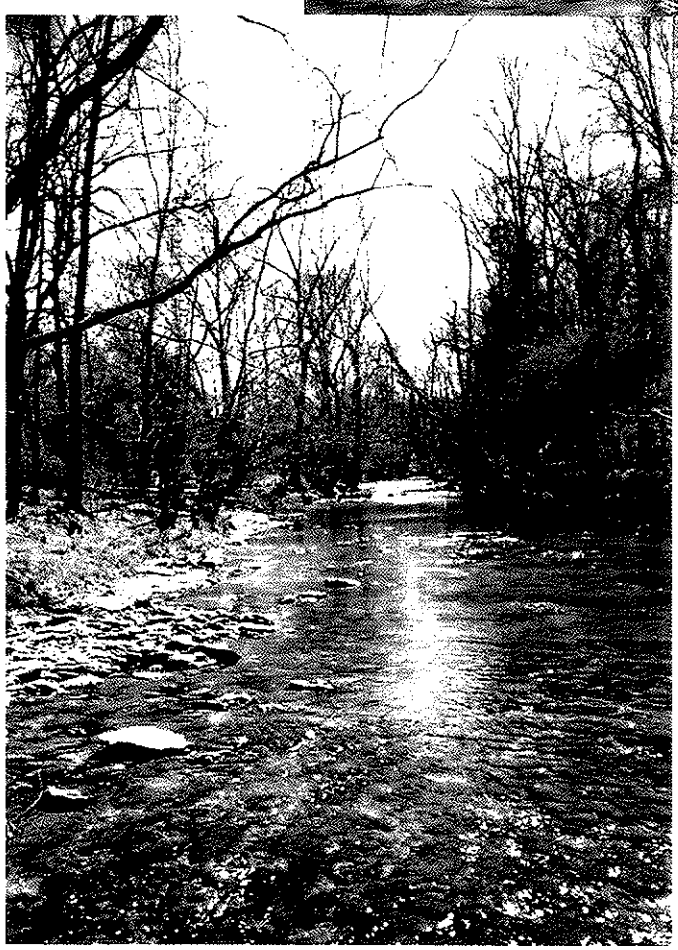
LOWER FOUNTAIN CREEK
QUALITATIVE FISH STUDY
1995





Prepared for

Tennessee Duck River Agency
Shelbyville, Tennessee

Prepared by

Aquatic Resources Center
Franklin, Tennessee

March 1995

AQUATIC RESOURCES CENTER

MAILING ADDRESS
P.O. Box 680818
Franklin, TN 37068-0818

DELIVERY ADDRESS
128 Holiday Court
Suite 112
Franklin, TN 37064
(615) 790-0172
FAX (615) 790-0173

30 March 1995

Mr. Steve Parks
Tennessee Duck River Agency
210E Depot Street
Shelbyville, Tennessee 37160

RE: Qualitative Fish Survey of Lower Fountain Creek and Silver Creek, Maury County, TN
Aquatic Resources Center Project No. 093

Dear Mr. Parks:

Enclosed please find six copies of the final report for the survey of lower Fountain Creek and Silver Creek. Included is a list of species encountered, site descriptions, and a comparison with a 1991 study done for Tennessee Valley Authority.

If there are any questions please contact us at any time.

Thank you.

Sincerely yours,

Todd W. Askegaard
Project Biologist

TABLE OF CONTENTS

	Page
Letter of Transmittal	i
TABLE OF CONTENTS	ii
ACKNOWLEDGMENTS	iii
INTRODUCTION	1
MATERIALS AND METHODS	1
RESULTS	2
COMMENTS	2
REFERENCES	4

FIGURES

FIGURE 1	SAMPLING SITE LOCATIONS ON FOUNTAIN AND SILVER CREEKS, MAURY COUNTY, TENNESSEE

TABLES

TABLE 1	LOWER FOUNTAIN CREEK FISH SURVEY, MAURY COUNTY, TENNESSEE, 15 NOVEMBER 1994, 9-10 FEBRUARY 1995 AND 23 MARCH 1995

APPENDICES

APPENDIX A	SAMPLING SITE DESCRIPTIONS
APPENDIX B	PHOTOGRAPHS OF SAMPLING SITES

ACKNOWLEDGMENTS

Todd Askegaard, David Lamb and Keith Weaver conducted the fish survey. Todd Askegaard prepared the report, and R. D. Kathman reviewed it. Thanks to Todd Hunt for providing a spare electroshocker.

INTRODUCTION

In November 1994, Aquatic Resources began a qualitative survey on Fountain Creek (FC) and Silver Creek (SC) in Maury County, Tennessee. The goal was to identify fish species occurring in each creek and visually search for the presence of mussel populations.

METHODS

Four sites were selected along Fountain Creek. They were located at river miles 0.3, 2.4, 3.3, and 7.0 (Appendix A). These sites were easily accessed by roads and bridges. Two sites were selected on Silver Creek. They were located at river miles 0.1 and 1.0 (Appendix A). Figure 1 shows the general location of these sites. An attempt was made to sample two riffles and one pool that were each approximately 100 meters long at each site. Photographs taken at each site are shown in Appendix B.

Fish were sampled by electrofishing. This method was deemed the most efficient sampling technique to conduct a quick but representative survey, as requested by Tennessee Duck River Agency. Sampling was done with a three person team, one person electroshocking and two people using dipnets to capture fish. Fish were put in a bucket of water until a habitat area was sampled completely. Specimens were then identified, enumerated and released back into the stream.

An attempt was made to begin the survey in November 1994. Due to equipment failure and subsequent inclement weather, surveying was re-scheduled for the spring. Two riffles and one pool were sampled at the following sites: FCM 0.3, FCM 2.5, FCM 3.0, and SCM 0.1. There were very long pools and deep runs upstream and downstream of the riffle sampled at FCM 7.0, so only one riffle and one pool were sampled at FCM 7.0. Riffle A at FCM 7.0 was 25 meters long. Above SCM 0.1 the stream flattened out and became one long riffle; therefore only one riffle was sampled at SCM 1.0.

RESULTS

No relic mussel shells were found during the survey. No live mussels were found during visual searches while electroshocking.

A total of 28 species of fish were identified from both streams (Table 1). In Fountain Creek 24 species of fish were found. Sixteen species of fish were found in Silver Creek. The redband darter (*Etheostoma luteovinctum*), a species listed as in need of management by Tennessee Wildlife Resources Agency, was found in Silver Creek at mile 1.0. Coppercheek darter (*Etheostoma aquali*) was also found in Silver Creek (mile 1.0). This species is on the state threatened list and is a candidate for possible federal listing.

COMMENTS

Fountain Creek is a fairly wide stream (10 to 15 meters) which limits the ability of an electroshocker to effectively sample an area. Sampling was restricted in the pools to along the banks due to the lack of habitat and depth that was too deep to wade.

Silver Creek is a fairly shallow creek. The substratum is mostly limestone bedrock. The only pool sampled was found close to the mouth of the stream where it flowed into Fountain Creek.

In the study done for TVA in 1991 several types of sampling were done including seining, dipnetting, and electroshocking. This may explain the greater number of species sampled and number of gamefish caught.

During the 1991 study samples were collected at FCM 0.3, FCM 3.3, and SCM 4.4. At the Fountain Creek sites 35 species were found and 17 species were found at the Silver Creek site (Table 2). Fifteen of the species found at the 1991 Fountain Creek sites were not collected in the present study. Nine of these species were rare in 1991. In 1995 four species were collected that were not found in 1991 and three of these were rare. In 1991eight species of fish were found at the Silver Creek site that were not collected in the 1995 study. Four of these species were rare. Seven species were collected in the present study that were not found in the 1991 survey and six of these were rare.

Organic enrichment and sedimentation have been occurring in the lower reaches of Fountain Creek (mile 0.3) at an increasing rate (Charles Saylor, Tennessee Valley Authority, personal communication), which may account for the differences in number and composition of species between 1991 (29 species) and 1995 (19 species).

This earlier study also found redband darters and coppercheek darters. Redband darters were common in Silver Creek, but not found in Fountain Creek, while the coppercheek darter was rare in Fountain Creek and not found in Silver Creek .

Tennessee Wildlife Resources Agency. 1994. Summary of Proclamation 94-16. Tennessee Wildlife Resources Commission Proclamation Wildlife in Need of Management.

Tennessee Wildlife Resources Agency. 1994. Summary of Proclamation 94-17. Tennessee Wildlife Resources Commission Proclamation Endangered or Threatened Species.

Tennessee Valley Authority. 1991. Fountain Creek Survey. In house report.

FIGURE 1
SAMPLING SITES LOCATED ON FOUNTAIN AND SILVER CREEKS, MAURY COUNTY, TENNESSEE

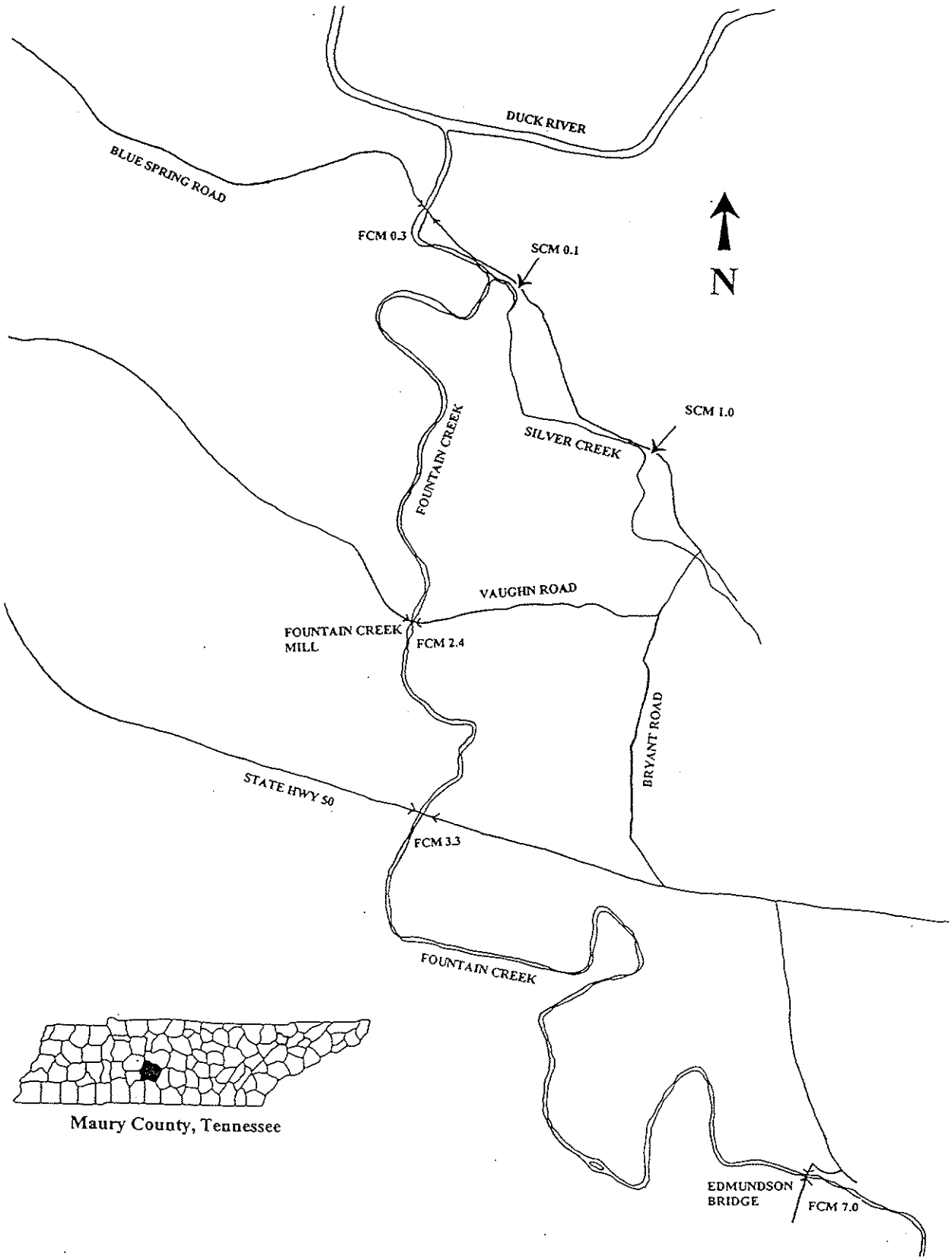


TABLE 2
COMPARISON OF RELATIVE ABUNDANCES BETWEEN 1991 AND 1995
FOUNTAIN CREEK AND SILVER CREEK
MAURY COUNTY, TENNESSEE

		Fountain Creek					
		1991		1995			
Scientific name	Common name	0.3	3.3	0.3	2.5	3.3	7.0
Ambloplites rupestris	Rockbass		C				
Ameiurus melas	Black bullhead						
Campostoma anomalum	Stoneroller	A	A	A	A	C	
Catostomus commersoni	White sucker			R	R	R	
Cottus carolina	Banded sculpin	C	C	C	R	C	R
Cyprinella galactura	Whitetail shiner		C		R		
Cyprinella spiloptera	Spotfin shiner	C	R	R			
Dorosoma cepedianum	Gizzard shad			A			
Erimystax insignis	Blotched chub	R	R				
* *Etheostoma aquali*	Coppercheek darter	R					
Etheostoma blennioides	Greenside darter	C	C	R		R	
Etheostoma caeruleum	Rainbow darter	R	C			R	
Etheostoma crossopterum	Fringed darter	C	C				
Etheostoma flabellare	Fantail darter	R	C	R		C	
Etheostoma flavum	Saffron darter	A	A				
** *Etheostoma luteovinctum*	Redband darter						
Etheostoma ruflineatum	Redline darter	C	C	R	R	C	R
Etheostoma simoterum	Tennessee snubnose darter	A	C	C		C	R
Fundulus catenatus	Northern studfish	C	C				
Fundulus notatus	Blackstripe topminnow	C	C				
Gambusia affinis	Western mosquitofish	C					
Hypentelium nigricans	Northern hogsucker	R	C	C	C		R
Ictalurus natalis	Yellow bullhead	R	R				
Labidesthes sicculus	Brook silverside	R	R				
Lepomis cyanellus	Green sunfish	C	C	R		R	
Lepomis gulosus	Warmouth			R			
Lepomis macrochirus	Bluegill	C	C	R	R		
Lepomis megalotis	Longear sunfish	A	C	R	R		
Luxilus chrysocephalus	Striped shiner	C	C	C	R	R	
Lythrurus ardens	Rosefin shiner		C			R	
Lythrurus lirus	Mountain shiner	C	C		R		
Micropterus dolomieu	Small mouth bass		R				
Micropterus puntulatus	Spotted bass	R	R				
Moxostoma duquesnei	Black redhorse	R	R				
Moxostoma erythurum	Golden redhorse	R					
Notropis amblops	Bigeye chub	C	C	A			
Notropis boops	Bigeye shiner			R			
Notropis telescopus	Telescope shiner	R	C	C	C		
Noturus exilis	Slender madtom		R			R	R
Percina caprodes	Logperch		R				
Pimephales notatus	Bluntnose minnow	A	C	C			
Semotilis atromaculatus	Creek chub						

Rare = 0-4 specimens, common = 5-30 specimens, abundant = > 30 specimens

* State threatened species, possible federal listing

** Tennessee in need of management listing

TABLE 2
COMPARISON OF RELATIVE ABUNDANCES BETWEEN 1991 AND 1995
FOUNTAIN CREEK AND SILVER CREEK
MAURY COUNTY, TENNESSEE

Scientific name	Common name	Silver Creek		
		1991	1995	
		4.4	0.1	1.0
Ambloplites rupestris	Rockbass			
Ameiurus melas	Black bullhead			R
Campostoma anomalum	Stoneroller	A	C	C
Catostomus commersoni	White sucker		R	
Cottus carolina	Banded sculpin	C	C	C
Cyprinella galactura	Whitetail shiner			
Cyprinella spiloptera	Spotfin shiner			
Dorosoma cepedianum	Gizzard shad			
Erimystax insignis	Blotched chub			
* *Etheostoma aquali*	Coppercheek darter			R
Etheostoma blennioides	Greenside darter		R	C
Etheostoma caeruleum	Rainbow darter			
Etheostoma crossopterum	Fringed darter	C		
Etheostoma flabellare	Fantail darter	C	R	C
Etheostoma flavum	Saffron darter	A		
** *Etheostoma luteovinctum*	Redband darter	C		R
Etheostoma ruflineatum	Redline darter			
Etheostoma simoterum	Tennessee snubnose darter		C	C
Fundulus catenatus	Northern studfish	C		R
Fundulus notatus	Blackstripe topminnow	C		
Gambusia affinis	Western mosquitofish	R		
Hypentelium nigricans	Northern hogsucker		R	R
Ictalurus natalis	Yellow bullhead	R		
Labidesthes sicculus	Brook silverside			
Lepomis cyanellus	Green sunfish	C		
Lepomis gulosus	Warmouth			
Lepomis macrochirus	Bluegill			
Lepomis megalotis	Longear sunfish			
Luxilus chrysocephalus	Striped shiner	C	C	C
Lythrurus ardens	Rosefin shiner	A		R
Lythrurus lirus	Mountain shiner			
Micropterus dolomieu	Small mouth bass			
Micropterus puntulatus	Spotted bass			
Moxostoma duquesnei	Black redhorse			
Moxostoma erythurum	Golden redhorse	R		
Notropis amblops	Bigeye chub		R	
Notropis boops	Bigeye shiner	R	R	
Notropis telescopus	Telescope shiner			
Noturus exilis	Slender madtom			
Percina caprodes	Logperch			
Pimephales notatus	Bluntnose minnow	C	R	C
Semotilis atromaculatus	Creek chub	R		

Rare = 0-4 specimens, common = 5-30 specimens, abundant = >30 specimens

*State threatened species, possible federal listing

** Tennessee in need of management listing

TABLE 1
LOWER FOUNTAIN CREEK FISH SURVEY, MAURY COUNTY, TENNESSEE
15 NOVEMBER 1994, 9 - 10 FEBRUARY 1995, 23 MARCH 1995

		Fountain Creek Mile 0.3				Fountain Creek Mile 2.5			Fountain Creek Mile 3.3		
		15-Nov-94	9-Feb-95			9-Feb-95			23-Mar-95	10-Feb-95	23-Mar-95
Scientific name	Common name	Riffle B	Riffle A	Riffle B	Pool	Riffle A	Riffle B	Pool	Riffle A	Riffle B	Pool
Ameiurus melas	Black bullhead										
Campostoma anomalum	Stoneroller		74	7	2	29	1	2	3	14	
Catostomus commersoni	White sucker				2			2	1		
Cottus carolina	Banded sculpin	1	3	2	1	2	1		7	1	
Cyprinella galactura	Whitetail shiner							2			
Cyprinella spiloptera	Spotfin shiner		1		1						
Dorosoma cepedianum	Gizzard shad	Lg school									
* *Etheostoma aquali*	Coppercheek darter										
Etheostoma blennioides	Greenside darter	1							2	3	
Etheostoma caeruleum	Rainbow darter								3	1	
Etheostoma flabellare	Fantail darter	1		1					6	5	
** *Etheostoma luteovinctum*	Redband darter										
Etheostoma ruflineatum	Redline darter	3	1			1			10	6	
Etheostoma simoterum	Tennessee snubnose darter		1	4	5				6	2	
Fundulus catenatus	Northern studfish										
Hypentelium nigricans	Northern hogsucker		5	1		2	3				
Lepomis cyanellus	Green sunfish			1	1						2
Lepomis gulosus	Warmouth			1	1						
Lepomis macrochirus	Bluegill			2				2			
Lepomis megalotis	Longear sunfish			1				1			
Luxilus chrysocephalus	Striped shiner	2	6	1	1			1	4		
Lythrurus ardens	Rosefin shiner								4		
Lythrurus lirus	Mountain shiner							1			
Notropis amblops	Bigeye chub		4	41	128						
Notropis boops	Bigeye shiner		3								
Notropis telescopus	Telescope shiner	6				7					
Noturus exilis	Slender madtom								1		
Pimephales notatus	Bluntnose minnow		1		9						

* State threatened species, possible federal listing
** Tennessee in need of management listing

TABLE 1
LOWER FOUNTAIN CREEK FISH SURVEY, MAURY COUNTY, TENNESSEE
15 NOVEMBER 1994, 9-10 FEBRUARY 1995, 23 MARCH 1995

Scientific name	Common name	Fountain Creek Mile 7.0 10-Feb-95 Riffle A	Fountain Creek Mile 7.0 10-Feb-95 Pool	Silver Creek mile 0.1 9-Feb-95 Riffle A	Silver Creek mile 0.1 9-Feb-95 Riffle B	Silver Creek mile 0.1 9-Feb-95 Pool	Silver Creek mile 1.0 23-Mar-95 Riffle A
Ameiurus melas	Black bullhead						1
Campostoma anomalum	Stoneroller			10	2	2	21
Catostomus commersoni	White sucker				2	1	
Cottus carolina	Banded sculpin		1			1	6
Cyprinella galactura	Whitetail shiner						
Cyprinella spiloptera	Spotfin shiner						
Dorosoma cepedianum	Gizzard shad						
* *Etheostoma aquali*	Coppercheek darter						1
Etheostoma blennioides	Greenside darter				1		7
Etheostoma caeruleum	Rainbow darter						
Etheostoma flabellare	Fantail darter			2			42
** *Etheostoma luteovinctum*	Redband darter						4
Etheostoma ruflineatum	Redline darter	1					
Etheostoma simoterum	Tennessee snubnose darter	2				10	8
Fundulus catenatus	Northern studfish						2
Hypentelium nigricans	Northern hogsucker	2		3	1		1
Lepomis cyanellus	Green sunfish						
Lepomis gulosus	Warmouth						
Lepomis macrochirus	Bluegill						
Lepomis megalotis	Longear sunfish						
Luxilus chrysocephalus	Striped shiner			2		3	5
Lythrurus ardens	Rosefin shiner						2
Lythrurus lirus	Mountain shiner						
Notropis amblops	Bigeye chub					1	
Notropis boops	Bigeye shiner					2	
Notropis telescopus	Telescope shiner						
Noturus exilis	Slender madtom	1					
Pimephales notatus	Bluntnose minnow					2	17

* State threatened species, possible federal listing
** Tennessee in need of management listing

APPENDIX A
SAMPLING SITE DESCRIPTIONS
FOUNTAIN CREEK AND SILVER CREEK
MAURY COUNTY, TENNESSEE
15 NOVEMBER 1994, 9-10 FEBRUARY 1995, 23 MARCH 1995

Fountain Creek mile 0.3	Site located at Blue Springs Road bridge. Stream habitat predominantly shallow pool and riffle with unstable churt and gravel substrate. Deep organic matter (mostly leaves) along left side of pool looking upstream.
Fountain Creek mile 2.4	Located on upstream side of Vaughn Road bridge, near Fountain Creek Mill. Riffles 0.5-0.75 meters deep with unstable gravel substrate. Pool greater than 1 meter deep.
Fountain Creek mile 3.0	Site located at State Highway 50 bridge. Various substrate in the riffles which included gravel, rubble, cobble, and boulder. Pool 10 meters wide with a bedrock substrate with some shifting gravel.
Fountain Creek mile 7.0	Located upstream of Edmundson bridge. Pool substrate was bedrock with steep embankments. Some tree root habitat. Riffle substrate gravel, rubble, and cobble.
Silver Creek mile 0.1	Located upstream from the confluence of Fountain Creek and Silver Creek. Limestone bedrock substrate with some gravel and cobble. Pool located at bend in stream approximately 0.75 meters deep.
Silver Creek mile 1.0	Site located downstream of Bryant Road bridge. Shallow riffles <0.5 meters deep. Substrate of limestone bedrock with some gravel and cobble.

APPENDIX B
PHOTOGRAPHS OF SAMPLING SITES
FOUNTAIN CREEK AND SILVER CREEK
MAURY COUNTY, TENNESSEE
15 NOVEMBER 1994, 9-10 FEBRUARY 1995, 23 MARCH 1995

Fountain Creek mile 0.3

Upstream riffle A

Top: View looking upstream from start of sampling site

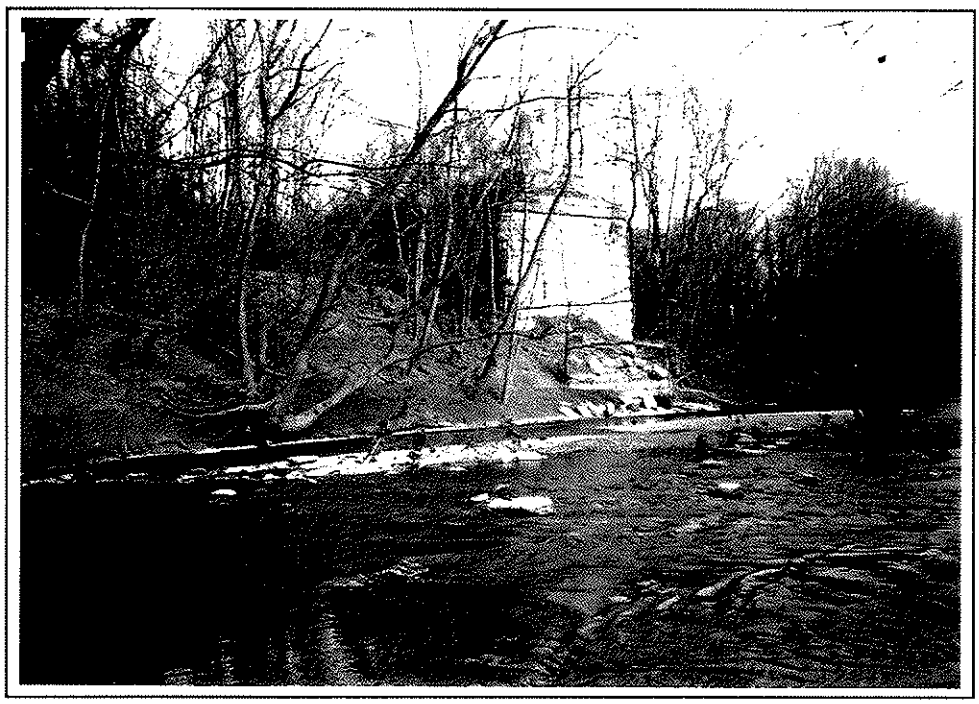
Bottom: View looking downstream from end of sampling site

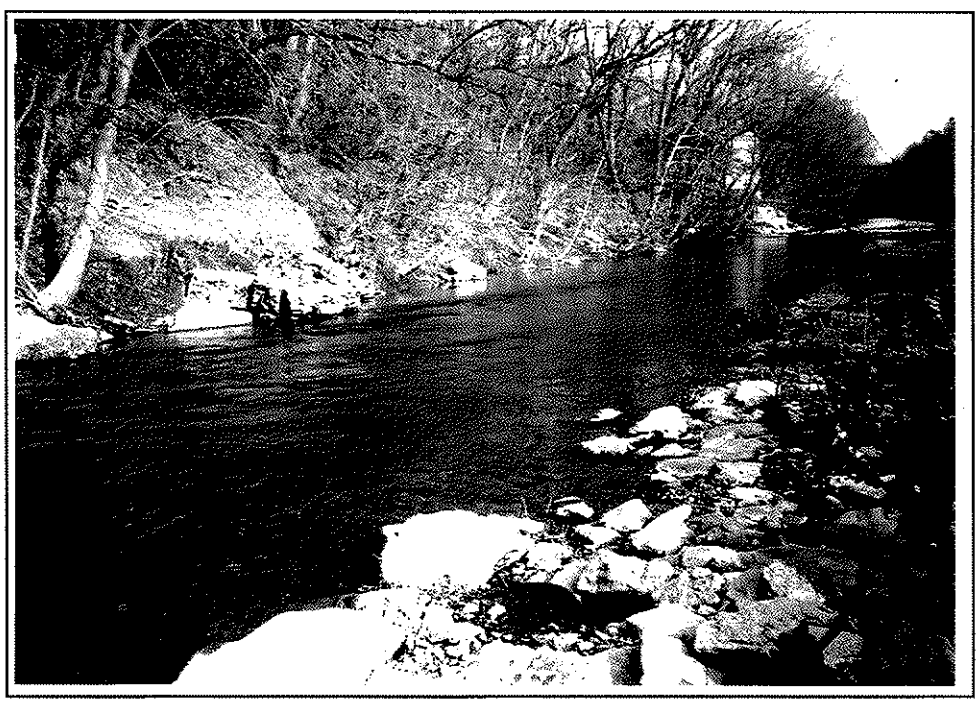




Fountain Creek mile 0.3
Downstream riffle B

Top: View looking downstream from middle of sampling site
Bottom: View looking downstream from end of sampling site





Fountain Creek mile 0.3

Pool

Top: View looking upstream from start of sampling site

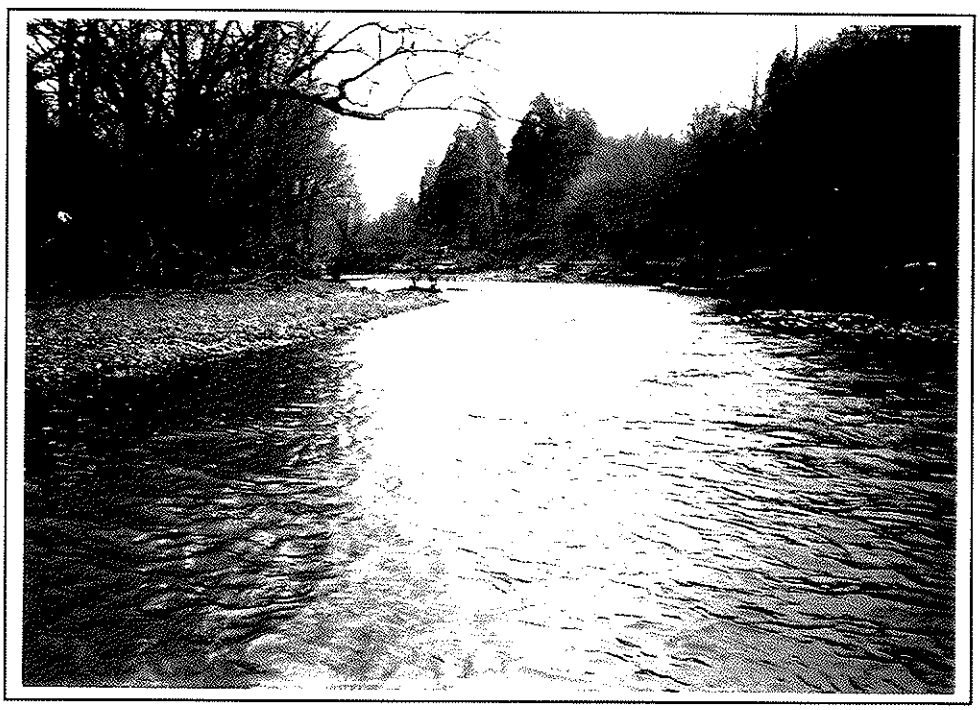
Bottom: View looking downstream from end of sampling site





Fountain Creek mile 2.4

Top: View looking upstream from start of upstream riffle A
Bottom: View looking upstream from start of pool



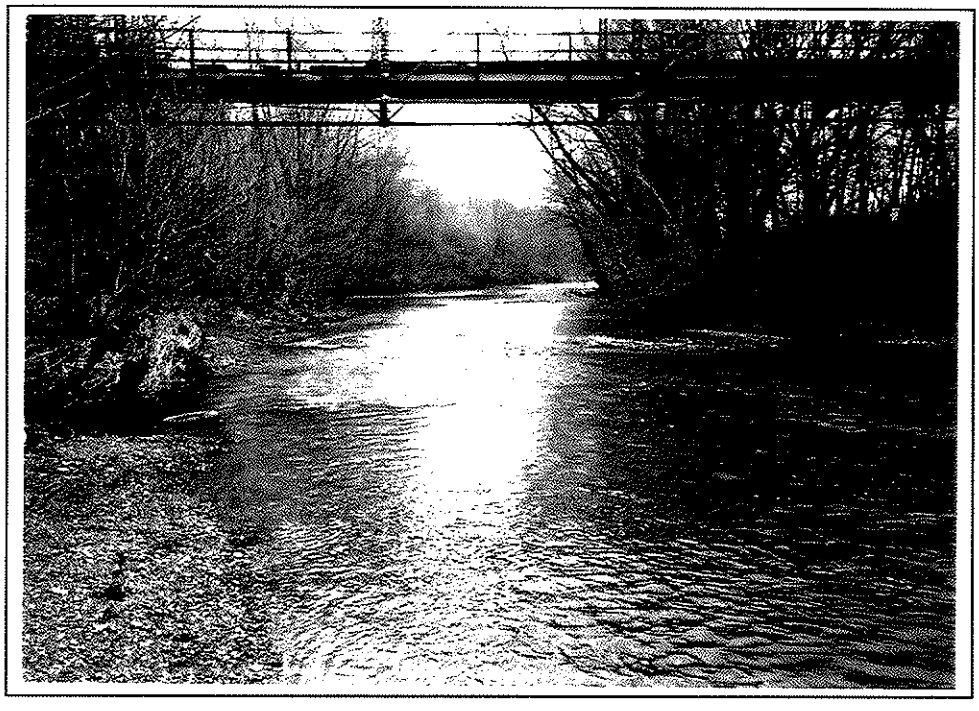


Fountain Creek mile 2.4

Downstream riffle B

Top: View looking downstream from middle of sampling site

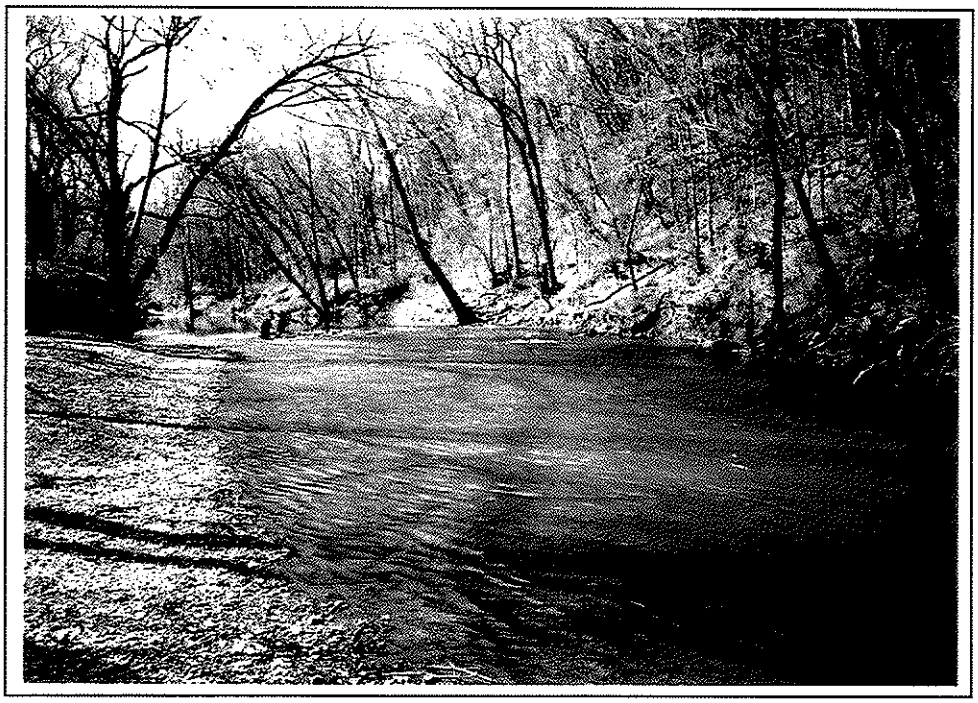
Bottom: View looking upstream from middle of sampling site

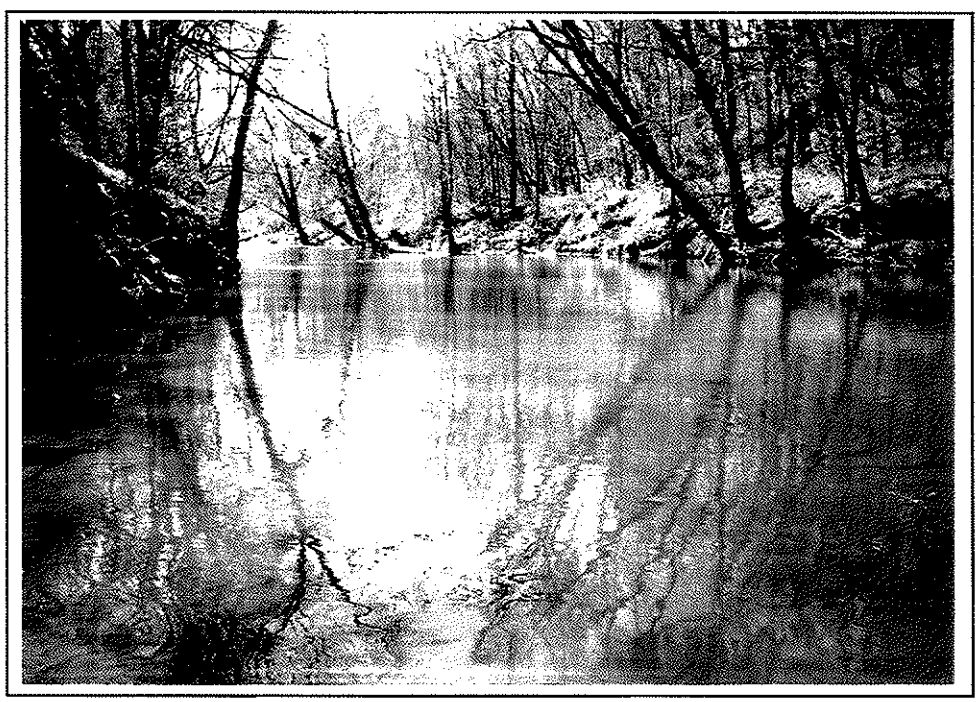




Fountain Creek mile 3.0

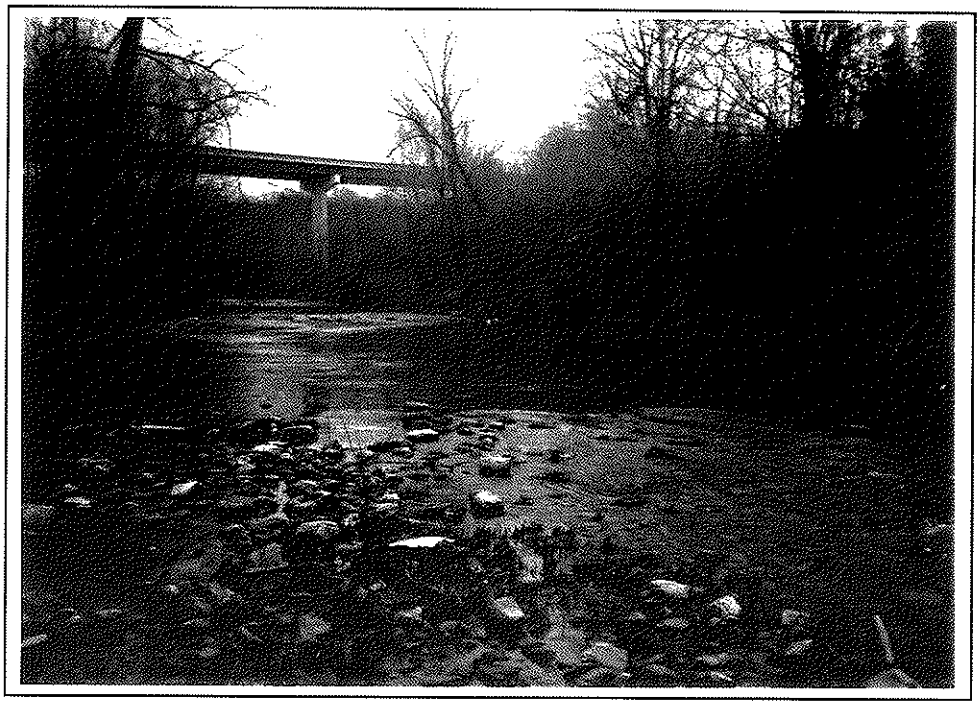
Top: View looking upstream from start of upstream riffle A
Bottom: View looking upstream from start of pool





Fountain Creek mile 3.0

View looking upstream from start of downstream riffle B



Silver Creek mile 0.1

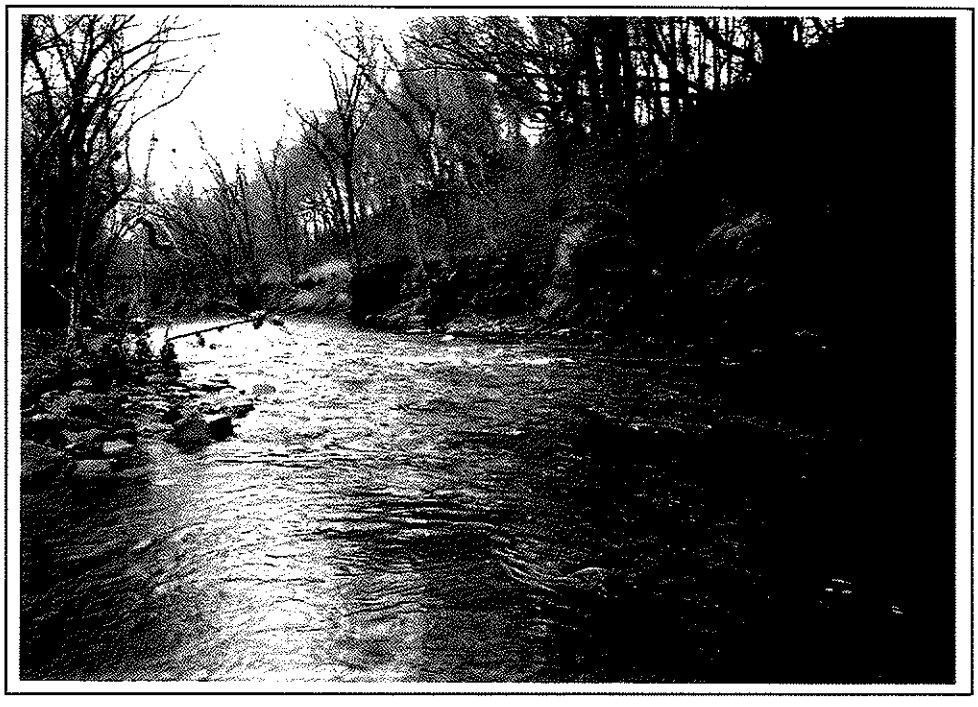
View looking upstream from start of downstream riffle B



Fountain Creek mile 7.0

Top: View looking downstream from end of upstream riffle A

Bottom: View looking upstream from start of pool





Silver Creek mile 1.0

Top: View looking downstream from middle of upstream riffle A
Bottom: View looking upstream from middle of upstream riffle A

