no.	%	km	%
42	3428	1	0.2	0.64	0.1
43	3433	4	0.9	7.36	0.6
44	3434	1	0.2	0.31	0.0
45	3438	7	1.5	6.12	0.5
46	3448	1	0.2	0.72	0.1
47	3458	2	0.4	3.10	0.3
48	3668	6	1.3	35.75	3.1
49	4328	1	0.2	0.94	0.1
50	4334	1	0.2	1.95	0.2
51	4335	1	0.2	1.94	0.2
52	4422	1	0.2	1.13	0.1
53	4423	1	0.2	1.06	0.1
54	4424	1	0.2	1.60	0.1
55	4428	2	0.4	1.21	0.1
56	4434	3	0.6	4.57	0.4
57	4438	3	0.6	2.31	0.2
58	5443	1	0.2	0.81	0.1
59	5448	1	0.2	1.33	0.1
60	5468	4	0.9	4.41	0.4
61	6368	3	0.6	6.94	0.6
62	6448	1	0.2	0.60	0.1
63	6468	3	0.6	8.47	0.7
64	7138	2	0.4	3.38	0.3
65	7221	1	0.2	3.34	0.3
66	7228	1	0.2	2.44	0.2
67	7238	1	0.2	1.69	0.1
68	7328	2	0.4	1.34	0.1
69	7338	1	0.2	1.35	0.1
70	7358	1	0.2	1.34	0.1
71	7422	1	0.2	1.05	0.1
72	7423	1	0.2	3.09	0.3
73	7426	1	0.2	0.32	0.0
74	7428	3	0.6	1.93	0.2
75	7431	3	0.6	1.75	0.2
76	7432	1	0.2	0.85	0.1
77	7434	1	0.2	0.63	0.1
78	7438	6	1.3	3.88	0.3
79	7451	1	0.2	1.33	0.1
80	7468	2	0.4	2.95	0.3
81	8348	2	0.4	3.22	0.3
82	8411	1	0.2	2.11	0.2

Lake Ontario (con't)

NUMBER	COMP_REC CLASS	OCCURRENCES		SHORELENGTH	
		no.	%	km	%
83	8418	1	0.2	0.40	0.0
84	8424	1	0.2	1.22	0.1
85	8442	2	0.4	5.49	0.5
86	8443	1	0.2	2.60	0.2
87	8448	27	5.8	38.56	3.4
88	8468	2	0.4	2.56	0.2
89	9121	1	0.2	0.97	0.1
90	9137	1	0.2	0.61	0.1
91	9138	1	0.2	0.63	0.1
92	9225	1	0.2	4.05	0.4
93	9228	1	0.2	4.73	0.4
94	9324	1	0.2	0.50	0.0
95	9421	1	0.2	2.25	0.2
96	9422	6	1.3	14.71	1.3
97	9423	3	0.6	6.92	0.6
98	9424	1	0.2	3.52	0.3
99	9426	1	0.2	0.44	0.0
100	9428	16	3.4	19.58	1.7
101	9433	1	0.2	1.80	0.2
102	9434	1	0.2	1.06	0.1
103	9438	15	3.2	18.52	1.6
104	9448	18	3.8	17.74	1.6
105	9458	1	0.2	0.44	0.0
106	9461	1	0.2	1.38	0.1
107	9465	1	0.2	1.62	0.1
108	9468	5	1.1	3.83	0.3
109	10148	1	0.2	3.62	0.3
110	10168	1	0.2	1.62	0.1
111	10248	6	1.3	15.27	1.3
112	10342	1	0.2	3.29	0.3
113	10348	10	2.1	27.61	2.4
114	10368	2	0.4	6.38	0.6
115	10442	1	0.2	7.27	0.6
116	10443	1	0.2	0.59	0.1
117	10448	38	8.1	82.05	7.2
118	10468	32	6.8	40.55	3.6
119	10668	1	0.2	6.88	0.6
120	11254	1	0.2	2.21	0.2
121	12148	1	0.2	0.53	0.0
122	12248	3	0.6	13.98	1.2
123	12268	2	0.4	7.38	0.7

Lake Ontario (con't)

NUMBER	COMP_REC CLASS	OCCURRENCES		SHORELENGTH	
		no.	%	km	%
124	12348	7	1.5	91.36	8.0
125	12362	1	0.2	3.12	0.3
126	12368	4	0.9	22.16	2.0
127	12448	7	1.5	29.67	2.6
128	12468	5	1.1	27.96	2.5
129	12668	7	1.5	32.38	2.9
130	13368	1	0.2	3.92	0.3
131	13448	5	1.1	16.63	1.5
132	13468	8	1.7	47.20	4.2
133	14148	1	0.2	4.61	0.4
134	14248	1	0.2	1.64	0.1
135	14268	1	0.2	0.59	0.1
136	14418	2	0.4	4.22	0.4
137	14428	1	0.2	0.99	0.1
138	14448	2	0.4	2.88	0.3
139	14468	3	0.6	38.56	3.4
140	14668	2	0.4	9.95	0.9
141	16114	2	0.4	2.35	0.2
142	16118	9	1.9	47.70	4.2
143	16128	8	1.7	22.47	2.0
144	16138	5	1.1	9.66	0.9
145	16148	2	0.4	0.99	0.1
146	16153	1	0.2	4.11	0.4
147	16158	5	1.1	5.67	0.5
148	16168	3	0.6	11.64	1.0
149	16228	1	0.2	10.69	0.9
150	16628	2	0.4	5.13	0.5
151	16638	1	0.2	0.29	0.0
152	16668	1	0.2	0.69	0.1
153	17618	1	0.2	0.87	0.1
154	17628	1	0.2	0.44	0.0
<b>TOTALS</b>		<b>468</b>	<b>100.0</b>	<b>1135.94</b>	<b>100.0</b>

**Lake Ontario (con't)****Example: COMP\_REC CLASS - 12348**

- 12 - Geomorphic class
- 3 - Protection class
- 4 - Nearshore class
- 8 - Historical Shoreline Change rate

**Geomorphic Classification**

- 1 High (> 15m) Bluff (intermittent or no beach)
- 2 High (> 15m) Bluff With Beach
- 3 Low (< 15m) Bluff (intermittent or no beach)
- 4 Low (< 15m) Bluff With Beach
- 5 Sandy/Silty Banks
- 6 Clay Banks
- 7 Sandy Beach / Dunes
- 8 Coarse Beach
- 9 Baymouth or Barrier Beach
- 10 Bedrock (Resistant)
- 11 Bedrock (Non-Resistant)
- 12 Low Plain
- 13 Open Shoreline Wetlands
- 14 Semi-Protected Wetlands
- 15 Composite Shorelines
- 16 Artificial
- 17 Unclassified

**Protection Classification**

- 1 Heavily Protected
- 2 Moderately Protected
- 3 Minor Protection
- 4 No Protection
- 5 Non-Structural Protection
- 6 Unclassified

**Subaqueous/Nearshore Classification**

- 1 Clay
- 2 Sand
- 3 Sand / Gravel Lag Over Clay
- 4 Bedrock (Resistant)
- 5 Bedrock (Non-Resistant)
- 6 Unclassified

**Historical Shoreline Change Rate**

- 1 < -0.1 m/yr - Accretion
- 2 -0.1 to 0.1 m/yr - Stable
- 3 0.11 to 0.3 m/yr - Low
- 4 0.31 to 0.7 m/yr - Moderate
- 5 0.71 to 1.2 m/yr - High
- 6 1.21 to 2.0 m/yr - Very High
- 7 > 2.0 m/yr - Severe
- 8 Unclassified



**ST. LAWRENCE RIVER GEOMORPHIC CLASSIFICATION**

NUMBER	GEOMORPHIC CLASS	OCCURRENCES	SHORE LENGTH (km)
1	3 Low Bluff	6 2.1%	23.80 1.3%
2	4 Low Bluff & Beach	2 0.7%	8.82 0.5%
3	5 Sand/Silty Banks	5 1.7%	41.78 2.2%
4	6 Clay Banks	1 0.4%	3.35 0.2%
5	8 Coarse Beach	5 1.7%	18.09 1.0%
6	9 Barrier Beach	4 1.4%	6.96 0.4%
7	10 Bedrock (Resistant)	36 12.5%	233.88 12.4%
8	12 Low Plain	143 49.8%	804.79 42.5%
9	13 Open Shore Wetlands	24 8.4%	337.27 17.8%
10	14 Semi-Protected Wtlnds	15 5.2%	110.11 5.8%
11	16 Artificial	37 12.9%	240.94 12.7%
12	17 Unclassified	9 3.1%	62.25 3.3%
<b>TOTAL</b>	<b>12</b>	<b>287 100.0</b>	<b>1,892.03 100.0</b>

**ST. LAWRENCE RIVER PROTECTION CLASSIFICATION**

NUMBER	PROTECTION CLASS	OCCURRENCES	SHORE LENGTH (km)
1	1 Heavily Protected	38 13.2%	246.07 13.0%
2	2 Mod Protected	34 11.9%	181.64 9.6%
3	3 Minor Protection	48 16.7%	440.76 23.3%
4	4 No Protection	158 55.1%	957.85 50.6%
5	6 Unclassified	9 3.1%	65.71 3.5%
<b>TOTAL</b>	<b>5</b>	<b>287 100.0</b>	<b>1,892.03 100.0</b>

**ST. LAWRENCE RIVER NEARSHORE CLASSIFICATION**

NUMBER	NEARSHORE CLASS	OCCURRENCES	SHORE LENGTH (km)
1	1 Clay	15 5.2%	114.50 6.1%
2	2 Sand	43 15.0%	357.52 18.9%
3	3 Sand/Gravel over Clay	2 0.7%	17.45 0.9%
4	4 Bedrock (Resistant)	61 21.3%	261.06 13.8%
5	6 Unclassified	166 57.8%	1,141.50 60.3%
<b>TOTAL</b>	<b>5</b>	<b>287 100.0</b>	<b>1,892.03 100.0</b>

ST. LAWRENCE RIVER COMPOSITE CLASSIFICATION

NUMBER	COMPOSITE CLASS	OCCURRENCES		SHORE LENGTH (km)	
1	322	1	0.3%	10.61	0.6%
2	326	1	0.3%	3.77	0.2%
3	336	2	0.7%	3.43	0.2%
4	344	1	0.3%	2.71	0.1%
5	346	1	0.3%	3.29	0.2%
6	433	1	0.3%	5.86	0.3%
7	436	1	0.3%	2.96	0.2%
8	522	1	0.3%	7.84	0.4%
9	523	1	0.3%	11.59	0.6%
10	526	2	0.7%	15.49	0.8%
11	532	1	0.3%	6.85	0.4%
12	844	5	1.7%	18.09	1.0%
13	944	4	1.4%	6.96	0.4%
14	1026	2	0.7%	17.07	0.9%
15	1034	3	1.0%	13.35	0.7%
16	1036	5	1.7%	56.67	3.0%
17	1042	2	0.7%	3.83	0.2%
18	1044	16	5.4%	77.15	4.1%
19	1046	8	2.7%	65.80	3.5%
20	1211	1	0.3%	3.91	0.2%
21	1212	4	1.4%	14.86	0.8%
22	1216	4	1.4%	18.53	1.0%
23	1221	5	1.7%	26.61	1.4%
24	1222	3	1.0%	14.48	0.8%
25	1224	2	0.7%	7.79	0.4%
26	1226	14	4.8%	61.45	3.3%
27	1231	3	1.0%	9.84	0.5%
28	1232	4	1.4%	23.70	1.3%
29	1234	2	0.7%	16.64	0.9%
30	1236	20	6.8%	204.01	10.8%
31	1241	2	0.7%	5.56	0.3%
32	1242	10	3.4%	43.94	2.3%
33	1244	16	5.4%	58.21	3.1%
34	1246	52	17.7%	281.08	14.9%
35	1266	2	0.7%	17.52	0.9%
36	1332	1	0.3%	14.52	0.8%
37	1336	1	0.3%	26.11	1.4%
38	1341	3	1.0%	45.28	2.4%
39	1342	7	2.4%	147.11	7.8%
40	1344	1	0.3%	5.25	0.3%
41	1346	18	6.1%	98.99	5.2%

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**ST. LAWRENCE RIVER COMPOSITE CLASSIFICATION**

NUMBER	COMPOSITE CLASS	OCCURRENCES		SHORE LENGTH (km)	
42	1434	2	0.7%	11.33	0.6%
43	1436	1	0.3%	35.15	1.9%
44	1442	4	1.4%	30.80	1.6%
45	1444	6	2.0%	24.53	1.3%
46	1446	2	0.7%	8.30	0.4%
47	1612	4	1.4%	35.32	1.9%
48	1614	1	0.3%	4.98	0.3%
49	1616	24	8.2%	168.48	8.9%
50	1626	2	0.7%	4.94	0.3%
51	1642	1	0.3%	3.65	0.2%
52	1646	5	1.7%	23.57	1.3%
53	1734	1	0.3%	10.32	0.6%
54	1744	1	0.3%	3.74	0.2%
55	1761	1	0.3%	23.31	1.2%
56	1766	6	2.0%	24.88	1.3%
<b>TOTAL</b>	<b>56</b>	<b>294</b>	<b>100.0</b>	<b>1,892.03</b>	<b>100.0</b>