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**AUSTIN      TEXAS**  
**INTER-OFFICE**

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**DATE:** April 19, 1996

**SUBJECT:** Mountain Creek fish tissue health consultation

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The Texas Department of Health (TDH) Seafood Safety Division has requested that the Health Risk Assessment and Toxicology Program review fish tissue data from 68 samples collected from Mountain Creek Lake. This Lake is adjacent to a Texas Utilities Power Plant and a Naval Air Station in Dallas.

We estimate the theoretical maximum excess lifetime cancer risk associated with consumption of one eight ounce meal per month of Mountain Creek fish to be approximately five in 10,000 persons. This risk exceeds TDH criteria for issuance of a fish consumption advisory. The major contributor to the carcinogenic risk are the polychlorinated biphenyls, particularly Aroclor 1260.

In addition to the carcinogenic risk, the hazard index for non-cancer effects is exceeded by 1.8 times, primarily due to the presence of Aroclor 1254.

**Health Consultation**

**Mountain Creek Lake Fish Tissue**

**Dallas, Texas**

**April 17, 1996**

**Prepared by:**

**TEXAS DEPARTMENT OF HEALTH  
HEALTH RISK ASSESSMENT AND TOXICOLOGY PROGRAM**

## **BACKGROUND AND STATEMENT OF ISSUES**

Mountain Creek Lake is located in Grand Prairie and Dallas, Texas on a tributary of the Trinity River just off Interstate 20 in Dallas County. This reservoir was impounded in 1937 and is approximately 3,000 acres in size. The lake is primarily used by an adjacent power generating plant, but also is a popular fishing and boating area. The water is shallow and turbid, with an average depth of eight feet and a shoreline of scarce vegetation.

The facilities adjacent to Mountain Creek Lake include the Texas Utilities Power Plant, the Naval Air Station (NAS), and the Naval Weapons Industrial Reserve Plant (NWIRP). A base closure is underway at the Naval Air Station located adjacent to the NWIRP and a Resource Conservation and Recovery Act (RCRA) Facility Investigation is being conducted by the Department of the Navy at Dallas. Part of the Naval Air Station drains to Mountain Creek below the dam. Additionally, the Bio-Ecology National Priority List (NPL) Site is bounded by the tributaries of Mountain Creek and is located one mile northeast of the Lake. This former landfill site was cleaned up and capped in 1985 and has recently been removed from the NPL for Superfund sites. There have been no contaminant releases found in monitoring wells located between Bio-Ecology and Mountain Creek Lake between 1985-1996.

Contaminant levels in fish tissues from a preliminary survey conducted by the Department of the Navy raised concerns from representatives of the Texas Department of Health (TDH), Texas Natural Resource Conservation Commission, and the U.S. Environmental Protection Agency (EPA), regarding potential human health risks associated with consumption of fish from Mountain Creek Lake (results attached in appendix). As a result, the Navy contracted with the U.S. Geological Survey (USGS) to conduct sampling and analysis of fish tissue, as well as a survey of consumption patterns of local fishers. The survey indicates that regular fishing is occurring and that the species most commonly consumed are channel catfish, common carp, and largemouth bass.

The following analyses were performed: six channel catfish were analyzed for volatile and semi-volatile organic chemicals; 23 largemouth bass, 10 common carp, and 29 channel catfish were analyzed for polychlorinated biphenyls (PCB's) and organochlorine pesticides; and from this set of 62 samples, 10 largemouth bass, 9 common carp, and 26 channel catfish were analyzed for metals. The samples were analyzed as either skin-on or skin-off fillets, or whole eviscerated fish; however, all data represent edible fish tissue as consumed by the public.

## DISCUSSION

### Results

The chemicals that were detected in the 68 fish collected by the USGS from Mountain Creek Lake are summarized in Tables I and II below. Of these chemicals, the major contaminants of concern are the PCB's, particularly Aroclor 1260. The organochlorine pesticides that were found in fish tissue include chlordane, which was found at ten times above the detection limit and heptachlor epoxide, dieldrin, DDD, DDT, and methoxychlor, which contained average concentrations of less than the detection limit. The two volatile organics that were found include acetone, which is a common lab contaminant and is commonly used in the field for rinsing of collection jars, and phenol, which was reported by the laboratory as being found in the blank. Of the 22 metals that were analyzed, only selenium was found at levels of public health concern.

The toxicological evaluation associated with consumption of Mountain Creek fish considers both the carcinogenic potential of these chemicals, and the non-cancer health effects, such as liver lesions, dermal, and ocular effects. Persons may be exposed to a number of these chemicals simultaneously in a particular portion of edible fish tissue. If two or more contaminants are capable of producing similar adverse health effects, we consider the risk to be additive for the particular health effect. Cancer risk estimates are based on a 70 kg person consuming an average of 30 grams per day (approximately one eight ounce meal per week) for a period of 30 years. Non-cancer health effects are based on a 70 kg person consuming 30 grams per day over a lifetime.

### Cancer Risk

Based on EPA's chemical specific cancer potency factors, we estimate a theoretical maximum excess lifetime cancer risk associated with consumption of one 8 ounce meal per week of Mountain Creek fish of approximately 5 in 10,000 persons, or  $5 \times 10^{-4}$ . The major contributors to the carcinogenic risk are the PCB's. In a comparison of risk due to PCB's by the three methods of preparation, there was no significant difference found for fish prepared as either skin on or skin off. However, there was a significantly higher risk for fish cooked whole and eviscerated. This method of preparation is associated with a risk in exceedance of  $1 \times 10^{-3}$ . Other chemicals that contribute to the carcinogenic risk include chlordane, heptachlor epoxide, dieldrin, and DDT's. All of these chemicals are classified as probable (B2) human carcinogens, based on increased incidence of hepatic carcinoma in laboratory animals.

### Excess Lifetime Cancer Risk Associated with Consumption of Mountain Creek Fish

Total PCB's	$4.6 \times 10^{-4}$
Chlordane	$1.2 \times 10^{-5}$
Heptachlor epoxide	$1.0 \times 10^{-7}$
Dieldrin	$6.4 \times 10^{-6}$
DDE	$1.5 \times 10^{-6}$
DDD	$1.0 \times 10^{-8}$
DDT	<u><math>2.0 \times 10^{-8}</math></u>
<b>Cumulative Risk</b>	<b><math>4.8 \times 10^{-4}</math></b>

### Non-Cancer Risk

Other health effects to consider would be the non-cancer endpoints associated with exposure to PCB Aroclor 1254, organochlorine pesticides, and selenium. In evaluating these effects, a hazard ratio is calculated for each chemical and a hazard index or cumulative risk is determined. As with carcinogens, the endpoints for toxicity must be similar for consideration of a cumulative risk due to exposure to multiple contaminants. The hazard index is a sum of the ratios of the calculated dose to reference dose (RfD). The reference dose is defined as the level of exposure that is unlikely to cause significant adverse health effects in humans exposed over a lifetime. A hazard index greater than one indicates that the potential exists for adverse health effects for persons exposed over a lifetime. The common basis for the RfD for these chemicals is an increase in liver lesions, increased liver weights, and alterations in liver enzymes in experimental animals. The hazard index for consumption of Mountain Creek fish is 1.8, and is primarily due to Aroclor 1254.

Other effects of Aroclor 1254 include a type of skin irritation known as chloracne in humans exposed occupationally, hypertension, gastric ulcers, anemia, depressed immunological function, swelling and reddening of the eyes, a reversible type of hepatic microsomal enzyme induction at low doses, and liver enlargement and fatty degeneration of the liver with long-term high doses. PCB's can stay in the body for years in the fat and liver and may be transferred to infants through breast-feeding.

In addition to the organic contaminants found in Mountain Creek fish, selenium was found at a level of public health concern. The FDA has established an action level of 2 ppm for selenium in fish in interstate commerce. The average concentration of selenium in Mountain Creek fish is approximately 1.7 ppm (range <0.5 - 4.3).

Toxic effects of selenium include brittle nails, hair and nail loss, lowered hemoglobin levels, mottled teeth, skin lesions, central nervous system abnormalities, loss of feeling in the hands and arms, increase in blood coagulation times, anemia, and hepatitis. The seriousness of effects is dose dependent. There is no evidence to indicate that selenium is carcinogenic in animals or humans.

**Non-Cancer Health Risk Associated with Consumption of Mountain Creek Fish**

	<b>Hazard Ratio</b>
PCB Aroclor 1254	1.26
Chlordane	0.37
Heptachlor epoxide	0.003
Dieldrin	0.019
DDT	0.00015
Methoxychlor	0.00045
Selenium	<u>0.15</u>
<b>Hazard Index</b>	<b>1.8</b>

**SUMMARY OF RESULTS**

<b>TABLE I ORGANIC CHEMICALS DETECTED IN MOUNTAIN CREEK FISH</b>				
<b>CHEMICAL</b>	<b>D.L.</b>	<b>#SAMPLES</b>	<b>RANGE (ug/kg)</b>	<b>AVERAGE (ug/kg)</b>
Phenol	50	5	45 - 158	81
Acetone	300	5	nd - 1000	612
PCB 1242	15	62	nd - 33	5
PCB 1254	15	62	nd - 470	59
PCB 1260	15	62	nd - 2200	263
PCB Total	15	62	nd - 2630	326
Chlordane	5	62	nd - 580	52
Heptachlor Epoxide	5	62	nd - 6.9	0.1
Dieldrin	5	62	nd - 40	2.2
DDE	5	62	nd - 160	25.2
DDD	5	62	nd - 10	0.24
DDT	10	62	nd - 7.5	0.18
Methoxychlor	10	62	nd - 65	5.3

(nd = non-detectable)

<b>TABLE II METALS IN MOUNTAIN CREEK FISH (ug/g)</b>										
<b>Al</b> 0.37	<b>Ba</b> 0.23	<b>B</b> 1.45	<b>Cr</b> 0.91	<b>V</b> <0.3	<b>Cu</b> 0.83	<b>Fe</b> 27.5	<b>Mn</b> 0.98	<b>Sr</b> 10.7	<b>Zn</b> 38.7	<b>Sb</b> <0.3
<b>As</b> <0.3	<b>Be</b> <0.3	<b>Cd</b> <0.3	<b>Co</b> <0.3	<b>Hg</b> 0.2	<b>Pb</b> <0.3	<b>Mo</b> <0.3	<b>Ni</b> <0.3	<b>Se</b> 1.7	<b>Ag</b> <0.3	<b>U</b> <0.3

## CONCLUSIONS

The United States Geological Survey has provided the Texas Department of Health with tissue data from 68 fish collected from Mountain Creek Lake. The Lake is bounded by the Texas Utilities Power Plant, the Naval Air Station, and the Naval Weapons Industrial Reserve Plant. The data are satisfactory for the determination of a public health risk assessment for consumers of fish from this Lake. A survey conducted by the USGS among 81 fishers of the lake over a period of several weekends indicate that regular fishing is occurring and that the majority of fish consumed includes largemouth bass, common carp, and channel catfish. We were not provided with information regarding the amount of fish consumed.

Fish are eaten either skin-on or skin-off or as whole eviscerated fish. The data represents all three methods of preparation and the three most commonly consumed species. There were no significant differences found in carcinogenic risk for fish prepared and consumed with either skin-on or skin-off. There was however a significant increase in carcinogenic risk for fish cooked whole and eviscerated. The excess lifetime cancer risk exceeded  $1 \times 10^{-3}$  for this method of preparation.

The theoretical excess lifetime carcinogenic risk for 70 kg persons consuming approximately one 8 ounce meal per week of Mountain Creek fish is approximately  $5 \times 10^{-4}$  or 5 in 10,000 persons exposed over a period of 30 years. This risk is primarily due to the presence of PCB Aroclor 1260. The carcinogenic risk estimate exceeds the TDH criteria of a  $1 \times 10^{-4}$  risk level for issuance of a fish consumption advisory. The consumption limit based on the  $1 \times 10^{-4}$  risk level for carcinogenic effects is 6 grams per day, or less than one meal per month.

In addition to the carcinogenic risk, the EPA hazard index for non-cancer endpoints is exceeded by 1.8 times, primarily due to the presence of Aroclor 1254. The endpoint for toxicity is an increase in liver lesions and alterations in liver enzymes. Selenium was found at levels that approach the FDA action level of 2 ppm for removal of fish from interstate commerce.

## CONCLUSIONS AND RECOMMENDATIONS

1. The theoretical excess lifetime cancer risk associated with consumption of Mountain Creek fish is approximately  $5 \times 10^{-4}$ . This risk exceeds TDH policy for issuance of a fish consumption advisory.



2. Persons consuming fish from Mountain Creek Lake would be exposed to a number of chemicals simultaneously, all of which are hepatotoxins. The consumption limit based on a theoretical increased lifetime cancer risk of  $1 \times 10^{-4}$  for 70 kg persons exposed for 30 years is 0.8 meals per month. This is interpreted as a no consumption limit.
3. In addition to the cancer risk, several contaminants associated with non-cancer endpoints were detected. In particular, selenium was found at elevated levels which were near the FDA action level.

## APPENDIX

TABLE III SEMI-VOLATILE ORGANIC CHEMICALS IN MT. CREEK FISH

	CHANNEL CATFISH				
Sample ID	191	218	195	179	229
Sample type	FSF	FSF	FSF	FSF	FSF
Fishing area	10	7	10	8	2
Sample length	16.2"	16.5"	16.6"	17.2"	14.6"
SEMI-VOLATILE ORGANIC CHEMICALS (UG/KG)					
PHENOL	77	44.9 E	62.1	158	61.4
BIS(2-CHLOROETHYL)ETHER	< 50	< 50	< 50	< 50	< 50
2-CHLOROPHENOL	< 50	< 50	< 50	< 50	< 50
1,3-DICHLOROBENZENE	< 50	< 50	< 50	< 50	< 50
1,4-DICHLOROBENZENE	< 50	< 50	< 50	< 50	< 50
1,2-DICHLOROBENZENE	< 50	< 50	< 50	< 50	< 50
N-NITroso--DI-N-PROPYLAMINE	< 50	< 50	< 50	< 50	< 50
P-CRESOL	< 50	< 50	< 50	< 50	< 50
NITROBENZENE	< 50	< 50	< 50	< 50	< 50
ISOPHORONE	< 50	< 50	< 50	< 50	< 50
C8-ALKYL-PHENOL	< 50	< 50	< 50	< 50	< 50
BIS(2-CHLOROETHOXY)METHANE	< 50	< 50	< 50	< 50	< 50
3,5-DIMETHYL-PHENOL	< 50	< 50	< 50	< 50	< 50
1,2,4-TRICHLOROBENZENE	< 50	< 50	< 50	< 50	< 50
NAPHTHALENE	< 50	< 50	< 50	< 50	< 50
QUINOLINE	< 50	< 50	< 50	< 50	< 50
ISOQUINOLONE	< 50	< 50	< 50	< 50	< 50
4-CHLORO-3-METHYL-PHENOL	< 50	< 50	< 50	< 50	< 50

(E=estimated value, FSF=skin off fillet)

TABLE III (cont.) SEMI-VOLATILE ORGANIC CHEMICALS IN MT. CREEK FISH

	CHANNEL CATFISH				
Sample ID	191	218	195	179	229
Sample type	FSF	FSF	FSF	FSF	FSF
Fishing area	10	7	10	8	2
Sample length	16.2"	16.5"	16.6"	17.2"	14.6"
SEMI-VOLATILE ORGANIC CHEMICALS (UG/KG)					
2-CHLORONAPHTHALENE	< 50	< 50	< 50	< 50	< 50
2-ETHYLNAPHTHALENE	< 50	< 50	< 50	< 50	< 50
2,6-DIMETHYLNAPHTHALENE	< 50	< 50	< 50	< 50	< 50
1,6-DIMETHYLNAPHTHALENE	< 50	< 50	< 50	< 50	< 50
ACENAPHTHYLENE	< 50	< 50	< 50	< 50	< 50
1,2-DIMETHYLNAPHTHALENE	< 50	< 50	< 50	< 50	< 50
DIMETHYLPHTHALATE	< 50	14.1 E	< 50	< 50	< 50
2,6-DINITROTOLUENE	< 50	< 50	< 50	< 50	< 50
ACENAPHTHENE	< 50	< 50	< 50	< 50	< 50
2,4-DINITROTOLUENE	< 50	< 50	< 50	< 50	< 50
2,3,6-TRIMETHYLNAPHTHALENE	< 50	< 50	< 50	< 50	< 50
9H-FLUORENE	13.6 E	14.0 E	13.5 E	15.0 E	< 50
4-CHLOROPHENYLETHER	< 50	< 50	< 50	< 50	< 50
DIETHYLPHTHALATE	12.6 E	12.7 E	11.1 E	13.0 E	12.1 E
N-NITROSODIPHENYLAMINE	< 50	< 50	< 50	< 50	< 50
AZOBENZENE	< 50	< 50	< 50	< 50	< 50
4-BROMOPHENYLPHENYLETHER	< 50	< 50	< 50	< 50	< 50
1-METHYL-9H-FLOURENE	< 50	< 50	< 50	< 50	< 50
HEXACHLOROBENZENE	< 50	< 50	< 50	< 50	< 50
PENTACHLOROANISOL	< 50	< 50	< 50	< 50	< 50
DIBENZOTHIOPHENE	< 50	< 50	< 50	< 50	< 50
PENTACHLORONITROBENZENE	< 50	< 50	< 50	< 50	< 50
PHENANTHRENE	5.1 E	5.7 E	6.5 E	12.1 E	< 50

(E=estimated value, FSF=skin off fillet)

TABLE III (cont.) SEMI-VOLATILE ORGANIC CHEMICALS IN MT. CREEK FISH

	CHANNEL CATFISH				
Sample ID Sample type Fishing area Sample length	191 FSF 10 16.2"	218 FSF 7 16.5"	195 FSF 10 16.6"	179 FSF 8 17.2"	229 FSF 2 14.6"
<b>SEMI-VOLATILE ORGANIC CHEMICALS (UG/KG)</b>					
ANTHRACENE	24.1 E	24.3 E	22.9 E	25.1 E	< 50
ACRIDINE	< 50	< 50	< 50	< 50	< 50
PHENANTHRIDINE	< 50	< 50	< 50	< 50	< 50
9H-CARBAZOL	< 50	< 50	< 50	< 50	< 50
2-METHYLANTHRACENE	< 50	< 50	< 50	< 50	< 50
BENZO(C)CINNOLINE	< 50	< 50	< 50	< 50	< 50
4,5-METHYLENPHENANTHRENE	< 50	19.8 E	18.7 E	20.2 E	< 50
1-METHYLPHENANTHRENE	< 50	< 50	< 50	< 50	< 50
DI-N-BUTYLPHTHALATE	58.9 E	74.2 E	52.7 E	73.5 E	59.6 E
ANTHRAQUINONE	< 50	< 50	< 50	< 50	< 50
FLUORANTHENE	36.1 E	38.5 E	35.5 E	39.0 E	< 50
PYRENE	< 50	31.6 E	29.2 E	31.6 E	< 50
1-METHYLPYRENE	< 50	< 50	< 50	< 50	< 50
BUTYLBENZYLPHTHALATE	< 50	78.2 E	< 50	76.8 E	269
BENZO(a)ANTHRACENE	< 50	< 50	< 50	< 50	< 50
CHRYSENE	< 50	< 50	< 50	< 50	< 50
BIS(2-ETHYLHEXYL)PHTHALATE	379 E	108 E	1710 E	103 E	200 E
2,2'-BIQUINOLONE	< 50	< 50	< 50	< 50	< 50
DI-N-OCTYLPHTHALATE	133 E	283 E	129 E	988 E	227 E
BENZO(b)FLUORANTHENE	< 50	< 50	< 50	< 50	< 50
BENZO(k)FLUORANTHENE	< 50	< 50	< 50	< 50	< 50
BENZO(a)PYRENE	< 50	< 50	< 50	< 50	< 50
INDENO(1,2,3-C,D)PYRENE	< 50	< 50	< 50	< 50	< 50
DIBENZO(a,h)ANTHRACENE	< 50	< 50	< 50	< 50	< 50
BENZO(g,h,i)PERYLENE	< 50	< 50	< 50	< 50	< 50

(E=estimated value, FSF=skin off fillet)

TABLE IV VOLATILE ORGANIC CHEMICALS IN MT. CREEK FISH

	CHANNEL CATFISH				
Sample ID Sample type Fishing area Sample length	189 VOC 10 16.2"	205 VOC 2 15.2"	193 VOC 10 16.6"	177 VOC 8 17.2"	216 VOC 7 16.5
<b>VOLATILE ORGANIC CHEMICALS (UG/KG)</b>					
DICHLORODIFLUOROMETHANE	<15	<15	<15	<15	<15
CHLOROMETHANE	<25	<25	<25	<25	<25
VINYL CHLORIDE	<15	<15	<15	<15	<15
BROMOMETHANE	<15	<15	<15	<15	<15
CHLOROETHANE	<15	<15	<15	<15	<15
TRICHLOROFLUOROMETHANE	<	<15	<15	<15	<15
1,1-DICHLOROETHENE	<15	<15	<15	<15	<15
CARBON DISULFIDE	<50	<50	<50	<50	<50
ACETONE	560 E	<300	850 E	500 E	1000
METHYLENE CHLORIDE	<15	<15	<15	<15	<15
ACRYLONITRILE	<30	<30	<30	<30	<30
TRANS-1,2-DICHLOROETHENE	<15	<15	<15	<15	<15
METHYL-T-BUTYL ETHER	<15	<15	<15	<15	<15
1,1-DICHLOROETHANE	<15	<15	<15	<15	<15
2,2-DICHLOROPROPANE	<15	<15	<15	<15	<15
CIS-1,2-DICHLOROETHENE	<15	<15	<15	<15	<15
2-BUTANANONE	<100	<100	180 E	88 E	220 E
BROMOCHLOROMETHANE	<15	<15	<15	<15	<15
TETRAHYDROFURAN	<50	<50	<50	<50	<50
CHLOROFORM	<15	<15	<15	<15	<15
1,1,1-TRICHLOROETHANE	<15	<15	<15	<15	<15
CARBON TETRACHLORIDE	<15	<15	<15	<15	<15
1,1-DICHLOROPROPENE	<15	<15	<15	<15	<15
BENZENE	<15	<15	2.8 E	2.3 E	6.9 E
1,2-DICHLOROETHANE	<15	<15	<15	<15	<15
TRICHLOROETHANE	<15	<15	<15	<15	<15
1,2-DICHLOROPROPANE	<15	<15	<15	<15	<15
DIBROMOMETHANE	<15	<15	<15	<15	<15

(E=estimated value)

TABLE IV (cont.) VOLATILE ORGANIC CHEMICALS IN MT. CREEK FISH

	CHANNEL CATFISH				
Sample ID	189	205	193	177	216
Sample type	VOC	VOC	VOC	VOC	VOC
Fishing area	10	2	10	8	7
Sample length	16.2"	15.2"	16.6"	17.2"	16.5
VOLATILE ORGANIC CHEMICALS (UG/KG)					
METHYLMETHACRYLATE	< 15	< 15	< 15	< 15	< 15
BROMODICHLOROMETHANE	< 15	< 15	< 15	< 15	< 15
2-CHLOROETHYL VINYL ETHER	< 100	< 100	< 100	< 100	< 100
CIS-1,3-DICHLOROPROPENE	< 15	< 15	< 15	< 15	< 15
4-METHYL-2-PENTANONE	< 50	< 50	< 50	< 50	< 50
TOLUENE	< 15	< 15	< 15	< 15	4.2 E
TRANS-1,3-DICHLOROPROPENE	< 15	< 15	< 15	< 15	< 15
ETHYLMETHACRYLATE	< 15	< 15	< 15	< 15	< 15
1,1,2-TRICHLOROETHANE	< 15	< 15	< 15	< 15	< 15
TETRACHLOROETHENE	< 15	< 15	< 15	< 15	< 15
1,3-DICHLOROPROPANE	< 15	< 15	< 15	< 15	< 15
2-HEXANONE	< 50	< 50	< 50	< 50	< 50
DIBROMOCHLOROMETHANE	< 15	< 15	< 15	< 15	< 15
1,2-DIBROMOETHANE	< 15	< 15	< 15	< 15	< 15
CHLOROBENZENE	< 15	< 15	< 15	< 15	< 15
1,1,1,2-TETRACHLOROETHANE	< 15	< 15	< 15	< 15	< 15
ETHYLBENZENE	< 15	< 15	< 15	< 15	< 15
m and p-XYLENE	< 15	< 15	< 15	< 15	< 15
o-XYLENE	< 15	< 15	< 15	< 15	< 15
STYRENE	< 15	< 15	< 15	< 15	< 15
BROMOFORM	< 15	< 15	< 15	< 15	< 15
ISOPROPYLBENZENE	< 15	< 15	< 15	< 15	< 15
BROMOBENZENE	< 15	< 15	< 15	< 15	< 15
1,1,2,2-TETRACHLOROETHANE	< 15	< 15	< 15	< 15	< 15
1,2,3-TRICHLOROPROPANE	< 15	< 15	< 15	< 15	< 15
n-PROPYLBENZENE	< 15	< 15	< 15	< 15	< 15
2-CHLOROTOLUENE	< 15	< 15	< 15	< 15	< 15
4-CHLOROTOLUENE	< 15	< 15	< 15	< 15	< 15

TABLE IV (cont.) VOLATILE ORGANIC CHEMICALS IN MT. CREEK FISH

	CHANNEL CATFISH				
Sample ID	189	205	193	177	216
Sample type	VOC	VOC	VOC	VOC	VOC
Fishing area	10	2	10	8	7
Sample length	16.2"	15.2"	16.6"	17.2"	16.5
VOLATILE ORGANIC CHEMICALS (UG/KG)					
1,3,5-TRIMETHYLBENZENE	< 15	< 15	< 15	< 15	< 15
TERT-BUTYL BENZENE	< 15	< 15	< 15	< 15	< 15
1,2,4-TRIMETHYLBENZENE	< 15	< 15	< 15	< 15	< 15
sec-BUTYLBENZENE	< 15	< 15	< 15	< 15	< 15
1,3-DICHLOROBENZENE	< 15	< 15	< 15	< 15	< 15
p-ISOPROPYLTOLUENE	< 15	< 15	< 15	< 15	< 15
1,4-DICHLOROBENZENE	< 15	< 15	< 15	< 15	< 15
1,2-DICHLOROBENZENE	< 15	< 15	< 15	< 15	< 15
n-BUTYLBENZENE	< 15	< 15	< 15	< 15	< 15
1,2-DIBROMO-3-CHLOROPROPANE	< 15	< 15	< 15	< 15	< 15
1,2,3-TRICHLOROBENZENE	< 15	< 15	< 15	< 15	< 15
1,2,4-TRICHLOROBENZENE	< 15	< 15	< 15	< 15	< 15
HEXACHLOROBUTADIENE	< 15	< 15	< 15	< 15	< 15
NAPHTHALENE	< 15	< 15	< 15	< 15	< 15



TABLE V

## POLYCHLORINATED BIPHENYLS IN MT. CREEK FISH

SPECIES	SAMPLE ID	SAMPLE TYPE	FISHING AREA	TOTAL LENGTH	PCB 1242 ug/kg	PCB 1254 ug/kg	PCB 1260 ug/kg	PCB TOTAL ug/kg
LARGEMOUTH BASS	15	FSF	4	18.7"	<5	22	5	27
	59	FSF	9	19"	<5	40	420	460
	143	FSF	10	18.5"	<5	10	35	45
	23	FSF	4	14"	<15	<15	19	19
	43	FSF	8	13.8"	<15	100	110	210
	51	FSF	8	14.6"	<15	29	56	85
	63	FSF	9	13.6"	<15	38	150	188
	87	FSF	11	15.7"	<15	76	240	316
	95	FSF	11	15.3"	<10	12	35	47
	99	FSF	11	14.3"	<10	13	37	50
	107	FSF	2	15.6"	<10	10	17	27
	111	FSF	2	14.5"	<10	10	23	33
	147	FSF	10	14"	<10	10	22	32
	24	FSO	4	14"	<15	15	17	42
	44	FSO	8	13.8"	<15	35	130	165
	52	FSO	8	14.6"	<10	27	53	80
	64	FSO	9	13.6"	<10	30	110	140
	88	FSO	11	15.7"	19	100	370	489
	96	FSO	11	15.3"	<10	19	58	77
	100	FSO	11	14.3"	<10	38	120	158
108	FSO	2	13.8"	<10	<10	15	15	
112	FSO	2	12.8"	<10	8.6	38	46.6	
148	FSO	10	14"	<10	<10	25	25	
COMMON CARP	4	FSF	4	21.9"	<15	15	72	87
	75	FSF	8	19.2"	<15	65	110	175
	83	FSF	9	19.9"	<15	110	320	430
	123	FSF	11	19.4"	14	52	107	173
	127	FSF	11	21.2"	31	77	630	738
	131	FSF	10	21"	30	470	1670	2170
	135	FSF	10	18.7"	22	52	220	294
	139	FSF	10	20.3"	<10	51	400	451
	163	FSF	10	20.5"	<15	<15	51	51
	167	FSF	2	19.4"	<15	<15	<15	<15

(FSF=skin off fillet, FSO=skin on fillet)

TABLE V (cont.) POLYCHLORINATED BIPHENYLS IN MT. CREEK FISH

SPECIES	SAMPLE ID	SAMPLE TYPE	FISHING AREA	TOTAL LENGTH	PCB 1242 ug/kg	PCB 1254 ug/kg	PCB 1260 ug/kg	PCB TOTAL ug/kg
CHANNEL CATFSIH	34	FSF	4	25.4"	11	93	780	884
	38	FSF	4	22.8"	<5	46	180	226
	179	FSF	8	17.2"	32	50	120	202
	191	FSF	10	16.2"	15	29	120	164
	195	FSF	10	16.6"	<15	24	97	121
	199	FSF	2	17.6"	<15	17	55	72
	207	FSF	2	15.2"	<15	<10	25	25
	218	FSF	7	16.5"	5	23	54	82
	229	FSF	11	15.8"	11	60	103	174
	233	FSF	2	16.9"	<5	18	46	64
	35	FSO	4	25.4"	<15	55	190	245
	39	FSO	4	22.8"	33	410	1700	2143
	180	FSO	8	17.2"	21	24	79	124
	192	FSO	10	16.2"	<15	<15	47	47
	196	FSO	10	16.6"	<15	29	99	128
	200	FSO	2	17.6"	<15	21	73	94
	208	FSO	2	15.2"	<15	<15	34	34
	219	FSO	7	16.5"	<5	15	56	71
	230	FSO	11	15.8"	6	37	96	139
	234	FSO	2	16.9"	<5	9.8	47	56.8
	40	WBE	4	21"	<5	74	1000	1074
	210	WBE	10	14.1"	<15	44	91	135
	224	WBE	8	18.9"	9.1	64	740	813
	225	WBE	7	18.7"	12	118	630	760
	226	WBE	7	21.9"	<5	92	840	932
235	WBE	2	22.5"	9.7	140	860	1009	
236	WBE	2	22.5"	<5	27	81	108	
249	WBE	7	14.9"	12	120	180	312	
250	WBE	7	23.3"	14	420	2200	2634	

(FSF=skin off fillet, FSO=skin on fillet, WBE=whole body eviscerated)

TABLE VI ORGANOLCHLORINE PESTICIDES IN MT. CREEK FISH

SPECIES	SAMPLE ID	SAMPLE TYPE	FISHING AREA	TOTAL LENGTH	CHLOR-DANE	ALPHA HCH	HEXA-CHLORO-BENZENE	PENTA-CHLORO-ANISOLE
LARGEMOUTH BASS	15	FSF	4	18.7"	110	<5	<5	<5
	59	FSF	9	19"	<8	<5	<5	<5
	143	FSF	10	18.5"	<11	<5	<5	<5
	23	FSF	4	14"	<5	<5	<5	<5
	43	FSF	8	13.8"	7.4	<5	<5	<5
	51	FSF	8	14.6"	5.6	<5	<5	<5
	63	FSF	9	13.6"	7.7	<5	<5	<5
	87	FSF	11	15.7"	9.9	<5	<5	<5
	95	FSF	11	15.3"	6.2	<5	<5	<5
	99	FSF	11	14.3"	8	<5	<5	<5
	107	FSF	2	15.6"	6.8	<5	<5	<5
	111	FSF	2	14.5"	6.3	<5	<5	<5
	147	FSF	10	14"	6.2	<5	<5	<5
	24	FSO	4	14"	<5	<5	<5	<5
	44	FSO	8	13.8"	14	<5	<5	<5
	52	FSO	8	14.6"	5.5	<5	<5	<5
	64	FSO	9	13.6"	5.8	<5	<5	<5
	88	FSO	11	15.7"	14	<5	<5	<5
	96	FSO	11	15.3"	8.2	<5	<5	<5
	100	FSO	11	14.3"	21	<5	<5	<5
108	FSO	2	13.8"	<5	<5	<5	<5	
112	FSO	2	12.8"	5.1	<5	<5	<5	
148	FSO	10	14"	7.6	<5	<5	<5	
COMMON CARP	4	FSF	4	21.9"	13	<5	<5	<5
	75	FSF	8	19.2"	<5	<5	<5	<5
	83	FSF	9	19.9"	24	<5	<5	<5
	123	FSF	11	19.4"	26	<5	<5	<5
	127	FSF	11	21.2"	42	<5	<5	<5
	131	FSF	10	21"	41	<5	<5	<5
	135	FSF	10	18.7"	26	<5	<5	<5
	139	FSF	10	20.3"	21	<5	<5	<5
	163	FSF	10	20.5"	12	<5	<5	<5
	167	FSF	2	19.4"	6.9	<5	<5	<5

(FSF=skin off fillet, FSO=skin on fillet)

TABLE VI (cont.) ORGANOCHLORINE PESTICIDES IN MT. CREEK FISH

SPECIES	SAMPLE ID	SAMPLE TYPE	FISHING AREA	TOTAL LENGTH	CHLORDANE	ALPHA HCH	HEXA-CHLORO-BENZENE	PENTA-CHLORO-ANISOLE
CHANNEL CATFSIH	34	FSF	4	25.4"	130	<5	<5	<5
	38	FSF	4	22.8"	64	<5	<5	<5
	179	FSF	8	17.2"	87	<5	<5	<5
	191	FSF	10	16.2"	30	<5	<5	<5
	195	FSF	10	16.6"	96	<5	<5	<5
	199	FSF	2	17.6"	12	<5	<5	<5
	207	FSF	2	15.2"	9.7	<5	<5	<5
	218	FSF	7	16.5"	41	<5	<5	<5
	229	FSF	11	15.8"	47	<5	<5	<5
	233	FSF	2	16.9"	29	<5	<5	<5
	35	FSO	4	25.4"	57	<5	<5	<5
	39	FSO	4	22.8"	580	<5	<5	<5
	180	FSO	8	17.2"	45	<5	<5	<5
	192	FSO	10	16.2"	12	<5	<5	<5
	196	FSO	10	16.6"	120	<5	<5	<5
	200	FSO	2	17.6"	16	<5	<5	<5
	208	FSO	2	15.2"	11	<5	<5	<5
	219	FSO	7	16.5"	20	<5	<5	<5
	230	FSO	11	15.8"	26	<5	<5	<5
	234	FSO	2	16.9"	9.8	<5	<5	<5
	40	WBE	4	21"	220	<5	<5	<5
	210	WBE	10	14.1"	17	<5	<5	<5
	224	WBE	8	18.9"	74	<5	<5	<5
	225	WBE	7	18.7"	160	<5	<5	<5
	226	WBE	7	21.9"	130	<5	<5	<5
235	WBE	2	22.5"	207	<5	<5	<5	
236	WBE	2	22.5"	31	<5	<5	<5	
249	WBE	7	14.9"	170	<5	<5	<5	
250	WBE	7	23.3"	290	<5	<5	<5	

(FSF=skin off fillet, FSO=skin on fillet, WBE=whole body eviscerated)

TABLE VI (cont.) ORGANOCHLORINE PESTIDES IN MT. CREEK FISH

SPECIES	SAMPLE ID	SAMPLE TYPE	FISHING AREA	TOTAL LENGTH	BETA HCH	GAMMA HCH	DELTA HCH
LARGEMOUTH BASS	15	FSF	4	18.7"	<5	<5	<5
	59	FSF	9	19"	<5	<5	<5
	143	FSF	10	18.5"	<5	<5	<5
	23	FSF	4	14"	<5	<5	<5
	43	FSF	8	13.8"	<5	<5	<5
	51	FSF	8	14.6"	<5	<5	<5
	63	FSF	9	13.6"	<5	<5	<5
	87	FSF	11	15.7"	<5	<5	<5
	95	FSF	11	15.3"	<5	<5	<5
	99	FSF	11	14.3"	<5	<5	<5
	107	FSF	2	15.6"	<5	<5	<5
	111	FSF	2	14.5"	<5	<5	<5
	147	FSF	10	14"	<5	<5	<5
	24	FSO	4	14"	<5	<5	<5
	44	FSO	8	13.8"	<5	<5	<5
	52	FSO	8	14.6"	<5	<5	<5
	64	FSO	9	13.6"	<5	<5	<5
	88	FSO	11	15.7"	<5	<5	<5
	96	FSO	11	15.3"	<5	<5	<5
	100	FSO	11	14.3"	<5	<5	<5
108	FSO	2	13.8"	<5	<5	<5	
112	FSO	2	12.8"	<5	<5	<5	
148	FSO	10	14"	<5	<5	<5	
COMMON CARP	4	FSF	4	21.9"	<5	<5	<5
	75	FSF	8	19.2"	<5	<5	<5
	83	FSF	9	19.9"	<5	<5	<5
	123	FSF	11	19.4"	<5	<5	<5
	127	FSF	11	21.2"	<5	<5	<5
	131	FSF	10	21"	<5	<5	<5
	135	FSF	10	18.7"	<5	<5	<5
	139	FSF	10	20.3"	<5	<5	<5
	163	FSF	10	20.5"	<5	<5	<5
	167	FSF	2	19.4"	<5	<5	<5

(FSF=skin off fillet, FSO=skin on fillet)

TABLE VI (cont.) ORGANOCHLORINE PESTIDES IN MT. CREEK FISH

SPECIES	SAMPLE ID	SAMPLE TYPE	FISHING AREA	TOTAL LENGTH	BETA HCH	GAMMA HCH	DELTA HCH
CHANNEL CATFSIH	34	FSF	4	25.4"	<5	<5	<5
	38	FSF	4	22.8"	<5	<5	<5
	179	FSF	8	17.2"	<5	<5	<5
	191	FSF	10	16.2"	<5	<5	<5
	195	FSF	10	16.6"	<5	<5	<5
	199	FSF	2	17.6"	<5	<5	<5
	207	FSF	2	15.2"	<5	<5	<5
	218	FSF	7	16.5"	<5	<5	<5
	229	FSF	11	15.8"	<5	<5	<5
	233	FSF	2	16.9"	<5	<5	<5
	35	FSO	4	25.4"	<5	<5	<5
	39	FSO	4	22.8"	<5	<5	<5
	180	FSO	8	17.2"	<5	<5	<5
	192	FSO	10	16.2"	<5	<5	<5
	196	FSO	10	16.6"	<5	<5	<5
	200	FSO	2	17.6	<5	<5	<5
	208	FSO	2	15.2"	<5	<5	<5
	219	FSO	7	16.5"	<5	<5	<5
	230	FSO	11	15.8"	<5	<5	<5
	234	FSO	2	16.9"	<5	<5	<5
	40	WBE	4	21"	<5	<5	<5
	210	WBE	10	14.1"	<5	<5	<5
	224	WBE	8	18.9"	<5	<5	<5
	225	WBE	7	18.7"	<5	<5	<5
	226	WBE	7	21.9"	<5	<5	<5
	235	WBE	2	22.5"	<5	<5	<5
	236	WBE	2	22.5"	<5	<5	<5
	249	WBE	7	14.9"	<5	<5	<5
	250	WBE	7	23.3"	<5	<5	<5

(FSF=skin off fillet, FSO=skin on fillet, WBE=whole body eviscerated)

TABLE VI (cont.) ORGANOCHLORINE PESTICIDES IN MT. CREEK FISH

SPECIES	SAMPLE ID	SAMPLE TYPE	FISHING AREA	TOTAL LENGTH	HEPTA-CHLOR	ALDRIN	DACTHAL
LARGEMOUTH BASS	15	FSF	4	18.7"	<5	<5	<5
	59	FSF	9	19"	<5	<5	<5
	143	FSF	10	18.5"	<5	<5	<5
	23	FSF	4	14"	<5	<5	<5
	43	FSF	8	13.8"	<5	<5	<5
	51	FSF	8	14.6"	<5	<5	<5
	63	FSF	9	13.6"	<5	<5	<5
	87	FSF	11	15.7"	<5	<5	<5
	95	FSF	11	15.3"	<5	<5	<5
	99	FSF	11	14.3"	<5	<5	<5
	107	FSF	2	15.6"	<5	<5	<5
	111	FSF	2	14.5"	<5	<5	<5
	147	FSF	10	14"	<5	<5	<5
	24	FSO	4	14"	<5	<5	<5
	44	FSO	8	13.8"	<5	<5	<5
	52	FSO	8	14.6"	<5	<5	<5
	64	FSO	9	13.6"	<5	<5	<5
	88	FSO	11	15.7"	<5	<5	<5
	96	FSO	11	15.3"	<5	<5	<5
	100	FSO	11	14.3"	<5	<5	<5
108	FSO	2	13.8"	<5	<5	<5	
112	FSO	2	12.8"	<5	<5	<5	
148	FSO	10	14"	<5	<5	<5	
COMMON CARP	4	FSF	4	21.9"	<5	<5	<5
	75	FSF	8	19.2"	<5	<5	<5
	83	FSF	9	19.9"	<5	<5	<5
	123	FSF	11	19.4"	<5	<5	<5
	127	FSF	11	21.2"	<5	<5	<5
	131	FSF	10	21"	<5	<5	<5
	135	FSF	10	18.7"	<5	<5	<5
	139	FSF	10	20.3"	<5	<5	<5
	163	FSF	10	20.5"	<5	<5	<5
	167	FSF	2	19.4"	<5	<5	<5

(FSF=skin off fillet, FSO=skin on fillet)

TABLE VI (cont.) ORGANOCHLORINE PESTIDES IN MT. CREEK FISH

SPECIES	SAMPLE ID	SAMPLE TYPE	FISHING AREA	TOTAL LENGTH	HEPTA-CHLOR	ALDRIN	DACTHAL
CHANNEL CATFSIH	34	FSF	4	25.4"	<5	<5	<5
	38	FSF	4	22.8"	<5	<5	<5
	179	FSF	8	17.2"	<5	<5	<5
	191	FSF	10	16.2"	<5	<5	<5
	195	FSF	10	16.6"	<5	<5	<5
	199	FSF	2	17.6"	<5	<5	<5
	207	FSF	2	15.2"	<5	<5	<5
	218	FSF	7	16.5"	<5	<5	<5
	229	FSF	11	15.8"	<5	<5	<5
	233	FSF	2	16.9"	<5	<5	<5
	35	FSO	4	25.4"	<5	<5	<5
	39	FSO	4	22.8"	<5	<5	<5
	180	FSO	8	17.2"	<5	<5	<5
	192	FSO	10	16.2"	<5	<5	<5
	196	FSO	10	16.6"	<5	<5	<5
	200	FSO	2	17.6"	<5	<5	<5
	208	FSO	2	15.2"	<5	<5	<5
	219	FSO	7	16.5"	<5	<5	<5
	230	FSO	11	15.8"	<5	<5	<5
	234	FSO	2	16.9"	<5	<5	<5
	40	WBE	4	21"	<5	<5	<5
	210	WBE	10	14.1"	<5	<5	<5
	224	WBE	8	18.9"	<5	<5	<5
	225	WBE	7	18.7"	<5	<5	<5
	226	WBE	7	21.9"	<5	<5	<5
	235	WBE	2	22.5"	<5	<5	<5
236	WBE	2	22.5"	<5	<5	<5	
249	WBE	7	14.9"	<5	<5	<5	
250	WBE	7	23.3"	<5	<5	<5	



TABLE VI (cont.) ORGANOCHLORINE PESTICIDES IN MT. CREEK FISH

SPECIES	SAMPLE ID	SAMPLE TYPE	FISHING AREA	TOTAL LENGTH	HEPTA-CHLOR EPOXIDE	OXY CHLORDANE	TRANS CHLORDANE	CIS CHLORDANE
LARGEMOUTH BASS	15	FSF	4	18.7"	<5	<5	7.6	12
	59	FSF	9	19"	<5	<5	<5	<5
	143	FSF	10	18.5"	<5	<5	<5	<5
	23	FSF	4	14"	<5	<5	<5	<5
	43	FSF	8	13.8"	<5	<5	<5	<5
	51	FSF	8	14.6"	<5	<5	<5	<5
	63	FSF	9	13.6"	<5	<5	<5	<5
	87	FSF	11	15.7"	<5	<5	<5	<5
	95	FSF	11	15.3"	<5	<5	<5	<5
	99	FSF	11	14.3"	<5	<5	<5	<5
	107	FSF	2	15.6"	<5	<5	<5	<5
	111	FSF	2	14.5"	<5	<5	<5	<5
	147	FSF	10	14"	<5	<5	<5	<5
	24	FSO	4	14"	<5	<5	<5	<5
	44	FSO	8	13.8"	<5	<5	<5	<5
	52	FSO	8	14.6"	<5	<5	<5	<5
	64	FSO	9	13.6"	<5	<5	<5	<5
	88	FSO	11	15.7"	<5	<5	<5	<5
	96	FSO	11	15.3"	<5	<5	<5	<5
	100	FSO	11	14.3"	<5	<5	<5	<5
108	FSO	2	13.8"	<5	<5	<5	<5	
112	FSO	2	12.8"	<5	<5	<5	<5	
148	FSO	10	14"	<5	<5	<5	<5	
COMMON CARP	4	FSF	4	21.9"	<5	<5	<5	<5
	75	FSF	8	19.2"	<5	<5	<5	<5
	83	FSF	9	19.9"	<5	<5	<5	<5
	123	FSF	11	19.4"	<5	<5	<5	<5
	127	FSF	11	21.2"	<5	<5	<5	6
	131	FSF	10	21"	<5	<5	<6	<5
	135	FSF	10	18.7"	<5	<5	<5	<5
	139	FSF	10	20.3"	<5	<5	<5	<5
	163	FSF	10	20.5"	<5	<5	<5	<5
	167	FSF	2	19.4"	<5	<5	<5	<5

(FSF=skin off fillet, FSO=skin on fillet)

TABLE VI (cont.) ORGANOCHLORINE PESTICIDES IN MT. CREEK FISH

SPECIES	SAMPLE ID	SAMPLE TYPE	FISHING AREA	TOTAL LENGTH	HEPTA CHLOR EPOXIDE	OXY CHLORDANE	TRANS CHLORDANE	CIS CHLORDANE
CHANNEL CATFSIH	34	FSF	4	25.4"	<5	<5	<5	<b>8.8</b>
	38	FSF	4	22.8"	<5	<5	<5	<b>5.9</b>
	179	FSF	8	17.2"	<5	<5	<b>7.4</b>	<b>13</b>
	191	FSF	10	16.2"	<5	<5	<5	<5
	195	FSF	10	16.6"	<5	<5	<5	<b>13</b>
	199	FSF	2	17.6"	<5	<5	<5	<5
	207	FSF	2	15.2"	<5	<5	<5	<5
	218	FSF	7	16.5"	<5	<5	<5	<5
	229	FSF	11	15.8"	<5	<5	<5	<5
	233	FSF	2	16.9"	<5	<5	<5	<5
	35	FSO	4	25.4"	<5	<5	<5	<b>7.4</b>
	39	FSO	4	22.8"	<b>6.9</b>	<b>9.4</b>	<b>28</b>	<b>43</b>
	180	FSO	8	17.2"	<5	<5	<5	<b>6.5</b>
	192	FSO	10	16.2"	<5	<5	<5	<5
	196	FSO	10	16.6"	<5	<5	<b>6.1</b>	<b>15</b>
	200	FSO	2	17.6"	<5	<5	<5	<5
	208	FSO	2	15.2"	<5	<5	<5	<5
	219	FSO	7	16.5"	<5	<5	<5	<5
	230	FSO	11	15.8"	<5	<5	<5	<5
	234	FSO	2	16.9"	<5	<5	<5	<5
	40	WBE	4	21"	<5	<5	<b>7.2</b>	<b>16</b>
	210	WBE	10	14.1"	<5	<5	<5	<5
	224	WBE	8	18.9"	<5	<5	<5	<b>6.4</b>
	225	WBE	7	18.7"	<5	<5	<b>8</b>	<b>12</b>
	226	WBE	7	21.9"	<5	<5	<5	<b>9.5</b>
	235	WBE	2	22.5"	<5	<5	<b>9.2</b>	<b>16</b>
236	WBE	2	22.5"	<5	<5	<5	<5	
249	WBE	7	14.9"	<5	<5	<b>12</b>	<b>14</b>	
250	WBE	7	23.3"	<5	<5	<b>14</b>	<b>22</b>	

(FSF=skin off fillet, FSO=skin on fillet, WBE=whole body eviscerated)

TABLE VI (cont.) ORGANOCHLORINE PESTICIDES IN MT. CREEK FISH

SPECIES	SAMPLE ID	SAMPLE TYPE	FISHING AREA	TOTAL LENGTH	TRANS-NONA-CHLOR	DIELDRIN	DDE	DDD	DDT
LARGEMOUTH BASS	15	FSF	4	18.7"	12	9.8	10	10	3.5 e
	59	FSF	9	19"	<5	<5	4.9 e	<5	<10
	143	FSF	10	18.5"	<5	<5	3.9 e	<5	<10
	23	FSF	4	14"	<5	<5	8.9	<5	<5
	43	FSF	8	13.8"	<5	<5	6.3	<5	<5
	51	FSF	8	14.6"	<5	<5	<5	<5	<5
	63	FSF	9	13.6"	<5	<5	7.6	<5	<5
	87	FSF	11	15.7"	<5	<5	7.6	<5	<5
	95	FSF	11	15.3"	<5	<5	<5	<5	<5
	99	FSF	11	14.3"	<5	<5	<5	<5	<5
	107	FSF	2	15.6"	<5	<5	<5	<5	<5
	111	FSF	2	14.5"	<5	<5	<5	<5	<5
	147	FSF	10	14"	<5	<5	5.4	<5	<5
	24	FSO	4	14"	<5	<5	10	<5	<5
	44	FSO	8	13.8"	<5	<5	8.5	<5	<5
	52	FSO	8	14.6"	<5	<5	<5	<5	<5
	64	FSO	9	13.6"	<5	<5	6.1	<5	<5
	88	FSO	11	15.7"	<5	<5	12	<5	<5
	96	FSO	11	15.3"	<5	<5	7.6	<5	<5
	100	FSO	11	14.3"	<5	<5	15	<5	<5
108	FSO	2	13.8"	<5	<5	<5	<5	<5	
112	FSO	2	12.8"	<5	<5	8.1	<5	<5	
148	FSO	10	14"	<5	<5	6.2	<5	<5	
COMMON CARP	4	FSF	4	21.9"	<5	<5	47	<5	<b>7.5</b>
	75	FSF	8	19.2"	<5	<5	6.5	<5	<5
	83	FSF	9	19.9"	<5	<5	15	<5	<5
	123	FSF	11	19.4"	<5	<5	9.5	<5	<5
	127	FSF	11	21.2"	<5	<5	65	<5	<15
	131	FSF	10	21"	<5	<5	18	<5	<5
	135	FSF	10	18.7"	5.1	<5	14	<5	<5
	139	FSF	10	20.3"	<5	<5	10	<5	<5
	163	FSF	10	20.5"	<5	<5	8.7	<5	<5
	167	FSF	2	19.4"	<5	<5	19	<5	<5

(FSF=skin off fillet, FSO=skin on fillet)

TABLE VI (cont.) ORGANOCHLORINE PESTICIDES IN MT. CREEK FISH

SPECIES	SAMPLE ID	SAMPLE TYPE	FISHING AREA	TOTAL LENGTH	TRANS-NONA-CHLOR	DIELDRIN	DDE	DDD	DDT
CHANNEL CATFSIH	34	FSF	4	25.4"	14	5.2	150	<5	<5
	38	FSF	4	22.8"	9.9	<5	58	<5	<10
	179	FSF	8	17.2"	16	<5	30	<5	<5
	191	FSF	10	16.2"	5.2	<5	23	<5	<5
	195	FSF	10	16.6"	23	40	22	<5	<5
	199	FSF	2	17.6"	<5	<5	13	<5	<5
	207	FSF	2	15.2"	<5	<5	18	<5	<5
	218	FSF	7	16.5"	<5	<5	11	<5	<5
	229	FSF	11	15.8"	<5	<5	15	<5	<5
	233	FSF	2	16.9"	<5	<5	9.3	<5	<5
	35	FSO	4	25.4"	12	5.2	46	<5	<5
	39	FSO	4	22.8"	<b>80</b>	<b>12</b>	<b>75</b>	<5	<10
	180	FSO	8	17.2"	8.2	<5	18	<5	<5
	192	FSO	10	16.2"	<5	<5	9.5	<5	<5
	196	FSO	10	16.6"	28	47	<b>22</b>	<5	<5
	200	FSO	2	17.6"	<5	<5	17	<5	<5
	208	FSO	2	15.2"	<5	<5	22	<5	<5
	219	FSO	7	16.5"	<5	<5	9.3	<5	<10
	230	FSO	11	15.8"	<5	<5	9.6	<5	<10
	234	FSO	2	16.9"	<5	<5	8.2	<5	<10
	40	WBE	4	21"	30	12	<b>160</b>	<5	<10
	210	WBE	10	14.1"	<5	<5	23	<5	<5
	224	WBE	8	18.9"	10	<5	25	<5	<10
	225	WBE	7	18.7"	16	<5	<b>54</b>	<5	<10
	226	WBE	7	21.9"	<5	<5	110	<5	<10
	235	WBE	2	22.5"	30	<5	<b>134</b>	<5	<5
236	WBE	2	22.5"	<5	<5	22	<5	<10	
249	WBE	7	14.9"	27	<5	<b>33</b>	<5	<10	
250	WBE	7	23.3"	32	5.2	<b>60</b>	<b>5.1</b>	<10	

(FSF=skin off fillet, FSO=skin on fillet, WBE=whole body eviscerated)

TABLE V I(cont.) ORGANOCHLORINE PESTICIDES IN MT. CREEK FISH

SPECIES	SAMPLE ID	SAMPLE TYPE	FISHING AREA	TOTAL LENGTH	ENDRIN	CIS-NONA-CHLOR	METH-OXY-CHLOR	MIREX	TOXA-PHENE
LARGEMOUTH BASS	15	FSF	4	18.7"	<5	4.6 e	<5	<5	<200
	59	FSF	9	19"	<5	<5	<5	<5	<200
	143	FSF	10	18.5"	<5	<5	<5	<5	<200
	23	FSF	4	14"	<5	<5	8.9	<5	<200
	43	FSF	8	13.8"	<5	<5	6.3	<5	<200
	51	FSF	8	14.6"	<5	<5	<5	<5	<200
	63	FSF	9	13.6"	<5	<5	7.6	<5	<200
	87	FSF	11	15.7"	<5	<5	7.6	<5	<200
	95	FSF	11	15.3"	<5	<5	<5	<5	<200
	99	FSF	11	14.3"	<5	<5	<5	<5	<200
	107	FSF	2	15.6"	<5	<5	<5	<5	<200
	111	FSF	2	14.5"	<5	<5	<5	<5	<200
	147	FSF	10	14"	<5	<5	5.4	<5	<200
	24	FSO	4	14"	<5	<5	10	<5	<200
	44	FSO	8	13.8"	<5	<5	8.5	<5	<200
	52	FSO	8	14.6"	<5	<5	<5	<5	<200
	64	FSO	9	13.6"	<5	<5	6.1	<5	<200
	88	FSO	11	15.7"	<5	<5	12	<5	<200
	96	FSO	11	15.3"	<5	<5	7.6	<5	<200
	100	FSO	11	14.3"	<5	<5	15	<5	<200
108	FSO	2	13.8"	<5	<5	<5	<5	<200	
112	FSO	2	12.8"	<5	<5	8.1	<5	<200	
148	FSO	10	14"	<5	<5	6.2	<5	<200	
COMMON CARP	4	FSF	4	21.9"	<5	<5	47	<5	<200
	75	FSF	8	19.2"	<5	<5	6.5	<5	<200
	83	FSF	9	19.9"	<5	<5	15	<5	<200
	123	FSF	11	19.4"	<5	<5	9.5	<5	<200
	127	FSF	11	21.2"	<5	17	65	<5	<200
	131	FSF	10	21"	<5	5.7	18	<5	<200
	135	FSF	10	18.7"	<5	<5	14	<5	<200
	139	FSF	10	20.3"	<5	<5	10	<5	<200
	163	FSF	10	20.5"	<5	<5	8.7	<5	<200
	167	FSF	2	19.4"	<5	<5	19	<5	<200

(FSF=skin off fillet, FSO=skin on fillet)

TABLE VI (cont.) ORGANOCHLORINE PESTICIDES IN MT. CREEK FISH

SPECIES	SAMPLE ID	SAMPLE TYPE	FISHING AREA	TOTAL LENGTH	ENDRIN	CIS-NONA-CHLOR	METH-OXY-CHLOR	MIREX	TOXA-PHENE
CHANNEL CATFSIH	34	FSF	4	25.4"	<5	6.5	<5	<5	<200
	38	FSF	4	22.8"	<5	6.7	10	<5	<200
	179	FSF	8	17.2"	<5	8.8	<5	<b>&lt;5</b>	<200
	191	FSF	10	16.2"	<5	5.2	<5	<5	<200
	195	FSF	10	16.6"	<5	8.0	<5	<b>&lt;5</b>	<200
	199	FSF	2	17.6"	<5	<5	<5	<5	<200
	207	FSF	2	15.2"	<5	<5	<5	<5	<200
	218	FSF	7	16.5"	<5	<5	<5	<5	<200
	229	FSF	11	15.8"	<5	<5	<5	<5	<200
	233	FSF	2	16.9"	<5	<5	<5	<5	<200
	35	FSO	4	25.4"	<5	11	<5	<b>&lt;5</b>	<200
	39	FSO	4	22.8"	<b>&lt;5</b>	<b>25</b>	<b>&lt;10</b>	<b>&lt;5</b>	<b>&lt;200</b>
	180	FSO	8	17.2"	<5	<5	<5	<b>&lt;5</b>	<200
	192	FSO	10	16.2"	<5	<5	<5	<5	<200
	196	FSO	10	16.6"	<5	12	<b>&lt;5</b>	<b>&lt;5</b>	<b>&lt;200</b>
	200	FSO	2	17.6"	<5	<5	<5	<5	<200
	208	FSO	2	15.2"	<5	<5	<5	<5	<200
	219	FSO	7	16.5"	<5	<5	<10	<5	<200
	230	FSO	11	15.8"	<5	<5	<10	<5	<200
	234	FSO	2	16.9"	<5	<5	<10	<5	<200
	40	WBE	4	21"	<5	14	<b>&lt;10</b>	<b>&lt;5</b>	<b>&lt;200</b>
	210	WBE	10	14.1"	<5	<5	<5	<5	<200
	224	WBE	8	18.9"	<5	<5	<10	<b>&lt;5</b>	<200
	225	WBE	7	18.7"	<5	6.7	<b>&lt;10</b>	<b>&lt;5</b>	<b>&lt;200</b>
	226	WBE	7	21.9"	<5	8.4	<10	<b>&lt;5</b>	<200
	235	WBE	2	22.5"	<5	<5	<b>&lt;5</b>	<b>&lt;5</b>	<b>&lt;200</b>
236	WBE	2	22.5"	<5	<5	<10	<5	<200	
249	WBE	7	14.9"	<5	7.6	<b>&lt;10</b>	<b>&lt;5</b>	<b>&lt;200</b>	
250	WBE	7	23.3"	<5	18	<b>&lt;10</b>	<b>&lt;5</b>	<b>&lt;200</b>	

(FSF=skin off fillet, FSO=skin on fillet)

**Table VII**

<b>METALS IN MT. CREEK FISH (ug/g)</b>										
<b>Al</b> 0.37	<b>Ba</b> 0.23	<b>B</b> 1.45	<b>Cr</b> 0.91	<b>V</b> <0.3	<b>Cu</b> 0.83	<b>Fe</b> 27.5	<b>Mn</b> 0.98	<b>Sr</b> 10.7	<b>Zn</b> 38.7	<b>Sb</b> <0.3
<b>As</b> <0.3	<b>Be</b> <0.3	<b>Cd</b> <0.3	<b>Co</b> <0.3	<b>Hg</b> 0.2	<b>Pb</b> <0.3	<b>Mo</b> <0.3	<b>Ni</b> <0.3	<b>Se</b> 1.7	<b>Ag</b> <0.3	<b>U</b> <0.3

n=26 channel catfish, 9 common carp, 10 largemouth bass

Table VIII PRELIMINARY SURVEY OF CHLORINATED ORGANIC COMPOUNDS IN MOUNTAIN CREEK FISH

COMPOUND	WHOLE CARP	BASS FILLET	WHOLE CARP	BASS FILLET	WHOLE CARP	BASS FILLET
	CONCENTRATION (UG/KG)					
ALPHA-HCH	<5	<5	<5	<5	<5	<5
HEXACHLOROBENZENE	<5	<5	<5	<5	<5	<5
PENTACHLOROANISOLE	<5	<5	<5	<5	<5	<5
BETA-HCH	<5	<5	<5	<5	<5	<5
GAMMA-HCH	<5	<5	<5	<5	<5	<5
DELTA-HCH	<5	<5	<5	<5	<5	<5
HEPTACHLOR	<5	<5	<5	<5	<5	<5
ALDRIN	<5	<5	<5	<5	<5	<5
DACTHAL	<5	<5	<5	<5	<5	<5
HEPTACHLOR EPOXIDE	<5	<5	<5	<5	<5	<5
OXYCHLORDANE	<5	<5	<5	<5	<5	<5
TRANS- CHLORDANE	5.2	<5	15	<5	15	<5
CIS-CHLORDANE	8.2	<5	18	<5	23	<5
TRANS-NONACHLOR	13	<5	20	10	23	<5
CIS-NONACHLOR	8.3	<5	12	6.1	12	<5
o'p'-DDE	<5	<5	<5	<5	8.9	<5
p'p'-DDE	140	9.1	29	9	81	14
o'p'-DDD	<5	<5	<5	<5	<5	<5
p'p'-DDD	13	<5	5.7	<5	65	<5
o'p'-DDT	<5	<5	<5	<5	<5	<5
o'p'-METHOXYCHLOR	<5	<5	<5	<5	<5	<5
p'p'-METHOXYCHLOR	<5	<5	<5	<5	<5	<5
MIREX	<5	<5	<5	<5	<5	<5
TOXAPHENE	<200	<200	<200	<200	<200	<200
TOTAL PCB	590	63	1600	580	4200	300
DIELDRIN	<5	<5	<5	<5	<5	<5
ENDRIN	<5	<5	<5	<5	<5	<5



**Table IX PRELIMINARY SURVEY OF TRACE METALS IN MOUNTAIN CREEK FISH LIVERS**

COMPOUND	CARP LIVER	BASS LIVER	BASS LIVER	CARP LIVER	BASS LIVER
	CONCENTRATION (UG/G)				
ALUMINUM	322	<1	<1	1.4	1
BARIUM	1.9	<0.1	<0.1	<0.1	0.1
BORON	1.1	1	0.8	0.3	0.6
CHROMIUM	0.7	<0.5	<0.5	<0.5	0.5
COPPER	90.7	16.4	25.1	36.3	24.7
IRON	2390	718	913	476	932
MANGANESE	12.6	9.5	8.7	0.8	8
STRONTIUM	6.4	0.6	1.4	0.2	0.9
ZINC	616	99.1	84.3	286	99.7
ANTIMONY	<0.2	<0.2	<0.2	<0.2	0.2
ARSENIC	0.7	1.4	0.5	0.3	0.3
BERYLLIUM	<0.2	<0.2	<0.2	<0.2	0.2
CADMIUM	1.4	<0.2	0.5	0.3	0.2
COBALT	0.4	0.6	0.5	<0.2	0.6
LEAD	0.4	<0.2	<0.2	<0.2	0.2
MOLYBDENUM	1.3	1.1	1.1	0.2	1.1
NICKEL	0.6	0.3	0.2	<0.2	0.2
SELENIUM	4.5	5.3	5.6	1	5.1
SILVER	0.3	<0.2	0.3	<0.2	0.2
URANIUM	<0.2	<0.2	<0.2	<0.2	0.2
MERCURY	<0.1	<0.1	0.1	<0.1	0.1
VANADIUM	2.4	0.2	0.6	0.2	0.2