APPENDIX B

BIOACCUMULATION MONITORING
and
QUALITY ASSURANCE RESULTS

APPENDIX B.1
Toxic Substances Bioaccumulation Monitoring
Summary of Data
Synthetic Organic Chemicals in Fish Tissue

Bottle Number:		24.1.F.95	24.2.F.95	24.11.F.95	24.12.F.95
Station Name:		Yuma Main Drain/ Outlet	Yuma Main Drain/ Outlet	Yuma Main Drain/ Outlet	Yuma Main Drain/ Outlet
Date of Collection:		6/21/95	6/21/95	4/10/96	4/10/96
Species:		Carp	Largemout Bass	Carp	Channel Catfish
Tissue Type:		Flesh	Flesh	Flesh	Flesh
	Fresh Weight Quantitation Limit (MQL)	Fresh Weight Concentration	Fresh Weight Concentration	Fresh Weight Concentration	Fresh Weight Concentration
COMPOUND	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)
aldrin	5	ND	ND	ND	ND
cis-chlordane	5	<MQL	<MQL	**6.1**	**5.8**
trans-chlordane	5	<MQL	<MQL	<MQL	<MQL
oxychlordane	5	<MQL	ND	<MQL	ND
cis-nonachlor	5	<MQL	<MQL	<MQL	<MQL
trans-nonachlor	5	<MQL	<MQL	**12**	**8.5**
alpha chlordene	5	ND	ND	ND	ND
gamma chlordene	5	ND	ND	ND	ND
chlorpyrifos	10	<MQL	ND	ND	ND
dicofol	100	ND	ND	ND	ND
dichlorobenzophenone	30	ND	ND	ND	ND
dacthal	5	<MQL	ND	**11**	**7.4**
diazinon	50	ND	ND	ND	<MQL
dieldrin	5	**9.0**	<MQL	**8.8**	**6.1**
endosulfan I	5	**140**	<MQL	<MQL	<MQL
endosulfan II	35	**50**	<MQL	<MQL	ND
endosulfan sulfate	40	**51**	<MQL	<MQL	ND
endrin	15	ND	ND	ND	ND
ethion	20	<MQL	ND	<MQL	<MQL
alpha HCH	2	ND	ND	ND	ND
beta HCH	10	ND	ND	ND	ND
gamma HCH	2	ND	ND	ND	ND
delta HCH	5	ND	ND	ND	ND
o,p'-DDD	10	<MQL	<MQL	**12**	<MQL
p,p'-DDD	10	**26**	<MQL	**61**	**50**
o,p'-DDE	10	<MQL	ND	**14**	**14**
p,p'-DDE	5	**590**	**110**	**1700**	940
p,p'-DDMU	15	<MQL	ND	**22**	<MQL
o,p'-DDT	10	ND	ND	<MQL	<MQL
p,p'-DDT	10	<MQL	<MQL	<MQL	**33**
heptachlor	5	ND	ND	ND	ND
heptachlor epoxide	5	ND	ND	ND	ND
hexachlorobenzene	2	ND	ND	<MQL	<MQL
methoxychlor	15	ND	ND	ND	<MQL
oxadiazon	5	ND	ND	ND	ND
ethyl parathion	10	ND	ND	ND	ND
methyl parathion	10	ND	ND	ND	ND
PCB 1248	50	ND	ND	ND	ND
PCB 1254	50	<MQL	<MQL	**110**	**69**
PCB 1260	50	<MQL	ND	<MQL	<MQL
tetradifon	10	ND	ND	ND	ND
toxaphene	100	**140**	ND	**410**	**420**
% Lipid		2.47	0.165	2.23	1.83
% Moisture		78.3	78.8	78.7	78.2

APPENDIX B.1
Toxic Substances Bioaccumulation Monitoring
Summary of Data
Synthetic Organic Chemicals in Fish Tissue

Bottle Number:		24.3.F.95	24.4.F.95	24.6.F.95	24.5.F.95
Station Name:		Colorado River/ Internat'l Boundry	Colorado River/ Internat'l Boundry	Colorado River/ Internat'l Boundry	Colorado River/ Internat'l Boundry
Date of Collection:		6/13/95	6/13/95	12/5/95	12/5/95
Species:		Carp	Largemouth Bass	Carp	Largemouth Bass
Tissue Type:		Flesh	Flesh	Flesh	Flesh
	Fresh Weight	Fresh Weight	Fresh Weight	Fresh Weight	Fresh Weight
	Quantitation Limit (MQL)	Concentration	Concentration	Concentration	Concentration
COMPOUND	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)
aldrin	5	ND	ND	ND	ND
cis-chlordane	5	<MQL	ND	<MQL	ND
trans-chlordane	5	<MQL	ND	<MQL	<MQL
oxychlordane	5	ND	ND	ND	ND
cis-nonachlor	5	<MQL	ND	<MQL	ND
trans-nonachlor	5	<MQL	<MQL	<MQL	<MQL
alpha chlordene	5	ND	ND	ND	ND
gamma chlordene	5	ND	ND	ND	ND
chlorpyrifos	10	<MQL	ND	<MQL	ND
dicofol	100	ND	ND	ND	ND
dichlorobenzophenone	30	ND	ND	ND	ND
dacthal	5	<MQL	<MQL	**7.3**	<MQL
diazinon	50	ND	<MQL	<MQL	ND
dieldrin	5	<MQL	<MQL	<MQL	ND
endosulfan I	5	**6.5**	ND	**8.0**	ND
endosulfan II	35	ND	ND	ND	ND
endosulfan sulfate	40	<MQL	<MQL	<MQL	ND
endrin	15	ND	ND	ND	ND
ethion	20	ND	ND	ND	ND
alpha HCH	2	ND	ND	ND	ND
beta HCH	10	ND	ND	ND	ND
gamma HCH	2	ND	ND	ND	ND
delta HCH	5	ND	ND	ND	ND
o,p'-DDD	10	<MQL	ND	<MQL	ND
p,p'-DDD	10	<MQL	<MQL	<MQL	<MQL
o,p'-DDE	10	ND	ND	ND	ND
p,p'-DDE	5	**220**	**36**	**220**	**57**
p,p'-DDMU	15	<MQL	ND	<MQL	ND
o,p'-DDT	10	ND	ND	ND	ND
p,p'-DDT	10	<MQL	ND	<MQL	ND
heptachlor	5	ND	ND	ND	ND
heptachlor epoxide	5	ND	ND	ND	ND
hexachlorobenzene	2	ND	<MQL	ND	ND
methoxychlor	15	ND	ND	<MQL	ND
oxadiazon	5	ND	ND	<MQL	ND
ethyl parathion	10	ND	ND	<MQL	ND
methyl parathion	10	ND	ND	ND	ND
PCB 1248	50	ND	ND	ND	ND
PCB 1254	50	<MQL	ND	<MQL	<MQL
PCB 1260	50	<MQL	ND	<MQL	ND
tetradifon	10	ND	<MQL	<MQL	ND
toxaphene	100	**130**	ND	<MQL	ND
% Lipid		7.20	0.262	2.69	0.673
% Moisture		74.1	79.5	78.5	78.0

APPENDIX B.1

Toxic Substances Bioaccumulation Monitoring

Summary of Data

Synthetic Organic Chemicals in Fish Tissue

Bottle Number:		27.2.F.95	27.1.F.95	27.5.F.95	27.6.F.95
Station Name:		New River/ Westmorland	New River/ Westmorland	New River/ Westmorland	New River/ Westmorland
Date of Collection:		6/16/95	6/16/95	4/10/96	4/10/96
Species:		Carp	Channel Catfish	Carp	Channel Catfish
Tissue Type:		Flesh	Flesh	Flesh	Flesh
	Fresh Weight Quantitation Limit (MQL)	Fresh Weight Concentration	Fresh Weight Concentration	Fresh Weight Concentration	Fresh Weight Concentration
COMPOUND	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)
aldrin	5	ND	<MQL	<MQL	ND
cis-chlordane	5	<MQL	19	13	11
trans-chlordane	5	<MQL	14	10	8.3
oxychlordane	5	ND	<MQL	<MQL	<MQL
cis-nonachlor	5	<MQL	10	7.3	5.5
trans-nonachlor	5	<MQL	24	14	13
alpha chlordene	5	ND	<MQL	<MQL	<MQL
gamma chlordene	5	ND	<MQL	<MQL	<MQL
chlorpyrifos	10	<MQL	17	<MQL	<MQL
dicofol	100	ND	ND	ND	ND
dichlorobenzophenone	30	ND	ND	ND	ND
dacthal	5	6.5	25	98	120
diazinon	50	ND	ND	ND	<MQL
dieldrin	5	6.2	32	14	27
endosulfan I	5	6.8	37	63	110
endosulfan II	35	<MQL	<MQL	39	58
endosulfan sulfate	40	<MQL	<MQL	<MQL	<MQL
endrin	15	ND	<MQL	<MQL	<MQL
ethion	20	ND	<MQL	<MQL	<MQL
alpha HCH	2	ND	ND	ND	ND
beta HCH	10	ND	ND	ND	ND
gamma HCH	2	ND	ND	ND	<MQL
delta HCH	5	ND	ND	ND	ND
o,p'-DDD	10	<MQL	<MQL	14	<MQL
p,p'-DDD	10	15	61	58	41
o,p'-DDE	10	<MQL	<MQL	<MQL	<MQL
p,p'-DDE	5	830	1100	710	740
p,p'-DDMU	15	<MQL	16	16	<MQL
o,p'-DDT	10	ND	<MQL	<MQL	<MQL
p,p'-DDT	10	ND	19	<MQL	16
heptachlor	5	ND	ND	ND	ND
heptachlor epoxide	5	ND	ND	ND	ND
hexachlorobenzene	2	<MQL	ND	3.9	4.2
methoxychlor	15	ND	<MQL	ND	<MQL
oxadiazon	5	ND	ND	ND	ND
ethyl parathion	10	ND	ND	ND	ND
methyl parathion	10	ND	ND	ND	ND
PCB 1248	50	ND	ND	<MQL	<MQL
PCB 1254	50	<MQL	<MQL	110	<MQL
PCB 1260	50	120	79	250	91
tetradifon	10	ND	ND	ND	ND
toxaphene	100	100	750	270	290
% Lipid		0.567	2.89	2.29	3.54
% Moisture		79.8	78.8	78.4	77.9

APPENDIX B.1

Toxic Substances Bioaccumulation Monitoring

Summary of Data

Synthetic Organic Chemicals in Fish Tissue

Bottle Number:		355.2.F.95	355.1.F.95	355.3.F.95	355.4.F.95
Station Name:		All American Can./ d/s Imperial Dam	All American Can./ d/s Imperial Dam	All American Can./ d/s Imperial Dam	All American Can. d/s Imperial Dam
Collection Date:		6/14/95	6/14/95	12/5/95	12/5/95
Species:		Carp	Channel Catfish	Carp	Largemouth Bass
Tissue Type:		Flesh	Flesh	Flesh	Flesh
	Fresh Weight Quantitation Limit (MQL)	Fresh Weight Concentration	Fresh Weight Concentration	Fresh Weight Concentration	Fresh Weight Concentration
COMPOUND	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)
aldrin	5	<MQL	ND	ND	ND
cis-chlordane	5	**5.9**	<MQL	<MQL	ND
trans-chlordane	5	<MQL	<MQL	<MQL	ND
oxychlordane	5	ND	ND	ND	ND
cis-nonachlor	5	**7.5**	<MQL	<MQL	ND
trans-nonachlor	5	**9.9**	<MQL	**8.0**	ND
alpha chlordene	5	ND	ND	ND	ND
gamma chlordene	5	ND	ND	ND	ND
chlorpyrifos	10	<MQL	<MQL	ND	ND
dicofol	100	ND	ND	ND	ND
dichlorobenzophenone	30	ND	ND	ND	ND
dacthal	5	ND	<MQL	<MQL	<MQL
diazinon	50	ND	<MQL	ND	ND
dieldrin	5	<MQL	<MQL	<MQL	ND
endosulfan I	5	ND	<MQL	<MQL	ND
endosulfan II	35	ND	ND	ND	ND
endosulfan sulfate	40	ND	ND	ND	ND
endrin	15	ND	ND	ND	ND
ethion	20	ND	ND	ND	ND
alpha HCH	2	ND	ND	ND	ND
beta HCH	10	ND	ND	ND	ND
gamma HCH	2	ND	ND	ND	ND
delta HCH	5	ND	ND	ND	ND
o,p'-DDD	10	<MQL	<MQL	<MQL	ND
p,p'-DDD	10	**21**	**11**	**13**	ND
o,p'-DDE	10	<MQL	<MQL	<MQL	ND
p,p'-DDE	5	**250**	**74**	**250**	**12**
p,p'-DDMU	15	<MQL	ND	<MQL	ND
o,p'-DDT	10	ND	ND	ND	ND
p,p'-DDT	10	<MQL	<MQL	<MQL	ND
heptachlor	5	ND	ND	ND	ND
heptachlor epoxide	5	ND	ND	ND	ND
hexachlorobenzene	2	<MQL	ND	ND	ND
methoxychlor	15	ND	ND	ND	ND
oxadiazon	5	ND	ND	ND	ND
ethyl parathion	10	ND	ND	ND	ND
methyl parathion	10	ND	ND	ND	ND
PCB 1248	50	ND	ND	ND	ND
PCB 1254	50	**84**	<MQL	**70**	ND
PCB 1260	50	**50**	<MQL	**54**	ND
tetradifon	10	ND	ND	ND	ND
toxaphene	100	<MQL	<MQL	<MQL	ND
% Lipid		8.34	4.93	2.71	0.078
% Moisture		72.1	76.3	78.1	80.8

APPENDIX B.1
Toxic Substances Bioaccumulation Monitoring
Summary of Data
Synthetic Organic Chemicals in Fish Tissue

Bottle Number:		**27.3.F.95**
Station Name:		**New River/ Internat'l Boundry**
Date of Collection:		**6/28/95**
Species		**Carp**
Tissue Type:		**Flesh**
	Fresh Weight Quantitation Limit (MQL)	**Fresh Weight Concentration**
COMPOUND	**ppb (ng/g)**	**ppb (ng/g)**
aldrin	5	<MQL
cis-chlordane	5	**39**
trans-chlordane	5	**32**
oxychlordane	5	<MQL
cis-nonachlor	5	**12**
trans-nonachlor	5	**29**
alpha chlordene	5	**5**
gamma chlordene	5	**8.7**
chlorpyrifos	10	**46**
dicofol	100	ND
dichlorobenzophenone	30	ND
dacthal	5	**5.9**
diazinon	50	**65**
dieldrin	5	**7.8**
endosulfan I	5	<MQL
endosulfan II	35	ND
endosulfan sulfate	40	ND
endrin	15	ND
ethion	20	ND
alpha HCH	2	<MQL
beta HCH	10	ND
gamma HCH	2	**4.2**
delta HCH	5	ND
o,p'-DDD	10	**20**
p,p'-DDD	10	**94**
o,p'-DDE	10	<MQL
p,p'-DDE	5	**180**
p,p'-DDMU	15	<MQL
o,p'-DDT	10	<MQL
p,p'-DDT	10	<MQL
heptachlor	5	ND
heptachlor epoxide	5	<MQL
hexachlorobenzene	2	**10**
methoxychlor	15	ND
oxadiazon	5	ND
ethyl parathion	10	ND
methyl parathion	10	ND
PCB 1248	50	**180**
PCB 1254	50	**98**
PCB 1260	50	<MQL
tetradifon	10	ND
toxaphene	100	**120**
% Lipid		6.15
% Moisture		74.1

APPENDIX B.2
Toxic Substances Bioaccumulation Monitoring
Summary of Data
Trace Elements in Fish Tissue (ppm, wet weight)

Collection Date: Species: Tissue Type:		6/14/1995 Channel Catfish Flesh		6/14/1995 Channel Catfish Flesh		6/14/1995 Channel Catfish Liver		6/14/1995 Carp Flesh	
ELEMENTS	**Fresh Weight Quantitation Limit (MQL) ppm (ug/g)**	**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**	
		Result	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**
Mercury	0.02	**0.03**		0.02		NA		**0.09**	
Selenium	0.05	**0.72**		NA		NA		**1.4**	
Arsenic	0.05	**0.16**		NA		NA		**0.52**	
Cadmium	0.01	<MQL		<MQL		NA		<MQL	
Nickel	0.1	<MQL		ND		NA		<MQL	
Silver	0.02	NA		NA		ND		NA	
Chromium	0.02	NA		NA		0.02	Blank (0.02)	NA	
Copper	0.05	NA		NA		**2**		NA	
Lead	0.1	NA		NA		<MQL		NA	
Zinc	0.3	NA		NA		**20**		NA	
Percent Moisture		76.3		NA(IS)		77.0		72.1	

ND = not detected
NA = not analyzed
NA(IS) = not analyzed due to insufficient sample
For all elements, except for copper and silver, the MQL (method quantification limit) equals the MDL (method detection limit).
The MQL for silver is 0.02 ppm; the MDL for silver is 0.01 ppm; the MQL for copper is 0.05; the MDL for copper is 0.02.
Method blanks contain 0.02 ppm chromium.

Station Name: All American Canal - d/s Imperial Dam

APPENDIX B.2
Toxic Substances Bioaccumulation Monitoring
Summary of Data
Trace Elements in Fish Tissue (ppm, wet weight)

Collection Date: Species: Tissue Type:		12/5/1995 Carp Flesh		12/5/1995 Largemouth Bass Flesh		12/5/1995 Largemouth Bass Liver	
ELEMENTS	**Fresh Weight Quantitation Limit (MQL) ppm (ug/g)**	**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**	
		Result	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**
Mercury	0.02	**0.1**		0.02		NA	
Selenium	0.05	**1.2**		**2.1**		NA	
Arsenic	0.05	**0.36**		**0.08**		NA	
Cadmium	0.01	<MQL		ND		NA	
Nickel	0.1	<MQL		<MQL		NA	
Silver	0.02	NA		NA		<MQL	
Chromium	0.02	NA		NA		0.02	Blank (0.02)
Copper	0.05	NA		NA		**7.2**	
Lead	0.1	NA		NA		<MQL	
Zinc	0.3	NA		NA		**24**	
Percent Moisture		78.1		80.8		80.7	

ND = not detected
NA = not analyzed
NA(IS) = not analyzed due to insufficient sample
For all elements, except for copper and silver, the MQL (method quantification limit) equals the MDL (method detection limit).
The MQL for silver is 0.02 ppm; the MDL for silver is 0.01 ppm; the MQL for copper is 0.05; the MDL for copper is 0.02.
Method blanks contain 0.02 ppm chromium.

APPENDIX B.2

Toxic Substances Bioaccumulation Monitoring

Summary of Data

Trace Elements in Fish Tissue (ppm, wet weight)

Collection Date: Species: Tissue Type:		6/13/1995 Carp Flesh		6/13/1995 Carp Flesh		6/13/1995 Largemouth Bass Flesh		6/13/1995 Largemouth Bass Liver	
ELEMENTS	**Fresh Weight Quantitation Limit (MQL) ppm (ug/g)**	**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**	
		Result	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**
Mercury	0.02	0.14		0.14		0.26		NA	
Selenium	0.05	0.78		0.8		1		NA	
Arsenic	0.05	0.2		0.21		0.06		NA	
Cadmium	0.01	<MQL		<MQL		ND		NA	
Nickel	0.1	<MQL		<MQL		<MQL		NA	
Silver	0.02	NA		NA		NA		0.008	
Chromium	0.02	NA		NA		NA		0.02	Blank (0.02)
Copper	0.05	NA		NA		NA		9.4	
Lead	0.1	NA		NA		NA		<MQL	
Zinc	0.3	NA		NA		NA		22	
Percent Moisture		74.1		74.1		79.5		79.1	

ND = not detected

NA = not analyzed

NA(IS) = not analyzed due to insufficient sample

For all elements, except for copper and silver, the MQL (method quantification limit) equals the MDL (method detection limit).

The MQL for silver is 0.02 ppm; the MDL for silver is 0.01 ppm; the MQL for copper is 0.05; the MDL for copper is 0.02.

Method blanks contain 0.02 ppm chromium.

APPENDIX B.2
Toxic Substances Bioaccumulation Monitoring
Summary of Data
Trace Elements in Fish Tissue (ppm, wet weight)

Species:		6/13/1995		12/5/1995		12/5/1995		12/5/1995	
Tissue Type:		Largemouth Bass Liver		Largemouth Bass Flesh		Largemouth Bass Liver		Carp Flesh	
ELEMENTS	**Fresh Weight Quantitation Limit (MQL) ppm (ug/g)**	**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**	
		Result	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**
Mercury	0.02	NA		0.46		NA		0.3	
Selenium	0.05	NA		0.76		NA		0.75	
Arsenic	0.05	NA		0.09		NA		0.14	
Cadmium	0.01	NA		ND		NA		<MQL	
Nickel	0.1	NA		<MQL		NA		<MQL	
Silver	0.02	<MQL		NA		<MQL		NA	
Chromium	0.02	0.02		NA		<MQL		NA	
Copper	0.05	9.1		NA		4.2		NA	
Lead	0.1	<MQL		NA		<MQL		NA	
Zinc	0.3	21		NA		20		NA	
Percent Moisture		79.2		78		76.8		78.5	

ND = not detected
NA = not analyzed
NA(IS) = not analyzed due to insufficient sample
For all elements, except for copper and silver, the MQL (method quantification limit) equals the MDL (method detection limit).
The MQL for silver is 0.02 ppm; the MDL for silver is 0.01 ppm; the MQL for copper is 0.05; the MDL for copper is 0.02.
Method blanks contain 0.02 ppm chromium.

APPENDIX B.2

Toxic Substances Bioaccumulation Monitoring

Summary of Data

Trace Elements in Fish Tissue (ppm, wet weight)

Collection Date: Species: Tissue Type:		6/16/1995 Channel Catfish Flesh		6/16/1995 Channel Catfish Liver		6/16/1995 Carp Flesh		6/28/1995 Carp Flesh	
ELEMENTS	**Fresh Weight Quantitation Limit (MQL) ppm (ug/g)**	**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**	
		Result	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**
Mercury	0.02	0.18		NA		0.28		0.31	
Selenium	0.05	0.58		NA		1.5		1	
Arsenic	0.05	<MQL		NA		0.06		0.06	
Cadmium	0.01	<MQL		NA		<MQL		ND	
Nickel	0.1	<MQL		NA		<MQL		<MQL	
Silver	0.02	NA		<MQL		NA		NA	
Chromium	0.02	NA		0.02	Blank (0.02)	NA		NA	
Copper	0.05	NA		1.8		NA		NA	
Lead	0.1	NA		<MQL		NA		NA	
Zinc	0.3	NA		21		NA		NA	
Percent Moisture		78.8		80.8		79.9		74.1	

ND = not detected

NA = not analyzed

NA(IS) = not analyzed due to insufficient sample

For all elements, except for copper and silver, the MQL (method quantification limit) equals the MDL (method detection limit).

The MQL for silver is 0.02 ppm; the MDL for silver is 0.01 ppm; the MQL for copper is 0.05; the MDL for copper is 0.02.

Method blanks contain 0.02 ppm chromium.

Station Name: New River - Westmorland

APPENDIX B.2
Toxic Substances Bioaccumulation Monitoring
Summary of Data
Trace Elements in Fish Tissue (ppm, wet weight)

Collection Date:		4/10/1996		4/10/1996		4/10/1996		4/10/1996	
Species:		Carp		Carp		Channel Catfish		Channel Catfish	
Tissue Type:		Flesh		Flesh		Flesh		Liver	
ELEMENTS	**Fresh Weight Quantitation Limit (MQL) ppm (ug/g)**	**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**	
		Result	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**
Mercury	0.02	0.28		0.27		0.08		NA	
Selenium	0.05	1.5		1.5		0.8		NA	
Arsenic	0.05	0.11		0.09		0.06		NA	
Cadmium	0.01	<MQL		<MQL		ND		NA	
Nickel	0.1	<MQL		ND		ND		NA	
Silver	0.02	NA		NA		NA		ND	
Chromium	0.02	NA		NA		NA		0.02	Blank (0.02)
Copper	0.05	NA		NA		NA		2.3	
Lead	0.1	NA		NA		NA		0.06	<MQL
Zinc	0.3	NA		NA		NA		21	
Percent Moisture		78.4		78.3		77.9		81.3	

ND = not detected
NA = not analyzed
NA(IS) = not analyzed due to insufficient sample
For all elements, except for copper and silver, the MQL (method quantification limit) equals the MDL (method detection limit).
The MQL for silver is 0.02 ppm; the MDL for silver is 0.01 ppm; the MQL for copper is 0.05; the MDL for copper is 0.02.
Method blanks contain 0.02 ppm chromium.

Station Name: New River - Westmorland

APPENDIX B.2
Toxic Substances Bioaccumulation Monitoring
Summary of Data
Trace Elements in Fish Tissue (ppm, wet weight)

Collection Date: Species: Tissue Type:		6/21/1995 Carp Flesh		6/21/1995 Largemouth Bass Flesh		6/21/1995 Largemouth Bass Liver		4/10/1996 Carp Flesh	
ELEMENTS	**Fresh Weight Quantitation Limit (MQL) ppm (ug/g)**	**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**	
		Result	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**
Mercury	0.02	0.03		0.03		NA		0.05	
Selenium	0.05	0.88		0.74		NA		1	
Arsenic	0.05	0.16		0.11		NA		0.17	
Cadmium	0.01	<MQL		<MQL		NA		<MQL	
Nickel	0.1	<MQL		<MQL		NA		<MQL	
Silver	0.02	NA		NA		<MQL		NA	
Chromium	0.02	NA		NA		0.03	Blank (0.02)	NA	
Copper	0.05	NA		NA		4.6		NA	
Lead	0.1	NA		NA		<MQL		NA	
Zinc	0.3	NA		NA		28		NA	
Percent Moisture		78.3		78.8		77.3		78.7	

ND = not detected
NA = not analyzed
NA(IS) = not analyzed due to insufficient sample
For all elements, except for copper and silver, the MQL (method quantification limit) equals the MDL (method detection limit).
The MQL for silver is 0.02 ppm; the MDL for silver is 0.01 ppm; the MQL for copper is 0.05; the MDL for copper is 0.02.
Method blanks contain 0.02 ppm chromium.

Station Name: Yuma Main Drain

APPENDIX B.2
Toxic Substances Bioaccumulation Monitoring
Summary of Data
Trace Elements in Fish Tissue (ppm, wet weight)

Collection Date: Species: Tissue Type:		4/10/1996 Channel Catfish Flesh		4/12/1996 Carp Flesh	
ELEMENTS	**Fresh Weight Quantitation Limit (MQL) ppm (ug/g)**	**Fresh Weight Concentration ppm (ug/g)**		**Fresh Weight Concentration ppm (ug/g)**	
		Result	**Qualifier**	**Result**	**Qualifier**
Mercury	0.02	0.05		NA	
Selenium	0.05	0.5		NA	
Arsenic	0.05	0.07		NA	
Cadmium	0.01	<MQL		NA	
Nickel	0.1	<MQL		NA	
Silver	0.02	NA		<MQL	
Chromium	0.02	NA		0.04	Blank (0.02)
Copper	0.05	NA		2.1	
Lead	0.1	NA		<MQL	
Zinc	0.3	NA		22	
Percent Moisture		78.2		81.5	

ND = not detected
NA = not analyzed
NA(IS) = not analyzed due to insufficient sample
For all elements, except for copper and silver, the MQL (method quantification limit) equals the MDL (method detection limit).
The MQL for silver is 0.02 ppm; the MDL for silver is 0.01 ppm; the MQL for copper is 0.05; the MDL for copper is 0.02.
Method blanks contain 0.02 ppm chromium.

Station Name: Yuma Main Drain

APPENDIX B.3
Toxic Substances Bioaccumulation Monitoring
Summary of QA/QC Data
Pesticide MS/MSD Recoveries

	Matrix Spike	Matrix Spike Duplicate
Date of Collection:	6/13/1995	6/13/1995
Species:	Largemouth Bass	Largemouth Bass
Tissue Type:	Flesh	Flesh
COMPOUND	**Percent Recovered**	**Percent Recovered**
aldrin	59	69
cis-chlordane	73	95
trans-chlordane	72	94
oxychlordane	68	92
cis-nonachlor	82	98
trans-nonachlor	74	81
alpha chlordene	62	71
gamma chlordene	62	63
chlorpyrifos	55	68
dicofol	48	51
dichlorobenzophenone	96	110
dacthal	100	108
diazinon	84	95
dieldrin	103	113
endosulfan I	96	105
endosulfan II	116	122
endosulfan sulfate	116	119
endrin	104	120
ethion	37	46
alpha HCH	63	74
beta HCH	61	81
gamma HCH	64	81
delta HCH	65	80
o,p'-DDD	83	99
p,p'-DDD	82	96
o,p'-DDE	71	62
p,p'-DDE	68	71
p,p'-DDMU	63	76
o,p'-DDT	55	46
p,p'-DDT	82	95
heptachlor	38	42
heptachlor epoxide	74	94
hexachlorobenzene	50	47
methoxychlor	92	101
oxidiazon	104	114
ethyl parathion	82	95
methyl parathion	59	67
tetradifon	103	123
Surrogates:		
DBOB	57.8	65
DCB	91	102
DBCE	108	120
Average:	76.2	86.6
Standard Deviation:	20.6	23.2

APPENDIX B.4
Toxic Substances Bioaccumulation Monitoring
Summary of QA/QC Data
Pesticide MS/MSD Precision

	Matrix Spike	Matrix Spike Duplicate	
Date of Collection:	6/13/1995	6/13/1995	
Species:	Largemouth Bass	Largemouth Bass	
Tissue Type:	Flesh	Flesh	
COMPOUND	**Fresh Weight Concentration ppb (ng/g)**	**Fresh Weight Concentration ppb (ng/g)**	**RPD**
aldrin	24.1	27.1	12
cis-chlordane	25.4	31.6	22
trans-chlordane	23.1	28.7	22
oxychlordane	22.3	28.8	25
cis-nonachlor	42.1	48	13
trans-nonachlor	30.8	32.1	4
alpha chlordene	25.2	27.6	9
gamma chlordene	29.6	28.5	4
chlorpyrifos	50.3	59.3	16
dicofol	53.4	54.1	1
dichlorobenzophenone	111	125	12
dacthal	46.4	48	3
diazinon	770	832	8
dieldrin	46.2	48.7	5
endosulfan I	37.9	39.6	4
endosulfan II	49.7	49.9	0
endosulfan sulfate	90.2	88.9	1
endrin	36.3	39.8	9
ethion	82.4	96.7	16
alpha HCH	10.6	11.8	11
beta HCH	31.9	40.8	24
gamma HCH	15.7	19	19
delta HCH	21.2	24.8	16
o,p'-DDD	73.7	84.2	13
p,p'-DDD	77.2	85.3	10
o,p'-DDE	56.5	47.2	18
p,p'-DDE	89.2	89.5	0
p,p'-DDMU	101	115	13
o,p'-DDT	47.2	37.8	22
p,p'-DDT	174	192	10
heptachlor	14.8	15.6	5
heptachlor epoxide	24.9	30.2	19
hexachlorobenzene	12.9	11.6	11
methoxychlor	170	180	6
oxidiazon	104	109	5
ethyl parathion	120	133	10
methyl parathion	53	57.5	8
tetradifon	94.4	107	13
% Lipid	0.287	0.278	0.01
% Moisture	79.8	79.6	0.25

RPD = Relative Percent Difference

APPENDIX B.5
Toxic Substances Bioaccumulation Monitoring
Summary of QA/QC Data
Duplicate Sample Precision

Species: Tissue Type:		Carp Flesh	Carp Flesh	
COMPOUND	**Fresh Weight Quantitation Limit (MQL) ppb (ng/g)**	**Fresh Weight Concentration ppb (ng/g)**	**Fresh Weight Concentration ppb (ng/g)**	**RPD**
aldrin	5			
cis-chlordane	5	0.99	0.7	34
trans-chlordane	5	0.91	0.87	4.5
oxychlordane	5			
cis-nonachlor	5	0.61	0.65	6.3
trans-nonachlor	5	1.6	1.9	17
alpha chlordene	5			
gamma chlordene	5			
chlorpyrifos	10	1.3	1.4	7.4
dicofol	100			
dichlorobenzophenone	30			
dacthal	5	1.8	1.1	48
diazinon	50			
dieldrin	5	3.6	3.2	12
endosulfan I	5	6.5	5.3	20
endosulfan II	35			
endosulfan sulfate	40	3.6	3.6	0
endrin	15			
ethion	20			
alpha HCH	2			
beta HCH	10			
gamma HCH	2			
delta HCH	5			
o,p'-DDD	10	1.9	0.68	95
p,p'-DDD	10	9.5	7.5	24
o,p'-DDE	10		0.44	100
p,p'-DDE	5	220	220	0
p,p'-DDMU	15	3.5	3.2	9
o,p'-DDT	10			
p,p'-DDT	10	1.7	1.1	43
heptachlor	5			
heptachlor epoxide	5			
hexachlorobenzene	2			
methoxychlor	15			
oxidiazon	5			
ethyl parathion	10			
methyl parathion	10			
PCB 1248	50			
PCB 1254	50			
PCB 1260	50			
tetradifon	10			
toxaphene	100	130	130	0
% Lipid		7.2	7.39	2.6
% Moisture		74.1	74.1	0

RPD = Relative Percent Difference

APPENDIX B.5
Toxic Substances Bioaccumulation Monitoring
Summary of QA/QC Data
Duplicate Sample Precision

Species:		Carp	Carp	
Tissue Type:		Flesh	Flesh	
COMPOUND	**Fresh Weight Quantitation Limit (MQL) ppb (ng/g)**	**Fresh Weight Concentration ppb (ng/g)**	**Fresh Weight Concentration ppb (ng/g)**	**RPD**
aldrin	5			
cis-chlordane	5	13	11	17
trans-chlordane	5	10	8.9	12
oxychlordane	5			
cis-nonachlor	5	7.3	6.8	7.1
trans-nonachlor	5	14	15	6.9
alpha chlordene	5			
gamma chlordene	5			
chlorpyrifos	10			
dicofol	100			
dichlorobenzophenone	30			
dacthal	5	98	110	12
diazinon	50			
dieldrin	5	14	17	19
endosulfan I	5	63	74	16
endosulfan II	35			
endosulfan sulfate	40			
endrin	15			
ethion	20			
alpha HCH	2			
beta HCH	10			
gamma HCH	2			
delta HCH	5			
o,p'-DDD	10	14	14	0
p,p'-DDD	10	58	56	3.5
o,p'-DDE	10			
p,p'-DDE	5	710	740	4.1
p,p'-DDMU	15	16	17	6.1
o,p'-DDT	10			
p,p'-DDT	10			
heptachlor	5			
heptachlor epoxide	5			
hexachlorobenzene	2	3.9	4.7	19
methoxychlor	15			
oxidiazon	5			
ethyl parathion	10			
methyl parathion	10			
PCB 1248	50			
PCB 1254	50	110	120	8.7
PCB 1260	50	250	260	3.9
tetradifon	10			
toxaphene	100	270	300	11
% Lipid		2.29	2.29	0
% Moisture		78.4	78.3	0.1

RPD = Relative Percent Difference

APPENDIX B.6
Toxic Substances Bioaccumulation Monitoring
Summary of QA/QC Data
Recovery of Surrogate Standards

Bottle Number	Percent DBOB Recovered	Percent DCB Recovered	Percent DBCE Recovered
24.1.F.95	74	115	74
24.2.F.95	71	118	129
34.3.F.95	62	117	106
24.3.F.95 DUP	68	114	112
27.1.F.95	66	123	82
27.2.F.9527.3.F.95	70	138	127
27.3.F.95	69	123	108
355.1.F.95	63	112	81
24.4.F.95	64	110	108
24.4.F.95 MS	59	95	106
24.4.F.95 MSD	66	102	120
355.2.F.95	60	111	87
24.5.F.95	60	113	95
24.6.F.95	60	107	70
355.3.F.95	61	109	75
355.4.F.95	58	96	120
24.11.F.95	62	112	88
24.12.F.95	68	111	89
27.5.F.95	61	107	68
27.5.F.95 DUP	68	112	103
27.6.F.95	66	103	105
Std. Dev.	4.4	9.4	18.6
Mean:	65	112	98

DBOB = dibromo-octafluorobiphenyl
DCB = decachlorobiphenyl (#209)
DBCE = dibutylchlorendate

APPENDIX B.8
Toxic Substances Bioaccumulation Monitoring
Summary of QA/QC Data
Trace Element Blanks, SRMs, Matrix Spikes

MERCURY	Certified Value	EMAP Range (+/- 15 %)	Set 1 ppm		Set 2 ppm		Set 3 ppm		Set 4 ppm
DOLT-2	1.99 ppm	(1.60- 2.40)	2.01		1.95		2.01		1.96
DORM-1	0.798 ppm	(0.615- 1.00)	0.76		0.73		0.785		0.741
Blanks:			0.01/0.00		0.00/0.00	(MDL= 0.02 ppm)	0.00/0.00		0.00/0.00
Matrix Spike:	% Recovery		88.60%		91.30%		91.70%		86.50%

SELENIUM	Certified Value	EMAP Range (+/- 15 %)	Set 2 ppm		Set 3 ppm	
DOLT-2	6.06 ppm	(4.73- 7.53)	5.26		5.54	
DORM-1	1.62 ppm	(1.28- 2.00)	1.42		1.43	
1566a	2.21 ppm	(1.67- 2.82)	2		1.94	
Blanks:			0.02/0.02	(MDL= 0.05 ppm)	0.02/0.01	(MDL= 0.05 ppm)
Matrix Spike:	% Recovery		92.1%;96.3%		87.5%;79.5%	

ARSENIC	Certified Value	EMAP Range (+/- 15 %)	Set 2 ppm		Set 3 ppm	
DOLT-2	16.6 ppm	(13.2- 20.4)	14.5		15.5	
DORM-1	17.7 ppm	(13.3- 22.8)	16.3		15.5	
1566a	14.0 ppm	(10.9- 17.5)	13.6		12.7	
Blanks:			0.01/0.01	(MDL= 0.05 ppm)	0.01/0.02	(MDL= 0.05 ppm)
Matrix Spike:	% Recovery		85.8%;94.6%		90.2%;95%	

APPENDIX B.8
Toxic Substances Bioaccumulation Monitoring
Summary of QA/QC Data
Trace Element Blanks, SRMs, Matrix Spikes

CADMIUM	Certified Value	EMAP Range (+/- 15 %)	Set 5 ppm		Set 7 ppm		Set 12 ppm
DOLT-2	20.8 ppm	(17.2/ 24.5)	not analyzed		19.3		NA
DORM-1	0.086 ppm	(0.063- 0.113)	0.093		0.089		0.064
1566a	4.15 ppm	(3.20- 5.21)	4.12		4.27	(MDL= 0.01 ppm)	4.31
Blanks:			0.002/0.001		0.005/0.001		0.000/0.000
Matrix Spike:	% Recovery		90.20%		91.70%		99.70%

NICKEL	Certified Value	EMAP Range (+/- 15 %)	Set5 ppm		Set 7 ppm		Set 12 ppm
DOLT-2	0.20 ppm	(0.153/ 0.253)	not analyzed		0.234		NA
DORM-1	1.20 ppm	(0.766- 1.72)	1.11		1.17		1.34
1566a	2.25 ppm	(1.54- 3.09)	2.43		2.38		7.34
Blanks:			0.000/0.000		0.011/0.014	(MDL= 0.1 ppm)	0.004/0.000
Matrix Spike:	% Recovery		97.50%		98.60%		106%

SILVER	Certified Value	EMAP Range (+/- 15 %)	Set 4 ppm		Set 6 ppm
1566a	1.68 ppm	(1.30- 2.10)	1.48		1.57
Blanks:			0.000/0.000		0.000/0.000
Matrix Spike:	% Recovery		79.20%		89.60%

CHROMIUM	Certified Value	EMAP Range (+/- 15 %)	Set 4 ppm		Set 6 ppm	
DOLT-2	0.37 ppm	(0.246- 0.518)	0.474		0.808	
1566a	1.43 ppm	(0824- 2.17)	1.25		1.36	
Blanks:			0.02/0.02	(MDL= 0.02 ppm)	0.02/0.02	(MDL= 0.02 ppm)
Matrix Spike:	% Recovery		107%		104%	

APPENDIX B.8
Toxic Substances Bioaccumulation Monitoring
Summary of QA/QC Data
Trace Element Blanks, SRMs, Matrix Spikes

COPPER	Certified Value	EMAP Range (+/- 15 %)	Set 4 ppm		Set 6 ppm	
DOLT-2	25.8 ppm	(21.0- 30.9)	25.8		26.8	
1566a	5.22 ppm	(52.7- 81.2)	65		70.5	
Blanks:			0.05/0.02	(MDL= 0.02 ppm)	0.05/0.04	(MDL= 0.02 ppm)
Matrix Spike:	% Recovery		104%		96.50%	

LEAD	Certified Value	EMAP Range (+/- 15 %)	Set 4 ppm		Set 6 ppm	
DOLT-2	0.22 ppm	(0.17- 0.276)	0.368		0.492	
1566a	0.371 ppm	(0.303- 0.443)	0.481		0.0404	
Blanks:			0.9/0.2	(MDL= 0.1 ppm)	0.015/0.026	(MDL= 0.1 ppm)
Matrix Spike:	% Recovery		105%		105%	

ZINC	Certified Value	EMAP Range (+/- 15 %)	Set 4 ppm		Set 6 ppm	
DOLT-2	85.8 ppm	(70.8- 101)	81.7		87.4	
1566a	830 ppm	(657- 1020)	839		835	
Blanks:			2.3/0.4	(MDL=0.3 ppm)	0.2/0.3	(MDL=0.3 ppm)
Matrix Spike:	% Recovery		109%		500%	

APPENDIX B.9
Toxic Substances Bioaccumulation Monitoring
Summary of QA/QC Data
Trace Element Duplicate Sample Precision

Collection Date: Species: Tissue Type:		6/14/1995 Channel Catfish Flesh	6/14/1995 Channel Catfish Flesh	
ELEMENTS	**Fresh Weight Quantitation Limit (MQL) ppm (ug/g)**	**Fresh Weight Concentration ppm (ug/g)**	**Fresh Weight Concentration ppm (ug/g)**	**RPD**
		Result	**Result**	
Mercury	0.02	0.03	0.02	40
Selenium	0.05	0.72	NA	
Arsenic	0.05	0.16	NA	
Cadmium	0.01	ND	ND	
Nickel	0.1	ND	ND	
Silver	0.02	NA	NA	
Chromium	0.02	NA	NA	
Copper	0.05	NA	NA	
Lead	0.1	NA	NA	
Zinc	0.05	NA	NA	
Percent Moisture:		76.3	NA (IS)	

ND = not detected
NA = not analyzed
IS = insufficient sample
RPD = Relative Percent Difference

APPENDIX B.9

Toxic Substances Bioaccumulation Monitoring

Summary of QA/QC Data

Trace Element Duplicate Sample Precision

Collection Date: Species: Tissue Type:		6/13/1995 Carp Flesh	6/13/1995 Carp Flesh	
ELEMENTS	**Fresh Weight Quantitation Limit (MQL) ppm (ug/g)**	**Fresh Weight Concentration ppm (ug/g)**	**Fresh Weight Concentration ppm (ug/g)**	**RPD**
		Result	**Result**	
Mercury	0.02	0.14	0.14	0
Selenium	0.05	0.78	0.8	2.5
Arsenic	0.05	0.2	0.21	4.9
Cadmium	0.01	ND	ND	
Nickel	0.1	ND	ND	
Silver	0.02	NA	NA	
Chromium	0.02	NA	NA	
Copper	0.05	NA	NA	
Lead	0.1	NA	NA	
Zinc	0.05	NA	NA	
Percent Moisture:		74.1	74.1	0

ND = not detected

NA = not analyzed

RPD = Relative Percent Difference

Collection Date: Species: Tissue Type:		6/13/1995 Largemouth Bass Liver	6/13/1995 Largemouth Bass Liver	
ELEMENTS	**Fresh Weight Quantitation Limit (MQL) ppm (ug/g)**	**Fresh Weight Concentration ppm (ug/g)**	**Fresh Weight Concentration ppm (ug/g)**	**RPD**
		Result	**Resut**	
Mercury	0.02	NA	NA	
Selenium	0.05	NA	NA	
Arsenic	0.05	NA	NA	
Cadmium	0.01	NA	NA	
Nickel	0.1	NA	NA	
Silver	0.02	ND	ND	
Chromium	0.02	0.02	0.02	0
Copper	0.05	9.4	9.1	3.2
Lead	0.1	ND	ND	
Zinc	0.05	22	21	4.7
Percent Moisture:		79.1	79.2	0.1

ND = not detected

NA = not analyzed

RPD = Relative Percent Difference

APPENDIX B.9
Toxic Substances Bioaccumulation Monitoring
Summary of QA/QCData
Trace Element Duplicate Sample Precision

Collection Date: Species: Tissue Type:		4/10/1995 Carp Flesh	4/10/1995 Carp Flesh	
ELEMENTS	**Fresh Weight Quantitation Limit (MQL) ppm (ug/g)**	**Fresh Weight Concentration ppm (ug/g)**	**Fresh Weight Concentration ppm (ug/g)**	**RPD**
		Result	**Result**	
Mercury	0.02	0.28	0.27	3.6
Selenium	0.05	1.5	1.5	0
Arsenic	0.05	0.11	0.09	20
Cadmium	0.01	ND	ND	
Nickel	0.1	ND	ND	
Silver	0.02	NA	NA	
Chromium	0.02	NA	NA	
Copper	0.05	NA	NA	
Lead	0.1	NA	NA	
Zinc	0.05	NA	NA	
Percent Moisture:		78.5	78.3	0.3

ND = not detected
NA = not analyzed
RPD = Relative Percent Difference