

*Protecting Our Water Environment*



*Metropolitan Water Reclamation District of Greater Chicago*

**RESEARCH AND DEVELOPMENT  
DEPARTMENT**

*REPORT NO. 91-28*

*COMPREHENSIVE WATER QUALITY EVALUATION*

*FISH SURVEY OF THE*

*CHICAGO WATERWAY SYSTEM*

*DURING 1990*

*S.G. Dennison  
S.J. Sedita  
D.R. Zenz  
C. Lue-Hing*

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by

Samuel G. Dennison  
Biologist II

Salvador J. Sedita  
Biology Section Head

David R. Zenz  
Manager of Research and Technical Services

Cecil Lue-Hing  
Director of Research and Development

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## DISCLAIMER

Mention of proprietary equipment and chemicals in this report does not constitute endorsement by the Metropolitan Water Reclamation District of Greater Chicago.

## SUMMARY AND CONCLUSIONS

The Illinois Pollution Control Board ruled in Docket R87-27 that a Comprehensive Water Quality Evaluation of the Chicago Waterway System and its influence on the Lower Des Plaines and Upper Illinois Rivers would be carried out by the Metropolitan Water Reclamation District of Greater Chicago and would be completed by January 15, 1992. The ruling stated that the evaluation should be conducted over the three-year period of January 1, 1989 through December 31, 1991.

As part of the Comprehensive Water Quality Evaluation, an electrofishing survey was conducted to monitor the distribution and abundance of fish populations in the Chicago Waterway System. Fish were sampled at each of 20 stations located within the Waterway System from the waterway controlling works near Lake Michigan to Lockport, Illinois. These stations were sampled at a scheduled frequency of four times per year during the period of compliance.

This report contains information on the numbers and weights of fish collected, including fish of harvestable size of angler interest, and on the quality of the stream for fish as estimated by the Index of Biotic Integrity.

Fish populations integrate both chemical and physical perturbations which affect stream quality. Stream quality for fish is affected by the chemical and physical quality of the



water, the quality of the physical habitat and the variability of stream flow.

The Index of Biotic Integrity (IBI) assesses the health of a fish community using 12 fish community measures, or metrics, which fall into three broad categories: (1) species composition, (2) trophic composition, and (3) fish abundance and condition. The Illinois Department of Conservation (IDOC) and the Illinois Environmental Protection Agency (IEPA) have used the IBI to develop a five-tiered stream classification system predicated largely on the type and condition of the fishery resource. This five-tiered classification system will be used in this report to describe the stream quality of the Chicago Waterway System. The five categories of the stream classification system developed by the IDOC and the IEPA which describe stream quality as a function of IBI are:

Class A. Excellent stream quality for fish, IBI of 51 to 60, a unique aquatic resource, comparable to the best situations without human disturbance.

Class B. Good stream quality for fish, IBI of 41 to 50, a highly valued aquatic resource, a good sport fishery.

Class C. Fair stream quality for fish, IBI of 31 to 40, a moderate aquatic resource, a bullhead, sunfish, and carp fishery.

Class D. Poor stream quality for fish, IBI of 21 to 30, a limited aquatic resource, carp or other less desirable species support fishery.

Class E. Very poor stream quality for fish, IBI less than or equal to 20, a restricted use aquatic resource, no sport fishery, few fish of any species present.

#### 1990

Fourteen thousand one hundred thirty-three fish weighing 2,014 kilograms (4,431 pounds) comprised of 38 species were collected with electrofishing gear from the Chicago Waterway System from April to December 1990. These fish were distributed among the branches of the Waterway System as follows:

1. The North Shore Channel total catch was 8,612 fish (538 fish per sample) composed of 25 fish species. The total weight of the catch was 170 kilograms (11 kilograms per sample). The major

species by number was the bluntnose minnow and the major species by weight was the carp. Harvestable size fish included black bullhead, black crappie, bluegill, carp, green sunfish, largemouth bass, rock bass and white sucker.

2. The North Branch of the Chicago River total catch was 296 fish (37 fish per sample) composed of 16 fish species. The total weight of the catch was 102 kilograms (13 kilograms per sample). The major species by number was the goldfish and the major species by weight was the carp. Harvestable size fish included black bullhead, bluegill and carp.
  
3. The Chicago Sanitary and Ship Canal total catch was 1,602 fish (80 fish per sample) composed of 17 fish species. The total weight of the catch was 738 kilograms (37 kilograms per sample). The major species by number was the goldfish and the major species by weight was the carp. Harvestable size fish included black bullhead, bluegill, carp and largemouth bass.

4. The Calumet River total catch was 1,328 fish (166 fish per sample) composed of 20 fish species. The total weight of the catch was 231 kilograms (29 kilograms per sample). The major species by number was the gizzard shad and the major species by weight was the carp. Harvestable size fish included black crappie, bluegill, carp, green sunfish x bluegill hybrid, largemouth bass, white sucker.
  
5. The Little Calumet River total catch was 870 fish (109 fish per sample) composed of 14 fish species. The total weight of the catch was 236 kilograms (29 kilograms per sample). The major species by number was the emerald shiner and the major species by weight was the carp. Harvestable size fish included black bullhead and carp.
  
6. The Cal-Sag Channel total catch was 395 fish (49 fish per sample) composed of 14 fish species. The total weight of the catch was 64 kilograms (8 kilograms per sample). The major species by number was the green sunfish and the major

4. The Calumet River total catch was 1,328 fish (166 fish per sample) composed of 20 fish species. The total weight of the catch was 231 kilograms (29 kilograms per sample). The major species by number was the gizzard shad and the major species by weight was the carp. Harvestable size fish included black crappie, bluegill, carp, green sunfish x bluegill hybrid, largemouth bass, white sucker.
  
5. The Little Calumet River total catch was 870 fish (109 fish per sample) composed of 14 fish species. The total weight of the catch was 236 kilograms (29 kilograms per sample). The major species by number was the emerald shiner and the major species by weight was the carp. Harvestable size fish included black bullhead and carp.
  
6. The Cal-Sag Channel total catch was 395 fish (49 fish per sample) composed of 14 fish species. The total weight of the catch was 64 kilograms (8 kilograms per sample). The major species by number was the green sunfish and the major

species by weight was the carp. Harvestable size fish included the carp.

7. The Chicago River total catch was 1,027 fish (86 fish per sample) composed of 24 fish species. The total weight of the catch was 448 kilograms (37 kilograms per sample). The major species by number was the green sunfish and the major species by weight was the carp. Harvestable size fish included black bullhead, black crappie, bluegill, carp, green sunfish, green sunfish x bluegill hybrid, largemouth bass, pumpkinseed and rock bass.

The following conclusions can be reached as to the stream quality of the Chicago Waterway System based on the maximum IBI achieved at each sample location:

1. North Shore Channel: Stations 1 and 2 had maximum IBIs of 34 and 32 with a stream class rating of C. This upper portion of the North Shore Channel is a moderate aquatic resource with fair stream quality for fish. Stations 3 and 4, had maximum IBIs of 30 and 34 with a stream class rating of D and C. This lower

portion of the North Shore Channel is a moderate aquatic resource with fair stream quality for fish.

2. North Branch of the Chicago River: Stations 5 and 6 had maximum IBIs of 26 with a stream class rating of D. The North Branch of the Chicago River is a limited aquatic resource with poor stream quality for fish.
3. Chicago Sanitary and Ship Canal: Stations 7 to 11 had maximum IBIs of 20 to 30 with a stream class rating of D. The Chicago Sanitary and Ship Canal is a limited aquatic resource with poor stream quality for fish.
4. Calumet River: Stations 12 and 13 had maximum IBIs of 36 and 30 with a stream class rating of C and D. The Calumet River is a moderate aquatic resource with fair stream quality for fish.
5. Little Calumet River: Stations 14 and 15 had maximum IBIs of 32 and 20 with a stream class rating of C and D. The Little Calumet River is

a limited aquatic resource with poor stream quality for fish.

6. Cal-Sag Channel: Stations 16 and 17 had maximum IBIs of 22 and 30 with a stream class rating of D. The Cal-Sag Channel is a limited aquatic resource with poor stream quality for fish.
  
7. Chicago River: Stations 18 and 20 had maximum IBIs of 40 and 32 with a stream class rating of C. Station 19 had a maximum IBI of 28 with a stream class rating of D. In general, the Chicago River is a moderate aquatic resource with fair stream quality for fish.



## INTRODUCTION

In October 1987, the Metropolitan Water Reclamation District of Greater Chicago (District) and the Illinois Environmental Protection Agency (IEPA) submitted a joint proposal to the Illinois Pollution Control Board (IPCB) seeking to upgrade 11.1 miles of Chicago area waterways, change existing IPCB limitations for certain pollutants discharged from the Calumet and North Side Water Reclamation Plants (WRPs), and change the dissolved oxygen standard for the Cal-Sag Channel. Figure 1 shows the location of District WRPs, service areas, and major waterways within metropolitan Chicagoland. The IPCB ruled favorably on the joint District/IEPA petition in May 1988, but as a part of the ruling, the District was also required to conduct a comprehensive water quality study, as follows:

"The Metropolitan Sanitary District of Greater Chicago shall complete and submit a Comprehensive Water Quality Evaluation of the Chicago Waterway System and its influence on the Lower Des Plaines and Upper Illinois Rivers by January 15, 1992. Such evaluation shall include assessment of performance levels for the North Side, Calumet, and Stickney wastewater [sic] reclamation plants and the extent of sewer overflow reduction through the Metropolitan Sanitary District of Greater Chicago's Tunnel and Reservoir Plan (IPCB, 1988)."

The ruling stated that the evaluation should be conducted over the three-year period of January 1, 1989 through December 31, 1991.

# METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

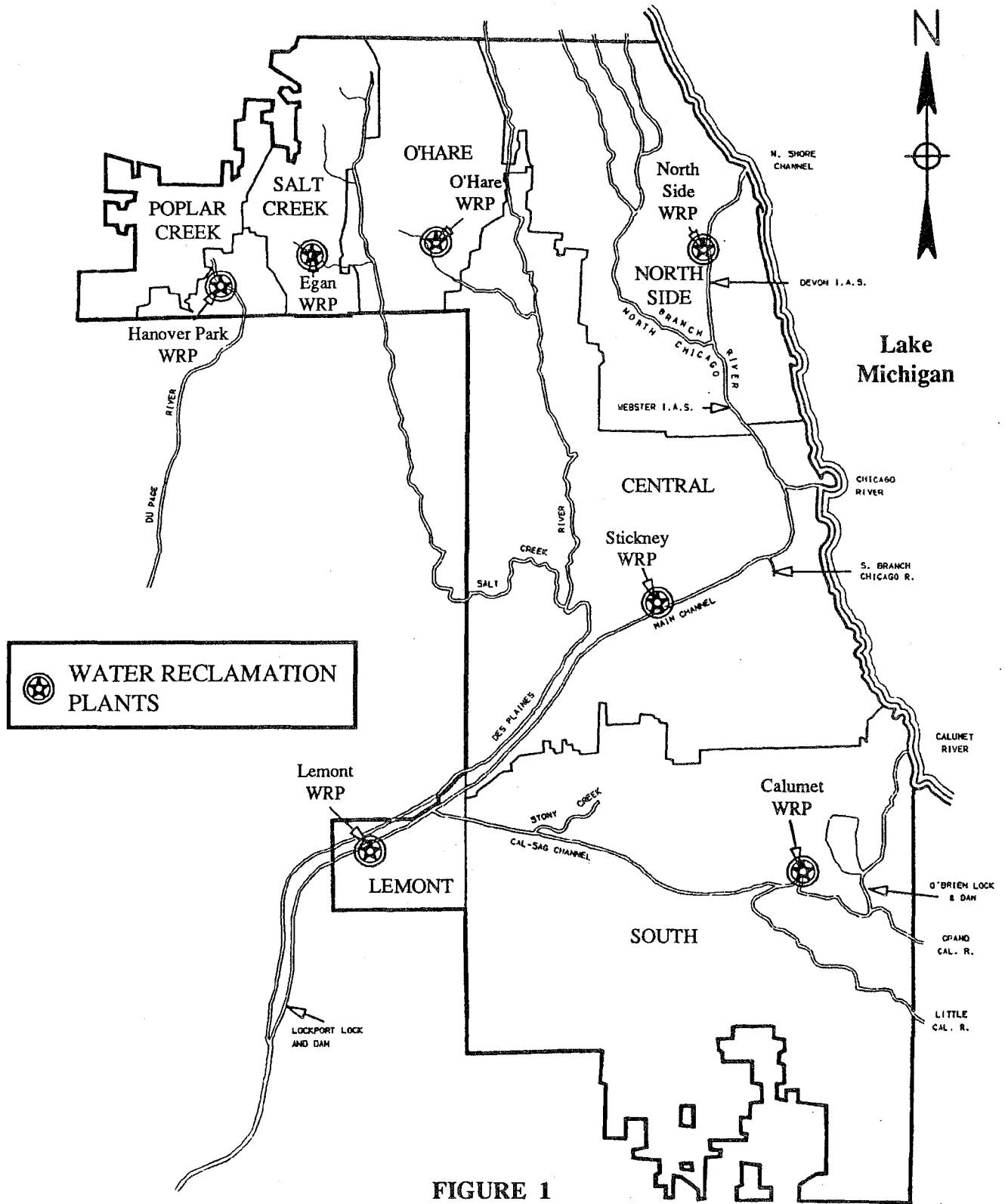


FIGURE 1

MAP OF MAJOR FACILITIES AND SERVICE AREAS

In implementing the IPCB's Ruling, the District engaged the services of three outside consultants to supplement District efforts and perform various aspects of the evaluation. Their reports, and separate District reports covering discrete aspects of the study, will be submitted to the IEPA.

The objective of this report is to present the results of fish collections from the District waterways and to describe the water quality of these waterways as reflected by their fish populations. Fish collections and analyses give the most meaningful index of water quality to the public. Fish occupy the upper levels of the aquatic food chain as the ultimate aquatic consumer. Therefore, changes in water quality that significantly affect the other kinds of organisms within the aquatic community will also affect the species composition and abundance of the fish population.

A knowledge of the assemblage of fish species in a stream and the numerical relationships of these species provides an excellent biological picture of the watercourse and its well-being. When such information is available over a long period of time, fish can be one of the most sensitive indicators of the quality of the aquatic environment.

## STUDY AREA

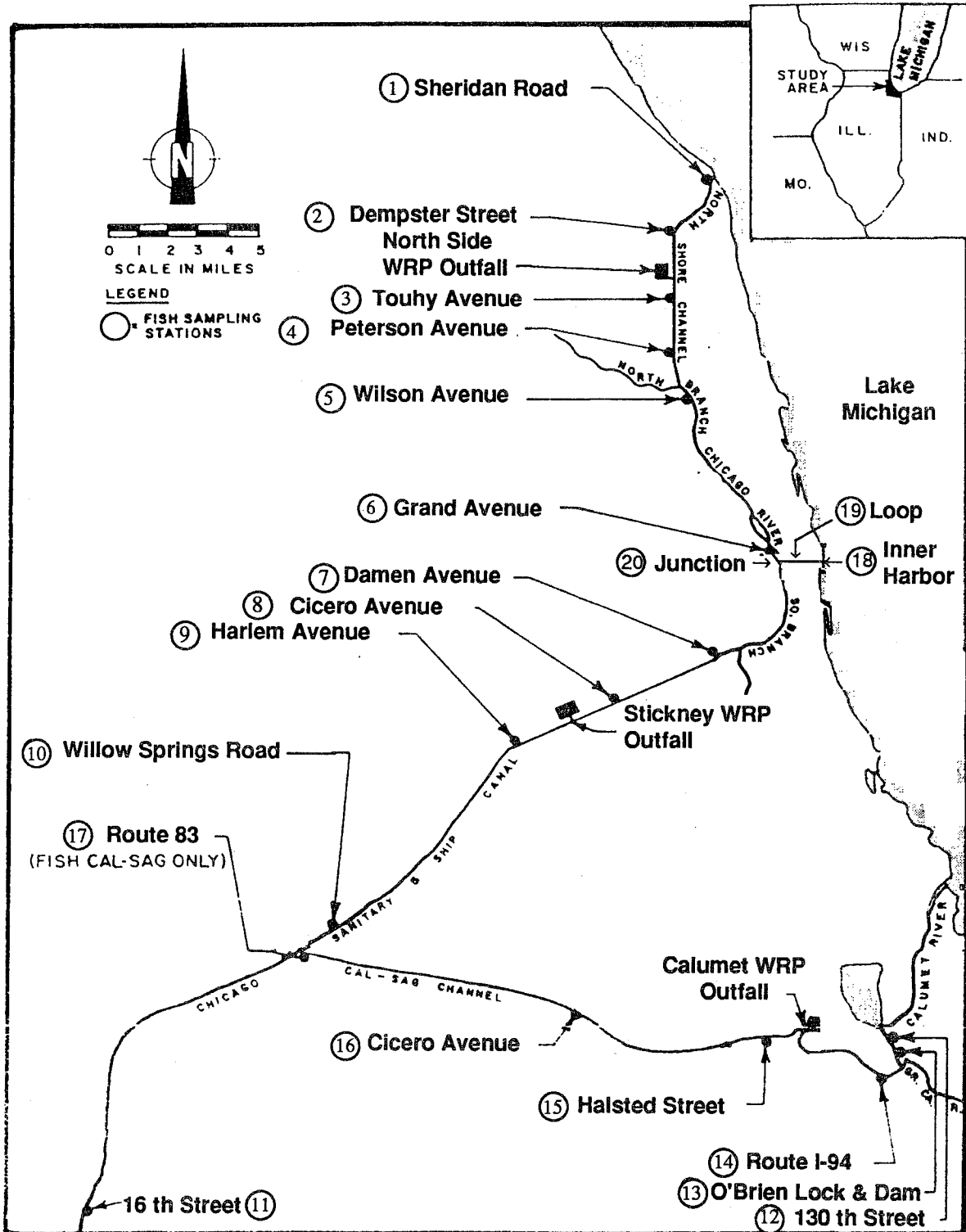
The study area is located in the Metropolitan Chicago Area in Northeastern Illinois (Figure 2). The Biology Section of the Research and Development Department collected fish by use of a boat electrofisher from 20 locations on the deep draft waterways in the Chicago Waterway System during 1990. A list of waterway fish sampling stations, including the distance of each station upstream or downstream from a major WRP is shown in Table 1.

The Chicago Waterway System, consisting of 82 miles of canals constructed during the period 1892 to 1928, as well as dredged deep draft portions of natural streams, is tributary to the Illinois River via the lower Des Plaines River.

THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

FIGURE 2

LOCATION OF SAMPLING STATIONS FOR FISH DURING 1990



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1

WATERWAY FISH SAMPLING STATIONS

FISH SAMPLING STATION NUMBER AND LOCATION	MILES FROM WATER RECLAMATION PLANT (WRP) OUTFALL
<u>North Shore Channel</u>	
<u>Miles From North Side WRP</u>	
1. Sheridan Road	6.3 Upstream
2. Dempster Street	1.7 Upstream
3. Touhy Avenue	1.0 Downstream
4. Peterson Avenue	2.7 Downstream
<u>North Branch Chicago River</u>	
5. Wilson Avenue	3.8 Downstream
6. Grand Avenue	10.3 Downstream
<u>Chicago Sanitary and Ship Canal</u>	
<u>Miles From Stickney WRP</u>	
7. Damen Avenue	5.2 Upstream
8. Cicero Avenue	1.2 Upstream
9. Harlem Avenue	1.8 Downstream
10. Willow Springs Road	7.9 Downstream
11. 16th Street, Lockport	23.7 Downstream
<u>Calumet River</u>	
<u>Miles From Calumet WRP</u>	
12. 130th Street	5.6 Upstream
13. O'Brien Lock and Dam	5.0 Upstream
<u>Little Calumet River</u>	
14. Route I-94	3.3 Upstream
15. Halsted Street	1.3 Downstream
<u>Cal-Sag Channel</u>	
16. Cicero Avenue	6.6 Downstream
17. Route 83	17.2 Downstream
<u>Chicago River</u>	
18. Inner Harbor	
19. Loop	
20. NBCR/SBCR Junction	

## MATERIALS AND METHODS

### Fish Collections

Fish were collected at a scheduled frequency of four times a year at each of 20 locations. The gear used to collect the fish was a boat mounted electrofisher. The electrofisher was powered by a 230-volt, 3,000-watt, 180-cycle, 3-phase, alternating-current generator. The water was electrified with 8 to 15 amps of current. Stunned fish were picked out of the water with long handled dip nets by either of two netters who were positioned on the bow of the boat.

In most cases, the section of canal sampled extended for 400 meters. Whenever possible, both sides of this canal section were electrofished. Total time of electrofishing (the time, in minutes, that the current was actually on) was noted for each collection.

Fish were identified to species, weighed to the nearest gram or ounce, measured for maximum standard length and maximum total length to the nearest millimeter, and checked for signs of parasites, disease or other anomalies. Generally, large fish were identified, weighed and measured at the sampling site and returned alive to the canal. Small fish were preserved in 10 percent (v/v) formalin and processed later in the laboratory.

## ABUNDANCE OF FISH

Catch per unit of effort by electrofishing is a useful, easily obtained index to the abundance of the populations of many fish species. This relative measure is more useful when applied to adult fish because of size selectivity. Data regarding the relative abundance of small fish are probably biased too low, but trends in the abundance of young fish can be monitored if electrofishing equipment and procedures are evaluated with this objective in mind (Reynolds, 1983).

In the present study, numbers and weights of fish collected per electrofishing sample are the catch per unit of effort data used for comparisons among the waterways. These data are listed along with the total numbers and weights of fish collected. For more detailed comparisons, the numbers and weights of fish collected per 30 minutes of electrofishing effort are listed for each separate collection at each location in the Appendix.

## SIZE OF FISH

Average, minimum and maximum total lengths (in millimeters) and weights (in grams) for each fish species may be compared with those species listed as being of harvestable size and therefore of interest to anglers (Table 2). These data are listed by the Illinois Department of Conservation (Bertrand, 1984).



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2

HARVESTABLE SIZE FISH IN ILLINOIS<sup>a</sup>

	<u>Minimum Total Length</u>		<u>Average Weight</u>	
	Inches	Millimeters	Pounds	Grams
Walleye-Sauger	12	305	1	454
Northern pike	18	457	3	1361
Black bass	10	254	1	454
Largemouth bass <sup>b</sup>	10	254		
Smallmouth bass	10	254		
Panfish			0.4	181
Sunfish	6	152		
Rock bass <sup>b</sup>	6	152		
Warmouth	6	152		
Hybrid sunfish <sup>b</sup>	6	152		
Green sunfish <sup>b</sup>	6	152		
Bluegill <sup>b</sup>	6	152		
Misc. sunfish	6	152		
Black bullhead <sup>b</sup>	7.5	191		
Yellow bullhead	7.5	191		
Brown bullhead	7.5	191		
Black crappie <sup>b</sup>	8	203		
White crappie	8	203		
White bass	8	203		
Yellow bass	8	203		
Channel catfish	12	305	1	454
Flathead catfish	12	305	1	454
Non-game			1.5	680
Carp <sup>b</sup>	12	305		
Drum	10	254		
Suckers <sup>b</sup>	12	305		
Smallmouth buffalo	12	305		
Bigmouth buffalo	12	305		
Black buffalo	12	305		
Golden redborse	12	305		
Silver redborse	12	305		
Shorthead redborse	12	305		
Paddlefish	24	610		
Yellow perch	10	254		

<sup>a</sup> From Bertrand, 1984.

<sup>b</sup> Species found in harvestable size in the Chicago Waterway System during 1990.

## INDEX OF BIOTIC INTEGRITY

The accurate assessment of biotic integrity requires a method that integrates biotic responses through an examination of patterns and process from individual to ecosystem levels. One tactic is to define an array of biological metrics much like the economic indicators used in econometric analyses. The Index of Biotic Integrity (IBI) developed by Karr (1981) and Karr et al. (1986) adopts this tactic, incorporating data from the study of entire fish communities in twelve metrics in three categories. The value of each metric is then compared to the value expected at a site located in a similar geographical region on a stream of similar size where human influences have been minimal (Weber 1981). Ratings of 5, 3, and 1 are assigned to each metric according to whether its value approximates, deviates somewhat from, or deviates strongly from the value expected at the relatively undisturbed site. The sampling site is then assigned to one of six quality classes based on the total of the 12 metric ratings. The highest score, 60, indicates a site without perturbation; sites of reduced quality have lower scores.

The calculation procedure for the IBI for use in Northeastern Illinois in the present study was obtained from the Illinois Environmental Protection Agency (Robert Schacht and Robert Hite, personal communication). The same procedure is being used by other investigators throughout the state for classifying the biotic integrity of Illinois streams. An

example of the calculation of the Index of Biotic Integrity is given in Table 3.

The Illinois Environmental Protection Agency (IEPA) gave these IBI scores qualitative labels so that they could be used for the classification of Illinois streams (IEPA, 1988, Hite and Bertrand, 1989). The biological stream characterization criteria for the classification of Illinois streams used by the IEPA are listed in Table 4. Because the metrics are differentially sensitive to various perturbations, for example siltation or toxic chemicals, as well as to various portions of the range of integrity, conditions at a site can be determined with considerable accuracy.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 3

AN EXAMPLE OF SCORING OF METRICS FOR CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR A FISH COLLECTION FROM THE NORTH SHORE CHANNEL AT SHERIDAN ROAD, WILMETTE ON JULY 19, 1990  
(Stream Order = 2, Northeast Illinois Basin)

IBI Metric	Sample Value	Score <sup>a</sup>
1. Total Number of Species	12	5
2. Number of Sucker Species	1	1
3. Number of Sunfish Species	4	5
4. Number of Darter Species	0	1
5. Number of Intolerant Species	1	1
6. Percent of Total As Green Sunfish	2.1	5
7. Percent of Individuals As Hybrids	0	5
8. Percent of Individuals Diseased or Abnormal	0.3	3
9. Percent of Omnivores	97.5	1
10. Percent of Insectivorous Cyprinids	0	1
11. Percent of Carnivores	0.3	1
12. Number of Fish Caught per Hour <sup>b</sup>	1660	<u>5</u>
IBI =		34

<sup>a</sup>Scores based on sample value ranges listed in Hite and Bertrand, 1989.

<sup>b</sup>Product of the number of fish per 30 minutes (830) multiplied by 2.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 4

BIOLOGICAL STREAM CHARACTERIZATION CRITERIA FOR THE CLASSIFICATION OF ILLINOIS STREAMS\*

Stream Class	Total IBI Score	Aquatic Resource Category	Stream Quality Description
A	51-60	Unique Aquatic Resource	EXCELLENT. Comparable to the best situations without human disturbance; threatened and endangered species may be present. All regionally expected species for the habitat and stream size, including the most tolerant forms, are present with a full array of age (size) classes; balanced trophic structure.
13 B	41-50	Highly Valued Aquatic Resource	GOOD. Sport Fishery: Good fishery for important gamefish species, such as walleye, sauger, smallmouth, spotted, or largemouth bass, northern pike, white bass, crappie, catfish, rock bass, or put and take trout fishery. Species richness may be somewhat below expectations for stream size or geographic region.
C	31-40	Moderate Aquatic Resource	FAIR. Fishery consists predominantly of bullhead, sunfish, and carp. Species diversity and number of intolerant fish reduced. Diverse forage community may be present. Trophic structure skewed with increased frequency of omnivores, green sunfish and/or tolerant species. Nursery or rearing area for common sport fish. Young of year or juveniles of above species common in fish samples.

Table continued on the following page.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 4 (Continued)

BIOLOGICAL STREAM CHARACTERIZATION CRITERIA FOR THE CLASSIFICATION OF ILLINOIS STREAMS\*

Stream Class	Total IBI Score	Aquatic Resource Category	Stream Quality Description
D	21-30	Limited Aquatic Resource	POOR. Carp or other less desirable species support fishery. Fish community dominated by omnivores and tolerant forms. Few if any fish of other species caught. Few if any young of year or juveniles of any sport species present.
E	≤ 20	Restricted Use Aquatic Resource	VERY POOR. Few fish of any species present. No sport fishery exists. No young of year or juveniles of sport species present.
		No fish	Repeated sampling finds no fish (from Karr <u>et al.</u> , 1986).

\*Classification as listed in Illinois Environmental Protection Agency, 1988, Hite and Bertrand, 1989, and Karr et al., 1986.

## RESULTS

### 1990

Fourteen thousand one hundred thirty-three fish weighing 2,014 kilograms (4,431 pounds) comprised of 38 species were collected with electrofishing gear from the Chicago Waterway System from April to December 1990. These fish were distributed among the branches of the Waterway System as follows: North Shore Channel - 8,612 fish, 25 species; North Branch of the Chicago River - 296 fish, 16 species; Chicago River - 1,027 fish, 24 species; Chicago Sanitary & Ship Canal - 1,602 fish, 17 species; Calumet River - 1,328 fish, 20 species, the Little Calumet River - 870 fish, 14 species, and the Cal-Sag Channel - 395 fish, 14 species.

#### NORTH SHORE CHANNEL

Abundance of Fish. Electrofishing results for the North Shore Channel fish catch are listed in Table 5 for number of fish collected and in Table 6 for weight of the total catch. Twenty-five fish species and a total of 8,612 fish were collected from the North Shore Channel.

Bluntnose minnows (3,801), fathead minnows (2,982), golden shiners (450) and goldfish (449) made up 89 percent of the fish collected from the North Shore Channel. Carp (70,353 grams), goldfish (42,037 grams), and carp x goldfish hybrids (47,308 grams) made up 69 percent of the weight of fish collected from the North Shore Channel.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 5

NUMBER OF FISH COLLECTED FROM THE NORTH SHORE CHANNEL  
DURING 1990

Fish Species	Total Number	Number Per Sample		
		Average	Minimum	Maximum
Alewife	255	15.94	0	192
Gizzard shad	97	6.06	0	24
Coho salmon	2	0.13	0	1
Rainbow smelt	18	1.13	0	14
Goldfish	449	28.06	0	205
Carp*	60	3.75	0	14
Carp x goldfish hybrid	90	5.63	0	19
Golden shiner	450	28.13	0	79
Emerald shiner	1	0.06	0	1
Spottail shiner	94	5.88	0	41
Bluntnose minnow	3801	237.56	0	2348
Fathead minnow	2982	186.38	0	1359
Longnose dace	4	0.25	0	2
White sucker*	5	0.31	0	2
Oriental weatherfish	3	0.19	0	2
Black bullhead*	12	0.75	0	2
Brook stickleback	4	0.25	0	1
Rock bass*	2	0.13	0	2
Green sunfish*	150	9.38	0	23
Pumpkinseed sunfish	5	0.31	0	1
Orangespotted sunfish	1	0.06	0	1
Bluegill*	63	3.94	0	24
Largemouth bass*	45	2.81	0	21
Black crappie*	13	0.81	0	6
Green sf. x pumpkinseed	2	0.13	0	1
Johnny darter	1	0.06	0	1
Yellow perch	3	0.19	0	2
Number of Fish:	8,612			
Number of Species:	25			
Number of Hybrids:	2			

\* Species found in harvestable size during 1990.



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 6

WEIGHT OF TOTAL CATCH OF FISH COLLECTED FROM THE NORTH SHORE CHANNEL  
DURING 1990

Fish Species	Total Weight (grams)	Weight (grams) Per Sample		
		Average	Minimum	Maximum
Alewife	673.32	42.08	0.00	304.86
Gizzard shad	14211.87	888.24	0.00	4791.00
Coho salmon	604.05	37.75	0.00	319.05
Rainbow smelt	14.40	0.90	0.00	9.50
Goldfish	14180.99	886.31	0.00	2152.00
Carp	70352.82	4397.05	0.00	26825.67
Carp x goldfish hybrid	47308.24	2956.77	0.00	13757.50
Golden shiner	1676.14	104.76	0.00	352.53
Emerald shiner	3.02	0.19	0.00	3.02
Spottail shiner	115.43	7.21	0.00	46.48
Bluntnose minnow	3827.73	239.23	0.00	1760.22
Fathead minnow	3459.02	216.19	0.00	1288.01
Longnose dace	4.04	0.25	0.00	1.50
White sucker	1989.68	124.36	0.00	963.50
Oriental weatherfish	6.92	0.43	0.00	6.02
Black bullhead	2281.00	142.56	0.00	434.50
Brook stickleback	9.31	0.58	0.00	3.32
Rock bass	175.14	10.95	0.00	175.14
Green sunfish	3133.17	195.82	0.00	883.13
Pumpkinseed sunfish	93.48	5.84	0.00	42.00
Orangespotted sunfish	10.58	0.66	0.00	10.58
Bluegill	2884.27	180.27	0.00	1097.00
Largemouth bass	1334.29	83.39	0.00	574.70
Black crappie	1466.30	91.64	0.00	1067.50
Green sf. x pumpkinseed	62.29	3.89	0.00	61.64
Johnny darter	0.77	0.05	0.00	0.77
Yellow perch	<u>43.50</u>	2.72	0.00	40.00
Total Weight of Fish Catch:	169,921.77			

Size of Fish. Average, minimum and maximum lengths and weights for fish collected from the North Shore Channel are listed in Table 7 and Table 8, respectively. Harvestable size fish included black bullhead (average of 227 mm total length, maximum of 240 mm), black crappie (maximum of 272 mm), bluegill (maximum of 177 mm), carp (average of 349 mm, maximum of 715 mm), green sunfish (maximum of 185 mm), largemouth bass (maximum of 333 mm), rock bass (maximum of 192 mm) and the white sucker (maximum of 394 mm).

Index of Biotic Integrity. The Index of Biotic Integrity for the North Shore Channel (Table 9) ranged from 18 (very poor stream quality, a restricted aquatic resource) to 34 (fair stream quality, a moderate aquatic resource).

#### NORTH BRANCH OF THE CHICAGO RIVER

Abundance of Fish. Electrofishing results for the North Branch of the Chicago River fish catch are listed in Table 10 for number of fish collected and in Table 11 for weight of the total catch. Sixteen fish species and a total of 296 fish were collected from the North Branch of the Chicago River.

Goldfish (83), carp (58), bluntnose minnow (27), gizzard shad (23) and carp x goldfish hybrids (23) made up 72 percent of the fish collected from the North Branch of the Chicago River. Carp (59,783 grams), goldfish (15,934 grams), and carp x

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 7

LENGTH OF FISH COLLECTED FROM THE NORTH SHORE CHANNEL  
DURING 1990

Fish Species	Number	Total Length (millimeters)		
		Average	Minimum	Maximum
Alewife	252	53	26	179
Black bullhead	12	227	192	240
Black crappie	13	183	90	272
Bluegill	63	123	28	177
Bluntnose minnow	3,791	42	20	93
Brook stickleback	4	54	48	60
Carp	60	349	56	715
Carp x goldfish	89	242	44	479
Coho salmon	2	312	312	312
Emerald shiner	1	74	74	74
Fathead minnow	2,982	43	22	82
Gizzard shad	97	225	86	362
Golden shiner	447	58	26	151
Goldfish	448	90	32	271
Green sunfish	149	90	21	185
Green sunfish x pumpkinseed	1	132	132	132
Johnny darter	1	43	43	43
Largemouth bass	45	82	46	333
Longnose dace	4	45	32	50
Orangespotted sunfish	1	75	75	75
Oriental weatherfish	3	59	48	68
Pumpkinseed	5	83	34	127
Pumpkinseed x green sunfish	1	34	34	34
Rainbow smelt	18	54	43	71
Rock bass	2	121	50	192
Spottail shiner	94	47	23	104
White sucker	5	282	60	394
Yellow perch	3	91	54	160

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 8

WEIGHT OF FISH COLLECTED FROM THE NORTH SHORE CHANNEL  
DURING 1990

Fish Species	Number	Individual Fish Weight (grams)		
		Average	Minimum	Maximum
Alewife	252	2.64	0.22	49
Black bullhead	12	190.08	122.00	233.5
Black crappie	13	112.79	11.15	321
Bluegill	63	45.78	0.53	100
Bluntnose minnow	3,791	1.01	0.07	12.1
Brook stickleback	4	2.33	1.19	3.32
Carp	60	1,172.55	3.72	5,057
Carp x goldfish	89	527.03	1.75	2,268
Coho salmon	2	302.03	285.00	319.05
Emerald shiner	1	3.02	3.02	3.02
Fathead minnow	2,982	1.16	0.10	7.58
Gizzard shad	97	146.51	7.41	557
Golden shiner	447	3.74	0.11	43
Goldfish	448	31.64	0.65	459
Green sunfish	149	20.94	0.21	176
Green sunfish x pumpkinseed	1	61.64	61.64	61.64
Johnny darter	1	0.77	0.77	0.77
Largemouth bass	45	29.66	1.61	569.5
Longnose dace	4	1.01	0.29	1.5
Orangespotted sunfish	1	10.58	10.58	10.58
Oriental weatherfish	3	2.31	0.90	3.9
Pumpkinseed	5	18.70	0.84	42
Pumpkinseed x green sunfish	1	0.65	0.65	0.65
Rainbow smelt	18	0.8	0.30	1.6
Rock bass	2	87.57	3.14	172
Spottail shiner	94	1.23	0.16	9
White sucker	5	397.94	3.18	743
Yellow perch	3	14.5	1.49	40

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 9

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR  
THE NORTH SHORE CHANNEL DURING 1990

IBI Metric	Average	Minimum	Maximum
Number of Species Per Sample	9	4	14
Number of Sucker Species	0.3	0	1
Number of Sunfish Species	2.4	0	4
Number of Darter Species	0.1	0	1
Number of Intolerant Species	0.4	0	2
Percent of Total as Green Sunfish	7.1	0	42.9
Percent of Individuals as Hybrids	5.9	0	18.2
Percent Diseased	3.69	0	14.3
Percent of Omnivores	73.9	14.3	98
Percent of Insectivorous Cyprinids	1.6	0	14.3
Percent of Carnivores	4.4	0	21.4
Total Abundance	538.6	7	3871
Electrofishing time (minutes)	43	35	50
Stream Order	2	2	2
Stream Basin	2	2	2
Species Metric Factor	3.5	1	5
Sucker Metric Factor	1	1	1
Sunfish Metric Factor	4.4	1	5
Darter Metric Factor	1	1	1
Intolerant Metric Factor	1.3	1	3
Green Metric Factor	4	1	5
Hybrid Metric Factor	2.1	1	5
Disease Metric Factor	2.6	1	5
Omnivore Metric Factor	1.4	1	5
Insectivorous Metric Factor	1	1	1
Carnivore Metric Factor	2.5	1	5
Abundance Metric Factor	3.1	1	5
Index of Biotic Integrity (IBI)	27.9	18	34

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 10

NUMBER OF FISH COLLECTED FROM THE NORTH BRANCH OF THE CHICAGO RIVER  
DURING 1990

Fish Species	Total Number	Number Per Sample		
		Average	Minimum	Maximum
Alewife	4	0.50	0	3
Gizzard shad	23	2.88	0	7
Goldfish	83	10.38	0	35
Carp*	58	7.25	2	14
Carp x goldfish hybrid	23	2.88	0	7
Golden shiner	9	1.13	0	5
Emerald shiner	6	0.75	0	4
Spottail shiner	3	0.38	0	3
Bluntnose minnow	27	3.38	0	23
Black bullhead*	6	0.75	0	2
Yellow bullhead	1	0.13	0	1
Threespine stickleback	1	0.13	0	1
Green sunfish	17	2.13	0	6
Orangespotted sunfish	1	0.13	0	1
Bluegill*	18	2.25	0	4
Largemouth bass	9	1.13	0	5
Black crappie	4	0.50	0	1
Green sf. x bluegill	2	0.25	0	1
Pumpkinseed x bluegill	1	0.13	0	1
Number of Fish:	296			
Number of Species:	16			
Number of Hybrids:	3			

\* Species found in harvestable size during 1990.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 11

WEIGHT OF TOTAL CATCH OF FISH COLLECTED FROM THE NORTH BRANCH OF THE CHICAGO RIVER  
DURING 1990

Fish Species	Total Weight (grams)	Weight (grams) Per Sample		
		Average	Minimum	Maximum
Alewife	140.96	17.62	0.00	108.96
Gizzard shad	2331.18	291.40	0.00	804.94
Goldfish	15934.19	1991.77	0.00	5509.35
Carp	59783.22	7472.90	1956.15	14024.38
Carp x goldfish hybrid	21052.80	2631.60	0.00	5656.95
Golden shiner	248.80	31.10	0.00	93.27
Emerald shiner	24.25	3.03	0.00	16.96
Spottail shiner	11.20	1.40	0.00	11.20
Bluntnose minnow	85.74	10.72	0.00	67.50
Black bullhead	999.50	124.94	0.00	421.00
Yellow bullhead	22.24	2.78	0.00	22.24
Threespine stickleback	3.08	0.39	0.00	3.08
Green sunfish	321.44	40.18	0.00	76.50
Orangespotted sunfish	10.38	1.30	0.00	10.38
Bluegill	855.99	107.00	0.00	211.50
Largemouth bass	115.25	14.41	0.00	60.90
Black crappie	135.00	16.88	0.00	45.00
Green sf. x bluegill	119.56	14.95	0.00	75.00
Pumpkinseed x bluegill	<u>2.46</u>	0.31	0.00	2.46
Total Weight of Fish Catch:	102,197.24			

goldfish hybrids (21,053 grams) made up 95 percent of the weight of fish collected from the North Branch of the Chicago River.

Size of Fish. Average, minimum and maximum lengths and weights for fish collected from the North Branch of the Chicago River are listed in Table 12 and Table 13, respectively. Harvestable size fish included black bullhead (average of 215 mm, maximum of 255 mm), bluegill (maximum of 174 mm total length) and carp (average of 374 mm, maximum of 583 mm).

Index of Biotic Integrity. The Index of Biotic Integrity for the North Shore Channel and North Branch of the Chicago River (Table 14) ranged from 18 (very poor stream quality, a restricted aquatic resource) to 26 (poor stream quality, a limited aquatic resource).

#### CHICAGO SANITARY AND SHIP CANAL

Abundance of Fish. Electrofishing results for the Chicago Sanitary and Ship Canal fish catch are listed in Table 15 for number of fish collected and in Table 16 for weight of the total catch. Seventeen fish species and a total of 1,602 fish were collected the Chicago Sanitary and Ship Canal.

Goldfish (664) and carp (534) made up 75 percent of the fish collected from the Chicago Sanitary and Ship Canal. Carp (642,718 grams), goldfish (78,991 grams), and carp x goldfish hybrids (10,021 grams) made up 99 percent of the weight of fish collected from the Chicago Sanitary and Ship Canal.



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 12

LENGTH OF FISH COLLECTED FROM THE NORTH BRANCH OF THE CHICAGO RIVER  
DURING 1990

Fish Species	Number	Total Length (millimeters)		
		Average	Minimum	Maximum
Alewife	3	171	164	176
Black bullhead	6	215	181	255
Black crappie	4	137	119	150
Bluegill	18	119	42	174
Bluntnose minnow	27	63	50	80
Carp	56	374	106	583
Carp x goldfish	23	355	274	466
Emerald shiner	6	74	46	87
Gizzard shad	23	193	97	267
Golden shiner	9	120	60	175
Goldfish	81	192	91	275
Green sunfish	17	90	52	131
Green sunfish x bluegill	2	135	119	150
Largemouth bass	9	89	37	140
Orangespotted sunfish	1	74	74	74
Pumpkinseed x bluegill	1	49	49	49
Spottail shiner	3	73	68	78
Threespine stickleback	1	68	68	68
Yellow bullhead	1	116	116	116

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 13

WEIGHT OF FISH COLLECTED FROM THE NORTH BRANCH OF THE CHICAGO RIVER  
DURING 1990

Fish Species	Number	Individual Fish Weight (grams)		
		Average	Minimum	Maximum
Alewife	3	40.11	32.00	46.5
Black bullhead	6	166.58	100.50	280
Black crappie	4	33.75	20.00	45
Bluegill	18	47.56	1.20	136
Bluntnose minnow	27	3.18	1.27	6.24
Carp	56	1,055.18	25.05	2,920.05
Carp x goldfish	23	915.34	392.00	1,796.5
Emerald shiner	6	4.04	0.78	6.51
Gizzard shad	23	101.36	11.26	258
Golden shiner	9	27.64	2.85	76.5
Goldfish	81	195.48	16.35	590
Green sunfish	17	18.91	3.50	43
Green sunfish x bluegill	2	59.78	44.56	75
Largemouth bass	9	12.81	0.88	39
Orangespotted sunfish	1	10.38	10.38	10.38
Pumpkinseed x bluegill	1	2.46	2.46	2.46
Spottail shiner	3	3.73	2.95	4.6
Threespine stickleback	1	3.08	3.08	3.08
Yellow bullhead	1	22.24	22.24	22.24

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 14

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR  
THE NORTH BRANCH OF THE CHICAGO RIVER DURING 1990

IBI Metric	Average	Minimum	Maximum
Number of Species Per Sample	6.8	5	9
Number of Sucker Species	0.0	0	0
Number of Sunfish Species	2.4	2	4
Number of Darter Species	0.0	0	0
Number of Intolerant Species	0.1	0	1
Percent of Total as Green Sunfish	8.0	0.0	30.0
Percent of Individuals as Hybrids	9.1	0.0	17.4
Percent Disease	15.7	2.4	30.0
Percent of Omnivores	63.9	20.0	85.5
Percent of Insectivorous Cyprinids	2.6	0.0	9.5
Percent of Carnivores	5.3	0.0	10.9
Total Abundance	37.0	16	55
Electrofishing time (minutes)	40	34	45
Order	3	3	3
Basin	2	2	2
Species Metric Factor	2.3	1	3
Sucker Metric Factor	1.0	1	1
Sunfish Metric Factor	3.5	3	5
Darter Metric Factor	1.0	1	1
Intolerant Metric Factor	1.0	1	1
Green Metric Factor	4.3	1	5
Hybrid Metric Factor	1.5	1	5
Disease Metric Factor	1.0	1	1
Omnivore Metric Factor	1.5	1	3
Insectivorous Metric Factor	1.0	1	1
Carnivore Metric Factor	3.5	1	5
Abundance Metric Factor	1.0	1	1
Index of Biotic Integrity (IBI)	23	18	26

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 15

NUMBER OF FISH COLLECTED FROM THE CHICAGO SANITARY AND SHIP CANAL  
DURING 1990

Fish Species	Total Number	Number Per Sample		
		Average	Minimum	Maximum
Alewife	1	0.05	0	1
Gizzard shad	20	1	0	8
Rainbow smelt	1	0.05	0	1
Central mudminnow	1	0.05	0	1
Goldfish	664	33.2	0	306
Carp*	534	26.7	4	130
Carp x goldfish hybrid	10	0.5	0	5
Golden shiner	21	1.05	0	6
Emerald shiner	14	0.7	0	8
Spottail shiner	2	0.1	0	1
Bluntnose minnow	237	11.85	0	77
Fathead minnow	11	0.55	0	9
Black bullhead*	17	0.85	0	4
Green sunfish	38	1.9	0	24
Pumpkinseed sunfish	2	0.1	0	1
Bluegill*	9	0.45	0	4
Largemouth bass*	19	0.95	0	7
Black crappie	1	0.05	0	1
Number of Fish:	1,602			
Number of Species:	17			
Number of Hybrids:	1			

\* Species found in harvestable size during 1990.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 16

WEIGHT OF TOTAL CATCH OF FISH COLLECTED FROM THE CHICAGO SANITARY AND SHIP CANAL  
DURING 1990

Fish Species	Total Weight (grams)	Weight (grams) Per Sample		
		Average	Minimum	Maximum
Alewife	0.49	0.02	0.00	0.49
Gizzard shad	887.74	44.39	0.00	290.00
Rainbow smelt	2.30	0.12	0.00	2.30
Central mudminnow	5.50	0.28	0.00	5.50
Goldfish	78991.01	3949.55	0.00	33019.24
Carp	642718.07	32135.90	2898.15	140282.31
Carp x goldfish hybrid	10021.02	501.05	0.00	3855.60
Golden shiner	543.49	27.17	0.00	197.07
Emerald shiner	65.20	3.26	0.00	46.88
Spottail shiner	6.28	0.31	0.00	4.24
Bluntnose minnow	778.19	38.91	0.00	161.30
Fathead minnow	57.71	2.89	0.00	47.65
Black bullhead	2832.00	141.60	0.00	634.00
Green sunfish	205.52	10.28	0.00	106.85
Pumpkinseed sunfish	56.00	2.80	0.00	45.00
Bluegill	421.85	21.09	0.00	293.64
Largemouth bass	855.54	42.78	0.00	373.23
Black crappie	<u>42.53</u>	2.13	0.00	42.53
Total Weight of Fish Catch:	738,490.44			

Size of Fish. Average, minimum and maximum lengths and weights for fish collected from the Chicago Sanitary and Ship Canal are listed in Table 17 and Table 18, respectively. Harvestable size fish included black bullhead (average of 221 mm total length, maximum of 275 mm), bluegill (maximum of 174 mm), carp (average of 376 mm, maximum of 749 mm) and largemouth bass (maximum of 265 mm).

Index of Biotic Integrity. The Index of Biotic Integrity for the Chicago Sanitary and Ship Canal (Table 19) ranged from 18 (very poor stream quality, a restricted aquatic resource) to 30 (poor stream quality, a limited aquatic resource).

#### CALUMET RIVER

Abundance of Fish. Electrofishing results for the Calumet River fish catch are listed in Table 20 for number of fish collected and in Table 21 for weight of the total catch. Twenty fish species and a total of 1,328 fish were collected from the Calumet River.

Gizzard shad (487), emerald shiner (235), white perch (133), green sunfish (115), and bluntnose minnow (114) made up 81 percent of the fish collected from the Calumet River. Carp (138,152 grams), gizzard shad (32,745 grams), chinook salmon (25,912 grams), and largemouth bass (12,640 grams) made up 91 percent of the weight of fish collected from the Calumet River.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 17

LENGTH OF FISH COLLECTED FROM THE CHICAGO SANITARY AND SHIP CANAL  
DURING 1990

Fish Species	Number	Total Length (millimeters)		
		Average	Minimum	Maximum
Alewife	1	40	40	40
Black bullhead	17	221	191	275
Black crappie	1	157	157	157
Bluegill	9	122	61	174
Bluntnose minnow	237	61	35	97
Carp	527	376	63	749
Carp x goldfish	9	350	159	462
Central mudminnow	1	88	88	88
Emerald shiner	14	80	60	97
Fathead minnow	11	70	60	81
Gizzard shad	20	139	81	303
Golden shiner	21	117	50	153
Goldfish	660	159	54	301
Green sunfish	38	55	30	150
Largemouth bass	18	111	60	265
Pumpkinseed	2	101	80	121
Rainbow smelt	1	66	66	66
Spottail shiner	2	72	67	77

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 18

WEIGHT OF FISH COLLECTED FROM THE CHICAGO SANITARY AND SHIP CANAL  
DURING 1990

Fish Species	Number	Individual Fish Weight (grams)		
		Average	Minimum	Maximum
Alewife	1	0.49	0.49	0.49
Black bullhead	17	166.59	94.00	302
Black crappie	1	42.53	42.53	42.53
Bluegill	9	46.87	4.71	120
Bluntnose minnow	237	3.28	0.30	12.71
Carp	527	1,201.78	4.39	7,399.35
Carp x goldfish	9	1,023.70	75.68	1,672.65
Central mudminnow	1	5.5	5.50	5.5
Emerald shiner	14	4.66	1.60	8.16
Fathead minnow	11	5.25	3.18	7
Gizzard shad	20	44.39	6.99	290
Golden shiner	21	25.88	1.22	50.96
Goldfish	660	118.91	3.02	725
Green sunfish	38	5.41	0.19	59
Largemouth bass	18	33.90	3.09	206
Pumpkinseed	2	28	11.00	45
Rainbow smelt	1	2.3	2.30	2.3
Spottail shiner	2	3.14	2.04	4.24



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 19

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR  
THE CHICAGO SANITARY AND SHIP CANAL DURING 1990

IBI Metric	Average	Minimum	Maximum
Number of Species Per Sample	6	2	12
Number of Species Per Sample	5.3	3	11
Number of Sucker Species	0	0	0
Number of Sunfish Species	0.8	0	2
Number of Darter Species	0	0	0
Number of Intolerant Species	0.1	0	1
Percent of Total as Green Sunfish	6.1	0	68.6
Percent of Individuals as Hybrids	0.3	0	2.5
Percent Disease	21.1	2.1	46.7
Percent of Omnivores	88.1	25.7	100
Percent of Insectivorous Cyprinids	1.8	0	20.5
Percent of Carnivores	1.3	0	5.5
Total Abundance	80.1	8	490
Electrofishing time (minutes)	36	31	47
Order	3	3	4
Basin	2	2	2
Species Metric Factor	1.4	1	3
Sucker Metric Factor	1	1	1
Sunfish Metric Factor	1.3	1	3
Darter Metric Factor	1	1	1
Intolerant Metric Factor	1	1	1
Green Metric Factor	4.4	1	5
Hybrid Metric Factor	4.4	1	5
Disease Metric Factor	1	1	1
Omnivore Metric Factor	1.1	1	3
Insectivorous Metric Factor	1.1	1	3
Carnivore Metric Factor	1.9	1	5
Abundance Metric Factor	1.9	1	5
Index of Biotic Integrity (IBI)	22	18	30

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 20

NUMBER OF FISH COLLECTED FROM THE CALUMET RIVER  
DURING 1990

Fish Species	Total Number	Number Per Sample		
		Average	Minimum	Maximum
Alewife	41	5.13	0	27
Gizzard shad	487	60.88	5	138
Chinook salmon	5	0.63	0	3
Rainbow smelt	1	0.13	0	1
Goldfish	9	1.13	0	6
Carp*	69	8.63	2	17
Carp x goldfish hybrid	4	0.50	0	2
Golden shiner	2	0.25	0	1
Emerald shiner	235	29.38	0	223
Spottail shiner	1	0.13	0	1
Sand shiner	1	0.13	0	1
Bluntnose minnow	114	14.25	0	51
Fathead minnow	24	3.00	0	23
White sucker*	5	0.63	0	4
White perch	125	15.63	0	65
Green sunfish	115	14.38	0	78
Pumpkinseed sunfish	11	1.38	0	3
Bluegill*	27	3.38	0	7
Largemouth bass*	40	5.00	1	13
Black crappie*	2	0.25	0	1
Green sf x orangespotted	1	0.13	0	1
Green sf. x pumpkinseed	1	0.13	0	1
Green sf. x bluegill*	3	0.38	0	2
Pumpkinseed x bluegill	1	0.13	0	1
Yellow perch	4	0.50	0	2
Number of Fish:	1,328			
Number of Species:	20			
Number of Hybrids:	5			

\* Species found in harvestable size during 1990.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 21

WEIGHT OF TOTAL CATCH OF FISH COLLECTED FROM THE CALUMET RIVER  
DURING 1990

Fish Species	Total Weight (grams)	Weight (grams) Per Sample		
		Average	Minimum	Maximum
Alewife	1888.56	236.07	0.00	1471.50
Gizzard shad	32744.98	4093.12	1170.87	7731.27
Chinook salmon	25911.90	3238.99	0.00	16924.95
Rainbow smelt	4.00	0.50	0.00	4.00
Goldfish	1928.00	241.00	0.00	1305.00
Carp	138151.60	17268.95	2268.00	39785.50
Carp x goldfish hybrid	3325.05	415.63	0.00	1956.15
Golden shiner	67.50	8.44	0.00	51.00
Emerald shiner	1303.44	162.93	0.00	1235.88
Spottail shiner	11.64	1.46	0.00	11.64
Sand shiner	1.09	0.14	0.00	1.09
Bluntnose minnow	264.02	33.00	0.00	113.68
Fathead minnow	73.04	9.13	0.00	70.48
White sucker	2776.97	347.12	0.00	2476.97
White perch	6674.78	834.35	0.00	3768.84
Green sunfish	1155.93	144.49	0.00	732.41
Pumpkinseed sunfish	279.50	34.94	0.00	95.88
Bluegill	1017.60	127.20	0.00	355.65
Largemouth bass	12640.48	1580.06	286.00	3601.50
Black crappie	200.50	25.06	0.00	126.50
Green sf x orangespotted	11.72	1.47	0.00	11.72
Green sf. x pumpkinseed	66.00	8.25	0.00	66.00
Green sf. x bluegill	132.49	16.56	0.00	85.00
Pumpkinseed x bluegill	57.18	7.15	0.00	57.18
Yellow perch	<u>144.47</u>	18.06	0.00	100.24
Total Weight of Fish Catch:	230832.44			

Size of Fish. Average, minimum and maximum lengths and weights for fish collected from the Calumet River are listed in Table 22 and Table 23, respectively. Harvestable size fish included black crappie (maximum of 207 mm total length), bluegill (maximum of 152 mm), carp (average of 492 mm, maximum of 765 mm), green sunfish x bluegill hybrid (maximum of 166 mm), largemouth bass (maximum of 404 mm), white sucker (average of 331 mm, maximum of 430 mm).

Index of Biotic Integrity. The Index of Biotic Integrity for the Calumet River (Table 24) ranged from 26 (poor stream quality, a restricted aquatic resource) to 36 (fair stream quality, a limited aquatic resource).

#### LITTLE CALUMET RIVER

Abundance of Fish. Electrofishing results for the Little Calumet River fish catch are listed in Table 25 for number of fish collected and in Table 26 for weight of the total catch. Fourteen fish species and a total of 236 fish were collected from the Little Calumet River.

Emerald shiner (256), gizzard shad (194), goldfish (153) carp (107), and white perch (92) made up 92 percent of the fish collected from the Little Calumet River. Carp (172,289 grams), goldfish (33,791 grams), and carp x goldfish hybrids (14,272 grams) made up 93 percent of the weight of fish collected from the Little Calumet River.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 22

LENGTH OF FISH COLLECTED FROM THE CALUMET RIVER  
DURING 1990

Fish Species	Number	Total Length (millimeters)		
		Average	Minimum	Maximum
Alewife	41	172	55	203
Black crappie	2	195	182	207
Bluegill	27	116	40	152
Bluntnose minnow	114	55	28	96
Carp	69	492	292	765
Carp x goldfish	4	377	301	425
Chinook salmon	5	794	575	885
Emerald shiner	234	88	66	118
Fathead minnow	24	61	40	78
Gizzard shad	487	165	45	371
Golden shiner	2	142	129	155
Goldfish	9	216	183	257
Green sunfish	115	74	46	130
Green sunfish x bluegill	3	123	77	166
Green sunfish x orangespot	1	81	81	81
Green sunfish x pumpkinseed	1	145	145	145
Largemouth bass	40	232	63	404
Pumpkinseed	11	95	52	143
Pumpkinseed x bluegill	1	135	135	135
Rainbow smelt	1	81	81	81
Sand shiner	1	53	53	53
Spottail shiner	1	104	104	104
White sucker	5	331	205	430
White perch	125	150	72	230
Yellow perch	4	146	128	177

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 23

WEIGHT OF FISH COLLECTED FROM THE CALUMET RIVER  
DURING 1990

Fish Species	Number	Individual Fish Weight (grams)		
		Average	Minimum	Maximum
Alewife	41	46.06	1.88	73.62
Black crappie	2	100.25	74.00	126.5
Bluegill	27	37.69	0.95	76.78
Bluntnose minnow	114	2.32	0.25	11.11
Carp	69	2,002.20	390.00	7,351
Carp x goldfish	4	831.26	405.00	1,190.7
Chinook salmon	5	5,182.38	1,644.30	7,342.65
Emerald shiner	234	5.54	2.99	15
Fathead minnow	24	3.04	0.70	5.66
Gizzard shad	487	67.24	0.66	555
Golden shiner	2	33.75	16.50	51
Goldfish	9	214.22	115.00	335
Green sunfish	115	10.05	2.00	47.5
Green sunfish x bluegill	3	44.16	7.49	85
Green sunfish x orangespot	1	11.72	11.72	11.72
Green sunfish x pumpkinseed	1	66	66.00	66
Largemouth bass	40	316.01	3.92	1,020.6
Pumpkinseed	11	25.41	3.00	58
Pumpkinseed x bluegill	1	57.18	57.18	57.18
Rainbow smelt	1	4	4.00	4
Sand shiner	1	1.09	1.09	1.09
Spottail shiner	1	11.64	11.64	11.64
White sucker	5	555.39	100.52	1,332.45
White perch	125	53.40	4.00	190
Yellow perch	4	36.12	20.35	59.5

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 24

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR  
THE CALUMET RIVER DURING 1990

IBI Metric	Average	Minimum	Maximum
Number of Species Per Sample	9.0	7	11
Number of Sucker Species	0.3	0	1
Number of Sunfish Species	2.5	1	3
Number of Darter Species	0.0	0	0
Number of Intolerant Species	0.5	0	2
Percent of Total as Green Sunfish	9.2	0.0	41.5
Percent of Individuals as Hybrids	0.9	0.0	2.8
Percent Disease	5.0	0.0	13.9
Percent of Omnivores	61.4	29.9	83.0
Percent of Insectivorous Cyprinids	9.6	0.0	52.0
Percent of Carnivores	14.2	1.6	25.3
Total Abundance	166.0	36	431
Electrofishing time (minutes)	34	28	40
Stream Order	3	3	3
Stream Basin	2	2	2
Species Metric Factor	3.0	3	3
Sucker Metric Factor	1.0	1	1
Sunfish Metric Factor	4.0	1	5
Darter Metric Factor	1.0	1	1
Intolerant Metric Factor	1.3	1	3
Green Metric Factor	4.0	1	5
Hybrid Metric Factor	3.0	1	5
Disease Metric Factor	2.0	1	5
Omnivore Metric Factor	1.3	1	3
Insectivorous Metric Factor	1.5	1	5
Carnivore Metric Factor	4.5	3	5
Abundance Metric Factor	4.0	1	5
Index of Biotic Integrity (IBI)	31	26	36

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 25

NUMBER OF FISH COLLECTED FROM THE LITTLE CALUMET RIVER  
DURING 1990

Fish Species	Total Number	Number Per Sample		
		Average	Minimum	Maximum
Gizzard shad	194	24.25	0	88
Goldfish	153	19.13	1	63
Carp*	107	13.38	1	32
Carp x goldfish hybrid	11	1.38	0	4
Golden shiner	17	2.13	0	11
Emerald shiner	256	32.00	0	252
Spottail shiner	7	0.88	0	4
Bluntnose minnow	1	0.13	0	1
Fathead minnow	1	0.13	0	1
Black bullhead*	6	0.75	0	3
White perch	92	11.50	0	39
Green sunfish	4	0.50	0	3
Pumpkinseed sunfish	18	2.25	0	8
Bluegill	2	0.25	0	1
Largemouth bass	<u>1</u>	0.13	0	1
Number of Fish:	870			
Number of Species:	14			
Number of Hybrids:	1			

\* Species found in harvestable size during 1990.



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 26

WEIGHT OF TOTAL CATCH OF FISH COLLECTED FROM THE LITTLE CALUMET RIVER  
DURING 1990

Fish Species	Total Weight (grams)	Weight (grams) Per Sample		
		Average	Minimum	Maximum
Gizzard shad	14271.59	1783.95	0.00	6393.05
Goldfish	33791.16	4223.90	438.00	13413.23
Carp	172288.80	21536.10	1672.65	53133.00
Carp x goldfish hybrid	9496.85	1187.11	0.00	3601.00
Golden shiner	324.42	40.55	0.00	162.05
Emerald shiner	1389.33	173.67	0.00	1357.52
Spottail shiner	68.72	8.59	0.00	40.75
Bluntnose minnow	8.36	1.05	0.00	8.36
Fathead minnow	2.00	0.25	0.00	2.00
Black bullhead	832.50	104.06	0.00	525.00
White perch	2738.90	342.36	0.00	1004.82
Green sunfish	34.57	4.32	0.00	29.47
Pumpkinseed sunfish	590.13	73.77	0.00	296.24
Bluegill	72.00	9.00	0.00	42.00
Largemouth bass	<u>63.89</u>	7.99	0.00	63.89
Total Weight of Fish Catch:	235973.22			

Size of Fish. Average, minimum and maximum lengths and weights for fish collected from the Little Calumet River are listed in Table 27 and Table 28, respectively. Harvestable size fish included black bullhead (average of 207 mm, maximum of 243 mm total length) and carp (average of 445 mm, maximum of 775 mm).

Index of Biotic Integrity. The Index of Biotic Integrity for the Little Calumet River (Table 29) ranged from 16 (very poor stream quality, a restricted aquatic resource) to 32 (poor stream quality, a limited aquatic resource).

#### CAL-SAG CHANNEL

Abundance of Fish. Electrofishing results for the Cal-Sag Channel fish catch are listed in Table 30 for number of fish collected and in Table 31 for weight of the total catch. Fourteen fish species and a total of 395 fish were collected from the Cal-Sag Channel.

Green sunfish (159), goldfish (63), bluegill (51), gizzard shad (49) and carp (42) made up 92 percent of the fish collected from the Cal-Sag Channel. Carp (44,996 grams), goldfish (8,881 grams) and carp x goldfish hybrids (4,585 grams) made up 91 percent of the weight of fish collected from the Cal-Sag Channel.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 27

LENGTH OF FISH COLLECTED FROM THE LITTLE CALUMET RIVER  
DURING 1990

Fish Species	Number	Total Length (millimeters)		
		Average	Minimum	Maximum
Black bullhead	6	207	154	243
Bluegill	2	122	115	129
Bluntnose minnow	1	86	86	86
Carp	106	445	242	775
Carp x goldfish	11	369	288	445
Emerald shiner	255	86	59	113
Fathead minnow	1	49	49	49
Gizzard shad	193	178	56	313
Golden shiner	17	107	60	155
Goldfish	151	212	140	274
Green sunfish	4	72	52	99
Largemouth bass	1	152	152	152
Pumpkinseed	18	111	69	144
Spottail shiner	7	100	91	107
White perch	91	110	48	180

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 28

WEIGHT OF FISH COLLECTED FROM THE LITTLE CALUMET RIVER  
DURING 1990

Fish Species	Number	Individual Fish Weight (grams)		
		Average	Minimum	Maximum
Black bullhead	6	138.75	46.00	199.5
Bluegill	2	36	30.00	42
Bluntnose minnow	1	8.36	8.36	8.36
Carp	106	1,617.61	214.00	8,164.8
Carp x goldfish	11	863.35	405.50	1,285.5
Emerald shiner	255	5.42	1.64	11.16
Fathead minnow	1	2	2.00	2
Gizzard shad	193	73.52	2.12	323
Golden shiner	17	19.08	2.74	62.22
Goldfish	151	220.82	67.00	572
Green sunfish	4	8.64	2.77	18.65
Largemouth bass	1	63.89	63.89	63.89
Pumpkinseed	18	32.79	5.77	67
Spottail shiner	7	9.82	7.37	11.92
White perch	91	29.60	1.85	97.04

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 29

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR  
THE LITTLE CALUMET RIVER DURING 1990

IBI Metric	Average	Minimum	Maximum
Number of Species Per Sample	5.9	2	10
Number of Sucker Species	0.0	0	0
Number of Sunfish Species	1.0	0	2
Number of Darter Species	0.0	0	0
Number of Intolerant Species	0.0	0	0
Percent of Total as Green Sunfish	2.8	0.0	21.4
Percent of Individuals as Hybrids	1.0	0.0	3.2
Percent Disease	16.6	3.2	42.9
Percent of Omnivores	72.0	17.8	100.0
Percent of Insectivorous Cyprinids	11.4	0.0	74.1
Percent of Carnivores	10.2	0.0	30.9
Total Abundance	108.8	14	343
Electrofishing time (minutes)	41	30	49
Stream Order	3	3	3
Stream Basin	2	2	2
Species Metric Factor	1.8	1	3
Sucker Metric Factor	1.0	1	1
Sunfish Metric Factor	1.5	1	3
Darter Metric Factor	1.0	1	1
Intolerant Metric Factor	1.0	1	1
Green Metric Factor	4.5	1	5
Hybrid Metric Factor	2.8	1	5
Disease Metric Factor	1.0	1	1
Omnivore Metric Factor	1.5	1	5
Insectivorous Metric Factor	1.5	1	5
Carnivore Metric Factor	2.8	1	5
Abundance Factor	2.5	1	5
Index of Biotic Integrity (IBI)	23	16	32

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 30

NUMBER OF FISH COLLECTED FROM THE CAL-SAG CHANNEL  
DURING 1990

Fish Species	Total Number	Number Per Sample		
		Average	Minimum	Maximum
Alewife	3	0.38	0	3
Gizzard shad	49	6.13	0	34
Central mudminnow	1	0.13	0	1
Goldfish	63	7.88	0	23
Carp*	42	5.25	0	11
Carp x goldfish hybrid	6	0.75	0	3
Emerald shiner	2	0.25	0	1
Bluntnose minnow	1	0.13	0	1
Fathead minnow	3	0.38	0	3
White sucker	1	0.13	0	1
Black bullhead	1	0.13	0	1
White perch	1	0.13	0	1
Green sunfish	159	19.88	0	131
Bluegill	51	6.38	0	29
Largemouth bass	12	1.50	0	7
Number of Fish:	395			
Number of Species:	14			
Number of Hybrids:	1			

\* Species found in harvestable size during 1990.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 31

WEIGHT OF TOTAL CATCH OF FISH COLLECTED FROM THE CAL-SAG CHANNEL  
DURING 1990

Fish Species	Total Weight (grams)	Weight (grams) Per Sample		
		Average	Minimum	Maximum
Alewife	3.47	0.43	0.00	3.47
Gizzard shad	3067.47	383.43	0.00	2145.58
Central mudminnow	5.24	0.66	0.00	5.24
Goldfish	8881.16	1110.15	0.00	3354.00
Carp	44996.39	5624.55	0.00	16270.15
Carp x goldfish hybrid	4584.95	573.12	0.00	2325.75
Emerald shiner	9.42	1.18	0.00	6.29
Bluntnose minnow	0.71	0.09	0.00	0.71
Fathead minnow	3.29	0.41	0.00	3.29
White sucker	212.50	26.56	0.00	212.50
Black bullhead	42.00	5.25	0.00	42.00
White perch	0.87	0.11	0.00	0.87
Green sunfish	825.15	103.14	0.00	480.77
Bluegill	1043.68	130.46	0.00	787.02
Largemouth bass	<u>435.60</u>	54.45	0.00	180.00
Total Weight of Fish Catch:	64111.90			

Size of Fish. Average, minimum and maximum lengths and weights for fish collected from the Cal-Sag Channel are listed in Table 32 and Table 33, respectively. Harvestable size fish included the carp (average of 366 mm total length, maximum of 622 mm total length).

Index of Biotic Integrity. The Index of Biotic Integrity for the Cal-Sag Channel (Table 34) ranged from 16 (very poor stream quality, a restricted aquatic resource) to 30 (poor stream quality, a limited aquatic resource).

#### CHICAGO RIVER

Abundance of Fish. Electrofishing results for the Chicago River fish catch are listed in Table 35 for number of fish collected and in Table 36 for weight of the total catch. Twenty-four fish species and a total of 1,027 fish were collected from the Chicago River.

Green sunfish (219), carp (177), bluntnose minnow (115) alewife (97), rock bass (90), goldfish (81), bluegill (54) and largemouth bass (50) made up 86 percent of the fish collected from the Chicago River. Carp (381,318 grams), goldfish (17,825 grams) and carp x goldfish hybrids (15,680 grams) made up 93 percent of the weight of fish collected from the Chicago River.

Size of Fish. Average, minimum and maximum lengths and weights for fish collected from the Chicago River are listed in Table 37 and Table 38, respectively.



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 32

LENGTH OF FISH COLLECTED FROM THE CAL-SAG CHANNEL  
DURING 1990

Fish Species	Number	Total Length (millimeters)		
		Average	Minimum	Maximum
Alewife	3	46	43	50
Black bullhead	1	150	150	150
Bluegill	50	94	23	137
Bluntnose minnow	1	37	37	37
Carp	42	366	67	622
Carp x goldfish	6	360	306	388
Central mudminnow	1	74	74	74
Emerald shiner	2	81	67	94
Fathead minnow	3	44	42	46
Gizzard shad	49	178	114	301
Goldfish	61	178	43	259
Green sunfish	156	56	27	127
Largemouth bass	12	107	47	231
White sucker	1	273	273	273
White perch	1	37	37	37

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 33

WEIGHT OF FISH COLLECTED FROM THE CAL-SAG CHANNEL  
DURING 1990

Fish Species	Number	Individual Fish Weight (grams)		
		Average	Minimum	Maximum
Alewife	3	1.16	0.99	1.42
Black bullhead	1	42	42.00	42
Bluegill	50	19.61	0.22	43.51
Bluntnose minnow	1	0.71	0.71	0.71
Carp	42	1,071.34	5.58	3,628.8
Carp x goldfish	6	764.16	483.00	963.9
Central mudminnow	1	5.24	5.24	5.24
Emerald shiner	2	4.71	3.13	6.29
Fathead minnow	3	1.10	0.85	1.32
Gizzard shad	49	62.60	14.46	310
Goldfish	61	141.60	1.60	331
Green sunfish	156	5.22	0.27	45
Largemouth bass	12	36.3	1.99	180
White sucker	1	212.5	212.50	212.5
White perch	1	0.87	0.87	0.87

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 34

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR  
THE CAL-SAG CHANNEL DURING 1990

IBI Metric	Average	Minimum	Maximum
Number of Species Per Sample	5.13	4	10
Number of Sucker Species	0.13	0	1
Number of Sunfish Species	1.50	1	2
Number of Darter Species	0.00	0	0
Number of Intolerant Species	0.00	0	0
Percent of Total as Green Sunfish	23.27	0.0	71.6
Percent of Individuals as Hybrids	1.72	0.0	10.3
Percent Disease	12.0	0.0	31.3
Percent of Omnivores	53.29	2.9	94.3
Percent of Insectivorous Cyprinids	0.50	0.0	3.4
Percent of Carnivores	3.91	0.0	12.5
Total Abundance	49.50	14	183
Electrofishing time (minutes)	38	33	47
Stream Order	4	4	4
Stream Basin	2	2	2
Species Metric Factor	1.25	1	3
Sucker Metric Factor	1.00	1	1
Sunfish Metric Factor	2.00	1	3
Darter Metric Factor	1.00	1	1
Intolerant Metric Factor	1.00	1	1
Green Metric Factor	2.75	1	5
Hybrid Metric Factor	3.75	1	5
Disease Metric Factor	1.75	1	5
Omnivore Metric Factor	2.50	1	5
Insectivorous Metric Factor	1.00	1	1
Carnivore Metric Factor	2.75	1	5
Abundance Metric Factor	1.50	1	5
Index of Biotic Integrity (IBI)	22	16	30

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 35

NUMBER OF FISH COLLECTED FROM THE CHICAGO RIVER  
DURING 1990

Fish Species	Total Number	Number Per Sample		
		Average	Minimum	Maximum
Alewife	97	8.08	0	50
Gizzard shad	21	1.75	0	8
Brown trout	9	0.75	0	5
Coho salmon	6	0.50	0	4
Chinook salmon	7	0.58	0	6
Rainbow smelt	1	0.08	0	1
Goldfish	81	6.75	0	17
Grass Carp	1	0.08	0	1
Carp*	177	14.75	0	33
Carp x goldfish hybrid	14	1.17	0	5
Golden shiner	19	1.58	0	6
Emerald shiner	17	1.42	0	14
Spottail shiner	7	0.58	0	6
Bluntnose minnow	115	9.58	0	45
White sucker	1	0.08	0	1
Black bullhead*	4	0.33	0	2
Rock bass*	90	7.50	0	40
Green sunfish*	219	18.25	0	107
Pumpkinseed sunfish*	8	0.67	0	4
Orangespotted sunfish	4	0.33	0	3
Bluegill*	54	4.50	0	19
Smallmouth bass	3	0.25	0	2
Largemouth bass*	50	4.17	0	17
Black crappie*	6	0.50	0	2
Green sf. x bluegill*	1	0.08	0	1
Yellow perch	<u>15</u>	1.25	0	5
Number of Fish:	1027			
Number of Species:	24			
Number of Hybrids:	2			

\* Species found in harvestable size during 1990.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 36

WEIGHT OF TOTAL CATCH OF FISH COLLECTED FROM THE CHICAGO RIVER  
DURING 1990

Fish Species	Total Weight (grams)	Weight (grams) Per Sample		
		Average	Minimum	Maximum
Alewife	3951.30	329.28	0.00	2232.59
Gizzard shad	2738.10	228.18	0.00	1157.12
Brown trout	5321.99	443.50	0.00	2778.30
Coho salmon	101.87	8.49	0.00	68.27
Chinook salmon	98.17	8.18	0.00	83.79
Rainbow smelt	2.34	0.20	0.00	2.34
Goldfish	17824.50	1485.38	0.00	4141.00
Grass Carp	3316	276	0	3316.00
Carp	381318.23	31776.52	0.00	73460.60
Carp x goldfish hybrid	15680.30	1306.69	0.00	6504.55
Golden shiner	321.11	26.76	0.00	154.48
Emerald shiner	82.12	6.84	0.00	70.05
Spottail shiner	18.16	1.51	0.00	15.09
Bluntnose minnow	464.58	38.72	0.00	220.00
White sucker	125.00	10.42	0.00	125.00
Black bullhead	910.00	75.83	0.00	515.00
Rock bass	4325.96	360.50	0.00	1443.98
Green sunfish	3271.42	272.62	0.00	1180.61
Pumpkinseed sunfish	270.46	22.54	0.00	152.00
Orangespotted sunfish	46.11	3.84	0.00	34.83
Bluegill	1699.31	141.61	0.00	711.00
Smallmouth bass	289	24	0	196.00
Largemouth bass	4337.09	361.42	0.00	1404.80
Black crappie	438.50	36.54	0.00	190.00
Green sf. x bluegill	111.50	9.29	0.00	111.50
Yellow perch	<u>1180.38</u>	98.37	0.00	452.00
Total Weight of Fish Catch:	448243.13			

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 37

LENGTH OF FISH COLLECTED FROM THE CHICAGO RIVER  
DURING 1990

Fish Species	Number	Total Length (millimeters)		
		Average	Minimum	Maximum
Alewife	97	163	28	204
Black bullhead	4	237	205	263
Black crappie	6	167	134	210
Bluegill	54	105	38	170
Bluntnose minnow	115	67	34	94
Brown trout	9	263	126	580
Carp	171	463	147	845
Carp x goldfish	14	361	203	610
Chinook salmon	7	104	96	111
Coho salmon	6	112	77	130
Emerald shiner	17	80	67	95
Gizzard shad	21	208	100	330
Golden shiner	18	102	35	174
Goldfish	81	204	135	264
Grass carp	1	600	600	600
Green sunfish	218	83	44	161
Green sunfish x bluegill	1	154	154	154
Largemouth bass	50	139	51	338
Orangespotted sunfish	4	83	74	94
Pumpkinseed	8	108	82	165
Rainbow smelt	1	65	65	65
Rock bass	90	116	37	240
Smallmouth bass	3	168	97	245
Spottail shiner	7	64	55	75
White sucker	1	222	222	222
Yellow perch	15	166	72	242

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 38

WEIGHT OF FISH COLLECTED FROM THE CHICAGO RIVER  
DURING 1990

Fish Species	Number	Individual Fish Weight (grams)		
		Average	Minimum	Maximum
Alewife	97	40.74	0.29	96
Black bullhead	4	227.5	141.00	291
Black crappie	6	73.08	44.00	146
Bluegill	54	31.47	1.10	118
Bluntnose minnow	115	4.04	0.30	12.12
Brown trout	9	591.33	19.00	2,778.3
Carp	171	2,094.33	78.93	11,340
Carp x goldfish	14	1,120.02	157.00	3,430.35
Chinook salmon	7	14.02	11.58	16.96
Coho salmon	6	16.98	6.44	25.37
Emerald shiner	17	4.83	2.75	8.24
Gizzard shad	21	130.39	11.34	358
Golden shiner	18	17.47	0.35	83.5
Goldfish	81	220.06	39.00	505
Grass carp	1	3,316	3,316.00	3,316
Green sunfish	218	14.92	1.81	104
Green sunfish x bluegill	1	111.5	111.50	111.5
Largemouth bass	50	86.74	2.50	670
Orangespotted sunfish	4	11.53	7.65	16.13
Pumpkinseed	8	33.81	10.00	112
Rainbow smelt	1	2.34	2.34	2.34
Rock bass	90	48.07	1.20	285
Smallmouth bass	3	96.21	14.86	196
Spottail shiner	7	2.59	1.76	3.6
White sucker	1	125	125.00	125
Yellow perch	15	78.69	3.46	185

Harvestable size fish included black bullhead (average of 237 mm total length, maximum of 263 mm total length), black crappie (maximum of 210 mm), bluegill (maximum of 170 mm), carp (average of 463 mm, maximum of 845 mm), green sunfish (maximum of 161 mm), one green sunfish x bluegill hybrid of 154 mm, largemouth bass (maximum of 338 mm), pumpkinseed sunfish (maximum of 165 mm) and rock bass (maximum of 240 mm).

Index of Biotic Integrity. The Index of Biotic Integrity for the Chicago River (Table 39) ranged from 18 (very poor stream quality, a restricted aquatic resource) to 40 (fair stream quality, a moderate aquatic resource).



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 39

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR  
THE CHICAGO RIVER DURING 1990

IBI Metric	Average	Minimum	Maximum
Number of Species Per Sample	8.8	4	14
Number of Sucker Species	0.1	0	1
Number of Sunfish Species	2.9	1	5
Number of Darter Species	0.0	0	0
Number of Intolerant Species	1.5	0	3
Percent of Total as Green Sunfish	14.4	0.0	54.9
Percent of Individuals as Hybrids	1.5	0.0	7.7
Percent Disease	7.0	0.0	13.8
Percent of Omnivores	60.6	5.6	94.3
Percent of Insectivorous Cyprinids	2.1	0.0	16.7
Percent of Carnivores	15.5	0.0	35.2
Total Abundance	85.8	29	195
Electrofishing time (minutes)	35	30	42
Stream Order	3	3	3
Stream Basin	2	2	2
Species Metric Factor	3.0	1	5
Sucker Metric Factor	1.0	1	1
Sunfish Metric Factor	3.7	1	5
Darter Metric Factor	1.0	1	1
Intolerant Metric Factor	2.0	1	3
Green Metric Factor	3.5	1	5
Hybrid Metric Factor	3.2	1	5
Disease Metric Factor	1.3	1	5
Omnivore Metric Factor	2.0	1	5
Insectivorous Metric Factor	1.0	1	1
Carnivore Metric Factor	4.5	1	5
Total Number of Species	8.8	4	14
Abundance Metric Factor	2.2	1	5
Index of Biotic Integrity (IBI)	28	18	40

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APPENDIX AI

Number, Weight and Total Length of Fish Collected Per  
Sample at Stations 1 to 20 in the Chicago Waterway System  
During 1990

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-1

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 1  
AT SHERIDAN ROAD ON THE NORTH SHORE CHANNEL DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>6/4/90 Sample</u>										
Alewife	29	22.91	304.86	240.70	10.51	1.54	49.00	110	68	179
Bluegill	24	18.96	1,097.00	866.04	45.71	25.00	75.00	132	106	177
Bluntnose minnow	244	192.76	205.42	162.22	0.84	0.25	8.00	39	30	84
Brook stickleback	1	0.79	1.80	1.42	1.80	1.80	1.80	52	52	52
Carp	1	0.79	2,438.10	1,924.82	2,438.10	2,438.10	2,438.10	569	569	569
Carp x goldfish	1	0.79	166.00	131.05	166.00	166.00	166.00	204	204	204
Fathead minnow	16	12.64	38.78	30.62	2.42	0.60	7.58	51	36	75
Gizzard shad	5	3.95	580.00	457.90	116.00	61.00	174.00	221	186	255
Golden shiner	22	17.38	29.46	23.24	1.34	0.50	3.81	48	35	69
Goldfish	10	7.90	2,152.00	1,698.95	215.20	65.00	459.00	210	146	271
Green sunfish	20	15.80	615.86	486.20	30.79	5.99	76.00	107	65	141
Green sunfish x pumpkinseed	1	0.79	61.64	48.66	61.64	61.64	61.64	132	132	132
Rainbow smelt	2	1.58	2.27	1.80	1.14	0.83	1.44	62	55	68
Spottail shiner	2	1.58	10.40	8.22	5.20	1.40	9.00	79	54	104
Yellow perch	1	0.79	40.00	31.58	40.00	40.00	40.00	160	160	160
Total for 6/4/90	379	299.41	7,743.59	6,113.42						

Table continued on the following page.

AI-2

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-1 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 1  
AT SHERIDAN ROAD ON THE NORTH SHORE CHANNEL DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>7/19/90 Sample</u>										
Alewife	5	3.75	59.84	44.89	11.97	2.32	39.74	102	70	173
Black crappie	1	0.75	58.50	43.88	58.50	58.50	58.50	155	155	155
Bluntnose minnow	823	617.25	1,070.78	804.25	1.30	0.28	12.10	46	32	93
Carp	1	0.75	895.50	671.63	895.50	895.50	895.50	394	394	394
Fathead minnow	185	138.75	496.31	372.55	2.68	1.06	5.65	56	45	71
Gizzard shad	5	3.75	1,125.00	843.76	225.00	129.00	469.00	272	237	356
Golden shiner	52	39.00	237.81	178.41	4.57	1.69	28.40	71	52	134
Goldfish	8	6.00	877.35	658.03	109.67	21.00	346.00	159	101	241
Green sunfish	23	17.25	883.13	662.39	38.40	4.62	176.00	104	61	185
Pumpkinseed	1	0.75	2.14	1.61	2.14	2.14	2.14	48	48	48
Rock bass	2	1.50	175.14	131.36	87.57	3.14	172.00	121	50	192
White sucker	1	0.75	280.00	210.00	280.00	280.00	280.00	299	299	299
Total for 7/19/90	1,107	830.25	6,161.50	4,622.76						

Table continued on the following page.

AI-3

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-1 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 1  
AT SHERIDAN ROAD ON THE NORTH SHORE CHANNEL DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>9/12/90 Sample</u>										
Alewife	192	122.88	100.21	64.00	0.52	0.22	1.24	37	26	51
Bluegill	6	3.84	79.29	50.61	13.22	3.11	24.50	84	54	111
Bluntnose minnow	311	199.04	479.99	306.45	1.54	0.14	6.34	51	24	80
Carp	4	2.56	5,690.00	3,631.92	1,422.50	14.00	5,057.00	310	88	670
Carp x goldfish	1	0.64	129.50	82.66	129.50	129.50	129.50	190	190	190
Fathead minnow	449	287.36	305.05	194.71	0.68	0.10	4.89	36	22	72
Gizzard shad	5	3.20	404.18	257.99	80.84	14.18	137.00	188	103	231
Golden shiner	63	40.32	56.14	35.85	0.89	0.11	11.18	36	26	102
Goldfish	17	10.88	1,149.67	733.81	67.63	0.65	321.00	120	32	243
Green sunfish	18	11.52	127.63	81.46	7.09	3.00	14.66	68	54	88
Johnny darter	1	0.64	0.77	0.49	0.77	0.77	0.77	43	43	43
Largemouth bass	21	13.44	308.14	196.70	14.67	1.61	240.50	65	46	245
Longnose dace	1	0.64	1.14	0.73	1.14	1.14	1.14	50	50	50
Pumpkinseed	1	0.64	19.50	12.45	19.50	19.50	19.50	95	95	95
Spottail shiner	19	12.16	14.64	9.35	0.77	0.16	1.38	42	23	57
Total for 9/12/90	1,109	709.76	8,865.85	5,659.18						

Table continued on the following page.

AI-4

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-1 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 1  
AT SHERIDAN ROAD ON THE NORTH SHORE CHANNEL DURING 1990

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>10/30/90 Sample</u>										
Alewife	1	0.63	0.34	0.21	0.34	0.34	0.34	38	38	38
Bluegill	1	0.63	6.86	4.29	6.86	6.86	6.86	74	74	74
Bluntnose minnow	2,348	1,479.24	1,759.28	1,101.94	0.75	0.07	8.86	38	20	90
Coho salmon	1	0.63	319.05	199.41	319.05	319.05	319.05	312	312	312
Fathead minnow	1,362	858.06	1,019.59	638.11	0.75	0.12	4.20	40	24	71
Golden shiner	79	49.77	80.57	50.39	1.02	0.16	43.00	38	26	151
Goldfish	2	1.26	289.00	180.63	144.50	143.00	146.00	192	187	196
Green sunfish	4	2.52	45.84	28.65	11.46	0.21	21.39	70	21	99
Largemouth bass	14	8.82	90.37	56.50	6.46	2.79	17.15	75	60	108
Longnose dace	2	1.26	1.40	0.87	0.70	0.29	1.11	40	32	47
Orangespotted sunfish	1	0.63	10.58	6.61	10.58	10.58	10.58	75	75	75
Pumpkinseed x green sunfish	1	0.63	0.65	0.41	0.65	0.65	0.65	34	34	34
Rainbow smelt	14	8.82	9.50	5.95	0.68	0.30	1.41	52	43	71
Spottail shiner	41	25.83	33.16	20.75	0.81	0.21	3.36	42	29	71
Total for 10/30/90	3,871	2,438.73	3,666.19	2,294.72						

AI-5



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-2

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 2  
AT DEMPSTER STREET ON THE NORTH SHORE CHANNEL DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>6/5/90 Sample</u>										
Alewife	8	6.32	103.92	82.05	12.99	2.15	42.00	109	70	170
Bluegill	2	1.58	137.00	108.16	68.50	65.00	72.00	140	133	147
Carp x goldfish	4	3.16	2536.00	2002.10	634.00	409.00	1,134.00	314	272	396
Fathead minnow	27	21.33	48.70	38.45	1.80	0.59	4.06	49	34	64
Golden shiner	71	56.09	98.74	77.98	1.39	0.66	3.24	50	41	68
Goldfish	1	0.79	64.00	50.53	64.00	64.00	64.00	193	193	193
Green sunfish	1	0.79	16.00	12.63	16.00	16.00	16.00	85	85	85
Total for 6/5/90	114	90.06	3004.36	2371.90						
<u>6/6/90 Sample</u>										
Alewife	7	5.53	16.41	12.95	2.34	1.76	3.14	74	66	79
Black crappie	1	0.79	65.00	51.32	65.00	65.00	65.00	176	176	176
Bluegill	13	10.27	795.70	628.19	61.21	35.00	100.00	139	124	157
Carp	1	0.79	1,389.15	1,096.70	1,389.15	1,389.15	1,389.15	420	420	420
Carp x goldfish	15	11.85	10,790.00	8,518.42	719.33	239.00	1,587.60	314	238	422
Fathead minnow	39	30.81	139.56	110.20	3.58	1.74	6.41	59	50	70
Golden shiner	6	4.74	47.02	37.12	7.84	2.45	32.00	77	61	142
Goldfish	4	3.16	651.00	513.95	162.75	52.00	243.00	184	137	209
Green sunfish	3	2.37	75.00	59.21	25.00	16.00	37.00	96	83	110
Largemouth bass	1	0.79	276.00	217.89	276.00	276.00	276.00	254	254	254
Pumpkinseed	1	0.79	29.00	22.89	29.00	29.00	29.00	109	109	109
Total for 6/6/90	91	71.89	14,273.84	11,268.84						

Table continued on the following page.

AI-6

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-2 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 2  
AT DEMPSTER STREET ON THE NORTH SHORE CHANNEL DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>7/23/90 Sample</u>										
Black bullhead	2	1.72	349.50	299.57	174.75	142.50	207.00	222	212	232
Black crappie	1	0.86	60.00	51.43	60.00	60.00	60.00	163	163	163
Bluegill	3	2.58	216.84	185.86	72.28	60.00	83.50	142	139	148
Carp	7	6.02	10,925.50	9,364.72	1,560.79	453.00	4,603.00	438	302	692
Carp x goldfish	18	15.48	13,757.50	11,792.15	764.31	229.00	1,829.50	326	235	479
Fathead minnow	23	19.78	74.31	63.68	3.23	1.65	5.34	59	50	69
Golden shiner	33	28.38	181.58	155.61	5.50	2.08	30.12	73	58	131
Goldfish	7	6.02	854.00	732.01	122.00	64.50	252.50	176	151	224
Green sunfish	17	14.62	323.92	277.65	19.05	4.00	72.19	82	54	142
Total for 7/23/90	111	95.46	26,743.15	22,922.68						
<u>9/19/90 Sample</u>										
Alewife	2	1.36	2.08	1.42	1.04	1.01	1.07	45	45	45
Black bullhead	2	1.36	403.00	274.77	201.50	188.50	214.50	232	224	240
Black crappie	1	0.68	32.15	21.92	32.15	32.15	32.15	127	127	127
Bluegill	4	2.72	138.33	94.32	34.58	0.53	53.50	105	28	138
Bluntnose minnow	75	51.00	311.05	212.13	4.15	1.42	6.86	68	48	80
Carp	5	3.40	927.28	632.24	185.46	3.97	892.00	140	58	406
Carp x goldfish	16	10.88	791.20	539.45	49.45	1.75	530.50	89	44	308
Fathead minnow	864	587.52	1,288.01	878.28	1.49	0.21	7.00	47	27	82
Gizzard shad	18	12.24	2,057.29	1,402.71	114.29	19.79	191.00	209	122	251
Golden shiner	61	41.48	199.59	136.08	3.27	0.31	14.57	59	28	110
Goldfish	136	92.48	1,346.39	918.08	9.90	1.14	160.50	70	37	217
Green sunfish	18	12.24	237.18	161.69	13.18	5.15	49.50	81	61	133
Largemouth bass	1	0.68	10.04	6.85	10.04	10.04	10.04	84	84	84
Oriental weatherfish	1	0.68	0.90	0.61	0.90	0.90	0.90	48	48	48
Spottail shiner	28	19.04	46.48	31.69	1.66	0.28	2.74	53	27	63
Yellow perch	2	1.36	3.50	2.39	1.75	1.49	2.01	57	54	60
Total for 9/19/90	1,234	839.12	7,794.47	5,314.63						

Table continued on the following page.

AI-7

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-2 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 2  
AT DEMPSTER STREET ON THE NORTH SHORE CHANNEL DURING 1990

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>10/31/90 Sample</u>										
Black bullhead	2	1.28	328.00	209.36	164.00	122.00	206.00	215	192	238
Bluegill	1	0.64	24.32	15.52	24.32	24.32	24.32	116	116	116
Brook stickleback	1	0.64	1.19	0.76	1.19	1.19	1.19	48	48	48
Carp	4	2.56	38.79	24.75	9.70	3.72	16.03	77	56	93
Carp x goldfish	6	3.84	61.83	39.47	10.31	3.44	21.47	74	56	98
Fathead minnow	16	10.24	44.41	28.34	2.78	0.69	6.37	57	41	77
Goldfish	205	131.20	2,011.41	1,290.43	9.81	1.54	108.00	74	42	164
Green sunfish	16	10.24	326.64	208.51	20.42	7.14	63.00	96	69	142
Largemouth bass	1	0.64	5.29	3.38	5.29	5.29	5.29	68	68	68
Oriental weatherfish	2	1.28	6.02	3.84	3.01	2.12	3.90	64	60	68
Pumpkinseed	1	0.64	0.84	0.54	0.84	0.84	0.84	34	34	34
Rainbow smelt	2	1.28	2.63	1.68	1.32	1.03	1.60	62	58	66
Spottail shiner	1	0.64	2.24	1.43	2.24	2.24	2.24	61	61	61
Total for 10/31/90	258	165.12	2,853.61	1,828.01						

AI-8

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-3

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 3  
AT TOUHY AVENUE ON THE NORTH SHORE CHANNEL DURING 1990

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>6/6/90 Sample</u>										
Alewife	6	3.90	42.64	27.81	7.11	2.70	19.04	99	74	142
Bluegill	1	0.65	14.20	9.26	14.20	14.20	14.20	88	88	88
Carp	14	9.10	26,825.67	17,495.00	1,916.12	243.00	4,938.12	452	235	715
Carp x goldfish	5	3.25	6,709.40	4,375.70	1,341.88	359.00	2,268.00	401	264	472
Fathead minnow	1	0.65	2.58	1.68	2.58	2.58	2.58	58	58	58
Gizzard shad	6	3.90	967.00	630.64	161.17	74.00	294.00	257	187	333
Golden shiner	14	9.10	180.48	117.70	12.89	2.02	31.52	91	56	131
Goldfish	7	4.55	1,397.82	911.62	199.69	63.00	366.00	198	143	260
Green sunfish	1	0.65	34.34	22.40	34.34	34.34	34.34	101	101	101
Pumpkinseed	1	0.65	42.00	27.39	42.00	42.00	42.00	127	127	127
Total for 6/6/90	56	36.40	36,216.13	23,619.20						
<u>7/18/90 Sample</u>										
Alewife	2	1.36	11.30	49.77	5.65	2.99	8.31	87	74	100
Brook stickleback	1	0.68	3.32	2.26	3.32	3.32	3.32	60	60	60
Carp	9	6.12	12,030.50	8,202.60	1,336.72	372.50	4,127.00	413	274	665
Carp x goldfish	3	2.04	1,984.50	1,353.06	661.50	266.00	891.00	302	230	347
Gizzard shad	8	5.44	605.63	412.93	75.70	38.94	115.58	178	144	204
Golden shiner	18	12.24	142.80	97.36	7.93	2.32	17.50	85	62	128
Goldfish	8	5.44	1,466.00	999.55	183.25	24.00	344.50	196	117	243
White sucker	2	1.36	963.50	656.93	481.75	248.50	715.00	334	273	394
Total for 7/18/90	51	34.68	17,207.55	11,774.46						

Table continued on the following page.

AI-9

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-3 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 3  
AT TOUHY AVENUE ON THE NORTH SHORE CHANNEL DURING 1990

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>9/18/90 Sample</u>										
Black bullhead	2	1.20	434.50	260.70	217.25	201.00	233.50	239	237	240
Black crappie	6	3.60	1,067.50	640.50	177.92	79.50	321.00	217	176	272
Bluegill	2	1.20	181.50	108.90	90.75	84.00	97.50	155	150	160
Carp	11	6.60	6,294.43	3,776.66	572.22	9.67	1,571.50	277	75	470
Carp x goldfish	13	7.80	4,590.20	2,754.11	353.09	4.04	1,489.50	210	58	400
Fathead minnow	2	1.20	2.57	1.54	1.29	1.22	1.35	45	44	46
Gizzard shad	21	12.60	2,936.18	1,761.71	139.82	7.41	352.00	220	86	315
Golden shiner	26	15.60	352.53	211.52	13.56	8.65	36.00	103	93	139
Goldfish	30	18.00	737.36	442.40	24.58	4.32	256.50	89	59	212
Green sunfish	21	12.60	325.48	195.28	15.50	6.51	34.50	88	66	120
Largemouth bass	3	1.80	65.75	39.45	21.92	20.00	25.07	113	108	120
Longnose dace	1	0.60	1.50	0.90	1.50	1.50	1.50	50	50	50
Spottail shiner	2	1.20	3.37	2.02	1.69	0.99	2.38	53	42	63
White sucker	1	0.60	743.00	445.80	743.00	743.00	743.00	386	386	386
Total for 9/18/90	141	84.60	17,735.87	10,641.49						

Table continued on the following page.

AI-10

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-3 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 3  
AT TOUHY AVENUE ON THE NORTH SHORE CHANNEL DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>11/7/90 Sample</u>										
Black bullhead	2	1.42	383.00	273.57	191.50	171.00	212.00	229	220	238
Black crappie	1	0.71	114.00	81.43	114.00	114.00	114.00	199	199	199
Bluegill	3	2.13	4.23	3.02	1.41	0.92	1.84	41	36	47
Carp	1	0.71	1,530.90	1,093.50	1,530.90	1,530.90	1,530.90	484	484	484
Carp x goldfish	4	2.84	1,488.01	1,062.87	372.00	2.98	1,474.20	153	56	422
Coho salmon	1	0.71	285.00	203.57	285.00	285.00	285.00	312	312	312
Gizzard shad	1	0.71	14.09	10.06	14.09	14.09	14.09	108	108	108
Golden shiner	2	1.42	27.46	19.61	13.73	12.24	15.22	107	106	107
Goldfish	6	4.26	72.78	52.00	12.13	8.13	16.00	85	73	97
Green sunfish	1	0.71	10.00	7.14	10.00	10.00	10.00	82	82	82
Total for 11/7/90	22	15.62	3,929.47	2,806.77						

Table continued on the following page.

AI-11

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-4

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 4  
AT PETERSON AVENUE ON THE NORTH SHORE CHANNEL DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>6/7/90 Sample</u>										
Alewife	3	2.25	31.72	23.79	10.57	2.64	20.96	108	77	141
Black crappie	2	1.50	69.15	51.86	34.58	11.15	58.00	130	90	170
Carp x goldfish	3	2.25	2,262.90	1,697.18	754.30	553.00	963.90	341	313	380
Fathead minnow	1	0.75	1.42	1.07	1.42	1.42	1.42	42	42	42
Golden shiner	2	1.50	35.70	26.78	17.85	4.70	31.00	107	73	141
Goldfish	5	3.75	385.83	289.37	77.17	21.83	142.00	141	96	183
Green sunfish	1	0.75	15.67	11.75	15.67	15.67	15.67	82	82	82
Total for 6/7/90	17	12.75	2,802.39	2,101.80						
<u>7/17/90 Sample</u>										
Black bullhead	1	0.81	151.00	122.43	151.00	151.00	151.00	206	206	206
Bluegill	3	2.43	189.00	153.25	63.00	38.50	78.50	136	115	153
Brook stickleback	1	0.81	3.00	2.43	3.00	3.00	3.00	57	57	57
Carp	1	0.81	916.00	742.70	916.00	916.00	916.00	350	350	350
Gizzard shad	4	3.24	731.50	593.11	182.88	82.00	317.00	239	189	285
Largemouth bass	3	2.43	574.70	465.97	191.57	2.46	569.50	146	51	333
White sucker	1	0.81	3.18	2.58	3.18	3.18	3.18	60	60	60
Total for 7/17/90	14	11.34	2,568.38	2,082.47						

Table continued on the following page.

AI-12

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-4 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 4  
AT PETERSON AVENUE ON THE NORTH SHORE CHANNEL DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>9/17/90 Sample</u>										
Carp	1	0.70	451.00	314.65	451.00	451.00	451.00	322	322	322
Carp x goldfish	1	0.70	2,041.20	1,424.09	2,041.20	2,041.20	2,041.20	461	461	461
Emerald shiner	1	0.70	3.02	2.11	3.02	3.02	3.02	74	74	74
Gizzard shad	24	16.80	4,791.00	3,342.56	199.63	84.00	557.00	251	197	362
Goldfish	3	2.10	726.38	506.78	242.13	22.38	436.00	197	100	265
Green sunfish	3	2.10	53.04	37.01	17.68	4.40	32.00	89	57	115
Total for 9/17/90	33	23.10	8,065.64	5,627.20						
<u>11/7/90 Sample</u>										
Black bullhead	1	0.73	232.00	169.76	232.00	232.00	232.00	240	240	240
Golden shiner	1	0.73	6.26	4.58	6.26	6.26	6.26	86	86	86
Green sunfish	3	2.19	43.44	31.78	14.48	4.44	26.00	86	58	114
Largemouth bass	1	0.73	4.00	2.93	4.00	4.00	4.00	79	79	79
Spottail shiner	1	0.73	5.14	3.76	5.14	5.14	5.14	77	77	77
Total for 11/7/90	7	5.11	290.84	212.81						

AI-13



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-5

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 5  
AT WILSON AVENUE ON THE NORTH BRANCH OF THE CHICAGO RIVER DURING 1990

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>6/12/90 Sample</u>										
Alewife	1	0.67	32.00	21.33	32.00	32.00	32.00	176	176	176
Black bullhead	1	0.67	174.00	116.00	174.00	174.00	174.00	210	210	210
Black crappie	1	0.67	20.00	13.33	20.00	20.00	20.00	119	119	119
Bluegill	3	2.01	109.00	72.66	36.33	21.00	50.00	120	100	133
Bluntnose minnow	1	0.67	6.00	4.00	6.00	6.00	6.00	75	75	75
Carp	10	6.70	14,024.38	9,349.58	1,402.44	59.18	2,920.05	407	133	570
Carp x goldfish	3	2.01	2,321.35	1,547.57	773.78	592.00	1,020.60	342	325	375
Emerald shiner	1	0.67	6.51	4.34	6.51	6.51	6.51	87	87	87
Gizzard shad	3	2.01	458.00	305.34	152.67	121.00	184.00	257	239	267
Golden shiner	5	3.35	79.03	52.68	15.81	2.85	30.00	101	60	144
Goldfish	22	14.74	4,165.00	2,776.66	189.32	24.00	406.00	187	102	250
Green sunfish	2	1.34	50.00	33.33	25.00	14.00	36.00	103	88	118
Green sunfish x bluegill	1	0.67	44.56	29.71	44.56	44.56	44.56	119	119	119
Total for 6/12/90	54	36.18	21,489.83	14,326.53						
<u>7/16/90 Sample</u>										
Black bullhead	1	0.73	100.50	73.54	100.50	100.50	100.50	181	181	181
Black crappie	1	0.73	45.00	32.93	45.00	45.00	45.00	147	147	147
Bluegill	2	1.46	106.27	77.76	53.14	40.27	66.00	123	115	130
Carp	4	2.92	4,754.50	3,478.90	1,188.63	369.00	2,876.00	393	254	583
Carp x goldfish	3	2.19	3,028.50	2,215.97	1,009.50	699.00	1,228.50	362	308	406
Golden shiner	3	2.19	93.27	68.25	31.09	20.77	42.50	135	116	149
Goldfish	1	0.73	66.00	48.29	66.00	66.00	66.00	140	140	140
Green sunfish	4	2.92	71.05	51.98	17.76	4.68	43.00	83	59	119
Largemouth bass	1	0.73	0.88	0.64	0.88	0.88	0.88	37	37	37
Orangespotted sunfish	1	0.73	10.38	7.60	10.38	10.38	10.38	74	74	74
Total for 7/16/90	21	15.33	8,276.35	6,055.86						

Table continued on the following page.

AI-14

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-5 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 5  
AT WILSON AVENUE ON THE NORTH BRANCH OF THE CHICAGO RIVER DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>9/14/90 Sample</u>										
Black bullhead	2	1.50	421.00	287.05	210.50	141.00	280.00	235	215	255
Bluegill	3	2.25	202.02	137.75	67.34	2.02	136.00	120	45	173
Carp	2	1.50	1,956.15	1,333.74	978.08	737.10	1,219.05	398	345	450
Carp x goldfish	2	1.50	1,631.20	1,112.19	815.60	724.00	907.20	349	337	360
Gizzard shad	1	0.75	171.00	116.59	171.00	171.00	171.00	243	243	243
Goldfish	1	0.75	176.00	120.00	176.00	176.00	176.00	194	194	194
Green sunfish	6	4.50	53.18	36.26	8.86	3.50	12.00	76	52	91
Green sunfish x bluegill	1	0.75	75.00	51.14	75.00	75.00	75.00	150	150	150
Largemouth bass	2	1.50	14.47	9.87	7.24	4.47	10.00	75	68	82
Total for 9/14/90	20	15.00	4,700.02	3,204.59						
<u>10/26/90 Sample</u>										
Black bullhead	1	0.68	139.00	94.77	139.00	139.00	139.00	205	205	205
Black crappie	1	0.68	45.00	30.68	45.00	45.00	45.00	150	150	150
Bluegill	1	0.68	1.20	0.82	1.20	1.20	1.20	42	42	42
Carp	7	4.76	6,645.15	4,530.79	949.31	680.40	1,474.20	383	347	429
Gizzard shad	4	2.72	56.53	38.55	14.13	11.26	21.69	104	97	121
Goldfish	2	1.36	617.84	421.25	308.92	27.84	590.00	190	109	271
Total for 10/26/90	16	10.88	7,504.72	5,116.86						

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-6

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 6  
AT GRAND AVENUE ON THE NORTH BRANCH OF THE CHICAGO RIVER DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>5/2/90 Sample</u>										
Black crappie	1	0.77	25.00	19.23	25.00	25.00	25.00	130	130	130
Bluntnose minnow	1	0.77	2.00	1.54	2.00	2.00	2.00	53	53	53
Carp	6	4.62	5,035.99	3,873.84	839.33	25.05	2,806.65	273	106	529
Carp x goldfish	1	0.77	793.80	610.62	793.80	793.80	793.80	331	331	331
Emerald shiner	4	3.08	16.96	13.05	4.24	1.85	5.34	77	61	85
Gizzard shad	5	3.85	470.58	361.98	94.12	16.00	178.00	199	121	263
Goldfish	35	26.95	5,509.35	4,237.95	157.41	16.35	412.00	184	91	275
Green sunfish	1	0.77	34.00	26.15	34.00	34.00	34.00	112	112	112
Largemouth bass	1	0.77	39.00	30.00	39.00	39.00	39.00	140	140	140
Total for 5/2/90	55	42.35	11,926.68	9,174.36						
<u>7/13/90 Sample</u>										
Alewife	3	2.64	108.96	96.14	36.32	20.63	46.50	158	137	173
Black bullhead	1	0.88	165.00	145.59	165.00	165.00	165.00	223	223	223
Bluegill	1	0.88	69.00	60.88	69.00	69.00	69.00	136	136	136
Bluntnose minnow	23	20.24	67.50	59.57	2.93	1.27	6.24	62	50	80
Carp	6	5.28	5,209.50	4,596.61	868.25	357.00	1,416.00	372	270	433
Carp x goldfish	3	2.64	4,036.00	3,561.18	1,345.33	727.00	1,796.50	411	345	466
Green sunfish	1	0.88	5.71	5.04	5.71	5.71	5.71	64	64	64
Spottail shiner	3	2.64	11.20	9.88	3.73	2.95	4.60	73	68	78
Threespine stickleback	1	0.88	3.08	2.72	3.08	3.08	3.08	68	68	68
Total for 7/13/90	42	36.96	9,675.95	8,537.61						

Table continued on the following page.

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-6 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 6  
AT GRAND AVENUE ON THE NORTH BRANCH OF THE CHICAGO RIVER DURING 1990

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>9/13/90 Sample</u>										
Bluegill	4	3.16	211.50	166.97	52.88	15.00	80.50	132	95	152
Carp	9	7.11	8,723.00	6,886.58	969.22	276.00	2,047.50	370	263	487
Carp x goldfish	4	3.16	3,585.00	2,830.26	896.25	392.00	1,558.00	353	292	417
Gizzard shad	7	5.53	804.94	635.48	114.99	59.22	201.70	207	171	240
Golden shiner	1	0.79	76.50	60.39	76.50	76.50	76.50	175	175	175
Goldfish	15	11.85	3,349.00	2,643.97	223.27	47.00	374.00	203	132	242
Green sunfish	2	1.58	76.50	60.40	38.25	34.50	42.00	125	119	131
Total for 9/13/90	42	33.18	16,826.44	13,284.05						
<u>10/25/90 Sample</u>										
Bluegill	4	3.24	157.00	127.28	39.25	6.00	104.00	118	80	174
Bluntnose minnow	2	1.62	10.24	8.30	5.12	4.86	5.38	73	71	75
Carp	14	11.34	13,434.55	10,892.90	959.61	344.00	1,502.55	372	277	430
Carp x goldfish	7	5.67	5,656.95	4,586.71	808.14	410.00	1,389.15	342	274	427
Emerald shiner	1	0.81	0.78	0.63	0.78	0.78	0.78	46	46	46
Gizzard shad	3	2.43	370.13	300.11	123.38	53.55	258.00	191	157	256
Goldfish	7	5.67	2,051.00	1,662.98	293.00	65.00	479.00	212	145	250
Green sunfish	1	0.81	31.00	25.14	31.00	31.00	31.00	120	120	120
Largemouth bass	5	4.05	60.90	49.38	12.18	5.30	24.00	94	71	125
Pumpkinseed x bluegill	1	0.81	2.46	1.99	2.46	2.46	2.46	49	49	49
Yellow bullhead	1	0.81	22.24	18.03	22.24	22.24	22.24	116	116	116
Total for 10/25/90	46	37.26	21,797.25	17,673.45						

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-7

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 7  
AT DAMEN AVENUE ON THE CHICAGO SANITARY AND SHIP CANAL DURING 1990

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>4/4/90 Sample</u>										
Black bullhead	1	0.88	94.00	82.94	94.00	94.00	94.00	200	200	200
Carp	4	3.52	2898.20	2557.19	724.55	283.00	1,389.20	333	268	416
Goldfish	7	6.16	2097.82	1851.03	299.69	5.82	552.00	213	65	285
Pumpkinseed	1	0.88	45.00	39.71	45.00	45.00	45.00	121	121	121
Total for 4/4/90	13	11.44	5135.02	4530.87						
<u>6/21/90 Sample</u>										
Black bullhead	3	2.91	548.00	530.32	182.67	144.00	244.00	220	202	254
Bluegill	2	1.94	34.71	33.59	17.36	4.71	30.00	90	61	118
Bluntnose minnow	5	4.85	7.71	7.46	1.54	1.00	1.85	51	46	54
Carp	58	56.26	56,210.50	50,214.52	969.15	53.30	4,082.40	354	133	658
Gizzard shad	1	0.97	28.12	27.21	28.12	28.12	28.12	133	133	133
Golden shiner	6	5.82	163.68	158.39	27.28	4.19	45.74	120	71	150
Goldfish	44	42.68	4,450.86	4,307.26	101.16	8.74	460.00	149	77	290
Green sunfish	1	0.97	5.05	4.89	5.05	5.05	5.05	61	61	61
Largemouth bass	7	6.79	373.23	160.57	53.32	5.44	245.30	120	71	260
Total for 6/21/90	127	123.19	61,821.86	55,444.21						
<u>7/31/90 Sample</u>										
Black bullhead	3	2.58	515.00	441.43	171.67	110.00	216.50	223	191	239
Bluegill	2	1.72	53.50	45.86	26.75	21.50	32.00	102	98	106
Carp	39	33.54	30,915.43	25,442.30	792.70	99.50	1,940.00	341	178	486
Golden shiner	1	0.86	44.69	38.31	44.69	44.69	44.69	147	147	147
Goldfish	10	8.60	2,635.00	2,258.56	263.50	104.50	440.50	208	160	266
Largemouth bass	3	2.58	297.10	254.66	99.03	3.60	206.00	171	63	265
Total for 7/31/90	58	49.88	34,460.72	28,481.12						

Table continued on the following page.

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-7 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 7  
AT DAMEN AVENUE ON THE CHICAGO SANITARY AND SHIP CANAL DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>9/27/90 Sample</u>										
Black bullhead	4	3.52	634.00	559.41	158.50	127.00	216.00	217	198	238
Bluegill	4	3.52	293.64	259.10	73.41	31.64	120.00	146	112	174
Bluntnose minnow	19	16.72	77.35	68.27	4.07	2.16	7.00	68	60	85
Carp	65	57.20	63,361.60	56,657.86	974.79	16.38	3,600.45	355	93	610
Carp x goldfish	3	2.64	3,855.60	3,402.00	1,285.20	1,077.30	1,644.30	406	370	462
Gizzard shad	4	3.52	35.82	31.61	8.96	6.99	10.34	90	81	99
Golden shiner	5	4.40	197.07	173.87	39.41	29.80	50.96	142	128	153
Goldfish	46	40.48	9,098.19	8,027.81	197.79	47.48	698.00	194	128	287
Green sunfish	2	1.76	24.89	21.96	12.45	12.20	12.69	80	80	80
Largemouth bass	6	5.28	143.34	126.48	23.89	6.40	74.00	103	71	170
Total for 9/27/90	158	139.04	77,721.50	69,328.37						

AI-19

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-8

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 8  
AT CICERO AVENUE ON THE CHICAGO SANITARY AND SHIP CANAL DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total	Per 30	Total	Per 30	Average	Minimum	Maximum	Average	Minimum	Maximum
	Catch	Minutes	Catch	Minutes						
<u>3/30/90 Sample</u>										
Black bullhead	1	0.86	133.00	114.00	133.00	133.00	133.00	215	215	215
Bluntnose minnow	3	2.58	6.70	5.74	2.23	0.47	5.64	50	35	74
Carp	5	4.30	8,930.25	7,654.50	1,786.05	963.90	3,175.20	472	390	550
Goldfish	15	12.90	2,430.00	2,082.86	162.00	38.00	335.00	181	125	242
Total for 3/30/90	24	20.64	11,499.95	9,857.10						
<u>6/13/90 Sample</u>										
Black bullhead	2	1.54	450.00	346.16	225.00	148.00	302.00	248	220	275
Bluntnose minnow	30	23.10	147.66	113.56	4.92	1.41	12.71	69	50	97
Carp	130	100.10	140,282.31	107,909.50	1,079.09	10.22	7,399.35	351	84	731
Carp x goldfish	5	3.85	3,273.72	4,688.34	654.74	75.68	1,587.60	291	159	440
Emerald shiner	1	0.77	4.89	3.76	4.89	4.89	4.89	84	84	84
Fathead minnow	9	6.93	47.65	36.66	5.29	3.18	7.00	70	60	81
Gizzard shad	2	1.54	135.28	104.06	67.64	32.71	102.57	173	143	203
Golden shiner	4	3.08	97.08	74.68	24.27	7.47	37.54	121	84	145
Goldfish	306	235.62	33,019.24	25,399.51	107.91	3.51	680.40	156	58	290
Spottail shiner	1	0.77	4.24	3.26	4.24	4.24	4.24	77	77	77
Total for 6/13/90	490	377.30	177,462.07	138,679.49						
<u>7/30/90 Sample</u>										
Black bullhead	1	0.88	135.00	119.12	135.00	135.00	135.00	227	227	227
Bluntnose minnow	42	36.96	161.30	142.33	3.84	1.70	7.70	66	53	84
Carp	26	22.88	18,111.23	15,980.51	696.59	39.08	1,842.75	322	132	498
Fathead minnow	1	0.88	4.65	4.10	4.65	4.65	4.65	66	66	66
Goldfish	29	25.52	3,515.46	3,191.48	121.22	27.00	580.00	165	113	277
Total for 7/30/90	99	87.12	21,927.64	19,437.54						

Table continued on the following page.

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-8 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 8  
AT CICERO AVENUE ON THE CHICAGO SANITARY AND SHIP CANAL DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>9/28/90 Sample</u>										
Alewife	1	0.75	0.49	0.37	0.49	0.49	0.49	40	40	40
Bluntnose minnow	77	57.75	145.01	108.87	1.88	0.30	10.50	52	35	88
Carp	22	16.50	19,220.96	14,415.74	873.68	6.62	2,948.40	317	69	561
Emerald shiner	1	0.75	4.46	3.35	4.46	4.46	4.46	80	80	80
Gizzard shad	2	1.50	22.47	16.86	11.24	7.86	14.61	96	84	107
Golden shiner	2	1.50	2.65	1.99	1.33	1.22	1.43	50	50	50
Goldfish	32	24.00	3,552.00	2,664.00	111.00	19.00	350.00	162	98	236
Green sunfish	1	0.75	6.00	4.50	6.00	6.00	6.00	68	68	68
Largemouth bass	1	0.75	11.00	8.25	11.00	11.00	11.00	98	98	98
Pumpkinseed	1	0.75	11.00	8.25	11.00	11.00	11.00	80	80	80
Rainbow smelt	1	0.75	2.30	1.73	2.30	2.30	2.30	66	66	66
Total for 9/28/90	141	105.75	22978.34	17233.91						

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-9

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 9  
AT HARLEM AVENUE ON THE CHICAGO SANITARY AND SHIP CANAL DURING 1990

AI-22

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>4/12/90 Sample</u>										
Bluntnose minnow	6	4.50	13.19	9.90	2.20	0.62	4.22	53	38	70
Carp	20	15.00	29,408.55	22,056.42	1,470.43	8.15	5,216.40	383	78	730
Goldfish	38	28.50	4,667.25	3,564.71	122.82	3.02	435.00	160	54	269
Total for 4/12/90	64	48.00	34,088.99	25,631.03						
<u>6/25/90 Sample</u>										
Bluntnose minnow	22	20.68	70.93	66.51	3.22	0.97	9.13	61	42	88
Carp	24	22.56	45,903.90	43,034.92	1,912.66	41.35	4,819.50	453	124	650
Carp x goldfish	2	1.88	2,891.70	2,710.97	1,445.85	1,219.05	1,672.65	414	410	418
Gizzard shad	1	0.94	290.00	271.88	290.00	290.00	290.00	303	303	303
Goldfish	32	30.08	3,275.05	3,070.43	102.35	12.69	378.00	148	80	236
Total for 6/25/90	81	76.14	52,431.58	49,154.71						
<u>8/3/90 Sample</u>										
Bluntnose minnow	4	3.32	7.03	5.86	1.76	0.95	2.08	55	45	59
Carp	20	16.60	32,953.00	27,460.83	1,647.65	70.50	4,979.00	422	161	678
Golden shiner	1	0.83	11.00	9.17	11.00	11.00	11.00	97	97	97
Goldfish	59	48.97	5,916.50	4,930.43	100.28	16.50	343.00	151	93	245
Total for 8/3/90	84	69.72	38,887.53	32,406.29						
<u>10/5/90 Sample</u>										
Bluntnose minnow	1	0.88	5.30	4.68	5.30	5.30	5.30	77	77	77
Carp	15	13.20	30,582.50	26,984.55	2,038.83	495.50	5,861.00	465	301	668
Goldfish	4	3.52	397.50	350.73	99.38	18.00	190.50	156	103	194
Total for 10/5/90	20	17.60	30,985.30	27,339.96						

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-10

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 10  
AT WILLOW SPRINGS ROAD ON THE CHICAGO SANITARY AND SHIP CANAL DURING 1990

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>4/5/90 Sample</u>										
Bluegill	1	0.81	40.00	32.43	40.00	40.00	40.00	132	132	132
Bluntnose minnow	1	0.81	1.18	0.96	1.18	1.18	1.18	47	47	47
Carp	24	19.44	21,110.49	17,116.43	879.60	4.39	3,940.70	336	63	623
Fathead minnow	1	0.81	5.41	4.39	5.41	5.41	5.41	73	73	73
Goldfish	9	7.29	1,424.00	1,154.59	158.22	60.00	358.00	178	133	253
Total for 4/5/90	36	29.16	22,581.08	18,308.80						
<u>6/29/90 Sample</u>										
Bluntnose minnow	10	8.60	58.30	49.97	5.83	1.71	8.80	75	56	87
Carp	28	24.08	52,098.00	44,655.42	1,860.64	531.50	6,460.00	460	320	749
Central mudminnow	1	0.86	5.50	4.71	5.50	5.50	5.50	88	88	88
Goldfish	18	15.48	510.50	437.57	28.36	4.82	130.00	101	59	174
Green sunfish	1	0.86	6.84	5.86	6.84	6.84	6.84	67	67	67
Spottail shiner	1	0.86	2.04	1.75	2.04	2.04	2.04	67	67	67
Total for 6/29/90	59	50.74	52,681.18	45,155.28						
<u>8/7/90 Sample</u>										
Bluntnose minnow	17	15.98	76.53	71.75	4.50	2.28	7.14	71	57	82
Carp	7	6.58	11,810.00	11,071.89	1,687.14	1,053.00	2,630.00	456	392	524
Emerald shiner	8	7.52	46.88	43.95	5.86	2.94	8.16	85	63	97
Goldfish	6	5.64	213.00	199.69	35.50	17.50	96.50	116	101	164
Largemouth bass	1	0.94	3.09	2.90	3.09	3.09	3.09	60	60	60
Total for 8/7/90	39	36.66	12,149.50	11,390.18						
<u>10/15/90 Sample</u>										
Carp	6	5.82	6,664.65	6,449.67	1,110.78	456.00	1,530.90	411	313	452
Goldfish	1	0.97	3.64	3.52	3.64	3.64	3.64	55	55	55
Green sunfish	1	0.97	6.31	6.11	6.31	6.31	6.31	69	69	69
Total for 10/15/90	8	7.76	6,674.60	6,459.30						

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-11

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 11  
AT 16TH STREET, LOCKPORT ON THE CHICAGO SANITARY AND SHIP CANAL DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>4/17/90 Sample</u>										
Black crappie	1	0.88	42.53	37.53	42.53	42.53	42.53	157	157	157
Carp	14	12.32	25,465.00	22,469.12	1,818.93	829.00	2,494.80	473	369	532
Emerald shiner	4	3.52	8.97	7.90	2.24	1.60	3.03	68	60	74
Gizzard shad	8	7.04	168.05	148.28	21.01	13.36	35.93	132	120	154
Goldfish	3	2.64	1,231.00	1,086.18	410.33	193.00	725.00	243	202	301
Total for 4/17/90	30	26.40	26,915.55	23,749.01						
<u>6/26/90 Sample</u>										
Black bullhead	2	1.34	323.00	215.34	161.50	118.00	205.00	212	192	232
Carp	5	3.35	11,938.30	7,958.87	2,387.66	655.00	4,082.40	480	340	578
Golden shiner	1	0.67	8.76	5.84	8.76	8.76	8.76	87	87	87
Goldfish	3	2.01	190.00	126.67	63.33	30.00	85.00	145	109	165
Green sunfish	24	16.08	106.85	71.23	4.45	0.19	59.00	49	30	150
Total for 6/26/90	35	23.45	12,566.91	8,377.95						
<u>8/1/90 Sample</u>										
Carp	15	10.20	24,073.50	16,413.74	1,604.90	335.00	3,124.00	445	282	561
Golden shiner	1	0.68	18.56	12.65	18.56	18.56	18.56	111	111	111
Goldfish	2	1.36	364.00	248.18	182.00	30.00	334.00	177	108	245
Green sunfish	7	4.76	35.58	24.26	5.08	2.03	12.00	58	46	81
Largemouth bass	1	0.68	27.78	18.94	27.78	27.78	27.78	123	123	123
Total for 8/1/90	26	17.68	24,519.42	16,717.77						
<u>10/4/90 Sample</u>										
Carp	7	4.48	10,779.75	6,880.69	1,539.96	713.00	3,203.55	445	343	586
Gizzard shad	2	1.28	208.00	132.76	104.00	15.00	193.00	195	111	279
Green sunfish	1	0.64	14.00	8.94	14.00	14.00	14.00	85	85	85
Total for 10/4/90	10	6.40	11,001.75	7,022.39						

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-12

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 12  
AT 130TH STREET ON THE CALUMET RIVER DURING 1990

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>4/25/90 Sample</u>										
Alewife	27	20.25	1,471.50	1,103.67	54.50	30.82	73.62	184	155	203
Bluegill	2	1.50	50.64	37.98	25.32	20.64	30.00	111	104	118
Bluntnose minnow	51	38.25	113.68	85.29	2.23	0.25	11.11	54	28	95
Carp	17	12.75	34,568.15	25,926.14	2,033.42	390.00	4,932.90	511	294	710
Carp x goldfish	2	1.50	1,956.15	1,467.12	978.08	765.45	1,190.70	400	375	425
Chinook salmon	1	0.75	1,644.30	1,233.23	1,644.30	1,644.30	1,644.30	575	575	575
Emerald shiner	223	167.25	1,235.88	927.16	5.54	2.99	15.00	88	66	118
Fathead minnow	23	17.25	70.48	52.92	3.06	0.70	5.66	61	40	78
Gizzard shad	5	3.75	1,870.00	1,402.50	374.00	160.00	460.00	328	254	358
Goldfish	6	4.50	1,305.00	978.75	217.50	130.00	335.00	220	192	257
Green sunfish x bluegill	1	0.75	85.00	63.75	85.00	85.00	85.00	166	166	166
Largemouth bass	3	2.25	1,223.34	917.51	407.78	12.74	1,020.60	242	101	387
Sand shiner	1	0.75	1.09	0.82	1.09	1.09	1.09	53	53	53
White sucker	4	3.00	2,476.97	1,857.73	619.24	100.52	1,332.45	335	205	430
White perch	65	48.75	3,768.84	2,826.75	57.98	4.00	190.00	152	72	230
Total for 4/25/90	431	323.25	51,841.02	38,881.32						

Table continued on the following page.

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-12 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 12  
AT 130TH STREET ON THE CALUMET RIVER DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>7/11/90 Sample</u>										
Alewife	1	0.75	28.05	21.04	28.05	28.05	28.05	157	157	157
Bluegill	5	3.75	247.74	185.82	49.55	28.00	75.26	134	121	152
Bluntnose minnow	1	0.75	10.07	7.55	10.07	10.07	10.07	96	96	96
Carp	2	1.50	5,100.50	3,825.38	2,550.25	878.00	4,222.50	540	375	704
Gizzard shad	91	68.25	6,674.16	5,005.70	73.34	44.66	219.60	181	157	278
Golden shiner	1	0.75	51.00	38.25	51.00	51.00	51.00	155	155	155
Green sunfish	1	0.75	47.50	35.63	47.50	47.50	47.50	130	130	130
Largemouth bass	4	3.00	1,358.00	1,018.51	339.50	184.00	434.50	293	235	322
White perch	23	17.25	1,137.72	853.33	49.47	28.00	107.00	150	130	204
Total for 7/11/90	129	96.75	14,654.74	10,991.21						
<u>9/6/90 Sample</u>										
Bluegill	3	2.49	161.00	134.17	53.67	37.00	65.00	139	126	147
Bluntnose minnow	7	5.81	19.84	16.54	2.83	1.13	4.27	56	44	65
Carp	6	4.98	12,021.60	10,018.02	2,003.60	1,360.80	2,466.45	532	455	586
Carp x goldfish	1	0.83	963.90	803.25	963.90	963.90	963.90	407	407	407
Gizzard shad	99	82.17	7,731.27	6,442.77	78.09	19.66	152.89	184	123	231
Green sunfish	2	1.66	37.30	31.08	18.65	9.30	28.00	89	75	103
Largemouth bass	13	10.79	2,511.80	2,093.16	193.22	3.92	695.00	169	63	362
Pumpkinseed	3	2.49	95.88	79.90	31.96	11.88	50.00	112	81	136
White perch	18	14.94	965.70	804.76	53.65	30.00	125.00	155	130	220
Total for 9/6/90	152	126.16	24,508.29	20,423.65						

Table continued on the following page.

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-12 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 12  
AT 130TH STREET ON THE CALUMET RIVER DURING 1990

AI-27

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>10/22/90 Sample</u>										
Bluegill	5	4.30	174.83	149.85	34.97	2.84	49.99	119	56	140
Bluntnose minnow	26	22.36	78.90	67.64	3.03	1.11	8.86	62	50	91
Carp	12	10.32	24,862.95	21,311.10	2,071.91	992.25	4,961.25	509	400	669
Chinook salmon	3	2.58	16,924.95	14,507.10	5,641.65	4,536.00	6,775.65	837	785	870
Gizzard shad	138	118.68	6,312.00	5,410.28	45.74	0.66	447.00	135	45	345
Green sunfish	9	7.74	126.22	108.20	14.02	7.36	36.00	85	71	124
Largemouth bass	6	5.16	1,629.41	1,396.64	271.57	6.00	935.55	181	74	395
Pumpkinseed	1	0.86	55.00	47.14	55.00	55.00	55.00	143	143	143
Pumpkinseed x bluegill	1	0.86	57.18	49.01	57.18	57.18	57.18	135	135	135
Rainbow smelt	1	0.86	4.00	3.43	4.00	4.00	4.00	81	81	81
Spottail shiner	1	0.86	11.64	9.98	11.64	11.64	11.64	104	104	104
White sucker	1	0.86	300.00	257.14	300.00	300.00	300.00	314	314	314
White perch	8	6.88	340.90	292.21	42.61	30.00	67.36	144	132	162
Total for 10/22/90	212	182.32	50,877.98	43,609.72						

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-13

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 13  
IMMEDIATELY DOWNSTREAM OF THE O'BRIEN LOCK AND DAM ON THE CALUMET RIVER DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total	Per 30	Total	Per 30	Average	Minimum	Maximum	Average	Minimum	Maximum
	Catch	Minutes	Catch	Minutes						
<u>4/23/90 Sample</u>										
Bluegill	1	1.00	20.00	20.00	20.00	20.00	20.00	103	103	103
Carp	7	7.00	7325.40	7325.40	1,046.49	408.00	2,551.50	404	292	578
Carp x goldfish	1	1.00	405.00	405.00	405.00	405.00	405.00	301	301	301
Emerald shiner	6	6.00	30.23	30.23	5.04	3.42	7.63	85	76	95
Fathead minnow	1	1.00	2.56	2.56	2.56	2.56	2.56	51	51	51
Gizzard shad	8	8.00	1170.87	1170.87	146.36	6.87	555.00	181	88	371
Goldfish	2	2.00	384.00	384.00	192.00	115.00	269.00	198	183	212
Green sunfish	1	1.00	17.93	17.93	17.93	17.93	17.93	92	92	92
Largemouth bass	1	1.00	286.00	286.00	286.00	286.00	286.00	272	272	272
Pumpkinseed	3	3.00	70.73	70.73	23.58	3.20	58.00	88	52	138
White perch	3	3.00	54.98	54.98	18.33	8.31	38.00	103	83	140
Yellow perch	2	2.00	44.23	44.23	22.12	20.35	23.88	132	128	135
Total for 4/23/90	36	36.00	9811.93	9811.93						
<u>7/10/90 Sample</u>										
Alewife	11	11.77	347.73	372.57	31.61	9.00	40.54	155	100	177
Black crappie	1	1.07	74.00	79.29	74.00	74.00	74.00	182	182	182
Bluegill	7	7.49	355.65	381.06	50.81	20.00	76.78	132	95	150
Carp	14	14.98	39785.50	42627.32	2,841.82	518.50	7,351.00	523	314	765
Emerald shiner	6	6.42	37.33	40.00	6.22	3.90	9.86	91	78	105
Gizzard shad	17	18.19	1421.83	1523.38	83.64	36.14	363.00	190	147	358
Golden shiner	1	1.07	16.50	17.68	16.50	16.50	16.50	129	129	129
Largemouth bass	8	8.56	3601.50	3858.74	450.19	237.50	1,020.50	309	255	404
White perch	8	8.56	406.64	435.70	50.83	40.13	64.69	151	138	159
Yellow perch	2	2.14	100.24	107.40	50.12	40.74	59.50	160	143	177
Total for 7/10/90	75	80.25	46146.92	49443.14						

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Table continued on the following page.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-13 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 13  
IMMEDIATELY DOWNSTREAM OF THE O'BRIEN LOCK AND DAM ON THE CALUMET RIVER DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>9/5/90 Sample</u>										
Alewife	1	0.97	39.40	38.13	39.40	39.40	39.40	168	168	168
Black crappie	1	0.97	126.50	122.42	126.50	126.50	126.50	207	207	207
Carp	9	8.73	12219.50	11825.33	1,357.72	584.50	3,502.50	429	343	630
Gizzard shad	64	62.08	4790.09	4635.58	74.85	12.18	183.86	182	98	253
Goldfish	1	0.97	239.00	231.29	239.00	239.00	239.00	231	231	231
Green sunfish	24	23.28	194.57	188.27	8.11	3.02	30.18	69	52	107
Green sunfish x orangespot	1	0.97	11.72	11.34	11.72	11.72	11.72	81	81	81
Largemouth bass	3	2.91	1496.00	1447.74	498.67	336.00	750.00	319	295	352
Pumpkinseed	1	0.97	46.00	44.52	46.00	46.00	46.00	128	128	128
Total for 9/5/90	105	101.85	19162.78	18544.62						
<u>10/23/90 Sample</u>										
Alewife	1	1.00	1.88	1.88	1.88	1.88	1.88	55	55	55
Bluegill	4	4.00	7.74	7.74	1.94	0.95	2.70	49	40	54
Bluntnose minnow	29	29.00	41.53	41.53	1.43	0.34	4.34	48	30	70
Carp	2	2.00	2268.00	2268.00	1,134.00	907.20	1,360.80	423	400	445
Chinook salmon	1	1.00	7342.65	7342.65	7,342.65	7,342.65	7,342.65	885	885	885
Gizzard shad	65	65.00	2774.76	2774.76	42.69	2.30	346.00	144	60	342
Green sunfish	78	78.00	732.41	732.41	9.39	2.00	37.00	73	46	125
Green sunfish x bluegill	2	2.00	47.49	47.49	23.75	7.49	40.00	102	77	126
Green sunfish x pumpkinseed	1	1.00	66.00	66.00	66.00	66.00	66.00	145	145	145
Largemouth bass	2	2.00	534.43	534.43	267.22	8.43	526.00	203	86	320
Pumpkinseed	3	3.00	11.89	11.89	3.96	3.00	5.08	57	54	62
Total for 10/23/90	188	188.00	13828.78	13828.78						

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-14

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 14  
AT ROUTE I-94 ON THE LITTLE CALUMET RIVER DURING 1990

AI-30

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>4/24/90 Sample</u>										
Black bullhead	1	0.61	46.00	28.16	46.00	46.00	46.00	154	154	154
Bluntnose minnow	1	0.61	8.36	5.12	8.36	8.36	8.36	86	86	86
Carp	21	12.81	25771.45	15778.44	1,227.21	268.00	4,847.85	407	271	645
Carp x goldfish	4	2.44	3089.35	1891.44	772.34	582.00	1,162.35	359	301	445
Emerald shiner	252	153.72	1357.52	881.51	5.39	1.64	11.16	86	59	113
Fathead minnow	1	0.61	2.00	1.22	2.00	2.00	2.00	49	49	49
Gizzard shad	5	3.05	570.55	349.31	114.11	7.24	212.07	198	94	272
Golden shiner	11	6.71	162.05	99.22	14.73	2.74	43.00	98	60	149
Goldfish	22	13.42	3845.00	2354.09	174.77	95.00	328.00	200	168	242
Pumpkinseed	6	3.66	176.40	108.00	29.40	5.77	41.61	107	69	123
Spottail shiner	2	1.22	18.01	11.02	9.01	7.37	10.64	99	91	107
White perch	17	10.37	387.25	298.86	22.78	4.52	51.64	106	70	150
Total for 4/24/90	343	209.23	35433.94	21806.39						
<u>7/9/90 Sample</u>										
Black bullhead	3	2.43	525.00	425.68	175.00	158.00	199.50	225	210	243
Bluegill	1	0.81	30.00	24.32	30.00	30.00	30.00	115	115	115
Carp	17	13.77	31039.00	25166.76	1,825.82	311.00	5,118.50	458	261	730
Carp x goldfish	1	0.81	1018.00	825.41	1,018.00	1,018.00	1,018.00	377	377	377
Gizzard shad	11	8.91	722.41	585.74	65.67	45.86	146.00	175	157	253
Golden shiner	2	1.62	44.65	36.20	22.33	15.62	29.03	117	107	127
Goldfish	5	4.05	1002.50	812.84	200.50	138.50	272.50	211	186	231
Largemouth bass	1	0.81	63.89	51.80	63.89	63.89	63.89	152	152	152
Pumpkinseed	3	2.43	59.49	48.23	19.83	17.10	21.76	91	88	93
Spottail shiner	4	3.24	40.75	33.03	10.19	8.81	11.92	102	97	107
White perch	20	16.20	1004.82	814.71	50.24	13.67	97.04	139	94	180
Total for 7/9/90	68	55.08	35550.51	28824.72						

Table continued on the following page.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-14 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 14  
AT ROUTE I-94 ON THE LITTLE CALUMET RIVER DURING 1990

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>9/4/90 Sample</u>										
Bluegill	1	1.00	42.00	42.00	42.00	42.00	42.00	129	129	129
Carp	11	11.00	24542.00	24542.00	2,231.09	548.00	8,164.80	477	337	775
Carp x goldfish	1	1.00	768.00	768.00	768.00	768.00	768.00	365	365	365
Emerald shiner	1	1.00	8.36	8.36	8.36	8.36	8.36	96	96	96
Gizzard shad	88	88.00	6393.05	6320.82	72.65	4.56	124.99	180	74	215
Goldfish	3	3.00	663.00	663.00	221.00	180.00	283.00	217	195	241
Pumpkinseed	8	8.00	296.24	296.24	37.03	25.00	67.00	118	106	144
White perch	39	39.00	847.25	847.25	21.72	1.85	88.53	95	48	167
Total for 9/4/90	152	152.00	33559.90	33487.67						
<u>10/23/90 Sample</u>										
Carp	9	8.46	21252.25	19923.99	2,361.36	415.00	4,734.45	513	297	665
Emerald shiner	2	1.88	20.06	18.81	10.03	9.60	10.46	107	106	107
Gizzard shad	50	47.00	3681.53	3451.48	73.63	2.12	228.00	176	56	296
Goldfish	1	0.94	438.00	410.63	438.00	438.00	438.00	268	268	268
Pumpkinseed	1	0.94	58.00	54.38	58.00	58.00	58.00	136	136	136
Spottail shiner	1	0.94	9.96	9.34	9.96	9.96	9.96	96	96	96
White perch	16	15.04	499.58	468.39	31.22	5.16	90.00	116	68	176
Total for 10/23/90	80	75.20	25959.38	24337.02						

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-15

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 15  
AT HALSTED STREET ON THE LITTLE CALUMET RIVER DURING 1990

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>4/19/90 Sample</u>										
Carp	7	4.76	6839.00	4662.92	977.00	214.00	2,126.30	388	253	592
Emerald shiner	1	0.68	3.39	2.31	3.39	3.39	3.39	75	75	75
Goldfish	3	2.04	479.00	326.59	159.67	110.00	205.00	196	179	209
Green sunfish	3	2.04	29.47	20.10	9.82	2.77	18.65	76	52	99
Total for 4/19/90	14	9.52	7350.86	5011.92						
<u>7/3/90 Sample</u>										
Black bullhead	2	1.34	261.50	174.33	130.75	117.00	144.50	207	202	212
Carp	32	21.44	53133.00	35421.99	1,660.41	241.50	4,352.50	461	246	671
Carp x goldfish	4	2.68	3601.00	2400.66	900.25	405.50	1,285.50	368	288	422
Gizzard shad	20	13.40	959.01	639.36	47.95	33.04	69.63	158	141	180
Golden shiner	3	2.01	110.20	73.47	36.73	22.29	62.22	138	129	155
Goldfish	63	42.21	13413.23	8942.17	212.91	67.00	464.50	211	140	274
Green sunfish	1	0.67	5.10	3.40	5.10	5.10	5.10	62	62	62
Total for 7/3/90	125	83.75	71483.04	47655.38						
<u>8/31/90 Sample</u>										
Carp	9	6.39	8039.50	5742.52	893.28	224.50	2,520.00	375	242	555
Carp x goldfish	1	0.71	1020.50	728.93	1,020.50	1,020.50	1,020.50	406	406	406
Gizzard shad	18	12.78	1922.46	1373.16	106.80	11.12	323.00	197	95	313
Goldfish	38	26.98	8868.43	6334.60	233.38	78.50	572.00	212	149	273
Total for 8/31/90	66	46.86	19850.89	14179.21						

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Table continued on the following page.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-15 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 15  
AT HALSTED STREET ON THE LITTLE CALUMET RIVER DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>10/19/90 Sample</u>										
Carp	1	0.64	1672.65	1067.65	1,672.65	1,672.65	1,672.65	468	468	468
Gizzard shad	2	1.28	22.58	14.42	11.29	7.97	14.61	104	89	118
Golden shiner	1	0.64	7.52	4.80	7.52	7.52	7.52	87	87	87
Goldfish	18	11.52	5082.00	3243.82	282.33	190.00	448.00	226	189	257
Total for 10/19/90	22	14.08	6784.75	4330.69						

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-16

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 16  
AT CICERO AVENUE ON THE CAL-SAG CHANNEL DURING 1990

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Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>4/18/90 Sample</u>										
Bluegill	5	4.30	137.76	118.08	27.55	19.00	43.51	118	107	134
Carp	5	4.30	6262.60	5367.90	1,252.52	225.00	1,701.00	426	253	490
Carp x goldfish	3	2.58	2325.75	1993.50	775.25	483.00	963.90	357	306	388
Emerald shiner	1	0.86	6.29	5.39	6.29	6.29	6.29	94	94	94
Gizzard shad	10	8.60	364.23	312.18	36.42	14.46	100.00	157	120	247
Goldfish	5	4.30	921.00	789.44	184.20	145.00	218.00	203	187	212
Total for 4/18/90	29	24.94	10017.63	8586.49						
<u>6/28/90 Sample</u>										
Carp	2	1.88	1488.50	1395.47	744.25	54.50	1,434.00	302	147	457
Goldfish	15	14.10	1724.50	1616.73	114.97	19.50	303.50	169	95	234
Green sunfish	5	4.70	11.90	11.16	2.38	1.07	5.94	46	37	63
Largemouth bass	1	0.94	22.00	20.63	22.00	22.00	22.00	114	114	114
Total for 6/28/90	23	21.62	3246.90	3043.99						
<u>8/8/90 Sample</u>										
Carp	9	8.19	10884.51	9895.01	1,209.39	160.00	3,567.00	390	212	622
Carp x goldfish	2	1.82	1667.20	1515.64	833.60	760.00	907.20	369	355	383
Gizzard shad	34	30.94	2145.58	1950.53	63.11	41.76	161.00	181	159	275
Goldfish	23	20.93	3354.00	3049.10	145.83	30.00	331.00	183	119	241
White sucker	1	0.91	212.50	193.18	212.50	212.50	212.50	273	273	273
Total for 8/8/90	69	62.79	18263.79	16603.46						
<u>10/17/90 Sample</u>										
Carp	3	2.73	985.00	895.45	328.33	303.00	351.00	283	280	285
Gizzard shad	1	0.91	310.00	281.82	310.00	310.00	310.00	301	301	301
Goldfish	8	7.28	1740.00	1581.82	217.50	82.00	318.00	210	156	259
Green sunfish	1	0.91	4.84	4.40	4.84	4.84	4.84	58	58	58
Largemouth bass	1	0.91	180.00	163.64	180.00	180.00	180.00	231	231	231
Total for 10/17/90	14	12.74	3219.84	2927.13						

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-17

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 17  
AT ROUTE 83 ON THE CAL-SAG CHANNEL DURING 1990

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>4/13/90 Sample</u>										
Bluegill	29	24.94	787.02	674.56	27.14	15.10	63.00	117	97	151
Gizzard shad	1	0.86	15.00	12.86	15.00	15.00	15.00	123	123	123
Green sunfish	3	2.58	60.44	51.80	20.15	4.40	45.00	87	60	124
Largemouth bass	1	0.86	61.00	52.29	61.00	61.00	61.00	166	166	166
Total for 4/13/90	34	29.24	923.46	791.51						
<u>6/27/90 Sample</u>										
Bluegill	1	0.86	42.00	36.00	42.00	42.00	42.00	130	130	130
Carp	11	9.46	16270.15	13945.84	1,479.10	128.00	3,628.80	439	194	620
Green sunfish	2	1.72	28.00	24.00	14.00	14.00	14.00	95	94	95
Largemouth bass	2	1.72	152.50	130.71	76.25	58.50	94.00	191	185	197
Total for 6/27/90	16	13.76	16492.65	14136.55						
<u>8/22/90 Sample</u>										
Alewife	3	1.92	3.47	2.22	1.16	0.99	1.42	46	43	50
Bluegill	11	7.04	8.22	5.25	0.75	0.22	1.46	32	23	42
Blurtnose minnow	1	0.64	0.71	0.45	0.71	0.71	0.71	37	37	37
Carp	11	7.04	6951.08	4436.85	631.92	5.58	3,333.50	268	67	595
Carp x goldfish	1	0.64	592.00	377.87	592.00	592.00	592.00	350	350	350
Emerald shiner	1	0.64	3.13	2.00	3.13	3.13	3.13	67	67	67
Fathead minnow	3	1.92	3.29	2.09	1.10	0.85	1.32	44	42	46
Gizzard shad	1	0.64	106.00	67.66	106.00	106.00	106.00	243	243	243
Goldfish	12	7.68	1141.66	728.72	95.14	1.60	234.00	147	43	228
Green sunfish	131	83.84	480.77	307.27	3.67	0.27	38.50	52	27	127
Largemouth bass	7	4.48	20.10	12.83	2.87	1.99	4.77	55	47	68
White perch	1	0.64	0.87	0.56	0.87	0.87	0.87	37	37	37
Total for 8/22/90	183	117.12	9311.30	5943.77						

Table continued on the following page.

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-17 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 17  
AT ROUTE 83 ON THE CAL-SAG CHANNEL DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>10/16/90 Sample</u>										
Black bullhead	1	0.64	42.00	26.81	42.00	42.00	42.00	150	150	150
Bluegill	5	3.20	68.68	43.84	13.74	0.86	43.00	73	35	137
Carp	1	0.64	2154.60	1375.28	2,154.60	2,154.60	2,154.60	514	514	514
Central mudminnow	1	0.64	5.24	3.34	5.24	5.24	5.24	74	74	74
Gizzard shad	2	1.28	126.66	80.84	63.33	16.66	110.00	175	114	236
Green sunfish	17	10.88	239.20	152.70	14.07	2.50	38.00	81	50	124
Total for 10/16/90	27	17.28	2636.38	1682.81						

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-18

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 18  
AT THE INNER HARBOR ON THE CHICAGO RIVER DURING 1990

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>6/1/90 Sample</u>										
Alewife	33	23.43	1415.35	1010.93	42.89	28.66	58.51	176	155	204
Black bullhead	2	1.42	395.00	282.14	197.50	141.00	254.00	232	205	259
Black crappie	2	1.42	115.00	82.14	57.50	50.00	65.00	164	156	172
Bluegill	19	13.49	510.26	364.49	26.86	9.26	49.00	112	76	138
Carp	5	3.55	25429.95	18164.25	5,085.99	2,494.80	7,824.60	680	560	778
Carp x goldfish	1	0.71	304.00	217.14	304.00	304.00	304.00	242	242	242
Chinook salmon	6	4.26	83.79	59.85	13.97	11.58	16.96	104	96	111
Coho salmon	4	2.84	68.27	48.77	17.07	6.44	25.37	111	77	130
Gizzard shad	1	0.71	312.00	222.86	312.00	312.00	312.00	310	310	310
Goldfish	6	4.26	1272.00	908.58	212.00	82.00	296.00	206	153	235
Green sunfish	7	4.97	258.00	184.29	36.86	18.00	77.00	118	91	156
Largemouth bass	3	2.13	692.99	494.99	231.00	8.99	670.00	170	82	330
Rock bass	15	10.65	1257.94	898.53	83.86	7.22	246.00	135	67	210
Spottail shiner	1	0.71	3.07	2.19	3.07	3.07	3.07	75	75	75
Yellow perch	1	0.71	16.00	11.43	16.00	16.00	16.00	129	129	129
Total for 6/1/90	106	75.26	32133.62	22952.58						

Table continued on the following page.

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-18 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 18  
AT THE INNER HARBOR ON THE CHICAGO RIVER DURING 1990

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>7/26/90 Sample</u>										
Alewife	2	1.62	15.70	12.73	7.85	7.19	8.51	93	90	95
Black bullhead	2	1.62	515.00	417.57	257.50	224.00	291.00	242	221	263
Black crappie	2	1.62	190.00	154.06	95.00	44.00	146.00	172	134	210
Bluegill	4	3.24	147.38	119.50	36.85	8.01	62.82	111	70	148
Bluntnose minnow	12	9.72	34.60	28.05	2.88	1.73	5.88	61	52	78
Carp	3	2.43	11963.27	9699.95	3,987.76	954.50	7,656.77	603	397	790
Carp x goldfish	1	0.81	1105.50	896.35	1,105.50	1,105.50	1,105.50	442	442	442
Emerald shiner	14	11.34	70.05	56.80	5.00	2.75	8.24	81	67	95
Golden shiner	3	2.43	94.12	76.31	31.37	1.00	83.50	105	48	174
Goldfish	3	2.43	975.50	790.95	325.17	183.50	451.00	232	194	258
Grass carp	1	0.81	3316.00	2688.65	3,316.00	3,316.00	3,316.00	600	600	600
Green sunfish	16	12.96	453.20	367.46	28.33	4.56	72.00	98	56	147
Green sunfish x bluegill	1	0.81	111.50	90.41	111.50	111.50	111.50	154	154	154
Largemouth bass	9	7.29	1404.80	1139.02	156.09	10.48	504.50	185	86	329
Rock bass	7	5.67	670.41	543.59	95.77	8.53	285.00	141	70	240
Smallmouth bass	2	1.62	92.63	75.11	46.32	14.86	77.77	130	97	162
Yellow perch	2	1.62	363.00	294.32	181.50	178.00	185.00	218	207	228
Total for 7/26/90	84	68.04	21522.66	17450.83						

Table continued on the following page.

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-18 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 18  
AT THE INNER HARBOR ON THE CHICAGO RIVER DURING 1990

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>9/20/90 Sample</u>										
Black crappie	1	0.81	68.50	55.54	68.50	68.50	68.50	158	158	158
Bluntnose minnow	7	5.67	26.89	21.80	3.84	1.93	6.15	69	56	80
Brown trout	5	4.05	220.29	178.62	44.06	24.49	63.58	149	126	173
Golden shiner	4	3.24	32.77	26.57	8.19	3.19	10.25	90	70	97
Green sunfish	66	53.46	994.91	806.70	15.07	4.00	104.00	86	56	161
Largemouth bass	10	8.10	205.80	166.86	20.58	7.81	87.00	107	78	177
Orangespotted sunfish	1	0.81	11.28	9.15	11.28	11.28	11.28	81	81	81
Pumpkinseed	1	0.81	10.00	8.11	10.00	10.00	10.00	82	82	82
Rainbow smelt	1	0.81	2.34	1.90	2.34	2.34	2.34	65	65	65
Rock bass	26	21.06	733.63	594.84	28.22	4.33	170.00	105	55	205
Total for 9/20/90	122	98.82	2306.41	1870.09						
<u>11/1/90 Sample</u>										
Bluegill	12	10.32	58.36	50.01	4.86	1.40	15.42	59	45	94
Bluntnose minnow	9	7.74	43.54	37.32	4.84	2.37	6.57	75	62	85
Brown trout	2	1.72	1833.40	1571.49	916.70	19.00	1,814.40	354	128	580
Carp	2	1.72	5755.05	4932.90	2,877.53	2,154.60	3,600.45	545	481	609
Emerald shiner	3	2.58	12.07	10.35	4.02	3.59	4.78	78	75	84
Green sunfish	107	92.02	1180.61	1009.84	11.03	4.13	44.00	78	57	135
Largemouth bass	17	14.62	967.38	829.17	56.90	2.50	590.00	118	51	335
Orangespotted sunfish	3	2.58	34.83	29.86	11.61	7.65	16.13	84	74	94
Rock bass	40	34.40	1443.98	1237.72	36.10	1.20	147.00	109	37	190
Total for 11/1/90	195	167.70	11329.22	9708.66						

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-19

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 19  
AT THE LOOP ON THE CHICAGO RIVER DURING 1990

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>5/31/90 Sample</u>										
Alewife	50	36.50	2232.59	1633.59	44.65	20.80	66.93	174	133	204
Bluntnose minnow	1	0.73	2.00	1.46	2.00	2.00	2.00	53	53	53
Carp	22	16.06	69921.25	51161.87	3,178.24	310.00	11,340.00	516	260	845
Carp x goldfish	1	0.73	380.00	278.05	380.00	380.00	380.00	272	272	272
Coho salmon	1	0.73	17.06	12.48	17.06	17.06	17.06	112	112	112
Goldfish	9	6.57	2174.00	1590.73	241.56	100.00	410.00	212	177	240
Green sunfish	2	1.46	8.88	6.49	4.44	1.81	7.07	56	44	67
Yellow perch	1	0.73	3.46	2.53	3.46	3.46	3.46	74	74	74
Total for 5/31/90	87	63.51	74739.24	54687.20						
<u>7/25/90 Sample</u>										
Carp	17	13.77	24596.80	19943.36	1,446.87	330.00	2,835.00	426	297	574
Goldfish	11	8.91	2023.00	1640.27	183.91	105.00	322.00	196	174	244
Pumpkinseed	1	0.81	50.00	40.54	50.00	50.00	50.00	128	128	128
Yellow perch	5	4.05	452.00	366.49	90.40	10.00	162.00	184	96	242
Total for 7/25/90	34	27.54	27121.80	21990.66						
<u>9/24/90 Sample</u>										
Alewife	2	1.82	1.06	0.96	0.53	0.32	0.74	40	36	44
Bluegill	1	0.91	18.00	16.36	18.00	18.00	18.00	98	98	98
Brown trout	1	0.91	2778.30	2525.73	2,778.30	2,778.30	2,778.30	547	547	547
Carp	18	16.38	26223.75	23839.78	1,456.88	567.00	2,976.75	440	322	555
Green sunfish	2	1.82	9.19	8.36	4.60	3.90	5.29	60	57	62
Largemouth bass	1	0.91	68.00	61.82	68.00	68.00	68.00	171	171	171
Smallmouth bass	1	0.91	196.00	178.18	196.00	196.00	196.00	245	245	245
Yellow perch	3	2.73	222.00	201.82	74.00	30.00	110.00	184	146	207
Total for 9/24/90	29	26.39	29516.30	26833.01						

Table continued on the following page.

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-19

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 19  
AT THE LOOP ON THE CHICAGO RIVER DURING 1990

Date of Sample and Fish Species Collected	<u>Number of Fish</u>		<u>Weight (grams)</u>		<u>Individual Fish Weight (grams)</u>			<u>Total Length (millimeters)</u>		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>11/1/90 Sample</u>										
Bluegill	1	0.83	2.91	2.43	2.91	2.91	2.91	54	54	54
Bluntnose minnow	2	1.66	4.11	3.43	2.06	0.30	3.81	52	34	69
Brown trout	1	0.83	490.00	408.33	490.00	490.00	490.00	367	367	367
Carp	25	20.75	73460.60	61217.24	2,938.42	455.00	8,646.75	524	303	773
Golden shiner	1	0.83	0.35	0.29	0.35	0.35	0.35	35	35	35
Goldfish	5	4.15	1418.00	1181.67	283.60	140.00	505.00	220	187	251
Green sunfish	2	1.66	14.29	11.91	7.15	6.69	7.60	67	67	67
Largemouth bass	1	0.83	6.84	5.70	6.84	6.84	6.84	75	75	75
Total for 11/1/90	38	31.54	75397.10	62831.00						

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-20

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 20  
AT THE JUNCTION OF THE NORTH AND SOUTH BRANCHES OF THE CHICAGO RIVER DURING 1990

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>5/30/90 Sample</u>										
Alewife	4	3.76	244.40	229.13	61.10	45.00	96.00	192	186	198
Black crappie	1	0.94	65.00	60.94	65.00	65.00	65.00	174	174	174
Bluegill	11	10.34	711.00	666.59	64.64	29.00	118.00	142	118	170
Bluntnose minnow	31	29.14	115.80	108.59	3.74	1.32	12.12	62	47	94
Carp	11	10.34	16368.03	15345.03	1,488.00	78.93	5,868.45	381	147	720
Carp x goldfish	2	1.88	1622.70	1521.28	811.35	432.00	1,190.70	327	282	372
Chinook salmon	1	0.94	14.38	13.48	14.38	14.38	14.38	110	110	110
Coho salmon	1	0.94	16.54	15.51	16.54	16.54	16.54	112	112	112
Gizzard shad	7	6.58	800.01	750.01	114.29	17.44	358.00	204	117	330
Golden shiner	6	5.64	39.39	78.00	6.57	5.11	7.94	89	80	98
Goldfish	17	15.98	3391.00	3179.09	199.47	65.00	371.00	196	151	236
Green sunfish	2	1.88	68.54	64.26	34.27	24.54	44.00	117	110	124
Largemouth bass	3	2.82	693.28	649.95	231.09	6.28	572.00	204	75	338
Pumpkinseed	2	1.88	152.00	142.50	76.00	40.00	112.00	142	118	165
Rock bass	1	0.94	90.00	84.38	90.00	90.00	90.00	150	150	150
Yellow perch	1	0.94	3.92	3.68	3.92	3.92	3.92	72	72	72
Total for 5/30/90	101	94.94	24395.99	22912.42						
<u>7/24/90 Sample</u>										
Bluegill	2	1.94	53.30	51.58	26.65	3.30	50.00	95	55	134
Bluntnose minnow	8	7.76	17.64	17.08	2.21	1.00	3.22	57	48	65
Carp	26	25.22	34704.38	32434.83	1,334.78	180.00	3,742.20	397	226	610
Goldfish	11	10.67	1847.00	1787.41	167.91	100.00	260.00	186	169	208
Green sunfish	7	6.79	130.18	125.98	18.60	6.12	50.00	83	64	121
Rock bass	1	0.97	130.00	125.81	130.00	130.00	130.00	182	182	182
White sucker	1	0.97	125.00	120.97	125.00	125.00	125.00	222	222	222
Yellow perch	2	1.94	120.00	116.13	60.00	30.00	90.00	154	116	191
Total for 7/24/90	58	56.26	37127.50	34779.79						

AI-42

Table continued on the following page.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AI-20 (Continued)

NUMBER, WEIGHT AND TOTAL LENGTH OF FISH COLLECTED FROM STATION NUMBER 20  
AT THE JUNCTION OF THE NORTH AND SOUTH BRANCHES OF THE CHICAGO RIVER DURING 1990

AI-43

Date of Sample and Fish Species Collected	Number of Fish		Weight (grams)		Individual Fish Weight (grams)			Total Length (millimeters)		
	Total Catch	Per 30 Minutes	Total Catch	Per 30 Minutes	Average	Minimum	Maximum	Average	Minimum	Maximum
<u>9/26/90 Sample</u>										
Alewife	6	6.00	42.20	42.20	7.03	0.29	40.16	52	28	150
Carp	33	33.00	71761.15	71761.15	2,174.58	393.00	9,809.10	476	297	835
Carp x goldfish	5	5.00	6504.55	6504.55	1,300.91	170.00	3,260.25	376	203	530
Gizzard shad	8	8.00	1157.12	1157.12	144.64	13.11	265.00	216	107	284
Goldfish	2	2.00	583.00	583.00	291.50	215.00	368.00	223	198	248
Green sunfish	3	3.00	77.00	77.00	25.67	8.00	55.00	99	78	132
Largemouth bass	6	6.00	298.00	298.00	49.67	11.00	164.00	138	96	225
Total for 9/26/90	63	63.00	80423.02	80423.02						
<u>11/6/90 Sample</u>										
Bluegill	4	3.88	198.10	191.71	49.53	1.10	100.00	122	38	170
Bluntnose minnow	45	43.65	220.00	212.90	4.89	0.87	7.89	72	44	87
Carp	15	14.55	21134.00	20452.25	1,408.93	300.00	3,685.50	428	260	587
Carp x goldfish	4	3.88	5763.55	5577.63	1,440.89	157.00	3,430.35	392	205	610
Gizzard shad	5	4.85	468.97	453.84	93.79	11.34	240.00	182	100	280
Golden shiner	5	4.85	154.48	149.50	30.90	15.14	38.24	135	109	149
Goldfish	17	16.49	4141.00	4007.41	243.59	39.00	474.00	210	135	264
Green sunfish	5	4.85	76.62	74.15	15.32	10.38	31.00	89	75	120
Pumpkinseed	4	3.88	58.46	56.58	14.62	12.46	16.00	92	84	96
Spottail shiner	6	5.82	15.09	14.59	2.52	1.76	3.60	62	55	71
Total for 11/6/90	110	106.70	32230.27	31190.56						

APPENDIX AII

Metrics Used in the Calculation of the  
Index of Biotic Integrity (IBI) for Each Fish Sample at  
Stations 1 to 20 in the Chicago Waterway System During 1990

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-1

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR  
STATION NUMBER 1 AT SHERIDAN ROAD ON THE NORTH SHORE CHANNEL DURING 1990

IBI Metric	Date of Collection			
	6/4/90	7/19/90	9/12/90	10/30/90
Number of Species Per Sample	10	7	10	2
Number of Species Per Sample	11	12	13	12
Number of Sucker Species	0	1	0	0
Number of Sunfish Species	2	4	3	3
Number of Darter Species	0	0	1	0
Number of Intolerant Species	1	1	0	2
Percent of Total as Green Sunfish	5.3	2.1	1.6	0.1
Percent of Individuals as Hybrids	0.5	0.0	0.1	2.6
Percent Disease	1.1	0.3	0.5	0.1
Percent of Omnivores	86.3	97.5	93.9	98.0
Percent of Insectivorous Cyprinids	0.5	0.0	1.8	1.1
Percent of Carnivores	0.8	0.3	1.9	0.7
Total Abundance	379	1107	1110	3871
Electrofishing time (min):	38	40	47	48
Stream Order	2	2	2	2
Stream Basin	2	2	2	2
Species Metric Factor	5	5	5	5
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	5	5	5	5
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	1	3
Green Metric Factor	3	5	5	5
Hybrid Metric Factor	3	5	3	3
Disease Metric Factor	1	3	3	3
Omnivore Metric Factor	1	1	1	1
Insectivorous Metric Factor	1	1	1	1
Carnivore Metric Factor	1	1	3	1
Abundance Metric Factor	5	5	5	5
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	28	34	34	34



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-2

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR STATION NUMBER 2 AT DEMPSTER STREET ON THE NORTH SHORE CHANNEL DURING 1990

IBI Metric	Date of Collection			
	6/5-6/90	7/23/90	9/19/90	10/31/90
Number of Species Per Sample	9	7	14	11
Number of Sucker Species	0	0	0	0
Number of Sunfish Species	4	3	3	3
Number of Darter Species	0	0	0	0
Number of Intolerant Species	0	0	0	2
Percent of Total as Green Sunfish	2.0	15.3	1.5	6.2
Percent of Individuals as Hybrids	9.3	16.2	1.3	2.3
Percent Disease	5.9	8.1	0.2	0.4
Percent of Omnivores	80.0	63.1	94.2	87.2
Percent of Insectivorus Cyprinids	0.0	0.0	2.3	1.2
Percent of Carnivores	1.0	0.9	0.3	1.2
Total Abundance	205	111	1235	258
Electrofishing time (min):	38	35	44	47
Stream Order	2	2	2	2
Stream Basin	2	2	2	2
Species Metric Factor	3	3	5	5
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	5	5	5	5
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	1	3
Green Metric Factor	5	3	5	3
Hybrid Metric Factor	1	1	1	1
Disease Metric Factor	1	1	3	3
Omnivore Metric Factor	1	1	1	1
Insectivorus Metric Factor	1	1	1	1
Carnivore Metric Factor	1	1	1	3
Abundance Metric Factor	5	3	5	5
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	26	22	30	32

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-3

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR  
STATION NUMBER 3 AT TOUHY AVENUE ON THE NORTH SHORE CHANNEL DURING 1990

IBI Metric	Date of Collection			
	6/6/90	7/18/90	9/18/90	11/7/90
Number of Species Per Sample	8	6	12	8
Number of Sucker Species	0	1	1	0
Number of Sunfish Species	3	0	3	3
Number of Darter Species	0	0	0	0
Number of Intolerant Species	0	0	0	1
Percent of Total as Green Sunfish	1.8	0.0	14.9	4.5
Percent of Individuals as Hybrids	8.9	5.9	9.2	18.2
Percent Disease	14.3	13.7	2.8	0.0
Percent of Omnivores	85.7	88.2	63.8	45.5
Percent of Insectivorous Cyprinids	0.0	0.0	2.1	0.0
Percent of Carnivores	0.0	0.0	6.4	9.1
Total Abundance	56	51	141	22
Electrofishing time (min):	46	44	50	42
Stream Order	2	2	2	2
Stream Basin	2	2	2	2
Species Metric Factor	3	3	5	3
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	5	1	5	5
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	1	1
Green Metric Factor	5	5	3	5
Hybrid Metric Factor	1	1	1	1
Disease Metric Factor	1	1	1	5
Omnivore Metric Factor	1	1	1	1
Insectivorous Metric Factor	1	1	1	1
Carnivore Metric Factor	1	1	5	5
Abundance Metric Factor	1	1	5	1
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	22	18	30	30

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-4

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR STATION NUMBER 4 AT PETERSON AVENUE ON THE NORTH SHORE CHANNEL DURING 1990

IBI Metric	Date of Collection			
	6/7/90	7/17/90	9/17/90	11/7/90
Number of Species Per Sample	5	7	4	5
Number of Sucker Species	0	1	0	0
Number of Sunfish Species	2	1	1	1
Number of Darter Species	0	0	0	0
Number of Intolerant Species	0	0	0	0
Percent of Total as Green Sunfish	5.9	0.0	9.1	42.9
Percent of Individuals as Hybrids	17.6	0.0	3.0	0.0
Percent Disease	11.8	0.0	0.0	0.0
Percent of Omnivores	64.7	35.7	84.8	14.3
Percent of Insectivorus Cyprinids	0.0	0.0	3.0	14.3
Percent of Carnivores	11.8	21.4	0.0	14.3
Total Abundance	17	14	33	7
Electrofishing time (min):	40	37	43	41
Stream Order	2	2	2	2
Stream Basin	2	2	2	2
Species Metric Factor	1	3	1	1
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	5	3	3	3
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	1	1
Green Metric Factor	3	5	3	1
Hybrid Metric Factor	1	5	1	5
Disease Metric Factor	1	5	5	5
Omnivore Metric Factor	1	3	1	5
Insectivorus Metric Factor	1	1	1	1
Carnivore Metric Factor	5	5	1	5
Abundance Metric Factor	1	1	1	1
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	22	34	20	30

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-5

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR STATION NUMBER 5 AT WILSON AVENUE ON THE NORTH BRANCH OF THE CHICAGO RIVER DURING 1990

IBI Metric	Date of Collection			
	6/12/90	7/16/90	9/14/90	10/26/90
Number of Species Per Sample	9	8	5	6
Number of Sucker Species	0	0	0	0
Number of Sunfish Species	3	4	2	2
Number of Darter Species	0	0	0	0
Number of Intolerant Species	0	0	0	0
Percent of Total as Green Sunfish	3.7	19.0	30.0	0.0
Percent of Individuals as Hybrids	7.4	14.3	15.0	0.0
Percent Disease	16.7	19.0	30.0	18.8
Percent of Omnivores	77.8	38.1	20.0	81.3
Percent of Insectivorous Cyprinids	1.9	0.0	0.0	0.0
Percent of Carnivores	1.9	9.5	10.0	6.3
Total Abundance	54	21	20	16
Electrofishing time (min):	45	41	44	44
Stream Order	3	3	3	3
Stream Basin	2	2	2	2
Species Metric Factor	3	3	1	1
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	5	5	3	3
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	1	1
Green Metric Factor	5	3	1	5
Hybrid Metric Factor	1	1	1	5
Disease Metric Factor	1	1	1	1
Omnivore Metric Factor	1	3	3	1
Insectivorous Metric Factor	1	1	1	1
Carnivore Metric Factor	3	5	5	5
Abundance Metric Factor	1	1	1	1
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	24	26	20	26

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-6

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR STATION NUMBER 6 AT GRAND AVENUE ON THE NORTH BRANCH OF THE CHICAGO RIVER DURING 1990

IBI Metric	Date of Collection			
	5/2/90	7/13/90	9/13/90	10/25/90
Number of Species Per Sample	7	7	5	7
Number of Sucker Species	0	0	0	0
Number of Sunfish Species	2	2	2	2
Number of Darter Species	0	0	0	0
Number of Intolerant Species	0	1	0	0
Percent of Total as Green Sunfish	1.8	2.4	4.8	2.2
Percent of Individuals as Hybrids	1.8	7.1	9.5	17.4
Percent Disease	18.2	9.5	2.4	10.9
Percent of Omnivores	85.5	76.2	76.2	56.5
Percent of Insectivorous Cyprinids	7.3	9.5	0.0	2.2
Percent of Carnivores	3.6	0.0	0.0	10.9
Total Abundance	55	42	42	46
Electrofishing time (min):	39	34	38	37
Stream Order	3	3	3	3
Stream Basin	2	2	2	2
Species Metric Factor	3	3	1	3
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	3	3	3	3
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	1	1
Green Metric Factor	5	5	5	5
Hybrid Metric Factor	1	1	1	1
Disease Metric Factor	1	1	1	1
Omnivore Metric Factor	1	1	1	1
Insectivorous Metric Factor	1	1	1	1
Carnivore Metric Factor	3	1	1	5
Abundance Metric Factor	1	1	1	1
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	22	20	18	24

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-7

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR STATION NUMBER 7 AT DAMEN AVENUE ON THE CHICAGO SANITARY AND SHIP CANAL DURING 1990

IBI Metric	Date of Collection			
	4/4/90	8/9/90	7/31/90	9/27/90
Number of Species Per Sample	4	9	6	8
Number of Sucker Species	0	0	0	0
Number of Sunfish Species	1	2	1	2
Number of Darter Species	0	0	0	0
Number of Intolerant Species	0	0	0	0
Percent of Total as Green Sunfish	0.0	0.8	0.0	1.3
Percent of Individuals as Hybrids	0.0	0.0	0.0	1.9
Percent Disease	15.4	8.7	25.9	12.7
Percent of Omnivores	84.6	89.8	86.2	87.9
Percent of Insectivorous Cyprinids	0.0	0.0	0.0	0.0
Percent of Carnivores	0.0	5.5	5.2	3.8
Total Abundance	13	127	58	157
Electrofishing time (min):	34	31	35	34
Stream Order	3	3	3	3
Stream Basin	2	2	2	2
Species Metric Factor	1	3	1	3
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	1	3	1	3
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	1	1
Green Metric Factor	5	5	5	5
Hybrid Metric Factor	5	5	5	1
Disease Metric Factor	1	1	1	1
Omnivore Metric Factor	1	1	1	1
Insectivorous Metric Factor	1	1	1	1
Carnivore Metric Factor	1	5	5	3
Abundance Metric Factor	1	3	1	5
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	20	30	24	26

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-8

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR STATION NUMBER 8 AT CICERO AVENUE ON THE CHICAGO SANITARY AND SHIP CANAL DURING 1990

IBI Metric	Date of Collection			
	3/30/90	3/30/90	7/30/90	9/28/90
Number of Species Per Sample	4	8	5	11
Number of Sucker Species	0	0	0	0
Number of Sunfish Species	0	0	0	2
Number of Darter Species	0	0	0	0
Number of Intolerant Species	0	0	0	1
Percent of Total as Green Sunfish	0.0	0.0	0.0	0.7
Percent of Individuals as Hybrids	0.0	1.0	0.0	0.0
Percent Disease	4.2	13.9	7.0	2.1
Percent of Omnivores	95.8	98.2	99.0	96.5
Percent of Insectivorous Cyprinids	0.0	0.4	0.0	0.7
Percent of Carnivores	0.0	0.0	0.0	1.4
Total Abundance	24	490	100	141
Electrofishing time (min):	36	39	34	40
Stream Order	3	3	3	3
Stream Basin	2	2	2	2
Species Metric Factor	1	3	1	3
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	1	1	1	3
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	1	1
Green Metric Factor	5	5	5	5
Hybrid Metric Factor	5	1	5	5
Disease Metric Factor	1	1	1	1
Omnivore Metric Factor	1	1	1	1
Insectivorous Metric Factor	1	1	1	1
Carnivore Metric Factor	1	1	1	3
Abundance Metric Factor	1	5	3	5
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	20	22	22	30

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-9

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR STATION NUMBER 9 AT HARLEM AVENUE ON THE CHICAGO SANITARY AND SHIP CANAL DURING 1990

IBI Metric	Date of Collection			
	4/12/90	6/25/90	8/3/90	10/5/90
Number of Species Per Sample	3	3	4	3
Number of Sucker Species	0	0	0	0
Number of Sunfish Species	0	0	0	0
Number of Darter Species	0	0	0	0
Number of Intolerant Species	0	0	0	0
Percent of Total as Green Sunfish	0.0	0.0	0.0	0.0
Percent of Individuals as Hybrids	0.0	2.5	0.0	0.0
Percent Disease	32.8	23.5	36.9	15.0
Percent of Omnivores	100.0	97.5	100.0	100.0
Percent of Insectivorous Cyprinids	0.0	0.0	0.0	0.0
Percent of Carnivores	0.0	0.0	0.0	0.0
Total Abundance	64	81	84	20
Electrofishing time (min):	40	32	36	34
Stream Order	3	3	3	3
Stream Basin	2	2	2	2
Species Metric Factor	1	1	1	1
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	1	1	1	1
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	1	1
Green Metric Factor	5	5	5	5
Hybrid Metric Factor	5	1	5	5
Disease Metric Factor	1	1	1	1
Omnivore Metric Factor	1	1	1	1
Insectivorous Metric Factor	1	1	1	1
Carnivore Metric Factor	1	1	1	1
Abundance Metric Factor	1	3	1	1
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	20	18	20	20



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-10

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR STATION NUMBER 10 AT WILLOW SPRINGS ROAD ON THE CHICAGO SANITARY AND SHIP CANAL DURING 1990

IBI Metric	Date of Collection			
	4/5/90	6/29/90	9/7/90	10/15/90
Number of Species Per Sample	5	6	5	3
Number of Sucker Species	0	0	0	0
Number of Sunfish Species	1	1	0	1
Number of Darter Species	0	0	0	0
Number of Intolerant Species	0	0	0	0
Percent of Total as Green Sunfish	0.0	1.7	0.0	12.5
Percent of Individuals as Hybrids	0.0	0.0	0.0	0.0
Percent Disease	41.7	6.8	23.1	37.5
Percent of Omnivores	97.2	96.6	76.9	87.5
Percent of Insectivorous Cyprinids	0.0	1.7	20.5	0.0
Percent of Carnivores	0.0	0.0	2.6	0.0
Total Abundance	36	59	39	8
Electrofishing time (min):	37	35	32	31
Stream Order	3	3	3	3
Stream Basin	2	2	2	2
Species Metric Factor	1	1	1	1
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	1	1	1	1
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	1	1
Green Metric Factor	5	5	5	3
Hybrid Metric Factor	5	5	5	5
Disease Metric Factor	1	1	1	1
Omnivore Metric Factor	1	1	1	1
Insectivorous Metric Factor	1	1	3	1
Carnivore Metric Factor	1	1	3	1
Abundance Metric Factor	1	1	1	1
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	20	20	24	18

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-11

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR STATION NUMBER 11 AT 16TH STREET, LOCKPORT ON THE CHICAGO SANITARY AND SHIP CANAL DURING 1990

IBI Metric	Date of Collection			
	4/17/90	6/26/90	8/1/90	10/4/90
Number of Species Per Sample	5	5	5	3
Number of Sucker Species	0	0	0	0
Number of Sunfish Species	1	1	1	1
Number of Darter Species	0	0	0	0
Number of Intolerant Species	0	0	0	0
Percent of Total as Green Sunfish	0.0	68.6	26.9	10.0
Percent of Individuals as Hybrids	0.0	0.0	0.0	0.0
Percent Disease	46.7	5.7	23.1	40.0
Percent of Omnivores	83.3	25.7	69.2	90.0
Percent of Insectivorus Cyprinids	13.3	0.0	0.0	0.0
Percent of Carnivores	3.3	0.0	3.8	0.0
Total Abundance	30	35	26	10
Electrofishing time (min):	34	34	44	47
Stream Order	4	4	4	4
Stream Basin	2	2	2	2
Species Metric Factor	1	1	1	1
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	1	1	1	1
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	1	1
Green Metric Factor	5	1	1	3
Hybrid Metric Factor	5	5	5	5
Disease Metric Factor	1	1	1	1
Omnivore Metric Factor	1	3	1	1
Insectivorus Metric Factor	1	1	1	1
Carnivore Metric Factor	3	1	3	1
Abundance Metric Factor	1	1	1	1
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	22	18	18	18

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-12

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR  
STATION NUMBER 12 AT 130TH STREET ON THE CALUMET RIVER DURING 1990

IBI Metric	Date of Collection			
	4/25/90	7/11/90	9/6/90	10/22/90
Number of Species Per Sample	11	9	7	11
Number of Sucker Species	1	0	0	1
Number of Sunfish Species	1	2	3	3
Number of Darter Species	0	0	0	0
Number of Intolerant Species	1	0	0	2
Percent of Total as Green Sunfish	0.0	0.8	1.3	4.2
Percent of Individuals as Hybrids	0.7	0.0	0.7	0.5
Percent Disease	0.2	0.8	2.6	1.9
Percent of Omnivores	29.9	74.4	73.7	83.0
Percent of Insectivorus Cyprinids	52.0	0.0	0.0	0.5
Percent of Carnivores	16.0	20.9	20.4	8.5
Total Abundance	431	129	152	212
Electrofishing time (min):	40	40	36	35
Stream Order	3	3	3	3
Stream Basin	2	2	2	2
Species Metric Factor	3	3	3	3
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	1	3	5	5
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	1	3
Green Metric Factor	5	5	5	5
Hybrid Metric Factor	3	5	3	3
Disease Metric Factor	3	3	1	1
Omnivore Metric Factor	3	1	1	1
Insectivorus Metric Factor	5	1	1	1
Carnivore Metric Factor	5	5	5	5
Abundance Metric Factor	5	3	5	5
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	36	32	32	34

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-13

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR STATION NUMBER 13 IMMEDIATELY DOWNSTREAM OF THE O'BRIEN LOCK AND DAM ON THE CALUMET RIVER DURING 1990

IBI Metric	Date of Collection			
	4/23/90	7/10/90	9/5/90	10/23/90
Number of Species Per Sample	10	10	7	7
Number of Sucker Species	0	0	0	0
Number of Sunfish Species	3	2	3	3
Number of Darter Species	0	0	0	0
Number of Intolerant Species	0	0	0	1
Percent of Total as Green Sunfish	2.8	0.0	22.9	41.5
Percent of Individuals as Hybrids	2.8	0.0	1.0	1.6
Percent Disease	13.9	12.2	8.6	0.0
Percent of Omnivores	50.0	57.3	71.4	51.6
Percent of Insectivorous Cyprinids	16.7	8.0	0.0	0.0
Percent of Carnivores	16.7	25.3	3.8	1.6
Total Abundance	36	75	105	188
Electrofishing time (min):	30	28	31	30
Stream Order	3	3	3	3
Stream Basin	2	2	2	2
Species Metric Factor	3	3	3	3
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	5	3	5	5
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	1	1
Green Metric Factor	5	5	1	1
Hybrid Metric Factor	1	5	3	1
Disease Metric Factor	1	1	1	5
Omnivore Metric Factor	1	1	1	1
Insectivorous Metric Factor	1	1	1	1
Carnivore Metric Factor	5	5	3	3
Abundance Metric Factor	1	3	5	5
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	26	30	26	28

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-14

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR  
STATION NUMBER 14 AT ROUTE I-94 ON THE LITTLE CALUMET RIVER DURING 1990

IBI Metric	Date of Collection			
	4/24/90	7/9/90	9/4/90	10/23/90
Number of Species Per Sample	10	9	6	7
Number of Sucker Species	0	0	0	0
Number of Sunfish Species	1	2	2	1
Number of Darter Species	0	0	0	0
Number of Intolerant Species	0	0	0	0
Percent of Total as Green Sunfish	0.0	0.0	0.0	0.0
Percent of Individuals as Hybrids	1.2	1.5	0.7	0.0
Percent Disease	3.2	14.7	5.9	3.8
Percent of Omnivores	17.8	51.5	67.1	75.0
Percent of Insectivorous Cyprinids	74.1	5.9	0.7	3.8
Percent of Carnivores	5.0	30.9	25.7	20.0
Total Abundance	343	68	152	80
Electrofishing time (min):	49	37	30	32
Stream Order	3	3	3	3
Stream Basin	2	2	2	2
Species Metric Factor	3	3	1	3
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	1	3	3	1
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	1	1
Green Metric Factor	5	5	5	5
Hybrid Metric Factor	1	1	3	5
Disease Metric Factor	1	1	1	1
Omnivore Metric Factor	5	1	1	1
Insectivorous Metric Factor	5	1	1	1
Carnivore Metric Factor	3	5	5	5
Abundance Metric Factor	5	1	5	3
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	32	24	28	28

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-15

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR STATION NUMBER 15 AT HALSTED STREET ON THE LITTLE CALUMET RIVER DURING 1990

IBI Metric	Date of Collection			
	4/19/90	7/3/90	8/31/90	10/19/90
Number of Species Per Sample	4	5	2	4
Number of Sucker Species	0	0	0	0
Number of Sunfish Species	1	1	0	0
Number of Darter Species	0	0	0	0
Number of Intolerant Species	0	0	0	0
Percent of Total as Green Sunfish	21.4	0.8	0.0	0.0
Percent of Individuals as Hybrids	0.0	3.2	1.5	0.0
Percent Disease	42.9	20.0	24.2	18.2
Percent of Omnivores	71.4	94.4	98.5	100.0
Percent of Insectivorus Cyprinids	7.1	0.0	0.0	0.0
Percent of Carnivores	0.0	0.0	0.0	0.0
Total Abundance	14	125	66	22
Electrofishing time (min):	44	45	42	47
Stream Order	3	3	3	3
Stream Basin	2	2	2	2
Species Metric Factor	1	1	1	1
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	1	1	1	1
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	1	1
Green Metric Factor	1	5	5	5
Hybrid Metric Factor	5	1	1	5
Disease Metric Factor	1	1	1	1
Omnivore Metric Factor	1	1	1	1
Insectivorus Metric Factor	1	1	1	1
Carnivore Metric Factor	1	1	1	1
Abundance Metric Factor	1	3	1	1
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	16	18	16	20

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-16

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR  
STATION NUMBER 16 AT CICERO AVENUE ON THE CAL-SAG CHANNEL DURING 1990

IBI Metric	Date of Collection			
	4/18/90	6/28/90	8/8/90	10/17/90
Number of Species Per Sample	4	4	4	5
Number of Sucker Species	0	0	1	0
Number of Sunfish Species	1	1	1	1
Number of Darter Species	0	0	0	0
Number of Intolerant Species	0	0	0	0
Percent of Total as Green Sunfish	0.0	21.7	1.4	7.1
Percent of Individuals as Hybrids	10.3	0.0	2.9	0.0
Percent Disease	17.2	8.7	20.0	7.1
Percent of Omnivores	69.0	73.9	94.3	85.7
Percent of Insectivorous Cyprinids	3.4	0.0	0.0	0.0
Percent of Carnivores	0.0	4.3	0.0	7.1
Total Abundance	29	23	70	14
Electrofishing time (min):	35	35	33	33
Stream Order	4	4	4	4
Stream Basin	2	2	2	2
Species Metric Factor	1	1	1	1
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	1	1	1	1
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	1	1
Green Metric Factor	5	1	5	3
Hybrid Metric Factor	1	5	1	5
Disease Metric Factor	1	1	1	1
Omnivore Metric Factor	1	1	1	1
Insectivorous Metric Factor	1	1	1	1
Carnivore Metric Factor	1	3	1	5
Abundance Metric Factor	1	1	1	1
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	16	18	16	22

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-17

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR  
STATION NUMBER 17 AT ROUTE 83 ON THE CAL-SAG CHANNEL DURING 1990

IBI Metric	Date of Collection			
	4/13/90	6/27/90	8/22/90	10/16/90
Number of Species Per Sample	4	4	10	6
Number of Sucker Species	0	0	0	0
Number of Sunfish Species	2	2	2	2
Number of Darter Species	0	0	0	0
Number of Intolerant Species	0	0	0	0
Percent of Total as Green Sunfish	8.8	12.5	71.6	63.0
Percent of Individuals as Hybrids	0.0	0.0	0.5	0.0
Percent Disease	0.0	31.3	0.5	11.1
Percent of Omnivores	2.9	68.8	16.9	14.8
Percent of Insectivorous Cyprinids	0.0	0.0	0.5	0.0
Percent of Carnivores	2.9	12.5	4.4	0.0
Total Abundance	34	16	183	27
Electrofishing time (min):	35	35	47	47
Stream Order	4	4	4	4
Stream Basin	2	2	2	2
Species Metric Factor	1	1	3	1
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	3	3	3	3
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	1	1
Green Metric Factor	3	3	1	1
Hybrid Metric Factor	5	5	3	5
Disease Metric Factor	5	1	3	1
Omnivore Metric Factor	5	1	5	5
Insectivorous Metric Factor	1	1	1	1
Carnivore Metric Factor	3	5	3	1
Abundance Metric Factor	1	1	5	1
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	30	24	30	22



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-18

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR  
STATION NUMBER 18 AT THE INNER HARBOR ON THE CHICAGO RIVER DURING 1990

IBI Metric	Date of Collection			
	6/1/90	7/26/90	9/20/90	11/1/90
Number of Species Per Sample	13	13	10	9
Number of Sucker Species	0	0	0	0
Number of Sunfish Species	4	4	5	4
Number of Darter Species	0	0	0	0
Number of Intolerant Species	3	2	3	2
Percent of Total as Green Sunfish	6.6	19.0	54.1	54.9
Percent of Individuals as Hybrids	0.9	2.4	0.0	0.0
Percent Disease	1.9	4.8	6.6	0.0
Percent of Omnivores	42.5	27.4	9.0	5.6
Percent of Insectivorus Cyprinids	0.9	16.7	0.0	1.5
Percent of Carnivores	29.2	26.2	35.2	30.3
Total Abundance	106	84	122	195
Electrofishing time (min):	42	37	37	35
Stream Order	3	3	3	3
Stream Basin	2	2	2	2
Species Metric Factor	5	5	3	3
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	5	5	5	5
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	3	3	3	3
Green Metric Factor	3	3	1	1
Hybrid Metric Factor	3	1	5	5
Disease Metric Factor	1	1	1	5
Omnivore Metric Factor	3	3	5	5
Insectivorus Metric Factor	1	1	1	1
Carnivore Metric Factor	5	5	5	5
Abundance Metric Factor	3	1	3	5
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	34	30	34	40

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-19

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR  
STATION NUMBER 19 AT THE LOOP ON THE CHICAGO RIVER DURING 1990

IBI Metric	Date of Collection			
	5/31/90	7/25/90	9/24/90	9/24/90
Number of Species Per Sample	6	4	8	8
Number of Sucker Species	0	0	0	0
Number of Sunfish Species	1	1	2	2
Number of Darter Species	0	0	0	0
Number of Intolerant Species	1	0	2	1
Percent of Total as Green Sunfish	2.3	0.0	6.9	5.3
Percent of Individuals as Hybrids	1.1	0.0	0.0	0.0
Percent Disease	9.2	11.8	13.8	5.3
Percent of Omnivores	94.3	82.4	69.0	86.8
Percent of Insectivorus Cyprinids	0.0	0.0	0.0	0.0
Percent of Carnivores	2.3	14.7	20.7	5.3
Total Abundance	87	34	29	38
Electrofishing time (min):	41	37	33	36
Stream Order	3	3	3	3
Stream Basin	2	2	2	2
Species Metric Factor	1	1	3	3
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	1	1	3	3
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	1	1	3	1
Green Metric Factor	5	5	3	3
Hybrid Metric Factor	1	5	5	5
Disease Metric Factor	1	1	1	1
Omnivore Metric Factor	1	1	1	1
Insectivorus Metric Factor	1	1	1	1
Carnivore Metric Factor	3	5	5	5
Abundance Metric Factor	1	1	1	1
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	18	24	28	26

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE AII-20

METRICS USED IN THE CALCULATION OF THE INDEX OF BIOTIC INTEGRITY (IBI) FOR STATION NUMBER 20 AT THE NORTH AND SOUTH BRANCH CHICAGO RIVER JUNCTION DURING 1990

IBI Metric	Date of Collection			
	5/30/90	7/24/90	9/26/90	11/6/90
Number of Species Per Sample	14	8	5	8
Number of Sucker Species	0	1	0	0
Number of Sunfish Species	5	3	1	3
Number of Darter Species	0	0	0	0
Number of Intolerant Species	3	1	0	0
Percent of Total as Green Sunfish	2.0	12.1	4.6	4.5
Percent of Individuals as Hybrids	2.0	0.0	7.7	3.6
Percent Disease	9.9	12.1	6.2	2.7
Percent of Omnivores	75.2	77.6	78.5	79.1
Percent of Insectivorous Cyprinids	0.0	0.0	0.0	5.5
Percent of Carnivores	7.9	5.2	9.2	0.0
Total Abundance	101	58	65	110
Electrofishing time (min):	32	31	30	31
Stream Order	3	3	3	3
Stream Basin	2	2	2	2
Species Metric Factor	5	3	1	3
Sucker Metric Factor	1	1	1	1
Sunfish Metric Factor	5	5	1	5
Darter Metric Factor	1	1	1	1
Intolerant Metric Factor	3	1	1	1
Green Metric Factor	5	3	5	5
Hybrid Metric Factor	1	5	1	1
Disease Metric Factor	1	1	1	1
Omnivore Metric Factor	1	1	1	1
Insectivorous Metric Factor	1	1	1	1
Carnivore Metric Factor	5	5	5	1
Abundance Metric Factor	3	1	1	5
Index of Biotic Integrity (IBI)				
Sum of Metric Factors	32	28	20	26