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EXECUTIVE SUMMARY

This document is the Water Year (WY) 1994 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 1980 amendment to the U. S. Supreme Court Decree. Additionally, this report serves to summarize the Corps' major accomplishment 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 provides an overview and audit of flow measurements and accounting computed by Christopher B. Burke Engineering under contract to the Corps of Engineers for WY 1991 and WY 1992, 1 October 1990 through 30 September 1992.

During WY 1994 and continuing into WY 1995 the District modified the hydrologic runoff models and hydraulic sewer models in order to utilize the DSS database as the sole database in all diversion accounting computations. This conversion to the DSS database will improve the efficiency of the diversion accounting by eliminating the need for data transformations between two different databases.

The Lake Michigan Diversion Accounting Reports for WY 1991 and WY 1992 have been completed. The State of Illinois diverted 3,555 cfs during WY 1991 and 3,409 cfs during WY 1992. These diversions are 355 cfs and 209 cfs greater than the 3,200 cfs 40 year average diversion specified in the modified decree. The running average of the diversion for WY 1981 through WY 1992 is 3,457 cfs, or 257 cfs over the annual allocation. The cumulative deviation is now -3,084 cfs-years. The negative sign indicates a cumulative flow deficit. The maximum allowable cumulative flow deficit specified in the decree is 2,000 cfs-years.

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) 1994 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, the certification of WY 1991 and WY 1992 diversion flows, a description of the sources of the diversion, a description of the accounting procedures, and a summary of all significant activities that occurred during WY 1994.

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 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 was first diverted from Lake Michigan at Chicago into the Mississippi River Basin with the completion of the Illinois and Michigan (I & M) Canal in 1848. The Illinois and Michigan Canal was primarily for transportation and diverted up to 500 cubic feet per second (cfs).

Development of the Chicago sewer system led to severe sanitation problems in the Chicago River by 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 during this time was an increase in the overbank flooding within the city. The sewer system expanded as more roads and buildings were built. This construction increased the rate and volume of runoff and resulted in increased flooding.

As a solution to the sanitation and flooding problems, the Chicago Sanitary and Ship Canal (CSSC) was built. The construction reversed the flow direction of the Chicago River (figure 1). The Chicago Sanitary and Ship Canal was completed in 1900 by the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC, formerly the Metropolitan Sanitary District of Greater Chicago, MSDGC). The Sanitary and Ship Canal followed the course of the older I & M Canal. This canal is much larger than the I & M Canal and can handle the Chicago River flow as well as increased shipping. The Chicago River Controlling Works were constructed at the mouth of the Chicago River in the 1930s. The lock and sluice gates regulate the amount of Lake Michigan water allowed to pass into the river and restricts river flooding entering Lake Michigan.

Between 1907 and 1910, the MWRDGC constructed a second sanitary canal called the North Shore Canal. This canal extends from Lake Michigan at Wilmette south 6.14 miles to the North Branch of the Chicago River. The Wilmette Controlling Works regulate the amount of Lake Michigan flow allowed down the channel.

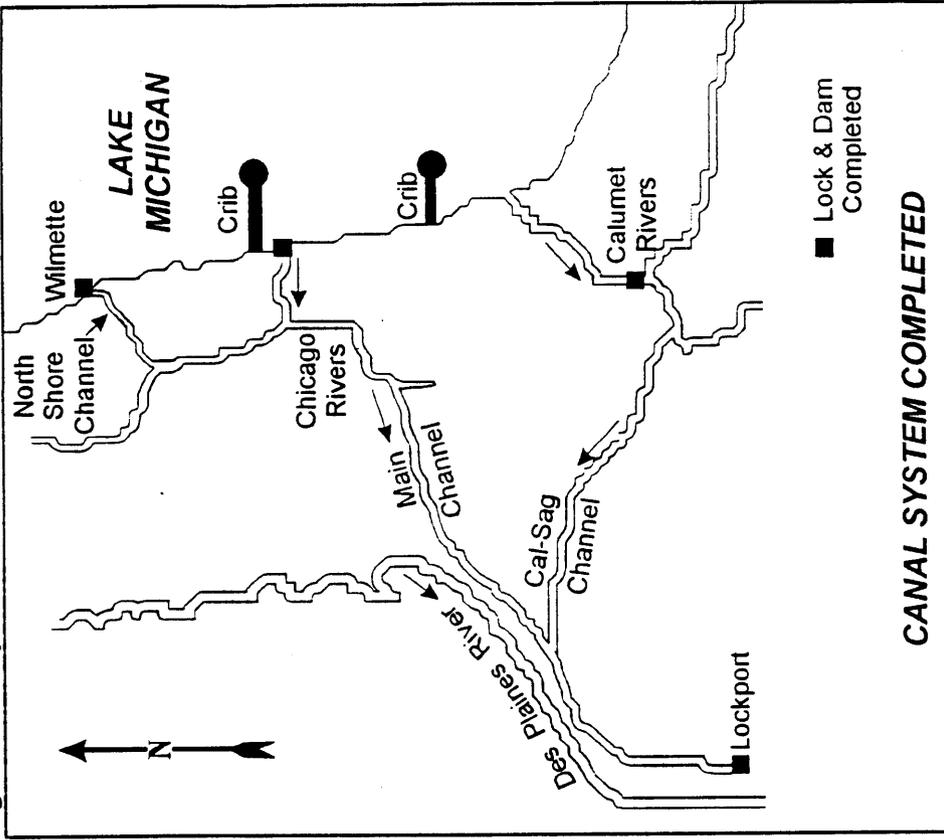
Construction of a third canal, the Calumet Sag Canal, was completed in 1922. The canal connects Lake Michigan, through the Grand Calumet River, to the Sanitary and Ship Canal. This canal carried combined sewage overflows from South Chicago, Illinois and East Chicago, Indiana. The O'Brien Lock and Dam located on the Calumet River, regulates the flow of Lake Michigan waters down the canal. Figure 2 shows the affected watershed.

Upon completion of the Chicago Sanitary and Ship Canal in 1901, the Secretary of War issued a permit authorizing a diversion of 4,167 cfs. In 1908 and 1913, the United States brought actions to enjoin the MWRDGC from diverting more than the 4,167 cfs previously authorized in 1901. The two actions were consolidated and the Supreme Court entered a decree on 5 January 1925 allowing the Secretary of War to issue diversion permits. In March 1925, the permit issued limited the diversion to 8,500 cfs, about the average then being used.

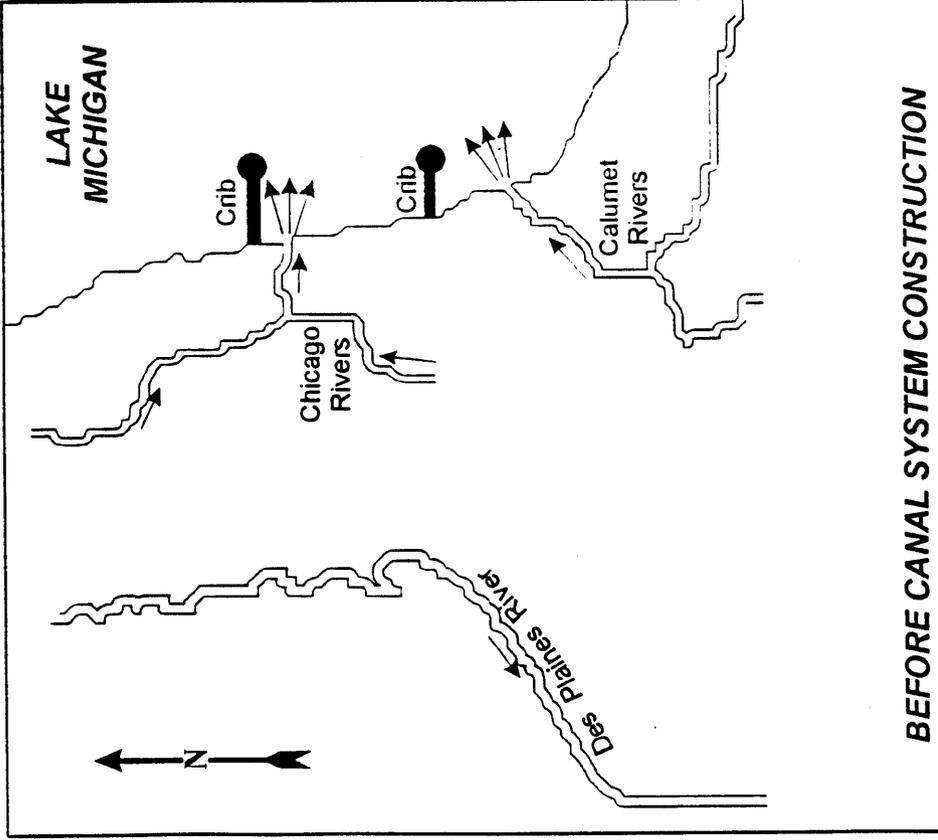
In 1922, 1925, and 1926, several Great Lakes States filed similar original actions in the U.S. Supreme Court seeking to restrict the diversion at Chicago. A Special Master, appointed by the U.S. Supreme Court to hear the combined three suits, found the 1925 permit to be valid and recommended dismissal of the action. The U.S. Supreme Court, however, reversed the Special Master's finding. Subsequently, the Court instructed the Special Master to determine the steps necessary for Illinois and MWRDGC to reduce the diversion. Consequently, a 1930 decree reduced the allowable diversion (which did not include domestic pumpage) in three steps: to 6,500 cfs after 1 July 1930; to 5,000 cfs after 30 December 1935; and to 1,500 cfs after 31 December 1938.

Figure 1

Development of the Chicago Canal System



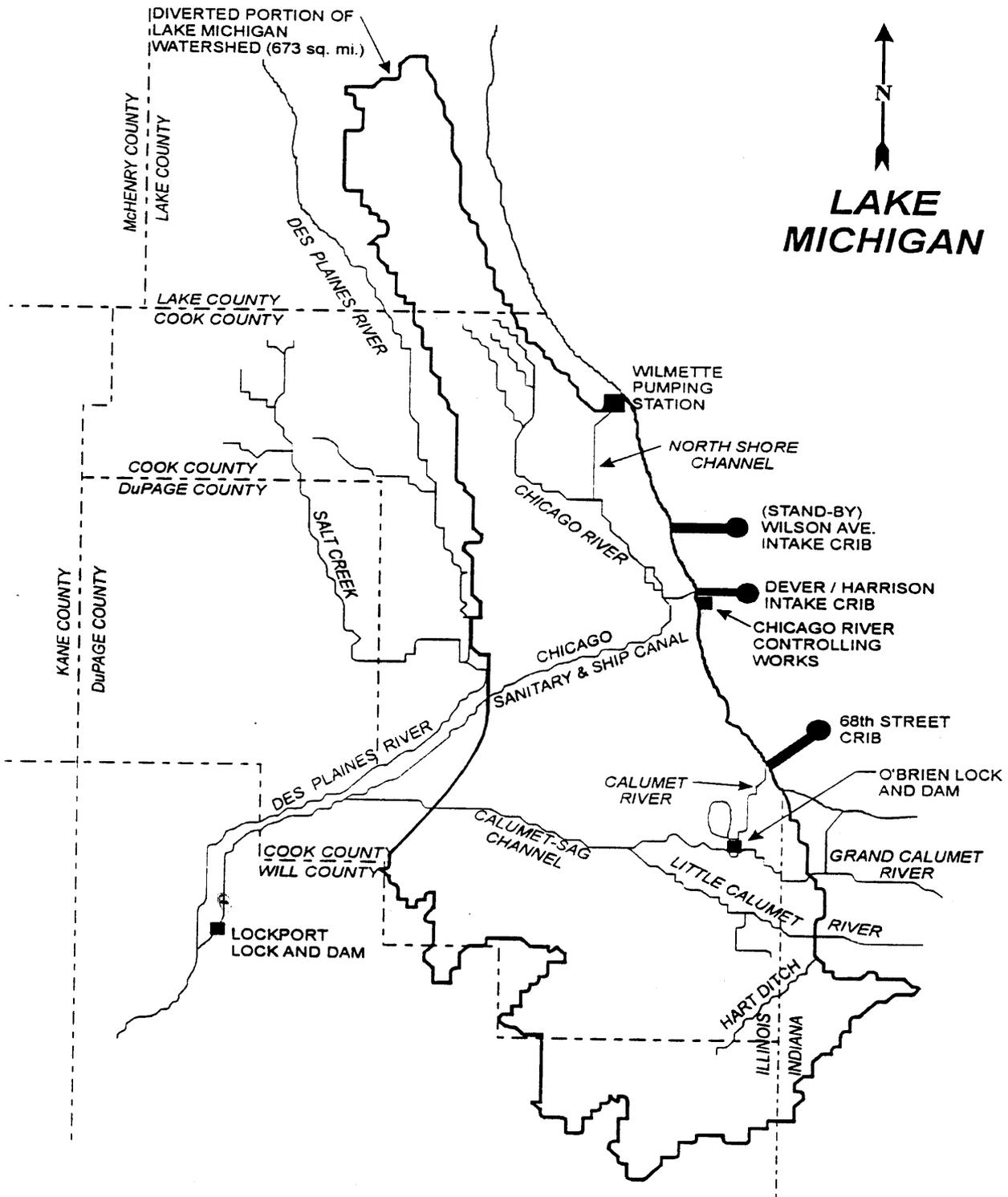
CANAL SYSTEM COMPLETED



BEFORE CANAL SYSTEM CONSTRUCTION

Figure 2

Location Plan - Lake Michigan Diversion at Chicago



In 1967, an additional Supreme Court Decree limited the diversion of Lake Michigan water by the State of Illinois and its municipalities, including domestic pumpage, to a five year average of 3,200 cfs effective 1 March 1970. The 1967 Supreme Court Decree gave full responsibility to the State of Illinois for diversion measurements and computations. The role of the Corps of Engineers, as specified in the decree, was to be one of "general supervision and direction."

The 1967 decree was modified on 1 December 1980. This modified decree changed the beginning of the accounting year from 1 March to 1 October. The modified decree also extended the period for the running average diversion from five years to forty years beginning with WY 1981.

The amended decree contains three provisions that affected the role of the Corps of Engineers in the diversion accounting program. First, although the State of Illinois was primarily responsible for measurement and computation of diversion flows, the decree allowed the Corps of Engineers to participate in the function, subject to agreement and cost sharing with the State of Illinois. Negotiations were held on cost sharing the computation of the diversion. No agreement was reached due to lack of funding. The measurement and computation of the diversion continued to be done by the Illinois Department of Transportation (IDOT) through its consultants, the Northeastern Illinois Planning Commission (NIPC), MWRDGC, and the United States Geological Survey (USGS).

Second, the supervisory role for the Corps of Engineers increased so the Corps of Engineers was responsible for auditing the computations and measurements performed by the State of Illinois.

Third, the modified decree states that the Chief of Engineers shall appoint a Three Member Technical Committee to determine the best current engineering practice and scientific knowledge for measuring the diversion and to make recommendations as appropriate. The decree states that "...the members should be selected on the basis of recognized experience and technical expertise in flow measurement or hydrology." A technical committee is to be reconvened at least once every five years. The first Technical Committee convened in June 1981 and completed its work in April 1982. The second Technical Committee convened in July 1986, and completed their final report in November 1987. The third Technical Committee completed their final report in August 1994.

The Water Resources Development Act of 1986 gave the Corps of Engineers responsibility for the computation of diversion flows as formerly done by the State of Illinois. The Corps of Engineers' new mission became effective 1 October 1987.

SIGNIFICANT HYDROLOGIC EVENTS

During WY 1994, a total of 25.71 inches of precipitation fell at the National Weather Service O'Hare Weather Station. This recorded precipitation for 1994 is 28% less than the long term (1951-1990) average of 35.82 inches. The recorded monthly rainfall data during WY 1994, and the deviation from long term annual and monthly average precipitation, are tabulated in Table 1.

TABLE 1

WY 1994 MONTHLY AND ANNUAL PRECIPITATION (INCHES) NATIONAL WEATHER SERVICE O'HARE WEATHER STATION

Month	1994 Precipitation	1951-1990 Average Precipitation	Deviation	% of Average
Oct-93	2.19	2.41	-0.22	91
Nov-93	1.52	2.92	-1.40	52
Dec-93	1.00	2.47	-1.47	40
Jan-94	1.77	1.53	0.24	116
Feb-94	2.56	1.36	1.20	188
Mar-94	1.09	2.69	-1.60	41
Apr-94	2.20	3.64	-1.44	60
May-94	0.58	3.32	-2.74	17
Jun-94	6.09	3.78	2.31	161
Jul-94	1.62	3.66	-2.04	44
Aug-94	4.05	4.22	-0.17	96
Sep-94	1.04	3.82	-2.78	27
Annual	25.71	35.82	-10.11	72

OTHER SIGNIFICANT EVENTS

The Third Technical Committee completed its work with the final report released in August 1994. The committee's mission was to review the diversion accounting procedures and assure that the "best current engineering practice and scientific knowledge" is being applied by the Corps of Engineers in computing the diversion. The report was included as an appendix in the WY 1993 Annual Report.

A separate, detailed chronology of significant non-hydrologic events is included in appendix A of this Water Year 1994 Annual Report.

STATUS OF ACCOUNTING REPORTS

Lake Michigan diversion flow data is summarized in accounting reports prepared on an annual basis as flows are certified. Since implementation of the modified Supreme Court Decree of 1 December 1980 and before this report, the Corps of Engineers has certified diversion flows for WY 1981 through WY 1990. The WY 1991 and WY 1992 Lake Michigan Diversion Accounting Reports are certified and included as appendices B and C of this Water Year 1994 Annual Report. The State of Illinois diverted 3,555 cfs during WY 1991 and 3,409 cfs during WY 1992. These diversions are 355 cfs and 209 cfs greater than the 3,200 cfs 40 year average diversion specified in the 1980 modified decree. Table 2 shows the accounting year, the certified flows, the running average flows, and the cumulative deviation from the allowable diversion of 3,200 cfs.

TABLE 2

STATUS OF THE STATE OF ILLINOIS DIVERSION UNDER THE 1980 MODIFIED U.S. SUPREME COURT DECREE

Accounting Year	Certified Flow (cfs)	Running Average (cfs)	Cumulative Deviation (cfs)
1981	3,106	3,106	94
1982	3,087	3,097	207
1983	3,613	3,269	-206
1984	3,432	3,310	-438
1985	3,472	3,342	-710
1986	3,751	3,410	-1,261
1987	3,774	3,462	-1,835
1988	3,376	3,451	-2,011
1989	3,378	3,443	-2,189
1990	3,531	3,452	-2,520
1991	3,555	3,461	-2,875
1992	3,409	3,457	-3,084

The running average diversion for the period WY 1981 through WY 1992 is 3,457 cfs, 257 cfs greater than the 3,200 cfs 40 year average diversion specified by the modified decree. Also, the annual average diversion has twice exceeded the 3680 cfs annual limit, the maximum number of times allowed in the decree. None of the years have exceeded the absolute annual maximum of 3840 cfs. The cumulative deviation, the sum of the differences between the annual average flows and 3,200 cfs, is -3,084 cfs-years. The negative cumulative deviation indicates a cumulative flow deficit. The decree specifies a maximum allowable deficit of 2,000 cfs- years over the first 39 years of the 40 year averaging period.

Christopher B. Burke Engineering, under contract to the Corps of Engineers, computed the diversion and prepared the accounting reports for WY 1991 and WY 1992

with assistance and detailed review provided by the Corps of Engineers. Data collection and preparation, diversion computation, and report writing for the WY 1993 accounting report is being performed by the Corps. Data collection and preparation for this report began in Fiscal Year (FY) 1993. Certification of the WY 1993 accounting report is scheduled for FY 1996.

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 diversion locations are at 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 consists of four components; lockage, discretionary flow, navigation makeup flow, and leakage. The lockage component is the flow used in locking vessels to and from the lake. The purpose of the discretionary diversion is to dilute effluent from sewage discharges. When large storms are forecast, the canal is drawn down before the storm to prevent flooding. If the runoff is not enough to refill the canal, navigation makeup water is passed. The leakage component is water estimated to pass, in an uncontrolled way, through or around the lakefront structures.

ACCOUNTING PROCEDURES

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.

DIVERSION COMPUTATION

An acoustic velocity meter (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.

Water was diverted by the Federal government during the April-May 1992 Chicago tunnel flood in order to lower the river level and reduce hydrostatic pressure on the tunnel. This action was approved by the U.S. Army Corps of Engineers, North Central Division to facilitate efforts to cease the flow of river water entering the tunnel breach. The diverted water, while measured by the AVM, is not part of Illinois' diversion from Lake Michigan because it falls under the category of federal emergency uses. Consequently, it is deducted from the AVM record.

The flow measured at Romeoville was approximately 106% of the annual diversion during WY 1991 and 113% during WY 1992, the later flow being higher due to the Chicago tunnel flood. Approximately 97% of the diverted water was measured by the AVM during WY 1991 and 94% during WY 1992, the later diversion being reduced due to the influx of western suburbs using Lake Michigan water as their primary domestic water supply source. Most of these new users of Lake Michigan water in WY1992 do not discharge their sewage effluent to the canal system. As more communities are added, more water will be discharged outside the canal system, further lowering the percentage 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 1 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 accounts for 3.3% of the diversion in WY 1991 and 5.6% in WY 1992. As more communities convert to Lake Michigan water supply, the percentage will increase.

DIVERSION BUDGET CHECKS

Water budgets verify those flows not measured. Most of the budgets compare simulated flows to recorded flows and these comparisons indicate the accuracy of the diversion accounting. The four primary budgets are the budgets for the three major Water Reclamation Plants (WRP's) that serve the area involved in diversion accounting and the canal balance budget for the CSSC. The Upper Des Plaines pump station budget will also become a significant budget after measurement problems are resolved. The remaining budgets estimate runoff from stream gaged areas in the Lake Michigan watershed or are budgets of non-simulated flows such as water supply pumpage. The budgets are discussed in detail in the WY 1991 and WY 1992 accounting reports.

ACCOMPLISHMENTS DURING FY 1994

In each accounting year, various changes to the diversion procedures and other activities help to improve the accuracy and efficiency of the diversion accounting.

REVISION OF COMPUTER MODELS

Modifications were made to the hydrologic runoff models and hydraulic sewer routing models in order to incorporate the conversion to the DSS database. The modified models, used for the WY91 and WY92 accounting, eliminated much of the required data manipulation between two different databases. The modifications are discussed within the individual accounting reports.

THIRD TECHNICAL COMMITTEE

The third Three Member Technical Committee was convened during February 1993. The committee's mission was to review and assess the diversion accounting procedures and to assure that the "best current engineering practice and scientific knowledge" is applied by the Corps of Engineers in computing the diversion. Their work culminated in a report that constitutes appendix H of the WY 1993 Annual Report. The primary recommendations of the Third Technical Committee are summarized below.

- a. Release diversion accounting and annual reports in a more timely fashion.
- b. Consider recomputing the WY81 through WY83 accounting to reflect AVM based flows through the use of regression equations.
- c. Prepare a detailed manual of procedures for diversion accounting.
- d. Update the diversion accounting and AVM quality assurance plans.
- e. Improve the accuracy and reliability of measured flows at the Upper Des Plaines pumping station.

ACTIVITIES FOR FY 1995 AND 1996

The activities for FY95 and FY96 address the recommendations of the Third Technical Committee.

ACCOUNTING REPORTS

The Accounting Reports for WY 1991 and WY 1992 were completed in FY 1995 and the Accounting Reports for WY 1993 will be completed in FY 1996. Thereafter, additional accounting reports are expected to be completed in the second fiscal year following the end of the water year for which the diversion is computed.

DIVERSION ACCOUNTING MANUAL

A manual will be finalized during FY 1996 to describe in detail the steps in the diversion accounting procedure. The manual will include any updates and modifications up to and including the WY 1992 Accounting Report. This manual is currently 90 percent complete and will be included as an appendix to the WY 1995 Annual Report.

FLOW MEASUREMENTS

Due to significant measurement problems that exist at the Upper Des Plaines pumping station, flow measurements will be conducted during WY 1996 to assess the accuracy of existing pump measurements. Based on the measurements, either the existing pumps will be recalibrated or additional measurement devices will be permanently installed to provide a consistently accurate and reliable means of measuring the flows. Accurate measurements are necessary so that the full advantage of this facility as a calibration point for the diversion models may be realized. The extent of the flow measurements taken, and therefore the immediate usefulness of this location as a calibration point, is subject to funding constraints.

FOURTH TECHNICAL COMMITTEE

The Fourth Technical Committee will be under contract in mid FY 1996. The Committee is expected to finish its work in early FY 1997.

SUMMARY AND CONCLUSIONS

SUMMARY

The Lake Michigan Diversion Accounting procedure continues to evolve and improve. Further improvements will occur during the WY 1993 diversion accounting. The implementation of the more efficient DSS database will allow for a more timely release of the WY 1993 accounting report and all future reports. A comprehensive manual will also be completed during FY 1996 to include all the improvements.

CONCLUSIONS

The Lake Michigan Diversion Accounting Reports for WY 1991 and WY 1992 have been completed as required by the Supreme Court Decree.

The State of Illinois diverted 3,555 cfs during WY 1991 and 3,409 during WY 1992. These flows are 355 cfs and 209 cfs greater than the 3,200 cfs limit specified in the decree. The running average of the diversion for WY 1981 through WY 1992 is 3,457 cfs, or 257 cfs over the annual allocation. The cumulative deviation is now -3,084 cfs-years. The negative sign indicates a cumulative flow deficit. The maximum allowable cumulative flow deficit specified in the decree is 2,000 cfs-years.

DATE	CORRESPONDENCE DESCRIPTION
15-Nov-93	Letter from IDOT to Chicago District requesting that, when the Diversion Accounting reports for Water Years 1986-89 are sent out, language in the letter of transmittal which mentions the excessive leakage at the federal lakefront structures is included
30-Nov-93	Letter from Chicago District to IDOT stating that Chicago District just received direction to disseminate the Lake Michigan Diversion Accounting reports for Water Years 1986-1989 with leakage through lakefront structures as part of the State of Illinois' diversion
08-Dec-93	Memo from CENCC-ED-HW to CENCD-PE-ED-HW enclosing Chicago District's Water Control Section Annual Report covering Water Year 1993
10-Dec-93	Letter from Chicago District to Solicitor General of the U.S. Department of Justice enclosing the Joint Annual Report for Water Years 1990-92 and discussing excess diversion
28-Dec-93	Letter from Chicago District to the Town of Schererville, Department of Public Works requesting daily treated municipal water supply pumpage for Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Village of Riverwoods requesting monthly domestic water supply pumpage from Lake Michigan through Deerfield for Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Texaco Refining and Marketing Inc. requesting daily values of treated storm water discharge into the Chicago Sanitary and Ship Canal from the Lockport facility for Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Uno-Ven Corporation requesting monthly values (daily averages) of water removed from the Chicago Sanitary and Ship Canal and monthly values (daily averages) of water discharged to the canal during Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Whiting Filtration Plant requesting daily treated municipal water supply pumpage for Whiting during Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Underwriters Laboratories Inc. requesting daily surface runoff discharged to the North Branch Chicago River for Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Thorn Creek Basin Sanitary District requesting daily measured discharge from the TCBSD Sewage Treatment Plant to Thorn Creek for Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Calumet Flexicore Corp. requesting daily water discharges into the Grand Calumet River for Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to City of Chicago Heights, Water Department requesting daily pumpage rates of Lake Michigan water supplied by Hammond, Indiana to the city of Chicago Heights and Lake Michigan water supply pumpage rates by the city of Chicago Heights to Glenwood for Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Consumer Illinois Water Company, Will County Office requesting average daily discharges during Water Years 1991 and 1992 for the Consumer Illinois Water--Plum Creek, Willowbrook and University Park sewage treatment facilities

DATE	CORRESPONDENCE DESCRIPTION
28-Dec-93	Letter from Chicago District to Village of Deerfield requesting measured daily discharge from the Deerfield Sewage Treatment Plant to the North Branch Chicago River for Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Homewood Department of Public Works requesting daily measured discharge from the Homewood Sewage Treatment Plant to Butterfield Creek for Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Indiana Department of Environmental Management requesting total daily groundwater pumpages for Dyer and St. John during Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Indiana Department of Water Management requesting monthly average discharges for the Dyer, Schererville, Hammond and East Chicago for Water Years 1991 and 1992 sanitary treatment facilities
28-Dec-93	Letter from Chicago District to Indiana Department of Natural Resources requesting total daily withdrawals from Lake Michigan for Hammond and East Chicago for Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Illinois Department of Transportation requesting Lake Michigan daily and/or yearly water supply values for all applicable entities contained in the LMO-2 monthly pumpage reports and annual Lake Michigan allocation and unaccounted-for-flow summaries and the Lake Michigan Water Supply Distribution Network Diagram for Water Years 1990, 1991 and 1992
28-Dec-93	Letter from Chicago District to Illinois Environmental Protection Agency requesting daily values of water discharged to Thorn Creek from Material Service Yard #41, to Summit Conduit from Material Service Yard #19 and daily discharge values for Marblehead Lime and Rhone-Poulenc Basic Chemical for Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to North Shore Sanitary District requesting daily measured discharge form the NSSD Clavey Sewage Treatment Plant to the North Branch Chicago River for Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Rhone-Poulenc Basic Chemical requesting daily measured discharge to Thorn Creek for Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Acme Steel Company requesting daily river water discharges to MWRD sewers for Acme Steel facilities in Chicago and Riverdale for Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Argonne National Laboratories requesting daily water withdrawals from the Sanitary and Ship Canal for Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Village of Glenview requesting monthly water supply for Glenview Naval Air Station during Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to LTV Steel requesting Calumet River water discharged to the Calumet Water Reclamation Plant by LTV Steel during Water Years 1991 and 1992

DATE	CORRESPONDENCE DESCRIPTION
28-Dec-93	Letter from Chicago District to Republic Engineering Steel requesting Calumet River withdrawals discharged to the Calumet Water Reclamation Plant via city sewers during Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Village of Libertyville, Department of Public Works requesting daily Lake Michigan water supply pumpage during Water Years 1991 and 1992
28-Dec-93	Letter from Chicago District to Metropolitan Water Reclamation District of Greater Chicago requesting monthly treatment plant reports for Stickney WRF, Northside WRF, Calumet WRF and Lemont WRF, date and quantity of all backflows to Lake Michigan, recycle flows for the 3 major MWRDGC facilities, estimates of leakage through the outfall structures that allow canal water to enter into the sewer system of the 3 major MWRDGC facilities, Upper Des Plaines Pumping Station flows, and the estimated quantity of water transferred to the Northside Water Reclamation Facility from the O'Hare and Egan facilities' watersheds
05-Jan-94	Memo from CENCC-ED-HW to CENCD-PE-ED-HW enclosing Chicago District's updated Water Control Section Annual Report covering Water Year 1993 with additional information as requested
11-Jan-94	Letter from Chicago District to Indiana Department of Natural Resources, Division of Water requesting total daily withdrawals from Lake Michigan for Hammond and East Chicago during Water Years 1991 and 1992
13-Jan-94	Letter from Chicago District to Kevin Oberg, USGS, requesting aggregate groundwater withdrawals with township, range, hydrologic and county identifiers
21-Jan-94	Letter from Chicago District to USGS enclosing information regarding the 3 lakefront control structures, construction drawings of the Chicago River Controlling Works, O'Brien Lock and Sluice Gates and the Wilmette Pumping Station and the MWRDGC recorded elevation data at these structures during USGS 1993 periods of measurement
21-Jan-94	Memo from CENCC-ED-HW for CENCD-PE-ED-HW enclosing ten copies of Lake Michigan Diversion Accounting Annual Report Water Years 1990-92 report
31-Jan-94	Letter from IDOT to Chicago District regarding priorities for USGS flow measurements
31-Jan-94	Letter from Chicago District to Consoer Townsend, Envirodyne Engineers, enclosing one copy of Lake Michigan Diversion Accounting Annual Report Water Years 1990-92 and expressing thanks to an employee of Consoer Townsend for his assistance
04-Feb-94	Letter from Chicago District to IDOT enclosing 2 copies of the Lake Michigan Diversion Accounting Annual Reports for Water Years 1990-1992
10-Feb-94	Letter from Chicago District to IDOT responding to IDOT's 20 January letter concerning the Chicago District's evaluation of the leakage of lakefront structures
11-Mar-94	Letter from Chicago District to IDOT replying to IDOT's 31 January letter regarding priorities for USGS flow measurements--this letter also addresses the issue of installing AVM's at the lakefront

DATE	CORRESPONDENCE DESCRIPTION
16-Mar-94	Letter from IDOT to Chicago District concerning flow measurements used in Lake Michigan Diversion Accounting
18-Mar-94	Letter from USGS to Chicago District providing the mean discharge measured at the Chicago River Controlling Works by the ADCP and the discharge estimated by the sluice-gate ratings
24-Mar-94	Letter from Philip Peterson, Assistant Attorney General, State of Wisconsin, to Chicago District regarding Lake Michigan Diversion Accounting Annual Report for Water Years 1990-92 and Wisconsin's concern that Illinois has diverted water in violation of the Supreme Court decree
04-Apr-94	Letter from Chicago District to IDOT replying to IDOT's 16 March letter concerning flow measurements used in Lake Michigan Diversion Accounting
11-Apr-94	Letter from Chicago District to USGS stating editorial and other suggestions for publication of the "Measurements of leakage from Lake Michigan control structures near Chicago, Illinois, April-October 1993" report
03-May-94	Memo from CENCC-ED-H to Office of the Chief Counsel, U.S. Army Corps of Engineers, regarding Lake Michigan Diversion Accounting - Annual Reports, Accounting Reports and Certification
04-May-94	Memo from CENCC-ED-H to CENCC-CO-O regarding funding of Three Member Technical Committee for Lake Michigan Diversion Accounting in FY 1996
05-May-94	Letter from Chicago District to Christopher B. Burke Engineering, LTD enclosing the final "Scope of Work" for Contract Number DACW23-94-D-0008 - Accounting Reports for WY 91 & WY 92 and diversion accounting manual
06-June-94	Letter from IDOT to Chicago District providing comments regarding the draft USGS report on measurement of leakage at the lakefront controlling structures
30-Jun-94	Memo from CENCC-ED-HW to CENCD-ED regarding Lake Michigan Diversion Accounting Draft Water Year 1990 Report
01-Jul-94	Letter from Kevin Oberg, USGS to Michael Heidersheidt, MWRDGC, regarding the possibility of USGS assisting MWRD in validating flow measured by AVMS in the turbine intakes at Lockport by using the ADCP
07-Jul-94	Memo from CENCD-PE-ED-HW with review comments regarding Findings of the Third Technical Committee for Review of Diversion Flow Measurements & Accounting Procedures - Draft July 1994 Report
07-Jul-94	Memo from CECW-EH-W to CENCC-ED-H regarding collection of project funds for operation of hydrologic programs
13-Jul-94	Facsimile from USGS to Chicago District stating editorial and other suggestions regarding the report "Findings of the Third Technical for Review of Diversion Flow Measurements and Accounting Procedures"

DATE	CORRESPONDENCE DESCRIPTION
15-Jul-94	Letter from Chicago District to State of Wisconsin, Assistant Attorney General, responding to Wisconsin's 24 March letter regarding two considerations which make Illinois' violation of the Supreme Court decree less serious than it would otherwise be
20-Jul-94	Letter from USGS to Chicago District regarding review comments of the draft report "Lake Michigan Diversion - Findings of the Third Technical Committee for Review of Diversion Flow Measurements and Accounting Procedures"
20-Jul-94	Letter from Chicago District to Illinois Department of Transportation stating that Dan Injerd of IDOT's Chicago office had been given one draft copy of the Lake Michigan Diversion Accounting Water Year 1993 Annual Report and one draft copy of the Lake Michigan Diversion Accounting Water Year 1990 Report
02-Aug-94	Memo from CENCC-CO to CENCC-ED-HW regarding funds for the National Weather Service and the US Geological Survey
03-Aug-94	Memo from CENCC-ED-HW to CENCD-RM-FA regarding collection of project funds for operation of hydrologic programs
05-Aug-94	Letter from IDOT to Chicago District regarding Illinois comments on draft 1993 Diversion Accounting report
10-Aug-94	Memo from CENCD-PE-ED-WH to CENCC-ED-HW regarding review and approval of Lake Michigan Diversion Accounting draft report for 1990
17-Aug-94	Letter from Joseph Jacobazzi to LTC Slockbower regarding response to IDOT Diversion Accounting comments
22-Aug-94	Letter from Chicago District to IDOT responding to comments on draft 1993 Diversion Accounting report
24-Aug-94	Letter from USGS to Chicago District enclosing 15 copies of the report "Measurement of leakage from Lake Michigan through three control structures near Chicago, Illinois"
14-Sep-94	Letter from Daniel Injerd, IDOT, to Kevin Oberg, USGS, requesting that a USGS representative participate in IDOT's field trips--Michigan requested a briefing on Illinois' efforts to manage Lake Michigan diversion and that a USGS representative be available to discuss flow measurement at Romeoville and the lakefront
23-Sep-94	Memo from CENCC-ED-HW to CENCD-PE-ED-WH regarding cooperative stream gaging costs for FY95