



**US Army Corps
of Engineers®
Chicago District**

**LAKE MICHIGAN
DIVERSION ACCOUNTING
WATER YEAR 2001
ANNUAL REPORT**

VOLUME I

EXECUTIVE SUMMARY

This document is the Water Year (WY) 2001 Annual Report of the Chicago District, U. S. Army Corps of Engineers activities in the monitoring and review of the accounting of Lake Michigan diversion flows through Chicago, Illinois as directed by the 1980 amendment to the 1967 U. S. Supreme Court Decree. Additionally, this report serves to summarize the Corps' major accomplishments with respect to the mission as mandated by the Water Resources Development Act of 1986, PL99-662, Section 1142. This act gave the Corps complete responsibility for diversion accounting effective 1 October 1987. This report also provides an overview and evaluation of a proposed move of the accounting location from Lockport to the Chicago lakefront.

In response to a request from the Great Lakes Mediation Committee (meeting date December 11-13, 1995), the Chicago District has completed a series of studies that allow for the move of the accounting point to the lakefront. Currently the primary measurement point for diversion accounting is at Lockport, Illinois on the Chicago and Sanitary Ship Canal (CSSC). At this point, approximately 94% of the diversion flows accountable to Illinois are measured through an acoustic velocity meter (AVM) upstream at Romeoville, Illinois. Included in this measurement are component flows which are not part of the diversion. Additionally, there are also flows accountable to Illinois that bypass this measurement point. In accordance with the Decree the diversion is determined by measuring the flow at Lockport (i.e. at the AVM), subtracting flows that are not part of the diversion, and adding back the bypassed flows.

The Mediation Committee recommended moving the diversion point to the Chicago lakefront and measuring the direct diversions from the lake into the canal system. The diversions would be monitored by AVM's at Chicago River Controlling Works, the O'Brien Lock and Dam, and the Wilmette Lock. To these diversions would be added a fixed runoff, plus the water supply pumpage monitored by the State of Illinois, less a fixed consumptive loss. Based on work completed by the Chicago District, the Mediation Committee negotiated values of 800 cfs for the runoff and 168 cfs for the consumptive loss. The appendices to this document include a report by the District on runoff and consumptive use, a report by the United States Geological Survey (USGS) on measurement errors at the Romeoville and Lakefront AVM's, and two reports by Mead & Hunt on measurements errors at water supply pumpage facilities.

The District's runoff report also includes a comparison of the Lockport versus Lakefront diversions for WY 1997 through WY 2003. The average diversion for this period, based on the existing accounting system is 2,812 cfs, with an uncertainty of 2.3%; while the average annual diversion for the same period from the Lakefront accounting system, using the negotiated values of runoff and consumptive use, would be 2,765 cfs, with an uncertainty of 7.9%.

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INTRODUCTION

The diversion of water from the Lake Michigan watershed is important to the Great Lake states and to the Canadian province of Ontario. The states and province that border the Great Lakes have concerns with diversions during periods of low lake levels and the long-term effects of diversion. To insure these concerns are considered, the U.S. Army Corps of Engineers is responsible for the accounting of flow diverted from the Lake Michigan watershed.

The Water Year (WY) 2001 Annual Report on Lake Michigan Diversion Accounting presents activities by the Corps of Engineers in accounting for the diversion from Lake Michigan by the State of Illinois. The accounting of the diversion is performed according to the guidelines established in the 1980 modified U.S. Supreme Court Decree concerning the diversion.

Presented in this report is the history of the diversion and its accounting, a description of the sources of the diversion, a description of the accounting procedures, a comparison of Lockport versus Lakefront accounting, a summary of significant hydrologic events and construction completion, and all significant activities that occurred during WY 2001 through to the present. The appendices to this document include a report by the District on runoff and consumptive use, a report by the United States Geological Survey (USGS) on measurement errors at the Romeoville and Lakefront AVM's, and two reports by Mead & Hunt on measurements errors at water supply pumpage facilities.

AUTHORITY FOR REPORT

Under the provisions of the U.S. Supreme Court Decree in the Wisconsin, et al v. Illinois et al, 388 U.S. 426, 87 S.Ct. 1774 (1967) as modified by 449 U.S. 48, 101 S. CT. 557 (1980), the Corps of Engineers monitors the measurement and computation of Lake Michigan diversion by the State of Illinois. The terms of the modified decree require the Corps of Engineers to prepare an annual report on the accounting of the Lake Michigan water diverted by the State of Illinois and actions taken by the involved agencies.

HISTORY OF THE DIVERSION

Water has been diverted from Lake Michigan at Chicago into the Mississippi River Watershed since the completion of the Illinois and Michigan (I & M) Canal in 1848. At that time, the diversion averaged about 500 cubic feet per second (cfs). The I & M Canal was built primarily to serve transportation needs by providing a connecting watercourse between the Great Lakes and the Mississippi River system.

With the development of the Chicago metropolitan area, sewer and drainage improvements led to severe sanitation problems in the mid to late 1800's. The newly constructed sewers moved water and wastes into the Chicago River, which until 1900 drained to Lake Michigan. The water quality of Lake Michigan deteriorated and contaminated the city's primary water supply.

A second problem that occurred during this time period was an increase in the overbank flooding within the city. As more roads were built and buildings constructed, the sewer system was correspondingly expanded. The increase in impervious area from the newly constructed roads and buildings increased the rate and volume of stormwater runoff and resulted in increased flooding.

As a solution to the sanitation and flooding problems, construction of the Chicago Sanitary and Ship Canal (CSSC) was undertaken. Construction of the CSSC allowed the flow direction of the Chicago River to be reversed (Figure 1). Construction of the Chicago Sanitary and Ship Canal was completed in 1900 by the MWRDGC. The CSSC followed the course of the older I & M Canal. The CSSC is much larger than the I & M canal and can handle the Chicago River flow, as well as increased shipping. In 1938, the Chicago River Controlling Works (CRCW) was constructed at the mouth of the Chicago River. The CRCW regulates the amount of Lake Michigan water allowed to pass into the river and restricts river flooding from entering Lake Michigan. The Lockport Lock and Dam controls the water level in the CSSC.

Between 1907 and 1910, the MWRDGC constructed a second canal called the North Shore Channel. It extended from Lake Michigan at Wilmette in a southerly direction 6.14 miles to the north branch of the Chicago River. The Wilmette Pumping Station, also known as the Wilmette Controlling Works, regulates the amount of Lake Michigan flow allowed down the channel through the use of one vertical lift gate. The four abandoned 250 cfs pumps have not been used for diversion since 70's.

Construction of a third canal, the Calumet Sag Channel, was completed in 1922. The canal connects Lake Michigan through the Grand Calumet River, to the CSSC. The Calumet Sag Channel was constructed to carry sewage from South Chicago, Illinois and East Chicago, Indiana. The Blue Island Lock and Dam controlled flow through the canal. The O'Brien Lock and Dam, which replaced the Blue Island Lock and Dam, was completed in 1967 and is located on the Calumet River. The O'Brien Lock and Dam regulates the flow of Lake Michigan waters down the Calumet Sag Channel. Figure 2 shows the affected watershed.

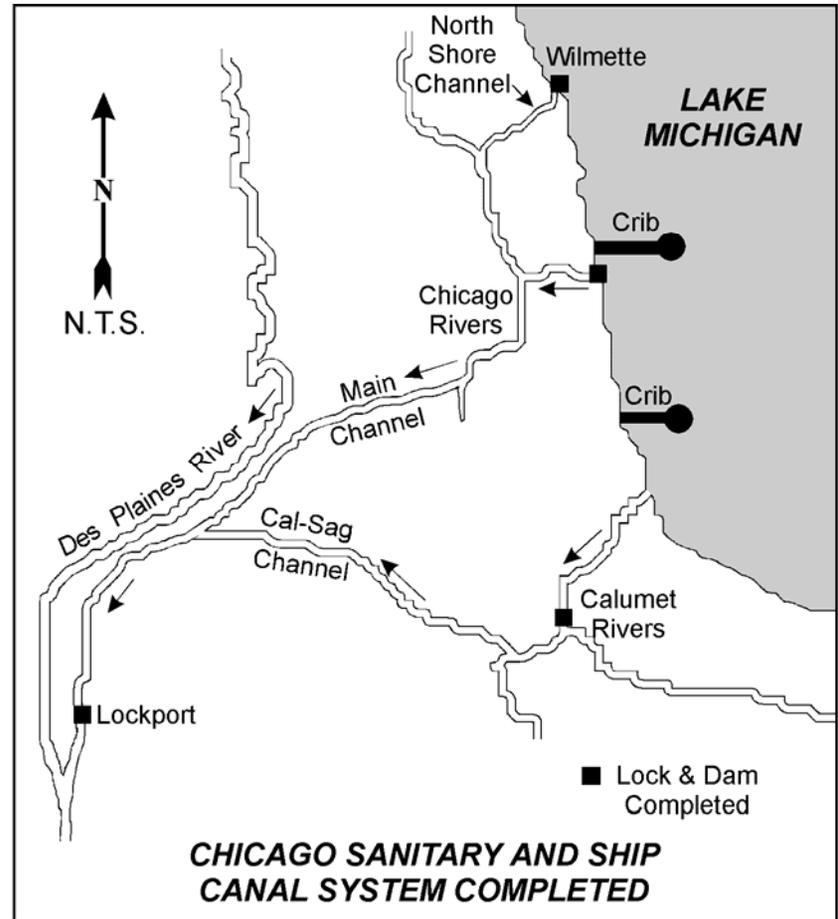
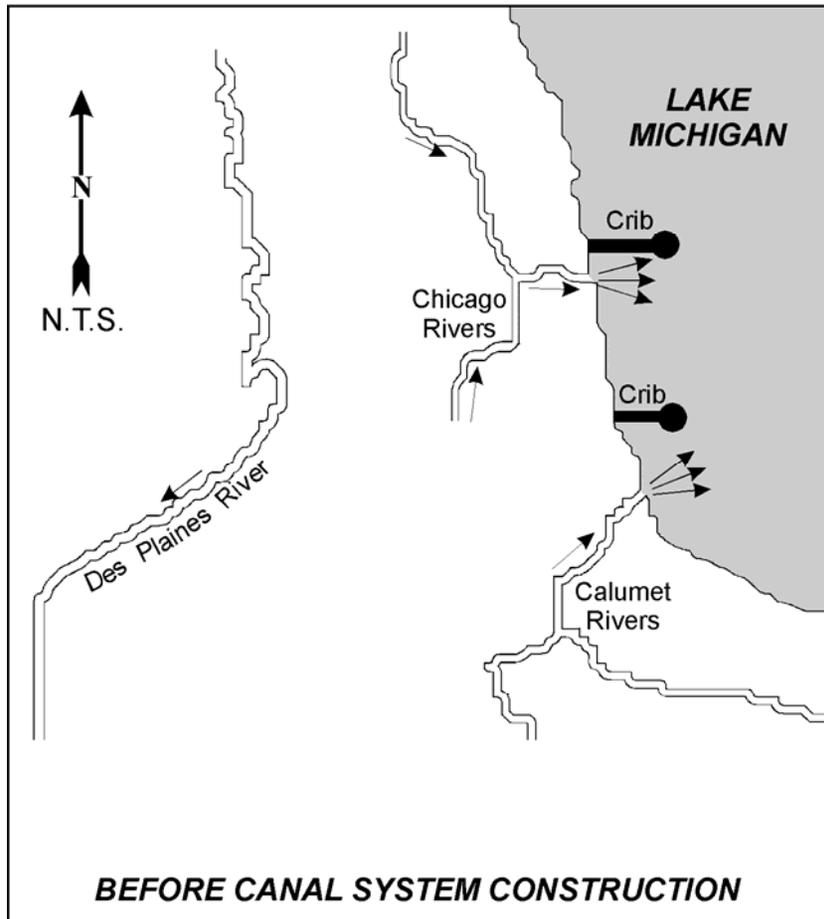


FIGURE 1 DEVELOPMENT OF THE CHICAGO SANITARY AND SHIP CANAL SYSTEM

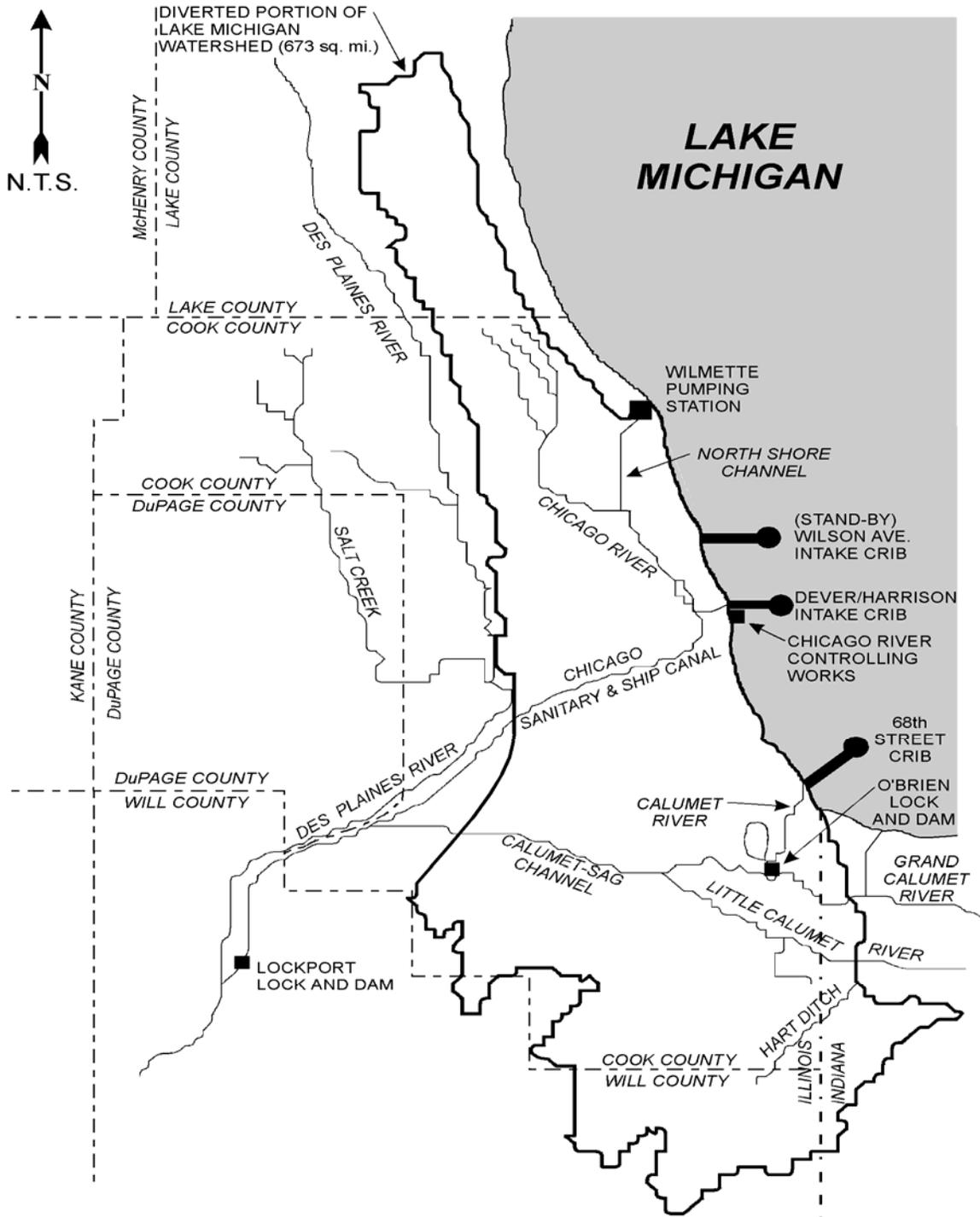


FIGURE 2 LOCATION PLAN - LAKE MICHIGAN DIVERSION AT CHICAGO

SIGNIFICANT HYDROLOGIC EVENTS

During WY 2001, an average total of 36.39 inches of precipitation fell at the 25 Illinois State Water Survey (ISWS) raingages that make up the Lake Michigan Diversion Accounting raingage network. The average total precipitation for WY 2001 is 2 percent less than the eleven year (1990-2000) average of 37.11 inches for the 25 raingage network and was about 101% of the 1971-2000 Chicago O’Hare Airport annual precipitation average of 36.67 inches. Table 1 tabulates the recorded monthly rainfall data during WY 2001, and the deviation from the ISWS ten-year annual and monthly average precipitation.

TABLE 1 WY 2001 MONTHLY AND ANNUAL PRECIPITATION (INCHES)
Illinois State Water Survey Average Across the 25 Raingage Network

Month	WY 2001 Precipitation	1990-2000		Percent of Average
		Average Precipitation	Deviation	
Oct-00	2.06	3.19	-1.13	65%
Nov-00	2.64	3.09	-0.45	85%
Dec-00	2.28	1.74	0.54	131%
Jan-01	1.05	2.34	-1.29	45%
Feb-01	2.69	1.90	0.79	142%
Mar-01	1.33	2.39	-1.06	56%
Apr-01	2.98	3.67	-0.69	81%
May-01	4.05	3.84	0.21	105%
Jun-01	2.44	4.39	-1.95	56%
Jul-01	3.98	3.49	0.49	114%
Aug-01	7.01	4.03	2.98	174%
Sep-01	3.86	3.04	0.82	127%
Annual	36.39	37.11	-0.72	98%

A major storm period, from July 21 through August 2, occurred during WY 2001. During the period one gage recorded a rainfall depth and duration that corresponded to a storm which equaled or exceeded the 100-year recurrence frequency for northeastern Illinois, one gage equaled or exceeded the 50-year recurrence frequency, and three gages equaled or exceeded the 25-year recurrence frequency. During this period almost 1.1 billion gallons of water backflowed from the canal system into Lake Michigan.

Two additional significant storms also occurred during WY 2001. On August 24-25 one gage recorded a rainfall depth and duration that corresponded to a storm which equaled or exceeded the 5-year recurrence frequency, and over 75 million gallons of water backflowed into Lake Michigan. Further, on August 30-31 two gages recorded rainfall depths and durations that corresponded to a storm which equaled or exceeded the 10-year recurrence frequency, and over 156 million gallons of water backflowed into Lake Michigan.

SIGNIFICANT CONSTRUCTION COMPLETION

The State of Illinois completed the construction of the Chicago Inner Harbor Basin Cutoff Wall during 2001. The wall was constructed across the turning basin, and serves to greatly reduce the leakage of Lake Michigan water through the basin walls and into the canal system. In addition to the new watertight cutoff wall, the facilities also include a pump station and four 10-foot by 10-foot sluice gates. The pump station may be used to return excessive leakage back Lake Michigan, and the sluice gates can be used to allow direct diversions into the canal system, or stormwater backflows into the Lake.

SOURCES OF DIVERSION

The Lake Michigan diversion consists of three primary components. These components are domestic pumpage from Lake Michigan used for water supply and not returned to Lake Michigan, stormwater runoff from the diverted Lake Michigan watershed, and direct diversions through the three lakefront control structures.

Domestic pumpage from Lake Michigan is used for water supply and its effluent is discharged to the canals by various Water Reclamation Plants (WRP's). Currently, the WRP's that divert domestic pumpage from the lake either discharge to the canal system or to the Des Plaines River and its tributaries. In the future as more communities convert to Lake Michigan water supply, water supply effluent may also be discharged to the Fox River. The Fox River is approximately 35 miles west of downtown Chicago.

Stormwater runoff that previously drained to Lake Michigan through the Chicago River and the Calumet River now drains to the Chicago Sanitary and Ship Canal (CSSC) and the Calumet Sag Channel, respectively. The Calumet Sag Channel drains to the CSSC, and the CSSC ultimately drains into the Illinois River and the Mississippi River. The drainage area of the diverted Lake Michigan watershed is approximately 673 square miles.

Direct diversions occur at three lakefront locations; the Chicago River Controlling Works (CRCW), the O'Brien Lock and Dam, and the Wilmette Controlling Works. These controlling structures are located downtown, at the south end, and at the north end of the Chicago area, respectively. The direct diversion at each of these locations consists of four components; lockage, leakage, discretionary flow and navigation makeup flow. The lockage component is the flow used in locking vessels to and from the lake. The leakage component is water estimated to pass, in an uncontrolled way, through or around the three lakefront structures. The purpose of the discretionary diversion is to dilute effluent from sewage discharges and improve water quality in the canal system. Navigation makeup water is made up of two parts. When large storms are forecast, the canal is drawn down before the storm to prevent flooding, and navigation makeup water is used during this draw down period to maintain navigation depths. If the runoff is not enough to refill the canal, additional navigation makeup water is allowed pass from Lake Michigan to return the canal system to their normal operating stages.

LOCKPORT ACCOUNTING

An AVM was installed and has been operating at Romeoville (five miles upstream of the Lockport Powerhouse and three miles upstream of the Lockport Controlling Works) since 12 June 1984. The AVM directly measures total flow through the canal above both the Powerhouse and the Controlling Works. The overwhelming majority of the Lake Michigan diversion and some non-Lake Michigan flows pass through the AVM. The diversion accounting procedure uses the flow measured at Romeoville and deducts flows not accountable in the diversion. Diversion flows which bypass Lockport are added to yield the net computed diversion of water from Lake Michigan. This procedure represents the accounting technique as required by the modified Supreme Court Decree.

Diversion accounting uses both measured and estimated flows. A series of hydrologic and hydraulic computer models use various meteorological data to simulate flows not measured. These simulated flows as well as measured flows are used to compute the diversion. Along with the diversion calculation, a number of water budgets verify simulated flows and estimate the reliability of the computed diversion.

The flow measured at Romeoville is approximately 99% of the annual diversion, and approximately 90% of the diverted water is measured by the AVM. Deductions from the Romeoville AVM flow include runoff from 217 square miles of the Des Plaines River watershed discharged to the canal, groundwater supply effluent and groundwater seepage into the Tunnel and Reservoir Plan (TARP) tunnels discharged to the canal, and Indiana water supply discharged to the canal through the Calumet River system and the Calumet Sag Channel (see figure 2 for locations). The computer models of the Des Plaines watershed area estimate the runoff deduction. The groundwater pumpage deductions are obtained directly from pumping records. The Indiana water supply is computed from pumping records and a calculation to determine the portion of the water supply draining west to the Calumet Sag Channel.

The additions for diversion flow that do not flow through Romeoville are primarily Lake Michigan water supply pumpage effluent treated and released to the Des Plaines River or its tributaries. This flow is obtained directly through pumping records of the communities involved and currently accounts for approximately 10% of the diversion. As more communities convert to Lake Michigan water supply, the percentage will increase.

LAKEFRONT ACCOUNTING

As part of the Great Lakes Mediation process, modifications in the methodology for computing the diversion were considered. This review was undertaken because the prescribed Lockport Accounting procedure has proven to be complex and time consuming. The difficulties arise from the large amounts of data that are required and the extensive computer simulations that are involved. Additionally, the measurement gaging and computer simulation models require periodic updating because of changes to the hydrologic and hydraulic characteristics of the watershed. The recommendation of the Mediation Committee was to move the primary measurement point for diversion accounting to the Chicago lakefront.

A move to the lakefront requires a revised procedure for computing the diversion that would consist of the addition of direct diversions through the three lakefront

structures, water supply, and a negotiated value of runoff, followed by the subtraction of a negotiated value of consumptive use. Direct diversions would be measured using AVMs at CRCW, O'Brien Lock and Dam and Wilmette Controlling Works. Lake Michigan water supply pumpages from primary (first order) users would be summed and federal pumpages subtracted. Runoff diverted from the Lake Michigan watershed would be an agreed upon constant value based on an average runoff determined through a period of record simulation. The consumptive use credit would be negotiated and could be either a fixed value or a fixed percentage of the water supply.

Appendix A, the District's report titled "Lakefront Accounting Technical Analysis," details the period of record methodology used in determining a constant average diverted runoff, and the continuous period methodology used to explore potential consumptive use values. Based on the District's work, the Mediation Committee adopted the following values for use in Lakefront Accounting: a negotiated runoff value of 800 cfs; and a negotiated consumptive use value of 168 cfs.

COMPARISON OF LOCKPORT VERSUS LAKEFRONT ACCOUNTING

The Chicago District completed an uncertainty comparison of the accounting methods that can be used to determine the diversion of Lake Michigan waters by the State of Illinois (see Addendum 2 of Appendix A, "Uncertainty Comparison, Lockport versus Lakefront Measurements"). Extensive technical support was provided by the Fifth Technical Committee, the USGS, and Mead & Hunt (under contract to the District). The accounting methods that were evaluated included:

- LOCKPORT – The existing accounting system in which flows are measured at the Romeoville AVM, with non-accountable flows deducted and by-passed flows credited.
- LAKEFRONT - A Lakefront Accounting system that includes direct diversions, water supply, and fixed values of runoff and consumptive use. This is the system proposed by the Mediation Committee for computing Lakefront Accounting.

This uncertainty comparison used seven years of flows from WY 1997 through WY 2003. The method used to determine uncertainties is the first order variance procedure as utilized by the Fifth Technical Committee. Errors associated with the Romeoville and lakefront AVMs were established by USGS (Appendix B), and the errors associated with water supply were established by Mead & Hunt (Appendices C and D).

The results from the analyses are summarized in Table 2 on the next page. This table shows that the average annual diversion for WY97-03 for the existing system is 2,812 cfs, with an uncertainty of 2.3%; while the average annual diversion for the same period from a Lakefront Accounting system with fixed values of runoff and consumptive use would be 2,765 cfs, with an uncertainty of 7.9%.

Table 2 Comparisons of Flows and Uncertainties
Lockport Accounting versus Lakefront Accounting

Lockport

Fixed Lakefront

Year	Flow (cfs)	CoV (%)	Flow (cfs)	CoV (%)
1997	3,114	2.3	3,107	7.5
1998	3,059	2.3	3,033	7.6
1999	2,909	2.3	2,826	7.8
2000	2,584	2.2	2,670	8.2
2001	2,698	2.3	2,607	8.3
2002	2,919	2.3	2,585	8.4
2003	2,398	2.3	2,524	8.6
Average	2,812		2,765	
Wt				
Average		2.3		7.9

*CoV (%) - Coefficient of Variance (percent)

It is apparent from the above table that the present accounting system is a more accurate method than Lakefront Accounting for computing the diversion accountable to the State of Illinois. This is due to three factors: the errors are smaller in computing runoff than in assuming a fixed value; a consumptive use value (and the associated error) doesn't have to be assumed; and the Romeoville AVM is more accurate than the lakefront AVMs.

ACTIVITIES FOR FY 2001

The activities in Fiscal Year (FY) 2001 included the completion of the WY 1998 annual report (WY 1997 Lockport accounting report). Activities related to the WY 1998 and WY 1999 Lockport accounting reports (data collection and necessary model revisions) continued. Tasks associated with Lakefront accounting for WY 1997, 1998 and 1999 continued in FY 2001. The Fourth Technical Committee provided its final report to the USACE in May 2001, and was included as an appendix to the WY 1998 Annual Report. The final report on the preliminary field investigation of the water supply metering system for nine pumping stations within the Chicagoland area was completed. The studies on long-term runoff and consumptive use, which provided the technical basis of an agreement between the states to potentially move the accounting process to the lakefront, continued in FY 2001. The contract for work on a detailed QA/QC of ten primary water supply diverters in Chicago and five in the northern Chicago suburbs was modified in response to a major comment made by the Fourth Technical Committee. Coordination continued on the effort to implement the one-year Navigation Makeup Reduction demonstration study during FY 2001.

ACTIVITIES FOR FY 2002 – FY 2006

The activities in FY 2002 included the completion of hydrologic and hydraulic modeling for WY 1998 and WY 1999. Data collection for WY 2000 and 2001 was begun. Tasks associated with Lakefront accounting for WY 1997, 1998 and 1999 continued in FY 2002. Selection of the Fifth Technical Committee was begun. The draft reports on the detailed QA/QC of 12 primary water supply diverters in Chicago and six in the northern Chicago suburbs were available. The study on long-term runoff, which provided the technical basis of an agreement between the states to potentially move the accounting process to the lakefront, was augmented to extend the end modeling point from WY 1994 to WY 1999 to cover a continuous period of 49 years (WY 51 through WY 99). Mediation activities related to the Great Lakes Mediation Committee continued. Work on a comprehensive diversion accounting manual also continued. Finally, the Corps and the MWRDGC executed a Navigation Makeup demonstration program during April through May, 2002. Extensive hydraulic and water quality data were obtained for four storm events during the demonstration period. Survey data from the canal operatives were also collected. The field demonstration study would look at the impacts of a change to the existing Navigation Makeup operations in an effort to reduce this component of diversion.

The activities in FY 2003 included review of the WY 1998 and WY 1999 Lockport accounting reports and coordination of activities related to the Fifth Technical Committee. Error analysis associated with Lakefront Accounting for WY 1997, 1998 and 1999 continued by USGS in FY 2003. The Fifth Technical Committee commenced its tasks in January and completed the first three workshops and majority of the review work in FY 2003. The final reports on the detailed QA/QC of 12 primary water supply diverters in Chicago and six in the northern Chicago suburbs were completed. Coordination continued on the effort to implement the one-year Navigation Makeup Reduction demonstration study during FY 2003. A contract was initiated for the Lake Michigan Diversion Accounting computations for WY 2000 and WY 2001.

The activities in FY 2004 included collection of data for the WY 2002 and WY 2003 Lockport accounting and continued coordination of activities related to the Fifth Technical Committee. In October 2004, the Fifth Technical Committee provided preliminary findings to the parties during the fourth meeting. In July 2004, the Fifth Technical Committee published their final report which was included as Appendix B in the WY 2002 Annual Report. Also completed were the Lockport accounting reports for WY 2000 and WY 2001. Funding for Lakefront accounting was not included in the Energy and Water Appropriations Bill for FY 2004; therefore, the Lakefront accounting activities were halted. However, the stream gage assets deployed at the lakefront controlling works remain in service with a significantly reduced support from the USGS. The AVM gage on the CSSC at Romeoville was being moved to a new location (RM 302) after a decision was made that a second dispersal barrier would be installed on the canal near the existing AVM gage location. The electrical fields generated by the barrier would interfere with the compass that is used with the ADCP for calibration purpose, and could also potentially affect the acoustic signals in water. The new site that is about 6 miles upstream from the existing location was selected with due considerations in diversion flow capture, canal hydraulics and barge fleeting on the CSSC. The USACE, USGS and the Fifth Technical Committee reached a consensus that the selected new site at Lemont was the best amongst a total of four candidates.

The activities in FY 2005 included data analyses for WY 2002 and WY 2003 Lockport accounting. The Corps started hydrologic simulations and in the mean time evaluated the recommendations that the Fifth Technical Committee had made. Also, data

collection for WY 2004 Lockport accounting was completed. The Corps established a new Contract with the ISWS to acquire continued services for operating and maintaining the 25-gage raingage network in the diverted watershed.

The activities in FY 2006 included continued modeling and diversion accounting computations for WY 2002 and WY 2003. The AVM on the CSSC at Romeoville was totally removed when the construction of dispersal barrier had reached a point that remaining equipment and cables at the site had to go. Before Romeoville gage was completely decommissioned, more than one year of concurrent data at Romeoville and Lemont had been collected that should suffice for the calibration and independent verification of AVM data at Lemont. In 2006, a dialogue was opened between the Corps and MWRDGC regarding upgrade of the flow measurement capability at the Upper Des Plaines Pumping Station. As part of the pumping station rehabilitation plan, the MWRDGC would replace the aging pumps and the associated flow meters in the pumping station. In addition, a new TARP connecting structure would be constructed near the station to divert combined sewer flows from the intercepting sewer to the deep tunnel during large runoff events and future repairs at the pumping station. To ensure the continuity of data availability and independent verification of flow rates through the pumps, the Corps requested that a separate flow meter in the intercepting sewer be considered. The MWRDGC cooperatively agreed to install an additional flow meter in the incoming intercepting sewer upstream from both the station and the new TARP diversion structure. Rehabilitation will start in FY 2007 and the project will complete in two years. This should fix a long time issue regarding verification of simulated runoff from the Des Plaines watershed that discharges to the CSSC – a deductible component to the flow measured at Romeoville.

SUMMARY AND CONCLUSIONS

SUMMARY

The comparison of uncertainties in Lockport accounting versus Lakefront accounting has been completed. From both a theoretical and measurement basis, accounting at Lockport has been determined to be more accurate.

CONCLUSIONS

Using Lockport accounting the average annual diversion for WY97-03 for the existing system is 2,812 cfs, with an uncertainty of 2.3%; while the average annual diversion for the same period from a Lakefront accounting system with fixed values of runoff and consumptive use would be 2,765 cfs, with an uncertainty of 7.9%.

APPENDIX A

**LAKEFRONT ACCOUNTING
TECHINCAL ANALYSIS**

APPENDIX B

**COMPUTATION AND ERROR ANALYSIS OF DISCHARGE FOR THE
LAKE MICHIGAN PROJECT IN ILLINOIS:**

1997-1999 WATER YEARS

APPENDIX C

**REVIEW OF NINE LAKE MICHIGAN
WATER SUPPLY WITHDRAWALS**

APPENDIX D

**TECHNICAL ANALYSIS OF
LAKE MICHIGAN WITHDRAWALS**

**(Schematics for Pumping Stations and Water Treatment Facilities Not Provided
Due to Security Reason)**

Summary of Findings

Twelve City of Chicago Pumping Stations

- Central Park
- Cermak
- Chicago Avenue
- Lakeview
- Lexington
- Mayfair
- Roseland
- 68th Street
- Southwest
- Springfield Avenue
- Thomas Jefferson
- Western Avenue

Six North Shore Water Treatment Facilities

- CLCJAWA
- Evanston
- Highland Park
- Northbrook
- Waukegan
- Wilmette