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US Army Corps
of Engineers
Detroit District

Great Lakes Update

2003 Annual Summary

The year 2003 brought low water levels again to the Great Lakes, especially in the upper lakes where levels were lower than 2002 for most of the year. Levels on Lakes Erie and Ontario were helped by above average precipitation in early 2003. By August, their levels had recovered to exceed levels of 2002. High rates of precipitation and low evaporation late in the year helped moderate water levels throughout the basin and offered encouragement for higher levels in 2004.

Hydrology

Frigid air temperature in early 2003 lead to significant ice cover on the Great Lakes, the most extensive ice cover on the lakes since the late 1970s. Lakes Superior and Huron, which rarely freeze completely over, approached 100 percent ice cover, as did Lakes Erie and St. Clair.

Conditions remained cool in the Great Lakes basin in the spring of 2003, and moderated to near normal for the summer. The near normal temperatures of the summer of 2003 were quite a bit cooler than the past two summer seasons as evidenced by the number of 90-degree days recorded at Detroit, Michigan. Summer 2001 had 14 days of 90-degree temperatures, while 2002 had 26 90-degree days. In contrast, summer 2003 only had 4 days of 90-degree temperatures.

The cooler air temperatures in 2003 lead to cooler water temperatures, which kept evaporation rates lower than average. Evaporation is at its peak when the air temperature is significantly colder than the water temperature. An important benefit of ice cover is its ability to curb evaporation, allowing more water to stay in the lakes. Accordingly, evaporation was below average on the Great Lakes through most of 2003.

An active storm track brought several strong systems though the Great Lakes basin during October and November. These storms brought heavy rain and snow throughout the basin. A continuation of this active pattern could bring a significant amount of precipitation to the Great Lakes basin this winter. Figure 1 below compares the monthly deviation of precipitation from long-term averages (LTAs) for each month of the year for 2002 and 2003 over the Great Lakes Basin. Annual precipitation was slightly above average overall in 2003.

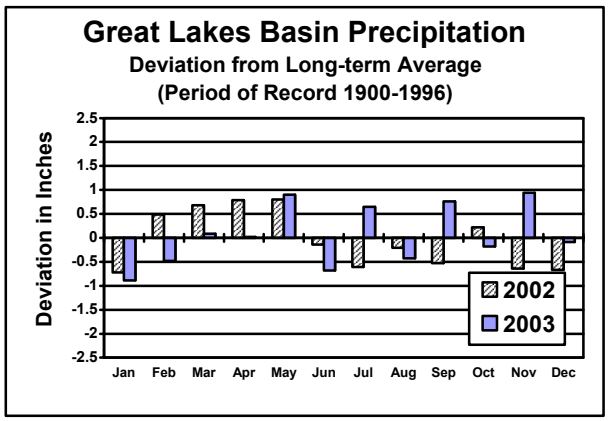

Figure 1

Typically, snowpack over the basin is at its peak in early March, averaging near 5 inches of snow water equivalency (SWE). The U.S. National Weather Service conducts snow surveys using low-flying aircraft across the Lake Superior drainage basin each year to help in predictions of water supplies to the Great Lakes. The results of these surveys for early March 2003 are shown in Figure 2. In March 2003,

snow water equivalent was about 10 percent above average. A similar survey will be made in March 2004 to help forecast water levels for the Great Lakes for the spring-autumn period.

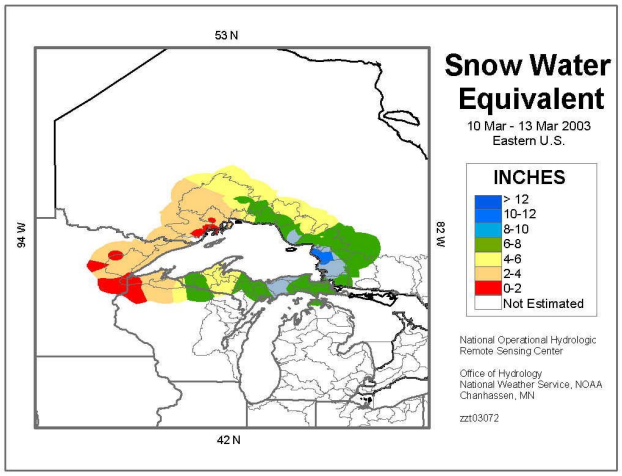

Figure 2

The National Weather Service's Climate Prediction Center's 2004 winter outlooks bring equal chances of above, below or normal precipitation and temperature conditions to the Great Lakes basin. The reason for the uncertainty is the absence of strong El Niño or La Niña conditions in the Pacific Ocean. Forecasters do, however, predict winter will bring its usual weather variability.

Water Levels

The *Monthly Bulletin of Lake Levels for the Great Lakes* displays water levels on the Great Lakes for the years 2002 and 2003. The following discussion uses monthly mean levels.

Levels of Lakes Superior, Michigan-Huron, St. Clair and Erie remained below their respective LTAs throughout the year. In contrast, Lake Ontario started out the year about nine inches below its LTA but rose to about two inches above its LTA by June, remaining above average into October and ending the year about 8 inches above average.

Below-average precipitation from November 2002 through February 2003 led to 2003 Lake Superior levels starting at 2 inches lower than in January 2002 and contributed to lower levels throughout 2003. Lake Superior levels began 2003 at 600.9 feet, 7 inches below its January LTA. Below-average water supplies to the basin during the early months of 2003 resulted in levels falling below last year's comparable levels. Following the seasonal pattern, levels declined to 600.5 feet in March then rose, peaking at its normal time in August at 601.3 feet, 11 inches below its LTA. Levels fell only slightly by the end of the year, ending at 601.0 feet, 9 inches below the December LTA. The lake rose above chart datum in May and remained above until November.

Lake Michigan-Huron levels began the year at 576.8 feet, 20 inches below its January LTA and 7 inches lower than January 2002. Levels in 2003 remained below average and were significantly lower than those of 2002. Following its usual seasonal pattern, Lake Michigan-Huron peaked at its normal time in July at 577.6 feet, 23 inches below its LTA and 11 inches lower than in 2002. Lake Michigan-Huron did not rise above chart datum until June and only remained there until September. The lake ended the year in December at 577.1 feet, 18 inches below its December LTA and at about the same level as December 2002. Late year precipitation and low evaporation helped to limit the seasonal decline through the fall 2003 period.

Lake St. Clair levels started the year at 572.8 feet, 10 inches lower than its January LTA and 4 inches lower than in 2002. Throughout 2003, levels remained below average and below comparable 2002 levels. Lake St. Clair peaked in July at 573.9 feet, 11 inches below its LTA. The peak level carried over into August before the seasonal decline began. The end of year level in December was 573.1, 9 inches below its LTA, and 2 inches above the year before.

Lake Erie levels started the year at 570.3 feet, 7 inches below its January LTA. Levels remained below average the entire year. While levels during the first half of the 2002 were at or very near their LTAs, below average precipitation and supplies resulted in 2003 levels being below their LTAs. Lake Erie peaked in July at 571.5, 5 inches below its LTA. Conditions improved during the fall and winter period but levels still remained below their LTAs, ending the year at 570.5 feet, 4 inches below the December LTA.

Lake Ontario started 2003 at 243.9 feet, 9 inches below its January LTA. Below-average supplies in the last few months of 2002 and continuing into the

first part of 2003 contributed to below-average levels. Above average supplies contributed to levels rising above the LTA in June and remaining above or near monthly LTAs for the remainder of the year. Lake Ontario peaked at 246.4 feet in June, 2 inches above its LTA and ended the year at 245.1 feet, 7 inches above its December LTA.

Lake Superior Regulation

During 2003, the International Lake Superior Board of Control (ILSBC) continued to use Regulation Plan 1977-A as the basis for determining Lake Superior outflows. The ILSBC is a bi-national body that reports to the International Joint Commission (IJC) on boundary water management issues including the management of Lake Superior outflows. Flow changes resulting from monthly Lake Superior regulation are accomplished by varying the amount of water allocated to hydropower production and, when necessary, opening or closing gates in the Compensating Works at the head of the St. Marys Rapids.

Overall, water supplies to Lake Superior were 23% below average in 2003. Only March, May, July, September, and November had above average supplies. Annual precipitation over the basin was 97% of average. Lake Superior's 2003 levels were lower than those of 2002. A one-half open gate setting was maintained in the Compensating Works during 2003 to support fishery spawning and minimum flow requirements in the St. Marys Rapids.

The Silver Lake Dam on the Dead River near Marquette, Michigan failed on May 15 due to heavy rains. This resulted in the shutdown of the Presque Isle Generating Station (the area's largest power producer). From May 19 through June 21, 2003 Edison Sault Electric Company (ESEC) was allowed to over-discharge in order to provide emergency generation of electricity to help stabilize the power grid in Michigan's Upper Peninsula. In keeping with the Boundary Waters Treaty of 1909 between the United States and Canada and the 1914 IJC Orders of Approval, Great Lakes Power Limited's (GLPL) Clergue plant at Sault Ste. Marie, Ontario was authorized by the Board to over-discharge at an equivalent rate starting May 28 and ending on June 21, 2003. This resulted in both plants running at capacity for this period. Ponding restrictions were waived for the emergency period. The over-discharge from the two plants amounted to 1,800 cubic feet per second (cfs) in May and 2,800 cfs in June.

In mid-August, a wide-area blackout affected much of the Northeastern U.S. and most of Ontario. GLPL's Clergue plant suffered a short-term shutdown of about 8 hours on August 14. This shutdown did not affect monthly flow allotments. ESEC's service area was not affected by the blackout.

Another issue related to power production is peaking and ponding. Flow variations due to peaking and ponding operations by the hydropower plants at Sault Ste. Marie cause St. Marys River water levels downstream of the plants to fluctuate. With water levels and Lake Superior outflows below average, these fluctuations are a concern to commercial navigation users. In March 2003, the IJC authorized continuation of peaking and ponding operations until March 2004, subject to prior approval by the Board each month.

The Board may suspend ponding operations on weekends and holidays for 8 hours each day if they are expected to cause sustained weekend levels at the U.S. slip gauge to be below chart datum. The Board suspended weekend and holiday ponding operations for portions of April and May, all of July, and September through December due to low levels at U.S. Slip. These low water levels were caused by a combination of low flow in the St. Marys River and the low water level conditions on Lake Huron.

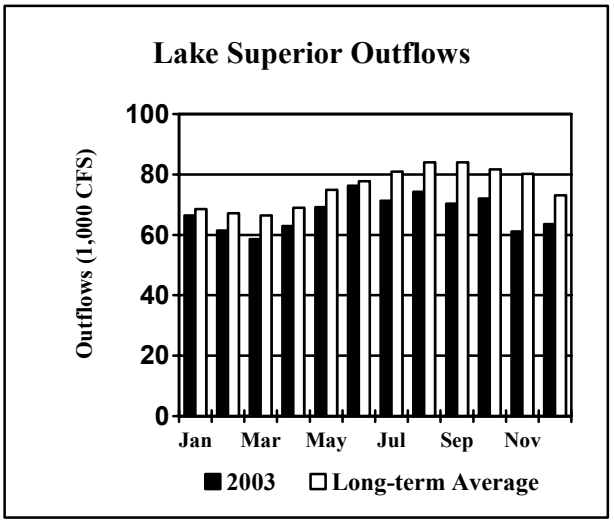

Figure 3

Outflows were 11% below LTA, ranging from a low of 58,600 cubic feet per second (cfs) in March to a high of 76,300 cfs in June. Figure 3 compares the monthly Lake Superior outflows in 2003 to long-term average flows for the 1900-1989 period of record. Further information can be found on the Internet at: *http://www.lre.usace.army.mil/glhh*

Lake Ontario Regulation

Late in the 2002 regulation year on December 10, Lake Ontario reached a level of 243.8 feet, about 9 inches below its LTA, and 8 inches below the level of one year earlier. Although both Lake Ontario basin precipitation and local supplies had been near average, the total supplies to Lake Ontario had been consistently below average as a result of the low level and outflow of Lake Erie. The levels of Lake St. Louis and Montreal Harbor were particularly low, due to the very low Lake Ontario and Ottawa River flows. Lower outflows from Lake Erie were anticipated for early 2003 due to low levels of Lakes Michigan-Huron and Erie. The supply of water to Lake Ontario from the upper lakes remained below average in early 2003.

As part of its operations, the International St. Lawrence River Board of Control (ISLRBC) periodically assesses the hydrologic conditions in the Lake Ontario - St. Lawrence River system to formulate an outflow regulation strategy. Accordingly, on December 11, 2002 the ISLRBC decided to permit outflow increases for critical hydropower and navigation needs, using the equivalent of a maximum of 3 inches of water from Lake Ontario relative to Regulation Plan 1958-D. The strategy also included opportunities to under-discharge if conditions were favorable, especially during ice formation, in order to restore the water taken off Lake Ontario. As of December 11, 2002 the net result of previous over-discharges for these purposes, and previous under-discharges to conserve water, was that the Lake Ontario level was 1.5 inches lower than the level that would have occurred if outflows specified by Plan 1958-D had been released.

At the beginning of the 2003 regulation year, the water level of Lake Ontario was still well below its LTA and a net total accumulated deviation of -2 inches of water had been used for over-discharges. Generally, water temperatures were below the 10-year average. Ice began to form in the Beauharnois Canal near Montreal as early as January 5. As part of normal operations, ISLRBC reduces the Lake Ontario outflow to promote the formation of a smooth, stable ice cover on the St. Lawrence River. Typically this is done each winter after the navigation season is closed. A rough ice cover increases the water flow resistance, and a weak cover risks ice jams, which could be problematic for outflow regulation during the winter.

The first outflow reduction for ice management took place on January 10, and ice formation in the Beauharnois Canal and in key sections of the International Reach was completed by January 24. Lake Ontario reached its seasonal low level on February 20 at 243.6 feet, 13 inches below its LTA, and 17 inches below the level of one year ago. By this time, the net total accumulated deviation was -1.5 inches of water on Lake Ontario as a result of the under-discharges for ice formation. This deviation occurred despite a short duration over-discharge that was necessary to flush out accumulated loose ice at Iroquois Dam.

By March 7, the level on Lake Ontario was 243.7 feet, 14 inches below its LTA. Water supply from the Lake Ontario basin was near average but the inflow from Lake Erie was below average. The levels of the upper Great Lakes were also below their LTAs. Inflow from the Ottawa River basin, into Lake St. Louis was also lower than normal. The levels on Lake St. Louis and at the Port of Montreal were near record lows for that time of year. On March 31, navigation between Lake Ontario and Montreal resumed as the Seaway officially opened. The opening had been delayed one week due to heavy ice conditions still in the St. Lawrence River.

In light of the continued low supplies reaching Lake Ontario, the Board's long-term strategy was to conserve water as opportunities arose, for future critical navigation and hydropower use later in the year, allowing for possible flow reductions to prevent flooding in the Montreal region during the Ottawa River freshet in the spring. The ISLRBC strategy was to offset the accumulated over-discharges that aided in the seasonal haul out of recreational boats from the fall of 2002, maintained adequate levels for navigation in the Port of Montreal, maintained levels on Lake St. Louis for navigation in the Seaway and assisted ice formation in the winter. As a result of this under-discharge strategy, all previously

accumulated over-discharges were offset by May 2, and an additional 2 inches of water was conserved on Lake Ontario by June 7. Conservation of water was suspended on June 7 as a result of the rise in Lake Ontario levels to 246.4 feet. The 2 inches of conserved water was retained on the lake. Lake Ontario peaked at 246.6 feet on June 14, at 4 inches above the LTA and 7 inches below the level of the previous year.

Given the continued below-average levels on the upper Great Lakes and with Lake Ontario above its LTA but well below last year's level, the ISLRBC maintained its strategy throughout June, July and into August to retain the conserved water on Lake Ontario to meet critical needs later in the year.

On August 14, an extensive electricity blackout occurred throughout much of the Northeastern U.S. and the Province of Ontario that caused widespread power outages. To assist in the recovery from this emergency situation, the Board exercised its emergency authority and implemented a series of over-discharges at the request of the Ontario electrical system operators. In response to the state of emergency declared in Ontario by the Prime Minister of the province, additional water was released for hydropower production between August 15 and 22. Prior to making the decision to over-discharge, the Board assessed the impacts on water levels and currents in the system, commercial and recreational navigation, as well as flooding potential in known sensitive areas. During short intervals throughout this over-discharge period, outflows from Lake Ontario reached as high as 318,000 cfs, which permitted the hydropower facilities to operate at capacity, thus contributing badly needed additional power to the affected grids.

By early September, water levels on the upper Great Lakes continued to remain lower than average and lower than they were the year before, with the exception of Lake Erie, which was 1 inch higher than in September 2002. The level of Lake Ontario fell by 5.9 inches during August, which was similar to its normal August decline of 5.5 inches. Approximately 0.6 in. of that decline was due to higher outflows to assist in the recovery from the massive power blackout. On September 9, the Lake Ontario level was 245.3 feet, 0.4 inches above its average for that time of the year. Lake St. Louis and Port of Montreal levels had decreased since August, and were 9 inches and 20 inches below average, respectively. The Board strategy to ensure that enough water remained in Lake Ontario to meet critical needs later in the year was maintained, although provisions were made to allow for over-discharges to meet critical hydropower needs, assist navigation at the Port of Montreal, and maintain a level of at least 67.6 feet on Lake St. Louis. However, conditions were such that over-discharges were not necessary in the autumn, and the Board was able to maintain the 1 inch of conserved water on Lake Ontario through October 24.

In late October, the Board adopted a strategy to conserve additional water for future critical needs. Rain on the Ottawa River basin had increased its outflow and caused a rise in levels in the Montreal area. This was seen as an opportunity to conserve water on Lake Ontario since total supplies to the Lake Ontario basin during the first three weeks of October were below normal due to lower than average supplies from Lake Erie. As a result of the new strategy, an additional 3 inches of water was stored on Lake Ontario. As of December 12, the level of Lake Ontario was 245.1 feet, which was 7 inches above its LTA and 16 inches above the level of one year ago, with a total of 4 inches of water conserved on Lake Ontario.

Figure 4 compares 2002 Lake Ontario outflows with period of record (1900 - 1989) LTA outflows. Further information on ILSBC activities can be found on the Internet at: *http://www.islrbc.org/*

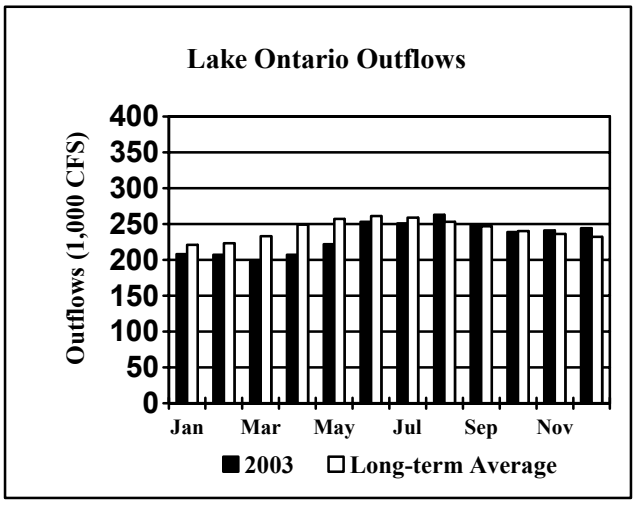

Figure 4

Public Concerns

The public's concerns with low water levels persisted in 2003. U.S. Army Corps of Engineers and Environment Canada staff continued to receive numerous inquiries. Many calls were received from the news media interested in the status of lake levels and their effects on the economics and ecology of the region.

Upper Great Lakes Plan of Study

In January 2002, the Upper Great Lakes Plan of Study team, which was assembled by the IJC in August 2001, submitted a final Plan of Study to review the current regulation of outflows from Lake Superior. The Plan was accepted by the IJC and made public in April 2002. The final Plan can be found at: *http://www.lre.usace.army.mil/Storage/HH/IJC/uglpos/pos.pdf*. Implementation of the Plan of Study is expected to begin in 2004, pending budget considerations.

International Lake Ontario - St. Lawrence River Study Moves into Year Four

Great progress is being made in the International Lake Ontario-St. Lawrence River Study, which began in the fall of 2000. The Study is nearly finished with its data collection phase and is heading into its evaluation and plan development phase. The goal of the Study is to make recommendations to the IJC for alternative criteria and plans to regulate outflows from Lake Ontario through the St. Lawrence River.

The International Lake Ontario - St. Lawrence River Study was set in motion by the IJC to assess and evaluate the Commission's Order of Approval used to regulate outflows from Lake Ontario through the St. Lawrence River. The current Order of Approval requires that the St. Lawrence Seaway Power Project be operated to meet certain conditions and criteria to protect the interests in both countries including shoreline communities, commercial navigation and hydropower production. The Study is also evaluating the impacts of changing water levels on environmental factors, shore erosion, flood damages, recreational boating, and tourism as well as taking into account the forecasted effects of climate change.

The study has nine technical work groups:

- Coastal Processes
- Commercial Navigation
- Environmental
- Hydrology and Hydraulics Modeling
- Hydroelectric Power
- Information Management
- Plan Formulation and Evaluation
- Recreational Boating
- Domestic, Industrial, and Municipal Water Uses

The groups that represent the main interests of the system are developing performance indicators that will go into a Shared Vision Model being used by the Plan Formulation and Evaluation Group. Performance indicators are a measure of economic, social or environmental health as related to impacts of different water levels in Lake Ontario and the St. Lawrence River. The Shared Vision process is an integrated triangular approach that will allow the Study Team to evaluate how alternative plans performs against alternative criteria in an effort to achieve the best balance between the performance indicators for all of the interests.

The Coastal Processes Technical Work Group is investigating the impacts of water level fluctuations on shore property, paying attention to erosion and flood processes to build performance indicators for Lake Ontario and the St. Lawrence River. A database of over 50,000 riparian property parcels has been developed that includes key physical attributes, such as existing shoreline protection, distance of primary dwelling from eroding bluff, long-term erosion rates, elevation of surrounding land, and main floor elevation. A flood and erosion prediction system will allow an assessment of water levels on shoreline interests.

The Commercial Navigation Group completed a report on the management of ice cover operational procedures. It also is developing U.S. and Canadian commercial navigation vessel/commodity movement data for Lake Ontario and the St. Lawrence Seaway. The group will also develop data and metric for use in the Shared Vision Model. Finally, the group is developing the terms of reference for a model to measure and evaluate impacts.

The studies being performed by the Environmental Technical Work Group are very challenging. The

Group investigated the impacts of water level variations and the seasonality of those variations on fish, birds, plants, and other wildlife in the Lake Ontario-St. Lawrence system and identified 46 different wetland sites for ecosystem study. An integrated ecological response model is being developed to assess the impacts of alternative plans on this multi-faceted interest.

The Hydrology and Hydraulics Group is developing models to simulate levels, flows, and other hydraulic conditions that would result from various regulation plans with different scenarios. Their investigations include developing four critical climate change models representing warm and wet, not so warm and wet, warm and dry, and not so warm and dry conditions and water supply information.

The Hydroelectric Power Technical Work Group developed a report describing the state of the industry in terms of present and future trends, market factors, and effects of climate change. They are also providing the Plan Formulation and Evaluation Group with inputs for the Shared Vision Model. The performance indicators the group is developing will attempt to maximize megawatts, maximize the value of megawatts, assure flow predictability and stability, and provide ice management flexibility. Flow curves depicting efficient flows by season will be developed.

The Information Management Group gathers and circulates information collected and produced by the technical work groups and the other study participants.

The Recreational Boating Technical Work Group completed surveys of marinas along and boaters using the Lake Ontario-St. Lawrence River system. Their surveys include evaluating the impact of water level variations on charter boating. The group will combine the information from the surveys to produce overall estimates of losses to marinas, losses in boating opportunities, and losses in tourism related revenues to local communities due to variations in high and low water levels.

The Water Uses group is studying the impacts of water level variations on industrial, municipal, and domestic water intakes and treatment facilities. Ongoing work is being performed by the group to address concerns relating to shore-wells in the river communities and the economic costs of high water flooding causing sewer/septic system backup for shore residents.

An integral part of the Study is the Public Interest Advisory Group. The volunteer group was appointed by the International Joint Commission to ensure effective communication between the public and the International Lake Ontario-St. Lawrence River Study Team. Over the past two years, the group has given more than 50 presentations to various stakeholder groups helping to create an awareness of the study and passing the concerns of the public along to the study team. They continue to hold meetings throughout the Lake Ontario-St. Lawrence River System, with a series of 15 public meetings scheduled in the United States and Canada during the summer of 2004.

As the Study progresses, based on the input received and the information that has been gathered, preferences of the stakeholders in each of the interest groups will be clearly defined. The Plan Formulation and Evaluation Group will use the Shared Vision Model to evaluate the effectiveness of alternative criteria and plans based on those preferences. The final step of finding a regulation plan that is beneficial to all interests will be challenging.

A great deal of additional information about the study is available on the website at: *http://www.losl.org.* Please visit the website to be added to the mailing list and to keep informed about the summer meeting schedule.

Meetings with the Public

The ILSBC held its annual public meeting on June 24, 2003 in Sault Ste. Marie, Ontario, Canada. The Board plans to hold its 2004 public meeting in late June. Semi-Annual Progress Reports, meeting minutes and further information on the June public meeting, when available, can be found on the Board's website at: *http://www.lre.usace.army.mil/Storage/HH/IJC/Superior/index.shtml*

The St. Lawrence River Board of Control held one meeting with the public in 2003 at Dorval, Quebec on June 19. It also held two multi-city conference calls for the public. One was held on March 18 in Hamilton, Ont.; Dorval, Que.; Ogdensburg, N.Y and Oswego, N.Y. The other was held on September 16 in Burlington, Ont.; Belleville, Ont.; Dorval, Que.;

Rochester, N.Y. and Alexandria Bay, N.Y. More information can be found at the Board's website: *http://www.islrbc.org/*

The International Niagara Board of Control (INBC) meet twice during the year to discuss routine matters under the Board's jurisdiction. The Board held its annual meeting with the public on September 15, 2003 in Niagara Falls, Ontario. For more information on activities on the INBC please visit: *http://www.lre.usace.army.mil/Storage/HH/IJC/Niagra/index.shtml*

Commercial Navigation

The Soo Locks opened the 2003 shipping season as scheduled on March 25, 2003. Through November 2003, the estimated tonnage passing through the Soo Locks at Sault Ste. Marie, Michigan was about 12% below the comparable 2002 tonnage. U.S. and Canadian vessels carried 47.1 and 12.7 million short tons of cargo respectively, as compared to respective 2002 tonnages of 51.9 and 15.6 million short tons. Foreign vessels carried about 3.5 million short tons, down about 25% from the 2002 tonnage.

Through November, an estimated total of 6,886 vessels had transited the locks compared to 7,951 vessels the previous year. Cargo vessels totaled 3,517 compared to 3,963 the year before. There were 2,146 U.S. flagged vessels, 997 Canadian flagged and 364 foreign flagged vessels (ocean going or "salties"). Other vessels transiting the locks such as pleasure craft, tour boats, Coast Guard and scientific research vessels numbered 3,369. The U. S. locks will close on January 25, 2004 and reopen March 25, 2004. A 10-day extension on the January close was granted late in 2003 to accommodate late season navigation needs.

The Canadian lock at Sault Ste. Marie, Ontario reopened on May 15, 2003. By season-end on October 15, 2003, a total of 2,859 vessels carrying 93,389 passengers had transited the locks. The vessels were primarily pleasure craft and tour boats, as well as some commercial and government vessels. The lock is expected to reopen in mid-May 2004.

According to preliminary figures through November 2003, tonnage passing through the Lake Ontario-Montreal section of the St. Lawrence Seaway was down about 1.6% from 2002 at about 26.0 million metric tons (MMT). Vessel traffic was down about 2.6% over 2002 at 2,334 (combined lake and ocean vessels). The St. Lawrence Seaway Development Authority provided these figures.

Preliminary data on the type of cargo transiting the Seaway through November 2003 include iron and steel (down 28.9% to about 1.9 MMT); grain (down 9.4% to about 7.8 MMT); coal (down 39.5% to about 0.19 MMT); general cargo (down 37.9% to about 2.5 MMT); and petroleum products (up 30.8% to about 1.5 MMT). For additional detail on Seaway activities visit their website on the Internet at: *http://www.greatlakes-seaway.com/*

New Lock

A new "Poe sized" lock is proposed to replace the Davis and Sabin Locks at the Soo Locks complex at Sault Ste. Marie, MI. The purpose is to provide for more efficient movement of waterborne commerce. Completion of a Limited Re-evaluation Report, Project Cooperation Agreement discussions with the Great Lakes Commission as the non-federal sponsor, and authorization of final funding is still required.

2003 Great Lakes Updates

The following reports were published in 2003:

2002 Annual Summary, Vol. No. 150, January 2003

Permitting Issues on the Great Lakes, Vol. No. 151, April 2003

The Soo Locks Visitors Center, A Great Vacation Destination, Vol. No. 152, July 2003

Frequently Asked Questions on Current Water Levels, Vol. No. 153, October 2003

Previous Update articles are available at: *http://www.lre.usace.army.mil/glhh/news*

General Notes

All elevations shown in this article are referenced to the IGLD 1985 datum. Information about the Great Lakes water levels outflows, and weather is available at *http://www.lre.usace.army.mil/glhh*