

**UTAH STATE DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE RESOURCES**

**JORDAN RIVER
FISHERY EVALUATION**

JORDAN RIVER FISHERIES EVALUATION

In Conjunction with the Jordan River Wetland
Advanced Identification Study

September 1987

Maureen M. Wilson

Utah Division of Wildlife Resource
Department of Natural Resources

TABLE OF CONTENTS

	<u>Page</u>
Introduction	1
Field Studies	1
Results	4
Discussion	12
Literature Cited	20
Appendix I, UDWR Stream Fishery Classification Description .	21
Appendix II, Electrofishing Summary, Jordan River, Fall 1986, (Holden and Crist 1987)	23

LIST OF TABLES

	<u>Page</u>
Table 1. Jordan River fishery classification sections . . .	3
Table 2. Fishery Resource of the Jordan River, 1976, UDWR Records	8
Table 3. Fishery Resource of the Jordan River, 1985-1986. Studies completed by UDWR and Salt Lake County Health Department	10
Table 4. Fishery Resource of the Jordan River, 1986. From a comprehensive study completed for the Central Valley Wastewater Reclamation Facility. Holden and Crist (1987).	13

LIST OF FIGURES

	<u>Page</u>
Figure 1. Fishery classification sections	2
Figure 2. Sampling sites	5
Figure 3. Location of nongame fish species	14
Figure 4. Location of warm water game fish species	15
Figure 5. Location of cold water game fish species	17

Fishery Resource Evaluation
for
Jordan River in Salt Lake County, Utah

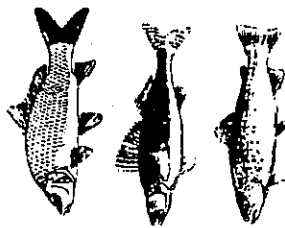
INTRODUCTION

A Wetland Advance Identification Study (WAIDS) was developed for and conducted on the wetlands associated with the Jordan River corridor in Salt Lake County, UT by representatives of several interested state and local government agencies including the Utah Division of Wildlife Resources (UDWR). The study was conducted to evaluate these wetlands as to their functional values (e.g., water quality, fish and wildlife habitat, storm water retention and others) for use in planning by the involved agencies. Using the guidelines described by Adamus, 1983, the WAIDS was divided into several components. This report deals with the fishery resource component of the WAIDS and addresses the fishery resource of the Jordan River and its relationship to the associated wetlands.

FIELD STUDIES

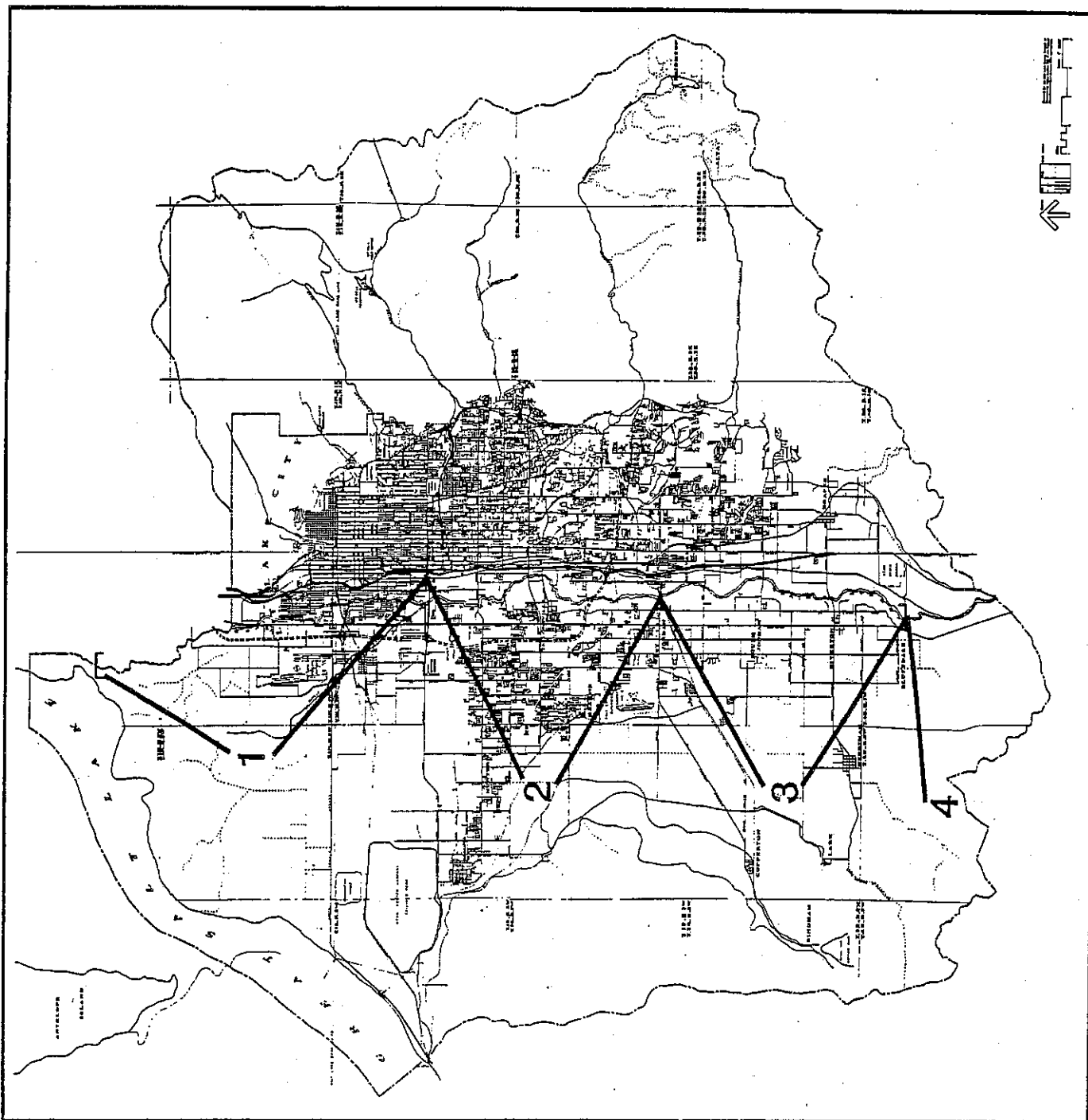
The Jordan River fishery (UDWR Fishery Catalog number IV AA) was sampled in March and June, 1963 (UDWR unpublished report) in several locations from near Lehi north to Cudahy Lane in Salt Lake City. Two river sections were described and surveyed in 1965. The entire river reach from Utah Lake to the Great Salt Lake (4202 ft elevation) was resurveyed in December, 1976. Five sections were established (Fig. 1) and rated according to the system used to classify fishing waters in Utah (Appendix I). This rating is based on three criteria: productivity, aesthetics and availability. The stream

Figure 1. Fishery Classification Sections



DIVISION OF WILDLIFE RESOURCES

JORDAN RIVER
FISHERY EVALUATION



sections and associated water quality classifications are given in Table 1. Note that the water quality section boundaries are not identical to the fishery classification section boundaries, but the trend, that is, the higher classification near Utah Lake, and the Lower near the Great Salt Lake, is similar.

Table 1. Jordan River fishery classification sections.

Section	Description	Fishery Classification	Miles	Water Quality Classification ^{1/}
1	Great Salt Lake (4202 ft elevation) to 2100 S. St., SLC	5		3D, 3C and 3B
2	2100 S. to 9000 S., SLC	4	28.4 ^{2/}	3B and 3A
3	9000 S. to 14600 S., SLC	4	9.3	3A
4	14600 S. to first dam at Salt Lake-Ut Co. line.	3	6.5	3B
5	Salt Lake-Utah County line to Utah Lake.	3	10.0	3B

^{1/} 3A designates cold water species of game fish protection.
3B designates warm water species of game fish protection.
3C designates nongame fish protection.

^{2/} Sections 1 and 2 combined.

An electrofishing station was established in each of the stream sections. In conjunction with a use-attainability assessment completed for the Jordan River at the Mill Creek confluence, the division conducted fisheries surveys above and below the Mill Creek confluence, in October, 1985. Additional sites from a study conducted for Central Valley Water Reclamation facility, were evaluated in September, 1986 for the WAIDS data

base near the Narrows, Bluffdale, 12300 and 9000 South Street. The locations of all these stations are shown in Figure 2.

RESULTS

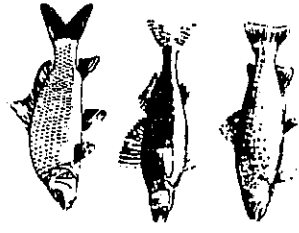
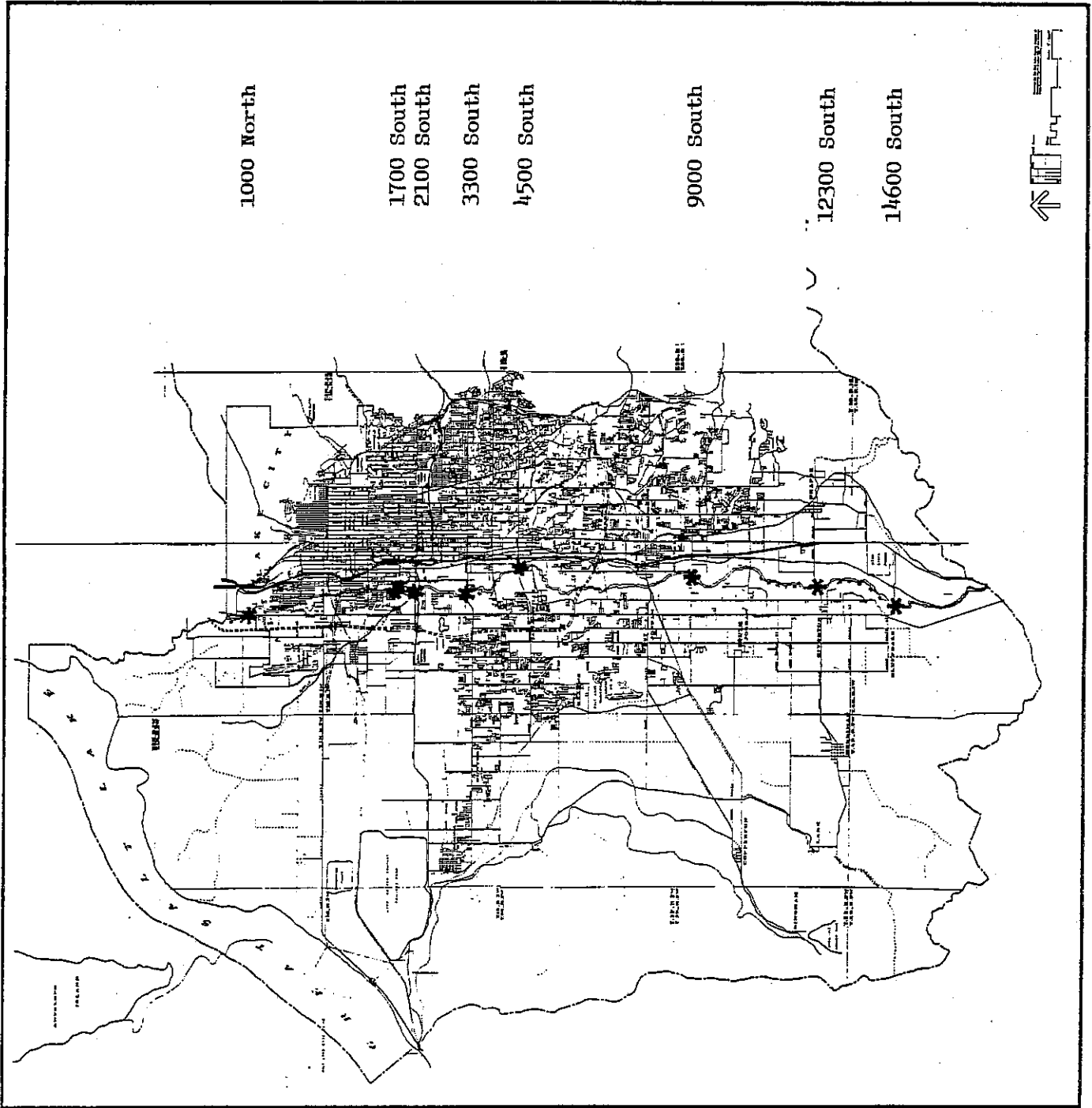
Historical Information

No population estimates were made from the data collected in 1963. Species present were listed and relative abundance described. Location of stations, species observed and general observations on habitat are listed below.

Station	Species	Status
Cudahy Lane	carp	rare
	Comments: Very few fish observed, turbidity of river increased due to dredging.	
2100 S.- 3300 S.	carp	predominant
	Utah sucker	common
	reeside shiner	rare
	green sunfish	rare
	Comments: River channel is wider and very shallow in areas north of Mill Creek confluence. Many stretches are devoid of fish.	
3300 S-Bullion St.	Utah sucker	very abundant
	carp	common
	<u>Pantosteus sp.</u>	rare
	rainbow trout	less than 20
	shiner	about 50 individuals
	Comments: Riverbed changes markedly at 4800 S. to 3300 S.; it becomes much deeper and has a silt substrate although pea gravel is still present. Turbidity is greatly increased over that observed in upstream stretches.	
Bullion St.-6400 S	Utah sucker	very abundant
	carp	common
	<u>Pantosteus sp.</u>	rare
	rainbow trout	about 30 individuals

Figure 2- Sampling Sites

*



DIVISION OF WILDLIFE RESOURCES

JORDAN RIVER
FISHERY EVALUATION

Station	Species	Status
	Comments: Water is clear, with slight brownish cast. Channel bottom is hard with small pea gravel present.	
6400 S. - 7800 S.	Utah sucker	very abundant
	carp	common
	Utah chub	rare
	rainbow trout	uncommon (15-20 individuals)
12400 S. St.	carp	common
	speckled dace	common
	<u>Pantosteus sp.</u>	common
	redside shiner	common
	Utah sucker	common
	Utah chub	rare
	brown trout	rare
	rainbow trout	rare
	Comments: Water is clear; channel has shallow riffles and few pools. Trout and most fish found in pools.	
14600 S. St.	carp	common
	<u>Pantosteus sp.</u>	common
	speckled dace	common
	Utah sucker	uncommon
	brown trout	uncommon
Lehi, near Narrows	channel catfish	abundant
	white bass	abundant
	walleye	abundant
	green sunfish	abundant
	carp	common
	Utah sucker	uncommon
	Utah chub	uncommon
	brown trout	rare

No indication was given as to how many individual fish make up a particular status description. Numbers observed were given for a very few species. Pantosteus sp. is a mountain sucker type. For the majority of stations in the WAIDS study area (Cudahy lane to 7800 S. St.), the nongame species, carp and sucker were most common. Warmwater game species were more

common in the upstream stations, near Utah Lake. These stations also contained a greater number of species than the downstream stations.

Results of the 1976 survey are given in Table 2. Station number is the south coordinate location in Salt Lake City (e.g., station 17 is located at 1700 South, Salt Lake City, UT). Again, population estimates were not made, due to the inability to obtain the data needed to make these estimates. Relative abundance is provided, however, and the data show that for stations within the Salt lake valley, the nongame species are the most abundant and that the warmwater game species are more common at stations closer to Utah Lake.

UDWR information contains a general (unpublished report) description of the five sections of the Jordan River; Sections 1 and 2 (Great Salt Lake to 6400 South, Salt Lake City) combined were described as having low gradient, poor stream esthetics, but suitable velocities and discharges for a warmwater fishery. Available fish habitat was lacking due to channelization, and high turbidity was thought to limit food production. The channel substrate type was described as of poor quality and unsuitable for macroinvertebrate and fish spawning habitat. Productivity for game species was very low and so these stream sections were designated as Class 5 fisheries. The factors described as limiting the fisheries were poor water quality and channelization impacts.

Section 3 (6400 South to 12300 South) was listed as a stream reach with moderate development and, at that time, poor esthetics. Stream discharge, water velocities, and percent of channel covered by low flow were thought to be suitable to maintain a fishery. Channelization caused major adverse impacts to the fish habitat in this reach also. Substrate was described as

Table 2. Fishery resource of the Jordan River, 1976, UDWR records.

Station	# Nongame species ^{1/}	% Composition	# Warmwater game species ^{2/}	% Composition	# Coldwater game species ^{3/}	% Composition	# Total species
17	13	100	0	0	0	0	2
41	11	92	0	0	1	8	2
123	70	96	0	0	3	4	4
146	25	17	124	83	0	0	6

^{1/} Nongame species: carp, Utah sucker, and mountain sucker.

^{2/} Warmwater game species: white bass, walleye, channel catfish, and black bullhead.

^{3/} Coldwater game species: rainbow trout and brown trout.

fair quality and suitable for macroinvertebrate production. Bank cover and stream shading were noted as poor. This section was stocked with trout at that time and had poor natural reproduction. This reach was designated a Class 5 fishery, though it was thought to be of Class 3 quality had it not been impacted by channelization.

Section 4 (12300 South to the Salt Lake-Utah County line) was rated fair in esthetics with the moderate development along the stream reach. Discharge was noted to be often inadequate for fishery purposes due to the diversions from the river. Water velocities were adequate, but percent of channel covered at low flow was described as poor. In this reach, bank cover, shading and habitat characteristics (pool and riffles) were noted as good. Turbidity, as in the previous reaches, was thought to limit production of aquatic plants. Substrate appeared to be good for macroinvertebrate production. Natural propagation of warmwater species was described as fair; and so this section was classified a Class 3 fishery, the highest of the four sections in Salt Lake County.

WAIDS EVALUATION

Fishery data collected in October 1985 and September 1986 is presented in Table 3. The stations sampled in the 1985 effort (Station 17 and 39) were chosen to determine possible adverse impacts of the Central Valley Water Reclamation Facility discharge (near 2900 South) on the fishery of the Jordan River. These stations were more typical of the altered channel, especially station 39, lacking riparian vegetation and associated wetlands. The station at 3900 South had, in fact, been dredged since the high runoff flows of 1983,

Table 3. Fishery resource of the Jordan River, 1985-86. Studies completed by UDWR and Salt Lake City-County Health Department.

Station	# Nongame species ^{1/}	% Composition	# Warmwater game species ^{2/}	% Composition	# Coldwater game species ^{3/}	% Composition	# Total species
17	138	93	10	7	0	0	7
39	35	88	5	12	0	0	4
90	34	89	3	8	1	3	4
146	37	84	7	16	0	0	4
Narrows	11	28	28	72	0	0	5

^{1/} Nongame species: carp, Utah sucker, mountain sucker and Utah chub

^{2/} Warmwater game species: black crappie, white bass, green sunfish, walleye, channel catfish, black bullhead and yellow perch.

^{3/} Coldwater game species: rainbow trout

1984 and 1985. The stations at 9000, 14600 South and the Narrows were added to obtain additional information, especially from reaches that did have associated wetlands (14600 South and Narrows). Again, the data gathered was insufficient to determine population levels. Species present and relative abundance only are presented. The general pattern follows that of the two previous studies. Nongame fish, especially carp and Utah sucker were dominant in all reaches except near Utah Lake at the Narrows where warmwater species, mostly white bass, were more common.

The presence of warm water species in the northern reaches (Sections 1 and 2) indicate a need to reevaluate the fisheries classification and management plans for these reaches, especially with the need for an urban fishery in the Salt Lake Valley. The water quality classification for the river reach from North Temple Street to Farmington Bay should be protected for warmwater game fish species (3B), rather than for nongame fish species (3C).

CENTRAL VALLEY STUDY

In 1986, Central Valley Wastewater Reclamation Facility contracted with BIO/WEST to conduct fishery and macroinvertebrate studies on the Jordan River (Holden and Crist 1987) to further evaluate potential impacts of the facility discharge on these resources. This study included eight sites on the Jordan River from Bluffdale (14600 South) to 1000 North in Salt Lake City. The Mill Creek confluence, where the facility discharge enters the river, was the site of a more concentrated sampling effort (three of eight sites) to determine any immediate effects of the discharge. In addition to these sites, other areas in the vicinity of the population monitoring sites were sampled by

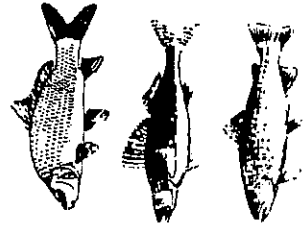
electrofishing and seining to determine presence of species and young-of-the-year (YOY) fish by habitat type. The relative abundance and percent composition of the study are given in Table 4. These numbers were obtained by multiplying the number of total fish collected by percent species composition at each station. The three stations near the Mill Creek confluence were summed (Station 29) and individual species were grouped as nongame, warmwater species and cold water species. Comparisons can be made between stations on the basis of catch-per-unit-effort as reported in the electrofishing summary of the BIO/WEST report (Appendix II). Numbers of fish varied at stations within the WAIDS study area from 30.68/1000 seconds at 12300 South to 70.33/1000 seconds at 1700 South.

DISCUSSION

All the fish sampling efforts on the Jordan River show that the nongame species are common in all of the fishery reaches (Fig. 3), and are the dominant group of species at all sample sites, except at the Narrows. This is probably because members of this species group (e.g., carp) tend to be opportunistic feeders and can utilize a wider range of water quality and habitat conditions (Edwards and Twomey 1982). Warmwater game fish species were found at almost all sampling sites (Fig. 4), but in reduced numbers, except at the Narrows site, where white bass was the dominant species (Table 3). In the earlier studies, they were found only near the Narrows site (Table 2). This group contains more species than the nongame fish species group. This may have been the result of local introductions and movement from Utah Lake, which supports many warmwater game fish species, including walleye and

**Figure 3.
Non-game
Fish Species**

- Carp *
- Utah Sucker *
- Mountain Sucker *
- Utah Chub *



DIVISION OF WILDLIFE RESOURCES

JORDAN RIVER
FISHERY EVALUATION

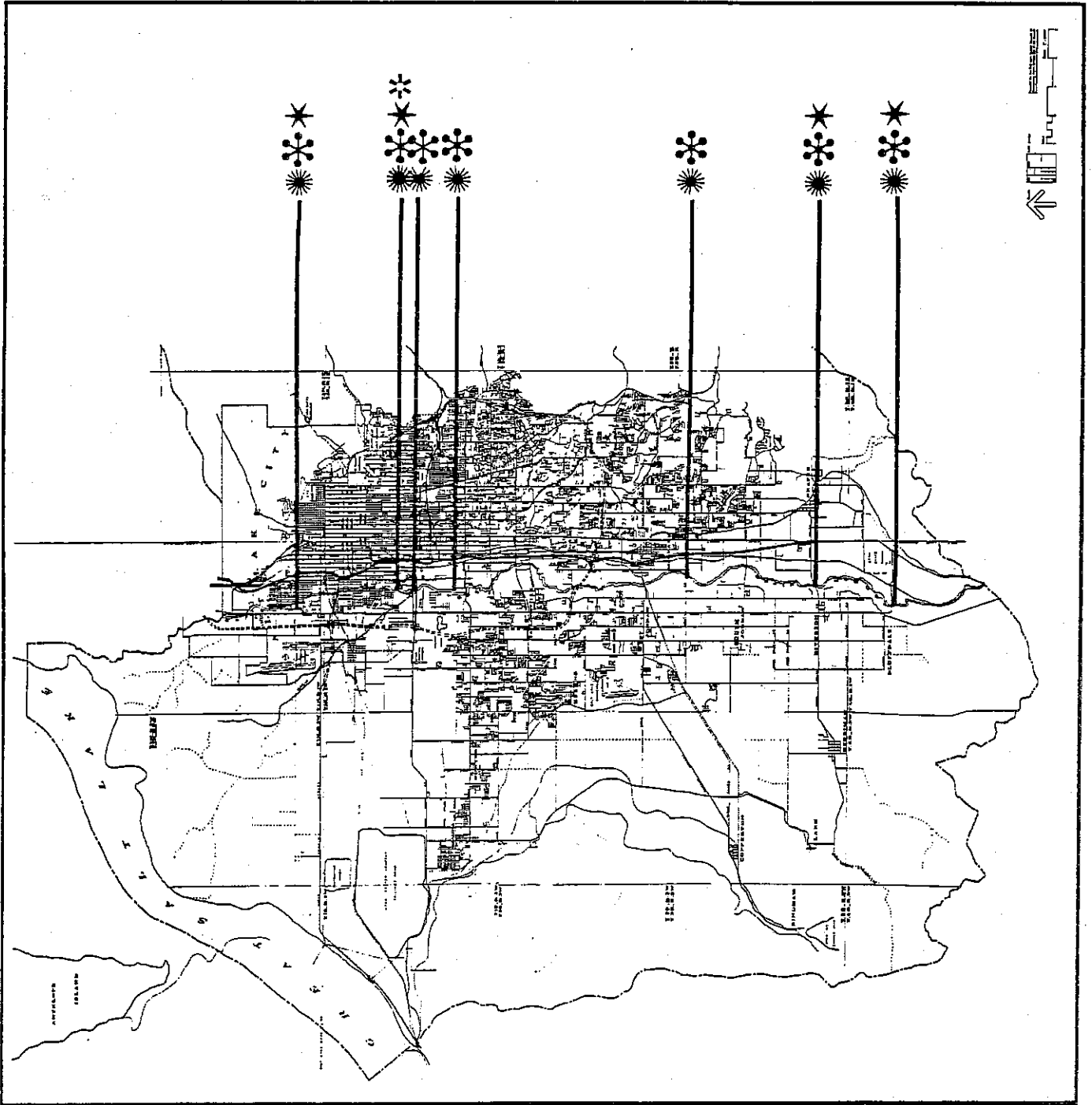


Figure 4. Warmwater Game Fish Species

Walleye ↙

White Bass ↙

Black Crappie ↙

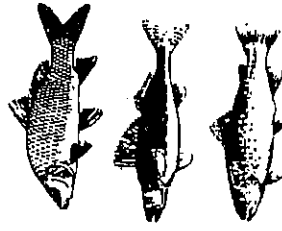
Green Sunfish ↙

Largemouth Bass ↙

Channel Catfish ↙

Black Bullhead ↙

Yellow Perch ↗



DIVISION OF WILDLIFE RESOURCES

JORDAN RIVER
FISHERY EVALUATION

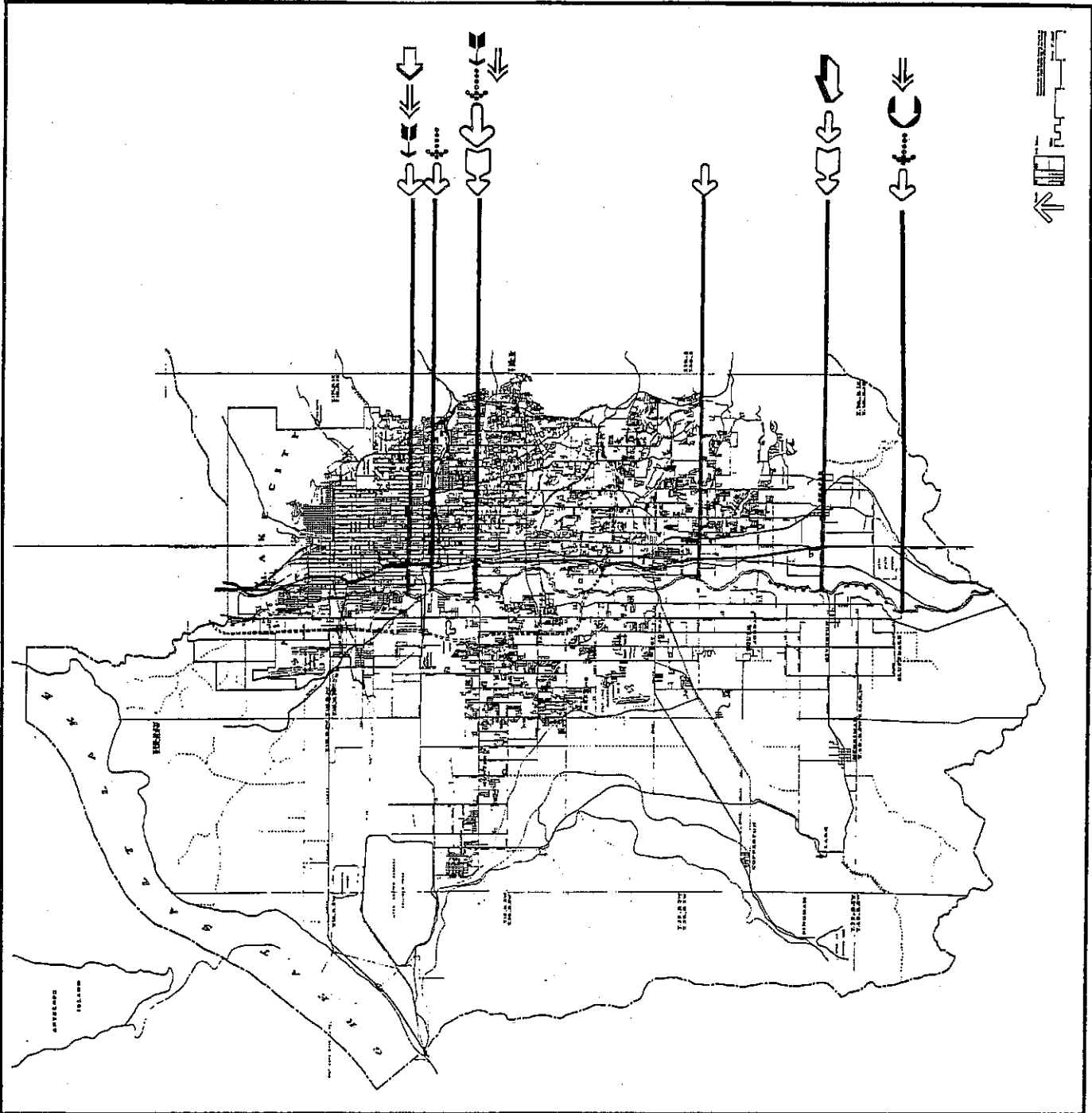


Table 4. Fishery resource of the Jordan River, 1986. From a comprehensive study completed for the Central Valley Wastewater Reclamation Facility (Holden and Crist 1987).

Station	# Nongame species ^{1/}	% Composition	# Warmwater game species ^{2/}	% Composition	# Coldwater game species ^{3/}	% Composition	# Total species
17	258	90.6	19	6.6	8	2.8	10
21	225	89.6	26	10.4	0	0	4
29	365	92	58	8.7	0	0	7
45	386	93	29	7.1	0	0	7
123	102	81	23	18.3	0	0	7
146	174	96	13	7	0	0	9

^{1/} Nongame species: carp, Utah sucker, mountain sucker, Utah chub, fathead minnow, and mosquitofish.

^{2/} Warmwater game species: black crappie, white bass, green sunfish, largemouth bass, walleye, channel catfish, black bullhead and yellow perch.

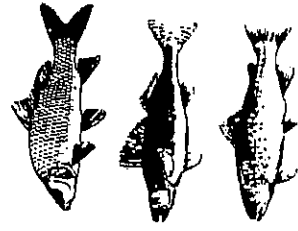
^{3/} Coldwater game species: cutthroat trout, rainbow trout, rainbow/cutthroat cross and brown trout.

white bass (Radant and Sakaguchi 1981). Coldwater game fish species, the group least tolerant of poor water quality and lack of habitat and cover (Raleigh, et al 1984, 1986) were found in very low numbers at some of the sampling sites (Fig. 5). The amount of natural reproduction that occurs in the Jordan River is unknown as electrofishing tends to select for larger fish (Reynolds 1983) and all sampling efforts were a one time sampling, usually in the fall or winter during low flow periods. Very few YOY fish were obtained by seining. This may have been due to the movement of YOY out of backwaters as water temperatures dropped (Holden and Crist 1987). Additional sampling throughout the year is required to determine the amount of natural reproduction for the fish species of the Jordan River.

Fish were found closely associated with bank cover in the 1985-86 study conducted by UDWR and Salt Lake County Health Department. Of the habitat types sampled in the Central Valley study, riparian banks, or those with overhanging vegetation, or willows generally were areas where fish were more common (L. Crist, personal comment). The station at 1700 South showed the highest catch per unit effort (Appendix I) and had high numbers in the 1985 sampling effort (Table 3), although the high numbers are not directly comparable to the other stations of that study since the sampling effort was not the same for all stations. However, a higher number of species were found in this station under both studies, and the amount of bank cover was noted to be greater than those of nearby stations (2100 South to 9000 South). This reach is downstream from the Surplus Canal and is located in an area included in the Jordan River Parkway System. As such it is relatively less disturbed than the other reaches mentioned above, although there are few associated

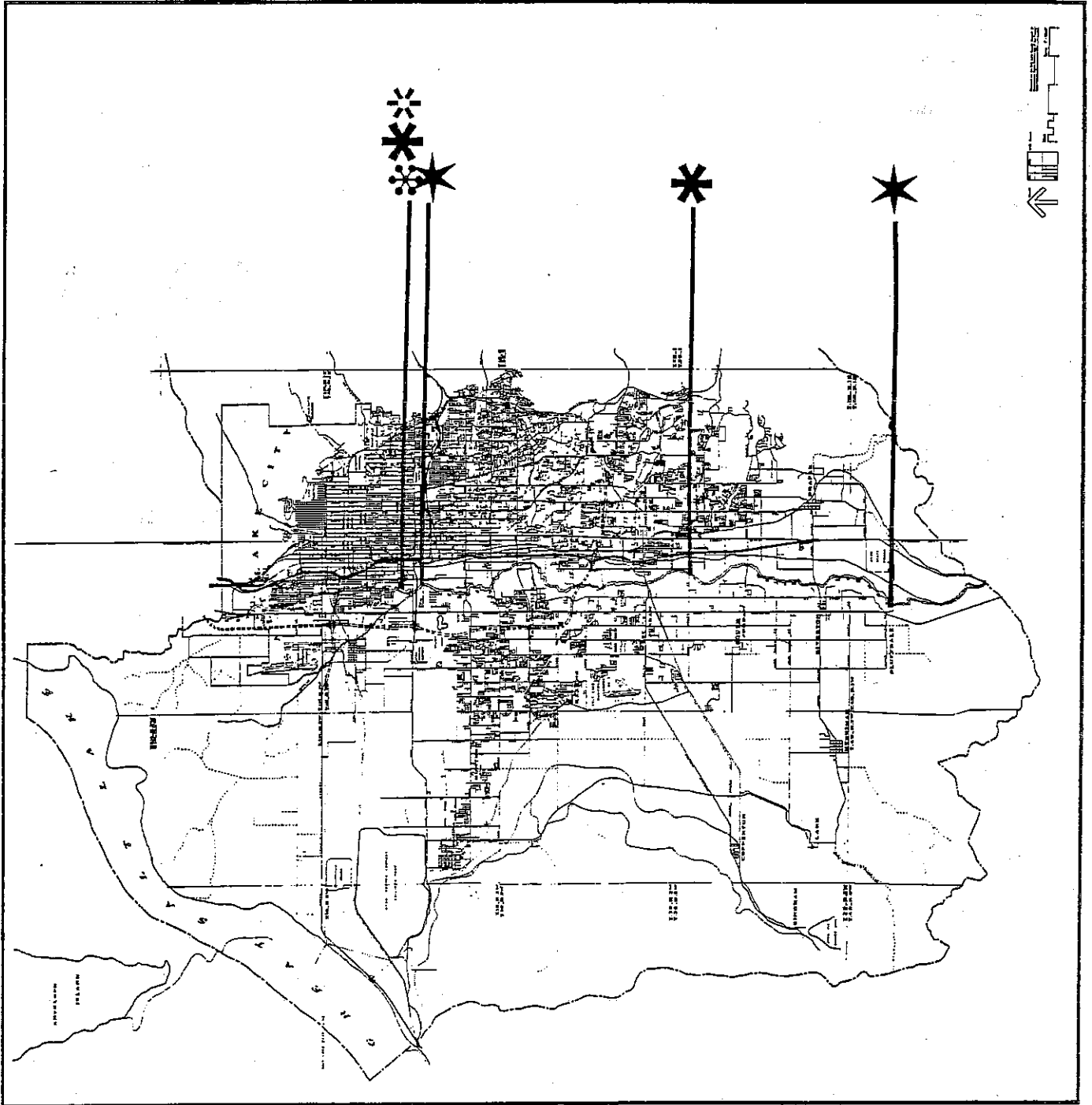
**Figure 5.
Coldwater Game
Fish Species**

- Cutthroat Trout ❄️**
- Rainbow Trout ***
- Cutthroat/Rainbow ❄️***
- Brown Trout ***



DIVISION OF WILDLIFE RESOURCES

JORDAN RIVER
FISHERY EVALUATION



wetlands and riparian vegetation areas are not extensive.

Generally, all the Jordan River sampling efforts focus on the adverse impacts of channelization (channel straightening), dredging and poor water quality as limiting the fish habitat of the Jordan River. Channelization and dredging has been occurring on the river periodically for over 20 years and much more intensively during the last four high water years. Many of the reaches have been altered, particularly north of the 9000 South area, making the channel more canal-like and reducing the diversity of habitat types needed to maintain a healthy fishery. Channelization and dredging has also removed riparian vegetation, which provides very effective cover and has cut off other associated wetlands such as oxbows, which are important in improving water quality, serving as flood flow channels during high water, and offering nursery habitat for young fish. Unfortunately, data on the fishery of the Jordan River before any alteration activities does not exist.

From a fishery resource standpoint, the maintenance of all existing wetlands along the Jordan River corridor is valuable to preserve what little habitat diversity the river now has. As such, the wetland basins identified in the identification study (see Jensen 1986) would be considered to be valuable. We offer the following as specific management practice recommendations for the Jordan River channel and associated wetlands:

1. An update of the fishery classification information, particularly as related to the water quality, quantity and physical habitat characteristics is needed.

2. Dredging should be discontinued as a flood control practice.
3. Drop structures should be placed to stabilize the gradient and prevent any future headcutting due to dredging and channel straightening activities. These structures will also provide some instream habitat.
4. Revegetation of raw banks by native wetland species will provide both bank stability and instream cover for fish.
5. Reestablishment of connections between the river channel and oxbows to allow for water exchange and fish passage will provide for important warm water spawning and rearing areas.
6. The river must be allowed to meander and form backwater, riffle, run and pool areas. A diversity of physical habitat types provides for a diversity of life stages and species to exist. Disallowing development within the river corridor, particularly in the reaches where the river presently meanders (near 1700 South, 12300 South, and 14600 South) will prevent the need for expensive work to repair damages to the river environs and the habitat that is provided to fish and wildlife.

LITERATURE CITED

- Adamus, P. 1983. A method for wetland functional assessment, Volumes I and II. Report No. FHWA-IP-82-24. U.S. Dept. Transportation. Federal Highway administration.
- Edwards, E.A., and K. A. Twomey. 1982. Habitat suitability index models: Common carp. U.S. Dept. Int. Fish Wildl. Serv. FWS/OBS-82/10.12. 27 pp.
- Holden, P. and L. Crist. 1987. Fisheries and macroinvertebrate studies of the Jordan River in Salt Lake County. BIO/WEST report for the Central Valley Water Reclamation Board. BIO/WEST, Logan, UT.
- Jensen, S. In press. Jordan River channel stability evaluation. Salt Lake City-County Health Department. Division of Environmental Health. Bureau of Water Quality.
- Radant, R. D. and D. K. Sagaguchi. 1981. Utah Lake fisheries inventory. Cooperative agreement 8-07-40-S0634 between the U.S. Bureau of Reclamation and the Utah Division of Wildlife Resources. 244 pp.
- Raleigh, R. F., T. Hichman, R. C. Solomon, and P. C. Nelson. 1984. Habitat suitability information: Rainbow trout. U.S. Fish Wildl. Serv. FWS/OBS-82/10.60. 64 pp.
- Raleigh, R. F., L. D. Zuckerman, and P. C. Nelson. 1986. Habitat suitability index models and instream flow suitability curves: Brown trout, revised. U.S. Fish Wildl. Serv. Biol. Rep. 82(10.124). 65 pp.
- Reynolds, J. B. 1983. Electrofishing. In: Fisheries techniques. L. A. Nielsen and D. L. Johnson, eds. American fisheries Society, Bethesda, MD. pp 147-163.

APPENDIX I

UDWR Stream Fish Classification Description

General Definitions Of Class I, II, III, IV, V, And VI Streams

Class I streams support the highest quality stream fisheries in Utah, and are the best of the blue ribbon waters. They should be preserved and improved for fishing and related recreation. These streams are typically outstanding in natural beauty and are truly unique. They are accessible by automobile, and the larger streams are floatable. Productivity of game fish is very high. Natural reproduction and/or stocking of small fish maintains an excellent sport fishery. At the present, only 70 miles of Class I stream exist in Utah. All Class I streams are on the quality stream list.

Class II streams are of great importance to the state fishery, and may also be considered blue ribbon quality. These are productive streams with high esthetic value and should be preserved. Fishing and other recreational uses should be the primary consideration. They are moderate to large in size and may have some human development along them. Many Class II streams are comparable to Class I except for size. There are only 302 miles of Class II stream in Utah. All Class II streams are on the quality stream list.

Class III streams comprise about half of the total stream fisheries in Utah. These waters are important because they support the bulk of our stream fishing. Water development involving Class III waters should be planned to include fisheries as a primary use, and fishery losses should be prevented, or enhanced when possible. There are 3,864 miles of Class III stream in Utah. Many Class III streams are on the quality stream list.

Class IV streams are typically poor in quality, with limited sport fishery value. Fishing should be considered a secondary use. A few Class IV fisheries support catchable-size hatchery trout in areas where few other fisheries exist. Water development plans should include proposals to enhance fisheries values where feasible. There are 1,893 miles of Class IV stream in Utah. The few Class IV streams on the quality stream list usually support federal or state fish species that are threatened, endangered, or of special management concern.

Class V streams in their present state are practically valueless as fisheries. Other water uses might take preference over fisheries use in planning water developments. However, many Class V streams could provide valuable fisheries if additional water or physical habitat improvement were provided. There are 726 miles of Class V stream in Utah. Class V streams are generally not on the quality stream list.

Class VI streams are those stream channels which are dewatered for significant periods of the year. Many of the stream reaches now in this class could support good-to-excellent fish populations if appropriate minimum flows were provided. Planning of water developments should include consideration for restoration of these dewatered sections of stream. Class VI streams are not on the quality stream list unless special plans for provision of adequate instream flows have been made, but not yet actually implemented.

APPENDIX II

Electrofishing Summary, Jordan River

Fall 1986

(Holden and Crist 1987)

Demet

ELECTROFISHING SUMMARY - JOHNSON RIVER - FALL, 1986

Species	S-1		S-2		J-1		J-2		J-3		J-4		J-5		J-6		J-7		J-8	
	C	%	C	%	C	%	C	%	C	%	C	%	C	%	C	%	C	%	C	%
Carp	52.0	92.5	12.4	78.1	76.0	90.2	24.0	33.6	27.0	50.3	29.0	58.7	23.0	48.5	16.0	30.0	3.0	8.7	7.0	18.6
Utah sucker	2.0	3.8	1.9	12.0	6.0	7.2	37.0	52.5	21.0	39.3	17.0	33.7	20.0	41.0	34.0	63.2	22.0	72.3	27.0	74.2
Mt. sucker							<1.0	.7									<1.0	.8	1.0	2.2
Black crapple	<1.0	.4	<1.0	1.5					1.0	1.6			1.0	.6	1.0	1.9			<1.0	1.1
White bass	1.0	2.5	1.0	4.6			<1.0	.7	5.0	8.8	1.7	3.4	4.0	8.1	1.0	1.9	5.0	15.1	<1.0	1.1
CRSF			<1.0	1.5			3.0	4.9			<1.0	.8	<1.0	.2	1.0	1.7				
HSSF																				
IMB																				
Walleye	<1.0	.8	<1.0								1.0	1.9					1.0	2.4	<1.0	.5
REF																				
CIT							<1.0	.7												
REF X CIT							1.0	1.4												
Brown trout							<1.0	.7												
Channel catfish							<1.0	.7			<1.0	1.5	<1.0	.5	1.0	1.4			<1.0	.5
Black bullhead							<1.0	.3											1.0	1.6
Utah chub					2.0	2.5	3.0	3.8												
Rainhead																				
Catostoma			<1.0	1.5											<1.0	.2			1.0	.5
Yellow perch																				
Total/1000's	56.75		15.87		83.68		70.33		63.78		49.87		48.35		53.50		30.58		35.96	
Tot. fish collected	230		131		359		285		251		264		408		413		126		182	
Sample size (sec)	4211		8216		4290		4061		4730		5294		8436		7720		4104		5050	
No. of species	5		6		3		10		4		6		7		7		6		6	

C = Catch/1000 seconds

% = percent species composition at station

% X TFC = Total Number of Fish

J-1: 1000 North-200 North
 J-2: 1700 South-2100 South
 J-3: 2100 South-2700 South
 J-4: Below Millcreek
 J-5: Above Millcreek to 3300 South
 J-6: 4500 South to Big Cottonwood Creek
 J-7: 12300 South Upstream
 J-8: 14600 South Upstream